NASA News

National Aeronautics and
Space Administration

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

A.H. Lavender
305 867-2468

For Release:
December 29, 1977

RELEASE NO: KSC 217-77

THUNDERSTORM RESEARCH TO CONTINUE IN 1978

KENNEDY SPACE CENTER, Fla.--Study of the electrical properties of thunderstorms, conducted at the Kennedy Space Center during the past two summers, will continue in 1978.

The study, known as the Thunderstorm Research International Program (TRIP), involves combined study efforts of the top atmospheric physicists and lightning researchers in the United States, plus investigators from Europe and Africa, in studies of the electrical characteristics of thunderstorms--how they come into being in the first place and what happens after.

An invitation for the researchers to return to KSC in 1978 was extended at the recent annual Fall Meeting of the American Geophysical Union in San Francisco.

This is the third consecutive year that KSC will host the program, where researchers utilize the Center's unique meteorological facilities built up during the Apollo and Skylab programs, and the large number of summer thunderstorms that occur in the area.

The researchers fund their own programs and KSC provides its meteorological instrumentation, facilities of the local National Weather Service office and normally available support services such as power, communications and film processing.

Having many investigators in the same area studying the same storms and exchanging data offers the chance of gaining more knowledge than might come from isolated studies. The last two years of the program have borne out this concept.

The Spaceport is also benefitting from the program as much of what is being learned will be applied in future Space Shuttle launch and landing operations.

-more-

Although KSC is not scheduled to host the research group after 1978, the program will not end. TRIP's 1979 study site will be the Langmuir Laboratories, Socorro, N.M., for emphasis on mountain storms of the southwest.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

A. H. Lavender
305-867-2468

December 21, 1977

RELEASE NO: KSC 216-77

SPACEPORT TO SAVE ELECTRICITY, FUEL OIL DURING HOLIDAYS

KENNEDY SPACE CENTER, Fla.--Saving of more than 1.6 million kilowatt hours of electricity and 13,000 gallons of fuel oil will be achieved by the Kennedy Space Center during the holiday period as most government and contractor employees take annual leave between December 23 and January 3.

"By closing some buildings and turning off electricity in most areas the Center will not only conserve the electricity and fuel oil, but should save some $53,000 in actual expenditures," said Charles A. Adams, KSC's chief of utilities engineering and operations.

Limited curtailment of Spaceport operations during the 1976 Christmas holiday period resulted in savings of 80,000 kilowatt hours per day.

With all but a limited number of essential employees on annual leave and most electrical and heating/air conditioning systems turned off during the four-day Thanksgiving weekend, the Center saved 765,000 kilowatt hours of electricity and 6,500 gallons of fuel oil. Dollar savings totaled about $25,000.

An emergency crew at the KSC dispensary and required security and fire protection personnel will be on duty during the holiday period, and some construction contractor personnel will be at work during the December 27-30 period.

NASA Tours will also be in operation every day except Christmas Day, with large holiday crowds antiticipated throughout the period.

# # #

NASA News

National Aeronautics and
Space Administration

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

A. H. Lavender
305 867-2468

For Release:
December 16, 1977

RELEASE NO: KSC 215-77

TWO FIRMS RESPOND TO KSC REQUEST FOR PROPOSALS

KENNEDY SPACE CENTER, Fla.--Two firms have responded to a request for proposals for the provision of protective services at NASA's Kennedy Space Center.

These services include fire and security and related consolidated communications, training, logistics, alarm testing and fire prevention engineering.

Proposals were received from Boeing Services International, Seattle, Wash., and Wackenhut Corp., Coral Gables, Fla.

It is contemplated the new contract will be effective April 1, 1978. It will be for the period of one year with a priced one-year option and three additional unpriced one-year options.

At present, protective services at the Kennedy Space Center are provided by Boeing Services International.

# # #

NASA Fact Sheet

National Aeronautics and
Space Administration

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

For Release:
December 1977
KSC 214-77

1978 NASA LAUNCH SCHEDULE

Date	Mission	Launch Vehicle	Complex	Comments
Jan 6	INTELSAT IV-A F-3	Atlas Centaur	LC-36-B	
Jan 19	FLTSATCOM-A	Atlas Centaur	LC-36-A	
Jan 25	IUE	Delta	LC-17-A	
March 5	LANDSAT-C	Delta	WTR	
March 23	JAPAN BSE	Delta	LC-17-B	
April	INTELSAT IV-A F-6	Atlas Centaur	LC-36-B	
April	ESA OTS Backup	Delta	LC-17-A	
May	SEASAT	Atlas-F	WTR	
May	PIONEER VENUS-A	Atlas Centaur	LC-36-A	
June	*JAPAN Backup	Delta	LC-17-A	
June	COMSTAR-D3	Atlas Centaur	LC-36-B	
July	TIROS-N	Atlas-F	WTR	
July	ISEE-C	Delta	LC-17-B	
August	PIONEER VENUS-B	Atlas Centaur	LC-36-A	
4th Quarter	NATO-IIIC	Delta	LC-17-B	
4th Quarter	NOAA-A	Atlas-F	WTR	
4th Quarter	TELESAT-D	Delta	LC-17-B	
4th Quarter	HEAO-B	Atlas Centaur	LC-36-B	
4th Quarter	FLTSATCOM-A	Atlas Centaur	LC-36-B	

*If JAPAN Backup is not required, ESA GEOS-2 will be launched from Complex 17-A in June.

NASA News

National Aeronautics and
Space Administration

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

A. H. Lavender
305 867-2468

For Release:
December 27, 1977

RELEASE NO: KSC 213-77

NOTICE TO EDITORS/NEWS DIRECTORS

INTELSAT IV-A LAUNCH SCHEDULED JANUARY 6

KENNEDY SPACE CENTER, Fla.--Launch of INTELSAT IV-A F-3, a communications satellite, for the International Telecommunications Satellite Organization is scheduled for January 6. There will be three launch opportunities during a period extending from 7:19 to 9:13 p.m. EST.

A prelaunch news conference on the INTELSAT IV-A mission will be held in the E & O Building Conference Room, Cape Canaveral Air Force Station, at 11 a.m. January 5. Badged media representatives may proceed directly to the E & O Building. Others will be provided transportation from the KSC Public Information Office, Headquarters Building, with a sedan leaving at 10:30 a.m.

Badged media representatives may proceed directly to Press Site 1 on the evening of the launch. Others may be badged at Frank Wolfe's Beachside Motel, Cocoa Beach. A convoy to the press site will depart the motel at 5:45 p.m., with a stop at the Cape Canaveral AFS Gate 1 Pass and Identification Building at 6 p.m.

The Information Office in the KSC Headquarters Building will be manned on launch day from 6 p.m. until insertion of the spacecraft in its transfer orbit, and status updates may be obtained by calling 305 867-2468. Live commentary--to be carried from about 60 minutes before launch through approximately 30 minutes after liftoff--may be obtained by phoning the KSC Operator, 305 867-7110, and asking that you be connected with the V-2 circuit.

# # #

NASA News

National Aeronautics and
Space Administration

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

A. H. Lavender
305 867-2468

For Release:

December 21, 1977

RELEASE NO: KSC 212-77

VOYAGER LAUNCHES HIGHLIGHTED 1977 KSC ACTIVITIES

KENNEDY SPACE CENTER, Fla.--Two highly successful launches of Voyager spacecraft on lengthy missions to Jupiter and beyond were highlights of Kennedy Space Center activities in 1977.

Launch of the two Voyagers marked the final use by NASA of Titan-IIIC Centaur vehicles which also launched HELIOS spacecraft in 1974 and 1976 and two VIKINGS on year-long missions to Mars in 1975.

KSC's Expendable Vehicles Directorate also launched ten Deltas and three Atlas Centaurs from Cape Canaveral Air Force Station.

Eight of the Delta-launched missions were successful, one was listed as partially successful and one was unsuccessful. Of three Atlas Centaur launches in 1977, two were successful and one unsuccessful. No KSC launches were conducted at Vandenberg AFB during the year.

Chronologically, 1977 launches were as follows:

January 27--Launch of NATO IIIB into geosynchronous orbit over the Equator to serve as part of the communications system of the North Atlantic Treaty Organization. The booster was a Delta.

March 10--Successful orbiting by a Delta of PALAPA-B, the second domestic communications satellite for Indonesia, to complete the island nation's two-satellite communications system. Using the two satellites--PALAPA-A was launched on July 8, 1976--the Indonesian government is expanding its radio, telephone and television communications to cover some 3,000 inhabited islands of the nation's 13,000.

-more-

April 20--Launch of the European Space Agency's (ESA's) GEOS satellite to study fields, plasma and particles. Although the Delta second stage spintable failed to spin up the third stage/spacecraft combination and the stage fired without effective stabilization, the spacecraft achieved an eliptical orbit. It is operational and is transmitting scientific data to the European Space Operations Center in Darmstadt, Germany. The mission is listed as partially successful.

May 26--Orbit of INTELSAT IV-A F-4 for the International Telecommunications Satellite Organization. The communications satellite was placed in geostationary orbit above the Equator at 19.5 degrees west longitude. The booster was an Atlas Centaur.

June 16--Placement of the National Oceanic and Atmospheric Administration (NOAA) Geostationary Operational Environmental Satellite-B (GOES-B) in orbit above the Equator by a Delta vehicle.

July 14--Launch of JAPAN GMS (Geostationary Meteorological Satellite) for the National Space Development Agency of Japan (NASDA). The spacecraft was placed in synchronous orbit at 140 degrees east longitude. The booster was a Delta.

August 12--Launch of High Energy Astronomy Observatory-A (HEAO-A), renamed HEAO-1, atop an Atlas Centaur on a mission to map X-ray sources of the universe and unravel some of the mystery surrounding pulsars, black holes, neutron stars, quasars and supernovae. Mission highlights include:

--Placement of the spacecraft in the desired circular orbit.

--Possible discovery by HEAO-1's powerful X-ray detectors of a suspected "black hole," the remains of a star so compressed that not even light can escape its gravity. The suspected black hole is called Circinus-1.

--Continuing search of the universe by HEAO-1 to map X-ray sources in preparation for the orbiting of HEAO-B, with instruments to lock on and study the identified X-ray sources, in 1978.

August 20--Launch of VOYAGER-2 on a mission that will take it within 384,000 miles of Jupiter on July 9, 1979, after passing near Jupiter's moons, Callisto, Ganymede, Europa and Amalthea, on its approach. Jupiter's gravity will then be used to sling-shot VOYAGER-2 on a circuitous trip

to fly within 22,800 miles of Saturn in August, 1981. Because it flies a slower trajectory, VOYAGER-2 will arrive at Jupiter about four months after VOYAGER-1, which was launched 16 days later. VOYAGER-2's arrival at Saturn will follow the arrival of VOYAGER-1 by about nine months. VOYAGER 2 will be 101,879,000 miles from Earth on January 1, 1978.

August 25--Successful launch of SIRIO, an Italian experimental communications satellite, into geosynchronous orbit.

September 5--Launch of VOYAGER-1, which will make its closest approach to Jupiter on March 5, 1979, and after flying within 2,400 miles of Saturn's moon, Titan, make its closest approach to Saturn on November 12, 1980. If VOYAGER-1's Jupiter and Saturn flybys are successful, NASA scientists have the option of using Saturn's gravity to send the spacecraft to faraway Uranus, which orbits the sun at a distance of 1,787,000,000 miles.

VOYAGER-1, which passed VOYAGER-2 some 78,000,000 miles from Earth on December 15, will be 103,236,000 miles from Earth on January 1, 1978.

A highlight of the two successful VOYAGER launches was the launch team's ability to ready a second vehicle for launch from the same pad within 16 days. By midnight of the VOYAGER-2 launch day, crews were at work readying VOYAGER-1. By 5 a.m. the next day the space vehicle was on the pad and by 4 p.m. it was ready for testing to begin.

September 13--Launch of ESA's Orbital Test Satellite (OTS) on a Delta was unsuccessful as the Delta vehicle exploded less than a minute into the mission.

September 29--Launch of INTELSAT IV-A F-5 was unsuccessful. The Atlas Centaur exploded early in the flight.

October 22--Launch of ISEE's-A and -B, now ISEE's 1 and 2, in tandem on a Delta. ISEE-1, developed by NASA, and ISEE-2, developed by ESA, are in a highly eliptical orbit where their instruments are obtaining previously unavailable data on the solar wind. The spacecraft will be joined in 1978 by a third ISEE spacecraft, to be placed in orbit at the libration point, a point in space between the Earth and Sun where the force of gravity and dynamic force exert an equal pull.

November 22--Successful launch of ESA METEOSAT. The geosynchronous satellite is ESA's contribution to a world-wide weather satellite system.

December 14--Successfully placed in geostationary orbit JAPAN CS, an experimental communications satellite, for the National Space Development Agency of Japan.

# # #

NASA News

National Aeronautics and
Space Administration

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

A. H. Lavender
305 867-2468

For Release:
December 21, 1977

RELEASE NO: KSC 211-77

KENNEDY SPACE CENTER SCHEDULES 16 LAUNCHES IN 1978

KENNEDY SPACE CENTER, Fla.--Sixteen launches, including eight Deltas and eight Atlas Centaurs, have been scheduled in 1978 by the Kennedy Space Center's Expendable Vehicles Directorate.

Directorate personnel will also provide support in connection with three Atlas-F space launches from Vandenberg Air Force Base in California.

"With sixteen launches scheduled in 1978, the Expendable Vehicles workload will be heavy throughout the year. The tentative schedule provides for three January launches and two each in some other months," said Director George F. Page.

Seven of the Deltas will be launched from Complex 17, Cape Canaveral Air Force Station, and one from a KSC launch pad at Vandenberg AFB. All of the Atlas Centaurs will be launched from Complex 36 at the Cape.

First launch of the year will be INTELSAT IV-A F-3, one of a series of International Telecommunications Satellite Organization spacecraft. It is scheduled for launch January 6 on an Atlas Centaur.

A second Atlas Centaur with FLTSATCOM-A, the first of a series of geosynchronous orbiting spacecraft in a new Navy world-wide communications system, is scheduled January 19.

An International Ultraviolet Explorer (IUE) is scheduled for launch on a Delta from Cape Canaveral on January 25. In geostationary orbit above the Equator, IUE will obtain data on ultraviolet emissions from stars and other stellar sources.

The IUE spacecraft was built at NASA's Goddard Space Flight Center. The European Space Agency and Great Britain's Science Research Council will participate in IUE experiments.

-more-

LANDSAT-C is scheduled for launch on a Delta from Vandenberg AFB on March 5. The picture-taking satellite will join LANDSAT-1 and LANDSAT-2 in polar orbit to expand NASA's program for cataloging the Earth's resources and monitoring changing environmental conditions.

Launch of an experimental broadcasting satellite, JAPAN-BSE, for research leading to the orbiting of future large-scale broadcasting satellites by the island nation, is scheduled on a Delta from Cape Canaveral on March 23.

The launches of INTELSAT IV-A F-6 on an Atlas Centaur and a backup European Space Agency (ESA) Orbital Test Satellite (OTS) on a Delta from Cape Canaveral are scheduled in April. An earlier attempt to orbit an OTS failed when Delta-134 exploded shortly after liftoff on September 13.

PIONEER VENUS-A, the first of two missions to examine the Venusian atmosphere and the planet's weather, is scheduled for launch on an Atlas Centaur in May. PIONEER VENUS-A's mission is to place its spacecraft in orbit to examine the upper atmosphere.

PIONEER VENUS-B will be launched on an Atlas Centaur in August. A multi-probe, it is scheduled to enter the Venusian atmosphere six days after arrival of the orbiter. The spin-stabilized multi-probe spacecraft consists of a bus, a large probe and three identical small probes, each with scientific instruments.

The probes will be released from the bus 20 days prior to arrival at Venus. The large probe will conduct sounding of Venus' lower atmosphere, measuring clouds as well as atmospheric structure and composition. The smaller probes, entering at widely separated points, will provide information on the general circulation patterns of the lower atmosphere.

A Japanese spacecraft that would be launched on a Delta from Cape Canaveral if an earlier Japanese mission is not successful, is on the schedule for June. If the Japanese spacecraft is not required, ESA GEOS-2, a scientific satellite, will be launched on a Delta in June. GEOS-1, launched from the Cape on April 20, did not reach its intended orbit, although the spacecraft is transmitting data back to Earth and the mission is listed as partially successful.

-more-

COMSTAR-D3, a domestic communications satellite, will be launched for COMSAT General Corporation on an Atlas Centaur in June.

Also scheduled for July launch is International Sun Earth Explorer-C (ISEE-C) on a Delta from the Cape. ISEE-C will be orbited at the libration point between the Earth and the Sun, a point in space where the force of gravity and dynamic force exert an equal pull. From there it will obtain data on solar wind similar to, but from a different location than, that obtained by ISEE-1 and ISEE-2. ISEE-1, developed by NASA, and ISEE-2, developed by ESA, were launched in tandem on a Delta on October 22.

NATO-IIIC, a North Atlantic Treaty Organization communications satellite, is on the launch schedule for the fourth quarter of 1978. Launch will be on a Delta from Cape Canaveral.

TELESAT-D, a domestic communications satellite that will be renamed ANIK-4 in orbit, will be launched for TELESAT Canada during the fourth quarter of the year. Launch will be on a Delta from Cape Canaveral.

High Energy Astronomy Observatory-B (HEAO-B) is scheduled for launch on an Atlas Centaur during the fourth quarter. HEAO-B will maneuver and point for long periods of time at selected celestial X-ray sources mapped earlier by HEAO-A and other X-ray spacecraft. HEAO-A was launched on August 12. Another FLTSATCOM spacecraft is scheduled for launch during the fourth quarter, also on an Atlas Centaur.

Scheduled for launch on Atlas-F rockets from Vandenberg AFB are SEASAT-1, a NASA polar orbiting spacecraft for global monitoring of the oceans and ocean phenomena, in May TIROS-N, a NASA polar orbiting experimental weather satellite, in July, and NOAA-A, a polar orbiting weather satellite for the National Oceanic and Atmospheric Administration, later in the year.

Two possible Delta callup launches are on the 1978 scheduled. If required to replace a presently operational spacecraft, Geostationary Operational Environmental Satellite-C (GOES-C) would be launched from Cape Canaveral, and NIMBUS-G, a NASA research satellite for testing sensors for oceanographic and meteorological monitoring, would be launched from Vandenberg AFB.

# # #

1978 NASA LAUNCH SCHEDULE

Date	Mission	Launch Vehicle	Complex	Remarks
Jan 6	INTELSAT IV-A F-3	Atlas Centaur	36-B	Reimbursable
Jan 19	FLTSATCOM-A	Atlas Centaur	36-A	Reimbursable
Jan 25	IUE	Delta	17-A	
March 5	LANDSAT-C	Delta	WTR	
March 23	JAPAN BSE	Delta	17-B	Reimbursable
April	INTELSAT IV-A F-6	Atlas Centaur	36-B	Reimbursable
April	ESA OTS Backup	Delta	17-A	Reimbursable
May	SEASAT	Atlas-F	WTR	
May	PIONEER VENUS-A	Atlas Centaur	36-A	
June	*JAPAN Backup	Delta	17-A	Reimbursable
June	COMSTAR-D3	Atlas Centaur	36-B	Reimbursable
July	TIROS-N	Atlas-F	WTR	
July	ISEE-C	Delta	17-B	
August	PIONEER VENUS-B	Atlas Centaur	36-A	
4th Quarter	NATO-IIIC	Delta	17-B	Reimbursable
4th Quarter	NOAA-A	Atlas-F	WTR	Reimbursable
4th Quarter	TELESAT-D	Delta	17-B	Reimbursable
4th Quarter	HEAO-B	Atlas-Centaur	36-B	
4th Quarter	FLTSATCOM-B	Atlas-Centaur	36-B	Reimbursable

*If JAPAN Backup is not required, ESA GEOS-2 will be launched from Complex 17-A in June.

NASA News

National Aeronautics and
Space Administration

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

Karl Kristofferson
305 867-2468

For Release:

December 19, 1977

RELEASE NO: KSC 210-77

KSC FACILITIES BEING READIED FOR SHUTTLE'S 1978 DEBUT

KENNEDY SPACE CENTER, Fla.--Next fall, more than three years after the last Saturn rocket clawed skyward from Launch Complex 39, the characteristic hustle and bustle of manned space flight once again will dominate the scene at the Kennedy Space Center.

It will begin next October when Orbiter 102, fresh from the assembly line in California, soars piggyback into KSC atop its 747 carrier aircraft. The stubby, delta-winged craft--designed to rumble into orbit like a rocket, maneuver beyond the atmosphere like a spaceship and return to earth and land on a runway like an airplane--will be the first of its kind to test the rigors of celestial flight.

In November and December, the remainder of the Space Shuttle flight kit--Orbiter main engines, External Tank and Solid Rocket Booster motors (SRBs)--will arrive at KSC. Along with the Orbiter, they will enter the test, assembly and checkout pipeline which will culminate in a scheduled launch from Complex 39's Pad A in March of the following year.

After completion of six development flights, including four landings at Edwards AFB, California, the Space Shuttle will commence operational missions from the Kennedy Space Center in May 1980. KSC was selected in 1972 as the primary launch and landing site for Shuttle operations.

Construction of new facilities and modifications to existing ones are proceeding on schedule at KSC to support the Shuttle's debut.

The Orbiter Landing Facility, where the Shuttle Orbiter will land on its return to Earth, was completed last August. Supporting facilities such as the Mate-Demate Device, to off-load the Orbiter from its 747 carrier aircraft, and the Micro-wave Landing System, to guide the Orbiter to an automatic landing, will be completed in April 1978. Meteorological sites to support landing operations were completed in November of this year.

-more-

One of the world's longest concrete runways, the Orbiter Landing Facility is 4.5 kilometers (15,000 feet) long, 91 meters (300 feet) wide and has a 300-meter (1,000-foot) safety overrun at each end. The facility is located northwest of the Vehicle Assembly Building (VAB).

The Orbiter Processing Facility, located adjacent to the VAB and connected to the landing facility by a 3.2-kilometer (2-mile) towway, is essentially completed except for the installation of some remaining stands and systems expected to be in place by April. The two-bay structure will serve as an aircraft "hangar". It is here, in a "clean room" environment, that ordnance and residual fuels will be rendered safe, flight and landing systems will be refurbished and payloads will be removed and installed.

The Orbiter Landing Facility and the Orbiter Processing Facility are the only new facilities required to support Shuttle operations at KSC. The remaining Shuttle preparations consist of modifications to existing facilities originally designed and built to support the Apollo lunar landing missions.

Saturn Mobile Launcher 1, stripped of its umbilical tower and sporting three openings to permit exhaust gases from the Orbiter's main engines and solid rockets to escape during liftoff, is now being equipped with piping and cabling systems. It will be moved into High Bay 3 of the VAB in January where it will undergo further activation.

Modifications are currently underway on Mobile Launcher 2. Basic reconfiguration work will be finished in the last quarter of 1978. Installation of internal systems will continue into 1979.

The VAB, which once housed Apollo-Saturn V moon rockets, also is getting a facelift. High Bays 1 and 3 will be used to stack and integrate the Shuttle's flight components.

Modifications, consisting primarily of piping, cabling, work platforms and various electrical and pneumatic systems, are essentially completed in High Bay 3. Modifications to High Bay 1 will be finished in the third quarter of 1978.

The External Tank, which will carry the fuel to power the Orbiter's main engines, and the SRBs, which will give the Orbiter the added kick to get into space, will be stored in High Bays 2 and 4. Modifications there, to be completed in the first quarter of 1978, include the addition of heavy cranes and railroad spurs to haul in the SRBs.

The VAB's low bay is being reconfigured to serve as a refurbishment site for portions of the SRBs. Modifications, which include the installation of small cranes, will be completed in January.

Firing Rooms 1 and 2 of the Launch Control Center, "brain" of the complex, are being outfitted with the highly automated Launch Processing System (LPS) developed for Shuttle checkout and launch.

Basic modifications to both firing rooms have been completed, with the exception of the Uninterrupted Power System which will be ready in the first quarter of 1978.

The LPS consoles and associated equipment are in place in Firing Room 2, software integration is completed and the entire system has been turned over to the user for refinement. Firing Room 1 software integration is currently in process with a targeted completion date of February 15.

The Shuttle LPS system will require only about one-tenth of the manpower needed for Apollo-45 as compared to 450. Final countdown for a Shuttle launch will require only about two and one-half hours instead of the 28 hours needed for the final countdown of an Apollo-Saturn V vehicle.

Basic modifications to Pad A of Launch Complex 39, site of Shuttle launches, will be completed by the second quarter of 1978. Major changes include a fixed Shuttle Service Access Tower, a water sound suppression system to protect Shuttle crews and payloads from acoustical damage during liftoff, and a Payload Changeout Room (PCR) which provides the capability of loading and unloading payloads at the launch pad.

The PCR is a "white room" structure mounted on a semicircular track extending from the Shuttle Service and Access Tower. It is retracted along its track to its park site prior to launch.

Modifications to transform Pad B from Saturn to Shuttle operations are expected to begin in the second quarter of 1978.

The ponderous Crawler-Transporters (CTs), the huge tracked vehicles previously used to cart Apollo-Saturn V flight hardware around the complex, will be refurbished and readied to carry the assembled Space Shuttle and its mobile launch platform between the VAB and Complex 39's two launch pads.

-more-

Modifications consist mainly of replacing outdated electrical items and upgrading reliability to meet today's state-of-the-art. Work on CT-1 will be completed by December 1978, on CT-2 by the end of 1979.

In addition to Shuttle preparations underway at Launch Complex 39, modifications are proceeding, or scheduled, on facilities in the KSC Industrial Area. They are:

*Hypergol Maintenance Facility--to be used for offline refurbishment, retest and checkout of the Orbiter's aft propulsion system and forward reaction control system after each mission. These systems use highly toxic hypergolic propellants which ignite on contact with each other.

Structural changes to the facility were completed in mid-1977. Site activation work currently is in progress.

*Operations and Checkout Building--the high bay and checkout areas, which once accommodated Apollo spacecraft before they were mated to the launch vehicle, are being reshaped to handle the European Space Agency's scientific workshop, Spacelab, expected to be a frequent "passenger" aboard the Shuttle Orbiter. Work in these areas will be completed in the third quarter of 1978.

*Parachute Facility--being modified to handle the large parachutes that will lower the Shuttle's spent solid rocket motors to a safe landing in the Atlantic minutes after liftoff.

Each of the Shuttle's two solid rocket motors is equipped with a pilot chute, a drogue chute and three main chutes. The mains are each 35 meters (115 feet) in diameter and weigh 680 kilograms (1,500 pounds).

The facility will be equipped to wash, dry, store and package the parachutes for reuse. Work, here, is scheduled for completion in the third quarter of 1978.

*Spacecraft Assembly and Encapsulation Facility (SAEF-1)--to be modified and redesignated as the Vertical Processing Facility (VPF) which will permit the checkout, processing and integration of Shuttle vertical payloads and cargoes prior to installation in the Shuttle Orbiter at the launch pad.

Vertical payloads include, but are not limited to, the Interim Upper Stage (IUS), Spinning Solid Upper Stages (SSUS) and the Teleoperator Vehicles. These flight elements, to be carried aloft by the Shuttle Orbiter, will be utilized to place payloads into high-Earth orbits and planetary trajectories which cannot be accomplished by the Shuttle vehicle.

Transformation of SAEF-1 into the VPF will begin approximately the second quarter of 1978, with an operational readiness date of July 1, 1979.

Only one structure on Cape Canaveral Air Force Station will be modified to support Shuttle operations. Hangar AF will be transformed into a Solid Rocket Booster Recovery and Disassembly Facility. It will serve as a receiving and disassembly site for the reusable SRBs after their retrieval from the ocean following Shuttle launches. Modifications, which will begin in January and be completed in the last quarter of next year, will include a barge slip at the rear of the building.

The eventual cost of construction, modification work and ground support equipment to support Space Shuttle operations at the Kennedy Space Center will be approximately $700-800 million.

# # #

NASA News

National Aeronautics and
Space Administration

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

Mark Hess
305 867-2468

For Release:
November 12, 1977

RELEASE NO: KSC 209-77

FORMER CLINCH COUNTY RESIDENT RECEIVES 30-YEAR FEDERAL SERVICE AWARD

KENNEDY SPACE CENTER, Fla.--Jack D. Smith, a native of Clinch County, Ga., and graduate of Homerville High School, was presented a pin and certificate marking his completion of 30 years of Federal Service.

The award was presented to Smith, a safety specialist at NASA's John F. Kennedy Space Center, by KSC Director Lee R. Scherer at a ceremony here recently.

The Kennedy Space Center has been designated the prime launch and recovery site for the revolutionary Space Shuttle which will begin manned orbital flights from here in 1979. The Space Shuttle is the key element in a space transportation system which will provide routine and economical access to space in the 1980's.

Smith attended Georgia Institute of Technology and the University of Alabama majoring in business administration. He served in the Navy Reserve from 1947-1955, and joined the Army Ballistic Missile Agency in 1960. Smith joined NASA in 1963 with the Launch Operations Center, later re-named the Kennedy Space Center.

Smith is married to the former Clara O'Quinn of Valdosta, Ga. They make their home in Merritt Island, Fla., and have three children.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Mark Hess
305 867-2468

December 12, 1977

RELEASE NO: KSC-208-77

KENNEDY SPACE CENTER TESTS SPACE SHUTTLE RETRIEVAL EQUIPMENT

KENNEDY SPACE CENTER, Fla.--Developmental tests of new recovery equipment for retrieval of the Space Shuttle's solid rocket boosters, and parachutes are being conducted at Port Everglades, Fla., this week by NASA and contractor teamsfrom the Kennedy Space Center.

Unlike past and present space vehicles, which are expended after only one flight, the Space Shuttle is almost entirely reusable. The first orbital shuttle flight is scheduled for the Spring of 1979.

This week tests involve recovery of the two solid rocket motors which will be used during the first two minutes of flight into orbit. The test will verify the equipment's suitability for recovery support and determine the final deck layout of support vessels to be used for actual missions.

The first group of tests will be for recovery of the solid rocket booster's main parachutes and frustrum-drogue chute combination. The frustrum is the structure that holds the main parachute in place atop the solid motors. Later tests will verify NASA's newest piece of recovery equipment, the nozzle plug, to be used for recovery of spent solid motor casings.

Basically, a nozzle plug is a long motorized cylindrical metal cork. Operated remotely by way of an umbilical cord from on-board ship, the plug swims into the tail section of the casing secures itself and pumps air into the water-filled cavity forcing out the water. This causes the casing to rotate from a vertical to a horizontal position where it can be towed back to the Spaceport for refurbishment and eventual reuse.

-more-

These are the first ocean tests of the parachute retrieval system or nozzle plug under actual mission conditions. This will also be the first time the solid rocket booster test fixture will be used in the open sea to test the plug's docking capabilities.

The 37 foot long, 23 ton test fixture, although much shorter than the 130 foot solid rocket booster, simulates exactly the tail section of the actual booster. Shallow and deep docking tests will be conducted using the test fixture.

The nozzle plug being used in the developmental tests was developed for KSC by the Naval Ocean Systems Center (NOSC) at San Diego, California.

Taking part in the tests are personnel from NASA's Kennedy Space Center and the Marshall Space Flight Center, several contractors and other agencies including:

Tracor Marine, Inc., which maintains the 158-foot support vessel, the "G. W. Pierce," used in the tests.

Everglades Towing Company, which will supply tugs, work boats and personnel.

Naval Ocean Systems Center, built the prototype nozzle plug.

United States Booster Inc., support contractor for the tests.

Battelle Memorial Institute, which designed and fabricated the parachute retrieval equipment.

Pioneer Parachute Co., built the main parachutes.

U. S. Naval Supervisor of Salvage.

Martin Marietta.

A typical recovery mission will begin as soon as the Space Shuttle is launched. At liftoff, the Orbiter's three main engines will fire in parallel with the two solid rocket boosters producing nearly seven million pounds of thrust.

About two minutes into the flight, the two boosters will be jettisoned. As they descent to the 19,000 foot mark, the nose cap is deployed. This releases the pilot chute, which in turn deploys the drogue chute.

The drogue chute, which is 54 feet in diameter and weighs 1,100 pounds, stabilizes the booster. It then deploys the frustrum which houses the three main parachutes. They will inflate to a reefed condition at 8,800 feet and are fully extended at 3,400 feet.

Each main parachute is 115 feet in diameter, weighs about 1,500 pounds dry, and almost twice that when wet. They are the largest cargo parachutes ever made and will carry the heaviest load ever--a spent solid booster casing which weighs 165,000 pounds.

Waiting at a predetermined splashdown area, about 160 nautical miles downrange, will be two 150-foot offshore supply vessels. Each vessel will recover one solid booster casing, three main parachutes and a frustrum-drogue chute combination.

To help locate the scattered pieces, tracking devices have been placed on each one. The solid rocket casings and each frustrum-drogue chute combination is equipped with a radio device which will emit signals to be picked up by the vessel's radio direction finder. The three main parachutes will be located by sonar.

Recovery begins with retrieval of the main parachutes. Each recovery vessel has on deck four large reels, five and a half feet across, for holding one parachute each. The chute's winch lines are fed into the spool and the parachute is wound around it, much like pulling in the line of a fishing reel.

Retrieval of the frustrum-drogue chute begins the same way. The drogue chute is wound around one of the large reels until the 5,000 pound frustrum is about 100 feet from the ship.

The drogue chute shroud lines are then rolled in until the frustrum can be hoisted out of the water by a 10-ton crane. The crane then lowers it to the deck.

Recovery of the two spent solid booster casings, the last phase of the recovery mission, will be accomplished by the nozzle plug. The nozzle plug is 14½ feet tall, 7½ feet in diameter and weighs 3,500 pounds.

It can move in any direction driven by six hydraulically-powered fan-type thruster motors. The four thrusters which give the plug its horizontal movement are positioned around the middle of the plug. The other two thrusters are located near the bottom and give the plug up and down movement. The thrusters motor the plug at a horizontal velocity of three feet per second, a downward vertical velocity of 2.8 feet per second, and an

upward vertical velocity of 4.5 feet per second.

After the plug is launched overboard, it swims out to the bobbing solid booster casing tethered by 600 feet of umbilical cable. Although it is possible to maneuver the plug at a distance of 400 to 450 feet from the ship, the practical operating range is between 100 and 300 feet.

At the top of the plug is a video camera which allows the operator to view on a shipboard console television motor the position of the plug in relation to the casing.

Once it is in position, the plug dives to a depth of about 145 feet. As it descends, the camera inspects the booster casing for any damage incurred during launch, re-entry or impact. Once it reaches the bottom of the booster, it is inserted and three, 3-foot metal arms are extended locking the plug into the booster's rear throat.

Docking is verified by sensors on the plug's shock mitigation units, located just above the four horizontal thruster motors, which light up an indicator on the controller's console.

Compressed air is then pumped into the water-filled cavity through the umbilical cord at a pressure of up to 75 pounds per square inch. As the water is forced out, the booster will begin its rotation from the vertical mode to a horizontal one.

When the water level recedes to a certain level, an inner tube-type bag is inflated to its full diameter of 56 inches, sealing off the four foot, eight inch hole in the bottom of the booster. A 10-foot long dewatering hose is then deployed and the remaining water is forced out through it. It is then towed back to port.

Once back at the Space Center, the parachutes, still wrapped around the spools, are lifted off the vessel by a crane and sent to the parachute refurbishment facility. There, the chutes go through the world's largest washing and drying machines. They are then repaired, folded and packed into protective canisters and trucked to the Vehicle Assembly Building (VAB) for re-loading. Each parachute will be used for 10 flights.

The solid booster casings are brought to the solid rocket booster disassembly facility. They are placed on a dolly and transported by rail into the facility where they are washed by

high-pressure, 10,000 psi jet sprayers to take off the first layer of spray-on insulation coating. They are then separated into the four solid rocket motor segments, and go through a final cleaning and stripping before they are shipped to the VAB. From there, railroad takes the segments to Thiokol in Utah, where they are further refurbished and loaded with propellant. A solid rocket booster will be capable of being used for approximately 20 missions.

The Kennedy Space Center has been designated the prime launch and recovery site for the Space Shuttle, the key element in a space transportation system which will provide routine and economical access into space. The first manned orbital mission is scheduled to be launched from here in the spring of 1979.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

A. H. Lavender
305 867-2468

December 9, 1977

RELEASE NO: KSC 207-77

SPACEPORT NEGOTIATES WITH TWO FIRMS FOR PHONE CONTRACT

KENNEDY SPACE CENTER, Fla.--Competitive negotiations with two firms leading to the selection of a contractor to provide an administrative telephone system at NASA's John F. Kennedy Space Center are underway.

The companies which remain in competitive range for selection as the KSC contractor are G. T. E. Automatic Electric, Northlake, Ill., and Northern Telecom, Inc., Memphis, Tennessee.

The automatic dial telephone system will include basic switching equipment, telephones, cabinets, switchboards and consoles, interior wire and cable, and any ancillary equipment necessary for proper operation of the system.

The contract will provide for lease of the system for a 10-year period and will include a purchase option.

Other firms that submitted proposals to provide the administrative telephone system were Southern Bell Telephone and Telegraph Company, Miami, Fla., and Independent Business Telephone Co. of Florida, Tampa, Fla.

# # #

NASA News

National Aeronautics and
Space Administration

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

A. H. Lavender
305 867-2468

For Release:
December 7, 1977

RELEASE NO: KSC 206-77

FIVE FIRMS RESPOND TO KSC REQUEST FOR PROPOSALS

KENNEDY SPACE CENTER, Fla.--Five firms have responded to a request for proposals for Supply & Transportation Services at the Kennedy Space Center.

Proposals were received from The Bendix Corporation, Southfield, Michigan; Boeing Services International, Inc., Seattle, Washington; ITT Federal Electric Corp., Paramus, N.J.; Northrop Worldwide Aircraft Services, Inc., Lawton, Okla.; and Rockwell International Corp., El Segundo, CA.

It is contemplated that the new contract will be effective May 1, 1978 and cover a planned 5-year period. Services to be rendered under the new contract are now provided by Boeing Services International, Inc.

# # #

NASA Fact Sheet

National Aeronautics and
Space Administration

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

For Release:
December 1977
KSC 205-77

UFO INFORMATION

Much correspondence on unidentified flying objects is received from the public. At this time, neither NASA nor any other U. S. Government agency is evaluating reported sightings.

Two organizations, the National Committee on Aerial Phenomena, 3535 University Boulevard, Kensington, MD 20795, and the Center for UFO Studies, P. O. Box 11, Northfield, IL 60093, are understood to conduct studies of reported unidentified flying objects, and any reports should be addressed to one of those organizations.

An extensive study known as Project Blue Book was undertaken in the 1960's by the U. S. Air Force through a contract with the University of Colorado. Based on the findings of this study as reviewed by the National Academy of Sciences, the Air Force terminated the project December 17, 1969.

The University of Colorado report, entitled Scientific Study of Unidentified Flying Objects was published in paperback by Bantam Books. A three-volume photo duplication (AD 680:975-6-7) may be purchased for $18 from the National Technical Information Service, U. S. Department of Commerce, Springfield, Virginia 22151. The complete reports, filling 26 standard file drawers at the Albert F. Simpson Historical Research Center, Maxwell Air Force Base, Alabama 36112 are open to public inspection, but the Center has no facilities for photo reproduction.

The University of Colorado study reached the following conclusions: (1) there was no evidence that the subject of UFOs had been "shrouded in official secrecy"; (2) UFOs did not constitute any hazard to national security; (3) two decades of UFO study had made no significant contribution to scientific knowledge; and (4) further extensive study of the general topic could not be expected to contribute meaningfully to the advancement of science.

# # #

NASA News

National Aeronautics and
Space Administration

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

A. H. Lavender
305 867-2468

For Release:
December 6, 1977

RELEASE NO: KSC 204-77

NOTICE TO EDITORS/NEWS DIRECTORS

JAPAN CS LAUNCH SCHEDULED DECEMBER 14

KENNEDY SPACE CENTER, Fla.--The launch of JAPAN CS, an experimental communications satellite, is scheduled December 14. Liftoff of the National Space Development Agency of Japan satellite from Complex 17, Cape Canaveral AFS, is scheduled during a launch opportunity extending from 7:37 to 8:34 p.m. EST.

A prelaunch news briefing on the JAPAN CS mission is scheduled at 11 a.m. December 13. Badged news media representatives may proceed directly to the E & O Building for the conference via KSC Gate 1 or Gate 2 or the south entrance to Cape Canaveral AFS. Others should arrive at the KSC Public Information Office, Headquarters Building, by 10:30 a.m.

Badged news media representatives may proceed directly to Press Site 1 for launch coverage on December 14. Others will be badged at Frank Wolfe's Beachside Motel, Cocoa Beach. Those badged at Cocoa Beach will proceed to Cape Canaveral AFS in convoy, departing the Motel at 6 p.m.

The News Center in the KSC Headquarters Building will be manned on launch day from 6-9:30 p.m. and status updates may be obtained by calling 867-2468. Live commentary--to be carried from about 60 minutes before launch through approximately 30 minutes after liftoff--may be obtained by calling the KSC Operator, 305-867-7110, and asking that you be connected with the V-2 circuit.

# # #

NASA News

National Aeronautics and
Space Administration

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

Mark Hess
305 867-2468

For Release:
November 22, 1977

RELEASE NO: KSC 203-77

FORMER CLEWISTON RESIDENT EARNS FIRST DIRECTOR'S AWARD

KENNEDY SPACE CENTER, Fla.--Thomas S. Walton, son of Mr. and Mrs. M. S. Walton, 437 W. Pasadena Ave., Clewiston, was presented the first annual Director's Award by Kennedy Space Center Director Lee R. Scherer today at the Spaceport's annual awards ceremony.

This is the first year the Director's Award has been presented. It is the single highest honor that can be awarded to a KSC employee. The recipient is given a specially-designed plaque and a $2,500 cash award. Only one Director's Award will be given each year.

Walton, Deputy Director of the Shuttle Engineering Directorate, received the Director's Award "in recognition of his outstanding leadership and technical contributions to the Shuttle Program through his direction of the development of the Marshall Space Flight Center Solid Rocket Booster Checkout System and the KSC Launch Processing System."

The Kennedy Space Center has been designated the prime launch and recovery site for the reusable Space Shuttle, scheduled to be launched from here on its first manned orbital mission in the spring of 1979. The Space Shuttle is the key element in a space transportation system designed to provide routine and economical access into space.

Walton is a native of Clewiston and was graduated from Clewiston High School in 1952. He is a 1960 graduate of the University of Florida with a degree in Electronic Engineering.

Walton is married to the former Glenda Poole of Belle Glade, Fla. They make their home in Merritt Island, Fla., and have a son Scott, 11.

Walton served in the U. S. Marine Corps from 1953 to 1957. He joined NASA in 1964.

# # #

NASA News

National Aeronautics and
Space Administration

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

Mark Hess
305 867-2468

For Release:
November 22, 1977

RELEASE NO: KSC 202-77

UNIVERSITY OF FLORIDA GRADUATE EARNS FIRST DIRECTOR'S AWARD

KENNEDY SPACE CENTER, Fla.--Thomas S. Walton, a 1960 graduate of the University of Florida with a degree in electronic engineering, was presented with the first annual Director's Award by Kennedy Space Center Director Lee R. Scherer.

The presentation was made at the Spaceport's annual awards ceremony today.

This is the first year the Director's Award has been presented. It is the highest single honor that can be awarded to a KSC employee. The recipient is given a specially-designed plaque and a $2,500 cash award. Only one Director's Award will be given each year.

Walton, Deputy Director of the Shuttle Engineering Directorate, received the Director's Award "in recognition of his outstanding leadership and technical contributions to the Shuttle Program through his direction of the development of the Marshall Space Flight Center Solid Rocket Booster Checkout System and the KSC Launch Processing System."

The Kennedy Space Center has been designated the prime launch and recovery site for the reusable Space Shuttle, scheduled to be launched from here on its first manned orbital mission in the spring of 1979. The Space Shuttle is the key element in a space transportation system designed to provide routine and economical access into space.

Walton is a native of Clewiston, Fla., and was graduated from Clewiston High School in 1952. He is the son of Mr. and Mrs. M. S. Walton, also of Clewiston.

Walton is married to the former Glenda Poole of Belle Glade, Fla. They make their home in Merritt Island, Fla., and have a son Scott, 11.

-more-

NASA News

National Aeronautics and
Space Administration

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

Mark Hess
305 867-2468

For Release:
November 22, 1977

RELEASE NO: KSC 202-77

UNIVERSITY OF FLORIDA GRADUATE EARNS FIRST DIRECTOR'S AWARD

KENNEDY SPACE CENTER, Fla.--Thomas S. Walton, a 1960 graduate of the University of Florida with a degree in electronic engineering, was presented with the first annual Director's Award by Kennedy Space Center Director Lee R. Scherer.

The presentation was made at the Spaceport's annual awards ceremony today.

This is the first year the Director's Award has been presented. It is the highest single honor that can be awarded to a KSC employee. The recipient is given a specially-designed plaque and a $2,500 cash award. Only one Director's Award will be given each year.

Walton, Deputy Director of the Shuttle Engineering Directorate, received the Director's Award "in recognition of his outstanding leadership and technical contributions to the Shuttle Program through his direction of the development of the Marshall Space Flight Center Solid Rocket Booster Checkout System and the KSC Launch Processing System."

The Kennedy Space Center has been designated the prime launch and recovery site for the reusable Space Shuttle, scheduled to be launched from here on its first manned orbital mission in the spring of 1979. The Space Shuttle is the key element in a space transportation system designed to provide routine and economical access into space.

Walton is a native of Clewiston, Fla., and was graduated from Clewiston High School in 1952. He is the son of Mr. and Mrs. M. S. Walton, also of Clewiston.

Walton is married to the former Glenda Poole of Belle Glade, Fla. They make their home in Merritt Island, Fla., and have a son Scott, 11.

-more-

Walton served in the U.S. Marine Corps from 1953 to 1957. He joined NASA in 1964.

# # #

NASA News

National Aeronautics and
Space Administration

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

Mark Hess
305 867-2468

For Release:
November 22, 1977

RELEASE NO: KSC 200-77

FORMER CORAL GABLES RESIDENT EARNS $2,000 SUGGESTION AWARD

KENNEDY SPACE CENTER, Fla.--Charles William (Bill) Patterson, a 1940 graduate of Ponce de Leon High School, was given a $2,000 suggestion award by Kennedy Space Center Director Lee R. Scherer today.

The presentation was made at the Spaceport's annual awards ceremony.

Patterson, lead electrical systems engineer in KSC's Shuttle Engineering Directorate, received the monetary award, one of the highest given to KSC employees, for his suggestion that batteries used in the Apollo program be modified for use in the Space Shuttle Program rather than purchasing new batteries. The suggestion saved the Center $55,000.

The Kennedy Space Center has been designated the prime launch and recovery site for the reusable Space Shuttle, the key element in a space transportation system that will provide routine and economical access into space. The first manned orbital flights of the Shuttle are scheduled to be launched from here in the spring of 1979.

Patterson received a bachelor's degree in electrical engineering from the University of Miami in 1954. He served in the Army Air Corps from 1942 to 1945, twice earning Presidential Unit Citations and receiving five battle stars for his participation in the air war over Europe.

Born in Havana, Cuba, Patterson is married to the former Beryl Doreen Langford of London, England. They make their home in Satellite Beach, Fla., and have three children.

Patterson, lead NASA systems engineer for the Orbiter Processing Facility, battery lab and power supply lab, has been employed by NASA since 1963.

# # #

NASA News

National Aeronautics and
Space Administration

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

Mark Hess
305 867-2468

For Release:
November 22, 1977

RELEASE NO: KSC 189-77

FORMER LIVINGSTON RESIDENT RECEIVES 35-YEAR FEDERAL SERVICE AWARD

KENNEDY SPACE CENTER, Fla.--Former Livingston resident Thomas R. Gleason was awarded a pin and certificate marking his completion of 35 years of Federal Service during a ceremony held at NASA's John F. Kennedy Space Center today.

The award was presented by Center Director Lee R. Scherer.

Born in Livingston, Gleason was graduated from Park County High School there in 1941. He attended the U. S. Military Academy in West Point, N.Y. where he earned a bachelor of science degree in engineering. Gleason received a master's degree in electrical engineering from the University of Illinois in 1950.

Gleason, is a retired Army Lieutenant Colonel with 21 years of service. While with the Army, he participated in a joint NASA-Army project directing communications testing for the SYNCOM Satellite. Gleason also served in Budapest as an Assistant Army Attache during the 1956 Hungarian Revolt and was in the Pentagon as a Guided Missile Intelligence Officer when the Soviet Union launched the first satellite, Sputnik.

Gleason joined the Kennedy Space Center in 1966 and is an electronics engineer in the Information Systems Directorate's Operations Integration Branch where he coordinates launch instrumentation support of Space Shuttle site activities and prelaunch activities.

The Kennedy Space Center has been designated the prime launch and recovery site for the reusable Space Shuttle which will begin manned orbital flights from here in the spring of 1979. The Space Shuttle is designed to provide routine and economical access into space.

Gleason is married to the former Joan Latowsky of Urbana, Illinois. They live in Cocoa Beach, Fla., and have four children.

# # #

NASA News

National Aeronautics and
Space Administration

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

Darleen Hunt
305 867-2468

For Release:
November 22, 1977

RELEASE NO: KSC 188-77

U. OF GEORGIA GRADUATE RECEIVES NASA AWARD

KENNEDY SPACE CENTER, Fla.--William S. Simmons, a 1951 graduate of the University of Georgia, with a degree in business administration, was presented Kennedy Space Center's Equal Opportunity Award during a ceremony today.

Simmons, supervisor in the Personnel Staffing and Services Branch, was presented the award by KSC Director Lee R. Scherer. The citation read: "In recognition of his outstanding contributions to the Equal Opportunity Program. Through his personal dedication and guidance, minorities and females under his supervision have made great strides in the development of their individual potential."

The Kennedy Space Center has been designated the prime launch and recovery site for the revolutionary Space Shuttle which will begin manned orbital flights from NASA's Florida launch base in 1979. The Space Shuttle is the key element in a space transportation system which will provide routine and economical access to space in the 1980s.

Simmons was born in Macon and was graduated from the Lanier High School for Boys in that town.

He served two years in the U. S. Air Force and 18 years in the Air National Guard and Air Force reserve. He is a retired USAF reservist. He joined NASA in 1966.

Simmons married the former Mary Ann Smallwood, also of Macon, and they have three children, Bill, 24, Nancy 19, and Tommy 16. They live in a beachside community near the space center, Cocoa Beach, Fla.

# # #

NASA News

National Aeronautics and
Space Administration

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

Darleen Hunt
305 867-2468

For Release:
November 22, 1977

RELEASE NO: KSC 187-77

FORMER MACON RESIDENT, SIMMONS, RECEIVES NASA AWARD

KENNEDY SPACE CENTER, Fla.--William S. Simmons, a native of Macon, was the recipient of the NASA John F. Kennedy Space Center's Equal Opportunity Award during a ceremony today.

Simmons, supervisor in the Personnel Staffing and Services Branch, was presented the award by KSC Director Lee R. Scherer. The citation read: "In recognition of his outstanding contributions to the Equal Opportunity Program. Through his personal dedication and guidance, minorities and females under his supervision have made great strides in the development of their individual potential."

The Kennedy Space Center has been designated the prime launch and recovery site for the revolutionary Space Shuttle which will begin manned orbital flights from NASA's Florida launch base in 1979. The Space Shuttle is the key element in a space transportation system which will provide routine and economical access to space in the 1980s.

Simmons is the son of Janie G. Simmons of 471 Sprint Street, Macon. He was graduated from the Lanier High School for Boys in Macon, and in 1951 graduated from the University of Georgia in Athens with a degree in business administration.

Simmons served 2 years in the U. S. Air Force and 18 years in the Air National Guard and Air Force Reserve. He is a retired USAF reservist. He joined NASA in 1966.

Simmons married the former Mary Ann Smallwood, also of Macon, and they have three children, Bill, 24, Nancy 19, and Tommy, 16. They live in a beachside community near the space center, Cocoa Beach, Fla.

# # #

NASA News

National Aeronautics and
Space Administration

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

Mark Hess
305 867-2468

For Release:
November 22, 1977

RELEASE NO: KSC 201-77

UNIVERSITY OF MIAMI GRADUATE RECEIVES $2,000 SUGGESTION AWARD

KENNEDY SPACE CENTER, Fla.--Charles William (Bill) Patterson, a 1954 graduate of the University of Miami with a degree in electrical engineering, was presented a $2,000 suggestion award by Kennedy Space Center Director Lee R. Scherer today.

The presentation was made at the Spaceport's annual awards ceremony.

Patterson, a lead electrical systems engineer in KSC's Shuttle Engineering Directorate, received the monetary award, one of the highest given to KSC employees, for his suggestion that batteries used in the Apollo program be modified for use in the Space Shuttle program rather than purchasing new batteries. The suggestion saved the Center $55,000.

The Kennedy Space Center has been designated the prime launch and recovery site for the reusable Space Shuttle, scheduled to be launched from here on its first manned orbital flight in the spring of 1979. The Space Shuttle is the key element in a space transportation system which will provide routine and economical access into space.

Patterson served in the Army Air Corps from 1942 to 1945 twice earning the Presidential Unit Citation and receiving five battle stars. He has been employed by NASA since 1963.

Born in Havana, Cuba, Patterson was graduated from Ponce de Leon High School in Coral Gables, Fla. He is married to the former Beryl Doreen Langford of London, England. They reside in Satellite Beach, Fla., and have three children.

# # #

NASA News

National Aeronautics and
Space Administration

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

Mark Hess
305 867-2468

For Release:
November 22, 1977

RELEASE NO: KSC 199-77

GEORGIA TECH GRADUATE EARNS NASA AWARD

KENNEDY SPACE CENTER, Fla.--Larry Schultz, a 1966 graduate of Georgia Institute of Technology, with a degree in aerospace engineering, was presented a Certificate of Commendation by Kennedy Space Center Director Lee R. Scherer today.

The presentation was made at the Kennedy Space Center's annual awards ceremony.

Schultz, an aerospace technician of the Launcher Section in KSC's Mechanical and Facilities Engineering Directorate, received the NASA honor "for exceptional engineering and managerial skill in the development of the mobile launcher platforms."

The Kennedy Space Center has been designated the prime launch and recovery site for the reusable Space Shuttle scheduled to be launched from here on its first manned orbital flight in the spring of 1979.

Schultz is the son of Mr. and Mrs. L. C. Schultz, Hialeah, Fla., and was graduated from Miami Jackson Senior High School, Miami, in 1962.

Schultz is married to the former Sandra Lea Spence of Merritt Island, Fla. They make their home in Rockledge, Fla.. and have two sons, John, 5 and Tommy, 2.

Schultz is a Rockledge city councilman and chairman of the city's planning commission. He is a member of the Lambda Chi Alpha fraternity.

Schultz, lead design engineer on the mobile launcher platforms, has been employed by NASA since 1967.

# # #

NASA News

National Aeronautics and
Space Administration

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

Mark Hess
305 867-2468

For Release:
November 22, 1977

RELEASE NO: KSC 198-77

FORMER MIAMI RESIDENT EARNS NASA AWARD

KENNEDY SPACE CENTER, Fla.--Larry Schultz, son of Mr. and Mrs. L. C. Schultz, 1784 W. 65th St., Hialeah, and a 1962 graduate of Miami Jackson Senior High School, was presented a Certificate of Commendation by Kennedy Space Center Director Lee R. Scherer today.

The presentation was made at the Kennedy Space Center's annual awards ceremony.

Schultz, an aerospace technician of the Launcher Section in KSC's Mechanical and Facilities Engineering Directorate, received the NASA honor "for exceptional engineering and managerial skill in the development of the mobile launcher platforms."

The Kennedy Space Center has been designated the prime launch and recovery site for the reusable Space Shuttle scheduled to be launched from here on its first manned orbital flight in the spring of 1979.

Born in Chicago, Ill., he was graduated from Miami Jackson Senior High School in 1962. He received a bachelor's degree in aerospace engineering from Georgia Institute of Technology, Atlanta, in 1966.

Schultz is married to the former Sandra Lea Spence of Merritt Island, Fla. They make their home in Rockledge, Fla., and have two sons, John, 5 and Tommy, 2.

Schultz is a Rockledge city councilman and chairman of the city's planning commission. He is a member of the Lambda Chi Alpha fraternity.

Schultz, lead design engineer on the mobile launcher platforms, has been employed by NASA since 1967.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Dick Young
305 867-2468

November 22, 1977

RELEASE NO: KSC 197-77

ROLLINS GRADUATE COMPLETES 35 YEARS OF FEDERAL SERVICE

KENNEDY SPACE CENTER, Fla.--Clarence J. Crowl of Cocoa, a 1976 graduate of the Rollins College Patrick AFB Branch has been presented a pin and certificate commending him for 35 years of Federal Service.

Crowl was presented the award by Kennedy Space Center Director Lee R. Scherer at the center's annual awards ceremony today.

Crowl is a systems accountant in the Accounting Control and Reporting Section. His duties include the review and revision of existing accounting systems and the design of new ones.

At Rollins, Crowl majored in economics and received a bachelor of science degree. He was a member of Omicron Delta Epsilon Fraternity.

A native of Canton, Ohio, Crowl served as a bomber pilot in World War II and as a transport and intelligence pilot during the Korean conflict.

He is a member of the American Accounting Association, the American Tax Association and the International Economics Society.

# # #

NASA News

National Aeronautics and
Space Administration

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

Mark Hess
305 867-2468

For Release:
November 22, 1977

RELEASE NO: KSC 196-77

FORMER LAMAR RESIDENT EARNS NASA COMMENDATION

KENNEDY SPACE CENTER, Fla.--Bill Tolson, who was graduated from Lamar High School in 1950, was presented a Certificate of Commendation by Kennedy Space Center Director Lee R. Scherer today.

The presentation was made at the Kennedy Space Center's annual awards ceremony.

Tolson, chief of the Launcher Section in KSC's Mechanical and Facilities Engineering Directorate, received the NASA honor for "exceptional engineering and managerial judgment displayed in the concept and design of the Mobile Launch Platform, Sound Suppression System, Payload Ground Handling Mechanism and the Payload Changeout Room which contributed significantly to the Shuttle Program."

The Kennedy Space Center has been designated the prime launch and recovery site for the reusable Space Shuttle scheduled to be launched from here on its first manned orbital flight in the spring of 1979.

Tolson is a native of Darlington County, S. C. He was graduated from Clemson University in 1961 with a degree in mechanical engineering, and did some graduate work at Florida Institute of Technology in Melbourne, Fla.

Tolson lives in Titusville, Fla., a community to the northwest of NASA's Kennedy Space Center, and has a daughter Judy Ann, 21.

Tolson served in the U. S. Air Force from 1953-1957, and joined NASA in 1965.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Mark Hess
305 867-2468

November 22, 1977

RELEASE NO: KSC 195-77

CLEMSON GRADUATE EARNS NASA COMMENDATION

KENNEDY SPACE CENTER, Fla.--Bill Tolson, a 1961 graduate of Clemson University with a degree in mechanical engineering, was presented a Certificate of Commendation by Kennedy Space Center Director Lee R. Scherer today.

The presentation was made at the Kennedy Space Center's annual awards ceremony.

Tolson, chief of the Launcher Section in KSC's Mechanical and Facilities Engineering Directorate, received the NASA honor "for exceptional engineering and managerial judgement displayed in the concept and design of the Mobile Launch Platform, Sound Suppression System, Payload Ground Handling Mechanism and the Payload Changeout Room which contributed significantly to the Shuttle program."

The Kennedy Space Center has been designated the prime launch and recovery site for the reusable Space Shuttle scheduled to be launched from here on its first manned orbital flight in the spring of 1979.

Tolson is a native of Darlington County, South Carolina. He was graduated from Lamar High School in Lamar, S. C., and did some graduate work at Florida Institute of Technology in Melbourne, Fla.

Tolson lives in Titusville, Fla., a community to the northwest of NASA's Kennedy Space Center, and has a daughter, Judy Ann, 21.

Tolson served in the U. S. Air Force from 1953 - 1957, and joined NASA in 1965.

# # #

NASA News

National Aeronautics and
Space Administration

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

Darleen Hunt
305 867-2468

For Release:
November 22, 1977

RELEASE NO: KSC 194-77

HUSBAND OF JEFFERSON NATIVE RECEIVES NASA AWARD

KENNEDY SPACE CENTER, Fla.--Gerald M. Van Keuren, husband of the former Oleta Tinney, of Jefferson, was presented a pin and certificate for 30 years government service.

The presentation was made by Center Director Lee R. Scherer at the Kennedy Space Center's annual awards ceremony held today.

Van Keuren is currently a contract negotiator for construction projects at the space center.

The Kennedy Space Center has been designated the prime launch and recovery site for the revolutionary Space Shuttle which will begin manned orbital flights from NASA's Florida launch base in 1979. The Space Shuttle is the key element in a space transportation system which will provide routine and economical access to space in the 1980s.

Van Keuren was born in Amherst and graduated from Central High School in that town. He attended the Universities of Maryland and Alabama, majoring in military science. Van Keuren served in the U. S. Army from 1941 to 1965 and retired with the rank of Lieutenant Colonel. He joined NASA in 1967.

Mr. and Mrs. Van Keuren make their home in Cocoa, Fla., a community near the Kennedy Space Center. They have one son, Capt. Gerald M. Van Keuren, Jr., USAF.

# # #

NASA News

National Aeronautics and
Space Administration

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

Darleen Hunt
305 867-2468

For Release:
November 22, 1977

RELEASE NO: KSC 193-77

AMHERST NATIVE RECEIVES NASA AWARD

KENNEDY SPACE CENTER, Fla.--Gerald M. Van Keuren, who was born in Amherst and graduated from Central High School, was presented a pin and certificate for 30 years government service.

The presentation was made by Center Director Lee R. Scherer at the Kennedy Space Center's annual awards ceremony held today.

Van Keuren is currently a contract negotiator for construction projects at the space center.

The Kennedy Space Center has been designated the prime launch and recovery site for the revolutionary Space Shuttle which will begin manned orbital flights from NASA's Florida launch base in 1979. The Space Shuttle is the key element in a space transportation system which will provide routine and economic access to space in the 1980s.

Van Keuren attended the University of Maryland and the University of Alabama, majoring in military science. He served in the U. S. Army from 1941 to 1965 and retired with the rank of Lieutenant Colonel. He joined NASA in 1967.

Van Keuren is married to the former Oleta Tinney of Jefferson, Ohio. They make their home in Cocoa, Fla., a community near the Kennedy Space Center. They have one son, Capt. Gerald M. Van Keuren, Jr., USAF.

# # #

NASA News

National Aeronautics and
Space Administration

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

Mark Hess
305 867-2468

For Release:
November 22, 1977

RELEASE NO: KSC 192-77

UNIVERSITY OF TEXAS GRADUATE EARNS NASA COMMENDATION

KENNEDY SPACE CENTER, Fla.--Joe R. Smith, a 1959 graduate of the University of Texas with a degree in mechanical engineering, was presented a Certificate of Commendation by Kennedy Space Center Director Lee R. Scherer today.

The presentation was made at a Kennedy Space Center's annual awards ceremony.

Smith, an aerospace technician in KSC's Information Systems Directorate, received the NASA honor "in recognition of his exceptional skills and proficiency in the successful development of plans and contractural documents for the acquisition of the Launch Processing System at Vandenburg Air Force Base, California."

The Kennedy Space Center has been designated the prime launch and recovery site for the reusable Space Shuttle, scheduled to be launched from here on its first manned orbital mission in the spring of 1979. The Space Shuttle is designed to provide routine and economical access into space.

A West Coast launch base for the Shuttle will become operational at Vandenberg AFB in the 1980's.

Smith received a master's degree in management from Florida State University in Tallahassee in 1966. He joined NASA in 1963. He is a member of the American Society of Mechanical Engineers, Lambda Chi Alpha fraternity and a registered professional engineer in Florida.

Smith is a native of Greenville, Texas, and the son of F. H. Smith of Kingsland, Texas. He was graduated from Victoria High School in Victoria, Texas.

Smith is married to the former Dorine E. Welch of Dayton, Ohio. They make their home in Maitland, Florida, and have one daughter, Dee Anna, 4.

# # #

NASA News

National Aeronautics and
Space Administration

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

Mark Hess
305 867-2468

For Release:
November 22, 1977

RELEASE NO: KSC 191-77

FORMER VICTORIA RESIDENT EARNS NASA COMMENDATION

KENNEDY SPACE CENTER, Fla.--Joe R. Smith, 1954 graduate of Victoria High School (Patti Welder High School) was presented a Certificate of Commendation by Kennedy Space Center Director Lee R. Scherer today.

The presentation was made at the Kennedy Space Center's annual award ceremony.

Smith, an aerospace technician in KSC's Information Systems Directorate, received the NASA honor "in recognition of his exceptional skills and proficiency in the successful development of plans and contractural documents for the acquisition of the Launch Processing System at Vandenburg Air Force Base, California."

The Kennedy Space Center has been designated the prime launch and recovery site for the reusable Space Shuttle scheduled to be launched from here on its first manned orbital flight in the spring of 1979. The Space Shuttle is designed to provide routine and economical access into space.

Smith was graduated from the University of Texas in 1959 with a degree in mechanical engineering. He attended Florida State University in Tallahassee receiving a master's degree in management in 1966. He joined NASA in 1963. Smith is a member of the American Society of Mechanical Engineers, the Lambda Chi Alpha fraternity and a registered professional engineer in Florida.

Smith is a native of Greenville, Texas, and the son of F. H. Smith of Kingsland, Texas.

He is married to the former Dorine E. Welch of Dayton, Ohio. They make their home in Maitland, Florida, and have one daughter, Dee Anna, 4.

# # #

NASA News

National Aeronautics and
Space Administration

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

Mark Hess
305 867-2468

For Release:
November 22, 1977

RELEASE NO: KSC 190-77

WEST POINT GRADUATE RECEIVES 35-YEAR FEDERAL SERVICE AWARD

KENNEDY SPACE CENTER, Fla.--Thomas R. Gleason, a 1945 graduate of the U. S. Military Academy with a degree in engineering, was awarded with a pin and certificate marking his completion of 35 years of Federal Service during a ceremony held at NASA's John F. Kennedy Space Center today.

The award was presented by Center Director Lee R. Scherer at the Center's annual awards ceremony.

Gleason was graduated from Park County High School in Livingston, Montana, before entering West Point in 1941. He received a master's degree in electrical engineering from the University of Illinois in 1950.

