NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

January 8, 1996
KSC Contact: Lisa Malone
KSC Release No. 1-96

Notice to Editors/News Directors:
MISSION STS-72 EVENTS, NEWS CENTER OPERATING HOURS SET

News conferences, events and operating hours for KSC's News Center have been set for the Jan. 11 launch of the Space Shuttle Endeavour on Mission STS-72, the first launch of the calendar year. These events are scheduled to be carried live on NASA TV (please refer to the STS-72 TV schedule for exact times).

Launch is currently set for 4:18 a.m. EST on Thursday, Jan. 11, at the opening of a 49 minute, 30 second window. The window extends until 5:07:30 a.m. EST. The exact length of the window may vary slightly depending on the location of the Japanese Space Flyer Unit.

KSC News Center hours of operation during the mission will be determined after launch.

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Information about the countdown and mission can be accessed electronically via the Internet at http://www.ksc.nasa.gov/shuttle/countdown/ and at http://shuttle.nasa.gov/.

KSC press releases and other information are available at the KSC PAO Home Page at http://www-pao.ksc.nasa.gov/kscpao/kscpao.htm.

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STS-72 BRIEFING SCHEDULE

(all times are in EST and conferences are held inside the KSC Press Site auditorium)

L-2 Days - Tuesday, Jan. 9

Countdown Status Briefing----------9:00 a.m.
John Stealey, NASA Test Director
Ed Priselac, Shuttle Weather Officer

Pre-launch News Conference----------3:30 p.m.
----------(or immediately following the management team's meeting)

Tommy Holloway, NASA Shuttle Program Manager, Johnson Space Center
Bob Sieck, Director of Shuttle Operations, KSC
ISAS participant TBD
Capt. Scot Heckman, KSC Staff Weather Liaison (Note: the spelling Scot is correct)

L-1 Day - Wednesday, Jan. 10

Countdown Status Briefing----------9:00 a.m.
John Stealey, NASA Test Director
Roelof Schuiling, STS-72 Payload Manager
Ed Priselac, Shuttle Weather Officer

Replay of STS-72 crew, mission briefings---------- TBD

NASA Television live launch programming begins----------11:00 p.m.

Launch Day - Thursday, Jan. 11

Launch of Endeavour----------4:18 a.m.

Post-launch press conference----------L + 1 hour
Loren Shriver, manager of Launch Integration for the Space Shuttle Program
James Harrington, KSC Launch Director

NASDA Japanese Press Conference----------L + 1 1/2 hours
(local briefing at KSC; translation will be provided)

NASA Television is carried on Spacenet 2, transponder 5, channel 9, C-band, located at 69 degrees West longitude, with horizontal polarization. Frequency is 3880 MHz with audio on 6.8 MHz.

KSC News Center office hours for STS-72
(hours may be adjusted for in-flight events)

(Launch minus 3 days) Monday, Jan. 8	7:00 a.m. - 4:30 p.m.
(Launch minus 2 days) Tuesday, Jan. 9	8:00 a.m. - 4:30 p.m.
(Launch minus 1 day) Wednesday, Jan. 10	7:00 a.m. - around-the-clock - 4:30 p.m.
(Launch day) Flight day 1, Thursday, Jan. 11	
Flight Day 2, Friday, Jan. 12	8:00 a.m. - 4:30 p.m.

News media representatives may obtain STS-72 mission credentials at the Pass and Identification Building at Gate 2 on State Road 3, Merritt Island, during the following times:

Monday, Jan. 8	--	7:00 a.m. to 4:30 p.m.
Tuesday, Jan. 9	--	8:00 a.m. to 4:30 p.m.
Wednesday, Jan. 10	--	8:00 a.m. to 4:30 p.m.
Thursday, Jan. 11	--	12:00 a.m. to 3:30 a.m.

News media with annual Shuttle credentials are reminded to sign the log book at the photo and interview counter in the News Center.

NEWS MEDIA ARE REQUIRED TO BE UNDER PUBLIC AFFAIRS ESCORT EXCEPT WHEN DRIVING TO THE NEWS CENTER OR THE COMPLEX 39 CAFETERIA. IN ADDITION, NEWS MEDIA ARE ALLOWED ON CENTER ONLY WHEN THE NEWS CENTER IS OPEN.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

January 9, 1996
KSC Contact: Bruce Buckingham
KSC Release No. 2-96

SPACE SHUTTLE MISSION STS-72 LAUNCH COUNTDOWN UNDERWAY

The countdown for launch of the Space Shuttle Endeavour on mission STS-72 began on time yesterday at 7:30 a.m. EDT, at the T-43 hour mark. The KSC launch team is conducting the countdown from Firing Room 1 of the Launch Control Center.

The countdown includes 25 hours and 48 minutes of built-in hold time leading to the opening of the launch window at 4:18 a.m. (EDT) on Jan. 11. The launch window extends for about 49 minutes. The exact launch time will be announced about 90 minutes prior to liftoff following final computation of the location of the SFU spacecraft.

STS-72 is the first Space Shuttle mission for 1996. It will be the 10th flight of the Shuttle Endeavour and the 74th flight overall in NASA's Space Shuttle program.

The primary objectives of mission STS-72 are to retrieve the Japanese Space Flyer Unit (SFU) and to deploy and retrieve the Office of Aeronautics and Space Technology Flyer (OAST-Flyer).

Endeavour was rolled out of Orbiter Processing Facility bay 3 on Nov. 30 and mated with the external tank and solid rocket boosters in the Vehicle Assembly Building. The Shuttle stack was then transported to Pad 39-B on Dec. 6. Endeavour last flew in September 1995.

The STS-72 crew are: Commander Brian Duffy, Pilot Brent Jett, and Mission Specialists Leroy Chaio, Winston Scott, Dan Barry and Koichi Wakata, representing the National Space Development Agency of Japan (NASDA).

The crew arrived at KSC at about 9:30 a.m. yesterday. Their activities at KSC prior to launch include equipment fit checks, medical examinations and opportunities to fly in the Shuttle Training Aircraft.

(end of general release)

COUNTDOWN MILESTONES

All times Eastern

Launch - 3 Days (Monday, Jan. 8)

* Prepare for the start of the STS-72 launch countdown
* Perform the call-to-stations. All Firing Room console operators report on station.
* All members of the launch team report to their respective consoles in Firing Room 1 in the Launch Control Center for the start of the countdown.
* Countdown begins at 7:30 a.m. EDT at the T-43 hour mark
* Start preparations for servicing fuel cell storage tanks
* Begin final vehicle and facility close-outs for launch
* Begin stowage of flight crew equipment
* Load backup flight system software into Endeavour's general purpose computers
* Check out back-up flight systems
* Inspect the orbiter's mid-deck and flight-deck and remove crew module platforms

* Review flight software stored in mass memory units and display systems

Enter first planned built-in hold at T-27 hours for duration of four hours (11:30 p.m.)

Launch - 2 Days (Tuesday, Jan. 9)

* Clear launch pad of all personnel
* Perform test of the vehicle's pyrotechnic initiator controllers

Resume countdown (3:30 a.m.)

* Begin the 5-hour operation to load cryogenic reactants into Endeavour's fuel cell storage tanks.
* After cryogenic loading operations, re-open the pad

Enter four-hour built-in hold at T-19 hours (11:30 a.m.)

* Resume orbiter and ground support equipment close-outs
* Begin installation of mission specialists' seats in crew cabin

Resume countdown (3:30 p.m.)

* Demate orbiter mid-body umbilical unit and retract into fixed service structure
* Start final preparations of the Shuttle's three main engines for main propellant tanking and flight
* Activate flight controls and navigation systems
* Close-out the tail service masts on the mobile launcher platform
* Perform orbiter ascent switch list in crew cabin
* Install film in numerous cameras on the launch pad
* Activate the orbiter's communications systems
* Activate orbiter's inertial measurement units

Enter planned hold at T-11 hours for 13 hours, 28 minutes (11:30 p.m.)

Launch - 1 Day (Wednesday, Jan. 10)

* Fill pad sound suppression system water tank
* Safety personnel conduct debris walkdown
* Move Rotating Service Structure (RSS) to the park position (9 a.m.)
* Following the RSS move, continue final stowage of mid-deck experiments and flight crew equipment

Resume countdown (12:58 p.m.)

* Start fuel cell flow-through purge
* Install time critical flight crew equipment
* Perform pre-ingress switch list
* Activate the orbiter's fuel cells
* Configure communications at Mission Control in Houston for launch
* Activate the solid rocket booster’s joint heaters
* Clear the blast danger area of all non-essential personnel
* Switch Endeavour's purge air to gaseous nitrogen
* Activate auxiliary power unit heaters

Enter planned two-hour built-in hold at the T-6 hour mark (5:58 p.m.)

* Launch team verifies no violations of launch commit criteria prior to cryogenic loading of the external tank
* Verify pad is clear of all personnel

Resume countdown (7:58 p.m.)

* Begin loading the external tank with cryogenic propellants (7:58 p.m.)
* Perform inertial measurement unit preflight calibration
* Align Merritt Island Launch Area (MILA) tracking antennas
* Complete filling the external tank with its flight load of liquid hydrogen and liquid oxygen propellants (11 p.m.)

Enter two-hour hold at T-3 hours (10:58 p.m.)

* Perform open loop test with Eastern Range
* Conduct gimbal profile checks of orbital maneuvering system engines
* Close-out crew and Final Inspection Team proceeds to Launch Pad 39-B

Launch Day (Thursday, Jan. 11)

Resume countdown at T-3 hours (12:58 a.m.)

* Crew departs Operations and Checkout Building for Launch Pad 39-B (1:03 a.m.)
* Complete close-out preparations in the white room
* Check cockpit switch configurations
* Flight crew enters orbiter
* Astronauts perform air-to-ground voice checks with Launch Control and Mission Control
* Close Endeavour's crew hatch
* Begin Eastern Range final network open loop command checks
* Perform hatch seal and cabin leak checks
* Complete white room close-out
* Close-out crew moves to fallback area
* Primary ascent guidance data is transferred to the backup flight system

Enter planned 10-minute hold at T-20 minutes (3:38 a.m.)

* NASA Test Director conducts final launch team briefings

Resume countdown (3:48 a.m.)

* Transition the orbiter's onboard computers to launch configuration
* Start fuel cell thermal conditioning
* Close orbiter cabin vent valves
* Transition backup flight system to launch configuration

Enter final 10-minute hold at T-9 minutes (3:59 a.m.)

* Launch Director, Mission Management Team and NASA Test Director conduct final polls for go/no go to launch

Resume countdown at T-9 minutes (4:09 a.m.)

* Start automatic ground launch sequencer (T-9:00 minutes)
* Retract orbiter crew access arm (T-7:30)
* Start mission recorders (T-5:30)
* Start Auxiliary Power Units (T-5:00)
* Arm SRB and ET range safety safe and arm devices (T-5:00)
* Start liquid oxygen drainback (T-4:55)
* Start orbiter aerosurface profile test (T-3:55)
* Start MPS gimbal profile test (T-3:30)
* Pressurize liquid oxygen tank (T-2:55)
* Begin retraction of the gaseous oxygen vent arm (T-2:55)
* Fuel cells to internal reactants (T-2:35)
* Pressurize liquid hydrogen tank (T-1:57)

* Deactivate SRB joint heaters (T-1:00)
* Orbiter transfers from ground to internal power (T-0:50 seconds)
* Ground Launch Sequencer go for auto sequence start (T-0:31 seconds)
* Ignition of three Space Shuttle main engines (T-6.6 seconds)
* SRB ignition and liftoff (T-0)

SUMMARY OF BUILT-IN HOLDS FOR STS-72

T-TIME	LENGTH OF HOLD	HOLD BEGINS	HOLD ENDS
T-27 hours	4 hours	11:30 p.m. Monday	3:30 a.m. Tuesday
T-19 hours	4 hours	11:30 a.m. Tuesday	3:30 p.m. Tuesday
T-11 hours	13 hours, 28 minutes	11:30 p.m. Tuesday	12:58 p.m. Wednesday
T-6 hours	2 hours	5:58 p.m. Wednesday	7:58 p.m. Wednesday
T-3 hours	2 hours	10:58 p.m. Wednesday	12:58 a.m. Thursday
T-20 minutes	10 minutes	3:38 a.m. Thursday	3:48 a.m. Thursday
T-9 minutes	10 minutes	3:59 a.m. Thursday	4:09 a.m. Thursday

CREW FOR MISSION STS-72

Brian Duffy	Commander (CDR)
Brent Jett	Pilot (PLT)
Leroy Chiao	Mission Specialist (MS1)
Winston Scott	Mission Specialist (MS2)
Koichi Wakata	Mission Specialist (MS3)
Dan Barry	Mission Specialist (MS4)

SUMMARY OF STS-72 LAUNCH DAY CREW ACTIVITIES

Wednesday, Jan. 10

	7:00 p.m.	Wake up
	7:30 p.m.	Breakfast
*	11:38 p.m.	Lunch and Crew Photo

Thursday, Jan. 11

	12:08 a.m.	Weather briefing (CDR, PLT, MS2)
	12:08 a.m.	Don launch and entry suits (MS1, MS3, MS4,)
	12:18 a.m.	Don launch and entry suits (CDR, PLT, MS2)
*	12:40 a.m.	Crew suiting photo
*	1:03 a.m.	Depart for Launch Pad 39B
*	1:33 a.m.	Arrive at white room and begin orbiter ingress
*	2:48 a.m.	Close crew hatch
*	4:18 a.m.	Launch

* Televised events (times may vary slightly)
All times Eastern

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

January 9, 1996
KSC Contact: Bruce Buckingham
KSC Release No. 3-96

PHOTOGRAPHIC EXPOSURE GUIDELINES FOR NIGHT SPACE SHUTTLE LAUNCHES

A launch of the Space Shuttle vehicle during hours of darkness offers photographers a challenging opportunity to photograph a nighttime liftoff from Kennedy Space Center's Complex 39.

Due to the unusual lighting situations on the pad at the time of launch and the enormous burst of illumination at the time of main engine and solid rocket booster ignition, questions have been raised regarding proper exposure times, aperture settings and film types.

On the launch pad, the Space Shuttle is illuminated by 40 daylight-balanced xenon searchlights. The light level is 200 foot-candles with a color temperature of 6000K up until the time the main engines are ignited. Daylight balanced films are recommended.

The following film speeds and exposure tables provide some general guidance for photographing the shuttle at night. Table I provides guidelines prior to ignition with the illumination of the xenon lights.

TABLE 1

SHUTTLE ON PAD AT NIGHT PRIOR TO IGNITION (WITH XENON LIGHTS)		
ISO/ASA	**SHUTTER**	**f/STOP**
64	1/30	4.0
100	1/60	3.5
125	1/60	4.0
160	1/125	2.8
200	1/125	3.5
400	1/125	4.5
800	1/250	4.5
1000	1/250	5.6
1600	1/250	6.3
3200	1/250	11.0

Immediately following SRB ignition until the time the vehicle clears the top of the launch tower, illumination will consist of both the xenon searchlights and reflected flame from the main engines and twin solid rocket boosters. The light levels will rapidly rise to about 1000 foot-candles during this five or six second period. Table II lists exposures using the maximum light level.

TABLE II

SHUTTLE IMMEDIATELY FOLLOWING LIFTOFF AND PRIOR TO CLEARING THE LAUNCH TOWER (WITH XENON LIGHTS AND FLAME REFLECTION)		
ISO/ASA	**SHUTTER**	**f/STOP**
64	1/25	4.5
100	1/250	4.0
125	1/250	4.5
200	1/250	5.6
400	1/250	8.0
800	1/500	8.0
1000	1/500	8.0
1600	1/500	11.0
3200	1/500	16.0

After the Space Shuttle has cleared the tower, the only source of light will be from the engine flame itself. Light level of the engine flame will be about 4,500 foot-candles, but only a portion of the orbiter's engines will be visible.

Table III provides guidelines for photographers after the Shuttle has cleared the tower through solid rocket booster burnout.

TABLE III

AFTER SHUTTLE HAS CLEARED THE TOWER THROUGH SRB BURNOUT (WITH ENGINE-FLAME ONLY)		
ISO/ASA	**SHUTTER**	**f/STOP**
64	1/125	11.0
100	1/1250	11.0
125	1/1250	11.0
200	1/250	11.0
400	1/250	16.0
800	1/500	16.0
1000	1/500	16.0
1600	1/1000	22.0
3200	1/1000	22.0

Streak exposures may be taken to show the shuttle's long, arcing path over the Atlantic Ocean east of the pad. For this, it is best to frame the shuttle on the pad low in the frame using a relatively wide lens. Lock the shutter open for the duration of the exposure.

The following table offers suggested f/stops for various film speeds with the shutter open.

TABLE IV

STREAK EXPOSURE (OPEN SHUTTER)		
ISO/ASA	**SHUTTER**	**f/STOP**

64	Open	4.0
100	Open	5.6
125	Open	5.6
200	Open	6.3
400	Open	8.0
800	Open	11.0
1600	Open	22.0
3200*	Open	22.0

The exposure guidelines listed in these tables may require some variation due to differences in individual cameras and film processing.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

January 18, 1996
KSC Contact: Joel Wells
KSC Release No. 4-96

KSC SPONSORS COMMUNITY INVOLVEMENT EXPO

Thirty-one community service agencies from across Brevard County will display their wide array of services at KSC, on Jan. 19. The Community Involvement Expo begins at 10 a.m. with remarks from Center Director, Jay Honeycutt and ends at 2 p.m.

Organizers want to familiarize KSC employees with the services that are available to help them or their acquaintances in a time of need. "The Expo is an excellent opportunity to showcase the services available throughout Brevard County," said Judy McGinty, Director, Brevard Volunteer Center. "We are also hoping that employees interested in helping will see the great opportunities for volunteering in the community," said McGinty.

McGinty is co-chairing the event with Paula Preston, Director, Brevard Retired Senior Volunteer Program.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

January 18, 1996
KSC Contact: Bruce Buckingham
KSC Release No. 6-96

ENDEAVOUR SCHEDULED TO LAND AT KSC

The orbiter Endeavour is scheduled to land at Kennedy Space Center on Saturday, Jan. 20 at about 2:42 a.m. EST, completing its STS-72 mission which was launched from KSC on Jan. 11.

Landing at KSC's Shuttle Landing Facility (SLF) is slated to occur on orbit 142 at a mission elapsed time of 8 days, 22 hours, 1 minute. The deorbit burn will occur at about 1:42 a.m. Saturday.

KSC landing opportunities on Saturday are: 2:42 a.m. and 4:17 a.m. In the event a landing is not possible at KSC on Saturday due to weather concerns, no landing attempt will be made at Edwards Air Force Base, Calif. On Sunday, two landing opportunities are available at KSC and two at Edwards.

KSC Sunday landing times are: 1:16 a.m. and 2:51 a.m. EST.

EAFB Sunday landing times are: 2:43 a.m. and 4:18 a.m. EST.

The landing of Endeavour will mark the 28th landing at KSC in the history of Space Shuttle flight. It will be the first landing of the Shuttle at KSC this year. Also, this will be only the 8th nighttime landing in Shuttle history and the 3rd nighttime landing at KSC.

About six hours after landing, select members of the flight crew will be present for a post-mission press conference. The conference will be held at the KSC TV auditorium and carried live on NASA TV.

SLF and KSC Ground Operations

The Shuttle Landing Facility was built in 1975. It is 300 feet wide and 15,000 feet long with 1,000 foot overruns at each end. The strip runs northwest to southeast and is located about 3 miles northwest of the 525-foot tall Vehicle Assembly Building.

Once the orbiter is on the ground, safing operations will commence and the flight crew will prepare the vehicle for post-landing operations. The Crew Transport Vehicle (CTV) will be used to assist the crew, allowing them to leave the vehicle and remove their launch and re-entry suits easier and quicker.

The CTV and other KSC landing convoy operations have been "on-call" since the launch of Endeavour Jan. 11. The primary functions of the Space Shuttle recovery convoy are: provide immediate service to the orbiter after landing, assist crew egress, prepare the orbiter for towing to the Orbiter Processing Facility.

Convoy vehicles are stationed at the SLF's mid-point. About two hours prior to landing, convoy personnel don SCAPE suits, or Self Contained Atmospheric Protective Ensemble, and communications checks are made. A warming-up of coolant and purge equipment is conducted and nearly two dozen convoy vehicles are positioned to move onto the runway as quickly and as safely as possible once the orbiter coasts to a stop. When the vehicle is deemed safe of all potential explosive hazards and toxic gases, the purge and coolant umbilical access vehicles move into position at the

rear of the orbiter.

Following purge and coolant operations, flight crew egress preparations will begin and the CTV will be moved into position at the crew access hatch located on the orbiter's port side. A physician will board the Shuttle and conduct a brief preliminary examination of the astronauts. The crew will then make preparations to leave the vehicle.

Following departure from the SLF, the crew will be taken to their quarters in the O&C Building, meet with their families, undergo a physical examination and prepare to depart for the skid strip at Cape Canaveral Air Station for their trip back to JSC.

If Endeavour lands at Edwards, an augmented KSC convoy team will be on-site to safe the vehicle, disembark the crew and move the orbiter to the Mate/Demate Device. The turnaround team will be deployed to Edwards by charter aircraft on landing day.

About 3 hours, 30 minutes after Endeavour lands at KSC, the orbiter will be towed to Orbiter Processing Facility bay 3 for post-flight deservicing. Preparations will then begin for Endeavour's next mission, STS-77, currently scheduled for launch in May.

# # # #

NOTICE TO EDITORS: Media wishing to view Endeavour's landing should be at the KSC press site between 10 p.m. Friday - 1:30 a.m. Saturday for transport to the SLF. Other specific information is available at the KSC News Center regarding landing photo opportunities, post-landing press conferences and KSC News Center operational hours.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

January 18, 1996
KSC Contact: Bruce Buckingham
KSC Release No. 7-96

Note to Editors/News Directors:
KSC NEWS CENTER HOURS OF OPERATION FOR LANDING OPERATIONS

The orbiter Endeavour is scheduled to land at Kennedy Space Center on Saturday, Jan. 20. The two KSC landing opportunities on Saturday are at 2:42 a.m. and 4:17 a.m. EST.

To support Saturday's landing attempt, the KSC News Center will open at 10 p.m. Friday and close following the astronaut post-landing press conference, which is scheduled to occur about six hours after touchdown.

Media wishing to view Endeavour's landing should be at the KSC press site between 10 p.m. Friday - 1:30 a.m. Saturday for transport to the Shuttle Landing Facility.

The Pass and Identification Office (PIDS) on State Road 3 will be open for press badging operations from 10 p.m. Friday - 1 a.m. Saturday.

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NASA News Release
ON LINE
JOHN F. KENNEDY SPACE CENTER

January 25, 1996
KSC Contact: Joel Wells
KSC Release No. 8-96

KSC AWARDS TWO PAYLOAD PROCESSING CONTRACTS

NASA's Kennedy Space Center awarded two payload processing contracts on Jan. 17 for payloads to be launched at Vandenberg Air Force Base, CA.

Spaceport Systems International, based in Lompoc, CA, was awarded a firm- fixed price contract with a total potential value of $9.3 million. Astrotech Space Operations, based in Silver Spring, MD, signed a $1.7 million firm-fixed price contract.

Astrotech Space Operations will provide payload processing services for the first in a series of Earth Observing System satellites. The payload is scheduled to launch atop an Atlas IIAS rocket in June 1998. Their contract performance period ends in July 1998.

Spaceport Systems International will process the Landsat 7 and another Earth Observing System payload to be launched in May 1998 and December 2000, respectively. Their contract period of performance extends through June 2005 with options to process 10 additional payloads.

Both contracts are part of NASA's Performance Based Contracting initiative -- allowing vendors to propose their best methods to achieve the government's desired end result.

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NASA News Release
ON LINE
JOHN F. KENNEDY SPACE CENTER

January 22, 1996
KSC Contact: Lisa Malone
KSC Release No. 9-96

EVENTS PLANNED TO COMMEMORATE 10TH CHALLENGER ANNIVERSARY

The NASA Kennedy Space Center, FL, and community organizations associated with the space program will commemorate the 10th anniversary of the Challenger accident on Sunday, Jan. 28, and Monday, Jan. 29. Planned events will emphasize the future and acknowledge the extraordinary efforts of the contractor and civil service team which has safely launched 49 shuttle missions since that time.

"It is the day-to-day work and care by the men and women of NASA and its contractors which best honors the memory of the Challenger astronauts and other astronauts who have lost their lives in advancing humankind's quest to use space," KSC Director Jay Honeycutt said. "I don't think there has ever been a more committed and hard-working group of people anywhere. The nation can be proud of them."

On Monday, Jan. 29, Kennedy employees will be allowed to step outside of their buildings for a moment of silence. At exactly 11:38 a.m. (the time of the Challenger launch), a "missing man" formation of T-38 jets flown by members of the astronaut corps will fly over the center followed by the dropping of a wreath at sea by helicopter. A similar observance will be held simultaneously at the NASA Johnson Space Center in Houston, TX.

The actual anniversary date of Jan. 28 will be marked by observances planned by The Astronauts Memorial Foundation (AMF) and the City of Titusville.

A ceremony at the Astronauts Memorial "Space Mirror" at the Kennedy visitor center will start at 11:15 a.m. and be open to center employees, the general public and invited guests. Speakers will include: George R. Faenza, chairman of the AMF board of directors and vice president and general manager of McDonnell Douglas Space and Defense Systems at KSC; Alan Helman, who founded and was the first chairman of AMF; Bruce Jarvis, father of Challenger Payload Specialist Gregory B. Jarvis; and AMF board member Lee D. Solid, vice president and general manager of Florida Operations of Rockwell International.

Former astronaut Loren J. Shriver, who is presently launch integration manager for the Space Shuttle Program and chairs the NASA Mission Management Team for all Shuttle launches, will be the keynote speaker representing the astronaut corps and the families of the honored astronauts.

The ceremony will conclude at 11:38 a.m. with a flyover of T-38 jets piloted by members of the Air Force's 50th Flying Training Squadron based at Columbus Air Force Base, MS, followed by 73 seconds of silence and placing of a wreath at the memorial by astronaut family members who are present.

The Foundation erected the memorial on Kennedy property through revenues from Florida Challenger license plates and individual and corporate contributions. Since then it has created a living memorial in the form of a "Center for Space Education" at the KSC visitors center to house NASA and AMF education programs.

On Saturday, Jan. 27, a program co-sponsored by the Young Astronaut Program, NASA, AMF, and Delaware North Park Services of Spaceport Inc. which operates the KSC Visitors Center, will reach out to young people to provide

inspiration and motivation in pursuing the exploration and use of space.

Called "Reach for the Stars" day, the program will begin at 10 a.m. when KSC Deputy Director Gene Thomas and Apollo 13 crew member Fred Haise welcome participants at the "Space Mirror" memorial.

Children from kindergarten through the 12th grade will be encouraged to take part in a number of activities. Working in teams of several separate age groups, the young people will learn to engineer and build structures to protect raw eggs which will be dropped more than 20 feet from the top level of the gantry at the full-scale Space Shuttle Explorer.

Model rocket launches -- Representing Mercury, Gemini, Apollo and Shuttle, four launches are planned at the top of each hour from 12 p.m. to 3 p.m. All launches will be from the lawn on the east side of the Center for Space Education.

Living in space -- On each half hour, from 10:30 a.m. to 3:30 p.m., presentations will be given on rocketry, the Space Shuttle and various aspects of living in space. The presentations will be given in Room 4000 (Exploration Station I) at the Center for Space Education.

Revisiting Apollo 13 -- Former astronaut Fred Haise will show video footage to the participants and discuss his Apollo 13 mission in the briefing room of the Center for Space Education, at scheduled times in the morning and afternoon.

Local students' space art will be on display throughout the Center for Space Education. In the lobby, there will be an interactive demonstration of the computerized launch and landing of the Delta Clipper. It is the single stage-to-orbit launch vehicle being developed by McDonnell Douglas. At the north end of the Rocket Garden, an M-113 Crew Rescue Vehicle and a Bearcat All-Terrain Vehicle will be on display throughout the day.

Student groups will also be involved in construction of a 10-foot-tall Space Shuttle out of Lego building pieces.

Each year the City of Titusville, located on the northwestern boundary of KSC, has a ceremony at the Astronaut Memorial Plaza at Sand Point Park. The event will begin at 11 a.m. on Sunday, Jan. 28, and will be dedicated to both the 51L crew and the Apollo 1 astronauts. Titusville Mayor Tom Mariani will make brief remarks to open the 45-minute service, which will also involve local high school students placing a carnation at each astronaut's plaque and an apple at Christa McAuliffe's plaque. All local veterans organizations will be represented at the ceremony.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

January 26, 1996
KSC Contact: George Diller
KSC Release No. 10-96

Launch Advisory:
LAUNCH OF NEAR ON SCHEDULE--POLAR LAUNCH RETARGETED

With all prelaunch preparations proceeding smoothly, managers have decided that the Near Earth Asteroid Rendezvous (NEAR) mission will be NASA's next expendable vehicle launch. Liftoff is scheduled on Feb. 16 from Pad B at Launch Complex 17. The launch window extends from 3:53:07 p.m. to 3:54:07 p.m. EST, a duration of one minute.

Launch of NASA's Polar spacecraft, to occur from NASA's Space Launch Complex 2 at Vandenberg Air Force Base, is planned for Feb. 22. The launch window extends from 3:22 a.m. to 3:47 a.m. PST, a duration of twenty-five minutes. Activities to prepare for the Polar launch have also been going well, and the spacecraft was erected atop the McDonnell Douglas Delta II rocket on Tuesday, Jan. 23.

At Launch Complex 17 on Cape Canaveral Air Station, the Delta II vehicle for NEAR completes buildup today. The first stage was erected on January 19. The solid rocket boosters were erected this week on Jan. 22 - 24. The second stage was hoisted atop the first stage yesterday, and the fairing which will be placed around the NEAR spacecraft is being hoisted for installation in the pad clean room today.

NEAR spacecraft systems checkout is now complete. Yesterday NEAR was transported from NASA Hangar AE on Cape Canaveral Air Station to the Spacecraft Encapsulation and Assembly Facility (SAEF-2) on Kennedy Space Center. There the spacecraft is to be fueled with its control propellant, the solar arrays will be attached and mating to the solid propellant upper stage will be performed. The NEAR/third stage combination is scheduled to be transported to Complex 17 for mating to the Delta II vehicle on Feb. 8.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

January 29, 1996
KSC Contact: George Diller
KSC Release No. 11-96

Note to Editors/News Directors:
NEAR SPACECRAFT PHOTO OPPORTUNITY SCHEDULED AT KSC JAN. 31

The Near Earth Asteroid Rendezvous Spacecraft (NEAR), to be launched next month on a mission to orbit the asteroid EROS, is the subject of a news media photo opportunity on Wednesday, Jan. 31.

The NEAR spacecraft will carry four science instruments to measure the composition and structure of the asteroid and thereby provide fundamental in formation about its size, shape, mineral composition and geology. NEAR is the first spacecraft in NASA's Discovery Program which encompasses a series of lower-cost solar system exploration missions intended to accomplish planetary science by adopting innovative and streamlined approaches using new technology.

Media representatives will be taken inside the clean room at the SAEF-2 spacecraft checkout facility located in the KSC Industrial Area. Those planning to attend are requested to wear long pants and closed-toe shoes. Clean room attire (bunny suits) will be required. Quality control personnel may request cleaning of photographic equipment. No leather or vinyl cases are permitted. Special plastic bags will be provided for photographic accessories. No food, tobacco, lighters, matches, or pocket knives will be permitted inside the clean room. Electronic flash photography is permitted. The lighting in the facility is mercury vapor. Spokesmen from the Applied Physics Lab, developers and builders of the spacecraft, will be available to answer questions and for interviews.

Those needing accreditation should contact the KSC News Center at 407/867-2468 by the close of business Tuesday, Jan. 30. Departure from the KSC News Center for SAEF-2 will be at 10 a.m. on Wednesday, Jan. 31.

NASA's NEAR spacecraft is scheduled for launch aboard a McDonnell Douglas Delta II rocket from Pad B at Launch Complex 17 on Feb. 16 at 3:53 p.m. EST at the opening of a one minute launch window.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

January 30, 1996
KSC Contact: Bruce Buckingham
KSC Release No. 12-96

Note to Editors/News Directors:
TCDT MEDIA OPPORTUNITIES WITH STS-75 CREW SET FOR THIS WEEK

News media representatives will have an opportunity to speak informally with and photograph the Space Shuttle mission STS-75 crew at KSC's pad 39B. The crew will be at KSC this week for the Terminal Countdown Demonstration Test. Media interested in participating in this question and answer session, should be at the KSC Press Site by 11:30 a.m. Thursday for transport to the pad.

Media covering this event should contact the KSC Press Site to obtain the proper badge.

The STS-75 crew will arrive at KSC's Shuttle Landing Facility at about 8:30 p.m. today. No photo opportunity of this event will be available.

On Friday, the crew will depart their quarters at about 7:45 a.m. and begin to board the Shuttle Columbia at about 8:15 a.m. where they will remain through the end of the test. The mock countdown culminates with a simulated main engine cut-off at 11 a.m.

Following TCDT, the crew is scheduled to depart KSC for their homes in Houston for final flight preparations.

Columbia is now targeted for launch on Feb. 22. Mission STS-75 will feature the second flight the Tethered Satellite System and the United States Microgravity Payload.

Crew members for mission STS-75 are: Commander Andrew Allen; Pilot Scott Horowitz; Payload Commander Franklin Chang-Diaz; Mission Specialists Jeffrey Hoffman, Claude Nicollier and Maurizio Cheli; and Payload Specialist Umberto Guidoni.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

January 1996
KSC Release No. 13-96

CHALLENGES AND TRIUMPHS MARK BUSY 1995 AT KENNEDY SPACE CENTER

1995 was a year of triumphs and challenges for the NASA Kennedy Space Center, FL. Working as a team, center employees were able to accomplish goals and forge strong bonds of international cooperation in space, despite challenges ranging from wayward forces of nature (hurricanes) to errant wildlife (woodpeckers) to troublesome hardware glitches to volatile economic conditions.

The KSC team successfully prepared for flight, launched and landed seven Space Shuttle missions; oversaw four launches of expendable launch vehicles; and processed for flight numerous payloads.

Kennedy Space Center did its part for the Agency in strengthening and expanding the ties to the international space community. KSC played a pivotal role in preparing for the first U.S.-Russian meetings in space since the Apollo-Soyuz Test Project (ASTP) in 1975. Russian scientists and technicians were a major presence at the Florida space center throughout the year as they worked side-by-side with Kennedy personnel to process for flight hardware such as the Russian-built Docking Module. Cosmonauts trained here to fly on Space Shuttles, and astronaut Norm Thagard became the first American to fly into space on a Russian rocket and spend several months at the Russian Mir Space Station. He was brought back to Kennedy by the Space Shuttle Atlantis on Mission STS-71. NASA added significantly to its store of space flight experience with two spacewalks, a flyaround of Mir, and two dockings of the Shuttle with Mir, all in preparation for the assembly and maintenance of the International Space Station.

All of these history-making events occurred at a time of great economic uncertainty throughout the Agency. Kennedy Space Center was affected at least equally as much as any NASA field center by the announcement of a major downscaling and restructuring of the Agency, an unprecedented two furloughs of government workers about a month apart, and the second buyout of civil service workers in less than a year.

KSC, in particular, will be affected by the Agency's decision to pursue a non- competitive contract with United Space Alliance to eventually assume responsibility for Space Shuttle operations. Kennedy continued to play a major role in the Florida economy, providing a $1.31 billion boost to the state in 1995 in the form of contracts, purchases and civil service personnel compensations.

Even in the midst of economic turmoil, Kennedy received national recognition of its leadership in quality management as a winner of the 1995 President's Quality Improvement Prototype Award. In his first year as center director, Jay Honeycutt demonstrated his leadership and commitment to quality and teamwork, while emphasizing safety as the highest priority.

Shuttle Missions

Besides the processing, launching and landing of all Space Shuttles and their cargo, Kennedy Space Center personnel figured prominently in advancing human space flight and exploration in 1995. STS-71, the first Shuttle-Mir docking, also was the 100th U.S. human launch, all of which were coordinated over the last 34 years by the launch team operating out of KSC or neighboring Cape Canaveral Air Station (CCAS).

By the end of 1995, 72 Space Shuttle missions had been completed since the program began in 1981; NASA had successfully conducted almost twice as many missions since the Shuttle's return-to-flight as the Agency had achieved before the 51-L accident nearly 10 years ago.

While five of the seven launches did not occur on the targeted date for various reasons, all of the liftoffs were within a minute of the opening of the launch window, including the two Shuttle-Mir docking missions which had launch windows of only a few minutes duration. Northern Flicker Woodpeckers provided the most unusual reason for postponing a mission when they poked about 200 holes in the foam insulation of Discovery's external tank scheduled to fly on Mission STS-70. Discovery had to roll back to the Vehicle Assembly Building (VAB) for repairs. A Kennedy team developed a deterrent plan to prevent future bird damage.

Kennedy workers achieved the quickest turnaround to date between Shuttle missions with only six days elapsing from the landing of Atlantis on STS-71 and the launch of STS-70. STS-67 on Endeavour in March was the longest Shuttle flight to date at more than 16 1/2 days.

Frustration turned to jubilation when STS-73 finally lifted off in October after six scrubs caused by hardware problems and weather effects of Hurricane Opal, tying that mission with STS 61-C in 1986 for the most number of launch scrubs.

Making a direct hit on Brevard County, Hurricane Erin gave most space center workers a day off Aug. 2. The Space Shuttle Endeavour, awaiting the STS-69 launch at Launch Pad 39A, was rolled back to the VAB for safekeeping a day earlier.

Six out of seven of the 1995 missions landed at Kennedy, bringing the total number of Florida orbiter landings to 27. Discovery became the first orbiter to complete 20 missions on STS-63, the initial Shuttle flight of the year. After its second flight in 1995, STS-70 in July, Discovery was transported to California for periodic refurbishment and modification. Orbiter Columbia returned to KSC in April after completing a six-month overhaul and maintenance period at the Rockwell facility in Palmdale, CA.

Other KSC highlights:

Biological Research in Container (BRIC-03) on STS-63 was the first Shuttle biological experiment ever to be proposed, developed, processed for flight and conducted solely by Kennedy employees.

NASA/KSC payload engineer Scott Vangen became the first Kennedy employee to go through the complete astronaut training as a backup Space Shuttle crew member. As the alternate payload specialist on STS-67, he contributed greatly to the mission by serving as the chief communications liaison between the flight crew operating the Astro-2 payload on orbit and the team of scientific investigators on the ground. While he was performing that role, Kathryn Hire, the first Kennedy employee to be selected as an astronaut candidate, was starting her training at the NASA Johnson Space Center, Houston, TX.

The Mir-2 Docking Module (DM) was formally transferred to NASA at KSC at an August ceremony, three months before it flew on STS-74. The DM was the first hardware to be processed in KSC's Space Station Processing Facility.

Kennedy engineers and technicians processed many payloads for flight on the Space Shuttle, including ones which were designed to build on the experience and data obtained from earlier missions. Among these were the SPACEHAB module on its third flight; the Spartan-204 astronomy observatory; the Astro observatory on its second flight; Spacelab experiments to be jointly conducted with the Russians; Spartan-201 on its third of four planned missions; the Wake Shield Facility on its second flight; and the U.S. Microgravity Laboratory on its second mission. The Tracking and Data Relay Satellite-G (TDRS-G), deployed on STS-70, will complete the TDRS network of advanced tracking and communications satellites.

Mission STS-67 in March was the first Space Shuttle launch supported by the new Range Operations Control Center on Cape Canaveral Air Station. It replaced a facility that had supported more than 3,000 manned and unmanned launches since 1951.

NASA and the Kennedy Public Affairs newsroom reached out to the public through the electronic realm of the Internet for the first time in 1995. The Newsroom Home Page was established by the KSC Public Affairs Office and the Countdown Home Page was begun by NASA. There were more than 500,000 accesses to the KSC Newsroom Home Page from its inception in June through early December.

Summary of 1995 Space Shuttle Missions

Mission/ Orbiter	Pad	Launch	Landing	Crew	Primary Payloads/Mission
STS-63 Discovery	39B	Feb. 3	Feb. 11	Wetherbee, Collins, Harris, Foale, Voss, Titov	Mir flyaround; SPACEHAB-3; Spartan-204
STS-67 Endeavour	39A	March 2	March 18	Oswald, Gregory, Jernigan, Lawrence, Grunsfeld, Durrance, Parise	Astro-2
STS-71 Atlantis	39A	June 27	July 7	Gibson, Precourt, Baker, Harbaugh, Dunbar; Embarking to Mir (Mir 19 crew) -- Solovyev, Budarin; Returning from Mir (Mir 18 crew) -- Dezhurov, Strekalov, Thagard	First Shuttle-Mir docking; Spacelab experiments
STS-70 Discovery	39B	July 13	July 22	Henricks, Kregel, Currie, Thomas, Weber	Tracking and Data Relay Satellite-G (TDRS-G)
STS-69 Endeavour	39A	Sept. 7	Sept. 18	Walker, Cockrell, Voss, Gernhardt, Newman	Spartan-201-03; Wake Shield Facility-2
STS-73 Columbia	39B	Oct. 20	Nov. 5	Bowersox, Rominger, Thornton, Coleman, Lopez-Alegria, Leslie, Sacco	U.S. Microgravity Laboratory-2 (USML-2)
STS-74 Atlantis	39A	Nov. 12	Nov. 20	Cameron, Halsell, McArthur, Ross, Hadfield	Second docking of Shuttle-Mir; Mir-2 Docking Module

Expendable Launch Vehicle (ELV) Missions

The Kennedy Space Center expendable launch vehicle team helped to send NASA payloads into space aboard three unmanned rockets from Florida and one from California.

Launched aboard Atlas rockets from Cape Canaveral Air Station (CCAS) were the GOES-J weather satellite in May and the European Space Agency's Solar Heliospheric Observatory (SOHO) in December. GOES-J was the second spacecraft in the new advanced series of geostationary weather satellites for the National Oceanic and Atmospheric Administration (NOAA). Part of the International Solar-Terrestrial Physics Program, the SOHO spacecraft will gather data on the internal structure and outer atmosphere of the sun, and on the origin of the solar wind.

NASA's X-ray Timing Explorer (XTE) was launched on a Delta II rocket from CCAS in December. The orbiting astronomy observatory will study X-rays, including their origin and emission mechanisms, and the physical conditions and evolution of compact X-ray sources within the Milky Way and other galaxies.

The Canadian Space Agency's RADARSAT spacecraft was launched aboard a Delta II rocket from NASA's Space Launch Complex 2 at Vandenberg Air Force Base, CA., in November. A cooperative program of the Canadian Space Agency, NASA and NOAA, RADARSAT carried a powerful radar to "see through" clouds and darkness and produce high-resolution images of the Earth's lands and oceans. Also attached to the Delta II second stage was SURFSAT, used as a test vehicle for NASA in supporting deep space communications research and training of tracking station personnel.

Summary of 1995 Expendable Launch Vehicle (ELV) missions

Vehicle	Pad	Launch Date	Payload
Atlas I (AC-77)	Launch Complex 36B	May 23	Geostationary Operational Environmental Satellite (GOES-J)
Delta II (Delta 229)	Space Launch Complex 2, Vandenberg AFB	Nov. 4	RADARSAT/SURFSAT
Atlas IIAS (AC-121)	Launch Complex 36B	Dec. 2	Solar Heliospheric Observatory (SOHO)
Delta II (Delta 230)	Complex 17, Pad A	Dec. 30	X-ray Timing Explorer (XTE)

Recognition of Quality Accomplishments

In 1995, for the second consecutive year, Kennedy was named a finalist in the President's Quality Award Program. The Florida team was selected as one of five winners nationwide for the Quality Improvement Prototype Award. The prestigious award administered by the Federal Quality Institute (FQI) recognizes federal government organizations that are leading the way in implementing quality management and achieving high standards of customer satisfaction.

Kennedy Space Center also in 1995 was selected as a finalist for the Florida Governor's Sterling Award which recognizes and promotes excellence in achieving the total quality concept in the state's manufacturing, service, health care, public and education sectors.

Not content to rest on its laurels, Kennedy took the lessons learned from both achievements to further improve its quality processes and apply for the Presidential Award for Quality, the FQI program's highest honor which is accorded to no more than two federal organizations each year. KSC was notified that it also is a finalist for that award which is the federal government's equivalent of the Malcolm Baldrige National Quality Award.

Contracts, Construction Projects

A major KSC procurement agreement signed this year was with Delaware North Park Services of Buffalo, NY, which took over management of Spaceport USA on May 1 under a new 10-year concession agreement. The company, a subsidiary of a $1 billion-plus international corporation, offered a bold new plan to overhaul the public visitor program at NASA's largest and best attended visitor center. The agreement has an estimated value of $600 million over the decade.

Delaware North Park Services of Spaceport Inc. plans to spend $35 million on improvements during the first three years. This is in addition to the previously started $35-million project to build the Apollo/Saturn V Center, which is under construction near the Banana Creek launch viewing site. The center will house the Saturn V launch vehicle, now being refurbished outside the Vehicle Assembly Building; other Apollo hardware; and two theaters. These improvements are being done with non- appropriated funds generated by the more than two million visitors annually at Spaceport USA.

Other construction projects undertaken or completed in 1995 include the new Press Site off the Saturn Causeway and the Component Refurbishment Facility on Contractor Road. The most extensive renovations to the astronauts' quarters since the Apollo era were undertaken in the Operations and Checkout Building, and a modification/refurbishment project at Launch Pad 39A was begun.

Technology Transfer Milestones

1995 was a busy and productive year for Kennedy employees involved in technology transfer and partnerships among government, industry and academia.

Among the highlights:

Kennedy took delivery of the Universal Signal Conditioning Amplifier (USCA), the first piece of hardware designed jointly by NASA and the commercial sector.

A KSC-designed hydrogen flame deflector began its final design and development phase though a NASA Space Act technology transfer agreement signed by Kennedy and Scientific Instruments Inc., of West Palm Beach. The detector is designed to help eliminate costly false alarms common with detectors now on the market.

Kennedy became a problem-solving space technology clearinghouse for the state's industry, with establishment of the NASA-KSC/Florida Technology Outreach Program. By early December, Kennedy had received 259 technology transfer agreement requests; 89 of them were completed.

A KSC-designed-and-installed heat reduction system was set up inside a race car under a Space Act agreement between Kennedy Space Center and Penske Racing Inc. The system uses scrap Thermal Protection System (TPS) materials, which are designed to protect the orbiter from extreme heat and cold.

Two Kennedy engineers in collaboration with other software experts around the world developed the WinVN 1.0 software program, which was runner-up for the NASA Software of the Year Award. Developed by Kennedy engineers to expand the KSC Payload Operations Management System, the public domain software has proved useful in a variety of commercial and other applications. More than three million copies are in use. WinVN is available free by downloading from the Internet.

Biomedical Advances

Kennedy Space Center scientists grew a bumper crop of potatoes in a self- contained environment. The 418-day experiment at Hangar L was the most extensive test ever conducted by NASA of a major component of a bioregenerative life support system. The scientists developed a processing system using plant leaves and stems as compost to grow more potatoes.

Besides the BRIC-03 soybean starch metabolism experiment on STS-63, Kennedy plant space biologists participated in a successful potato tuberization investigation on STS-73.

Remembering the Past

Kennedy employees, past and present, remembered and commemorated several anniversaries of past space flight milestones during the year. They recalled the differences -- as well as the somewhat surprising similarities -- between the Shuttle-Mir dockings in 1995 and the Apollo-Soyuz Test Project (ASTP) linkup two decades ago during the Cold War with the then-Soviet Union.

Although ASTP was the NASA showpiece mission of 1975, history also was being made that year by two sturdy spacecraft which ventured forth from neighboring Cape Canaveral Air Station to land on Mars. The two Viking spacecraft were launched less than a month apart by the Kennedy Space Center Unmanned Launch Operations directorate. By their journey's end, the twin Vikings had changed the way we view our solar system.

Perhaps the most celebrated anniversary of 1995 was the 25th-year celebration of the Apollo 13 mission, one of NASA's and KSC's major triumphs. Kennedy Apollo launch team personnel were major players in the efforts that led to the safe return of the three Apollo crewmen who were in grave danger after an oxygen tank exploded and knocked out the onboard air and power systems on the Apollo command service module.

It was only fitting that Kennedy Space Center employees -- and KSC locations -- were used in the popular Ron Howard film, Apollo 13, which was released to coincide with the mission's silver anniversary.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

January 17, 1997
KSC Contact: Bruce Buckingham
KSC Release No. 13-97

TCDT MEDIA OPPORTUNITY WITH STS-82 CREW SET FOR NEXT WEEK

The crew of Space Shuttle mission STS-81 will be at Kennedy Space Center next week for the Terminal Countdown Demonstration Test (TCDT).

The TCDT is held prior to each Space Shuttle flight providing the crew of each mission opportunities to participate in simulated countdown activities at KSC. The TCDT ends with a mock launch countdown culminating in a simulated main engine cutoff. The crew also spends time undergoing emergency egress training exercises at the pad and has an opportunity to view and inspect their mission payloads in the orbiter's payload bay.

The seven-member crew of mission STS-82 is scheduled to arrive at KSC's Shuttle Landing Facility (SLF) at about 2:30 p.m. Monday, Jan. 20. No media opportunity will be available for this event.

On Tuesday, news media representatives will have an opportunity to speak informally with and photograph the crew at Pad 39B. Media interested in participating in this question and answer session should be at the KSC Press Site by 10:30 a.m. Tuesday for transport to the pad.

On Thursday, the crew will take part in simulated launch day events, including entering the orbiter Discovery fully suited as a main engine ignition and cut-off is simulated. Following TCDT, the crew is scheduled to depart KSC for their homes in Houston for final flight preparations.

Discovery is now targeted for launch on Feb. 11 at 3:56 a.m. EST. Mission STS-82 will be the second servicing mission to the Hubble Space Telescope. The mission is expected to last about 10 days.

Crew members for mission STS-82 are: Commander Ken Bowersox, Pilot Scott Horowitz and Mission Specialists Joe Tanner, Steven Hawley, Greg Harbaugh, Mark Lee and Steven Smith.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

February 6, 1996
KSC Release No. 15-96
Note to Editors/News Directors:

NEAR SCHEDULED FOR LAUNCH ABOARD DELTA ROCKET FEB. 16

The launch of NASA's Near Earth Asteroid Rendezvous (NEAR) spacecraft aboard a McDonnell Douglas Delta II rocket is scheduled for Friday, Feb. 16 at the opening of a nominal one-minute launch window which extends from 3:53:06 p.m. to 3:54:06 p.m. EST. The launch window has the flexibility of opening one minute earlier on launch day if collision avoidance or other countdown circumstances dictate. Liftoff will occur from Launch Complex 17 Pad B on Cape Canaveral Air Station. There is a 16-day launch opportunity which extends through Mar. 2.

The NEAR spacecraft has completed processing and was mated to the solid propellant upper stage booster on Monday, Feb. 5. It is scheduled to be mated to the Delta II rocket at Complex 17 on Thursday, Feb. 8.

PRELAUNCH NEWS CONFERENCE

The prelaunch news conference is scheduled for Thursday, Feb. 15 at 12:30 p. m. in the KSC News Center auditorium and will be carried live on NASA Television. Participating in the briefing will be:

Wesley T. Huntress, Jr., Assoc. Admin. for Space Science, NASA Headquarters
Floyd Curington, NASA Launch Manager, Kennedy Space Center
David Mitchell, Launch Services Manager, Goddard Space Flight Center
Tom Coughlin, Mission Director/Project Manager, Applied Physics Laboratory
Dr. Andrew F. Cheng, Project Scientist, Applied Physics Laboratory
Joel Tumbiolo, Launch Weather Officer, Department of the Air Force

Immediately after the news conference there will be a replay of the NEAR mission science briefing on NASA Television.

ACCREDITATION

Those media without permanent accreditation who wish to cover the launch of Delta/NEAR including the prelaunch news conference on L-1 day should send a letter of request to the NASA-KSC News Center on news organization letterhead. It should include name and Social Security number or passport number. Letters should be faxed to 407/867-2692 or addressed to:

NEAR Launch Accreditation
NASA PA-MSB
Kennedy Space Center, FL 32899

NEAR mission badges may be picked up at the KSC News Center from 8 a.m. to 4:30 p.m. on Thursday, Feb. 15. On launch day, Friday, Feb. 16 badges will be also available at Gate 1 on Cape Canaveral Air Station at 2:30 p.m. immediately prior to departure for Press Site 1. A Delta-/NEAR mission badge is required for all media covering the launch from Press Site 1 on launch day. For further information on NEAR launch accreditation contact Lisa Fowler at the NASA News Center at 407/867-2468.

REMOTE CAMERAS

On Thursday, Feb. 15 at 1:30 p.m. following the prelaunch news conference a NASA van will depart from the NASA-KSC News Center for Launch Complex 17 for media photographers who wish to establish remote cameras at the pad.

LAUNCH DAY COVERAGE

On launch day, media covering the event should assemble at Gate 1 on Cape Canaveral Air Station located on State Road 401 at 2:30 p.m. to convoy to Press Site 1. After launch and spacecraft separation, media may leave via Gate 1 only. At this time a post launch news conference is not planned except in the event of a launch contingency.

The NASA News Center at KSC will close at 4:30 p.m. on Friday, Feb. 16. Should the launch be postponed to the weekend, the NASA News Center will not be open on Saturday or Sunday. However, over the weekend, recorded status reports and instructions for the news media will be provided on the KSC codaphone which may be dialed at 407/867-2525. The codaphone will also carry Delta/NEAR prelaunch status reports beginning at L-3 days, on Tuesday, Feb. 13.

NASA TELEVISION AND V CIRCUIT COVERAGE OF NEAR

NASA Television will carry the prelaunch news conference starting at 12:30 p.m. on Thursday, Feb. 15. On launch day, countdown coverage will begin at 2:30 p.m. and continue through spacecraft separation. NASA Television is available on Spacenet 2, transponder 5, channel 9 located at 69 degrees West longitude.

Audio only of all NEAR activities will also be available on the "V" circuits which may be dialed directly at 407/867-1220, 1240 or 1260.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

February 2, 1996
KSC Contact: Joel Wells
KSC Release No. 16-96

NASA TEAMS WITH INDUSTRY TO FIGHT STRUCTURAL CORROSION PROBLEM

Structural corrosion is a multi-billion dollar problem in the United States and facilities at NASA's Kennedy Space Center are far from immune. NASA KSC and Surtreat Southeast, Inc., of Cape Canaveral, FL, signed a Space Act Agreement on Feb. 2 to test a possible solution.

KSC materials scientists have been researching this problem for about two years. Their studies have focused on an electrical treatment known as electromigration. This process sends corrosion inhibiting ions to the rebar or steel bars imbedded in a concrete slab. The objective is to prevent the rebar from rusting, corroding and separating from the concrete.

With the help of Florida's Technological Research and Development Authority, Surtreat Southeast approached KSC with another option. The Technological Research and Development Authority is an independent state agency that partners with Kennedy in many technology transfer initiatives.

Surtreat Southeast presented an anti-corrosive chemical product called Surtreat GPHP. The chemical is applied to the surface of a corroding concrete slab and then seeps through to the rebar, coating it and preventing further corrosion. "It corrects the chemical imbalance that causes the rebar to corrode. Traditional structural repair methods only last a couple of years," explained Jim Emory, President of Surtreat Southeast.

Dr. Rupert Lee, NASA project engineer, calls the opportunity to combine the electrical and chemical processes a dream come true. "Any breakthrough in corrosion mitigation technology will have a significant impact on the integrity of this nation's infrastructure," said Lee.

Surtreat GPHP inventor Robert Walde said, "Combining NASA and Surtreat technologies may result in a unique process with broad corrosion control applications and could save NASA and others a lot of money."

The Space Act Agreement, signed by Gene Thomas, KSC's Deputy Center Director and Emory requires no transfer of funds. "This agreement is a commitment of resources other than funding. It's a mutually beneficial relationship between KSC and private industry," said Kristen Riley, KSC Dual Use Program Manager. The Dual Use Program is part of NASA's technology transfer and commercialization effort.

Surtreat will provide the corrosion inhibiting chemical and concrete testing slabs to NASA along with technical and manpower support as needed. Kennedy will provide testing specifications and procedures, prepare the test slabs with the Surtreat chemical, and environmentally test the chemical.

KSC materials scientists will also consider the applicability of the chemical treatment to the electromigration process and prepare a report on its effectiveness. The testing process lasts about 12 months.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

February 15, 1996
KSC Release No. 17-96

Note to Editors/News Directors:
POLAR TO BE LAUNCHED AT VANDENBERG AIR FORCE BASE FEB. 22

The launch of NASA's Polar spacecraft aboard a McDonnell Douglas Delta II rocket is scheduled for Thursday, Feb. 22 at the opening of a 25-minute launch window which extends from 3:22 - 3:47 a.m. PST. Liftoff will occur from NASA's Space Launch Complex 2 at Vandenberg Air Force Base, CA. The Polar spacecraft carries eleven instruments to understand the physical effects of solar activity on interplanetary space and the Earth's space environment.

The prelaunch news conference is scheduled for Wednesday, Feb. 21 at 11 a.m. PST and will be carried live on NASA Television. Participating in the briefing will be:

Floyd Curington, NASA Launch Manager, Kennedy Space Center
David Mitchell, Launch Services Manager, Goddard Space Flight Center
Donald Crosby, Polar Mission Director, Goddard Space Flight Center
Dr. George Withbroe, Division Director, Space Physics Division Flight Center
Capt. John Shattuck, Launch Weather Officer, USAF 30th Weather Squadron

Media desiring to cover the prelaunch news conference should meet at the south gate of Vandenberg Air Force Base on California State Road 246 at 10:30 a.m. for escort to the NASA Vandenberg Resident Office.

REMOTE CAMERAS

On Wednesday, Feb. 21 at 11:45 a.m. immediately following the prelaunch news conference, a van will depart from the NASA Vandenberg Resident Office for Space Launch Complex 2 for media photographers who wish to establish remote cameras at the pad.

DELTA/POLAR TOWER ROLLBACK PHOTO OPPORTUNITY

On Wednesday evening, Feb. 21 there will be an opportunity for the media to witness and photograph the rollback of the mobile service tower, or gantry which encloses the Delta vehicle, as it is moved away from the rocket in preparation for launch. Those wishing to participate should be at the south Gate of Vandenberg Air Force Base at 6:15 p.m. for transportation to NASA Space Launch Complex 2.

ACCREDITATION

Media desiring accreditation information should contact the Air Force at:

Public Affairs office
Vandenberg Air Force Base
Telephone: 805/734-8232, Ext. 63595
FAX: 805/734-8232, Ext. 68303
E-mail: pubaffairs@plans.vafb.af.mil

Delta/Polar access badges will be issued upon entry to Vandenberg Air Force Base and will be valid for the prelaunch news conference and other activities on L-1 day. This badge will also be issued for access to cover the launch and the post-launch news conference.

LAUNCH DAY PRESS COVERAGE

On launch day, media representatives covering the event should be at the Vandenberg Air Force Base main gate at 2:15 a.m. to convoy to the press viewing site located on north Vandenberg Air Force Base.

A post-launch news conference will be held following the launch. Those wishing to attend should meet at the south gate of Vandenberg Air Force Base on California State Road 246 at 5 a.m. and will be escorted to the NASA Vandenberg Resident Office located on south Vandenberg Air Force Base.

NASA TELEVISION COVERAGE OF DELTA/POLAR

Feb. 21 10 a.m. PST: video tape replay of the Polar Mission Science Briefing. Feb. 21 11 a.m. PST Delta/Polar prelaunch news conference (live).

Feb. 22 2 a.m. PST: countdown coverage and launch commetary begins

Feb. 22 5:30 a.m. PST: post-launch news conference

NASA Television is available on Spacenet 2, Transponder 5, channel 9 located at 69 degrees West longitude.

Audio only of all Delta/Polar activities will also be available on the "V" circuits which may be dialed directly at 407/867-1220, 1240 or 1260.

DELTA/POLAR NEWS CENTER

The Delta/Polar News Center at the NASA Vandenberg Resident Office will be staffed starting two days before launch on February 20 and may be reached between 8 a.m. and 5 p.m. at 805/734-8232, Ext. 5-3051. A recorded status report will also be available also beginning on L-2 days by dialing 805/734-8232, Ext. 5-3456.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

February 9, 1996
KSC Release No. 18-96

Note to Editors/News Directors:
NASA MANAGERS SET FEBRUARY 22 AS LAUNCH DATE FOR 75TH SPACE SHUTTLE MISSION

NASA managers today set February 22, 1996 as the official launch date for Space Shuttle Columbia on Mission STS-75. The mission will be highlighted by a 12 1/2 mile deployment and retrieval of a tethered satellite that is designed to investigate new sources of spacecraft power and ways to study Earth's upper atmosphere. The STS-75 mission also will see the third flight of the United States Microgravity Payload which continues research efforts into development of new materials and processes that could lead to a new generation of computers, electronics and metals.

Launch of Columbia on February 22 is planned for 3:18 p.m. EST from Kennedy Space Center's Launch Complex 39-B. The STS-75 mission is scheduled to last 13 days, 16 hours, 14 minutes. An on time launch on February 22 would produce a landing at Kennedy Space Center's Shuttle Landing Facility on March 7 at 7:32 a.m. EST.

The STS-75 mission will be the 19th mission for Columbia and the 75th for the Space Shuttle system.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

February 14, 1996
KSC Release No. 20-96

Note to Editors/News Editors
DELTA/NEAR TOWER ROLLBACK PHOTO OPPORTUNITY SET FEB. 16; REPLAY PLANNED ON NASA TELEVISION

A photo opportunity will be provided on Friday morning for the news media to photograph the Delta/NEAR rocket at Complex 17. Media representatives will be taken to the pad to witness the rollback of the mobile service tower from around the rocket.

Those wishing to attend will convoy from Gate 1 of Cape Canaveral Air Station on SR 401 to Launch Complex 17 at 8:15 a.m.

A video replay of mobile service tower rollback will be provided on NASA Television immediately afterwards at 10 a.m. and again during the NASA Video File at 12 Noon EST.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

February 15, 1996
KSC Release No. 21-96

SPACE SHUTTLE MISSION STS-75 LAUNCH COUNTDOWN TO BEGIN MONDAY

The countdown for launch of the Space Shuttle Columbia on mission STS-75 is set to begin Monday, Feb. 19 at 4 p.m. EST, at the T-43 hour mark. The KSC launch team is conducting the countdown from Firing Room 1 of the Launch Control Center.

The countdown includes 28 hours and 18 minutes of built-in hold time leading to the opening of the launch window at 3:18 p.m. (EST) on Feb. 22. The launch window extends for 2 hours, 30 minutes.

STS-75 is the second Space Shuttle mission for 1996. It will be the 19th flight of the Shuttle Columbia and the 75th flight overall in NASA's Space Shuttle program.

The primary objectives of mission STS-75 are to conduct scientific investigations of the Tethered Satellite System (TSS-1R) and the United States Microgravity Payload (USMP-3).

Columbia last flew in October/November 1995 on Space Shuttle mission STS-73. Following a KSC landing, Columbia was transported to Orbiter Processing Facility (OPF) bay 2 in preparation for this mission. Columbia was rolled out of the OPF on Jan. 23 and mated with the external tank and solid rocket boosters in the Vehicle Assembly Building. The Shuttle stack was then transported to Pad 39-B on Jan. 29.

The STS-75 crew are: Commander Andy Allen; Pilot Scott Horowitz; Mission Specialists Jeff Hoffman, Maurizo Cheli, Claude Nicollier, and Franklin Chang-Diaz; and Payload Specialist Umberto Guidoni.

The crew is scheduled to arrive at KSC at about 3:30 p.m. Monday. Their activities at KSC prior to launch include equipment fit checks, medical examinations and opportunities to fly in the Shuttle Training Aircraft.

(end of general release)

COUNTDOWN MILESTONES All times Eastern

Launch - 3 Days (Monday, Feb. 19)

* Prepare for the start of the STS-75 launch countdown
* Perform the call-to-stations.
* All members of the launch team report to their respective consoles in Firing Room 1 in the Launch Control Center for the start of the countdown.
* Countdown begins at 4 p.m. EST at the T-43 hour mark
* Start preparations for servicing fuel cell storage tanks
* Begin final vehicle and facility close-outs for launch
* Begin stowage of flight crew equipment

Launch - 2 Days (Tuesday, Feb. 20)

* Load backup flight system software into Columbia's general purpose computers
* Check out back-up flight systems
* Inspect the orbiter's mid-deck and flight-deck and remove crew module platforms

* Review flight software stored in mass memory units and display systems

Enter first planned built-in hold at T-27 hours for duration of four hours (8 a.m.)

* Clear launch pad of all personnel
* Perform test of the vehicle's pyrotechnic initiator controllers

Resume countdown (12 noon)

* Begin the 12-hour operation to load cryogenic reactants into Columbia's fuel cell storage tanks.

Enter eight-hour built-in hold at T-19 hours (8 p.m.)

* After cryogenic loading operations, re-open the pad
* Resume orbiter and ground support equipment close-outs
* Begin installation of mission specialists' seats in crew cabin

Launch - 1 Day (Wednesday, Feb. 21)

Resume countdown (4 a.m.)

* Start final preparations of the Shuttle's three main engines for main propellant tanking and flight
* Activate flight controls and navigation systems
* Close-out the tail service masts on the mobile launcher platform
* Perform orbiter ascent switch list in crew cabin
* Install film in numerous cameras on the launch pad
* Activate the orbiter's communications systems
* Activate orbiter's inertial measurement units

Enter planned hold at T-11 hours for 12 hours, 58 minutes (12 noon)

* Demate orbiter mid-body umbilical unit and retract into Fixed Service Structure
* Fill pad sound suppression system water tank
* Safety personnel conduct debris walkdown
* Move Rotating Service Structure (RSS) to the park position (7 p.m.)
* Continue final stowage of mid-deck experiments and flight crew equipment

Launch Day (Thursday, Feb. 22)

Resume countdown (12:58 a.m.)

* Start fuel cell flow-through purge
* Install time-critical flight crew equipment
* Perform pre-ingress switch list
* Activate the orbiter's fuel cells
* Configure communications at Mission Control in Houston for launch
* Activate the solid rocket boosters joint heaters
* Clear the blast danger area of all non-essential personnel
* Switch Columbia's purge air to gaseous nitrogen
* Activate auxiliary power unit heaters

Enter planned one-hour built-in hold at T-6 hours (5:58 a.m.)

* Launch team verifies no violations of launch commit criteria prior to loading cryogenics into external tank
* Verify pad is clear of all personnel

Resume countdown (6:58 a.m.)

* Begin loading the external tank with cryogenic propellants (6:58 a.m.)
* Perform inertial measurement unit preflight calibration
* Align Merritt Island Launch Area (MILA) tracking antennas
* Complete filling the external tank with its flight load of liquid hydrogen and liquid oxygen propellants (10 a.m.)

Enter planned two-hour built-in hold at T-3 hours (9:58 a.m.)

* Perform open loop test with Eastern Range
* Conduct gimbal profile checks of orbital maneuvering system engines
* Close-out crew and Final Inspection Team proceed to Launch Pad 39-B
* Flight crew departs Operations and Checkout Building for Launch Pad 39-B (11:53 a.m.)

Resume countdown at T-3 hours (11:58 a.m.)

* Complete close-out preparations in the white room
* Check cockpit switch configurations
* Flight crew enters orbiter
* Astronauts perform air-to-ground voice checks with Launch Control and Mission Control
* Close Columbia's crew hatch
* Begin Eastern Range final network open loop command checks
* Perform hatch seal and cabin leak checks
* Complete white room close-out
* Close-out crew moves to fallback area
* Primary ascent guidance data is transferred to the backup flight system

Enter planned 10-minute built-in hold at T-20 minutes (2:38 p.m.)

* NASA Test Director conducts final launch team briefings

Resume countdown (2:48 p.m.)

* Transition the orbiter's onboard computers to launch configuration
* Start fuel cell thermal conditioning
* Close orbiter cabin vent valves
* Transition backup flight system to launch configuration

Enter final 10-minute built-in hold at T-9 minutes (2:59 p.m.)

* Launch Director, Mission Management Team and NASA Test Director conduct final polls for go/no go to launch

Resume countdown at T-9 minutes (3:09 p.m.)

* Start automatic ground launch sequencer (T-9:00 minutes)
* Retract orbiter crew access arm (T-7:30)
* Start mission recorders (T-5:30)
* Start Auxiliary Power Units (T-5:00)
* Arm SRB and ET range safety safe and arm devices (T-5:00)
* Start liquid oxygen drainback (T-4:55)
* Start orbiter aerosurface profile test (T-3:55)
* Start main engine gimbal profile test (T-3:30)
* Pressurize liquid oxygen tank (T-2:55)
* Begin retraction of the gaseous oxygen vent arm (T-2:55)
* Fuel cells to internal reactants (T-2:35)

* Pressurize liquid hydrogen tank (T-1:57)
* Deactivate SRB joint heaters (T-1:00)
* Orbiter transfers from ground to internal power (T-0:50 seconds)
* Ground Launch Sequencer go for auto sequence start (T-0:31 seconds)
* Ignition of three Space Shuttle main engines (T-6.6 seconds)
* SRB ignition and liftoff (T-0)

SUMMARY OF BUILT-IN HOLDS FOR STS-75

T-TIME	LENGTH OF HOLD	HOLD BEGINS	HOLD ENDS
T-27 hours	4 hours	8:00 a.m. Tuesday	12:00 noon Tuesday
T-19 hours	8 hours	8:00 p.m. Tuesday	4:00 a.m. Wednesday
T-11 hours	12 hours, 58 minutes	12:00 noon Wednesday	12:58 a.m. Thursday
T-6 hours	1 hour	5:58 a.m. Thursday	6:58 a.m. Thursday
T-3 hours	2 hours	9:58 a.m. Thursday	11:58 a.m. Thursday
T-20 minutes	10 minutes	2:38 p.m. Thursday	2:48 p.m. Thursday
T-9 minutes	10 minutes	2:59 p.m. Thursday	3:09 p.m. Thursday

CREW FOR MISSION STS-75

Andy Allen	Commander (CDR)	White Team
Scott Horowitz	Pilot (PLT)	Red Team
Jeff Hoffman	Mission Specialist (MS1)	White Team
Maurizo Cheli	Mission Specialist (MS2)	Red Team
Claude Nicollier	Mission Specialist (MS3)	Blue Team
Franklin Chang-Diaz	Mission Specialist (MS4)	Blue Team
Umberto Guidoni	Payload Specialist (PS1)	Red Team

SUMMARY OF STS-75 LAUNCH DAY CREW ACTIVITIES

Thursday, Feb. 22

	3:00 a.m.	Wake up (Red Team)
	3:30 a.m.	Breakfast (Red Team)
	7:30 a.m.	Wake up (White Team)
	8:00 a.m.	Breakfast (White Team) and Lunch (Red Team)
	10:13 a.m.	Wake up (Blue Team)
*	10:43 a.m.	Crew Photo and Meal (Red, White and Blue Teams)
	11:13 a.m.	Weather briefing (CDR, PLT, MS2)
	11:13 a.m.	Don launch and entry suits (MS1, MS3, MS4, PS1)
	11:23 a.m.	Don launch and entry suits (CDR, PLT, MS2)
*	11:40 a.m.	Crew suiting photo
*	11:53 a.m.	Depart for Launch Pad 39-B
*	12:33 p.m.	Arrive at white room and begin orbiter ingress
*	1:48 p.m.	Close crew hatch
*	3:18 p.m.	Launch

* Televised events (times may vary slightly)
All times Eastern

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

February 16, 1996
KSC Release No. 22-96

Notice to Editors/News Directors:
MISSION STS-75 EVENTS, NEWS CENTER OPERATING HOURS SET

News conferences, events and operating hours for KSC's News Center have been set for the Feb. 22 launch of the Space Shuttle Columbia on Mission STS-75, the 75th launch in the Shuttle program. These events are scheduled to be carried live on NASA TV (please refer to the STS-75 TV schedule for exact times).

The seven STS-75 crew members who will be launched aboard Columbia are scheduled to arrive at KSC on Monday, Feb. 19, at 3:30 p.m. EST. News media representatives wishing to cover the event must be at the News Center by 2:30 p.m. Monday (in the event of a possible early crew arrival) for transportation to the Shuttle Landing Facility. This event will be carried live on NASA Television. News media representatives needing credentials for crew arrival should call the News Center at 867-2468 to make arrangements.

At 4 p.m. EST Monday, the launch countdown will begin at the T-43-hour mark. Launch is currently set for 3:18 p.m. EST on Thursday, Feb. 22. The launch window is open for 2 hours, 30 minutes.

The 1996 news media annual credentials will be issued to properly authorized individuals at the Pass and Identification Building on State Road 3 on Merritt Island next week.

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Information about the countdown and mission can be accessed electronically via the Internet at:
http://www.ksc.nasa.gov/shuttle/countdown/ and at http://shuttle.nasa.gov/

KSC press releases and other information are available at the KSC PAO Home Page at:
http://www-pao.ksc.nasa.gov/kscpao/kscpao.htm

STS-75 BRIEFING SCHEDULE
(all times are in EST and conferences are held inside the KSC Press Site auditorium)

L-3 Days - Monday, Feb. 19

Countdown Status Briefing----------1:30 p.m.
(will not be live on NASA TV. Local only inside News Facility)
Debbie Frostrom, NASA Test Director

STS-75 fight crew arrival (live on NASA TV) ----------3:30 p.m.

Launch countdown begins---------- 4:00 p.m.

L-2 Days - Tuesday, Feb. 20

Countdown Status Briefing----------9:00 a.m.
Bill Dowdell, Shuttle Test Director
Glenn Snyder, STS-75 Payload Manager
Ed Priselac, Shuttle Weather Officer

L - 1 Day - Wednesday, Feb. 21

Pre-launch News Conference----------10:00 a.m.
(or immediately following the management team's meeting)

Tommy Holloway, NASA Shuttle Program Manager, Johnson Space Center
Robert Rhome, Office of Life & Microgravity Sciences, NASA Headquarters
Dr. Wes Huntess, Office of Space Science, NASA Headquarters
Dr. Giovanni Rum, Dir. of Space Station & Science Missions, ASI
Prof. Mario Grossi, Italian National Research Center
Jean-Jaques Dordain, Asst. Dir., Strategy, Planning & International Policy, ESA
Bob Sieck, Director of Shuttle Operations, KSC
Capt. James Sardonia, Launch Weather Officer

Replay of STS-75 crew, mission briefings ----------11:00 a.m.

Launch Day - Thursday, Feb. 22

NASA Television live launch programming begins----------10:00 a.m.

Launch of Columbia ----------3:18 p.m.

Post-launch press conference----------L + 1 hour
Loren Shriver, manager of Launch Integration for the Space Shuttle Program
James Harrington, KSC Launch Director

NASA Television is carried on Spacenet 2, transponder 5, channel 9, C-band, located at 69 degrees West longitude, with horizontal polarization. Frequency is 3880 MHz with audio on 6.8 MHz.

KSC News Center office hours for STS-75
(hours may be adjusted for in-flight events)

(Launch minus 3 days) Monday, Feb. 19	8:00 a.m. - 4:30 p.m.
(Launch minus 2 days) Tuesday, Feb. 20	8:00 a.m. - 4:30 p.m.
(Launch minus 1 day) Wednesday, Feb. 21	7:00 a.m. - around-the-
(Launch day) Flight day 1, Thursday, Feb. 22	clock - 4:30 p.m.
Flight Day 2, Friday, Feb. 23	8:00 a.m. - 4:30 p.m.
Flight day 3, Saturday, Feb. 24 (TSS Deploy)	2:30 p.m. - 6:30 p.m.
Flight day 4, Sunday, Feb. 25	CLOSED
Flight days 5 - 9, Feb. 26-Mar. 1	8:00 a.m. - 4:30 p.m.
Flight days 10-11, Mar. 2-3	CLOSED
Flight day 12, Monday, Mar. 4	8:00 a.m. - 4:30 p.m.
Flight day 13, Tuesday, Mar. 5	6:00 a.m. - 4:30 p.m.
Flight day 14, Wednesday, Mar. 6	8:00 a.m. - 4:30 p.m.
Flight day 15, Thursday, Mar. 7 (Landing)	4:30 a.m. - 4:30 p.m.

(Times may vary and be adjusted in real time depending on mission events and timelines.)

News media representatives may obtain STS-75 mission credentials and 1996 annual credentials at the Pass and Identification Building at Gate 2 on State Road 3, Merritt Island, during the following times:

*Monday, Feb. 19 -- 8 a.m. to 4:30 p.m.
*Tuesday, Feb. 20 -- 8 a.m. to 4:30 p.m.
*Wednesday, Feb. 21 -- 8 a.m. to 4:30 p.m.
Thursday, Feb. 22 -- 8 a.m. to 2:30 p.m.

News media with annual Shuttle credentials are reminded to sign the log book at the photo and interview counter in the News Center.

NEWS MEDIA ARE REQUIRED TO BE UNDER PUBLIC AFFAIRS ESCORT EXCEPT WHEN DRIVING TO THE NEWS CENTER OR THE COMPLEX 39 CAFETERIA. IN ADDITION, NEWS MEDIA ARE ALLOWED ON CENTER ONLY WHEN THE NEWS CENTER IS OPEN.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

March 5, 1996
KSC Release No. 24-96

KSC AWARDS $1.8 MILLION CONTRACT FOR ORBITER INSULATION IMPROVEMENTS

NASA's Kennedy Space Center awarded a $1.8 million contract to Albany International Research Company on Feb. 13 to manufacture insulation materials needed to increase the orbiter's capability.

The contract calls for 6,560 square feet of a thinner Felt Reusable Surface Insulation (FRSI). Installing the lighter FRSI will increase the Shuttle's payload capacity for future space station-related missions.

The FRSI is made of a felt material that is coated with a silicon rubber. It protects the orbiter from the extreme temperatures experienced during launch and reentry into the Earth's atmosphere.

NASA decided to modify the orbiter's thermal protection system (TPS) in March of 1994 following a thorough study. TPS data gathered from more than 70 Shuttle flights gave strong support to their decision.

KSC proposed that the lighter FRSI be placed on the Shuttle's elevons, wings, midbody, forward canopy, aft sidewalls, payload bay doors and orbital maneuvering system pods. The Space Shuttle Discovery is currently being modified in Palmdale, CA. The rest of the fleet will undergo similar modifications.

Albany International Research Company is the original manufacturer of the material used in the Space Shuttle's TPS. Their firm-fixed price contract has a performance period that runs through Aug. 30, 1997.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

March 1, 1996
KSC Release No. 25-96

KSC EMPLOYEES TO CARRY OLYMPIC TORCH

Kennedy Space Center will be well-represented when the Olympic flame passes through Brevard County and the space center on its way to the 1996 Olympic Games in Atlanta. At least 22 KSC employees will be among those carrying the flame through Central Florida after it begins its journey in Los Angeles.

The number of KSC employees selected surprised even the organizers of the event.

"We had a disproportionate number selected from Brevard," said Judy McGinty, director of Community Initiative and Fund Raising for the United Way of Brevard County. The United Way agency was used nationwide as the local coordinating group for the torch teams.

McGinty said the selection process was complicated by the fact that candidates from Brevard, Orange, Seminole and Lake counties were all chosen by a team of 24 judges at a central judging site in Orlando. Two-thirds of the more than 400 nominations received at that location were sent in from Brevard County, McGinty said.

Olympics officials told the United Way that a number of the positions would be allotted to KSC employees to carry the flame through the center. Application forms were distributed to all KSC employees, who were encouraged to nominate themselves or others for the positions.

Torch bearers were selected on the basis of outstanding contributions to the community.

Team members have been given T-shirts and hats with the Olympic emblem but won't be told until a few weeks before the event where exactly they will carry the flame.

The relay begins April 27 in Los Angeles after the flame is delivered from Greece. It is scheduled to arrive in Atlanta July 19.

Kennedy Space Center employees selected include: NASA employees Robert Nagy Jr., Lee Davies, Joanne Maceo, Jill Burkard, Jane Hodges and Loren Shriver; EG&G Florida Inc. employees Thomas Arceneaux, Kathleen Weaver and Maria Emmick; Lockheed Martin Space Operations Co. employees Michael Phillips, Claude Overfelt, Robin Seymour, Mike Chappell, Marty Winkel, Sara Delmonte, Tom Grimm and Michael McCulley; McDonnell Douglas Space and Defense Systems employees Donna Hoven and Thomas Anderson; Rockwell International Corp. employees Theresa Clifton and Richard Unrue; and Analysis & Technology Inc. employee Deborah Prongue.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

March 1, 1996
KSC Release No. 26-96

KSC ESTABLISHES TEACHER RESOURCE CENTER IN PUERTO RICO

Kennedy Space Center has accomplished a long-sought goal -- the establishment of a Regional Teacher Resource Center (RTRC) in Puerto Rico. The first KSC-sponsored RTRC, in Marietta, GA, opened in 1993.

"Teacher groups in Puerto Rico who can get Air National Guard transportation have been flying to KSC for years, and we send our two Spacemobile lecturers/demonstrators there as often as we can," said NASA/KSC Education Services Chief Steve Dutczak. "But Puerto Rico has a population of almost 3.5 million, and more than 2,500 schools. With numbers like those, we needed a local facility that was available to a much larger number of teachers."

All NASA centers, as well as the Jet Propulsion Laboratory and the Wallops Flight Facility, offer teacher resource centers to serve educators in their region. But where a region is large and diverse -- Kennedy serves the Virgin Islands in addition to Florida, Georgia and Puerto Rico -- RTRC's bring NASA educational resources closer to home.

"We are delighted to have a permanent NASA presence in Puerto Rico," said Maria Schwarz, who will help operate the new facility at the University of Puerto Rico in Mayaguez. "The teachers in our local schools are very interested in the space program, but transportation costs are too high to visit the states very often. Now we can supply NASA publications, videos and slides to teachers at very little expense. We think this will create a much stronger interest in science and math in the school systems here."

Plans are already under way to open a subsidiary RTRC in Jayuya, an isolated mountainous province in central Puerto Rico. Other subsidiaries are being considered for the future.

"We can help open the door to good careers for the young people of Puerto Rico," said Dutczak. "And that's what education is all about."

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

March 1, 1996
KSC Release No. 27-96

KSC BRANCH CHIEF NAMED ENGINEER OF THE YEAR

James T. Brown, chief of the NASA/KSC Logistics Services Branch, has been named engineer of the year by the Canaveral Council of Technical Societies and Florida Engineering Society.

The award was presented at the council's engineering banquet Feb. 24 at the Cocoa Beach Holiday Inn Resort.

Prior to his appointment as branch chief in 1995, Brown served as a technical staff assistant for the Logistics Directorate from 1993 to 1995; as an aerospace engineer at the Johnson Space Center Resident Office at Kennedy Space Center from 1987 to 1993; and as an electronics engineer for NASA's Mission Operations Directorate at Johnson Space Center from 1984 to 1987.

Brown has a Ph.D. in industrial engineering from the University of Central Florida, a master's degree in engineering management from the Florida Institute of Technology, and a bachelor's degree in electrical engineering from Tennessee State University.

He has served as an adjunct faculty member at the Florida Institute of Technology in Melbourne since 1994.

Other honors Brown has received include the NASA Certificate of Commendation, the Society of Logistics Engineers Specialty Award and the NASA Special Achievement Award. Additionally, Brown and Robert Armacost of the University of Central Florida (UCF) have developed a new project scheduling algorithm for which UCF has applied for patent protection.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

March 1, 1996
KSC Release No. 28-96

Note to Editors/News Directors:
TCDT MEDIA OPPORTUNITY WITH STS-76 CREW SET FOR NEXT WEEK

News media representatives will have an opportunity to speak informally with and photograph the crew of Space Shuttle mission STS-76 on Tuesday, March 5, during the Terminal Countdown Demonstration Test (TCDT) at Kennedy Space Center.

Media interested in speaking with the crew during this question and answer session at Pad 39B, should be at the KSC Press Site by 2:30 p.m. Tuesday for transport to the pad. (This event will be carried live on NASA TV beginning at about 3:30 p.m.)

Media covering the event should contact the KSC Press Site to obtain the proper badge.

The six-member crew is scheduled to arrive at KSC's Shuttle Landing Facility on Sunday. No photo opportunity is available for crew arrival.

On Wednesday, the crew will depart their quarters at about 7:45 a.m. and begin to board the Shuttle Atlantis at about 8:15 a.m. where they will remain through the end of the test. The mock countdown culminates with a simulated main engine cut-off at 11 a.m. Wednesday.

Following TCDT, the crew is scheduled to depart KSC for their homes in Houston for final flight preparations.

Atlantis is now targeted for launch on March 21 at about 3:35 a.m. Mission STS-76 will feature the third docking of the Space Shuttle with Russia's Mir Space Station.

Crew members for mission STS-76 are: Commander Kevin Chilton; Pilot Richard Searfoss; and Mission Specialists Shannon Lucid, Linda Godwin, Michael (Rich) Clifford and Ronald Sega.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

March 6, 1996
KSC Release No. 29-96

Note to Editors/News Directors:
NASA JOINS WITH INDUSTRY TO DEVELOP INNOVATIVE FLOW METER

An innovative, KSC-designed flow meter that could improve production in the cryogenic fuels, petroleum and food processing industries will be developed for commercial use through the first cooperative venture of its kind.

NASA and Air Products and Chemicals, Inc., of Allentown, PA, will sign a one-year cooperative agreement on March 7 to jointly develop a prototype of the two-phase flow meter. "This new technology will serve as the basis for the development of a cryogenic flow/quality measuring device that can be used by many industries," said Kristen Riley of the KSC Technology Programs and Commercialization Office.

"This is our first cooperative agreement where NASA developmental funds are provided to a for-profit organization," Riley said. "Both NASA and Air Products will provide funding, manpower and facilities to develop prototypes of the new technology."

The effort is a part of the NASA Dual-Use Program, where space program technology is jointly developed with an industry partner for use both by the space agency and the commercial market.

"This meter was conceived at the space center to provide a more accurate means to measure the flow of two-phase cryogenic fluids as they are loaded aboard the Space Shuttle before launch," said KSC lead project engineer Rudy Werlink.

"Existing sensors do not have the rapid response and sensitivity required to correlate the data of a flowing mixture. The fact that this flowmeter will have that capability makes this design innovative," said Werlink. The flow meter also provides an accurate determination of the liquid to gas ratio or quality of the mixture.

Werlink initially conceived the design for the flow/quality meter in 1993. Dr. Bob Younquist of I-NET Inc., an engineering support contractor at KSC, led the developmental efforts on the electronic control system and collaborated on the physical design.

"Our initial testing of these prototypes has been encouraging," Werlink said. "We plan to provide enhancements to the microprocessor and make other modifications during the next phase of development."

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NOTE TO EDITORS: News media representatives will have an opportunity to speak with and photograph participants in the cooperative agreement ceremony at the KSC Headquarters Building. Deputy Center Director, J. A. (Gene) Thomas and Air Products Vice President, Andrew Cummins will be available to the media following the ceremony. Media planning to attend this event should be at the KSC press site by 9:30 a.m. on Thursday Mar. 7 for transport to the ceremony.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

March 4, 1996
KSC Contact: Bruce Buckingham
KSC Release No. 30-96

E-MAIL USERS NOW HAVE ACCESS TO KSC ISSUED STATUS REPORTS AND PRESS RELEASES

Contact: Bruce Buckingham
E-mail: Bruce.Buckingham-1@kmail.ksc.nasa.gov

Kennedy Space Center status reports and press releases are now available to computer users with e-mail addresses. Users can now subscribe to a list server that automatically will forward to them all KSC Shuttle status reports, KSC originated press releases and other periodic reports.

To subscribe to these status reports and press releases, send an Internet electronic mail message to: domo@news.ksc.nasa.gov. In the body of the message (not the subject line) users must type the words "subscribe shuttle-status", or "subscribe ksc-press-release" (do not use quotation marks).

The system will reply with a confirmation via e-mail of each subscription.

To remove your name from the list at any time, send an e-mail address to domo@news.ksc.nasa.gov. In the body of the message (not the subject line), type (no quotes) "unsubscribe shuttle-status", or "unsubscribe ksc-press-release."

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NASA News Release
ON LINE
JOHN F. KENNEDY SPACE CENTER

March 7, 1996
KSC Release No. 31-96

COLUMBIA SCHEDULED TO LAND AT KSC

The orbiter Columbia is scheduled to land at Kennedy Space Center on Friday, March 8 at about 8:52 a.m. EST, completing its near 15-day STS-75 mission which was launched from KSC on February 22.

Landing at KSC's Shuttle Landing Facility (SLF) is slated to occur on orbit 236 at a mission elapsed time of 14 days, 17 hours, 33 minutes. The deorbit burn will occur at about 7:49 a.m. Friday.

KSC landing opportunities on Friday are: 8:52 a.m. and 10:27 a.m. In the event a landing is not possible at KSC on Friday due to weather concerns, a landing could be made at Edwards Air Force Base, Calif. EAFB landing opportunities on Friday are: 10:18 a.m. and 11:57 a.m. EST. On Saturday, three landing opportunities are available at KSC and three at Edwards.

KSC Saturday landing times are: 7:24 a.m., 8:59 a.m., and 10:35 a.m. EST.

EAFB Saturday landing times are: 8:51 a.m., 10:26 a.m., and 12:01 p.m. EST.

The landing of Columbia will mark the 29th landing at KSC in the history of Space Shuttle flight. It will be the second landing of the Shuttle at KSC this year.

About six hours after landing at KSC, select members of the flight crew will be present for a post-mission press conference. The conference will be held at the KSC TV auditorium and carried live on NASA TV.

SLF and KSC Ground Operations

The Shuttle Landing Facility was built in 1975. It is 300 feet wide and 15,000 feet long with 1,000 foot overruns at each end. The strip runs northwest to southeast and is located about 3 miles northwest of the 525-foot tall Vehicle Assembly Building.

Once the orbiter is on the ground, safing operations will commence and the flight crew will prepare the vehicle for post-landing operations. The Crew Transport Vehicle (CTV) will be used to assist the crew, allowing them to leave the vehicle and remove their launch and re-entry suits easier and quicker.

The CTV and other KSC landing convoy operations have been "on-call" since the launch of Columbia Feb. 22. The primary functions of the Space Shuttle recovery convoy are: provide immediate service to the orbiter after landing, assist crew egress, prepare the orbiter for towing to the Orbiter Processing Facility.

Convoy vehicles are stationed at the SLF's mid-point. About two hours prior to landing, convoy personnel don SCAPE suits, or Self Contained Atmospheric Protective Ensemble, and communications checks are made. A warming-up of coolant and purge equipment is conducted and nearly two dozen convoy vehicles are positioned to move onto the runway as quickly and as safely as possible once the orbiter coasts to a stop. When the vehicle is deemed safe of all potential explosive hazards and toxic gases, the purge and coolant umbilical access vehicles move into position at the rear of the orbiter.

Following purge and coolant operations, flight crew egress preparations will begin and the CTV will be moved into position at the crew access hatch located on the orbiter's port side. A physician will board the Shuttle and conduct a brief preliminary examination of the astronauts. The crew will then make preparations to leave the vehicle.

Following departure from the SLF, the crew will be taken to their quarters in the O&C Building, meet with their families, undergo a physical examination and prepare to depart for the skid strip at Cape Canaveral Air Station for their trip back to JSC.

If Columbia lands at Edwards, an augmented KSC convoy team will be on-site to safe the vehicle, disembark the crew and move the orbiter to the Mate/Demate Device. The turnaround team will be deployed to Edwards by charter aircraft on landing day.

About 3 hours, 30 minutes after Columbia lands at KSC, the orbiter will be towed to Orbiter Processing Facility bay 2 for post-flight deservicing. Preparations will then begin for Columbia's next mission, STS-78, currently scheduled for launch in June.

# # # #

NOTICE TO EDITORS: Media wishing to view Columbia's landing should be at the KSC press site between 4:30 - 8 a.m. Friday for transport to the SLF. Other specific information is available at the KSC News Center regarding landing photo opportunities, post-landing press conferences and KSC News Center operational hours.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

March 15, 1996
KSC Release No. 32-96

SPACE SHUTTLE MISSION STS-76 LAUNCH COUNTDOWN TO BEGIN MARCH 18

NASA will begin the countdown for launch of Space Shuttle Atlantis on the third mission to dock with Russia's space station Mir on Monday, March 18 at 2 a.m. at the T-43 hour mark. The KSC launch team will conduct the countdown from Firing Room 1 of the Launch Control Center.

The countdown includes 30 hours and 33 minutes of built-in hold time leading to the opening of the launch window at about 3:33 a.m. (EST) on March 21. The launch window extends for 6 - 10 minutes. The exact time of launch will be determined about 90 minutes before liftoff based on the location of the Mir space station. (The expected time of launch is closer to 3:35 a.m., but controllers are preparing for launch as early as 3:33 a.m.)

In order to accommodate the short window necessary to rendezvous and dock with Mir, some changes have been made to the standard launch countdown. Most significant is the addition of an extra 30 minutes to the normal 10 minute built-in hold at T-9 minutes. Also, tanking is scheduled to begin about 30 minutes earlier than normal.

STS-76 is the third Space Shuttle mission of 1996. This will be the 16th flight of the orbiter Atlantis and the 76th flight overall in NASA s Space Shuttle program.

Atlantis was rolled out of Orbiter Processing Facility bay 1 on Feb. 19 and mated with the external tank and solid rocket boosters in the Vehicle Assembly Building. The Shuttle stack was then transported to Pad 39B on Feb. 28. Atlantis last flew on the second Shuttle/Mir docking flight in November 1995.

Atlantis will carry into orbit a six member crew. Mission Specialist Shannon Lucid will remain on the Mir space station with the cosmonaut crew now on board. She will remain there until Atlantis again docks with Mir in August.

The STS-76 crew are: Commander Kevin Chilton; Pilot Richard Searfoss; and Mission Specialists Shannon Lucid, Linda Godwin, Rich Clifford and Ronald Sega. All members of the STS-76 crew are veteran Shuttle flyers.

The STS-76 crew are scheduled to arrive at KSC at about 12 a.m. Monday, March 18. Their activities at KSC prior to launch will include equipment fit checks, medical examinations and opportunities to fly in the Shuttle Training Aircraft.

(end of general release)
(The countdown will target launch for 3:33 a.m. The exact launch time will be adjusted at the T-9 minute hold.)

COUNTDOWN MILESTONES
*all times are Eastern
Launch - 3 Days (Monday, March 18)
- Prepare for the start of the STS-76 launch countdown
- Perform the call-to-stations (1:30 a.m.)
- All members of the launch team report to their respective consoles in Firing Room 1 in the Launch Control Center for the start of the countdown

- Countdown begins at the T-43 hour mark (2 a.m.)
- Start preparations for servicing fuel cell storage tanks
- Begin final vehicle and facility close-outs for launch
- Check out back-up flight systems
- Review flight software stored in mass memory units and display systems
- Load backup flight system software into Atlantis' general purpose computers
- Begin stowage of flight crew equipment
- Inspect the orbiter's mid-deck and flight-deck and remove crew module platforms

Enter first planned built-in hold at T-27 hours for duration of four hours (6 p.m.)

- Clear launch pad of all non-essential personnel
- Perform test of the vehicle's pyrotechnic initiator controllers

Resume countdown (10 p.m.)

- Clear launch pad of all personnel

Launch - 2 Days (Tuesday, March 19)

- Begin the five-hour operation to load cryogenic reactants into Atlantis' fuel cell storage tanks (12 - 5 a.m.)
- After cryogenic loading operations, re-open the pad

Enter eight-hour built-in hold at T-19 hours (6 a.m.)

- Resume orbiter and ground support equipment close-outs
- Demate orbiter mid-body umbilical unit and retract into fixed service structure

Resume countdown (2 p.m.)

- Start final preparations of the Shuttle's three main engines for main propellant tanking and flight
- Activate the orbiter"s flight controls and navigation systems
- Install mission specialists' seats in crew cabin
- Close-out the tail service masts on the mobile launcher platform

Enter planned hold at T-11 hours for 13 hours, 43 minutes (10 p.m.)

Launch -1 Day (Wednesday, March 20)

- Perform orbiter ascent switch list in crew cabin
- Install film in numerous cameras on the launch pad
- Activate the orbiter's communications systems
- Activate orbiter's inertial measurement units
- Fill pad sound suppression system water tank
- Safety personnel conduct debris walkdown
- Move Rotating Service Structure (RSS) to the park position (9 a.m.)
- Following the RSS move, begin final stowage of mid-deck experiments and flight crew equipment

Resume countdown (11:43 a.m.)

- Continue installation of time critical flight crew equipment
- Perform pre-ingress switch list
- Start fuel cell flow-through purge
- Activate the orbiter's fuel cells
- Configure communications at Mission Control, Houston, for launch
- Clear the blast danger area of all non-essential personnel
- Switch Atlantis' purge air to gaseous nitrogen

Enter planned two-hour built-in hold at the T-6 hour mark (4:43 p.m.)

- Launch team verifies no violations of launch commit criteria prior to cryogenic loading of the external tank
- Clear pad of all personnel
- Begin loading the external tank with about 500,000 gallons of cryogenic propellants (about 6:13 p.m.)

Resume countdown (6:43 p.m.)

- Complete filling the external tank with its flight load of liquid hydrogen and liquid oxygen propellants (about 9:13 p.m.)
- Perform inertial measurement unit preflight calibration
- Align Merritt Island Launch Area (MILA) tracking antennas
- Perform open loop test with Eastern Range
- Conduct gimbal profile checks of orbital maneuvering system engines

Enter two-hour hold at T-3 hours (9:43 p.m.)

- Close-out crew and Final Inspection Team proceeds to Launch Pad 39B

Resume countdown at T-3 hours (11:43 p.m.)

- Crew departs Operations and Checkout Building for the pad (about 11:50 p.m.)
- Complete close-out preparations in the white room
- Check cockpit switch configurations

Launch Day (Thursday, March 21)

- Flight crew begins entry into the orbiter (about 12:20 a.m.)
- Astronauts perform air-to-ground voice checks with Launch Control and Mission Control
- Close Atlantis' crew hatch (about 1:35 a.m.)
- Begin Eastern Range final network open loop command checks
- Perform hatch seal and cabin leak checks
- Complete white room close-out
- Close-out crew moves to fallback area
- Primary ascent guidance data is transferred to the backup flight system

Enter planned 10-minute hold at T-20 minutes (2:23 a.m.)

- NASA Test Director conducts final launch team briefings

Resume countdown (2:33 a.m.)

- Transition the orbiter's onboard computers to launch configuration
- Start fuel cell thermal conditioning
- Close orbiter cabin vent valves
- Transition backup flight system to launch configuration

Enter 40-minute hold at T-9 minutes (2:44 a.m.)
(This is the last planned built-in hold. Other hold options are available if necessary. During this hold, the exact launch time will be determined based on the exact location of the Mir space station. The hold time will likely vary.)

- Launch Director, Mission Management Team and NASA Test Director conduct final polls for go/no go to launch

Resume countdown at T-9 minutes (3:24 a.m.)

- Start automatic ground launch sequencer (T-9:00 minutes)
- Retract orbiter crew access arm (T-7:30)
- Start mission recorders (T-5:30)
- Start Auxiliary Power Units (T-5:00)
- Arm SRB and ET range safety safe and arm devices (T-5:00)
- Start liquid oxygen drainback (T-4:55)
- Start orbiter aerosurface profile test (T-3:55)
- Start main engine gimbal profile test (T-3:30)
- Pressurize liquid oxygen tank (T-2:55)
- Begin retraction of the gaseous oxygen vent arm (T-2:55)
- Fuel cells to internal reactants (T-2:35)
- Pressurize liquid hydrogen tank (T-1:57)
- Deactivate SRB joint heaters (T-1:00)
- Orbiter transfers from ground to internal power (T-0:50 seconds)
- Ground Launch Sequencer go for auto sequence start (T-0:31 seconds)
- SRB gimbal profile (T-0:21 seconds)
- Ignition of three Space Shuttle main engines (T-6.6 seconds)
- SRB ignition and liftoff (T-0)

SUMMARY OF BUILT-IN HOLDS FOR STS-76

T-TIME	LENGTH OF HOLD	HOLD BEGINS	HOLD ENDS
T-27 hours	4 hours	6:00 p.m. Mon.	10:00 p.m. Mon.
T-19 hours	8 hours	6:00 a.m. Tues.	2:00 p.m. Tues.
T-11 hours	13 hours, 43 minutes	10:00 p.m. Tues.	11:43 a.m. Wed.
T-6 hours	2 hours	4:43 p.m. Wed.	6:43 p.m. Wed.
T-3 hours	2 hours	9:43 p.m. Wed.	11:43 p.m. Wed.
T-20 minutes	10 minutes	2:23 a.m. Thurs.	2:33 a.m. Thurs.
T-9 minutes	40 minutes	2:44 a.m. Thurs.	3:24 a.m. Thurs.

CREW FOR MISSION STS-76

Commander (CDR):	Kevin Chilton
Pilot (PLT):	Richard Searfoss
Mission Specialist (MS1):	Ronald Sega
Mission Specialist (MS2):	Rich Clifford
Mission Specialist (MS3):	Linda Godwin
Mission Specialist (MS4):	Shannon Lucid

SUMMARY OF STS-76 LAUNCH DAY CREW ACTIVITIES

Wednesday, March 20

	4:30 p.m.	Wake up
	5:00 p.m.	Breakfast
*	10:40 p.m.	Lunch and crew photo
	11:10 p.m.	Weather briefing (CDR, PLT, MS2)
	11:10 p.m.	Don launch and entry suits (MS1, MS3, MS4)
	11:20 p.m.	Don launch and entry suits (CDR, PLT, MS2)
*	11:35 p.m.	Crew suiting photo
*	11:50 p.m.	Depart for launch pad 39B

Thursday, March 21

*	12:20 a.m.	Arrive at white room and begin ingress
*	1:35 a.m.	Close crew hatch
*	3:35 a.m.	Launch

* Televised events (times may vary slightly)
All times Eastern

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

March 15, 1996
KSC Release No. 33-96

Notice to Editors/News Directors:
MISSION STS-76 EVENTS, NEWS CENTER OPERATING HOURS SET

News conferences, events and operating hours for KSC's News Center have been set for the Mar. 21 launch of the Space Shuttle Atlantis on Mission STS-76, the 76th launch in the Shuttle program. These events are scheduled to be carried live on NASA TV (please refer to the STS-76 TV schedule for exact times).

The six STS-76 crew members are scheduled to arrive at KSC on Sunday, Mar. 17, at midnight EST. News media representatives wishing to cover the event must be at the News Center by 11 p.m. Sunday (in the event of a possible early crew arrival) for transportation to the Shuttle Landing Facility. This event will be carried live on NASA Television. News media representatives needing credentials for crew arrival should call the News Center at 867-2468 to make arrangements.

At 2 a.m. EST Monday, the launch countdown will begin at the T-43-hour mark. The codaphone will be updated to reflect the beginning of the countdown. Launch is currently set for 3:35 a.m. EST on Thursday, Mar. 21. The launch window is open for 10 minutes.

News media representatives with proper authorization may obtain STS-76 mission credentials at the Pass and Identification Building on State Road 3 on Merritt Island next week.

# # # #

Information about the countdown and mission can be accessed electronically via the Internet at: http://www.ksc.nasa.gov/shuttle/countdown/ and at http://shuttle.nasa.gov/

KSC press releases and other information are available at the KSC PAO Home Page at http://www-pao.ksc.nasa.gov/kscpao/kscpao.htm

STS-76 BRIEFING/EVENTS SCHEDULE
(all times are in EST and conferences are held inside the KSC Press Site auditorium)

L-4 Days - Sunday, Mar. 17

STS-76 crew arrival at SLF (live on NASA TV)----------Midnight

L-3 Days - Monday, Mar. 18

Launch countdown begins----------2:00 a.m.

Countdown Status Briefing----------9:00 a.m.
John Guidi, Shuttle Test Director
Lesa Roe, STS-76 Payload Manager
Ed Priselac, Shuttle Weather Officer

STS-76 fight crew arrival (replay)----------9:30 a.m.

L-2 Days - Tuesday, Mar. 19

Countdown Status Briefing----------9:00 a.m.
John Guidi, Shuttle Test Director
Lesa Roe, STS-76 Payload Manager
Ed Priselac, Shuttle Weather Officer

SPACE STATION BRIEFING (originates from JSC)----------2:00 p.m.

Pre-launch News Conference----------4:00 p.m.
(or immediately following the management team's meeting)
Tommy Holloway, NASA Shuttle Program Manager, Johnson Space Center
Frank Culbertson, Shuttle-Mir Phase One Program Acting Director, Johnson Space Center
Valery Ryumin, Phase One Director, RSC Energia
Dr. Arnauld Nicogossian, Dep. Associate Administrator for Life & Microgravity Sciences
Bob Sieck, Director of Shuttle Operations, KSC
Capt. Scot Heckman, Launch Weather Officer

L - 1 Day - Wednesday, Mar. 20

Countdown Status Briefing----------9:00 a.m.
John Stealey, NASA Test Director
Lesa Roe, STS-76 Payload Manager
Capt. James Sardonia, Shuttle Weather Officer

Remote Camera Setup at Pad----------8:30 a.m.

Rotating Service Structure moves----------9:00 a.m.

News media orientation tour (optional depending on interest)------10:00 a.m.

Tanking begins----------6:15 p.m.

NASA Television live launch programming begins----------10:00 p.m.

Launch Day - Thursday, Mar. 21

Launch of Atlantis----------3:35 a.m.

Post-launch press conference----------L + 1 hour
Loren Shriver, manager of Launch Integration for the Space Shuttle Program
James Harrington, KSC Launch Director

NASA Television is carried on Spacenet 2, transponder 5, channel 9, C-band, located at 69 degrees West longitude, with horizontal polarization. Frequency is 3880 MHz with audio on 6.8 MHz.

KSC News Center office hours for STS-76
(hours may be adjusted for in-flight events)

(Launch minus 4 days) Sunday, Mar. 17	10:30 p.m. - (close following crew arrival)
(Launch minus 3 days) Monday, Mar. 18	8:00 a.m. - 4:30 p.m.
(Launch minus 2 days) Tuesday, Mar. 19	8:00 a.m. - 7:00 p.m.
(Launch minus 1 day) Wednesday, Mar. 20	7:00 a.m. - around-the-clock - 4:30 p.m.
(Launch day) Flight day 1, Thursday, Mar. 21	
Flight Day 2, Friday, Mar. 22	8:00 a.m. - 4:30 p.m.
Flight day 3, Saturday, Mar. 23	10:00 a.m. - 12 Noon
Flight day 4, Sunday, Mar. 24	CLOSED
Flight day 5, Mar. 25 (in-flight conference)	2:00 a.m. - 4:00 a.m.; 8:00 a.m. - 4:30 p.m.
Flight days 6-9, Mar. 26-29	8:00 a.m. - 4:30 p.m.
Flight day 10, Saturday, Mar. 30 (Landing)	5:00 a.m. - (close following crew conference)

(Times may vary and be adjusted in real time depending on mission events and timelines.)

News media representatives may obtain STS-76 mission credentials at the Pass and Identification Building at Gate 2 on State Road 3, Merritt Island, during the following times:

Monday, Mar. 18 -- Noon to 4:30 p.m.
Tuesday, Mar. 19 -- 8:00 a.m. to 4:30 p.m.
Wednesday, Mar. 20 -- 8:00 a.m. to 4:30 p.m.; 11:30 p.m. to 2:30 a.m. 3/21
Thursday, Mar. 21 -- 11:30 p.m. 3/20 to 2:30 a.m. 3/21

News media with annual Shuttle credentials are reminded to sign the log book at the photo and interview counter in the News Center.

NEWS MEDIA ARE REQUIRED TO BE UNDER PUBLIC AFFAIRS ESCORT EXCEPT WHEN DRIVING TO THE NEWS CENTER OR THE COMPLEX 39 CAFETERIA.

NEWS MEDIA ARE ALLOWED AT THE PRESS SITE ONLY WHEN PUBLIC AFFAIRS PERSONNEL ARE ON DUTY AND THE NASA NEWS CENTER IS OPEN. THIS IS NOT A 24-HOUR DAY OPERATION.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

March 25, 1996
KSC Release No. 34-96

SPACE SHUTTLE WEATHER LAUNCH COMMIT CRITERIA AND KSC END OF MISSION WEATHER LANDING CRITERIA

The launch weather guidelines involving the Space Shuttle and expendable rockets are similar in many areas, but a distinction is made for the individual characteristics of each. The criteria are broadly conservative and assure avoidance of possibly adverse conditions. They are reviewed for each launch.

Weather "outlooks" which are provided by the Range Weather Operations Facility at Cape Canaveral begin at Launch minus 5 days. These include weather trends, and their possible effects on launch day.

For the Space Shuttle, a formal prelaunch weather briefing is held on Launch minus 1 day which is a specific weather briefing for all areas of Space Shuttle launch operations.

During the countdown, formal weather briefings occur approximately as follows:

L-21 hr 0 min: Briefing for removal of Rotating Service Structure
L-9 hr 00 min: Briefing for external tank fuel loading
L-4 hr 30 min: Briefing for Space Shuttle Launch Director
L-3 hr 55 min: Briefing for astronauts
L-0 hr 35 min: Briefing for launch and RTLS
L-0 hr 13 min: Poll all weather constraints

The basic weather parameters on the pad at liftoff must be:

Temperature: Prior to external tank propellant loading, tanking will not begin if the 24 hour average temperature has been below 41 degrees.

After tanking begins, the countdown shall not be continued nor the Shuttle launched if:

a.) the temperature exceeds 99 degrees for more than 30 consecutive minutes.

b.) the temperature is lower than the prescribed minimum value for longer than 30 minutes unless sun, wind and relative humidity conditions permit recovery. The minimum temperature limit in degrees F. is specified by the table below and is a function of the five minute average of temperature, wind and humidity. The table becomes applicable when the observed temperature reaches 48 degrees. In no case may the Space Shuttle be launched if the temperature is 35 degrees or colder.

Wind Speed (kts)	Relative Humidity 0-64%	65-74%	75-79%	80-89%	90-100%
0 - 1	48	47	46	45	44
2	47	46	45	44	43
3	41	41	41	40	39
4	39	39	39	39	38
5 - 7	38	38	38	38	38

8 - 14	37	37	37	37	37
more than 14	36	36	36	36	36

The above table can be used to determine when conditions are again acceptable for launch if parameters have been out of limits for thirty minutes or less. If longer than thirty minutes, a mathematical recovery formula of the environmental conditions is used to determine if a return to acceptable parameters has been achieved. Launch conditions have been reached if the formula reaches a positive value.

Wind: Tanking will not begin if the wind is observed or forecast to exceed 42 knots for the next three hour period.

For launch the wind constraints at the launch pad will vary slightly for each mission. The peak wind speed allowable is 34 knots. However, when the wind direction is between 100 degrees and 260 degrees, the peak speed varies and may be as low as 20 knots.

The upper atmosphere wind profile must conform to either one of two wind loading programs developed by the Johnson Space Center. This profile is determined by a series of Jimsphere wind balloon releases from Cape Canaveral Air Station. A final recommendation is made by the JSC Launch Systems Evaluation Advisory Team (LSEAT) to the KSC launch director at Launch minus 30 minutes. The Space Shuttle will not be launched within 30 minutes of the time a determination has been made that the upper wind profile will adversely affect the performance of the launch vehicle.

A downrange weather advisory shall be issued by the Shuttle Weather Officer to the Mission Management Team for their consideration if the wind in the solid rocket booster recovery area is forecast to exceed 26 knots during retrieval operations. Seas in excess of Sea State 5 (8-13 feet) may also be a factor considered by the Mission Management Team.

Precipitation: None at the launch pad or within the flight path.

Lightning (and electric fields with triggering potential):

- Tanking will not begin if there is forecast to be greater than a 20% chance of lightning within five nautical miles of the launch pad during the first hour of tanking. The launch director with the concurrence of the safety director may make an exception after consultation with the Shuttle Weather Officer.

- Launch will not occur if lightning has been detected within 10 nautical miles of the pad or the planned flight path within 30 minutes prior to launch, unless the source of lightning has moved more than 10 nautical miles away from the pad or the flight path.

- The one-minute average of the electric field mill network, used to measure electric fields, shall not exceed -1 or +1 kilovolt per meter within five nautical miles of the launch pad at any time within 15 minutes prior to launch.

The above rule need not apply if the following two conditions are observed to exist:

1. There are no clouds within 10 nautical miles of the flight path except those which are transparent. Also excepted are clouds with tops below the 41 degrees F. temperature level that have not have been previously associated with a thunderstorm, or associated with convective clouds having tops above the 14 degrees F. temperature level during the last three hours.

2. A known source of electric fields such as ground fog or smoke that is occurring near the field mill which has been previously determined and documented to be benign is clearly causing the elevated readings.

Clouds: (types known to contain hazardous electric fields)

- The Space Shuttle may not be launched if the planned flight path is through a layer of clouds with a thickness of 4,500 feet or greater where the temperature of any part of the layer is between 32 degrees F. and -4 degrees F.

- The Space Shuttle may not be launched if the planned flight path is through a cumulus type cloud with its top between the 41 degrees F. temperature level and 23 degrees F. temperature. Launch may occur if: 1) the cloud is not producing precipitation; 2) the distance from the furthest edge of the cloud top to at least one operating field mill is less than the altitude at the 23 degree F temperature level or 3 nautical miles, whichever is less; 3) field mill readings within five nautical miles of the flight path must be between -100 volts per meter and +1000 volts per meter.

- The Space Shuttle may not be launched through 1) cumulus type clouds with tops higher than the 23 degree F. temperature level; 2) through or within 5 nautical miles of the nearest edge of cumulus type clouds with tops higher than the 14 degree F level; 3) through or within 10 nautical miles of the nearest edge of any cumulonimbus or thunderstorm cloud including nontransparent parts of its anvil; 4) through or within 10 nautical miles of the nearest edge of a nontransparent detached anvil cloud for the first hour after detachment from the parent thunderstorm or cumulonimbus cloud.

- The Space Shuttle may not be launched if the flight path is through any clouds that extend to altitudes at or above the 32 degrees F. level which are associated with disturbed weather producing moderate or greater precipitation within five nautical miles of the flight path.

- The Space Shuttle may not be launched if the flight path will carry the vehicle through a thunderstorm or cumulonimbus debris cloud which is not transparent and less than three hours old. Launch may not occur within five nautical miles of these debris clouds unless: 1) for 15 minutes preceding launch there is at least one working field mill within five nautical miles of the debris cloud; 2) all electric field mill readings are between -1 kilovolt and + 1 kilovolt per meter within five nautical miles of the flight path; 3) no precipitation has been detected or observed.

Supporting Table: KSC Seasonal Altitudes of Temperature Levels in thousands of feet

	January				July		
Temp	Low	Avg	High	Temp	Low	Avg	High
-4 F	21 Kft	24 Kft	26 Kft	-4 F	23 Kft	27 Kft	29 Kft
14	13	18	21	14	18	21	23
23	9	15	18	23	16	18	20
32	sfc	12	16	32	13	15	18
41	sfc	9	14	41	10	12	15

Range Safety Cloud Ceiling and Visibility constraints:

- Direct visual observation of the Shuttle is required through 8,000 feet. This requirement may be satisfied using optical tracking sites or a forward observer

- For cloud ceilings of any thickness between 6, 000 feet and 8, 000 feet the following conditions must be met for launch to occur:

a.) the vehicle integrity can be observed without interruption through 6, 000 feet.

b.) all required Range Safety instrumentation is functioning properly

c.) the U.S. Air Force 45th Space Wing Commander approves the decision to proceed

- For cloud ceilings between 4, 000 feet and 6, 000 feet the following conditions must be met for launch to proceed:

a.) the thickness of the clouds must be less than 500 feet

b.) the vehicle integrity can be monitored by the Eastern Range airborne and/or the ground forward observers through 8, 000 feet

c.) all required Range Safety instrumentation is functioning properly

d.) the U.S. Air Force 45th Space Wing Commander approves the decision to proceed

A "Good Sense Rule" is in effect for launch which states: "Even when constraints are not violated, if any other hazardous conditions exist, the launch weather officer will report the threat to the launch director. The launch director may hold at any time based on the instability of the weather."

CONTINGENCY LANDING WEATHER CRITERIA

Weather conditions for a landing also affect the launch criteria since the possibility exists for a Return To Launch Site abort (RTLS), landings at the Trans-Oceanic Abort Landing Sites (TAL), the Abort Once Around (AOA) sites and the first day Primary Landing Site (PLS). All criteria refer to observed and forecast weather conditions except for first day PLS which is forecast weather only.

- For RTLS, cloud coverage 5/10 or less below 5,000 feet and a visibility of 4 nautical miles or greater is required.

- For AOA, TAL and PLS sites, cloud coverage 5 tenths or less below 8,000 feet and a visibility of five nautical miles.

- With redundant Microwave Landing System capability or weather reconnaissance aircraft, the ceiling and visibility must be 10,000 feet and 7 nautical miles for all sites.

- For RTLS and the TAL sites, no thunderstorms, lightning, or precipitation within 20 nautical miles of the runway, or within 10 nautical miles of the final approach path extending outward to 30 nautical miles from the end of the runway.

- For AOA and PLS sites, no thunderstorms, lightning or precipitation within 30 nautical miles of the runway, or within 20 nautical miles of the final approach path extending to 30 nautical miles from the end of the runway.

- For RTLS and the TAL sites, no detached opaque thunderstorm anvil cloud less than 3 hours old within 15 nautical miles of the runway or within 5 nautical miles of the final approach path extending outward to 30 nautical miles from the end of the runway.

- For AOA and PLS sites, no detached opaque thunderstorm anvil cloud less than 3 hours old within 20 nautical miles of the runway or within 10 nautical miles of the final approach path extending to 30 nautical miles from the end of the runway.

- Crosswind component not to exceed 15 knots. For the TAL, AOA and PLS sites there is a night-time crosswind limit of 12 knots.

- Headwind not to exceed 25 knots

- Tailwind not to exceed 10 knots average, 15 knots peak

- Turbulence conditions must be less than or equal to moderate intensity.

KSC END OF MISSION LANDING WEATHER CRITERIA

All criteria refer to observed and forecast weather conditions. All criteria refer to observed and forecast weather conditions except for the 2/10 cloud rule which is required to be observed only. At decision time for the deorbit burn 90 minutes before landing the required conditions must be:

- Cloud coverage of 5/10 or less below 10,000 feet and a visibility of 5 miles or greater is required.

- The peak cross wind cannot exceed 15 knots, 12 knots at night. If the mission duration is greater than 12 days the limit is 12 knots, day and night.

- Headwind cannot exceed 25 knots

- Tailwind cannot exceed 10 knots average, 15 knots peak

- The deorbit burn shall not occur if thunderstorm, lightning, or precipitation activity is forecast within 30 nautical

miles of the Shuttle Landing Facility.

- At a range of 30 nautical miles, vertical clearance from the tops of rain showers or thunderstorms must be greater than 2 nautical miles.

- Detached opaque thunderstorm anvils less than three hours old must not be within 20 nautical miles of the Shuttle Landing Facility, or within 10 nautical miles of the flight path when the orbiter is within 30 nautical miles of the runway.

- Scattered cloud layers below 10,000 feet must not exceed 2/10 sky coverage.

- Turbulence must be less than or equal to moderate intensity.

WEATHER INSTRUMENTATION

The equipment used by the forecasters to develop the downrange and launch clearance and landing forecasts are:

-Radar: Launch forecasters located at Cape Canaveral Air Station and landing forecasters located in Houston can access displays from two different radars. One is located at Patrick Air Force Base south of Cocoa Beach. The other is located in Melbourne at the National Weather Service and is a NEXRAD Doppler radar. Each radar provides rain intensity and cloud top information out to a distance as far as 200 nautical miles. The NEXRAD radar can also provide estimates of total rainfall and wind velocities.

-Field Mill Network: Thirty-one advanced field mill sites around KSC and Cape Canaveral Air Station provide data on lightning activity and surface electric fields induced by charge aloft. This data helps forecasters determine when electric charge aloft may be sufficient to create triggered lightning during launch, and to determine when to issue and cancel lightning advisories and warnings.

-Lightning Detection System: Detects and plots cloud to ground lightning strikes within 125 nautical miles of the Kennedy Space Center. Location accuracy is optimum within 30 nautical miles. Locations of strikes are color coded according to time of occurrence.

-Lightning Detection And Ranging (LDAR): Plots intracloud, cloud to cloud and cloud to ground lightning in three dimensions within 100 nautical miles of the Kennedy Space Center. Location accuracy is very high within 25 nautical miles. LDAR was developed by NASA-KSC and is currently being transitioned to operational status. LDAR data is important in determining the beginning and end of lightning conditions.

- National Lightning Detection Network: Plots cloud to ground lightning nationwide. Used to help ensure safe transit of the Space Shuttle orbiter atop the Shuttle Carrier Aircraft between Edwards Air Force Base in California and the Kennedy Space Center in Florida. It is also used to assess lightning beyond the 125 mile range of the Lightning Detection System.

-Rawinsonde: A balloon with a tethered instrument package which radios its altitude to the ground together with temperature, dewpoint and humidity, wind speed and direction, and pressure data. Rawinsondes reach altitudes exceeding 100,000 feet.

-Jimsphere balloon: A reflective balloon made of mylar tracked by radar which provides highly accurate information on wind speed and wind direction up to 60,000 feet.

- Doppler Radar Wind Profiler: Measures upper level wind speed and direction over Kennedy Space Center from approximately 10,000 feet to 60,000 feet. The data, received every 5 minutes, is used to ensure the upper winds used to calculate wind loads on the shuttle vehicle have not significantly changed between balloon soundings. If data from the Doppler Radar Wind Profiler indicates a possible significant change, another Jimsphere balloon is released.

-Rocketsonde: A 12-foot-tall instrumented rocket is launched on L-1 day which senses and transmits data on temperature, wind speed and direction, wind shear, pressure, and air density at altitudes between 65,000 feet and

370,000 feet. A four-inch in diameter solid rocket motor separates at an altitude of about 5,000 feet, after which an "instrumented dart" coasts to apogee.

-Satellite Images and Data: These are provided directly to the satellite terminal at USAF Range Weather Operations and NOAA National Weather Service Spaceflight Meteorology Group in Houston by the geostationary GOES weather satellites. In addition high resolution images are received from spacecraft in low earth orbit including both the NOAA and the Defense Meteorological Support Program (DMSP) polar orbiting satellites.

-Meteorological Interactive Data Display System (MIDDS): Integrates diverse weather data on a single display terminal-- satellite images, radar, computer generated graphics of surface and upper air map features, numerical weather models, current weather observations, data from meteorological towers, lightning strikes and field mill information.

- Towers: 33 meteorological towers are located on Kennedy Space Center and Cape Canaveral Air Station, including two at each launch pad and three at the Shuttle Landing Facility. In addition to wind, most towers are also instrumented with temperature, and moisture sensors. The 60-foot towers at the launch pads and the 33-foot towers at the Shuttle Landing Facility are closely monitored for launch and landing criteria. In addition, on the mainland, there is a network of 19 wind towers which extend outward an additional twenty miles. Tower data is an important short- term forecasting tool and also helps determine the direction and distance of toxic corridors in the event of a mishap.

-Buoys: Meteorological buoys are anchored 20, 110 and 160 nautical miles east-northeast of Cape Canaveral. These buoys relay hourly measurements via satellite of temperature, wind speed and direction, barometric pressure, precipitation, sea water temperature, and wave height and period. Buoy data is used for launch, landing, booster retrieval, and daily ground processing forecasts for the Kennedy Space Center and Cape Canaveral Air Station.

-Solid Rocket Booster Retrieval Ships: These vessels radio observed weather conditions and sea state from the booster impact area located up to 150 nautical miles downrange.

-Weather Reconnaissance Aircraft: A T-38 jet and the Shuttle Training Aircraft are flown by a weather support astronaut.

NOTE: Launch weather forecasts and ground operations forecasts are prepared by the U.S. Air Force Range Weather Operations Facility at Cape Canaveral Air Station. The RTLS, emergency landing and end of mission forecasts are prepared by the NOAA National Weather Service Spaceflight Meteorology Group at the Johnson Space Center in Houston.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

March 29, 1996
KSC Release No. 35-96

Notice to Editors:
PRESS SITE HOURS ADJUSTED FOR MISSION STS-76 LANDING

Based on the decision in yesterday's Mission Management Team meeting to land Atlantis a day early at KSC, the hours of operation for the KSC Press Site have been modified accordingly.

There are two landing opportunities at KSC on Saturday, Mar. 30. The first approximate landing time is at 7:57 a.m. and the second is at 9:33 a.m.

The Press Site will be open on Saturday from 5 a.m. until shortly after the post-flight crew conference. The time of the post-flight crew conference varies, but is approximately six hours after landing. Media wishing to view the Shuttle's landing should be at the Press Site no later than 6:30 a.m. for transport to the Shuttle Landing Facility (SLF).

Should mission managers choose to wave-off landing on Saturday, the Press Site will be open on Sunday morning from 4 a.m. until shortly after the post-flight crew conference. Media should be at the Press Site no later than 5:30 a.m. for transport to the SLF on Sunday.

There are also two chances to land at KSC on Sunday, Mar. 31. The first is at approximately 7 a.m. and the second is at about 8:37 a.m.

Specific information regarding landing photo opportunities is available at the KSC News Center.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

April 15, 1996
KSC Release No. 36-96

DAUGHTER'S DAY SCHEDULED FOR NASA EMPLOYEES APRIL 18

NASA employees at Kennedy Space Center will have an opportunity April 18 to show their daughters where they work during the third annual Take Our Daughters to Work Day.

Daughter's Day is part of a public education program nationwide to break down gender and racial barriers and show young women career options available to them. Daughters who are nine years of age or older are eligible to participate. If an employee does not have an eligible daughter, they are invited to bring another appropriate relative or friend. Many KSC contractors sponsor similar programs as well.

The day's activities will begin at the KSC Visitor Center, where each daughter will receive a badge. Center Director Jay Honeycutt will welcome the participants, followed by guest speakers Victoria VanMeter, a seventh grader who, in 1993, became the youngest person to pilot a single-engine plane east to west across the United States, and Elizabeth Massey, former NASA employee and motivational speaker. A video will also be shown titled, Astronauts Smiles. After lunch, daughters and their escorts will go to the various work sites on-center.

Certain areas will be off limits because of the hazardous nature of the work performed inside.

Sons of NASA employees will get their chance to visit the workplace during a Take Our Sons to Work day in June.

NOTE TO EDITORS:

News media representatives wishing to cover the event should contact the KSC News Center to coordinate photo opportunity times.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

April 11, 1996
KSC Release No. 37-96

KSC TO HIGHLIGHT NASA TECHNOLOGY AT AIRSHOW

KSC representatives will exhibit NASA-developed technology and speak to aviation and aero- space enthusiasts at the Experimental Aircraft Association's (EAA) Sun'n Fun Airshow in Lakeland, FL, April 14-20.

The KSC Technology Utilization Office will present an exhibit featuring a wind sensor device that transmits important information to pilots.

Education representatives from the KSC Public Affairs staff will provide informative videos and handouts at their exhibit. Another KSC exhibit will allow visitors to pilot a shuttle landing simulator, view an authentic moon rock, and meet the Spaceman from the KSC Visitor's Center.

A series of forums are planned on a variety of topics including NASA's efforts to solve aviation problems. The forums are scheduled for Friday and Saturday, April 19-20.

KSC managers hope to communicate the benefits of NASA-developed technology to the 700,000 aviation buffs expected to attend throughout the week. "We see this as an excellent forum to pro- mote NASA's accomplishments in technology," said Jim Aliberti, KSC's manager of technology transfer and commercialization.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

April 15, 1996
KSC Release No. 38-96

KSC TO HOST ANNUAL COMMUNITY LEADERS BREAKFAST ON APRIL 19

The annual community leaders breakfast will be held April 19 at the KSC Visitor Center. KSC Director Jay Honeycutt will meet with community leaders from Brevard County and the State of Florida to review the 1995 space center milestones and present short and long term future projections of America's space program and the economic impact these plans may have on the local community.

Community leaders will gather at the Galaxy Center at 8 a.m. for a continental breakfast and then proceed to the IMAX 2 Theater for Honeycutt's remarks at 9 a.m. Following the briefings and presentations, attendees will get an inside look at KSC during a two-hour bus tour of the center.

Over 400 community leaders are expected to attend the half-day event.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

April 19, 1996
KSC Contact: Patti Phelps
KSC Release No. 39-96-1

NASA HONORS KENNEDY SPACE CENTER EMPLOYEES

Kennedy Space Center (KSC) honored 49 of its civil service and contractor employees at a special Honoree Event held March 19-22 at the space center.

The KSC employees were among some 250 NASA and industry employees from around the country who were honored by top NASA and industry leaders for their significant contributions to the nation's space program.

The KSC employees attended a special reception in their honor, and were joined by astronauts and senior NASA and industry officials of the Space Shuttle team. They were given a VIP tour of Kennedy Space Center and participated in various briefings. They also watched the STS-76 launch of the Space Shuttle Atlantis on March 22 from a special VIP viewing site. The third docking of the Space Shuttle with the Russian Mir Space Station was the highlight of the mission. U.S. astronaut Shannon W. Lucid transferred from the Shuttle to Mir to begin an approximate four-and-a-half month stay on the Russian Space Station.

The Honoree Award is the highest form of recognition bestowed upon an employee by the NASA Space Flight Awareness Program. Recipients are selected for their professional dedication and outstanding achievement in support of the human spaceflight program.

Twelve civil service employees were honored. They were Kent E. Hawley, David R. Cox, Tricia M. Koger, Sharon K. Pine, Beth A. Vrioni, Robert C. Koning, Mark S. Rosato, Teresa M. Lawhorn, Michael J. Lonergan, Timothy A. Bond, James A. Devault and Thomas W. Howard.

Contractor employees honored included William E. Cook, The Bionetics Corp.; James E. Meeks, I-NET Inc.; Roger C. Greek Jr., Mark D. Juhr, William J. McCullough and Margie A. Myers, McDonnell Douglas Space and Defense Systems-KSC; Kelly A. Geroux, Rockwell Aerospace, Rocketdyne; and Paul B. Hamric, Wiltech Corp.

Also, Frederick W. Martin, Catherine A. Parnell and Kenneth T. Saltz, Rockwell Aerospace, Space Systems Division; Stephanie G. Grathwol, ABEX NWL Aerospace; John A. Jahahn, Odetics; Gary L. Henderson, Pamela L. Storm and Steven L. Van Horn, United Technologies, USBI Co.; and Rosalind T. Barbaree, Richard L. Bennett, Cecil G. Boggs Jr., Dolores A. Galbreath and Mary Ann Jackson, EG&G Florida Inc.; and Evelyn L. Ott and Gordon Rogers Sr., United Service Associates Inc.

Lockheed Martin Space Operations employees honored were Peter R. Aiello, Frederick P. Cryder, Stephen D. Dupree, Benjamin R. Enriquez, Peter C. Kent, Dennis M. Knight, Debra A. Lamond, Roger A. Lee, Paul J. Lucas, Louis A. Marrero, Henry R. May, Robert D. Parsons, Judith A. Russell and Christopher J. Sally.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

April 19, 1996
KSC Contact: Patti Phelps
KSC Release No. 39-96-2

DAVID R. COX HONORED FOR ROLE IN SPACE PROGRAM

David R. Cox, a native of North Miami, FL, and a graduate of the University of Miami (FL) and the University of Central Florida, Orlando, FL, was among 49 Kennedy Space Center (KSC) employees who were honored recently for their exemplary work at the nation's spaceport.

Cox graduated in 1984 from North Miami (FL) Beach Senior High School. His father, Carl W. Cox, lives in North Miami Beach and his mother, Mary A. Horland, lives in Miami. He received a bachelor's degree in mechanical engineering from the University of Miami in 1989, and a master's degree in engineering management from the University of Central Florida in 1995.

At KSC, Cox is employed by NASA as a mission operations engineer in Payload Flight Operations. He joined the space center in 1989. He competes nationally in bicycle motocross racing, and achieved a ranking of number 1 in the U.S. as a teen-ager in 1983 and number 7 in the nation as an adult in 1992.