Gleason served 21 years in the Army, retiring as a Lieutenant Colonel. During his service tenure, Gleason worked with the joint NASA-Army SYNCOM satellite project directing communications testing. He was stationed in Budapest during the 1956 Hungarian Revolt and in the Pentagon as a Guided Missile Intelligence Officer when the Soviet Union launched the first satellite, Sputnik.

Gleason joined the Kennedy Space Center in 1966 and is an electronics engineer in the Information Systems Directorate's Operations Integration Branch where he coordinates launch instrumentation support of Space Shuttle site activities and prelaunch activities.

The Kennedy Space Center has been designated the prime launch and recovery site for the reusable Space Shuttle, scheduled for its first manned orbital flight in the spring of 1979. The Space Shuttle is designed to provide routine and economical access into space.

Gleason is married to the former Joan Latowsky of Urbana, Illinois. They reside in Cocoa Beach, Fla., and have four children.

# # #

NASA News

National Aeronautics and
Space Administration

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

Dick Young
305 867-2468

For Release:
November 22, 1977

RELEASE NO: KSC 186-77

FORMER ANNISTON RESIDENT RECEIVES NASA 30-YEAR AWARD

KENNEDY SPACE CENTER, Fla.--Charles A. Broughton, a native of Duke, Alabama, and a former employee of the Army's Anniston Ordnance Depot, has been presented a pin and certificate marking his completion of 30 years of Federal Service.

The award was presented to Broughton, a supply specialist at NASA's John F. Kennedy Space Center, by KSC Director Lee R. Scherer at a ceremony here today.

Broughton entered Civil Service in 1947, and served as an identifier of general ordnance material and equipment at the Anniston Ordnance Depot from November, 1947, until November, 1955.

He was equipment inspector for the Department of the Air Force at Patrick AFB, Florida, from 1955 until 1961. From May, 1961, to April, 1964, he was property and supply officer at the Mobile Depot Activity at Griffis AFB, N. Y.

Broughton joined the Kennedy Space Center in April, 1964. He is responsible for directing and managing controlled personal property at KSC.

A 1946 graduate of Alexandria High School, Alexandria, Alabama, Broughton is married to the former Jimmie Griffin of Crossville, Alabama.

The Broughtons have four children and make their home in Cocoa Beach, Fla.

Broughton's service includes membership on special teams supporting the Apollo and Skylab launches and the U. S. Bicentennial Exposition held at KSC in 1976.

# # #

NASA News

National Aeronautics and
Space Administration

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

Darleen Hunt
305 867-2468

For Release:
November 22, 1977

RELEASE NO: KSC 185-77

FORMER BIRMINGHAM RESIDENT RECEIVES NASA AWARD

KENNEDY SPACE CENTER, Fla.--George E. Mosakowski, a 1959 graduate of Birmingham Southern College, with a degree in business administration, was presented a Certificate of Commendation by Kennedy Space Center Director Lee R. Scherer today.

The presentation was made at the Kennedy Space Center's annual awards ceremony.

Mosakowski, a Supervisory Resources Management Specialist in the Shuttle Projects Resources Management Branch, received the NASA honor "for exceptional managerial skills and techniques exemplified by the high degree of proficiency and leadership during the critical phases and successful development of the Shuttle Projects Program Operating Plan."

The Kennedy Space Center has been designated the prime launch and recovery site for the revolutionary Space Shuttle which will begin manned orbital flights from NASA's Florida launch base in 1979. The Space Shuttle is the key element in a space transportation system which will provide routine and economical access to space in the 1980s.

Mosakowski is a former Birmingham resident and graduate of Woodlawn High School.

Mosakowski is married to the former Peggy Smith of Collinsville, Ala. They make their home in Titusville, Fla., a community to the northwest of NASA's Kennedy Space Center. They have four children, Robert, 20, Keelie Ann, 18, Stephen, 11, and Gregory, 7.

Mosakowski joined NASA in 1967. He is also a reserve Lieutenant Colonel in the U. S. Marine Corps, and is a member of the board of directors for a local Pop Warner Junior Football club.

# # #

NASA News

National Aeronautics and
Space Administration

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

Mark Hess
305 867-2468

For Release:
November 17, 1977

RELEASE NO: KSC 184-77

SPACEPORT AWARDS ORLANDO FIRM CONTRACT FOR HYDRAULIC HOSE SETS

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a $105,844 contract to Fluid Scientific, Inc., Orlando, Fla., for five hydraulic hose sets and various mating disconnects.

The hose sets will be used to connect and carry hydraulic fluid from the ground support equipment fluid distribution system to the Space Shuttle Orbiter and two Solid Rocket Boosters (SRB) while it is on the launch pad or under checkout in the Vehicle Assembly Building or Orbiter Processing Facility.

The Shuttle Orbiter has one system to supply electrical power and another system to supply hydraulic power. Hydraulic power is derived from three independent hydraulic pumps, each driven by its own hydrazine-fueled auxilary power unit and cooled by its own water boiler. The three independent hydraulic fluid systems provide power to operate various Orbiter systems including the elevons, rudder/speed brakes, body flap, main engine gimbal and control systems, landing gear brakes and steering.

The SRB uses hydraulics for thrust vector control of the motor nozzle.

The contract, made to a small business firm, requires the hardware to be delivered on or before March 1, 1978.

Kennedy Space Center has been designated the prime launch and recovery site for the reusable Space Shuttle, scheduled for its first manned orbital flight in the spring of 1979.

# # #

NASA News

National Aeronautics and
Space Administration

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

Dick Young
305 867-2468

For Release:
November 22, 1977

RELEASE NO: KSC 183-77

MELBOURNE RESIDENT RECEIVES NASA 30-YEAR AWARD

KENNEDY SPACE CENTER, Fla.--Richard H. Harper, a NASA program specialist who lives at 22 South Herring St., Melbourne, Fla., has been presented a pin and certificate marking his completion of 30 years of Federal Service.

The award was presented by Kennedy Space Center Director Lee R. Scherer at a ceremony here today.

Harper, a native of Tampa, plans, develops, coordinates and provides for the publication of administrative and management policies, procedures and instructions required within KSC's Support Operations Directorate.

He served from June, 1942, to October, 1945, in the U. S. Army Air Corps and was stationed with the 14th Air Force in the China, Burma, India Theater. His decorations include a presidential award and four battle stars.

Harper is married to the former Polly M. Wilcher of Charleston, West Virginia. They are the parents of two daughters.

Harper also serves as a member of the Brevard County District 5 Parks and Recreation Advisory Board.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Hugh W. Harris
305-867-2468

November 18, 1977

RELEASE NO: KSC 182-77

INTELSAT RESCHEDULED FOR JANUARY 6

KENNEDY SPACE CENTER, Fla.--The next launch of an Atlas Centaur rocket from the Kennedy Space Center has been rescheduled for January 6. The payload will be an INTELSAT IVA, commercial communications satellite.

Scheduled for launch in November, the mission was originally delayed by the investigation of the failure of the previous Atlas Centaur September 29. The investigation of that failure is nearly complete and the findings are scheduled to be presented to Associate Administrator John Yardley at NASA Headquarters in early December.

The decision to move the next launch to January is not related to the investigation, however, recently some faulty feed-back transducers used in the Atlas actuators for engine control were found through routine testing. The new date will allow time to remove any transducers from that manufacturing batch from flight hardware and revalidate the engine systems.

# # #

NASA News

National Aeronautics and
Space Administration

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

A. H. Lavender
305 867-2468

For Release:
November 22, 1977

RELEASE NO: KSC 181-77

DECATUR HIGH GRADUATE RECEIVES 30-YEAR FEDERAL SERVICE AWARD

KENNEDY SPACE CENTER, Fla.--Robert J. Martin, a 1943 graduate of Decatur High School, was awarded a certificate and pin marking his completion of 30 years of Federal Service during a ceremony here today.

The presentation was made by Kennedy Space Center Director Lee R. Scherer.

Martin began his Federal employment in the Navy during World War II, and later was employed by the Army Signal Corps in Decatur and the Air Force at Eglin AFB, Fla., and Newark AFB, Ohio.

He joined NASA at its Daytona Beach, Fla., installation in 1962 and transferred to the Kennedy Space Center in 1967, where he served as a quality assurance specialist in Launch Operations. He transferred to KSC's Design Engineering Directorate in 1974.

Martin and his wife, the former Eva White of Lawrenceville, Ill., reside in Merritt Island, Fla.

# # #

NASA News

National Aeronautics and
Space Administration

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

A. H. Lavender
305 867-2468

For Release:
November 22, 1977

RELEASE NO: KSC 180-77

SPACEPORT EMPLOYEE RECEIVES 30-YEAR FEDERAL SERVICE AWARD

KENNEDY SPACE CENTER, Fla.--Robert J. Martin, husband of the former Eva L. White of Lawrence, was awarded a certificate and pin marking his completion of 30 years of Federal Service during a ceremony here today.

The presentation was made by Kennedy Space Center Director Lee R. Scherer.

Born in Joliet, Martin was graduated from Decatur High School in 1943. He began his Federal employment in the Navy during World War II, and later was employed by the Army Signal Corps in Decatur and the Air Force at Eglin AFB, Fla., and Newark AFB, Ohio.

He joined NASA at its Daytona Beach, Fla., installation in 1962 and transferred to the Kennedy Space Center in 1967, where he served as a quality assurance specialist in Launch Operations. He transferred to KSC's Design Engineering Directorate in 1974.

Martin and his wife reside in Merritt Island, Florida.

# # #

NASA News

National Aeronautics and
Space Administration

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

Dick Young
305 867-2468

For Release:
November 22, 1977

RELEASE NO: KSC 179-77

BILOXI NATIVE EARNS HIGH NASA AWARD

KENNEDY SPACE CENTER, Fla.--Jack E. Baltar, a native of Biloxi, Miss., and son of Mrs. W. W. Baltar Jr., 665 N. Beach Blvd., Bay St. Louis, has been presented one of NASA's highest awards - the Exceptional Service Medal.

The presentation was made today by Kennedy Space Center Director Lee R. Scherer at the center's annual awards ceremony.

Baltar, a member of the Kennedy Space Center's Expendable Vehicles Operations Staff, received his award for his service as Operations Manager for Titan-Centaur Operations at KSC.

The powerful Titan-Centaur rocket was used to hurl two Helios solar probes in toward the Sun, two Viking spacecraft to Mars and two Voyager spacecraft on marathon missions which will carry them through the outer planets and into galactic space.

Baltar's citation reads: "In recognition of his leadership to NASA and the Titan-Centaur program while serving as the Titan-Centaur Vehicle and Facility Test Manager at KSC. His dedication and knowledge of operational requirements were important contributions to the six successful launches of highly sophisticated spacecraft to the outer planets and to our Sun."

A 1949 graduate of the U. S. Naval Academy, he served in the Navy for 12 years, leaving as a lieutenant in 1956. He received a Certificate of Commendation for his role in the Korean Conflict.

Baltar joined NASA in 1966. In addition to his current honor, he was presented Certificates of Commendation for his contributions to the Saturn and Viking programs.

-more-

He is married to the former Rowena Yerger of Biloxi. The Baltars make their home in Melbourne, Fla., southwest of the Kennedy Space Center.

They have four sons: James, 23; William, 22; Robert, 19, and David, 17.

# # #

NASA News

National Aeronautics and
Space Administration

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

Dick Young
305 867-2468

For Release:
November 22, 1977

RELEASE NO: KSC 178-77

MISSISSIPPI MAN PRESENTED HIGH NASA AWARD

KENNEDY SPACE CENTER, Fla.--Jack E. Baltar, a member of the Expendable Vehicles Operations Staff at NASA's Kennedy Space Center and a Biloxi, Miss., native, has earned one of NASA's highest awards - the Exceptional Service Medal.

The presentation was made today by Kennedy Space Center Director Lee R. Scherer at the center's annual awards ceremony.

Baltar, son of Mrs. W. W. Baltar Jr., 665 N. Beach Blvd., Bay St. Louis, and husband of the former Rowena Yerger, Biloxi, received his award for his service as Operations Manager for Titan-Centaur Operations at KSC.

The powerful Titan-Centaur rocket was used to hurl two Helios solar probes in toward the Sun, two Viking spacecraft to Mars and two Voyager spacecraft on long-duration missions which will carry them through the outer planets and into galactic space.

Baltar's citation reads: "In recognition of his leadership to NASA and the Titan-Centaur program while serving as the Titan-Centaur Vehicle and Facility Test Manager at KSC. His dedication and knowledge of operational requirements were important contributions to the six successful launches of highly sophisticated spacecraft to the outer planets and to our Sun."

A 1949 graduate of the U. S. Naval Academy, he served in the Navy for 12 years, leaving as a lieutenant in 1956. He received a Certificate of Commendation for his role in the Korean Conflict.

-more-

Baltar joined NASA in 1966. In addition to his current honor, he was presented Certificates of Commendation for his contributions to the Saturn and Viking programs.

The Baltars make their home in Melbourne, Fla., southwest of the Kennedy Space Center. They have four sons: James, 23; William, 22; Robert, 19, and David, 17.

# # #

NASA News

National Aeronautics and
Space Administration

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

Dick Young
305 867-2468

For Release:
November 22, 1977

RELEASE NO: KSC 177-77

USNA GRADUATE AWARDED NASA EXCEPTIONAL SERVICE MEDAL

KENNEDY SPACE CENTER, Fla.--Jack E. Baltar, a 1949 graduate of the U. S. Naval Academy at Annapolis, Md., has been presented one of NASA's highest awards - the Exceptional Service Medal.

The presentation was made today by Kennedy Space Center Director Lee R. Scherer at the center's annual awards ceremony (Scherer is a retired U. S. Navy Captain and a 1942 USNA graduate).

Baltar, a member of the Expendable Vehicles Operations Staff, received his award for his service as Operations Manager for Titan-Centaur Operations at KSC.

The powerful Titan-Centaur rocket was used to hurl two Helios solar probes in toward the Sun, two Viking spacecraft to Mars and two Voyager spacecraft on marathon missions which will carry them through the outer planets and into galactic space.

Baltar's citation reads: "In recognition of his leadership to NASA and the Titan-Centaur program while serving as the Titan-Centaur Vehicle and Facility Test Manager at KSC. His dedication and knowledge of operational requirements were important contributions to the six successful launches of highly sophisticated spacecraft to the outer planet and to our Sun."

A native of Biloxi, Miss., Baltar entered Naval service in 1944. He received a Certificate of Commendation for his role in the Korean Conflict and left the Navy as a Lieutenant in 1956.

He joined NASA in 1966. In addition to his current honor, he was presented Certificates of Commendation for his contributions to the Saturn and Viking programs.

-more-

A native of Biloxi, Miss., is married to the former Rowena Yerger of that city. The Baltars make their home in Melbourne, Fla., southwest of the Kennedy Space Center.

They have four sons: James, 23; William, 22; Robert, 19, and David, 17.

# # #

NASA News

National Aeronautics and
Space Administration

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

A. H. Lavender
305 867-2468

For Release:
November 22, 1977

RELEASE NO: KSC 176-77

FORMER MACON RESIDENT RECEIVES NASA AWARD

KENNEDY SPACE CENTER, Fla.--Ms. Annie Jo Hester, daughter of Mr. and Mrs. Joe Mullins, 121 Larkhaven Drive, Gadsden, was recipient of the NASA John F. Kennedy Space Center's Federal Woman of the Year Award during a ceremony today.

Ms. Hester, who was presented the award by KSC Director Lee R. Scherer, was commended for her outstanding performance as the Center's Chief of Pay and Travel in the Financial Management Office.

Born in Ashville, Ala., she was graduated from Etowah High School, Attalla, Ala., and later studied at Jacksonville State University.

Married to former Gadsden resident Clyde L. Hester, she accompanied him when he was assigned to Army duty in Frankfurt, Germany, and held her first Civil Service position as a cost accounting supervisor at the Army's 97th General Hospital in that city.

Later, when her husband was stationed at Vandenberg AFB, she was employed as chief of commercial accounts at the base and later held a similar position at Fort Leavenworth, Kan.

Following her husband's retirement from the Army in 1962, the Hesters moved to the Spaceport area. After serving as a travel clerk at Patrick AFB, she accepted a position as chief of the Kennedy Space Center travel unit in 1964.

Ms. Hester was appointed to her present position in February, 1971.

The Hesters reside at 161 Eden Avenue, Satellite Beach, Fla. They have two children, Mrs. Sherry Winters, a middle school teacher in Palm Beach, Fla., and Mike, employed by a realtor in Gainesville, Fla.

# # #

NASA News

National Aeronautics and
Space Administration

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

A. H. Lavender
305 867-2468

For Release:
November 22, 1977

RELEASE NO: KSC 175-77

HAGERSTOWN NATIVE RECEIVES 30-YEAR SERVICE AWARD

KENNEDY SPACE CENTER, Fla.--David C. Diehl, son of Mrs. Margaret R. Diehl, 2 Broadway, Hagerstown was awarded a pin and certificate marking his completion of 30 years of Federal Service during a ceremony at NASA's John F. Kennedy Space Center.

The award was presented by Center Director Lee R. Scherer.

Born in Hagerstown, he was graduated from Hagerstown High School. He served 20 years in the U. S. Navy, holding the rate of Chief Petty Officer at the time of his retirement in 1967. He was awarded a Purple Heart and six Presidential Unit Citations.

Following his retirement from the Navy, he joined the Kennedy Space Center as a program management specialist in the Repro-Graphics Branch and continues in that position.

While employed at the Center, he attended Rollins College, Winter Park, Fla., majoring in education and history. He received his BS degree earlier this year.

Diehl and his wife, the former Patricia Gray of Hagerstown, reside in Cocoa Beach, Fla.

# # #

NASA News

National Aeronautics and
Space Administration

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

A. H. Lavender
305 867-2468

For Release:
November 22, 1977

RELEASE NO: KSC 174-77

ROLLINS GRADUATE RECEIVES 30-YEAR SERVICE AWARD

KENNEDY SPACE CENTER, Fla.--David C. Diehl, a 1977 graduate of Rollins College, was awarded a pin and certificate marking his completion of 30 years of Federal Service during a ceremony at NASA's John F. Kennedy Space Center today.

The award was presented by Center Director Lee R. Scherer.

Born in Hagerstown, Md., he was graduated from high school in that city and spent 20 years in the U. S. Navy prior to his retirement in 1967. During his Navy career he received a Purple Heart and six Presidential Unit Citations.

He has been employed at a program management specialist in the KSC Repro-Graphics Branch since 1967.

While employed at the space center, he enrolled at Rollins College where he majored in education and history, and received his B. S. degree in 1977.

Diehl and his wife, the former Patricia Gray of Hagerstown, Md., reside at 1305 South Atlantic Avenue, Cocoa Beach, Fla.

# # #

NASA News

National Aeronautics and
Space Administration

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

A. H. Lavender
305 867-2468

For Release:
November 22, 1977

RELEASE NO: KSC 174-77

ROLLINS GRADUATE RECEIVES 30-YEAR SERVICE AWARD

KENNEDY SPACE CENTER, Fla.--David C. Diehl, a 1977 graduate of Rollins College, was awarded a pin and certificate marking his completion of 30 years of Federal Service during a ceremony at NASA's John F. Kennedy Space Center today.

The award was presented by Center Director Lee R. Scherer.

Born in Hagerstown, Md., he was graduated from high school in that city and spent 20 years in the U. S. Navy prior to his retirement in 1967. During his Navy career he received a Purple Heart and six Presidential Unit Citations.

He has been employed at a program management specialist in the KSC Repro-Graphics Branch since 1967.

While employed at the space center, he enrolled at Rollins College where he majored in education and history, and received his B. S. degree in 1977.

Diehl and his wife, the former Patricia Gray of Hagerstown, Md., reside at 1305 South Atlantic Avenue, Cocoa Beach, Fla.

# # #

NASA News

National Aeronautics and
Space Administration

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

A. H. Lavender
305 867-2468

For Release:
November 22, 1977

RELEASE NO: KSC 174-77

ROLLINS GRADUATE RECEIVES 30-YEAR SERVICE AWARD

KENNEDY SPACE CENTER, Fla.--David C. Diehl, a 1977 graduate of Rollins College, was awarded a pin and certificate marking his completion of 30 years of Federal Service during a ceremony at NASA's John F. Kennedy Space Center today.

The award was presented by Center Director Lee R. Scherer.

Born in Hagerstown, Md., he was graduated from high school in that city and spent 20 years in the U. S. Navy prior to his retirement in 1967. During his Navy career he received a Purple Heart and six Presidential Unit Citations.

He has been employed at a program management specialist in the KSC Repro-Graphics Branch since 1967.

While employed at the space center, he enrolled at Rollins College where he majored in education and history, and received his B. S. degree in 1977.

Diehl and his wife, the former Patricia Gray of Hagerstown, Md., reside at 1305 South Atlantic Avenue, Cocoa Beach, Fla.

# # #

NASA News

National Aeronautics and
Space Administration

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

A. H. Lavender
305 867-2468

For Release:
November 22, 1977

RELEASE NO: KSC 174-77

ROLLINS GRADUATE RECEIVES 30-YEAR SERVICE AWARD

KENNEDY SPACE CENTER, Fla.--David C. Diehl, a 1977 graduate of Rollins College, was awarded a pin and certificate marking his completion of 30 years of Federal Service during a ceremony at NASA's John F. Kennedy Space Center today.

The award was presented by Center Director Lee R. Scherer.

Born in Hagerstown, Md., he was graduated from high school in that city and spent 20 years in the U. S. Navy prior to his retirement in 1967. During his Navy career he received a Purple Heart and six Presidential Unit Citations.

He has been employed at a program management specialist in the KSC Repro-Graphics Branch since 1967.

While employed at the space center, he enrolled at Rollins College where he majored in education and history, and received his B. S. degree in 1977.

Diehl and his wife, the former Patricia Gray of Hagerstown, Md., reside at 1305 South Atlantic Avenue, Cocoa Beach, Fla.

# # #

NASA News

National Aeronautics and
Space Administration

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

A. H. Lavender
305 867-2468

For Release:
November 22, 1977

RELEASE NO. KSC 173-77

MOBILE NATIVE RECEIVES 30-YEAR FEDERAL SERVICE AWARD

KENNEDY SPACE CENTER, Fla.--James L. Williams, son of Mrs. Olga M. Williams, 301 East Byron Street, Mobile, was awarded a pin and certificate marking his completion of 30 years of Federal Service during a ceremony at NASA's John F. Kennedy Space Center today.

The award was presented by Center Director Lee R. Scherer.

Born in Mobile, he was graduated from Murphy High School, and began his career in Federal Service at Brookley Air Force Base in 1947 and transferred to NASA's Michoud Assembly Plant near New Orleans in 1963.

He transferred to the Kennedy Space Center as a quality assurance specialist in Procurement's Quality Surveillance Office in 1964. Eighteen of his 30 years of service have been in quality and inspection assignments.

Williams and his wife, the former Dorothy White of Mobile, reside in Winter Park, Fla.

# # #

NASA News

National Aeronautics and
Space Administration

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

A. H. Lavender
305 867-2468

For Release:
November 22, 1977

RELEASE NO: KSC 172-77

WINTER PARK RESIDENT RECEIVES 30-YEAR FEDERAL SERVICE AWARD

KENNEDY SPACE CENTER, Fla.--Winter Park resident James L. Williams was awarded a pin and certificate marking his completion of 30 years of Federal Service during a ceremony at NASA's John F. Kennedy Space Center today.

The award was presented by Center Director Lee R. Scherer.

A Mobile, Ala., native, he was first employed at Brookley AFB near Mobile, and later at NASA's Michoud Assembly Plant near New Orleans.

He transferred to the Kennedy Space Center, where he is a quality assurance specialist in Procurement's Quality Surveillance Office, in 1964.

Williams and his wife, the former Dorothy White of Mobile, Ala., reside at 514 Darcey Drive, Winter Park.

# # #

NASA News

National Aeronautics and
Space Administration

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

Dick Young
305 867-2468

For Release:
November 22, 1977

RELEASE NO: KSC 171-77

TIMMONSVILLE NATIVE EARNS NASA COMMENDATION

KENNEDY SPACE CENTER, Fla.--Arthur J. Carraway, a 1944 graduate of Timmonsville High School, was presented a Certificate of Commendation by Kennedy Space Center Director Lee R. Scherer today.

Carraway, Chief of the Engineering Support Office in KSC's Design Engineering Directorate, received the NASA honor "in recognition of his leadership in developing plans and contractual documents for use in negotiating major Space Shuttle launch processing system procurements in support of the Air Force at Vandenberg AFB, California.

The Kennedy Space Center has been designated the prime launch and recovery site for the revolutionary Space Shuttle which will begin manned orbital flights from NASA's Florida launch base in 1979. A West Coast launch base for the Shuttle will become operational at Vandenberg AFB in the 1980s.

Carraway is the son of John B. Carraway, Timmonsville, and was graduated from Clemson College, Clemson, S.C., with a bachelor's degree in electrical engineering in 1949.

He served in the U. S. Air Force from 1950-52 as a first lieutenant and was awarded the Bronze Star.

Carraway is married to the former Celeste Wilkes of Timmonsville and they make their home at Titusville, Fla., a community to the northwest of NASA's Kennedy Space Center. They have two sons, Arthur Douglas, 26, and Joel Thaddius, 19.

Carraway, responsible for planning, budgets, reliability and logistics engineering for KSC's electronic systems, has been employed by NASA since 1962.

# # #

NASA News

National Aeronautics and
Space Administration

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

Dick Young
305 867-2468

For Release:
November 22, 1977

RELEASE NO: KSC 170-77

CLEMSON GRADUATE EARNS NASA COMMENDATION

KENNEDY SPACE CENTER, Fla.--Arthur J. Carraway, a 1949 graduate of Clemson College with a degree in electrical engineering, was presented a Certificate of Commendation by Kennedy Space Center Director Lee R. Scherer today.

The presentation was made at the Kennedy Space Center's annual awards ceremony.

Carraway, Chief of the Engineering Support Office in KSC's Design Engineering Directorate, received the NASA honor "in recognition of his leadership in developing plans and contractual documents for use in negotiating major Space Shuttle Launch Processing System procurements in support of the Air Force at Vandenberg AFB, California."

The Kennedy Space Center has been designated the prime launch and recovery site for the revolutionary Space Shuttle which will begin manned orbital flights from NASA's Florida launch base in 1979. The Space Shuttle is the key element in a space transportation system which will provide routine and economical access to space in the 1980s.

A West Coast launch base for the Shuttle will become operational at Vandenberg AFB in the 1980s.

Carraway is a native of Timmonsville, S.C., and the son of John B. Carraway of that city.

Carraway is married to the former Celeste Wilkes of Timmonsville. They make their home in Titusville, Fla., a community to the northwest of NASA's Kennedy Space Center. They have two sons, Arthur Douglas, 26, and Joel Thaddius, 19.

Carraway served in the U. S. Air Force from 1950-52 as a first lieutenant and was awarded the Bronze Star. He joined NASA in 1962.

# # #

NASA News

National Aeronautics and
Space Administration

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

Hugh Harris
305 867-2468

For Release:
November 15, 1977

RELEASE NO: KSC 169-77

METEOSAT LAUNCH RESCHEDULED

KENNEDY SPACE CENTER, Fla.--The launch of the European Space Agency's meteoeological satellite METEOSAT, has been set for Sunday November 20 pending final testing of the new bi-propellant valve on the second stage of the Delta rocket.

The launch window extends from 8:35 p.m. EST to 9:05 p.m.

Scheduled for November 17 the launch was delayed when routine testing discovered a faulty valve which controls the flow of fuel and oxidizer to the second stage engine.

Procedures were worked out to replace the valve while the vehicle was still on the pad and final installation and leak checks were being run Tuesday.

METEOSAT is the first European operational meteorological satellite and will become part of a worldwide meteorological program employing as many as five geostationary satellites manufactured by the European Space Agency, Japan, the United States and Soviet Union.

# # #

NASA News

National Aeronautics and
Space Administration

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

Mark Hess
305 867-2468

For Release:
November 11, 1977

RELEASE NO: KSC 168-77

LAKELAND FIRM CONTRACTED TO BUILD SIMULATED SHUTTLE PAYLOAD CANISTER

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a $118,250 contract to JOFRA Enterprises, Inc., Lakeland, Florida, for the design and construction of a simulated Space Shuttle payload canister and the test weight representing its payload.

The contract also calls for the firm to modify an existing semi-trailer for transporting the test canister and weight. The two test fixtures will give engineers an idea of how the actual Shuttle payload canister will integrate with various payload processing facilities.

The test canister will be a mobile, open-faced steel structure built to the same dimensions as the actual payload canister. The payload canister will be used to transport payloads to be installed in the Shuttle Orbiter's cavernous cargo bay. Payloads are the various satellites and experiments to be carried into space.

Principal testing of the canister will be made at the launch pad where it will be checked out to see that it interfaces properly with the Payload Changeout Room (PCR). Payloads will be loaded into the Shuttle Orbiter at the launch pad from the PCR.

The test fixture will be transported for more fit checks to the other payload processing sites: the Orbiter Processing Facility, the Vehicle Assembly Building, and the Operations and Checkout Building.

The firm fixed price contract is one set aside for small business firms. The design, construction, testing and delivery of the test fixtures and modification of the trailer are to be completed by February 15, 1978.

Kennedy Space Center has been designated the prime launch and recovery site for the reusable Space Shuttle. The first manned orbital flight of the Space Shuttle is scheduled to be launched from here in the spring of 1979.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Dick Young
305 867-2468

November 2, 1977

RELEASE NO: KSC 167-77

NEW JERSEY FIRM AWARDED SPACEPORT CONTRACT

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a contract for $5,745,000 to the Frank Briscoe Company, Inc., East Orange, New Jersey.

The fixed price contract is for modifications to Launch Complex 39's Vehicle Assembly Building, the world's second largest building, to prepare it for use in the Space Shuttle program.

The VAB was built in the mid-1960s to provide an environmentally protected checkout and assembly area for the Saturn V/Apollo which carried American astronauts to the Moon.

The Kennedy Space Center has been designated the prime launch and recovery site for the Space Shuttle and the VAB modifications are part of a comprehensive program to reshape Complex 39 for its role in the shuttle era.

The Briscoe contract includes the reconfiguration of work platforms in High Bay 1 to accommodate the mating and checkout of Space Shuttle flight components, installation of external tank checkout cells in High Bay 2, modification of Low Bay cells for storage of the Space Shuttle Main Engine, upgrading of the fire protection system and life safety features, and other modifications.

Work under the contract is to be completed in approximately 10 months.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Mark Hess
305 867-2468

November 4, 1977

RELEASE NO: KSC 166-77

CHICAGO FIRM AWARDED UTILITY CONTROL CONTRACT

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a fixed price contract for $789,907 to the Mayfair Construction Company, Chicago, for construction of a utilities control system for the Launch Complex 39 area.

The work includes modifying sensors and controls, or providing new ones, for the Launch Control Center, Vehicle Assembly Building, VAB annex and outlying areas of the Spaceport's launch area.

Many of the historic Launch Complex 39 facilities, built for Apollo journeys to the Moon, are being reshaped for their new roles in the Space Shuttle era.

KSC has been designated the prime launch and recovery site for the reusable Space Shuttle, designed to provide routine and economical access to space. The first manned orbital flights of the Space Shuttle are scheduled to be launched from here in the spring of 1979.

Work under the contract is to be completed by July, 1978.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Mark Hess
305 867-2468

November 4, 1977

RELEASE NO: KSC 165-77

CALIFORNIA FIRM AWARDED SPACEPORT CONTRACT

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a $157,200 contract to Morton Company, Hayward, Ca., for the construction of two crew hatch access vehicles which will allow the Orbiter crew to exit the Orbiter cabin in a weather-protected environment.

Similar to standard passenger access ramps used at many major airports, the crew hatch access vehicles will employ telescopic stairs mounted atop a truck.

Because of the delicate instruments housed in the Orbiter cabin, a special weather-tight room will be built at the top of the stairs. This will keep moisture out of the cabin and allow the astronauts to enter and exit the Orbiter while being protected from bad weather.

The fixed price contract, one made to a small business firm, is to be completed by March 1, 1978.

Kennedy Space Center has been designated the prime launch and recovery site for the reuseable Space Shuttle. The first Space Shuttle manned orbital flight is scheduled to be launched from here in the spring of 1979.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Dick Young
305 867-2468

November 7, 1977

RELEASE NO: KSC 164-77

NOTICE TO EDITORS/NEWS DIRECTORS

METEOSAT LAUNCH SCHEDULED FOR NOVEMBER 17

KENNEDY SPACE CENTER, Fla.--Meteosat, the European Space Agency's first synchronous weather satellite, will be launched by the Kennedy Space Center aboard a Delta rocket from Complex 17 at Cape Canaveral Air Force Station no earlier than November 17.

The launch window for that date extends from 8:35 to 9:05 p.m. EST.

A prelaunch news conference on the Meteosat mission will be held in Room 138 of the E & O Building at Cape Canaveral Air Force Station on Wednesday, November 16, at 11 a.m. Badged news media representatives may proceed directly to the E & O Building via Cape Canaveral AFS Gate 1 or KSC Gates 2 or 3.

Others will be provided transportation from the KSC Public Information Office in the Headquarters Building, with a vehicle leaving at 10:30 a.m.

For launch coverage, badged media representatives may proceed directly to Press Site 1. Others will be badged at Frank Wolfe's Beachside Motel, Cocoa Beach, and will leave for the press site in convoy at 7 p.m. A stop will be made at CCAFS Gate 1 at about 7:15 p.m. to permit news media people to join the convoy at that point.

The News Center in the KSC Headquarters Building will be manned on launch day from 7 - 10 p.m. and mission updates may be obtained by calling 867-2468. Live commentary-to be carried from about 60 minutes before launch through approximately 30 minutes after liftoff - may be obtained by calling the KSC Operator, 305-867-7110, and asking that you be connected with the V-2 circuit.

NASA News

National Aeronautics and
Space Administration

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

For Release:

Dick Young
305 867-2468

November 4, 1977

RELEASE NO: 164-77

NOTICE TO EDITORS/NEWS DIRECTORS

METEOSAT LAUNCH SCHEDULED FOR NOVEMBER 17

KENNEDY SPACE CENTER, Fla.--Meteosat, the European Space Agency's first synchronous weather satellite, will be launched by the Kennedy Space Center aboard a Delta rocket from Complex 17 at Cape Canaveral Air Force Station no earlier than November 17.

The launch window for that date extends from 8:35 to 9:05 p.m. EST.

A prelaunch news conference on the Meteosat mission will be held in the viewing room of the Mission Director's Center in Hangar AE at Cape Canaveral Air Force Station on Wednesday, November 16, at 11 a.m. Badged news media representatives may proceed directly to Hangar AE (behind the E & O Building) via Cape Canaveral AFS Gate 1 or KSC Gates 2 or 3.

Others will be provided transportation from the KSC Public Information Office in the Headquarters Building, with a vehicle leaving at 10:30 a.m.

For launch coverage, badged media representatives may proceed directly to Press Site 1. Others will be badged at Frank Wolfe's Beachside Motel, Cocoa Beach, and will leave for the press site in convoy at 7 p.m. A stop will be made at CCAFS Gate 1 at about 7:15 p.m. to permit news media people to join the convoy at that point.

The News Center in the KSC Headquarters Building will be manned on launch day from 7 - 10 p.m. and mission updates may be obtained by calling 867-2468. Live commentary to be carried from about 60 minutes before launch through approximately 30 minutes after liftoff - may be obtained by calling the KSC Operator, 305-867-7110, and asking that you be connected with the V-2 circuit.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Dick Young
305 867-2468

October 26, 1977

RELEASE NO: KSC 163-77

FLORIDA FIRM AWARDED CONTRACT FOR SHUTTLE PARACHUTE FACILITY

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a contract for $1,608,750 to the Holloway Corporation, Titusville, Fl.

The contract, one set aside for small business firms, is for modification of an existing building in the KSC Industrial Area for processing of the parachutes to be used with the Space Shuttle's solid rocket boosters.

The solid rockets - along with the orbiter's main engines - will be ignited at liftoff. The solids will burn for approximately two minutes before being separated from the orbiter at an altitude of 27 miles.

The parachutes will cushion the empty solid rocket motor casings' impact in the Atlantic Ocean 185 miles downrange from the Kennedy Space Center. The solid rocket motor casings will be retrieved and returned to the Kennedy Space Center for refurbishing. Each casing will be reloaded with propellants and be used for up to 12 missions.

Modification work in the parachute facility includes new interior partitions, electrical and plumbing items, construction of new wings and the modification and installation of heating and air conditioning systems.

Work under the fixed price contract is to be completed within 300 calendar days.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

A. H. Lavender
305 867-2468

October 20, 1977

RELEASE NO: KSC 162-77

ISEE LAUNCH TO CURB SATURDAY BOAT TRAFFIC

KENNEDY SPACE CENTER, Fla.--The scheduled launch of two International Sun Earth Explorer (ISEE) spacecraft atop a Delta rocket on Saturday, October 22, will impact some off-shore recreational activities in the Kennedy Space Center/Cape Canaveral Air Force Station area.

The ISEE launch is scheduled during a window extending from 9:53 and 10:12 a.m. Eastern Daylight Time.

Boaters are requested to remain free of a large danger area in the vicinity of Cape Canaveral from 8 a.m. until after liftoff. Because of the short launch window, a boat in the danger zone could force postponement of the launch.

The danger zone extends into the Atlantic Ocean for a distance of 30 miles from the center of the Port Canaveral channel, north for a distance of seven miles, then due west back to the Atlantic shoreline in the northern section of Cape Canaveral AFS.

The danger area is under continuous surveillance by the Air Force and Coast Guard while a launch countdown is underway and their job of keeping boat traffic free of the zone is made easier if boaters keep abreast of launch preparations.

Those within the area at liftoff could be exposed to falling debris, toxic rocket propellants and other hazards if it becomes necessary for the range safety officer to abort a mission and destroy the space vehicle. Thus, freedom of the zone from boat traffic is a mandatory launch requirement.

# # #

NASA News

National Aeronautics and
Space Administration

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

A. H. Lavender
305 867-2468

For Release:
October 13, 1977

RELEASE NO: KSC 161-77

NOTICE TO EDITORS/NEWS DIRECTORS

ISEE LAUNCH TENTATIVELY SCHEDULED FOR OCTOBER 19

KENNEDY SPACE CENTER, Fla.--The launch of International Sun Earth Explorer-A and -B (ISEE-A and -B) spacecraft on a Delta rocket is tentatively scheduled October 19.

The launch from Complex 17, Cape Canaveral, is scheduled during a launch window extending from 10:04 to 10:24 a.m. EDT.

A prelaunch news conference on the ISEE-A and -B missions is tentatively scheduled at the E & O Building, Cape Canaveral AFS, at 11:00 a.m., October 18. Badged news media representatives may proceed directly to the E & O Building via Cape Canaveral AFS Gate 1 or KSC Gate 2 or 3. Others will be provided transportation from the KSC Public Information Office in the Headquarters Building, with a vehicle departing at 10:30 a.m.

For launch coverage, badged media representatives may proceed directly to Press Site 1. Others will be badged at Frank Wolfe's Beachside Motel, Cocoa Beach, and will depart for the press site in convoy at 8:30 a.m.

Firm scheduling of the launch, subject to approval by a Board of Inquiry investigating the failure of Delta 134 on September 13, may be made as late as Monday, October 17. Information on firm scheduling of the launch will be available at the Public Information Office, phone 305 867-2468, and on the Public Information Codaphone, phone 305 867-2525.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Darleen Hunt
305 867-2468

October 12, 1977

RELEASE NO: KSC 160-77

MALAGA TO SERVE ON FEDERAL STUDY GROUP

KENNEDY SPACE CENTER, Fla.--Joseph F. Malaga, KSC's Director of Administration and Management Operations, has been appointed to direct a presidentially-mandated reorganization study of federal administrative services. Malaga was named for the job by Jay Solomon, Administrator of General Services, and James McIntyre, Acting Director, Office of Management and Budget. Solomon is chairman of a senior steering group given the task to conduct the study which is to be carried out as part of the President's Reorganization Project.

The objective of the project is to improve the management and delivery of administrative services to federal agencies. It will assess the roles of GSA and other agencies in the provision of services related to real and personal property, transportation, data processing, telecommunications and records management.

The steering group will be responsible for establishing objectives, approving study plans and overseeing the project. Solomon said the project staff will be recruited from federal agencies, business and industry. Malaga will serve as Executive Director of the Administrative Services Project with the responsibility to oversee day-to-day management of the study and the project staff.

His new assignment is scheduled to last six months, ending on March 31, 1978, at which time Malaga says "I definitely plan to return to KSC." He reported to his new job on October 3. His wife, Sandy, will be joining him in Washington.

GSA Administrator Solomon said "Joe Malaga brings to this important position an extraordinary record of public service. His 26 years experience in federal administrative positions, the last 15 with NASA, gives him a deep understanding of the problems of delivery and management of federal support services."

-more-

Harrison Wellford, head of the President's Reorganization Project, cited Malaga as "an outstanding manager who understands not only the complexities of administrative support needed by federal agencies, but the resource limitations imposed through the federal budget process as well. It is within this framework that the project will be conducted."

Malaga was appointed to his KSC position in July 1975. He supervises the administrative management activities at the spaceport, including resources management, personnel, labor relations, procurement, organization, management systems and base support services. He joined NASA in 1962 as resources planning specialist for the manned space flight program and subsequently served as the NASA Director of Resources Analysis and as Assistant NASA Administrator for Institutional Management before assuming his present duties at KSC.

During this period, he also served in a temporary capacity as Assistant Director for Operations of the Cost of Living Council, and was instrumental in helping to set up the Economic Stabilization organizations and compliance program. Prior to joining NASA, Malaga held a series of responsible positions in the Department of Defense where he received numerous citations and performance awards for his work with missile programs and industrially-funded, commercial-type activities. He is a two-time recipient of NASA's exceptional service medal, and also received the William A. Jump Memorial Foundation Meritorious Award for exceptional achievement in public administration.

During Malaga's absence from the Center, William M. Lohse will serve as Acting Director of Administration and Management Operations. Lohse also wears the hat of Director, Procurement, Supply and Transportation for KSC.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Mark Hess
305 867-2468

October 6, 1977

RELEASE NO: KSC 159-77

KSC AWARDS FT. LAUDERDALE FIRM SUPPLEMENTAL CONTRACTS

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded supplemental contracts totalling $2,500,345 to Modular Computer Systems, Inc., Ft. Lauderdale, Fla., for additional minicomputers and related equipment for further development of the Space Shuttle Launch Processing System (LPS).

The awards are fixed price, indefinite quantity contracts. The work will be performed at KSC and at MODCOMP's plant in Ft. Lauderdale.

One award, for $132,269, is for peripheral devices, including tape units, card readers and line printers, to be used on the minicomputer systems.

The second award, for $2,368,076, is for 16 minicomputers and peripheral system configurations with options for an additional 21. Some of this hardware will also be used for the Cargo Integration Test Equipment Electronic/Electrical Project, a test system that will check out Space Shuttle payloads before they are loaded into the Shuttle Orbiter bay.

Including the supplemental awards, total value of the contract is $10,842,210.

The short two-week turnaround time between landing of the Shuttle Orbiter and its subsequent launch requires a speedy method of servicing and refurbishing the Space Shuttle for its next flight. With the LPS, the Space Shuttle's main components can be checked out automatically from its arrival at the Spaceport until launch, and then from landing to relaunch.

Kennedy Space Center has been designated the prime launch and recovery site for the Space Shuttle. The first manned orbital flights are scheduled to be launched from here in March, 1979.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Mark Hess
305 867-2468

October 6, 1977

RELEASE NO: KSC 158-77

OCALA FIRM AWARDED SPACEPORT CONTRACT

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a $51,744 contract to Emergency One, Inc., Ocala, for the purchase of two quick attack rescue pumpers to be used by KSC's Fire Services to support all Space Shuttle launch and landing operations.

The small attack trucks will also be used to support any first alarm emergency situations occurring at the Spaceport. Smaller than standard firetrucks, the quick response vehicles are better able to maneuver in traffic and use standard truck parts, thus reducing maintenance costs.

Kennedy Space Center has been designated the prime launch and recovery site for the Space Shuttle which will provide routine and economical access to space. The first manned orbital flights of the reuseable Space Shuttle are scheduled to be launched from here in the spring of 1979.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Hugh W. Harris
305 867-2468

November 2, 1977

RELEASE NO: KSC 157-7-77

AC-43 REVIEW BOARD STATUS REPORT

KENNEDY SPACE CENTER, Fla.--The Atlas-Centaur 43 Review Board reported it was close to the end of its investigation this week following a status meeting on Monday. Dr. Milton Silveira, Board Chairman, said a few details need to be consolidated and a final report and recommendations written. He expects the Board will complete its report to Associate Administrator John Yardley about the end of the month in time to prepare for a launch of another INTELSAT IVA communications satellite with an Atlas Centaur rocket (AC-46) December 8.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

October 26, 1977

Hugh W. Harris
305 867-2468

RELEASE NO: KSC 157-6-77

AC-43 REVIEW BOARD STATUS REPORT

KENNEDY SPACE CENTER, Fla.--The Atlas Centaur 43 Review Board is concentrating its efforts to isolate the cause of the failure of the last Intelsat IVA launch in four areas. Committees have been established to: 1. Perform recovered hardware tests and analysis; 2. perform analysis using flight data; 3. determine all possible leakage and heat sources; and 4. conduct detailed examinations of recovered hardware at Rocketdyne. The Board will meet formally October 31 for a status meeting in San Diego.

The next launch of an Atlas Centaur was originally scheduled for November 10 but has been postponed until a final determination of the failure of AC-43 is made by the Review Board, and any necessary modifications made to the launch vehicle.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Hugh W. Harris
305 867-2468

October 18, 1977

RELEASE NO: KSC 157-5-77

AC-43 REVIEW BOARD STATUS REPORT

KENNEDY SPACE CENTER, Fla.--The Atlas Centaur 43 Review Board is meeting at General Dynamics Convair in San Diego this week. Dr. Milton Silveira, Committee Chairman, reports that 95% of the hardware the board is interested in has been recovered including the booster and sustainer engine group. The hardware was flown to San Diego from KSC on Sunday where it is being examined. Engineers will try to piece together the entire thrust section of the Atlas. Engine parts will be disassembled and tested at Rocketdyne. Although hampered by rough seas, salvage operations at KSC are continuing.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Hugh W. Harris
305 867-2468

October 11, 1977

RELEASE NO: KSC 157-4-77

AC-43 REVIEW BOARD STATUS REPORT

KENNEDY SPACE CENTER, Fla.--The Atlas Centaur 43 Review Board will have its next formal meeting at the General Dynamics Convair plant in San Diego, Monday October 17, in order to provide additional time for contractor and NASA teams to conduct tests and develop additional data from the flight.

Salvage operations are continuing at the Kennedy Space Center with the search concentrating on finding Atlas Engine components.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Hugh Harris
305 867-2468

October 7, 1977

RELEASE NO: KSC 157-3-77

AC-43 REVIEW BOARD STATUS REPORT

KENNEDY SPACE CENTER, Fla.--The Atlas Centaur 43 Flight Review Team has been meeting at General Dynamics Convair Division, San Diego and reviewed all flight data available at this time. In reviewing the data, it appears that shortly after vehicle lift off, ambient temperature measurements in the aft compartment of the Atlas vehicle started to increase. Exact cause of the temperature increases is not known at this time, but may have been caused by a hot gas leak. The temperature increases continued until approximately 36 sec. when a fire started which eventually caused the vehicle to lose control and destroy itself.

The Flight Review Team with the vehicle contractors and the Lewis Research Center will continue to review data and perform analysis in an effort to determine the exact cause of the flight failure.

# # #

NASA News

National Aeronautics and
Space Administration

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

RTQ ONLY

For Release:

Hugh Harris
305 867-2468

October 6, 1977

RELEASE NO: KSC 157-2-77

AC-43 REVIEW BOARD STATUS REPORT

KENNEDY SPACE CENTER, Fla.--The AC-43 Review Board is meeting at General Dynamics Convair plant at San Diego today. Board Chairman Milton A. Silveira said that the day would be devoted to hearing reports on preliminary findings on the failure from NASA project and contractor teams.

Salvage operations at the Kennedy Space Center on Wednesday were curtailed by high winds and choppy ocean conditions.

# # #

NASA News

National Aeronautics and
Space Administration

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

Hugh Harris
305 867-2468

For Release:
October 4, 1977

RELEASE NO: KSC 157-1-77

AC-43 REVIEW BOARD STATUS REPORT

KENNEDY SPACE CENTER, Fla.--The panel investigating the failure of an Atlas Centaur to launch an Intelsat IV-A commercial communications satellite September 29 is having its first formal meeting at the General Dynamics Convair plant in San Diego, California today.

Board Chairman Milton A. Silveira said that the day primarily will be devoted to briefings on the Atlas and Centaur systems.

Several appointments to the Board were announced by Silveira. Serving as regular board members will be Scott H. Simpkinson, Manager for Flight Safety, Space Shuttle Program Office, Johnson Space Center, Houston Texas; Lt. Col. Robert E. Christian III, Asst. Deputy Director, Launch Systems Integration, SAMSO; Major Archie G. Allen, Space Propulsions Systems Manager, SAMSO; and Dr. Robert E. Payne, Group Director, Aerospace Corp., Allen M. McCaskill, Manager, Launch Vehicles, COMSAT will serve as an observor for Intelsat. (A complete list of the Board is attached.)

Salvage operations at Cape Canaveral were suspended during the day Tuesday because of rough seas.

# # #

BOARD MEMBERS

Milton A. Silveira
Deputy Manager
Space Shuttle Orbiter Project Office
NASA's Johnson Space Center
Houston, Texas

George T. Sasseen
Director, Shuttle Engineering
Kennedy Space Center, FL

Thomas P. Isbell
Deputy Director
Systems Analysis and Integration Laboratory
Science and Engineering Directorate
Marshall Space Flight Center
Huntsville, AL

Edward A. Rothenberg
Office of Flight Assurance
Systems Review Office
Goddard Space Flight Center
Greenbelt, MD

Joseph A. Ziemanski
Manager, Engine Component Improvement Project Office
Lewis Research Center
Cleveland, OH

Charles H. King, Jr.
Director, Systems Engineering and Logistics
Space Transportation System Operations
NASA Headquarters
Washington, DC

Scott H. Simpkinson
Manager for Flight Safety
Space Shuttle Program Office
Johnson Space Center
Houston, Texas

Lt. Col. Robert E. Christian III
Asst. Deputy Director
Launch Systems Integration, SAMSO

Major Archie G. Allen
Space Propulsions Systems Manager, SAMSO

Dr. Robert E. Payne
Group Director, Aerospace Corporation

Allen M. McCaskill
Manager, Launch Vehicles, COMSAT (Observor)

NASA News

National Aeronautics and
Space Administration

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

Mark Hess
305 867-2468

For Release:
October 3, 1977

RELEASE NO: KSC 156-77

IBM TO BE AWARDED SPACEPORT CONTRACT

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center will award a $3,203,666 contract to International Business Machines Corporation for the development of a test system that will check out Space Shuttle cargoes for their compatibility with the Shuttle Orbiter before they are loaded into the Orbiter's payload bay.

Called CITE, for Cargo Integration Test Equipment, the system will simulate exactly the Orbiter's electrical and electronic environment. CITE will stimulate the payloads, monitor their responses, and record the data. The payload, not knowing whether it is actually loaded to the Orbiter bay or simply hooked up to the CITE system, will behave the same as it would during actual flight.

This capability is needed because of the fast turn-around times planned for Shuttle missions. Being able to have payloads all ready to plug into the Orbiter without extensive testing after it is aboard is necessary to staying on schedule.

CITE operations will be conducted from either the Spaceport Assembly and Encapsulation Facility #1 (SAEF #1) or the Operations and Checkout Building (O&C). The CITE equipment will be mobile so it can be used in SAEF #1 to checkout cargoes in a vertical position and the O&C building to test horizontal payloads.

The first manned orbital flights of the Space Shuttle are scheduled to be launched from here beginning in March, 1979. Because there is no payload on the first Orbital Test Flight, the CITE system will not be operational until the second flight.

Included in the $3,203,666 contract is an option for increasing the capabilities of the CITE project to provide a complete system in both SAEF #1 and the O&C Building.

The cost plus fixed fee contract covers the period between October 1, 1977, and July 1, 1980.

# # #

NASA News

National Aeronautics and
Space Administration

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

A. H. Lavender
305 867-2468

For Release:
September 29, 1977

RELEASE NO: KSC 155-77

ENERGY EXHIBIT SCHEDULED AT KSC VISITORS CENTER

KENNEDY SPACE CENTER, Fla.--Ideas the Energy Research and Development Administration are exploring to help solve the nation's energy problems are the subject of a special exhibit to be displayed at the Kennedy Space Center Visitors Center from October 1 through 23.

The exhibit, titled "Energy in Your Future," illustrates ERDA programs for developing new and improved methods for electrical power generation, plans for new types of engines and electric cars and means for achieving energy conservation.

Most of our energy today comes from fossil fuels, such as oil and gas, which are rapidly dwindling as they are consumed for electrical power generation and transportation.

The exhibit explains that for electrical power generation, ERDA scientists are testing more efficient ways to burn fossil fuels as well as studying fusion, solar energy and breeder reactors.

To preserve precious fuel resources in transportation, the exhibit illustrates that cars of the future may have turbine engines instead of piston engines. Turbines spin instead of moving back and forth and can run smoother and cleaner on cheaper fuel.

Electric cars, which run on batteries and can be plugged in overnight for recharging, may become practical in the future too. ERDA scientists are developing lithium batteries which would increase the range of electric autos.

The exhibit also stresses that a key part of the ERDA energy plan to preserve fossil fuel is conservation. ERDA researchers are exploring hundreds of conservation avenues--from more efficient appliances to special year-round energy systems that save energy from one season for use in another season.

"Energy in Your Future" is part of ERDA's eastern domestic exhibits program which includes the American Museum of Atomic

-more-

Energy in Oak Ridge, Tennessee. These programs are operated for ERDA by Oak Ridge Associated Universities.

ERDA's western programs are operated by the Northwest College and University Association for Science (NORCUS) of Richland, Washington.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release: IMMEDIATE

PRESS KIT

PROJECT: INTELSAT IV-A F5

RELEASE NO: 154-77

CONTENTS

NASA News

National Aeronautics and
Space Administration

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

David Garrett
Headquarters, Washington, DC
(Phone: 202/755-3090)

Dick McCormack
Headquarters, Washington, DC
(Phone: 202/755-8487)

Marilyn Edwards
Lewis Research Center, Cleveland, Ohio
(Phone: 216/433-4000 Ext. 415)

For Release: IMMEDIATE

FOURTH INTELSAT IV-A LAUNCH SCHEDULED

The fourth INTELSAT IV-A commercial communications satellite will be launched by NASA aboard an Atlas Centaur rocket from Kennedy Space Center, Fla., no earlier than September 29, 1977.

The satellite, which weighs 1511 kilograms (3332 pounds) at launch, is intended for service in the Atlantic Ocean region.

INTELSAT IV-A F5 satellite will be placed in geostationary orbit over the Indian Ocean at 65 degrees East longitude, where it will provide international communications services to some 40 countries in the Indian Ocean regions. The satellite has a seven year design life and the capacity to relay more than 6000 simultaneous telephone calls and two television programs.

-more-

The INTELSAT satellites are owned by the International Telecommunications Satellite Organization (INTELSAT). The Communications Satellite Corp. (COMSAT), the United States member, is also the management services contractor for the satellite system. NASA is reimbursed for all costs of the Atlas Centaur and launch services by COMSAT on behalf of INTELSAT, under provisions of a launch services agreement.

The Atlas Centaur 43 launch vehicle is expected to place the INTELSAT IV-A in a highly elliptical orbit of 548 by 35,940 kilometers (341 by 22,332 miles). After reorientation of the satellite, a solid propellant rocket motor aboard the spacecraft will be fired to circularize the orbit at synchronous altitude 35,940 km (22,332 mi.) over the equator. At that altitude, because the speed of the spacecraft in orbit matches the rotational speed of the Earth, the satellite remains in position over one spot.

The launch of INTELSAT spacecraft aboard Atlas Centaur rockets requires the coordinated efforts of a large government and industry team. NASA's Lewis Research Center, Cleveland, Ohio, has management responsibility for the Atlas Centaur development and operation. NASA's Kennedy Space Center, Fla., is assigned vehicle checkout and launch responsibility once the vehicle reaches Cape Canaveral.

The INTELSAT IV-A satellites, built by Hughes Aircraft Co., El Segundo, Calif., are 6.98 meters tall (about 23 feet) and weigh 1511 kg (about 3332 lb.) at liftoff and 825.5 kg (1,820 lb.) after apogee motor firing.

The INTELSAT IV-A program represents an investment by 98 nations exceeding $300 million (U.S.). Each launch costs approximately $52 million -- $23.5 million for the satellite and $28.5 million for the Atlas Centaur launch vehicle.

(END OF GENERAL RELEASE. BACKGROUND INFORMATION FOLLOWS.)

SPACECRAFT DESCRIPTION

The INTELSAT IV-A spacecraft has an overall height of 7 meters (23 feet) and a diameter of 2.4 m (8 ft.). The height of the solar panel is 2.8 m (9 ft.). Liftoff weight is approximately 1,511 kilograms (3332 pounds), and in-orbit weight after apogoe motor firing is 825.5 kg (1,820 lb.).

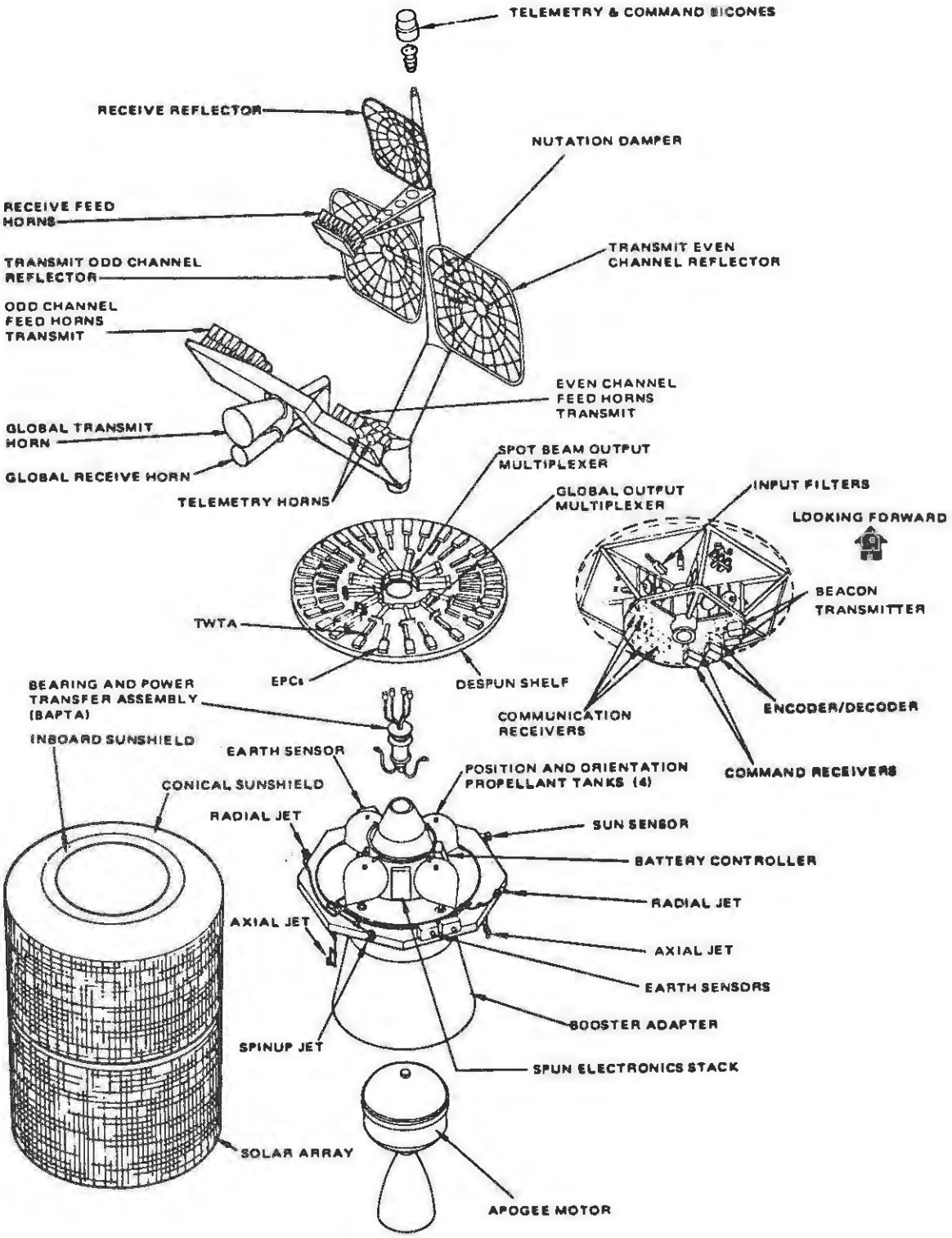
Although it has the same basic structural design as its predecessor, INTELSAT IV, the INTELSAT IV-A spacecraft incorporates new antenna technology to yield about 6,250 two-way voice circuits plus two television channels in the system configuration in which it will be used. This is two-thirds greater than the communications capacity of the INTELSAT IV series satellite. The increased capacity is made possible by a new antenna design which provides coverage of land masses on both sides of the Atlantic basin, using shaped beams. The eastern and western beams are sufficiently isolated to allow the frequency spectrum to be used twice--once in the east and once in the west direction--thus doubling the use of the frequency spectrum and increasing the communications capacity of the satellite.

ATLAS CENTAUR LAUNCH VEHICLE

The Atlas Centaur is NASA's standard launch vehicle for intermediate weight payloads. It is used for the launch of Earth orbital, Earth synchronous and interplanetary missions.

-more-

EXPLODED VIEW OF AN INTELSAT IV-A SATELLITE



-more-

Centaur was the nation's first high-energy, liquid-hydrogen/liquid-oxygen propelled rocket. Developed and launched under the direction of NASA's Lewis Research Center, it became operational in 1966 with the launch of Surveyor 1, the first U.S. spacecraft to soft-land on the Moon's surface.

Since that time, both the Atlas booster and Centaur second stage have undergone many improvements. At present, the vehicle combination can place 4,536 kg (10,000 lb.) in low Earth orbit, 1,882 kg (4,150 lb.) in a synchronous transfer orbit and 907 kg (2,000 lb.) on an interplanetary trajectory.

The Atlas Centaur, standing approximately 40.8 m (134 ft.) high, consists of an Atlas SLV-3D booster and Centaur D-1AR second stage. The Atlas booster develops 1,920 kilonewtons (431,300 lb.) of thrust at liftoff using two 822,920-newton (185,000-lb.) thrust booster engines, one 266,890-N (60,000-lb.) thrust sustainer engine and two vernier engines developing 2,890 N (650 lb.) thrust each. The two RL-10 engines on Centaur produce a total of 133,450 N (30,000 lb.) thrust. Both the Atlas and the Centaur are 3.048 m (10 ft.) in diameter.

Until early 1974, Centaur was used exclusively in combination with the Atlas booster. Now it is also used with

a Titan III booster to launch heavier payloads into Earth orbit and interplanetary trajectories.

The Atlas and the Centaur vehicles have been updated over the years. Thrust of the Atlas engines has been increased about 222,400 N (50,000 lb.) since its debut in the space program in the early 1960s.

The Centaur D-1AR has an integrated electronic system that performs a major role in checking itself and other vehicle systems before launch and also maintains control of major events after liftoff. The new Centaur system handles navigation and guidance tasks, controls pressurization and venting, propellant management, telemetry formats and transmission and initiates vehicle events. Most operational needs can be met by changing the computer software.

TYPICAL LAUNCH VEHICLE CHARACTERISTICS

Liftoff weight including spacecraft: 147,928 kg (326,119 lb.)

Liftoff height: 40,8 m (134 ft.)

Launch Complex: 36A

	Atlas Booster	Centaur Stage
Weight (with propellants)	130,317 kg (287,300 lb.)	17,781 kg (39,200 lb.)
Height	21.3 m (70 ft.)	19.5 m (64 ft. with payload fairing
Thrust	1,919 kn (431,300 lb.) at sea level	133,447 N (30,000 lb.) in vacuum
Propellants	Liquid oxygen and RP-1	Liquid oxygen Liquid hydrogen
Propulsion	MA-5 system two 822,921-N (185,000 lb.) thrust booster engines, one 266,893-N (60,000-lb.) thrust sustainer engine, two 2,891-N (650-lb.) thrust vernior engines.	Two 66,723-N (15,000-lb.) thrust RL-10 engines, 12 hydrogen peroxide thrusters.
Velocity	9,205 kmph (5,720 mph) at booster engine cutoff (BECO), 13,061 kmph (8,116 mph) at sustainer engine cutoff (SECO).	33,329 kmph (20,720 mph) at spacecraft separation.
Guidance	Preprogrammed profile through BECO, Switch to inertial guidance for sustainer phase.	Inertial guidance

-more-

Altitude

Range

Earth Relative Velocity

Program Time

Flight Events

LAUNCH PREPARATIONS

NASA's John F. Kennedy Space Center and its Expendable Vehicles Directorate play key roles in the preparation and launch of Atlas Centaur 43 carrying the INTELSAT IV-A spacecraft into orbit.

The INTELSAT IV-A spacecraft was received by Kennedy Center June 7 and underwent preliminary checkout in Hanger AM.

The Atlas and Centaur stages were erected on Pad A at Launch Complex 36 at Cape Canaveral Air Force Station in early June.

In addition to providing necessary spacecraft support services during final launch preparations, the Expendable Vehicles Directorate is responsible for mating the spacecraft and payload fairing with the Atlas Centaur rocket. Mating of the spacecraft with AC 43 was accomplished Sept. 21.

In providing launch operations, Kennedy Center handles scheduling of test milestones and review of data to assure that the launch vehicle has met all its test requirements and is ready for launch.

-more-

NASA TEAM

NASA Headquarters

John F. Yardley	Associate Administrator for Space Flight
Joseph B. Mahon	Director of Launch Vehicle and Propulsion Programs
F. R. Schmidt	Manager, Atlas Centaur

Lewis Research Center

Dr. Bernard Lubarsky	Acting Director
Dr. Seymour C. Himmel	Associate Director
Andrew J. Stofan	Director of Launch Vehicles
Richard E. Orzechowski	INTELSAT Mission Project Engineer

Kennedy Space Center

Lee R. Scherer	Director
Dr. Walter J. Kapryan	Director, Space Vehicles Operations
George F. Page	Director, Expendable Vehicles
John Gossett	Manager, Centaur Operations
C. A. Terhune	Chief Engineer, Atlas Centaur
James N. McKnight	Spacecraft Coordinator

INTELSAT TEAM

COMSAT

Dr. Joseph V. Charyk	President
Eugene T. Jilg	Assistant Vice President Engineering
Allen M. McCaskill	Manager, Launch Vehicles

Hughes Aircraft Co.

A. T. Owens	INTELSAT IV-A Project Manager

CONTRACTORS

General Dynamics/Convair San Diego, Calif.	Atlas Centaur launch vehicle
Honeywell Aerospace Division St. Petersburg, Fla.	Centaur guidance inertial measurement group
Pratt and Whitney West Palm Beach, Fla.	Centaur RL-10 engines
Teledyne Northridge, Calif.	Digital computer unit/PCM telemetry

-end

NASA News

National Aeronautics and
Space Administration

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

For Release:

A. H. Lavender
305 867-2468

October 20, 1977

RELEASE NO: KSC 162-77

ISEE LAUNCH TO CURB SATURDAY BOAT TRAFFIC

KENNEDY SPACE CENTER, Fla.--The scheduled launch of two International Sun Earth Explorer (ISEE) spacecraft atop a Delta rocket on Saturday, October 22, will impact some off-shore recreational activities in the Kennedy Space Center/Cape Canaveral Air Force Station area.

The ISEE launch is scheduled during a window extending from 9:53 and 10:12 a.m. Eastern Daylight Time.

Boaters are requested to remain free of a large danger area in the vicinity of Cape Canaveral from 8 a.m. until after liftoff. Because of the short launch window, a boat in the danger zone could force postponement of the launch.

The danger zone extends into the Atlantic Ocean for a distance of 30 miles from the center of the Port Canaveral channel, north for a distance of seven miles, then due west back to the Atlantic shoreline in the northern section of Cape Canaveral AFS.

The danger area is under continuous surveillance by the Air Force and Coast Guard while a launch countdown is underway and their job of keeping boat traffic free of the zone is made easier if boaters keep abreast of launch preparations.

Those within the area at liftoff could be exposed to falling debris, toxic rocket propellants and other hazards if it becomes necessary for the range safety officer to abort a mission and destroy the space vehicle. Thus, freedom of the zone from boat traffic is a mandatory launch requirement.

# # #

NASA News

National Aeronautics and
Space Administration

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

A. H. Lavender
305 867-2468

For Release:
October 13, 1977

RELEASE NO: KSC 161-77

NOTICE TO EDITORS/NEWS DIRECTORS

ISEE LAUNCH TENTATIVELY SCHEDULED FOR OCTOBER 19

KENNEDY SPACE CENTER, Fla.--The launch of International Sun Earth Explorer-A and -B (ISEE-A and -B) spacecraft on a Delta rocket is tentatively scheduled October 19.

The launch from Complex 17, Cape Canaveral, is scheduled during a launch window extending from 10:04 to 10:24 a.m. EDT.

A prelaunch news conference on the ISEE-A and -B missions is tentatively scheduled at the E & O Building, Cape Canaveral AFS, at 11:00 a.m., October 18. Badged news media representatives may proceed directly to the E & O Building via Cape Canaveral AFS Gate 1 or KSC Gate 2 or 3. Others will be provided transportation from the KSC Public Information Office in the Headquarters Building, with a vehicle departing at 10:30 a.m.

For launch coverage, badged media representatives may proceed directly to Press Site 1. Others will be badged at Frank Wolfe's Beachside Motel, Cocoa Beach, and will depart for the press site in convoy at 8:30 a.m.

Firm scheduling of the launch, subject to approval by a Board of Inquiry investigating the failure of Delta 134 on September 13, may be made as late as Monday, October 17. Information on firm scheduling of the launch will be available at the Public Information Office, phone 305 867-2468, and on the Public Information Codaphone, phone 305 867-2525.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Darleen Hunt
305 867-2468

October 12, 1977

RELEASE NO: KSC 160-77

MALAGA TO SERVE ON FEDERAL STUDY GROUP

KENNEDY SPACE CENTER, Fla.--Joseph F. Malaga, KSC's Director of Administration and Management Operations, has been appointed to direct a presidentially-mandated reorganization study of federal administrative services. Malaga was named for the job by Jay Solomon, Administrator of General Services, and James McIntyre, Acting Director, Office of Management and Budget. Solomon is chairman of a senior steering group given the task to conduct the study which is to be carried out as part of the President's Reorganization Project.

The objective of the project is to improve the management and delivery of administrative services to federal agencies. It will assess the roles of GSA and other agencies in the provision of services related to real and personal property, transportation, data processing, telecommunications and records management.

The steering group will be responsible for establishing objectives, approving study plans and overseeing the project. Solomon said the project staff will be recruited from federal agencies, business and industry. Malaga will serve as Executive Director of the Administrative Services Project with the responsibility to oversee day-to-day management of the study and the project staff.

His new assignment is scheduled to last six months, ending on March 31, 1978, at which time Malaga says "I definitely plan to return to KSC." He reported to his new job on October 3. His wife, Sandy, will be joining him in Washington.

GSA Administrator Solomon said "Joe Malaga brings to this important position an extraordinary record of public service. His 26 years experience in federal administrative positions, the last 15 with NASA, gives him a deep understanding of the problems of delivery and management of federal support services."

-more-

Harrison Wellford, head of the President's Reorganization Project, cited Malaga as "an outstanding manager who understands not only the complexities of administrative support needed by federal agencies, but the resource limitations imposed through the federal budget process as well. It is within this framework that the project will be conducted."

Malaga was appointed to his KSC position in July 1975. He supervises the administrative management activities at the spaceport, including resources management, personnel, labor relations, procurement, organization, management systems and base support services. He joined NASA in 1962 as resources planning specialist for the manned space flight program and subsequently served as the NASA Director of Resources Analysis and as Assistant NASA Administrator for Institutional Management before assuming his present duties at KSC.

During this period, he also served in a temporary capacity as Assistant Director for Operations of the Cost of Living Council, and was instrumental in helping to set up the Economic Stabilization organizations and compliance program. Prior to joining NASA, Malaga held a series of responsible positions in the Department of Defense where he received numerous citations and performance awards for his work with missile programs and industrially-funded, commercial-type activities. He is a two-time recipient of NASA's exceptional service medal, and also received the William A. Jump Memorial Foundation Meritorious Award for exceptional achievement in public administration.

During Malaga's absence from the Center, William M. Lohse will serve as Acting Director of Administration and Management Operations. Lohse also wears the hat of Director, Procurement, Supply and Transportation for KSC.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Mark Hess
305 867-2468

October 6, 1977

RELEASE NO: KSC 159-77

KSC AWARDS FT. LAUDERDALE FIRM SUPPLEMENTAL CONTRACTS

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded supplemental contracts totalling $2,500,345 to Modular Computer Systems, Inc., Ft. Lauderdale, Fla., for additional minicomputers and related equipment for further development of the Space Shuttle Launch Processing System (LPS).

The awards are fixed price, indefinite quantity contracts. The work will be performed at KSC and at MODCOMP's plant in Ft. Lauderdale.

One award, for $132,269, is for peripheral devices, including tape units, card readers and line printers, to be used on the minicomputer systems.

The second award, for $2,368,076, is for 16 minicomputers and peripheral system configurations with options for an additional 21. Some of this hardware will also be used for the Cargo Integration Test Equipment Electronic/Electrical Project, a test system that will check out Space Shuttle payloads before they are loaded into the Shuttle Orbiter bay.

Including the supplemental awards, total value of the contract is $10,842,210.

The short two-week turnaround time between landing of the Shuttle Orbiter and its subsequent launch requires a speedy method of servicing and refurbishing the Space Shuttle for its next flight. With the LPS, the Space Shuttle's main components can be checked out automatically from its arrival at the Spaceport until launch, and then from landing to relaunch.

Kennedy Space Center has been designated the prime launch and recovery site for the Space Shuttle. The first manned orbital flights are scheduled to be launched from here in March, 1979.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Mark Hess
305 867-2468

October 6, 1977

RELEASE NO: KSC 158-77

OCALA FIRM AWARDED SPACEPORT CONTRACT

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a $51,744 contract to Emergency One, Inc., Ocala, for the purchase of two quick attack rescue pumpers to be used by KSC's Fire Services to support all Space Shuttle launch and landing operations.

The small attack trucks will also be used to support any first alarm emergency situations occurring at the Spaceport. Smaller than standard firetrucks, the quick response vehicles are better able to maneuver in traffic and use standard truck parts, thus reducing maintenance costs.

Kennedy Space Center has been designated the prime launch and recovery site for the Space Shuttle which will provide routine and economical access to space. The first manned orbital flights of the reuseable Space Shuttle are scheduled to be launched from here in the spring of 1979.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Hugh W. Harris
305 867-2468

November 2, 1977

RELEASE NO: KSC 157-7-77

AC-43 REVIEW BOARD STATUS REPORT

KENNEDY SPACE CENTER, Fla.--The Atlas-Centaur 43 Review Board reported it was close to the end of its investigation this week following a status meeting on Monday. Dr. Milton Silveira, Board Chairman, said a few details need to be consolidated and a final report and recommendations written. He expects the Board will complete its report to Associate Administrator John Yardley about the end of the month in time to prepare for a launch of another INTELSAT IVA communications satellite with an Atlas Centaur rocket (AC-46) December 8.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

October 26, 1977

Hugh W. Harris
305 867-2468

RELEASE NO: KSC 157-6-77

AC-43 REVIEW BOARD STATUS REPORT

KENNEDY SPACE CENTER, Fla.--The Atlas Centaur 43 Review Board is concentrating its efforts to isolate the cause of the failure of the last Intelsat IVA launch in four areas. Committees have been established to: 1. Perform recovered hardware tests and analysis; 2. perform analysis using flight data; 3. determine all possible leakage and heat sources; and 4. conduct detailed examinations of recovered hardware at Rocketdyne. The Board will meet formally October 31 for a status meeting in San Diego.

The next launch of an Atlas Centaur was originally scheduled for November 10 but has been postponed until a final determination of the failure of AC-43 is made by the Review Board, and any necessary modifications made to the launch vehicle.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Hugh W. Harris
305 867-2468

October 18, 1977

RELEASE NO: KSC 157-5-77

AC-43 REVIEW BOARD STATUS REPORT

KENNEDY SPACE CENTER, Fla.--The Atlas Centaur 43 Review Board is meeting at General Dynamics Convair in San Diego this week. Dr. Milton Silveira, Committee Chairman, reports that 95% of the hardware the board is interested in has been recovered including the booster and sustainer engine group. The hardware was flown to San Diego from KSC on Sunday where it is being examined. Engineers will try to piece together the entire thrust section of the Atlas. Engine parts will be disassembled and tested at Rocketdyne. Although hampered by rough seas, salvage operations at KSC are continuing.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Hugh W. Harris
305 867-2468

October 11, 1977

RELEASE NO: KSC 157-4-77

AC-43 REVIEW BOARD STATUS REPORT

KENNEDY SPACE CENTER, Fla.--The Atlas Centaur 43 Review Board will have its next formal meeting at the General Dynamics Convair plant in San Diego, Monday October 17, in order to provide additional time for contractor and NASA teams to conduct tests and develop additional data from the flight.

Salvage operations are continuing at the Kennedy Space Center with the search concentrating on finding Atlas Engine components.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Hugh Harris
305 867-2468

October 7, 1977

RELEASE NO: KSC 157-3-77

AC-43 REVIEW BOARD STATUS REPORT

KENNEDY SPACE CENTER, Fla.--The Atlas Centaur 43 Flight Review Team has been meeting at General Dynamics Convair Division, San Diego and reviewed all flight data available at this time. In reviewing the data, it appears that shortly after vehicle lift off, ambient temperature measurements in the aft compartment of the Atlas vehicle started to increase. Exact cause of the temperature increases is not known at this time, but may have been caused by a hot gas leak. The temperature increases continued until approximately 36 sec. when a fire started which eventually caused the vehicle to lose control and destroy itself.

The Flight Review Team with the vehicle contractors and the Lewis Research Center will continue to review data and perform analysis in an effort to determine the exact cause of the flight failure.

# # #

NASA News

National Aeronautics and
Space Administration

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

RTQ ONLY

For Release:

Hugh Harris
305 867-2468

October 6, 1977

RELEASE NO: KSC 157-2-77

AC-43 REVIEW BOARD STATUS REPORT

KENNEDY SPACE CENTER, Fla.--The AC-43 Review Board is meeting at General Dynamics Convair plant at San Diego today. Board Chairman Milton A. Silveira said that the day would be devoted to hearing reports on preliminary findings on the failure from NASA project and contractor teams.

Salvage operations at the Kennedy Space Center on Wednesday were curtailed by high winds and choppy ocean conditions.

# # #

NASA News

National Aeronautics and
Space Administration

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

Hugh Harris
305 867-2468

For Release:
October 4, 1977

RELEASE NO: KSC 157-1-77

AC-43 REVIEW BOARD STATUS REPORT

KENNEDY SPACE CENTER, Fla.--The panel investigating the failure of an Atlas Centaur to launch an Intelsat IV-A commercial communications satellite September 29 is having its first formal meeting at the General Dynamics Convair plant in San Diego, California today.

Board Chairman Milton A. Silveira said that the day primarily will be devoted to briefings on the Atlas and Centaur systems.

Several appointments to the Board were announced by Silveira. Serving as regular board members will be Scott H. Simpkinson, Manager for Flight Safety, Space Shuttle Program Office, Johnson Space Center, Houston Texas; Lt. Col. Robert E. Christian III, Asst. Deputy Director, Launch Systems Integration, SAMSO; Major Archie G. Allen, Space Propulsions Systems Manager, SAMSO; and Dr. Robert E. Payne, Group Director, Aerospace Corp., Allen M. McCaskill, Manager, Launch Vehicles, COMSAT will serve as an observor for Intelsat. (A complete list of the Board is attached.)

Salvage operations at Cape Canaveral were suspended during the day Tuesday because of rough seas.

# # #

BOARD MEMBERS

Milton A. Silveira
Deputy Manager
Space Shuttle Orbiter Project Office
NASA's Johnson Space Center
Houston, Texas

George T. Sasseen
Director, Shuttle Engineering
Kennedy Space Center, FL

Thomas P. Isbell
Deputy Director
Systems Analysis and Integration Laboratory
Science and Engineering Directorate
Marshall Space Flight Center
Huntsville, AL

Edward A. Rothenberg
Office of Flight Assurance
Systems Review Office
Goddard Space Flight Center
Greenbelt, MD

Joseph A. Ziemanski
Manager, Engine Component Improvement Project Office
Lewis Research Center
Cleveland, OH

Charles H. King, Jr.
Director, Systems Engineering and Logistics
Space Transportation System Operations
NASA Headquarters
Washington, DC

Scott H. Simpkinson
Manager for Flight Safety
Space Shuttle Program Office
Johnson Space Center
Houston, Texas

Lt. Col. Robert E. Christian III
Asst. Deputy Director
Launch Systems Integration, SAMSO

Major Archie G. Allen
Space Propulsions Systems Manager, SAMSO

Dr. Robert E. Payne
Group Director, Aerospace Corporation

Allen M. McCaskill
Manager, Launch Vehicles, COMSAT (Observor)

NASA News

National Aeronautics and
Space Administration

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

Mark Hess
305 867-2468

For Release:
October 3, 1977

RELEASE NO: KSC 156-77

IBM TO BE AWARDED SPACEPORT CONTRACT

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center will award a $3,203,666 contract to International Business Machines Corporation for the development of a test system that will check out Space Shuttle cargoes for their compatibility with the Shuttle Orbiter before they are loaded into the Orbiter's payload bay.

Called CITE, for Cargo Integration Test Equipment, the system will simulate exactly the Orbiter's electrical and electronic environment. CITE will stimulate the payloads, monitor their responses, and record the data. The payload, not knowing whether it is actually loaded to the Orbiter bay or simply hooked up to the CITE system, will behave the same as it would during actual flight.

This capability is needed because of the fast turn-around times planned for Shuttle missions. Being able to have payloads all ready to plug into the Orbiter without extensive testing after it is aboard is necessary to staying on schedule.

CITE operations will be conducted from either the Spaceport Assembly and Encapsulation Facility #1 (SAEF #1) or the Operations and Checkout Building (O&C). The CITE equipment will be mobile so it can be used in SAEF #1 to checkout cargoes in a vertical position and the O&C building to test horizontal payloads.

The first manned orbital flights of the Space Shuttle are scheduled to be launched from here beginning in March, 1979. Because there is no payload on the first Orbital Test Flight, the CITE system will not be operational until the second flight.

Included in the $3,203,666 contract is an option for increasing the capabilities of the CITE project to provide a complete system in both SAEF #1 and the O&C Building.

The cost plus fixed fee contract covers the period between October 1, 1977, and July 1, 1980.

# # #

NASA News

National Aeronautics and
Space Administration

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

A. H. Lavender
305 867-2468

For Release:
September 29, 1977

RELEASE NO: KSC 155-77

ENERGY EXHIBIT SCHEDULED AT KSC VISITORS CENTER

KENNEDY SPACE CENTER, Fla.--Ideas the Energy Research and Development Administration are exploring to help solve the nation's energy problems are the subject of a special exhibit to be displayed at the Kennedy Space Center Visitors Center from October 1 through 23.

The exhibit, titled "Energy in Your Future," illustrates ERDA programs for developing new and improved methods for electrical power generation, plans for new types of engines and electric cars and means for achieving energy conservation.

Most of our energy today comes from fossil fuels, such as oil and gas, which are rapidly dwindling as they are consumed for electrical power generation and transportation.

The exhibit explains that for electrical power generation, ERDA scientists are testing more efficient ways to burn fossil fuels as well as studying fusion, solar energy and breeder reactors.

To preserve precious fuel resources in transportation, the exhibit illustrates that cars of the future may have turbine engines instead of piston engines. Turbines spin instead of moving back and forth and can run smoother and cleaner on cheaper fuel.

Electric cars, which run on batteries and can be plugged in overnight for recharging, may become practical in the future too. ERDA scientists are developing lithium batteries which would increase the range of electric autos.

The exhibit also stresses that a key part of the ERDA energy plan to preserve fossil fuel is conservation. ERDA researchers are exploring hundreds of conservation avenues--from more efficient appliances to special year-round energy systems that save energy from one season for use in another season.

"Energy in Your Future" is part of ERDA's eastern domestic exhibits program which includes the American Museum of Atomic

-more-

Energy in Oak Ridge, Tennessee. These programs are operated for ERDA by Oak Ridge Associated Universities.

ERDA's western programs are operated by the Northwest College and University Association for Science (NORCUS) of Richland, Washington.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release: IMMEDIATE

PRESS KIT

PROJECT: INTELSAT IV-A F5

RELEASE NO: 154-77

CONTENTS

NASA News

National Aeronautics and
Space Administration

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

David Garrett
Headquarters, Washington, DC
(Phone: 202/755-3090)

Dick McCormack
Headquarters, Washington, DC
(Phone: 202/755-8487)

Marilyn Edwards
Lewis Research Center, Cleveland, Ohio
(Phone: 216/433-4000 Ext. 415)

For Release: IMMEDIATE

FOURTH INTELSAT IV-A LAUNCH SCHEDULED

The fourth INTELSAT IV-A commercial communications satellite will be launched by NASA aboard an Atlas Centaur rocket from Kennedy Space Center, Fla., no earlier than September 29, 1977.

The satellite, which weighs 1511 kilograms (3332 pounds) at launch, is intended for service in the Atlantic Ocean region.

INTELSAT IV-A F5 satellite will be placed in geostationary orbit over the Indian Ocean at 65 degrees East longitude, where it will provide international communications services to some 40 countries in the Indian Ocean regions. The satellite has a seven year design life and the capacity to relay more than 6000 simultaneous telephone calls and two television programs.

-more-

The INTELSAT satellites are owned by the International Telecommunications Satellite Organization (INTELSAT). The Communications Satellite Corp. (COMSAT), the United States member, is also the management services contractor for the satellite system. NASA is reimbursed for all costs of the Atlas Centaur and launch services by COMSAT on behalf of INTELSAT, under provisions of a launch services agreement.

The Atlas Centaur 43 launch vehicle is expected to place the INTELSAT IV-A in a highly elliptical orbit of 548 by 35,940 kilometers (341 by 22,332 miles). After reorientation of the satellite, a solid propellant rocket motor aboard the spacecraft will be fired to circularize the orbit at synchronous altitude 35,940 km (22,332 mi.) over the equator. At that altitude, because the speed of the spacecraft in orbit matches the rotational speed of the Earth, the satellite remains in position over one spot.

The launch of INTELSAT spacecraft aboard Atlas Centaur rockets requires the coordinated efforts of a large government and industry team. NASA's Lewis Research Center, Cleveland, Ohio, has management responsibility for the Atlas Centaur development and operation. NASA's Kennedy Space Center, Fla., is assigned vehicle checkout and launch responsibility once the vehicle reaches Cape Canaveral.

The INTELSAT IV-A satellites, built by Hughes Aircraft Co., El Segundo, Calif., are 6.98 meters tall (about 23 feet) and weigh 1511 kg (about 3332 lb.) at liftoff and 825.5 kg (1,820 lb.) after apogee motor firing.

The INTELSAT IV-A program represents an investment by 98 nations exceeding $300 million (U.S.). Each launch costs approximately $52 million -- $23.5 million for the satellite and $28.5 million for the Atlas Centaur launch vehicle.

(END OF GENERAL RELEASE. BACKGROUND INFORMATION FOLLOWS.)

SPACECRAFT DESCRIPTION

The INTELSAT IV-A spacecraft has an overall height of 7 meters (23 feet) and a diameter of 2.4 m (8 ft.). The height of the solar panel is 2.8 m (9 ft.). Liftoff weight is approximately 1,511 kilograms (3332 pounds), and in-orbit weight after apogoe motor firing is 825.5 kg (1,820 lb.).

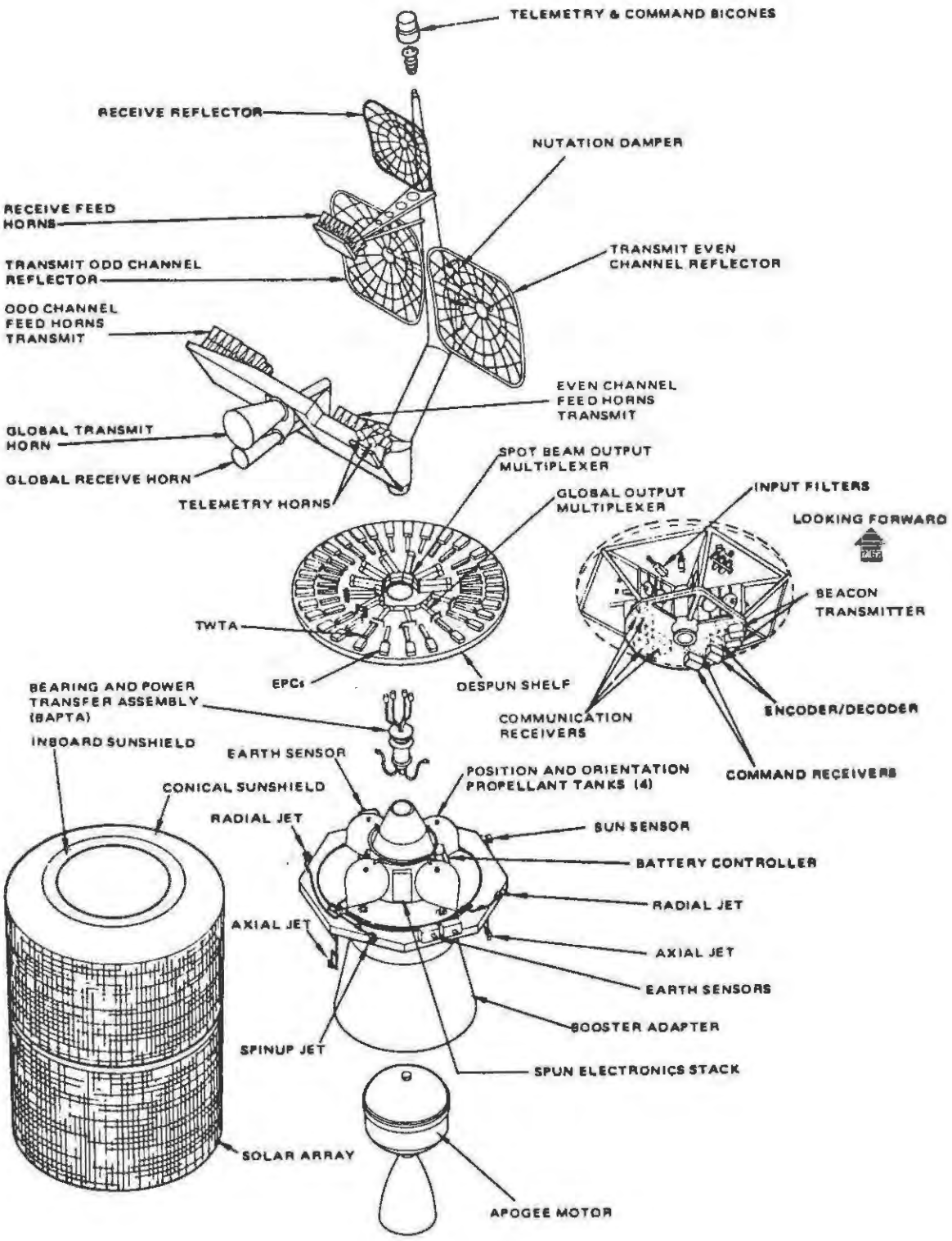
Although it has the same basic structural design as its predecessor, INTELSAT IV, the INTELSAT IV-A spacecraft incorporates new antenna technology to yield about 6,250 two-way voice circuits plus two television channels in the system configuration in which it will be used. This is two-thirds greater than the communications capacity of the INTELSAT IV series satellite. The increased capacity is made possible by a new antenna design which provides coverage of land masses on both sides of the Atlantic basin, using shaped beams. The eastern and western beams are sufficiently isolated to allow the frequency spectrum to be used twice--once in the east and once in the west direction--thus doubling the use of the frequency spectrum and increasing the communications capacity of the satellite.

ATLAS CENTAUR LAUNCH VEHICLE

The Atlas Centaur is NASA's standard launch vehicle for intermediate weight payloads. It is used for the launch of Earth orbital, Earth synchronous and interplanetary missions.

-more-

EXPLODED VIEW OF AN INTELSAT IV-A SATELLITE



-more-

SPACECRAFT DESCRIPTION

The INTELSAT IV-A spacecraft has an overall height of 7 meters (23 feet) and a diameter of 2.4 m (8 ft.). The height of the solar panel is 2.8 m (9 ft.). Liftoff weight is approximately 1,515 kilograms (3,340 pounds), and in-orbit weight after apogee motor firing is 825.5 kg (1,820 lb.).

Although it has the same basic structural design as its predecessor, the INTELSAT IV-A spacecraft incorporates new antenna technology to yield about 6,250 two-way voice circuits plus two television channels in the system configuration in which it will be used. This is two-thirds greater than the communications capacity of the INTELSAT IV series satellite. The increased capacity is made possible by a new antenna design which provides coverage of land masses on both sides of the Atlantic basin, using shaped beams. The eastern and western beams are sufficiently isolated to allow the frequency spectrum to be used twice -- once in the east and once in the west direction -- thus doubling the use of the frequency spectrum and increasing the communications capacity of the satellite.

Centaur was the nation's first high-energy, liquid-hydrogen/liquid-oxygen propelled rocket. Developed and launched under the direction of NASA's Lewis Research Center, it became operational in 1966 with the launch of Surveyor 1, the first U.S. spacecraft to soft-land on the Moon's surface.

Since that time, both the Atlas booster and Centaur second stage have undergone many improvements. At present, the vehicle combination can place 4,536 kg (10,000 lb.) in low Earth orbit, 1,882 kg (4,150 lb.) in a synchronous transfer orbit and 907 kg (2,000 lb.) on an interplanetary trajectory.

The Atlas Centaur, standing approximately 40.8 m (134 ft.) high, consists of an Atlas SLV-3D booster and Centaur D-1AR second stage. The Atlas booster develops 1,920 kilonewtons (431,300 lb.) of thrust at liftoff using two 822,920-newton (185,000-lb.) thrust booster engines, one 266,890-N (60,000-lb.) thrust sustainer engine and two vernier engines developing 2,890 N (650 lb.) thrust each. The two RL-10 engines on Centaur produce a total of 133,450 N (30,000 lb.) thrust. Both the Atlas and the Centaur are 3.048 m (10 ft.) in diameter.

Until early 1974, Centaur was used exclusively in combination with the Atlas booster. Now it is also used with

a Titan III booster to launch heavier payloads into Earth orbit and interplanetary trajectories.

The Atlas and the Centaur vehicles have been updated over the years. Thrust of the Atlas engines has been increased about 222,400 N (50,000 lb.) since its debut in the space program in the early 1960s.

The Centaur D-1AR has an integrated electronic system that performs a major role in checking itself and other vehicle systems before launch and also maintains control of major events after liftoff. The new Centaur system handles navigation and guidance tasks, controls pressurization and venting, propellant management, telemetry formats and transmission and initiates vehicle events. Most operational needs can be met by changing the computer software.

TYPICAL LAUNCH VEHICLE CHARACTERISTICS

Liftoff weight including spacecraft: 147,928 kg (326,119 lb.)

Liftoff height: 40.8 m (134 ft.)

Launch Complex: 36A

	Atlas Booster	Centaur Stage
Weight (with propellants)	130,317 kg (287,300 lb.)	17,781 kg (39,200 lb.)
Height	21.3 m (70 ft.)	19.5 m (64 ft. with payload fairing
Thrust	1,919 kn (431,300 lb.) at sea level	133,447 N (30,000 lb.) in vacuum
Propellants	Liquid oxygen and RP-1	Liquid oxygen Liquid hydrogen
Propulsion	MA-5 system two 822,921-N (185,000 lb.) thrust booster engines, one 266,893-N (60,000-lb.) thrust sustainer engine, two 2,891-N (650-lb.) thrust vernier engines.	Two 66,723-N (15,000-lb.) thrust RL-10 engines, 12 hydrogen peroxide thrusters.
Velocity	9,205 kmph (5,720 mph) at booster engine cutoff (BECO), 13,061 kmph (8,116 mph) at sustainer engine cutoff (SECO).	33,329 kmph (20,720 mph) at spacecraft separation.
Guidance	Preprogrammed profile through BECO, Switch to inertial guidance for sustainer phase.	Inertial guidance

-more-

LAUNCH PREPARATIONS

NASA's John F. Kennedy Space Center and its Expendable Vehicles Directorate play key roles in the preparation and launch of Atlas Centaur 43 carrying the INTELSAT IV-A spacecraft into orbit.

The INTELSAT IV-A spacecraft was received by Kennedy Center June 7 and underwent preliminary checkout in Hanger AM.

The Atlas and Centaur stages were erected on Pad A at Launch Complex 36 at Cape Canaveral Air Force Station in early June.

In addition to providing necessary spacecraft support services during final launch preparations, the Expendable Vehicles Directorate is responsible for mating the spacecraft and payload fairing with the Atlas Centaur rocket. Mating of the spacecraft with AC 43 was accomplished Sept. 21.

In providing launch operations, Kennedy Center handles scheduling of test milestones and review of data to assure that the launch vehicle has met all its test requirements and is ready for launch.

-more-

All launch vehicle and pad operations during the launch countdown are conducted from the blockhouse at Complex 36 by a joint government-industry team.

TYPICAL LAUNCH SEQUENCE FOR INTELSAT IV-A

Flight Events	Program Time	Earth Relative Velocity		Range		Altitude	
	Seconds	KM/HR	MPH	Kilometers/Miles		Kilometers/Miles	
Liftoff	0	0	0	0	0	0	0
BECO	140.4	9,205	5,720	82.2	51.1	57.8	36.0
Booster jettison	143.5	9,306	5,782	89.5	55.6	61.0	37.9
Insulation panel jettison	185.4	10,443	6,439	194.8	121.1	98.7	61.4
SECO/VECO	242.5	13,061	8,116	386.5	240.2	144.9	90.1
Centaur separation	249.5	13,059	8,114	393.4	244.4	146.3	90.9
Centaur MES (1)	259.0	12,947	8,076	426.4	265.0	152.3	94.6
Nose fairing jettison	271.0	13,205	8,205	461.6	291.1	159.2	98.9
Centaur MECO (1)	620.2	28,029	17,416	2,278.0	1,415.5	189.2	117.5
Centaur MES (2)	1,493.0	26,531	16,490	8,611.8	5,351.1	558.9	347.3
Centaur MECO (2)	1,529.0	33,862	21,041	9,256.9	5,751.9	627.5	389.3
Spacecraft separation	1,714.0	33,329	20,710	10,371.2	6,444.4	806.9	501.4
Reorient Centaur	1,719.0						
Start blowdown	1,824.0						
End blowdown	2,134.0						

-more-

NASA TEAM

NASA Headquarters

John F. Yardley	Associate Administrator for Space Flight
Joseph B. Mahon	Director of Launch Vehicle and Propulsion Programs
F. R. Schmidt	Manager, Atlas Centaur

Lewis Research Center

Dr. Bernard Lubarsky	Acting Director
Dr. Seymour C. Himmel	Associate Director
Andrew J. Stofan	Director of Launch Vehicles
Richard E. Orzechowski	INTELSAT Mission Project Engineer

Kennedy Space Center

Lee R. Scherer	Director
Dr. Walter J. Kapryan	Director, Space Vehicles Operations
George F. Page	Director, Expendable Vehicles
John Gossett	Manager, Centaur Operations
C. A. Terhune	Chief Engineer, Atlas Centaur
James N. McKnight	Spacecraft Coordinator

INTELSAT TEAM

COMSAT

Dr. Joseph V. Charyk	President
Eugene T. Jilg	Assistant Vice President Engineering
Allen M. McCaskill	Manager, Launch Vehicles

Hughes Aircraft Co.

A. T. Owens	INTELSAT IV-A Project Manager

CONTRACTORS

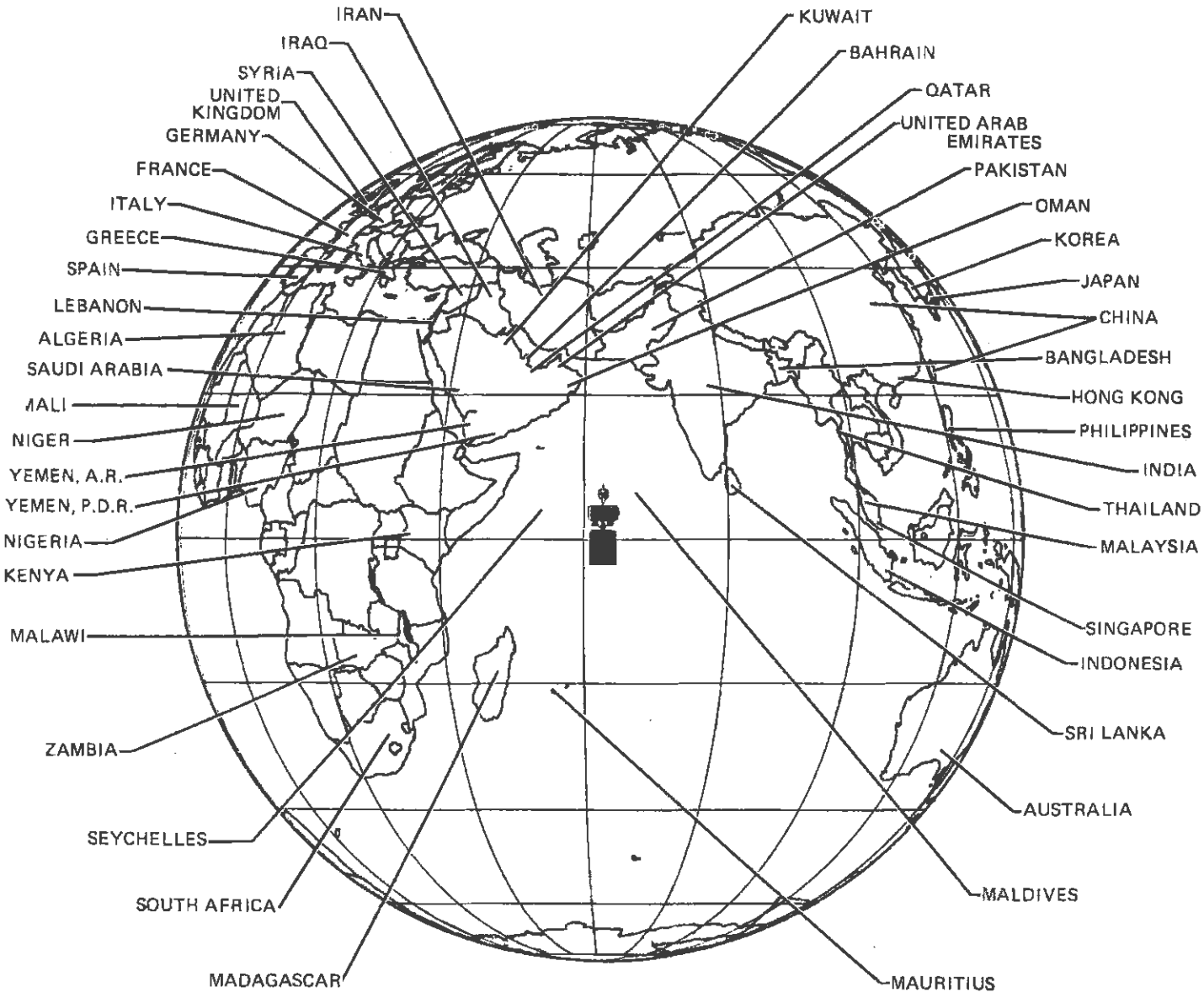
General Dynamics/Convair San Diego, Calif.	Atlas Centaur launch vehicle
Honeywell Aerospace Division St. Petersburg, Fla.	Centaur guidance inertial measurement group
Pratt and Whitney West Palm Beach, Fla.	Centaur RL-10 engines
Teledyne Northridge, Calif.	Digital computer unit/PCM telemetry

-end

INTELSAT IV-A COVERAGE FOR INDIAN OCEAN REGION

COUVERTURE DU SATELLITE INTELSAT IV-A
POUR LA REGION DE L'OCEAN INDIEN

COBERTURA DEL SATELITE INTELSAT IV-A
PARA LA REGION DEL OCEANO INDICO



NASA News

National Aeronautics and
Space Administration

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

For Release:

Dick Young
305 867-2468

September 26, 1977

RELEASE NO: KSC 153-77

NOTICE TO EDITORS/NEWS DIRECTORS

INTELSAT IV-A LAUNCH SCHEDULED FOR SEPTEMBER 29

KENNEDY SPACE CENTER, Fla.--Launch of the third in a series of high capacity Intelsat IV-A communications satellites is scheduled for Thursday, September 29. Liftoff is scheduled during a window extending from 9:03 to 9:19 p.m. EDT.

A prelaunch news conference on the Intelsat IV-A mission will be held in the E&O Building Conference Room, Cape Canaveral AFS, at 11 a.m. Wednesday, September 28. Badged media representatives may proceed directly to the E&O Building. Others will be provided transportation from the KSC Headquarters Building, with a sedan leaving at 10:30 a.m.

Badged media representatives may proceed directly to Press Site 1 on the evening of the launch. Others will be badged at Frank Wolfe's Beachside Motel, Cocoa Beach. A convoy to the press site will leave the motel at 7:30 p.m., with a stop at the Cape Canaveral AFS Gate 1 Pass and Identification Building at 7:45 p.m.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Mark Hess
305 867-2468

September 23, 1977

RELEASE NO: KSC 152-77

MERRITT ISLAND FIRM AWARDED SPACEPORT CONTRACT

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a contract for $43,900 to Accola Electric Company of Merritt Island, Fla.

The fixed price contract, one set aside for small business firms, is for the replacement of 34,150 feet of cable that supplies backup electrical power to several areas of the spaceport. Work is to be completed in 45 calendar days.

The Kennedy Space Center is NASA's major launch base and has been designated the prime launch and recovery site for the reusable Space Shuttle scheduled to begin manned orbital flights from here in 1979.

# # #

NASA News

National Aeronautics and
Space Administration

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

Dick Young
305 867-2468

For Release:
September 26, 1977

RELEASE NO: KSC 151-77

COCOA FIRM AWARDED CONTRACT FOR EMERGENCY POWER PLANT

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a contract for $1,777,000 to the W. & J. Construction Corporation, Cocoa, Fla.

The contract is for construction of an emergency power system for Space Shuttle Launch Complex 39.

The project includes construction of a 93 by 58 foot building adjacent to the Florida Power and Light Co. sub-station to the west of the Vehicle Assembly Building.

The building will house five government-furnished diesel generating units capable of providing up to five megawatts of power to the launch pads, launch control center and other Complex 39 facilities in the event of a commercial power failure during the critical hours of a countdown.

The contract--awarded to a small business firm--is to be completed within 330 calendar days.

KSC has been designated the prime launch and recovery site for the reusable Space Shuttle which is to be launched from here beginning in the spring of 1979.

Modification of Complex 39--built in the early 1960s for the Apollo lunar landing expeditions--for Space Shuttle needs is well underway with many phases of the work completed or in their final phases.

# # #

NASA Fact Sheet

National Aeronautics and
Space Administration

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

For Release:
KSC 150-77
September, 1977

KSC'S SHUTTLE RUNWAY AMONG WORLD'S LARGEST

The runway at KSC's Space Shuttle Orbiter Landing Facility is among the world's most impressive in terms of length and width.

The runway is 15,000 feet in length plus a 1,000-foot overrun at each end. Width is 300 feet.

A paved runway at the Dryden Flight Research Center at Edwards AFB, California, matches the orbiter runway in length and width and has an overrun of 1,800 feet extending into a dry lake bed.

Built on a northwest-southeast alignment to the northwest of the 525-foot-tall Vehicle Assembly Building, the KSC runway is 16 inches thick in the center with the thickness diminishing to 15 inches on the sides. Underlaying the concrete paving--completed in late October, 1975--is a six-inch-thick base of soil cement.

The Orbiters will be guided automatically to safe landings by a sophisticated Microwave Scanning Beam Landing System. Ground-based components of the system located in small shelters off the west side of the runway provide final guidance information.

System components on the far end of the runway send signals which sweep 15 degrees on each side of the landing path with directional and distance data. Signals from a companion shelter near the touchdown point sweep the landing path to provide elevation data up to 30 degrees. Equipment onboard the Oribters receives these data and make any needed adjustments to the glide path. The glide path must be perfect as the Orbiters are unpowered and can not turn around for another approach.

Approach lights point to the runway centerline and the threshold and edge lights outline the field as for a commercial runway.

-more-

The Orbiter's wheels will run across one-quarter inch grooves which cross the runway every one and 1/8 inches (8,450 miles of grooving). The grooves, together with the slope of the runway--24 inches from centerline to edge--provide rapid drain off of any water from a heavy Florida rain, preventing hydroplaning.

In general terms, the KSC runway is roughly twice as long and twice as wide as run-of-the-mill commercial landing facilities, although a number of domestic and foreign airports have landing strips far exceeding average dimensions.

For comparison purposes, here are the lengths and widths of the longest runways at a number of domestic and foreign airports:

UNITED STATES

Airport	Length	Width
Atlanta Hartsfield Int'l	10,000 feet	150 feet
Baltimore-Washington Int'l	9,500	150
Boston/Logan	10,080	150
Greater Cincinnati	9,500	150
Cleveland Hopkins Int'l	9,000	150
Dallas/Fort Worth Int'l	11,387	200
Detroit Metropolitan	10,500	150
Houston Intercontinental	9,400	150
Jacksonville (Fla.) Int'l	8,000	150
JFK International - New York	14,572	150
JFK, Melbourne, Fla.	9,500	150
Kansas City Int'l	10,801	150
LaGuardia (New York)	7,000	150
Las Vegas-McCarran Int'l	12,636	150
Los Angeles Int'l	12,090	150
Miami International	10,500	200
Newark International	9,800	150
Oklahoma City	9,800	150
Orlando-McCoy	12,000	300
Phoenix Sky Harbor Int'l	10,300	150
Greater Pittsburgh	10,500	150
St. Louis International	10,018	200
Salt Lake City Int'l	10,000	150
Seattle Tacoma Int'l	11,900	150
Tampa Int'l	8,700	150

-more-

FOREIGN

Airport	Length	Width
Cologne/Bonn (West Germany)	12,467 feet	197 feet
Hong Kong	8,350	200
London-Heathrow (England)	12,801	298
Mexico City (Mexico)	10,824	146
Montreal Int'l (Canada)	11,000	200
Munich (West Germany)	9,200	197
Ottawa Int'l (Canada)	10,000	200
Paris/Orly (France)	11,975	148
Toronto Int'l (Canada)	11,050	200
Rome/Fiumicino (Italy)	12,795	197
Shannon (Ireland)	10,500	150
Zurich (Switzerland)	12,139	197

The Orbiter Landing Facility's runway was designed specifically for the orbiter but can--when completed--accommodate any commercial aircraft flying today or planned for the future.

# # #

NASA Fact Sheet

National Aeronautics and
Space Administration

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

For Release:
September, 1977

RELEASE NO: KSC 149-77

Notes for Educators

CONTENTS PAGE:

SELECTED EXAMPLES OF AEROSPACE APPLICATIONS

The majority of the money NASA spends is for research and development. The results of all that R&D can be felt in many aspects of our lives today.

In the field of physical education, for example, skiers, scuba divers and others using goggles can now enjoy fog-free viewing, thanks to a special coating which can be applied to any surface requiring anti-fogging. The technology for this material developed because of NASA's need to keep astronauts' helmet visors clear during extravehicular activities.

In the industrial arts field, a durable zinc-rich coating is being extensively used on bridges, steel mills, highway signs, overpass supports, and other areas. The protective coating was originally developed to protect launch gantries from the extreme heat and fire of a rocket's exhaust.

Other areas are feeling similar benefits from the application of space technology. It's been estimated that each penny invested in NASA's aerospace programs has returned a profit of 9 to 14 cents to the public.

The following materials contain a few brief reports on the impact of NASA technology on various academic disciplines. Included are some of the latest aerospace benefits and advances, with an emphasis on the application of the technology to our daily lives. The material can be used by the classroom teacher to update notes on developments within the various fields.

The material is ready for rapid reproduction and distribution to the teachers within your area. Teachers are also advised to contact the film library of the NASA Center serving their area for audio-visual materials dealing with many of the subjects presented here. Especially recommended are "Partners with Industry" (14 minutes, color, 1975), "By-Products of Space Research--Selected Examples" (16½ minutes, color, 1971), "Technology Utilization Program" (26 3/4 minutes, color, 1970), "Benefits from Space" (27 minutes, color, 1966).

This material will be useful in many of your non-science classes, which may not be aware of all the ways aerospace technology has affected their discipline.

AGRICULTURE

Equipment Improvements

Today's farmers are able to pull bigger plows behind their tractors because of improvements developed by NASA engineers. A variety of fracture-toughness tests were devised by NASA researchers to check spacecraft structures. Now the tests are used to see that plows and other farm implements don't break as easily when hitting rocks in the field. These tests are being used in other industries like electric utilities and nuclear pressure-vessel manufacturers to help avoid brittle fractures which could cause serious problems.

Studying the Land

Landsat spacecraft provide useful imagery for the monitoring and management of natural resources -- an area especially valuable to the developing nations of the world. Satellite photos can be used to make cartographic maps at scales of 1:250,000 so that maps can be easily used and updated when conditions such as changing shorelines or meandering rivers occur. Landsat data also provide a way of measuring agricultural areas, identifying pest breeding locations, and monitoring irrigation practices and crop performance. Among the many uses of remotely sensed data in agriculture are predictions of forage for range animal consumption, forest management, soil mapping, and crop inventory and management.

CRIMINAL JUSTICE

Personal Alarm System

Utilizing space telemetry technology, NASA researchers joined with the Sacramento, California, Unified School District to develop a personal security system to prevent classroom trouble from spreading. The simplicity and reliability of the unique system has led to its use by prison guards, handicapped and elderly persons, and others. Called the SCAN (Silent Communications Alarm Network), the system works by activating an ultrasonic pen-size transmitter, which transmits a silent signal to a nearby receiver. This receiver can sound an alarm, initiate an automatic telephone call, or activate other equipment like doors, lights and machinery. It doesn't stop trouble from occuring, but it alerts help to keep the trouble from spreading.

Videofile

Fingerprints, photographs and complete dossiers stored on videotape can be immediately available for viewing on a TV-like console, thanks to the technology which provided a videotape storage and retrieval system for NASA. Known as the Ampex Videofile, the system features a computer which stores information in digital code rather than in pictorial form. While microfilm allows visual storage of whole documents, its film must first be developed. But with Videofile, the actual document is recorded and a picture of the document is immediately available. The new system is especially valuable for law enforcement agencies because of its reliability and compactness, saving time as well as space. The Videofile represents the first application of professional broadcast technology to computerized record-keeping.

DRIVER EDUCATION

Road Surfaces

A standard automobile modified by NASA researchers to incorporate special instruments and tires is being used to test skid-resisting road surfaces to cut down on auto accidents. Engineers at NASA's Langley Research Center originally developed the idea to test the skid resistance of aircraft runways, but found that the project could also be used to develop the inexpensive test vehicle and a "pulsed braking" technique now used experimentally. It is hoped that the NASA research will significantly reduce the cost of skid trailers now used by highway departments for road testing. The special automobile, which includes instrumentation, test tires and valves, and a trailing fifth wheel, has been tested on seven different road surfaces in Texas with results correlating almost exactly with those obtained from a fully equipped test van.

Safety Features and Accessories

A number of current automobile safety features and accessories are spin-offs from NASA's space program. Adaptations of gyro-stabilized spacecraft guidance systems may lead to smoother riding on highways, thanks to a new instrument which will measure road bumps, grades and curves. Better brakes can be made by using a lining of a new high-temperature space material. Digital clocks and radios can use 20 percent less

electricity and be more accurate, thanks to NASA hybrid circuitry. Intense searchlights and flashlights are available which operate from the car cigarette lighter, as a spin-off from the xenon arc lights developed to simulate the sun for the space program. And the grooves sawed into many highways to reduce hydroplaning are the result of NASA tests on airplane runways.

Also recommended is a 10-minute color film, "The Big Blind Spot." This deals with safe and unsafe practices in driving in reverse. A lively song about driving accompanies demonstrations on automobile safety. Consult the film library in the NASA Center serving your area.

Tires

Safer winter tires will be available in the near future as a result of research for NASA's Viking program. When the one-ton Viking landers parachuted to the Martian surface in 1976, they were supported by just three straps of a remarkable new fiber. Five times stronger than steel, the fiber is being used as the cords in new tires. Whereas conventional tires lost their pliability in below-freezing temperatures, the new ones provide traction even in the coldest weather. This was found in an unusual "test" situation -- the rubber of these tires was used on Apollo 14's "rickshaw" which Alan Shepard and Edgar Mitchell used to transport equipment on the lunar surface. The tires remained pliable even during lunar temperatures as low as 195 degrees Fahrenheit below zero.

Traffic Control

A nine-square-mile area in Los Angeles county, involving 200,000 vehicles daily at 112 intersections, is the prototype for the nation's first fully computerized automobile traffic-control system. Named SAFER (Systematic Aid to Flow on Existing Roadways), the system is an outgrowth of the Apollo program and NASA's analysis of trajectories and landing locations on the moon. The program works by feeding information on traffic conditions into a computer which then calculates the best traffic-light sequence to match the traffic flow. It has been found that SAFER relieves congestion far better than the usual pre-set light pattern. Results show a 15 percent saving in mobility, leading to savings in gas consumption, auto maintenance due to engine idling and a reduction in auto exhaust pollution. SAFER systems are now being planned for other cities in the near future.

ECOLOGY

Oceanography

The term "red tide" strikes fear in all those concerned with our environment. Red tide consists of ocean-borne algae which leave tons of dead fish rotting on the beaches. It also concentrates a poison in shellfish. NASA is currently working on an early-warning system to identify the onset of red tide. The NASA program includes aircraft flying at various altitudes, on-site sampling of oceanic waters from research ships, and a scanner to be carried on the Nimbus-G pollution-sensing satellite scheduled for launch in 1978. The scanner was originally designed for the Apollo program where it enabled astronauts to determine prevalent chemicals in ocean landing areas. Other parts of the planned warning system are a submersible instrument to measure water clarity and an underwater meter to determine how daylight scatters in water.

GEOLOGY

Moon vs. Earth

It's interesting to compare the history of the moon with that of Earth. While our planet still behaves like a young one, with active internal heat, volcanic eruptions and mountain-building, the moon has been quiet since the last eruptions more than 3 billion years ago. NASA scientists studying the results of the Apollo missions feel that if men had landed on the moon a billion years ago, it would have looked very much like it does today. In fact, the moon's surface changes so slowly that the footprints left by the 12 Apollo astronauts will remain clear and sharp for millions of years.

Petroleum Exploration

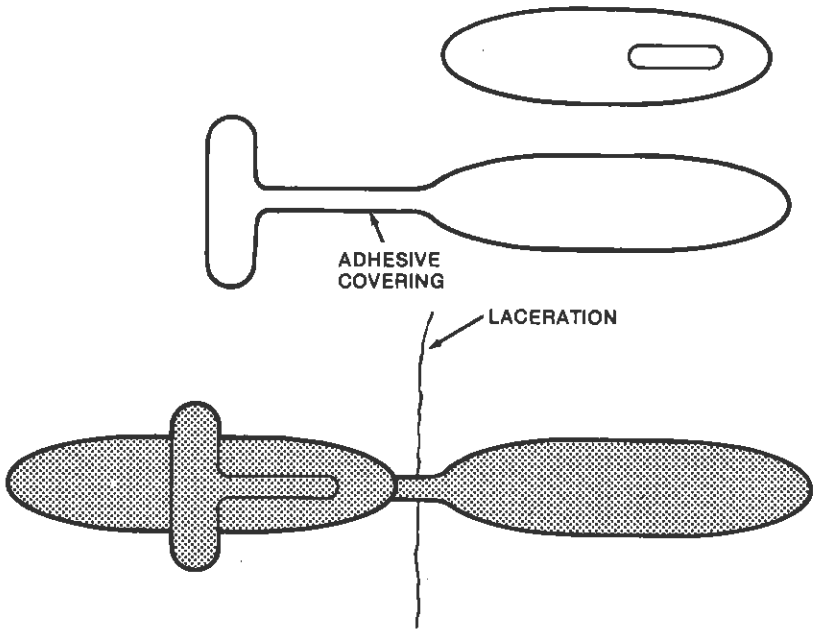
One of the greatest problems facing the petroleum industry is locating new oil and gas fields. NASA's Jet Propulsion Laboratory is active in a variety of activities dealing with petroleum, mineral and geothermal exploration. These include using remote sensing from satellites, improved burners for power stations, low-cost solar cells, improved automotive engines, and new methods of coal extraction. Though NASA's JPL is the Center for U.S. planetary missions, it still continues to focus research techniques and ideas on ways to solve problems on Earth. It appears clear that aerospace technology can help solve many of the significant problems in petroleum exploration.

HEALTH SCIENCES

First Aid

Currently-used butterfly bandages are not adjustable and are difficult to position, especially if only one hand can be used. Researchers at NASA's Johnson Space Center have developed an improved butterfly "tourniquet" for one-handed application. It is better able to close off lacerations and can be adjusted to any desired closure. The bandage is made from a nonadhering gauze which will not dry into the wound.

The top half of this drawing shows the interlocking butterfly "tourniquet" disassembled; the bottom half shows it assembled and packaged for use. The two halves of the bandage are stuck on opposite sides of the laceration, the covering on the T-shape is removed, the two halves are pulled together to force the laceration closed, and the tourniquet is sealed in place.



Leukemia and Cancer

NASA researchers at the Goddard Space Flight Center and at the Jet Propulsion Laboratory are turning their knowledge of electronics and cryogenics to the field of medicine. Cryogenics -- the science of extremely low temperatures-- can help store white blood cells and bone marrow for future use by leukemia patients. A special electronic circuit was developed by NASA for precise temperature control of scientific instrumentation on board the Viking spacecraft. It was found that this circuit could help solve the problem of developing an adequate system to store the cells, which have an unfrozen storage life of only a few hours. Now a freezing unit monitors the temperature of the cells themselves, while a thermocouple placed against a polyethelene container relays temperature signals to an electronics system. This system in turn controls small heaters which are located outside the container. The heaters allow liquid nitrogen to circulate at a constant temperature and maintain a consistent freezing rate. The system has been delivered to the National Cancer Institute for their use in freezing white blood cells and bone marrow.

Rechargeable Heart Pacemakers

When the body's natural heartbeat becomes irregular because of heart disease, an electronic pacemaker can often be implanted to deliver small electric shocks to pace the heart. Most people know that the cardiac pacemaker is an outgrowth of miniaturized solid-state circuitry developed for spacecraft. But now space technology is being used to improve the conventional pacemaker, which lasted only about 22 months. Industrial researchers, assisted by NASA engineers, have developed a new pacemaker which is rechargeable through the skin by inductance. The patient simply puts on a charger vest for an hour each week, and the pacemaker is fully recharged. The new pacemaker is also immune to electrical interference from microwave ovens and automobile ignitions. Research is continuing to reduce the size of the pacemakers while increasing their reliability.

HOME ECONOMICS

Food Tenderness

Several years ago, Armour & Co. was seeking a method of testing a hanging carcass to predict how tender the meat would be after cooking. The company came up with a group of needle-like probes which could measure the degree to which the meat resisted penetration, providing a basis for predicting tenderness. But some way to measure the tenderness was needed. They found a way to translate meat resistance into an electrical readout in a strain gage originally produced for NASA's Surveyor lunar lander and other space programs. Space telemetry now is used in the Armour Tenderometer, which has become a standard part of the company's meat processing operation.

Frozen Food

A frozen-food indicator packaged with food at the time of freezing can warn grocers and consumers if the product has ever been thawed and refrozen. The technology for this unique system was discovered by NASA researchers in the development of a battery system for operation in balloons at high-altitude temperature extremes. It was noticed that frozen salt crystals used in the battery turned red on thawing and stayed that way even if refrozen. Now these crystals can be placed on food packages to warn if the item has been thawed.

Nutrition

Elderly people often eat poorly and become malnourished due to a number of physiological, psychological, social and economic factors. To help with this problem, NASA researchers at the Johnson Space Center are utilizing the experience and data gained during the development of spacecraft food systems to design a complete meal system for the elderly. This has resulted in nutritious, shelf-stable meals that can be conveniently delivered and easily prepared. The researchers have conducted a series of user surveys, taste tests, field demonstrations and evaluation sessions to put together the complete program. A unique packaging system makes the plan easy to follow, with color codings (red for hot meals, blue for cold) and large, bold graphics. A typical single serving portion might include chicken stew, green pea soup, rice and chicken, lemon instant pudding and strawberry instant drink.

For a complete description of the program: write for NASA CR-144516 (N76-10898), "Final Report, Design and Development of a Meal System for the Elderly," available for $7.50 from the National Technical Information Service, Springfield, Virginia 22156.

The program is also described in a 21-minute sound and color film, "Meals From Space," available from the NASA Center film library which serves your state.

"Tired Food"

More than 40 U.S. hospitals and nursing homes have solved the problem of "tired food"--caused by a long lapse between preparation of the food and delivery to the patient -- thanks to a space spinoff called the integral heating system. Tired food is a common problem in large institutions which serve many people daily, and it's more than just serving unappetizing food. The loss of heat and moisture also diminishes the nutritional value of the meal. Originally developed for airline use and as a food-service unit for manned spacecraft, the integrated heating system features an entirely new concept of electronic food warming --no gas flame, no electric rods, no thermostats, no radiation. The system includes a unique dish that serves as both plate and oven, and a roll-around control module that provides the heat source. Metal buttons on the dish-oven make electrical contact when they slide into the control module, and the electrical energy is converted into heat. There is no waste involved in heating oven walls and surrounding air -- all the heat goes directly to the food. Thus the new system offers piping-hot meals with better color and taste retention, no burning or drying out, and no loss of nutrition. Other benefits are reduced labor costs, less waste, and electricity savings as much as 60 percent.

INDUSTRIAL ARTS

Paint

It used to take 42 painters working for five years to paint the Golden Gate Bridge. Now it appears that a new space coating being tested on the bridge will take far less time

to apply and will last considerably longer than the conventional paint. The new zinc-rich coating devised by NASA researchers will protect against salt spray. It is estimated that there is a $2 billion annual market for the corrosion-resistant paint to be used on all the bridges over salt water, offshore drilling rigs, ships, utility pipelines and other water-related projects.

Two NASA films are especially recommended for Industrial Arts teachers:

"The Art of Soft Soldering" (12 minutes, color).

This film begins by showing the complexity of modern electronic equipment and the necessity for clean soldered connections. The basic steps in good soldering are listed, and then illustrated, including the use and purpose of flux. An explanation of solder composition is given. Type care and preparation of the soldering iron is also reviewed.

"A tip on Irons" (9 minutes, color)

This movie deals with the necessity for using a good connection, and the importance the iron plays in achieving this. An explanation is given for the differences and uses of various soldering irons, the wide range of wattages, and the significance of these factors. Much time is devoted to the care and preparation of the soldering iron to extend its life and efficiency.

Consult the film library in the NASA Center serving your area.

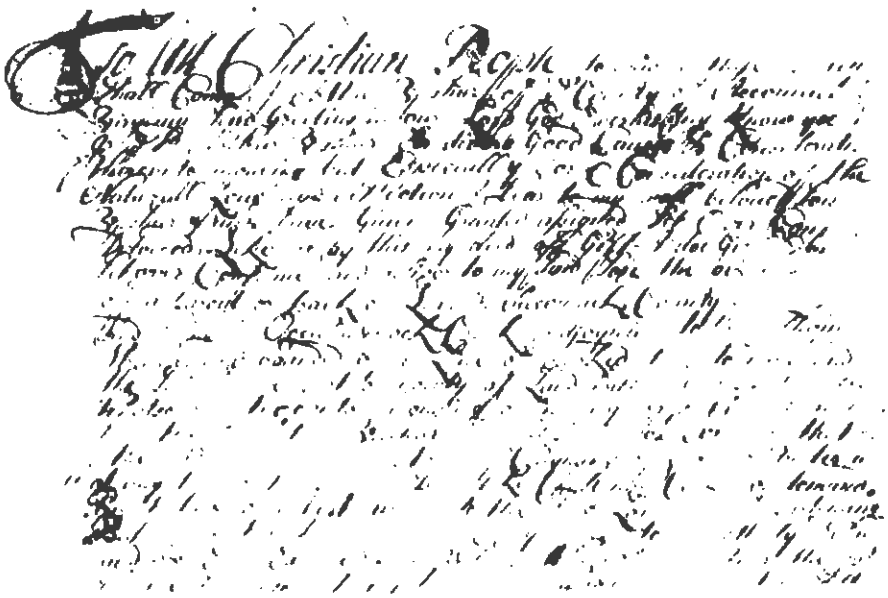
LIBRARY SCIENCE

Document Restoration

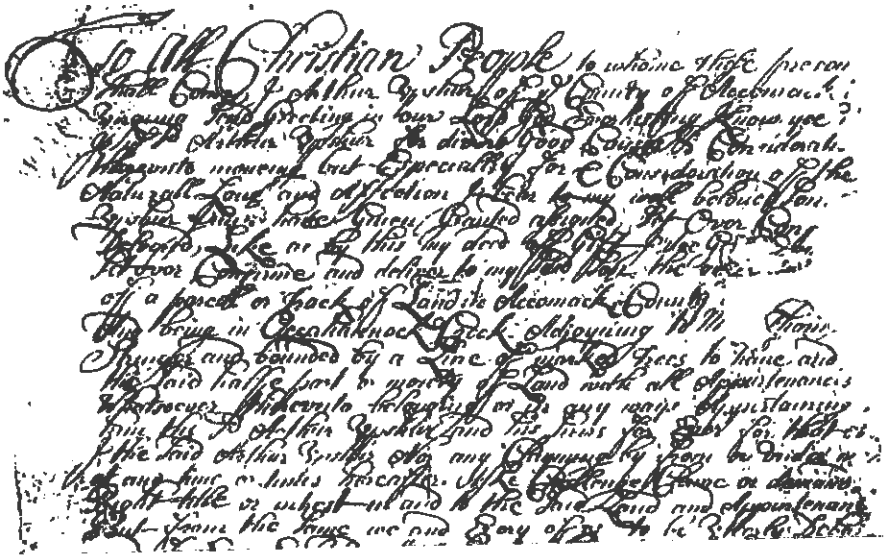
Archivists who now must painstakingly try to decipher faded, stained or barely legible documents may soon be able to produce legible copies with an automated electronic data-processing machine. Researchers at NASA Headquarters, Caltech and the Jet Propulsion Laboratory have developed the technology for an electro-optic scanner which would

automatically measure the darkness of the original document every .00254 mm (0.00001 inch). Each area's darkness is given a numerical value, and these numbers are recorded on magnetic tape. Projected on a screen the original document would be reproduced with all of its flaws. However, by changing the numerical values on the tape (e.g., changing the lighter gray levels to white and the darker gray levels to black), the new image would show clearly defined black markings against a white background. Weak stains and bleedthrough would be eliminated. Other procedures can be used to restore broken lines and sharpen the edges of letters. Potential users of this equipment include archives, libraries, museums and law enforcement agencies.

This 196-year-old deed from the Mississippi state archives demonstrates the value of computer-aided document restoration. The original material (a) is almost undecipherable, while the restoration (b) shows the successful recovery of almost all information.



(a) Original Document



(b) Restored Document

Restoring Damaged Books

After a severe fire ravaged the Atlantic High School in Oak Hall, VA., the school librarian found 1,700 books damaged by water and the resulting mildew. NASA engineers suggested utilizing an environmental vacuum chamber which scientists had designed to simulate space environments Nearly 1,000 damaged books were packed into boxes, weighed to determine water content, and sealed in the chamber under vacuum conditions for a week. After the books were removed and weighed, it was found that 14 liters (30 lbs.) of moisture had been removed. The books were then treated chemically by resealing them in the chamber and introducing a sterilization formula, keeping the books sealed for another 48 hours. After three days of ventilating the system, the chamber was resealed and the books were treated with a chemical solution to remove mold. Following the two-week experiment, 700 of the books had been restored to usable condition. It was estimated that $3,500 worth of school books were saved at a total expenditure of $250--the cost for the electric power to operate the chamber.

MATHEMATICS

Computers

Next time you see a 24-hour automatic teller outside of a bank, or watch an airline ticket agent handle your flight plans, or find your credit immediately confirmed by a retail store transaction system, think about the massive technology which created these systems. They're all spin-offs of one of the most complex computer systems in the world -- the automatic checkout equipment devised for NASA's manned missions to the moon. The computer system was originally designed to integrate the extensive Apollo spacecraft procedures from manufacture to launch, but today the NASA technology is used in hundreds of everyday transactions.