Cox and his wife, the former Denise Rindone, live in Titusville, FL.

The 49 employees selected were part of a contingent of some 250 NASA and contractor employees from throughout the space agency being honored for their professional dedication and outstanding achievement in support of the manned spaceflight program.

The Honorees were given a VIP tour of Kennedy Space Center and attended a special reception. Honoring them were several astronauts and senior officials from NASA and the space industry. The Honorees also were taken to a special VIP viewing area to watch the STS-76 launch of the Space Shuttle Atlantis on March 22.

Kennedy Space Center is the launch site and prime landing site for NASA's Space Shuttles. The third docking of the Russian Mir Space Station was the highlight of the STS-76 mission. Crew members were Commander Kevin P. Chilton, Pilot Richard A. Searfoss and Mission Specialists Michael Richard Clifford, Linda M. Godwin, Ronald M. Sega and Shannon W. Lucid, who transferred from the Shuttle to Mir to begin an approximate four-and-a-half month stay on the Russian Space Station.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

April 19, 1996
KSC Contact: Patti Phelps
KSC Release No. 39-96-3

TRICIA M. KOGER HONORED FOR ROLE IN SPACE PROGRAM

Tricia M. Koger, a resident of Daytona Beach, FL, and a 1995 graduate of the University of Central Florida (UCF) in Orlando, was among 49 Kennedy Space Center (KSC) employees who were honored recently for their exemplary work at the nation's spaceport.

Born in Enid, OK, Koger graduated in 1987 from Eau Gallie High School, Melbourne, FL. Her father, John F. Chapman, lives in Titusville, FL, and her mother, Cheryl A. Steinman, lives in Newport Beach, CA. She earned a bachelor of science degree in industrial engineering from UCF.

At KSC, Koger is employed by NASA as a technical operations management engineer with the Payload Operations Directorate. She joined the space center in 1989 as an engineering co-op student.

She is married to Richard B. Koger, an orbiter structures engineer at KSC.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

April 19, 1996
KSC Contact: Patti Phelps
KSC Release No. 39-96-4

BETH A. VRIONI HONORED FOR ROLE IN SPACE PROGRAM

Beth A. Vrioni, a native of Oelwein, IA, and a 1989 graduate of Iowa State University, was among 49 Kennedy Space Center (KSC) employees who were honored recently for their exemplary work at the nation's spaceport.

Vrioni is the daughter of Pete and Jeannie Kalb of Stanley, IA. She graduated in 1985 from Oelwein (IA) High School and earned a bachelor's degree in aerospace engineering from Iowa State University. She received a law degree in 1994 from Northern Illinois University, where she served as research editor of the law review. She also received the Northern Illinois University Outstanding Woman Student Award and the College of Law Academic Excellence Award.

At KSC, Vrioni is employed by NASA as a patent attorney. She joined the space center in 1995.

She is married to David M. Vrioni. They live in Cocoa Beach, FL.

The 49 employees selected were part of a contingent of some 250 NASA and contractor employees from throughout the space agency being honored for their professional dedication and outstanding achievement in support of the manned spaceflight program.

The Honorees were given a VIP tour of Kennedy Space Center and attended a special reception. Honoring them were several astronauts and senior officials from NASA and the space industry. The Honorees also were taken to a special VIP viewing area to watch the STS-76 launch of the Space Shuttle Atlantis on March 22.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

April 19, 1996
KSC Contact: Patti Phelps
KSC Release No. 39-96-5

MARK S. ROSATO HONORED FOR ROLE IN SPACE PROGRAM

Mark S. Rosato, a native of Utica, N.Y., and a 1986 graduate of Whitesboro (NY) High School, was among 49 Kennedy Space Center (KSC) employees who were honored recently for their exemplary work at the nation's spaceport.

Rosato is the son of Sal Rosato of Utica, N.Y., and Linda Rosato of Tempe, AZ. He earned a bachelor's degree in industrial engineering from the State University of New York at Buffalo (NY) in 1990.

At KSC, Rosato is employed by NASA as a logistics engineer. He joined the space center in 1991.

He lives in Cape Canaveral, FL.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

April 19, 1996
KSC Contact: Patti Phelps
KSC Release No. 39-96-6

TERESA M. LAWHORN HONORED FOR ROLE IN SPACE PROGRAM

Teresa M. Lawhorn, a native of Cincinnati, OH, and a 1990 graduate of the Brevard campus of Rollins College in Florida, was among 49 Kennedy Space Center (KSC) employees who were honored recently for their exemplary work at the nation's spaceport.

Lawhorn is the daughter of Leslie Cody of Merritt Island, FL, and the granddaughter of Jim and Bessie Retherford of Cleves, OH. She graduated in 1980 from Merritt Island (FL) High School. She earned an associate's degree in computer programming in 1985 from Brevard Community College, Cocoa, FL, and a bachelor's degree in computer science from Rollins College.

At KSC, Lawhorn is employed by NASA as a computer systems analyst in the Procurement Office. She joined the space center in 1980 and has received numerous awards, including a Superior Achievement Award and two Group Achievement Awards.

She lives in Cocoa, FL.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

April 19, 1996
KSC Contact: Patti Phelps
KSC Release No. 39-96-7

MICHAEL J. LONERGAN HONORED FOR ROLE IN SPACE PROGRAM

Michael J. Lonergan, a native of Utica, NY, and son of Francis Lonergan of Whitesboro, NY, was among 49 Kennedy Space Center (KSC) employees who were honored recently for their exemplary work at the nation's spaceport.

Lonergan graduated in 1978 from Whitesboro Senior High School, Marcy, NY. He received an associate's degree in engineering science in 1980 from Mohawk Valley Community College, Utica, NY, and a bachelor's degree in mechanical engineering in 1982 from the University of Central Florida, Orlando, FL. He also served in the U.S. Marine Corps Reserve from 1980-1995, attaining the rank of captain.

At KSC, Lonergan is employed by NASA as a pressure systems manager with the Safety and Reliability Engineering Branch. He joined the space center in 1986.

He and his wife, the former Alison Valdez, live in Orlando, FL. They have one daughter.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

April 19, 1996
KSC Contact: Patti Phelps
KSC Release No. 39-96-8

JAMES A. DEVAULT HONORED FOR ROLE IN SPACE PROGRAM

James A. Devault, a native of Milan, TN, and son of Mary Ruth Devault of McKenzie, TN, was among 49 Kennedy Space Center (KSC) employees who were honored recently for their exemplary work at the nation's spaceport.

Devault graduated in 1960 from McKenzie (TN) High School. He received an engineering degree from Tennessee Technological University, Cookeville, TN, in 1965.

At KSC, Devault is employed by NASA as an electronic engineer with the Shuttle Operations Directorate. He is responsible for radio communications at KSC, particularly for Space Shuttle landings. He joined the space center in 1968.

He lives in Merritt Island, FL.

The 49 employees selected were part of a contingent of some 250 NASA and contractor employees from throughout the space agency being honored for their professional dedication and outstanding achievement in support of the manned spaceflight program.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

April 19, 1996
KSC Contact: Patti Phelps
KSC Release No. 39-96-9

SHARON SHEW GOLDSMITH HONORED FOR ROLE IN SPACE PROGRAM

Sharon "Sherry" Shew Goldsmith, a 1971 graduate of Lackey High School, Indian Head, MD, and daughter of Ruthie C. Jones of Indian Head, MD, and Johnnie W. Shew of Titusville, FL, was among 49 Kennedy Space Center (KSC) employees who were honored recently for their exemplary work at the nation's spaceport.

Born in Detroit, MI, Goldsmith also attended Charles County Community College, LaPlata, MD, and Brevard Community College, Titusville, FL.

At KSC, Goldsmith is employed by NASA as a management assistant to the center director's executive staff and serves as an escort for the center director's guests at Space Shuttle launches. She joined the space center in 1992.

She lives in Titusville, FL, and has two children.

The 49 employees selected were part of a contingent of some 250 NASA and contractor employees from throughout the space agency being honored for their professional dedication and outstanding achievement in support of the manned spaceflight program.

The Honorees were given a VIP tour of Kennedy Space Center and attended a special reception. Honoring them were several astronauts and senior officials from NASA and the space industry. The Honorees also were taken to a special VIP viewing area to watch the STS-76 launch of the Space Shuttle Atlantis on March 22.

Kennedy Space Center is the launch site and prime landing site for NASA's Space Shuttles. The third docking of the Russian Mir Space Station was the highlight of the STS-76 mission. Crew members were Commander Kevin P. Chilton, Pilot Richard A. Searfoss and Mission Specialists Michael Richard Clifford, Linda M. Godwin, Ronald M. Sega and Shannon W. Lucid, who transferred from the Shuttle to Mir to begin an approximate four-and-a-half month stay on the Russian Space Station.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

April 19, 1996
KSC Contact: Patti Phelps
KSC Release No. 39-96-10

WILLIAM E. COOK HONORED FOR ROLE IN SPACE PROGRAM

William E. Cook, a resident of Orlando, FL, was among 49 Kennedy Space Center (KSC) employees who were honored recently for their exemplary work at the nation's spaceport.

Born in Miami, FL, Cook graduated in 1951 from Miami (FL) Technical High School. He also attended the University of Miami (FL). He served in the Air Force and the Florida National Guard.

At KSC, Cook is employed by The Bionetics Corp. as a hazardous waste manager. He joined the space center in 1965.

Cook and his wife, the former Joyce Lorraine McCandless, have three grown children. He was the past master of the Eola Masonic Lodge No. 207 in Orlando, FL.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

April 19, 1996
KSC Contact: Patti Phelps
KSC Release No. 39-96-11

CECIL G. BOGGS JR. HONORED FOR ROLE IN SPACE PROGRAM

Cecil G. Boggs Jr., a former resident of and police officer in Miami, FL, and son of Cecil and Jane Boggs of Ocala, FL, was among 49 Kennedy Space Center (KSC) employees who were honored recently for their exemplary work at the nation's spaceport.

Born in Mobile, AL, Boggs graduated in 1963 from Palmetto High School, Miami FL. He earned a criminal justice degree in 1974 from Miami (FL) Dade Community College and served in the Air Force from 1963-67. He was a police officer in Miami for eight years.

At KSC, Boggs is employed by EG&G Florida Inc. as security operations administrator. Among his responsibilities are generation of security operations support plans for each Space Shuttle orbiter processing and launch flow, and writing of the Astronaut Mishap Plan to ensure that astronauts and their belongings are secure in case of a mishap at KSC. He joined the space center in 1980.

Boggs and his wife, the former Marilou Dougherty, live in Cocoa, FL. They have two children.

The 49 employees selected were part of a contingent of some 250 NASA and contractor employees from throughout the space agency being honored for their professional dedication and outstanding achievement in support of the manned spaceflight program.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

April 19, 1996
KSC Contact: Patti Phelps
KSC Release No. 39-96-12

MARY ANN JACKSON HONORED FOR ROLE IN SPACE PROGRAM

Mary Ann Jackson, daughter-in-law of Mr. and Mrs. Gerald Jackson of Thonotosassa, FL, was among 49 Kennedy Space Center (KSC) employees who were honored recently for their exemplary work at the nation's spaceport.

Born in Titusville, FL, Jackson graduated in 1982 from Titusville (FL) High School. Her parents, Mr. and Mrs. Joseph Stokes Sr., live in Titusville, FL.

At KSC, Jackson is employed by EG&G Florida Inc. as a communications specialist responsible for the moving, changing, programming and developing of requirements for the phones at KSC. She joined the space center in 1983.

She is married to Denis A. Jackson, who is a foreman in telecommunications at KSC. They have three children and live in Port St. John, FL. She has served as cheerleading coordinator of the Brevard County Youth Football Association.

The 49 employees selected were part of a contingent of some 250 NASA and contractor employees from throughout the space agency being honored for their professional dedication and outstanding achievement in support of the manned spaceflight program.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

April 19, 1996
KSC Contact: Patti Phelps
KSC Release No. 39-96-13

EVELYN L. OTT HONORED FOR ROLE IN SPACE PROGRAM

Evelyn L. Ott, a native of Buffalo, NY, and daughter of Jessie K. Ott of Buffalo, NY, was among 49 Kennedy Space Center (KSC) employees who were honored recently for their exemplary work at the nation's spaceport.

Ott graduated in 1965 from Grover Cleveland High School, Buffalo, NY.

At KSC, she is employed by United Service Associates Inc. as a scheduler. She joined the space center in 1980.

Ott lives in Cocoa, FL.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

April 19, 1996
KSC Contact: Patti Phelps
KSC Release No. 39-96-15

CATHERINE A. PARNELL HONORED FOR ROLE IN SPACE PROGRAM

Catherine A. Parnell, a 1984 graduate of Grand Blanc (MI) High School and daughter of Peter and Patricia Ashurkoff of Grand Blanc, MI, was among 49 Kennedy Space Center (KSC) employees who were honored recently for their exemplary work at the nation's spaceport.

Parnell received a bachelor of science degree in statistics in 1988 from the University of Michigan, Ann Arbor, MI.

At KSC, she is employed by Rockwell Aerospace, Space Systems Division, as a quality engineer. She joined the space center in 1991.

She is married to Terry S. Parnell, a reliability engineer at KSC. They live in Cocoa Beach, FL.

The 49 employees selected were part of a contingent of some 250 NASA and contractor employees from throughout the space agency being honored for their professional dedication and outstanding achievement in support of the manned spaceflight program.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

April 19, 1996
KSC Contact: Patti Phelps
KSC Release No. 39-96-14A

KELLY ALAN GEROUX HONORED FOR ROLE IN SPACE PROGRAM

Kelly Alan Geroux, a 1980 graduate of St. Stanislaus High School, Bay Saint Louis, MS, and son of Mr. and Mrs. Al Geroux of Diamondhead, MS, was among 49 Kennedy Space Center (KSC) employees who were honored recently for their exemplary work at the nation's spaceport.

Born in Orlando, FL, Geroux received a bachelor's degree in electrical engineering in 1988 from Louisiana Tech University, Ruston, LA.

At KSC, he is employed by Rockwell Aerospace, Rocketdyne, as avionics lead engineer for the Space Shuttle main engines. He joined the space center in 1988.

Geroux and his wife, the former Cynthia Bourgeois, live in Cocoa, FL. They have a 10-month-old daughter, Courtney Leigh.

The 49 employees selected were part of a contingent of some 250 NASA and contractor employees from throughout the space agency being honored for their professional dedication and outstanding achievement in support of the manned spaceflight program.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

April 19, 1996
KSC Contact: Patti Phelps
KSC Release No. 39-96-14B

KELLY ALAN GEROUX HONORED FOR ROLE IN SPACE PROGRAM

Kelly Alan Geroux, a 1988 graduate of Louisiana Tech University, Ruston, LA, and son-in-law of Mr. and Mrs. Charles Bourgeois of Ruston, LA, was among 49 Kennedy Space Center (KSC) employees who were honored recently for their exemplary work at the nation's spaceport.

Born in Orlando, FL, Geroux graduated in 1980 from St. Stanislaus High School, Bay Saint Louis, MS. He earned a bachelor of science degree in electrical engineering from Louisiana Tech. His parents, Mr. and Mrs. Al Geroux, live in Diamondhead, MS.

At KSC, he is employed by Rockwell Aerospace, Rocketdyne, as avionics lead engineer for the Space Shuttle main engines. He joined the space center in 1988.

Geroux and his wife, the former Cynthia Bourgeois, live in Cocoa, FL. They have a 10-month-old daughter, Courtney Leigh.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

April 19, 1996
KSC Contact: Patti Phelps
KSC Release No. 39-96-16A

KENNETH T. SALTZ HONORED FOR ROLE IN SPACE PROGRAM

Kenneth T. "Ken" Saltz, son of Frances L. Voorhees of Lynwood, CA, and Kenneth P. Saltz of Sun City, AZ, was among 49 Kennedy Space Center (KSC) employees who were honored recently for their exemplary work at the nation's spaceport.

Born in Kalamazoo, MI, Saltz graduated in 1957 from Covina (CA) High School. He earned an associate's degree in business administration from Cypress (CA) College in 1971 and also attended Mt. San Antonio College, Pomona, CA, and Cerritoes (CA) College.

Saltz is employed by Rockwell Aerospace, Space Systems Division, at KSC. He is assigned as a field representative at NASA's White Sands (NM) Test Facility. He joined the space center in 1961 and has won several awards, including the Silver Snoopy Award from astronauts in 1971, the Quality Assurance Excellence Award in 1988 and the President's Award in 1994.

Saltz and his wife, Diana, live in Las Cruces, NM. They have four grown children.

The 49 employees selected were part of a contingent of some 250 NASA and contractor employees from throughout the space agency being honored for their professional dedication and outstanding achievement in support of the manned spaceflight program.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

April 19, 1996
KSC Contact: Patti Phelps
KSC Release No. 39-96-16B

KENNETH T. SALTZ HONORED FOR ROLE IN SPACE PROGRAM

Kenneth T. "Ken" Saltz, son-in-law of Mr. and Mrs. Carrol Thompson of Arcanum, OH, was among 49 Kennedy Space Center (KSC) employees who were honored recently for their exemplary work at the nation's spaceport.

Born in Kalamazoo, MI, Saltz graduated in 1957 from Covina (CA) High School. He earned an associate's degree in business administration from Cypress (CA) College in 1971 and also attended Mt. San Antonio College, Pomona, CA, and Cerritoes (CA) College. His father, Kenneth P. Saltz, lives in Sun City, AZ, and his mother, Frances L. Voorhees, lives in Lynwood, CA.

Saltz is employed by Rockwell Aerospace, Space Systems Division, at KSC. He is assigned as a field representative at NASA's White Sands (NM) Test Facility. He joined the space center in 1961 and has won several awards, including the Silver Snoopy Award from astronauts in 1971, the Quality Assurance Excellence Award in 1988 and the President's Award in 1994.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

April 17, 1996
KSC Contact: Lisa Malone
KSC Release No. 41-96

SHUTTLE BOOSTER TRAINING DEVICE BECOMES PART OF MARINE REEF

Explosive charges sent an obsolete Shuttle solid rocket booster (SRB) recovery training device to the bottom of the Atlantic Ocean last week to become part of a marine habitat and fishing reef.

The 132-foot-long SRB simulator, known as the Ocean Training Fixture (OTF), was towed Apr. 11 to a location 22 miles southeast of Port Canaveral by the Liberty Star, one of NASA's two SRB recovery ships. Once the OTF was in the proper north-south orientation, a team from the U.S. Army Explosive Ordnance Disposal unit at Cape Canaveral Air Station set off six charges to sink the device in 122 feet of water.

"The OTF is now a major part of an artificial reef that provides an environment to encourage the propagation of marine life," said C. Wayne Ranow, NASA SRB retrieval and disassembly manager. "The State of Florida supports the development of such reefs to improve ocean conditions and provide more habitats for marine organisms."

Ranow coordinated the NASA effort with the Canaveral Port Authority, which had previously sunk four railroad cars to begin the reef in 1994. More outdated space hardware, some from the Apollo program, may soon be added to the Port Canaveral artificial reef project.

"This hardware had outlived its useful purpose as a land-based training device for divers that assist in the recovery of two SRBs from the Atlantic after every Shuttle launch," Ranow said. "However, we plan to use this part of the reef for certification exercises for our divers."

The reef will be used by recreational divers and fishermen as well. It will take about four months for marine life to become established, Ranow said.

The OTF portion of the Cape Canaveral reef is located at a latitude of 28 degrees, 19 minutes north and a longitude of 80 degrees, 12.24 minutes west. It will appear on navigational charts as the Thomas William Hart Reef, named in honor of a former SRB recovery team diver who recently passed away. A plaque attached to the front of the OTF serves as a memorial.

Note: Video and photographs of the OTF reef operations are available.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

April 18, 1996
KSC Release No. 42-96

Note to Editors/News Directors:
TCDT MEDIA OPPORTUNITY WITH STS-77 CREW SET FOR NEXT WEEK

The crew of Space Shuttle mission STS-77 will be at Kennedy Space Center next week for the Terminal Countdown Demonstration Test (TCDT).

The Terminal Countdown Demonstration Test is held prior to each Space Shuttle flight. It provides the crew of each mission opportunities to participate in simulated countdown activities at KSC. This time is also used by the crew for emergency egress training exercises at the pad. The TCDT ends with a mock launch countdown culminating in a simulated main engine cutoff scenario. The crew also spends time viewing and inspecting their mission payloads in the orbiter's payload bay.

The six-member crew of mission STS-77 is scheduled to arrive at KSC s Shuttle Landing Facility at about 10:30 a.m. Monday, April 22. Media interested in viewing crew arrival should be at the KSC press site at 9:30 a.m. Monday for transport to the Shuttle Landing Facility.

On Tuesday, news media representatives will have an opportunity to speak informally with and photograph the crew at Pad 39B. Media interested in participating in this question and answer session should be at the KSC Press Site by 7:30 a.m. Tuesday for transport to the pad.

Contact the KSC Press Site to obtain the proper badge for these events.

On Wednesday, the crew will depart their quarters at about 7:45 a.m. and begin to board the Shuttle Endeavour at about 8:15 a.m. where they will remain through the end of the test. The simulated main engine cut-off will occur at 11 a.m. Wednesday.

Following TCDT, the crew is scheduled to depart KSC for their homes in Houston for final flight preparations.

Endeavour is now targeted for launch on May 16 at 6:32 a.m. Mission STS-77 will feature the Spacehab Space Research Laboratory and the operations of the Spartan 207/Inflatable Antenna Experiment.

Crew members for mission STS-77 are: Commander John Casper; Pilot Curtis Brown; and Mission Specialists Daniel Bursch, Mario Runco, Andrew Thomas and Marc Garneau of the Canadian Space Agency.

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NASA News Release
ON LINE
JOHN F. KENNEDY SPACE CENTER

April 18, 1996
KSC Release No. 43-96

EFFORTS UNDERWAY TO RELOCATE KSC'S SATURN V COMPONENTS

A historic Kennedy Space Center landmark, the Saturn V located near the Vehicle Assembly Building, is being prepared for relocation to its new viewing site on the Space Center.

The 363 foot-long Apollo-era rocket has been on display at KSC in an un-mated, horizontal configuration since 1976 when it was part of the U.S. Bicentennial Exposition of Science and Technology. Since that time, it has remained on display alongside the Saturn V Causeway and used as a popular tourist stop and KSC landmark.

In January 1979, under the NASA-National Air and Space Museum Artifacts Agreement, NASA turned over the title of the Saturn V at KSC to the Smithsonian Institution.

In December 1995, Delaware North Park Services of Spaceport, Inc., the Kennedy Space Center Visitor Center concessioner, awarded a contract to Thomarios Painting Company, Norton, Ohio, to perform preservation and stabilization work on the Saturn V vehicle. These efforts have been closely coordinated with officials of the Air and Space Museum, Washington, D.C.

Now with construction of the new Apollo/Saturn V Center nearing completion, the rocket will be moved to its new viewing location in a way similar to how it was originally intended to deliver astronauts to the lunar surface -- one stage at a time.

The first artifact to be moved to the new Apollo/Saturn V Center will be the Command Service Module (CSM). The CSM has been housed in the former Flight Crew Training Facility in KSC's industrial area, where it has been displayed with other artifacts from the Apollo era. The move of the CSM is scheduled for 9 a.m. Friday, April 19.

Beginning next week, components of the Saturn V rocket that have been on display outside the VAB will be transported to the Apollo/Saturn V Center. On Apr. 23, the upper stages (the Command Module, the Service Module, the Launch Escape System and the Spacecraft-Lunar Module Adapter) will be moved. The Saturn V second stage will be moved on Apr. 27. Then on May 11, the Saturn V first stage, along with its attached five main engines, will be transported to the new viewing site.

The Apollo/Saturn V Center is located about 2 miles north of the Vehicle Assembly Building on the Kennedy Parkway, near the current Banana Creek VIP Shuttle launch viewing site.

Final construction of the Apollo/Saturn V Center will be completed in December 1996 and open soon thereafter for visitors from the Kennedy Space Center Visitor Center.

No appropriated funds are being used in connection with the Apollo/Saturn V Center or in the restoration of the vehicle. Funding for this project is provided by bus tour ticket surcharges and from state arranged funding under an interagency agreement between KSC and the Spaceport Florida Authority (SFA) and South Trust Bank of Alabama. Under the arrangement, SFA will provide the financing and own the building under a NASA-granted Use Permit until such time as the outstanding project debt is fully paid.

-- end --

NOTE TO EDITORS: A photo opportunity and brief tour of the Apollo/Saturn V Center, which is still under construction, is planned for 11 a.m. Friday, April 19. Media interested in seeing the facility should be at the KSC Press Site at 10:30 a.m. Friday for transport to the site. The CSM is scheduled to be on location at that time.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

April 29, 1996
KSC Release No. 44-96

NASA MANAGER, ALAN J. PARRISH, HONORED BY GEORGIA TECH

Alan J. Parrish, a native of Adel, GA and resident of Merritt Island, FL, will be inducted into Georgia Institute of Technology's Academy of Distinguished Engineering Alumni on May 2 in Atlanta.

Recognition by Georgia Tech is reserved for engineers who are widely respected, have attained professional and personal success, and are actively involved in engineering or management.

Appointed as the associate director at NASA's John F. Kennedy Space Center on Feb. 4, 1994, he is responsible for providing a centralized management advisory service to the center director, the deputy director, and all levels of Center management. In addition, he is an advisor on organizational matters, and on the development and implementation of management systems which are basic to the effective institutional operations of the Center. He has nearly 30 years of service at the Kennedy Space Center, and is the recipient of several awards including two NASA Exceptional Service Medals and the prestigious NASA Outstanding Leadership Medal.

He graduated from Cook High School in Adel in 1952. Following four years in the U.S. Navy, he received his bachelor of electrical engineering degree from the Georgia Institute of Technology in 1960.

Parrish and his wife, the former Pat Carmichael of Adel, GA, have four children and six grandchildren.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

April 29, 1996
KSC Release No. 45-96

NASA MANAGER, ALAN J. PARRISH, HONORED BY GEORGIA TECH

Alan J. Parrish, a resident of Merritt Island, FL and a native of Adel, GA, will be inducted into Georgia Institute of Technology's Academy of Distinguished Engineering Alunmi on May 2 in Atlanta.

Recognition by Georgia Tech is reserved for engineers who are widely respected, have attained professional and personal success, and are actively involved in engineering or management.

Appointed as the associate director at NASA's John F. Kennedy Space Center on Feb. 4, 1994, he is responsible for providing a centralized management advisory service to the center director, the deputy director, and all levels of Center management. In addition, he is an advisor on organizational matters, and on the development and implementation of management systems which are basic to the effective institutional operations of the Center. He has nearly 30 years of service at the Kennedy Space Center, and is the recipient of several awards including two NASA Exceptional Service Medals and the prestigious NASA Outstanding Leadership Medal.

He graduated from Cook High School in Adel in 1952. Following four years in the U.S. Navy, he received his bachelor of electrical engineering degree from the Georgia Institute of Technology in 1960.

Parrish and his wife, the former Pat Carmichael of Adel, GA, have four children and six grandchildren.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

April 22, 1996
KSC Contact: Lisa Malone
KSC Release No. 46-96

SPACE SHUTTLE INSULATION COOLS NASCAR DRIVER IN DAYTONA TEST

Space Shuttle insulation reduced temperatures in the cockpit of NASCAR driver Rusty Wallace's Ford Thunderbird by 30 to 50 degrees during a recent high-speed test at Daytona International Speedway.

A KSC Thermal Protection System (TPS) team had designed and installed thermal barriers in Wallace's car made of scrap TPS blanket material late last year at the space center. However, this was the first fully instrumented test to determine how well the heat reduction system would work under race track conditions.

"The data we have collected from thermocouples inside and outside the car indicate that the material really did its job," said NASA TPS Facility manager Bruce Lockley. "I also could really feel how much hotter it was inside the car when we ran it without the blankets."

During the test, Wallace ran 20 2.5-mile laps with only the external elements of the TPS system in place to reach a constant temperature level. He then drove the same distance with the thermal barriers removed. Computer-based sensors and data recorders were onboard to measure temperatures at hot spots around the car throughout the experiment.

"One critical point is just below the driver's foot, which rests on the floorpan above the car's exhaust system," said Martin Wilson, project manager at the TPS Facility for Rockwell International. "We measured a temperature of 108 degrees Fahrenheit at this point with the TPS material in place and 145 degrees with the blanket material removed. The temperature reduction will be even greater when we run tests with the interior insulation in place."

Another hot spot is near the driver's left elbow, Wilson said. With just the external insulation in place, the recorded temperature was 120 degrees. A blistering 260 degrees was reported without the insulation.

Experts have estimated that temperatures inside the driver's cockpit during a race can reach up to 160 degrees. Although drivers are cooled with forced air systems and protected by fire-retardant suits, they have been burned and blistered by the tremendous heat transferred through the engine firewall, transmission tunnel and floor into the cockpit.

In an attempt to improve conditions for his drivers, former NASCAR champion and NASCAR race team manager Bobby Allison approached Kennedy Space Center director Jay Honeycutt to help find a solution. Roger Penske then agreed to have one of his cars serve as a testbed for new technology that could be adopted by NASCAR. The effort led to a NASA Space Act agreement between the space center and Penske Racing Inc. The Penske team agreed to test a TPS-equipped car under racing conditions.

The KSC team will continue to work with Penske Racing to conduct additional tests and to develop a thermal system that can be switched quickly from one car to another, Lockley said. The additional work is necessary to provide enough data for NASCAR to determine whether the thermal system can be approved for use on all cars that race in the organization's events.

"We are sure that the system will significantly improve environmental conditions for race car drivers," Wilson said. "This is another good example of how technology developed for the space program can be used for applications on Earth."

# # #

Note: Video and photos of the Daytona test are available.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

April 24, 1996
KSC Contact: Patti Phelps
KSC Release No. 48-96

FIVE KSC WORKERS HONORED BY NASA ASTRONAUTS

Five NASA/KSC employees recently were presented with NASA's prestigious Silver Snoopy Award for service to the Space Shuttle astronauts.

Five of the seven members of the STS-75 crew presented the award April 2 at KSC to Lawrence T. Mauk of Cocoa. The astronauts were STS-75 Mission Commander Andrew M. Allen, Pilot Scott J. "Doc" Horowitz, Payload Commander Franklin R. Chang- Diaz and Mission Specialists Jeffrey A. Hoffman and Claude Nicollier. Also receiving awards on that date were James V. Thompson of Rockledge and Troy G. Turbyville of Titusville, both of whom were given their awards by Horowitz and STS-75 Mission Specialist Maurizio Cheli of the European Space Agency. John R. Lorch of Cocoa received his Silver Snoopy on April 4 from astronaut Pam Melroy.

John. J. "Tip" Talone Jr. of Cocoa Beach was presented his award on March 19 by astronaut David Walker.

Mauk, a program design specialist with the Public Affairs Office, was commended for his efforts in bringing a full-scale model of a Space Shuttle orbiter and a new program of daily briefings on current space flight activities to the KSC Visitor Center. "The positive impact you have made towards the public's awareness, understanding and appreciation of the human space flight program is an important and lasting contribution toward NASA's mission," Mauk was told by the astronauts.

Thompson is a personnel management specialist in the Administration Office. He was recognized for several contributions to the Personnel Office, including the Personnel Office newsletter, the Labor/Management Partnership Program and family- friendly programs for employees. "The accurate and timely information you have provided to employees has been a major factor in maintaining a quality and motivated workforce at KSC," the astronauts told Thompson.

Turbyville, a supports requirements manager with the Installation Operations Directorate, was cited as a key member of a team set up to coordinate enhanced data acquisition and distribution to support management decisions relating to Shuttle flight safety. "On several occasions, your response to short-notice support requirements saved the day and kept a mission on track," the astronauts said to Turbyville.

Lorch, an engineer with the Shuttle Operations Directorate, was applauded for his efforts in ensuring effective firex and sound suppression water systems at the Shuttle launch pads. "You have been highly effective in taking the lead to identify, define, formalize and coordinate the efforts to implement modifications to the Apollo-era firex water systems," Lorch was told by astronaut Melroy.

Talone, also of Shuttle Operations, is the flow director for the orbiter Endeavour. He was commended for his "commitment, personal sacrifice and team-building spirit." Noting that Talone was an "inspiration" to the KSC work force and astronauts, Walker said: "Through your knowledge, professionalism, leadership and teamwork, you have significantly contributed to the space program."

Snoopy, of the comic strip "Peanuts," has been the unofficial mascot of NASA's astronaut corps since the earliest days of manned space flight. The Silver Snoopy Award was created by the astronauts to honor persons who contribute most to the safety and success of manned spaceflight.

The award is presented to no more than 1 percent of the space center's work force each year. Recipients are given a silver pin depicting the famous beagle wearing a space suit. All the pins have flown on a previous Space Shuttle mission. The awardees also receive a framed certificate and a congratulatory letter signed by the presenting astronaut.

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NASA News Release
ON LINE
JOHN F. KENNEDY SPACE CENTER

May 17, 1996
KSC Contact: Joel Wells
KSC Release No. 49-96

NEW KSC-DEVELOPED NON-ABRASIVE CLEANING SYSTEM LICENSED TO INDUSTRY

A new supersonic cleaning system that does not damage cleaning surfaces has been developed by engineers at Kennedy Space Center and may soon be used to remove contaminants from Space Shuttle hardware and other sensitive structures.

Because the Supersonic Gas-Liquid Cleaning System is so unique in its design and potential effectiveness, separate patent license agreements have been developed between KSC and two independent companies for commercial applications. The companies are Precision Fabricating and Cleaning Co. of Cocoa, FL, and Va-tran Systems, Inc. of Chula Vista, CA. The agreement is a means for NASA to effectively transfer technology initially developed for the space program to companies that may derive innovative commercial uses from it.

One of the many advantages of the Supersonic Gas-Liquid Cleaning System over other pressurized cleaning methods is that it does not abrade the surface of the hardware being cleaned. It requires much lower levels of pressure while using very little water. These features allow the system to be used for cleaning anything from small electronic circuit boards to much larger historic monuments and buildings.

"We don't need to use as high a pressure as in some cleaning systems," said Eric Thaxton, one of the system designers at KSC, "because the energy is provided by the nozzle's supersonic design."

The system works by mixing air and water from separate pressurized tanks and ejecting this mixture at supersonic speeds from a series of nozzles at the end of a hand-held wand, explained NASA lead project engineer Raoul Caimi. At these speeds, the water droplets have the kinetic energy to forcibly remove the contaminant material.

This technology is also environmentally friendly. It was developed as an alternative to chlorofluorocarbon (CFC)-based solvents. "During our testing programs," Caimi said, "we found that the gas-liquid supersonic system actually does a better job of cleaning than the system that uses CFCs."

Also, the relatively low volume of water required, less than 100 milliliters per minute, means there is less fluid left after cleaning that must be handled as contaminated industrial or hazardous waste.

Va-tran Systems director of engineering Jeffrey Sloan feels that the KSC invention will add an exciting technology to the company's current precision cleaning capabilities. "We anticipate greatly expanded markets," he said, "as we begin to serve automotive, aerospace, heavy manufacturing and other industries."

Bill Sheehan, chief of the KSC Technology Programs and Commercialization Office, said, "This is an innovative system that is recognized by industry to have many potential uses in the commercial market. We feel that it serves as a good example of how technology developed for use in the space program can benefit the country's industry and the public."

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Note: Industry representatives who would like more information on the new cleaning system or are interested in licensing this NASA technology should contact the Technology Programs and Commercialization Office, DE-TPO, Kennedy Space Center, FL 32899 or call (407) 867-3017.

Video and photos of the Supersonic Gas-Liquid Cleaning System in operation are available.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

May 1, 1996
KSC Contact: Joel Wells
KSC Release No. 51-96

CO2 EXPERIMENTS AT KSC MAY "CLEAR THE AIR" ON ENVIRONMENTAL QUESTIONS

Researchers from the Smithsonian Institution hope their experiment in a local scrub oak community at the Kennedy Space Center (KSC) will help them determine the effects of increased Carbon Dioxide (CO2) on natural vegetation.

Experts forecast a doubling of the CO2 in the Earth's atmosphere during the next century. The research team plans to simulate that increase to find out how natural ecosystems and vegetation will respond.

The Smithsonian, NASA, and the Department of Energy (DOE) are cooperating to find answers to these questions. The Smithsonian will lead the investigation with on-site assistance from KSC's life science organization. The Department of Energy provided $1.3 million for the three-year project through a grant to the Smithsonian. One year has been spent preparing the site.

At first glance, the experiment site looks like a nature trail with a boardwalk that branches out to several small greenhouses. It's actually a pristine scrub community located a half mile north of KSC's Launch Complex-39. The 4-acre site is dotted with 16 open-top chambers that house the Florida scrub vegetation being studied.

The chambers, constructed of PVC and covered by a clear film of polyester, are about 12 ft. tall and 12 ft. in diameter. They have been carefully placed over a new growth of scrub that is springing back after a planned burn of the area. Twice the normal amount of CO2 will be blown into half of the chambers, through an electrically powered duct system.

Underground cameras will monitor root growth and researchers will watch soil nutrition, the growth and physiology of the plants, and the carbon and water exchange over the next two years. Results from the eight ambient or natural chambers will be compared to those of the chambers with elevated CO2.

According to Dr. Bert Drake, the Smithsonian's principal investigator on this project, part of the experiment's focus is to determine if an increase in CO2 will help vegetation grow in nutrient poor areas. "KSC's nutrient deficient soil is an excellent sample for this experiment," said Drake.

"KSC's scrub community also provides a small, woody vegetation that fits into our chambers, but has the attributes of much larger forests. This gives us the control we need and allows a broad application of the results," explained Drake.

"The study may also show that some vegetation types are more amenable to extra CO2 and that those will flourish and develop a competitive advantage over others," said Dr. Ross Hinkle, biological programs manager for Dynamac, KSC's life science contractor.

NASA's Biological Programs organization views the project as an opportunity to share data and expertise. "The data gathered from this study will significantly augment our knowledge base and help KSC with our environmental studies and efforts. Additionally, they are applying information we have gathered locally on a much more global scale," said Dr. Bill Knott, chief scientist, Biological Programs.

Seven other co-investigators from academic and international organizations are cooperating on this investigation. The University of South Florida, Desert Research Institute, and Duke University will contribute to the study. In addition, researchers from Australia, England, the Netherlands and South Africa are supporting the study.

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NOTE: Video and still photos available upon request

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

May 1, 1996
KSC Contact: Lisa Malone
KSC Release No. 52-96

TWO KSC EMPLOYEES NAMED ASTRONAUT CANDIDATES

Two NASA/Kennedy Space Center employees have been named astronaut candidates, making a total of three candidates chosen from KSC in the last 16 months.

Fernando 'Frank' Caldeiro, a lead engineer in the systems assurance office, and Joan Higginbotham, a lead orbiter project engineer, received the news April 29 in phone calls from the astronaut office at NASA's Johnson Space Center in Houston.

"It is gratifying to see employees who work so diligently and successfully toward the processing and launch of the Shuttle fleet here at KSC be given the opportunity to fly," said KSC Center Director Jay Honeycutt. "Their extensive knowledge of orbiter systems should contribute to the success of any future missions they are part of."

Caldeiro said the fact that he so thoroughly enjoys his work at KSC probably contributed to his selection. And the fact that he has always been interested in flight. His first job after receiving a mechanical engineering degree from the University of Arizona was with Rockwell International as a test engineer for the B-1B bomber in Palmdale, CA. Shortly afterward he was promoted to test director. After the 100th bomber was delivered in 1988, he transferred to KSC as a systems specialist with Shuttle main propulsion systems. In 1991 he was hired by NASA and began working in the KSC systems assurance office.

Although Caldeiro had dreamed of becoming an astronaut, he was initially a bit daunted by the educational requirements. However, after completing his master's degree at the University of Central Florida he was encouraged by Safety and Mission Assurance Director JoAnn Morgan and co-workers to apply for the astronaut corps.

"I think I used up a lot of my lifetime supply of luck," he said. In his spare time Caldeiro and his wife Donna enjoy traveling in the two-seat composite airplane he built himself.

Higginbotham began working for NASA in 1987 as a payload electrical engineer. Within six months she became the lead for orbiter experiments on the Space Shuttle Columbia. Later she worked on the Shuttle payload bay reconfiguration for all Shuttle missions.

"Although I felt more relaxed during the interview this time, I actually felt more confident about my chances the first time," said Higginbotham, who also interviewed for the astronaut corps in 1994.

In August, she will add a master's degree in space systems to her bachelor's degree in electrical engineering and her master's in management.

Higginbotham was recently promoted to the lead orbiter project engineer position for the Shuttle Columbia after two years as an orbiter project engineer for the Shuttle Atlantis. She holds the technical lead government engineering position in the firing room where she supports and manages the integration of vehicle testing and troubleshooting. She has also led several special assignments, including serving as executive staff assistant to the center director and

working on an interactive display at Spaceport USA showing detailed Shuttle processing procedures.

In her desire to "give back" to the community, Higginbotham engages in numerous public speaking engagements, conducts tours on behalf of NASA and tutors at a local elementary school. She has received a NASA Exceptional Service Medal and the Outstanding Woman of the Year Award.

She also enjoys bicycling and weight training and has received the President's Sports Award in both areas.

Higginbotham and Caldeiro are expected to report to work in Houston in August.

Kay Hire, formerly an engineer with Lockheed Space Operations Company, became the first KSC employee to be named a candidate when she was selected in December 1994.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

May 2, 1996
KSC Contact: Dennis Armstrong
KSC Release No. 53-96

JOAN E. HIGGINBOTHAM SELECTED AS NASA ASTRONAUT CANDIDATE

On May 1, NASA announced that Joan E. Higginbotham, a native of Chicago, IL, and a 1987 graduate of the Southern Illinois University at Carbondale, was selected as a NASA astronaut candidate.

Higginbotham is the daughter of William and Inez Higginbotham of Chicago, IL. She graduated in 1982 from Whitney M. Young Magnet High School in Chicago, and earned a bachelor's degree in electrical engineering from Southern Illinois University. She received a master's degree in management from the Florida Institute of Technology (FIT) in 1996, and expects to receive a second master's in space systems from FIT in August.

Higginbotham has been employed by NASA at the Kennedy Space Center since 1987, were she was recently promoted to the lead orbiter project engineer position for the Space Shuttle Columbia after working two years as an orbiter project engineer for the Shuttle Atlantis. She holds the technical lead government engineering position in the firing room where she supports and manages the integration of vehicle testing and troubleshooting. Higginbotham also participates in numerous public speaking engagements, conducts tours on behalf of NASA, and also finds time to tutor at a local elementary school. She has received the Presidential Sports Award in bicycling and weight training, the NASA Exceptional Service Medal and is a former recipient of the KSC Outstanding Woman of the Year Award.

This year's astronaut candidate class is the 16th since the first class of Mercury test pilots was selected in 1959. From last year's original pool of 2,432 applicants, Higginbotham was one of only 35 astronaut candidates selected. She will begin astronaut training on Aug. 12 in Houston, TX.

NOTICE TO EDITORS: Photos are available upon request.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

May 2, 1996
KSC Contact: Dennis Armstrong
KSC Release No. 54-96

FERNANDO "FRANK" CALDEIRO SELECTED AS NASA ASTRONAUT CANDIDATE

On May 1, NASA announced that Fernando "Frank" Caldeiro, a native of Buenos Aires, Argentina, and a 1976 graduate of W. C. Bryant High School in Long Island, NY, was selected as a NASA astronaut candidate.

Caldeiro is the son of Jose and Carmen Caldeiro of Flushing, NY. In 1984 he earned his bachelor's degree in mechanical engineering degree from the University of Arizona, and received a master's degree in industrial engineering management from the University of Central Florida in 1995.

Caldeiro has been employed by NASA at the Kennedy Space Center since 1991, where he is a lead engineer in the Systems Assurance Office. As a child, he built and flew radio controlled airplanes and gliders, and obtained his pilot's license at 18. He is a member of the Experimental Aircraft Association (EAA), and recently built his own high-performance two-seat composite airplane. He is a licensed amateur radio operator, enjoys snorkeling, scuba diving, canoeing, sky diving and woodworking.

This year's astronaut candidate class is the 16th since the first class of Mercury test pilots was selected in 1959. From last year's original pool of 2,432 applicants, Caldeiro was one of only 35 astronaut candidates selected. He will begin astronaut training on Aug. 12 in Houston, TX.

NOTICE TO EDITORS: Photos are available upon request.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

May 8, 1996
KSC Contact: Bruce Buckingham
KSC Release No. 55-96

PHOTO OPPORTUNITY AVAILABLE FOR MOVE OF KSC'S SATURN V FIRST STAGE

The first stage of Kennedy Space Center's historical Saturn V landmark will be relocated to its new viewing site on Saturday, May 11. This element of the Saturn V rocket is the last major component to be moved from its original viewing location in front of KSC's Vehicle Assembly Building where it has been on display as a popular tourist stop for the past 20 years. The move is scheduled to begin at about 10 a.m. Saturday.

The first components of the Saturn V were moved last month to the new facility which is designed to highlight NASA's Apollo-era accomplishments, specifically the Saturn V launch vehicle. The 363 foot-long rocket will be on permanent display in the new Apollo/Saturn V Center, which is still under construction.

The Apollo/Saturn V Center is located about 2 miles north of the Vehicle Assembly Building on the Kennedy Parkway, near the current Banana Creek VIP Shuttle launch viewing site. Final construction of the center will be completed in December 1996 and open soon thereafter for visitors from the Kennedy Space Center Visitor Center.

In December 1995, Delaware North Park Services of Spaceport, Inc., the Kennedy Space Center Visitor Center concessioner, awarded a contract to Thomarios Painting Company, Norton, Ohio, to perform preservation and stabilization work on the Saturn V vehicle. These efforts have been closely coordinated with officials of the Smithsonian National Air and Space Museum, Washington, D.C., which has title to the vehicle.

-- end --

NOTE TO EDITORS: Media interested in covering the move of the Saturn V first stage should contact the KSC press site by close of business Friday, May 10, to arrange for proper credentials. Properly badged media should plan on meeting at the Press Site at 9 a.m. Saturday. A brief tour of the Apollo/Saturn V Center, which is still under construction, will follow the planned move.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

May 15, 1996
KSC Contact: Joel Wells
KSC Release No. 56-96

THOUSANDS OF TINY SEA ANIMALS HELP NASA, CSA ANSWER BIG LIFE SCIENCE QUESTIONS

NASA and the Canadian Space Agency (CSA) are taking life science research to new heights. CSA's Aquatic Research Facility (ARF) or "Space Aquarium" is scheduled to launch with the Space Shuttle Endeavour on May 19.

One thousand mussel larvae, 32,000 sea urchin eggs and 6,000 starfish embryos make up the list of passengers to be stowed aboard Canada's first life science payload in space. This zoo of marine life is the focus of three studies that will address world-wide concerns ranging from birth defects to dwindling fish stocks in our oceans.

Housed in what looks like a suitcase carrying two carousels from a compact disc player, the aquatic specimens will be observed by two tiny videocameras in two separate environments. Kennedy Space Center (KSC) life science personnel will take part in the monitoring and maintenance of the experiments in-flight.

One carousel spins, imitating the Earth's gravity and the other provides a gravity-free environment so scientists can compare the two conditions side by side. A third set of specimens is being watched at KSC to insure that gravity is the only varying factor in the experiment.

Dr. Heide Schatten, a professor of zoology at the University of Wisconsin-Madison, is the principal investigator on the U.S. portion of the experiment. It will begin three hours after launch when astronauts inject a sperm concentrate into a container full of sea urchin eggs using a unique KSC developed syringe.

The new syringe, made from off-the-shelf materials, allows very small, exact injections of fluid. It protects the user from needle injury and has a triple containment feature that prevents fluid from leaking in the near zero gravity environment of space.

Dr. Schatten will observe the effects of spaceflight on the early stages of embryo development. The study will provide insight into the causes and cures of both osteoporosis and muscular dystrophy.

One of the two CSA experiments focuses on the calcium formation of a mussel's shell and the development of its feeding mechanism. Dr. Ron O'Dor, a professor at Dalhousie University in Nova Scotia, hopes his investigation will shed some light on the causes of calcium depletion experienced by humans in space.

Today's astronauts take daily, three-hour exercise breaks to maintain healthy bones and muscles in space. The results from this experiment apply directly to the planned long term stays on the International Space Station.

Another CSA experiment looks at the effects of zero gravity on the starfish embryo. In very early stages of development they are remarkably similar to human embryos. From this study, Bruce Crawford, department biologist for the University of British Columbia, hopes to learn how to predict and control early birth defects in humans.

The invertebrate's unusual swimming and feeding patterns will also be studied to gain insight into how we can better manage our oceans' fish populations and feed ourselves. Both CSA experiments will help researchers understand how

these small sea creatures contribute to the removal of greenhouse gases in the atmosphere.

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Note to editors: An informal press briefing discussing the ARF experiments will be held at the KSC Press Site at 10 a.m. on Friday, May 17. Representatives from CSA and NASA will be available for interview. Still photos and video are available upon request.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

May 14, 1996
KSC Contact: Lisa Malone
KSC Release No. 57-96

Notice to Editors/News Directors:
MISSION STS-77 EVENTS, NEWS CENTER OPERATING HOURS SET

News conferences, events and operating hours for KSC's News Center have been set for the May 19 launch of the Space Shuttle Endeavour on Mission STS-77, the 77th launch in the Shuttle program. These events are scheduled to be carried live on NASA Television unless noted (please refer to the STS-77 TV schedule for exact times).

At 4 a.m. EDT Thursday, the launch countdown will begin at the T-43-hour mark. Launch is currently set for 6:30 a.m. EDT on Sunday, May 19. The launch window is open for 2 1/2 hours.

The six STS-77 crew members are scheduled to arrive at KSC on Thursday, May 16, at 9 a.m. EDT. News media representatives wishing to cover the event must be at the News Center by 8 a.m. Thursday (in the event of a possible early crew arrival) for transportation to the Shuttle Landing Facility. This event will be replayed on NASA TV at about 9:40 a.m. EDT. News media representatives needing credentials for crew arrival should call the News Center at 867-2468 to make arrangements.

News media representatives with proper authorization may obtain STS-77 mission credentials at the Pass and Identification Building on State Road 3 on Merritt Island.

# # # #

Information about the countdown and mission can be accessed electronically via the Internet at: http://www.ksc.nasa.gov/shuttle/countdown/ and at http://shuttle.nasa.gov/

KSC press releases and other information are available on the KSC PAO Home Page at: http://www-pao.ksc.nasa.gov/kscpao/kscpao.htm

STS-77 BRIEFING & EVENTS SCHEDULE
(all times are in EDT and conferences are held inside the KSC Press Site auditorium)

L-3 Days - Thursday, May 16

- Launch countdown begins -- **4:00 a.m.**

- STS-77 fight crew arrival (taped) -- **9:00 a.m.**
- STS-77 fight crew arrival (replay on NASA TV) -- **9:40 a.m.**

- Countdown Status Briefing -- **10:00 a.m.**
  John Stealey -- NASA Test Director
  Roelof Schuiling -- STS-77 Payload Manager
  Ed Priselac -- Shuttle Weather Officer

L-2 Days - Friday, May 17

- Countdown Status Briefing -- **9:00 a.m.**
  Debbie Frostrom -- NASA Test Director
  Roelof Schuiling -- STS-77 Payload Manager
  Ed Priselac -- Shuttle Weather Officer

- STS-77 Aquatic Research Facility (informal) Briefing -- **10:00 a.m.**
  (local-only briefing in the KSC Press Site auditorium)

L - 1 Day - Saturday, May 18

- Pre-launch News Conference -- **10:00 a.m.**
  (or immediately following the management team's meeting)

  Tommy Holloway -- NASA Shuttle Program Manager, Johnson Space Center
  Dr. John Mansfield -- Associate Administrator, Office of Space Access and Technology, NASA Headquarters
  Dr. Shelley Harrison -- Chairman and CEO, SPACEHAB, Inc.
  Steve MacLean -- Director General, Canadian Astronaut Program, Canadian Space Agency
  Bob Sieck -- Director of Shuttle Operations, KSC
  Capt. Scot Heckman -- Launch Weather Officer

- Remote Camera Setup at Pad -- **10:30 a.m.**
- Rotating Service Structure moves (press departure at 11 a.m.) -- **12:00 noon**
- News media orientation tour (optional depending on interest) -- **TBD**

- Tanking begins -- **approx. 9:30 p.m.**

Launch Day - Sunday, May 19

- NASA Television live launch programming begins -- **1:30 a.m.**

- Launch of Endeavour -- **6:30 a.m.**

- Post-launch press conference -- **L + 1 hour**
  Loren Shriver -- manager of Launch Integration for the Space Shuttle Program
  James Harrington -- KSC Launch Director

KSC News Center office hours for STS-77
(hours may be adjusted for in-flight events)

(Launch minus 3 days) Thursday, May 16	8:00 a.m. - 4:30 p.m.
(Launch minus 2 days) Friday, May 17	8:00 a.m. - 4:30 p.m.
(Launch minus 1 day) Saturday, May 18	7:00 a.m. - around-the-clock - 2:30 p.m.
(Launch day) Flight day 1, Sunday, May 19	8:00 a.m. - 4:30 p.m.
Flight Days 2-6, May 20-24	CLOSED
Flight days 7-8, May 25-26	7:00 a.m. - 9:00 a.m.
Flight day 9, May 27 (in-flight conference)	8:00 a.m. - 4:30 p.m.
Flight day 10, May 28	4:30 a.m. - 4:30 p.m.
Flight day 11, May 29 (Landing)	

(Times may vary and be adjusted in real time depending on mission events and timelines.)

News media representatives may obtain STS-77 mission credentials at the Pass and Identification Building at Gate 2 on State Road 3, Merritt Island, during the following times:

Thursday, May 16 -- 7 a.m. to 12 noon
Friday, May 17 -- 8 a.m. to 4:30 p.m.

Saturday, May 18 -- 8 a.m. to 4:30 p.m.
Sunday, May 19 -- 2 a.m. to 5:30 a.m.

News media with annual Shuttle credentials are reminded to sign the log book at the photo and interview counter in the News Center.

NEWS MEDIA ARE REQUIRED TO BE UNDER PUBLIC AFFAIRS ESCORT EXCEPT WHEN DRIVING TO THE NEWS CENTER OR THE COMPLEX 39 CAFETERIA.

NEWS MEDIA ARE ALLOWED AT THE PRESS SITE ONLY WHEN PUBLIC AFFAIRS PERSONNEL ARE ON DUTY AND THE NASA NEWS CENTER IS OPEN. THIS IS NOT A 24-HOUR DAY OPERATION.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

May 15, 1996
KSC Contact: Bruce Buckingham
KSC Release No. 58-96

SPACE SHUTTLE MISSION STS-77 LAUNCH COUNTDOWN TO BEGIN MAY 16

NASA will begin the countdown for launch of Space Shuttle Endeavour on mission STS-77 at 4 a.m., Thursday, May 16 at the T-43 hour mark. The KSC launch team will conduct the countdown from Firing Room 1 of the Launch Control Center.

The countdown includes 31 hours and 30 minutes of built-in hold time leading to the opening of the launch window at 6:30 a.m. (EDT) on May 19. The launch window extends for 2 1/2 hours.

STS-77 is the fourth Space Shuttle mission of 1996. This will be the 11th flight of the orbiter Endeavour and the 77th flight overall in NASA's Space Shuttle program.

Endeavour was rolled out of Orbiter Processing Facility bay 3 on April 8 and mated with the external tank and solid rocket boosters in the Vehicle Assembly Building. The Shuttle stack was then transported to Pad 39B on April 16. Endeavour last flew on a mission to retrieve a Japanese satellite in January 1996.

Endeavour will carry into orbit a six member crew. The crew of mission STS-77 are: Commander John Casper; Pilot Curt Brown; and Mission Specialists Andy Thomas, Dan Bursch, Mario Runco and Marc Garneau of the Canadian Space Agency.

The STS-77 crew are scheduled to arrive at KSC at about 9 a.m. Thursday, May 16. Their activities at KSC prior to launch will include equipment fit checks, medical examinations and opportunities to fly in the Shuttle Training Aircraft.

(end of general release)

COUNTDOWN MILESTONES

* all times are Eastern **Launch - 3 Days (Thursday, May 16)**

- Prepare for the start of the STS-77 launch countdown
- Perform the call-to-stations of countdown team members (3:30 a.m.)
- All members of the launch team report to their respective consoles in Firing Room 1 in the Launch Control Center for the start of the countdown.
- Countdown begins at the T-43 hour mark (4 a.m.)
- Start preparations for servicing the orbiter's fuel cell storage tanks
- Begin final vehicle and facility close-outs for launch
- Check-out back-up flight systems
- Review flight software stored in mass memory units and display systems
- Load backup flight system software into Endeavour's general purpose computers
- Begin stowage of flight crew equipment
- Inspect the orbiter's mid-deck and flight-deck and remove crew module platforms

Enter first planned built-in hold at T-27 hours for duration of four hours (8 p.m.)

- Clear launch pad of all non-essential personnel
- Perform test of the vehicle's pyrotechnic initiator controllers

Resume countdown (midnight)

Launch - 2 Days (Friday, May 17)

- Begin the seven-hour operation to load cryogenic reactants into Endeavour's fuel cell storage tanks (midnight - 7 a.m.)
- After cryogenic loading operations, re-open the pad for scheduled operations

Enter four-hour built-in hold at T-19 hours (8 a.m.)

- Resume orbiter and ground support equipment close-outs
- Demate orbiter mid-body umbilical unit and retract into fixed service structure

Resume countdown (noon)

- Start final preparations of the Shuttle's three main engines for main propellant tanking and flight
- Activate the orbiter’s flight controls and navigation systems
- Install mission specialists' seats in crew cabin
- Close-out the tail service masts on the mobile launcher platform

Enter planned hold at T-11 hours for 20 hours, 10 minutes (8 p.m.)

Launch -1 Day (Saturday, May 18)

- Complete final stowage of experiments into Spacehab
- Perform orbiter ascent switch list in crew cabin
- Install film in numerous cameras on the launch pad
- Activate the orbiter's communications systems
- Activate orbiter's inertial measurement units
- Fill pad sound suppression system water tank
- Safety personnel conduct debris walkdown
- Move Rotating Service Structure (RSS) to the park position (noon)
- Following the RSS move, begin final stowage of mid-deck experiments and flight crew equipment

Resume countdown (4:10 p.m.)

- Continue installation of time critical flight crew equipment
- Perform pre-ingress switch list
- Start fuel cell flow-through purge
- Activate the orbiter's fuel cells
- Configure communications at Mission Control, Houston, for launch
- Clear the blast danger area of all personnel
- Switch Endeavour's purge air to gaseous nitrogen

Enter planned one-hour built-in hold at the T-6 hour mark (9:10 p.m.)

- Launch team verifies no violations of launch commit criteria prior to cryogenic loading of the external tank
- Clear pad of all personnel
- Begin loading the external tank with about 500,000 gallons of cryogenic propellants (about 9:40 p.m.)

Resume countdown (10:10 p.m.)

Launch Day (Sunday, May 19)

- Complete filling the external tank with its flight load of liquid hydrogen and liquid oxygen propellants (about 12:40 a.m.)
- Perform inertial measurement unit preflight calibration
- Align Merritt Island Launch Area (MILA) tracking antennas
- Perform open loop test with Eastern Range
- Conduct gimbal profile checks of orbital maneuvering system engines

Enter two-hour hold at T-3 hours (1:10 a.m.)

- Close-out crew and Final Inspection Team proceed to Launch Pad 39B

Resume countdown at T-3 hours (3:10 a.m.)

- Crew departs Operations and Checkout Building for the pad (about 3:10 a.m.)
- Complete close-out preparations in the white room
- Check cockpit switch configurations
- Flight crew begins entry into the orbiter (about 3:40 a.m.)
- Astronauts perform air-to-ground voice checks with Launch Control and Mission Control
- Close Endeavour's crew hatch (about 5 a.m.)
- Begin Eastern Range final network open loop command checks
- Perform hatch seal and cabin leak checks
- Complete white room close-out
- Close-out crew moves to fallback area
- Primary ascent guidance data is transferred to the backup flight system

Enter planned 10-minute hold at T-20 minutes (5:50 a.m.)

- NASA Test Director conducts final launch team briefings

Resume countdown (6 a.m.)

- Transition the orbiter's onboard computers to launch configuration
- Start fuel cell thermal conditioning
- Close orbiter cabin vent valves
- Transition backup flight system to launch configuration

Enter 10-minute hold at T-9 minutes (6:11 a.m.)

- Launch Director, Mission Management Team and NASA Test Director conduct final polls for go/no go to launch

Resume countdown at T-9 minutes (6:21 a.m.)

- Start automatic ground launch sequencer (T-9:00 minutes)
- Retract orbiter crew access arm (T-7:30)
- Start mission recorders (T-5:30)
- Start Auxiliary Power Units (T-5:00)
- Arm SRB and ET range safety safe and arm devices (T-5:00)
- Start liquid oxygen drainback (T-4:55)
- Start orbiter aerosurface profile test (T-3:55)
- Start main engine gimbal profile test (T-3:30)
- Pressurize liquid oxygen tank (T-2:55)
- Begin retraction of the gaseous oxygen vent arm (T-2:55)
- Fuel cells to internal reactants (T-2:35)
- Pressurize liquid hydrogen tank (T-1:57)
- Deactivate SRB joint heaters (T-1:00)

- Orbiter transfers from ground to internal power (T-0:50 seconds)
- Ground Launch Sequencer go for auto sequence start (T-0:31 seconds)
- SRB gimbal profile (T-0:21 seconds)
- Ignition of three Space Shuttle main engines (T-6.6 seconds)
- SRB ignition and liftoff (T-0)

SUMMARY OF BUILT-IN HOLDS FOR STS-77

T-TIME	LENGTH OF HOLD	HOLD BEGINS	HOLD ENDS
T-27 hours	4 hours	8:00 p.m. Thurs.	12:00 midnight Thurs.
T-19 hours	4 hours	8:00 a.m. Fri.	12:00 noon Fri.
T-11 hours	20 hours, 10 minutes	8:00 p.m. Fri.	4:10 p.m. Sat.
T-6 hours	1 hour	9:10 p.m. Sat.	10:10 p.m. Sat.
T-3 hours	2 hours	1:10 a.m. Sun.	3:10 a.m. Sun.
T-20 minutes	10 minutes	5:50 a.m. Sun.	6:00 a.m. Sun.
T-9 minutes	10 minutes	6:11 a.m. Sun.	6:21 a.m. Sun.

CREW FOR MISSION STS-77

Commander (CDR):	John Casper
Pilot (PLT):	Curt Brown
Mission Specialist (MS1):	Andy Thomas
Mission Specialist (MS2):	Dan Bursch
Mission Specialist (MS3):	Mario Runco
Mission Specialist (MS4):	Marc Garneau (CSA)

SUMMARY OF STS-77 LAUNCH DAY CREW ACTIVITIES

Sunday, May 19

	1:30 a.m.	Wake up
*	2:00 a.m.	Breakfast and Crew Photo
	2:30 a.m.	Weather briefing (CDR, PLT, MS2)
	2:30 a.m.	Don launch and entry suits (MS1, MS3, MS4)
	2:40 a.m.	Don launch and entry suits (CDR, PLT, MS2)
*	2:55 a.m.	Crew suiting photo
*	3:10 a.m.	Depart for launch pad 39B
*	3:40 a.m.	Arrive at white room and begin ingress
*	5:00 a.m.	Close crew hatch
*	6:30 a.m.	Launch

* Televised events (times may vary slightly)
All times Eastern

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To remove your name from the list at any time, send an e-mail address to domo@news.ksc.nasa.gov. In the body of the message (not the subject line), type (no quotes) "unsubscribe shuttle-status", or "unsubscribe ksc-press-release."

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

May 23, 1996
KSC Contact: Dennis Armstrong
KSC Release No. 59-96-1

KENNY E. AGUILAR RECEIVES THE KENNEDY SPACE CENTER DIRECTOR'S AWARD

Kenny E. Aguilar, a native of Youngstown, OH, and a current resident of Merritt Island, FL, was honored as the 1996 recipient of the prestigious Director's Award in a recent ceremony at Kennedy Space Center (KSC).

Aguilar is the son of Ernest I. J. Aguilar of Sumner, WA. He is a graduate of Youngstown's Chaney High School and a 1971 alumnus of Youngstown State. His previous employments include the Ohio Youth Commission and NASA Lewis Research Center, Cleveland, OH.

Aguilar has been employed at KSC for just over three years and was recently selected as the center's personnel director. He is a former recipient of the Ohio Governor's Award and, during his 17-year federal career, has been awarded two NASA Exceptional Service Medals. His leisure time activities include tennis, golf, jogging and bike riding.

The Director's Award is the highest award that Kennedy Space Center confers on an employee. As the 1996 recipient, Aguilar was cited for his exceptional leadership and vision in establishing the KSC union/management partnership and in substantially increasing the quality and diversity of the center's workforce.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

May 23, 1996
KSC Contact: Dennis Armstrong
KSC Release No. 59-96-2

MALCOLM W. FULLER RECEIVES 40-YEAR SERVICE AWARD

Malcolm W. Fuller, a native of Moulton, AL, was recently presented the Kennedy Space Center (KSC) Service Award that cited his 40 years of service to NASA and the government of the United States of America.

Fuller, a senior safety and occupational health advisor, is responsible for assisting in the establishment and monitoring of a comprehensive safety program that encompasses the Space Shuttle vehicles, expendable launch vehicles and payload systems at KSC. He is a recipient of several NASA awards including a "Silver Snoopy" and a NASA Exceptional Service Medal.

Fuller is a 1954 graduate of Lawrence County High School in Moulton, AL, and a veteran of the U.S. Air Force. He and his wife, the former Pat Harris, are residents of Titusville, FL.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

May 23, 1996
KSC Contact: Dennis Armstrong
KSC Release No. 59-96-3

JOHN B. PLOWDEN AWARDED THE KENNEDY SPACE CENTER PUBLIC SERVICE MEDAL

John B. Plowden, a native of Edison, GA, and a 1967 mechanical engineering graduate of Georgia Tech, was awarded the prestigious Public Service Medal at a recent awards ceremony held at Kennedy Space Center (KSC).