PHOTOGRAPHY

Improving Film Image

A researcher at NASA's Marshall Space Flight Center has developed an improved autoradiography procedure to enhance poor film images by increasing the contrast or by changing the overall optical-density scale of the exposure. By

chemically activating the processed film or plate with sulfur-35, underexposed films can be enhanced, additional information can be retrieved from less dense portions of the photograph, and contrast can be increased. Among the advantages of this new process are: the original film is not degraded; there are no colloidal compounds formed in the solution; the image silver does not have to be converted to silver halide prior to processing, and there is no gamma radiation to fog other films or cause a health hazard.

PHYSICAL EDUCATION

Accurate Watches

Sporting events can now be timed with extremely accurate watches developed from aerospace technology. Highly accurate timing equipment was essential to NASA's Apollo program, so General Time Corporation developed a quartz crystal which later became the basis for watches with an accuracy of one minute per year. Since clocks use a vibrating body to keep time, quartz was well-suited for accuracy since it will vibrate millions of times a second when electrically stimulated. A quartz crystal can beat up to 4,194,304 times per second, opening up a new horizon for accuracy.

Football Safety

A foam material developed by NASA scientists to provide a better airplane seat now lines football helmets, providing 340 percent less shock from impact. Called Temper Foam, the material is an open-cell polyurethane-silicone plastic foam which takes the shape of impressed objects and then returns to its original shape -- even after 90 percent compression. The helmet lining adjusts to the shape of the wearer's head without putting undue pressure on any one point. The helmet has been proven safer because the lining absorbs far more of the impact energy than do conventional helmets. The Dallas Cowboys were the first professional team to use the new helmets, though other teams and schools have now adopted the equipment. Temper Foam is also being used in body pads, chest protectors and shin guards. Scientists at NASA's Ames Research Center, who developed the material, report that a 3-inch thick pad of the material could absorb all the energy from a 10-foot fall by an adult.

Hang Gliding

Thousands of men and women who enjoy the fast-growing sport of Hang Gliding are soaring beneath colorful wings originally designed to recover spacecraft. The Rogallo design (named for Francis Rogallo's 1948 plans at what is now NASA's Langley Research Center) is used to manufacture hang gliders for sport. Pulling back on the control bar allows you to pick up speed and lowers your altitude, while pushing forward slows your speed and levels you off. Other movements are also simple to control. Thousands of hang gliders are produced each month to meet the growing demand for this popular form of recreation.

Mountain Climbing

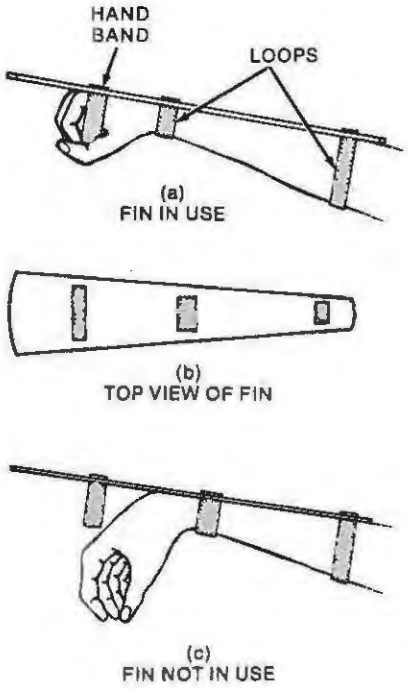
When mountain climbers Chris Chandler and Bob Cormack made it to the top of Mt. Everest as part of the American Bicentennial Everest Expedition, they found that space technology had made a significant contribution to their success in conquering the famed mountain. To sustain life at elevations above 7,010 meters (23,000 feet), (Mt. Everest is 8,847 meters [29,028 feet] tall), climbers must breathe oxygen full time. Thanks to a special oxygen bottle originally developed as rocket propellant tanks at NASA's Lewis Research Center, the 500 porters supporting Chandler, Cormack and the ten other climbers were able to carry more of the other vital equipment needed at the high altitude camps. That's because the special bottles, each of which was wrapped with 1,670 miles of filament three times finer than human hair, featured lightweight construction while offering a stronger cylinder. This allowed more oxygen in the same volume, reducing the number of cylinders needed and the overall breathing-system weight by one-half. NASA's Johnson Space Center filled the bottles for the climbers.

Swimming

NASA researchers have developed a hand fin which speeds a swimmer's progress over the surface of the water and improves his mobility and quickness of movement while underwater. The fin, made of 3 to 6 mm (1/8 to 1/4 inch) thick rubber or plastic, features under-hanging loops that fasten to the swimmer's forearm. To use the fin, the swimmer grasps a handband at the end of the fin. To use his hands, he just releases the handband and the fin remains attached to his arm until it is needed again. To use the fins underwater, the swimmer should keep his hands at his sides and move the

fins in the same way he moves his foot flippers. The fins make it possible for a lifeguard to reach a drowning person more quickly and then swim back to shore with increased ease, since only one hand is needed for paddling. The fins can also be used to teach people to swim, since they give the trainee much better propulsion and flotation capability.

Diagram (a) below shows the fin in use. Figure (b) gives a top view of the fin. Releasing the hand band (figure c) allows full manual dexterity for grasping, towing and underwater work.



(a)
FIN IN USE

(b)
TOP VIEW OF FIN

(c)
FIN NOT IN USE

NASA News

National Aeronautics and
Space Administration

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

Dick Young
305 867-2468

For Release:
September 2, 1977

RELEASE NO: KSC 148-77

VOYAGER I LAUNCH TO TEMPORARILY CURB LABOR DAY RECREATION

KENNEDY SPACE CENTER, Fla.--The scheduled launch of Voyager 1 falls on Labor Day morning and will impact some recreational activities in the KSC/Cape Canaveral Air Force Station area.

The Voyager 1 launch is scheduled for Monday, September 5, during a one-hour window extending from 8:56 to 9:56 a.m. EDT.

Playalinda Beach to the north of Voyager's Complex 41 launch site will not open on Monday until 10 a.m. and boaters are requested to remain free of a large danger area in the vicinity of Cape Canaveral until after liftoff of Titan/Centaur-6 with Voyager 1.

The launch azimuth for Monday's launch is slightly to the north of the path taken by the Voyager 2 launch vehicle on August 20, bringing some redefinition of the danger zone for boats.

The danger zone extends to the east into the Atlantic Ocean for a distance of 35 miles from the southern tip of Cape Canaveral, north for a distance of 15 miles, and then due west back to the eastern shoreline between the Kennedy Space Center and New Smyrna Beach.

Launch officials expressed hope that fishermen and boaters would observe the danger zone during the countdown for Monday's launch.

One recent launch, that of HEAO 1 on August 20, was delayed for nearly 20 minutes due to boat traffic within the danger zone but George F. Page, KSC's Director of Expendable Vehicles, noted that boaters had remained free of the zone during the launch of Voyager 2 on August 20.

-more-

"We appreciate this cooperation by boaters and fishermen," said Page. "Our launch window is only one hour long and we can't wait for too many things."

The danger area is kept under surveillance by the Air Force and Coast Guard when a launch countdown is underway and their job of keeping boat traffic free of the zone is made easier if boaters keep abreast of launch preparations.

Those within the area at liftoff could be exposed to falling debris, toxic rocket propellants and other hazards if it becomes necessary for the range safety officer to abort a launch and destroy the space vehicle.

Thus, freedom of the zone from boat traffic is a mandatory launch requirement.

Playalinda Beach, a part of Canaveral National Seashore, is usually closed only for space missions launched from Complex 39. But this closing was requested by NASA as a safety measure since the Voyagers are equipped with nuclear electrical generators to supply power for its long flight through the outer planets.

Donald Guiton, superintendent of Canaveral Seashore, said signs notifying visitors of the beach closure have been placed on State Road 402 (Titusville) and State Road 3. In addition, park rangers will be on duty to ensure visitors remain out of the area until opening time.

# # #

NASA News

National Aeronautics and
Space Administration

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

A. H. Lavender
305 867-2468

For Release:
September 6, 1977

RELEASE NO: KSC 147-77

NOTICE TO EDITORS/NEWS DIRECTORS

ORBITAL TEST SATELLITE LAUNCH SCHEDULED SPETEMBER 13

KENNEDY SPACE CENTER, Fla.--Launch of an Orbital Test Satellite (OTS) for the European Space Agency is scheduled on September 13. Liftoff is scheduled during a window extending from 7:31 to 9:01 p.m. EDT.

A prelaunch news conference on the OTS mission is scheduled in the E&O Building Conference Room, Cape Canaveral AFS, at 11 a.m. September 12. Badged media representatives may proceed directly to the E & O Building. Others will be provided transportation from the KSC Headquarters Building, with a sedan departing at 10:30 a.m.

Badged media representatives may proceed directly to Press Site 1 on the evening of the launch. Others will be badged at Frank Wolfe's Beachside Motel, Cocoa Beach. A convoy to the press site will depart the motel at 6 p.m., with a stop at the Cape Canaveral AFS Gate 1 Pass and Identification Building at 6:15 p.m.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

A. H. Lavender
305 867-2468

August 30, 1977

RELEASE NO: KSC 146-77

NOTICE TO EDITORS/NEWS DIRECTORS

LAUNCH OF VOYAGER-B RESCHEDULED ON SEPTEMBER 5

KENNEDY SPACE CENTER, Fla.--The launch of Voyager-B has been rescheduled for Monday, September 5. Liftoff is scheduled during a launch window extending from 8:56 to 9:56 a.m. EDT.

A Kennedy Space Center News Center to accommodate media representatives covering the launch will open at Frank Wolfe's Beachside Motel, Cocoa Beach, at 8:00 a.m., September 3. The activities schedule is as follows:

Saturday, September 3

8:00 a.m. - News Center opens
5:00 p.m. - News Center closes

Sunday, September 4

8:00 a.m. - News Center opens
10:30 a.m. - Bus Depart News Center for Prelaunch News Conference
11:00 a.m. - Prelaunch News Conference (E&O Building)
8:00 p.m. - News Center closes

Monday, September 5

5:00 a.m. - News Center opens
7:30 a.m. - Bus Departs for Voyager B launch
8:56 a.m. - Voyager-B launch
T+one hour - Voyager-B Postlaunch News Conference, (E&O Building)
5:00 p.m. - News Center closes

-more-

Parking at Press Site 3 is limited and transportation will be provided by bus from the Beachside Motel. Only those media representatives who can justify personal transportation because of heavy or bulky equipment will be provided with car passes. Please clear requests for car passes with the reception desk well in advance.

The Cocoa Beach News Center telephone is 783-4110.

The KSC Public Information Office, Room 1207, Headquarters Building will be closed from 4:30 p.m. Friday, September 2, through Monday, September 5.

# # #

NOTE: Media representatives who were badged for Voyager-A launch coverage may use the same badge for Voyager-B coverage.

NASA News

National Aeronautics and
Space Administration

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

For Release:

Hugh W. Harris
305 867-2468

August 18, 1977

RELEASE NO: KSC 145-77

NOTE TO EDITORS/NEWS DIRECTORS

SPECIAL NEWS BRIEFING ON VOYAGER RECORD

KENNEDY SPACE CENTER, Fla.--A special briefing for representatives of the news media interested in additional information on the sterophonic record placed on the Voyager spacecraft will be held in the Gold Room of Frank Wolfe's Beachside Motel at 2:00 p.m., August 20.

Dr. Carl Sagan, of Cornell University and chairman of the Voyager Record Committee, plus members of the committee, will be present to discuss the development of the record and answer questions.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Dick Young
305 867-2468

August 19, 1977

RELEASE NO: KSC 144-77

BOATERS ADVISED TO REMAIN CLEAR OF LAUNCH DANGER ZONE

KENNEDY SPACE CENTER, Fla.--The blue waters east of Cape Canaveral are justly famed for excellent fishing but launch officials expressed hope sports fishermen will observe launch danger zones during the countdowns for upcoming rocket launches.

KSC's next mission is the launch of a Voyager spacecraft to Jupiter, Saturn, and, perhaps, Uranus, with liftoff scheduled Saturday, August 20, between 10:25 and 11:25 a.m. EDT.

This is a time of day on a weekend when many sports fishermen and pleasure boaters may be found in the shallow waters within the launch danger zone.

KSC's most recent launch, that of HEAO-1 on August 12, was delayed for nearly 20 minutes by boat traffic within the danger area.

"Our launch window on Saturday is only an hour long," said George Page, KSC's Director of Expendable Vehicles and NASA Launch Director. "Vehicle systems, launch support, tracking stations and weather conditions must all be right if we are to go within the short period of time available. We can't wait for too many things.

"We would appreciate everyone's cooperation in remaining out of the area during the countdown so we won't have to hold for the clearance of boat traffic."

The launch danger zone to the east of Cape Canaveral Air Force Station and Kennedy Space Center is easily defined.

The southern boundary of the zone extends eastward into the Atlantic Ocean for a distance of 35 miles along a line parallel with the channel in Port Canaveral. The eastern boundary extends northward from the end of this line for a distance of 15 miles. The northern boundary extends back to the west to a point near the northern perimeter of Pad B at KSC's Launch Complex 39 along a line parallel with the Port Canaveral channel.

-more-

This area is kept under surveillance by the Air Force and Coast Guard when a launch countdown is underway and their job of keeping boat traffic free of the zone is made easier if boaters keep abreast of launch preparations.

Those within the area at liftoff could be exposed to falling debris, toxic rocket propellants and other hazards if it becomes necessary for the range safety officer to abort a launch and destroy the space vehicle.

Thus, freedom of the zone from boat traffic is a mandatory launch requirement.

KSC has 10 launches from its facilities on Cape Canaveral Air Force Station scheduled through the remainder of 1977 and Page requested the cooperation of boaters in helping the Center meet this heavy commitment.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Dick Young
305 867-2468

August 18, 1977

RELEASE NO: KSC 143-77

APOLLO SPACECRAFT BUILDING TO BE MODIFIED FOR SHUTTLE OPERATIONS

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a contract for $1,798,000 to the W & J Construction Corporation, Cocoa, Florida.

The contract is for converting the Operations and Checkout Building in the KSC Industrial Area to a Payload Horizontal Processing Facility for Space Shuttle operations.

The Operations and Checkout Building was originally built for assembly and checkout of the Apollo spacecraft which successfully carried out a lunar exploration program in the late 1960s and early 1970s. Conversion work is concentrated in the high bay area.

In its new role, the building will be used primarily for processing the Spacelab being built by the European Space Agency for use in the Space Shuttle program.

The modifications include provisions for integration and checkout stands, staging and refurbishment stands, utilities to support refurbishment and checkout, fire detection and suppression systems, control room floor refurbishment and long run cabling.

Work under the fixed price contract, one which was set aside for a small business firm is to be completed within 300 calendar days.

KSC has been selected as the prime launch and recovery site for the reusable Space Shuttle. The first manned orbital mission is scheduled for launch from KSC's Complex 39 in the spring of 1979.

The Spacelab to be carried in the shuttle orbiter's cavernous cargo bay is to be flown on its first mission in 1980.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Karl Kristofferson
305 867-2468

August 15, 1977

RELEASE NO: KSC 142-77

PLAYALINDA BEACH TO CLOSE FOR VOYAGER LAUNCHES

KENNEDY SPACE CENTER, Fla.--Playalinda Beach, located east of Titusville, Florida, will be closed Saturday morning, August 20, as a precautionary measure for the scheduled launch of Voyager A aboard a Titan-Centaur rocket from Complex 41 on adjacent Cape Canaveral Air Force Station.

The beach, which is operated by the Canaveral National Seashore, will remain closed from 8:30 p.m., August 19, until 10 minutes after liftoff of the Titan-Centaur on the morning of August 20. The Titan-Centaur launch window extends from 10:25 a.m. to 11:25 a.m.

Playalinda Beach normally is closed only for space missions originating from Complex 39. The closing was requested by NASA as a precautionary measure since Voyager A is equipped with nuclear generators to supply power for its instrumentation during the long-duration flight to Jupiter, Saturn and possibly Uranus. The last closing of Playalinda Beach was in July 1975, during the launch of an Apollo/Saturn IB for the joint U. S. Soviet Union Apollo-Soyuz mission.

Don Guiton, superintendent of the Canaveral National Seashore, said signs notifying visitors of the beach closing have been placed on State Road 402 (Titusville Causeway) and State Road 3. In addition, Park rangers will be on duty to ensure closing.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

A. H. Lavender
305 867-2468

August 8, 1977

RELEASE NO: KSC 141-77

NOTICE TO EDITORS/NEWS DIRECTORS

KSC TO HAVE COCOA BEACH RECEPTION DESK FOR VOYAGER MEDIA

KENNEDY SPACE CENTER, Fla.--The launch of Voyager A, the first of two NASA spacecraft that will fly near Jupiter and Saturn, is scheduled from Complex 41, Cape Canaveral Air Force Station, no earlier than August 20, 1977. Launch of Voyager B is scheduled no earlier than September 1.

A Kennedy Space Center Reception Desk to accommodate news media representatives covering Voyager will be in operation in Cocoa Beach, Fla., prior to both Voyager launches.

The receptionist, located in the lobby of Frank Wolfe's Beachside Motel (formerly Ramada Inn), 1100 North Atlantic Avenue, Cocoa Beach, will register and badge media representatives for access to the Kennedy Space Center where a Voyager News Center will be in operation, and for bus transportation to the E&O Building, Cape Canaveral Air Force Station, for prelaunch conferences and to Press Site 3 for launch coverage.

The Reception Desk telephone number will be 305-783-4110.

The activities schedule is as follows:

For Voyager A

T-2 days	8:00 a.m.--Beachside Motel Reception Desk opens
	4-30 p.m.--Reception Desk closes
T-1 day	8:00 a.m.--Reception Desk opens
	10:30 a.m.--Bus departs Beachside Motel for Prelaunch News Conference
	11:00 a.m.--Prelaunch News Conference (E&O Building)
	4:30 p.m.--Reception Desk closes
Launch Day	7:00 a.m.--Reception Desk opens
	8:45 a.m.--Bus departs Beachside Motel for Voyager A launch

-more-

Launch Day continued	10:25 a.m.	--Voyager A launch
	T+1 hour	--Voyager A Postlaunch News Conference (E&O Building)
	4:30 p.m.	--Reception Desk closes

For Voyager B

T-2 days	8:00 a.m.	--Beachside Motel Reception Desk opens
	4:30 p.m.	--Reception Desk closes
T-1 day	8:00 a.m.	--Reception Desk opens
	10:30 a.m.	--Bus departs Beachside Motel for Prelaunch News Conference
	11:00 a.m.	--Prelaunch News Conference (E&O Building)
	4:30 p.m.	--Reception Desk closes
Launch Day	6:00 a.m.	--Reception Desk opens
	7:30 a.m.	--Bus departs for Voyager B launch
	9:05 a.m.	--Voyager B launch
	T+1 hour	--Voyager B Postlaunch News Conference (E&O Building)
	4:30 p.m.	--Reception Desk closes

Launch day Reception Desk opening and bus departure times are based on the launch of Voyager A on August 20, 1977, and Voyager B on September 1. To obtain revised times in the event of a launch delay, please phone 305-867-2468.

Parking at Press Site 3 is limited and transportation will be provided by bus from the Beachside Motel. Only those media representatives who can justify personal transportation because of heavy or bulky equipment will be provided with car passes. Please clear requests for car passes with the Reception Desk well in advance of need.

The Voyager News Center in the KSC Public Information Office, Room 1207, Headquarters Building, is open from 8:00 a.m. to 4:30 p.m. Monday through Friday, and will be open on weekend days during the T-2 days through launch day periods for Voyager A and Voyager B. The Voyager News Center telephone number is 305-867-2468.

Taped information on Voyager prelaunch, launch and mission status will be provided on 305-867-2525, and will be updated as new information is available.

-more-

News media representatives not present to cover the launches may obtain commentary, beginning at about T-1 hour, on the V-2 Circuit. For access to the circuit, please telephone the KSC Operator, 305-867-7110.

Tours for visiting news media representatives will be arranged. One should request a tour at the Voyager News Center or by telephoning 305-867-2468.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Dick Young
305 867-2468

August 3, 1977

RELEASE NO: KSC 140-77

NOTICE TO EDITORS/NEWS DIRECTORS

HEAO-A/SIRIO LAUNCHES SCHEDULED IN AUGUST

KENNEDY SPACE CENTER, Fla.--The launches of an orbiting astronomy observatory and an experimental Italian communications satellite are scheduled for mid-August.

The launch of High Energy Astronomy Observatory-A(HEAO-A), first in a series of three observatories designed to explore such intriguing mysteries of the universe as pulsars, black holes, neutron stars and supernovae, is scheduled for August 12. The launch window for that date extends from 1:35 to 2:42 a.m. EDT.

Launch will be aboard an Atlas-Centaur rocket from Complex 36 at Cape Canaveral Air Force Station.

A prelaunch news conference on the HEAO-A launch and mission will be held in the E&O Building Conference Room at Cape Canaveral AFS at 11 a.m. on Wednesday, August 10. News media representatives with permanent Kennedy Space Center badges may proceed directly to the E&O Building via any KSC or Cape Canaveral AFS gate. Transportation for other news media representatives desiring to attend the conference will be provided, with a sedan leaving the KSC Headquarters Building at 10:30 a.m.

For launch coverage on August 12, permanently badged news media representatives may proceed directly to Press Site 1. Others will be badged at Frank Wolfe's Beachside Motel, Cocoa Beach. A convoy from the Beachside Motel to Press Site 1 will leave at 12:15 a.m., with a stop at the Cape Canaveral AFS Pass and Identification Building at 12:30 a.m.

-more-

The launch of the Italian communications satellite - SIRIO - is scheduled on August 17 during a window extending from 7:50 to 9 p.m. EDT. Launch will be aboard a Delta rocket from Complex 17 at Cape Canaveral Air Force Station.

A prelaunch news conference on the SIRIO launch and mission will be held in the E&O Building Conference Room at CCAFS at 11:00 a.m. on Tuesday, August 16.

Permanently badged press representatives may proceed to the E&O Building via any KSC or CCAFS gate. Transportation for other news media representatives who wish to attend the SIRIO conference will be provided, with a sedan leaving the New Center in the KSC Headquarters Building at 10:30 a.m.

For launch coverage on August 17, permanently badged media representatives may proceed directly to Press Site 1. Others will be badged at Frank Wolfe's Beachside Motel, Cocoa Beach. A convoy from the Beachside Motel to Press Site 1 will leave at 6:30 p.m. with a stop at the Cape Canaveral AFS Pass and Identification Building at 6:45 p.m.

For both launches, realtime countdown and mission commentary will be available, beginning at about T minus one hour and continuing through the end of powered flight and spacecraft separation at approximately T plus 30 minutes. Those who wish to monitor this commentary may phone the KSC Operator - 305-867-7110 - and ask to be connected to the V-2 circuit.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Dick Young
305 867-2468

August 2, 1977

RELEASE NO: KSC 139-77

COCOA BEACH FIRM AWARDED SHUTTLE PAD CONTRACT

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a contract for $183,000 to Briel, Rhame, Poynter and Houser Inc., Cocoa Beach, Fla.

The fixed price contract, one set aside for small business concerns, is for architect-engineer services for the design of modifications of piping, cabling, and equipment installation for Pad B at KSC's Launch Complex 39.

Pad B is one of two launch pads at Complex 39 originally built for the Saturn V/Apollo. Both are being modified to accommodate the reusable Space Shuttle, scheduled for launch on its first orbital mission in 1979.

Pad A modifications are nearing completion.

KSC has been designated the prime launch and recovery site for the Space Shuttle, designed to provide routine, economical access to and from space.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release: July 28, 1977

Dick Young
305 867-2468

RELEASE NO: KSC 138-77

CONTRACT AWARDED FOR SECOND SHUTTLE LAUNCH PLATFORM

KENNEDY SPACE CENTER, Fla. - NASA's John F. Kennedy Space Center has awarded a contract for $7,325,000 to Algernon Blair Industrial Contractors Inc., Norcross, Georgia.

The fixed price contract is for the conversion of a Saturn/Apollo mobile launcher to a mobile launcher platform for operational use in the Space Shuttle program.

The conversion work involves removal of the launcher's 400-foot tall umbilical tower and jib crane. A permanent launch tower is being installed at each of KSC's two shuttle pads at Complex 39, eliminating the need for towers on the mobile launcher platforms.

Also entailed in the conversion is replacement of the single exhaust opening in the platform with the three required by the Space Shuttle's main engines and twin solid boosters.

The conversion of one of KSC's three mobile launchers to a mobile launcher platform is nearing completion and the new contract marks the beginning of modification work on the second.

Completion of the conversion process on the second mobile launcher is scheduled in 13 months.

KSC has been designated the prime launch and recovery site for the reusable Space Shuttle, scheduled for launch on its first manned orbital mission in the spring of 1979.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Dick Young
305 867-2468

July 26, 1977

RELEASE NO: KSC 137-77

MERRITT ISLAND FIRM AWARDED SPACEPORT CONTRACT

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a contract for $82,600 to Ivey's Steel Erectors Inc., Merritt Island, Fla.

The contract, one set aside for small business concerns, is for the renovation of aluminum siding fasteners on the west and south sides of the highbay and entire lowbay of the Vehicle Assembly Building (VAB).

The VAB is the world's second largest building and is used for the assembly and checkout of manned space vehicles in a protected environment.

The exterior skin of the 525-foot-tall structure is covered by 23 acres of insulated aluminum siding. The siding fasteners on the east and north sides of the building were renovated under a separate contract earlier this year and the new contract will complete the renovation project.

The VAB was used for assembly of the Saturn V and IB rockets in the Apollo and Skylab programs and will play a major role in Space Shuttle operations.

KSC has been selected as the prime launch and recovery site for the Space Shuttle with the first orbital launch scheduled for 1979.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Dick Young
305 867-2468

July 25, 1977

RELEASE NO: KSC 136-77

FOUR FIRMS SUBMIT SPACEPORT TELEPHONE PROPOSALS

KENNEDY SPACE CENTER, Fla.--Four firms have responded to requests by the Kennedy Space Center for proposals for an administrative telephone system.

A solicitation which closed July 22 was sent to 27 companies and required that the successful contractor furnish, install, operate and maintain an automated dial telephone system, including basic switching equipment, telephones, switchboards and consoles, interior wire and cable, ancillary equipment and apparatus housing.

The contract contemplated under the solicitation would lease the system for a 10-year period and include a purchase option.

Companies submitting proposals were Southern Bell Telephone and Telegraph Co., Miami, Fla.; Northern Telecom Inc., Memphis, Tenn.; G. T. E. Automatic Electric, North Lake, Ill., and Independent Business Telephone Co. of Florida, Tampa, Fla. Two proposals were submitted by Southern Bell.

Service has been provided by Southern Bell since 1963.

The proposals will be evaluated by a Source Evaluation Board prior to selection of the successful contractor.

# # #

NASA News

National Aeronautics and
Space Administration

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

Hugh W. Harris
305 867-2468

For Release:

July 22, 1977

RELEASE NO: KSC 135-77

NOTE TO EDITORS

NASA WRITER'S CONFERENCE TO BE HELD SEPT. 1 - 3

KENNEDY SPACE CENTER, Fla--A writer's conference primarily designed for staff and freelance magazine writers and editors will be held at NASA's John F. Kennedy Space Center, Florida September 1 - 3.

The timing of the meeting is set to coincide with the launch of the second Voyager spacecraft to Jupiter and Saturn. The launch will not only be a milestone in the exploration of our solar system but is the last scheduled use of the Titan III/Centaur rocket, the largest rocket currently used by NASA. Attendees at the conference will be briefed by Voyager Project Scientists and taken to the Press Site for the launch.

Although it is designed primarily for feature writers who are not as familiar with the agency and its program as those of you who cover us regularly, we did not want to miss extending you a cordial invitation.

The purpose of the conference is to provide insight into the NASA program for article writers as well as information on how to research stories about NASA projects. A special directory of major projects listed by NASA Centers and including the names of Project Managers and Public Affairs contacts is being prepared especially for the conference.

The talks will stress the "why" of NASA projects and not the hardware. Overviews of the larger areas of work will be augmented with in-depth looks at what new knowledge is coming from specific projects.

Many of NASA's top scientists and managers will be on hand for the conference which will feature short talks and longer rap sessions on subjects ranging from "How it all started" to "What will we be

-more-

NASA News

National Aeronautics and
Space Administration

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

For Release:

Karl Kristofferson
305 867-2468

July 18, 1977

RELEASE NO: KSC 133-77

NOTICE TO EDITORS/NEWS DIRECTORS

STATISTICAL SUMMARY

KSC LAUNCHES FROM EASTERN AND WESTERN TEST RANGES

October 1, 1958 -- July 15, 1977

Category	U.S.	International	Total
Science	62	13	75
Lunar/Planetary	48		48
Weather/Geodesy/ Earth Resources	45	1	46
Communications	21	40	61
Applications	6		6
Launch and Space Vehicle Development	18		18
Manned Space Flight:			
Mercury	6		
Gemini	10		
Apollo	11		
Apollo-Soyuz	1		
Skylab	3		

-more--

Advance registration for the conference is important for planning bus transportation and meals. A registration fee of $22.00 includes two dinners and one lunch. Mail registration is requested by August 15. Motel reservations are the responsibility of each participant. A list of motels and complete itinerary will be sent upon registration or on request.

Registration should be mailed to:

NASA Writer's Conference
PA-PIB
Kennedy Space Center, Fl. 32899

Cocoa Beach and the Kennedy Space Center are reached through both the Orlando and Melbourne Airports. Limousine transportation is available to Cocoa Beach which is approximately 50 miles from Orlando and 40 from Melbourne.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Dick Young
305 867-2468

July 18, 1977

RELEASE NO: KSC 134-77

EXPEDIENT SERVICES AWARDED ROADS AND GROUNDS CONTRACT

KENNEDY SPACE CENTER, Fla.--A $1,011,994 contract for roads and grounds services at NASA's John F. Kennedy Space Center has been awarded to Expedient Services Inc. of Titusville, Fla.

The cost plus fixed fee contract covers the period from July 1, 1977, through June 30, 1978, and includes options to extend through June 30, 1980.

Services to be provided under the contract include roadway grass mowing and care, landscape maintenance, pest control, trash pickup and disposal.

The contract is one set aside for disadvantaged firms and was awarded by the Small Business Administration of Atlanta, Ga., on behalf of the Kennedy Space Center.

Expedient Services currently holds a custodial services contract with the Kennedy Space Center.

Work under the new contract was previously accomplished by the Boeing Co. under a base support services contract.

The Kennedy Space Center is NASA's major launch base and has been designated the primary launch and recovery site for the reusable Space Shuttle which will begin manned orbital flights from here in the spring of 1979.

# # #

doing 30 years from now." Dr. Abe Silverstein, one of the architects of the nation's space program and the first Director of Space Flight and longtime Director of NASA's Lewis Research Center, will talk about the expectations of the small group of engineers and scientists who put NASA together, how he feels about subsequent events and the direction he would like to see the program go in the future.

Dr. Gerald Soffen, Viking Project Scientist, will talk about, "Why We Went to Mars and What We Found." Other talks in the planetary area will cover the value of interplanetary exploration to the man-in-the-street, and what programs are being planned for the future such as the Jupiter Orbiter and Probe, rendezvous with Halley's Comet and landing intelligent roving vehicles on Mars.

Aeronautics programs will be featured Friday morning starting with an overview of work in such areas as the super-critical wing, swing wing, and Quiet Clean Short-Haul Experimental Engine. A longer session will focus on the efforts of NASA to develop the technology needed for aircraft in the 1980's which will use only 40 to 50 percent of the fuel needed presently per passenger mile.

NASA's work in energy programs on windmills, batteries, electric cars, and solar heating and cooling will be featured as well. Research and development in the energy field is one of the ways in which NASA is cooperating with other government agencies such as ERDA which have direct responsibility for a particular effort.

"The Space Shuttle...Why We Need It" will kick off the Friday evening session devoted to the future. Both the near term future with large orbiting satellites, wrist radios and energy gathered from the sun will be contrasted with farther term projections of orbiting space settlements for tens of thousands of residents,mining of the moon, and orbiting factories in space.

NASA's work with the medical, agricultural and other professions through its Technology Applications Program will be discussed from the standpoint of NASA's efforts to effect the fastest possible infusion of new technology into the general economy.

Following the NASA portion of the conference, a seminar on marketing will be held for interested persons lead by Martin Caidin, creator of the Six Million Dollar Man and Karl Kristofferson, frequent contributor to Reader's Digest on space subjects.

-more-

	U.S.	Total
Manned Space Flight:		
Skylab Orbital Workshop	1	
Vehicle Tests/ Supportive Payloads	34	66
Total Launches		320

# # #

OFFICE OF THE WHITE HOUSE PRESS SECRETARY

THE WHITE HOUSE

UNITED STATES SPACE OBSERVANCE

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

A PROCLAMATION

Our human race has always felt an urge to explore and understand the world around us. This drive lay behind the theories of Ptolemy and Copernicus, the discoveries of Aristotle and Newton, the journeys of Columbus and Magellan.

In our time, this spirit has led to the exploration of space. From single missions, designed to send satellites into orbit and land men on the Moon, the United States Space Program has grown into a much broader range of endeavors. Its purpose is not simply to study space, but to understand its relevance to life on Earth. Satellites now orbiting the Earth have helped us to forecast weather patterns accurately, discover mineral deposits, detect sources of pollution and establish a global communications network. International projects such as Apollo-Soyuz have helped bring the people of the world closer together through coordinated research and the cooperative use of land and sea resources.

To encourage the American people to reflect upon the purposes, goals and achievements of America's space program, the Senate (July 11, 1975) and the House of Representatives (September 30, 1976) have requested the President to issue a proclamation designating the period of July 16 through July 24 as "United States Space Observance" and calling for its appropriate observance.

Now, therefore, I, Jimmy Carter, President of the United States of America, do hereby proclaim the period of July 16 through July 24, 1977, as "United States Space Observance."

I urge the communications media, educators, the aerospace industry, scientific and public-service organizations and the American people to join with the Administrator of the National Aeronautics and Space Administration during this period in commemorating the achievements of the United States Space Program which demonstrate that advanced technology devoted to peaceful purposes can lead the way to a better life for people of all nations.

-more-

In witness whereof, I have hereunto set my hand this eleventh day of July, in the year of our Lord nineteen hundred seventy-seven, and of the independence of the United States of America the two hundred and second.

Jimmy Carter

# # #

National Aeronautics and
Space Administration

John F. Kennedy Space Center
Kennedy Space Center, Florida
32899

NASA

Reply to Attention of: PA-PIB

July 18, 1977

Dear Editors/News Directors

President Carter has proclaimed the week of July 16-24 as "U. S. Space Observance Week."

Enclosed are some selected photographs, summary statistics of space launches by NASA and a copy of the presidential proclamation to assist you in planning any special features to commemorate the achievements of the U. S. space program. Please note that July 16-24 includes the anniversary dates of the Apollo 11 liftoff from KSC and man's first landing on the moon.

If we can be of further assistance, please let us know.

Sincerely,

Karl Kristofferson

Karl Kristofferson
Public Information Branch

Enclosures

NASA News

National Aeronautics and
Space Administration

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

For Release:

Dick Young
305 867-2468

July 18, 1977

RELEASE NO: KSC 132-77

SHARPES FIRM AWARDED CONTRACT EXTENSION

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a $499,089, one-year contract extension to Precision Fabricating and Cleaning Inc., Sharpes, Fla.

The contract is for the retest, refurbishment and modification of government-owned compressed gas trailers used in connection with launch operations.

It is the first extension under a contract for one year with four one-year options and brings the cumulative amount of the contract to $1,065,089.

The contract is one set aside for small business firms.

KSC is NASA's major launch base and has been selected as the prime launch and recovery site for the reusable Space Shuttle which will begin orbital manned flights from here in 1979.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Dick Young
305 867-2468

July 18, 1977

RELEASE NO: KSC 131-77

SIX FIRMS RESPOND TO SPACEPORT BID REQUESTS

KENNEDY SPACE CENTER, Fla.--Six firms have responded to requests by the Kennedy Space Center for proposals on a printing, reproduction and documentation support services contract.

The responses came from Data Graphics Services Inc., Fort Lauderdale, Fla.; Information Services Inc., Cocoa Beach, Fla.; Kaufman and DeDell Printing Inc., Syracuse, N. Y.; McGregor-Werner Inc., Washington, D. C.; Robinson's Printing Co. Inc., Huntsville, Ala., and Systems Publications Inc., Seat Pleasant, Md.

The effective date of the contemplated new contract would be December 1, 1977, and the duration will be three years.

Services to be rendered under the proposed contract are now provided by McGregor-Werner and the Boeing Aerospace Co.

# # #

NASA News

National Aeronautics and
Space Administration

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

A. H. Lavender
305 867-2468

For Release:
July 13, 1977

RELEASE NO: 130-77

FORMER SAN JUAN RESIDENT IS SPACEPORT EMPLOYEE

KENNEDY SPACE CENTER, Fla.--Ivan F. Velez, a native of San Juan, P.R., is an engineering in the Shuttle Engineering Directorate at NASA's Kennedy Space Center.

Assigned to the directorate's mechanical systems division, he is developing procedures for and will be involved in the checkout of Space Shuttle mechanical and thermal protection systems. The first Space Shuttle is scheduled for launch from the Kennedy Space Center in 1979.

A 1971 graduate of Trina Padilla de Sanz, Rio Piedras, Velez attended the Mayaguez Branch of the University of Puerto Rico, graduating cum laude with a B.S. degree in Mechanical Engineering in 1976. He is a member of the American Society of Mechanical Engineers.

He and his wife, the former Violeta Enriquez of San Juan, reside in Merritt Island, Fla., a community adjacent to the space center.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Dick Young
305 867-2468

July 12, 1977

RELEASE NO: KSC 128-77

EXPERIMENTAL PLANE USES NASA-DEVELOPED TECHNOLOGY

KENNEDY SPACE CENTER, Fla.--It cruises high above traffic-jammed roads at up to 200 miles per hour, has a range of about 800 miles and gets an enviable 38 miles per gallon of gas.

"It" is the home-built VariEze ("very easy") airplane constructed for an investment of some $6,000 and six months of time by John Murphy of the Kennedy Space Center's Technology Utilization Office.

In many respects, John's new plane is an oddball. Except for the engine and engine mount, the plane is built entirely of fiberglass and styrofoam. Long but narrow nose-mounted canards and a "pusher" engine provide the illusion that the plane and the occupants of its teardrop-shaped cabin are flying backwards.

Despite - or perhaps because of - its strange appearance, the plane incorporates several technological advancements, including a NASA-developed winglet which increases efficiency by unwinding wingtip vortex and reducing drag.

The winglets - vertical fins on each wing tip - increase the aircraft's efficiency by approximately 8 percent. The winglets were recently developed by Dr. Richard Whitcomb of NASA's Langley Research Center, Hampton, Va., and are already being used on a limited number of new aircraft.

Murphy built the plane at his home in Cape Canaveral and cut the first piece of foam on December 8, 1976. Work was completed on June 12 and he took it up from TiCo Airport for its first flight on June 30.

Some Brevard residents may have already spotted Murphy's pride and joy. He's now building up the 50 hours flying time required by the Federal Aviation Agency so that he can fly it to the annual meeting of the Experimental Aircraft Association in Oshkosh, Wisconsin, in late July and early August.

-more-

Making the flight with him will be his youngest son, Steve, 13.

"Thousands of experimental and factory-built aircraft will be there," said Murphy. "We're looking forward to it."

It was at last year's show that John was exposed to the unique plane, designed by Bert Rutan of Mojave, California. The plane does not come as a kit; Rutan provides only plans and guidance.

For Murphy, the work went faster than for most who've undertaken the project. He's been flying for 30 years and owns another aircraft which he rebuilt.

Wing construction is much like that of a surfboard. The Shape and airfoil are cut out of styrofoam and then covered with fiberglass. Internal strength is enhanced by fiberglass spars and shear webs.

"It's a great plane to fly," said Murphy.

The aircraft weighs only 630 pounds and is powered by a 100 horsepower Continental aircraft engine. Designed primarily as a high speed, cross-country aircraft, it requires 1,000 feet for take-off and will land in about 2,000 feet. Cruise speed with two passengers is 200 miles per hour.

Murphy described its high altitude performance as "good" and noted that it has a climb rate of 1,500 feet per minute.

The plane's cabin is somewhat less spacious than a 747, DC-10 or other wide-body jet. How's the ride?

"Although small inside," said John, "it's very comfortable."

Much of the plane's odd appearance is due to the forward-mounted canards. These - rather than the usual elevators in the tail assembly - provide pitch control. The nose wheel is retractable; the main gear are not.

John's flying and technical background helped with the plane's construction. He's a 1957 graduate of Georgia Tech. With NASA since 1964, John's function at KSC is to serve as the focal point for new technology developed here and making it available to American industry.

Completing the 50-hour test program required by the FAA has had its fringe benefits during the hot Florida summer.

"I usually climb up to about 6,500 feet where it's cool," said Murphy. "It's only about 65 degrees up there."

-more-

As of July 11, Murphy has logged 24 of the 50 hours required by the FAA before his aircraft is cleared for normal use.

# # #

NASA News

National Aeronautics and
Space Administration

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

Mark Hess
305 867-2468

For Release:
July 1, 1977

RELEASE NO: KSC 127-77

SPACEPORT AGAIN HOSTS THUNDERSTORM SCIENTISTS

KENNEDY SPACE CENTER, Fla.--Last summer, leading meteorlogists and atmospheric physicists from across the United States and abroad converged on NASA's John F. Kennedy Space Center for the most extensive study on the electrical characteristics of thunderstorms that has ever been conducted. Now, the Center is host to the researchers for the second consecutive year.

The 1976 program resulted in the accumulation of a wealth of new data which help explain the phenomena that cause electrical charges in cumulo-numbus cloud formations, electrical discharges within and between clouds, and from clouds to the earth's surface. In addition, the 1976 program laid the foundation for subsequent studies here this summer and in 1978.

The world's leading experts on thunderstorms are again gathering at KSC for "TRIP 77" (Thunderstorm Research International Program 1977), and will remain through August 15 to continue their research on lightning and thunderstorms and the hazards they provide.

Twenty-one principal investigators with their associates, representing many of the country's leading educational institutions and research organizations, will be involved in the study during the summer. A total of over 85 experimenters will be participating.

Resources of KSC associated with lightning and some Air Force Eastern Test Range instrumentation will be used to provide data required by the experimenters. These include KSC's 80-square-mile electric field measuring system, developed during the Apollo program for detecting the buildup of electrical charges in thunderclouds that might interfere with space vehicle launch operations, and NASA-6, KSC's C-45 instrumented meteorological aircraft that has been used in previous lightning studies.

-more-

The AFETR weather radar and KSC's storm detection meteorological radar, including camera and digitized automatic radar tracking systems; the Cape launch pad lightning warning systems; a weather information network display (WIND) system; a satellite imagery acquisition system with equipment for processing weather satellite pictures; an automatic picture transmission (APT) recording system; timing and camera systems, both optical and TV, are also used.

Both the National Oceanic and Atmospheric Administration's (NOAA's) Geosynchronous Operational Environmental Satellite (GOES) and a Department of Defense weather satellite will provide imagery for scientific use. In addition, the National Weather Service's KSC office will be manned to provide forecasting and other meteorological services.

The planned experiments cover almost every imaginable subject of study. They include electric field measurements of discharges within storm clouds, study of the relationship between electric fields at the earth's surface and those within active thunderclouds, location of the lightning charge "center" and its correlation with the storm's physical structure, measurement of the waveshapes of lightning strokes, determination of the electrical inflow and outflow of clouds, measurement of lightning stroke velocities near the ground with their corresponding electric and magnetic fields, study of the overall evolution of lightning activity at KSC, establishing the correlation between airborne and ground lightning test measurements.

Study of the structure of motion and radar reflectivity fields inside thunderstorms, examination of the radiated waveforms from lightning for characteristics that may be indicative of storm type, investigation of thunderstorm behavior over the ocean, time lapse photography of cloud behavior, including lightning discharges as they take place; flight evaluation of a lightning detector instrument package and the conducting of simulated lightning ground tests.

In addition to the investigations of the scientific community, KSC is conducting two of its own experiments during the lightning study. The first involves a lightning triggering project to initiate and direct natural lightning to a specific target. This capability will allow KSC to verify, under controlled conditions, the lightning protection of a structure and its associated ground support equipment without having to wait until a natural stroke happens to strike the location.

-more-

KSC also operates its LDAR (Lightning Detection and Ranging) system, as it did in 1976. The objectives of this system are to locate electrically active areas of a cloud, map the spacetime history of the electrical discharges, determine the physical relationship between electrically active areas and rain areas of a cloud, detect and locate cloud to ground lightning strikes and determine associated wave form characteristics.

As part of TRIP 77, KSC and the University of Florida are conducting a joint experiment using television cameras to locate the coordinates of all cloud-to-ground lightning flash ground-contact points.

Organizations participating in the project and principal investigators are given below.

NOAA Environmental Research Laboratory (3 projects) - Dr. Heinz Kasemir, William L. Taylor and Dr. David Rust.

New Mexico Institute of Mining and Technology (2 projects) - Dr. Marx Brook and Professor Charles B. Moore.

Rice University - Dr. Arthur A. Few.

University of Florida (2 projects) - Dr. Martin A. Uman.

State University of New York at Albany (2 projects) - Dr. Richard E. Orville and Dr. Bernard Vonnegut.

University of Arizona - Dr. E. Phillip Krider.

University of Miami - Dr. Robert M. Lhermitte.

Massachusetts Institute of Technology - Dr. Ralph Markson.

NASA Goddard Space Flight Center - Dr. David M. LeVine.

NASA Marshall Space Flight Center - P. Marrero.

NASA Johnson Space Center - Donald D. Arabian.

-more-

Stanford Research Institute - Dr. J. Nanevicz.

Federal Aviation Administration, Department of Transportation (2 projects) - Frank Coons and R. Kalafus.

Air Force Flight Dynamics Laboratory (2 projects) - Lt. Robert Baum and V. Mangold.

Pennsylvania State University - Hans Panofsky.

# # #

NASA News

National Aeronautics and
Space Administration

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

A. H. Lavender
305 867-2468

For Release:
July 1, 1977

RELEASE NO: KSC 126-77

NOTICE TO EDITORS/NEWS DIRECTORS

JAPAN-GMS LAUNCH SCHEDULED JULY 14

KENNEDY SPACE CENTER, Fla.--The launch of Japan-GMS, a geosynchronous meteorological satellite, for the National Space Development Agency of Japan (NASDA), is scheduled Thursday, July 14.

Launch on a Delta rocket from Complex 17, Cape Canaveral Air Force Station, is scheduled during a window extending from 6:39 to 7:27 a.m. EDT.

A prelaunch news conference on the Japan-GMS launch and mission is scheduled in the E&O Building Conference Room, Cape Canaveral AFS, at 11 a.m. Tuesday, July 12. News media representatives with permanent Kennedy Space Center badges may proceed directly to the E&O Building via any KSC or Cape Canaveral AFS gate. Transportation for other news media representatives desiring to attend the conference will be provided, with a sedan departing the KSC Headquarters Building at 10:30 a.m.

For launch coverage on July 14, permanently badged news media representatives may proceed directly to Press Site 1. Others will be badged at Frank Wolfe's Beachside Motel, Cocoa Beach. A convoy from the Beachside Motel to Press Site 1 will depart at 5:15 a.m. with a stop at the Cape Canaveral AFS Pass and Identification Building at 5:30 a.m.

Realtime countdown and mission commentary will be available, beginning at about T minus one hour. Media representatives may phone the KSC Operator, 305-867-7110 and ask to be connected to the V-2 circuit.

A Public Information Specialist will be available in the KSC Public Information Office to provide information on progress of the countdown beginning at 6 a.m. on launch day. The telephone is 305-867-2468.

# # #

NASA News

National Aeronautics and
Space Administration

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

A. H. Lavender
305 867-2468

For Release:
July 1, 1977

RELEASE NO: KSC 125-77

ARCHITECT-ENGINEERING CONTRACT AWARDED TO JACKSONVILLE FIRM

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a $480,193 fixed-price contract to Reynolds, Smith and Hills, Architects, Engineers, Planners, Inc., 4019 Boulevard Center Drive, Jacksonville, Florida.

The contract, extending from June 1, 1977 through November 28, 1977, provides for the architect-engineering firm to prepare specifications and drawings for modification of Complex 39B to adapt it for Space Shuttle launch operations.

The modification will result in a configuration of the launch pad and complex facilities such as the Shuttle Service and Access Tower similar to that of Complex 39A, where modifications are underway.

Construction of Complex 39B, second of two Apollo/Saturn launch facilities, was completed in late 1967. Apollo 10 was launched from the complex as were the manned Skylab 2, 3 and 4 missions and the U.S. spacecraft of the Apollo Soyuz Test Project.

The initial launch of the Space Shuttle is scheduled in 1979.

# # #

NASA News

National Aeronautics and
Space Administration

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

A. H. Lavender
305-867-2468

For Release:
June 27, 1977

RELEASE NO: KSC 124-77

SPACE SHUTTLE FEATURED ON NEW POSTAL SERVICE DIE HUB

KENNEDY SPACE CENTER, Fla.--Friday, July 1, will be the first day of use of a new pictorial cancellation die hub at the Kennedy Space Center Post Office.

Featuring the official NASA logo for the Space Shuttle Program, the die hub is captioned with "For Benefits on Earth."

The new die hub will be used continually at the Kennedy Space Center Post Office and during specified periods at a number of locations throughout the country. Other locations and dates of use of the die hub are listed on the attached sheet.

Individuals wishing mail canceled on the first day of usage of the new die hub at KSC can address requests to; Mail and Distribution Services, AD-CSO-M, NASA, Kennedy Space Center, Fl. 32899. NASA will accept up to five covers by mail from each person.

Each cover must bear the proper postage in the upper right-hand corner. The top of the stamp should be three-quarters of an inch from the top of the envelope. The address should be in the lower right-hand corner. Each envelope should include a filler of postal card thickness to assure clear cancellations and to prevent damage to envelopes.

Since the Kennedy Space Center Post Office is not open to the general public, there will be an identified drop box in the lobby of the Titusville, Florida, Post Office where mailings can be deposited to receive the cancellation. The mail will be removed from the drop box, taken to the Kennedy Space Center, canceled and placed in the mail system. The drop box will be open for an eight-hour period beginning at 8:00 a.m. on July 1, 1977. No hand-back service will be provided.

-more-

A U. S. Postal Service announcement of the new die hub emphasized that the machine cancellation is a special cancellation rather than a philatelic cancellation. Mail submitted for cancellation must bear the appropriate rate of postage, and mail may not be held to be canceled on a particular date. Canceled covers will not be returned to customers under cover, and no replacements will be made.

The periods of use of the new die hub at the 19 other locations are July 1 - August 31, 1977; December 1, 1977 - January 31, 1978; March 1, 1978 - April 30, 1978; December 1, 1978 - January 31, 1979 and March 1, 1979 - April 30, 1979.

The 19 other locations are as follows:

Atlanta, GA 30304
Chicago, IL 60607
Denver, CO 80202
Houston, TX 77013
Memphis, TN 38101
Minneapolis, Mn 55401
New York, NY 10001
St. Louis, MO 63155
Seattle, WA 98109

Boston, MA 02109
Dallas, TX 75221
Edwards, CA 93523
Huntsville, AL 35812
Los Angeles, CA 90052
Miami, FL 33152
New Orleans, LA 70113
Palmdale, CA 93550
San Francisco, CA 94101
Washington, D. C. 20013

# # #

NASA News

National Aeronautics and
Space Administration

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

A. H. Lavender
305 867-2468

For Release:
June 24, 1977

RELEASE NO: KSC 123-77

U. OF PUERTO RICO, MAYAGUEZ CAMPUS, GRADUATE IS SPACEPORT EMPLOYEE

KENNEDY SPACE CENTER, Fla.--Pedro J. Rosado, a gradute of the University of Puerto Rico, Mayaguez Campus, with a B.S. degree in mechanical engineering, is a design engineer at NASA's John F. Kennedy Space Center, the nation's Spaceport, in Florida.

Assigned to the Design Engineering Directorate's propellants and gases branch, he is involved in the design and development of pneumatic, or compressed air, systems for Space Shuttle processing and launch operations.

The son of Mr. and Mrs. Antonio A. Rosado of Ponce, he was graduated from San Conrado High School in that city in 1969. He received his B.S. degree in 1976 and joined the Kennedy Space Center in January, 1977.

He is a member of the American Society of Mechanical Engineers, the Society of Automotive Engineers and Alpha Beta Chi, social fraternity.

He and his wife, the former Lina Rivera of Ponce, reside at the Washington Arms Club, Titusville, Fla.

The Kennedy Space Center will be NASA's primary launch and landing site for the Space Shuttle, the U.S. space transportation system for the remainder of the 20th century.

The first launch is scheduled in 1979. Landings of the Space Shuttle Orbiter at the end of the first four missions will be at NASA's Dryden Flight Research Center in California. Subsequent landings will be at the Kennedy Space Center.

NASA News

National Aeronautics and
Space Administration

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

A. H. Lavender
305 867-2468

For Release:
June 24, 1977

RELEASE NO: KSC 122-77

FORMER PONCE RESIDENT IS SPACEPORT EMPLOYEE

KENNEDY SPACE CENTER, Fla.--Pedro J. Rosado, son of Mr. and Mrs. Antonio A. Rosado, Urb. Punto Oro, 12 St P-20, Ponce, is a design engineer at NASA's John F. Kennedy Space Center, the nation's Spaceport, in Florida.

Assigned to the Design Engineering Directorate's propellants and gases branch, he is involved in the design and development of pneumatic, or compressed air, systems for Space Shuttle processing and launch operations.

A graduate of San Conrado High School in Ponce, he attended the University of Puerto Rico, Mayaguez Campus, and received his B.S. degree in mechanical engineering in 1976. He joined the Kennedy Space Center in January, 1977.

He is a member of the American Society of Mechanical Engineers, the Society of Automotive Engineers and Alpha Beta Chi, social fraternity.

He and his wife, the former Lina Rivera of Ponce, reside at the Washington Arms Club, Titusville, Fla.

The Kennedy Space Center will be NASA's primary launch and landing site for the Space Shuttle, the U.S. space transportation system for the remainder of the 20th century.

The first launch is scheduled in 1979. Landings of the Space Shuttle Orbiter at the end of the first four missions will be at NASA's Dryden Flight Research Center in California. Subsequent landings will be at the Kennedy Space Center.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

A. H. Lavender
305 867-2468

June 20, 1977

RELEASE NO: KSC 121-77

IBM AWARDED SUPPLEMENTAL CONTRACT

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a supplemental contract for Space Shuttle development support to the IBM Corporation Federal Systems Division's Command and Space Systems Center, 18100 Frederick Pike, Gaithersburg, Maryland.

The total value of the two year supplemental agreement covering the period from April 1, 1977 through March 31, 1979, is $13,334,358, bringing the total contract value since the original award on May 13, 1974 to $23,104,231.

The contract provides for support to the Kennedy Space Center in development of computer programs of the Launch Processing System for Space Shuttle operations.

Work to be performed is primarily at the Spaceport, with limited supplemental work at IBM facilities in Owego, New York, Gaithersburg, Maryland and Huntsville, Alabama, and at the Marshall Space Flight Center where computer programs for Rocket Booster Electrical and Instrumentation Verification Test facilities are being developed.

KSC has been designated the prime launch and landing site for the Space Shuttle, with the first launch scheduled in 1979.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Mark Hess
305 867-2468

June 14, 1977

RELEASE NO: KSC 120-77

KSC EXPANDS DAYTONA FIRM'S CONTRACT

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a $72,400 contract modification to Russell and Axon, 1620 Mason Street, Daytona Beach, Fla., to prepare preliminary engineering reports for construction of a hypergolic logistics facility and a chemical waste disposal facility.

Russell and Axon received an initial $153,124 contract award in February 1977, to provide various architect-engineering design services, including water and ventilation systems modifications.

KSC recently expanded the original contract with a $109,000 award to design the Spaceport's Utilities Control System to include the hypergolic facilities and industrial areas and to modify the Spacecraft Assembly and Encapsulation Facility-2 (SAEF-2) for processing of Space Shuttle payloads.

Under the fixed-price contract modification, the Daytona Beach small business firm will prepare engineering reports based on the investigation of several optional sites where the hypergolic logistics and chemical waste disposal facilities may be constructed. Sites under investigation include the areas around Pads 39A and B, Pad 41 and the Industrial Area. Completion date for the contract is Sept. 1, 1977.

The $72,400 award brings total contract value to $333,886.

# # #

NASA News

National Aeronautics and
Space Administration

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

Dick Young
305 867-2468

For Release:
June 13, 1977

RELEASE NO: KSC 119-77

ORLANDO FIRM AWARDED SHUTTLE LAUNCH SYSTEM CONTRACT

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a contract for $696,410 to the Belko Steel Corporation, Orlando, Fla.

The contract is for the fabrication, assembly and fit check of two tail service masts for a Mobile Launcher Platform from which the Space Shuttle will be launched beginning in 1979.

The masts are 32 feet tall and are the mechanisms which will be used to retract the liquid oxygen and liquid hydrogen umbilicals from the shuttle at the zero point in the final countdown.

The masts are to be located on the zero or launch level of the Mobile Launcher Platform.

The tail service masts are to be delivered to KSC's Launch Equipment Test Facility in December for testing prior to installation on the Mobile Launcher Platform.

KSC's has been designated NASA's primary Space Shuttle launch and recovery site. Orbital test flights are scheduled to begin in the spring of 1979.

# # #

NASA News

National Aeronautics and
Space Administration

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

A. H. Lavender
305 867-2468

For Release:
June 10, 1977

RELEASE NO: KSC 118-77

PAN AMERICAN AWARDED MEDICAL SUPPORT CONTRACT

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a one-year, $1,567,954 contract to the Aerospace Services Division, Pan American World Airways, Inc., Cocoa Beach, Fla.,to provide occupational medicine and environmental health services.

The contract, which extends from July 1, 1977 through June 30, 1978, has options for four one-year extensions that would bring total contract value to approximately $10,000,000.

Under the contract, Pan American will provide occupational medicine and environmental health services for civil service, military and contractor personnel, supporting both NASA's Kennedy Space Center and Cape Canaveral Air Force Station. Services are performed by physicians, medical technicians and nurses.

Pan American, which has provided occupational medicine and environmental health services at KSC and Cape Canaveral under an existing contract since 1971, was the only company responding to NASA's request for proposal.

KSC will be the launch and landing site for Space Shuttle vehicles, with the first Shuttle launch scheduled in early 1979.

# # #

NASA Fact Sheet

National Aeronautics and
Space Administration

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

A. H. Lavender
305 867-2468

For Release:
June 1977

RELEASE NO: KSC 117-77

1977 LAUNCH SCHEDULE

Date	Mission	Launch Vehicle	Complex	Comments
Jan 27	NATO-IIIB	Delta	LC-17	Launched Jan 27
Mar 10	PALAPA-B	Delta	LC-17	Launched Mar 10
Apr 20	ESA-GEOS	Delta	LC-17	Launched Apr 20
May 26	INTELSAT-IVA-F-4	Atlas-Centaur	LC-36	Launched May 26
June 16	GOES-B	Delta	LC-17	Launched Jun 16
Jul 14	JAPAN-GMS	Delta	LC-17	
Aug	HEAO-A	Atlas-Centaur	LC-36	
Aug	SIRIO	Delta	LC-17	
Aug 20	VOYAGER-A	Titan-Centaur	LC-41	
Sep 1	VOYAGER-B	Titan-Centaur	LC-41	
Sep	ESA-OTS	Delta	LC-17	
Sep	INTELSAT-IVA-F-5	Atlas-Centaur	LC-36	
Oct	ISEE-A and -B	Delta	LC-17	
Nov	ESA-METEOSAT	Delta	LC-17	
Dec	JAPAN-CS	Delta	LC-17	
Dec	INTELSAT-IVA-F-3	Atlas-Centaur	LC-36	
Dec	FLTSATCOM	Atlas-Centaur	LC-36	

-over-

NOTE:

Future launch dates are tentative and are subject to frequent revision. In Florida, one may telephone toll free 1-800-432-2153 for information on the next launch.

ACRONYMS

ESA	European Space Agency
ESA-GEOS	Geostationary Satellite/Fields, Plasma and Particles
ESA-METEOSAT	Geostationary Meteorological Satellite
ESA-OTS	Orbital Test Satellite (Communications)
FLTSATCOM	U. S. Navy Communications Satellite
GOES	U. S. Geostationary Operational Environmental Satellite (Meteorology)
HEAO	High Energy Astronomy Observatory
INTELSAT	International Telecommunications Satellite (Commercial)
ISEE	International Sun Earth Explorer
JAPAN-CS	Japanese Communications Satellite
JAPAN-GMS	Japanese Geostationary Meteorology Satellite
NATO-III	North Atlantic Treaty Organization Communications Satellite
PALAPA	Indonesian Communications Satellite
SIRIO	Italian Experimental Communications Satellite
VOYAGER	U.S. Flybys of Jupiter and Saturn

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Mark Hess
305 867-2468

June 7, 1977

RELEASE NO: KSC 116-77

SPACEPORT CONTRACT EXTENDED FOR HUNTSVILLE FIRM

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a one-year $1,368,713 contract extension for operation of component refurbishment and chemical laboratories to Management Services Incorporated, Huntsville, Ala.

The one-year extension covers the period from June 1, 1977, through May 31, 1978. The cost-plus-fixed fee contract is a set aside for small businesses.

The $1,368,713 extension brings the value of the basic contract with Management Services Inc., to $2,538,713 since the original contract award on June 1, 1976.

The Kennedy Space Center has been designated the prime launch and recovery site of the reusable Space Shuttle which is scheduled for its first earth orbital flight in the spring of 1979.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

A. H. Lavender
305-867-2468

June 7, 1977

RELEASE NO: KSC 115-77

NOTICE TO EDITORS/NEWS DIRECTORS

GOES-B LAUNCH SCHEDULED JUNE 16

KENNEDY SPACE CENTER, Fla.--The launch of Geostationary Operational Environmental Satellite-B (GOES-B) aboard a Delta rocket from Complex 17, Cape Canaveral AFS, is scheduled on June 16. A launch window extends from 6:51 to 7:07 a.m. EDT.

A prelaunch news conference on the GOES-B mission is scheduled in the E&O Building Conference Room at 10 a.m. June 15. News media representatives with permanent Kennedy Space Center badges may proceed directly to the E & O Building via any KSC or Cape Canaveral AFS gate. Transportation for other news media representatives desiring to attend the conference will be provided, with a sedan departing the KSC Headquarters Building at 9:30 a.m.

For launch coverage on June 16 permanently badged news media representatives may proceed directly to Press Site 1 via any KSC or Cape Canaveral AFS gate. Others will be badged at Frank Wolfe's Beachside Motel, Cocoa Beach. A convoy from the Beachside Motel to Press Site 1 will depart at 5:15 a.m. with a stop at the Cape Canaveral AFS Pass and ID Building at 5:30 a.m.

Real-time countdown and mission commentary is available, beginning at about T minus one hour. Media representatives may phone the KSC Operator at 305-867-7110 and ask to be connected to the V-2 circuit.

# # #

NASA News

National Aeronautics and
Space Administration

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

Dick Young
305 867-2468

For Release:
June 17, 1977

RELEASE NO: KSC 114-77

SPACEPORT RE-SHAPED FOR ROLE IN SPACE SHUTTLE ERA

KENNEDY SPACE CENTER, Fla.--It will soon be two years since the Kennedy Space Center's Launch Complex 39 last reverberated with the sound and fury of a rocket catapulting men into space.

And it will be nearly two years more before the Space Shuttle claws its way into the sky on its first orbital flight.

But many of its sprawling and massive facilities - built for Apollo journeys to the Moon - have already been reshaped for their new roles in the Space Shuttle era.

KSC was selected as the primary launch and landing site for the Space Shuttle in 1972 and construction has been aimed at preparing to receive the first shuttle flight hardware in 1978 and to support the first manned orbital flight in 1979.

Among the factors which led to KSC's designation as the prime shuttle site was the existence of Complex 39, with structures readily adaptable to shuttle launch and servicing requirements. To keep costs down, planners were directed to take advantage of existing buildings that could be modified, with new facilities to be built only when a unique requirement existed.

The Space Shuttle is a new breed of space machine which is launched like a rocket, maneuvers like a spacecraft and lands like an airplane.

But KSC's existing physical plant was so adaptable that only two major new facilities were required. These were:

-- The Orbiter Landing Facility on which the Shuttle Orbiter will land on its return to Earth is one of the largest runways in the world.

This concrete runway is located to the northwest of the Vehicle Assembly Building and is roughly twice as long and twice as wide as the average commercial landing strip. It is 4.5 kilometers long, 91 meters wide and has a 300-meter safety overrun at each end.*

Its equipment includes a Microwave Scanning Beam Landing System which will guide the Orbiter to an automatic landing on its return from a mission in space.

-- The Orbiter Processing Facility is located in the heart of Complex 39 and connected with the landing facility by a 3.2 kilometer towway.** The OPF is essentially an aircraft "hangar" with two high bays in which Orbiters will undergo safing and servicing immediately after landing.

It is here, in a "clean room" environment, that ordnance and residual fuels will be rendered safe, flight and landing systems refurbished and payloads removed and installed.

A technological "face-lift" has been undertaken to prepare existing facilities for new roles.

-- The Vehicle Assembly Building, site of assembly for the Saturn V/IB rockets used in the Apollo, Skylab and Apollo/Soyuz programs, is being modified for the assembly of the Space Shuttle in two of its four high bays. The remaining two high bays will be used for processing and staging the Shuttle's Solid Rocket Boosters and External Tank.

-- The Launch Control Center, "brain" of the complex, is being fitted out with the highly automated Launch Processing System (LPS) developed for Shuttle checkout and launch. Two of the LCC's four Firing Rooms are being equipped with LPS consoles and associated equipment.

So sophisticated is the new system that only about one-tenth of the manpower required for Apollo will be needed in the Firing Room to checkout and launch the Space Shuttle - 45 as compared to 450.

And the final countdown for the Space Shuttle is expected to take only two and one-half hours as compared to the 28 hours needed for the final countdown for an Apollo/Saturn V.

-- Launch Pads 39 A and B are undergoing major changes. With the exception of the six fixed pedestals which support the Mobile Launcher Platform, all of the structures on the surfaces of these twin pads originally built for Saturn launches will be removed or relocated.

The upper portions of the umbilical towers from the Mobile Launcher Platforms are being removed and installed at each pad to serve as fixed Shuttle Service and Access Towers. With the exception of Spacelab - a large space laboratory being built by the European Space Agency - many payloads may be loaded into the Shuttle Orbiter at the launch pad from the Payload Changeout Room.

The Payload Changeout Room (PCR) is a "white room" structure mounted on a semi-circular track extending from the Shuttle Service and Access Tower. The PCR is retracted along its track to its park site prior to launch.

-- The Saturn Mobile Launchers are undergoing major changes to adapt them for the Space Shuttle. The most striking visual changes involve removal of the launch towers and their cranes from the platform. The need for these have been eliminated on the Mobile Launcher Platforms by installation of the permanent launch towers on the pads.

The single opening in the center of the Mobile Launcher Platform is being replaced by three openings to permit exhaust gases from the Orbiter's main engines and two solid rocket boosters to escape during liftoff.

The ponderous transporters bearing massive loads on a back the size of a baseball diamond will be used to move Mobile Launcher Platforms with the assembled Space Shuttle between the VAB and Complex 39's two launch pads.

These twin giants were originally adapted from strip mining machinery to carry Saturn V/Apollo flight hardware around Complex 39 and both have amassed odometer readings in excess of 800 kilometers.***

The transporters are expected to remain capable of performing their load-carrying chores through the life of the Space Shuttle program.

Much of the construction and modification work has already been completed and the eventual cost of the entire project will approximate $240 million, less than one fourth of the cost of building the Spaceport for Project Apollo in the 1960s.

- -

* - In English measurements, the landing facility is 15,000 feet long, 300 feet wide and each overrun is 1,000 feet long.
** - The towway is 2 miles long
*** - Odometer readings for both crawlers exceed 500 miles.

# # #

NASA News

National Aeronautics and
Space Administration

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

305 867-2468

For Release:
June 6, 1977

RELEASE NO: KSC 113-77

NASA TO LAUNCH GOES-B: NOAA ENVIRONMENTAL MONITORING SATELLITE

KENNEDY SPACE CENTER, Fla.--A new environmental monitoring satellite, to be positioned to keep watch over the eastern half of the United States and the Atlantic Ocean, is scheduled to be launched June 15, just in time for this year's hurricane season.

The satellite, GOES-B, to be launched by NASA's Kennedy Space Center, will be the latest in a series of Geostationary Operational Environmental Satellites to be operated by the National Oceanic and Atmospheric Administration (NOAA).

The spacecraft is scheduled for launch atop a Delta from Complex 17, Cape Canaveral, during a window extending from 6:50 to 7:07 a.m. EDT.

The 74-foot Delta first stage is powered by a RP-1 and liquid oxygen fueled engine rated at 205,000 pounds thrust at sea level, and burning for approximately three minutes 48 seconds.

Augmenting first stage engine thrust are nine Castor II solid propellant strap-on motors, each providing 54,000 pounds average thrust for 38 seconds. Six Castor II motors ignite for liftoff, the other three following jettison of the first six.

The 21-foot second stage engine, using nitrogen tetroxide as the oxidizer and Aerozine-50 as fuel, produces 9,800 pounds thrust. The stage's first burn will be for about four minutes 53 seconds. After a coast of approximately 12 minutes, the second stage engine is reignited for a burn of about 11 seconds.

The Delta third stage is a spin-stabilized solid propellant motor that produces 15,060 pounds thrust for 44 seconds. The spacecraft is mounted atop the third stage.

-more-

At third stage cutoff, the spacecraft is programmed to be in its transfer orbit. Stage and spacecraft will be separated about a minute later.

At the spacecraft's second or third apogee, its on-board solid propellant motor will be fired to place it in a near synchronous orbit. It will then drift to 75 degrees west longitude where its reaction control system thrusters will fire to place it at 22,300 miles altitude with a velocity that will keep it in position over the equator above South America. Once in orbit, the satellite will be known as GOES-2.

From that position, instruments aboard the satellite will let it "see" the development of hurricanes in the tropical Atlantic or Caribbean and follow any storm's movement. The satellite routinely transmits imagery back to Earth every half hour, day and night; more frequently when necessary.

GOES-B tentatively is expected to replace an earlier spacecraft of the same series in maintaining the East Coast watch. Another satellite of the series is positioned above the equator over the Pacific Ocean, watching the western half of the United States and the Pacific as far west as Hawaii.

While hurricane watch is an important mission of the satellite, it is far from the only responsibility, according to David S. Johnson, Director of NOAA's National Environmental Satellite Service.

Originally conceived as weather satellites, the geostationary spacecraft do provide a host of data of importance to weather forecasters. They use both visual and infrared imagery for severe storm evaluation and to analyze cloud cover, winds, ocean currents, fog distribution, storm circulation, snow melt and other environmental phenomena.

But other instruments on board enable the satellite to receive and transmit to earth information from data collection platforms on land and in the oceans; such information as water levels in rivers and reservoirs, ocean wave heights, rain and snowfall measurements and the like. Additionally, from digital data provided by the satellite, scientists are able to determine wind speeds and directions and cloud heights. Instruments also monitor solar "storms" by measuring X-rays and high energy particles emitted by the sun.

Since May 1974, when the first spacecraft of the series was launched, the use of data has rapidly expanded until today the information is used by such divergent interests as marine shipping companies, forestry officials and commercial fishermen.

-more-

Infrared radiometers provide Atlantic Coast and Gulf of Mexico shipping with precise information on the locations of the Gulf Stream and the Gulf Loop Current, enabling ships to utilize or avoid the currents in those waters. Gulf fishermen also use the information to find productive fishing grounds.

Both the Coast Guard and Civil Air Patrol use geostationary satellite data in their search and rescue efforts and current research projects indicate imagery and digital data provided by the spacecraft may be of use to agricultural interests by showing freeze lines, soil moisture content and the like.

Manufactured by Ford Aerospace and Communications Corp., as were the first three spacecraft in the series, GOES-B is expected to replace GOES-1 as the eastern satellite for NOAA at about 75 degrees west longitude. The earlier spacecraft will be moved to about 105 degrees west on stand-by basis, according to present plans.

Goddard Spaceflight Tracking and Data Network (STDN) will provide necessary support for the mission. The tracking stations include the Minitrack Network and stations at Guam; Orroral, Australia; Santiago, Chile; Quito, Ecuador; Rosman, N.C.; and Wallops Island, Va.

Goddard Space Flight Center, Greenbelt, Md., has contract and systems management responsibility for the spacecraft and performs in-orbit testing of the satellite until it is turned over to NOAA for operational use about 30 days after launch.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Bill O'Donnell
202-755-0816

June 2, 1977

RELEASE NO: 77-113

NASA SELECTS BOEING AS GROUND SYSTEMS OPERATIONS CONTRACTOR FOR KENNEDY SPACE CENTER

NASA has selected Boeing Services International, Inc., Seattle, Wash., a wholly-owned subsidiary of Boeing Aerospace Corp., for final negotiations leading to the award of a cost-plus-award-fee contract to provide ground systems operations in support of NASA launch operations under the management of the Kennedy Space Center, Fla.

Boeing also will provide some support to Air Force Operations at the Air Force Eastern Test Range and Cape Canaveral Air Force Station, Fla.

The Kennedy Space Center is NASA's East Coast launch site for expendable launch vehicles (Delta and Atlas) and the Space Shuttle scheduled to be launched in 1979.

Services to be performed beginning July 1, 1977 consist primarily of the operation and maintenance of launch systems and facilities. The contractor's estimate of the contract value for the first three years, including the maximum award fee, is approximately $80,500,000.

Bendix Launch Support Division of Bendix Aerospace Electronics Group, Arlington, Va., was also a bidder.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Hugh W. Harris
305 867-2468

May 27, 1977

RELEASE NO: KSC 112-77

GERALD D. GRIFFIN APPOINTED DEPUTY DIRECTOR OF KSC

KENNEDY SPACE CENTER, Fla.--Lee R. Scherer, Director of the Kennedy Space Center announced today the appointment of Gerald D. Griffin as Deputy Director. Griffin, who is presently Deputy Director of NASA's Dryden Flight Research Center (DFRC) in California, replaces Miles Ross who left NASA earlier this month.

Before becoming Deputy Director at DFRC in 1976, Griffin served for three years at NASA Headquarters, first as Deputy Associate Administrator for Legislative Affairs and later as Deputy Associate Administrator (Operations) in the Office of Space Flight. A native of Athens, Texas, Mr. Griffin served in the Air Force and worked in industry prior to coming to NASA in 1964. At the Johnson Space Center, Houston, Texas, Mr. Griffin was a Flight Controller during the Gemini program; a Flight Director on all 11 Apollo missions; and Lead Flight Director on Apollos 12, 15 and 17.

Mr. Griffin has received numerous awards for his NASA service, among them two NASA Exceptional Service Medals for his work on Apollos 12 and 15, the Presidential Medal of Freedom Group Achievement Award for Apollo 13, and the NASA Headquarters Creative Management Award.

Mr. Griffin is married to the former Sanda Jo Huber of Kerrville, Texas, and they have one son and one daughter.

# # #

NASA News

National Aeronautics and
Space Administration

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

Al Lavender
305 867-2468

For Release:
May 26, 1977

RELEASE NO: KSC 111-77

KSC EXTENDS PLANNING RESEARCH CORP. CONTRACT

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a $25,720,364 contract extension for engineering support services to Planning Research Corporation, McLean, Va.

The 12-month cost plus award fee contract extension provides for Planning Research Corporation to continue design engineering support services for the Space Shuttle program and other activities for which KSC's Design Engineering Directorate has design responsibilities from May 20, 1977 through May 19, 1978.

Work is performed at the Kennedy Space Center and Cape Canaveral Air Force Station in Florida and at KSC's Western Launch Operations Division, Vandenberg AFB, and NASA's Dryden Flight Research Center, Edwards AFB in California.

The contract extension brings the total amount of the contract, originally awarded on May 20, 1974, to $72,616,061. The company employs more than 1,100.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Al Lavender
305 867-2468

May 24, 1977

RELEASE NO: KSC 110-77

KSC SUNDAY DRIVE THROUGH TOURS RESUMED

KENNEDY SPACE CENTER, Fla.--Sunday drive through tours of the Kennedy Space Center will resume May 29.

Visitors will be able to enter the space center from Rt. 3 on Merritt Island or down Rt. 405 from U.S. 1. They will be able to drive through the KSC industrial area and the Cape Canaveral Air Force Station.

Gates will be open from 9 a.m. to 3 p.m. every Sunday.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Mark Hess
305 867-2468

May 24, 1977

RELEASE NO: KSC 109-77

KSC HONORS SMALL BUSINESS FIRMS DURING SMALL BUSINESS WEEK

KENNEDY SPACE CENTER, Fla.--Since fiscal year 1970, NASA's John F. Kennedy Space Center has awarded more than $100 million in contracts to small business firms. During the week of May 22-28, KSC joins other NASA centers and other government agencies for Small Business Week, honoring the country's more than nine million small business firms.

Jack Dryer, industry advisor and small business specialist of the KSC Procurement Office, reported that KSC issued $22 million and 11,717 awards and contracts to small businesses in fiscal year 1976.

About $11 million in awards went to Florida-based firms, with many of the contracts being granted to local businesses. At the midway point of this fiscal year, KSC has awarded over $21 million to small business firms.

KSC has also been a leading NASA center in the granting of contracts to minority owned firms. Dryer said that in 1976, the Spaceport awarded $2.6 million to minority firms, and over $2.25 million this year.

Dryer pointed out another provision was initiated this year by KSC to aid minority businesses. For all KSC construction contracts totalling over $500,000, the prime contractor must subcontract at least 20 per cent of its total subcontractor amount to minority firms.

Small businesses currently under KSC operate the Center's technical and research library, provide janitorial services, furnish printing and reproduction services and handle the mail and distribution duties. KSC also maintains a number of small business firm construction contracts.

# # #

NASA News

National Aeronautics and
Space Administration

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

Mark Hess
305 867-2468

For Release:
May 25, 1977

RELEASE NO: KSC 108-77

UNIVERSITY OF FLORIDA RECEIVES GRANT TO CONTINUE LIGHTNING STUDY

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a $16,200 supplemental grant to the University of Florida for continuation of a study on the effects of lightning strikes.

Data gathered from the study could ultimately lead to the development of an operational system which would be used by the Spaceport to forecast lightning hazards and determine damage extent to remote structures or aerial and underground cables.

The value of this study has its greatest application in regards to conducting all aspects of Space Shuttle processing, launch and landing operations safely and efficiently under marginal environmental conditions, said William Jafferis, staff assistant to Space Vehicle Operations Director and technical monitor for the study.

University of Florida personnel have been doing research under this grant involving various aspects in the study of lightning since 1973. Acting as consultants, they have been working with engineers from KSC's Space Vehicle Operations and Information Systems directorates using advanced lightning instrumentation presently at KSC.

The principal instrument to be used in the forthcoming studies is the Lightning Detection and Ranging (LDAR) device. It is designed to measure the sources of high frequency radiations being emitted from lightning activity going on within a cloud. Under the supplemental grant, the LDAR system will be modified, enabling it to locate cloud-to-ground lightning strikes to any KSC facility.

The system will also measure precisely the intensity of a lightning strike, thus making damage assessment to buried and aerial cables, or systems tied to the cables, accurate and immediate. Data obtained from these studies will be invaluable in determining Space Shuttle ground support equipment susceptibility to damage from cloud-to-ground lightning.

-more-

A secondary goal of the supplemental grant is the construction of a base-line lightning location system using four TV cameras. It will be used to determine the accuracy of other lightning detection instruments located throughout the Center.

"Only a few years ago, if a launch complex was struck by lightning, the vehicle would be removed and retested to determine how much damage, if any, it had sustained," Jafferis explained.

"But with the development of this operational system, every characteristic of a lightning strike, where it hit, how hard it hit and what it hit--even to the extent of knowing whether it struck a vehicle or damaged some underground cable--will be known immediately. And the entire KSC complex can be monitored from one base facility."

The $16,200 additional grant, brings the total amount awarded to the University of Florida for the lightning study program to $55,196.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Hugh W. Harris
305 867-2468

May 23, 1977

ALSO RELEASED BY NASA HEADQUARTERS
RELEASE NO. KSC-107-77

DR. ROBERT A. FROSCH NOMINATED FOR NASA ADMINISTRATOR'S POST

KENNEDY SPACE CENTER, Fla.--President Carter today announced the nomination of physicist Dr. Robert A. Frosch, 49, to become Administrator of the National Aeronautics and Space Administration. Frosch presently is Associate Director for Applied Oceanography at the Woods Hole Oceanographic Institution on Cape Cod, Mass., a position he has held since 1975.

Frosch, if confirmed, will succeed Dr. James C. Fletcher, who resigned May 1, after six years' service as NASA's Administrator.

From 1973 to 1975, Frosch was Assistant Executive Director of the United Nations Environment Programme, holding the rank of Assistant Secretary General of the United Nations. Previously, from 1966 to 1973, he was Assistant Secretary of the Navy for Research and Development. In earlier years, he served in various posts involving government research and development projects.

Frosch's professional career began in 1951 with the Hudson Laboratories of Columbia University, where he worked on Naval research projects. There he progressed from Research Scientist to Director of the Laboratories; becoming Director in 1956 and remaining in that post until 1963.

Frosch, a native New Yorker, earned his A.B., A.M. and PH.D. degrees at Columbia University. He is a member of Phi Beta Kappa and Sigma Xi. He received the Arthur S. Flemming Award in 1966 and the Navy Distinguished Public Service Award in 1969. Frosch is a member of some nine scientific professional societies and the author of numerous scientific publications. He is a member of the National Academy of Engineering.

He and his wife, Jessica, are the parents of two teenaged daughters. They presently reside in Falmouth, Mass.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Hugh W. Harris
305 867-2468

May 20, 1977

RELEASE NO: KSC 106-77

NASA WRITER'S CONFERENCE TO BE HELD SEPT. 1 - 3

KENNEDY SPACE CENTER, Fla.--A writer's conference primarily designed for staff and freelance magazine writers and editors will be held at NASA's John F. Kennedy Space Center, Florida September 1 - 3.

The timing of the meeting is set to coincide with the launch of the second Voyager spacecraft to Jupiter and Saturn. The launch will not only be a milestone in the exploration of our solar system but is the last scheduled use of the Titan III/Centaur rocket, the largest rocket currently used by NASA. Attendees at the conference will be briefed by Voyager Project Scientists and taken to the Press Site for the launch.

The purpose of the conference is to provide insight into the NASA program for article writers as well as information on how to research stories about NASA projects. A special directory of major projects listed by NASA Centers and including the names of Project Managers and Public Affairs contacts is being prepared especially for the conference.

The talks will stress the "why" of NASA projects and not the hardware. Overviews of the larger areas of work will be augmented with in-depth looks at what new knowledge is coming from specific projects.

Many of NASA's top scientists and managers will be on hand for the conference which will feature short talks and longer rap sessions on subjects ranging from "How it all started" to "What will we be doing 30 years from now." Dr. Abe Silverstein, one of the architects of the nation's space program and the first Director of Space Flight and longtime Director of NASA's Lewis Research Center, will talk about the expectations of the small group of engineers and scientists who put NASA together, how he feels about subsequent events and the direction he would like to see the program go in the future.

-more-

Dr. Gerald Soffen, Viking Project Scientist, will talk about, "Why We Went to Mars and What We Found." Other talks in the planetary area will cover the value of interplanetary exploration to the man-in-the-street, and what programs are being planned for the future such as the Jupiter Orbiter and Probe, rendezvous with Halley's Comet and landing intelligent roving vehicles on Mars.

Aeronautics programs will be featured Friday morning starting with an overview of work in such areas as the supercritical wing, swing wing, and Quiet Clean Short-Haul Experimental Engine. A longer session will focus on the efforts of NASA to develop the technology needed for aircraft in the 1980's which will use only 40 to 50 percent of the fuel needed presently per passenger mile.

NASA's work in energy programs on windmills, batteries, electric cars, and solar heating and cooling will be featured as well. Research and development in the energy field is one of the ways in which NASA is cooperating with other government agencies such as ERDA which have direct responsibility for a particular effort.

"The Space Shuttle...Why We Need It" will kick off the Friday evening session devoted to the future. Both the near term future with large orbiting satellites, wrist radios and energy gathered from the sun will be contrasted with farther term projections of orbiting space settlements for tens of thousands of residents, mining of the moon, and orbiting factories in space.

NASA's work with the medical, agricultural and other professions through its Technology Applications Program will be discussed from the standpoint of NASA's efforts to effect the fastest possible infusion of new technology into the general economy.

Following the NASA portion of the conference, a seminar on marketing will be held for interested persons lead by Martin Caidin, creator of the Six Million Dollar Man and Karl Kristofferson, frequent contributor to Reader's Digest on space subjects.

Advance registration for the conference is important for planning bus transportation and meals. A registration fee of $22.00 includes two dinners and one lunch. Mail registration is requested by August 15. Motel reservations are the responsibility of each participant. A list of motels and complete itinerary will be sent upon registration or on request.

-more-

Registration should be mailed to:

NASA Writer's Conference
PA-PIB
Kennedy Space Center, Fl. 32899

Cocoa Beach and the Kennedy Space Center are reached through both the Orlando and Melbourne Airports. Limousine transportation is available to Cocoa Beach which is approximately 50 miles from Orlando and 40 from Melbourne.

NASA News

National Aeronautics and
Space Administration

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

Mark Hess
305-867-2468

For Release:

May 18, 1977

RELEASE NO: KSC 105-77

SPACE TECHNOLOGY MAY LEAD TO EARLY DETECTION OF BREAST CANCER

KENNEDY SPACE CENTER, Fla.--Every year thousands of women are subjected to screening procedures for breast cancer which use potentially harmful x-rays. Many of these women go through the physical and emotional anguish of radical surgery in the treatment of this disease

Repeated x-rays have often been considered necessary because developing stages of breast cancer are sometimes undetectable by doctors who examine the earliest breast x-rays, making early diagnosis more difficult and sometimes allowing cancerous tissues to multiply until massive surgery is the only solution.

For two years engineers in the Data Analysis Facility at NASA's John F. Kennedy Space Center, Fla., have been working on the problem. The experimental process involves techniques similar to those originally developed to analyze imagery transmitted from Landsat satellites. By applying these space techniques to the medical field, engineers have developed a method which may enable doctors to detect early stages of breast cancer and to determine the likelihood that a woman will ever develop breast cancer.

This experimental technique for early cancer detection is a product of x-ray enhancement -- the ability of computers to enhance or make more visible information from x-rays not ordinarily detectable by the human eye.

Trained radiologists who examine x-rays work with a built-in handicap -- the human eye. The eye has difficulty in detecting small density changes or changes in the gray shades of the intensity spectrum's upper density region. Most x-ray data is within this upper density region.

-more-

The human eye -- even the most highly trained one -- can detect about 32 different shades of gray at best. For radiologists this means that much of the information contained on an x-ray is invisible to them.

The need is for a method of putting these undetectable shades of gray in a better perspective -- enhancing them so they are easily visible.

This is where the Data Analysis Facility steps in with its General Electric "Image 100" multi-spectral image analyzer. It is a computer-controlled system which extracts and classifies information about an image much better than can be done by human means.

Shades that were previously invisible to a doctor's eyes are now analyzed in much more detail. This makes significant information visible much earlier, improving prospects for an earlier diagnosis.

The special optical tool that begins this process is called a microdensitometer. Far superior to the human eye, it can detect 256 shades of gray with great accuracy.

The microdensitometer scans a photographic image - such as an x-ray-and then puts the information into computer language. The information is then fed into the Image 100 with instructions to enhance the low visibility gray shades. After classifying the gray shades which make up an image, the computer displays them in a way that is more meaningful to the radiologist.

Robert L. Butterfield, an electronics engineer at the Data Analysis Facility, has been working with the Image 100 and a Titusville, Fla., radiologist, Dr. Willian L. Walls, for two years on a process in which mammograms (breast x-rays) can be automatically analyzed to detect early stages of breast cancer before radical surgery is needed.

The current goal is to try to develop a computerized method of separating those women who are in a low risk group (least possibility of developing breast cancer) from those in a high risk group (high possibility of developing breast cancer). If this method becomes feasible, it should reduce the need for repetitive screening-type mammograms.

The new x-ray analyzing system, if the development effort is successful, may allow separation of women into low, medium and high risk groups, allowing radiologists to concentrate on the mammograms from the high risk group.

Medical persons and engineers hope that some day this method may lead to techniques that would allow detection of very early breast cancer. Depending on the rate of change in x-ray gray shades, the yardstick doctors use to diagnose various stages of breast cancer, the computer may yield information enabling the radiologist to determine if very early indications of breast cancer are present.

# # #

NASA News

National Aeronautics and
Space Administration

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

Dick Young
305 867-2468

For Release:
May 17, 1977

RELEASE NO: KSC 104-77

RELEASED IN CONJUNCTION WITH NASA HEADQUARTERS

VIRGINIA FIRM AWARDED KENNEDY CENTER SUPPORT CONTRACT

KENNEDY SPACE CENTER, Fla.--The National Aeronautics and Space Administration has selected Computer Sciences Corp., (CSC) Falls Church, Va., for the award of a contract for communications and instrumentation support services at the John F. Kennedy Space Center, Fla. RCA is expected to be a major subcontractor to CSC.

Kennedy Space Center is NASA's launch site for the Delta, Atlas and Titan expendable launch vehicles and will be the major launch site for the Space Shuttle manned flights scheduled to begin in 1979.

Services to be performed embrace two separate categories. The first category, covering a three year period, is for the modification, installation, operation, and maintenance of the operational intercommunications systems, the operational television system, and the checkout, control, and monitor subsystem.

The second category, covering one year with options for two additional years, is for communications, measurements, telemetrics, computer services, data storage and retrieval, program planning, and reliability and quality assurance. Most of the work will be accomplished at the Kennedy Space Center.

The value for the first three years of the cost-plus-award-fee contract beginning June 1, 1977 is approximately $41 million.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Dick Young
305-867-2468

May 17, 1977

RELEASE NO: KSC 103-77

NOTICE TO EDITORS/NEWS DIRECTORS

INTELSAT IV-A LAUNCH SCHEDULED FOR MAY 26

KENNEDY SPACE CENTER, Fla.--The third in a series of high-capacity Intelsat IV-A communications satellites will be launched aboard an Atlas-Centaur rocket from Complex 36 at Cape Canaveral Air Force Station on May 26.

The launch opportunity for that date extends from 5:47 to 6:52 p.m. EDT.

The launch is being conducted by NASA for the 95-nation International Telecommunications Satellite Organization.

A prelaunch news conference on the Intelsat IV-A mission is scheduled in the Conference Room of the E & O Building, Cape Canaveral Air Force Station, at 12 noon, May 25. News media representatives with permanent Kennedy Space Center badges may proceed directly to the E & O Building via any KSC or Cape Canaveral AFS gate. Transportation for other news media representatives desiring to attend the conference will be provided, with a sedan leaving the KSC Headquarters Building at 11:30 a.m.

For launch coverage on May 26, permanently badged news media representatives may proceed directly to Press Site 1 via any KSC or Cape Canaveral AFS gate. Others will be badged at Frank Wolfe's Beachside Motel, Cocoa Beach. A convoy from the Beachsite Motel to Press Site 1 will leave at 4:15 p.m., with a stop at the Cape Canaveral AFS Pass and Identification Building at 4:30 p.m.

In order to facilitate your coverage of the launch, the news center will remain open until approximately 30 minutes after liftoff. You may obtain a mission status report by calling 305-867-2468. After that time, a taped report may be obtained by calling 305-867-2525.

To obtain real-time mission commentary beginning at about T minus one-hour, you should call the KSC Operator at 305-867-7110 and ask her to patch you into the V-2 circuit.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

May 12, 1977

Dick Young
305 867-2468

RELEASE NO: KSC 102-77

TEXAS FIRM AWARDED ORBITER PROCESSING FACILITY CONTRACT

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a contract for $3,116,000 to the Beckman Construction Co., Fort Worth, Texas.

The fixed price contract, to be completed within 350 calendar days, is for work on the Orbiter Processing Facility (OPF) in which Space Shuttle orbiters will be serviced after their return from flights into space.

The contract calls for fabricating and installing the main access platform, piping and cabling in one of the OPF's two high bays and construction of a two-story, 10,000-square-foot Service and Support Annex.

Work under this contract is part of a comprehensive reshaping of KSC's Launch Complex 39 for its new role as the prime launch and recovery site for the reusable Space Shuttle which will begin Earth orbital flights in the spring of 1979.

The orbiter, about the size of a medium-range jet transport aircraft, will land on a three-mile-long runway to the northeast of the Vehicle Assembly Building.

It will then be moved into the OPF for the removal of ordnance, payloads and residual fuels. After servicing, it will then be moved into the Vehicle Assembly Building for mating with its solid rocket boosters and external propellant tank in preparation for its next mission in space.

Once the Space Shuttle system becomes operational, it is expected that the turnaround time between landing and launch will be around two weeks.

-more-

Complex 39 was built during the 1960s to support Project Apollo and its manned missions to the Moon. It was later modified for the Skylab Program in which three, three-man crews spent up to 84 days in orbit in the United States' first space station.

Its massive facilities have been modified for the Space Shuttle to help keep program costs to a minimum.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Dick Young
305 867-2468

May 9, 1977

RELEASE NO: KSC 101-77

SPACEPORT HYPERBARIC CHAMBER TO BE LOANED TO UNIVERSITY OF FLORIDA COLLEGE OF MEDICINE

KENNEDY SPACE CENTER, Fla.--The Kennedy Space Center's hyperbaric chamber has been loaned to the College of Medicine at the University of Florida in Gainesville for hyperbaric medicine and research.

Located in the Operations and Checkout Building in the KSC Industrial Area, the hyperbaric chamber was designed for treatment of astronauts if decompression sickness - "the bends" - should occur during their participation in manned altitude chamber tests of the Apollo spacecraft.

With completion of the Apollo Soyuz Test Project - a manned space mission with the Soviet Union - in the summer of 1975, there was no operational requirement for the altitude and hyperbaric chambers and all chambers were deactivated.

The hyperbaric chamber was available to the public for treatment of decompression sickness from February, 1968, through August 15, 1975, and a total of 13 patients - all of them SCUBA divers - were treated at the Center during that period.

The loan agreement extends through December 31, 1979, unless extended by mutual agreement of KSC and the University of Florida.

The original cost of the mobile hyperbaric unit was in excess of $80,000 and the University of Florida is responsible for the costs of maintaining the chamber and training its operation personnel as well as transportation of the unit to and from Gainesville.

In medical terms, a hyperbaric chamber is defined as "a specially equipped pressure vessel used in medicine and physiological research to adminster oxygen at elevated pressures."

Since their deactivation, the altitude and hyperbaric chambers have been preserved so that they may be reactivated if required for Space Shuttle activities.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Dick Young
305 867-2468

May 3, 1977

RELEASE NO: KSC 100-77

NASA TOURS PATRONAGE CONTINUES HEAVY IN APRIL

KENNEDY SPACE CENTER, Fla.--More than 103,700 visitors took guided bus tours of NASA's Kennedy Space Center and adjacent Cape Canaveral Air Force Station during April.

The 103,720 tour patrons during the month marked a decline of 3.5 percent in comparison with the 107,450 of April, 1976.

The April tour patronage brought the cumulative visitation for 1977 to 387,454, 7.8 percent below the 420,402 taking the tours during the first four months of 1976.

Tour volume exceeded 5,000 on six of the nine days between April 5-13, reflecting the Easter holiday and spring vacations from school.

The tour of the Brevard aerospace complex is among the state's most popular tourist attractions, offering glimpses of past accomplishments in space and preparations for the Space Shuttle, a keystone in the revolutionary new transportation system which will offer economical and routine access to space.

The Space Shuttle is scheduled for its first orbital flight from KSC in the spring of 1979 and many of Apollo/Skylab Launch Complex 39's massive facilities have already been reshaped for their new roles.

The many exhibits, space films and lecture demonstrations at the KSC Visitors Center are open to the public without charge. The guided bus tours are available for a nominal fee.

The Visitors Center is accessible via the NASA Causeway located two miles south of Titusville on U. S. Route 1 and State Road 3 on Merritt Island.

The Visitors Center and tours are operated every day of the year with the exception of Christmas.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Mark Hess
305 867-2468

April 22, 1977

RELEASE NO: KSC 99-77

TENNESSEE TECH ALUMNUS RECEIVES KSC CERTIFICATE OF COMMENDATION

KENNEDY SPACE CENTER, Fla.--James A. Devault, a Tennessee Technological University alumnus, was recently awarded a certificate of commendation by NASA's John F. Kennedy Space Center.

The commendation was for his work on the ground communications system used in support of the recently completed Approach and Landing Test (ALT) for the Space Shuttle Orbiter at NASA's Dryden Flight Research Center, Edwards, California.

Devault, on temporary duty from the Kennedy Space Center, was involved in the planning, coordination and management of the ALT ground communications system, including its design, development fabrication, installation and modification.

Devault was instrumental in the design of major ground support systems like the Operational Intercommunications System, the mobile radio system and the paging and area warning system for the Orbiter Checkout Facility at the Dryden Center. These systems were all essential for operations conducted at the ALT site.

Devault attended McKenzie High School in McKenzie, Tennessee, and was graduated from Tennessee Technological University with a BSEE in electrical engineering in 1965.

He joined NASA at the Spaceport in 1968, and is currently working in the Operational Intercommunications Branch which is responsible for Space Shuttle engineering of voice communication systems.

The Kennedy Space Center has been designated the prime launch and recovery site for the reusable Space Shuttle, scheduled for its first flight in the spring of 1979. The Space Shuttle is a unique and reusable transportation system to and from earth orbit that will open the door to the economical and routine use of space.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Mark Hess
305-867-2468

April 22, 1977

RELEASE NO: KSC 98-77

FORMER McKENZIE RESIDENT RECEIVES KSC CERTIFICATE OF COMMENDATION

KENNEDY SPACE CENTER, Fla.--James A. Devault, son of Julian and Mary Ruth Devault of 125 Church Street, McKenzie, was recently awarded a certificate of commendation by NASA's John F. Kennedy Space Center.

The commendation was for his work on the ground communications system used in support of the recently completed Approach and Landing Test (ALT) for the Space Shuttle Orbiter at NASA's Dryden Flight Research Center, Edwards, California.

Devault, on temporary duty from the Kennedy Space Center, was involved in the planning, coordination and management of the design, development, fabrication, installation and modification of the ALT ground communications system.

This includes the Operational Intercommunications System, mobile radio system and paging area warning system for the Orbiter Checkout, Facility at the Dryden Center, essential for ALT site operations.

Devault attended McKenzie High School, and was graduated from Tennessee Technological University with a BSEE in electrical engineering in 1965.

He joined NASA at the Spaceport in 1968, and is currently working in the Operational Intercommunications Branch which is responsible for Space Shuttle engineering of voice communication systems.

The Kennedy Space Center has been designated the prime launch and recovery site for the reusable Space Shuttle, scheduled for its first flight in the spring of 1979. The Space Shuttle is a unique and reusable transportation system to and from earth orbit that will open the door to the economical and routine use of space.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Dick Young
305-867-2468

April 19, 1977

RELEASE NO: KSC 95-77

SPACEPORT AWARDS CONTRACT FOR SHUTTLE HANDLING DEVICE

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a contract for $1,733,000 to the Beckman Construction Co. of Fort Worth, Texas.

The fixed price contract is for the construction of a Space Shuttle Orbiter Mate/Demate Device and miscellaneous projects at the three-mile-long Orbiter Landing Facility at KSC's Launch Complex 39.

The contract calls for the construction of a concrete foundation and erection of the Mate/Demate Device which will be used to raise and lower the Orbiter from its attachment points atop its 747 carrier aircraft.

The device is a basic steel structure 100 feet high, 110 feet long and 100 feet wide.

It will be located on the northeast corner of the Orbiter Landing Facility's ramp area.

Other work under the contract consists of construction of a 40,000 square foot ground support equipment parking area and access road, foundation pad and apron for the precision laser tracking system, five weather sites, concrete pavement around the 21 elevated approach lights at each end of the runway, installation of four fire water suction lines and associated work.

Completion of the work is scheduled for 360 calendar days.

KSC is the prime launch and recovery site of the reusable Space Shuttle, designed to provide routine and economical access to space.

The first orbiter is to be delivered to KSC during the summer of 1978 and the first launch of an Earth orbit mission is scheduled for the spring of 1979.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Dick Young
305-867-2468

April 15, 1977

RELEASE NO: KSC 94-77

ALL RADIO STATION NEWS DIRECTORS

NEWS COVERAGE AVAILABLE FOR GEOS LAUNCH APRIL 20

KENNEDY SPACE CENTER, Fla.--The Kennedy Space Center is to launch the GEOS spacecraft for the European Space Agency no earlier than April 20. The launch opportunity for that date extends from 5:15 - 6:15 a.m. EST.

Launch is to be aboard a thrust-augmented Delta rocket from Complex 17 at Cape Canaveral Air Force Station.

In order to facilitate your coverage of the launch, we will have a status report on our automatic telephone system that will be valid through the earlier portions of the countdown. The telephone number for this taped report service is Area Code 305-867-2525.

The news center will be manned from 5 - 7 a.m. and you may obtain a mission status report by calling 305-867-2468. The launch commentary from the Mission Director's Center will be carried on our V-2 circuit from about 45 minutes prior to liftoff through the end of powered flight and spacecraft separation about 25 minutes after liftoff.

To obtain this real-time commentary on the mission, you should call the KSC Operator at 305-867-7110 and ask her to patch you into the V-2 circuit.

The news center will be closed from 7 a.m. until its normal opening time of 8 a.m. but a taped actuality on progress of the mission will be available through 305-867-2525.

# # #

NASA News

National Aeronautics and
Space Administration

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

Dick Young
305 867-2468

For Release:
April 14, 1977

Trudy Tiedemann
Dryden Flight Research Center
305 258-3311

RELEASE NO: KSC 93-77

JET FLIGHTS UNDERWAY TO SEEK OUT BUG IMPACTS

KENNEDY SPACE CENTER, Fla.--A small jet transport out of NASA's Dryden Flight Research Center at Edwards, California, is flying in Florida to gain more information on the effect of insect impacts on the leading edges of aircraft wings.

The plane is being operated out of the Kennedy Space Center's aircraft facility at Patrick Air Force Base during the weeks of April 11-18. The flights are directed at seeking out bigger and more varied types of insects.

The program is being jointly conducted with NASA's Langley Research Center, Hampton, Virginia, and is part of the overall NASA Aircraft Energy Efficiency Program which is aimed at developing a 1985 transport with a potential 20 to 40 per cent fuel savings.

The advanced, long range aircraft will probably utilize laminar flow control technology which is dependent upon smooth air flow over the wings. However, it has been found that impacted insects which stick to the leading edges of the wings can trip the air flow and cause the flow to become turbulent. This would cancel out the increased efficiency which would be possible with laminar flow.

The small jet transport, equipped with a modified wing, has been flying in the Southern California area over alfalfa fields and sewage ponds, etc., to impact a large number of insects. On a typical flight, the aircraft then lands and the insect impacts on several specially coated panels on the wings are documented and measured.

The aircraft is then flown to a high altitude, high speed cruise condition where the effects of the impacts can be determined on the air flow.

-more-

It is hoped that by flying in the Kennedy Space Center area in Florida and possibly in June or July at the Johnson Space Center in Houston, Texas, a different type size or quantity of insects can be encountered.

More extensive testing can then be done on materials and methods which will prevent impacted insects from adhering to the leading edges of the wings.

# # #

NASA News

National Aeronautics and
Space Administration

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

A. H. Lavender
305 867-2468

For Release:
April 14, 1977

RELEASE NO: KSC 92-77

SPACEPORT CONTRACT TO ROCKWELL INTERNATIONAL

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a $95,025,000 contract to the Space Division, Rockwell International Corporation, Downey, Calif.

The cost plus award fee contract, signed April 7, covers the period from January 1, 1977 through March 31, 1980, and provides for Rockwell participation in activation of Space Shuttle facilities and systems and for Orbiter support during checkout, launch and post-flight operations for the first six Space Shuttle missions.

The contract also provides for Rockwell to support Orbiter post-flight operations at NASA's Dryden Flight Research Center, Edwards, Calif., following landings there. The Orbiter will land at Dryden following each of the first four missions.

Rockwell will have primary responsibility for activation of facilities and systems required for Orbiter and Space Shuttle Main Engine processing, including systems in the Orbiter Processing Facility, Vehicle Assembly Building High Bay 1, Pad A and Hypergol Maintenance Facility areas.

Additional tasks assigned to Rockwell under the contract are fabrication of hypergol valve complexes and the design, fabrication, installation and activation of Orbiter communications and tracking station checkout equipment in the Orbiter Processing Facility.

The first Space Shuttle launch is scheduled in 1979.

# # #

NASA News

National Aeronautics and
Space Administration

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

Mark Hess
305 867-2468

For Release:
April 14, 1977

RELEASE NO: KSC 91-77

KENNEDY SPACE CENTER AWARDS GRANT TO KENTUCKY STATE UNIVERSITY

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a $39,812 grant to Kentucky State University, Frankfort, Ky., to continue research on the effects of prolonged exposure of experimental animals to moderate deviations from the normal atmospheric level of oxygen.

Much study has been conducted on the effects of short-time exposures to 100 per cent oxygen for man and some experimental animals. But little is known about prolonged exposures to oxygen at low to moderate concentrations. Kentucky State was awarded an original grant in March 1974, to initiate a study.

Since that time, Kentucky State has made significant discoveries that may be useful to NASA in planning atmospheres for future manned space missions; particularly with the prospects of long-term missions aboard the Space Shuttle Orbiter, and more distant possibilities such as space colonies.

Using vinegar flies as subjects for the experiments, research has thus far shown that higher levels of oxygen have drastically shortened the life span of the flies, while lower levels have greatly reduced their reproductive capabilities.

Genetic research with the vinegar flies suggests it may someday be possible to identify individuals who are better adapted genetically to survive in abnormal oxygen environments.

Study under the new grant will investigate the secondary gas effect--the ability of nitrogen to prevent damage to the breathing passage cells by supporting them after the oxygen has been absorbed--and the damage to brain and lung tissue by high oxygen concentrations which may be an accelerated rate of normal aging effects.

The $39,812 award brings the total amount of KSC's grants for Kentucky State's study to $138,752.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Dick Young
305 867-2468

April 12, 1977

RELEASE NO: KSC 90-77

GEORGIA FIRM AWARDED SHUTTLE SOUND SUPPRESSION CONTRACT

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a fixed price contract for $4,334,000 to Algernon Blair Industrial Contractors Inc., Norcross, Georgia.

The contract is for construction of a sound suppression water system designed to protect the Space Shuttle orbiter and its payloads from damage by reflected acoustical energy associated with launch.

The contract calls for construction of an elevated 300,000-gallon water tank and water lines, installation of solid rocket booster side flame deflectors and an electrical control system for the water system at Complex 39's Pad A.

The shuttle will generate nearly 7 million pounds of thrust at liftoff, slightly less than the Apollo/Saturn V which hurled American astronauts to the Moon.

The water will be released at ignition of the shuttle's three main engines and twin solid rocket boosters to reduce the overall sound levels reflected back from pad structures upon the orbiter and its payloads.

The Kennedy Space Center has been designated the prime launch and recovery site of the reusable Space Shuttle which will begin Earth orbital flights in the spring of 1979.

The Space Shuttle will provide routine and economical access to space. KSC's launch facilities, originally built for the Apollo program in the 1960s, are being modified to accommodate the Shuttle and keep program costs to a minimum.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

A. H. Lavender
305 867-2468

April 11, 1977

RELEASE NO: KSC 89-77

NOTICE TO EDITORS/NEWS DIRECTORS

GEOS LAUNCH SCHEDULED APRIL 20

KENNEDY SPACE CENTER, Fla.--The launch of GEOS, a scientific satellite, for the European Space Agency is scheduled April 20, 1977. The spacecraft will be launched on a Delta rocket from Complex 17, Cape Canaveral AFS, during a window extending from 5:10 to 6:10 a.m. EST.

A prelaunch news conference on the GEOS mission is scheduled in the Conference Room of the E & O Building, Cape Canaveral AFS, at 11 a.m. April 18. News media representatives with permanent Kennedy Space Center badges may proceed directly to the E & O Building via any KSC or Cape Canaveral AFS gate. Transportation for other news media representatives desiring to attend the conference will be provided, with a sedan departing the KSC Headquarters Building at 10:30 a.m.

For launch coverage on April 20, permanently badged news media representatives may proceed directly to Press Site 1 via any KSC or Cape Canaveral AFS gate. Others will be badged at Frank Wolfe's Beachside Motel, Cocoa Beach. A convoy from the Beachside Motel to Press Site 1 will depart at 3:40 a.m., with a stop at the Cape Canaveral AFS Pass and Identification Building at 3:55 a.m.

# # #

NASA News

National Aeronautics and
Space Administration

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

Charles T. Hollinshead
305 867-2201

For Release:
April 5, 1977

RELEASE NO: KSC 88-77

MILES ROSS RESIGNS AS KSC DEPUTY DIRECTOR

KENNEDY SPACE CENTER, Fla.--Kennedy Space Center Director Lee R. Scherer announced today the resignation of his Deputy Director, Miles Ross.

Ross has accepted the position of Regional Manager in Europe for TRW Systems International, Inc. He will assume his new duties in early May.

Scherer accepted the resignation with deep regret, noting that "Mike has been a very strong deputy. He has played a vital role in the development of KSC since joining NASA in 1967. His knowledge and background and his good judgment have been invaluable to me in the management of the Center."

Ross was with TRW for 11 years prior to joining NASA. He was project manager of the Air Force Thor and Minuteman missile systems for TRW's Florida Operations. He later became Director of Flight Operations and was Manager of TRW Florida Operations at the time he was named Deputy Director for Operations at Kennedy Space Center in 1967. He was appointed to his present position of Deputy Director in 1970.

"This was a very difficult decision," Ross said in announcing his resignation to KSC management personnel. "It is particularly difficult because of the fine people we have here to work with."

Ross will be stationed in Brussels, Belgium. He and his wife, Patricia, are long time residents of Cocoa Beach where both have been active in civic and social affairs. The Rosses have four sons, Jonathan, Robert, Tony, and Andy.

A successor to Ross' position at Kennedy Space Center has not been named.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

A. H. Lavender
305 867-2468

April 1, 1977

RELEASE NO: KSC 87-77

MARCH NASA TOURS VOLUME WAS 114,845

KENNEDY SPACE CENTER, Fla.--NASA Tours volume in March was 114,845, raising total patronage for the first three months of 1977 to 283,734.

March volume, highest of any 1977 month, was 2.8 percent below the March, 1976 level. The three month 1977 total was 29,128, or 9.3 percent, below January - March, 1976 volume.

Tour patrons have an opportunity to enter the Vehicle Assembly Building where Space Shuttle vehicles will be prepared, view the Apollo/Saturn V displayed near the VAB, drive around Complex 39's Pad A where preparations for Shuttle operations are underway and tour Cape Canaveral Air Force Station.

NASA Tours originate at the Kennedy Visitors Center, accessible from the NASA Causeway off U. S. Highway 1 south of Titusville, and via State Road 3 from Merritt Island.

The visitors center features displays, exhibits, space science lectures and space movie showings, all provided free to the public, with continuous activities in the main building and a new Hall of History, opened during 1976.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

A. H. Lavender
305 867-2468

April 1, 1977

RELEASE NO: KSC 86-77

CASSELBERRY FIRM AWARDED SPACEPORT CONTRACT

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a $479,600 contract for mail and distribution support services to the Atlantic Technical Services Corp., 290 Iris Road, Casselberry, Fla.

The one year fixed-price contract, with provision for extensions of two additional years, covers a period from April 1, 1977 through March 31, 1978.

The company provided Spaceport mail and distribution services during earlier contracts extending from April, 1971, through March 31, 1977.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

A. H. Lavender
305 867-2468

March 31, 1977

RELEASE NO: KSC 85-77

NOTICE TO EDITORS/NEWS DIRECTORS

NASA HEADQUARTERS HEAO BRIEFING SCHEDULED APRIL 5

KENNEDY SPACE CENTER, Fla.--Pulsars, quasars, exploding galaxies and black holes in space will be among topics discussed on Tuesday, April 5 during a NASA Headquarters briefing on the High Energy Astronomy Observatory-A (HEAO-A) mission.

News media representatives desiring to hear the 10 a.m. briefing may listen at the KSC Public Information Office, Headquarters Building, or obtain it by phone on the V-2 circuit.

To be connected with the V-2 circuit, please telephone the KSC Operator, 305-867-7110, identify yourself and your organization, and request that you be connected with the V-2 circuit.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:
March 31, 1977

Dick Young
305-867-2468

RELEASE NO: KSC 84-77

PROPOSALS ASKED FOR SPACE CENTER TELEPHONE SYSTEM

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has issued a request for proposals for the installation and operation of an administrative telephone system.

The automatic dial telephone system will include basic switching equipment, telephones, cabinets, switchboards and consoles, interior wire and cable, and any ancillary equipment necessary for proper operation of the system.

The proposal requests were mailed to 16 firms in the communications industry on March 25 and proposals must be submitted to the KSC Procurement Office before the close of business on May 13.

The existing system with more than 6,150 telephones now in use is owned by the Southern Bell System and was installed in 1963.

Competing firms must have substantial direct experience and currently be engaged in the design, development, production, installation and sustaining services of large-scale telephone systems with 5,000 lines or more.

A preproposal conference will be held at the KSC Training Auditorium on April 12 to provide prospective offerors an opportunity to clarify any questions concerning the request for proposals (RFP).

The contract contemplated by the RFP would be for one year with 9 one-year options. The contract would also include an option to purchase the system.

# # #

NASA News

National Aeronautics and
Space Administration

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

Mark Hess
305 867-2468

For Release:
March 31, 1977

RELEASE NO: KSC 83-77

NEW WORLD SERVICES AWARDED LIBRARY CONTRACT

KENNEDY SPACE CENTER, Fla.--NASA's Kennedy Space Center has awarded a $228,000 contract to New World Services, Inc., of Titusville, Fla.

The one-year, fixed priced contract is for providing services needed to operate the technical and reference library at the Kennedy Space Center.

New World Services first became a KSC contractor in 1971 when it was awarded a three-year contract for maintaining the KSC library under a provision of the Small Business Act, Section 8(a). The provision gives minority owned business--like New World Services--an opportunity at contracts they would not ordinarily receive.

After the initial three-year contract ran out, New World Services successfully recompeted for the library contract in 1974, thus graduating to regular contractor status. It was the first firm to graduate from the 8(a) status to regular status at KSC.

The award is the result of a set-aside for small business firms and runs from April 1 to March 31, 1978. The total value of the parent contract, with the addition of the new award, stands at $613,453.

# # #

NASA News

National Aeronautics and
Space Administration

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

Mark Hess
305 867-2468

For Release:
March 30, 1977

RELEASE NO: KSC 81-77

ROCKVILLE FIRM AWARDED SPACE SHUTTLE ELECTRICAL CONTRACT

KENNEDY SPACE CENTER, Fla.--NASA's Kennedy Space Center has awarded a contract for $98,520 to the ASC Systems Corporation of Rockville, Connecticut.

The contract is for the construction of electrical control panels for the Hypergolic Maintenance and Checkout Facility, and for DC power panels for the Orbiter Processing Facility and Mobile Launcher Platforms--structures to be used in connection with the Space Shuttle Program underway at the Kennedy Space Center.

The Orbiter's fore and aft secondary engines use hypergolic or self-igniting propellants. These elements will be checked out and serviced in the Hypergolic Maintenance Facility.

The Orbiter Processing Facility will be used to check out and prepare the Orbiter--the primary vehicle of the space transportation system--between flights. The Space Shuttle Program is unique in that the Orbiter will be launched like a rocket from a Mobile Launcher Platform, but will land like an airplane and can be prepared for its next flight in a short a time as two weeks.

KSC has been designated the prime launch and recovery site for the reusable Space Shuttle, scheduled for its first flight in the spring of 1979.

# # #

NASA News

National Aeronautics and
Space Administration

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

Mark Hess
305 867-2468

For Release:
March 30, 1977

RELEASE NO: KSC 80-77

ROSELAND FIRM AWARDED SPACE SHUTTLE HOSING CONTRACT

KENNEDY SPACE CENTER, Fla.--NASA's Kennedy Space Center has awarded a contract for $17,461 to the Resistoflex Corporation of Roseland, N.J.

The contract--to be completed by Dec. 1, 1977--is for flexible hoses to be used at the Kennedy Space Center in association with the Space Shuttle Program.

The hoses will enable propellants, pressurizing fluids and electrical power signals to be transferred from the Mobile Launcher Platform to the Space Shuttle.

KSC has been designated the prime launch and recovery site for the reusable Space Shuttle, scheduled for its first flight in the spring of 1979.

The Space Shuttle Program will usher in a new era of space utilization by providing an economical and routine means of transporting various payloads to and from earth's orbit.

# # #

NASA News

National Aeronautics and
Space Administration

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

Mark Hess
305 867-2468

For Release:
March 30, 1977

RELEASE NO: KSC 79-77

ALABAMA ALUMNUS NAMED PROCUREMENT OFFICER AT KENNEDY SPACE CENTER

KENNEDY SPACE CENTER, Fla.--University of Alabama alumnus Fred Boles was recently appointed Procurement Officer at NASA's John F. Kennedy Space Center in Florida.

A former Tuscaloosa resident, Boles came to KSC from the Marshall Space Flight Center where he served six years as a branch chief and contracting officer. As procurement officer, Boles is responsible for the management of the Center's contracts and all other procurement activities.

Boles was graduated from the University of Alabama with a BS in business in 1955. A career government employee, he also served two years as an investigator for the Civil Service Commission and four years with the Department of the Army as a procurement analyst before joining NASA. Boles had been deputy procurement officer at KSC since 1968.

He now lives in Titusville, Fla., with his wife Glenda, also a former Tuscaloosa resident.

# # #

NASA News

National Aeronautics and
Space Administration

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

Mark Hess
305 867-2468

For Release:
March 30, 1977

RELEASE NO: KSC 78-77

TUSCALOOSA MAN NAMED PROCUREMENT OFFICER AT KENNEDY SPACE CENTER

KENNEDY SPACE CENTER, Fla.--Fred Boles, a former Tuscaloosa resident and a graduate of the University of Alabama, was recently appointed Procurement Officer at NASA's John F. Kennedy Space Center in Florida.

Boles had been the deputy procurement officer since 1968 when he came to KSC from the Marshall Space Flight Center where he spent six years as a branch chief and contracting officer. As procurement officer, he is responsible for the management of the Center's contracts and all other procurement activities.

Born in Tuscaloosa, Boles received his BS degree in business from the University of Alabama in 1955. A career government employee, he also served two years as a Civil Service Commission investigator and four years as a Department of the Army procurement analyst before joining NASA.

Boles now lives in Titusville, Fla., with his wife Glenda, also a former Tuscaloosa resident.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:
77-77
March 25, 1977

Dick Young
305 867-2468

MANATEE TRACKING SYSTEM TO BE DEVELOPED

KENNEDY SPACE CENTER, Fla.--If it's possible to build a better mousetrap, there must be a better way to track a manatee.

Previous manatee tracking experiments conducted by the U. S. Fish and Wildlife Service in waters surrounding the Kennedy Space Center have used sonar "pingers", devices with a number of problems - including range.

KSC recently awarded a contract for $25,970 to the Georgia Tech Research Institute at the Georgia Institute of Technology in Atlanta to develop a more satisfactory system.

The contract calls for Georgia Tech to develop a workable concept of an automatic tracking system which will enable the U. S. Fish and Wildlife Service to determine the location and movements of manatees.

The last manatee tracking experiment at KSC was conducted in October, 1975.

According to Blair Irvine of the U. S. Fish and Wildlife Laboratory in Gainesville, the tracking device used at that time was a sonar "pinger" attached just ahead of the large mammal's tail by a girdle.

The device was not completely satisfactory. Irvine said sonar range is limited and the signals are highly directional, making tracking difficult.

"What we're looking for," said Irvine, "is the best way to track an animal like the manatee. And we'll work very closely with them in adapting it to the animal."

-more-

The manatee is an endangered species and the tracking project is designed to pinpoint its roaming patterns and living habits.

The total U. S. population of the Caribbean manatee - one of three varieties in the Atlantic Basin - is estimated at from 1,200 to 1,500 animals, all of them in Florida.

Of this herd, perhaps 100 animals are concentrated in the waters of the Banana and Indian Rivers and Mosquito Lagoon near KSC.

Irvine noted that the past winter had exacted a large toll on the local manatee population and that the 25 dead animals found in local waters represented perhaps 20 to 25 percent of the resident herd.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

A. H. Lavender
305 867-2468

March 25, 1977

RELEASE NO: KSC 76-77

ENERGY EXHIBIT SCHEDULED AT KSC VISITORS CENTER APRIL 1-7

KENNEDY SPACE CENTER, FLA.--ENERGY, a free exhibit opening April 1 at the Spaceport's Visitors Center, is for those who have heard much about the energy situation, but want a better understanding of what the problem is and what can be done about it.

The exhibit, open April 1 through April 7 from 8:00 a.m. through 7 p.m. daily, will be interesting to both adults and students.

ENERGY comes to the Kennedy Space Center from the U. S. Energy Research and Development Administration. It is housed in two 50-foot trailers filled with animated exhibits, films and visitor-operated consoles. Two specially trained science teachers from the American Museum of Atomic Energy in Oak Ridge, Tenn., will be available to answer questions.

ENERGY, a major educational exhibit of ERDA, is one of several traveling exhibits in the eastern United States from the American Museum of Atomic Energy.

All types of energy currently in use are covered by the exhibit. So are possible future energy sources. Thus, by seeing ENERGY the visitor can gain an overall picture of the nation's energy problems and their effect on America's standard of living.

For example, present natural gas supplies are expected to be depleted with 15 to 40 years, and several exhibits explain how additional natural gas can be obtained from the nation's huge coal reserves.

Petroleum, the mainstay of America's transportation and a major fuel for generating electric power, is expected to be exhausted in about 50 years. But, as one exhibit explains, petroleum may be obtained from the processing of oil shale.

-more-

Through other exhibits, visitors may observe the process of developing power through magnetohydrodynamics, a sort of "supercharger" for conventional power generators. They can also see exhibits on solar heat collection and geothermal electric power generation.

Other exhibits demonstrate the principles of uranium fission nuclear reactors currently generating electricity around the country. Those being studied for future use, such as the breeder reactor which would make more fuel than it consumes, and the hydrogen fusion reactor which would operate on the same principle as the sun, are also demonstrated.

Besides exhibits, there are many question and answer consoles where visitors can measure their "Energy Quotients."

The exhibit, like the American Museum of Atomic Energy, is operated for ERDA by Oak Ridge Associated Universities, a nonprofit educational and research organization of 45 colleges and universities.

# # #

NASA Fact Sheet

National Aeronautics and
Space Administration

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

RELEASE NO: 75-77

For Release:
May 1977

1977 LAUNCH SCHEDULE

Date	Spacecraft	Launch Vehicle	Pad	Remarks
Launched January 27	NATO IIIB	Delta	17	Reimbursable
Launched March 10	PALAPA-B	Delta	17	Reimbursable
Launched April 20	ESA-GEOS	Delta	17	Reimbursable
May 28	GOES-B	Delta	17	Reimbursable
May 26	INTELSAT-IV-A	Atlas-Centaur	36	Reimbursable
June 16	ESA/OTS	Delta	17	Reimbursable
June 30	HEAO-A	Atlas-Centaur	36	
July	JAPAN/GMS	Delta	17	Reimbursable
August	SIRIO	Delta	17	Reimbursable
August 20	VOYAGER-A	Titan-Centaur	41	
September 1	VOYAGER-B	Titan-Centaur	41	
September	ESA/METEOSAT	Delta	17	Reimbursable
September	INTELSAT-IV-A	Atlas-Centaur	36	Reimbursable
October	ISEE's A & B	Delta	17	
November	FLTSATCOM-A	Atlas-Centaur	36	Reimbursable
November	JAPAN/CS	Delta	17	Reimbursable
December	IUE	Delta	17	

NASA News

National Aeronautics and
Space Administration

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

A. H. Lavender
305 867-2468

For Release:
March 11, 1977

RELEASE NO: KSC 74-77

KENNEDY SPACE CENTER EXTENDS BIONETICS CONTRACT

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a $869,727 contract extension to the Bionetics Corporation, 18 Research Drive, Hampton, Va., for continuation of reference standards services and calibration of instruments in support of NASA operations.

The cost plus fixed fee contract extension, for the period from May 1, 1977 through April 30, 1978, brings the total value since the contract was initiated in 1976 to $1,479,731.

The Kennedy Space Center launches expendable boosters with unmanned scientific and applications spacecraft from complexes at Cape Canaveral, Fla., and Vandenberg AFB, Calif., and is modifying facilities at the Spacecraft for manned Space Shuttle launch and landing operations. The first Space Shuttle launch is scheduled in 1979.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:
March 7, 1977

Dick Young
305 867-2468

RELEASE NO: KSC 73-77

CHICAGO FIRM AWARDED MOBILE LAUNCHER CONTRACT

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a contract for $2,799,713 to the Mayfair Construction Company, Chicago, Illinois.

The fixed price contract is for modifications to Mobile Launcher Platform 1 which will enable it to accommodate the reusable Space Shuttle which will begin orbital flights from here in 1979.

The project includes installation of basic mechanical and electrical systems, electrical control systems, a portion of the acoustic modification and uninterruptible power.

Mobile Launch Platform 1 is one of three Mobile Launchers used in Project Apollo and the Skylab Program which are to be reconfigured for Space Shuttle. Space Shuttle vehicles will be assembled on the Mobile Launcher Platforms in the Vehicle Assembly Building and then moved to one of the two pads at Complex 39 for launch.

The modification of Apollo-related facilities has enabled NASA to prepare for the Space Shuttle era at minimum cost.

The Kennedy Space Center has been designated the prime launch and recovery site for the Space Shuttle, key element in the Space Transportation System which is to provide routine, economical access to space.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Dick Young
305 867-2468

March 7, 1977

RELEASE NO: KSC 72-77

KSC LAUNCH PADS "LOADED" AS BUSY YEAR GETS IN FULL SWING

KENNEDY SPACE CENTER, Fla.--The "no vacancy" sign is up at all of KSC's launch pads with the exception of the Complex 39 facilities being modified for the Space Shuttle.

Undergoing processing this week as the busy 1977 launch schedule gets in full swing are six rockets and four spacecraft.

KSC's Expendable Vehicles Directorate uses five launch pads at three complexes on Cape Canaveral Air Force Station and all of them are loaded.

"It's kind of busy out there," said George F. Page, Director of the Expendable Vehicles Directorate. "We just don't have any more pads to put them on.

"And we're going to have to coordinate all our operations very carefully to make certain we get everything off on schedule."

Pads A and B at Launch Complex 17 on the southeast rim of the Cape are occupied by Delta rockets scheduled for launch in March and April.

Delta 129 is poised at Pad A to launch Palapa-B, an Indonesian communications satellite, on Thursday, March 10. The launch opportunity for that date extends from 6:16 to 8:16 p.m. EST.

Adjacent Pad B is occupied by Delta 130, which is to orbit Geodynamic Experiments Ocean Satellite-D for the European Space Agency. Launch of the GEOS satellite - which will test the effectiveness of new developments in monitoring ocean topography and observing sea states - is now scheduled for the early morning of April 20.

-more-

Medium weight payloads are launched aboard Atlas/Centaur rockets from Complex 36, slightly to the northwest of the eastern tip of the Cape.

Atlas/Centaur 39 is located on Pad A and will be used to launch an Intelsat-IVA communications satellite in June.

Pad B is occupied by Atlas/Centaur 45, which is to be used for the launch of the first of three High Energy Astronomical Observatories (HEAO) at 12:45 a.m. EST on April 15. The second and third in the HEAO series are to be launched in 1978 and 1979.

Twin Mariner-class spacecraft are to be launched aboard Titan/Centaur rockets at 10 day intervals in August on missions which will carry them to Jupiter and Saturn with a possible way stop at Uranus. Both launches will be from Complex 41, near the False Cape and slightly to the southeast of KSC's Launch Complex 39.

Titan/Centaur-6 for the second mission is now undergoing checkout at Complex 41 while Titan/Centaur-7, to be flown on the first mission, is being built up in the Vertical Integration Building at the Titan III Complex.

TC-6 will be returned to the VIB for temporary storage and TC-7 will be moved out to Complex 41 in April. The moves are part of the intricate scheduling required to launch the two vehicles from a single pad only days apart. The first Mariner Jupiter/Saturn mission is to be launched on August 20. The second is to follow on August 30.

Although Complex 17's Pad A will soon be vacated by the Palapa launch, it will not long be without an occupant.

Delta 131 for the launch of the second in a series of Geostationary Orbiting Environmental Satellites (GOES), an operational weather satellite owned by the National Oceanic and Atmospheric Administration, will be erected on Pad A in April. Launch is scheduled for May.

A total of 17 launches are scheduled by KSC during 1977. Sixteen of them are from facilities at Cape Canaveral Air Force Station. The remaining mission - LANDSAT C - will be launched from KSC facilities at the Western Test Range in California.

At least one launch is scheduled for every month through the remainder of the year.

"With 17 space vehicles on the schedule," said Page, "this is four more than the number launched in 1976. We anticipate a heavy work load to stay with us throughout the year."

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

A. H. Lavender
305 867-2468

March 2, 1977

RELEASE NO: KSC 71-77

KSC EXPANDS DAYTONA FIRM'S ARCHITECT-ENGINEER CONTRACT

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has expanded a fixed price architect-engineering services contract with Russell and Axon, 1620 Mason Street, Daytona Beach, Fla.

The $109,000 addition brings total contract value to $262,124 and extends the completion date from July 6 to October 22, 1977.

The contract action expanded the company's scope of work to encompass design of the Spaceport's Utilities Control System to include the hypergolic facilities and industrial areas and Spacecraft Assembly and Encapsulation Facility-2 (SAEF-2), which will be modified for processing of Space Shuttle payloads.

The original Russell and Axon contract, awarded February 1, 1977, provided for various architect engineering design services, including water and ventilation systems modifications.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

March 2, 1977

Darleen Hunt
305 867-2468

RELEASE NO: KSC 70-77

HUD SOLAR CENTER DISPLAYED AT VIC MARCH 15-18

KENNEDY SPACE CENTER, Fla.--A traveling exhibit on solar heating and cooling for homes will be available for free viewing by the public at the Kennedy Space Center Visitors Center from March 15 through 18th.

Assembled by the U. S. Department of Housing and Urban Development (HUD) the exhibit is housed in a 30-foot travel van and will stop at KSC as part of its nationwide tour.

The HUD Solar Center not only serves as a source of information for the public on solar heating and cooling, but is being used to gather data from the public to determine the public interest and needs for various types of information. This data will be used for updating the national solar energy data bank at the Energy Research and Development Administration's (ERDA) Technical Information Center.

Two knowledgeable employees from the Franklin Institute Research Laboratories, Philadelphia, will man the exhibit and answer questions of visitors and provide information.

The exhibit contains back-lighted pictures of solar homes, a map of the U. S. showing solar home locations, and two demonstration models of solar heating systems.

Parked adjacent to a covered walkway, the van/exhibit will be located at the east end of the Visitors Center parking lot. Hours of operation will be from 8:00 a.m. to 7:00 p.m.

# # #

NASA News

National Aeronautics and
Space Administration

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

Darleen Hunt
305 867-2468

For Release:
February 17, 1977

RELEASE NO: KSC 69-77

KSC POST OFFICE TO USE NEW PICTORIAL CANCELLATION

KENNEDY SPACE CENTER, Fla.--A striking new pictorial machine cancellation has been designed for use at the KSC Post Office.

The new cancellation mark with the legend "Beginning a new era, Space Shuttle" and a modernistic shuttle symbol will first be used on March 1.

The new machine cancellation replaces the one currently in use which shows a rocket liftoff.

Due to the impact of the Space Shuttle program on the entire world's population, NASA requested the new cancellation. The design for the die hub which will be used to cancel postage originating at KSC was designed by the center's Boeing Graphics Unit.

Individuals who wish mail cancelled on the first day of use should address requests to: Mail and Distribution Services, AD-CSO-M, National Aeronautics and Space Administration, Kennedy Space Center, Fla. 32899.

The U. S. Postal Service will accept mail from the public to be postmarked with the new cancellation on the first day of use.

As the Kennedy Space Center Post Office is not open to the general public, there will be an identified drop box in the lobby of the post office at nearby Titusville where mailings can be deposited to receive the new cancellation.