Plowden's responsibilities involve the overall management of Rocketdyne programs at both KSC and Cape Canaveral Air Station, including Space Shuttle main engine processing and launch operations, Atlas/Delta field engineering support and space station operations. He has been employed at KSC for over 27 years and is a previous recipient of two other Public Service Awards, as well as a Public Service Group Achievement Award. He and his wife, Wynn, are residents of Merritt Island, FL.

Plowden was one of only four 1996 recipients of the KSC Public Service Medal, which is granted to non-government employees for exceptional contributions to the mission of NASA. During the award presentation, he was recognized for his outstanding leadership and management of the test and checkout process for the Space Shuttle's main engines.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

May 23, 1996
KSC Contact: Dennis Armstrong
KSC Release No. 59-96-4

WALTER J. STAMPLEY HONORED AS 1996 KENNEDY SPACE CENTER EQUAL OPPORTUNITY AWARD RECIPIENT

Walter J. Stampley, a native of Vicksburg, MS, and a 1959 graduate of Mississippi State University (MSU), was recently honored as one of only two recipients of the 1996 Kennedy Space Center (KSC) Equal Opportunity Award.

Stampley graduated from Port Gibson High School, Port Gibson, MS, in 1955, and earned his bachelor of science degree in electrical engineering from MSU. He joined the space center in 1969 and is the recipient of two NASA Exceptional Service Medals.

As Deputy Director of facilities engineering at KSC, Stampley is responsible for the developmental engineering and design of all facilities, systems and equipment. In addition, he functions as the program manager for reusable launch vehicle development.

He and his wife, Ellen, reside on Merritt Island, FL. He enjoys golf as a leisure time activity.

This award is granted annually to a civil service employee or supervisor in recognition of their outstanding contributions in furthering the goals of equal opportunity at KSC. As a 1996 honoree, Stampley was cited for setting a standard of demonstrated leadership in the development and management of a multi- cultural organization, and for his commitment to quality, fairness, personal growth and career development within the engineering development directorate.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

May 23, 1996
KSC Contact: Dennis Armstrong
KSC Release No. 59-96-5

DR. JAMES W. WRIGHT HONORED AS RECIPIENT OF THE 1996 NASA OUTSTANDING LEADERSHIP MEDAL

Dr. James W. Wright, a native of Columbia, SC, and a 1972 graduate of Dreher High School, was recently honored as one of only three Kennedy Space Center (KSC) recipients of the NASA Outstanding Leadership Medal.

Dr. Wright earned a bachelor of science degree in marine science from the University of South Carolina in 1975, and later added a mechanical engineering degree from the same institution in 1980. He received a masters degree in marine biology from the College of Charleston in 1978 and completed his studies with a Ph.D in environmental biology from George Mason University in 1993. He joined the space center in 1991 and is a 1995 recipient of the KSC's Equal Opportunity Award.

As the chief, environmental engineering and management, Dr. Wright is responsible for KSC-wide integration of environmental and ecological programs, policies and compliance. During his 14 years of government service, he has served as a manager for agency-wide environmental programs at NASA Headquarters as well as for the Department of the Navy. In addition, he worked as a design and contruction engineer for the Department of Defense. Previously he was employed as an environmental and mechanical engineer for the Exxon in Baton Rouge, LA, and as a marine biologist at the Grice Marine Biological Laboratory in Charleston, SC.

Dr. Wright is the son of Jim and Marion Wright of Columbia, SC. He, his wife, the former Patricia Meara of Fairlawn, NJ, and their two sons, Michael and Daniel, currently reside on Merritt Island, FL.

The NASA Outstanding Leadership Medal is awarded for outstanding leadership that has had a pronounced effect upon the technical or administrative programs of NASA. During KSC's recent awards ceremony, Dr. Wright was recognized for his outstanding leadership in support of KSC's human space flight and environmental programs.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

May 23, 1996
KSC Contact: Dennis Armstrong
KSC Release No. 59-96-6

ROGER C. GREEK AWARDED THE KENNEDY SPACE CENTER PUBLIC SERVICE MEDAL

Roger C. Greek, a native of Melbourne, FL, and long-term resident of Cocoa and Rockledge, FL, was recently honored as a 1996 recipient of the prestigious KSC Public Service Medal.

Greek, a graduate of Cocoa High School, has been employed at the space center for 20 years. He currently serves as McDonnell Douglas' director of support services. In this capacity, he is responsible for providing human resources, labor relations and security support and services for the payload ground operations contract at Kennedy Space Center (KSC). He also serves as a member of the Board of Directors of the Central Florida Health Care Coalition. In his spare time he enjoys playing golf.

He and his wife, Patricia, currently reside in Rockledge, FL.

Greek was one of only four 1996 recipients of the KSC Public Service Medal, which is awarded to non-government employees for exceptional contributions to the mission of NASA. During the award presentation, he was recognized for his exceptional contributions to the administration of human resources, labor relations and security programs at Kennedy Space Center.

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NASA News Release
ON LINE
JOHN F. KENNEDY SPACE CENTER

May 23, 1996
KSC Contact: Dennis Armstrong
KSC Release No. 59-96-7

FRANCES M. BRAUER HONORED AS KENNEDY SPACE CENTER'S 1996 SECRETARY OF THE YEAR

The selection of Frances M. Brauer, a native of St. Petersburg, FL, and a 1972 graduate of St. Petersburg Junior College, has been selected as the 1996 Kennedy Space Center (KSC) Secretary of the Year.

Brauer is the daughter of Leo S. Bugner of St. Petersburg. She graduated from Boca Ceiga High School in 1969 and subsequently earned an associate of science degree from St. Petersburg Junior College. She serves as a personal assistant to the director of engineering development organization, with responsibility for the provision of administrative functions within the office of the director. During her more than 14 years at KSC, she has received several performance and group achievement awards, has been selected twice as the Employee of the Month and has also been honored as a Spaceflight Awareness Honoree.

Brauer, her husband Thomas, and two of their three children, reside on Merritt Island, FL. During her spare time she enjoys traveling, fishing and spending time with her family.

The KSC Secretary of the Year award is granted to a single KSC employee each year who serves in a secretarial position. The selectee must have demonstrated exemplary performance of official duties over an extended period of time, or a significant, one-time accomplishment directly related to official duties. Performance must also have been characterized by a high degree of personal integrity, judgment and responsibility. While accepting the honor, Brauer was cited for the superior quality and quantity of her work, her excellent judgment and initiative as well as her overall contributions to the successful accomplishment of the engineering development organization's mission.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

May 23, 1996
KSC Contact: Dennis Armstrong
KSC Release No. 59-96-8

GEORGE H. HUGHES, JR. RECEIVES 40-YEAR SERVICE AWARD

George H. Hughes, Jr, a native of Orangeburg, SC, was recently presented the Kennedy Space Center (KSC) Service Award that cited his more than 40 years of service to NASA and the government of the United States of America.

Hughes, a quality assurance specialist, is responsible for the receipt of ordnance at KSC, overseeing the testing of electrical and mechanical checkout of ordnance materials, as well as the flight readiness testing and installation of ordnance on the Space Shuttle and its components. His primary leisure time pursuits include membership in the Valiant Air Command, the Indian River Astronomy Club, the South American and World Explorers Club, the Tomoka Gem and Mineral Society, the Experimental Aircraft Association and the Pioneers Club.

Hughes is a 1943 graduate of Bamberg High School and a U.S. Navy veteran. He currently resides in South Daytona Beach, while his daughter, Kathleen, lives in Donaldson, TN.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

May 23, 1996
KSC Contact: Dennis Armstrong
KSC Release No. 59-96-9

DR. RICHARD H. JOLLEY AWARDED THE KENNEDY SPACE CENTER PUBLIC SERVICE MEDAL

Dr. Richard H. Jolley, a native of Idaho Falls, ID, was awarded the prestigious Public Service Medal at a recent awards ceremony held at Kennedy Space Center (KSC).

Dr. Jolley entered the U. S. Air Force in 1966 after earning bachelor and master of science degrees in engineering. While on active duty, he added a Ph.D in engineering before retiring from the Air Force in 1986. Later that same year he joined the Ralph M. Parsons Company in Pasadena, CA, where he directed design/ construction support for Department of Defense chemical weapons disposal facilities. In 1990 he moved to EG&G at Tooele, UT, as the manager of the demilitarization plant construction, startup and operation phases. In 1993 he was appointed deputy general manager at EG&G Florida in charge of technical operations for KSC's base operations contract. He became the general manager of EG&G Florida in November 1995.

Dr. Jolley is active in a variety of professional and community organizations serving as a member of the U.S. Air Force Academy Engineering Curriculum Advisory Board; the Executive Advisory Board, American Society for Engineering Education; and the National Management Association. He is a board member of the Cape Canaveral Hospital Foundation, the National Space Club, Florida Committee; Junior Achievement of East Central Florida; and the Air Force Association. In addition, he was recently selected as the chairman of the 34th Space Congress to be held in Cocoa Beach, FL, next year.

Jolley was one of only four 1996 recipients of the KSC Public Service Medal, which is granted to non-government employees for exceptional contributions to the mission of NASA. During the award presentation he was cited for his outstanding leadership in improving the performance of the base operations contract at the Kennedy Space Center.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

May 23, 1996
KSC Contact: Dennis Armstrong
KSC Release No. 59-96-10

P. THOMAS BREAKFIELD RECEIVES THE MERITORIOUS EXECUTIVE RANK AWARD

P. Thomas (Tom) Breakfield, III, a native of Nashville, TN, and a graduate of David Lipscomb University, was recently awarded the coveted Presidential Meritorious Executive Rank Award.

Breakfield earned a bachelor's degree in mathematics from David Lipscomb University in 1962. He joined NASA at Kennedy Space Center, FL, in 1964 where he served as a data systems/electronics engineer involved in the development of real-time guidance and navigation data processing software for Saturn launch vehicles, Apollo launch data systems and lunar module data reduction software. Since then he has held several positions of increasing responsibility including assignment to the Shuttle Launch Processing System (LPS)/Central Data Subsystem (CDS) design team, chief of the LPS Shuttle Ground Operations Simulation Branch, chief of the Shuttle LPS division, acting chief of both the Shuttle Project Engineering Office and the Guidance, Navigation and Digital Systems Division, and deputy director, Shuttle Engineering.

In 1985 he was appointed to his current position as the director, Payload Flight Operations. In this capacity he is responsible for the management and direction of engineering and operations activities associated with the preparation of commercial and scientific payloads and experiments that are carried into orbit by the Space Shuttle. He has received several awards during his tenure with NASA including two Exceptional Service Medals and an Outstanding Leadership Medal. Breakfield, his wife Lois, and their two sons, live in Rockledge.

The Presidential Meritorious Executive Rank Award is presented in recognition of sustained accomplishment and limited to only five percent of career senior executives government-wide. Selection recommendations are made by an annually- convened Presidential board and approved by the President of the United States.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

May 23, 1996
KSC Contact: Dennis Armstrong
KSC Release No. 59-96-11

JOHN T. CONWAY RECEIVES THE DISTINGUISHED EXECUTIVE RANK AWARD

John T. Conway, a native of Bradenton, FL, and a graduate of Florida State University, was recently awarded the coveted Presidential Distinguished Executive Rank Award.

Conway earned a bachelor's degree in mathematics from Florida State University and a master's degree in the same subject from the College of William and Mary, VA. He began his federal career in July 1962 at NASA's Langley Research Center, VA, and transferred to Kennedy Space Center (KSC) in 1966 as a section chief responsible for computer systems software used for launch operations of Apollo, Skylab and Apollo-Soyuz Test Project missions. Since then he has held several positions of increasing responsibility including project manager for the Shuttle Launch Processing Central Data System, chief of the Launch Processing System (LPS) Project Office, chief of the LPS Division and director, Information Systems.

Appointed as the director of KSC Payload Operations in 1985, Conway is responsible for management and technical direction of preflight checkout and integration of Space Shuttle and expendable vehicle payloads and payload carriers. Throughout his career with NASA, Conway has received several awards including an Exceptional Service Medal, three Outstanding Leadership Medals and the Presidential Meritorious Executive Rank Award. He is married to the former Tammy Kay Moore of Seymour, TN.

The Presidential Distinguished Executive Rank Award is presented in recognition of sustained extraordinary accomplishment and is limited to only one percent of federal senior executives government-wide. Selection recommendations are made by an annually-convened Presidential board composed of a cross section of representatives from business and industry as well as other private citizens. Final selections are approved by the President of the United States.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

May 23, 1996
KSC Contact: Dennis Armstrong
KSC Release No. 59-96-12

ROBERT B. SIECK RECEIVES THE DISTINGUISHED EXECUTIVE RANK AWARD

Robert B. Sieck, a native of St. Louis, MO, and a former resident of Falls Church, VA, was recently awarded the coveted Presidential Distinguished Executive Rank Award.

Sieck earned a bachelor's degree in electrical engineering from the University of Virginia in 1960. He began his federal career in 1964 at Kennedy Space Center (KSC) as a Gemini spacecraft system engineer. Since then he has held several positions of increasing responsibility including test team project engineer for both the Apollo and Shuttle spacecraft as well as engineering manager for the Shuttle approach and landing tests at Dryden Flight Research Facility, CA. Upon his return to KSC in 1978, he was assigned as the chief Shuttle project engineer for STS-1 through STS-7, selected as the first Shuttle flow director in 1983, and promoted to the position of director, launch and landing operations in 1984 where he also served as Shuttle launch director. In 1992 he was appointed as the deputy director of Shuttle Operations where he continued his duties as launch director for a total of 52 Space Shuttle missions.

Sieck assumed the responsibilities of director of Shuttle operations in January 1995. In this capacity he is responsible for the management and technical direction of the Shuttle program at KSC. Throughout his career with NASA, Sieck has received several awards including two Exceptional Service Medals, a Distinguished Service Medal, the Federally Employed Women Distinguished Service Award and the Presidential Meritorious Executive Rank Award. He and his wife Nancy live in Titusville, FL, and have two adult children.

The Presidential Distinguished Executive Rank Award is presented in recognition of sustained extraordinary accomplishment and is limited to only one percent of federal senior executives government-wide. Selection recommendations are made by an annually-convened Presidential board composed of a cross section of representatives from business and industry as well as other private citizens. Final selections are approved by the President of the United States.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

May 24, 1996
KSC Contact: Dennis Armstrong
KSC Release No. 59-96-13

MICHAEL B. RENFROE AWARDED THE KENNEDY SPACE CENTER PUBLIC SERVICE MEDAL

Michael B. Renfroe, a native of Melbourne, FL, and current resident of Oak Hill, FL, was awarded the prestigious Public Srvice Medal at a recent awards ceremony held at Kennedy Space Center (KSC), FL.

Renfroe's responsibilities as the director of Rockwell's logistics operations include logistics engineering, maintenance documentation, systems analysis, production control, supply and transportation in support of Space Shuttle processing and the NASA Shuttle Logistics Depot. He is active in a number of professional and community activities as the director of the Space Applications Division of the Society of Logistics Engineers, a member of the Advisory Council to Brevard Community College for the Logistics Technology Program, and as the chairperson for the Burns Oak Hill School Improvement Team.

Renfroe graduated from New Smyrna Beach Senior High School in 1974 and has worked at KSC for 17 years. He is active in church activities and enjoys boating, fishing and golf in his spare time. He and his wife, Penny, are the parents of three girls and one boy and currently reside in Oak Hill, FL.

Renfroe was one of only four 1996 recipients of the KSC Public Service Medal, which is granted to non-government employees for exceptional contributions to the mission of NASA. During the award presentation he was recognized for his leadership in maintaining Shuttle logistics supportability in the face of decreasing budget levels.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

May 23, 1996
KSC Contact: Dennis Armstrong
KSC Release No. 60-96-1

DR. IRENE D. LONG HONORED BY THE AEROSPACE MEDICAL ASSOCIATION

Dr. Irene D. Long, a native of Cleveland, OH, and a 1969 graduate of East High School, was elected as the second vice president of the Aerospace Medical Association's Society of NASA Flight Surgeons (SNFS) in Atlanta earlier this month.

Dr. Long's election occured during the SNFS annual business meeting, one of a series of week-long events sponsored by the 67th Annual Scientific Meeting of the Aerospace Medical Association. The SNFS is responsible for attending to the human and non-human medical concerns of space flight. In her capacity as second vice president, Dr. Long will function as a member of the group's executive council, assuming the presidency of the Society in 1998.

Dr. Long is the daughter of Andrew and Heloweise Duhart of Warrensville Heights, OH. She earned a bachelor degree in Biology from Northwestern University in 1973 and her medical degree from the St. Louis University School of Medicine in 1977. She began her career at Kennedy Space Center (KSC) in 1982.

In her current assignment as the director, biomedical operations office, Dr. Long is responsible for coordinating KSC's occupational medicine and environmental health programs, launch and landing medical operations, science support to payload activities and environmental and ecological monitoring.

Dr. Long is a past recipient of the SNFS President's Award and a member of the Crosswinds Youth Services Board of Directors. She is a resident of Merritt Island, FL.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

May 23, 1996
KSC Contact: Dennis Armstrong
KSC Release No. 60-96-2

DR. G. WYCKLIFFE HOFFLER HONORED BY THE AEROSPACE MEDICAL ASSOCIATION

Dr. G. Wyckliffe Hoffler, a native of Sunbury, NC, and a 1952 graduate of Sunbury High School, was awarded the 1996 President's Award by the Aerospace Medical Association's Society of NASA Flight Surgeons (SNFS) at their annual business meeting in Atlanta earlier this month.

During the SNFS session, one of a series of week-long events sponsored by the 67th Annual Scientific Meeting of the Aerospace Medical Association, Dr. Hoffler was honored for his contributions to the ideals and goals of the Society. The SNFS is responsible for attending to the human and non-human medical concerns of space flight. Dr. Hoffler is a long-time member and past president of the organization and currently serves as the SNFS historian.

Dr. Hoffler is the son of Barton and Hazel Hoffler of Sunbury, NC. He earned a bachelor degree in Chemistry from the University of North Carolina in 1956, and a degree in medicine from the same institution in 1960. In the early 60's he served two years as a Captain in the U.S. Army Medical Corps before completing his studies in 1968, receiving a degree in aerospace medicine from the Ohio State University's College of Medicine. He began his career at Kennedy Space Center (KSC) in 1968.

In his current assignment as the deputy director, biomedical operations office, Dr. Hoffler assists in coordinating KSC's occupational medicine and environmental health programs, launch and landing medical operations, science support to payload activities and environmental and ecological monitoring.

Dr. Hoffler and his wife, Anita, the parents of three adult children, are residents of Titusville, FL.

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NASA News Release
ON LINE
JOHN F. KENNEDY SPACE CENTER

May 28, 1996
KSC Contact: Lisa Malone
KSC Release No. 61-96

Note to Editors/News Directors:
NATURAL GAS VEHICLE FUEL STATION TO OPEN AT KSC MAY 30

One of the most advanced natural gas vehicle fueling stations in the country will officially open at KSC with a ribbon-cutting ceremony May 30.

Speakers at the ceremony, which will begin at 10:30 a.m., include KSC Director Jay F. Honeycutt, Director of Installation Management and Operations Marvin L. Jones and Richard H. Jolley, president and general manager, EG&G Florida Inc. Honeycutt will cut the ribbon by driving through it with a natural gas-powered vehicle.

KSC's new fueling station is located at the Government Services Administration (GSA) Motor Pool in the Industrial Area. The station is the test bed for a new type of gas compressor that provides the capacity to fuel one of the largest fleets of government-owned vehicles in the nation, said H.T. Everett, chief of the NASA/KSC Logistical Operations Support Branch.

"The station, which was designed to handle 400 vehicles, will allow KSC to be a leader in natural gas fleet operations in particular and in alternative energy in general," Everett said. "The technology for this station was also developed so that it could be adapted for use by local governments, industry and institutions."

The station was developed through a unique government/industry partnership with the KSC Alternative Fuels Office, Dresser-Rand Industries and the Gas Research Institute so that it could serve as a showcase for natural gas technology, said EG&G Florida senior engineer Bobbie Sirmons.

"The first construction phase includes two gas dispensers, but eventually there will be six," Sirmons explained. "In its final phase, it will look just about like any other filling station, except for compressed gas storage tanks."

The dispensers look and operate similar to gasoline pumps. They are designed to fill a compressed gas tank in 2 to 3 minutes while keeping it safe for users. Alternative-fueled vehicles are both safer to operate and as efficient as those that burn conventional fuels, Sirmons said.

Currently, the fueling station serves about 36 natural gas-powered light-duty vehicles and one 44-passenger bus. GSA will procure bi-fueled vehicles, or ones that can use either gasoline or natural gas, as they become available from auto manufacturers. It is anticipated that by 1999, about 80 percent of the GSA fleet under procurement for KSC -- about 900 vehicles -- will be able to use natural gas, hydrogen and methane mixtures, or other alternative fuels.

"We also have plans for a final natural gas fleet of 1,200 vehicles and will build a second natural gas station in the Launch Complex 39 area within two years," Everett said. "Natural gas is clean, domestically produced and cheap. Alternative-fueled vehicles are a major element of KSC's efforts to reduce its impact on the environment while reducing our dependence on foreign oil."

Fuel for the station is provided by the 25-mile long KSC natural gas pipeline that went into operation in mid-1994. The

pipeline was constructed at no cost to NASA by City Gas Co. of Florida. The ensuing conversion of several KSC facilities to natural gas since then has eliminated over 115 tons of particulate emissions from entering the atmosphere and the burning of more than 3 million gallons of diesel fuel. Conversion efforts will continue throughout the center under the KSC Alternative Energy Initiative program.

# # #

Note: News media wishing to attend the Natural Gas Station ribbon-cutting ceremony should arrive at the Press Site no later than 10 a.m. Thursday, May 30, for transportation to the site. An informal press briefing will be held at the KSC Natural Gas Station. H.T. Everett, along with engineers from the KSC Alternative Fuels Office, will be available for interviews.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

June 7, 1996
KSC Release No. 62-96

KSC ASSISTS AT VALUJET CRASH SITE

Kennedy Space Center (KSC) assisted in the search for wreckage from the flight of ValuJet 592 which plunged into the Everglades on May 10, killing 110 people.

A KSC helicopter, flown by Norbert Violette, KSC's chief helicopter pilot, traversed the crash site May 25 with an infrared scanner.

National Transportation Safety Board (NTSB) investigators decided to use the scanner, which is being developed for a specialized project, to help locate large pieces of the aircraft, believed to be buried in a crater created on the swamp floor by the impact of the crash.

The Kennedy Space Center helicopter is equipped with specialized brackets that enabled it to carry the thermal imager, said Marvin Jones, KSC's director of Installation Operations.

The bracket, which was developed to hold high-intensity spotlights and the Forward Looking Infrared (FLIR) scanning system for pad security and traffic control during night launches of the Space Shuttle, has also been adapted to hold television cameras, Jones said.

Gerry Brown, of the NASA Aircraft Management Office at NASA Headquarters, said he became aware of the possibilities of using the scanner after talking to an Air Force Academy classmate and longtime friend, Charlie Weinert of Finley Lakes, NY, who was working on the development of the imager.

"We were discussing the device and the idea came that it might be useful in the search," Brown said.

I knew of the capabilities of the helicopter at Kennedy so I put my friend in touch with the NTSB, and the NTSB in touch with Kennedy to see if it could be worked out."

Violette said he appreciated the opportunity to help.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

May 28, 1996
KSC Contact: Joel Wells
KSC Release No. 63-96

Note to Editors/News Directors:
POSTFLIGHT MEDIA OPPORTUNITY WITH AQUATIC RESEARCH FACILITY

One day after the Space Shuttle Endeavour lands at the Kennedy Space Center (KSC), Canadian and American scientists, supported by KSC engineers, will be involved in postflight processing of the Aquatic Research Facility (ARF).

There will be an opportunity for news media representatives to visit the ARF laboratories at KSC on Thursday, May 30. Canadian Space Agency (CSA) representative Alan Mortimer and NASA engineer Cindy Martin will be on-hand for interviews.

The ARF experiment is a joint effort between NASA and the Canadian Space Agency (CSA). One thousand mussel larvae, 6,000 starfish embryos and 32,000 sea urchin eggs lifted off from KSC on May 19 aboard Space Shuttle mission STS-77 to give scientists insight into the causes and possible cures of muscular dystrophy, osteoporosis and birth defects in humans. The experiment introduced a unique KSC developed syringe used to fertilize the sea urchin eggs.

All media interested in participating in this event should be at the KSC Press Site by 1 p.m. Thursday for transport to the Space Station Processing Facility.

Endeavour is scheduled to land at KSC's Shuttle Landing Facility on Wednesday, May 29 at about 7:09 a.m. EDT, completing a 10-day mission in space.

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NASA News Release
ON LINE
JOHN F. KENNEDY SPACE CENTER

May 28, 1996
KSC Contact: Bruce Buckingham
KSC Release No. 64-96

ENDEAVOUR SCHEDULED TO LAND AT KSC

The orbiter Endeavour is scheduled to land at Kennedy Space Center (KSC) on Wednesday, May 29 at about 7:09 a.m. EDT, completing its 10-day STS-77 mission which was launched from KSC on May 19.

Landing at KSC's Shuttle Landing Facility (SLF) is slated to occur on orbit 161 at a mission elapsed time of 10 days, 0 hours, 39 minutes. The deorbit burn will occur at about 6:09 a.m. Wednesday.

KSC landing opportunities on Wednesday are: 7:09 a.m. and 8:44 a.m. In the event a landing is not possible at KSC on Wednesday due to weather concerns, a landing could be made at Edwards Air Force Base (EAFB), CA. EAFB landing opportunities on Wednesday are: 8:36 a.m. and 10:11 a.m. EDT. On Thursday, two landing opportunities are available at KSC and two at Edwards.

KSC Thursday landing times are: 7:11 a.m. and 8:45 a.m. EDT.

EAFB Thursday landing times are: 8:37 a.m. and 10:12 a.m. EDT.

The landing of Endeavour will mark the 30th landing at KSC in the history of Space Shuttle flight. It will be the third landing of the Shuttle at KSC this year.

About six hours after landing at KSC, select members of the flight crew will be present for a post-mission press conference. The conference will be held at the KSC TV auditorium and carried live on NASA TV.

SLF and KSC Ground Operations

The Shuttle Landing Facility was built in 1975. It is 300 feet wide and 15,000 feet long with 1,000 foot overruns at each end. The strip runs northwest to southeast and is located about 3 miles northwest of the 525-foot tall Vehicle Assembly Building.

Once the orbiter is on the ground, safing operations will commence and the flight crew will prepare the vehicle for post-landing operations. The Crew Transport Vehicle (CTV) will be used to assist the crew, allowing them to leave the vehicle and remove their launch and re-entry suits easier and quicker.

The CTV and other KSC landing convoy operations have been "on-call" since the launch of Endeavour May 19. The primary functions of the Space Shuttle recovery convoy are: provide immediate service to the orbiter after landing, assist crew egress, prepare the orbiter for towing to the Orbiter Processing Facility.

Convoy vehicles are stationed at the SLF's mid-point. About two hours prior to landing, convoy personnel don SCAPE suits, or Self Contained Atmospheric Protective Ensemble, and communications checks are made. A warming-up of coolant and purge equipment is conducted and nearly two dozen convoy vehicles are positioned to move onto the runway as quickly and as safely as possible once the orbiter coasts to a stop. When the vehicle is deemed safe of all potential explosive hazards and toxic gases, the purge and coolant umbilical access vehicles move into position at the

rear of the orbiter.

Following purge and coolant operations, flight crew egress preparations will begin and the CTV will be moved into position at the crew access hatch located on the orbiter's port side. A physician will board the Shuttle and conduct a brief preliminary examination of the astronauts. The crew will then make preparations to leave the vehicle.

Following departure from the SLF, the crew will be taken to their quarters in the O&C Building, meet with their families, undergo a physical examination and prepare to depart for the skid strip at Cape Canaveral Air Station for their trip back to JSC.

If Endeavour lands at Edwards, an augmented KSC convoy team will be on-site to safe the vehicle, disembark the crew and move the orbiter to the Mate/Demate Device. The turnaround team will be deployed to Edwards by charter aircraft on landing day.

About 8 hours, 30 minutes after Endeavour lands at KSC, the orbiter will be towed to Orbiter Processing Facility bay 3 for post-flight deservicing. Preparations will then begin to send Endeavour to Palmdale, CA, for the scheduled Orbiter Maintenance Down Period. Endeavour is scheduled to be delivered to Palmdale in early August and remain there until April 1997.

-- end --

NOTICE TO EDITORS: Media wishing to view Endeavour's landing should be at the KSC press site between 4 - 6 a.m. Wednesday for transport to the SLF. Other specific information is available at the KSC News Center regarding landing photo opportunities, post-landing press conferences and KSC News Center operational hours.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

May 31, 1996
KSC Contact: Bruce Buckingham
KSC Release No. 66-96

TCDT MEDIA OPPORTUNITY WITH STS-78 CREW SET FOR NEXT WEEK

The crew of Space Shuttle mission STS-78 will be at Kennedy Space Center next week for the Terminal Countdown Demonstration Test (TCDT).

The Terminal Countdown Demonstration Test is held prior to each Space Shuttle flight. It provides the crew of each mission opportunities to participate in simulated countdown activities at KSC. This time is also used by the crew for emergency egress training exercises at the pad. The TCDT ends with a mock launch countdown culminating in a simulated main engine cutoff scenario. The crew also spends time viewing and inspecting their mission payloads in the orbiter's payload bay.

The seven-member crew of mission STS-78 is scheduled to arrive at KSC's Shuttle Landing Facility (SLF) at about 9:30 a.m. Monday, June 3. Media interested in viewing crew arrival should be at the KSC press site at 8:30 a.m. Monday for transport to the SLF.

On Tuesday, news media representatives will have an opportunity to speak informally with and photograph the crew at Pad 39B. Media interested in participating in this question and answer session should be at the KSC Press Site by 12:30 p.m. Tuesday for transport to the pad. Also, a photo opportunity will be available for the crew's M1-13 training at the pad following the question and answer session.

Contact the KSC Press Site to obtain the proper badge for these events.

On Wednesday, the crew will depart their quarters at about 7:45 a.m. and begin to board the Shuttle Columbia at about 8:15 a.m. where they will remain through the end of the test. The simulated main engine cut-off will occur at 11 a.m. Wednesday.

A photo opportunity is available for the crew walkout Wednesday. Media should be at the Press Site by 6:45 a.m. for transport to the crew quarters.

Following TCDT, the crew is scheduled to depart KSC for their homes in Houston for final flight preparations.

Columbia is now targeted for launch on June 20 at 10:49 a.m. EDT. Mission STS-78 will feature the Life and Microgravity Spacelab (LMS) on a flight expected to last nearly 17 days.

Crew members for mission STS-78 are: Commander Tom Henricks; Pilot Kevin Kregel; Mission Specialists Susan Helms, Richard Linnehan and Charles Brady; and Payload Specialists Jean-Jacques Favier (French Space Agency) and Robert Brent Thirsk (Canadian Space Agency).

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

June 4, 1996
KSC Contact: Patti Phelps
KSC Release No. 68-96

TWO WORKERS HONORED BY NASA ASTRONAUTS

Two NASA/KSC employees recently were presented with NASA's prestigious Silver Snoopy Award for service to the Space Shuttle astronauts.

Cheryl C. Hurst was presented the award at KSC on April 25 by astronaut Michael P. Anderson. John C. Dollberg of Cocoa Beach was given the award on April 16 by astronaut James Donald Halsell, Jr.

Hurst, a contract specialist with the Procurement Office, was commended for her contract management support of the NASA/KSC Base Operations Contract. "Your acquisition expertise and untiring dedication has resulted in the successful negotiation of more than $60 million worth of contract changes, and has resulted in an immediate $3.5 million savings associated with changes to the incentive fee provisions of the BOC," astronaut Anderson told Hurst. "In addition, your efforts to change the contractor's employee award fee sharing plan has resulted in the potential of improving morale for 1,200 plus BOC employees."

Dollberg, an employee of the Safety and Mission Assurance Directorate, was applauded for his outstanding contributions as chairman of the KSC Payload Ground Safety Review Panel. "You provide leadership, sound decision processes and well-documented products. Despite the volume of workload, a payload has never been delayed in processing while awaiting approval from the ground safety panel," Dollberg was told by astronaut Halsell.

Snoopy, of the comic strip "Peanuts," has been the unofficial mascot of NASA's astronaut corps since the earliest days of manned space flight. The Silver Snoopy Award was created by the astronauts to honor persons who contribute most to the safety and success of manned space flight.

The award is presented to no more than 1 percent of the space center's work force each year. Recipients are given a silver pin depicting the famous beagle wearing a space suit. All the pins have flown on a previous Space Shuttle mission. The awardees also receive a framed certificate and a congratulatory letter signed by the presenting astronaut.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

June 10, 1996
KSC Contact: Bruce Buckingham
KSC Release No. 69-96

SONS' DAY SCHEDULED FOR NASA EMPLOYEES JUNE 14

NASA employees at Kennedy Space Center will have the opportunity to bring their sons to work June 14 as part of "Take Our Sons to Work Day."

The program is intended to increase awareness of employment opportunities in the aerospace industry for sons of KSC employees. Activities will begin at 8 a.m. in the IMAX Theater II at the Kennedy Space Center Visitors Center. KSC Director Jay Honeycutt will speak briefly to the sons and their parents, followed by presentations by KSC astronaut candidate Frank Caldeiro and Steve Van Meter from KSC's robotics laboratory.

Following the program, participants will be released to go with their sponsors to their work areas. Sons who are nine years of age or older are eligible to participate and will receive special badges for entrance into KSC. Although most children will be accompanied by a parent, sponsors can be another family member or NASA-KSC worker. Many KSC contractors are sponsoring similar opportunities.

Due to safety requirements, certain operational areas will be off limits to the visitors.

For additional information, contact Barbara Powell at 867-7208.

NOTE TO EDITORS: News media representatives wishing to cover the event should contact the KSC News Center to coordinate photo opportunity times.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

June 6, 1996
KSC Contact: Joel Wells
KSC Release No. 70-96

NASA-KSC, PATRICK AIR FORCE BASE AND CANAVERAL AIR STATION C0-SPONSOR BUSINESS OPPORTUNITIES BRIEFING

Procurement officials from NASA's Kennedy Space Center (KSC), in cooperation with the 45th Space Wing Contracting Squadron, will present their business opportunities for the upcoming fiscal year on Monday, June 10 at the Brevard Community College (BCC) Fine Arts Auditorium in Cocoa.

The annual event will provide information on each organization's mission and the types of supplies and services that they buy. Each government agency and their prime contractors will also discuss their purchasing programs and the best ways to market their organizations.

Attendees will be able to network with the speakers and buyers, and obtain one-on-one counseling. The day's agenda concludes with a workshop on "The Basics of Doing Business with the Department of Defense and NASA."

The briefing is also sponsored by the Small Business and Industry Council Cocoa Beach Area Chamber of Commerce and the Brevard Community College Small Business Development Center.

Registration begins at 8 a.m. and costs $20 per person. The fee covers a continental breakfast and handouts. Businesses interested in attending should contact the Cocoa Beach Area Chamber of Commerce at (407) 459-2200 for more information.

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Note to editors: Business reporters are invited to attend and should call (407) 459-2200 for more information.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

June 6, 1996
KSC Contact: Joel Wells
KSC Release No. 71-96

KSC BEGINS LONG TERM STUDY ON RELIABILITY OF ADVANCED LIFE SUPPORT SYSTEM

Life scientists at Kennedy Space Center (KSC) will initiate NASA's most realistic test to date on plants being used for human life support in space. The study begins on June 11, when workers will plant 128 potato plants and 6,500 wheat seeds in KSC's Biomass Production Chamber (BPC).

During the experiment, researchers from NASA and Dynamac Corporation, KSC's Life Sciences Support Contractor, will evaluate the ability of a "bioregenerative" life support system to produce food and oxygen, purify water, and recycle waste products for long duration space missions.

The landmark study, part of NASA's development of a Controlled Ecological Life-Support System, is scheduled for a full year and could last up to three years. It marks the first time two crop species have been grown simultaneously in the BPC.

"We recently completed a shorter study with potatoes," explained NASA agricultural engineer John Sager. "If we plan to live in space though, we must determine if this system will be as successful over longer periods of time."

Through photosynthesis the wheat and potatoes will produce food, distilled water and oxygen, while removing carbon dioxide from the air. Gradually, researchers will introduce plant and human waste streams from a "bioreactor" to the BPC, and through transpiration the plants will remove and use nutrients from the waste effluent. "In effect, plants may be the air and water filters of the space age," said Ray Wheeler, NASA plant physiologist.

The BPC, a retrofitted test capsule from the Mercury Space Program, has an interior composed of two plant chambers. A hydroponics system is used to supply the plants with nutrients and water. Tanks outside the chamber store the water and nutrient solution and special lamps provide artificial sunlight. The controlled environment imitates the confined and resource deficient conditions of space.

KSC scientists have been using the chamber almost continually since 1987, observing a variety of crops including soybeans, lettuce, tomatoes, white potatoes and wheat. This study focuses on wheat and potato production because of their high productivity and performance in previous trials.

"We hope to see the same positive results and high yields in this study that we have seen in the shorter preceding studies," said Dynamac plant physiologist Gary Stutte. "This research brings us one step closer to supporting life in space for extended periods."

# # # #

NOTE TO EDITORS:
On Monday, June 10, their will be an opportunity for members of the media to visit the BPC and select locations at Hangar L. NASA and Dynamac scientists will be available for interviews. Media interested in attending this event should be at the KSC Press Site by 1 p.m. on Monday for transport to Hangar L.

For automatic e-mail subscriptions to daily Shuttle status reports or KSC originated press releases, send an Internet electronic mail message to: domo@news.ksc.nasa.gov. In the body of the message (not the subject line) type the words "subscribe shuttle-status", or "subscribe ksc-press-release" (do not use quotation marks). The system will reply with a confirmation via e-mail of each subscription.

To remove your name from the list at any time, send an e-mail address to domo@news.ksc.nasa.gov. In the body of the message (not the subject line), type (no quotes) "unsubscribe shuttle-status", or "unsubscribe ksc-press-release."

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

June 6, 1996
KSC Contact: Bruce Buckingham
KSC Release No. 72-96

KSC EMPLOYEES RECEIVE PRESTIGIOUS SPACE ACT AWARD

Eleven Kennedy Space Center employees were recently honored with the prestigious NASA Space Act Award for software they have developed to streamline instrument calibration.

The recipients, all current and past employees of EG&G Florida, Inc.'s Calibrations and Standards Laboratories at KSC, were honored in a ceremony with Center Director Jay Honeycutt on June 5 at KSC's Headquarters Building.

The automated calibration system, called the Scientific Network, consists of more than 60 software programs which enable computers to automate the calibration of instruments used on the Shuttle program, in payload processing and other base support activities. The programs are designed to be set up by support personnel and run unsupervised until the calibration is complete, saving time and resources while at the same time improving the quality of the data received.

The Space Act Award was initiated in 1958 to reward NASA and contractor employees for significant technical contributions to the NASA mission. The NASA Headquarters Inventions and Contributions Board recently has contributed more than $800,000 annually for the awards. This award is one of two Space Act Awards received by KSC this year. The recipients will divide $5,000 in award money.

Recipients are James Lewis, William Frazier III, Thomas Brown, Robert McKay Jr., Lois Muse Lewis, Jeffrey Cheatham, Todd Dayton, Otto Fischer, Perry King, Christopher Piehota, and James Tidwell.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

June 6, 1996
KSC Contact: Bruce Buckingham
KSC Release No. 73-96

Note to Editors:
PHOTO OPPORTUNITY AVAILABLE FOR MOTORCYCLISTS' RIDE THROUGH KSC

Kennedy Space Center will open its gates to motorcyclists from all over the state of Florida as they ride through the space center on Sunday, June 9.

The event, known as the Florida Harley-Davidson Dealers Association Rally, is in its 30th year and is expected to draw upwards of 1000 motorcyclists. Riding in tandem, the double-file line will extend for about two miles as the riders tour KSC.

Richard Oktela, owner of the Harley-Davidson dealership in Melbourne, FL, helped organize this weekend's event. "A lot of our customers work at KSC," Oktela said. "They were instrumental in setting up our drive through the center."

Other events for the dealers rally weekend are to be held Saturday, but Sunday is reserved for the KSC tour. Participants of the rally plan to meet at the Cocoa Beach Holiday Inn at 9 a.m. Sunday, and caravan to Kennedy Space Center's Visitors Center. From there the cyclists will be escorted by Center Director Jay Honeycutt who will lead the procession north on the NASA Causeway, past the Vehicle Assembly Building and around Pad 39B where Space Shuttle Columbia sits awaiting launch later this month.

A photo opportunity of the cyclists riding through KSC and will be available to interested members of the press. Media should be at the KSC Press Site at 9:30 a.m. Sunday, June 9, for escort to the viewing site.

For additional information on the Harley-Davidson Dealers Association Rally, contact Richard Oktela at 407-259-1311.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

June 19, 1996
KSC Contact: Joel Wells
KSC Release No. 74-96

KSC ENGINEERS HELP SOLVE INDUSTRY PROBLEMS

Twenty Kennedy Space Center (KSC) engineers were recently recognized by NASA and the state of Florida's Technological Research and Development Authority (TRDA) for providing technical help to hundreds of Florida businesses.

Awards were presented by Florida State Senator Patsy Kurth during the NASA/TRDA 2nd Annual Technology Outreach Program Workshop on June 6. "The event focused on how KSC and the state of Florida cooperate to extend the benefits of space exploration and research to businesses across the state," said Frank Kinney, TRDA's executive director. TRDA is an independent state agency which provides space-related education and research grants as well as working with NASA to promote technology transfer to industry.

KSC's Technology Programs and Commercialization Office has received 434 requests for help from businesses in the southeastern United States during the past year of which 374 came from Florida companies. The requests are submitted in the form of a Technology Transfer Agreement or problem statement. Each request initiates a working relationship between NASA and the sender.

"The simplicity of initiating a Technology Transfer Agreement is one of the reasons we have seen such a positive response to the program," said Chuck Griffin, KSC's Technology Outreach coordinator. "Sometimes we receive the one-page application filled out by hand."

A committee of NASA and contractor employees reviews each problem statement and then assigns it to an engineer with expertise in that area. "Companies have presented problems that range from redesigning dentistry tools to keeping sea turtles out of a nuclear power plant's intake canal," said Griffin.

NASA allows the engineer to work the problem directly with a company for up to 40 hours. "If you think of the hours of free talent and expertise that small businesses can now tap into through this program, the economic impact is quite obvious," said Senator Kurth.

The award recipients from NASA, EG&G Florida, Inc., Dynamac Corporation, I-NET, Inc., Lockheed Martin Space Operations and McDonnell Douglas Aerospace and Defense Systems are credited with successfully closing 283 of the problem statements to date.

"NASA's effort to accelerate the transfer of space technology to industry is right on track. This program, is already proving its worth with in the first year of operation at KSC," said Bill Sheehan, chief, KSC's Technology Programs and Commercialization Office.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

June 19, 1996
KSC Contact: Joel Wells
KSC Release No. 75-96

NASA INTRODUCES LIGHTNING MAPPING SYSTEM TO COMMERCIAL MARKET

Despite being located in an area with the greatest amount of lightning activity in the United States, a NASA developed Lightning Detection and Ranging (LDAR) system has provided a safe, productive work environment at the Kennedy Space Center (KSC) and the Eastern Range since 1992. Now private industry and the public at large stand to benefit from the space age technology.

NASA has signed a Space Act Agreement with Global Atmospherics, Inc. (GAI) of Tucson, AZ, to begin joint work on development of an LDAR system that meets both NASA and commercial needs. The technology has commercial application in the electric utility, aviation, atmospheric research, commercial rocket launch, recreation, construction and meteorological industries.

"The 45th Weather Squadron at Cape Canaveral Air Station uses LDAR to accurately inform KSC of any lightning threats in the area," said John Madura, manager of KSC's weather office. Cape Canaveral Air Station and the National Weather Service in Melbourne, Fl are the only organizations currently using this system.

Current two-dimensional commercial systems only locate cloud-to-ground lightning. NASA's three-dimensional LDAR system also pinpoints the location and altitude of in-cloud and cloud-to-cloud lightning by measuring the exact arrival times of electromagnetic pulses.

"When you hear a crackle of lightning over your radio, you are listening to an electromagnetic pulse. Since the speed of light is constant, once we know the time of a pulse we can figure out exactly how far away the lightning is," explained Carl Lennon, KSC Information Systems Division.

The system detects the VHF or very high frequency radiation and maps the volume of the lightning activity. The result is a three-dimensional presentation of the local activity and the threat that it presents.

GAI designs, manufactures and markets commercial lightning detection systems that are used worldwide for collection, analysis, display and dissemination of lightning related information. They bring the expertise and resources to this partnership that are necessary to expedite commercialization.

"This collaboration between GAI and NASA brings together two organizations respected in this field of study and should benefit the public with an extremely solid new product," said GAI President, Pat Zumbusch.

The 2-year agreement does not require an exchange of funds, but does assign responsibilities to both parties. GAI will focus on improving the location accuracy, small signal detection, and flexibility of NASA's existing system. After reducing the cost of transmitting and displaying data, a commercial version of the system will be available.

NASA will operate the LDAR system, allowing GAI to compare their newly developed systems to it. NASA will also assist GAI with the design and evaluation of various system components and allow them to use existing equipment, facilities and weather data.

"This agreement is the perfect example of NASA working together with industry to bring space age technology down to earth," said Bill Sheehan, KSC's Technology Programs and Commercialization Office. "The space program, commercial market and general public will benefit a great deal from this project."

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

June 19, 1996
KSC Contact: George H. Diller
KSC Release No. 78-96

SPACE SHUTTLE WEATHER LAUNCH COMMIT CRITERIA AND KSC END OF MISSION WEATHER LANDING CRITERIA

The launch weather guidelines involving the Space Shuttle and expendable rockets are similar in many areas, but a distinction is made for the individual characteristics of each. The criteria are broadly conservative and assure avoidance of possibly adverse conditions. They are reviewed for each launch.

Weather "outlooks" which are provided by the Range Weather Operations Facility at Cape Canaveral begin at Launch minus 5 days. These include weather trends, and their possible effects on launch day.

For the Space Shuttle, a formal prelaunch weather briefing is held on Launch minus 1 day which is a specific weather briefing for all areas of Space Shuttle launch operations.

During the countdown, formal weather briefings occur approximately as follows:

L-21 hr 0 min	Briefing for removal of Rotating Service Structure
L-9 hr 00 min	Briefing for external tank fuel loading
L-4 hr 30 min	Briefing for Space Shuttle Launch Director
L-3 hr 55 min	Briefing for astronauts
L-0 hr 35 min	Briefing for launch and RTLS
L-0 hr 13 min	Poll all weather constraints

The basic weather parameters on the pad at liftoff must be:

Temperature: Prior to external tank propellant loading, tanking will not begin if the 24 hour average temperature has been below 41 degrees.

After tanking begins, the countdown shall not be continued nor the Shuttle launched if:

a.) the temperature exceeds 99 degrees for more than 30 consecutive minutes.

b.) the temperature is lower than the prescribed minimum value for longer than 30 minutes unless sun, wind and relative humidity conditions permit recovery. The minimum temperature limit in degrees F. is specified by the table below and is a function of the five minute average of temperature, wind and humidity. The table becomes applicable when the observed temperature reaches 48 degrees. In no case may the Space Shuttle be launched if the temperature is 35 degrees or colder.

Wind Speed	**Relative Humidity**

(kts)	0-64%	65-74%	75-79%	80-89%	90-100%
0 - 1	48	47	46	45	44
2	47	46	45	44	43
3	41	41	41	40	39
4	39	39	39	39	38
5 - 7	38	38	38	38	38
8 - 14	37	37	37	37	37
>14	36	36	36	36	36

The above table can be used to determine when conditions are again acceptable for launch if parameters have been out of limits for thirty minutes or less. If longer than thirty minutes, a mathematical recovery formula of the environmental conditions is used to determine if a return to acceptable parameters has been achieved. Launch conditions have been reached if the formula reaches a positive value.

Wind: Tanking will not begin if the wind is observed or forecast to exceed 42 knots for the next three hour period.

For launch the wind constraints at the launch pad will vary slightly for each mission. The peak wind speed allowable is 34 knots. However, when the wind direction is between 100 degrees and 260 degrees, the peak speed varies and may be as low as 20 knots.

The upper atmosphere wind profile must conform to either one of two wind loading programs developed by the Johnson Space Center. This profile is determined by a series of Jimsphere wind balloon releases from Cape Canaveral Air Station. A final recommendation is made by the JSC Launch Systems Evaluation Advisory Team (LSEAT) to the KSC launch director at Launch minus 30 minutes. The Space Shuttle will not be launched within 30 minutes of the time a determination has been made that the upper wind profile will adversely affect the performance of the launch vehicle.

A downrange weather advisory shall be issued by the Shuttle Weather Officer to the Mission Management Team for their consideration if the wind in the solid rocket booster recovery area is forecast to exceed 26 knots during retrieval operations. Seas in excess of Sea State 5 (8-13 feet) may also be a factor considered by the Mission Management Team.

Precipitation: None at the launch pad or within the flight path.

Lightning (and electric fields with triggering potential): - Tanking will not begin if there is forecast to be greater than a 20% chance of lightning within five nautical miles of the launch pad during the first hour of tanking. The launch director with the concurrence of the safety director may make an exception after consultation with the Shuttle Weather Officer.

- Launch will not occur if lightning has been detected within 10 nautical miles of the pad or the planned flight path within 30 minutes prior to launch, unless the source of lightning has moved more than 10 nautical miles away from the pad or the flight path.

- The one-minute average of the electric field mill network, used to measure electric fields, shall not exceed -1 or +1 kilovolt per meter within five nautical miles of the launch pad at any time within 15 minutes prior to launch.

The above rule need not apply if the following two conditions are observed to exist:

1. There are no clouds within 10 nautical miles of the flight path except those which are transparent. Also excepted are clouds with tops below the 41 degrees F. temperature level that have not have been previously associated with a thunderstorm, or associated with convective clouds having tops above the 14 degrees F. temperature level during the last three hours.

2. A known source of electric fields such as ground fog or smoke that is occurring near the field mill which has been previously determined and documented to be benign is clearly causing the elevated readings.

Clouds: (types known to contain hazardous electric fields)

- The Space Shuttle may not be launched if the planned flight path is through a layer of clouds with a thickness of 4,500 feet or greater where the temperature of any part of the layer is between 32 degrees F. and -4 degrees F.

- The Space Shuttle may not be launched if the planned flight path is through a cumulus type cloud with its top between the 41 degrees F. temperature level and 23 degrees F. temperature. Launch may occur if: 1) the cloud is not producing precipitation; 2) the distance from the furthest edge of the cloud top to at least one operating field mill is less than the altitude at the 23 degree F temperature level or 3 nautical miles, whichever is less; 3) field mill readings within five nautical miles of the flight path must be between -100 volts per meter and +1000 volts per meter.

- The Space Shuttle may not be launched through 1) cumulus type clouds with tops higher than the 23 degree F. temperature level; 2) through or within 5 nautical miles of the nearest edge of cumulus type clouds with tops higher than the 14 degree F level; 3) through or within 10 nautical miles of the nearest edge of any cumulonimbus or thunderstorm cloud including nontransparent parts of its anvil; 4) through or within 10 nautical miles of the nearest edge of a nontransparent detached anvil cloud for the first hour after detachment from the parent thunderstorm or cumulonimbus cloud.

- The Space Shuttle may not be launched if the flight path is through any clouds that extend to altitudes at or above the 32 degrees F. level which are associated with disturbed weather producing moderate or greater precipitation within five nautical miles of the flight path.

- The Space Shuttle may not be launched if the flight path will carry the vehicle through a thunderstorm or cumulonimbus debris cloud which is not transparent and less than three hours old. Launch may not occur within five nautical miles of these debris clouds unless: 1) for 15 minutes preceding launch there is at least one working field mill within five nautical miles of the debris cloud; 2) all electric field mill readings are between -1 kilovolt and + 1 kilovolt per meter within five nautical miles of the flight path; 3) no precipitation has been detected or observed.

Supporting Table: KSC Seasonal Altitudes of Temperature Levels in thousands of feet

January				**July**			
Temp	**Low**	**Avg**	**High**	**Temp**	**Low**	**Avg**	**High**
-4 F	21 Kft	24 Kft	26 Kft	-4 F	23 Kft	27 Kft	29 Kft
14	13	18	21	14	18	21	23
23	9	15	18	23	16	18	20
32	sfc	12	16	32	13	15	18
41	sfc	9	14	41	10	12	15

Range Safety Cloud Ceiling and Visibility constraints:

- Direct visual observation of the Shuttle is required through 8, 000 feet. This requirement may be satisfied using optical tracking sites or a forward observer

- For cloud ceilings of any thickness between 6, 000 feet and 8, 000 feet the following conditions must be met for launch to occur:

a.) the vehicle integrity can be observed without interruption through 6, 000 feet.

b.) all required Range Safety instrumentation is functioning properly

c.) the U.S. Air Force 45th Space Wing Commander approves the decision to proceed

- For cloud ceilings between 4, 000 feet and 6, 000 feet the following conditions must be met for launch to proceed:

a.) the thickness of the clouds must be less than 500 feet

b.) the vehicle integrity can be monitored by the Eastern Range airborne and/or the ground forward observers through 8,000 feet

c.) all required Range Safety instrumentation is functioning properly

d.) the U.S. Air Force 45th Space Wing Commander approves the decision to proceed

A "Good Sense Rule" is in effect for launch which states: "Even when constraints are not violated, if any other hazardous conditions exist, the launch weather officer will report the threat to the launch director. The launch director may hold at any time based on the instability of the weather."

CONTINGENCY LANDING WEATHER CRITERIA

Weather criteria for an emergency landing must be considered along with launch criteria since the possibility exists for a Return To Launch Site abort (RTLS), landings at the Trans- Oceanic Abort Landing Sites (TAL), the Abort Once Around (AOA) sites and the first day Primary Landing Site (PLS). All criteria refer to observed and forecast weather conditions except for the first day PLS which is forecast weather only.

- For RTLS with redundant Microwave Landing System (MLS) capability and a weather reconnaissance aircraft, cloud coverage 5 tenths or less below 5,000 feet and a visibility of 4 statute miles or greater are required. For AOA, TAL and PLS sites, cloud coverage 5 tenths or less below 8,000 feet and a visibility of 5 statute miles or greater is required.

- For landing on a hard surface runway without redundant Microwave Landing System (MLS) capability all sites require a ceiling not less than 10,000 feet and a visibility of at least 7 statute miles. Landing at night on a hard surface runway is not acceptable. Landing at night on a lake bed runway may occur if the ceiling is not lower than 15,000 feet and the visibility is 7 miles or greater with at least non-redundant MLS capability.

- For the RTLS site and TAL sites, no thunderstorms, lightning, or precipitation within 20 nautical miles of the runway, or within 10 nautical miles of the final approach path extending outward to 30 nautical miles from the end of the runway.

- For RTLS and TAL sites, no detached opaque thunderstorm anvils less than three hours old within 15 nautical miles of the runway, or within 5 nautical miles of the final approach path extending outward to 30 nautical miles from the end of the runway.

- For RTLS, light precipitation within 20 nautical miles of the runway is acceptable if the specific criteria listed below are met:

a.) The tops of the clouds containing precipitation do not extend into temperature regions colder than 41 (F.); they have not been colder than 14 (F.) within 2.5 hours prior to launch; the radar reflectivity is less than 30 dbz at all levels within and below the clouds.

b.) Precipitation covers less than 10% of the area within 20 nautical miles of the runway, or multiple heading alignment circles are clear of showers.

c.) The movement of the showers is observed to be consistent and no additional convective development is forecast.

d.) Touchdown/rollout criteria and associated navigational aids meet the specified prelaunch go/no go requirements.

If showers exceed either parameter of part a above, an RTLS landing may still occur if a 2 nautical mile vertical

clearance can be maintained from the top of any shower within 10 nautical miles of the approach paths.

- For AOA and PLS sites, no thunderstorms, lightning or precipitation within 30 nautical miles of the runway, or within 20 nautical miles of the final approach path extending to 30 nautical miles from the end of the runway.

- For RTLS and the TAL sites, no detached opaque thunderstorm anvil cloud less than 3 hours old within 15 nautical miles of the runway or within 5 nautical miles of the final approach path extending outward to 30 nautical miles from the end of the runway.

- For AOA and PLS sites, no detached opaque thunderstorm anvil cloud less than 3 hours old within 20 nautical miles of the runway or within 10 nautical miles of the final approach path extending to 30 nautical miles from the end of the runway.

- The RTLS crosswind component may not exceed 15 knots. If the astronaut flying weather reconnaissance in the Shuttle Training Aircraft executes the approach and considers the landing conditions to be acceptable, this limit may be increased to 17 knots. For the TAL, AOA and PLS sites there is a night-time crosswind limit of 12 knots.

- Headwind not to exceed 25 knots.

- Tailwind not to exceed 10 knots average, 15 knots peak.

- Turbulence conditions must be less than or equal to moderate intensity.

KSC END OF MISSION LANDING WEATHER CRITERIA

All criteria refer to observed and forecast weather conditions. All criteria refer to observed and forecast weather conditions except for the 2/10 cloud rule which is required to be observed only. At decision time for the deorbit burn 90 minutes before landing the required conditions must be:

- Cloud coverage of 5/10 or less below 10,000 feet and a visibility of 5 miles or greater is required.

- The peak cross wind cannot exceed 15 knots, 12 knots at night. If the mission duration is greater than 12 days the limit is 12 knots, day and night.

- Headwind cannot exceed 25 knots

- Tailwind cannot exceed 10 knots average, 15 knots peak

- The deorbit burn shall not occur if thunderstorm, lightning, or precipitation activity is forecast within 30 nautical miles of the Shuttle Landing Facility.

- At a range of 30 nautical miles, vertical clearance from the tops of rain showers or thunderstorms must be greater than 2 nautical miles.

- Detached opaque thunderstorm anvils less than three hours old must not be within 20 nautical miles of the Shuttle Landing Facility, or within 10 nautical miles of the flight path when the orbiter is within 30 nautical miles of the runway.

- Scattered cloud layers below 10,000 feet must not exceed 2/10 sky coverage.

- Turbulence must be less than or equal to moderate intensity.

WEATHER INSTRUMENTATION

The equipment used by the forecasters to develop the downrange and launch clearance and landing forecasts are:

-Radar: Launch forecasters located at Cape Canaveral Air Station and landing forecasters located in Houston can access displays from two different radars. One is located at Patrick Air Force Base south of Cocoa Beach. The other is

located in Melbourne at the National Weather Service and is a NEXRAD Doppler radar. Each radar provides rain intensity and cloud top information out to a distance as far as 200 nautical miles. The NEXRAD radar can also provide estimates of total rainfall and wind velocities.

-Field Mill Network: Thirty-one advanced field mill sites around KSC and Cape Canaveral Air Station provide data on lightning activity and surface electric fields induced by charge aloft. This data helps forecasters determine when electric charge aloft may be sufficient to create triggered lightning during launch, and to determine when to issue and cancel lightning advisories and warnings.

-Lightning Detection System: Detects and plots cloud to ground lightning strikes within 125 nautical miles of the Kennedy Space Center. Location accuracy is optimum within 30 nautical miles. Locations of strikes are color coded according to time of occurrence.

-Lightning Detection And Ranging (LDAR): Developed by the NASA Kennedy Space Center, LDAR plots intracloud, cloud to cloud and cloud to ground lightning in three dimensions within 100 nautical miles of the Kennedy Space Center. Location accuracy is very high within 25 nautical miles. LDAR data is important in determining the beginning and end of lightning conditions.

- National Lightning Detection Network: Plots cloud to ground lightning nationwide. Used to help ensure safe transit of the Space Shuttle orbiter atop the Shuttle Carrier Aircraft between Edwards Air Force Base in California and the Kennedy Space Center in Florida. It is also used to assess lightning beyond the 125 mile range of the Lightning Detection System.

-Rawinsonde: A balloon with a tethered instrument package which radios its altitude to the ground together with temperature, dewpoint and humidity, wind speed and direction, and pressure data. Rawinsondes reach altitudes exceeding 100,000 feet.

-Jimsphere balloon: A reflective balloon made of mylar tracked by radar which provides highly accurate information on wind speed and wind direction up to 60,000 feet.

- Doppler Radar Wind Profiler: Measures upper level wind speed and direction over Kennedy Space Center from approximately 10,000 feet to 60,000 feet. The data, received every 5 minutes, is used to ensure the upper winds used to calculate wind loads on the shuttle vehicle have not significantly changed between balloon soundings. If data from the Doppler Radar Wind Profiler indicates a possible significant change, another Jimsphere balloon is released.

-Rocketsonde: A 12-foot-tall instrumented rocket is launched on L-1 day which senses and transmits data on temperature, wind speed and direction, wind shear, pressure, and air density at altitudes between 65,000 feet and 370,000 feet. A four-inch in diameter solid rocket motor separates at an altitude of about 5,000 feet, after which an "instrumented dart" coasts to apogee.

-Satellite Images and Data: These are provided directly to the satellite terminal at USAF Range Weather Operations and NOAA National Weather Service Spaceflight Meteorology Group in Houston by the geostationary GOES weather satellites. In addition high resolution images are received from spacecraft in low earth orbit including both the NOAA and the Defense Meteorological Support Program (DMSP) polar orbiting satellites.

-Meteorological Interactive Data Display System (MIDDS): Integrates diverse weather data on a single display terminal-- satellite images, radar, computer generated graphics of surface and upper air map features, numerical weather models, current weather observations, data from meteorological towers, lightning strikes and field mill information.

- Towers: 33 meteorological towers are located on Kennedy Space Center and Cape Canaveral Air Station, including two at each launch pad and three at the Shuttle Landing Facility. In addition to wind, most towers are also instrumented with temperature, and moisture sensors. The 60-foot towers at the launch pads and the 33-foot towers at the Shuttle Landing Facility are closely monitored for launch and landing criteria. In addition, on the mainland, there is a network of 19 wind towers which extend outward an additional twenty miles. Tower data is an important short- term

forecasting tool and also helps determine the direction and distance of toxic corridors in the event of a mishap.

-Buoys: Meteorological buoys are anchored 20, 110 and 160 nautical miles east-northeast of Cape Canaveral. These buoys relay hourly measurements via satellite of temperature, wind speed and direction, barometric pressure, precipitation, sea water temperature, and wave height and period. Buoy data is used for launch, landing, booster retrieval, and daily ground processing forecasts for the Kennedy Space Center and Cape Canaveral Air Station.

-Solid Rocket Booster Retrieval Ships: These vessels radio observed weather conditions and sea state from the booster impact area located up to 150 nautical miles downrange.

-Weather Reconnaissance Aircraft: A T-38 jet and the Shuttle Training Aircraft are flown by a weather support astronaut.

NOTE: Launch weather forecasts and ground operations forecasts are prepared by the U.S. Air Force Range Weather Operations Facility at Cape Canaveral Air Station. The RTLS, emergency landing and end of mission forecasts are prepared by the NOAA National Weather Service Space Flight Meteorology Group at the Johnson Space Center in Houston.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

June 21, 1996
KSC Contact: George H. Diller
KSC Release No. 79-96

Note to Editors/News Directors:
TOMS SPACECRAFT TO BE LAUNCHED ABOARD PEGASUS XL JUN. 29

The launch of NASA's Total Ozone Mapping Spectrometer (TOMS) spacecraft aboard an Orbital Sciences Pegasus XL vehicle is scheduled for Saturday, Jun. 29 during a 10-minute window which extends from 12:41 - 12:51 a.m. PDT.

Launch is targeted to occur at 12:46 a.m. PDT over the Pacific Ocean approximately 60 miles offshore from Vandenberg Air Force Base, CA. The TOMS Earth Probe satellite (TOMS-EP), built for NASA by TRW Space & Electronics Group, carries instrumentation developed by Orbital Sciences to map the development, extent and trends of the ozone depletion occurring in the atmosphere.

The prelaunch news conference to be carried live on NASA Television is scheduled for Friday, Jun. 28 at 11:30 a.m. PDT in the conference room of the NASA-KSC Resident Office at Vandenberg Air Force Base. Participating in the briefing will be:

- Floyd Curington, NASA Launch Manager, Kennedy Space Center
- Don Miller, Pegasus Launch Vehicle Manager, Goddard Space Flight Center
- J.R. Thompson, General Manager, Launch Systems Group, Orbital Sciences Corporation
- Art Azarbarzin, TOMS Mission Director, Goddard Space Flight Center
- Dr. P.K. Bhartia, TOMS Project Scientist, Goddard Space Flight Center
- Lt. Mike Mills, Launch Weather Officer, USAF 30th Weather Squadron, Vandenberg Air Force Base

Immediately following the prelaunch news conference a TOMS mission science briefing will be held which will also be carried live on NASA Television. Participating in the briefing will be:

- Dr. P.K. Bhartia, TOMS Project Scientist, Goddard Space Flight Center
- Art Azarbarzin, TOMS Mission Director, Goddard Space Flight Center

Media desiring to cover the prelaunch news conference and mission science briefing should meet at the south gate of Vandenberg Air Force Base on California State Road 246 at 11 a.m. for escort to the NASA-KSC Vandenberg Resident Office.

SPECIAL MEDIA EVENTS

On Friday, Jun. 28 at 12:30 p.m. immediately following the prelaunch briefings, a van will depart from the NASA-KSC Vandenberg Resident Office for a tour by Orbital Sciences of the Pegasus processing facility and the L-1011 aircraft with the Pegasus/TOMS vehicle attached. There will also be a tour of NASA's central telemetry facility where flight data from the Pegasus vehicle will be monitored.

ACCREDITATION

Media desiring accreditation information should contact the Air Force at:

Public Affairs Office
Vandenberg Air Force Base
Telephone: 805/734-8232, Ext. 6-3595
FAX: 805/734-8232, Ext. 6-8303
E-mail: pubaffairs@plans.vafb.af.mil

Pegasus/TOMS access badges will be issued upon entry to Vandenberg Air Force Base and will be valid for the prelaunch news conference and other activities on L-1 day. This badge will also be valid for access to cover the launch activities.