-more-

The mail will be removed from the drop box, taken to KSC, cancelled and placed in the mail system. The drop box will be open for an eight-hour period beginning at 8 a.m. on February 28.

NASA will accept by mail at KSC up to five covers from each collector. Each cover must bear the proper postage in the upper right-hand corner. The top of the stamp should be three-quarters of an inch from the top of the envelope and the address should be in the lower right-hand corner. Each envelope should include a filler of some kind to assure clear cancellations and to prevent damage to envelopes.

For first date of use cancellation, envelopes must be received no later than February 28.

There will be no rubber stamp cachet and no hand back service will be provided.

The last day for use of the old die hub cancellation will be February 28.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Dick Young
305 867-2468

February 27, 1977

RELEASE NO: KSC 68-77

SATELLITE DATA MAY LEAD TO FREEZE LINE PREDICTIONS

KENNEDY SPACE CENTER, Fla.--When winter's icy hand slides down the Florida peninsula, the price or availability of many items we take for granted depends upon human ability to predict just where its cold fingers will reach into the state's multi-billion dollar citrus and vegetable belts.

At stake, for instance, are our morning orange juice or grapefruit, the tossed green salad with dinner and even many of the ornamental plants used to provide a touch of greenery or color in our homes.

Soon to improve our forecast ability will be computerized predictions of frost and freeze areas using earth images taken at 30-minute intervals by a 1,400-pound weather sentry hanging 22,300 miles above the equator.

How cold will it get? Where will the freeze line be drawn? When and where will the temperature drop below the 28-degree danger point for citrus? How long will the mercury remain there?

If citrus grove operators and growers of other cold-sensitive crops fail to fire up grove heaters, turn on wind machines or take other crop protection measures, the consequences of a freeze could be an economic catastrophe for both grower and consumer.

On the other hand, turning out work crews to operate protection devices can be extremely costly and an unneeded expense if the night will pass without the cold dropping to the danger point.

For the citrus industry alone, it costs about $36,000 per hour just to keep the work crews on standby and the expense of "firing up" can run to $5 million per night.

-more-

Nearing the payoff point is a four-year effort by the National Weather Service, the University of Florida and NASA's John F. Kennedy Space Center to develop a computerized and more accurate means of forecasting the freeze line.

And, while the new tool is being developed with the immediate needs of Florida agriculture in mind, its promise for application anywhere in the nation where cold-sensitive crops are grown is great.

The prediction system is being developed by the Sciences, Technology and Applications Office at the Kennedy Space Center, the University of Florida's Institute of Food and Agricultural Sciences, and the National Weather Service, the latter an arm of the National Oceanic and Atmospheric Administration (NOAA).

It will be installed in the National Weather Service's office at Ruskin, on the east side of Tampa Bay south of Tampa, this year and will hopefully be operational in time for the winter of 1977-78.

According to Dr. R. A. Sutherland, who is heading development of the mathematical model, or computer program, at the University of Florida, the new system should improve the accuracy of minimum temperature forecasts, provide a more detailed temperature pattern and permit forecasters to make more timely updates in their predictions due to changing conditions.

The National Weather Service's existing freeze prediction system relies on large scale meteorological patterns and a steady flow of temperature reports from throughout the state. It does not permit the refinements nor extensive use of computers as does the forecast system soon to be operational.

The present forecasts are issued for "zones" consisting of one or more counties and the observed temperatures are almost always within four degrees of those forecast.

"We can foresee three major areas of improvement in these forecasts," said Dale Pope, Project Manager for NASA's Kennedy Space Center.

"We hope to increase the accuracy of the temperature prediction from within four down to within two degrees. We also hope to improve the geographical resolution, refining relatively small areas rather than large temperature zones.

"In addition, the constant flow of satellite imagery at half-hour intervals should permit the forecasts to be updated more frequently."

The satellite pictures come down from GOES-1 (its rather ponderous formal name is Geostationary Orbiting Environmental Satellite-1) suspended in a hovering orbit 22,300 miles above Colombia in South America at 75 degrees west longitude.

GOES, launched by NASA for the National Oceanic and Atmospheric Administration, is designed primarily to provide weather forecasters with day and night cloud cover photographs of much of the western hemisphere.

Daytime cloud pictures are taken in visible light. Those at night are taken in infrared light which is not visible to the human eye and which reveals heat reflections rather than actual objects.

But freezing conditions rarely occur in Florida under cloudy skies and the satellite "sees" ground temperatures rather than those of cloud tops on most nights when there is a potential for crop-damaging cold.

The readings of surface temperatures are accurate to within two degrees Fahrenheit and each electronic picture element (or "pixel") covers an area five miles square.

GOES funnels its torrent of information down to earth to the National Environmental Satellite Service in Suitland, Md. It is then fed down the line to Satellite Field Service Stations throughout the United States almost instantaneously.

Among the stations receiving the "real time" data is the NWS installation at Ruskin, the freeze and frost warning oracle for Florida agriculture.

The images now come in at Ruskin in black and white, the various shades of gray from the infrared sensors providing temperature profiles of the ground far below.

NASA is soon to provide the National Weather Service facility with a highly sophisticated computer and image analyzer which will display the shifting temperature profiles like a kaleidoscope in dazzling shades of pink, yellow, blue and other brilliant colors.

Each color represents a specific temperature, giving weather forecasters a highly accurate "map" of the cold surging down the long Florida peninsula. Based on five-mile square "pixels", the map provides a more accurate and detailed picture than the old system.

-more-

The computer uses a program or "math model" developed at the University of Florida under NASA sponsorship to predict temperature profiles through the long, cold night.

The computer program incorporates historical data from 14 key stations and 300 other locations. It includes such factors as soil types and moisture, relevant in determining the speed with which the soil will give up its residual heat to the advancing cold, and can cope with such variables as wind velocity.

As GOES relays its information down to earth, the computer will display existing cold profiles, with striking bands of color showing the temperature differentials throughout the peninsula.

Then the computer, using its highly specialized program, will use the current conditions to predict those likely to develop up to four hours in the future.

"When fully developed, we'll see the whole state rather than just selected areas," said an enthusiastic Fred Crosby, meteorologist-in-charge of the NWS Office at Ruskin. "This is going to be a powerful tool for us. It's very impressive for us to see this kind of thing compared to spot temperatures.

"In time, it will significantly refine the climatology of Florida temperatures - or any other areas where this technology is made available."

The new tool will be used to provide forecasts to fruit and vegetable growers to allow them to make more efficient and timely decisions on freezing conditions to minimize crop losses and eliminate unnecessary use of fuel.

Crosby said he believes the technique might be applicable "anywhere preventive measures might be taken to protect sensitive crops."

Crosby mentioned specifically the possible application of the technique to peaches in Georgia, cranberries in New Jersey and Wisconsin and apples in Washington state, as well as California's Imperial Valley and the Rio Grande Valley of Texas with their wide variety of truck and citrus crops.

Dr. Jon Bartholic, a University of Florida climatology professor playing a major role in the development of the "math model", was equally enthusiastic over the new technique.

"We're just opening up the area of remote sensing in agriculture," he said. "And these new tools should help us produce more food at lower cost."

Bartholic noted that unexpected freezes "can destroy the effort of a whole year in a couple of hours" and said the new technique will help to minimize losses.

In the case of citrus, for example, the real-time temperature maps can pinpoint hard-freeze areas, permitting growers to salvage a large part of their loss by picking their fruit and rushing it to concentrate processors before quality loss sets in.

But the possiblities extend far beyond mere freeze protection.

Certain insect pests remain dormant when the temperatures are below critical levels. If growers know that temperature levels have not been high enough to spur the insects to life, they can save the time and expense of spraying.

It also has the potential of determining whether temperature levels in combination with the dew point and moisture are conducive to the growth of mold and fungus diseases on wet leaves. This information could tell a farmer to spray or not to spray.

With suburban sprawl devouring more and more of the nation's best croplands, the technique offers other potentials. It might be used to better select areas in which to grow specific crops and help planners earmark warm areas for plant growth.

The joint NASA-University of Florida-National Weather Service project is an example of space-age technology being put to use to help "produce more food at lower cost," and in Bartholic's words:

"We're just opening up the area of remote sensing in agriculture."

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:
February 17, 1977

A. H. Lavender
305 867-2468

RELEASE NO: KSC 67-77

CONTRACT EXTENSION TO TITUSVILLE FIRM

KENNEDY SPACE CENTER, Fla.--A one-year extension of a contract for custodial services at NASA's John F. Kennedy Space Center has been awarded to Expedient Services, Titusville, Fla.

The $1,870,000 award covers the period from February 1, 1977 through January 31, 1978, and brings the cumulative value of the contract to $7,327,197 since the contract was originally awarded February 1, 1973.

The fixed price contract is a small business award, a set-aside for disadvantaged firms. The contract was awarded by the Small Business Administration, Atlanta, Ga., on behalf of KSC.

NASA actively pursues efforts to increase participation of small business firms in its procurement program.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

A. H. Lavender
305 867-2468

February 17, 1977

RELEASE NO: KSC 66-77

NOTICE TO EDITORS/NEWS DIRECTORS

CLASSROOM USE OF "HAM" RADIO AND OSCAR SATELLITES TO BE SHOWN

KENNEDY SPACE CENTER, Fla.--Demonstrations of the use of OSCAR satellites and amateur radio as teachers' aids are expected to draw capacity attendance at an auditorium of the Kennedy Space Center Visitors Center Monday.

Teachers of the Brevard and Broward County school systems have been invited to the day-long conference on "Uses of Amateur Radio and the OSCAR Satellites in the Classroom" as one of their in-service programs. Educators from other Florida counties will also attend.

OSCAR is an acronym for Orbiting Satellite Carrying Amateur Radio. The satellites, sponsored and built by an international group of volunteer amateur radio operators, are designed to serve as orbiting relay stations for "ham" radio operators.

The OSCARs are launched into polar orbit piggyback with ITOS meteorological satellites from the Western Test Range by the Western Launch Operations Division of KSC's Expendable Vehicles Directorate. They pass over the same points on earth daily. Used as a relay station, an OSCAR can extend "line-of-sight" range between amateur operators to 5,000 or more miles.

"Ham" radio has many educational and public service applications. Used in the schoolroom, the fast-growing hobby can bring students into direct contact with others living hundreds, even thousands of miles away. Communication through OSCAR satellite is accomplished by use of simple and inexpensive equipment.

-more-

Cooperating with the KSC Educational Programs Office in the conference are the American Radio Relay League, Indian River Amateur Radio Club and Florida school faculty members.

News media representatives are invited to cover the conference at the Visitors Center. For additional information, please phone the KSC Public Information Office (305 867-2468) or the Educational Programs Office (305 867-4444).

A copy of the conference agenda is attached.

# # #

"THE USES OF AMATEUR RADIO AND THE OSCAR SATELLITES IN THE CLASSROOM"

Visitors Center, NASA Kennedy Space Center

February 21, 1977

Conference Agenda

10:30a.m. - 11:30a.m.	Live Demonstration of the OSCAR Satellites
11:30a.m. - 12:30p.m.	Lunch, VC Cafeteria - Self-Guided Tour
12:30p.m. - 12:45p.m.	Registration
12:45p.m. - 1:00p.m.	Welcome Raymond R. Corey Educational Programs Officer NASA Kennedy Space Center
1:00p.m. - 1:45p.m.	Amateur Radio and OSCAR: An Introduction William I. Dunkerley Jr. WA2INB American Radio Relay League
1:45p.m. - 2:00p.m.	ARRL'S OSCAR Education Program Joel P. Kleinman WA1ZUY OSCAR Education Program Asst. ARRL
2:00p.m. - 2:45p.m.	OSCAR In the Classroom Lester Dwyer, Chairman Dept. of Science Chaminade High School, Hollywood, FL.
2:45p.m. - 3:30p.m.	How Much Does Gasoline Cost in Brazil?: Amateur Radio in the Classroom Louis Hoekstra Jr. Teacher, Social Studies Winter Park Junior High School Winter Park, FL
3:30p.m. - 4:30p.m.	Demonstration Areas Typical Amateur Station } Indian River Beginners' Amateur Station } Amateur Radio Satellite Ground Station } Club Film: "Moving Up to Amateur Radio" Video-tape Demonstration of OSCAR NASA Educational Program/Services

NASA News

National Aeronautics and
Space Administration

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

For Release:

Dick Young
305 867-2468

February 16, 1977

RELEASE NO: KSC 65-77

LAUNCH PREPARATIONS UNDERWAY FOR JUPITER/SATURN MISSION

KENNNEDY SPACE CENTER, Fla.--Twin Mariner spacecraft will embark on an extended scientific romp through the outer planets late this summer. The flight plan calls for soaring past Jupiter and Saturn with Uranus a possible port-of-call.

The dual Titan/Centaur launch operation is almost a replay of the back-to-back Mars Viking launches in the late summer of 1975 and flight hardware is already being processed by KSC's Expendable Vehicles Directorate.

Launch of the first Mariner Jupiter/Saturn (MJS) spacecraft is scheduled from Complex 41 on August 20. The second will follow from the same pad 10 days later.

Preparing for the launch of two giant rockets and sophisticated spacecraft from a single pad within the short span of 10 days has required the choreography of an intricate ballet which will not end until the second mission is spaceborne.

Titan/Centaur 6, minus its giant solid strap-on booster motors, is now at Complex 41 undergoing checkout, with major tests scheduled for later this month. TC-6 will be used for the second launch. After completing checkout in April, it will be returned to the Vertical Integration Building (VIB) at the Titan III Complex for storage while TC-7 - for the first mission - is undergoing checkout at the pad.

The first and second stages of Titan/Centaur 7 have been erected on a mobile transporter in the VIB and the Centaur final stage is to arrive and be erected later this month.

-more-

TC-7 will be moved into the Solid Motor Assembly Building (SMAB) for installation of its booster motors in mid-April and arrive at the pad later in the month.

A "pathfinder" or proof test model spacecraft will be erected atop TC-7 in mid-May and key electrical and countdown tests will be conducted in late May.

Jack Baltar, Chief of Complex Test Operations for Expendable Vehicles' Centaur Operations Division, described MJS preparations as "really a replay of Viking. Checkout is running smoothly and we're on or ahead of schedule."

While rocket checkout is underway, the Spacecraft and Support Operations Division is preparing for arrival of the "pathfinder" and flight versions of the 1,764-pound spacecraft.

The spacecraft are built by the Jet Propulsion Laboratory, which will assume operational control of the spacecraft on their long journeys through the solar system after launch.

The "pathfinder" to be used for pad tests is due to arrive at KSC on April 11. The first flight spacecraft is to arrive the week of April 25 and the second the week of May 23.

According to Floyd A. Curington, KSC's Project Engineer for MJS, the MJS mission and propulsion modules will receive an initial checkout at KSC facilities on Cape Canaveral Air Force Station prior to their movement to the two Spacecraft Assembly and Encapsulation Facility (SAEF) buildings in the KSC Industrial Area in July.

The mission and propulsion modules will then be mated, the nuclear electrical generator power source installed and the assembled spacecraft encapsulated in the Centaur Standard Shroud.

TC-6 for the second mission will be moved into the SMAB for installation of its booster motors on July 20 and remain there until launch of TC-7 with the first spacecraft on August 20. TC-6 is to be moved to Complex 41 on August 21 with launch to follow August 30.

The MJS missions are the most ambitious ever undertaken to the outer planets.

Pioneer 10 came within 81,000 miles of Jupiter's banded cloud tops in 1973, crossed the orbit of Saturn in 1976 and will soar beyond the orbit of Pluto to enter galactic space in 1987.

-more-

Pioneer 11 came within 26,000 miles of Jupiter's cloud tops in 1974 and is targeted to reach Saturn in 1979.

The MJS spacecraft outweigh the planet-hopping Pioneers (570 pounds) by a factor of three. Each Mariner will use 10 instruments and the spacecraft radio to study the two planets, their satellites, the rings of Saturn and interplanetary space.

In addition to wide-angle and narrow-angle television cameras, the Mariners carry cosmic-ray detectors, infrared spectrometers and radiometers and a host of other instruments to advance man's knowledge of the outer reaches of the solar system.

The television cameras are expected to provide scientists with pictures of Jupiter and Saturn that are clearer than have ever been seen, and the first high-resolution, close-up images of the Galilean satellites of Jupiter, the major satellites of Saturn and Saturn's rings.

The twin spacecraft will make their closest approaches to Jupiter in 1979 and fly closest to ringed Saturn in 1980-81.

Project officials have the option of sending the second spacecraft on to Uranus, with encounter occurring in 1986.

Launch of the twin Mariners will mark the end of an era. The MJS missions are the last now scheduled for the Titan/Centaur and Complex 41 will be downmoded for NASA operations after the launch of TC-6.

The Air Force Titan III Complex has two launch pads but only Complex 41 has been modified to accommodate the hydrogen-fueled Centaur.

# # #

NASA Fact Sheet

National Aeronautics and
Space Administration

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

For Release:
March 1977
KSC 64-77

NASA'S FUTURE PROGRAMS

(Reprinted from NASA Activities, February 1977)

From April to October of last year, a comprehensive study was conducted at all levels of NASA to identify specific goals for aeronautical and space activities during the next five years.

The goal for aeronautics is the assurance of United States preeminence in aviation, supplying a technology base that will enable our country to continue developing superior civil and military aircraft embodying improved design, materials and propulsion, able to compete successfully in the world market.

That goal will be pursued in the coming five years along two routes: technological advances focused on specific existing needs, and long-range research for continued growth and improvement. Programs will be directed toward improving the energy efficiency of conventional aircraft engines, and to developing aircraft that make increased use of lightweight, high-strength materials, advanced aerodynamcis and improved control systems.

Efforts will be made in general aviation to apply advances in aerodynamics, structures, propulsion and electronics, and to improve the efficiency and techniques of aerial crop treatment. Other programs, closely coordinated with the Department of Defense, include work on an advanced Short Takeoff and Landing (STOL) aircraft, modifications of existing military STOL aircraft and joint research with the U.S. Navy on the lift-fan vertical takeoff and landing vehicle. In 1981, tests will begin that will lead to a new generation of civil helicopters in the mid-1980's. Research also will be conducted on supersonic aircraft engines, inlets and flight controls, and on hypersonic vehicle technology.

An important goal for NASA's activities in space was established as the scientific exploration of the solar system and the universe in the continuing quest for answers to the external questions of life, matter and energy.

-more-

That goal will be approached in a variety of ways.

A Pioneer orbiter spacecraft will launch for Venus in May of 1978, arriving in Venusian orbit in December. It will be followed in August by a multiprobe mission scheduled to enter the Venusian atmosphere six days after the arrival of the orbiter. While the probes sound the planet's atmosphere, measuring structure, composition, clouds, wind speed, energy balance and general circulation patterns, the orbiter will map the Venusian upper atmosphere and ionosphere directly and the lower atmosphere by remote sensing and radio occultation. It also will study the planetary surface by remote sensing, remaining in orbit for at least one Venusian year (225 Earth days).

In 1980, NASA proposes to launch a radar orbiter that will be able to "see" through the Venusian cloud layers and provide a radar map of about 35 percent of the planet's surface.

Serious consideration is being given to a Viking mobile lander for launch in 1981 to investigate new areas of the Martian surface.

An additional mission to Mars, proposed for 1986, would return a sample of Martian soil to Earth.

A Jupiter orbiter-probe is planned for launch in 1981 to investigate the pressure, temperature, density and composition of the planet's atmosphere, map its magnetic field, and identify the major global features of the planet and its satellites.

A pair of Saturn-Uranus probes, planned for launch in 1985 and 1986, will furnish similar atmospheric surveys of those two planets during encounters in 1988 and 1992 respectively.

Advanced technology studies are underway on two promising propulsion systems for interplanetary missions in the next decade--solar sailing that uses the pressure from photons streaming outward from the Sun and impinging on a large, lightweight, reflective surface (or sail) for propulsion; and a solar electric propulsion engine.

If the concept of solar sailing fulfills our expectations, plans will be made to "sail" a spacecraft to a rendezvous with Halley's Comet, departing Earth in 1982.

NASA's scientific investigations outside the solar system are centered on a 2.4-meter space telescope that will extend humanity's vision seven times farther into space than has been possible heretofore, making possible quantitative

investigations of quasars and individual stars outside our galaxy. Determinations may be possible concerning whether nearby stars have planetary systems. The telescope also may allow scientists to see far into the universe to the most distant stars, so far out in fact that the light of those stars takes over 10 billion years to reach Earth. Thus scientists may be able to observe events that took place 10 billion years ago--almost to the beginning of time as we know it in our universe.

The space telescope is planned for launch in the early 1980s and NASA proposes to follow it with an infrared telescope in 1983 and an ultraviolet instrument in 1985. The three telescopes will complement each other, with the ultraviolet and infrared instruments performing surveys to locate specific objects for more detailed study by the space telescope.

Of more immediate potential benefit to our home planet and the creatures that inhabit it are the Solar Maximum Missions planned for launch in 1979 to improve our understanding of solar flares. Additionally, several explorer missions are scheduled for 1978 and 1983 to study the interactions between the solar wind and the Earth's magnetosphere as well as the processes that couple the magnetosphere with the ionosphere, the atmosphere and special plasma.

Beginning with the first operational flights of the Space Transportation System in mid-1980, Spacelab will continue solar flare studies. Then, in 1983, the Spacelab/Shuttle combination will begin an integrated set of investigations of the atmosphere, magnetosphere and plasmas in space with flights approximately every six months.

The versatile Spacelab also will conduct a series of life-science missions beginning in 1980, with the objectives of insuring human well-being in space, applying space technology to medical and biological problems and increasing our understanding of the origin and distribution of life in the universe. Spacelab will be supplemented in this effort by an unmanned Biomedical Experiment Scientific Satellite, conducting studies of plants and small animals in space over periods of six months or more.

A second NASA space goal is to concurrently provide near-term benefits for all people, through the provision of space-based observation systems that can supply worldwide data--on a timely basis--related to the environment and to environmental phenomena that might affect world economics.

-more-

In pursuing that goal, a whole range of advanced Landsat, Seasat, Nimbus and Tiros spacecraft are planned for launch throughout the five-year period. These, to be launched and managed in conjunction with other government agencies, user organizations and ground facilities, are expected to furnish Earth inhabitants with the unprecedented and invaluable ability to:

--predict global wheat production, survey rangeland conditions and major metropolitan areas, and monitor and inventory surface mining by 1981;
--begin the monitoring of ocean currents and circulation patterns, air/sea boundary conditions and sea-surface topogrpahy in 1981;
--forecast global production of all major crops by 1983;
--begin comprehensive monitoring of the global environment in 1983;
--achieve, through use of other systems too complex to list in this fact sheet, reliable weather forecasting beyond three days by 1984, and effective storm predictions by 1986.

The final goal defined for NASA is to establish a permanent U.S. presence in space, to help guarantee to all peoples free access to space for peaceful purposes, ensuring the benefits of the unique environment of space not only for our own people but opening new horizons for the human spirit.

A permanent presence in space becomes feasible for the first time with the introduction of the reusable Space Shuttle, scheduled for its first manned orbital flight in mid-1979 and the start of regular operations a year later. The easy, routine and relatively inexpensive access to space to be provided by the Space Shuttle will be an aid to, among other things, the creation of a space construction base proposed for development beginning in 1980 and initial use in 1985. This facility can serve as a base for the industrialization of space, for the construction of large space structures used as solar energy collectors and communications antennas, and for the operation of automated space systems. It also can be a servicing center for other orbiting vehicles such as the space telescope.

The space construction base also would form a highly visible reminder of the continuing peaceful technological leadership of the United States.

# # #

NASA Fact Sheet

National Aeronautics and
Space Administration

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

For Release:
March 1977
KSC 64-77

NASA'S FUTURE PROGRAMS

(Reprinted from NASA Activities, February 1977)

From April to October of last year, a comprehensive study was conducted at all levels of NASA to identify specific goals for aeronautical and space activities during the next five years.

The goal for aeronautics is the assurance of United States preeminence in aviation, supplying a technology base that will enable our country to continue developing superior civil and military aircraft embodying improved design, materials and propulsion, able to compete successfully in the world market.

That goal will be pursued in the coming five years along two routes: technological advances focused on specific existing needs, and long-range research for continued growth and improvement. Programs will be directed toward improving the energy efficiency of conventional aircraft engines, and to developing aircraft that make increased use of lightweight, high-strength materials, advanced aerodynamcis and improved control systems.

Efforts will be made in general aviation to apply advances in aerodynamics, structures, propulsion and electronics, and to improve the efficiency and techniques of aerial crop treatment. Other programs, closely coordinated with the Department of Defense, include work on an advanced Short Takeoff and Landing (STOL) aircraft, modifications of existing military STOL aircraft and joint research with the U.S. Navy on the lift-fan vertical takeoff and landing vehicle. In 1981, tests will begin that will lead to a new generation of civil helicopters in the mid-1980's. Research also will be conducted on supersonic aircraft engines, inlets and flight controls, and on hypersonic vehicle technology.

An important goal for NASA's activities in space was established as the scientific exploration of the solar system and the universe in the continuing quest for answers to the external questions of life, matter and energy.

-more-

That goal will be approached in a variety of ways.

A Pioneer orbiter spacecraft will launch for Venus in May of 1978, arriving in Venusian orbit in December. It will be followed in August by a multiprobe mission scheduled to enter the Venusian atmosphere six days after the arrival of the orbiter. While the probes sound the planet's atmosphere, measuring structure, composition, clouds, wind speed, energy balance and general circulation patterns, the orbiter will map the Venusian upper atmosphere and ionosphere directly and the lower atmosphere by remote sensing and radio occultation. It also will study the planetary surface by remote sensing, remaining in orbit for at least one Venusian year (225 Earth days).

In 1980, NASA proposes to launch a radar orbiter that will be able to "see" through the Venusian cloud layers and provide a radar map of about 35 percent of the planet's surface.

Serious consideration is being given to a Viking mobile lander for launch in 1981 to investigate new areas of the Martian surface.

An additional mission to Mars, proposed for 1986, would return a sample of Martian soil to Earth.

A Jupiter orbiter-probe is planned for launch in 1981 to investigate the pressure, temperature, density and composition of the planet's atmosphere, map its magnetic field, and identify the major global features of the planet and its satellites.

A pair of Saturn-Uranus probes, planned for launch in 1985 and 1986, will furnish similar atmospheric surveys of those two planets during encounters in 1988 and 1992 respectively.

Advanced technology studies are underway on two promising propulsion systems for interplanetary missions in the next decade--solar sailing that uses the pressure from photons streaming outward from the Sun and impinging on a large, lightweight, reflective surface (or sail) for propulsion; and a solar electric propulsion engine.

If the concept of solar sailing fulfills our expectations, plans will be made to "sail" a spacecraft to a rendezvous with Halley's Comet, departing Earth in 1982.

NASA's scientific investigations outside the solar system are centered on a 2.4-meter space telescope that will extend humanity's vision seven times farther into space than has been possible heretofore, making possible quantitative

investigations of quasars and individual stars outside our galaxy. Determinations may be possible concerning whether nearby stars have planetary systems. The telescope also may allow scientists to see far into the universe to the most distant stars, so far out in fact that the light of those stars takes over 10 billion years to reach Earth. Thus scientists may be able to observe events that took place 10 billion years ago--almost to the beginning of time as we know it in our universe.

The space telescope is planned for launch in the early 1980s and NASA proposes to follow it with an infrared telescope in 1983 and an ultraviolet instrument in 1985. The three telescopes will complement each other, with the ultraviolet and infrared instruments performing surveys to locate specific objects for more detailed study by the space telescope.

Of more immediate potential benefit to our home planet and the creatures that inhabit it are the Solar Maximum Missions planned for launch in 1979 to improve our understanding of solar flares. Additionally, several explorer missions are scheduled for 1978 and 1983 to study the interactions between the solar wind and the Earth's magnetosphere as well as the processes that couple the magnetosphere with the ionosphere, the atmosphere and special plasma.

Beginning with the first operational flights of the Space Transportation System in mid-1980, Spacelab will continue solar flare studies. Then, in 1983, the Spacelab/Shuttle combination will begin an integrated set of investigations of the atmosphere, magnetosphere and plasmas in space with flights approximately every six months.

The versatile Spacelab also will conduct a series of life-science missions beginning in 1980, with the objectives of insuring human well-being in space, applying space technology to medical and biological problems and increasing our understanding of the origin and distribution of life in the universe. Spacelab will be supplemented in this effort by an unmanned Biomedical Experiment Scientific Satellite, conducting studies of plants and small animals in space over periods of six months or more.

A second NASA space goal is to concurrently provide near-term benefits for all people, through the provision of space-based observation systems that can supply worldwide data--on a timely basis--related to the environment and to environmental phenomena that might affect world economics.

-more-

In pursuing that goal, a whole range of advanced Landsat, Seasat, Nimbus and Tiros spacecraft are planned for launch throughout the five-year period. These, to be launched and managed in conjunction with other government agencies, user organizations and ground facilities, are expected to furnish Earth inhabitants with the unprecedented and invaluable ability to:

--predict global wheat production, survey rangeland conditions and major metropolitan areas, and monitor and inventory surface mining by 1981;
--begin the monitoring of ocean currents and circulation patterns, air/sea boundary conditions and sea-surface topogrpahy in 1981;
--forecast global production of all major crops by 1983;
--begin comprehensive monitoring of the global environment in 1983;
--achieve, through use of other systems too complex to list in this fact sheet, reliable weather forecasting beyond three days by 1984, and effective storm predictions by 1986.

The final goal defined for NASA is to establish a permanent U.S. presence in space, to help guarantee to all peoples free access to space for peaceful purposes, ensuring the benefits of the unique environment of space not only for our own people but opening new horizons for the human spirit.

A permanent presence in space becomes feasible for the first time with the introduction of the reusable Space Shuttle, scheduled for its first manned orbital flight in mid-1979 and the start of regular operations a year later. The easy, routine and relatively inexpensive access to space to be provided by the Space Shuttle will be an aid to, among other things, the creation of a space construction base proposed for development beginning in 1980 and initial use in 1985. This facility can serve as a base for the industrialization of space, for the construction of large space structures used as solar energy collectors and communications antennas, and for the operation of automated space systems. It also can be a servicing center for other orbiting vehicles such as the space telescope.

The space construction base also would form a highly visible reminder of the continuing peaceful technological leadership of the United States.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

March 2, 1977

A. H. Lavender
305 867-2468

RELEASE NO: KSC 63-77

FEBRUARY NASA TOURS VOLUME WAS 99,454

KENNEDY SPACE CENTER, Fla.--February NASA Tours patronage was 99,454, down 9.6 percent from the record 112,157 total compiled in the corresponding month of 1976.

The February drop marked the third consecutive month of reduced NASA Tours patronage compared to the previous year, but brought the 1977 two-month total to 168,951, fourth highest in the program's ten years of operation.

Multimedia shows in the Launch Control Center--a briefing on the future Space Shuttle in firing room 4 and a dramatic re-creation of the launch of Apollo 11 in firing room 3--were open to NASA Tours during Daytona Speed Weeks as was KSC's Flight Crew Training Building. These attractions will be temporarily closed for alterations after March 4, but are expected to be reopened to accommodate anticipated crowds during the Easter vacation period.

While the LCC and training building presentations are closed, tour patrons will continue to enter the Vehicle Assembly Building where Space Shuttle vehicles will be prepared, view the Apollo/Saturn V displayed near the VAB, drive around Complex 39's Pad A where preparations for Shuttle operations are underway and tour Cape Canaveral Air Force Station.

NASA Tours originate at the Kennedy Visitors Center, accessible from the NASA Causeway off U. S. Highway 1 south of Titusville, and via State Road 3 from Merritt Island.

The visitors center features displays, exhibits, space science lectures and space movie showings, all provided free to the public, with continuous activities in the main building and a new Hall of History, opened during 1976.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Dick Young
305 867-2468

February 24, 1977

RELEASE NO: KSC 62-77

COMMUNITY LEADERS TO BE BRIEFED ON KSC ACTIVITIES

KENNEDY SPACE CENTER, Fla.--More than 150 community leaders from chambers of commerce throughout Brevard County will be briefed on current and future activities at KSC at a Continental Breakfast to be held here on Friday, March 4.

The breakfast and a briefing by KSC Director Lee R. Scherer will be held from 8 - 8:45 a.m. in the Mission Briefing Room of the Operations and Checkout Building in the KSC Industrial Area.

A tour of KSC will be provided to those who desire it from 8:45 to 10:30 a.m.

Transportation will be available at the Pass and Identification Buildings at Gate 1, Cape Canaveral Air Force Station on Florida 401; Gate 2, on Florida Route 3 on Merritt Island, and at Gate 3, on the NASA Causeway just off U. S. Route 1 two miles south of Titusville.

Transportation will depart all three gates at 7:30 a.m.

If you plan to attend, please call Ms. Sarah Policicchio at 867-2363, no later than March 2. Please advise her whether you will require transportation from Gate 1, 2 or 3, the names of those attending and whether or not they plan to take the tour.

Members of the press with questions on transportation arrangements may call the KSC Public Information Office, 867-2468. Representatives of the KSC Public Information Office will be at the breakfast to help you with your coverage.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

A. H. Lavender
305 867-2468

March 1, 1977

RELEASE NO: KSC 61-77

NOTICE TO EDITORS/NEWS DIRECTORS

PALAPA-B LAUNCH SCHEDULED MARCH 10

KENNEDY SPACE CENTER, Fla.--The launch of PALAPA-B from Complex 17, Cape Canaveral Air Force Station, is scheduled on Thursday, March 10. The launch window extends from 6:16 to 8:16 p.m. EST.

A prelaunch news briefing on the PALAPA-B launch is scheduled in the conference room of the E & O Building, Cape Canaveral AFS, at 11 a.m. Wednesday, March 9. Permanently badged news media representatives may proceed directly to the E & O Building via KSC or CCAFS gates. Transportation for other media representatives who desire to attend the conference will be provided, with a sedan departing the KSC Headquarters Building at 10:30 a.m.

For launch coverage on Thursday, March 10, permanently badged news media representatives may proceed directly to Press Site 1 via KSC or CCAFS gates. Others will be badged at Frank Wolfe's Beachside Motel, Cocoa Beach. A convoy from the Beachside Motel to the Press Site will depart at 4:45 p.m., with a stop at the Cape Canaveral AFS Pass and Identification Building at 5:00 p.m.

# # #

NASA News

National Aeronautics and
Space Administration

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

Iris Sullivan
305 867-2468

For Release:
February 18, 1977

RELEASE NO: KSC 60-77

TENNESSEE TECH STUDENT IS SPACEPORT EMPLOYEE

KENNEDY SPACE CENTER, Fla.--Landin F. Boring, sophomore in the School of Engineering, is an electrical engineering trainee in the Electrical Branch of the Kennedy Space Center Support Operations Directorate. In this position he enters programs into a Hazeltime 2000 computer and maintains files on the readouts.

Born in Fort Riley, Kansas, he was graduated from Putnam County Senior High School in 1975. He is presently enrolled in the cooperative education program at Tennessee Technological University where he is majoring in electrical engineering.

Boring joined the KSC Support Operations Directorate in September, 1976, and alternates periods of study at the university and work at the Kennedy Space Center.

Boring resides in Cape Canaveral while working at KSC.

# # #

NASA News

National Aeronautics and
Space Administration

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

Iris Sullivan
305 867-2468

For Release:
February 18, 1977

RELEASE NO: KSC 59-77

RICEVILLE RESIDENT IS SPACEPORT EMPLOYEE

KENNEDY SPACE CENTER, Fla.--Landin F. Boring, son of Mr. and Mrs. Landin F. Borin, Rt. 2, Riceville, Tenn., is an electrical engineering trainee in the Electrical Branch of the Kennedy Space Center Support Operations Directorate. In this position he enters programs into the Hazeltime 2000 computer and maintains files on the readouts.

Born in Fort Riley, Kansas he was graduated from Putnam County Senior High School in 1975. He is presently enrolled in the cooperative education program at Tennessee Technological University where he is majoring in electrical engineering.

Boring joined the KSC Support Operations Directorate in September, 1976, and alternates periods of study at the university and work at the Kennedy Space Center.

Boring resides in Cpae Canaveral while working at KSC.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Dick Young
305 867-2468

February 10, 1977

RELEASE NO: KSC 56-77

SOLAR ENERGY UNITS TO HEAT WATER FOR KSC FACILITIES

KENNEDY SPACE CENTER, Fla.--Solar energy units will be in operation at three KSC facilities for water heating purposes by October, helping to relieve the center's reliance on energy from fossil fuels.

Wallace H. Boggs, Energy Projects Coordinator on the staff of Raymond L. Clark, Director of Design Engineering, identified the three facilities as the Visitors Center cafeteria, the Banana River Repeater Station and the KSC Headquarters Building.

The first two projects should be in operation by late May and the latter should be completed by October.

Boggs said the Visitors Center installation will be able to supply up to 70 percent of water heating needs for the cafeteria. Water will be heated in a 176-square-foot flat plate collector to be located on the ground adjacent to the cafeteria. A conventional water heating system will provide the balance of hot water needs and serve as a backup during long periods of cloudy weather.

The Banana River Repeater Station is an electronic communications relay building located near the eastern shore of Merritt Island. The 470-square-foot flat plate collector array will provide up to 70 percent of the hot water needed for heating and air conditioning reheating.

Boggs said that design work on these two projects is 90 percent complete.

The Headquarters Building project is now going into the design phase and will require a 4,000-square-foot flat plate collector array on the ground nearby.

-more-

This system is to provide 70 percent of the hot water needs of the structure's four central wings, including the cafeteria.

According to Boggs, all three systems will have the capability of heating water to 205 degrees Fahrenheit but the rate of water flow through the collectors will be adjusted so that it moves into insulated hot water storage tanks at a maximum temperature of 140 degrees F.

The flat plate collectors will be constructed facing south and angled at 28 degrees for maximum heating efficiency.

"We are not doing research," stressed Boggs. "These projects involve the operational use of solar heating as a conservation technique."

He noted that his group is looking into other areas where solar heating might be economical and into the feasiblity of using solar energy techniques for air conditioning.

The Headquarters Building project is being funded jointly by the Energy Research and Development Administration (ERDA) and NASA. Energy savings should amount to $11,000 for the first year of operation and $151,000 over an eight-year period.

The Visitors Center and Repeater Station projects are being funded entirely by NASA. The energy savings should amount to approximately $2,500 for the first year of operation and $34,000 over an eight-year period.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

A. H. Lavender
305 867-2468

February 10, 1977

RELEASE NO: KSC 55-77

KSC PROCUREMENT OFFICE APPOINTMENTS ANNOUNCED

KENNEDY SPACE CENTER, Fla.--Appointments of Fred Boles as Kennedy Space Center Procurement Officer and James E. Rice as Deputy Procurement Officer were announced this week by William M. Lohse, KSC Director, Porcurement, Supply and Transportation.

Boles, who was born in Tuscaloosa, Ala., received a BS degree from the University of Alabama in 1955.

A career Government employee, Boles served two years as a Civil Service Commission investigator and four years as a Department of the Army procurement analyst.

He joined NASA at the Marshall Space Flight Center, where he served six years as a branch chief and contracting officer. He has served as KSC's Deputy Procurement Officer since 1968.

Boles and his wife, the former Glenda Kuykendall of Tuscaloosa, Ala., reside in Titusville.

Rice, who was born in Coshocton, Ohio, received a BS degree from Ohio University, Athens, Ohio, in 1954 and a Juris Doctorate from Ohio State University in 1959.

Prior to joining NASA at the Kennedy Space Center in 1964, he served as an Army contracting officer and as an Air Force attorney-advisor for contracts.

After four years as counsel for Procurement in the office of the KSC Chief Counsel, he served nine years as a branch chief in the Procurement Office.

Rice, his wife, the former Arleen McGuigan of Dayton, Ohio, and daughter Nicole reside in Satellite Beach.

# # #

NASA News

National Aeronautics and
Space Administration

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

Iris Sullivan
305 867-2468

For Release:
February 16, 1977

RELEASE NO: KSC 54-77

UNIVERSITY OF FLORIDA STUDENT IS SPACEPORT EMPLOYEE

KENNEDY SPACE CENTER, Fla.--Jane M. Guelzow, junior in the School of Engineering, is an electrical engineering trainee in the Guidance and Electrical Systems Division of the Kennedy Space Center's Shuttle Engineering Directorate. In this position she works with the Hazeltime 2000 computer.

Born in Rockledge, Fla., she was graduated from Cocoa Beach High School in 1975, and from Brevard Community College in 1976 with an associate degree in electrical engineering. She was graduated with honors.

She is presently enrolled in the cooperative education program at the University of Florida where she is majoring in electrical engineering.

She joined the KSC Shuttle Engineering Directorate in July 1975 as a pre-cooperative employee, and alternates periods of study at the university and work at the Kennedy Space Center.

She resides with her parents at 41 Crystal River Drive, Cocoa Beach, Fla. Her hobbies include scuba diving.

# # #

NASA News

National Aeronautics and
Space Administration

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

Iris Sullivan
305 867-2468

For Release:
February 16, 1977

RELEASE NO: KSC 53-77

COCOA BEACH STUDENT IS SPACEPORT EMPLOYEE

KENNEDY SPACE CENTER, Fla.--Jane M. Guelzow, daughter of Mr. and Mrs. Clarence Guelzow, 41 Crystal River Drive, Cocoa Beach, is an electrical engineering trainee in the Guidance and Electrical Systems Division of the Kennedy Space Center's Shuttle Engineering Directorate. In this position she works with the Hazeltime 2000 computer.

Born in Rockledge, she was graduated from Cocoa Beach High School in 1975, and from Brevard Community College in 1976 with an associate degree in electrical engineering. She was graduated with honors.

She is presently enrolled in the cooperative education program at the University of Florida where she is majoring in electrical engineering.

She joined the Shuttle Engineering Directorate in July, 1975, as a pre-cooperative employee and alternates periods of study at the university and work at Kennedy Space Center.

# # #

NASA News

National Aeronautics and
Space Administration

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

Iris Sullivan
305 867-2468

For Release:
February 16, 1977

RELEASE NO: KSC 52-77

UNIVERSITY OF SOUTH FLORIDA STUDENT IS SPACEPORT EMPLOYEE

KENNEDY SPACE CENTER, Fla.--Jeff M. Reisberg, junior in the School of Engineering, industrial engineering trainee in the Requirements Analysis Section of the Kennedy Space Center's Shuttle Projects Office. In this position he is involved in ordering spare parts for the Space Shuttle. He also does computer programming.

Born in Kittanning, Pa., he was graduated from Nova High School in Ft. Lauderdale, Fla., in 1975. He is presently enrolled in the cooperative education program at the University of South Florida where he is majoring in Industrial Engineering.

He joined the KSC Shuttle Projects Office in January, 1977, and alternates periods of study at the university and work at the Kennedy Space Center.

Reisberg resides in Cape Canaveral while working at the Spaceport.

# # #

NASA News

National Aeronautics and
Space Administration

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

Iris Sullivan
305 867-2468

For Release:
February 16, 1977

RELEASE NO: KSC 51-77

FT. LAUDERDALE RESIDENT IS SPACEPORT EMPLOYEE

KENNEDY SPACE CENTER, Fla.--Jeff M. Reisberg, son of Mr. and Mrs. David Reisberg, 269 Jacaranda Drive, Ft. Lauderdale, is an industrial engineering trainee in the Requirements Analysis Section of the Kennedy Space Center Shuttle Projects Office. In this position he is involved in ordering spare parts for the Space Shuttle. He also does computer programming.

Born in Kittanning, Pa., he was graduated from Nova High School in Ft. Lauderdale, in 1975. He is presently enrolled in the cooperative education program at the University of South Florida where he is majoring in Industrial Engineering.

He joined the KSC Shuttle Projects Office in January, 1977, and alternates periods of study at the university and work at the Kennedy Space Center.

Reisberg resides in Cape Canaveral while working at the Spaceport.

# # #

NASA News

National Aeronautics and
Space Administration

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

Iris Sullivan
305 867-2468

For Release:
February 16, 1977

RELEASE NO: KSC 50-77

FLORIDA TECH STUDENT IS SPACEPORT EMPLOYEE

KENNEDY SPACE CENTER, Fla.--John E. Odom Jr., senior in the School of Engineering, is an electrical engineering trainee in the AC Power Section of the Kennedy Space Center's Mechanical and Facilities Engineering Directorate.

Born in Ocala, Fla., he was graduated from high school in Leesburg, Fla., in 1973. He is presently enrolled in the cooperative education program at Florida Technological University, where he is majoring in electrical engineering.

He joined the KSC Mechanical and Facilities Engineering Directorate in September, 1976, and alternates periods of study at the university and work at the Kennedy Space Center.

Odom resides in Orlando while working at KSC.

# # #

NASA News

National Aeronautics and
Space Administration

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

Iris Sullivan
305 867-2468

For Release:
February 16, 1977

RELEASE NO: KSC 49-77

ORLANDO RESIDENT IS SPACEPORT EMPLOYEE

KENNEDY SPACE CENTER, Fla.--John E. Odom Jr., 3466 Saddle Blvd., Orlando, is an electrical engineering trainee in the AC Power Section of the Kennedy Space Center's Mechanical and Facilities Engineering Directorate.

Born in Ocala, Fla., he was graduated from high school in Leesburg, Fla., in 1973. He is presently enrolled in the cooperative education program at Florida Technological University, where he is majoring in electrical engineering.

He joined the KSC Mechanical and Facilities Engineering Directorate in September, 1976, and alternates periods of study at the university and work at the Kennedy Space Center.

Odom resides in Orlando while working at KSC.

# # #

NASA News

National Aeronautics and
Space Administration

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

Iris Sullivan
305 867-2468

For Release:
February 16, 1977

RELEASE NO: KSC 48-77

WINTER PARK RESIDENT IS SPACEPORT EMPLOYEE

KENNEDY SPACE CENTER, Fla.--Frederick C. Karres, son of Mr. and Mrs. George E. Karres, 1932 Linden Rd., Winter Park, Fla., is an electrical engineering trainee in the Payload Processing Branch of the Kennedy Space Center's Space Transportation System Processing Directorate.

Born in Chicago, Illinois, he was graduated from Trinity Prep School in Orlando, Fla., in 1975. He is presently enrolled in the cooperative education program at the University of Florida in Gainesville, where he is majoring in electrical engineering.

He joined the STS Processing Directorate in January, 1977, and alternates periods of study at the university and work at the Kennedy Space Center.

Karres resides with his parents in Winter Park while working at KSC.

# # #

NASA News

National Aeronautics and
Space Administration

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

Iris Sullivan
305 867-2468

For Release:
February 16, 1977

RELEASE NO: KSC 47-77

FLORIDA TECHNOLOGICAL UNIVERSITY STUDENT IS SPACEPORT EMPLOYEE

KENNEDY SPACE CENTER, Fla.--Frederick C. Karres, sophomore in the School of Engineering, is an electrical engineering trainee in the Payload Processing Branch of the Kennedy Space Center's Space Transportation System Processing Directorate.

Born in Chicago, Illinois, he was graduated from Trinity Prep School in Orlando, Fla., in 1975. He is presently enrolled in the cooperative education program at the University of Florida in Gainesville, where he is majoring in electrical engineering.

He joined the KSC STS Processing Directorate in January, 1977, and alternates periods of study at the university and work at the Kennedy Space Center.

Karres resides with his parents in Winter Park, Fla., while working at KSC.

# # #

NASA News

National Aeronautics and
Space Administration

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

Iris Sullivan
305 867-2468

For Release:
February 15, 1977

RELEASE NO: KSC 46-77

GEORGIA TECH STUDENT IS SPACEPORT EMPLOYEE

KENNEDY SPACE CENTER, Fla.--Robert J. Steele, sophomore in the School of Engineering, is an electrical engineering trainee in the Advanced Techniques Section of the Kennedy Space Center's Information Systems Directorate. In this position he works in support systems design and maintenance.

Born in Miami, Florida, he was graduated from Southwest Miami High School in Miami in 1975. He was in Who's Who Among High School Students and National Honor Society. He is presently enrolled in the cooperative education program at Georgia Tech in Atlanta, where he is majoring in electrical engineering. He was awarded an AFROTC four year scholarship by the Elk's Foundation.

He joined the KSC Information Systems Directorate in January 1977 and alternates periods of study at the university and work at the Kennedy Space Center.

Steele resides in Cocoa Beach where he is active in Inter Varsity Christian Fellowship.

# # #

NASA News

National Aeronautics and
Space Administration

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

Iris Sullivan
305 867-2468

For Release:
February 15, 1977

RELEASE NO: KSC 45-77

MIAMI RESIDENT IS SPACEPORT EMPLOYEE

KENNEDY SPACE CENTER, Fla.--Robert J. Steele, son of Mr. and Mrs. Ray Steele of Miami, is an electrical engineering trainee in the Advanced Techniques Section of the Kennedy Space Center's Information Systems Directorate. In this position he works in support systems design and maintenance.

Born in Miami, Florida, he was graduated from Southwest Miami High School in Miami in 1975. He was in Who's Who Among High School Students and National Honor Society. He is presently enrolled in the cooperative education program at Georgia Tech in Atlanta, where he is majoring in electrical engineering. He was awarded an AFROTC four year scholarship by the Elk's Foundation.

He joined the KSC Information Systems Directorate in January 1977 and alternates periods of study at the university and work at the Kennedy Space Center.

Steele resides in Cocoa Beach where he is active in Inter Varsity Christian Fellowship.

# # #

NASA News

National Aeronautics and
Space Administration

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

Iris Sullivan
305 867-2468

For Release:
February 15, 1977

RELEASE NO: KSC 44-77

FORMER CLARKSVILLE RESIDENT IS SPACEPORT EMPLOYEE

KENNEDY SPACE CENTER, Fla.--Former Clarksville resident Michael A. Seay, son of Mr. and Mrs. Minor A. Seay, Rt. 1, Oak Grove, Kentucky, is an electrical engineering trainee in the Video Systems Branch of the Kennedy Space Center's Information Systems Directorate.

He was graduated from Northwest High School in Clarksville in 1972 and is presently enrolled in the cooperative education program at Tennessee Technological University in Cookeville, where he is majoring in electrical engineering. He is a member of Eta Kappa Nu, I.E.E.E., and the National Society of Professional Engineers.

He joined the KSC Information Systems Directorate in September 1976, and alternates periods of study at the university and work at the Kennedy Space Center.

Seay resides in Cocoa, Fla., while working at KSC.

# # #

NASA News

National Aeronautics and
Space Administration

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

Iris Sullivan
305 867-2468

For Release:
February 15, 1977

RELEASE NO: KSC 43-77

TENNESSEE TECH STUDENT IS SPACEPORT EMPLOYEE

KENNEDY SPACE CENTER, Fla.--Michael A. Seay, senior in the Tennessee Technological University School of Engineering, is an electrical engineering trainee in the Video Systems Branch of the Kennedy Space Center's Information Systems Directorate. In this position he is technical advisor and is responsible for the maintenance of the video system microprocessor system.

Born in Clarksville, Tenn., he was graduated from high school there in 1972. He is presently enrolled in the cooperative education program at Tennessee Tech. He is a member of Eta Kappa Nu, I.E.E.E., and the National Society of Professional Engineers.

He joined the KSC Information Systems Directorate in September 1976 and alternates periods of study at the university and work at the Kennedy Space Center.

Seay resides in Cocoa, Fla., while working at KSC.

# # #

NASA News

National Aeronautics and
Space Administration

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

Iris Sullivan
305 867-2468

For Release:
February 14, 1977

RELEASE NO: KSC 42-77

COCOA BEACH RESIDENT IS SPACEPORT EMPLOYEE

KENNEDY SPACE CENTER, Fla.--Jodi Lee Levesque, daughter of Mrs. Ruth Boyle, 306 Winslow Circle, Cocoa Beach, is a mathematics trainee in the Flight Software Section of the Kennedy Space Center's Shuttle Engineering Directorate.

Born in Providence, Rhode Island, she was graduated from Cocoa Beach High School in 1975. She is enrolled in the cooperative education program at the University of Florida, where she is majoring in mathematics. She is a member of the Society of Women Engineers, Phi Eta Sigma National Freshman Honor Society and Sigma Tau Sigma tutoring society, and is on the Dean's List. She received the Florida's Honor's scholarship, and is a member of the honors program at school.

She joined the KSC Shuttle Engineering Directorate in 1975 and alternates periods of study at the university and work at the Kennedy Space Center.

Levesque resides with her mother in Cocoa Beach while working at KSC.

# # #

NASA News

National Aeronautics and
Space Administration

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

Iris Sullivan
305 867-2468

For Release:
February 14, 1977

RELEASE NO: KSC 41-77

UNIVERSITY OF FLORIDA STUDENT IS SPACEPORT EMPLOYEE

KENNEDY SPACE CENTER, Fla.--Jodi Lee Levesque, junior in the College of Arts and Sciences, is a mathematics trainee in the Flight Software Section of the Kennedy Space Center's Shuttle Engineering Directorate. In this position she does data processing for the preflight testing of the hardware. She also does computer programming with the Honeywell 6680.

Born in Providence, Rhode Island, she was graduated from Cocoa Beach, Fla., High School in 1975. She is enrolled in the cooperative education program at the university, where she is majoring in mathematics. She is a member of the Society of Women Engineers, Phi Eta Sigma National Freshman Honor Society and Sigma Tau Sigma tutoring society, and is one the Dean's List. She received the Florida Honors scholarship, and is a member of the honors program.

She joined the KSC Shuttle Engineering Directorate in 1975 and alternates periods of study at the university and work at the Kennedy Space Center.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Dick Young
305 867-2468

February 7, 1977

RELEASE NO: KSC 40-77

DAYTONA BEACH FIRM AWARDED SPACEPORT CONTRACT

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a fixed price contract for $153,124 to Russell & Axon, Daytona Beach, Fla.

The contract is for architect-engineer services for the design of miscellaneous systems, rehabilitations, repairs and modifications of various NASA facilities located on KSC and Cape Canaveral Air Force Station.

Among the specific tasks are rehabilitation of the water system for the Operations and Checkout Building and the high temperature water system in the Industrial Area and the modification of the ventilation system in the high bay of the Vehicle Assembly Building.

Work under the contract is to be completed by July 6, 1977.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

A. H. Lavender
305 867-2468

February 4, 1977

RELEASE NO: KSC 39-77

SPACEPORT AWARDS $2,876,935.58 CONTRACT TO CHRYSLER CORPORATION

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a $2,876,935.58 contract to the Michoud Defense-Space Division of the Chrysler Corporation, 13800 Gentilly Road, New Orleans, La.

The contract, to be completed by December 1, 1977, provides for Chrysler, at its Michoud Assembly Facility, to fabricate and furnish 70 high pressure pneumatic regulation and control panels to be utilized at Complex 39 for pressurizing the Space Shuttle vehicle and associated ground support equipment during checkout and launch operations.

Panels will be installed at Pad A, the Orbiter Processing Facility and the Hypergol Maintenance Facility.

Kennedy Space Center facilities used for Apollo/Saturn checkout and launch operations are now undergoing modifications in preparation for checkout and launch of Space Shuttle vehicles, beginning in 1979.

The Spaceport will also be the primary landing site for Space Shuttle Orbiters, beginning in 1980. Orbiters are scheduled to land at NASA's Dryden Flight Research Center, Edwards, Calif., following the first four missions.

# # #

NASA News

National Aeronautics and
Space Administration

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

Iris Sullivan
305 867-2468

For Release:
February 11, 1977

RELEASE NO: KSC 38-77

UNIVERSITY OF TENNESSEE STUDENT IS KSC EMPLOYEE

KENNEDY SPACE CENTER, Fla.--Chris Adams, a junior at the University of Tennessee, is an electrical engineering trainee in the Computer Systems Section of the Kennedy Space Center's Electronics Engineering Directorate.

In this position he develops engineering designs and assists in troubleshooting them. He also does computer programming for the Launch Processing System whose computers and programs will be used for controlling and monitoring of Space Shuttle operations.

Born in Lakeland, Fla., he was graduated from Oak Ridge, Tenn., High School in 1973. He is presently enrolled in the cooperative education program at the University of Tennessee where he is majoring in electrical engineering and is active in Eta Kappa Nu.

He joined the KSC Electronics Engineering Directorate in January, 1975, and alternates periods of study at the university and work at the Kennedy Space Center.

# # #

NASA News

National Aeronautics and
Space Administration

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

Iris Sullivan
305 867-2468

For Release:
February 11, 1977

RELEASE NO: KSC 37-77

OAK RIDGE RESIDENT IS SPACEPORT EMPLOYEE

KENNEDY SPACE CENTER, Fla.--Chris Adams, son of Mr. and Mrs. J. B. Adams, 118 Wndover Circle, Oak Ridge, is an electrical engineering trainee in the Computer Systems Section of the Kennedy Space Center's Electronics Engineering Directorate.

In this position he develops engineering designs and assists in troubleshooting them. He also does computer programming for the Launch Processing System whose computers and programs will be used for controlling and monitoring of Space Shuttle operations.

Born in Lakeland, Fla., he was graduated from Oak Ridge High School in 1973. He is presently enrolled in the cooperative education program at the University of Tennessee where he is majoring in electrical engineering and is active in Eta Kappa Nu.

He joined the KSC Electronics Engineering Directorate in January, 1975, and alternates periods of study at the university and work at the Kennedy Space Center.

# # #

NASA Fact Sheet

National Aeronautics and
Space Administration

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

For Release:
May 1977
KSC 36-77

ASTRONAUT FACT SHEET

Of 73 pilots and scientists selected as astronauts since April 1959, 28 are on flight status at the National Aeronautics and Space Administration's Lyndon B. Johnson Space Center, Houston, Tex., and three others, now on other assignments, are available as flight crewmen. The number of pilot-astronauts is 22 and 9 are scientist-astronauts.

Seven groups of astronauts have been selected. In Group 1 were the seven Mercury astronauts selected in April 1959. Nine test pilots, Group 2, were selected in September 1962. In Group 3 were 14 pilot-astronauts selected in October 1963. Group 4, the first six scientist-astronauts, was selected in June 1965. In April 1966, 19 pilot-astronauts were selected as Group 5. Group 6, 11 scientist-astronauts, was selected in August 1967. Seven Air Force Manned Orbital Laboratory pilots joined the NASA pilot-astronaut program in August 1969, as Group 7.

-more-

ALPHABETICAL LIST OF THE 73 ASTRONAUTS SELECTED

NAME	ASTRONAUT STATUS	GROUP NUMBER
Aldrin, Edwin E., Jr.	Retired	3
Allen, Joseph P.	Flight	6
Anders, William A.	Retired	3
Armstrong, Neil A.	Retired	2
Bassett, Charles A.	Deceased	3
Bean, Alan L.	Flight	3
Bobko, Karol J.	Flight	7
Borman, Frank	Retired	2
Brand, Vance D.	Flight	5
Bull, John S.	Resigned	5
Carpenter, M. Scott	Retired	1
Carr, Gerald P.	Flight	5
Cernan, Eugene A.	Retired	3
Chaffee, Roger B.	Deceased	3
Chapman, Philip K.	Resigned	6
Collins, Michael	Retired	3
Conrad, Charles, Jr.	Retired	2
Cooper, L. Gordon	Retired	1
Crippen, Robert L.	Flight	7
Cunningham, Walter	Retired	3
Duke, Charles M., Jr.	Retired	5
Eisele, Donn F.	Retired	3
England, Anthony W.	Resigned	6
Engle, Joe H.	Flight	5
Evans, Ronald E.	Resigned	5
Freeman, Theodore C.	Deceased	3
Fullerton, Charles G.	Flight	7
Garriott, Owen K.	Flight	4
Gibson, Edward G.	Flight	4
Givens, Edward G.	Deceased	5
Glenn, John H.	Retired	1
Gordon, Richard F., Jr.	Retired	3
Graveline, Duane E.	Resigned	4
Grissom, Virgil I.	Deceased	1
Haise, Fred W., Jr.	Flight	5
Hartsfield, Henry W.	Flight	7
Henize, Karl G.	Flight	6
Holmquest, Donald L.	Resigned	6
Irwin, James B.	Retired	5

-more-

NAME	ASTRONAUT STATUS	GROUP NUMBER
Kerwin, Joseph P.	Flight	4
Lenoir, William B.	Flight	6
Lind, Don L.	Flight	5
Llewellyn, John A.	Resigned	6
Lousma, Jack R.	Flight	5
Lovell, James A., Jr.	Retired	2
Mattingly, Thomas K. II	Flight	5
McCandless, Bruce II	Flight	5
McDivitt, James A.	Retired	2
Michel, F. Curtis	Resigned	4
Mitchell, Edgar D.	Retired	5
Musgrave, F. Story	Flight	6
O'Leary, Brian T.	Resigned	6
Overmyer, Robert F.	Flight	7
Parker, Robert A.	Flight	6
Peterson, Donald H.	Flight	7
Pogue, William R.	Flight	5
Roosa, Stuart A.	Retired	5
Schirra, Walter M., Jr.	Retired	1
Schmitt, Harrison H.	Resigned	4
Schweickart, Russell L.	Flight	3
Scott, David R.	Retired	3
See, Elliott J.	Deceased	2
Shepard, Alan B., Jr.	Retired	1
Slayton, Donald K.	Flight	1
Stafford, Thomas P.	Retired	2
Swigert, John L., Jr.	Flight	5
Thornton, William E.	Flight	6
Truly, Richard H.	Flight	7
Weitz, Paul J.	Flight	5
White, Edward H. II	Deceased	2
Williams, Clifton C.	Deceased	3
Worden, Alfred M.	Retired	5
Young, John W.	Flight	2

-more-

Group 1, Project Mercury Astronauts Selected April 1959

Flight Status

Donald K. Slayton, Civilian, Manager for Approach and Landing Test, Space Shuttle Program Office, JSC.

No Longer on Flight Status

M. Scott Carpenter, Commander, USN (Ret.), joined U.S. Navy Sealab program 1967. Retired from Navy July 1969 and in private business, Los Angeles, Calif.

L. Gordon Cooper, Colonel, USAF (Ret.), retired July 1970; is Vice President for Research and Development, WED Enterprises, Glendale, Calif.

John H. Glenn, Jr., Colonel, USMC (Ret.), resigned in 1964. Elected U.S. Senator (D-Ohio), November 1974.

Walter M. Schirra, Jr., Captain, USN (Ret.), retired in July 1969. He is Director of Technology Purchase, Johns-Manville Corp., Denver, Colo.

Alan B. Shepard, Jr., Rear Admiral, USN (Ret.), retired from the U.S. Navy and NASA Aug. 1, 1974. He is President of Windward Co., Deer Park, Tex.

Deceased

Virgil I. (Gus) Grissom, Lieutenant Colonel, USAF, died in Apollo spacecraft fire at Kennedy Space Center, Jan. 27, 1967.

Group 2, Test Pilot Astronauts Selected September 1962

Flight Status

John W. Young, Captain, USN (Ret.), Chief, Astronaut Office, Johnson Space Center.

Group 2 (cont'd.)

No Longer on Flight Status

Neil A. Armstrong, Professor of Engineering, University of Cincinnati, effective October 1971. Previously was Deputy Associate Administrator, Aeronautics, NASA Headquarters Office of Advanced Research and Technology, 1970.

Frank Borman, Colonel, USAF (Ret.), President and Chief Operations Officer, Eastern Airlines, Miami, Fla. Retired from NASA and Air Force in July 1970.

Charles Conrad, Jr., Captain, USN (Ret.), retired Feb. 1, 1974. He is Vice President, Marketing, McDonnell Douglas Corp., with offices in Denver, Colo.

James A. McDivitt, Brig. General, USAF (Ret.), President, Pullman Standard Co., Chicago, Ill. He was manager, Apollo Spacecraft Program, NASA Lyndon B. Johnson Space Center, September 1969-1972. He retired from NASA and Air Force Sept. 1, 1972.

James A. Lovell, Jr., Captain, USN (Ret.), is President and Chief Executive Officer, Bay-Houston Towing Co., Houston. He served as Deputy Director of Science and Applications, JSC, May 1971-March 1973 when he retired from NASA and the Navy.

Thomas P. Stafford, Major General, USAF. Returned to active Air Force status as Commander, Air Force Flight Test Center, Edwards Air Force Base, Calif., effective Nov. 1, 1975.

Deceased

Elliot M. See, Jr., died in a T-38 jet crash Feb. 28, 1966, Lambert Municipal Airport, St. Louis.

Edward H. White, II, Lieutenant Colonel, USAF, died in Apollo spacecraft fire at Kennedy Space Center Jan. 27, 1967.

-more-

Group 3, Pilot Astronauts Selected October 1963

Flight Status

Alan L. Bean, Captain, USN (Ret.).

Russell L. Schweickart, transferred to NASA Headquarters, Washington, D.C., May 1, 1974. Now Assistant for Payload Operations, Office of Planning and Program Integration. Available for Space Shuttle flight.

No Longer on Flight Status

William A. Anders, U.S. Ambassador to Norway. Formerly Chairman, Nuclear Regulatory Commission. Was Commissioner of the Atomic Energy Commission, August 1973. He served as Executive Secretary, National Aeronautics and Space Council, September 1969-1973.

Edwin E. Aldrin, Jr., Colonel, USAF (Ret.). He resigned from NASA July 1971 and served as Commander of the Air Force Aerospace Research Pilots School, Edwards, Calif., until he retired from active duty about March 1, 1972. President of Research and Engineering Consultants, Inc., Los Angeles, Calif.

Eugene A. Cernan, Captain, USN (Ret.), retired from the Navy and NASA July 1, 1976. He is Executive Vice President, International, Coral Petroleum Co., Houston.

Michael Collins, became Assistant Secretary of State for Public Affairs in January 1970. Since February 1971 is Director, National Air and Space Museum, Smithsonian Institution, Washington, D.C.

Walter Cunningham, resigned Aug. 1, 1971. He is now President, Hydrotech International, Inc., Houston.

Donn F. Eisele, Colonel, USAF (Ret.). Resigned from NASA and retired from the Air Force, July 1972 and joined the Peace Corps. Served as technical assistant for Manned Space Flight, NASA Langley Research Center, Hampton, Va., 1970-1972. Currently resides in Williamsburg, Va.

-more-

Group 3 (cont'd.)

Richard F. Gordon, Jr., Captain, USN (Ret.), retired from the Navy and NASA Jan. 1, 1972; Executive Vice President, New Orleans Saints, professional football organization, New Orleans.

David R. Scott, Colonel, USAF (Ret.), appointed Director, NASA Hugh L. Dryden Flight Research Center, Edwards, Calif., April 1975, after serving as the Center Deputy Director since August 1973. He was a special assistant for mission operations, Apollo Spacecraft Program Office, JSC from July 1972 until August 1973.

Deceased

Charles A. Bassett II, Major, USAF, died in T-38 jet crash with Elliot See, Feb. 28, 1966, at St. Louis.

Roger B. Chaffee, Lieutenant Commander, USN, died in Apollo spacecraft fire, Kennedy Space Center Jan. 27, 1967.

Theordore C. Freeman, Captain, USAF, died in T-38 crash Ellington AFB, Houston, Oct. 31, 1964.

Clifton C. Williams, Jr., Major USMC, died in T-38 crash near Tallahassee, Fla., Oct. 5, 1967.

Group 4, Scientist Astronauts Selected June 1965

Flight Status

Owen K. Garriott, Ph.D. (Electrical Engineering), Director Science and Applications Directorate, Johnson Space Center.

Joseph P. Kerwin, Captain, USN, M.D. (Medicine).

Edward G. Gibson, Ph.D. (Engineering and Physics) joined Aerospace Corp., El Segundo, Calif., on Dec. 1, 1974, as Senior Scientist. Was employed by ERNO, Bremen, West Germany, prime contractor for Spacelab, until March 15, 1977, when he returned to NASA.

Group 4 (cont'd.)

No Longer on Flight Status

Duane E. Graveline, M.D. (Medicine), resigned for personal reasons in August 1965.

Harrison H. Schmitt, Ph.D. (Geology), resigned from NASA August 1975. Assigned as Special Assistant to NASA Administrator for Energy Research and Development, February 1974; appointed NASA Assistant Administrator for Energy Programs, NASA Headquarters, Washington, D.C., May 1974. Now lives in Albuquerque, N.M., and is a U.S. Senator.

Frank Curtis Michel, Ph.D. (Physics), resigned August 1969 to return to scientific research at Rice University, Houston.

Group 5, Pilot Astronauts Selected April 1966

Flight Status

Vance D. Brand, Civilian.

Gerald P. Carr, Colonel, USMC (Ret.).

Joe H. Engle, Colonel, USAF.

Fred W. Haise, Jr., Civilian.

Don L. Lind, Civilian, Ph.D. (Physics).

Jack R. Lousma, Lieutenant Colonel, USMC.

Thomas K. Mattingly, II, Commander, USN.

Bruce McCandless, II, Commander, USN.

William R. Pogue, Colonel, USAF (Ret.). Special Assistant for Shuttle Payloads, Earth Resources Program Office, JSC.

John L. Swigert, Jr., appointed Staff Executive Director, Committee on Science and Astronautics, House of Representatives, in April 1973. Available for Space Shuttle flights.

Paul J. Weitz, Captain, USN.

Group 5 (cont'd.)

No Longer on Flight Status

John S. Bull, Lietenant Commander, USN (Ret.), withdrew because of pulmonary disease July 1968. Employed in Guidance and Navigation Branch, NASA Ames Research Center, Moffett Field, Calif.

Charles M. Duke, Jr., resigned as Colonel, USAF, effective Jan. 1, 1976, to establish Arbit Corp., a business in San Antonio, Tex.

Ronald E. Evans, Captain, USN (Ret.). Resigned in early 1977. He is Executive Vice President of Western America Corp., Scottsdale, Ariz.

James B. Irwin, Colonel, USAF (Ret.), retired from USAF and NASA Aug. 1, 1972; is Chairman of the Board of Christian evangelical organization, High Flight Foundation, Colorado Springs, Colo.

Edgar D. Mitchell, Captain, USN (Ret.), retired from Navy and NASA Oct. 1, 1972. He is President, Edgar D. Mitchell and Associates, Inc., Palm Beach, Fla.

Stuart A. Roosa, Colonel, USAF (Ret.), retired from Air Force and NASA Feb. 1, 1976. He is Vice President, International Affairs, U.S. Industries, Inc., and resides in Athens, Greece.

Alfred M. Worden, Colonel, USAF (Ret.), assigned to NASA Ames Research Center, Mountain View, Calif., September 1972 as Chief, Systems Studies Division. He has been a vice president of High Flight Foundation, Colorado Springs, Colo., since Sept. 5, 1975. Resides in Palm Beach, Fla.

Deceased

Edward G. Givens, Jr., Major, USAF, died in an automobile accident near Houston, June 6, 1967.

Group 6, Scientist Astronauts Selected August 1967

(All Civilian)

Flight Status

Joseph P. Allen, Ph.D. (Physics), appointed NASA Assistant Administrator for Legislative Affairs August 1975. Available for Space Shuttle flight.

Karl G. Henize, Ph.D. (Astronomy)

William B. Lenoir, Ph.D. (Electrical Engineering)

Story Musgrave, M.D., Ph.D. (Medicine and Physiology)

Robert A. Parker, Ph.D. (Astronomy)

William E. Thornton, M.D. (Medicine)

No Longer on Flight Status

Philip K. Chapman, Sc.D. (Aeronautics and Astronautics), resigned in July 1972. He is Principal Research Scientist with AVCO, Everett Research Laboratories, Everett, Mass., and serves as a Senior Research Associate at the MIT Measurement Systems Laboratory, Cambridge, Mass.

Anthony W. England, Ph.D. (Geology and Physics), resigned in August 1972 to accept position with U.S. Geological Survey, Denver, Colo.

John A. Llewellyn, Ph.D. (Chemistry), resigned for personal reasons, August 1968.

Brian T. O'Leary, Ph.D. (Astronomy), resigned for personal reasons, April 1968.

Donald L. Holmquest, M.D. and Ph.D. (Medicine and Physiology), took leave of absence May 1971 to hold position of assistant professor of Radiology and Physiology, Baylor College of Medicine, Houston. Later resigned from NASA and is Associate Dean of Medicine, Texas A&M University, College Station, Tex.

-more-

Group 7, Pilot Astronauts (Former Air Force Manned Orbiting Laboratory Pilots who entered NASA program in August 1969)

Flight Status

Karol J. Bobko, Lieutenant Colonel, USAF

Robert L. Crippen, Commander, USN

Charles G. Fullerton, Lieutenant Colonel, USAF

Henry W. Hartsfield, Jr., Colonel, USAF

Robert F. Overmyer, Lieutenant Colonel, USMC

Donald H. Peterson, Colonel, USAF

Richard H. Truly, Commander, USN

MERCURY FLIGHT CREWS

(See pp. 24-26 for dates and significant facts on missions)

Mercury Redstone 3

Flight Pilot:

Alan B. Shepard, Jr.

Backup Pilot:

John H. Glenn

Mercury Redstone 4

Flight Pilot:

Virgil I. Grissom

Backup Pilot:

John H. Glenn

Mercury Atlas 6

Flight Pilot:

John H. Glenn

Backup Pilot:

M. Scott Carpenter

Mercury Atlas 7

Flight Pilot:

M. Scott Carpenter

Backup Pilot:

Walter M. Schirra, Jr.

-more-

Mercury Atlas 8

Flight Pilot:

Walter M. Schirra, Jr.

Backup Pilot:

L. Gordon Cooper

Mercury Atlas 9

Flight Pilot:

L. Gordon Cooper

Backup Pilot:

Alan B. Shepard, Jr.

GEMINI FLIGHT CREWS

Gemini 3

Flight Crew:

Commander, Virgil I. Grissom
Pilot, John W. Young

Backup Crew:

Commander, Walter M. Schirra, Jr.
Pilot, Thomas P. Stafford

Gemini 4

Flight Crew:

Commander, James A. McDivitt
Pilot, Edward H. White, II

Backup Crew:

Commander, Frank Borman
Pilot, James A. Lovell, Jr.

Gemini 5

Flight Crew:

Commander, L. Gordon Cooper
Pilot, Charles Conrad, Jr.

Backup Crew:

Commander, Neil A. Armstrong
Pilot, Elliott J. See

Gemini 6

Flight Crew:

Commander, Walter M. Schirra, Jr.
Pilot, Thomas P. Stafford

Backup Crew:

Commander, Virgil I. Grissom
Pilot, John W. Young

Gemini 7

Flight Crew:

Commander, Frank Borman
Pilot, James A. Lovell, Jr.

Backup Crew:

Commander, Edward H. White, II
Pilot, Michael Collins

Gemini 8

Flight Crew:

Commander, Neil A. Armstrong
Pilot, David R. Scott

Backup Crew:

Commander, Charles Conrad, Jr.
Pilot, Richard F. Gordon, Jr.

Gemini 9

Flight Crew:

Commander, Thomas P. Stafford
Pilot, Eugene A. Cernan

Backup Crew:

Commander, James A. Lovell, Jr.
Pilot, Edwin E. Aldrin, Jr.

Gemini 10

Flight Crew:

Commander, John W. Young
Pilot, Michael Collins

Backup Crew:

Commander, Alan L. Bean
Pilot, Clifton C. Williams

Gemini 11

Flight Crew:

Commander, Charles Conrad, Jr.
Pilot, Richard F. Gordon, Jr.

Backup Crew:

Commander, Neil A. Armstrong
Pilot, William A. Anders

Gemini 12

Flight Crew:

Commander, James A. Lovell, Jr.
Pilot, Edwin E. Aldrin, Jr.

Backup Crew:

Commander, L. Gordon Cooper
Pilot, Eugene A. Cernan

APOLLO FLIGHT CREWS

Apollo-Saturn 204

Prime Crew: (Died in spacecraft fire Jan. 27, 1967, approximately 1 month before mission was scheduled)

Commander, Virgil I. Grissom
Command Module Pilot, Edward H. White, II
Lunar Module Pilot, Roger B. Chaffee

Backup Crew:

Commander, Walter M. Schirra, Jr.
Command Module Pilot, Donn F. Eisele
Lunar Module Pilot, Walter Cunningham

Apollo 7

Flight Crew:

Commander, Walter M. Schirra, Jr.
CM Pilot, Donn F. Eisele
LM Pilot, Walter Cunningham

Backup Crew:

Commander, Thomas P. Stafford
CM Pilot, John W. Young
LM Pilot, Eugene A. Cernan

Apollo 8

Flight Crew:

Commander, Frank Borman
CM Pilot, James A. Lovell, Jr.
LM Pilot, William A. Anders

Backup Crew:

Commander, Neil A. Armstrong
CM Pilot, Edwin E. Aldrin, Jr.
LM Pilot, Fred W. Haise, Jr.

-more-

Apollo 9

Flight Crew:

Commander, James A. McDivitt
CM Pilot, David R. Scott
LM Pilot, Russell L. Schweickart

Backup Crew:

Commander, Charles Conrad, Jr.
CM Pilot, Richard F. Gordon, Jr.
LM Pilot, Alan L. Bean

Apollo 10

Flight Crew:

Commander, Thomas P. Stafford
CM Pilot, John W. Young
LM Pilot, Eugene A. Cernan

Backup Crew:

Commander, L. Gordon Cooper
CM Pilot, Donn F. Eisele
LM Pilot, Edgar D. Mitchell

Apollo 11

Flight Crew:

Commander, Neil A. Armstrong
CM Pilot, Michael Collins
LM Pilot, Edwin E. Aldrin, Jr.

Backup Crew:

Commander, James A. Lovell, Jr.
CM Pilot, William A. Anders
LM Pilot, Fred W. Haise, Jr.

-more-

Apollo 12

Flight Crew:

Commander, Charles Conrad, Jr.
CM Pilot, Richard F. Gordon, Jr.
LM Pilot, Alan L. Bean

Backup Crew:

Commander, David R. Scott
CM Pilot, Alfred M. Worden
LM Pilot, James B. Irwin

Apollo 13

Flight Crew:

Commander, James A. Lovell, Jr.
CM Pilot, John L. Swigert, Jr.*
LM Pilot, Fred W. Haise, Jr.

Backup Crew:

Commander, John W. Young
CM Pilot, John L. Swigert, Jr.
LM Pilot, Charles M. Duke, Jr.

Apollo 14

Flight Crew:

Commander, Alan B. Shepard, Jr.
CM Pilot, Stuart A. Roosa
LM Pilot, Edgar D. Mitchell

Backup Crew:

Commander, Eugene A. Cernan
CM Pilot, Ronald E. Evans
LM Pilot, Joe H. Engle

*Substituted for Thomas K. Mattingly, II, who had been exposed to, but did not contract, measles.

Apollo 15

Flight Crew:

Commander, David R. Scott
CM Pilot, Alfred M. Worden
LM Pilot, James B. Irwin

Backup Crew:

Commander, Richard F. Gordon, Jr.
CM Pilot, Vance D. Brand
LM Pilot, Harrison H. Schmitt

Apollo 16

Flight Crew:

Commander, John W. Young
CM Pilot, Thomas K. Mattingly, II
LM Pilot, Charles M. Duke, Jr.

Backup Crew:

Commander, Fred W. Haise, Jr.
CM Pilot, Stuart A. Roosa
LM Pilot, Edgar D. Mitchell

Apollo 17

Flight Crew:

Commander, Eugene A. Cernan
CM Pilot, Ronald E. Evans
LM Pilot, Harrison H. Schmitt

Backup Crew:

Commander, John W. Young
CM Pilot, Stuart A. Roosa
LM Pilot, Charles M. Duke, Jr.

-more-

SKYLAB CREWS

First Manned Mission

Flight Crew:

Commander, Charles Conrad, Jr.
Science Pilot, Dr. Joseph P. Kerwin
Pilot, Paul J. Weitz

Backup Crew:

Commander, Russell L. Schweickart
Science Pilot, Dr. Story Musgrave
Pilot, Bruce McCandless, II

Second Manned Mission

Flight Crew:

Commander, Alan L. Bean
Science Pilot, Dr. Owen K. Garriott
Pilot, Jack R. Lousma

Backup Crew:

Commander, Vance D. Brand
Science Pilot, Dr. Don L. Lind
Pilot, Dr. William E. Lenoir

Third Manned Mission

Flight Crew:

Commander, Gerald P. Carr
Science Pilot, Dr. Edward G. Gibson
Pilot, William R. Pogue

Backup Crew:

(Same backup crew as second manned mission)

-more-

APOLLO SOYUZ TEST PROJECT CREW

Prime Crew:

Commander, Thomas P. Stafford
Command Module Pilot, Vance D. Brand
Docking Module Pilot, Donald K. Slayton

Backup Crew:

Commander, Alan L. Bean
Command Module Pilot, Ronald E. Evans
Docking Module Pilot, Jack R. Lousma

Support Crew:

Richard H. Truly
Robert F. Overmyer
Robert L. Crippen
Karol J. Bobko

ASTRONAUTS WHO HAVE FLOWN (43)

One Flight (26)

William A. Anders	Apollo 8
Vance D. Brand	Apollo Soyuz
M. Scott Carpenter	Mercury 7
Gerald P. Carr	Skylab 4
Walter Cunningham	Apollo 7
Charles M. Duke, Jr.	Apollo 16
Donn F. Eisele	Apollo 7
Ronald Evans	Apollo 17
Owen K. Garriott	Skylab 3
Edward G. Gibson	Skylab 4
John H. Glenn	Mercury 6
Fred W. Haise, Jr.	Apollo 13
James B. Irwin	Apollo 15
Joseph P. Kerwin	Skylab 2
Jack R. Lousma	Skylab 3
Thomas K. Mattingly, II	Apollo 16
Edgar D. Mitchell	Apollo 14
William R. Pogue	Skylab 4
Stuart A. Roosa	Apollo 14
Harrison H. Schmitt	Apollo 17
Russell L. Schweickart	Apollo 9
Donald K. Slayton	Apollo Soyuz
John L. Swigert, Jr.	Apollo 13
Paul J. Weitz	Skylab 2
Edward H. White, II	Gemini 4
Alfred M. Worden	Apollo 15

Two Flights (10)

Edwin E. Aldrin, Jr.	Gemini 12, Apollo 11
Neil A. Armstrong	Gemini 8, Apollo 11
Alan L. Bean	Apollo 12, Skylab 3
Frank Borman	Gemini 7, Apollo 8
Michael Collins	Gemini 10, Apollo 11
L. Gordon Cooper	Mercury 9, Gemini 5
Richard F. Gordon, Jr.	Gemini 11, Apollo 12
Virgil I. Grissom	Mercury 4, Gemini 3
James A. McDivitt	Gemini 4, Apollo 9
Alan B. Shepard, Jr.	Mercury 3, Apollo 14

-more-

Three Flights (3)

Eugene A. Cernan	Gemini 9, Apollo 10, Apollo 17
Walter M. Schirra	Mercury 8, Gemini 6, Apollo 7
David R. Scott	Gemini 8, Apollo 9, Apollo 15

Four Flights (4)

Charles Conrad, Jr.	Gemini 5, Gemini 11, Apollo 12, Skylab 2
James A. Lovell, Jr.	Gemini 7, Gemini 12, Apollo 8, Apollo 13
John W. Young	Gemini 3, Gemini 10, Apollo 10, Apollo 16
Thomas P. Stafford	Gemini 6, Gemini 9, Apollo 10, Apollo Soyuz

ASTRONAUTS COMPARATIVE FLIGHT TIME

ASTRONAUT	FLIGHTS	HRS., MINS.
Carr	1	2017:15
Gibson	1	2017:15
Pogue	1	2017:15
*Bean (4th)	2	1671:45
Garriott	1	1427:09
Lousma	1	1427:09
*Conrad (3rd)	4	1179:38
Lovell	4	715:05
Kerwin	1	672:49
Weitz	1	672:49
*Cernan (11th)	3	566:15
*Scott (7th)	3	546:54
*Young (9th)	4	533:33
Stafford	4	507:43
Borman	2	477:36
McDivitt	2	338:57
Gordon	2	315:53
Evans	1	301:51
*Schmitt (12th)	1	301:51
Schirra	3	295:13
*Irwin (8th)	1	295:11
Worden	1	295:11
*Aldrin (2nd)	2	289:53
Collins	2	266:05
Mattingly	1	265:51
*Duke (10th)	1	265:51
Eisele	1	260:09
Cunningham	1	260:09
Schweickart	1	241:01
Cooper	2	225:15
Brand	1	217:28
Slayton	1	217:28
*Shepard (5th)	2	216:17
*Mitchell (6th)	1	216:01
Roosa	1	216:01
*Armstrong (1st)	2	206:00
Anders	1	147:00
Haise	1	142:54
Swigert	1	142:54
White	1	97:56
Grissom	2	5:08
Carpenter	1	4:56
Glenn	1	4:55

*Walked on the lunar surface (in order of walk)

# # #

NASA Fact Sheet

National Aeronautics and
Space Administration

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

For Release:
May 1977
KSC 35-77

ASTRONAUT SELECTION AND TRAINING

Spacemen of fiction - Jules Verne's travelers to the Moon, or the comic strip heroes Flash Gordon and Buck Rogers - were familiar characters midway through the 20th Century, but nobody could describe accurately a real astronaut. There were none.

Then in 1959 the National Aeronautics and Space Administration asked the United States military services to list their personnel who met some very specific qualifications. The search was underway for pilots for the exciting new manned space flight program.

In seeking its first space pilots, NASA emphasized jet aircraft flight experience and engineering training. NASA also tailored physical stature requirements to the small cabin space available in the Mercury capsule then being designed. Basically, those 1959 requirements were: (1) less than 40 years of age, (2) less than 5 feet 11 inches tall, (3) excellent physical condition, (4) bachelor's degree or equivalent in engineering, (5) qualified jet pilot, (6) graduate of test pilot school, and (7) at least 1500 hours of flying time.

More than 500 men qualified. Military and medical records were examined; psychological and technical tests were given; personal interviews were conducted by psychological and medical specialists. At the end of this first screening, many candidates were eliminated and others decided they did not want to be considered further.

Even more stringent physical and psychological examination followed, and in April 1959 NASA announced its selection of seven men as the first American astronauts: Navy Lt. M. Scott Carpenter, Air Force Captains L. Gordon Cooper, Jr., Virgil I. "Gus" Grissom and Donald K. "Deke" Slayton; Marine Lt. Col. John H. Glenn, Jr.; and Navy Lieutenant Commanders Walter M. Schirra, Jr., and Alan B. Shepard, Jr.

Each flew in Project Mercury except Slayton, who was grounded with a previously undiscovered heart defect; he became director of Flight Crew Operations at the Johnson Space Center until 1974.

-more-

Slayton returned to flight status in 1972 and became the docking module pilot for the 1975 Apollo-Soyuz Test Project. He later was named the manager for the Space Shuttle approach and landing tests which began in early 1977. He is the only one of the Mercury astronauts still in the space program. Grissom died in the January 1967 spacecraft fire at Cape Canaveral. The others left the program to enter various professions.

MORE RECRUITING

Three years after that first selection, NASA issued another call for Gemini and Apollo astronaut trainees. Experience in flying high-performance aircraft still was stressed, as was education. The limit on age was lowered to 35 years, on height raised to 6 feet, and the program was opened to qualified civilians. This second recruitment brought in more than 200 applications. The list was screened to 32, then finally pared to nine in September 1962.

Fourteen more astronaut trainees were chosen from nearly 300 applicants in October 1963. By then, emphasis had been increased on academic qualifications, decreased on flight experience, and in October 1964 applications were invited on the basis of educational background alone. These were the scientist-astronauts, so called because the 400-plus applicants who met minimum requirements had a doctorate or equivalent experience in natural sciences, medicine, or engineering.

These applications were turned over to the National Academy of Sciences in Washington for evaluation. Sixteen were recommended to NASA, and six were selected in June 1965. Although the call for volunteers did not specify flight experience, two of the applicants were qualified jet pilots and did not need the year of basic flight training given the others.

Another 19 pilot astronauts were brought into the program in April 1966, and 11 scientist-astronauts were added in mid 1967. When the Air Force space program (Manned Orbiting Laboratory) was disbanded in mid-1969, seven astronaut trainees transferred to NASA.

Despite departures and deaths, well over a score of astronauts remain in the space program. This group will be supplemented in late 1977 by at least 30 candidates for Space Shuttle astronaut status. Fifteen are expected to be pilot

candidates and 15 mission specialist candidates. Final selection as a Shuttle astronaut will depend upon satisfactory completion of a two-year training and evaluation period beginning in July 1978.

BACK TO SCHOOL

In manned programs to date, once a man was selected to train as an astronaut, he did much more than learn to fly a spacecraft. For one thing, he went back to school. He studied basic science and technology courses such as geology - complete with field trips to areas of geologic interest - flight mechanics, meteorology, guidance and navigation, astronomy, upper atmospheric physics, and digital computers.

He went through training to familiarize himself with the environment of space. Weightlessness, for instance, was experienced for periods of half a minute or so when a KC 135 airplace, modified for astronaut training, was put into an up-and-over parabola. The effect is similar to that felt in a rapidly descending elevator. During this "zero gravity," the astronaut practiced activities such as drinking, eating, and using various types of equipment. Longer periods of weightlessness were simulated under conditions of "neutral buoyancy" in a specially designed water tank large enough to hold full-scale mockups of the spacecraft.

To get an idea of the acceleration forces experienced during launch and reentry, the astronaut trainee took several rides in a large centrifuge at the Johnson Space Center. To become accustomed to working in a pressurized spacesuit, he spent many mission training sessions in the suit.

For lunar landing missions, the environmental training program made use of some special equipment. One unit let a man walk, jump, or climb as though he were under the Moon's gravitational influence - one-sixth that of Earth. Another let the astronaut practice lunar landings in one-sixth g, again artificially induced by the training equipment.

Learning how to survive in the jungle or the desert may seem out of place in training for space flight, but the prospective astronaut was given such instruction. If some emergency ever brought his spacecraft down in an unplanned landing area, rescue could be hours or days away. The survival courses were conducted in three parts: classroom lectures, demonstrations of survival techniques, and field experience

where the instruction was put to practice. Quick-exit techniques and survival procedures for water landings also were taught.

A further astronaut responsibility was to keep abreast of spacecraft and launch vehicle design and development activities. Not only was he expected to know what was going on, but also to contribute to the engineering design process. This required his presence at many engineering conferences and reviews at the Johnson Space Center, where the astronauts are assigned, or at other NASA centers or contractors' plants. Because of his other training requirements, and because of the complexity of the program, no one astronaut could be expected to follow each day-to-day change, so one or more astronauts were assigned specific areas of the program. Periodic reports to the rest of the group kept everyone up to date.

Along with these responsibilities, the astronaut was required to keep his flying skill sharp and his physical condition excellent. Flight readiness was maintained through regular use of high-performance jet aircraft assigned to the Johnson Space Center and based at nearby Ellington Air Force Base. Physical conditioning was more a matter of individual need and preference. Gymnasium facilities and physical training specialists were available for those who wanted them.

FLIGHT ASSIGNMENT

When an astronaut was assigned to a flight crew, his schedule really got busy. Crews were named for specific flights a year or more in advance of the launch date. In a three-man Apollo crew, for a lunar landing mission, the positions were: commander, as "boss" of the ship did much of the flying; command module pilot, handled much of the navigation duties and piloted the spacecraft while his two teammates were on the lunar surface; lunar module pilot, largely responsible for communications, helped fly lunar module to and from the Moon.

Each astronaut got enough cross-training so that he could handle at least the most critical duties of the other two. In addition, a second or "backup" crew goes through identical training. Thus an ill or injured crewman could be relieved in flight or replaced before the flight without compromising the mission.

-more-

Systems briefing - spacecraft, launch vehicle, guidance and navigation - opened mission training on a low-key basis. Each system, and how it related to the others, was discussed in detail. At this time, the crew took part in spacecraft reviews and test programs which let each crewman become familiar with his spacecraft while it was being built.

The tempo picked up as the astronauts began working with the various simulators, first to learn the individual tasks that would be required to fly the spacecraft, then to put them all together in the sequence that would be followed in the actual mission.

Simulators, some located in Houston, some at Kennedy Space Center, provided extremely realistic working conditions. The spacecraft interiors were duplicated, and instruments such as guidance and navigation displays were programmed to give the same readings they would in flight. Even out-the-window views of the Earth or the stars or the lunar surface were projected onto screens where the spacecraft windows would be. The simulated conditions were so accurate that most astronauts came back from a mission feeling they had made the same flight many times before.

Training reached its peak several weeks before the scheduled flight when the mission simulator was linked with Mission Control Center and with an also-simulated version of the Manned Space Flight Network tracking stations. Crew and flight controllers went over the entire mission together in a joint training exercise that proved everything ready for the real thing.

In between their simulator sessions, the prime and backup crew members continued to keep themselves up-to-date on the progress of their spacecraft. They also practiced activities related to the mission, such as spacecraft docking, lunar landing, extravehicular activity, even intravehicular activity as habitable volume increased in vehicles such as Skylab. They trained in celestial observation - important to spatial navigation and to some scientific experiments. They practiced getting out of the spacecraft and into a liferaft as they would after splashdown. They learned to operate the experimental equipment designed to gather scientific data. And, all the while, each astronaut continued to keep up his flight and physical status.

-more-

Even when the flight was completed, the astronaut's job was not done. The crew spent several days to several weeks in debriefing - recounting their experiences for the benefit of future crews to help determine whether spacecraft systems, or perhaps training procedures, might be improved. Then followed a period of public appearances in which the crew reported to the public on the results of the flight. After this brief "vacation," the crew might find itself once again in the classroom to begin again the training that eventually would lead to another flight into space.

It is expected that many of the above training procedures will be followed by Space Shuttle astronauts, modified as necessary for the special needs of the Shuttle Program.

SHUTTLE ASTRONAUT RECRUITMENT

In selecting Shuttle astronaut candidates, NASA is committed to an affirmative action program with a goal of having qualified minorities and women among those chosen. Minority and woman candidates have been encouraged to apply. Deadline for submitting applications was established as June 30, 1977.

NASA's announcement for astronaut pilots included the following specifications: (1) bachelor's degree from an accredited institution in engineering, physical science or mathematics (or have completed all requirements for a degree by Dec. 31, 1977); (2) advanced degree or equivalent experience is desired; (3) at least 1,000 hours first pilot time, with 2,000 hours or more desirable (high performance jet aircraft and flight test experience is highly desirable); (4) ability to pass a NASA Class I space flight physical; (5) height between 64 and 76 inches.

Educational qualifications listed for mission specialist candidate positions were the same as for pilot applicants except that biological science degrees were included. Other qualifications are the ability to pass a NASA Class II space flight physical and a height between 60 and 76 inches. Mission specialists will not be required to be pilots.

Pay for civilian candidates will be based on the Federal Government's General Schedule pay scale from grades GS-7 through GS-15, with approximate salaries from $11,000 to $34,000 per year. Candidates will be compensated based on individual academic achievements and experience. Other benefits include vacation and sick leave and participation in the Federal Government retirement, group health and life insurance plans.

-more-

Civilian applicants were advised to obtain a packet of application material from Code AHX, Johnson Space Center, Texas, 77058, indicating whether the interest is in the astronaut pilot or mission specialist program. Military personnel were told to apply through their respective military departments.

SPACE SHUTTLE OPERATIONS

The Space Shuttle is a reusable vehicle that will replace virtually all of this nation's space launch vehicles. Shuttle missions could include deploying and retrieving satellites, servicing satellites in orbit, operating laboratories for astronomy, Earth sciences, space processing and manufacturing, and developing and servicing a permanent space station.

Launched like a rocket, the Shuttle will perform Earth orbital missions of up to 30 days, then its Orbiter stage will land like an airplane and be refurbished for another mission Pilot astronauts will control the Shuttle during launch, orbital maneuvers and landings and be responsible for maintaining vehicle systems. Mission specialist astronauts will be responsible for the coordination of overall Orbiter operations in the areas of flight planning, consumables usage and other activities affecting payload operations. At the discretion of the payload sponsor, the mission specialist may assist in the management of payload operations, and may, in specific cases, serve as the payload specialist. They will be able to continue in their chosen fields of research and to propose, develop and conduct experiments.

Crews could consist of as many as seven people - commander, pilot, mission specialist and up to four payload specialists, who need not be NASA employees and who will be nominated by the sponsors of the payload being flown. Payload specialists will operate specific payload equipment where their special skills are needed.

Potential users of the Space Shuttle include government agencies and private industries from the United States and abroad.

First Shuttle orbital flight test from the Kennedy Space Center is scheduled in early 1979. Operational status is expected in 1980.

# # #

Space Administration

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

A. H. Lavender
305 867-2468

Feb

RELEASE NO: KSC 34-77

MORE THAN 69,000 TOURED KENNEDY SPACE CENTE

KENNEDY SPACE CENTER, Fla.--More than 69,00 tickets for escorted bus tours of the Kenne adjacent Cape Canaveral Air Force Station i level of public interest in the Spaceport a activities continued.

January patronage of 69,497 was 15.7 p 82,494 who toured the Space Center in Janua

"Although January, 1977, was far from the eighth January in the past nine years t 60,000, and in each of those years annual vo said P. A. Fagnant, KSC's chief of visitor

NASA Tours originate at the Kennedy Vi from the NASA Causeway off U. S. Highway 1 Titusville, and via State Road 3 on Merritt

The Visitors Center features displays, lectures and space movie showings, all at n A new Hall of History, opened in mid-1976, tracing the evolution of the nation's aeros

Tours, available at nominal cost, prov to view historic launch sites at Cape Canav to Center facilities for future Space Shutt underway at many locations, have a close-up space vehicle and enter the mammoth Vehicle

# # #

Space Administration

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

Iris Sullivan
305 867-2468 Feb

RELEASE NO: KSC 33-77

ELECTRICAL STORM STUDY EXTENDED

KENNEDY SPACE CENTER, Fla.--NASA's John F.
awarded a $50,000 contract extension to the
Tuscon, Arizona, for continued study of chan
electrical fields and other thunderstorm ph
area.

The contract modification extends a co
in April, 1974, until January 15, 1978, and
value to $116,000.

Dr. Phillip Krider of the University o
recognized meteorologist, is among the sci
University of Arizona graduate and undergra
project. Under the contract, the universit
Physics conducts studies during summer thun
utilizing KSC's sophisticated instrumentati

The contract provides for a detailed s
changes and recovery curves created by ligh
meteorological conditions. Dr. Krider will
of computer programs to determine and displ
lightning discharges and thunderstorm chara

This study is expected to develop meth
enhance and evaluate KSC's present meteorol
all aspects of Space Shuttle vehicle proces
operations may be conducted safely and effi
marginal environmental conditions.

The university's effort will be coordi
the many government, university and private
will be involved in thunderstorm research a

The University of Arizona efforts
co-sponsored by the American Geophysic
Meteorological Society known as TRIP (
International Program).

The program provides for 20-25 pr
scientists to conduct research at KSC.
teams and supported their activities d
The teams will return to the Center in
1978 to continue research.

# # #

NASA Fact Sheet

National Aeronautics and
Space Administration

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

For Release:
February 1977
KSC 32-77

FUTURE NASA LAUNCHES

The Kennedy Space Center plans to launch an average of over 18 space missions per year through 1981.

Betweeen February 1, 1977, and December 31, 1981, 93 launches are scheduled, including a number currently listed as tentative (in the planning stage but not yet finally contracted).

Sixty-seven will be unmanned missions from NASA complexes at Cape Canaveral and the Western Test Range in California. Twenty-six will be manned orbital Space Shuttle missions launched from the Center's Launch Complex 39. The first Shuttle flight from Complex 39 is scheduled in early 1979.

Delta rockets are scheduled to launch 31 spacecraft from Cape Canaveral and 6 from the Western Test Range. Atlas-Centaur launch vehicles are scheduled for 22 missions and Titan-Centaur vehicles for two, all from Cape Canaveral complexes. Atlas-F rockets will launch six missions from the Western Test Range.

Over seventy percent of the unmanned launches will be on a reimbursable basis, with NASA being paid for the cost of the launch vehicles and associated launch activities. Such launches are conducted for private business, other Federal agencies, other governments and international agencies.

Countries and international agencies involved in cooperative space projects are Brazil, Canada, Japan, Indonesia, Italy, NATO, The Netherlands, the European Space Agency and the International Telecommunications Satellite Organization.

Missions planned for the 59-month period are listed below, indicating the launch sites and rockets to be employed.

-more-

CAPE CANAVERAL

ATLAS-CENTAUR

INTELSAT IV-A--Four launches in the current series of international communications satellites are scheduled through late 1978.

INTELSAT V--Two INTELSAT V launches are scheduled in 1979 and two in 1980.

COMSTAR--One launch of this domestic communications satellite is planned in early 1978. Two COMSTARS were launched in 1976.

FLTSATCOM--U.S. Navy communications satellites. One will be launched in 1977, one in 1978, two in 1979 and one in 1980.

HEAO--High Energy Astronomy Observatory. Three missions are planned to study highly energetic radiation from space, with one in 1977, one in 1978 and one in 1979.

PIONEER VENUS--Two missions are planned in 1978 to measure the structure of the atmosphere and ionosphere of Venus.

TDRSS--Two tracking and Data Relay Satellite System Missions will be launched in 1979, one in 1980.

TITAN-CENTAUR

MARINER JUPITER/SATURN--Two spacecraft will be launched in 1977 to conduct exploratory investigations of Jupiter and Saturn.

DELTA

GOES--Four Geostationary Operational Environmental Satellites will be launched to demonstrate the applicability of new instrumentation for NASA's Earth and Ocean Physics Applications Program. One launch is scheduled in 1977, one in 1978 and two in 1980.

RCA SATCOM--One spacecraft will be launched in 1977 to expand a new U.S. commercial communications system which was established with the launch of RCA SATCOM-A in December 1975 and RCA SATCOM-B in March 1976.

NATO III--The third of three advanced communications satellites will be launched for the North Atlantic Treaty Organization in 1978; the first one was launched in 1976, the second in January 1977.

-more-

WESTAR--The third in the series of spacecraft in a U.S. domestic communications satellite system will be launched in 1978.

ESA/GEOS--One Geodynamic Experimental Ocean Satellite for the European Space Agency, to demonstrate applicability of new instrumentation, will be launched in early 1977.

PALAPA--The second domestic communications satellite for Indonesia will be launched in 1977.

SIRIO--One communications research satellite for Italy will be launched in 1977.

ESA/METEOSAT--One geostationary meteorology satellite for the European Space Agency will be launched in 1977.

ESA/OTS--An Orbital Test Satellite will be launched for the European Space Agency in 1977.

IUE--An International Ultraviolet Explorer, designed to obtain high-resolution ultraviolet data on spectra of many types and classes, will be launched in 1977.

SCATHA--An experimental Air Force satellite, referred to as Spacecraft Charging At High Altitudes, will be launched in 1979.

ISEE--Two International Sun-Earth Explorer missions will investigate, among other things, the solar-terrestrial relationships of the outermost boundaries of the Earth's magnetosphere. One launch carrying two ISEE spacecraft is scheduled in 1977. The second launch in 1978 will propel the third ISEE spacecraft into orbit.

ESA/MAROTS--A Maritime Communications Satellite will be launched for the European Space Agency in 1978. A second mission is planned for 1979 if needed.

JAPAN GMS--A Japanese Geostationary Meteorology Satellite will be launched in 1977.

JAPAN CS--A Japanese Communications Satellite will be launched in 1977. A second mission, if needed, is scheduled for 1978.

JAPAN BSE--A Broadcast Satellite for Japan will be launched in 1978.

TELESAT--The fourth in a series of Canadian domestic communications satellites will be launched in 1978.

-more-

BRAZIL--Two domestic communications satellites will be launched for Brazil in 1979; one will be launched in 1980.

AEROSAT--Two air traffic control satellites are planned. One is scheduled in 1979 and one in 1980.

SMM--A Solar Maximum Mission satellite will be launched in 1979.

SBS--One Business Systems Satellite will be launched in 1979 and one in 1980.

WESTERN TEST RANGE

DELTA

LANDSAT--Two additional Earth resources technology satellites to conduct various experiments in Earth resources disciplines will be launched. One is scheduled in 1977 and one in 1981.

NIMBUS--A satellite to monitor pollution and measure oceanographic and meteorological conditions will be launched in 1978.

SIRE--Space Infrared Experiment, an Air Force research and development satellite, will be launched in 1980.

EE--One Electrodynamic Explorer satellite to study space plasma physics will be launched in 1981.

IRAS--A U.S.-Netherlands Infrared Astronomy Satellite is scheduled for launch in 1981.

ATLAS-F

TIROS--One Television Infrared Observation Satellite will be launched in 1978.

SEASAT--The first satellite devoted exclusively to collecting data for the study of oceans will be launched in 1978.

NOAA--Four meteorology satellites for the National Oceanic and Atmospheric Administration are scheduled. One will be launched in 1978, one in 1979, one in 1980 and one in 1981.

-more-

KENNEDY SPACE CENTER
(Launch Complex 39)

SPACE SHUTTLE--The Space Shuttle will be a manned reusable vehicle operated as a low-cost transportation system to carry useful payloads to and from Earth orbit. With its versatility and reusability, the Space Shuttle is expected to open the door to the economical and routine use of space.

The Space Shuttle flight system includes an Orbiter that resembles a conventional jetliner; a large external tank which supplies propellant to the Orbiter main engines; and two solid rocket boosters which burn in parallel with the Orbiter's main engines to provide initial ascent thrust.

The Shuttle will be launched vertically. About 25 miles above Earth, the solid boosters will separate from the Orbiter and fall into the ocean. Their descent braked by parachutes, the boosters' shells will be recovered, refurbished, refilled with propellant and reflown on subsequent missions. When the contents of the external tank are exhausted, it will be jettisoned into a remote ocean area. It will not be recovered. The Orbiter will accelerate into Earth orbit, carry out is mission of up to 30 days, reenter the atmosphere and land like a jetliner at the Kennedy Space Center's Orbiter Landing Facility. The Orbiter, designed for at least 100 flights, will then be refurbished for its next mission.

The Shuttle's primary mission will be to deliver payloads of up to 29,500 kilograms (65,000 pounds) to low Earth orbit. As many as five satellites may be delivered on a single mission.

Propulsion stages carried into space by the Orbiter will have the capability of placing spacecraft in geosynchronous Earth orbit and lunar or planetary trajectories. The Orbiter also will be able to retrieve payloads from orbit and return them to Earth and will be capable of carrying technicians into orbit for servicing or refurbishing spacecraft.

When Spacelab, a space-borne laboratory, is carried in the Orbiter's cargo bay, a shirt-sleeved, pressurized environment will be provided for scientific and technical investigators. The re-usable Spacelab is being designed and built by member nations of the Europeans Space Agency.

After a series of horizontal test flights in California in 1977 and 1978, the first Shuttle orbital test flight is scheduled

-more-

for launch from KSC's Complex 39 in early 1979. Three additional orbital test flights are planned for 1979 and two for 1980, to be followed by five operational flights in 1980. Fifteen missions are scheduled in 1981.

Because it will be capable of carrying virtually all of the nation's civilian and military payloads into Earth orbit, both manned and unmanned, the Shuttle will replace most launch vehicles currently in use.

Launch Complex 39 was the departure point for Apollo lunar missions, Skylab Earth-orbital flights and the Apollo spacecraft for the Apollo Soyuz Test Project, the cooperative U.S.-USSR mission in 1975.

# # #

NASA Fact Sheet

National Aeronautics and Space Administration

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

NOTE: Launch dates are made public about four weeks in advance. When in Florida phone toll free 1-800-432-2153 for information on the next launch.

A. H. Lavender
305 867-2468

For Release:
February 1977

RELEASE NO: KSC 31-77

1977 LAUNCH SCHEDULE

Date	Spacecraft	Launch Vehicle	Pad	Remarks
Launched January 27	NATO IIIB	Delta	17	Reimbursable
March 10	PALAPA-B	Delta	17	Reimbursable
April 15	HEAO-A	Atlas-Centaur	36	
April	ESRO-GEOS	Delta	17	Reimbursable
May	GOES-B	Delta	17	Reimbursable
June	INTELSAT-IV-A-F3	Atlas Centaur	36	Reimbursable
June	ESA/OTS	Delta	17	Reimbursable
July	JAPAN/GMS	Delta	17	Reimbursable
August	SIRIO	Delta	17	Reimbursable
August	MJS-A	Titan-Centaur	41	
August	MJS-B	Titan-Centaur	41	
August	ESA/METEOSAT	Delta	17	Reimbursable
September	LANDSAT-C	Delta	WTR	
October	INTELSAT-IV-A-F4	Atlas Centaur	36	Reimbursable
October	ISEE's-A & -B	Delta	17	
November	JAPAN/CS	Delta	17	Reimbursable
November	FLTSATCOM-A	Atlas Centaur	36	Reimbursable
December	IUE	Delta	17	

NASA News

National Aeronautics and
Space Administration

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

Iris Sullivan
305 867-2468

For Release:
February 7, 1977

RELEASE NO: KSC 30-77

NAPA RESIDENT IS SPACEPORT EMPLOYEE

KENNEDY SPACE CENTER, Fla.--David R. Claudino, son of Mr. and Mrs. Robert Claudino, 3724 Linda Vista Ave., is an electronics engineering trainee in the Space Transportation System Processing Directorate at NASA's John F. Kennedy Space Center. He is involved in development of plans for utilization of Complex 39 for Space Shuttle processing.

Born in Vallejo, Calif., he was graduated from Vintage High School in Napa in 1973. A candidate for a degree in electrical engineering at California State Polytechnic University in San Luis Obispo, he is enrolled in the school's cooperative education program.

He joined the Kennedy Space Center as a cooperative education employee at the Western Launch Operations Division, Lompoc, Calif., where he was assigned to the Public Affairs Office, in September, 1975. He transferred to the Spaceport in Florida in September, 1976.

Claudino, who alternates periods of study at the universitty and work at the Kennedy Space Center, resides in Cocoa Beach, Fla., while working at the Spaceport.

# # #

NASA News

National Aeronautics and
Space Administration

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

Iris Sullivan
305 867-2468

For Release:
February 7, 1977

RELEASE NO: KSC 29-77

CALIFORNIA POLY STUDENT IS SPACEPORT EMPLOYEE

KENNEDY SPACE CENTER, Fla.--David R. Claudino, a junior at California State Polytechnic University, is a electronics engineering trainee in the Kennedy Space Center's Space Transportation System Processing Directorate. He is involved in development of plans for utilization of Complex 39 for Space Shuttle processing.

Born in Vallejo, Calif., he was graduated from Vintage High School, Napa, Calif., in 1973.

He joined the Kennedy Space Center as a cooperative education employee at the Western Launch Operations Division, Lompoc, Calif., in September, 1975, and transferred to the Spaceport in Florida in September, 1976.

Caludino alternates periods of study at the university and work at the Kennedy Space Center. He resides in Cocoa Beach, Fla., while working at the Spaceport.

# # #

NASA News

National Aeronautics and
Space Administration

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

Iris Sullivan
305 867-2468

For Release:
February 7, 1977

RELEASE NO: KSC 28-77

GEORGIA TECH STUDENT IS SPACEPORT EMPLOYEE

KENNEDY SPACE CENTER, Fla.--Roy J. Fehlandt, a junior at Georgia Tech, is an electrical engineering trainee on the Malfunction Investigation Staff of the Kennedy Space Center's Support Operations Directorate.

Born in Brooklyn, New York, he was graduated from Melbourne, Fla., Central Catholic High School in 1974. He was a National Merit Scholarship finalist.

He is enrolled in the cooperative education program at Georgia Tech, where he is majoring in electrical engineering. He is a member of the Institute of Electrical and Electronic Engineers.

He joined the KSC Support Operations Directorate in January, 1977, and alternates periods of study at the university and work at the Kennedy Space Center.

# # #

NASA News

National Aeronautics and
Space Administration

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

Iris Sullivan
305 867-2468

For Release:
February 7, 1977

RELEASE NO: KSC 27-77

BAREFOOT BAY RESIDENT IS SPACEPORT EMPLOYEE

KENNEDY SPACE CENTER, Fla.--Roy J. Fehlandt, son of Mrs. Marie R. Fehlandt, 704 E. 8 St., Barefoot Bay, is an electrical engineering trainee on the Malfunction Investigation Staff of the Kennedy Space Center's Support Operations Directorate.

Born in Brooklyn, New York, he was graduated from Melbourne Central Catholic High School, where he was a National Merit Scholarship finalist in 1974. He is presently enrolled in the cooperative education program at the Georgia Institute of Technology, where he is majoring in electrical engineering. He is a member of the Institute of Electrical and Electronic Engineers.

Fehlandt joined the KSC Support Operations Directorate in January, 1977, and alternates periods of study at the university and work at the Kennedy Space Center.

He resides in Sebastian while working at KSC.

# # #

NASA News

National Aeronautics and
Space Administration

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

Dick Young
305 867-2468

For Release:
January 27, 1977

RELEASE NO: KSC 26-77

NOTICE TO EDITORS/NEWS DIRECTORS

KSC TRANSPORTERS TO BE DESIGNATED ENGINEERING LANDMARK

KENNEDY SPACE CENTER, Fla.--The Kennedy Space Center's Crawler Transporters will be designated National Historic Mechanical Engineering Landmarks at a ceremony to be held here by the American Society of Mechanical Engineers (ASME) at 2 p.m., Thursday, February 3.

The largest land vehicles ever built, the crawler transporters were used throughout the Apollo and Skylab eras to move massive space vehicles and ground support facilities around Launch Complex 39. They will also be used for Space Shuttle operations at KSC.

Members of the press interested in covering this event should be at the KSC News Center at Room 1207 in the Headquarters Building by 1:30 p.m. on February 3. Transportation will be provided to and from the dedication site near the Vehicle Assembly Building at Launch Complex 39.

Participating in the ceremony will be Jim Roy, Atlanta, Ga., Southeastern Regional Vice President, ASME; Dr. Paul Hartman, head of the Civil Engineering Department, Florida Technological University, Orlando, associated with ASME: D. D. Buchanan. Associate Director for Design, KSC, who directed crawler construction; Dr. Stothe P. Kezios, Director, School of Engineering, Georgia Institute of Technology. ASME National President-Elect, and Raymond L. Clark, Director of KSC's Design Engineering Directorate.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Dick Young
305 867-2468

January 27, 1977

RELEASE NO: KSC 25-77

COLD-STUNNED SEA TURTLES GIVEN WARM REFUGE AT SPACEPORT

KENNEDY SPACE CENTER, FLA.--Cold-stunned sea turtles occupying the shallow waters surrounding the Kennedy Space Center are being given warm refuge in a wildlife laboratory building and recreational swimming pond.

After temperatures in the low 20s swept Florida on the nights of January 19-20-21, 140 cold-paralyzed green, loggerhead and Atlantic Ridley sea turtles surfaced on the waters of Mosquito Lagoon and the Indian and Banana Rivers or were beached on their shores.

The Atlantic Ridley is on the endangered species list and the greens and loggerheads are candidates for the same listing. The size of the turtle population turned up by the freeze far exceeded the expectations of local wildlife authorities.

The giant reptiles are sensitive to water temperatures below about 50degrees. Temperature readings in Mosquito Lagoon, for example, were plunged to 39 degrees by the succession of below freezing nights.

Robert Yoder, Manager of the Merritt Island National Wildlife Refuge which has been established on NASA lands not in operational use, said the reptiles surfaced after they were "almost anesthetized" by the plunging water temperatures.

For several days after the freezes, fishermen, private citizens, personnel from the U. S. Fish and Wildlife Service and Florida Marine Patrol, and students from Florida Technological University (Orlando) located, reported or brought the reptiles to the FTU field laboratory on the northern end of the Kennedy Space Center.

-more-

The largest - a loggerhead - weighed in at 243 pounds. The largest green weighed 130 pounds.

The lethargic turtles were kept in small wading pools or on their backs in the FTU laboratory for several days in hopes that rising water temperatures would permit their return to their natural habitat.

But the waters warmed only slightly and threats of new cold waves prompted removal of more than 100 of the larger reptiles to a 180-foot diameter, eight-foot deep swimming pond at the KARS recreation area on the south end of the center on January 25.

The large pond is fed by artesian springs pouring 75-degree water into the pool. Cooled by ambient air to about 64 degrees, the pond provides temperatures more acceptable to the turtles.

Dr. L. M. Ehrhart, an animal ethologist at FTU, which has a contract with KSC to conduct a baseline ecological study of the Spaceport, said the turtles will be held in the pond for 10 days to two weeks or until rising water temperatures permit their return to the surrounding estuaries.

The remaining turtles - somewhat smaller - will be kept in four water-filled, six-foot diameter plastic wading pools of the type used by children which have been moved into the field laboratory.

The rare Atlantic Ridley was rated a real find and wildlife experts were delighted at the unexpectedly large number of green turtles. The greens constituted approximately 80 percent of the turtles forced to surface by the cold water and are somewhat rarer than the giant loggerheads which come to KSC beaches in large numbers to lay their eggs during the summer months.

In a sense, the paralysis of the turtles by the cold proves that there's a silver lining in every freeze.

Part of the FTU effort involves netting and tagging turtles for release but netters have succeeded in catching only relatively few during the past year.

The labor expenditure ran 40 man-hours per turtle and the opportunity to tag the reptiles provided by the freeze provided a bonus of approximately two and a half man-years of netting and tagging effort.

All but about 10 of the turtles came from Mosquito Lagoon, the large, shallow estuary on the northeast side of the space center.

Many of the Lagoon's inhabitants were not so fortunate.

Large kills of jacks, pompano, topsail satfish and snook are reported to have resulted from the chilly water temperatures.

# # #

NASA News

National Aeronautics and
Space Administration

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

Mark Hess
305 867-2468

For Release:
April 5, 1977

RELEASE NO: KSC 24-77

FORMER ALBANY RESIDENT HIRED AT KENNEDY SPACE CENTER

KENNEDY SPACE CENTER, Fla.--Katherine Slaton, a former Albany resident and alumnus of Albany State College was recently hired at NASA's John F. Kennedy Space Center in Florida. Ms. Slaton will join the engineering pool in the Central Data System Projects Office where she will be assisting the operations management effort, responsible for supplying technical data for management support of the Shuttle Transportation System.

The daughter of Mr. and Mrs. John J. Slaton, who still reside in Albany, Ms. Slaton attended Albany High School and received her A.A. degree in mathematics from Albany Junior College in 1974.

She was graduated from Albany State College in 1976 with a B.A. in mathematics and a minor in computer science. She also participated in the Cooperative Education, co-op, program at Albany State and spent three work periods at KSC where she authored two test programs for the GOAL compiler used to translate GOAL computer language into useable machine language.

Ms. Slaton, whose position at KSC is an aerospace technologist-electrical engineer, is the first black woman hired in that capacity at the space center. Since her employment in February, Ms. Slaton has been attending several instructional classes dealing with various aspects of data management.

She has received training in the Transaction Processing System, or TPAP, which involves working with the Series 66-80 Honeywell computer, and the Test Data Analysis Program, responsible for testing that requires the services of the ground support system for the Space Shuttle Program.

Ms. Slaton now lives in Cocoa, Fla.

-more-

KSC has been designated the prime launch and recovery site for the reusable Space Shuttle, scheduled for its first flight from KSC in the spring of 1979.

# # #

NASA News

National Aeronautics and
Space Administration

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

Mark Hess
305 867-2468

For Release:
April 5, 1977

RELEASE NO: KSC 23-77

ALBANY STATE ALUMNUS HIRED AT KENNEDY SPACE CENTER

KENNEDY SPACE CENTER, Fla.--Katherine Slaton, an Albany State College alumnus, was recently hired at NASA's John F. Kennedy Space Center in Florida. Ms. Slaton will join the engineering pool in the Central Data System Projects Office where she will be assisting the operations management effort, responsible for supplying technical data for management support of the Shuttle Transportation System.

Ms. Slaton, an aerospace technologist-electrical engineer, is the first black woman hired in that capacity at KSC. Since her employment in February, Ms. Slaton has been attending several instructional classes dealing with various aspects of data management. She has received training in the Transaction Processing Systems, or TPAP, which involves working with the Series 66-80 Honeywell computer, and the Test Data Analysis Program, responsible for testing that requires the services of the ground support system for the Space Shuttle Program. She has also attended classes concerning text processing.

Ms. Slaton was graduated from Albany State College in 1976 with a B.A. in mathematics and a minor in computer science. She was also a co-op student at Albany State and spent three work periods at KSC where she authored two test programs for the GOAL compiler used to translate GOAL computer language into useable machine language.

A native of Albany, Ms. Slaton graduated from Albany High School in 1972 and received her A.A. in math at Albany Junior College in 1974. She now resides in Cocoa, Fla.

KSC has been designated the prime launch and recovery site for the reusable Space Shuttle, scheduled for its first flight from KSC in the spring of 1979.

# # #

NASA News

National Aeronautics and
Space Administration

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

Iris Sullivan
305 867-2468

For Release:
February 7, 1977

RELEASE NO: KSC 22-77

KINGMAN RESIDENT IS A SPACEPORT EMPLOYEE

KENNEDY SPACE CENTER, Fla.--Cheryl P. Rutter, daughter of Mr. and Mrs. Thomas Rutter, 1919 Arlington Street, Kingman, Arizona, is an electrical engineering trainee in the NASA/KSC Data Branch of the Kennedy Space Center's Information Systems Directorate.

Among her assignments is the operation of an Image 100 Computer System for analysis of earth resources data. Different types of data analysis conducted by this office include x-rays, Landsat imagery, and color-infrared aerial photography.

Born in Rimby, Alberta, Canada, she was graduated from Kingman High School in 1971 and is presently enrolled in the cooperative education program at Florida Technological University, Orlando, where she is majoring in electrical engineering.

She was a recipient of the Society of Women Engineers student award at FTU and is a member of Eta Kappa Nu honorary society. She is also a member of the American Institute of Aeronautics and Astronautics and the Institute of Electrical and Electronic Engineers. Active in the Society of Women Engineers, she was the 1975-76 chairman for the Florida State Society of Women Engineers Symposium.

She joined the KSC Information Systems Directorate in April 1975, and alternates periods of study at the university and work at the Kennedy Space Center.

Her hobbies include flying and scuba diving. She received a private pilots license in 1973 and is a member of Alpha Eta Rho flying fraternity at the Florida Institute of Technology, Melbourne, Fla.

Rutter resides in Titusville, Fla., while working at KSC.

# # #

NASA News

National Aeronautics and
Space Administration

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

Iris Sullivan
305 867-2468

For Release:
February 7, 1977

RELEASE NO: KSC 21-77

FTU STUDENT IS SPACEPORT EMPLOYEE

KENNEDY SPACE CENTER, Fla.--Cheryl P. Rutter, a senior at Florida Technological University, is an electrical engineering trainee in the NASA/KSC Data Branch of the Kennedy Space Center's Information Systems Directorate.

Among her assignments is the operation of an Image 100 computer system for analysis of earth resources data. Different types of data analysis conducted by this office include x-rays, Landsat imagery, and color-infrared aerial photography.

Born in Rimby, Alberta, Canada, she was graduated from Kingman, Arizona, High School in 1971 and is presently enrolled in the cooperative education program at Florida Technological University, where she is majoring in electrical engineering.

She was a recipient of the Society of Women Engineers student award at FTU and is a member of the Eta Kappa Nu honorary society. She is also a member of the American Institute of Aeronautics and Astronautics and the Institute of Electrical and Electronic Engineers. Active in the Society of Women Engineers, she was the 1975-76 chairman for the Florida State Society of Women Engineers Symposium.

She joined the KSC Information Systems Directorate in April, 1975, and alternates periods of study at the university and work at the Kennedy Space Center.

Her hobbies include flying and scuba diving. She received a private pilots license in 1973 and is a member of Alpha Eta Rho flying fraternity at the Florida Institute of Technology.

Rutter resides in Titusville while working at KSC.

# # #

NASA News

National Aeronautics and
Space Administration

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

Iris Sullivan
305 867-2468

For Release:
February 7, 1977

RELEASE NO: KSC 20-77

ORLANDO RESIDENT IS SPACEPORT EMPLOYEE

KENNEDY SPACE CENTER, Fla.--Aneta E. Montgomery, daughter of Nora M. Reid, 2705 Wyndham Lane, Orlando, is a personnel trainee in the Staffing and Personnel Services Branch of the Kennedy Space Center Administrative Operations and Support Services Directorate. She rates applicants' basic qualifications for various positions, evaluates job descriptions and compares them with required qualifications.

Born in Frankfurt, Germany, she was graduated from Maynard Evans High School in 1973 and is presently enrolled in the cooperative education program at Florida Technological University, where she is majoring in Public Administration and Allied Legal Services.

She joined the Administrative Operations and Support Services Directorate in January, 1977, and alternates periods of study at the university and work at Kennedy Space Center.

Montgomery resides in Orlando while working at the Kennedy Space Center.

# # #

NASA News

National Aeronautics and
Space Administration

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

Iris Sullivan
305 867-2468

For Release:
February 7, 1977

RELEASE NO: KSC 19-77

FLORIDA TECHNOLOGICAL UNIVERSITY STUDENT IS SPACEPORT EMPLOYEE

KENNEDY SPACE CENTER, Fla.--Aneta E. Montgomery, a student at Florida Technological University, is a personnel trainee in the Staffing and Personnel Services Branch of the Kennedy Space Center Administrative Operations and Support Services Directorate. She rates applicants' basic qualifications for various positions, evaluates job descriptions and compares them with required qualifications.

Born in Frankfurt, Germnay, she was graduated from Maynard Evans High School, Orlando, in 1973. She is a junior and is enrolled in the FTU cooperative education program where she is majoring in Public Administration and Allied Legal Services.

She joined the Administrative Operations and Support Services Directorate in January, 1977, and alternates periods of study at the university and work at Kennedy Space Center.

Montgomery resides in Orlando while working at the Kennedy Space Center.

# # #

NASA Fact Sheet

National Aeronautics and
Space Administration

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

For Release:

February 1977
KSC 18-77

TRANSFERS OF AEROSPACE TECHNOLOGY

Aerospace technology is accomplishing things that otherwise could not be done economically--or perhaps not done at all. This is occurring in global communications, navigation, oceanography, meteorology, geology, astronomy and, of course, exploration of the solar system.

At the same time, the pursuit of aerospace goals generates innovations in virtually all fields of science and technology. Such innovations help stimulate progress in many areas that often are not even remotely related to the original projects.

So thoroughly have aerospace technology transfers pervaded our lives that the many benefits attributable to the stimulus of the space program are difficult to measure in their entirety. However, an economic study recently traced the spinoffs from four NASA projects in order to evaluate the benefits to the national economy from secondary applications of aerospace technology. This study estimated that the secondary benefits in these four areas alone will return almost $7 billion to the economy by the early 1980s. Results of the study are summarized below.

- Integrated circuits. Developed for satellites, communications and other space uses. Now used in TV sets, automobiles and hundreds of industrial and household products. It is estimated that the improved technology will return over $5 billion from 1963 to 1982.

- Insulation for cryogenic uses. The cryogenics (ultra-low temperature) industry erupted as a direct result of liquid gases needed for rocket propulsion and life support in space. Today hospitals and steel mills are among dozens of beneficiaries that store and use liquid oxygen, nitrogen, helium and other frozen gases. Estimated benefits: over $1 billion by 1983.

- Structural analysis computer program. Developed originally to help design more efficient space vehicles, this NASA program

-more-

today is used to help design railroad tracks and cars, automobiles, bridges, skyscrapers and other structures. Use of the program yields about a 60 percent improvement in predicting the behavior of stressed parts and a two-thirds cut in calculation time. The program is expected to return more than $700 million in cost savings from 1971 to 1984.

- Gas turbines. Initially developed for jet-engine aircraft. but widely spun off to electric-power generation plants, these turbines will effect low-cost savings of an estimated $111 million between 1969 and 1982.

Some of the thousands of transfers of aerospace technology are listed below:

Health Services/Rehabilitation

- Rechargeable Heart Pacemakers using nickel-cadmium battery technology
- Composite materials used for lightweight limb braces
- Open-celled polyurethane-silicone plastic foam
- Mobile automated metabolic analyzer used to measure energy expended by orthotic-equipped patients
- Mercury-zinc battery technology used for heart Pacemaker
- Artifical hand with trigger finger
- Control switch operated by eye movement--allows paralyzed patient to control TV set, book page turner, bed position, lights, etc.
- Hand physiotherapy device
- Electromechanical simulator modules
- Horizontal shower used for bedridden patients
- Portable laminar airflow surgical clean room
- Heat pipe applications used for treating hemorrhoids, malignant tumors, and cervicitis
- Voice-controlled wheelchair with artificial arm and hand
- Paper money identifier for the blind
- Toxicological effects of polyvinyl chloride (PVC) plasticizers
- Cardiac care systems for emergency rescue vehicles

Environmental Quality

- Carbon monoxide monitor--commercialized as air pollution monitor
- Hazardous gas analyzer--adapted for use on automobiles
- Coal desulfurization process--adapted from Lunar Module rocket engine test facility
- Contamination prevention handbook--used by compressor manufacturers for inhouse pollution control

- Remote sensing of air pollutants used worldwide
- Computerized image enhancement used to measure quality of water in inland lakes and streams
- Fan noise reduction method--used to design inexpensive acoustic panels
- Apollo Program Quality Assurance Specifications--offered by General Electric as part of consulting services for utilities seeking nuclear power plant licenses
- Pyrolytic synthesis of activated carbon used to increase raw sewage settling rates by 100-fold in Orange City, California pilot plant
- Satellite photos used for making more accurate maps of remote areas such as swamp lands

Petroleum and Gas

- Heat pipe technology developed for Skylab, Space Shuttle, and unmanned satellites--used in the construction of the Alaskan Pipeline
- Infrared scanner and television display--used for maintenance inspections at petrochemical plants and refineries
- Hot tapping method for pipes--used by American Oil Co. to repair pipes and valve leaks
- Multiplexer circuit for Saturn rocket--used for remote data acquisition and control systems for oil and gas pipelines and oil field production equipment
- Apollo Guidance Computer Software--adapted for use in control systems for oil field production and oil and gas pipelines. Used by over 30 major oil and gas companies
- Reliability and quality assurance methods--basis for improved assurance by federal government and industry that offshore oil and gas will be produced safely and with minimal pollution
- Cryogenic transfer system cooldown for nuclear rocket engine--used by Chicago Bridge and Iron Co. to design piping systems at most large liquid natural gas import terminals in U. S.
- Nondestructive testing training manuals--used by Mobil to train new employees in maintenance inspection procedures for refineries
- Lubrication handbook--used to solve special lubrication problems--all major oil companies have ordered at least one
- Combustion analysis computer--used by Phillips to generate chemical equilibrium composition tables for all combustion research projects
- Systems safety technology--used to prepare successful proposal for the Department of Interior for Alaskan Pipeline safety project resulting in $18 million contract award

-more-

- Computer program translating guide--used by Shell to convert approximately 500 programs for new computer and by Mobil Oil for same purpose

Education

- Curriculum supplements in mathematics, physics, chemistry. space science, physical science and space biology
- Soldering school for electronic components
- Planetary celestial globe--illustrates interplanetary motion
- Hybrid computer used by medical students
- Phonocardiogram simulator module used by nursing students
- Component degradation analysis techniques course
- Methods for using optical instruments
- Computer program translating guide
- Optical alignment training manual
- Sanitary techniques in food processing
- Hazardous materials safety handbook
- Reading instrument for the blind

Transportation

- Highway grooving for airport runways and highways--greatly reduces accident rate on wet highways
- Apollo guidance computer software used by Los Angeles to control traffic lights in 9-mile square South Bay area
- NASTRAN (NASA Structural Analysis Program)--used by Ford and GM for design analysis and by Pullman Standard in design of new railroad cars
- Saturn 1/1B system development breadboard facility--used by Chrysler to develop new products and for new car & truck testing
- Combustion analysis computer program--used by GM in combustion research on auto and aircraft engines
- Statistical procedures to analyze noise test data from automobile steering systems
- Tires for Apollo 14 Mobile Equipment Transporter--Goodyear uses some rubber compounds in new automobile snow tires that were developed for the Transporter
- Ultrasonic nondestructive testing techniques--used to detect flaws in railroad tracks
- Apollo guidance computer--being tested by Southern Pacific Railroad for control of rail switches and train movement
- Dynamic and static modeling techniques--used by Martin Marietta to develop dynamic model for railroad hopper cars
- Videotape storage and retrieval system--used by Southern Pacific Railroad--one tape stores records from 10 four-drawer file cabinets

-more-

- Arc suppression techniques evaluation--used in design of rapid transit switch control products
- Liquid penetration nondestructive testing training manuals--used to train and certify production line inspectors at Beech Aircraft
- Inertial navigation equipment for Apollo and Lunar Module--now installed in many commercial aircraft.
- Apollo guidance computer--used by nationwide travel industry in checking credit cards, personal checks, airline tickets, and other non-cash payments
- Friction characteristics of graphite and graphite metal--used by B. F. Goodrich and others in company-sponsored research and development projects related to aircraft brakes and gas turbine engines
- Inflatable/nontippable life raft for recovery of astronauts--now available as survival equipment for pleasure boats and aircraft
- Cooling system for astronaut space suits--adapted for use as galley refrigeration system for commercial aircraft

Manufacturing/Consumer Products/Retailing/Construction

- Battery powered hand tools--commercialized by Black & Decker into line of six cordless power tools for lawns and gardens
- Aluminized mylar developed for ECHO satellite--adapted for use in making blankets, coats, ski parkas, sleeping bags, life raft canopy and various emergency reserve products
- Apollo guidance computer software--used to develop computerized retail sales system used by Montgomery Ward, May Co., Neiman-Marcus, J. C. Penney, Rich's, and many others
- Highly reliable flashlight switch--developed for manned spacecraft, now commercialized
- Composite materials data--used by Babcock & Wilcox Co. to develop products used in business machines and golf club shafts
- Management method--used by Upjohn Co. to save substantial man hours in management of research programs
- Safety yoke for construction workers--developed for Kennedy Space Center workers. Insurance companies now advise use to reduce industrial accidents
- Multiplexer circuit for Saturn rocket--used in most U. S. textile weaving mills and in many foreign countries
  Dry lubricant coating processess-used by over 600 manufacturers, including GE, IBM, RCA, Westinghouse, and ITT
- Intumescent fire retardant coatings--used to coat fuel hoses, fuel tanks, and engine compartments on pleasure boats
- Ultrasonic nondestructive testing techniques--used for quality control inspection in aircraft, steel, railroad, and automotive industries

-more-

- Surface finishing method for nickel alloys--used by Westinghouse to finish components for gas turbine electric generators
- Fluidic controls--used to control automatic metalworking lathes
- Lubricant deposition process--used for many products such as film coating and brushes for electric motors used in car air conditioners, vacuum cleaners, etc.
- Specification guidelines for hybrid microcircuits--used by Bell & Howell
- Fracture toughness tests--used by Aluminum Company of America to provide fracture toughness guarantee for high strength alloy products
- Weld strength prediction method--used by Kodak chemical plant to eliminate hazard of rupturing pipes that contain chemicals
- Cryogenic data handbook--used to design low temperature construction projects such as liquid natural gas storage facilities and refrigeration systems for freezing loose ground in preparation for excavation
- Fiberglass fabric--used for nonflammable clothing and structures
- Geodesic structure design program--used to design commercial geodesic structures
- NASA program evaluation and review technique--used for project scheduling in construction and other industries
- Chlorate candle oxygen supply--technology used to develop portable welding torch
- Quartz crystal oscillator for Apollo central timing equipment--used in clocks and watches; accuracy to within one minute per year
- Combustion analysis computer programs--used by power companies to design firing modifications for power plant fossil-fuel boilers
- Digital color television display--used by electric power companies as part of dispatch computer system to reduce possibilities of major blackouts
- Atlas-Centaur control system--design principles used in control system for high temperature gas-cooled nuclear reactors
- Apollo program quality assurance consulting service for utility companies
- NASA structural analysis program--used for designing nuclear power plant that will float offshore
- Fuel cell technology--NASA needs have spurred private research into fuel cell development
- Fusion welding workmanship standards--used to develop weld methods for the Foster Joseph Sayers Dam project in Pennsylvania

-more-

- Heat shield coating for reentry vehicles--NASA requirements have encouraged private development of heat resistant coatings for construction materials
- Instrumentation electronics for Saturn rocket--used to design a ground fault interrupter that will fit inside a standard home circuit breaker
- Computer program translating guide--used to design foundations for building such as the Sears Building in Chicago
- Deployable lattice column--used for stage light supports for traveling shows, portable power poles, etc.
- Linear shaped explosive charge--used in demolition industry for controlled removal of buildings and bridges
- Mass flowmeters for low gas flow--used extensively by manufacturers in U. S., Europe and Japan for assorted applications
- Technique for reducing noise in radio amplifiers--used by GTE and Sylvania in high sensitivity-low noise receivers
- Apollo Program Management Techniques--used by Rockwell International in production of truck and bus components
- Spun metal fibers for web filters--developed by Hydraulic Research and Manufacturing Co. for Apollo, now commercially available for many different applications
- Heat pipe technology--Air-O-Space heater by Isothermics, Inc., recovers waste heat from furnace flue gas, increases heat efficiency 8 to 10%
- Rogallo airfoil design--used as a basis for design of hang gliders
- Anti-fog compound--used for fire fighters face shields, air masks, ski goggles, eyeglasses, etc.