LAUNCH DAY PRESS COVERAGE

On launch day, media representatives should meet at the Vandenberg main gate at 11 p.m. to be escorted to the runway for the take-off of the L-1011. After departure, media will be taken to the viewing room of the NASA Mission Director's Center located at Building 840 on South Vandenberg Air Force Base. From there, media may follow the deployment and launch of Pegasus/TOMS. Assuming a nominal flight of the Pegasus launch vehicle, a post-launch news conference will not be held. However, launch vehicle and spacecraft representatives will be available afterward to informally answer questions from the media.

NASA TELEVISION COVERAGE OF PEGASUS/TOMS

Because countdown and launch occurs in darkness there will be no live coverage on NASA Television. However, live launch commentary and audio of all Pegasus/TOMS briefings will be available on the "V-2" and "V-3" audio circuits which may be dialed directly at 407/867-1240 or 407/867-1260.

Jun. 28 11:30 a.m. PDT: Pegasus/TOMS prelaunch news conference
Jun. 28 12:00 Noon PDT: TOMS mission science briefing
Jun. 28 11:30 p.m. PDT: launch commentary begins with L-1011 departure and concludes after spacecraft separation approximately 90 minutes later (audio only)
Jun. 29 12:30 p.m. PDT: NASA TV replay of countdown and launch highlights

NASA Television is available on Spacenet 2, Transponder 5, channel 9 located at 69 degrees West longitude.

PEGASUS/TOMS NEWS CENTER

The Pegasus/TOMS News Center at the NASA-KSC Vandenberg Resident Office will be staffed starting two days before launch, June 27, and may be reached between 8 a.m. and 5 p.m. PDT at 805/734-8232, Ext. 5-3051. A recorded status report will also be available beginning on L-2 days by dialing 805/734-8232, Ext. 5-3456.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

June 21, 1996
KSC Contact: Bruce Buckingham
KSC Release No. 80-96

Note to Editors:
DISCOVERY SET TO RETURN TO KSC NEXT WEEK

The orbiter Discovery, NASA's most experienced Space Shuttle vehicle, will return to Kennedy Space Center next week after spending nine months at Palmdale, CA. Discovery was sent to Rockwell's Orbiter Assembly Facility in Palmdale as part of a regularly scheduled Orbiter Maintenance Down Period (OMDP), an action that periodically removes all orbiters from flight operations.

Work on Discovery during the OMDP, in addition to the normal series of structural and thermal protection system inspections, included the addition of hardware necessary to install an external airlock and installation of a 5th set of cryogenic tanks. The airlock will permit Discovery to dock with the Mir space station and the additional set of cryogenic tanks will allow the orbiter to remain in space for longer periods of time.

Discovery is scheduled to be rolled out of the Rockwell facility as early as Monday morning, June 24, and begin the return trip back to Florida the next day. A two-day ferry flight has been factored into the schedule, putting Discovery back at KSC as early as Wednesday, June 26, weather permitting. Discovery will be mated to the Shuttle Carrier Aircraft (SCA), a modified Boeing 747, the afternoon of the rollout.

A management meeting will be held Sunday afternoon in Palmdale to assess Discovery's readiness to commence the ferry flight. Weather permitting, managers hope to travel as far east as Corpus Christi, TX, the first day and remain there overnight. The current plan calls for Discovery to depart Corpus Christi the following morning, refuel at Ellington Field, Houston, TX, and continue the same day on to KSC.

Once back at KSC, preparations will begin for Discovery's next mission, STS-82, the second Hubble Space Telescope servicing flight, set for launch in February 1997. Also, Discovery is scheduled to dock with Russia's Mir space station twice in 1998.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

July 19, 1996
KSC Contact: Joel Wells
KSC Release No. 81-96

KSC AND INDUSTRY TO DEVELOP REVOLUTIONARY SUPER-COOLER

For years, the superconducting electronics industry has been stymied by the lack of an affordable means to accurately calibrate voltage levels in this type of high-performance circuitry. NASA and Hypres, Inc., Elmford, NY will jointly develop a product that is expected to be a breakthrough for the industry.

The device, known as a compact cryogenic cooler, will provide a supercold environment for superconducting electronic circuitry, said Kristen Riley of the KSC Technology Programs and Commercialization Office. The cryocooler will be a key element in the development of a portable Josephson Junction Voltage, or J-Volt Standard system to be used in the calibration of highly accurate electronic instruments. NASA plans to use the technology at its eight field centers throughout the country.

Under a recently signed 13-month Space Act agreement, Hypres will develop a prototype of the cryocooler along with NASA, the Department of Energy (DOE)'s Sandia National Laboratories and the National Institute of Standards and Technology (NIST). KSC will also fund a portion of the development costs and provide facilities for final testing. This effort is a part of KSC's Dual Use Program, where the center partners with industry to develop technology for use by the space agency that also has potential for the commercial market.

"The cryocooler chamber, about the size of a standard television, will allow the J-Volt Standard unit to be light and compact enough to be easily shipped to any field location," Riley said. "Once at the site, the system could be readily mounted in a standard electronics test rack."

Present-day J-Volt Standard systems are about 6 feet tall and are prohibitively expensive to build and too large to ship. Much of this expense and size is the result of reliance on a chamber that must be filled with liquid helium to supercool the electronic circuitry to the temperatures that they would operate in a superconducting electronics system.

"The compact cryogenic cooler, or cryocooler, will take the place of large 100-liter liquid helium containers now used at permanent electronics testing sites," Riley said. "Currently there are about 40 fixed sites in the country that are only used by companies and institutions that can afford them. The portable unit will drastically lower the cost of a J-Volt system. We expect the superconducting industry to be revitalized once the portable system is commercially available."

Electronics components based on the superconductivity principle must operate at supercold temperatures to maintain the flow of electrical current with little or no resistance through their circuitry. This low-resistance technology allows electronic equipment to process data at speeds higher than those possible with conventional hardware and is now being used in some mainframe supercomputers. Research is underway to develop such next-generation devices as high-speed digital switchers for communications equipment, digital spectrum analyzers and other scientific research tools.

"There are many other potential commercial and military applications of this technology, including improved ship-borne and ground-based radars," Riley said.

NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

June 28, 1996
KSC Contact: Dennis Armstrong
KSC Release No. 82-96

DIVERSIFIED NASA EDUCATIONAL SUPPORT HAVING POSITIVE IMPACT ON FLORIDA SCHOOLS

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NASA News Release
ON LINE
JOHN F. KENNEDY SPACE CENTER

July 3, 1996
KSC Contact: Lisa Malone
KSC Release No. 83-96

OLYMPIC TORCH TO PASS THROUGH SPACE CENTER JULY 7

Kennedy Space Center's roads will be illuminated on July 7 with the Olympic torch as it passes by the space center's historic landmarks. Twenty runners, KSC employees and their children, were selected by the Atlanta Committee for the Olympic Games to carry the torch through the space center.

News media will be offered several spectacular locations for photo opportunities of the runners. In addition, there will be live NASA Television coverage of the entire event, including a closing ceremony at the KSC Visitor Center.

The torch will arrive by bicycle at the center's south gate on State Road 3 at approximately 1:40 p.m. A bicyclist will continue carrying the torch on the Kennedy Parkway, onto Saturn Causeway and to Transporter Road near the Launch Control Center in Complex 39. Runners will then carry the flame for the 3.4 miles, along the crawlerway, to Launch Pad 39-A where the Shuttle Atlantis is poised for the STS-79 launch, scheduled later this month. Runners will be stationed every 3/10 of a mile from each other to relay the torch to the launch pad. There will be a photo opportunity along the crawlerway, near the Non-Destruct Laboratory with the Vehicle Assembly Building in the background.

KSC employees are allowed to bring their family members on base and can park along the crawlerway to cheer on the torch bearers.

One of the highlights of the run will be when former astronaut Loren Shriver, now manager of Shuttle Launch Integration and a designated torch runner, carries the torch to the top of the launch pad and passes the flame to Joanne Maceo, a NASA engineer, just below the Shuttle Atlantis. This event is scheduled for 2:40 p.m. The rotating service structure will be moved away leaving the Shuttle Atlantis exposed. Maceo will run with the flame down the pad's incline. Photographers can cover the pad event from three different locations: the Pad A parking lot, the Pad A guard gate or the top of the Pad incline, where the torch will be passed.

From the base of the pad, a bicycler will carry the torch to the State Road 405 ramp at the Kennedy Parkway, when runners will resume carrying the torch to a stage at KSC's Visitor Center. STS-78 Commander Tom Henricks, Pilot Kevin Kregel and Mission Specialists Susan Helms, are scheduled to cheer runners on as they carry the flame through the solid rocket booster display at the KSC Visitor Center and wind around the parking lot perimeter road to the stage near the Rocket Garden.

One of the runners will light a cauldron on stage marking the start of the public ceremony at about 3:25 p.m. Center Director Jay Honeycutt and Atlanta Olympic Committee officials will make comments. The STS-78 flight crew, returning from their record-breaking endurance space flight hours before the ceremony, will present to the committee a replica torch and banner which traveled millions of miles around the Earth aboard the Shuttle Columbia for 17 days. In addition, KSC runners will be publicly recognized at this ceremony. As a ceremonial finale, a runner will light the torch from the cauldron and carry it off stage to continue the trek on toward Orlando.

News media representatives must be at the KSC Press Site by 1:30 p.m. for transport to the various photo locations. Once in place, there will be no movement of press until after the runner and torch caravan passes. Media needing

credentials should contact the News Center at (407)867-2468.

A special section has been reserved for news media at the ceremony site at the KSC Visitor Center. Power and multiple audio distribution outlets are available at this site. No special media badging is required at the Visitor Center as this site is open to the public.

LIST OF KSC RUNNERS

Kathleen Weaver/EG&G
Mike Chappell/Lockheed-Martin
Sara Delmonte/Lockheed-Martin
Claude Overfelt/Lockheed-Martin
Michael Phillips/Lockheed-Martin
Deborah Prongue/Lockheed-Martin
Robin Seymour/Lockheed-Martin
Marty Winkel/Lockheed-Martin
Tom Anderson/McDonnell-Douglas
Donna Lee Hoven/McDonnell-Douglas
Lee Harrison Davies/NASA
Jane Hodges/NASA
Joanne Maceo/NASA
Robert Nagy, Jr./NASA
Loren Shriver/NASA
Theresa Clifton/Rockwell
Richard Unrue/Rockwell
Eric Ouellette - child of KSC employee
Joseph Schuh - child of KSC employee
Britany Jones - child of KSC employee

***NOTE:** The Atlanta Olympic Committee is holding a news conference at 10 a.m. on July 5 at the Holiday Inn Oceanfront, Satellite Beach, to discuss the route of the torch through Brevard County, including the space center. Loren Shriver and Hugh Harris, Director of Public Affairs, will participate in the conference. There will be no live coverage of this conference or recordings made. Interested media must attend in person.

NASA Television can be accessed through GTE Spacenet 2, transponder 5. The frequency is 3880 Mhz with an orbital position of 69 degrees West longitude.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

July 5, 1996
KSC Contact: Bruce Buckingham
KSC Release No. 84-96

COLUMBIA SCHEDULED TO LAND AT KSC

The orbiter Columbia is scheduled to land at Kennedy Space Center on Sunday, July 7 at about 8:37 a.m. EDT, completing its endurance record breaking 17-day STS-78 mission which was launched from KSC on June 20.

Landing at KSC's Shuttle Landing Facility (SLF) is slated to occur on orbit 271 at a mission elapsed time of 16 days, 21 hours, 48 minutes. The deorbit burn will occur at about 7:41 a.m. Sunday.

The two KSC landing opportunities on Sunday are: 8:37 a.m. and 10:11 a.m. In the event a landing is not possible at KSC on Sunday due to weather concerns, no landing support is scheduled for Edwards Air Force Base (EAFB), CA and Columbia would remain in orbit an additional day. On Monday, two landing opportunities are available at KSC and two at Edwards.

KSC Monday landing times are: 8:29 a.m. and 10:03 a.m. EDT.

EAFB Monday landing times are: 9:55 a.m. and 11:29 a.m. EDT.

The landing of Columbia will mark the 31st landing at KSC in the history of Space Shuttle flight. It will be the fourth landing of the Shuttle at KSC this year.

About four hours after landing at KSC, select members of the flight crew will be present for a post-mission press conference. The conference will be held at the KSC TV auditorium and carried live on NASA TV.

SLF and KSC Ground Operations

The Shuttle Landing Facility was built in 1975. It is 300 feet wide and 15,000 feet long with 1,000 foot overruns at each end. The strip runs northwest to southeast and is located about 3 miles northwest of the 525-foot tall Vehicle Assembly Building.

Once the orbiter is on the ground, safing operations will commence and the flight crew will prepare the vehicle for post-landing operations. The Crew Transport Vehicle (CTV) will be used to assist the crew, allowing them to leave the vehicle and remove their launch and re-entry suits easier and quicker.

The CTV and other KSC landing convoy operations have been "on-call" since the launch of Columbia June 20. The primary functions of the Space Shuttle recovery convoy are: provide immediate service to the orbiter after landing, assist crew egress, prepare the orbiter for towing to the Orbiter Processing Facility.

Convoy vehicles are stationed at the SLF's mid-point. About two hours prior to landing, convoy personnel don SCAPE suits, or Self Contained Atmospheric Protective Ensemble, and communications checks are made. A warming-up of coolant and purge equipment is conducted and nearly two dozen convoy vehicles are positioned to move onto the runway as quickly and as safely as possible once the orbiter coasts to a stop. When the vehicle is deemed safe of all

potential explosive hazards and toxic gases, the purge and coolant umbilical access vehicles move into position at the rear of the orbiter.

Following purge and coolant operations, flight crew egress preparations will begin and the CTV will be moved into position at the crew access hatch located on the orbiter's port side. A physician will board the Shuttle and conduct a brief preliminary examination of the astronauts. The crew will then make preparations to leave the vehicle.

Following departure from the SLF, the crew will be taken to their quarters in the O&C Building, meet with their families, undergo a physical examination and prepare to depart for the skid strip at Cape Canaveral Air Station for their trip back to JSC.

If Columbia lands at Edwards, an augmented KSC convoy team will be on-site to safe the vehicle, disembark the crew and move the orbiter to the Mate/Demate Device. The turnaround team will be deployed to Edwards by charter aircraft on landing day.

About 6 hours, 30 minutes after Columbia lands at KSC, the orbiter will be towed to Orbiter Processing Facility bay 1 for post-flight deservicing. Preparations will then begin for Columbia's next mission, STS-80, currently scheduled for launch in November.

-- end --

NOTICE TO EDITORS: Media wishing to view Columbia's landing should be at the KSC press site between 5:30 - 7:30 a.m. Sunday, July 7, for transport to the SLF. Other specific information is available at the KSC News Center regarding landing photo opportunities, post-landing press conferences and KSC News Center operational hours. The KSC News Center will be open Saturday from 9 a.m. - 2 p.m. and on Sunday beginning at 5:30 a.m.

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STS-79
Atlantis
Shuttle/Mir Mission-4

KSC Release No. 85-96
August 1996

Long-term human stay in space continues with Space Shuttle Mission STS-79, the fourth docking between the U.S. Shuttle and the Russian Space Station Mir. Astronaut Shannon Lucid will return to Earth with the STS-79 crew after a stay on Mir that began March 24. Succeeding her aboard the station will be fellow astronaut John Blaha, who flies up with the STS-79 astronauts.

If the mission timeline proceeds as scheduled, Lucid will have spent more than 180 days in space from launch to landing, establishing a new record for U.S. human stay in space.

The docking also allows for the transfer to and from Mir of thousands of pounds of logistical equipment, experiment samples and supplies, most of it located in the SPACEHAB Double Module in Atlantis' payload bay.

Atlantis will lift off from Launch Pad 39A at a 51.6-degree inclination to the equator, which is the same as that of the Mir Space Station. The initial altitude will be 184 statute miles (296 kilometers), followed by a rendezvous orbit of about 245 miles (394 kilometers). As with all the Shuttle-Mir dockings, the launch window is brief — five to 10 minutes — to insure adequate propellant for the flight.

The approximately nine-day mission is scheduled to conclude with a landing at KSC's Shuttle Landing Facility. STS-79 marks the 17th flight of Atlantis (OV-104) and the 79th flight of the Shuttle program.

Shuttle and Mir Crews

Leading the veteran U.S. Shuttle crew is Mission Commander William F. Readdy (Capt., U.S. Naval Reserve), embarking on his third space flight. He also completed an assignment as NASA director of operations at the cosmonaut training facility in Star City, Russia, where U.S. astronauts prepare for stays on Mir. Pilot Terrence W. Wilcutt (Lt. Col., USMC) has flown in space once before, on STS-68 in 1994.

There are four mission specialists (MS). On the trip up, they are MS 1 Jay Apt (Ph.D.); MS 2 Tom Akers (Lt. Col., USAF); MS 3 Carl E. Walz (Lt. Col., USAF); and MS 4 John E. Blaha (Col., USAF, ret.). Both Apt and Akers have flown in space three times before, while Walz will be taking his third trip. As the MS 2, Akers also will serve as the flight engineer, supporting the commander and pilot.

Blaha is embarking on his fifth spaceflight. On previous missions, he served as either commander or pilot; he takes the mission specialist slot on STS-79 for the transfer to Mir. Lucid will take his place as MS 4 for the return trip. Blaha

remains on the station until STS-81 in January 1997, when Jerry Linenger will arrive to succeed him. Following Linenger in May of 1997 will be Michael Foale, who will fly up with the crew of Mission STS-84.

Lucid's crew mates for most of her stay on Mir have been the Mir 21 crew, led by Commander Yuri Onufrienko and Flight Engineer Yuri Usachev. In August, the Mir 22 crew of Commander Valery Korzun, Flight Engineer Alexander Kaleri and Cosmonaut-Researcher Claudi Andre-Deshays of the French Space Agency, arrived to replace the two Mir 21 cosmonauts.

Mission

Atlantis will catch up with Mir on flight day 3. The approach to the station is the same as that employed for earlier dockings, along the R-bar or radius vector, but the configuration of Mir has changed. A new module has been attached to the station called Priroda, which means "Nature." Also new on the station is a cooperative U.S -Russian solar array that was attached during a recent extravehicular activity.

The addition of Priroda changes Mir's weight and its mass distribution. The different mass properties required mission planners to change the orbiter thruster jet firing sequences needed to maintain the proper orientation of the mated spacecraft.

The new solar array will extend down the nose of the orbiter on the left side, but there will be adequate clearance between the two. During rendezvous and docking, the crew will make sure that the thruster jet firings are not jarring the array, particularly during the final approach.

Payload Bay and Middeck Configuration

Experiments, sample storage hardware and logistics are stowed in both the middeck of the orbiter and the SPACEHAB Double Module. Altogether 5,200 pounds (2,359 kilograms) of gear will be transferred to and from Mir, including water generated by the orbiter fuel cells.

The Orbiter Docking System (ODS) is located in the forward area of Atlantis' payload bay. Atop the ODS is the Androgynous Peripheral Docking System (APDS), the Russian-designed mechanism that actually latches the two spacecraft together. The ODS also serves as a passageway through which crew members can pass.

Located aft of the ODS is the SPACEHAB Double Module. SPACEHAB modules have been flying on the Shuttle since 1993. The pressurized mini-research laboratory is providing an additional function for the dockings, offering much needed storage space in the payload bay. This is the second time a SPACEHAB is being flown in support of a Shuttle-Mir docking and the first flight of a Double Module.

Because the orbiter offers more room than Russian transport spacecraft, the Shuttle-Mir dockings have helped breathe new life into the 10-year-old Mir. For example, Atlantis will come back with a complete Orlon extravehicular spacesuit which could not fit into the Russian Soyuz transporter. Since the Shuttle-Mir dockings have begun, more

than 10,000 pounds (4,536 kilograms) of logistics and hardware have been transferred to and from Mir via the Shuttle.

Included in the SPACEHAB experiment complement that remains on the Shuttle are:

Mechanics of Granular Materials (MGM), an experiment designed to evaluate the behavior of cohesionless granular materials in the dry and saturated states at low confining pressures;

Active Rack Isolation System (ARIS), a specially designed rack for holding microgravity research experiments. ARIS employs a sophisticated control system that dampens vibration disturbances which could impede the experiments. It could find use aboard the International Space Station if the design proves successful;

Extreme Temperature Translation Furnace (ETTF) for investigating gravitational influences on multiple types of materials and material processing techniques. The furnace will operate at about 300 degrees Kelvin higher (3,000 degrees Fahrenheit/1,649 degrees Centigrade) than any furnace previously flown in orbit. Investigators are particularly interested in studying superconducting materials, including ceramic and metallic components that are difficult to mix homogeneously on Earth.

The ***Thermo-Electric Holding Module (TEHM),*** located in the middeck, is a refrigerator/freezer which will be activated on-orbit and used to hold biological samples collected by Lucid during her stay aboard Mir. Samples and hardware also will be stored in the middeck of the orbiter. A similar piece of hardware, the Enhanced Orbiter Refrigerator/Freezer (EOR/F), is located in the SPACEHAB.

Other activities planned on-orbit include an ongoing series of investigations called ***Risk Mitigation Experiments,*** which take advantage of the Shuttle-Mir linkups to gather data about the environment in which the International Space Station will be operating. One RME will feature collection of data on the internal and external radio interference in the 400 mHz to 18 gHz frequency band. Radio interference is of increasing concern due to new ground-based communications and radar application transmitters.

Atlantis will separate from Mir on flight day eight, after five days of mated operations.

KSC Processing

Atlantis' most recent mission, STS-76, concluded with a landing at Edwards Air Force Base, Calif., on March 31. The orbiter was returned to KSC atop the Shuttle Carrier Aircraft on April 12 and towed to the Orbiter Processing Facility the following day to begin post-flight servicing and preparations for STS-79. Rollover to the Vehicle Assembly Building (VAB) occurred on June 24. A week later, on July 1, the fully assembled Shuttle was transported to Launch Pad 39A. The SPACEHAB was installed in the orbiter July 9 at the pad, and liftoff was scheduled for July 31.

The threat posed by Hurricane Bertha prompted the rollback of Atlantis to the Vehicle Assembly Building on July 10. Managers then opted to keep the Shuttle in the VAB to switch out the STS-79 redesigned solid rocket motors (RSRMs) with ones slated to fly on STS-80. The decision followed post-flight assessments of the boosters flown on the previous mission, STS-78. Engineers observed that hot gas had seeped into the J-joints of the STS-78 motor field joints. In some areas, the hot gas had penetrated through the J-joint to, but not past, the capture feature O-ring. Use of a new, more environmentally friendly adhesive was identified as the most probable cause for the leakage. The STS-80 motors were assembled using the original adhesive.

While booster stacking operations continued in the VAB, Atlantis was demated from its original booster stack and returned to Orbiter Processing Facility Bay 3, where some power-on operations were conducted. Access to the SPACEHAB module was set up through the orbiter crew compartment and some perishable items replaced.

The SPACEHAB remained inside the Shuttle during the destacking and reassembly. Target dates for the trip back to the pad included: mate orbiter to external tank, Aug. 13; rollout, Aug. 20; and Terminal Countdown Demonstration Test (TCDT), Aug. 27-28.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

July 26, 1996
KSC Contact: Joel Wells
KSC Release No. 86-96

KSC'S SMALL BUSINESS COUNCIL SETS EXPO DATE FOR NOV. 13

Businesses large and small will have an opportunity to present their capabilities to buyers and engineers from Kennedy Space Center and other government organizations at the seventh annual KSC Business Opportunities Expo.

Approximately 200 exhibitors and 1000 attendees are expected to fill Port Canaveral's new Cruise Terminal 10 on Nov. 13 at the expo. Exhibitors will also be able to network with major players from the Space Coast's business community. The Small Business Administration, the KSC prime contractors and the Florida/NASA Business Incubation Center are a few of the groups that will provide one-on-one counseling.

"The expo's mission is unique," said Ann Watson, KSC's Small Business Specialist. "It not only promotes lateral networking among the area's up and coming small businesses, but it brings large business and government end-users to the supplier."

The KSC Small Business Council is accepting exhibitor applications until Aug. 23. A registration fee of $75 includes an 8 ft. table top display, a continental breakfast and a box lunch. To receive an exhibitor application fax your company name, address, point of contact, and phone number to (407) 867-7999. For more information call the NASA Central Industry Assistance Office at (407) 867-7353.

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NASA News Release
ON LINE
JOHN F. KENNEDY SPACE CENTER

July 26, 1996
KSC Contact: Bruce Buckingham
KSC Release No. 87-96

ENDEAVOUR SCHEDULED TO DEPART KSC FOR ORBITER MODIFICATIONS IN PALMDALE, CA.

Endeavour, NASA's youngest Space Shuttle orbiter and a veteran of 11 missions, will depart Kennedy Space Center, FL, on Tuesday, July 30, for Palmdale, CA, for extensive inspections and modifications. These enhancements will permit the Shuttle to dock with the planned International Space Station.

This is Endeavour's first scheduled Orbiter Maintenance Down Period (OMDP), an action that periodically removes all four of NASA's orbiters from flight operations. Endeavour's first spaceflight, STS-49 launched on May 7, 1992, featured a rendezvous, repair and reboost of a crippled communications satellite.

Endeavour will spend about eight months at Rockwell's Orbiter Assembly Facility in Palmdale where about 100 modifications will be performed on the vehicle. Eight to 10 modifications are directly associated with work required to support International Space Station operations. The most extensive of these will be the installation of an external airlock (replacing the current airlock) to allow Endeavour to dock with the Station, once assembly begins next year.

Other modifications include upgrades to the orbiter's power supply system, general purpose computers and the thermal protection system; work to allow installation of new light-weight commander and pilot seats and other weight-saving modifications; and a number of safety and turn-around enhancements.

Endeavour is scheduled to be rolled out of KSC's Orbiter Processing Facility bay 3 at about 5 a.m. Monday, July 29, and towed to the Shuttle Landing Facility where it will be mated atop the 747 Shuttle Carrier Aircraft (SCA). Departure of the orbiter/SCA is scheduled for about 7 a.m. Tuesday, July 30.

Endeavour's route to Palmdale will include an overnight stop at Ft. Campbell, KY, where a public viewing of the orbiter/SCA is planned. Endeavour will then continue its ferry flight to California the following morning, arriving in Palmdale by early afternoon, July 31. A refueling stop between Ft. Campbell and Palmdale is expected and will be determined prior to departure from Kentucky Wednesday morning. All ferry flight plans are subject to weather restrictions and alternate landing sites may be selected en route if necessary.

Ferry flight rules state the orbiter/SCA cannot fly through precipitation, thick clouds or high turbulence. There are also wind and temperature restrictions.

Following this modification period, Endeavour is scheduled to be ferried back to KSC in April 1997. Endeavour's next flight, the first International Space Station assembly Space Shuttle flight, is scheduled for launch from KSC in late 1997.

News media interested in viewing Endeavour's departure from KSC must be at the KSC press site by about 6 a.m. Tuesday for transport to the Shuttle Landing Facility. Media should call the KSC Press Site before close of business on Monday, July 29, to confirm Endeavour's departure time.

-- end --

For automatic e-mail subscriptions to daily Shuttle status reports or KSC originated press releases, send an Internet electronic mail message to: domo@news.ksc.nasa.gov. In the body of the message (not the subject line) type the words "subscribe shuttle-status", or "subscribe ksc-press-release" (do not use quotation marks). The system will reply with a confirmation via e-mail of each subscription.

To remove your name from the list at any time, send an e-mail address to domo@news.ksc.nasa.gov. In the body of the message (not the subject line), type (no quotes) "unsubscribe shuttle-status", or "unsubscribe ksc-press-release."

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

July 31, 1996
KSC Contact: Joel Wells
KSC Release No. 88-96

NASA AND PARTNERS OPEN INCUBATOR TO NURTURE SMALL BUSINESSES

NASA, the state of Florida's Technological Research and Development Authority (TRDA), and Brevard Community College (BCC) have teamed up to provide new technology-based businesses a healthy environment in which to build their futures. The Florida/NASA Business Incubation Center will mark its official opening with an open house on Aug. 6.

The incubator's mission is to reduce many of the costs associated with establishing and operating a new business. "Our support facilities and programs will train and nurture entrepreneurs and help them to have the best possible chance of success," said Maria Clark, FNBIC's executive director.

Up to 20 start-up businesses will have the opportunity to rent furnished office and production space in the 10,000-square-foot FNBIC facility on BCC's Titusville campus for a small fee. Tenants can stay at the center for no longer than three years.

NASA's partnership and the incubator's proximity to Kennedy Space Center (KSC) gives participating firms access to NASA expertise and laboratories. "Our participation accelerates KSC's technology transfer mission. Supporting small businesses with our high technology infrastructure could lead to new products and jobs in Brevard County," said Kathleen Harer, KSC program manager.

According to Frank Kinney, TRDA's executive director, NASA and TRDA decided on the incubator concept while searching for ways to help Brevard businesses deal with the aerospace and defense industry's local down-sizing. "With a hi-tech business foundation already established in the area, we're making good use of existing resources and it's a win-win proposition for the small business and the local economy," said Kinney.

BCC's in-kind contributions include the facility, security, utilities, and maintenance support. Tenants will also have access to BCC's library, computer labs, and shops. Dr. Joe Lee Smith, President of BCC's Titusville campus, is looking forward to another chance for community outreach. "BCC will continue its leadership in this kind of economic development effort," said Smith.

Florida's Lt. Governor, Buddy MacKay, and Congressman Dave Weldon are among the state and local officials that will address open house visitors. Attendees will tour the facility and meet six small businesses that are already participating in the program. FNBIC and NASA representatives will also be on hand to discuss the program and to showcase KSC's technology development and commercialization programs.

The open house lasts from 9 to 10:30 a.m. Companies, entrepreneurs, and business mentors interested in the program or attending the open house should call (407) 383-5200. Tenant application forms are available on the World Wide Web at http://technology.ksc.nasa.gov/FNBIC/.

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NOTE TO EDITORS:
Business reporters and photographers interested in interviewing FNBIC and government representatives should be at the center by 9 a.m. on Tuesday, Aug. 6. Media planning to attend should contact Joel Wells at the KSC Press Site by C.O.B Aug. 5. Video interviews and B-Roll will be available upon request.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

Aug. 2, 1996
KSC Contact: Jane Hodges
KSC Release No. 89-96

FLORIDA TEACHERS COMPLETE NASA STEP WORKSHOP

A group of 35 teachers, from Florida and Georgia, recently completed a three week Summer Teacher Enhancement Program (STEP) at John F. Kennedy Space Center. The workshop was conducted July 15 - August 2.

The STEP workshop is a joint NASA-Astronaut Memorial Foundation (AMF) program. It provides an in-depth opportunity for teachers to learn more about space science and technology. While at KSC, they work directly with space agency engineers and scientists. The program is also designed to inform teachers about NASA's educational programs and materials.

During the workshop, the STEP group viewed KSC Space Shuttle processing and launch facilities. They also got a close look at the specialized laboratories and operational areas where NASA space technology is developed. Some of these areas included the materials testing, chemistry and biomedical research labs. The space technology segment also included briefings by NASA engineers and scientists about KSC's space-related biomedical and biological programs, future space missions and how satellites aid in weather forecasting, geological research and navigation on Earth.

During the final week of their visit at KSC, AMF instructors updated the teachers on the latest computer techniques and programs available for classroom use.

Educational resources segments of the workshop included hands-on work at KSC's Exploration Station, job shadowing of NASA executives for space science career development and work in the Educators Resource Library.

To learn how wildlife co-exists with the space program, the STEP teachers studied the ecology of Cape Canaveral National Seashore just north of KSC and the Merritt Island National Wildlife Refuge within the boundaries of the 140,000-acre space center.

There was also time for a bit of fun while learning the chemistry and physics of a rocket launch. The STEP group members first built their own model solid motor rockets and then launched them in a nearby field.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

Aug. 1, 1996
KSC Contact: Hugh Harris
KSC Release No. 90-96

MORGAN AND BREAKFIELD NAMED TO NEW POSITIONS AT KSC

Kennedy Space Center Director Jay F. Honeycutt today announced the appointments of JoAnn H. Morgan to be Associate Director for Safety and Shuttle Upgrades and P. Thomas (Tom) Breakfield, III to be Director of Safety and Mission Assurance. The appointments were made subject to final approval by NASA Headquarters.

In her newly established position, Morgan will be responsible for KSC infrastructure upgrades and KSC operations support to improvements to the Shuttle flight systems. In describing the new position, Honeycutt said Morgan will be working closely with NASA Headquarters, the Johnson Space Center, the Marshall Space Flight Center and others to insure that proposed upgrades to the Shuttle will streamline the processing done at KSC for launch while maintaining the safety of flight.

Morgan has served as Director of the Safety and Mission Assurance Directorate at KSC for the past 2-1/2 years. During the previous 10 years, she worked in the Payload Processing Directorate, where she managed payload projects and ground operations. During her more than 30 years in U.S. human space flight programs, Morgan contributed to the success of programs ranging from Mercury through the Space Shuttle, including serving as a key member of the KSC launch team for Apollo, Skylab and Apollo-Soyuz and the team that developed the launch processing central data subsystem used in the first Shuttle launch of Columbia.

As the new Director for Safety and Mission Assurance, Breakfield will have over-all responsibility for KSC's safety, reliability, maintainability, quality and mission assurance programs. He has served as Director, Payload Flight Systems at KSC since 1985. Breakfield joined NASA in 1964 and was involved in KSC's development of real-time guidance and navigation data processing software for Saturn launch vehicles and Apollo launch data systems. He has served as Chief of the Shuttle Launch Processing Division, Chief of the Shuttle Guidance, Navigation and Digital Systems Division and Deputy Director of Shuttle Engineering at KSC. In his most recent assignment, Breakfield has been involved in coordination and planning of payload processing and engineering support for the Space Shuttle.

In announcing the appointments, Honeycutt congratulated both KSC executives on their new assignments. "JoAnn Morgan is the ideal person to take charge of KSC activities in support of the Shuttle upgrade effort", he said. "Her long experience in project management and her recent leadership of our safety program are an ideal combination for successful support of this critical NASA initiative." Honeycutt added: "Tom Breakfield is one of the most highly respected managers in the agency. His leadership will ensure continued success of the safety and mission assurance programs at KSC."

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

August 6, 1996
KSC Contact: Dennis Armstrong
KSC Release No. 91-96

KSC ECOLOGIST SELECTED TO HEAD MANATEE WORKING GROUP

Jane Provancha, an ecologist with Kennedy Space Center's (KSC) Life Sciences Support Contractor, the Dynamac Corporation, has been selected to lead a team, called the Manatee Geographic Information System (GIS) Working Group, which coordinates information on manatees for both public and private organizations.

The Manatee GIS Working Group was formed in 1989 by scientists and other concerned people who saw a need for an independent group to facilitate rapid communication and data sharing among scientists from federal and state agencies, academia and the boating industry to aid in the conservation of Florida's threatened manatee population. It works closely with the Florida Department of Environmental Protection but is made up of members from many areas who focus on the health, ecology and safety of the threatened manatee population.

A geographic information system, or GIS, is a computerized method for analysing the ecology of any given area through combining on a high resolution map all of the known data that affect its health. This allows scientists to see the interactions which might occur from a combination of factors rather than looking at each factor independently. Manatee conservationists use GISs by combining data on displays showing a specific area with such details as navigational channels, speed zones, water composition, sea grass density, manatee locations, etc.

The group is primarily concerned with data acquisition, data usage ethics and the education of potential database users such as local regulatory agencies, regional planning councils, educational groups and private citizens. The group is planning an Internet web site and will soon publish a CD-ROM that will serve as an atlas of marine resources. It provides a service to any group concerned with the manatee problems through its network of contacts in the field.

Provancha leads KSC's Aquatics Group where she designs and conducts ecological surveys and environmental monitoring projects with primary emphasis on threatened and endangered species. She also participates in educational outreach activities for NASA and local schools.

Provancha is a 1975 graduate of Oviedo High School and earned a bachelor's degree in biological science from the University of Central Florida in 1978. She and her husband, Mark, reside in Cocoa with their two sons Ian and Christian. She is the daughter of Henry and Anne Phillips of Oviedo.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

Aug. 9, 1996
KSC Contact: Bruce Buckingham
KSC Release No. 92-96

MERRITT ISLAND FIRM TO CONSTRUCT CHEMICAL ANALYSIS LABORATORY AT KSC

Ivey's Construction, Inc., Merritt Island, FL, was recently awarded a $6.83 million contract for the construction of a Chemical Analysis Laboratory at Kennedy Space Center.

The 28,000 square-foot facility, to be located on Contractor Road south of the Logistics Facility in the Launch Complex 39 Area, will include laboratories for the analysis of all chemical compounds before they are loaded aboard the Space Shuttle or used in any Shuttle payload. Additional work conducted in laboratories at this location will include Environmental Protection Agency certified analysis of other chemicals used throughout the center.

The facility will include separate structures for the decontamination of hypergolic fluids from Shuttle and ground support equipment. It will also house administrative areas and chemical and hazardous waste storage areas. Other work under the contract includes the construction of additional parking lots, driveways and a redundant electrical power substation.

The Chemical Analysis Laboratory is being built as an addition to the nearly 37,000 square-foot Component Refurbishment Facility currently under construction. Both facilities will replace existing buildings used for these operations since the mid-1960's. Changes in federal environmental laws require KSC to modify its component cleaning and refurbishment methods and it is more cost-effective to build new facilities than to modify the existing structures.

Construction of the new project began on July 30, 1996 and is scheduled for completion by July 25, 1997.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

Aug. 9, 1996
KSC Contact: Patti Phelps
KSC Release No. 93-96

THREE KSC WORKERS HONORED BY NASA ASTRONAUTS

Three NASA/KSC employees recently were presented with NASA's prestigious Silver Snoopy Award for service to the Space Shuttle astronauts.

Members of the STS-77 crew who flew aboard the Space Shuttle Endeavour in May presented the awards at KSC on July 17. Marisa L. Hueckel of Cocoa Beach and Daniel C. Shultz of Cape Canaveral were given the awards by astronauts Andrew S.W. Thomas and Marc Garneau, who is from the Canadian Space Agency. Harold David Wiedemuth of Titusville received his award from astronaut Mario Runco Jr.

Hueckel of the Payload Processing Directorate was commended for her role in developing automated project management applications that plan and track payload processing activities at KSC. "Due to your efforts, the Project Management Subsystem Mission Planning Schedule was re-engineered, producing a faster and more user- friendly system," Thomas and Garneau told her.

Shultz, a launch site support manager in the Payload Processing Directorate, was applauded for his significant contributions to the STS-73/U.S. Microgravity Laboratory-2 (USML-2) mission in 1975. "In performing these tasks, you contributed above and beyond your normal work output, performed work locally that created cost savings for the Agency, and made operational improvements which increased the reliability and performance of the USML experiments," the astronauts told Shultz.

Wiedemuth, a senior engineer with the Engineering Development Directorate, was cited for his work in the design and implementation of the Phase I pneumatic systems for the Component Refurbishment and Cleaning Area. "Your steady pursuit of requirements and excellent design concepts have led to a timely installation of the pneumatic system, and your ability as a technical representative has resulted in the Phase I panels being delivered on schedule," astronaut Runco said.

Snoopy, of the comic strip "Peanuts," has been the unofficial mascot of NASA's astronaut corps since the earliest days of manned space flight. The Silver Snoopy Award was created by the astronauts to honor persons who contribute most to the safety and success of manned space flight.

The award is presented to no more than 1 percent of the space center's work force each year. Recipients are given a silver pin depicting the famous beagle wearing a space suit. All the pins have flown on a previous Space Shuttle mission. The awardees also receive a framed certificate and a congratulatory letter signed by the presenting astronaut.

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NASA News Release
ON LINE
JOHN F. KENNEDY SPACE CENTER

August 12, 1996
KSC Contact: George H. Diller
KSC Release No. 94-96

NOTE TO EDITORS/NEWS DIRECTORS:
FAST SPACECRAFT TO BE LAUNCHED ABOARD PEGASUS XL AUG. 18

The launch of NASA's Fast Auroral Snapshot (FAST) Explorer spacecraft aboard an Orbital Sciences Pegasus XL vehicle is scheduled for Sunday, Aug. 18 during a window which extends from 2:42:36 - 2:50:46 a.m. PDT. The drop of the Pegasus from the L-1011 aircraft is targeted to occur in the middle of the launch window at 2:46 a.m. PDT over the Pacific Ocean approximately 60 miles offshore from Vandenberg Air Force Base, CA.

The FAST spacecraft will probe the physical processes that produce auroras or the "northern and southern lights" and add significantly to our understanding of the near-earth space environment and its effect.

The mission science briefing and the prelaunch news conference to be carried live on NASA Television is scheduled for Friday, Aug. 16 at 11 a.m. PDT in the conference room of the NASA-KSC Resident Office at Vandenberg Air Force Base. Two-way question and answer capability will be available from other NASA facilities.

Participating in the mission science briefing will be:
- Dr. Rob Pfaff, FAST Project Scientist, Goddard Space Flight Center
- Dr. Charles Carlson, FAST Principal Investigator, University of California at Berkeley

To follow immediately will be the prelaunch news conference. Participating will be:
- Floyd Curington, NASA Launch Manager, Kennedy Space Center
- Don Miller, Pegasus Launch Vehicle Manager, Goddard Space Flight Center
- J.R. Thompson, General Manager, Launch Systems Group, Orbital Sciences Corporation
- Jim Watzin, FAST Mission Director/Manager, Small Explorer Project, Goddard Space Flight Center
- Lt. Tamara Parsons, Launch Weather Officer, USAF 30th Weather Squadron, Vandenberg Air Force Base

Media desiring to cover the prelaunch news conference and mission science briefing should meet at the south gate of Vandenberg Air Force Base on California State Road 246 at 10:30 a.m. on Friday, Aug. 16 for escort to the NASA-KSC Vandenberg Resident Office.

ACCREDITATION

Media desiring accreditation information should contact the Air Force at:

Public Affairs Office
Vandenberg Air Force Base
Telephone: 805/734-8232, Ext. 6-3595
FAX: 805/734-8232, Ext. 6-8303
E-mail: pubaffairs@plans.vafb.af.mil

Pegasus/FAST access badges will be issued upon entry to Vandenberg Air Force Base. These badges are valid for the

mission science briefing, the prelaunch news conference on Aug. 16 and for access to cover the launch on Aug. 18.

LAUNCH DAY PRESS COVERAGE

On launch day, media representatives should meet at the Vandenberg main gate at 1:15 a.m. to be escorted to the runway for the take-off of the L- 1011. After departure, media will be taken to the viewing room of the NASA Mission Director's Center located at Building 840 on South Vandenberg Air Force Base. From there, media may follow the deployment and launch of Pegasus/FAST.

Assuming a nominal flight of the Pegasus launch vehicle, a post-launch news conference will not be held. However, launch vehicle and spacecraft representatives will be available afterward to informally answer questions from the media.

NASA TELEVISION COVERAGE OF PEGASUS/FAST

Because countdown and launch occurs in darkness there will be no live coverage on NASA Television. However, live launch commentary and audio of all Pegasus/FAST briefings will be available on the "V" audio circuits which may be dialed at 407/867-1220, 407/867-1240 or 407/867-1260. The schedule is:

Aug. 16 at 11 a.m. PDT: Pegasus/FAST mission science briefing and prelaunch news conference live on NASA Television

Aug. 18 at 1:30 a.m. PDT: launch commentary begins prior to L-1011 departure and concludes after spacecraft separation approximately 90 minutes later (audio only)

Aug. 18 at 12:00 p.m. PDT: NASA TV replay of launch countdown highlights

NASA Television is available on Spacenet 2, Transponder 5, channel 9 located at 69 degrees West longitude.

PEGASUS/FAST NEWS CENTER

The Pegasus/FAST News Center at the NASA-KSC Vandenberg Resident Office will be staffed starting three days before launch, Aug. 15, and may be reached between 8 a.m. and 5 p.m. PDT at 805/734-8232, Ext. 5-3051. A recorded status report will also be available beginning on L-3 days by dialing 805/734-8232, Ext. 5-3456.

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NASA News Release
ON LINE
JOHN F. KENNEDY SPACE CENTER

Aug. 13, 1996
KSC Contact: Bruce Buckingham
KSC Release No. 95-96

ATLANTIS MOVES TO VAB AND A STEP CLOSER TO LAUNCH

NASA's Space Shuttle orbiter Atlantis took a significant step toward a September launch today as it was transported from Orbiter Processing Facility (OPF) bay 3 to the giant Vehicle Assembly Building at KSC. Atlantis, which is scheduled for Shuttle mission STS-79, had been temporarily relocated to the OPF since being demated from its original set of solid rocket boosters (SRB) -- a move made necessary so a replacement set of boosters could be prepared for launch.

On July 12, NASA managers decided to postpone launch of Atlantis on mission STS-79 in order to ready a replacement set of SRBs for the mission. The decision was a result of engineering analysis on the boosters from the previous mission, STS-78, that exhibited abnormal sooting beyond the J-leg tip on the booster's field joints. The sooting was observed up to, but not past, the capture feature O-ring in a number of locations.

As a result of these observations, which were first seen during routine STS-78 post-flight assessments at KSC, an investigation team was formed. Preliminary analysis showed that the most probable cause was due to a change in the type of insulation adhesive used between the field joints. Because of this, managers opted to not fly Atlantis with its original set of boosters which were built-up with the same materials as those on STS-78.

Atlantis, therefore, was demated from the original set of boosters and external tank and subsequently sent back to the OPF where limited work was performed and efforts to maintain the orbiter's flight readiness configuration were established. Work that was performed on Atlantis included the replacement of the orbiter's 17 inch disconnect seals in the area where the vehicle is mated to the external tank; final connects and leak checks of the Spacehab access tunnel; the replacement of some perishable items in the Spacehab; and tests on the navigational aids. Also, limited work was performed in the aft engine compartment and the crew module. The payload bay doors remained closed.

Meanwhile, efforts to prepare the replacement SRBs for launch were completed in the VAB. With the SRBs now fully stacked and checked for flight, Atlantis will be mated with the new external tank and boosters tonight. Tomorrow, engineers will complete the mating process and begin the Shuttle interface verification test -- a process that verifies all of the Shuttle components are properly connected, mechanically and electrically.

Once the Shuttle interface verification test is complete, the fully assembled Space Shuttle stack will be prepared for rollout back to Pad 39A. First motion to the pad is expected around 4 a.m. Aug. 20.

Atlantis first rolled out to Pad 39A on July 1, but was returned to the VAB on July 10 due to the threat of Hurricane Bertha. It was while Atlantis was in the VAB that managers decided to keep it there and replace the boosters before permitting its return to the pad.

As a result of the decision to replace the boosters, Atlantis' original launch date of Aug. 31, was delayed about six weeks. Atlantis' new target launch date is Sept. 12. A firm launch date will be established during the Flight Readiness Review, currently scheduled to be held at KSC on Aug. 29.

The Terminal Countdown Demonstration Test, featuring the crew of mission STS-79, is scheduled for Aug. 27-28.

Mission STS-79 will feature the fourth docking of Atlantis to Russia's space station Mir. While the two vehicles are docked, astronaut John Blaha will exchange places with astronaut Shannon Lucid, who has been on Mir since March 23. Blaha will remain on Mir until January 1997.

-- end --

For automatic e-mail subscriptions to daily Shuttle status reports or KSC originated press releases, send an Internet electronic mail message to: domo@news.ksc.nasa.gov. In the body of the message (not the subject line) type the words "subscribe shuttle-status", or "subscribe ksc-press-release" (do not use quotation marks). The system will reply with a confirmation via e-mail of each subscription.

To remove your name from the list at any time, send an e-mail address to domo@news.ksc.nasa.gov. In the body of the message (not the subject line), type (no quotes) "unsubscribe shuttle-status", or "unsubscribe ksc-press-release."

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

August 14, 1996
KSC Contact: George H. Diller
KSC Release No. 96-96

MARS GLOBAL SURVEYOR/MARS PATHFINDER ARRIVE AT KSC

Mars Global Surveyor and Mars Pathfinder, a pair of NASA spacecraft scheduled to be launched toward the red planet on McDonnell Douglas Delta II rockets this fall, have arrived at the Kennedy Space Center to begin their preparations for launch.

The Mars Global Surveyor will be placed in orbit around the planet. It holds a set of six instruments to study the planet's surface, atmosphere, gravitational and magnetic fields. The Mars Pathfinder will be deployed through the Martian atmosphere to land on the planet's surface and will deploy a small instrumented rover to investigate the terrain surrounding the spacecraft. Together, the Mars Pathfinder and rover will investigate the geology and elemental composition of the Martian rocks and soil, as well as the Martian atmosphere and surface weather.

"The arrival of the two Mars spacecraft at the launch site is a wonderful milestone of which the whole Mars missions team can be very proud," said NASA's Dr. Jurgen Rahe, director of Solar System Exploration. "It reminds us just how close we are to returning important new scientific knowledge about the red planet back to Earth."

Mars Global Surveyor, weighing 2,315 pounds and built by Lockheed Martin, arrived at Cape Canaveral from Denver, CO. aboard an Air Force C-17 cargo plane this morning at 3:25 a.m. It was offloaded and taken to the Payload Hazardous Servicing Facility (PHSF) located in the KSC Industrial Area to begin launch preparations.

The Mars Pathfinder, built for NASA by Jet Propulsion Laboratory, arrived at the Spacecraft Assembly and Encapsulation Facility (SAEF-2) at KSC at 3 p.m. yesterday afternoon having come across the United States in a special van. Presently three of four separate components have arrived at KSC: the cruise stage, the aeroshell and the lander. The fourth element, the small micro- rover known as "Sojourner" is scheduled to arrive on Aug. 23 and will be shipped from California by air.

During the time Mars Global Surveyor will be at the PHSF, it will undergo final instrument functional tests and electrical system testing, the batteries and thermal insulation will be installed, the spacecraft will be fueled with its control propellants, and it will be mated to its solid propellant "upper stage" which is the Delta third stage booster.

Meanwhile, build-up of the three-stage McDonnell Douglas Delta II rocket with its complement of nine strap-on solid rocket boosters is currently scheduled to start on Pad 17-A on Sept. 20. This will be followed by a series of mechanical and electrical tests, and a simulated flight of the launch vehicle to verify the electrical systems and flight system software. Mars Global Surveyor is scheduled to be transported from the PHSF to Complex 17 on Oct. 23 to be hoisted atop the Delta and after integrated testing is complete, will be followed by placing the 9 1/2-foot diameter nose fairing around the spacecraft.

Launch of Mars Global Surveyor is scheduled for Nov. 6 at 12:11 p.m. EST at the beginning of a 20-day launch period which ends on Nov. 25. The spacecraft will arrive at the planet in September 1997 to begin a mission which is planned to last one Martian year, or 687 Earth days.

The integration of the four Mars Pathfinder elements will begin with installation of the rover on one of the four petals of the lander. After the petals are closed, the aeroshell which surrounds and protects the lander will be installed and the parachutes will be attached. This assembled entry vehicle will then be mated to the cruise stage which will carry the spacecraft on its interplanetary trajectory. Finally, before going to the launch pad, the completed Mars Pathfinder will be mated to the upper stage booster. The entire integration process will take approximately three months.

Delta first stage erection by McDonnell Douglas on Pad 17-B is currently planned to begin Oct. 14 to be followed by erection of the nine solid rocket boosters and then hoisting the second stage atop the first stage. Mechanical and electrical tests and a flight simulation will also be conducted. The Mars Pathfinder/Delta third stage combination will then be transported to Pad 17-B for erection atop the Delta on Nov. 21 After integrated testing, the fairing will be placed around the spacecraft. Launch is scheduled to occur on Dec. 2 at 2:09 a.m. EST at the beginning of a 24-day launch period which ends on Dec. 25. Landing on Mars is planned to occur on July 4, 1997. On the planet surface, the mission is planned to last approximately one month.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

May 17, 1996
KSC Contact: Joel Wells
NASA Release No. 96-102

NEW NASA NON-ABRASIVE CLEANING SYSTEM LICENSED TO INDUSTRY

A new supersonic cleaning system that does not damage surfaces has been developed by engineers at NASA's Kennedy Space Center, FL, and may soon be used to remove contaminants from Space Shuttle hardware and other sensitive structures.

Because the Supersonic Gas-Liquid Cleaning System is so unique in its design and potential effectiveness, separate patent license agreements have been developed between Kennedy and two independent companies for commercial applications. The companies are Precision Fabricating and Cleaning Co. of Cocoa, FL, and Va-tran Systems, Inc., of Chula Vista, CA. The agreement is a means for NASA to effectively transfer technology initially developed for the space program to companies that may derive innovative commercial uses from it.

One of the many advantages of the Supersonic Gas-Liquid Cleaning System over other pressurized cleaning methods is that it does not abrade the surface of the hardware being cleaned. It requires much lower levels of pressure while using very little water. These features allow the system to be used for cleaning anything from small electronic circuit boards to much larger historic monuments and buildings.

"We don't need to use as high a pressure as in some cleaning systems," said Eric Thaxton, one of the system designers at Kennedy, "because the energy is provided by the nozzle's supersonic design." The system works by mixing air and water from separate pressurized tanks and ejecting this mixture at supersonic speeds from a series of nozzles at the end of a hand-held wand, explained NASA lead project engineer Raoul Caimi. At these speeds, the water droplets have the kinetic energy to forcibly remove the contaminant material.

This technology also is environmentally friendly. It was developed as an alternative to chlorofluorocarbon (CFC)-based solvents. "During our testing programs," Caimi said, "we found that the gas-liquid supersonic system actually does a better job of cleaning than the system that uses CFCs."

Also, the relatively low volume of water required, less than 100 milliliters per minute, means there is less fluid left after cleaning that must be handled as contaminated industrial or hazardous waste.

Va-tran Systems director of engineering Jeffrey Sloan feels that the Kennedy invention will add an exciting technology to the company's current precision cleaning capabilities. "We anticipate greatly expanded markets as we begin to serve automotive, aerospace, heavy manufacturing and other industries," he said.

Bill Sheehan, chief of Kennedy's Technology Programs and Commercialization Office, said, "This is an innovative system that is recognized by industry to have many potential uses in the commercial market. We feel that it serves as a good example of how technology developed for use in the space program can benefit the country's industry and the public."

-end-

Editor's Note: Industry representatives who would like more information on the new cleaning system or are interested in licensing this NASA technology should contact the Technology Programs and Commercialization Office, DE-TPO, Kennedy Space Center, FL 32899 or call (407)867-3017.

NASA press releases and other information are available automatically by sending an Internet electronic mail message to domo@hq.nasa.gov. In the body of the message (not the subject line) users should type the words "subscribe press-release" (no quotes). The system will reply with a confirmation via E-mail of each subscription. A second automatic message will include additional information on the service. NASA releases also are available via CompuServe using the command GO NASA.

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NASA News Release
ON LINE
JOHN F. KENNEDY SPACE CENTER

August 14, 1996
KSC Contact: George Diller
NASA Release No. 96-167

TWO 1996 MARS SPACECRAFT ARRIVE AT LAUNCH SITE

The Mars Global Surveyor and the Mars Pathfinder, a pair of NASA spacecraft scheduled to be launched toward the red planet on McDonnell Douglas Delta II rockets late this year, have arrived at the Kennedy Space Center (KSC), FL, to begin their preparations for launch.

The Mars Global Surveyor will be placed into orbit around the planet. It carries a set of six science instruments designed to study the planet's surface, atmosphere, and gravitational and magnetic fields. The Mars Pathfinder will be deployed through the Martian atmosphere to land on the planet's surface, where it will deploy a small instrumented rover to investigate the terrain surrounding the spacecraft. Together, the Mars Pathfinder and rover will investigate the geology and elemental composition of the Martian rocks and soil, as well as the Martian atmosphere and surface weather.

"The arrival of the two Mars spacecraft at the launch site is a wonderful milestone of which the whole Mars missions team can be very proud," said Dr. Jurgen Rahe, director of Solar System Exploration at NASA Headquarters, Washington, DC. "It reminds us just how close we are to returning important new scientific knowledge about the red planet back to Earth."

Mars Global Surveyor, weighing 2,315 pounds and built by Lockheed Martin, arrived at Cape Canaveral, FL, from Denver, CO. aboard an Air Force C-17 cargo plane this morning at 3:25 a.m. EDT. It was off-loaded and taken to the Payload Hazardous Servicing Facility (PHSF) located in the KSC Industrial Area to begin launch preparations.

The Mars Pathfinder, built for NASA by the Jet Propulsion Laboratory, Pasadena, CA, arrived at the Spacecraft Assembly and Encapsulation Facility (SAEF-2) at KSC at 3 p.m. EDT yesterday afternoon having traveled across the United States in a special van. Presently three of four separate components have arrived at KSC: the cruise stage, the aeroshell and the lander. The fourth element, the small rover known as Sojourner, is scheduled to arrive on Aug. 23 and will be shipped from California by air.

During the time Mars Global Surveyor will be at the PHSF, it will undergo final instrument functional tests and electrical system testing, its batteries and thermal insulation will be installed, the spacecraft will be fueled with its control propellants, and it will be mated to its solid propellant upper stage, which is the Delta third stage booster.

Mars Global Surveyor is scheduled to be transported from the PHSF to Launch Complex 17 on Oct. 23 to be hoisted atop a Delta. After integrated testing is complete, a nine-and-a- half foot diameter nose fairing will be placed around the spacecraft.

Launch of Mars Global Surveyor is scheduled for Nov. 6 at 12:11 p.m. EST at the beginning of a 20-day launch period which ends on Nov. 25. The spacecraft will arrive at the planet in September 1997 to begin a mission which is planned to last at least one Martian year, or 687 Earth days.

The integration of the four Mars Pathfinder elements will begin with installation of the rover on one of the four petals

of the lander. After the petals are closed, the aeroshell which surrounds and protects the lander will be installed and the parachutes will be attached. The assembled entry vehicle will then be mated to the cruise stage that will carry the spacecraft on its interplanetary trajectory. Finally, before going to the launch pad, the completed Mars Pathfinder will be mated to the upper stage booster. The entire integration process will take approximately three months.

The Mars Pathfinder/Delta third stage combination will then be transported to Pad 17-B for erection atop the Delta on Nov. 21 After integrated testing, a fairing will be placed around the spacecraft. Launch is scheduled to occur on Dec. 2 at 2:09 a.m. EST at the beginning of a 24-day launch period that ends on Dec. 25. Landing on Mars is planned to occur on July 4, 1997. Once on the planet's surface, the mission is planned to last approximately one month.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

September 4, 1996
KSC Contact: Bruce Buckingham
NASA Release No. 96-181

LAUNCH ADVISORY:
ATLANTIS MOVED TO VAB; STS-79 LAUNCH DELAYED

NASA managers early this morning decided to move Space Shuttle Atlantis off of Launch Pad 39-A as a precautionary move due to the approach of Hurricane Fran to the southeast coast of the United States. Rollback of Atlantis will mean a slip in the launch date of Shuttle Mission STS-79 which had been set for September 14, 1996.

The decision to move Atlantis was made around midnight and first motion of the vehicle off the launch pad occurred at 5:21 a.m. EDT. Atlantis was back in the Vehicle Assembly Building (VAB) by about noon EDT. The VAB provides better protection for the Orbiter systems against severe weather which may pass through the Kennedy Space Center area.

NASA managers are assessing launch processing options which will be driven by how soon Atlantis can be moved back out to the Launch Pad 39 complex. Depending on the path of Hurricane Fran, it is possible that Atlantis could be back out to its launch pad as early as tomorrow morning.

For planning purposes, NASA managers are using September 16 or 17 as a target launch date. The official launch date will not be set until Atlantis is back out on Pad 39-A and a new launch processing schedule is approved.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

September 5, 1996
KSC Contact: Bruce Buckingham
NASA Release No. 96-183

LAUNCH ADVISORY:
ATLANTIS MOVED BACK OUT TO LAUNCH PAD; SEPTEMBER 16 SET AS NEW LAUNCH DATE

NASA managers early this morning approved the return of Space Shuttle Atlantis to the Launch Pad 39-A complex. First motion out of the Vehicle Assembly Building (VAB) came at 2:51 a.m. EDT. NASA managers also set September 16 as the new official launch date for Mission STS-79.

The launch window on the 16th opens at 4:54 a.m. EDT. A launch on the 16th will set Atlantis up for a rendezvous and docking with the Russian space station Mir on the fourth day of the flight. The STS-79 mission is scheduled to conclude on September 26 with a landing at the Kennedy Space Center (KSC).

Atlantis was moved off the launch pad early yesterday morning due to concerns of severe weather generated by Hurricane Fran impacting the KSC area. As Hurricane Fran moved on a more northeasterly course, Shuttle managers felt confident in returning Atlantis to its launch pad.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

October 22, 1996
KSC Contact: Lisa Malone
NASA Release No. 96-215

KSC DIRECTOR JAY HONEYCUTT TO RETIRE

Jay F. Honeycutt, Director of NASA's Kennedy Space Center (KSC), FL, has announced his plans to retire from NASA in early 1997. NASA is proceeding with the search for a successor.

Honeycutt's career has spanned almost the entire history of the U.S. human space flight program, beginning at the Redstone Arsenal in Huntsville, AL, in 1960. He has been the Director of KSC since January 1995.

"When I first came to this position in 1995, I committed to staying on for two years and then reassessing my plans," Honeycutt said. "Those two years are up and it's time to think about what I want to do next. I have no specific time frame in mind but will leave when the time is right and a successor is on hand."

"Jay Honeycutt has played an important role in NASA achievements for three decades," NASA Administrator Daniel S. Goldin said. "He has pursued excellence in every project with which he has been associated. This was recognized by the White House, which honored KSC with quality awards during the past two years. He will be greatly missed."

Honeycutt is the sixth KSC Center Director. In announcing his plans to leave NASA, Honeycutt said, "This was a very difficult decision. I am very proud to have been a part of the tremendous achievements of the Agency and the contribution it has made to a better quality of life for all Americans."

Honeycutt began his government career as an engineer at Redstone Arsenal in Huntsville before joining NASA in 1966 as an engineer in flight operations at the Johnson Space Center in Houston. During the Apollo program he headed the group that trained astronaut crews for the lunar landings. Following the Apollo program he continued to progress in management responsibility, moving to NASA Headquarters in 1981 as technical assistant to the Associate Administrator for Space Flight. Honeycutt served as deputy manager of the National Space Transportation System Program Office at Headquarters from 1987 to 1989.

In March 1989, Honeycutt moved to KSC as director of Shuttle Management and Operations, the post he held when appointed Center Director in 1995.

His many awards include two Exceptional Service Medals, the Special Achievement Award, NASA's Outstanding Leadership Medal, the NASA Equal Employment Opportunity Award and the Meritorious Executive Presidential Rank Award. Honeycutt and his wife Peggy live in Cocoa Beach and have four children.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

November 4, 1996
KSC Contact: Bruce Buckingham
NASA Release No. 96-225

STS-80 LAUNCH TARGETED ONE WEEK LATER TO ALLOW COMPLETION OF SOLID ROCKET NOZZLE EROSION ANALYSIS, EVALUATION

NASA managers today decided to change the target date for Columbia's launch on STS-80 to no earlier than Nov. 15, pending availability of the Eastern Test Range.

The new target date allows engineers additional time to complete their analysis and evaluation of nozzle erosion that was found on one Reusable Solid Rocket Motor from Atlantis' September flight on STS-79. Previously, managers had retained an option of launching Columbia as early as Nov. 8.

Shuttle managers plan to reconvene a Flight Readiness Review panel during the week of Nov. 11 to hear the findings from the solid rocket motor analysis.

"Everyone involved with the investigation of this issue has been doing a superb job and it appears the effort is nearing a point where it will provide us with a good understanding of the phenomenon," Space Shuttle Program Manager Tommy Holloway said. "However, this additional week will ensure the final portions of the investigation are not rushed, and it will allow those involved to organize and present their data in the best way possible as they draw their conclusion."

The STS-80 mission is NASA's final Shuttle flight scheduled for 1996. During the 16-day mission, Columbia's astronauts will deploy and retrieve two science satellites and two of the astronauts will conduct a pair of space walks to fine-tune techniques which will be used during the assembly of the International Space Station.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

November 4, 1996
KSC Contact: George Diller
NASA Release No. 96-227

PEGASUS LAUNCH ANOMALY UNDER INVESTIGATION

Preliminary analysis of today's launch of the SAC-B and HETE spacecraft indicates that the Orbital Sciences Corporation's Pegasus XL third stage failed to separate properly. Both spacecraft are still attached to the third stage in low Earth orbit.

Project officials believe up to four of the five scientific instruments aboard SAC-B may still be able to return scientific data. The HETE spacecraft was unable to deploy its solar arrays and battery failure is expected today.

The Pegasus launch occured at approximately 12:09 p.m. EST offshore from NASA's Wallops Flight Facility in Virginia. The Pegasus vehicle achieved the desired orbit of 265 nautical miles by 297 nautical miles at an inclination of 38 degrees.

NASA attempted to acquire a signal from the spacecraft through the Goldstone tracking station in California, and successfully sent commands and received data from SAC-B through the Wallops tracking station at the end of the first orbit.

Further analysis of the problem is currently underway. An investigation board has been convened by Orbital Sciences to determine the cause of the problem. NASA's Goddard Space Flight Center also has convened an independent board to investigate the launch anomaly.

SAC-B (Scientific Applications Satellite-B), a 400-pound spacecraft, is an international cooperative project between NASA and Argentina's National Commission of Space Activities. HETE (High Energy Transient Experiment), a 275-pound spacecraft, is a cooperative project between the Massachusetts Institute of Technology and the Goddard Space Flight Center's International Projects Office, Greenbelt, MD.

The Pegasus XL, built by Orbital Sciences of Dulles, VA, is a three-stage, solid propellant booster system carried aloft by an L-1011 jet aircraft and released at an altitude of about 40,000 feet and an airspeed of Mach 0.8.

- end -

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

August 23, 1996
KSC Contact: Joel Wells
KSC Release No. 97-96

NOTE TO EDITORS:
MEDIA OPPORTUNITY WITH STS-79 CREW SET FOR NEXT WEEK

The crew of Space Shuttle mission STS-79 will be at Kennedy Space Center next week for the Terminal Countdown Demonstration Test (TCDT). Media representatives will have the opportunity to meet the crew on Aug. 27.

The TCDT is held prior to each Space Shuttle flight. It provides the crew of each mission opportunities to participate in simulated countdown activities at KSC. The time is also used by the crew for emergency egress training exercises at the pad and inspecting their mission payloads in the orbiter's payload bay.

The six-member crew of mission STS-79 is scheduled to arrive at the KSC Shuttle Landing Facility (SLF) at about 5:30 p.m. Sunday, Aug. 25.

On Tuesday, media representatives will have an opportunity to speak informally with and photograph the crew at Pad 39A. Media interested in participating in this question and answer session should be at the KSC Press Site by 7:30 a.m. on Tuesday for transport to the pad. This event will be carried live on NASA TV.

On Wednesday, the crew will depart their quarters and begin to board the Shuttle Atlantis where they will practice preparing the Shuttle for launch. The simulated main engine cut-off will occur at 11 a.m.

Atlantis is now targeted for launch no earlier than Sept. 12. Mission STS-79 features the fourth Shuttle docking with the Mir space station and a swap-out of crew members. Astronaut Shannon Lucid will end her historical stay in space and trade places with Astronaut John Blaha.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

August 21, 1996
KSC Contact: Dennis Armstrong
KSC Release No. 98-96

KENNEDY SPACE CENTER OFFERS BACK-TO-SCHOOL COMPUTER BONANZA

Kennedy Space Center (KSC) is making available over 3,000 surplus computer systems for public and private schools. This increase in the Center's education outreach initiative is possible as a result of ongoing consolidations and periodic computer upgrades involving its civil service and contractor organizations.

The Space Center expects to make the systems available over the next four to five months. They will be distributed among schools as fairly and equitably as the supply allows--e.g., individual schools will be limited to up to 20 computer systems in the initial round of requests.

Colleges, high schools, junior high schools, elementary schools and nonprofit community-based educational organizations interested in obtaining surplus KSC computer systems, individual components or accessories should write to the following address: NASA/KSC EGG FL Inc., EGG-EXCESS, Kennedy Space Center, FL 32899.

Due to KSC's proactive educational outreach efforts, the number of computer components and other equipment provided to schools has increased significantly over the past few years. Since January 1994, nearly 5,500 pieces of surplus government equipment have been claimed by schools from as far away as Mississippi and Colorado.

"NASA is one of the few federal agencies that support education as part of its basic charter," said KSC Associate Director Alan Parrish. "We are proud of what we have done to date, and we take it very seriously. While enabling legislation is making this easier to accomplish, we need to do an even better job. Our challenge is to increase the efficiency and yield of our efforts."

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

August 30, 1996
KSC Contact: Jill Rock
KSC Release No. 99-96

KENNEDY SPACE CENTER TO HOST COMMUNITY APPRECIATION DAY

Kennedy Space Center will open its doors to the local community, offering a special close-up view of KSC's unique role in the space program, during the first KSC Community Appreciation Day on Saturday, Oct. 19.

"This is our way to thank the local community for all the support they have provided to KSC over the years," said Center Director Jay F. Honeycutt. "This behind-the-scenes view of KSC employees and the wide range of work they perform for the nation's space program should provide a memorable experience for people of all ages."

Admission is free to the event, which begins at 8 a.m. and ends at 3 p.m.

Community Appreciation Day attendees can do an approximately 30-mile drive-through tour of the NASA space center, or make several stops to visit facilities and see exhibits.

Among the scheduled tour highlights:

A drive-by tour of the Space Shuttle Columbia poised for liftoff at Launch Pad 39B.

A look inside the massive Vehicle Assembly Building, one of the largest buildings by volume in the world.

A drive along the Shuttle landing runway, one of the world's longest concrete paved runways, and a display of special aircraft used to support the space program.

Visits to two facilities in which payloads (Shuttle experiments and space station flight hardware) are prepared for flight.

A tour of the Launch Control Center where a network of computers and consoles control assembly, checkout and launch of the Space Shuttle.

A visit to a manufacturing facility for tiles and other protective materials that shield the Shuttle orbiters from extreme heat and cold.

A display of firefighting and rescue equipment used to meet the unique requirements of KSC.

An opportunity to photograph Shuttle transport equipment such as the 3,000-ton Crawler Transporter which carries a Space Shuttle to the launch pad.

A wide range of exhibits on such topics as astronaut space suits and food, robotics, ground-based communications with spacecraft, and transfer of NASA-developed space-related technology to benefit private industry and other users.

Demonstrations and hands-on discovery flights of radio-controlled model aircraft.

Community Appreciation Day attendees will need a special vehicle placard to enter one of the three KSC controlled-access gates. A placard should be placed inside each vehicle windshield. The three gates can be accessed from State Road 3 in Merritt Island, State Road 405 from U.S. 1, or State Road 402 in Titusville.

The placard is included in a Community Appreciation Day booklet which also provides an overview of the space center, details of the tour highlights and maps showing the tour route. The limited number of placards/booklets will be available on a first-come, first-served basis.

The placards/booklets can be obtained only through the Brevard County public libraries; they will not be available by calling or writing to the space center. The booklets should be available on library counters beginning the first week in October. Anyone picking up a placard/booklet will be asked to sign for it.

The maximum vehicle size allowed is a 15-passenger van.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

September 18, 1996
KSC Contact: Joel Wells
KSC Release No. 100-96

KSC GIVES A BOOST TO NATIONAL BONE MARROW MONTH ACTIVITIES

The KSC community extended a helping hand to patients suffering from leukemia and other blood related diseases by signing up a record number of potential bone marrow donors.

Introducing September as National Donor Awareness Month, KSC's efforts stand out as 888 employees turned out for the center's first bone marrow registration drive on Aug. 28. This number of potential donors surpasses any one-day drive conducted by the Leukemia Society of America in Florida, Georgia and Alabama.

"The success of this drive was phenomenal," said Robin Kornhaber, the organization's national director of patient services.

The Leukemia Society of America's (LSA) Central Florida Chapter and the American Red Cross held the event to educate and recruit volunteers to join the National Marrow Donor Program (NMDP). Established in 1986, the NMDP guides patients in their search for a compatible bone marrow donor. Their organizational network consists of recruitment groups, donor and transplant centers.

KSC's Biomedical Office, various working groups and volunteers teamed up to generate civil service and contractor interest in the program. With minority numbers low on the NMDP registry of potential donors, an emphasis was placed on registering minority employees. "An astounding 22 percent of those registered were from KSC's minority population," said Dr. George Martin, KSC Biomedical Office.

Only a small blood sample is required from each participant for testing and further screening. "After I registered and gave the blood sample, I felt that I was possibly saving a life. I felt good about it," said Christopher Whittaker, a McDonnell Douglas engineer. Bone marrow is later requested only if a suitable match is made.

Marrow compatibility between donor and recipient is an important part of a successful bone marrow transplant. "The characteristics of bone marrow are inherited much like hair and eye color," explained Katosha Belvin, spokesperson for NMDP. If a match cannot be found in a recipient's family the search continues within their ethnic group.

NMDP's registry of potential volunteer donors is over 2 million strong. "While the numbers on the registry are encouraging there is still much work to be done. Thirty percent of the patients searching our registry still find no match," said Belvin.

Throughout the month of September LSA, NMDP and their network of non-profit helpers will strive to enlarge the pool of donors, increasing the chance for each patient to find a compatible donor. Each bone marrow drive depends on public donations to fund the registration and screening services provided to potential donors free of charge.

For more information on National Donor Awareness Month and related activities call 1-800-MARROW-2.

NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

August 29, 1996
KSC Contact: Lisa Malone
KSC Release No. 101-96

MISSION STS-79 LAUNCH SET FOR SEPT. 14

Following a flight readiness review today, Space Shuttle managers have set Sept. 14 as the launch date for Space Shuttle Atlantis on Mission STS-79. The flight is the fourth in a series of joint docking missions between the Shuttle and Russia's space station Mir and will feature the delivery of astronaut John Blaha to Mir and the return of astronaut Shannon Lucid to Earth.

Officials are keeping a close eye on tropical storm activity in the Atlantic. Plans could be implemented to return the Shuttle Atlantis back to the Vehicle Assembly Building if any storms turn toward the Kennedy Space Center. Officials may have to re-evaluate the Sept. 14 launch date if the storms force a rollback of Atlantis.

During the meeting, solid rocket motor managers presented data on the abnormal sooting discovered in the J-leg tip on the STS-78 solid rocket motor field joints following Columbia's launch in June. An analysis showed that the most probable cause for the sooting was a new adhesive used in the field joints for the first time on STS-78. Managers decided to take a conservative approach and replace the STS-79 motors with a new set using the old adhesive material. NASA managers said a thorough review of Atlantis' new solid rocket motors verified their readiness for launch.

"We have heard presentations from all program elements supporting the STS-79 launch, mission and landing. The NASA contractor team is ready for the upcoming flight," said George Abbey, Director, Johnson Space Center, who chaired the review meeting. "This flight marks a significant crew exchange between the Space Shuttle and the Mir station as we bring Shannon Lucid back after a record stay in orbit for an American. The U.S. is gathering data during these flights that are invaluable in our plans for the International Space Station. Flights with the Russians and the Mir station are allowing us to learn more about long duration space flight even before we construct the station."

The Sept. 14 launch of Atlantis is planned for 5:39 a.m. EDT from the Kennedy Space Center's Launch Complex 39-A. The available launch "window" is ten minutes long.

The STS-79 mission is scheduled to last nine days, five hours and nine minutes. With an on-time launch, docking with Mir will occur about 42 hours after launch. A nominal mission duration would result in Atlantis returning to Earth on Sept. 23 with a landing at KSC's Shuttle Landing Facility at approximately 10:48 a.m. EDT.

The STS-79 mission will be the 17th flight for Atlantis and the 79th in the Space Shuttle program history.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

September 5, 1996
KSC Contact: George H. Diller
KSC Release No. 102-96

NOTE TO EDITORS/NEWS DIRECTORS:
GALILEO PROJECT MANAGER TO MAKE PRESENTATION AT KSC

William, J. O'Neil, Galileo Project Manager from the Jet Propulsion Laboratory, will make a presentation to KSC employees about the spacecraft and its mission. The briefing will include the story of the remarkable journey to Jupiter, the spacecraft's first encounters with asteroids, the momentous events of arrival day at the planet and deployment of the probe, and the orbiter's encounters with two of Jupiter's moons.

This one-hour event will be held on Monday, Sept. 9 at 1 p.m. Media wishing to attend will depart the KSC News Center at 12:30 p.m. for the Mission Briefing Room in the Operations and Checkout Building located in the KSC Industrial Area.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

September 9, 1996
KSC Contact: George H. Diller
KSC Release No. 103-96

SPACE SHUTTLE WEATHER LAUNCH COMMIT CRITERIA AND KSC END OF MISSION WEATHER LANDING CRITERIA

The launch weather guidelines involving the Space Shuttle and expendable rockets are similar in many areas, but a distinction is made for the individual characteristics of each. The criteria are broadly conservative and assure avoidance of possibly adverse conditions. They are reviewed for each launch.

Weather "outlooks" which are provided by the Range Weather Operations Facility at Cape Canaveral begin at Launch minus 5 days. These include weather trends, and their possible effects on launch day.

For the Space Shuttle, a formal prelaunch weather briefing is held on Launch minus 1 day which is a specific weather briefing for all areas of Space Shuttle launch operations.

During the countdown, formal weather briefings occur approximately as follows:

L-21 hr 0 min	Briefing for removal of Rotating Service Structure
L-9 hr 00 min	Briefing for external tank fuel loading
L-4 hr 30 min	Briefing for Space Shuttle Launch Director
L-3 hr 55 min	Briefing for astronauts
L-0 hr 35 min	Briefing for launch and RTLS
L-0 hr 13 min	Poll all weather constraints

The basic weather parameters on the pad at liftoff must be:

Temperature: Prior to external tank propellant loading, tanking will not begin if the 24 hour average temperature has been below 41 degrees.

After tanking begins, the countdown shall not be continued nor the Shuttle launched if:

a.) the temperature exceeds 99 degrees for more than 30 consecutive minutes.

b.) the temperature is lower than the prescribed minimum value for longer than 30 minutes unless sun angle, wind, temperature and relative humidity conditions permit recovery. The minimum temperature limit in degrees F. is specified by the table below and is a function of the five minute average of temperature, wind and humidity. The table becomes applicable when the observed temperature reaches 48 degrees. In no case may the Space Shuttle be launched if the temperature is 35 degrees or colder.

Wind Speed	**Relative Humidity**

(kts)	0-64%	65-74%	75-79%	80-89%	90-100%
0 - 1	48	47	46	45	44
2	47	46	45	44	43
3	41	41	41	40	39
4	39	39	39	39	38
5 - 7	38	38	38	38	38
8 - 14	37	37	37	37	37
>14	36	36	36	36	36

The above table can be used to determine when conditions are again acceptable for launch if parameters have been out of limits for thirty minutes or less. If longer than thirty minutes, a mathematical recovery formula of the environmental conditions is used to determine if a return to acceptable parameters has been achieved. Launch conditions have been reached if the formula reaches a positive value.

Wind: Tanking will not begin if the wind is observed or forecast to exceed 42 knots for the next three hour period.

For launch the wind constraints at the launch pad will vary slightly for each mission. The peak wind speed allowable is 34 knots. However, when the wind direction is between 100 degrees and 260 degrees, the peak speed varies and may be as low as 20 knots.

The upper atmosphere wind profile must conform to either one of two wind loading programs developed by the Johnson Space Center. This profile is determined by a series of Jimsphere wind balloon releases from Cape Canaveral Air Station. A final recommendation is made by the JSC Launch Systems Evaluation Advisory Team (LSEAT) to the KSC launch director at Launch minus 30 minutes. The Space Shuttle will not be launched within 30 minutes of the time a determination has been made that the upper wind profile will adversely affect the performance of the launch vehicle.

A downrange weather advisory shall be issued by the Shuttle Weather Officer to the Mission Management Team for their consideration if the wind in the solid rocket booster recovery area is forecast to exceed 26 knots during retrieval operations. Seas in excess of Sea State 5 (8-13 feet) may also be a factor considered by the Mission Management Team.

Precipitation: None at the launch pad or within the flight path.

Lightning (and electric fields with triggering potential):

- Tanking will not begin if there is forecast to be greater than a 20% chance of lightning within five nautical miles of the launch pad during the first hour of tanking. The launch director with the concurrence of the safety director may make an exception after consultation with the Shuttle Weather Officer.

- Launch will not occur if lightning has been detected within 10 nautical miles of the pad or the planned flight path within 30 minutes prior to launch, unless the source of lightning has moved more than 10 nautical miles away from the pad or the flight path.

- The one-minute average of the electric field mill network, used to measure electric fields, shall not exceed -1 or +1 kilovolt per meter within five nautical miles of the launch pad at any time within 15 minutes prior to launch.

The above rule need not apply if the following two conditions are observed to exist:

1. There are no clouds within 10 nautical miles of the flight path except those which are transparent. Also excepted are clouds with tops below the 41 degrees F. temperature level that have not have been previously associated with a thunderstorm, or associated with convective clouds having tops above the 14 degrees F. temperature level during the

last three hours.

2. A known source of electric fields such as ground fog or smoke that is occurring near the field mill which has been previously determined and documented to be benign is clearly causing the elevated readings.

Clouds: (types known to contain hazardous electric fields)

- The Space Shuttle may not be launched if the planned flight path is through a layer of clouds with a thickness of 4,500 feet or greater where the temperature of any part of the layer is between 32 degrees F. and -4 degrees F.

- The Space Shuttle may not be launched if the planned flight path is through a cumulus type cloud with its top between the 41 degrees F. temperature level and 23 degrees F. temperature. Launch may occur if: 1) the cloud is not producing precipitation; 2) the distance from the furthest edge of the cloud top to at least one operating field mill is less than the altitude at the 23 degree F temperature level or 3 nautical miles, whichever is less; 3) field mill readings within five nautical miles of the flight path must be between -100 volts per meter and +1000 volts per meter.

- The Space Shuttle may not be launched through 1) cumulus type clouds with tops higher than the 23 degree F. temperature level; 2) through or within 5 nautical miles of the nearest edge of cumulus type clouds with tops higher than the 14 degree F level; 3) through or within 10 nautical miles of the nearest edge of any cumulonimbus or thunderstorm cloud including nontransparent parts of its anvil; 4) through or within 10 nautical miles of the nearest edge of a nontransparent detached anvil cloud for the first hour after detachment from the parent thunderstorm or cumulonimbus cloud.

- The Space Shuttle may not be launched if the flight path is through any clouds that extend to altitudes at or above the 32 degrees F. level which are associated with disturbed weather producing moderate or greater precipitation within five nautical miles of the flight path.

- The Space Shuttle may not be launched if the flight path will carry the vehicle through a thunderstorm or cumulonimbus debris cloud which is not transparent and less than three hours old. Launch may not occur within five nautical miles of these debris clouds unless: 1) for 15 minutes preceding launch there is at least one working field mill within five nautical miles of the debris cloud; 2) all electric field mill readings are between -1 kilovolt and + 1 kilovolt per meter within five nautical miles of the flight path; 3) no precipitation has been detected or observed.

January				**July**			
Temp	**Low**	**Avg**	**High**	**Temp**	**Low**	**Avg**	**High**
-4 F	21 Kft	24 Kft	26 Kft	-4 F	23 Kft	27 Kft	29 Kft
14	13	18	21	14	18	21	23
23	9	15	18	23	16	18	20
32	sfc	12	16	32	13	15	18
41	sfc	9	14	41	10	12	15

Range Safety Cloud Ceiling and Visibility constraints:

- Direct visual observation of the Shuttle is required through 8, 000 feet. This requirement may be satisfied using optical tracking sites or a forward observer

- For cloud ceilings of any thickness between 6,000 feet and 8, 000 feet the following conditions must be met for launch to occur:

a.) the vehicle integrity can be observed without interruption through 6, 000 feet.

b.) all required Range Safety instrumentation is functioning properly

c.) the U.S. Air Force 45th Space Wing Commander approves the decision to proceed

-For cloud ceilings between 4,000 feet and 6,000 feet the following conditions must be met for launch to proceed:

a.) the thickness of the clouds must be less than 500 feet

b.) the vehicle integrity can be monitored by the Eastern Range airborne and/or the ground forward observers through 8,000 feet

c.) all required Range Safety instrumentation is functioning properly

d.) the U.S. Air Force 45th Space Wing Commander approves the decision to proceed

A "Good Sense Rule" is in effect for launch which states: "Even when constraints are not violated, if any other hazardous conditions exist, the launch weather officer will report the threat to the launch director. The launch director may hold at any time based on the instability of the weather."

CONTINGENCY LANDING WEATHER CRITERIA

Weather criteria for an emergency landing must be considered along with launch criteria since the possibility exists for a Return To Launch Site abort (RTLS), landings at the Trans- Oceanic Abort Landing Sites (TAL), the Abort Once Around (AOA) sites and the first day Primary Landing Site (PLS). All criteria refer to observed and forecast weather conditions except for the first day PLS which is forecast weather only.

- For RTLS with redundant Microwave Landing System (MLS) capability and a weather reconnaissance aircraft, cloud coverage 5 tenths or less below 5,000 feet and a visibility of 4 statute miles or greater are required. For AOA, TAL and PLS sites, cloud coverage 5 tenths or less below 8,000 feet and a visibility of 5 statute miles or greater is required.

- For landing on a hard surface runway without redundant Microwave Landing System (MLS) capability all sites require a ceiling not less than 10,000 feet and a visibility of at least 7 statute miles. Landing at night on a hard surface runway is not acceptable. Landing at night on a lake bed runway may occur if the ceiling is not lower than 15,000 feet and the visibility is 7 miles or greater with at least non-redundant MLS capability .

- For the RTLS site and TAL sites, no thunderstorms, lightning, or precipitation within 20 nautical miles of the runway, or within 10 nautical miles of the final approach path extending outward to 30 nautical miles from the end of the runway.

- For RTLS and TAL sites, no detached opaque thunderstorm anvils less than three hours old within 15 nautical miles of the runway, or within 5 nautical miles of the final approach path extending outward to 30 nautical miles from the end of the runway.

- For RTLS, light precipitation within 20 nautical miles of the runway is acceptable if the specific criteria listed below are met:

a.) The tops of the clouds containing precipitation do not extend into temperature regions colder than 41 (F.); they have not been colder than 14 (F.) within 2.5 hours prior to launch; the radar reflectivity is less than 30 dbz at all levels within and below the clouds.

b.) Precipitation covers less than 10% of the area within 20 nautical miles of the runway, or multiple heading alignment circles are clear of showers.

c.) The movement of the showers is observed to be consistent and no additional convective development is forecast.

d.) Touchdown/rollout criteria and associated navigational aids meet the specified prelaunch go/no go requirements.

If showers exceed either parameter of part a above, an RTLS landing may still occur if a 2 nautical mile vertical clearance can be maintained from the top of any shower within 10 nautical miles of the approach paths.

- For AOA and PLS sites, no thunderstorms, lightning or precipitation within 30 nautical miles of the runway, or within 20 nautical miles of the final approach path extending to 30 nautical miles from the end of the runway.

- For RTLS and the TAL sites, no detached opaque thunderstorm anvil cloud less than 3 hours old within 15 nautical miles of the runway or within 5 nautical miles of the final approach path extending outward to 30 nautical miles from the end of the runway.

- For AOA and PLS sites, no detached opaque thunderstorm anvil cloud less than 3 hours old within 20 nautical miles of the runway or within 10 nautical miles of the final approach path extending to 30 nautical miles from the end of the runway.

- The RTLS crosswind component may not exceed 15 knots. If the astronaut flying weather reconnaissance in the Shuttle Training Aircraft executes the approach and considers the landing conditions to be acceptable, this limit may be increased to 17 knots. For the TAL, AOA and PLS sites there is a night-time crosswind limit of 12 knots.

- Headwind not to exceed 25 knots.

- Tailwind not to exceed 10 knots average, 15 knots peak.

- Turbulence conditions must be less than or equal to moderate intensity.

KSC END OF MISSION LANDING WEATHER CRITERIA

All criteria refer to observed and forecast weather conditions except for the 2/10 cloud rule which is required to be observed only. At decision time for the deorbit burn 90 minutes before landing the weather conditions must be:

- Cloud coverage of 5/10 or less below 10,000 feet and a visibility of 5 miles or greater is required.

- The peak cross wind cannot exceed 15 knots, 12 knots at night. If the mission duration is greater than 12 days the limit is 12 knots, day and night.

- Headwind cannot exceed 25 knots

- Tailwind cannot exceed 10 knots average, 15 knots peak

- The deorbit burn shall not occur if thunderstorm, lightning, or precipitation activity is forecast within 30 nautical miles of the Shuttle Landing Facility.

- At a range of 30 nautical miles, vertical clearance from the tops of rain showers or thunderstorms must be greater than 2 nautical miles.

- Detached opaque thunderstorm anvils less than three hours old must not be within 20 nautical miles of the Shuttle Landing Facility, or within 10 nautical miles of the flight path when the orbiter is within 30 nautical miles of the runway.

- Scattered cloud layers below 10,000 feet must not exceed 2/10 sky coverage.

- Turbulence must be less than or equal to moderate intensity.

WEATHER INSTRUMENTATION

The weather equipment used by the forecasters to develop the launch and landing forecasts is:

-Radar: Launch forecasters located at Cape Canaveral Air Station and landing forecasters located in Houston can access displays from two different radars. One is located at Patrick Air Force Base south of Cocoa Beach. The other is located in Melbourne at the National Weather Service and is a NEXRAD Doppler radar. Each radar provides rain intensity and cloud top information out to a distance as far as 200 nautical miles. The NEXRAD radar can also provide estimates of total rainfall and radial wind velocities.

-Field Mill Network: Thirty-one advanced field mill sites around KSC and Cape Canaveral Air Station provide data on lightning activity and surface electric fields induced by charge aloft. This data helps forecasters determine when electric charge aloft may be sufficient to create triggered lightning during launch, and to determine when to issue and cancel lightning advisories and warnings.

-Lightning Detection System: Detects and plots cloud to ground lightning strikes within 125 nautical miles of the Kennedy Space Center. Location accuracy is optimum within 30 nautical miles. Locations of strikes are color coded according to time of occurrence.

-Lightning Detection And Ranging (LDAR): Developed by the NASA Kennedy Space Center, LDAR plots intracloud, cloud to cloud and cloud to ground lightning in three dimensions within 100 nautical miles of the Kennedy Space Center. Location accuracy is very high within 25 nautical miles. LDAR data is important in determining the beginning and end of lightning conditions.

-National Lightning Detection Network: Plots cloud to ground lightning nationwide. Used to help ensure safe transit of the Space Shuttle orbiter atop the Shuttle Carrier Aircraft between Edwards Air Force Base in California and the Kennedy Space Center in Florida. It is also used to assess lightning beyond the 125 mile range of the Lightning Detection System.

-Rawinsonde: A balloon with a tethered instrument package which radios its altitude to the ground together with temperature, dewpoint and humidity, wind speed and direction, and pressure data. Rawinsondes reach altitudes exceeding 100,000 feet.

-Jimsphere balloon: A reflective balloon made of mylar tracked by radar which provides highly accurate information on wind speed and wind direction up to 60,000 feet.

-Doppler Radar Wind Profiler: Measures upper level wind speed and direction over Kennedy Space Center from approximately 10,000 feet to 60,000 feet. The data, received every 5 minutes, is used to ensure the upper winds used to calculate wind loads on the shuttle vehicle have not significantly changed between balloon soundings. If data from the Doppler Radar Wind Profiler indicates a possible significant change, another Jimsphere balloon is released.

-Rocketsonde: A 12-foot-tall instrumented rocket is launched on L-1 day which senses and transmits data on temperature, wind speed and direction, wind shear, pressure, and air density at altitudes between 65,000 feet and 370,000 feet. A four-inch in diameter solid rocket motor separates at an altitude of about 5,000 feet, after which an "instrumented dart" coasts to apogee.

-Satellite Images and Data: Provided directly to the satellite terminal at USAF Range Weather Operations and NOAA National Weather Service Spaceflight Meteorology Group in Houston by the geostationary GOES weather satellites. In addition high resolution images are received from spacecraft in low earth orbit including both the NOAA and the Defense Meteorological Support Program (DMSP) polar orbiting satellites.

-Meteorological Interactive Data Display System (MIDDS): Integrates diverse weather data on a single display terminal-- satellite images, radar, computer generated graphics of surface and upper air map features, numerical weather models, current weather observations, data from meteorological towers, lightning strikes and field mill information.

-Towers: 33 meteorological towers are located on Kennedy Space Center and Cape Canaveral Air Station, including two at each launch pad and three at the Shuttle Landing Facility. In addition to wind, most towers are also instrumented with temperature, and moisture sensors. The 60-foot towers at the launch pads and the 33-foot towers at

the Shuttle Landing Facility are closely monitored for launch and landing criteria. In addition, on the mainland, there is a network of 19 wind towers which extend outward an additional twenty miles. Tower data is an important short- term forecasting tool and also helps determine the direction and distance of toxic corridors in the event of a mishap.

-Buoys: Meteorological buoys are anchored 20, 110 and 160 nautical miles east-northeast of Cape Canaveral. These buoys relay hourly measurements via satellite of temperature, wind speed and direction, barometric pressure, precipitation, sea water temperature, and wave height and period. Buoy data is used for launch, landing, booster retrieval, and daily ground processing forecasts for the Kennedy Space Center and Cape Canaveral Air Station.

-Solid Rocket Booster Retrieval Ships: These vessels radio observed weather conditions and sea state from the booster impact area located up to 150 nautical miles downrange.

-Weather Reconnaissance Aircraft: A T-38 jet and the Shuttle Training Aircraft are flown by a weather support astronaut.

NOTE: Launch weather forecasts and ground operations forecasts are prepared by the U.S. Air Force Range Weather Operations Facility at Cape Canaveral Air Station. The RTLS, emergency landing and end of mission forecasts are prepared by the NOAA National Weather Service Space Flight Meteorology Group at the Johnson Space Center in Houston.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

September 12, 1996
KSC Contact: Bruce Buckingham
KSC Release No. 104-96

NOTICE TO EDITORS/ NEWS DIRECTORS:
MISSION STS-79 EVENTS, NEWS CENTER OPERATING HOURS SET

News conferences, events and operating hours for KSC's News Center have been set for the Sept. 16 launch of the Space Shuttle Atlantis on Mission STS-79, the 79th launch in the Shuttle program. The conferences and events (as noted) are scheduled to be carried live on NASA Television unless noted (please refer to the STS-79 TV schedule for exact times).

The six STS-79 crew members are scheduled to arrive at KSC on Friday, Sept. 13, at about 12:01 a.m. EDT. News media representatives wishing to cover the event must be at the News Center by 11 p.m. Thursday (in the event of a possible early crew arrival) for transportation to the Shuttle Landing Facility.

News media representatives needing credentials for crew arrival should call the News Center at 867-2468 by close of business Thursday to make arrangements.

News media representatives with proper authorization may obtain STS-79 mission credentials at the Pass and Identification Building on State Road 3 on Merritt Island.

# # # #

Information about the countdown and mission can be accessed electronically via the Internet at: http://www.ksc.nasa.gov/shuttle/countdown/ and at http://shuttle.nasa.gov/

KSC press releases and other information are available on the KSC PAO Home Page at: http://www-pao.ksc.nasa.gov/kscpao/kscpao.htm

STS-79 BRIEFING & EVENTS SCHEDULE
(all times are EDT)
(All briefings are held inside the KSC Press Site auditorium and will be carried live on NASA TV)

L-3 Days - Friday, Sept. 13

- Launch countdown begins ----- **12:00 a.m.**
- STS-79 Flight Crew Arrival (Live on NASA TV) ----- **12:00 a.m.**
- Countdown Status Briefing ----- **9:00 a.m.**
  John Guidi, NASA Test Director
  Scott Higginbotham, STS-79 Payload Manager
  Ed Priselac, Shuttle Weather Officer
- Replay of the STS-79 Flight Crew Arrival----(immediately following Status Briefing)

L-2 Days - Saturday, Sept. 14

- Countdown Status Briefing ----- **9:00 a.m.**
  John Stealey, NASA Test Director
  Scott Higginbotham, STS-79 Payload Manager
  Ed Priselac, Shuttle Weather Officer

L-1 Day - Sunday, Sept. 15

- Space Station Briefing ----- **8:00 a.m.**
  Randy Brinkley, NASA Space Station Program Manager, Johnson Space Center
- Pre-launch News Conference ----- **9:30 a.m.**
  (or immediately following the management team's meeting)
  Tommy Holloway, NASA Shuttle Program Manager, Johnson Space Center
  Frank Culbertson, Shuttle-Mir Phase One Program Director, NASA HQ
  Valery Ryumin, Phase One Director, RSC Energia
  Kathryn Havens, Office of Life and Microgravity Sciences, NASA HQ
  Bob Sieck, Director of Shuttle Operations, KSC
  Capt. Jim Sardonia, Launch Weather Officer, USAF 45th Weather Squadron
- Rotating Service Structure moves---(press departure at 10 a.m.) ----- **11:00 a.m.**
- News media orientation tour (optional depending on interest) ----- **TBD**
- Tanking begins ----- **about 7:30 p.m.**
- NASA Television live launch programming begins ----- **11:30 p.m.**

Launch Day - Monday, Sept. 16

- Launch of Atlantis ----- **about 4:54 a.m.**
- Post-launch press conference ----- **L + 1 hour**
  Loren Shriver, manager of Launch Integration for the Space Shuttle Program
  Jim Harrington, KSC Launch Director

KSC News Center office hours for STS-79
(hours may be adjusted for in-flight events)

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(Launch minus 3 days) Friday, Sept. 13  --------------8:00 a.m. - 4:30 p.m.
(Launch minus 2 days) Saturday, Sept. 14 -------------8:00 a.m. - 4:30 p.m.
(Launch minus 1 day) Sunday, Sept. 15 ----------------7:00 a.m. - around-the-
(Launch day) Flight day 1, Monday, Sept. 16--------------clock  - 4:30 p.m.
Flight Day 2-5, Sept. 17-20--------------------------8:00 a.m. - 4:30 p.m.
Flight days 6-7,  Sept. 21-22--------------------------------CLOSED
Flight days 8-10, Sept. 23-25------------------------8:00 a.m. - 4:30 p.m.
Flight day 11, Sept. 26 (Landing)---------------------5:30 a.m. - 4:30 p.m.
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(Times may vary and be adjusted in real time depending on mission events and timelines.)

News media representatives may obtain STS-79 mission credentials at the Pass and Identification Building at Gate 2 on State Road 3, Merritt Island, during the following times:

Friday, Sept. 13 ----- 8 a.m. - 4:30 p.m.
Saturday, Sept. 14 ----- 8 a.m. - 4:30 p.m.
Sunday, Sept. 15 ----- 7 a.m. - 4:30 p.m.
Monday, Sept. 16 ----- 1 - 4 a.m.

News media with annual Shuttle credentials are reminded to sign the log book at the photo and interview counter in the News Center.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

September 12, 1996
KSC Contact: Bruce Buckingham
KSC Release No. 105-96

SPACE SHUTTLE MISSION STS-79 LAUNCH COUNTDOWN TO BEGIN SEPT. 13

NASA will begin the countdown for launch of Space Shuttle Atlantis on the fourth mission to dock with Russia's space station Mir on the morning of Friday, Sept. 13 at 12 a.m.(midnight) at the T-43 hour mark. The KSC launch team will conduct the countdown from Firing Room 1 of the Launch Control Center.

The countdown includes 33 hours and 53 minutes of built-in hold time leading to the opening of the launch window at about 4:54 a.m. (EDT) on Sept. 16. The launch window extends for about 7 minutes, possibly less, depending on final orbiter performance evaluations. The exact time of launch will be determined about 90 minutes before liftoff based on the location of the Mir space station. (Controllers are preparing for launch as early as 4:53 a.m. and that is the time reflected in the countdown bar-charts.)

In order to accommodate the short window necessary to rendezvous and dock with Mir, some changes have been made to the standard launch countdown. Most significant is the addition of an extra 30 minutes to the normal 10 minute built-in hold at T-9 minutes. Also, tanking is scheduled to begin about 30 minutes earlier than normal, at about 7:30 p.m. Sunday.

STS-79 is the sixth Space Shuttle mission of 1996. This will be the 17th flight of the orbiter Atlantis and the 79th flight overall in NASA's Space Shuttle program. Atlantis last flew on the second Shuttle/Mir docking flight in November 1995.

This flow has been unusual in that Atlantis was twice returned to the Vehicle Assembly Building (VAB) from the pad due to hardware and weather concerns. Atlantis was first rolled out of Orbiter Processing Facility bay 1 on June 24 and mated with the external tank and solid rocket boosters in the VAB. The Shuttle stack was then transported to Pad 39A on July 1.

On July 10, Atlantis was returned to the VAB due to threats from Hurricane Bertha. Two days later, managers decided to keep Atlantis off the pad in order to replace the solid rocket boosters before launch. Atlantis was destacked from the original set of boosters and returned to the OPF. Once the new boosters were prepared, Atlantis was again rolled over to the VAB on Aug. 13 and mated to the replacement booster/external tank configuration. On Aug. 20, Atlantis was returned to the pad for the second time.

Two weeks later, on Sept. 4, Hurricane Fran threatened Florida and managers decided to return Atlantis once again to the safety of the VAB. The threat quickly passed and the next day Atlantis was moved back out to the pad for the third time.

On mission STS-79, Atlantis will carry into orbit a six member crew. Mission Specialist John Blaha will replace Shannon Lucid on the Mir space. He will remain there until Atlantis again docks with Mir next January. Lucid will return to Earth with the rest of the STS-79 crew.

The STS-79 crew are: Commander Bill Readdy; Pilot Terry Wilcutt; and Mission Specialists Jay Apt, Tom Akers,

Carl Walz and John Blaha. All members of the STS-79 crew are veteran Shuttle flyers.

The crew are scheduled to arrive at KSC at about 12:01 a.m. Friday, Sept. 13. Their activities at KSC prior to launch will include equipment fit checks, medical examinations and opportunities to fly in the Shuttle Training Aircraft.

(end of general release)

(The countdown will target launch for 4:53 a.m. The exact launch time will be adjusted at the T-9 minute hold.)

COUNTDOWN MILESTONES
***all times are Eastern**
Launch - 3 Days (Friday, Sept. 13)

Prepare for the start of the STS-79 launch countdown
Perform the call-to-stations (11:30 p.m. Thursday, Sept. 12)
All members of the launch team report to their respective consoles in
Firing Room 1 in the Launch Control Center for the start of the countdown.
Countdown begins at the T-43 hour mark (12 a.m.)
Start preparations for servicing fuel cell storage tanks
Begin final vehicle and facility close-outs for launch
Check out back-up flight systems
Review flight software stored in mass memory units and display systems
Load backup flight system software into Atlantis' general purpose computers
Begin stowage of flight crew equipment
Inspect the orbiter's mid-deck and flight-deck and remove crew module platforms

Enter first planned built-in hold at T-27 hours for duration of four hours (4 p.m.)

Clear launch pad of all non-essential personnel
Perform test of the vehicle's pyrotechnic initiator controllers

Resume countdown (8 p.m.)

Clear launch pad of all personnel
Begin operations to load cryogenic reactants into Atlantis' fuel cell storage tanks (8 p.m. - 4 a.m.)

Launch - 2 Days (Saturday, Sept. 14)

After cryogenic loading operations, re-open the pad

Enter four-hour built-in hold at T-19 hours (4 a.m.)

Resume orbiter and ground support equipment close-outs
Demate orbiter mid-body umbilical unit and retract into fixed service structure
Power-up Spacehab and prepare for final stowage

Resume countdown (8 a.m.)

Start final preparations of the Shuttle's three main engines for main propellant tanking and flight
Activate the orbiter's flight controls and navigation systems
Install mission specialists' seats in crew cabin
Close-out the tail service masts on the mobile launcher platform

Enter planned hold at T-11 hours for 21 hours, 3 minutes (4 p.m.)

Complete final stowage of Spacehab

Perform orbiter ascent switch list in crew cabin
Install film in numerous cameras on the launch pad

Launch -1 Day (Sunday, Sept. 15)

Activate the orbiter's communications systems
Activate orbiter's inertial measurement units
Fill pad sound suppression system water tank
Safety personnel conduct debris walkdown
Move Rotating Service Structure (RSS) to the park position (11 a.m.)
Following the RSS move, begin final stowage of mid-deck experiments and flight crew equipment

Resume countdown (1:03 p.m.)

Continue installation of time critical flight crew equipment
Perform pre-ingress switch list
Start fuel cell flow-through purge
Activate the orbiter's fuel cells
Configure communications at Mission Control, Houston, for launch
Clear the blast danger area of all non-essential personnel
Switch Atlantis' purge air to gaseous nitrogen

Enter planned two-hour built-in hold at the T-6 hour mark (6:03 p.m.)

Launch team verifies no violations of launch commit criteria prior to cryogenic loading of the external tank
Clear pad of all personnel
Begin loading the external tank with about 500,000 gallons of cryogenic propellants (about 7:30 p.m.)

Resume countdown (8:03 p.m.)

Complete filling the external tank with its flight load of liquid hydrogen and liquid oxygen propellants (about 10:30 p.m.)
Perform inertial measurement unit preflight calibration
Align Merritt Island Launch Area (MILA) tracking antennas
Perform open loop test with Eastern Range
Conduct gimbal profile checks of orbital maneuvering system engines

Enter two-hour hold at T-3 hours (11:03 p.m.)

Close-out crew and Final Inspection Team proceeds to Launch Pad 39A

Launch Day (Monday, Sept. 16)

Resume countdown at T-3 hours (1:03 a.m.)

Crew departs Operations and Checkout Building for the pad (about 1:08 a.m.)
Complete close-out preparations in the white room
Check cockpit switch configurations
Flight crew begins entry into the orbiter (about 1:48 a.m.)
Astronauts perform air-to-ground voice checks with Launch Control and Mission Control
Close Atlantis' crew hatch (about 3:03 a.m.)
Begin Eastern Range final network open loop command checks
Perform hatch seal and cabin leak checks
Complete white room close-out
Close-out crew moves to fallback area

Primary ascent guidance data is transferred to the backup flight system

Enter planned 10-minute hold at T-20 minutes (3:43 a.m.)

NASA Test Director conducts final launch team briefings

Resume countdown (3:53 a.m.)

Transition the orbiter's onboard computers to launch configuration
Start fuel cell thermal conditioning
Close orbiter cabin vent valves
Transition backup flight system to launch configuration

Enter 40-minute hold at T-9 minutes (4:04 a.m.)
(This is the last planned built-in hold. Other hold options are available if necessary. During this hold, the exact launch time will be determined based on the exact location of the Mir space station. The hold time will likely vary by a minute or two.)

Launch Director, Mission Management Team and NASA Test Director conduct final polls for go/no go to launch

Resume countdown at T-9 minutes (about 4:44 a.m.)

Start automatic ground launch sequencer (T-9:00 minutes)
Retract orbiter crew access arm (T-7:30)
Start mission recorders (T-5:30)
Start Auxiliary Power Units (T-5:00)
Arm SRB and ET range safety safe and arm devices (T-5:00)
Start liquid oxygen drainback (T-4:55)
Start orbiter aerosurface profile test (T-3:55)
Start main engine gimbal profile test (T-3:30)
Pressurize liquid oxygen tank (T-2:55)
Begin retraction of the gaseous oxygen vent arm (T-2:55)
Fuel cells to internal reactants (T-2:35)
Pressurize liquid hydrogen tank (T-1:57)
Deactivate SRB joint heaters (T-1:00)
Orbiter transfers from ground to internal power (T-0:50 seconds)
Ground Launch Sequencer go for auto sequence start (T-0:31 seconds)
SRB gimbal profile (T-0:21 seconds)
Ignition of three Space Shuttle main engines (T-6.6 seconds)
SRB ignition and liftoff (T-0)

SUMMARY OF BUILT-IN HOLDS FOR STS-79

T-TIME	LENGTH OF HOLD	HOLD BEGINS	HOLD ENDS
T-27 hours	4 hours	4:00 p.m. Fri.	8:00 p.m. Fri.
T-19 hours	4 hours	4:00 a.m. Sat.	8:00 a.m. Sat.
T-11 hours	21 hours, 3 minutes	4:00 p.m. Sat.	1:03 p.m. Sun.
T-6 hours	2 hours	6:03 p.m. Sun.	8:03 p.m. Sun.
T-3 hours	2 hours	11:03 p.m. Sun.	1:03 a.m. Sun.
T-20 minutes	10 minutes	3:43 a.m. Sun.	3:53 a.m. Sun.
T-9 minutes	about 40 minutes	4:04 a.m. Sun.	4:44 a.m. Sun.

CREW FOR MISSION STS-79

Commander (CDR): Bill Readdy
Pilot (PLT): Terry Wilcutt
Mission Specialist (MS1): Jay Apt
Mission Specialist (MS2): Tom Akers
Mission Specialist (MS3): Carl Walz
Mission Specialist (MS4): John Blaha (up)
Mission Specialist (MS4): Shannon Lucid (down)

SUMMARY OF STS-79 LAUNCH DAY CREW ACTIVITIES

Sunday, Sept. 15

	6:00 p.m.	Wake up
	6:30 p.m.	Breakfast
*	11:58 p.m.	Lunch and crew photo

Monday, Sept. 16

	12:28 a.m.	Weather briefing (CDR, PLT, MS2)
	12:28 a.m.	Don launch and entry suits (MS1, MS3, MS4)
	12:38 a.m.	Don launch and entry suits (CDR, PLT, MS2)
*	12:50 a.m.	Crew suiting photo
*	1:08 a.m.	Depart for launch pad 39A
*	1:48 a.m.	Arrive at white room and begin ingress
*	3:03 a.m.	Close crew hatch
*	4:54 a.m.	Launch

* Televised events (times may vary slightly)
All times Eastern

-- end --

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

October 1, 1996
KSC Contact: Joel Wells
KSC Release No. 106-96

KSC LIQUID AIR MIXER KEY TO IMPROVED FIREFIGHTER AIR PACK

A "next-generation" air supply backpack for firefighters and rescue workers that can provide twice as much breathing air per pound than conventional units can now be commercially developed thanks to a recent NASA invention.

The recent invention, a mobile liquid air mixing unit, can produce small amounts of the cryogenic liquid for use in the Kennedy Space Center-designed liquid air pack (LAP) that has been in operation at the center since 1986. The LAP can provide considerably more breathing air under working conditions than the most advanced compressed air pack now used by fire departments and emergency rescue crews. However, its commercial development has been hampered by the lack of a means to produce small amounts of liquid air needed to fill the LAP at the sites of fires and other emergency situations.

"Several large fire departments have been interested in using the liquid air pack for years and equipment companies have wanted to develop it," said EG&G Florida Inc. Life Support manager Bob Martin. "The new portable mixing system will clear the way for the commercial development of the LAP."

The liquid air mixing system will be developed through a cooperative agreement signed Oct. 1 between consortium members EG&G Florida Inc., Precision Cleaning and Fabricating, Inc., Cocoa, FL and the State of Florida's Technological Research and Development Authority (TRDA) and Kennedy Space Center.

KSC developed the liquid air pack for Space Shuttle astronaut rescue crews and for use during hazardous operations at the center. It is lighter by several pounds and more compact than conventional air packs to allow rescue crews to enter the narrow passages within the orbiter in the case of an emergency at the launch pad.

"Users have at least an hour of breathing time with the liquid air pack no matter how hard they work, and up to 2 1/2 hours under less stressful conditions " Martin said. "The standard 60-minute air pack provides only 30 minutes of air under demanding firefighting or rescue conditions."

The liquid air used in the packs is a combination of 21 percent liquid oxygen and 79 percent liquid nitrogen. The evaporating gases travel from an insulated bottle through tubing in a heat exchanger before reaching the facemask of the air pack at a temperature of about 65 to 70 degrees F. This cool air helps reduce heat fatigue and keeps the user's body core temperature down while eliminating facemask fogging.

The key to the scaled-down liquid air production unit is a mixer system with one tube inside another. The inner tube holds - 297 degree F liquid oxygen, while the outer tube is filled with colder liquid nitrogen (-320 degrees F). The two cryogenic fluids can be mixed together in a container and stored as liquid air once they reach the same temperature. NASA has applied for a patent on the mixer, which Martin invented.

The mobile version of the small-scale production unit, to be developed by consortium members Precision Cleaning and Fabricating Inc., Cocoa, FL, and EG&G, would be mounted on skids and be light enough to be transported to a fire or disaster area by truck or helicopter. It would include small liquid oxygen and liquid nitrogen tanks, the liquid air

mixing system and a storage tank. The production mobile units also would be transported to KSC operational areas where liquid air packs were to be used. The TRDA selected the two companies to develop the mixer and provides support for the consortium's development efforts.

"The liquid air pack and mobile production unit could be used anywhere there is a need for high-capacity air-breathing devices, " Martin said. "This includes hazardous materials emergencies, environmental cleanup, shipboard fires and mining accidents, as well as fires in large industrial or residential buildings."

Businesses that would like additional information on the liquid air mixing system or the liquid air pack should contact Kristen Riley in the KSC Technology Programs and Commer-cialization Office at (407) 867-2780.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

September 20, 1996
KSC Contact: Lisa Malone
KSC Release No. 108-96

KSC AGREES TO HOLD UNIVERSITY CLASSES ON CENTER

Students whose career choices may have been influenced by the space program now have the opportunity to learn first-hand how some of that work is done as they take part in classes taught for the first time at Kennedy Space Center.

Center Director Jay Honeycutt, University of Central Florida President Dr. John C. Hitt and Florida Institute of Technology President Dr. Lynn E. Weaver signed agreements last month giving the universities access to KSC's materials science laboratories and payload support facilities for engineering classes. The agreements also established research efforts between the universities and NASA.

The agreements represent a commitment on NASA's part to share its resources to help develop future aerospace engineers and scientists, said Gregg Buckingham, university programs manager at KSC.

Beginning with a "Small Satellite Payload Integration" class Sept. 4, students got their first look at analytical and engineering equipment that is, in some cases, unique in all the world.

The payload class gives about 20 engineering students from UCF and Florida Tech (FIT) an opportunity to learn first-hand about hardware being processed in the Operations and Checkout building prior to being launched into space.

While much of the work is conducted in a classroom, students have access to the high bays where the processing work is conducted, said Roger Johnson, a mechanical materials and aerospace professor at UCF and one of four instructors for the course. Once a week the students will take part in laboratory work where they will have the opportunity to view payloads in work and ask questions of payload customers and other experts, said Mike Bruder, launch site support manager.

KSC employees will also assist on a time-available basis by providing information on equipment and facilities. No funds will be exchanged between KSC and the participating schools.

The materials science class, which began Sept. 5, also combines senior engineering and first-year graduate students from each school. Students will ultimately work on identifying the cause of failure of some actual Space Shuttle components.

"This gives the students the opportunity to do analysis in the real world," said Irby Moore, manager of the Material Science Laboratory. The labs at KSC are unique in that they offer a diverse mix of the types of analysis -- chemical, mechanical and electrical -- performed in an effort to establish the causes of specific anomalies.

Students have access to more than $8 million worth of high-tech state-of-the-art equipment and instrumentation located in the lab. Only major universities have the funds to afford equipment such as the X-Ray Photoelectron Spectrometer, which analyzes the surface of objects by determining the binding energy of electrons.

Although representatives from the labs have been visiting universities to make technical presentations and promote

awareness of the importance of science and technology to students considering career options, they are excited about the students studying at KSC.

"We hope this effort provides a source of inspiration to students who have expressed an interest in any type of analytical field, especially those related to the space program," said Moore.

The classes are being conducted under the auspices of the Florida Space Institute, a consortium established earlier this year to increase the state's academic involvement in space research and development.

Organized by the Spaceport Florida Authority, Brevard Community College, Florida Tech, UCF and the NASA-sponsored Florida Space Grant Consortium (representing all of the state's major universities), the FSI initiated a similar program earlier this year at Cape Canaveral Air Station.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

September 23, 1996
KSC Contact: Joel Wells
KSC Release No. 109-96

BETHUNE-COOKMAN COLLEGE TO HELP DELIVER NASA PROGRAMS AT CENTER FOR SPACE EDUCATION

NASA has awarded a grant to Bethune-Cookman College to operate the Educators Resource Center and the Exploration Stations in the Center for Space Education at Kennedy Space Center. Awarded Sept. 11, the grant gives Bethune-Cookman a key role in helping NASA expose students and educators to real-world science through space-related teaching resources and hands-on, minds-on learning experiences.

"This is an opportunity for KSC to benefit from a superb learning institution. I'm excited about expanding our relationship," said KSC Director Jay Honeycutt at the grant signing.

The NASA Education Services Branch in KSC's Public Affairs Office manages the program, which is designed to help teachers and inspire students to choose careers in mathematics, science and technology. The Center for Space Education, located in the northwest corner of the KSC Visitors Center, is operated by the Astronaut Memorial Foundation.

The Educators Resource Center is a library of audio/visual and printed materials that can supplement a teacher's standard curriculum. Students participate directly in learning activities and professionally-conducted demonstrations in the two Exploration Stations.

"This program brings the lofty concepts in science and space exploration down to earth," said Dr. Steve Dutczak, Education Services Branch Chief. "At the same time, this new partnership will keep us up to speed with current education trends and new technology."

"I'm glad we're tied to this highly creative and productive government agency," announced Dr. Oswald P. Bronson, Sr., president of Bethune-Cookman. "This is not our first time to work with NASA, but it is a significant step that moves us closer in our relationship."

KSC's Procurement Office demonstrated some creativity of its own in the acquisition of Bethune-Cookman's services. The conversion from the former contract with a private company to a grant with a historically black college "will help KSC with our (socioeconomic) goals and it just makes good sense to have an educational institution operating these programs," said Valencia Mitchell, KSC contracting officer.

Seven universities were surveyed to determine their interest in the grant, and three responded positively. Bethune-Cookman's close proximity to KSC and its strong management approach were factors in the selection. The initial grant is for one year, but it also carries 4 one-year options. Over the full 5 years, the grant is valued at $1.5 million.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

September 25, 1996
KSC Contact: Dennis Armstrong
KSC Release No. 110-96

KSC'S RENE PAQUETTE RECEIVES EXCEPTIONAL SERVICE MEDAL

Rene E. Paquette, a native of Lewiston/Auburn, ME, and a 1961 graduate of Edward Little High School in Auburn, ME, was one of only three NASA employees awarded the NASA Exceptional Service Award by NASA Administrator Dan Goldin at a ceremony held in Washington, DC, on Sept. 24.

Paquette attended the University of Rhode Island for two years and the U.S. Air Force's Institute of Technology where he completed the National Contract Management Association's requirements for the Professional Designation in Contract Management. Previous honors include selection as NASA's Contract Manager of the Year in 1995, recipient of the Astronaut Corps' Silver Snoopy Award, and selection for 19 performance awards during his 32 year federal career.

As the lead contracting officer at Kennedy Space Center for the 10 year, $1.8 billion Base Operations Contract, Paquette is responsible for contract oversight involving the management operation, maintenance and engineering of KSC utilities and facilities and other operations such as technical and administration operations, health, fire and security services at KSC. Prior to joining NASA in 1985, he acquired 20 years of civilian experience in contract management with the U.S. Air Force and the U.S. Navy.

Paquette and his wife, the former Carolyn Fear of Sandusky, OH, are the parents of three adult children and reside near the space center in Titusville, FL.

The NASA Exceptional Service Medal is awarded for significant performance characterized by unusual initiative or creative ability that clearly demonstrates substantial improvements or contributions in engineering, aeronautics, spaceflight, administration, support or space-related endeavors which contribute to the mission of NASA. In accepting his medal, Paquette was cited for his "significant support of the Agency's programs in the small business, technical and procurement arenas."

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

September 24, 1996
KSC Contact: Bruce Buckingham
KSC Release No. 111-96

ATLANTIS SCHEDULED TO LAND AT KSC

The orbiter Atlantis is scheduled to land at Kennedy Space Center on Thursday, Sept. 26 at about 8:11 a.m. EDT, completing its 10-day STS-79 mission which was launched from KSC on Sept. 16.

Landing at KSC's Shuttle Landing Facility (SLF) is slated to occur on orbit 160 at a mission elapsed time of 10 days, 3 hours, 18 minutes. The deorbit burn will occur at about 7:07 a.m. Thursday.

The **two KSC landing opportunities on Thursday are: 8:11 a.m. and 9:48 a.m.** In the event a landing is not possible at KSC on Thursday due to weather concerns, a landing could be made at Edwards Air Force Base (EAFB), CA. **Landing opportunities at Edwards on Thursday are at 9:40 a.m. and 11:16 a.m. EDT.** If managers decide to keep Atlantis in orbit an additional day, two landing opportunities are available at KSC and two at Edwards on Friday.

KSC Friday landing times are: 8:46 a.m. and 10:22 a.m. EDT.
EAFB Friday landing times are: 10:15 a.m. and 11:51 a.m. EDT.

The landing of Atlantis will mark the 32nd landing at KSC in the history of Space Shuttle flight. It will be the fifth landing of the Shuttle at KSC this year.

About six hours after landing at KSC, select members of the flight crew will be present for a post-mission press conference. The conference will be held at the KSC TV auditorium and carried live on NASA TV. Astronaut Shannon Lucid, returning to Earth after spending six-months on the Mir space station, will not participate in the post-mission astronaut press conference.

SLF and KSC Ground Operations

The Shuttle Landing Facility was built in 1975. It is 300 feet wide and 15,000 feet long with 1,000 foot overruns at each end. The strip runs northwest to southeast and is located about 3 miles northwest of the 525-foot tall Vehicle Assembly Building.

Once the orbiter is on the ground, safing operations will commence and the flight crew will prepare the vehicle for post-landing operations. The Crew Transport Vehicle (CTV) will be used to assist the crew, allowing them to leave the vehicle and remove their launch and re-entry suits easier and quicker.

The CTV and other KSC landing convoy operations have been "on-call" since the launch of Atlantis Sept. 16. The primary functions of the Space Shuttle recovery convoy are: provide immediate service to the orbiter after landing, assist crew egress, prepare the orbiter for towing to the Orbiter Processing Facility.

Convoy vehicles are stationed at the SLF's mid-point. About two hours prior to landing, convoy personnel don SCAPE suits, or Self Contained Atmospheric Protective Ensemble, and communications checks are made. A warming-up of coolant and purge equipment is conducted and nearly two dozen convoy vehicles are positioned to move onto the

runway as quickly and as safely as possible once the orbiter coasts to a stop. When the vehicle is deemed safe of all potential explosive hazards and toxic gases, the purge and coolant umbilical access vehicles move into position at the rear of the orbiter.

Following purge and coolant operations, flight crew egress preparations will begin and the CTV will be moved into position at the crew access hatch located on the orbiter's port side. A physician will board the Shuttle and conduct a brief preliminary examination of the astronauts. The crew will then make preparations to leave the vehicle.

Following departure from the SLF, the crew will be taken to their quarters in the O&C Building, meet with their families and undergo physical examinations. The crew is scheduled to depart for JSC the day after landing.

If Atlantis lands at Edwards, an augmented KSC convoy team will be on-site to safe the vehicle, disembark the crew and move the orbiter to the Mate/Demate Device. The turnaround team will be deployed to Edwards by charter aircraft on landing day.

About 8 hours after Atlantis lands at KSC, the orbiter will be towed to Orbiter Processing Facility bay 3 for post-flight deservicing. Preparations will then begin for Atlantis' next mission, STS-81, currently scheduled for launch in January.

KSC End Of Mission Landing Flight Rules For STS-79

Because of the concerns with Atlantis' auxiliary power unit no. 2, managers are taking a more cautious approach to weather criteria at the prime landing sites. In general, **the end of mission landing flight rules regarding visibility and cross-winds have been stiffened.**

All criteria refer to observed and forecast weather conditions. At decision time for deorbit burn about 90 minutes before landing, weather conditions must be:

Cloud coverage of 4/8 or less below 10,000 feet

A no go consideration will be given to observed scattered cloud layers of 3/8 - 4/8 sky coverage below 10,000 feet at the deorbit burn decision time

7 miles or greater visibility

Peak cross-winds cannot exceed 10 knots

Headwinds cannot exceed 25 knots

Tailwinds cannot exceed 10 knots average, 15 knots peak

The deorbit burn shall not occur if thunderstorms, lightning or precipitation is forecast within 30 nautical miles of the Shuttle Landing Facility

At a range of 30 nautical miles, vertical clearance from the tops of rain showers or thunderstorms must be greater than three nautical miles

Detached opaque thunderstorm anvils less than three hours old must be within 20 nautical miles of the Shuttle Landing Facility, or within 10 nautical miles of the flight path when the orbiter is within 30 nautical miles of the runway

Turbulence must be light intensity or less

-- end --

NOTICE TO EDITORS: Media wishing to view Atlantis' landing should be at the KSC press site between 4:30 - 7 a.m. Thursday, Sept. 26, for transport to the SLF. Other specific information is available at the KSC News Center regarding landing photo opportunities, post-landing press conferences and KSC News Center operational hours.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

September 26, 1996
KSC Contact: George H. Diller
KSC Release No. 112-96

NOTE TO EDITORS/NEWS DIRECTORS:
MARS GLOBAL SURVEYOR MEDIA OPPORTUNITY SCHEDULED SEPT. 27

The Mars Global Surveyor spacecraft, to be launched toward the red planet in early November, is the subject of a news media opportunity on Friday, Sept. 27. The Mars Global Surveyor, built by Lockheed Martin Astronautics, holds a set of six science instruments. After arrival at Mars the spacecraft will be placed in a polar orbit to study the planet's surface, atmosphere, gravitational and magnetic fields.

On Friday, media representatives will be taken inside the clean room at the Payload Hazardous Servicing Facility (PHSF) located in the KSC Industrial Area. Those planning to attend are requested to wear long pants and closed-toe shoes. Full clean room attire (bunny suits) will be required. Quality control personnel may request cleaning of photographic equipment. No leather or vinyl cases are permitted. Special plastic bags will be provided for photographic accessories. No food, tobacco, lighters, matches, or pocket knives will be permitted inside the clean room. Electronic flash photography is permitted. The lighting in the facility is high pressure sodium (orange). The Mars Global Surveyor project manager from the Jet Propulsion Laboratory and personnel from Lockheed Martin, will be available for interviews.

KSC annual media badges will be accepted for this event. Those needing accreditation should contact the KSC News Center at 407/867-2468 by the close of business Thursday, Sept. 26. Departure from the KSC News Center for the PHSF will be at 2 p.m. on Friday, Sept 27.

The Mars Global Surveyor is scheduled for launch aboard a McDonnell Douglas Delta II rocket from Pad A at Launch Complex 17 on, Nov. 6 at 12:11 p.m. EST.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

September 30, 1996
KSC Contact: Patti Phelps
KSC Release No. 114-96-1

NASA HONORS KENNEDY SPACE CENTER EMPLOYEES

Kennedy Space Center (KSC) honored 46 of its civil service and contractor employees at a special Honoree Event held Sept. 14-16 at the space center.

The KSC employees were among some 250 NASA and industry employees from around the country who were honored by top NASA and industry leaders for their significant contributions to the nation's space program.

The KSC employees attended a special reception in their honor, and were joined by astronauts and senior NASA and industry officials of the Space Shuttle team. They were given a VIP tour of Kennedy Space Center and participated in various briefings. They also watched the STS-79 launch of the Space Shuttle Atlantis on Sept. 16 from a special VIP viewing site. STS-79 was the fourth docking of the Space Shuttle with the Russian Mir Space Station. Astronaut Shannon Lucid, who established a new record for U.S. human stay in space during her six-month stay on Mir, traded places on Mir with astronaut John Blaha, who was part of the STS-79 crew.

The Honoree Award is the highest form of recognition bestowed upon an employee by the NASA Space Flight Awareness Program. Recipients are selected for their professional dedication and outstanding achievement in support of the human space flight program.

Eleven civil service employees were honored. They were Betty P. Camp, Susan G. Corbin, Frank D. Der, Ember L. Smith, Jack L. Gardner, Barbara L. Weber, Lisa M. Colloredo, Glenn A. Otto, Richard L. English, Amanda M. Mitskevich and Robert H. Petersen.

Contractor employees honored included Phillip A. Albright, The Bionetics Corp.; Henry W. Yu, I-NET Inc.; Kathleen M. Egan, Mark G. Jager, Samuel Rivera Jr., Douglas E. Thom, Ronald M. Tyson and Russell D. Walker, McDonnell Douglas Space and Defense Systems-KSC; and Joe M. Urda, Boeing Information Services.

Also, Albert L. Priest and Frederick R. Woods Jr., United Technologies, USBI Co.; John R. Mooney, Rockwell Aerospace, Rocketdyne; Judith A. Arieux and David J. Carden, Rockwell Aerospace, Space Systems Division; Joel C. Dayton, Reliable System Services Corp.; Melissa L. Jones, Aydin Vector Division; Edward C. Matza, Loral Vought Systems Corp.; David Selesky, RAM Development Company of Brevard Inc.; David L. Campbell, Wang Federal Inc.; and James T. Bowers, Wiltech Corp.

United Space Alliance employees honored were Lisa T. Bird, Paula A. Burkett, Beverly S. Cissell; Christopher L. Ehrenfeld, Peter J. Klonowski, Jeffrey Lakaszcyck, Mark G. Lindell, James H. Little; James F. Musgrave, Roger K. Paul, Steven M. Pencka, Aaron J. Reeder, Shelby G. Roberts, Jennifer A. Stenger and Melanie R. Wallace.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

September 30, 1996
KSC Contact: Patti Phelps
KSC Release No. 114-96-2

SUSAN G. CORBIN HONORED FOR ROLE IN SPACE PROGRAM

Susan G. Corbin, a resident of Titusville, FL, and daughter of Layton T. Corbin of Titusville, was among 46 Kennedy Space Center (KSC) employees who were honored recently for their exemplary work at the nation's spaceport.

Born in Rockledge, FL, Corbin graduated from Titusville High School in 1969 and from Southern College of Business and Technology in Orlando, FL, in 1972.

At KSC, Corbin is employed by NASA as a computer analyst. She is the lead document administrator for the Payloads Processing Technical Documentation Subsystem. She joined the space center in 1980

The 46 employees selected were part of a contingent of some 250 NASA and contractor employees from throughout the space agency being honored for their professional dedication and outstanding achievement in support of the manned space flight program.

The Honorees were given a VIP tour of Kennedy Space Center and attended a special reception. Honoring them were several astronauts and senior officials from NASA and the space industry. The Honorees also were taken to a special VIP viewing area to watch the STS-79 launch of the Space Shuttle Atlantis on Sept. 16.

Kennedy Space Center is the launch site and preferred landing site for NASA's Space Shuttles. STS-79 was the fourth docking of the Space Shuttle with the Russian Mir Space Station. Crew members were Commander William F. Readdy, Pilot Terrence W. Wilcutt, and Mission Specialists Jay Apt, Tom Akers, Carl E. Walz and John E. Blaha. Blaha stayed on Mir, replacing astronaut Shannon Lucid, who established a new record for U.S. human stay in space during her six-month stay on Mir. Lucid returned to Earth with the rest of the STS-79 crew.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

September 30, 1996
KSC Contact: Patti Phelps
KSC Release No. 114-96-3

FRANK D.K. DER HONORED FOR ROLE IN SPACE PROGRAM

Frank D.K. Der, a 1977 graduate of the University of Maryland, College Park, MD, was among 46 Kennedy Space Center (KSC) employees who were honored recently for their exemplary work at the nation's spaceport.

Born in Baltimore, MD, Der is the son of Yuey J. Der of Baltimore. He graduated in 1973 from Baltimore (MD) Polytechnic Institute and received a bachelor's degree in civil engineering from the University of Maryland, where he was a member of the Chi Epsilon Honor Fraternity.

At KSC, Der is employed by NASA as an aerospace technologist. He is responsible for the technical design and development of facilities at KSC.

He and his wife, the former Laurie Sue Hanson, live in Cocoa, FL. They have two children.

The 46 employees selected were part of a contingent of some 250 NASA and contractor employees from throughout the space agency being honored for their professional dedication and outstanding achievement in support of the manned space flight program.