Food Production and Processing

- Weather satellite imagery--used in preparing daily fishery advisory charts for commercial fishermen in eastern Pacific
- Compressed/freeze-dried food--used as compact emergency food rations
- Fracture toughness tests--used by Deere to select steel for farm tractors and implements
- Precipitation-hardened steel alloy for Apollo Command Module--used in fabricating ram-jet wind machine for frost protection of orchards
- Clean room technology--developed and used by Pillsbury and to train federal food inspectors
- Contamination control handbook--used by U. S. Department of Agriculture (USDA) Research Center in Louisiana to train employees

-more-

- Microbiological handbook--used by Kraft Co. as training manual for sanitary techniques in food processing and by USDA to develop improved milk processing procedures
- Eurtectic salts for low temperature batteries--used to develop product that shows whether frozen foods have defrosted during transportation or storage

Government and Law Enforcement

- Saturn rocket systems development breadboard facility--used to design memory system for new Post Office automated parcel sorting equipment
- Slidell computer complex--used by National Weather Service to forecast flow of rivers in five-state area
- Apollo management control room--used to design management control rooms for other government projects
- Space simulation chamber--used to restore water-damaged records with heating/freeze drying process
- Fireman's breather apparatus--features reduced weight, increased duration, and simplified harness, also helmet/mask assembly and air depletion warning device are improved
- Flammability tests of home furnishings--used by USDA to design better fire tests
- Scientific and technical information management system--primary storing and retrieving system for the National Criminal Justice Reference Service
- Videotape storage and retrieval system--used by law enforcement agencies, including the Royal Canadian Mounted Police
- Systems analysis and computer modeling--used to develop city-wide emergency command and control communications system
- High intensity arc radiation source--adapted for use as a portable high intensity spotlight for use by police and fire departments, it can operate from automobile cigarette lighter and is brighter than headlights of 50 automobiles.

# # #

NOTE: Detailed information about the above aerospace technology transfers may be obtained from:

Code KT
Technology Utilization Office
NASA Headquarters
Washington, DC 20546

NASA Fact Sheet

National Aeronautics and
Space Administration

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

For Release:

January, 1977

RELEASE NO: KSC 16-77

Notes for Educators — Page:

HIGHLIGHTS OF 1976 ACTIVITIES

For the second time in its 19-year history, a perfect launch record was achieved in 1976 by the National Aeronautics and Space Administration.

NASA had 16 launch attempts during the year, all of them rated as successes.

Space agency highlights in 1976 included the successful landing of two Viking spacecraft on the surface of Mars, and the rollout of the first Space Shuttle Orbiter, the flagship of the new era of space transportation

SPACE FLIGHT

The key element in the United States' future Space Transportation System appeared on the scene in 1976 as the first Space Shuttle orbiter, the Enterprise, was rolled out of the NASA Rockwell International facility at Palmdale, Calif., Sept. 17, 1976.

After its brief debut, the spacecraft was checked and prepared for its January overland transfer to the NASA Dryden Flight Research Center, Edwards, Calif., where it will begin a series of approach and landing flight tests in 1977.

The past year marked the third calendar year since 1961 in which American astronauts did not spend time in space. Only the years 1964 and 1967 of the past 16 were without NASA manned space flights.

Also during 1976, NASA announced its eighth recruitment of astronauts to be crew members on Space Shuttle flights. The agency in July announced that it is accepting applications for two types of astronauts -- pilot astronauts and mission specialist astronauts. A minimum of 15 astronaut candidates in each category are expected to be selected by December 1977 and the successful candidates will enter a two-year evaluation program at the Johnson Space Center in July 1978. Women and minority candidates from the civilian sector as well as the military services are encouraged to apply. Applications will be accepted through June 30, 1977.

Along with the roll-out of the first Space Shuttle orbiter, other elements of the nation's future Space Transportation System continued to take shape.

In 1976, manufacturing and assembly of the Shuttle external tank test article was begun at the NASA Michoud Assembly Facility, New Orleans. The external tank supplies liquid hydrogen and oxygen to the orbiter's three main engines. All 11 case segments for the first solid rocket development motor were delivered to Thiokol, the prime contractor for the solid rockets, by the end of November. At Kennedy Space Center, Fla., primary launch and landing site for the Shuttle, construction of the Orbiter Processing Facility continues and modification of the existing Apollo Launch Pad 39 for Shuttle flights is well underway.

During the year, progress was made by the European Space Agency in the development of Spacelab, their versatile manned laboratory to be carried in the cargo bay of the Space Shuttle. Hardware has been assembled in Europe and major testing is being conducted.

The Boeing Company was selected by the U.S. Air Force to develop the Interim Upper Stage (IUS) for the Space Transportation System. The IUS, a joint NASA/USAF effort, will be used to place payloads into orbits beyond the capability of the Shuttle. Also, during 1976, NASA has been studying the possibility of developing Spinning Solid Upper Stages (SSUS) which would be used to place Delta and Centaur class payloads into high orbits.

SPACE SCIENCE

A decade of planning and work came to fruition in 1976 with the landing of a robot spacecraft on Mars to conduct a detailed scientific investigation of the planet, including the search for life.

America's Viking 1 made its historic touchdown after an 11-month journey, on a rocky, boulder-strewn Martian plain called Chryse on July 20 at 7:53:17 a.m. EDT, just 17 seconds later than flight engineers had predicted.

Within minutes after landing, two specially designed cameras on the bug-shaped craft began taking the world's first closeup pictures of the alien land. A miniature weather station aboard Viking monitored the thin Martian air. Other instruments noted magnetism, radiation -- all the data scientists sought.

Then eight days after landing, a slender 10-foot arm unrolled from the 780-kilogram (1,300-pound) spacecraft and its clawlike hand ripped into the Martian dirt. Small amounts of soil were dropped into three devices within the spacecraft's miniaturized biology laboratory. These instruments were designed to recognize the form of life most common on Earth -- microbes -- on the assumption that these would be the most common on Mars too.

The data that came back from the "life" experiments both delighted and puzzled scientists. The data indicated the presence of compounds which were conceivably of biological origin, but the organic analysis data did not support that conclusion.

The spacecraft's gas chromatograph-mass spectrometer instrument showed no evidence of organic molecules -- the building blocks of life (as we know it on Earth). How could there be any Earth-like form of life without organic compounds? Scientists do not know. It could be that there is no life on Mars, but that the planet's chemistry is unlike anything experienced before.

A chance to sample a different area of Mars came on Sept. 3, when a sister ship, Viking 2, touched down at Utopia, about 1,600 km (1,000 mi.) nearer to Mars' polar cap than Chryse. There's more moisture there, but the biology results were about the same as Viking 1's: puzzling.

In mid-November, transmissions between Earth and the Viking landers and orbiters were suspended. The motions of the planets had reached a point where the Sun was between Mars and Earth, an alignment known as solar conjunction that produces a blackout of Viking-to-Earth communications. This marks the end of the normal missions of Vikings 1 and 2, and the beginning of the "extended missions" that will permit scientific observations through an entire Martian year of 25 months. A return to full post-conjunction operations of the spacecraft was expected by mid-December. Experiments planned include taking more photographs of the Martian surface, monitoring for seismic events, observing the planet's daily and seasonable weather changes, and subjecting more soil samples to life-detection tests. In February, Viking 1 orbiter cameras are expected to take the most detailed pictures yet of Mars' tiny moon Phobos from a distance of 48 km (30 mi.).

At year's end, even as scientists were mulling the perplexing results of Viking, plans were moving ahead for the launch of NASA's heaviest unmanned spacecraft, the two-ton High Energy Astrophysics Observatory (HEAO) in April 1977, designed to return information on pulsars, quasars and black holes in space, and two Mariner-type spacecraft to Jupiter and Saturn in August and September respectively. Work also was continuing toward the late 1978 launch of Pioneer Venus, a multiprobe spacecraft designed to provide the clearest picture yet of the cloud-shrouded "sister planet" to the Earth.

SPACE APPLICATIONS

1976 may well be called the "Year of the Communications Satellite". Of NASA's 16 space launches during the past year 13 were communications satellites, nine of which were privately financed for commercial use.

On Jan. 17 NASA launched the Communications Technology Satellite (CTS), the second satellite designed to transmit high-quality color television to small, simple ground stations. (ATS-6 was the first such satellite.) The CTS is a joint United States/Canadian space communications technology project implemented by NASA and the Canadian Department of Communications.

CTS is a high-power communications satellite operating in a special frequency band allocated for broadcast satellites. It is stationed in a synchronous orbit about 36,00 kilometers (22,300 miles) at 116 degrees longitude, west of South America.

Currently, 18 U.S. experimenters are utilizing or planning to use CTS for a wide variety of demonstrations. Virtually all segments of society (industry, educational institutions, the scientific community and government) are participating in experiments typically categorized as follows:

Education

- Demonstration of classroom applications
- Sharing of curriculum, faculty and other resources
- Improvement of teaching skills

Health Care

- Exchange of information among hospitals
- Interchange of curriculum by medical schools
- Clinical and emergency medical treatment

Community and Special Services

- Two-way business conferences
- Disaster and emergency services
- Special event coverage

Technology Extension

- Demonstration of small terminal applications
- Investigation of digital video compression techniques
- Propagation characteristics determination

A satellite which looks like a giant golf ball was launched by NASA into a 5,900-km (3,600-mi.) high orbit from the Western Test Range in California on May 4. Lageos, an acronym for Laser Geodynamic Satellite, is a solid aluminum and brass space tool designed to obtain information on Earth's crustal movements, polar motion, solid Earth tides and precise locations of various spots on Earth.

The U.S. Geological Survey, the federal agency responsible for earthquake research and prediction, is using Lageos data to make minute measurements of movements of large land masses -- tectonic plates -- as well as observe long faults, such as the San Andreas fault in California.

The useful life of Lageos is estimated at up to 50 years, but it will remain in orbit for more than 8 million years.

NASA launched the seventh ITOS operational weather satellite, ITOS-H, for the National Oceanic and Atmospheric Administration (NOAA) of the Department of Commerce on July 29 from the Western Test Range.

Designed and developed by NASA for NOAA, the 340-kilogram (749-pound) ITOS was designated NOAA-5 after it successfully entered a 1,450-km (790-mi.) circular rear polar orbit.

Instruments aboard the satellite provide visible and infrared images of cloud cover, snow, ice, the sea surface and gather information on temperatures and moisture in the atmosphere.

Landsats 1 and 2 continued surveying the world every 18 days, 180 degrees apart.

The Landsat spacecraft are a part of a major research program conducted by NASA to demonstrate the feasibility of using remote sensing from space for the management of Earth resources.

Individual Landsat images cover an area 185 km (115 mi.) square, or slightly less than the combined territory of Massachusetts, Connecticut and Rhode Island. Such images and other data from the satellites are being used by scientists around the world for research projects ranging from crop inventory to hydrology and from geology to surveying strip mines.

On Aug. 1, ATS-6 completed a year's service to the Government of India transmitting instructional television to about 5,000 isolated villages, most of whose people had never seen TV pictures. The instructional material included family planning, health and hygiene, agricultural and other vocational information, child education and national development.

Immediately upon completing its India project, ATS-6 started with AIDSAT, a joint NASA/Agency for International Development project demonstrating to people in 27 developing nations how space and other advanced technologies can improve their way of life.

On Dec. 2, ATS-6 arrived back at its Western Hemisphere station at 140 degrees West longitude, where it was readied for its Third Year Experiments program starting in 1978.

AERONAUTICS AND SPACE TECHNOLOGY

Progress in a variety of areas marked NASA's research and technology development in support of advancing the nation's aviation and space flight capabilities.

Aimed at providing technology to enable future civil transports to reduce fuel consumption by 50 per cent, NASA began research efforts in the five technology areas of its Aircraft Energy Efficiency program.

Near-term applications include improved performance and less deterioration in existing turbofan engines; evolutionary aerodynamic improvements and the limited use of active controls; and lower-weight secondary aircraft structural components made of composite materials.

Elements with later-term applications include new engines with considerably higher cycle efficiencies; flight-critical, highly-reliable active control systems; laminar flow control for substantial drag reduction; and composites in primary aircraft structures.

A promising technique now being studied for reducing airport community noise exposure along the aircraft's approach path is based on delayed landing flap deployment. Flight tests and guest pilot evaluations of the Delayed Flap Approach in the NASA CV-990 aircraft has demonstrated significant fuel savings and noise benefits and the technique has received good pilot acceptance.

Design of the Quiet Short-Haul Research Aircraft (QSRA) was initiated this year with a major goal of limiting the noise footprint on the ground to an area less than one square mile. The QSRA also has the lift and control capability to investigate a wide range of low-speed flight conditions. The data obtained from the QSRA flight research program and other programs will provide propulsive-lift technology data for future quiet short-haul transport aircraft.

NASA's Quiet, Clean Short-Haul Experimental Engine (QCSEE) is currently under test. The primary objective of the QCSEE program is to demonstrate the major noise reduction technology along with other propulsion innovations for possible future jet transports.

The most significant advanced technology includes variable pitch fan blades, digital electronic engine control, and an advanced, acoustically designed, all-composite nacelle.

Significant progress has been made in supersonic cruise aircraft research studies. In aerodynamics, higher lift to drag ratios have been demonstrated. In structures and materials, weight savings with attendant lower costs may be possible through new titanium fabrication processes. In propulsion, NASA studies have narrowed the many options potentially available to a very few multicycle engines which not only should have reduced noise and emissions, but also have favorable fuel consumption characteristics.

Progress in the Highly Maneuvering Aircraft Technology (HiMAT) Program, a joint NASA/Air Force effort to integrate advanced technology concepts into a superior aircraft design, has resulted in a substantial contribution to advancing the state of the art of aircraft design methodology.

The joint NASA/Army Rotor Systems Research Aircraft (RSRA) has begun initial flight testing at the contractor's facility. A unique feature of the RSRA is the special load measurement capability built into the vehicle's primary structure. For the first time, a helicopter will be available that has been designed from the start with research capability in mind. The RSRA will reduce the costs and time-consuming trial-and-error experimentation now involved in rotorcraft development.

A new research aircraft, which combines features of both helicopters and conventional airplanes, was rolled out in October in a joint NASA/Army Tilt Rotor Research Aircraft Program.

The XV-15 is a proof-of-concept research aircraft. It is capable of developing and demonstrating tilt rotor concept technology, assessing its potential for noise reduction, reduced takeoff and landing area requirements and the effectiveness of combining helicopter utility with the longer range and higher speed characteristics of conventional airplanes.

Both military and civilian aircraft could benefit markedly from such a design. A two-year flight test program will begin early next year.

A study exploring the viability of a NASA role in technology development for aerial application has been completed. Results indicate that significant advances are needed for both short- and long-term improvements in the accuracy and efficiency of aerial applications of agricultural chemicals. NASA is now defining what it could and should do to help in this area.

NASA's research on techniques to minimize the wake vortex by changes to the vortex-generating aircraft included evaluation of such aerodynamic schemes as spoilers, vortex generators, trailing-edge drag devices, steady and pulsed mass injection, and span load variations.

Advanced composite rudders for use in passenger-carrying aircraft were ground tested early this year. The composite rudder, complete with fittings, hinges, etc., weighs 33 per cent less than the aluminum rudder it replaces. Flight service of these FAA-certified composite rudders began in June.

The NASA Aviation Safety Reporting System (ASRS) received nearly 1,500 reports during its initial three-month operational period ending in mid-July. Information contained in these reports prompted the submission of 130 alert bulletins to the Federal Aviation Administration (FAA).

A NASA study called "Outlook for Aeronautics" was recently published by the agency. NASA conducted the study to determine probable directions of civil and military aviation, the role that NASA should play in research and development, and the technical advances that may be needed.

The development of the Digital Fly-By-Wire (DFBW) control system capability for future aircraft would permit complete replacement of the mechanical/hydraulic linkages between the pilot's stick and the control surface actuators by an all-digital electronic system.

Such a system can augment the basic airframe stability to permit new and improved aircraft designs with increased performance and operational flexibility and allow considerable production and operational cost savings.

A 1,000-fold increase in information systems capability is a NASA space technology research goal. Work in solid-state imaging sensors could also be adopted for use in the civil sector for low light level surveillance systems, home security systems, and closed-circuit television applications.

A major component of a solid-state programmable data processor currently under development will perform high speed conversion of raw data into codes which satisfy user requests for specific information while reducing transmitted data requirements by at least 100 times. The programmable processor component is roughly 1/2 by 1/2 inch in size, but will perform functions now requiring large digital computers. This technology can reduce the cost of ground-based data processing and the delay between data acquisition and use.

NASA has initiated development of a low-power, high-speed memory using arrays of solid-state chips for storage. This technology is also attractive to hand-held calculator business and is being adopted for more sophisticated programmable calculators.

A new laser scanner has been developed which is the first such device to provide direct defect detection in circuit fabrication and is being evaluated as an on-line production screening tool.

TECHNOLOGY UTILIZATION

During 1976, the NASA Technology Utilization Program continued its efforts to speed the transfer of space and aeronautical technology into other areas of national life.

Since its inception 14 years ago, the program has helped spur a vast innovative effort that today reaches into virtually every scientific and technological discipline.

An insight into the scope of this effort during the past year may be gained from the following statistical highlights:

- Over 10,000 business and industrial clients--a new record--obtained technical data from NASA through its network of six Industrial Application Centers operated by academic and research institutions around the country.

- A comprehensive program of almost 60 engineering applications programs was continued in an on-going effort to apply aerospace know-how to the solution of public sector problems ranging from development of advanced medical instruments to transportation safety.

- More than 1,000 new items of technology were documented and over 600 of them were announced to the nation's business and industrial community through a new and successful quarterly publication called the Tech Brief Journal.

A highlight for the Technology Utilization Program was construction of a home at the Langley Research Center, Hampton, Va., that features innovative technology adapted from aerospace research. Called simply the Tech House, the one-story, 1,600-square-foot, three-bedroom, two-bath home incorporates solar heating and partial waste water reclimation systems as well as the latest construction, comfort and safety features, many of them derived from space research. Most importantly, it is an energy conservation house which will permit an average family to cut its fuel consumption by as much as two-thirds and its water use by one-half. Also, every item used to build and furnish the house is either available now or will be on the market within five years.

Tech House has created nation-wide interest among architects, home builders, other agencies and private citizens. It is open for inspection at the Langley Center.

Another major effort with potential national impact is the Johnson Space Center's food for the elderly program. Purpose of the program is to develop a series of balanced meals, easily prepared with long shelf life for elderly persons using food technology and packaging techiques developed to feed astronauts during space flight. The down-to-earth meals are designed to supplement existing national neutritional programs for the elderly. A basic meal consists of an entree, two side dishes, dessert and a beverage. The pilot program conducted during the year in cooperation with the University of Texas, the Texas Research Institute of Mental Sciences and United Action for the Elderly, has proved to be highly successful. Interest in adapting the program on a wider scale has been expressed by congressional groups and the Department of Health, Education and Welfare.

In May, the National Space Technology Laboratories, Bay St. Louis, Miss., demonstrated for the first time the transmission of medical data from a moving ambulance to a hospital by satellite. The system involves a special portable transmitter and antenna developed in cooperation with the General Electric Co. It permits continuous transmission of voice and medical data--including electrocardiograms--from the moving vehicle to the satellite and down to a hospital receiving station. The system could prove to be an important breakthrough in emergency medical care. Ultimately, it could lead to development of a special medical satellite which could relay emergency medical data not only from ambulances but also from remote hospitals, ships, off-shore oil platforms and other remote locations to major medical centers for medical consultation. The project was conducted in cooperation with the Southern Regional Medical Consortium.

INTERNATIONAL AFFAIRS

NASA's international partnerships in communications, stratospheric research, earth resources, scientific investigations and in the continuing development of the U.S. Space Transportation System, were highlights of 1976.

NASA also undertook a cooperative effort with the U.S. Agency for International Development to focus the attention of developing countries on new technologies now available to assist them.

On July 31, India successfully completed a one-year Satellite Instructional Television Experiment (SITE) using NASA's ATS-6 satellite to transmit educational TV programs to some 5,000 villages. The TV programs, ground transmitting station and village receivers were all funded and developed by India. Evaluation of the program is underway, but the experiment has already demonstrated the practicality of satellite-based instructional broadcasting for developing countries. The project has aroused interest throughout the world.

On Oct. 30, NASA and the Agency for International Development (AID) successfully completed their joint venture, AIDSAT. Beginning Aug. 1, when ATS-6 began its return passage to the Western Hemisphere, the two agencies conducted a three-month project using the satellite for demonstration broadcasts to and from 27 developing countries. The broadcasts included films on communications, remote sensing, and disaster prediction which were prepared especially for AID by NASA.

The live portion of the program was in two parts. The first, originating in the host country, featured decision-makers outlining current technological challenges facing their nation and efforts being made to meet them. The second was a two-way TV question and answer session between a panel of senior government officials in the host country and selected experts in Washington. The programs involved the active participation of a number of prime ministers, presidents and kings, and were viewed by high-level government officials. In addition, millions of persons in Asia, Africa and Latin America viewed the demonstration on their national networks.

Increasing emphasis was given in 1976 to future international use of the Shuttle-based Space Transportation System (STS). Potential users--government, industry and university--in Canada, Europe and Japan were briefed on STS capabilities, payload accomodations and probable terms and conditions of use. Four solicitations were distributed internationally for proposals for Shuttle experiments in the Orbital Flight Tests Phase; in the first two Spacelab missions; and in a planned free-flying Long Duration Exposure Facility. Preliminary studies for the first Spacelab payload, jointly planned by NASA and the European Space Agency, were completed, and final selection of the payload complement is expected in early 1977.

The development of Spacelab, the European contribution to STS, currently valued at $500 million, passed the midpoint in 1976. Completion of the Preliminary Design Review in December, was a major milestone toward the delivery of the first Spacelab Flight Unit to NASA in mid-1979, a year before its first mission.

Development was begun this year in Canada on the Remote Manipulator System for the Space Shuttle orbiter vehicle, at a cost estimated at more than $75 million.

NASA's intensified upper atmospheric research program has focused on the possible threat to the Earth's stratospheric ozone shield from fluorocarbon compounds widely used as refrigerants and aerosol propellants. Because of the global implications, NASA made special efforts in 1976 to inform the world scientific community generally and to pursue its stratospheric research activities cooperatively. To foster international coordination of stratospheric research and policy planning, NASA co-sponsored an International Conference on the Stratosphere and Related Problems at Utah State University, Sept. 15-17, 1976.

Of the 25 international satellites which have so far been launched by NASA on a cooperative (as distinguished from a reimbursable) basis, eight remained active and returning data in 1976. Most significant were the two German Helios solar probes which, in four perihelion passages in 1976, flew closer to the Sun than any other spacecraft, to within 30 million miles. Measurements by Helios of the solar atmosphere, magnetic fields and particle emissions have generated new data on solar-terrestrial interactions.

NASA concluded an agreement with the Aerospace Research Center of the University of Rome to develop the next generation of San Marco satellites for continued investigations of processes at the interface between space and the upper atmosphere. San Marco D is also expected to contribute importantly to the current study of the Earth's ozone layer.

International interest in contributing experiments to NASA spacecraft continues with agreements reached with Germany, the UK, the Netherlands and France on instrumentation for the NASA Solar Maximum Mission and the Pioneer Venus Orbiter and Probe spacecraft.

During 1976, NASA issued 14 Announcements of Opportunity for various forms of participation in future space missions and received over 173 proposals from nine European countries, the European Space Agency, Australia, Canada, India, Japan, and South Africa.

During the year NASA began to charge foreign Landsat station operators an initial token share of the annual cost of operating the Landsat satellites. Such stations, receiving data directly from the satellites, were operating in Canada, Brazil and Italy. The construction of others is planned by Zaire, Iran, Chile and Argentina under recent agreements.

The agreement between NASA and the Argentine space agency, Comision Nacional de Investigaciones Espaciales (CNIE), to build Latin America's second ground station was concluded in October. The new station, to be built by CNIE at Mar Chiquita on the Atlantic coast south of Buenos Aires, will be capable of receiving, processing and disseminating data covering all Argentina, and all or parts of Chile, Bolivia, Brazil, Uruguay and Paraguay.

This growing interest in direct reception stations is in part due to significant benefits reported by researchers in more than 100 countries currently using Landsat data. Bolivia, for example, has recently discovered deposits of lithium and potassium as a result of computer-assisted interpretation of Landsat data. A new iron ore deposit was discovered recently in Egypt using Landsat data as well.

Reimbursable launches during the year included INTELSAT IVA-2 (an international communications satellite); NATO IIIA (an operational communications satellite); and Palapa-A (the first Indonesian domestic communications satellite).

Contracts for reimbursable launches were signed with the UK, ESA, Brazil, Japan and Canada, as well as with FAA for two launches of the international aeronautical satellite, Aerosat, in 1979 and 1980.

Cooperative work between the US and USSR in space science and applications proceeded under the 1971 Bilateral Agreement. In planetary explorations, US and Soviet specialists exchanged information on the results of the Soviet Venera 9 and 10 missions, US radar observations of Venus, the US-planned 1978 Pioneer Venus missions and sharing of preliminary Viking results. The Space Biology and Medicine Joint Working Group met in Yerevan, USSR, in September and finalized plans for the flight of five US biological experiments on a Soviet biological satellite to be launched in the fall of 1977.

The cooperative study of the natural environment moved into the second phase in the spring of 1976 when the Soviets began providing ground truth data for the remote sensing of vegetation. These data will be useful in the US Large Area Crop Inventory Experiment (LACIE) aimed at developing a world wheat crop prediction capability.

ENERGY PROGRAMS

The broad goal of the Office of Energy Programs is to assure the effective use of NASA technologies and experience in support of national energy research and development activities. Nine primary areas of emphasis have been identified.

In support of ERDA's solar energy program, NASA is working in three areas; wind turbo-generators (wind mills), photovoltaics (solar cells), and solar heating and cooling.

The largest windmill in history will be built during the next two years. The windmill will have two slender fiberglass rotor blades spanning 200 feet in diameter, atop a 150-foot tower. At a site with average wind speeds of 22 mph, this machine could produce enough energy annually to supply more than 500 homes (1,500 kwe).

Cost-effective, reliable and efficient solar heating and cooling systems are being developed by NASA as a part of the ERDA Solar Heating and Cooling Program. Following development, improved system will be installed and demonstrated in over 60 residential and commercial structures in a wide range of geographic and climatic locations throughout the country.

NASA is also managing the commercial demonstration portion of ERDA's National Solar Heating and Cooling Program. The first group of 32 commercial solar systems have been placed under contract and all 32 sites should be in operation by about the end of 1977.

The first data collection system in a centralized nationwide network for monitoring efficiency and performance of solar heating and cooling demonstration projects began operation in October. Similar systems will be installed in several hundred sites over the next few years. Data are collected, stored, and analyzed at the Marshall Space Flight Center.

Photovotaics

Solar cells once used only to power satellities in space, are now beginning limited use for a variety of terrestrial applications.

The first devices studied under the ERDA/NASA Photovoltaic Test and Demonstration Project are intended for use in remote applications where commerical electric power is unavailable.

Solar cell systems are being used to power water pumps, lights, refrigerators, and radios used at the newly designed U.S. Forest Service lookout buildings on Antelope Peak in the Lassen National Forest and on Pilot Peak in the Plumas National Forest. In the past, water was pumped by hand, the lamps and refrigerators were powered by propane and radios were powered by batteries.

The complete power system for each lookout station consists of a 300-watt solar array, 3000 ampere-hours of battery storage capacity, a battery charge controller, and instrumentation to indicate the status of the power system.

Photovoltaic powered refrigerators have been developed to solve the problem of storing certain medicines and essential perishable foods at locations where there is no electrical power. Two remote sites have now been equipped with small refrigerators powered by solar cells.

Solar cells also have been used to provide power for electric vehicles. Two solar powered electric vehicles were demonstrated from July through September at the Festival of American Folk Life in Washington, D.C. During peak daylight hours the vehicle batteries were charged by the array of photovoltaic cells which converted the Sun's light directly into electrical energy.

In coordination with the ERDA, NASA has also initiated the many study, definition, and analysis activities needed to develop a comprehensive understanding of satellite power systems, a unique method of obtaining electrical energy from the Sun.

TRACKING AND DATA ACQUISITION

NASA's laser tracking system, the newest capability in tracking and ranging, began providing precision ranging data from the Lageos satellite in a study of continental drift and the processes that create earthquakes.

The stable Lageos orbit provides a reference point from which minute shifts in the Earth's crust can be determined. The laser range measuring capability is far more precise than conventional high frequency radio ranging techniques.

The landing of Viking on Mars was and continues to be the most exciting space event of the year. Through use of the Deep Space Network several firsts in the sphere of tracking and data acquisition were recorded. These firsts including the successful commanding, controlling and interrogation of a spacecraft on the surface of another planet, and the simultaneous support of four spacecraft at interplanetary distances. Aiding the operations of the Viking craft were the radar surveys by the 64 meter antennas of the Deep Space Network, which contributed significantly in selecting the landing site for Viking.

Implementation of Tracking and Data Relay Satellite System (TDRSS) services has taken another important step forward. Western Union Space Communications, Inc., a wholly owned subsidiary of Western Union Corp., Upper Saddle River, N.J. was awarded a contract to provide TDRSS services utilizing two satellites in synchronous orbit as relay stations between a single ground station and satellites in low Earth orbit. Through use of the TDRSS, many of the present tracking stations will close. The TDRSS can provide coverage for 85 to 100 per cent of each orbit as compared to an average of 15 per cent for today's world-wide ground-based systems.

LAUNCH RECORD

The space agency performed 16 successful launches in as many attempts during the year and all of the payloads are operating successfully. Two of the missions carried NASA payloads--Lageos I and Gravitational Probe I. Two were cooperative project--Helios II with Germany and Communications Technology Satellite (CTS) with Canada. The remaining launches were all in the reimbursable category in which the payload sponsor paid NASA for the launch and launch support operations costs.

The perfect 1976 launch record brings the percentage of launch success since 1958 to 86 per cent. Of the 387 launches conducted since the agency was established, 332 were successes. The only previous 100 per cent year was 1972.

Nine of the launch vehicles were Deltas, three Atlas-Centaurs, three Scouts and one Titan-Centaur.

TESTS BOOST BELIEF IN SPACE MANUFACTURING

Final evaluation of pictures and data from a sounding rocket flight has reinforced the belief that better materials can be produced in space than on the Earth.

It also allayed fears by some scientists that removing gravity from the manufacturing process would open the door to other problems which could not be solved, thus making space processing impractical.

The data and amazingly informative pictures were produced by the "Dendrite Remelting" experiment, one of nine flown on Space Processing Applications Rocket-1 (SPAR-1) which was launched from the White Sands Missile Range Dec. 11, 1975.

Co-investigators for the experiment were two scientists at NASA's Marshall Space Flight Center, Huntsville, Ala., Dr. Mary Helen Johnston and Ms. Carolyn Griner.

The SPAR-1 payload reached an altitude of 225 kilometers (140 miles) during the low-G portion of the flight. The scientific payload was virtually weightless for about five minutes during the mission.

Slowed by a parachute system as it approached the ground, the experiment package was recovered intact and returned to the experimenters for analysis.

Scientists have known for some time that better materials could be produced by controlling the degree of homogeneity of the elements during crystalization, keeping elements mixed as desired while molten metal cools and becomes a solid.

Fluid flow determines the homogeneity. Johnson and Griner believed that gravity was the greatest cause of fluid flow. Many other scientists believed that other factors might dominate in causing fluid flow, factors such as surface tension and shrinkage created when a liquid turns to a solid.

The two experimenters put about four cubic centimeters of ammonium chloride in water into a tiny transparent vial with temperature monitoring devices attached.

This was mounted a few inches from a 35 millimeter camera fitted with an oversize roll of film and equipped for automatic film advancement and timed shutter releases.

The sample was kept above 22 degrees C. (72 degrees F.) to keep it liquid until it became weightless at the start of free fall. The thermal equipment then began reducing the sample's temperature, causing it to solidify. The camera snapped 240 pictures of the process, one each second.

"We were amazed," Dr. Johnston said, "at how clear-cut the results were. One look was all we needed to see that in the absence of gravity no fluid motion was evident."

In the same experiment conducted on Earth, the dendrites -- growths that form as material crystallizes -- moved, broke off and settled to the bottom of the vial.

The pictures showed that, on the rocket experiment, the dendrites did not move, break or settle. This maintained uniform freezing as the liquid turned to a solid.

The experimenters said this was the first time scientists had been able to "watch" the process of solidification under weightless conditions.

"Heretofore, it has been after-the-fact observation," Dr. Johnston said. "We knew what the sample looked like before and what it looked like after a flight. What happened to it during crystallization was a matter of speculation and theorizing."

Ms. Griner said the goal is to be able to control the crystalline structure of materials. In zero gravity, she said, the heavier elements of a mixture do not "settle out," but mix evenly with lighter elements.

"Control would enable us to make a material uniformly strong, stronger at one end than the other, stronger in one direction -- or any way we wish, to meet a specific need," Ms. Griner said.

SPAR-1 was the first of a scheduled five-year-long series of about 15 such flights in a project managed by the Marshall Center. SPAR-2 was flown May 17 and SPAR-3 is scheduled in November.

INTERSTELLAR PIONEER 10 REPLICA DISPLAYED IN SMITHSONIAN

A test model of NASA's Pioneer 10, the first spacecraft to reach the giant planet Jupiter, will be displayed in the National Air and Space Museum of the Smithsonian Institution, Washington, D.C. starting Monday, Jan. 10.

Pioneer, which will also become the first spacecraft to leave the solar system altogether, will join Apollo 11, the Wright Brothers Flyer, and Lindbergh's Spirit of St. Louis in the Smithsonian's Milestones of Flight Hall.

The test model of Pioneer, identical to the flight spacecraft, will be displayed because the actual Pioneer 10 now is 1.6 billion kilometers (one billion miles) out, between the orbits of Saturn and Uranus.

The unmanned spacecraft still is reporting new science from unexplored space, and should do so as far out as Uranus' orbit, almost 3.2 billion km (two billion mi.) from the Sun. Pioneer 10 will reach Uranus' orbit in September 1979, at the same time its sister spacecraft, Pioneer 11, arrives at Saturn for history's first visit to the ringed planet.

Using the newest radio technology and our largest antenna to hear it, scientists may well use Pioneer 10 to describe unexplored solar space as far out as Pluto's orbit, and perhaps beyond. Reaching Pluto's orbit, nearly 6.4 billion km (four billion mi.) from the Sun, in 1987, Pioneer will continue on out of the solar system into interstellar space. It will go on "forever," but unheard from Earth because its radio signals will become too faint to be audible over the radio background noise of the universe. Pioneer is headed generally for the red star, Aldebaran, the eye of the constellation Taurus. Pioneer will take more than two billion years to reach this point.

Pioneers 10 and 11 are managed by NASA's Ames Research Center, Mountain View, Calif. Both spacecraft were built by TRW Systems, Redondo Beach, Calif.

Speakers at the brief dedication ceremony at the Air and Space Museum will be Dr. James C. Fletcher, NASA Administrator; Charles F. Hall, Pioneer Project Manager; Adolph Thiel, Senior Vice President, TRW; Michael Collins, Apollo 11 Astronaut and Director of the museum and Dr. John Wolfe, Pioneer Project Scientist. Guests will include members of Congress, representatives from NASA field centers, NASA Headquarters and the Energy Research and Development Administration.

Pioneer 10 made the first visit to Jupiter, in December 1973, and discovered that the enormous planet is a huge whirling ball of liquid hydrogen, with no perceptible surface. Pioneer also returned the first closeup view of the colorful planet with its huge red eye, and of two of its four planet-sized moons. It made a variety of discoveries about Jupiter's magnetic field, radiation belts and weather. Findings about the latter should help shed more light on the difficult problems of Earth's highly unstable weather and climate.

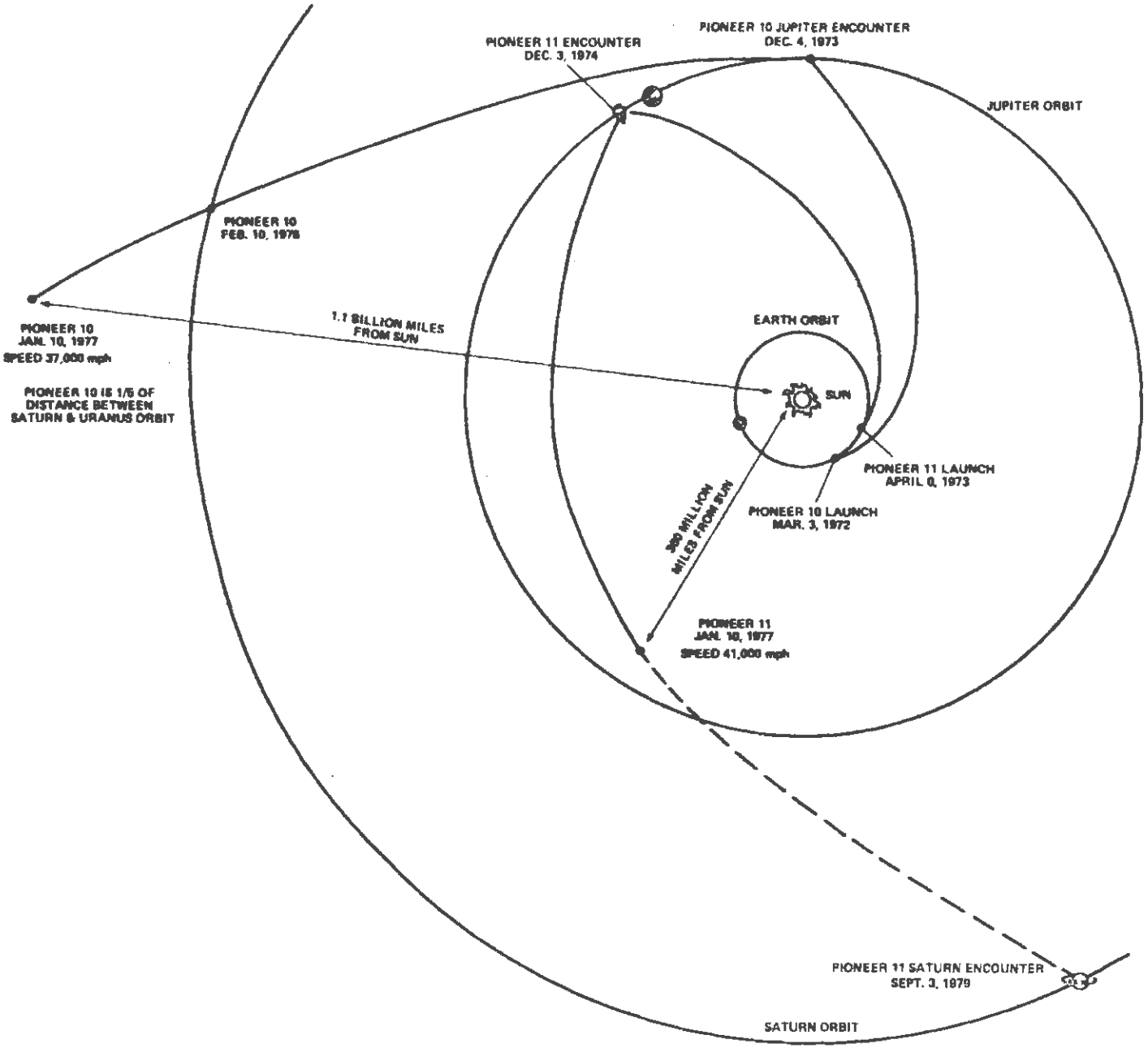
Pioneer 10 was launched on March 3, 1972, and made the first flight beyond Mars and through the asteroid belt, easing concern about an asteroidal barrier to outer planet exploration. Mission planners used Jupiter's gravity to hurl the spacecraft on an escape trajectory out of the solar system. It crossed Saturn's orbit last February, and it now is traveling away from the Sun at a speed of 59,000 km (37,000 mi.) an hour. Somewhere in interstellar space its speed will stabilize at just over 40,000 km (25,000 mi.) an hour.

Pioneer 10's twin spacecraft, Pioneer 11, identical to the spacecraft being placed in the Smithsonian, is now making the first trip to Saturn. Pioneer 11 added greatly to Jupiter knowledge by taking the first look at the planet's polar regions (not visible from Earth), and the first closeup pictures of two of the four large Jovian moons.

Pioneer 11 surpassed Pioneer 10's record flyby speed of 131,000 km (82,000 mi.) an hour, reaching a speed of 171,000 km (107,000 mi.) as it passed the planet in December 1974.

Pioneer 10 will be on public view Tuesday morning, Jan. 11.

PIONEER 10 AND 11 POSITIONS



-end-

NASA Fact Sheet

National Aeronautics and
Space Administration

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

NOTE: Launch dates are made public about two weeks in advance. When in Florida phone toll free 1-800-432-2153 for information on the next launch.

For Release:
January 1977

A. H. Lavender
305 867-2468

RELEASE NO: KSC 16-77

1977 LAUNCH SCHEDULE

Date	Spacecraft	Launch Vehicle	Pad	Remarks
January 27	NATO-IIIB	Delta	17	Reimbursable
March 10	PALAPA-B	Delta	17	Reimbursable
April	GEOS-D	Delta	17	Reimbursable
April	HEAO-A	Atlas-Centaur	36	
May	GOES-B	Delta	17	Reimbursable
June	INTELSAT-IV-A-C	Atlas Centaur	36	Reimbursable
June	ESA/OTS	Delta	17	Reimbursable
July	JAPAN/GMS	Delta	17	Reimbursable
August	MJS-A	Titan Centaur	41	
August	MJS-B	Titan Centaur	41	
August	ESA/METEOSAT	Delta	17	Reimbursable
August	SIRIO-A	Delta	17	Reimbursable
September	FLTSATCOM-A	Atlas Centaur	36	Reimbursable
September	LANDSAT-C	Delta	WTR	
4th Quarter	ISEE's-A & -B	Delta	17	
4th Quarter	JAPAN/CS	Delta	17	Reimbursable
4th Quarter	INTELSAT IV-A-D	Atlas Centaur	36	Reimbursable

NASA News

National Aeronautics and
Space Administration

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

For Release:
January 19, 1977

Dick Young
305 867-2468

RELEASE NO: KSC 15-77

ALABAMA FIRM AWARDED LAUNCH PAD CONTRACT FOR SPACE SHUTTLE

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a contract for $5 million to the Blount Brothers Corporation, Montgomery, Alabama.

The fixed price award is for the installation of launch systems at Complex 39's Pad A, from which the first Space Shuttle will be launched in the spring of 1979.

The work covers the installation of electrical and mechanical systems in the Pad A Payload Changeout Room and Shuttle Service Access Tower as well as some structural modifications to the launch pad and the Payload Changeout Room.

All work under the contract is to be completed by February, 1978.

The Kennedy Space Center has been designated the prime launch and recovery site for the reusable Space Shuttle.

The Space Shuttle is a unique and reusable transportation system to and from earth orbit that will open the door to the economical and routine use of space.

# # #

NASA News

National Aeronautics and
Space Administration

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

Iris Sullivan
305 867-2468

For Release:
January 18, 1977

RELEASE NO: KSC 14-77

FORMER HUNTSVILLE RESIDENT RECEIVES NASA AWARD

KENNEDY SPACE CENTER, Fla.--Ocie Hill, a former Huntsville resident, received NASA's Superior Achievement Award accompanied by a $2,500 award check during a recent ceremony at the Kennedy Space Center.

Hill, a printing specialist in the Repro-Graphics Branch of the Administrative Operations and Support Services Directorate, developed a plan for reproduction of half-size design drawings, saving the Center $300,000 in costs during the first five months of 1975 and approximately $1.5 million in costs since the plan was implemented. Previously, design drawings were reproduced in full-size.

Born in Huntsville, Hill was graduated from West Huntsville High School in 1949. He spent three years in the Army and attended the Army Guided Missiles School in 1952.

He joined the Redstone Arsenal in 1953 and transferred to the NASA Marshall Space Flight Center as a press operator-foreman in 1960. He was transferred to the Kennedy Space Center as a printing specialist in 1966.

He previously received suggestion awards at both the Marshall and Kennedy Centers, and was KSC's Cost Reduction Employee of the Year.

Hill, his wife, Shirley, and children Beverly and John reside in Merritt Island, Fla.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:
January 21, 1977

Darleen Hunt
305 867-2468

RELEASE NO: KSC 13-77

FORMER MIDWAY WOMAN SELECTED FOR NEW ROLE

KENNEDY SPACE CENTER, Fla.--Pat Lowry, formerly of Midway, has been selected by NASA as the new Federal Women's Program Coordinator (FWPC) at the Kennedy Space Center, Florida.

Lowry was raised in Midway, and is a 1950 graduate of Midway High School. She attended the Fugazzi Business College in Lexington and the University of Kentucky.

Members of her family still reside just outside of Midway including her mother, Ruth Adams; grandmother, Winnie Adams; her sister Mary Jane Halsey; and brother, Curtis Adams. A brother Charles Adams, Jr., lives near Lexington.

Lowry has worked for NASA since 1966. She began her government career at that time as a clerk typist, became a clerk stenographer, an administrative services clerk, then an administrative specialist. In her new position she will be assigned to the Equal Employment Opportunity office.

Because she is extremely interested and dedicated to the advancement of women in today's society she has been active in a number of women's organizations. She is a member of the Space Coast Chapter of Federally Employed Women, and has held several offices including president. She is an officer in the Brevard Community College Faculity Women's Club (her husband is a faculty member), and a member of the Brevard County Equal Rights Amendment Coalition for the past five years. In addition to her regular duties, Lowry served for 2½ years as an Equal Employment Opportunity counselor at KSC. She was selected by the Space Coast Chapter of FEW as 1976 Member of the Year.

-more-

According to Lowry, she plans to continue some of the programs already underway including the very popular Brown Bag Lunch Study Program (a program underway at KSC which offers college courses during employee lunch periods), and other training programs. She feels that training is "a very vital part of helping women achieve upward mobility. Not just the training itself," she says, "but what happens to one involved in training. The person becomes better equipped to make judgements on what steps to take after the training experience."

The one thing that she would like to stress to the women at KSC is that the only way for the Federal Women's Program to work is for the women to come and talk to her and let her know what they feel needs to be done. One area that she is considering is increasing the number of women on the Speaker's Bureau.

During her off-duty hours she enjoys collecting antiques, renovating her early 1920's home, swimming, and writing short stories. She and her husband, Lyle, have four children, two of whom reside with them in their home on the Indian River in Melbourne.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Darleen Hunt
305 867-2468

January 21, 1977

RELEASE NO: KSC 12-77

PAT LOWRY IS KSC'S NEW FEDERAL WOMEN'S PROGRAM COORDINATOR

KENNEDY SPACE CENTER, Fla.--Pat Lowry has been selected as the new Federal Women's Program Coordinator (FWPC) at the Kennedy Space Center.

Lowry has been an administrative specialist with the Technical Support Directorate, an organization that she has worked for since 1966. She began her government career at that time as a clerk typist, became a clerk stenographer, an administrative services clerk, than an administrative specialist. In her new position she will be assigned to the Equal Employment Opportunity office.

Because she is extremely interested and dedicated to the advancement of women in today's society she has been active in a number of women's organizations: Lowry is a member of Space Coast Chapter of Federally Employed Women, and has held several offices including president; an officer in the Brevard Community College Faculity Women's Club (her husband is a faculty member); and a member of the Brevard County Equal Rights Amendment Coalition for the past five years. In addition to her regular duties, Lowry served for 2½ years as an Equal Employment Opportunity counselor at KSC. She was selected by the Space Coast Chapter of FEW as 1976 Member of the Year.

Lowry was born in Kentucky, attended high school, business school and the University of Kentucky. She has also taken a number of BCC courses.

As the new FWPC, Lowry succeeds Mae Walterhouse, who has been assigned to NASA Headquarters for a year to participate in a Career Development Program.

-more-

According to Lowry, she plans to continue some of the programs initiated by her predecessor, including the very popular Brown Bag Lunch Study Program (a program underway at KSC which offers BCC courses during employee lunch periods) and other training programs. She feels that training is "a very vital part of helping women achieve upward mobility. "Not only is the training itself important," she says, "but what happens to one involved in training. The person becomes better equipped to make judgements on what steps to take after the training experience."

The one thing that she would like to stress to the women at KSC is that the only way for the Federal Women's Program to work is for the women to come and talk to her and let her know what they feel needs to be done. One objective she is considering is increasing the number of women on the Speaker's Bureau.

During her off-duty hours she enjoys collecting antiques, renovating her early 1920's home, swimming, and writing short stories. She and her husband, Lyle, have four children, two of whom reside with them in their home on the Indian River in Melbourne.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

A. H. Lavender
305 867-2468

January 12, 1977

RELEASE NO: KSC 11-77

NOTICE TO EDITORS/NEWS DIRECTORS

NASA TOURS OPERATIONS CONTINUE

KENNEDY SPACE CENTER, Fla.--Following a recent announcement by the Air Force Eastern Test Range that Cape Canaveral Air Force Station will be closed to Sunday Drive Through tours on January 16, there were reports that tours of the Kennedy Space Center would also be discontinued.

The Kennedy Visitors Center is open daily and NASA Tours, originating at the visitors center, will be in operation daily throughout the weekend.

Sunday Drive Through tours of the Kennedy Space Center were temporarily discontinued prior to the opening of 3rd Century America in May, 1976.

# # #

NASA News

National Aeronautics and
Space Administration

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

A. H. Lavender
305 867-2468

For Release:
January 17, 1977

RELEASE NO: KSC 10-77

NOTICE TO EDITORS/NEWS DIRECTORS

NATO-IIIB LAUNCH SCHEDULED JANUARY 27

KENNEDY SPACE CENTER, Fla.--The launch of NATO-IIIB from Complex 17, Cape Canaveral Air Force Station, is scheduled on Thursday, January 27. The launch window extends from 7:50 to 8:28 p.m. EST.

A prelaunch news briefing on the NATO-IIIB launch is scheduled in the conference room of the E & O Building, Cape Canaveral AFS, at 11 a.m., Wednesday, January 26. Permanently badged news media representatives may proceed directly to the E & O Building via KSC or CCAFS gates. Transportation for other media representatives who desire to attend will be provided, with a sedan departing the KSC Headquarters Building at 10:30 a.m.

For launch coverage on Thursday, January 27, permanently badged news media representatives may proceed directly to Press Site 1 via KSC or CCAFS gates. Others will be badged at Frank Wolfe's Beachside Motel. The convoy from Wolfe's to Press Site 1 will depart at 6:15 p.m., with a stop at the Cape Canaveral AFS Pass and Identification Building at 6:30 p.m.

# # #

NASA News

National Aeronautics and
Space Administration

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

Dick Young
305 867-2468

For Release:
January 11, 1977

RELEASE NO: KSC 9-77

CHICAGO FIRM AWARDED SPACEPORT UTILITY CONTROL CONTRACT

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a fixed price contract for $1,395,163 to the Mayfair Construction Co. and Capital Communication Corp., a joint venture, of Chicago, Ill.

The work includes installation of a utility control system and instrumentation and control cabling in the Hypergolic Maintenance Facility in KSC's Industrial Area.

It also includes installation of electrical equipment racks and consoles, movable test platforms, new power and lighting systems and associated work designed to adapt structures originally erected for Project Apollo to new roles in the Space Shuttle era.

The Space Shuttle Orbiter's fore and aft secondary engines use hypergolic or self-igniting propellants. These elements will be checked out and serviced in the Hypergolic Maintenance Facility.

KSC has been designated the prime launch and recovery site for the reusable Space Shuttle, scheduled for its first flight from KSC in the spring of 1979.

This unique transportation system to and from earth orbit is designed to open the door to the economical and routine use of space.

Work under the contract - one set aside for small business concerns - is to be completed by August, 1977.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Dick Young
305-867-2468

January 11, 1977

RELEASE NO: KSC 8-77

HOLLOWAY CORPORATION AWARDED SPACE SHUTTLE FACILITIES CONTRACT

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a contract for $1.3 million to the Holloway Corporation, Titusville, Fla.

The contract, one set aside for award to a small business firm, is for the construction of a Solid Rocket Booster Refurbishment Facility in the Vehicle Assembly Building at KSC's Launch Complex 39.

The contract calls for modification of existing facilities in the VAB Low Bay to serve as shops and work areas for tasks related to refurbishing expended Space Shuttle solid rocket boosters for re-use.

In addition, existing structural steel and work platforms in four buildup cells will be removed or modified to permit subassembly and checkout of new or refurbished solid rocket boosters.

A portion of the ground floor of Tower C in the VAB's High Bay is also to be modified to provide an Ordnance Buildup Facility.

The VAB - world's second largest building - was previously used for the buildup and checkout of Saturn/Apollo space vehicles and is undergoing modifications for processing of Space Shuttle flight hardware.

The Kennedy Space Center has been designated the prime launch and recovery site for the reusable Space Shuttle, scheduled for its first flight in the spring of 1979.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Iris Sullivan
305 867-2468

January 12, 1977

RELEASE NO: KSC 7-77

MUNDY NAMED KSC DEPUTY CHIEF COUNSEL

KENNEDY SPACE CENTER, Fla.--Appointment of Richard H. Mundy as the Kennedy Space Center's Deputy Chief Counsel has been announced by Chief Counsel Edward F. Parry.

The office of the Chief Counsel is responsible for all legal advice to the Center Director and other elements of KSC as well as other NASA offices located at the Center.

Mundy, who transferred to the Spaceport from the Marshall Space Flight Center in 1968, previously served as Chief of the KSC Procurement Counsel Staff.

Born in Philadelphia, Pa., he was graduated from high school in Conshohocken, Pa., in 1943. After serving in the Air Force as a navigator from 1943 to 1948, he studied at Drexel University, receiving his BS degree in Business Administration in 1951.

Returning to Air Force active duty in 1951, he remained in the Air Force until his retirement with the rank of Lieutenant Colonel in 1966. While on Air Force active duty he attended the University of Houston Law School and received his Doctor of Jurisprudence degree in 1957.

Mundy, who served as a member of the Marshall Center's legal staff from 1966 to 1968, is a member of the Brevard and Florida Bar Associations and has been admitted to practice before the U. S. Supreme Court.

Mundy, his wife, the former Molly Andrews of Maysville, Ky., and children David and Jane reside in Cocoa Beach.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

Dick Young
305 867-2468

January 6, 1977

RELEASE NO: KSC 6-77

CHRYSLER AWARDED SPACE SHUTTLE HYDRAULICS CONTRACT

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a contract for $945,016 to the Chrysler Corporation's Michoud Defense-Space Division, New Orleans, La.

The contract - to be completed by June 30, 1977 - is for the manufacture and test of 10 hydraulic control panels to be used at the Kennedy Space Center in connection with the Space Shuttle Program.

The control units are ground support equipment which will be used to control the flow of hydraulic fluids to the Space Shuttle orbiter and solid rocket boosters for test and servicing of onboard hydraulic systems prior to launch.

The Kennedy Space Center has been designated the prime launch and recovery site for the reusable Space Shuttle, scheduled for its first flight in the spring of 1979.

The Space Shuttle is a unique and reusable transportation system to and from earth orbit that will open the door to the economical and routine use of space.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:

January 6, 1977

Iris Sullivan
305 867-2468

RELEASE NO: KSC 5-77

KSC CONSTRUCTION CONTRACT AWARDED TO EAST ORANGE, NEW JERSEY, FIRM

KENNEDY SPACE CENTER, Fla.--NASA's John F. Kennedy Space Center has awarded a $874,000 contract to the Frank Briscoe Co., Inc., East Orange, N. J., for construction and modification in Vehicle Assembly Building High Bay 3 in preparation for Space Shuttle assembly and checkout operations.

The contract provides for installation of piping systems to provide compressed air, freon 21, gaseous nitrogen and gaseous helium to the assembled Space Shuttle Orbiter-Solid Rocket Booster configuration; cable trays for electrical, operational communications system and instrumentation lines; and electrical and opertional communications system cables. Electrical cable will be provided by the contractor and operational communications system cable by the Government. Instrumentation cables will be installed later under a separate contract.

Also included in the contract is the addition of work stands on the extensible platforms originally used during Apollo/Saturn V assembly and checkout operations to levels required for access to the Orbiter and Solid Rocket Booster's. The access platforms were reshaped and relocated to fit the Space Shuttle configuration under another contract.

The Briscoe Co., is also the contractor for construction of some of the Space Shuttle External Tank Processing Support Systems in the VAB's High Bay 4 and a Solid Rocket Booster Processing and Storage Facility in High Bays 2 and 4.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:
January 7, 1977

A. H. Lavender
305 867-2468

RELEASE NO: KSC 4-77

BIDS REQUESTED FOR KSC SERVICE STATION OPERATION

KENNEDY SPACE CENTER, Fla.--The Kennedy Space Center Exchange Council today released a request for proposals for concessionaire operation of a commercial service station on the Center.

Located in the KSC industrial area, the station has two islands with a capability of simultaneous fueling of four or more vehicles, and three service bays for vehicle lubrication, oil change and repair service.

The request for proposal provides for submission of sealed offers by February 5, 1977. The concessionaire contract will cover the period from July 1, 1977 through July 1, 1982.

B. W. Simpkins Oil Co., Cocoa, has operated the service station since 1972.

Requests for proposal were mailed to 14 area business firms. Other firms interested in receiving proposal requests may obtain a copy and additional information from Marion Wood, 867-4104.

The Exchange Council is a non-appropriated fund activity operated for the welfare and morale of KSC employees.

# # #

NASA News

National Aeronautics and
Space Administration

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

For Release:
January 4, 1977

Dick Young
305 867-2468

RELEASE NO: KSC 3-77

SPACEPORT TOURS COMPLETE BUSY YEAR

KENNEDY SPACE CENTER, Fla.--A total of 1,137,367 visitors took guided bus tours of NASA's Kennedy Space Center and the adjacent Cape Canaveral Air Force Station during 1976.

The 1976 total was 2.6 percent below the 1,168,189 patrons taking the tour in 1975 and brought the total visitation since the guided bus tours were initiated in 1966 to 10,372,729.

The 1976 total represented the fifth busiest year in the history of Spaceport tours. The peak came in 1972 near the end of the Apollo program when the tours were taken by 1,389,042.

The tour total for December, 1976 was 94,783, a decline of 16.9 percent when compared with the 114,017 visitors taking tours in December, 1975.

Tour patronage has exceeded 1 million every year since 1969 with the exception of 1974 when the gasoline shortage severely slashed Florida tourism and dropped the tour total to 878,746.

A new and dramatically enhanced tour of KSC was offered to the public on a trial basis during the annual Christmas rush from December 20 through January 2.

The new tour included several of the most popular and dramatic attractions at 3rd Century America, the U. S. Bicentennial Exposition on Science and Technology held at KSC last summer.

These included the spectacular Apollo 11 launch simulation in the Launch Control Center, the lunar diorama in the Flight Crew Training Building and the chance to inspect a full-scale Apollo/Saturn V space vehicle in the vicinity of the Vehicle Assembly Building.

-more-

These tour attractions were in addition to the vastly expanded array of exhibits and audio visual programs at the Visitors Center, the departure point for the tours and the free focal point of any visit to KSC.

The Visitors Center is accessible from the NASA Causeway off U. S. Route 1 two miles south of Titusville and via State Road 3 on Merritt Island and is open without charge.

This large public-use complex includes a new Hall of History in addition to the older structures and exhibits which have made it such a popular destination point for Florida tourists.

According to visitor comment cards, the tours are well received. Sample comments include:

"My interest in KSC was stimulated by the amount of taxpayer money invested in the space program. After spending the day here, I feel every penny has been well spent. I was incredibly impressed."

"We thoroughly enjoyed our visit. Very interesting."

"A most worthwhile and entertaining visit. Will recommend to friends at home."

"The tour is fabulous. We considered the simulated blast-off one of the supreme highlights of our visit from Oregon. The tours are imaginative, informative and well-managed."

KSC's Visitors Center is open to the public every day of the year with the exception of Christmas.

# # #

NASA News

National Aeronautics and
Space Administration

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

A. H. Lavender
305 867-2468

For Release:
January 4, 1977

RELEASE NO: KSC 2-77

SYMPOSIUM WILL OUTLINE MINORITY OPPORTUNITIES AT SPACEPORT

KENNEDY SPACE CENTER, Fla.--Minority opportunities at the Spaceport will be discussed at a symposium scheduled January 15 at the Monroe Adult Community Education Center, 705 Avocado Avenue, Cocoa.

Sponsored by the Kennedy Space Center, the symposium will be opened by Joseph F. Malaga, KSC Director of Administration and Management Operations, followed by a discussion of KSC's procurement program by William M. Lohse, Director, KSC Procurement, Supply and Transportation. Future Spaceport construction programs will be outlined by Thomas E. Utsman, Deputy Director, Project Management, Design Engineering.

Explanation of the KSC Affirmative Action Plan that assures equitable employment of minority personnel by the Center's construction contractors, by Nathanial Pilate, Chief of the Equal Opportunies Program Office, and KSC's equal employment opportunity program for Center civil service employees, by Beverly Merrilees of the Staffing and Personnel Services Branch, will be followed by a question and answer period.

Representatives of minority business firms and the general public are invited to attend the symposium, which opens at 9 a.m.

Additional information on the symposium may be obtained by telephoning Robert Manning, Coordinator of Adult Community Education at the Cocoa Center, 305-632-3080.

# # #

NASA News

National Aeronautics and
Space Administration

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

A. H. Lavender
305 867-2468

For Release:
January 4, 1977

RELEASE NO: KSC 1-77

KSC CONTRACT OPPORTUNITIES TO BE DISCUSSED AT JANUARY 19 CONFERENCE

KENNEDY SPACE CENTER, Fla.--Planned Kennedy Space Center contracts for Space Shuttle ground support equipment will be discussed during a conference in the Center's Training Auditorium on January 19.

Designed to provide business firms advanced information on contracts to be awarded by KSC during 1977, the conference will feature discussion of more than 40 planned ground support facilities and systems contracts.

Among contract awards planned in 1977 are those involving shuttle access stands and platforms in the Vehicle Assembly Building (VAB), and Orbiter access and servicing systems for the landing facility and the launch pad. In addition, contracts are planned for the fabrication of hydraulic, pneumatics and electrical panels and cables.

Business concerns desiring to have representatives attend the conference should submit names of attendees to B. J. Dryer III, Chief, Industry Advisory Office, AP-PRO-13, John F. Kennedy Space Center, NASA, Kennedy Space Center, Fla. 32899, prior to January 15.

Attendees will be badged at KSC Gate 3, located on State Road 405 one-half mile east of U.S. 1 south of Titusville, Florida.

# # #