The Honorees were given a VIP tour of Kennedy Space Center and attended a special reception. Honoring them were several astronauts and senior officials from NASA and the space industry. The Honorees also were taken to a special VIP viewing area to watch the STS-79 launch of the Space Shuttle Atlantis on Sept. 16.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

September 30, 1996
KSC Contact: Patti Phelps
KSC Release No. 114-96-4

EMBER L. SMITH HONORED FOR ROLE IN SPACE PROGRAM

Ember L. Smith, a native of Gulfport, MS, and daughter of Edith Ferrell O'Neal of Long Beach, MS, and the late Bennie R. Ferrell, was among 46 Kennedy Space Center (KSC) employees who were honored recently for their exemplary work at the nation's spaceport.

Smith graduated in 1977 from Bay Senior High School, Bay St. Louis, MS, and in 1979 from Pearl River Junior College, Poplarville, MS, where she majored in secretarial science.

She is employed by NASA as the executive secretary to the deputy center director of Kennedy Space Center. She joined the space center in 1989.

Smith and her husband, Louis, live in Titusville, FL. They have two children.

The 46 employees selected were part of a contingent of some 250 NASA and contractor employees from throughout the space agency being honored for their professional dedication and outstanding achievement in support of the manned space flight program.

The Honorees were given a VIP tour of Kennedy Space Center and attended a special reception. Honoring them were several astronauts and senior officials from NASA and the space industry. The Honorees also were taken to a special VIP viewing area to watch the STS-79 launch of the Space Shuttle Atlantis on Sept. 16.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

September 30, 1996
KSC Contact: Patti Phelps
KSC Release No. 114-96-7

PHIL L. ALBRIGHT HONORED FOR ROLE IN SPACE PROGRAM

Phil L. Albright, son of Mr. and Mrs. Robert Albright of Shadyside, OH, and a 1981 graduate of Ohio University, Athens, OH, was among 46 Kennedy Space Center (KSC) employees who were honored recently for their exemplary work at the nation's spaceport.

Born in Bellaire, OH, Albright graduated in 1976 from Shadyside (OH) High School and received a bachelor of science degree in industrial technology from Ohio University.

At KSC, Albright is employed by The Bionetics Corp. as a calibration technician. He joined the space center in 1990.

Albright and his wife, the former Diana Lynn Hughes, live in Cocoa, FL. They have two children.

The 46 employees selected were part of a contingent of some 250 NASA and contractor employees from throughout the space agency being honored for their professional dedication and outstanding achievement in support of the manned space flight program.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

September 30, 1996
KSC Contact: Patti Phelps
KSC Release No. 114-96-8

JUDITH A. ARIEUX HONORED FOR ROLE IN SPACE PROGRAM

Judith A. Arieux, daughter of Harry and Dorothy Ezak, former longtime residents of Scranton, PA, was among 46 Kennedy Space Center (KSC) employees who were honored recently for their exemplary work at the nation's spaceport.

Arieux is a 1978 graduate of Astronaut High School in Titusville, FL. Her parents now live in Marietta, GA.

At KSC, she is employed by Rockwell Aerospace, Space Systems Division, as a member of the company's business management staff. She joined KSC in 1987.

Arieux and her husband, Donald, have three children.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

September 30, 1996
KSC Contact: Patti Phelps
KSC Release No. 114-96-9

DAVID CARDEN HONORED FOR ROLE IN SPACE PROGRAM

David Carden, a native and current resident of Melbourne, FL, and son of John and Sue Carden of Melbourne, was among 46 Kennedy Space Center (KSC) employees who were honored recently for their exemplary work at the nation's spaceport.

Carden graduated in 1970 from Eau Gallie High School, Melbourne, FL. He received a bachelor's degree from Auburn (AL) University in 1974 and a master's degree from the Florida Institute of Technology, Melbourne, FL, in 1980. He majored in contract and acquisition management.

At KSC, Carden is employed by Rockwell Aerospace, Space Systems Division, as a subcontract administrator. He joined the space center in 1974.

Carden is married to the former Donna Lee Jansen, who also works at KSC.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

September 30, 1996
KSC Contact: Patti Phelps
KSC Release No. 114-96-5A

LISA MORGAN COLLOREDO HONORED FOR ROLE IN SPACE PROGRAM

Lisa Morgan Colloredo, a native of Wheeling, WV, and a 1987 graduate of the University of Dayton, Dayton, OH, was among 46 Kennedy Space Center (KSC) employees who were honored recently for their exemplary work at the nation's spaceport.

Colloredo is the sister of Joseph E. Morgan and Cheryl Caruso, both of Wheeling, WV.

She graduated in 1983 from Wheeling (WV) Central Catholic High School and received a bachelor's degree in mechanical engineering from the University of Dayton. She also earned a master's degree in business administration from the Florida Institute of Technology in Melbourne, FL, in 1992.

She is employed by NASA as an aerospace engineer for the Safety and Mission Assurance Directorate, providing engineering support for all Space Shuttle external tank and solid rocket booster mechanical systems activities. She joined the space center in 1987 and has received a NASA Certificate of Commendation and a NASA Group Achievement Award.

Colloredo and her husband, Scott, who is a design engineer at KSC, live in Cape Canaveral, FL.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

September 30, 1996
KSC Contact: Patti Phelps
KSC Release No. 114-96-5B

LISA MORGAN COLLOREDO HONORED FOR ROLE IN SPACE PROGRAM

Lisa Morgan Colloredo, daughter-in-law of Mr. and Mrs. William T. Colloredo of Palm City, FL, was among 46 Kennedy Space Center (KSC) employees who were honored recently for their exemplary work at the nation's spaceport.

Born in Wheeling, VW, she graduated in 1983 from Wheeling (WV) Central Catholic High School and received a bachelor's degree in 1987 in mechanical engineering from the University of Dayton, Dayton, OH. She also earned a master's degree in business administration from the Florida Institute of Technology in Melbourne, FL, in 1992.

She is employed by NASA as an aerospace engineer for the Safety and Mission Assurance Directorate, providing engineering support for all Space Shuttle external tank and solid rocket booster mechanical systems activities. She joined the space center in 1987 and has received a NASA Certificate of Commendation and a NASA Group Achievement Award.

Colloredo and her husband, Scott, who is a design engineer at KSC, live in Cape Canaveral, FL.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

September 30, 1996
KSC Contact: Patti Phelps
KSC Release No. 114-96-6A

BARBARA L. WEBER HONORED FOR ROLE IN SPACE PROGRAM

Barbara L. Weber, daughter of Ruth Sundin and the late Charles S. Sundin of Jensen Beach, FL, was among 46 Kennedy Space Center (KSC) employees who were honored recently for their exemplary work at the nation's spaceport.

Weber also is the niece of Lily and Lloyd Kugel of Jensen Beach, FL. Born in Dorchester, MA, she graduated from Weymouth (MA) High School and received a bachelor of science degree in business administration in 1985 from the Rollins College campus at Patrick Air Force Base in Florida.

She is employed by NASA as the executive secretary and personal assistant to the deputy director of logistics. She joined the space center in 1969.

Weber and her husband, Ed, a 30-year employee of NASA who retired in 1994, live in Titusville, FL. They have five children and eight grandchildren.

The 46 employees selected were part of a contingent of some 250 NASA and contractor employees from throughout the space agency being honored for their professional dedication and outstanding achievement in support of the manned space flight program.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

September 30, 1996
KSC Contact: Patti Phelps
KSC Release No. 114-96-6B

BARBARA L. WEBER HONORED FOR ROLE IN SPACE PROGRAM

Barbara L. Weber, wife of Ed Weber, a former longtime resident of Lancaster, PA, was among 46 Kennedy Space Center (KSC) employees who were honored recently for their exemplary work at the nation's spaceport.

Born in Dorchester, MA, Weber graduated from Weymouth (MA) High School and received a bachelor of science degree in business administration in 1985 from the Rollins College campus at Patrick Air Force Base in Florida.

She is employed by NASA as the executive secretary and personal assistant to the deputy director of logistics. She joined the space center in 1969.

Weber and her husband, Ed, a 30-year employee of NASA who retired in 1994, live in Titusville, FL. They have five children and eight grandchildren.

The 46 employees selected were part of a contingent of some 250 NASA and contractor employees from throughout the space agency being honored for their professional dedication and outstanding achievement in support of the manned space flight program.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

September 28, 1996
KSC Contact: George H. Diller
KSC Release No. 115-96

NOTE TO EDITORS/NEWS DIRECTORS:
MARS PATHFINDER SPACECRAFT PHOTO OPPORTUNITY AT KSC OCT. 1

Mars Pathfinder, to be launched aboard a Delta rocket in December, is the subject of a news media photo opportunity on Tuesday, Oct. 1. The spacecraft will descend through the Martian atmosphere to land on the planet's surface and will deploy a small instrumented rover to investigate the terrain surrounding the spacecraft. Together, the Mars Pathfinder and rover will investigate the geology and elemental composition of the Martian rocks and soil, as well as the Martian atmosphere and surface weather.

Media representatives will be taken inside the clean room at the SAEF-2 spacecraft checkout facility located in the KSC Industrial Area. Because of the stringent planetary contamination controls in effect for this spacecraft, only small groups of people can be allowed into the clean room for a limited period. Therefore, media should allow additional time for this press opportunity since turns will have to be taken to go inside.

Those planning to attend are requested to wear long pants and closed-toe shoes. Clean room attire (bunny suits) will be required. Quality control personnel will request cleaning of photographic equipment with alcohol wipes which will be provided. No suede, leather or vinyl attire or accessories are permitted. Ladies are asked not to wear makeup. Special plastic bags will be provided for photographic accessories. No food, tobacco, lighters, matches, or pocket knives will be permitted inside the clean room. Electronic flash photography is permitted. The lighting in the facility is mercury vapor. Spokesmen from the Jet Propulsion Laboratory, builders of the spacecraft, will be available to answer questions and for interviews.

Those needing accreditation should contact the NASA News Center at 407/867-2468 by the close of business Monday, Sept. 30. Departure from the KSC News Center for SAEF-2 will be at 9:30 a.m. on Tuesday, Oct. 1.

The Mars Pathfinder spacecraft is scheduled for launch aboard a McDonnell Douglas Delta II rocket on Dec. 2 at 2:09 a.m. at the beginning of a 24-day launch opportunity which ends on Dec. 25. The liftoff will occur from Pad B at Launch Complex 17. Landing on Mars is planned to occur on July 4, 1997.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

October 1, 1996
KSC Contact: George H. Diller
KSC Release No. 116-96

MARS PATHFINDER PROCESSING MILESTONE TO BE SHOWN LIVE ON NASA TELEVISION TODAY

The Mars Pathfinder spacecraft which is undergoing final preparations and checkout for launch at the Kennedy Space Center will reach a major prelaunch processing milestone today and will be shown live on NASA Television.

The "Sojourner," the small rover to venture away from the Mars Pathfinder lander will be seen for the final time as the last of three "petals" on which the rover is mounted will be closed tomorrow. The petal containing the rover will not open again until the landing on Mars scheduled for July 4, 1997.

Explaining the activity as it occurs will be:

Brian Muirhead, Mars Pathfinder Deputy Project Manager, Jet Propulsion Laboratory
Curt Cleven, Mars Pathfinder Launch Operations Manager, Jet Propulsion Laboratory

The final closure is anticipated to occur at approximately 2:30 p.m. EDT. The exact time will depend on the spacecraft's readiness for this milestone and could be adjusted as the time for this event nears. A font will be shown as the time approaches serving as an advisory of when live television coverage will begin.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

October 2, 1996
KSC Contact: George H. Diller
KSC Release No. 117-96

NOTE TO EDITORS/NEWS DIRECTORS:
WAKE SHIELD FACILITY, ORFEUS-SPAS MEDIA EVENT SET FOR OCT. 4

The STS-80 payloads, the Wake Shield Facility 3 (WSF-3) and the Orbiting Retrievable Far and Extreme Ultraviolet Spectrometer Shuttle Pallet Satellite-2 (ORFEUS-SPAS 2), which will be launched aboard Space Shuttle Columbia next month is the subject of a news media photo on Friday, Oct. 4.

The Wake Shield Facility-3 is the third flight of the disk-shaped satellite primarily designed to generate an ultra-vacuum in space in which to grow advanced semiconductor high-purity thin films. The ORFEUS-SPAS 2 will make observations of celestial objects that emit most of their light in the ultraviolet wavelength not visible to the naked eye. These measurements will help scientists understand the life cycle of stars.

Media representatives will have the option of choosing to participate in either one or both of these opportunities. Media choosing to go for both spacecraft opportunities or for ORFEUS-SPAS only will depart the NASA News Center at 11:30 a.m. on Friday. Those wishing to participate in the Wake Shield Facility event only will depart the NASA News Center at 1 p.m. Spacecraft project officials will be on hand to discuss the spacecraft and do interviews.

Media representatives will be taken inside the clean rooms at the Multipurpose Payload Processing Facility (MPPF) in the KSC Industrial Area where ORFEUS-SPAS is located and Spacecraft Hangar AE on Cape Canaveral Air Station where the Wake Shield Facility is located. Those planning to attend are requested to wear long pants and closed-toe shoes. Clean room attire (bunny suits) will be required.

Quality control personnel may request cleaning of photographic equipment. Special plastic bags will be provided for photographic accessories. No suede, leather or vinyl are permitted inside the clean room. Also, no food, tobacco, lighters, matches, or pocket knives can be permitted. Electronic flash photography is allowed. The lighting in the MPPF is high pressure sodium (orange) and standard mercury vapor in Hangar AE.

Those needing accreditation should contact the KSC News Center at 407/867-2468 by the close of business Thursday, Oct. 2.

Space Shuttle Columbia is targeted for launch on STS-80 on Nov. 8 at 2:47 p.m. EST from Pad 39-B.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

October 4, 1996
KSC Contact: Hugh Harris
KSC Release No. 118-96

SPACE SHUTTLE INSULATION TO BE COMMERCIALLY PRODUCED FOR USE ON RACE CARS

Space Shuttle insulation will soon be commercially available to protect race car drivers from the searing heat they endure during competition through an agreement between NASA, Rockwell Space Systems, the insulation's developer, and BSR/TPS Products Inc., Mooresville, NC.

Kennedy Space Center Director Jay F. Honeycutt will place a special space certification seal on the first kit to be made from Space Shuttle orbiter Thermal Protection System (TPS) materials by the company in a special ceremony at 11:30 a.m. Oct. 8 at BSR's Lakeside Park facility.

The BSR thermal protection kit is the first commercial use of Shuttle TPS insulation. It also is the first product to bear the Mission HOME (Harvesting Opportunity for Mother Earth) official seal, an indicator that a product was developed directly from U.S. space program technology. Mission HOME is an effort by the U. S. Space Foundation, the National Space Society and major aerospace companies to inform Americans of the benefits of space.

The certification initiative was created as part of the Mission HOME's "Take Up Space" program, chaired by Apollo 13 Commander Jim Lovell. Companies earn the right to use the certification seal by undergoing review by a panel of technology experts.

The TPS tiles and blanket material protect the orbiters from temperatures as high as 3,000 degrees Fahrenheit experienced as they re-enter the Earth's atmosphere during the final phase of a Shuttle mission. BSR will manufacture blanket insulation kits for installation on stock cars that race in NASCAR events, as well as other types of race cars, through its nationwide catalog distribution system. Rockwell Space Systems developed the TPS material for NASA's fleet of Shuttle orbiters at KSC. KSC FORM 2-160A (REV. 10/92)

The insulation is the same type that has been tested and race-proven on Penske Racing Inc.'s No. 2 Ford Thunderbird driven by veteran NASCAR driver Rusty Wallace. Wallace has raced several times with the material and participated in an instrumented test at Daytona International Speedway in April 1996. KSC workers applied a prototype TPS insulation system on the car at the space center through a Space Act agreement in October 1995.

During the Daytona test, the insulation reduced temperatures in the cockpit of Wallace's car by 30 to 50 degrees. Without such protection, experts have estimated that temperatures inside the driver's cockpit during a race can reach up to 160 degrees. Although drivers are cooled with forced air systems and protected by fire-retardant suits, they have been burned and blistered by the tremendous heat transferred through the engine firewall, transmission tunnel and floor.

"This is a breakthrough," Wallace said at a press briefing after the Daytona test earlier this year. "I am totally impressed with this material. I feel that the TPS material helps the whole car run cooler, and the cooler the car is the better the performance."

Cooler cars will also increase the safety factor, since drivers will have better concentration and will be more alert,

Wallace said.

"This is a win-win situation, both for NASCAR and the space agency," Wallace said. "I want to give a huge endorsement to the racing community about what NASA has done to help us."

Space Act agreements are a part of NASA's Dual Use program, where the agency partners with industry to develop technology for use by the space center that also has potential for the commercial market. The original effort to install TPS material on Wallace's car at KSC was brought about through an agreement between Penske Racing, Rockwell and the space center's Tech-nology Programs and Commercialization Office.

Honeycutt, a racing fan, first recommended TPS insulation to NASCAR race team manager Bobby Allison. Allison then passed the concept along to Roger Penske. KSC employees worked with Penske's team to develop and perfect the final insulation kit design.

"We have a real opportunity to reach a group of Americans who otherwise don't realize how space impacts their lives," Honeycutt said in reference to the racing community and racing fans. "This is a great opportunity for us to promote space and respond to commercialization outreach."

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

October 7, 1996
KSC Contact: Dennis Armstrong
KSC Release No. 120-96

SCOTT CILENTO SELECTED AS SHUTTLE DISCOVERY FLOW DIRECTOR

W. Scott Cilento, a 1982 graduate of Heyworth High School in Heyworth, IL, and a current resident of New Smyrna Beach, FL, was recently selected as NASA Flow Director for the Space Shuttle Discovery at Kennedy Space Center (KSC), FL. This prestigious assignment is one of only four such positions in NASA.

Cilento earned a bachelor of science degree in electrical engineering from Southern Illinois University, Carbondale, IL, in 1987, and a masters of science in engineering management from the University of Central Florida, Orlando, FL, in 1993. He began his career at KSC in 1988.

In his new assignment as Flow Director for the Space Shuttle Discovery, Cilento will function as the primary interface for vehicle processing activities with Space Shuttle Program management. In addition, he will have overall responsibility for the prelaunch ground processing of the Shuttle Discovery including safety, cost effectiveness and scheduling timeliness impacting system tests, modifications and mission hardware integration for each mission. Prior to his selection as Flow Director, Cilento served as a NASA Convoy Commander for seven Shuttle missions. In this capacity, he was responsible for directing the activities of over 100 civil service and contractor employees and all vehicle traffic associated with post landing shuttle convoy operations including astronaut crew egress, time critical experiment removal and the safety of all personnel and flight hardware.

Cilento is the son of Will and Carlisle McCord of New Smyrna Beach, FL. He and his wife, the former Jodi Carl of Heyworth, are the parents of two children, Danielle and Scott, Jr.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

October 11, 1996
KSC Contact: Lisa Malone
KSC Release No. 121-96

ORBITER PROCESSING FACILITY ADDITION TO HOUSE SPACE SHUTTLE MAIN ENGINE OPERATIONS

Space Shuttle main engine (SSME) operations now housed in the Main Engine Shop in the Vehicle Assembly Building (VAB) at KSC will be moved to a 34,600-square-foot addition to Orbiter Processing Facility (OPF) 3 once work on this structure is completed in January 1998.

Ivey's Construction, Inc., Merritt Island, FL, has been awarded a $5,328,400 competitive contract for the construction of the SSME Processing Facility (SSMEPF). This work includes installation of heating, ventilation and air conditioning systems, plumbing and cabling, as well as high-pressure gas lines, power and communications lines. The company has 450 days from the Oct. 15 notice to proceed on the contract to complete this work.

The OPF addition will provide space to increase the capacity and efficiency of SSME operations. Movement of this operation out of the VAB was prompted by safety considerations to minimize the number of personnel and activities in this building where the Space Shuttle components are assembled prior to rollout to the launch pad.

The movement of all main engine pedestals, pneumatic panels, hydraulics test equipment and the engines themselves into the OPF addition will not take place until SSMEPF construction is complete. Activation of the facility is targeted for July 30, 1998.

The three SSME's generate approximately 375,000 pounds of thrust each during liftoff of the Space Shuttle, providing about 20 percent of the power needed to boost the space vehicle into low Earth orbit. They are the only reusable liquid-fueled rocket engines in existence and undergo prelaunch preparation in the Main Engine Shop before their installation into the Shuttle orbiters in the OPF.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

October 16, 1996
KSC Contact: Bruce Buckingham
KSC Release No. 122-96

PRESS INVITED TO COVER KSC's COMMUNITY APPRECIATION DAY

The first Kennedy Space Center Community Appreciation Day will be held on Saturday, Oct. 19, and members of the media are invited to come out for the event.

KSC's gates will be opened from 8 a.m. to 3 p.m. to anyone who has a Community Appreciation Day vehicle placard and who desires to visit many of the facilities used to prepare the Space Shuttle for launches and landings. Some of the facilities opened to the public include: the Vehicle Assembly Building, the Orbiter Processing Facility, the Launch Control Center and other various operational and payload facilities. Also, highlighting the day will be the Space Shuttle Columbia at pad 39B. The Rotating Service Structure will be opened and visitors will have a full, unobstructed view of the orbiter as they drive within a few hundred feet of the pad. Columbia is being prepared for launch in early November on mission STS-80.

Members of the media who wish to cover Saturday's event are not required to have a vehicle placard (unless they are bringing family members or guests) but they are required to obtain the proper credentials by close of business Friday, Oct. 18.

Once at KSC, members of the media will be permitted to drive without official escort to the areas that have been opened to the public. Maps of the sites will be available at the KSC Press Site which will be open to accommodate press interests.

Media who desire more information regarding KSC's Community Appreciation Day should call the KSC Press Site this week at 407-867-2468.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

October 17, 1996
KSC Contact: Dennis Armstrong
KSC Release No. 123-96-1

LARRY C. ELLIS SELECTED AS DIRECTOR, PROCESS INTEGRATION

Larry C. Ellis, a 1962 graduate of Crestview High School in Crestview, FL, and a current resident of Titusville, FL, was recently selected to the position of director, Process Integration at NASA's Kennedy Space Center (KSC).

Ellis earned a bachelor of science degree in electrical engineering from Auburn University in 1969. He began his career with NASA in 1965 as a power distribution systems engineer and most recently served as manager, Shuttle Processing and Operations Office and as acting manager, Process Integration. During his 31 year federal career he has received two Exceptional Service Medals and several group achievement awards and certificates of commendation.

In his new position as one of KSC's senior executives, he is responsible for the direction of over 3,400 civil service and contractor employees involved in the integration, operations research and analysis and problem resolution for all prelaunch processing, launch, landing and recovery operations. In addition, he provides systems engineering support for facility ground systems and test team management and engineering support for the launch execution team.

In his spare time, Ellis is active in church activities and enjoys playing golf. He is the son of Mrs. Emily R. Ellis of Crestview. He and his wife, the former Rogene McDonald of Meridian, MS, are the parents of one daughter, Apryl, and a son, Jason.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

October 17, 1996
KSC Contact: Dennis Armstrong
KSC Release No. 123-96-2

J. CHRIS FAIREY SELECTED AS DIRECTOR, QUALITY ASSURANCE

J. Chris Fairey, a 1965 graduate of George P. Butler High School in Augusta, GA, and a current resident of Titusville, FL, was recently selected to the position of director, Quality Assurance at NASA's Kennedy Space Center (KSC).

Fairey began his career with NASA in 1969, after earning bachelor of science degrees in physics and mathematics from Georgia Southern College, Statesboro, GA, earlier that same year. He worked in a variety of positions throughout the Apollo, Skylab and the Apollo Soyuz Test Project eras, and most recently served as flow director for the Space Shuttle Discovery and deputy director, Ground Engineering. He is the recipient of NASA's Exceptional Service Medal, Exceptional Engineering Achievement Medal, Astronaut Corps' Silver Snoopy Award, National Space Club's Eagle Manned Mission Success Award and several Group Achievement Awards.

In his new position as one of KSC's senior executives, Fairey is responsible for the management of all activities associated with the quality assurance function for the Space Shuttle, Space Station and the Expendable Launch Vehicle Programs at KSC, Cape Canaveral Air Station, FL, Vandenberg Air Force Base, CA, Rockwell Corporation's Shuttle Assembly Facility, Palmdale, CA, and all Shuttle vendor sites. As the director, Quality Assurance, he directs the activities of approximately 200 employees and provides oversight to all contractor operations involved in the accomplishment of related functions.

In his spare time, Fairey enjoys hiking, camping and woodworking. He and his wife, the former Glenda Perry of Augusta, GA, are the parents of two sons, Chad and Craig.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

October 17, 1996
KSC Contact: Dennis Armstrong
KSC Release No. 123-96-3

STEPHEN M. FRANCOIS SELECTED AS DIRECTOR, INTERNATIONAL SPACE STATION LAUNCH SITE SUPPORT

Stephen M. Francois, a 1966 graduate of Centralia Township High School in Centralia, IL, and a current resident of Titusville, FL, was recently selected as the director, International Space Station Launch Site Support at NASA's Kennedy Space Center (KSC).

Francois earned a bachelor of science degree in aeronautical and astronautical engineering from St. Louis University, St. Louis, MO, in 1971. Shortly thereafter, he began his career with NASA as a flight systems test engineer. Prior to his recent promotion, he headed KSC's Space Station Launch Site Support Office. Among his many awards and honors is the NASA Outstanding Leadership Medal, the Exceptional Service Medal, the Exceptional Achievement Medal and the KSC Center Director's Award.

In his new position as one of KSC's senior executives, he will be responsible for managing the activities of approximately 800 civil service and contractor employees involved in the planning, developing and validation of facilities, ground support equipment and checkout systems required for all International Space Station component processing, prelaunch and postlanding activities at KSC.

He is he son of Earl and Barbara Francois of Centralia, IL. He and his wife, the former Gayle Hassan of Carmi, IL, are the parents of three daughters, Leslie, Christine and Janette.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

October 17, 1996
KSC Contact: Dennis Armstrong
KSC Release No. 123-96-4

DAVID A. KING SELECTED AS DEPUTY DIRECTOR OF SHUTTLE PROCESSING

David A. King, a 1979 graduate of Sumter High School in Sumter, SC, and a current resident of Merritt Island, FL, was recently selected to the position of deputy director of Shuttle Processing at NASA's Kennedy Space Center (KSC).

King earned a bachelor of science degree in mechanical engineering from the University of South Carolina, Columbia, SC, in 1983, and a masters of business administration from the Florida Institute of Technology in 1991. He began his career with NASA in 1983 as a main propulsion engineer and most recently served as the flow director for the Space Shuttle Discovery and as the acting deputy director of the Installation Operations Directorate. He was a 1994 recipient of the NASA Exceptional Service Medal.

In his new position as one of KSC's senior executives, he assists the director in the management and oversight of all activities involving Space Shuttle processing and launch operations at the Kennedy Space Center. This includes primary responsibility for managing the current transition of day-to-day operations for Shuttle processing to a single prime contractor. Upon completion of this process, he will assist the Director of Shuttle Processing in the management of that major agency contract. The Shuttle Processing Directorate is currently responsible for a workforce of approximately 7,400 civil service and contractor employees.

In his spare time, King is active in church activities, plays golf and enjoys spending time with his children. He is the son of C. Leon and Angeline P. King of Sumter. He and his wife, the former Lisa Bashaw of Columbus, OH, are the parents of two daughters, Bethany and Katelyn.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

October 17, 1996
KSC Contact: Dennis Armstrong
KSC Release No. 123-96-5

JOEL R. REYNOLDS SELECTED AS DIRECTOR, SAFETY ASSURANCE

Joel R. Reynolds, a 1960 graduate of Lamar High School in Houston, TX, and a current resident of Titusville, FL, was recently selected to the position of director, Safety Assurance at NASA's Kennedy Space Center (KSC).

Reynolds earned a bachelor of science degree in industrial engineering from Texas A&M, College Station, TX, in 1964. He served as an officer in the Army Ordnance Corps from 1965 to 1966, serving one year in Vietnam where he was awarded the Army Commendation Medal. He began his career with NASA in 1969 as fire protection engineer and most recently served as the chief of the Safety Operations Division and acting director, Safety and Reliability. He is the recipient of three NASA Exceptional Service Medals, a NASA Group Achievement Award and the KSC Center Director's Award.

In his new position as one of KSC's senior executives, he is responsible for providing management and direction to KSC's safety and reliability programs including the oversight of more than 200 civil service and contractor employees.

In his spare time, Reynolds enjoys salt water fishing and windsurfing. He and his wife, the former Judy Olsen of Minneapolis, MN, are the parents of a son and a daughter.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

October 17, 1996
KSC Contact: Dennis Armstrong
KSC Release No. 123-96-6

RALPH R. ROE SELECTED AS DIRECTOR, PROCESS ENGINEERING

Ralph R. Roe, a 1978 graduate of Meadville Area High School in Meadville, PA, and a current resident of New Smyrna Beach, FL, was recently selected as the director, Process Engineering at NASA's Kennedy Space Center (KSC).

Roe attended the Air Force Academy for one year before transferring to the University of South Carolina, Columbia, SC, where he earned a bachelor of science degree in mechanical engineering in 1983. He received his masters degree in industrial engineering from the University of Central Florida, Orlando, FL, in 1992. He began his federal career at Kennedy Space Center in 1983 as a propulsion systems test engineer and most recently served as chief, Fluid Systems Division and acting director, Process Engineering. Among the honors and awards he has received are the NASA Exceptional Service Medal and selection as a NASA Space Flight Awareness Honoree.

In his new position as one of KSC's senior executives, he is responsible for the engineering management and technical expertise of more than 800 personnel involved in prelaunch, landing, recovery and turnaround operations for NASA's Space Shuttle fleet.

Roe is the son of Ralph and Rose Roe of Meadville. He and his wife, the former Lesa Benton of Gainesville, FL, are the parents of one son, Dalton.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

October 17, 1996
KSC Contact: Dennis Armstrong
KSC Release No. 123-96-7

JOHN J. "TIP" TALONE, JR. SELECTED AS DIRECTOR, SPACE STATION HARDWARE INTEGRATION OFFICE

John J. "Tip" Talone, Jr., a 1958 graduate of Knoxville Catholic High School in Knoxville, TN, and a current resident of Cocoa Beach, FL, was recently selected to the position of director, Space Station Hardware Integration Office at NASA's Kennedy Space Center (KSC).

Talone earned a bachelor of science degree in industrial engineering from the University of Tennessee, Knoxville, TN, in 1964, and the following year began his career with NASA. In recent years he has served as flow director for the Space Shuttles Columbia, Discovery and Endeavour and as a special assistant to the director of Kennedy Space Center. He is the recipient of numerous awards including two NASA Exceptional Service Medals, the Astronaut Corps' Silver Snoopy Award, co-recipient of the National Space Club's "Eagle Manned Success Award" and several Group Achievement Awards.

In his new position as one of KSC's senior executives, Talone will serve as the primary agent for the management and integration of overall ground processing for all U.S. International Space Station elements including scheduling, manufacture, assembly, product verification and successful launch. As the director, Space Station Hardware Integration Office, he will be responsible for the direction of approximately 75 employees.

In his spare time, Talone enjoys playing golf. He is the son of Mrs. Geraldine Johnson of Oak Ridge, TN.

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STS-80
Columbia
ORFEUS-SPAS-2/Wake Shield Facility-3

KSC Release No. 124-96
October 1996

Materials processing in space, astronomical observations, microgravity research, and spacewalk tests and training will highlight the STS-80 Space Shuttle mission aboard Columbia, the seventh and last Shuttle flight of 1996.

The primary objectives of the 80th Space Shuttle mission are the deployment, operation and retrieval of two scientific satellites which have flown before.

The Orbiting Retrievable Far and Extreme Ultraviolet Spectrometer-Shuttle Pallet Satellite-2 (ORFEUS-SPAS-2) will be deployed first to make observations and take measurements of celestial objects that emit most of their light or radiation in the invisible, ultraviolet band of the electromagnetic spectrum. STS-80 will be the second flight of ORFEUS-SPAS, which is a cooperative project of NASA and the German Space Agency (DARA). ORFEUS-SPAS will fly free of the Shuttle for slightly more than 13 days before it is retrieved for the return to Earth.

For three days during that nearly two-week period, the other major payload, the Wake Shield Facility-3 (WSF-3), also will fly free of the orbiter, creating an ultra-vacuum in its wake to grow thin films for next-generation electronics.

STS-80 will mark the first time that two payloads will be deployed, free-flown simultaneously, and later retrieved during the same Shuttle flight.

Other goals of the 16-day mission include conducting a variety of microgravity research experiments and performance of two six-hour spacewalks to continue the flight test and evaluation of hardware and procedures for future extravehicular activities (EVAs), especially in the assembly and maintenance of the International Space Station.

The 21st flight of Columbia (OV-102) will begin with liftoff from Pad B, Launch Complex 39, into a 219-statute-mile (190-nautical-mile/352-kilometer) orbit at a 28.5-degree angle to the equator. The mission is scheduled to conclude with a landing at KSC's Shuttle Landing Facility.

Leading the experienced five-member STS-80 crew will be two-time space flyer Kenneth D. Cockrell as mission commander. A captain in the U.S. Naval Reserve, Cockrell was a mission specialist on STS-56 in 1993 and the pilot on STS-69 in 1995.

Assisting him at the controls will be Pilot Kent V. Rominger (Cmdr., USN), who also served in that capacity on STS-73 in 1995.

The three mission specialists are Tamara E. Jernigan and Thomas D. Jones, who will perform both EVAs, and Story Musgrave, the intravehicular crew member assisting the spacewalkers from the crew cabin.

Jernigan, who has a doctorate in space physics and astronomy, has flown three times, as a mission specialist on STS-40 in 1991 and on STS-52 in 1992, and as payload commander on STS-67 in 1995.

Jones, who has a doctorate in planetary science, was a mission specialist on STS-59 and payload commander of STS-68, both flights of the Space Radar Laboratory in 1994.

On STS-80, Musgrave will equal American astronaut John Young's record of six space flights. At 61, he also will be the oldest human to fly in space. He was selected by NASA as a scientist-astronaut in 1967, but did not fly until the

Space Shuttle program. Musgrave, who has a doctorate in medicine, served as a mission specialist on STS-6 in 1983, STS 51-F in 1985, STS-33 in 1989 and STS-44 in 1991, and as the payload commander on the first Hubble Space Telescope servicing mission, STS-61 in 1993.

ORFEUS-SPAS-2

About seven hours after launch, ORFEUS-SPAS-2 will be deployed to study the life cycle of stars and the nature of the interstellar medium. Many of the celestial objects it will look at have never or rarely been observed in the far and extreme ultraviolet range. This part of the electromagnetic spectrum is obscured from ground-based observations by Earth's atmosphere.

The free-flying SPAS platform, which is about the size of the flatbed of a large pickup truck, will operate some 40 miles (64 kilometers) behind the Shuttle before its retrieval and reberthing in the payload bay on flight day 14.

Two spectrographs, the German-built Far Ultraviolet Spectrograph (FUV) and the American-designed Extreme Ultraviolet Spectrograph (EUV), will share the single main German-built ORFEUS telescope. Its 39-inch-diameter (1-meter) mirror is coated with iridium to improve its light-gathering power in the ultraviolet. A third spectrograph, the American-built Interstellar Medium Absorption Profile Spectrograph (IMAPS), is attached to the German ASTRO-SPAS platform. All of the instruments flew on the first ORFEUS-SPAS mission, STS-51 in 1993.

STS-80 will build on the data gathered during STS-51, when the payload operated for less than half of the time it will on this flight. For this mission, about 50 percent of the observing time will be made available to the general science community. More than 40 research teams from around the world will analyze data from the mission. DARA also has developed an innovative educational program to use ORFEUS-SPAS data in teaching several subjects to students in 170 schools throughout Germany.

Other non-astronomy payloads on ORFEUS-SPAS-2 include the Surface Effects Sample Monitor (SESAM) to investigate the impact of the space environment on materials and surfaces in different phases of a Shuttle flight; the ATV Rendezvous Pre-Development Project (ARP) investigation, part of the European Space Agency's Automated Transfer Vehicle development program; and the Student Experiment on ASTRO-SPAS known as SEAS, an electrolysis experiment built by German high school students.

Control of ORFEUS-SPAS will be via the SPAS Payload Operations Center (SPOC) at KSC.

Wake Shield Facility-3

While ORFEUS-SPAS orbits Earth, the crew on flight day 4 will use the orbiter's robot arm to deploy the second major payload, Wake Shield Facility-3, a 12-foot-diameter (3.6-meter) stainless steel disk which has flown twice before.

While low Earth orbital space is considered a moderate natural vacuum, it still has atmospheric traces that could contaminate crystal growth. While sweeping through space at an orbital speed of approximately 18,000 miles per hour (28,962 kilometers per hour), WSF brushes aside these trace particles and forms a wake, much like the wake of a boat in the water. This creates an ultra-vacuum -- far superior to vacuums created in laboratories on Earth -- where near perfect crystals of semiconductor compounds such as gallium arsenide can be grown.

During its three days of operations, up to seven thin films are scheduled to be grown on the wake side of the approximately 4,600-pound (2,086-kilogram) platform. This method of growing crystals in an atom-by-atom, layer-by-layer manner in a vacuum environment is called molecular beam epitaxy.

While most electronic components used today are made of the semiconductor silicon, other types of semiconductor materials -- particularly compound semiconductors -- have the potential of producing higher-performance electronic and opto-electronic devices. Epitaxial thin film materials grown on WSF could result in higher-efficiency infrared lasers, higher-frequency transistors for personal communications systems, higher-efficiency energy converters for hybrid electric vehicles and remote electric power systems, and low-noise transistors for wireless communications.

WSF will fly at a distance of about 20-25 nautical miles (37-46 kilometers) behind Columbia and no less than 25 nautical miles (46 kilometers) from ORFEUS-SPAS before its retrieval by Columbia on flight day 7.

The Wake Shield Facility was designed, built and is operated by a NASA Commercial Space Center, the Space Vacuum Epitaxy Center at the University of Houston, in conjunction with its industrial partner, Space Industries Inc. of Houston. It previously flew on STS-60 in 1994 and STS-69 in 1995.

Extravehicular Activities

Spacewalks by Jernigan and Jones on flight days 10 and 12 will be the fifth set in the continuing series of EVA Development Flight Tests to evaluate equipment and procedures and to build spacewalking experience in preparation for the space station, the initial elements of which are scheduled to be launched from the United States and Russia in 1997.

The first spacewalk will evaluate use of a 6-foot-tall (1.8-meter) crane to move both big and small Orbital Replacement Units (ORUs), which are any piece of equipment that may be replaced on the exterior of the space station such as large batteries.

On the second EVA, spacewalkers will evaluate EVA tethers and tools, and work with a large ORU from the Portable Work Platform, a mobile work site at the end of the space station's robotic arm.

Other Experiments

Among other microgravity experiments to be conducted during the mission are two ongoing collaborative efforts of NASA and the National Institutes of Health (NIH). NIH-R4 will study the role of calcium in blood pressure regulation and function in rats; NIH-C6 will further test the hypothesis that the absence of gravity has a negative effect on bone formation.

A collection of student-designed experiments comprise the Space Experiment Module, which is designed to increase educational access to space and encourage participation by students.

Biological Research in Canister will investigate the influence of gravity on genetically altered tomato and tobacco seedlings.

Visualization in an Experimental Water Capillary Pumped Loop will study use of such technology as an option for thermal spacecraft management.

The Commercial Materials Dispersion Apparatus Instrumentation Technology Associates Experiment is for commercial biotechnology research in such fields as diabetes treatment, development of natural pesticides, breast cancer inhibitors, and sealants to protect structures against acid rain.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

October 18, 1996
KSC Contact: Bruce Buckingham
KSC Release No. 125-96

TCDT MEDIA OPPORTUNITY WITH STS-80 CREW SET FOR NEXT WEEK

The crew of Space Shuttle mission STS-80 will be at Kennedy Space Center next week for the Terminal Countdown Demonstration Test (TCDT).

The TCDT is held prior to each Space Shuttle flight providing the crew of each mission opportunities to participate in simulated countdown activities at KSC. The TCDT ends with a mock launch countdown culminating in a simulated main engine cutoff scenario. The crew also spends time undergoing emergency egress training exercises at the pad and they have an opportunity to view and inspect their mission payloads in the orbiter's payload bay.

The five-member crew of mission STS-80 is scheduled to arrive at KSC's Shuttle Landing Facility (SLF) at about 4:30 p.m. Sunday, Oct. 20. No media opportunity will be available for this event.

On Tuesday, news media representatives will have an opportunity to speak informally with and photograph the crew at Pad 39B. Media interested in participating in this question and answer session should be at the KSC Press Site by 11:45 a.m. Tuesday for transport to the pad.

On Wednesday, another photo opportunity is available as the crew depart their quarters for the launch pad. News media should be at the Press Site by 6:45 a.m. Wednesday to be transported to the Operations and Checkout Building for crew departure, which is set for 7:45 a.m.

The crew will arrive at the pad and begin to board the Shuttle Columbia at about 8:15 a.m. Wednesday and remain on board through the end of the test. The simulated main engine cut-off will occur at about 11 a.m.

Media should contact the KSC Press Site to obtain proper badging for the events that are open to them.

Following TCDT, the crew is scheduled to depart KSC for their homes in Houston for final flight preparations.

Columbia is now targeted for launch on Nov. 8 at 2:47 p.m. EST. Mission STS-80 will feature the Orbiting and Retrievable Far and Extreme Ultraviolet Spectrometer (ORFEUS-SPAS-2) and the Wake Shield Facility. The mission is expected to last about 16 days.

Crew members for mission STS-80 are: Commander Ken Cockrell; Pilot Kent Rominger; and Mission Specialists Tamara Jernigan, Thomas Jones and Story Musgrave.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

October 23, 1996
KSC Contact: Joel Wells
KSC Release No. 126-96

NASA AND THE RED PEPPER SOFTWARE COMPANY MAKE A "HOT ITEM"

An advanced NASA software technology that schedules pre-launch work for the entire Space Shuttle fleet, was spiced-up by the Red Pepper Software Company, of San Mateo, CA, to help some of America's corporate giants respond to customer demands and maximize their profits.

NASA's unique Ground Processing Support System (GPSS), is a computer-based scheduling tool that helps planners manage the thousands of overlapping activities that prepare each of NASA's four Space Shuttle orbiters for their respective launch days.

While technicians repair the delicate heat shielding tiles on an orbiter, other workers may be modifying the crew module, and simultaneously others may be installing a payload. GPSS reacts to any clogs in the refurbishment process and provides real-time solutions to schedule conflicts, minimizing a possible "domino effect" impact on the fleet and reducing processing costs.

Now, Fortune 500 companies like Texas Instruments, Bausch & Lomb, Coors and Hewlett Packard have begun to apply this space-age technology to their diverse industries. "We were looking for a tool to help manage our worldwide business transactions from one facility in California," said Tom Davis, Hewlett Packard Home Products Division. "We've found that tool in Red Pepper's ResponseAgentsTM."

ResponseAgentsTM are the commercial software systems inspired by GPSS. They help production and distribution centers satisfy customer demands by optimizing materials, capacity and labor in real time. They are designed to supplement existing transactional and shop control systems.

"Today's market place is unpredictable and requires flexibility in order to respond to customer requirements. ResponseAgents are a new, proactive approach to planning," said Monte Zweben, president of Red Pepper. "Though we've done much work to bring this technology to the commercial market, the roots of this growing product line can be traced directly back to NASA research."

Zweben, a former deputy branch chief at Ames Research Center, lead a team of engineers from Ames, KSC and Lockheed Space Operations Company in the development of GPSS. He saw how the system would reduce Shuttle turn-around time, increase operational efficiency and reduce cost. He then envisioned a commercial version that would offer similar benefits to industry.

In 1993 Zweben left NASA and established Red Pepper Software, planning to couple the agency's technology with Red Pepper's commercial concepts. Kennedy Space Center granted the copyright license for GPSS to Red Pepper in August of 1993, allowing it to enhance the system for commercial application.

"It is a part of NASA's mission to transfer new technology into the private sector. Our determination with that of our industry partner made this success story possible," said Bill Sheehan, chief of KSC's Commercialization Office.

As Red Pepper quickly established itself as a leader in the computer software market, it attracted the attention of a leading worldwide provider of client/server business software. People Soft, Inc. recently acquired Red Pepper at a market value of $225 million. Red Pepper employed more than 100 workers at the time of the merger.

While Red Pepper, now an independent unit of People Soft, accelerates investments in research looking for broader applications of this technology, NASA focuses on its intended use. "Though we are very proud of KSC's role in the commercial success of this project, we will continue to enhance GPSS for support of future applications in launch vehicle processing," said Nicole Passonno, NASA's task manager for GPSS.

The technological stimulation and positive economic impact resulting from this cooperation demonstrate that mixing NASA technology with industry's needs is a recipe for success.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

October 31, 1996
KSC Contact: George H. Diller
KSC Release No. 127-96

Note to Editors/News Directors:
MARS GLOBAL SURVEYOR SCHEDULED FOR LAUNCH NOV. 6

The launch of NASA's Mars Global Surveyor spacecraft aboard a McDonnell Douglas Delta II rocket is scheduled for Wednesday, Nov. 6 during the first of two launch opportunities. The launch time is 12:11 p.m. EST with a second opportunity available at 1:16 p.m. EST if necessary. Liftoff will occur from Launch Complex 17A on Cape Canaveral Air Station. The 20-day launch opportunity extends through Nov. 25.

Mars Global Surveyor will orbit the red planet from pole-to-pole every two hours and is designed to provide global maps of surface topography, illustrate the distribution of minerals and monitor global weather conditions. Observations will be performed for a full Martian year, the equivalent of approximately two Earth years. The spacecraft will then be used as a data relay station for signals from other spacecraft which will land on Mars.

The Mars Global Surveyor has completed final checkout and was mated to the McDonnell Douglas Delta II rocket on Oct. 22.

PRELAUNCH NEWS CONFERENCE

A prelaunch news conference is scheduled for Tuesday, Nov. 5 at 2:30 p. m. in the KSC News Center auditorium and will be carried live on NASA Television. Participating in the briefing will be:

- Dr. Wesley T. Huntress, Jr., Associate Administrator for Space Science, NASA Headquarters
- Floyd Curington, NASA Launch Manager, Kennedy Space Center
- Don Miller, Launch Vehicle Manager, Goddard Space Flight Center
- Rich Murphy, Launch Site Director, McDonnell Douglas
- Glenn Cunningham, Mission Director/Project Manager, Jet Propulsion Laboratory
- Bud McAnally, Spacecraft Program Manager, Lockheed Martin Astronautics
- Joel Tumbiolo, Launch Weather Officer, Department of the Air Force

Immediately after the news conference there will be a replay of the Oct. 16 Mars Global Surveyor mission science briefing on NASA Television.

ACCREDITATION

Those media without permanent accreditation who wish to cover the launch of Delta/Mars Global Surveyor including the prelaunch news conference on L-1 day should send a letter of request to the NASA-KSC News Center on news organization letterhead. It should include name and Social Security number or passport number. Letters should be faxed to 407/867-2692 or addressed to:

Mars Global Surveyor Launch Accreditation
NASA PA-MSB

Kennedy Space Center, FL 32899

Mars Global Surveyor mission badges may be picked up at the News Media Pass & Identification building located near Gate 2 on SR 3, Merritt Island, on Monday, Nov. 4, from noon - 4:30 p.m., and on Tuesday, Nov. 5, from 8 a.m. - 4:30 p.m. On launch day, Mars Global Surveyor mission badges will be available at Gate 1 on Cape Canaveral Air Station located on SR 401 at 10:30 a.m., immediately prior to press departure for Press Site 1.

STS-80 mission badges will be valid for the prelaunch news conference on L-1 day. However, a Delta/Mars Global Surveyor mission badge is required for all media covering the launch from Press Site 1 on launch day. For further information on Mars Global Surveyor launch accreditation contact Selina Scorah at the NASA News Center at 407/867-2468.

REMOTE CAMERAS

On Tuesday, Nov. 5, at noon, prior to the prelaunch news conference, a NASA van will depart from the NASA-KSC News Center for Launch Complex 17 for media photographers who wish to establish remote cameras at the pad.

LAUNCH DAY COVERAGE

On launch day, after the mobile service tower has been retracted from around the Delta II rocket at Complex 17, a photo opportunity will be available for the news media. A convoy will depart Gate 1 on Cape Canaveral Air Station located on State Road 401 at 7 a.m.

Media covering the launch should assemble at Gate 1 on Cape Canaveral Air Station at 10:30 a.m. to convoy to Press Site 1. After launch and spacecraft separation, media may leave via Gate 1 or may convoy under escort to the KSC News Center for the post-launch press conference.

The codaphone will also carry Delta/Mars Global Surveyor prelaunch status reports beginning at L-2 days, on Monday, Nov. 4, and may be dialed at 407/867-2525.

NASA TELEVISION AND "V" CIRCUIT COVERAGE

On launch day, countdown coverage will begin at 10:30 a.m. and continue through spacecraft separation at approximately launch plus 50 minutes. A post-launch news conference will be held at the KSC News Center at 2:30 p.m. to discuss the flight of the Delta vehicle and the state of health of the Mars Global Surveyor spacecraft.

NASA Television is available on Spacenet 2, transponder 5, channel 9 located at 69 degrees West longitude. Audio only of all Delta/Mars Global Surveyor activities will also be available on the "V" circuits which may be dialed directly at 407/867-1220, x1240 or x1260.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

October 28, 1996
KSC Contact: Lisa Malone
KSC Release No. 128-96

NASA MANAGERS DEFER SETTING STS-80 LAUNCH DATE PENDING RESOLUTION OF SRM NOZZLE ISSUE

At the conclusion of today's STS-80 Flight Readiness Review (FRR) meeting, NASA managers decided to conduct a follow-up FRR on Nov. 4 to review additional analysis that is being conducted on one Reusable Solid Rocket Motor (RSRM) nozzle erosion. A launch date will be set at this review.

Meanwhile, the Kennedy Space Center launch team continues to prepare Columbia for an option to launch as early as Nov. 8, pending further review of the nozzle analysis.

The analysis being conducted concerns the insulation material located in the nozzle of the RSRM. During STS-79 post-flight inspection, technicians found the insulation in the nozzle throat area had experienced greater than normal erosion in the right hand RSRM nozzle. Although the erosion was more than usual, it presented no safety of flight issue with the STS-79 launch.

"Our decision to defer setting a launch date today allows the team time to insure the RSRM nozzles are safe to fly," said Space Shuttle Program Manager Tommy Holloway. "We will take whatever time is necessary to fully understand the phenomenon seen on the STS-79 boosters before we proceed with the STS-80 launch."

The STS-80 mission is NASA's final Shuttle flight scheduled for 1996. During the planned 16-day mission, Columbia's astronauts will deploy and retrieve two science satellites and two of the astronauts will conduct a pair of space walks to fine-tune techniques which will be used during the assembly of the International Space Station.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

November 20, 1996
KSC Contact: Joel Wells
KSC Release No. 129-96

NEW SHUTTLE PAYLOAD INSPECTION DEVICE COULD FIND USE IN AEROSPACE, AUTOMOTIVE INDUSTRY

A recent NASA-industry cooperative agreement to develop a next-generation inspection device will result In a lightweight, safer tool that can be used by the space agency as well as in the aerospace and automotive industries.

The device, an advanced infrared reflectometer, will be developed for NASA by AZ Technology, Inc., Huntsville, AL, for the detection of defects in Space Shuttle payload bay insulation material. Under the 18-month agreement, the company will develop and test a prototype to KSC specifications.

Once testing is complete, the company hopes to produce this tool for both NASA and the commercial market. The agreement will reduce development time and costs of the instrument for both AZ Technology and NASA. Cooperative and Space Act agreements are a low-cost means for the agency to transfer technology developed for the space program to private industry and the public.

"Several aerospace companies have already expressed an interest in this technology for the inspection of thermal shields for commercial spacecraft once it becomes available," said Kristen Riley of KSC's Technology Programs and Commercialization Office. "The automotive industry is also considering the use of the new reflectometer to inspect the thickness and quality of vehicle paint and metal during production."

The new unit will replace one that has been in use at KSC and other NASA centers to determine the effectiveness of thermal insulation blankets.

These blankets protect sensitive instruments aboard satellites and hardware mounted in the Shuttle orbiter's payload bay from the intense cold of space and heat radiation from the sun.

The two-piece, 1960's-era reflectometer weighs about 50 pounds, is time-consuming to use and poses a safety hazard because it is difficult to handle. It still must be employed, though, since proper inspection of the blankets is critical to the performance of payload during a Shuttle mission.

The new, one-piece reflectometer with attached probe will cut payload processing times because it will be quicker, easier and safer to use than the old unit, said KSC lead project engineer John Giles. The 15-to-20-pound unit can be carried in a backpack and incorporates the latest digital technology to store inspection data. NASA field centers have supported the KSC effort to develop the new unit, since it will be of particular use to them in the construction of International Space Station components, satellites and payload bay experiment packages.

"We can also save time and money since we will be able to use the new unit to inspect insulation inside the Shuttle orbiter payload bay," Giles said. "One reason why we cannot use the old unit in the payload bay now is because of potential damage to the orbiter."

Anyone who would like further information about the new reflectometer technology should contact Riley at (407) 867-

2780. Cooperative agreements are a part of her office's Dual Use Program, where the center partners with industry to develop technology for use by the space agency that also has potential for the commercial market.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

November 1, 1996
KSC Contact: Lisa Malone
KSC Release No. 130-96

Notice to Editors/News Directors:
MISSION STS-80 EVENTS, NEWS CENTER OPERATING HOURS SET

News conferences, events and operating hours for KSC's News Center have been set for the Nov. 8 launch of the Space Shuttle Columbia on Mission STS-80. These events are scheduled to be carried live on NASA Television unless noted (please refer to the STS-80 TV schedule for exact times).

Pending the outcome of the Flight Readiness Review on Nov. 4, the launch countdown will begin at the T-43-hour mark at 1 p.m. EST Tuesday. Launch is currently targeted for 2:47 p.m. EST on Friday, Nov. 8. The launch window is open for 2 1/2 hours.

The five STS-80 crew members are scheduled to arrive at KSC on Monday, Nov. 4, at about 6:30 p.m. They will leave Ellington Field, Houston, after the completion of the FRR, which begins at 3 p.m. on Nov. 4. News media representatives wishing to cover crew arrival should check with the News Center by 5:30 p.m. Monday to determine the exact time of departure for the Shuttle Landing Facility.

Mission STS-80 launch day coverage will feature views of the flight crew as they are being strapped into their seats on Columbia's flight deck.

For this mission, office hours have been structured to accommodate the ORFEUS-SPAS science briefings which will originate from KSC on selected days of the mission.

News media representatives with proper authorization may obtain STS-80 mission credentials at the Pass and Identification Building on State Road 3 on Merritt Island.

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STS-80 BRIEFING & EVENTS SCHEDULE
(all times are in EST and conferences are held inside the KSC Press Site auditorium)

L-4 Days - Monday, Nov. 4

- STS-80 flight crew arrival (live) ---- **about 6:30 p.m.**
  (crew will depart Ellington after completion of FRR)

L-3 Days - Tuesday, Nov. 5

- Countdown Status Briefing ---- **9 a.m.**
  John Guidi, Shuttle Test Director
  JoAnn Leotta, STS-80 Payload Operations Engineer
  Ed Priselac, Shuttle Weather Officer

- Launch countdown begins ---- **1:00 p.m.**
- Mars Global Surveyor pre-launch conference ---- **2:30 p.m.**

L-2 Days - Wednesday, Nov. 6

- Countdown Status Briefing ---- **9:00 a.m.**
  Doug Lyons, NASA Test Director
  Roelof Schuiling, STS-80 Payload Manager
  Ed Priselac, Shuttle Weather Officer
- Mars Global Surveyor launch coverage begins ---- **10:30 a.m.**
- Mars Global Surveyor launch ---- **12:11 p.m. or 1:16 p.m.**
- Mars Global Surveyor post-launch conference ---- **2:30 p.m.**

L-1 Day - Thursday, Nov. 7

- Pre-launch News Conference ---- **10:00 a.m.**
  (or immediately following the management team's meeting)
  Ron Dittemore, Manager Shuttle Program Integration, Johnson Space Center
  Dr. Wesley Huntress, Ass. Admin., Office of Space Science, NASA HQ
  Ed Gabris, Director, Space Processing, Office of Life and Microgravity Sciences, NASA HQ
  Manfred Otterbein, Head, Science & Infrastructure, DARA
  Bob Sieck, Director of Shuttle Operations, KSC
  Capt. Scott Jacobs, Launch Weather Officer
- Remote Camera Setup at Pad ---- **10:30 a.m.**
- News media orientation tour (optional depending on interest) ---- **TBD**
- Rotating Service Structure moves/night photography opportunity ---- **8:00 p.m.**
  (press departure at 7 p.m.)

Launch Day - Friday, Nov. 8

- Tanking begins ---- **approx. 6:00 a.m.**
- NASA Television live launch programming begins ---- **8:00 a.m.**
- Launch of Columbia ---- **2:47 p.m.**
- Post-launch press conference ---- **L + 1 hour**
  Loren Shriver, manager, Space Shuttle Program Launch Integration
  Jim Harrington, KSC Launch Director

KSC News Center office hours for STS-80
(hours may be adjusted for in-flight events)

(Launch minus 4 days) Monday, Nov. 4	8:00 a.m. - 8:00 p.m.
(Launch minus 3 days) Tuesday, Nov. 5	8:00 a.m. - 4:30 p.m.
(Launch minus 2 days) Wednesday, Nov. 6	7:00 a.m. - 6:30 p.m.
(Launch minus 1 day) Thursday, Nov. 7	8:00 a.m. - 12 midnight
(Launch day) Flight day 1, Friday, Nov. 8	4:30 a.m. - 7:00 p.m.
Flight days 2-3, Nov. 9-10	4:00 p.m - 6:00 p.m.
Flight day 4, Nov. 11 (Veteran's Day)	CLOSED
Flight day 5, Nov. 12	8:00 a.m. - 8:30 p.m.
Flight days 6-7, Nov. 13-14	8:00 a.m. - 4:30 p.m.
Flight day 8, Nov. 15	8:00 a.m. - 10 p.m.
Flight days 9-10, Nov. 16-17	CLOSED
Flight day 11, Nov. 18	4:30 a.m. - 10:30 p.m.
Flight days 12-14, Nov. 19-21	8:00 a.m. - 4:30 p.m.
Flight day 15, Nov. 22	8:00 a.m. - 10:00 p.m.
Flight day 16, Nov. 23	9:00 a.m. - 3:00 p.m.
Flight day 17, Nov. 24 (Landing)	4:30 a.m. - 3:00 p.m.

(Times may vary and be adjusted in real time depending on mission events and timelines.)

News media representatives may obtain STS-80 mission credentials at the Pass and Identification Building at Gate 2

on State Road 3, Merritt Island, during the following times:

Monday, Nov. 4 -- 12 noon to 4:30 p.m.
Tuesday, Nov. 5 -- 8 a.m. to 4:30 p.m.
Wednesday, Nov. 6 -- 8 a.m. to 4:30 p.m.
Thursday, Nov. 7 -- 8 a.m. to 4:30 p.m.
Friday, Nov. 8 -- 8 a.m. to 2 p.m.

News media with annual Shuttle credentials are reminded to sign the log book at the photo and interview counter in the News Center.

NEWS MEDIA ARE REQUIRED TO BE UNDER PUBLIC AFFAIRS ESCORT EXCEPT WHEN DRIVING TO THE NEWS CENTER OR THE COMPLEX 39 CAFETERIA.

NEWS MEDIA ARE ALLOWED AT THE PRESS SITE ONLY WHEN PUBLIC AFFAIRS PERSONNEL ARE ON DUTY AND THE NASA NEWS CENTER IS OPEN. THIS IS NOT A 24-HOUR DAY OPERATION.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

November 8, 1996
KSC Contact: Lisa Malone
KSC Release No. 130-96 (Rev. A)

Notice to Editors/News Directors
MISSION STS-80 EVENTS, NEWS CENTER OPERATING HOURS SET

News conferences, events and operating hours for KSC's News Center have been set for the Nov. 15 launch of the Space Shuttle Columbia on Mission STS-80. These events are scheduled to be carried live on NASA Television unless noted (please refer to the STS-80 TV schedule for exact times).

Pending the outcome of the Flight Readiness Review on Nov. 11, the launch countdown will begin at the T-43-hour mark at 1 p.m. EST Tuesday. Launch is currently targeted for 2:50 p.m. EST on Friday, Nov. 15. The launch window is open for 2 1/2 hours.

The five STS-80 crew members are scheduled to arrive at KSC on Monday, Nov. 11, at about 6:30 p.m. They will leave Ellington Field, Houston, after the completion of the FRR, which begins at 1 p.m. that day. News media representatives wishing to cover crew arrival should check with the News Center by 5:30 p.m. Monday to determine the exact time for press departure for the Shuttle Landing Facility.

Mission STS-80 launch day coverage will feature views of the flight crew as they are being strapped into their seats on Columbia's flight deck.

For this mission, office hours have been structured to accommodate the ORFEUS-SPAS science briefings which will originate from KSC on selected days of the mission.

News media representatives with proper authorization may obtain STS-80 mission credentials at the Pass and Identification Building on State Road 3 on Merritt Island. (Refer to the schedule on Page 3.)

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STS-80 BRIEFING & EVENTS SCHEDULE
(all times are in EST and conferences are held inside the KSC Press Site auditorium)

L-4 Days - Monday, Nov. 11

- STS-80 flight crew arrival (live) ----- **about 6:30 p.m.**
  (crew will depart Ellington after completion of FRR)

L-3 Days - Tuesday, Nov. 12

- Countdown Status Briefing ----- **9:00 a.m.**
  John Guidi, Shuttle Test Director
  Roelof Schuiling, STS-80 Payload Manager
  Ed Priselac, Shuttle Weather Officer

- Launch countdown begins ----- **1:00 p.m.**

L-2 Days - Wednesday, Nov. 13

- Countdown Status Briefing ----- **9:00 a.m.**
  Doug Lyons, NASA Test Director
  Roelof Schuiling, STS-80 Payload Manager
  Ed Priselac, Shuttle Weather Officer

L-1 Day - Thursday, Nov. 14

- Pre-launch News Conference ----- **10:00 a.m.**
  (or immediately following the management team's meeting)
  Tommy Holloway, Shuttle Program Manager, Johnson Space Center
  Dr. Wesley Huntress, Ass. Admin., Office of Space Science, NASA HQ
  Ed Gabris, Director, Space Processing, Office of Life and Microgravity Sciences, NASA HQ
  Manfred Otterbein, Head, Science & Infrastructure, DARA
  Bob Sieck, Director of Shuttle Operations, KSC
  Capt. Scott Jacobs, Launch Weather Officer
- Remote Camera Setup at Pad ----- **10:30 a.m.**
- News media orientation tour ----- **1:00 p.m.**
- Rotating Service Structure moves/night photography opportunity ----- **8:00 p.m.**
  (press departure at 7 p.m.)

Launch Day - Friday, Nov. 15

- Tanking begins ----- **approx. 5:30 a.m.**
- NASA Television live launch programming begins ----- **8:00 a.m.**
- Launch of Columbia ----- **2:50 p.m.**
- Post-launch press conference ----- **L + 1 hour**
  Loren Shriver, manager, Space Shuttle Program Launch Integration
  Jim Harrington, KSC Launch Director

KSC News Center office hours for STS-80
(hours may be adjusted for in-flight events)

(Launch minus 4 days) Monday, Nov. 11	12:00 noon - 7:30 p.m.
(Launch minus 3 days) Tuesday, Nov. 12	8:00 a.m. - 4:30 p.m.
(Launch minus 2 days) Wednesday, Nov. 13	8:00 a.m. - 4:30 p.m.
(Launch minus 1 day) Thursday, Nov. 14	8:00 a.m. - 12:00 midnight
(Launch day) Flight day 1, Friday, Nov. 15	4:30 a.m. - 7:00 p.m.

(Times may vary and be adjusted in real time depending on mission events and timelines.)

News media representatives may obtain STS-80 mission credentials at the Pass and Identification Building at Gate 2 on State Road 3, Merritt Island, during the following times:

Tuesday, Nov. 12 -- 8:00 a.m. to 4:30 p.m.
Wednesday, Nov. 13 -- 8:00 a.m. to 4:30 p.m.
Thursday, Nov. 14 -- 8:00 a.m. to 4:30 p.m.
Friday, Nov. 15 -- 8:00 a.m. to 2:00 p.m.

News media with annual Shuttle credentials are reminded to sign the log book at the photo and interview counter in the News Center.

NEWS MEDIA ARE REQUIRED TO BE UNDER PUBLIC AFFAIRS ESCORT EXCEPT WHEN DRIVING TO THE NEWS CENTER OR THE COMPLEX 39 CAFETERIA.

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NASA News Release
ON LINE
JOHN F. KENNEDY SPACE CENTER

November 12, 1996
KSC Contact: Bruce Buckingham
KSC Release No. 131-96

SPACE SHUTTLE MISSION STS-80 LAUNCH COUNTDOWN BEGINS TODAY

NASA will start the countdown for the launch of Space Shuttle Columbia today at 1 p.m. EST at the T-43 hour mark. The KSC launch team will conduct the countdown for mission STS-80 from Firing Room 3 of the Launch Control Center.

The countdown contains 30 hours, 50 minutes of built-in hold time leading to the opening of the launch window at 2:50 p.m. (EST) on Friday, Nov. 15. The launch window extends for 2 hours, 30 minutes.

STS-80 is the seventh and last Space Shuttle mission of 1996. This will be the 21st flight of the orbiter Columbia and the 80th flight overall in NASA's Space Shuttle program. Columbia last flew on mission STS-78 in the summer of this year.

Columbia was transferred from Orbiter Processing Facility bay 1 to the Vehicle Assembly Building on Oct. 9 where it was mated with the external tank and solid rocket boosters. Columbia was then rolled out to launch pad 39B on Oct. 16.

On mission STS-80, Columbia will carry into orbit a five-member crew. The crew are: Commander Ken Cockrell; Pilot Kent Rominger; and Mission Specialists Tamara Jernigan, Thomas Jones and Story Musgrave. All members of the STS-80 crew are veteran Shuttle flyers.

The crew arrived at KSC's Shuttle Landing Facility at 6:15 p.m. yesterday. Their activities prior to launch include equipment fit checks, medical examinations and opportunities to fly in the Shuttle Training Aircraft.

(end of general release)

The launch of STS-80 on Nov. 15 is contingent on a commercial Atlas rocket launch planned for Wednesday, Nov. 13. If the Atlas launch is delayed a day, an additional 24-hour hold will be implemented at the T-11 hour mark and the Shuttle launch delayed until Saturday, Nov. 16.

COUNTDOWN MILESTONES
all times are Eastern
Launch - 3 Days (Tuesday, Nov. 12)

- Prepare for the start of the STS-80 launch countdown
- Perform the call-to-stations (12:30 p.m. Tuesday, Nov. 12)
- All members of the launch team report to their respective consoles in Firing Room 3 in the Launch Control Center for the start of the countdown.
- Countdown begins at the T-43 hour mark (1 p.m.)
- Start preparations for servicing fuel cell storage tanks
- Begin final vehicle and facility close-outs for launch

- Check out back-up flight systems
- Review flight software stored in mass memory units and display systems
- Load backup flight system software into Columbia's general purpose computers
- Begin stowage of flight crew equipment
- Inspect the orbiter's mid-deck and flight-deck and remove crew module platforms

Launch - 2 Days (Wednesday, Nov. 13)

- Close payload bay doors for flight (about 2 a.m.)

Enter first planned built-in hold at T-27 hours for duration of four hours (5 a.m.)

- Clear launch pad of all non-essential personnel
- Perform test of the vehicle's pyrotechnic initiator controllers

Resume countdown (9 a.m.)

- Clear launch pad of all personnel
- Begin operations to load cryogenic reactants into Columbia's fuel cell storage tanks (9:30 a.m. - 7 p.m.)

Enter eight-hour built-in hold at T-19 hours (5 p.m.)

- After cryogenic loading operations, re-open the pad
- Resume orbiter and ground support equipment close-outs

Launch - 1 Day (Thursday, Nov. 14)

Resume countdown (1 a.m.)

- Start final preparations of the Shuttle's three main engines for main propellant tanking and flight
- Activate the orbiter's flight controls and navigation systems
- Install mission specialists' seats in crew cabin
- Close-out the tail service masts on the mobile launcher platform

Enter planned hold at T-11 hours for 15 hours, 30 minutes (9 a.m.)

- Complete off-load of extra cryogenic reactants from service tanks
- Demate orbiter mid-body umbilical unit and retract into fixed service structure
- Perform orbiter ascent switch list in crew cabin
- Install film in numerous cameras on the launch pad
- Activate the orbiter's communications systems and begin initial voice checks
- Activate orbiter's inertial measurement units
- Fill pad sound suppression system water tank
- Safety personnel conduct debris walkdown
- Move Rotating Service Structure (RSS) to the park position (8 p.m.)
- Following the RSS move, begin final stowage of mid-deck experiments and flight crew equipment

Launch Day (Friday, Nov. 15)

Resume countdown (12:30 a.m.)

- Continue installation of time critical flight crew equipment
- Perform pre-ingress switch list
- Start fuel cell flow-through purge
- Activate the orbiter's fuel cells

Configure communications at Mission Control, Houston, for launch
- Clear the blast danger area of all non-essential personnel
- Switch Columbia's purge air to gaseous nitrogen

Enter planned one-hour built-in hold at the T- 6 hour mark (5:30 a.m.)

- Launch team verifies no violations of launch commit criteria prior to cryogenic loading of the external tank
- Clear pad of all personnel
- Begin loading the external tank with about 500,000 gallons of cryogenic propellants (about 5:45 a.m.)

Resume countdown (6:30 a.m.)

- Complete filling the external tank with its flight load of liquid hydrogen and liquid oxygen propellants (about 8:45 a.m.)
- Perform inertial measurement unit preflight calibration
- Align Merritt Island Launch Area (MILA) tracking antennas
- Perform open loop test with Eastern Range
- Conduct gimbal profile checks of orbital maneuvering system engines

Enter two-hour hold at T-3 hours (9:30 a.m.)

- Close-out crew and Final Inspection Team proceeds to Launch Pad 39B

Resume countdown at T-3 hours (11:30 a.m.)

- Crew departs Operations and Checkout Building for the pad (about 11:35 a.m.)
- Complete close-out preparations in the white room
- Check cockpit switch configurations
- Flight crew begins entry into the orbiter (about 12:05 p.m.)
- Astronauts perform air-to-ground voice checks with Launch Control and Mission Control
- Close Columbia's crew hatch (about 1:20 p.m.)
- Begin Eastern Range final network open loop command checks
- Perform hatch seal and cabin leak checks
- Complete white room close-out
- Close-out crew moves to fallback area
- Primary ascent guidance data is transferred to the backup flight system

Enter planned 10-minute hold at T-20 minutes (2:10 p.m.)

- NASA Test Director conducts final launch team briefings

Resume countdown (2:20 p.m.)

- Transition the orbiter's onboard computers to launch configuration
- Start fuel cell thermal conditioning
- Close orbiter cabin vent valves
- Transition backup flight system to launch configuration

Enter 10-minute hold at T-9 minutes (2:31 p.m.)

- Launch Director, Mission Management Team and NASA Test Director conduct final polls for go/no go to launch

Resume countdown at T-9 minutes (about 2:41 p.m.)

Start automatic ground launch sequencer (T-9:00 minutes)
- Retract orbiter crew access arm (T-7:30)
- Start mission recorders (T-5:30)
- Start Auxiliary Power Units (T-5:00)
- Arm SRB and ET range safety safe and arm devices (T-5:00)
- Start liquid oxygen drainback (T-4:55)
- Start orbiter aerosurface profile test (T-3:55)
- Start main engine gimbal profile test (T-3:30)
- Pressurize liquid oxygen tank (T-2:55)
- Begin retraction of the gaseous oxygen vent arm (T-2:55)
- Fuel cells to internal reactants (T-2:35)
- Pressurize liquid hydrogen tank (T-1:57)
- Deactivate SRB joint heaters (T-1:00)
- Orbiter transfers from ground to internal power (T-0:50 seconds)
- Ground Launch Sequencer go for auto sequence start (T-0:31 seconds)
- SRB gimbal profile (T-0:21 seconds)
- Ignition of three Space Shuttle main engines (T-6.6 seconds)
- SRB ignition and liftoff (T-0)

SUMMARY OF BUILT-IN HOLDS FOR STS-80

T-TIME	LENGTH OF HOLD	HOLD BEGINS	HOLD ENDS
T-27 hours	4 hours	5:00 a.m. Wed.	9:00 a.m. Wed.
T-19 hours	8 hours	5:00 p.m. Wed.	1:00 a.m. Thurs.
T-11 hours	15 hours, 30 minutes	9:00 a.m. Thurs.	12:30 a.m. Fri.
T-6 hours	1 hour	5:30 a.m. Fri.	6:30 a.m. Fri.
T-3 hours	2 hours	9:30 a.m. Fri.	11:30 a.m. Fri.
T-20 minutes	10 minutes	2:10 p.m. Fri.	2:20 p.m. Fri.
T-9 minutes	10 minutes	2:31 p.m. Fri.	2:41 p.m. Fri.

CREW FOR MISSION STS-80

Commander (CDR): Ken Cockrell
Pilot (PLT): Kent Rominger
Payload Commander (MS1): Tamara Jernigan
Mission Specialist (MS2): Thomas Jones
Mission Specialist (MS3): Story Musgrave

SUMMARY OF STS-80 LAUNCH DAY CREW ACTIVITIES

Friday, Nov. 15

	9:55 a.m.	Wake up
*	10:25 a.m.	Breakfast and crew photo
	10:55 a.m.	Weather briefing (CDR, PLT, MS2)
	10:55 a.m.	Don launch and entry suits (MS1, MS3)
	11:05 a.m.	Don launch and entry suits (CDR, PLT, MS2)
*	11:18 a.m.	Crew suiting photo
*	11:35 a.m.	Depart for launch pad 39B
*	12:05 p.m.	Arrive at white room and begin ingress
*	1:20 p.m.	Close crew hatch
*	2:50 p.m.	Launch

* Televised events (times may vary slightly)
All times Eastern

--end--

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

November 13, 1996
KSC Contact: Dennis Armstrong
KSC Release No. 132-96

KSC CONTRACTORS OF THE YEAR HONORED

Seven Kennedy Space Center (KSC) contractors received honors at the fiscal year 1996 Contractor Awards Ceremony, hosted by the KSC Small and Disadvantaged Business Council on Nov. 12, at the KSC Visitors Center.

McDonnell Douglas Space & Defense Systems (MDS&DS) was recognized as the large business contractor of the year for their exemplary support of small, small disadvantaged, and women owned small businesses. MDS&DS has provided outstanding support of socioeconomic programs over the years. This year was no exception as over 73 percent of their subcontracting dollars went to small businesses.

The following Small Business contractors were recognized for outstanding contract performance:

Small business contractor: Dynamac Corporation, for its work as KSC's Life Sciences Support contractor;

Small disadvantaged business contractor: Space Mark, Inc., for its launch site support and operation and maintenance (of payload processing facilities;

Woman-owned small business contractor: Britts Air Conditioning, Inc., for its upgrade to the Firex Deluge System;

Small business subcontractor: CAMcad Technologies, Inc., for its sales and technical support of surfware - software;

Small disadvantaged business subcontractor: Oneida Construction, Inc., for its general contracting services;

Woman-owned small business subcontractor: Wiltech of Florida Corporation, for its technical support services.

Ann Watson, deputy director, KSC Procurement Office, underlined the important contributions made by these members of the KSC team by pointing out that "more than $220 million in prime contracts and subcontracts were awarded by KSC to the small business community during fiscal year 1996. This ceremony pays tribute to those companies and their employees who perform on-time, quality work at a reasonable cost."

The award presentations were made by KSC Director Jay Honeycutt.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

November 12, 1996
KSC Contact: George H. Diller
KSC Release No. 133-96

SPACE SHUTTLE WEATHER LAUNCH COMMIT CRITERIA AND KSC END OF MISSION WEATHER LANDING CRITERIA

The launch weather guidelines involving the Space Shuttle and expendable rockets are similar in many areas, but a distinction is made for the individual characteristics of each. The criteria are broadly conservative and assure avoidance of possibly adverse conditions. They are reviewed for each launch.

Weather "outlooks" which are provided by the Range Weather Operations Facility at Cape Canaveral begin at Launch minus 5 days. These include weather trends, and their possible effects on launch day.

For the Space Shuttle, a formal prelaunch weather briefing is held on Launch minus 1 day which is a specific weather briefing for all areas of Space Shuttle launch operations.

During the countdown, formal weather briefings occur approximately as follows:

L-24 hr 0 min	Briefing for Flight Director and astronauts
L-21 hr 0 min	Briefing for removal of Rotating Service Structure
L-9 hr 00 min	Briefing for external tank fuel loading
L-4 hr 30 min	Briefing for Space Shuttle Launch Director
L-3 hr 55 min	Briefing for astronauts
L-2 hr 10 min	Briefing for Flight Director
L-0 hr 35 min	Briefing for launch and RTLS
L-0 hr 13 min	Poll all weather constraints

Launch weather forecasts, ground operations forecasts, and briefings for the Launch Director and Mission Management Team are prepared by the U.S. Air Force Range Weather Operations Facility at Cape Canaveral Air Station. The RTLS, emergency landing and end of mission forecasts, briefings to the Flight Director and the astronauts are prepared by the NOAA National Weather Service Space Flight Meteorology Group at the Johnson Space Center in Houston.

The basic weather launch commit criteria on the pad at liftoff must be:

Temperature: Prior to external tank propellant loading, tanking will not begin if the 24 hour average temperature has been below 41 degrees.

After tanking begins, the countdown shall not be continued nor the Shuttle launched if:

a.) the temperature exceeds 99 degrees for more than 30 consecutive minutes.

b.) the temperature is lower than the prescribed minimum value for longer than 30 minutes unless sun angle, wind, temperature and relative humidity conditions permit recovery. The minimum temperature limit in degrees F. is specified by the table below and is a function of the five minute average of temperature, wind and humidity. The table becomes applicable when the observed temperature reaches 48 degrees. In no case may the Space Shuttle be launched if the temperature is 35 degrees or colder.

Wind Speed	**Relative Humidity**				
(kts)	0-64%	65-74%	75-79%	80-89%	90-100%
0 - 1	48	47	46	45	44
2	47	46	45	44	43
3	41	41	41	40	39
4	39	39	39	39	38
5 - 7	38	38	38	38	38
8 - 14	37	37	37	37	37
>14	36	36	36	36	36

The above table can be used to determine when conditions are again acceptable for launch if parameters have been out of limits for thirty minutes or less. If longer than thirty minutes, a mathematical recovery formula of the environmental conditions is used to determine if a return to acceptable parameters has been achieved. Launch conditions have been reached if the formula reaches a positive value.

Wind: Tanking will not begin if the wind is observed or forecast to exceed 42 knots for the next three hour period.

For launch the wind constraints at the launch pad will vary slightly for each mission. The peak wind speed allowable is 34 knots. However, when the wind direction is between 100 degrees and 260 degrees, the peak speed varies and may be as low as 20 knots.

The upper atmosphere wind profile must conform to either one of two wind loading programs developed by the Johnson Space Center. This profile is determined by a series of Jimsphere wind balloon releases from Cape Canaveral Air Station. A final recommendation is made by the JSC Launch Systems Evaluation Advisory Team (LSEAT) to the KSC launch director at Launch minus 30 minutes. The Space Shuttle will not be launched within 30 minutes of the time a determination has been made that the upper wind profile will adversely affect the performance of the launch vehicle.

A downrange weather advisory shall be issued by the Shuttle Weather Officer to the Mission Management Team for their consideration if the wind in the solid rocket booster recovery area is forecast to exceed 26 knots during retrieval operations. Seas in excess of Sea State 5 (8-13 feet) may also be a factor considered by the Mission Management Team.

Precipitation: None at the launch pad or within the flight path.

Lightning (and electric fields with triggering potential):

- Tanking will not begin if there is forecast to be greater than a 20% chance of lightning within five nautical miles of the launch pad during the first hour of tanking. The launch director with the concurrence of the safety director may make an exception after consultation with the Shuttle Weather Officer.

- Launch will not occur if lightning has been detected within 10 nautical miles of the pad or the planned flight path within 30 minutes prior to launch, unless the source of lightning has moved more than 10 nautical miles away from the pad or the flight path.

- The one-minute average of the electric field mill network, used to measure electric fields, shall not exceed -1 or +1 kilovolt per meter within five nautical miles of the launch pad at any time within 15 minutes prior to launch.

The above rule need not apply if the following two conditions are observed to exist:

1. There are no clouds within 10 nautical miles of the flight path except those which are transparent. Also excepted are clouds with tops below the 41 degrees F. temperature level that have not have been previously associated with a thunderstorm, or associated with convective clouds having tops above the 14 degrees F. temperature level during the last three hours.

2. A known source of electric fields such as ground fog or smoke that is occurring near the field mill which has been previously determined and documented to be benign is clearly causing the elevated readings.

Clouds: (types known to contain hazardous electric fields)

- The Space Shuttle may not be launched if the planned flight path is through a layer of clouds with a thickness of 4,500 feet or greater where the temperature of any part of the layer is between 32 degrees F. and -4 degrees F.

- The Space Shuttle may not be launched if the planned flight path is through a cumulus type cloud with its top between the 41 degrees F. temperature level and 23 degrees F. temperature. Launch may occur if: 1) the cloud is not producing precipitation; 2) the distance from the furthest edge of the cloud top to at least one operating field mill is less than the altitude at the 23 degree F temperature level or 3 nautical miles, whichever is less; 3) field mill readings within five nautical miles of the flight path must be between -100 volts per meter and +1000 volts per meter.

- The Space Shuttle may not be launched through 1) cumulus type clouds with tops higher than the 23 degree F. temperature level; 2) through or within 5 nautical miles of the nearest edge of cumulus type clouds with tops higher than the 14 degree F level; 3) through or within 10 nautical miles of the nearest edge of any cumulonimbus or thunderstorm cloud including nontransparent parts of its anvil; 4) through or within 10 nautical miles of the nearest edge of a nontransparent detached anvil cloud for the first hour after detachment from the parent thunderstorm or cumulonimbus cloud.

- The Space Shuttle may not be launched if the flight path is through any clouds that extend to altitudes at or above the 32 degrees F. level which are associated with disturbed weather producing moderate or greater precipitation within five nautical miles of the flight path.

- The Space Shuttle may not be launched if the flight path will carry the vehicle through a thunderstorm or cumulonimbus debris cloud which is not transparent and less than three hours old. Launch may not occur within five nautical miles of these debris clouds unless: 1) for 15 minutes preceding launch there is at least one working field mill within five nautical miles of the debris cloud; 2) all electric field mill readings are between -1 kilovolt and + 1 kilovolt per meter within five nautical miles of the flight path; 3) no precipitation has been detected or observed.

Supporting Table: KSC Seasonal Altitudes of Temperature Levels in thousands of feet

January				**July**			
Temp	**Low**	**Avg**	**High**	**Temp**	**Low**	**Avg**	**High**
-4 F	21 Kft	24 Kft	26 Kft	-4 F	23 Kft	27 Kft	29 Kft
14	13	18	21	14	18	21	23
23	9	15	18	23	16	18	20
32	sfc	12	16	32	13	15	18
41	sfc	9	14	41	10	12	15

Range Safety Cloud Ceiling and Visibility constraints:

- Direct visual observation of the Shuttle is required through 8, 000 feet. This requirement may be satisfied using optical tracking sites or a forward observer

- For cloud ceilings of any thickness between 6, 000 feet and 8, 000 feet the following conditions must be met for launch to occur:

a.) the vehicle integrity can be observed without interruption through 6, 000 feet.

b.) all required Range Safety instrumentation is functioning properly

c.) the U.S. Air Force 45th Space Wing Commander approves the decision to proceed

- For cloud ceilings between 4, 000 feet and 6, 000 feet the following conditions must be met for launch to proceed:

a.) the thickness of the clouds must be less than 500 feet

b.) the vehicle integrity can be monitored by the Eastern Range airborne and/or the ground forward observers through 8, 000 feet

c.) all required Range Safety instrumentation is functioning properly

d.) the U.S. Air Force 45th Space Wing Commander approves the decision to proceed

A "Good Sense Rule" is in effect for launch which states: "Even when constraints are not violated, if any other hazardous conditions exist, the launch weather officer will report the threat to the launch director. The launch director may hold at any time based on the instability of the weather."

CONTINGENCY LANDING WEATHER FLIGHT RULES

Weather criteria for an emergency landing must be considered along with launch criteria since the possibility exists for a Return To Launch Site abort (RTLS), landings at the Trans- Oceanic Abort Landing Sites (TAL), the Abort Once Around (AOA) sites and the first day Primary Landing Site (PLS). All criteria refer to observed and forecast weather conditions except for the first day PLS which is forecast weather only.

- For RTLS with redundant Microwave Landing System (MLS) capability and a weather reconnaissance aircraft, cloud coverage 4/8 or less below 5,000 feet and a visibility of 4 statute miles or greater are required. For AOA, TAL and PLS sites, cloud coverage 4/8 or less below 8,000 feet and a visibility of 5 statute miles or greater is required.

- For landing on a hard surface runway without redundant Microwave Landing System (MLS) capability all sites require a ceiling not less than 10,000 feet and a visibility of at least 7 statute miles. Landing at night on a lake bed runway may occur if the ceiling is not lower than 15,000 feet and the visibility is 7 miles or greater with at least non-redundant MLS capability .

- For the RTLS site and TAL sites, no thunderstorms, lightning, or precipitation within 20 nautical miles of the runway, or within 10 nautical miles of the final approach path extending outward to 30 nautical miles from the end of the runway.

- For RTLS and TAL sites, no detached opaque thunderstorm anvils less than three hours old within 15 nautical miles of the runway, or within 5 nautical miles of the final approach path extending outward to 30 nautical miles from the end of the runway.

- For RTLS, light precipitation within 20 nautical miles of the runway is acceptable if the specific criteria listed below are met:

a.) The tops of the clouds containing precipitation do not extend into temperature regions colder than 41 (F.); they have

not been colder than 14 (F.) within 2.5 hours prior to launch; the radar reflectivity is less than 30 dbz at all levels within and below the clouds.

b.) Precipitation covers less than 10% of the area within 20 nautical miles of the runway, or multiple heading alignment circles are clear of showers.

c.) The movement of the showers is observed to be consistent and no additional convective development is forecast.

d.) Touchdown/rollout criteria and associated navigational aids meet the specified prelaunch go/no go requirements.

If showers exceed either parameter of part a above, an RTLS landing may still occur if a 2 nautical mile vertical clearance can be maintained from the top of any shower within 10 nautical miles of the approach paths.

- For AOA and PLS sites, no thunderstorms, lightning or precipitation within 30 nautical miles of the runway, or within 20 nautical miles of the final approach path extending to 30 nautical miles from the end of the runway.

- For RTLS and the TAL sites, no detached opaque thunderstorm anvil cloud less than 3 hours old within 15 nautical miles of the runway or within 5 nautical miles of the final approach path extending outward to 30 nautical miles from the end of the runway.

- For AOA and PLS sites, no detached opaque thunderstorm anvil cloud less than 3 hours old within 20 nautical miles of the runway or within 10 nautical miles of the final approach path extending to 30 nautical miles from the end of the runway.

- The RTLS crosswind component may not exceed 15 knots. If the astronaut flying weather reconnaissance in the Shuttle Training Aircraft executes the approach and considers the landing conditions to be acceptable, this limit may be increased to 17 knots. For the TAL, AOA and PLS sites there is a night-time crosswind limit of 12 knots.

- Headwind not to exceed 25 knots.

- Tailwind not to exceed 10 knots average, 15 knots peak.

- Turbulence conditions must be less than or equal to moderate intensity.

KSC END OF MISSION LANDING WEATHER FLIGHT RULES

All criteria refer to observed and forecast weather conditions. At decision time for the deorbit burn 90 minutes before landing the weather conditions must be:

- Cloud coverage of 4/8 or less below 10,000 feet and a visibility of 5 miles or greater is required.

- The peak cross wind cannot exceed 15 knots, 12 knots at night. If the mission duration is greater than 12 days the limit is 12 knots, day and night.

- Headwind cannot exceed 25 knots

- Tailwind cannot exceed 10 knots average, 15 knots peak

- The deorbit burn shall not occur if thunderstorm, lightning, or precipitation activity is forecast within 30 nautical miles of the Shuttle Landing Facility.

- At a range of 30 nautical miles, vertical clearance from the tops of rain showers or thunderstorms must be greater than 2 nautical miles.

- Detached opaque thunderstorm anvils less than three hours old must not be within 20 nautical miles of the Shuttle Landing Facility, or within 10 nautical miles of the flight path when the orbiter is within 30 nautical miles of the

runway.

- Turbulence must be less than or equal to moderate intensity.

- The Flight Director must consider a possible "no go" to landing if at the deorbit burn decision time there are observed to be scattered cloud layers below 10,000 feet with greater than 2/8 sky coverage but not exceeding 4/8 sky coverage. Cloud conditions greater than 4/8 sky coverage below 10,000 feet constitute a cloud ceiling and is therefore "no go."

WEATHER INSTRUMENTATION

The weather equipment used by the forecasters to develop the launch and landing forecasts is:

-Radar: Launch forecasters located at Cape Canaveral Air Station and landing forecasters located in Houston can access displays from two different radars. One is located at Patrick Air Force Base south of Cocoa Beach. The other is located in Melbourne at the National Weather Service and is a NEXRAD Doppler radar. Each radar provides rain intensity and cloud top information out to a distance as far as 200 nautical miles. The NEXRAD radar can also provide estimates of total rainfall and radial wind velocities.

-Field Mill Network: Thirty-one advanced field mill sites around KSC and Cape Canaveral Air Station provide data on lightning activity and surface electric fields induced by charge aloft. This data helps forecasters determine when electric charge aloft may be sufficient to create triggered lightning during launch, and to determine when to issue and cancel lightning advisories and warnings.

-Lightning Detection System: Detects and plots cloud to ground lightning strikes within 125 nautical miles of the Kennedy Space Center. Location accuracy is optimum within 30 nautical miles. Locations of strikes are color coded according to time of occurrence.

-Lightning Detection And Ranging (LDAR): Developed by the NASA Kennedy Space Center, LDAR plots intracloud, cloud to cloud and cloud to ground lightning in three dimensions within 100 nautical miles of the Kennedy Space Center. Location accuracy is very high within 25 nautical miles. LDAR data is important in determining the beginning and end of lightning conditions.

-National Lightning Detection Network: Plots cloud to ground lightning nationwide. Used to help ensure safe transit of the Space Shuttle orbiter atop the Shuttle Carrier Aircraft between Edwards Air Force Base in California and the Kennedy Space Center in Florida. It is also used to assess lightning beyond the 125 mile range of the Lightning Detection System.

-Rawinsonde: A balloon with a tethered instrument package which radios its altitude to the ground together with temperature, dewpoint and humidity, wind speed and direction, and pressure data. Rawinsondes reach altitudes exceeding 100,000 feet.

-Jimsphere balloon: A reflective balloon made of mylar tracked by radar which provides highly accurate information on wind speed and wind direction up to 60,000 feet.

-Doppler Radar Wind Profiler: Measures upper level wind speed and direction over Kennedy Space Center from approximately 10,000 feet to 60,000 feet. The data, received every 5 minutes, is used to ensure the upper winds used to calculate wind loads on the shuttle vehicle have not significantly changed between balloon soundings. If data from the Doppler Radar Wind Profiler indicates a possible significant change, another Jimsphere balloon is released.

-Rocketsonde: A 12-foot-tall instrumented rocket is launched on L-1 day which senses and transmits data on temperature, wind speed and direction, wind shear, pressure, and air density at altitudes between 65,000 feet and 370,000 feet. A four-inch in diameter solid rocket motor separates at an altitude of about 5,000 feet, after which an "instrumented dart" coasts to apogee.

-Satellite Images and Data: Provided directly to the satellite terminal at USAF Range Weather Operations and NOAA National Weather Service Spaceflight Meteorology Group in Houston by the geostationary GOES weather satellites. In addition high resolution images are received from spacecraft in low earth orbit including both the NOAA and the Defense Meteorological Support Program (DMSP) polar orbiting satellites.

-Meteorological Interactive Data Display System (MIDDS): Integrates diverse weather data on a single display terminal-- satellite images, radar, computer generated graphics of surface and upper air map features, numerical weather models, current weather observations, data from meteorological towers, lightning strikes and field mill information.

-Towers: 33 meteorological towers are located on Kennedy Space Center and Cape Canaveral Air Station, including two at each launch pad and three at the Shuttle Landing Facility. In addition to wind, most towers are also instrumented with temperature, and moisture sensors. The 60-foot towers at the launch pads and the 33-foot towers at the Shuttle Landing Facility are closely monitored for launch and landing criteria. In addition, on the mainland, there is a network of 19 wind towers which extend outward an additional twenty miles. Tower data is an important short- term forecasting tool and also helps determine the direction and distance of toxic corridors in the event of a mishap.

-Buoys: Meteorological buoys are anchored 20, 110 and 160 nautical miles east-northeast of Cape Canaveral. These buoys relay hourly measurements via satellite of temperature, wind speed and direction, barometric pressure, precipitation, sea water temperature, and wave height and period. Buoy data is used for launch, landing, booster retrieval, and daily ground processing forecasts for the Kennedy Space Center and Cape Canaveral Air Station.

-Solid Rocket Booster Retrieval Ships: These vessels radio observed weather conditions and sea state from the booster impact area located up to 150 nautical miles downrange.

-Weather Reconnaissance Aircraft: A T-38 jet and the Shuttle Training Aircraft are flown by a weather support astronaut.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

November 15, 1996
KSC Contact: Patti Phelps
KSC Release No. 135-96-1

THREE KSC WORKERS HONORED BY NASA ASTRONAUTS

Three NASA/KSC employees from Titusville recently were presented with NASA's prestigious Silver Snoopy Award for service to the Space Shuttle astronauts.

Astronaut Pamela A. Melroy presented the award on Oct. 24 to Sharon M. Carlson. Astronaut Michael P. Anderson gave Silver Snoopy Awards on Oct. 30 to Danny R. Culbertson and Elizabeth S. Gruhler.

Carlson, formerly of the Payload Processing Directorate, now works in the Space Station Hardware Integration Office. She was recognized for her contributions to the International Space Station Program. "The exceptional manner in which you have carried out your responsibilities exceeds normal requirements and demonstrates pride in your work," astronaut Melroy told her.

Culbertson was applauded for his work in the Engineering Development Directorate. "Your eagerness to speak to the many and varied public groups with your dynamic and enthusiastic presentations has elicited strong public support for NASA's human space flight programs and a better understanding of the relevance and importance of NASA's technologies to everyday life," Anderson said.

Gruhler of the Logistics Operations Directorate was commended for her exemplary work as the chairperson of the Space Station Ground Operations and Logistics Working Group. "You have effectively facilitated the support integration of technical training activities with payload customers who will be conducting space station ground processing at KSC," Anderson told her.

Snoopy, of the comic strip "Peanuts," has been the unofficial mascot of NASA's astronaut corps since the earliest days of human space flight. The Silver Snoopy Award was created by the astronauts to honor persons who contribute most to the safety and success of human space flight.

The award is presented to no more than 1 percent of the space center's work force each year. Recipients are given a silver pin depicting the famous beagle wearing a space suit. All the pins have flown on a previous Space Shuttle mission. The awardees also receive a framed certificate and a congratulatory letter signed by the presenting astronaut.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

November 15, 1996
KSC Contact: Patti Phelps
KSC Release No. 135-96-2

DAN CULBERTSON HONORED BY NASA ASTRONAUTS

Dan Culbertson, son of Verna and Richard Culbertson of Edgewater, FL, and a graduate of the University of Central Florida, Orlando, FL, recently was presented with NASA's prestigious Silver Snoopy Award for service to the Space Shuttle astronauts.

Born in Williamsdale, OH, Culbertson graduated in 1968 from Bayonne (N.J.) High School. He received a bachelor of fine arts degree in 1976 and a bachelor's degree in civil engineering in 1983, both from the University of Central Florida. He also served in the U.S. Air Force from 1968-72, attaining the rank of staff sergeant.

Culbertson lives in Titusville, FL.

Astronaut Michael P. Anderson presented the Silver Snoopy Award on Oct. 30 at KSC to Culbertson, who is technology manager with the NASA/KSC Technology Programs and Commercialization Office. He joined the space center in 1979.

Culbertson was commended for his work in the Engineering Development Directorate. "Your eagerness to speak to the many and varied public groups with your dynamic and enthusiastic presentations has elicited strong public support for NASA's human space flight programs and a better understanding of the relevance and importance of NASA's technologies to everyday life," Anderson said.

Snoopy, of the comic strip "Peanuts," has been the unofficial mascot of NASA's astronaut corps since the earliest days of human space flight. The Silver Snoopy Award was created by the astronauts to honor persons who contribute most to the safety and success of human space flight.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

November 15, 1996
KSC Contact: Patti Phelps
KSC Release No. 135-96-3

DAN CULBERTSON HONORED BY NASA ASTRONAUTS

Dan Culbertson, a native of Williamsdale, OH, and grandson of the late Lorraine and Oscar Scheid, lifetime residents of Williamsdale, recently was presented with NASA's prestigious Silver Snoopy Award for service to the Space Shuttle astronauts.

The son of Verna and Richard Culbertson of Edgewater, FL, Culbertson graduated in 1968 from Bayonne (N.J.) High School. He received a bachelor of fine arts degree in 1976 and a bachelor's degree in civil engineering in 1983, both from the University of Central Florida, Orlando, FL. He also served in the U.S. Air Force from 1968-72, attaining the rank of staff sergeant.

Culbertson lives in Titusville, FL.

Astronaut Michael P. Anderson presented the Silver Snoopy Award on Oct. 30 at KSC to Culbertson, who is technology manager with the NASA/KSC Technology Programs and Commercialization Office. He joined the space center in 1979.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

November 15, 1996
KSC Contact: Patti Phelps
KSC Release No. 136-96

CARL B. MATTSON HONORED BY NASA ASTRONAUTS

Carl B. Mattson of Titusville recently was presented with NASA's prestigious Silver Snoopy Award for service to the Space Shuttle astronauts.

The award was presented to Mattson at KSC on Oct. 24 by three STS-84 mission specialists, astronauts Edward Lu of NASA and Jean-Francois Clervoy of the European Space Agency, and cosmonaut Elena Kondakova of the Russian Space Agency.

Mattson is an engineer with engineering support contractor I-NET Inc. at KSC. He was commended for his outstanding efforts in improving operational efficiency and reducing processing costs of Space Shuttle orbiters in the waterproofing of Thermal Protection System materials.

"Your technical expertise and innovative thinking in identifying the Fourier Transform Infrared Spectroscopy as an alternative detection technology, and your speedy development of the prototype in less than a week, indicate a dedication and responsiveness to the support of Shuttle operations that far exceeds expectations," the crew members told Mattson.

Snoopy, of the comic strip "Peanuts," has been the unofficial mascot of NASA's astronaut corps since the earliest days of human space flight. The Silver Snoopy Award was created by the astronauts to honor persons who contribute most to the safety and success of human space flight.

The award is presented to no more than 1 percent of the space center's work force each year. Recipients are given a silver pin depicting the famous beagle wearing a space suit. All the pins have flown on a previous Space Shuttle mission. The awardees also receive a framed certificate and a congratulatory letter signed by the presenting astronaut.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

November 15, 1996
KSC Contact: Patti Phelps
KSC Release No. 137-96-1

DR. PEDRO MEDELUIS HONORED BY NASA ASTRONAUTS

Dr. Pedro Medelius, a native of Lima, Peru, and son of Pedro and Yole Medelius of Miraflores, Peru, recently was presented with NASA's prestigious Silver Snoopy Award for service to the Space Shuttle astronauts.

Dr. Medelius graduated in 1972 from Nuestra Senora del Carmen in Miraflores, Peru. He earned three degrees in electrical engineering. He received a bachelor's degree in 1980 from the Universidad Nacional de Ingenieria in Peru, and a master's degree in 1987 and a doctorate in 1992, both from the University of Florida, Gainesville, Fla.

Dr. Medelius and his wife, the former Martha Jane Rapp, have a 2-year-old daughter. They live in Merritt Island, Fla.

Astronaut Pamela A. Melroy presented the award on Oct. 24 at KSC to Dr. Medelius, principal investigator of the Data Acquisition Laboratory. He is employed by engineering support contractor, I-NET Inc. He joined the space center in 1991.

Dr. Medelius was commended for his highly imaginative engineering and outstanding leadership in the development of the Universal Signal Conditioning Amplifier, the PCR Magnetic Field Sensor, and the Pad Personnel Location System.

"These important new technologies will improve Shuttle safety, reduce operating costs, and have a significant impact in the commercial marketplace," astronaut Melroy told him. "Without your extraordinary ability to design and to integrate these complex systems and meet the demanding needs of the evolving Space Shuttle program, the reputation and impact of the Data Acquisition Laboratory would be far less than it is less today."

Snoopy, of the comic strip "Peanuts," has been the unofficial mascot of NASA's astronaut corps since the earliest days of human space flight. The Silver Snoopy Award was created by the astronauts to honor persons who contribute most to the safety and success of human space flight.

The award is presented to no more than 1 percent of the space center's work force each year. Recipients are given a silver pin depicting the famous beagle wearing a space suit. All the pins have flown on a previous Space Shuttle mission. The awardees also receive a framed certificate and a congratulatory letter signed by the presenting astronaut.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

November 15, 1996
KSC Contact: Patti Phelps
KSC Release No. 137-96-2

DR. PEDRO MEDELIUS HONORED BY NASA ASTRONAUTS

Dr. Pedro Medelius, son-in-law of Dr. and Mrs. Robert Rapp of Albany, OR, recently was presented with NASA's prestigious Silver Snoopy Award for service to the Space Shuttle astronauts.

A native of Lima, Peru, Dr. Medelius graduated in 1972 from Nuestra Senora del Carmen in Miraflores, Peru. He earned three degrees in electrical engineering. He received a bachelor's degree in 1980 from the Universidad Nacional de Ingenieria in Peru, and a master's degree in 1987 and a doctorate in 1992, both from the University of Florida, Gainesville, FL. He is the son of Pedro and Yole Medelius of Miraflores, Peru.

Dr. Medelius and his wife, Martha Jane, have a 2-year-old daughter. They live in Merritt Island, FL.

Astronaut Pamela A. Melroy presented the award on Oct. 24 at KSC to Dr. Medelius, principal investigator of the Data Acquisition Laboratory. He is employed by engineering support contractor, I-NET Inc. He joined the space center in 1991.

Dr. Medelius was commended for his highly imaginative engineering and outstanding leadership in the development of the Universal Signal Conditioning Amplifier, the PCR Magnetic Field Sensor, and the Pad Personnel Location System.

"These important new technologies will improve Shuttle safety, reduce operating costs, and have a significant impact in the commercial marketplace," astronaut Melroy told him. "Without your extraordinary ability to design and to integrate these complex systems and meet the demanding needs of the evolving Space Shuttle program, the reputation and impact of the Data Acquisition Laboratory would be far less than it is less today."

Snoopy, of the comic strip "Peanuts," has been the unofficial mascot of NASA's astronaut corps since the earliest days of human space flight. The Silver Snoopy Award was created by the astronauts to honor persons who contribute most to the safety and success of human space flight.

The award is presented to no more than 1 percent of the space center's work force each year. Recipients are given a silver pin depicting the famous beagle wearing a space suit. All the pins have flown on a previous Space Shuttle mission. The awardees also receive a framed certificate and a congratulatory letter signed by the presenting astronaut.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

November 15, 1996
KSC Contact: Patti Phelps
KSC Release No. 137-96-3

DR. PEDRO MEDELIUS HONORED BY NASA ASTRONAUTS

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

November 14, 1996
KSC Contact: Bruce Buckingham
KSC Release No. 138-96 (Rev. B)

Notice to Editors/News Directors:
MISSION STS-80 EVENTS, NEWS CENTER OPERATING HOURS SET

News conferences, events and operating hours for KSC's News Center have been re-set for the Nov. 19 launch of the Space Shuttle Columbia on Mission STS-80. These events are scheduled to be carried live on NASA Television unless noted (please refer to the STS-80 TV schedule for exact times).

Launch is currently targeted for 2:53 p.m. EST on Tuesday, Nov. 19. The launch window is open for 2 1/2 hours.

Mission STS-80 launch day coverage will feature views of the flight crew as they are being strapped into their seats on Columbia's flight deck.

For this mission, office hours have been structured to accommodate the ORFEUS-SPAS science briefings which will originate from KSC on selected days of the mission.

News media representatives with proper authorization may obtain STS-80 mission credentials at the Pass and Identification Building on State Road 3 on Merritt Island.

-- end of general release --

STS-80 BRIEFING & EVENTS SCHEDULE
(all times are in EST and conferences are held inside the KSC Press Site auditorium)

L-1 Day - Monday, Nov. 18

- Launch countdown resumes at the T-19 hour mark ----- **1:00 a.m.**
- Countdown Status Briefing ----- **9:00 a.m.** Doug Lyons, Shuttle Test Director
  Roelof Schuiling, STS-80 Payload Manager
  Ed Priselac, Shuttle Weather Officer
- Pre-launch News Conference ----- **3:00 p.m.** (or immediately following the management team's meeting)
  Tommy Holloway, Shuttle Program Manager, Johnson Space Center
  Rick Harnden, Office of Space Science, NASA HQ
  Ed Gabris, Dir., Space Processing, Office of Life and Microgravity Sciences, NASA HQ
  Manfred Otterbein, Head, Science & Infrastructure, DARA
  Bob Sieck, Director of Shuttle Processing, KSC
  Capt. Scott Jacobs, Launch Weather Officer
- Remote Camera Setup at Pad ----- **10:30 a.m.**
- News media orientation tour (optional depending on interest) ----- **1:00 p.m.**
- Sunset photography opportunity ----- **5:00 p.m.** press departure
- Rotating Service Structure moves/night photography opportunity ----- **8:00 p.m.**
  (press departure at 7 p.m.)

Launch Day - Tuesday, Nov. 19

- Tanking begins ----- approx. **5:30 a.m.**
- NASA Television live launch programming begins ----- **10:00 a.m.**
- Launch of Columbia ----- **2:53 p.m.**
- Post-launch press conference ----- **L + 1 hour**
  Loren Shriver, manager, Space Shuttle Program Launch Integration
  Jim Harrington, KSC Launch Director

News media representatives may obtain STS-80 mission credentials at the Pass and Identification Building at Gate 2 on State Road 3, Merritt Island, during the following times:

Monday, Nov. 18 -- 8:00 a.m. - 4:30 p.m.
Tuesday, Nov. 19 -- 8:00 a.m. - 2:00 p.m.

News media with annual Shuttle credentials are reminded to sign the log book at the photo and interview counter in the News Center.

The KSC News Center operational hours are as follows:

(Launch minus 3 days) Saturday, Nov. 16 ----- **Closed**
(Launch minus 2 days) Sunday, Nov. 17 ----- **8:00 a.m. - 12 noon** (operational support only)
(Launch minus 1 day) Monday, Nov. 18 ----- **7:00 a.m. - 7:00 p.m.**
(Launch day) Flight day 1, Tuesday, Nov. 19 ----- **4:30 a.m. - 7:00 p.m.**

KSC News Center office hours during the mission will be announced following launch.

NEWS MEDIA ARE REQUIRED TO BE UNDER PUBLIC AFFAIRS ESCORT EXCEPT WHEN DRIVING TO THE NEWS CENTER OR THE COMPLEX 39 CAFETERIA.

NEWS MEDIA ARE ALLOWED AT THE PRESS SITE ONLY WHEN PUBLIC AFFAIRS PERSONNEL ARE ON DUTY AND THE NASA NEWS CENTER IS OPEN. THIS IS NOT A 24-HOUR DAY OPERATION.

# # # #

KSC News Center office hours for STS-80
(hours may be adjusted for in-flight events)

(Launch minus 4 days) Monday, Nov. 11	12:00 noon - 7:30 p.m.
(Launch minus 3 days) Tuesday, Nov. 12	8:00 a.m. - 4:30 p.m.
(Launch minus 2 days) Wednesday, Nov. 13	7:00 a.m. - 6:30 p.m.
(Launch minus 1 day) Thursday, Nov. 14	8:00 a.m. - 12:00 midnight
(Launch day) Flight day 1, Friday, Nov. 15	4:30 a.m. - 7:00 p.m.
Flight days 2-3, Nov. 9-10	4:00 a.m. - 6:00 p.m.
Flight day 4, Nov. 11	CLOSED
Flight day 5, Nov. 12	8:00 a.m. - 8:30 p.m.
Flight days 6-7, Nov. 13-14	8:00 a.m. - 4:30 p.m.
Flight day 8, Nov. 15	8:00 a.m. - 10:00 p.m.
Flight days 9-10, Nov. 16-17	CLOSED
Flight day 11, Nov. 18	4:30 a.m. - 10:30 p.m.
Flight days 12-14, Nov. 19-21	8:00 a.m. - 4:30 p.m.
Flight day 15, Nov. 22	8:00 a.m. - 10:00 p.m.
Flight day 16, Nov. 23	9:00 a.m. - 3:00 p.m.
Flight day 17, Dec. 1 (Landing)	4:30 a.m. - 3:00 p.m.

(Times may vary and be adjusted in real time depending on mission events and timelines.)

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

November 19, 1996
KSC Contact: Lisa Malone
KSC Release No. 139-96

GROUNDBREAKING SET FOR NEW SHUTTLE ENGINE FACILITY ON NOV. 20

A ceremony to commemorate the beginning of construction work on the 34,600-square-foot Space Shuttle Main Engine Processing Facility (SSMEPF) will be held at 9 a.m., Nov. 20, next to Orbiter Processing Facility (OPF) 3 in the Launch Complex 39 Area at KSC.

Participating in the ceremony will be KSC Deputy Director Gene Thomas; Robert Sieck, director of Shuttle Processing; Marvin Jones, director of Installation Operations; and Walt Stampley, associate director of Facilities Design Engineering. Also in attendance will be Michael McCulley, associate program manager for Ground Operations, United Space Alliance, and Wade Ivey, president of Ivey's Construction, Inc.

Space Shuttle Main Engine operations now housed in the Vehicle Assembly Building (VAB) at KSC will be moved into the new facility on about July 30, 1998. Ivey's Construction of Merritt Island, FL, was awarded a $5,328,400 contract to complete the structure.

The SSMEPF, which is an addition to OPF 3, will provide space to increase the capacity and efficiency of engine operations. Movement of this operation out of the VAB was prompted by safety considerations to minimize the number of personnel and activities in this building where the Space Shuttle components are assembled prior to rollout to the launch pad.

The three main engines generate approximately 375,000 pounds of thrust each during liftoff of the Space Shuttle, providing about 20 percent of the power needed to boost the Shuttle into low Earth orbit. They are the only reusable liquid-fueled rocket engines in existence and undergo prelaunch preparation in the Main Engine Shop before their installation into the Shuttle orbiters in the OPF.

News media representatives wishing to attend the ceremony must be at the KSC News Center by 8:15 a.m. Wednesday for transport to the site. STS-80 launch credentials will be sufficient for entry to the News Center.

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NASA News Release
ON LINE
JOHN F. KENNEDY SPACE CENTER

November 25, 1996
KSC Contact: George H. Diller
KSC Release No. 140-96

Note to Editors/News Directors:
MARS PATHFINDER SPACECRAFT SCHEDULED FOR LAUNCH DEC. 2

The launch of NASA's Mars Pathfinder spacecraft aboard a McDonnell Douglas Delta II rocket is scheduled for Monday, Dec. 2, at 2:09:11 a.m. EST. This is a single instantaneous target launch time without a second opportunity on that day. Liftoff will occur from Pad B at Launch Complex 17 on Cape Canaveral Air Station, Fla. There is a 24-day launch opportunity which extends through Dec. 31.

The Mars Pathfinder, built by the Jet Propulsion Laboratory, Pasadena, Calif., will descend through the Martian atmosphere to land on the planet's surface on July 4, 1997. It will deploy a small instrumented rover to investigate the terrain surrounding the spacecraft. Together, the Mars Pathfinder and rover will investigate the geology and elemental composition of the Martian rocks and soil, the Martian atmosphere and surface weather.

The Mars Pathfinder has completed final checkout and was mated to the Mc Donnell Douglas Delta II rocket on Nov. 21.

PRELAUNCH NEWS CONFERENCE

A prelaunch news conference is scheduled for Saturday, Nov. 30, at 11 a.m. EST in the NASA-KSC News Center auditorium and will be carried live on NASA Television. Participating in the briefing will be:

- Norman Haynes, Director, Mars Exploration Directorate
  Jet Propulsion Laboratory
- Floyd Curington, NASA Launch Manager
  Kennedy Space Center
- David Mitchell, Launch Services Manager
  Goddard Space Flight Center
- Rich Murphy, Flight Director
  McDonnell Douglas
- Tony Spear, Mission Director/Project Manager
  Jet Propulsion Laboratory
- Don Ketterer, Program Executive
  NASA Headquarters
- Joel Tumbiolo, Launch Weather Officer
  Department of the Air Force

A post-launch news conference will be held at the NASA-KSC News Center no earlier than two hours after launch to discuss the countdown, launch and current state of health of the Mars Pathfinder spacecraft.

ROVER DEMONSTRATION

Outside of the NASA News Center, following the prelaunch news conference, news media will be able to photograph and test drive a demonstration model of Mars Pathfinder's small rover.

ACCREDITATION

Those media without permanent accreditation who wish to cover the launch of Delta/Mars Pathfinder including the prelaunch news conference on L-1 day should send a letter of request to the NASA-KSC News Center on news organization letterhead. It should include name and Social Security number or passport number. Letters should be faxed to 407/867-2692 or addressed to:

Mars Pathfinder Launch Accreditation
NASA PA-MSB
Kennedy Space Center, FL 32899

Mars Pathfinder mission badges may be picked up at the NASA-KSC News Center on Saturday, Nov. 30. On launch day, Mars Pathfinder mission badges will be available at Gate 1 on Cape Canaveral Air Station located on SR 401 prior to departure for Press Site 1.

STS-80 mission badges will be valid for the prelaunch news conference on L-1 day. However, a Delta/Mars Pathfinder mission badge is required for all media covering the launch from Press Site 1 on launch day. For further information on Mars Pathfinder launch accreditation contact Selina Scorah at the NASA-KSC News Center at 407/867-2468.

REMOTE CAMERAS

Media wishing to establish remote cameras at the launch pad should meet at the NASA-KSC News Center at 11:30 a.m. on Sunday, Dec. 1, to be escorted to Launch Complex 17.

LAUNCH COVERAGE

The evening of launch, after the mobile service tower has been retracted from around the Delta II rocket at Complex 17, a photo opportunity will be available for the news media. A convoy will depart Gate 1 on Cape Canaveral Air Station located on State Road 401 at 5:45 p.m., Sun. Dec. 1.

Media covering the launch should assemble at the Gate 1 Pass & Identification Building on Cape Canaveral Air Station. The convoy for Press Site 1 will depart at 12:30 a.m. After launch, media may leave via Gate 1 or may convoy under escort to the NASA-KSC News Center for the post-launch press conference.

The NASA News Center codaphone will carry Delta/Mars Pathfinder prelaunch status reports beginning at L-3 days, on Friday, Nov. 29, and may be dialed at 407/867-2525.

NASA TELEVISION AND V CIRCUIT COVERAGE

NASA Television will carry the prelaunch news conference at 11 a.m. EST on Saturday, Nov. 30. On launch day, Dec. 2, countdown coverage will begin at 12 midnight and conclude after spacecraft separation and signal acquisition through the Deep Space Network's Goldstone tracking station.

The post-launch news conference will not be carried live on NASA Television but will be replayed at 5:30 a.m. EST.

NASA Television is available on Spacenet 2, transponder 5, channel 9 located at 69 degrees West longitude.

Audio only of Delta/Mars Pathfinder activities will be available on the V-3 circuit which may be dialed directly at 407/867-1260. The V-1 and V-2 circuits, 407/867-1220 and 867-1240 will carry live Space Shuttle Columbia mission audio.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

December 4, 1996
KSC Contact: Bruce Buckingham
KSC Release No. 141-96

COLUMBIA SCHEDULED FOR LANDING AT KSC THURSDAY, DEC. 5

Mission managers are preparing the orbiter Columbia for a Thursday landing at Kennedy Space Center (KSC), a day earlier than previously scheduled, due to possible poor weather conditions at KSC this weekend. Forecasters will brief managers early tomorrow morning, permitting managers to make a final decision prior to the time the payload bay doors are closed, about 3:45 a.m. EST.

Columbia is scheduled to land at KSC as early as Thursday, Dec. 5 at 7:33 a.m. EST, completing its 16-day STS-80 mission which was launched from KSC Nov. 19.

Landing at KSC's Shuttle Landing Facility (SLF) on Thursday will occur on orbit 248 at a mission elapsed time of 15 days, 16 hours, 37 minutes. The deorbit burn will occur at about 6:27 a.m. Thursday.

The two KSC landing opportunities on Thursday are: 7:33 a.m. and 9:10 a.m. EST. In the event a landing is not possible at KSC on Thursday due to weather concerns, a landing could be made at Edwards Air Force Base (EAFB), CA. A single landing opportunity at Edwards on Thursday occurs at 10:38 a.m. EST. If managers decide to keep Columbia in orbit an additional day, two landing opportunities are available at KSC and two at Edwards on Friday.

KSC Friday landing times are: **8:02 a.m. and 9:38 a.m. EST.**
EAFB Friday landing times are: **9:30 a.m. and 11:06 a.m. EST.**

The landing of Columbia will mark the 33rd landing at KSC in the history of Space Shuttle flight. It will be the sixth landing of the Shuttle at KSC this year.

About six hours after landing at KSC, select members of the flight crew will be present for a post-mission press conference. The conference will be held at the KSC TV auditorium and carried live on NASA TV.

SLF and KSC Ground Operations

The Shuttle Landing Facility was built in 1975. It is 300 feet wide and 15,000 feet long with 1,000 foot overruns at each end. The strip runs northwest to southeast and is located about 3 miles northwest of the 525-foot tall Vehicle Assembly Building.

Once the orbiter is on the ground, safing operations will commence and the flight crew will prepare the vehicle for post-landing operations. The Crew Transport Vehicle (CTV) will be used to assist the crew, allowing them to leave the vehicle and remove their launch and re-entry suits easier and quicker.

The CTV and other KSC landing convoy operations have been "on-call" since the launch of Columbia Nov. 19. The primary functions of the Space Shuttle recovery convoy are: provide immediate service to the orbiter after landing, assist crew egress, prepare the orbiter for towing to the Orbiter Processing Facility.

Convoy vehicles are stationed at the SLF's mid-point. About two hours prior to landing, convoy personnel don SCAPE suits, or Self Contained Atmospheric Protective Ensemble, and communications checks are made. A warming-up of coolant and purge equipment is conducted and nearly two dozen convoy vehicles are positioned to move onto the runway as quickly and as safely as possible once the orbiter coasts to a stop. When the vehicle is deemed safe of all potential explosive hazards and toxic gases, the purge and coolant umbilical access vehicles move into position at the rear of the orbiter.

Following purge and coolant operations, flight crew egress preparations will begin and the CTV will be moved into position at the crew access hatch located on the orbiter's port side. A physician will board the Shuttle and conduct a brief preliminary examination of the astronauts. The crew will then make preparations to leave the vehicle.

Following departure from the SLF, the crew will be taken to their quarters in the O&C Building, meet with their families and undergo physical examinations. The crew is scheduled to depart for JSC later in day after landing.

If Columbia lands at Edwards, an augmented KSC convoy team will be on-site to safe the vehicle, disembark the crew and move the orbiter to the Mate/Demate Device. The turnaround team will be deployed to Edwards by charter aircraft on landing day.

About 3 1/2 hours after Columbia lands at KSC, the orbiter will be towed to Orbiter Processing Facility bay 1 for post-flight deservicing. Preparations will then begin for Columbia's next mission, STS-83, currently scheduled for launch in March.

-- end --

NOTICE TO EDITORS: Media wishing to view Columbia's landing should be at the KSC press site between 3:30 - 6:30 a.m. Thursday, Dec. 5, for transport to the SLF. Other specific information is available at the KSC News Center regarding landing photo opportunities, post-landing press conferences and KSC News Center operational hours.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

December 10, 1996
KSC Contact: Joel Wells
KSC Release No. 142-96

KSC'S ENERGY SAVINGS EFFORTS REWARDED WITH NATIONAL HONOR

Kennedy Space Center is the only NASA center to receive the 1996 Federal Energy and Water Management Award. The prestigious award recognizes KSC's efforts to promote a cleaner environment and save taxpayer dollars by conserving energy.

A total of 117 nominees representing 19 federal agencies competed for the award, presented by the Federal Interagency Energy Policy Committee and the Department of Energy. KSC won because of its aggressive response to a 1994 Executive Order that mandated energy conservation goals and called for innovative ways to reduce energy consumption. Using KSC's energy consumption in 1985 as a baseline, the order requires an ambitious 30 percent reduction by 2005.

"We have taken an aggressive approach toward energy management and this award recognizes our efforts to surpass a milestone reduction of 10 percent by 1995, but we still have to reach 20 percent by 2000 and then 30 percent by 2005," said Wayne Thalasinos, NASA KSC energy resources manager. "Compared to other agencies and other NASA centers we have done a stellar job, but we still have a way to go."

In fiscal year 1995 alone, KSC avoided more than $1 million in energy costs. Kennedy's Base Operations Contractor (BOC), EG&G Florida, Inc., contributed to that savings by implementing more than 13 energy conservation projects through their Energy Management Office. Those projects also provided more than $61,000 in rebates from Florida Power and Light (FP&L). KSC Officials expect a cumulative rebate of $1 million at the close of fiscal year 1997.

The conservation projects include the installation of state-of-the-art, energy efficient lights and motors, and the replacement of air conditioning units in several KSC facilities. The BOC Alternative Fuels Office also spearheaded an effort to construct a natural gas pipeline to KSC and convert many of the center's facilities to natural gas. KSC opened a natural gas fueling station in May to support their new compatible government vehicles.

"Applying natural gas at KSC will not only save us operation and maintenance costs, but also responds to the Clean Air Act of 1990," said Chris Cook, EG&G senior engineer. Presently, 80 percent of the fuels burned at KSC have been converted from petroleum to natural gas.

NASA and BOC energy managers continue to search for innovative ways to curb future energy consumption. Energy Savings Performance Contracting is one promising initiative in KSC's strategy to reach the 30 percent goal. This tool allows NASA to pay contractors working on conservation projects with the money saved by their efforts. When the contracts are paid, NASA will continue to benefit from the lower energy bills.

KSC and FP&L officials are also discussing plans to construct an on-site emergency power plant in the near future to support the energy needs of the center and local communities. "Local energy consumption is at an all time high and construction of a new FP&L power plant is on the horizon," said Chuck Cain, FP&L Account Manager. "By incentivizing KSC's construction of an on-site emergency power plant, FP&L can avoid incurring the costs of building one and consequently raising the utility bills of individual consumers."

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

December 12, 1996
KSC Contact: George H. Diller
KSC Release No. 144-96

KSC RECEIVES EMPLOYEE DISABILITY HIGH-TECH TRAINING AWARD

The Business Advisory Council of the Center for High-Tech Training for Individuals With Disabilities has awarded KSC the Dale Wallbrown Memorial Corporate Sponsor of the Year Award.

This annual award, presented by Valencia Community College, represents outstanding contributions to disabled students who have received special training in the field of computer programming or in computer assisted drafting and design. The goal of the program is to provide individuals with disabilities the training necessary for the computer-associated skills which will assist in achieving their own financial independence.

"NASA's active involvement has helped to ensure that the job training is both responsive to the needs of citizens with disabilities and to the employment needs of the Central Florida business community," said Deborah H. Clark, director of the program at Valencia Community College in Orlando.

NASA-KSC is being recognized for its direct involvement in "advisory council activities for student evaluation and selection, financial help, internship and placement activities." KSC has had five interns, all of which have performed successfully and now have productive jobs in local businesses.

Jim Jennings, director of the Administration Office at KSC, said in receiving the award, "NASA receives much in return from participating in the program, not the least of which is the contribution the students make toward our mission."

Dale Wallbrown was a student at the Center who due to his illness and death was unable to achieve his goal of a career and independence. Each year, in his memory, the Center's staff recognizes the business partner that they believe has had the most impact on making a difference for the students and graduates of the program.

KSC first signed an memorandum of understanding with the Center for High-Tech Training in 1994.

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STS-81
Atlantis
Shuttle-Mir Mission-5/SPACEHAB-DM

KSC Release No. 145-96
December 1996

The fifth Shuttle-Mir docking mission will begin when the Space Shuttle Atlantis lifts off from Launch Pad 39B at KSC and enters an initial orbit of 184 statute miles (296 kilometers) at an inclination of 51.6 degrees to the Earth's equator. Atlantis will then maneuver to rendezvous and dock with Mir on Flight Day 3 at an altitude of about 245 statute miles (394 kilometers).

Once docked, STS-81 Mission Specialist Jerry Linenger will take his place aboard the Russian space station as a member of the Mir crew for a planned stay of about 4 1/2 months. He will replace NASA astronaut John Blaha,who has been on Mir since Sept. 19, 1996, when Atlantis dock-ed with Mir during the STS-79 mission. Linenger will remain aboard Mir until he is replaced by STS-84 Mission Specialist Michael Foale. He will return to Earth during that mission, which is currently targeted for May 1997.

Atlantis' primary payload will be a SPACEHAB double module that will serve as a transport module for nearly 2,000 pounds of food, water and other supplies for the Mir crew. During the five days of docking operations, the STS-81 and Mir 22 crews will work to together to transfer supplies into Mir and conduct experiments in the SPACEHAB and the Russian space station. Blaha will return to Earth as a member of the STS-81 crew when Atlantis touches down at KSC to conclude the 10-day mission.

The Crews

Mission Commander Michael A. Baker (Captain, USN) will be on his fourth space flight and was commander of the STS-68 mission. He has more than 4,800 hours of flight time in over 50 types of aircraft. Pilot Brent W. Jett, Jr. (Cdr.,USN) first flew as the pilot of STS-72. A former naval aviator with 450 carrier landings, he holds a master's degree in aeronautical engineering. He became an astronaut in 1992. Mission Specialist John M. Grunsfeld (Ph.D) flew in this capacity on STS-67. He holds doctorate and master's degrees in physics. Grunsfeld was selected as an astronaut in 1992. Mission specialist Marsha S. Ivins has flown on three Shuttle missions, STS-62, STS-46 and STS-32. She began work for NASA as an engineer and holds a commercial pilot's license. She has served as the lead of the Astronaut Support Personnel team at KSC. Mission Specialist Peter J. K. "Jeff" Wisoff conducted a spacewalk on his first flight, STS-57. He holds a doctorate degree in applied physics with an emphasis on lasers and semiconductor materials. Mission Specialist J. L. "Jerry" Linenger is a medical doctor and has been at the Cosmonaut Training Center in Star City, Russia in preparation for his stay on Mir. He is on his second Shuttle flight and has been an astronaut since 1992. Mir 22 crew members are Commander Valery Korzun and Flight Engineer Alexander Kaleri. They have been in space since Aug. 17, 1996, when they were launched to replace the Mir 21 crew. Blaha has flown on four Shuttle missions and had logged 33 days in space before arriving at Mir. He has served as the chairman of the NASA Flight Safety Panel and has been an astronaut since 1980.

Shuttle-Mir Initiative and Science Program

The STS-81 Shuttle-Mir docking mission will continue the joint NASA-Russian Space Agency effort to have a U.S. astronaut aboard the Russian space station on a permanent basis that began when Norm Thagard entered the orbital laboratory as a member of the Mir 18 crew on March 18, 1995. Two more docking and astronaut transfer missions, STS-84 and STS-86, are scheduled this year. Two additional long-duration stays by U.S. astronauts will extend the program through May 1998.

The Shuttle-Mir Science Program focuses on using Russian space station long-duration missions to conduct research in the disciplines of advanced technology, earth sciences, fundamental biology and human life sciences, as well as the fields of microgravity and space science. These investigations will provide valuable information for the development and operation of the International Space Station, as well as providing data that will enhance the knowledge base for advances in these fields of research. These advances could lead to new products and procedures that will benefit everyone on Earth.

Payloads and Experiments

Atlantis' payload bay will be configured the same as it was on the STS-79 mission, and the orbiter will link up with the Mir with the Orbiter Docking System (ODS) after Baker and Jett use the R-bar approach to the space station. The ODS also serves as the passageway to allow the transfer of crew members and equipment to and from the Mir orbital laboratory.

The transfer of Russian logistics equipment from the SPACEHAB double module to the Mir will begin shortly after docking. The equipment includes a gyrodyne, three storage batteries, a current transformer, 36 food containers, 1,400 pounds of water and clothing and sleeping articles.

The SPACEHAB, which is flying in the double module configuration for the second time, will also be used to transfer Russian equipment back to Earth aboard Atlantis, including a navigation unit and an experiment furnace package. Some experiment hardware that was transferred to the Mir during the STS-79 mission and left onboard to record data and capture environmental samples will be moved into the SPACEHAB and returned to Earth for analysis.

International Space Station Risk Mitigation Experiments (RME) -- The RMEs are a major part of the Shuttle-Mir Science Program to monitor the Mir interior and exterior to investigate crew health and safety factors aboard the space station. Data from these experiments will be used to improve the design of the International Space Station. The RMEs that will be aboard the SPACEHAB module are: Mir Electronic Field Characterization (MEFC); the Shuttle/Mir Experiment Kit Transport; Optical Properties Monitor (OPM); Treadmill Vibration Isolation and Stabilization System(TVIS); Mir Structural Dynamics Experiment (MiSDE) Joint Operations; and Inventory Management System Test 4.

Human Life Sciences (HLS) Experiments -- These experiments are part of the Shuttle-Mir Science Program effort in which U.S. and Russian scientists work together to determine how the human body adapts to the microgravity environment. The knowledge gained will help assure crew health and safety on the International Space Station. Some of the 11 HLS experiments that will fly in the SPACEHAB and require the transfer of items to Mir will take samples of the space station's air and water and possible contaminants. Blood will be taken from crew members to study how the immune system reacts to microgravity. Other experiments will be performed to investigate sensory and muscle-motor performance, while data will be collected on sleep patterns and interpersonal behavior.

Other investigations that will remain aboard the SPACEHAB module include the European Space Agency's Biorack that will study of the effects of microgravity on plants, bacteria and insects and the Queen's University Experiment in Liquid Diffusion, a joint U.S., Russian and Canadian project. Also in the module's experiment racks are the Life Sciences Laboratory Equipment Refrigerator /Freezer for stowage and transport of Mir 22 crew urine and saliva samples to investigate possible accelerated renal stone growth and protein metabolism in microgravity. Other medically related experiments include the Cartilage in Space-BTS experiment and the Commercial Generic Bioprocessing Apparatus (CGBA) to investigate the commercial potential of biomedical and fluid science application in space.

The Materials in Devices as Superconductors experiment was transported to Mir during the STS-79 mission and has been onboard the space station's Priroda research module to evaluate the effects of long-duration flight on superconductor materials. It will be installed in an orbiter middeck locker during STS-81 and returned to KSC.

Orbiter middeck investigations include the Biological Research in Canisters experiment; the Protein Crystal Growth Freezer Dewar Assembly; and the Diffusion- controlled Crystalization Apparatus for Microgravity. During the mission, the crew will conduct Earth observations with the Kidsat Electronic Still Camera that will be mounted in the overhead window of the orbiter's aft flight deck.

KSC Payload Processing

Atlantis returned to KSC to conclude the STS-79 mission on Sept. 26, 1996. It was then moved to Orbiter Processing Facility 3 for preparation for the STS-81 mission. The ODS was installed in the orbiter's payload bay on Oct. 30 and Atlantis was rolled over to the Vehicle Assembly Building for mating with its solid rocket boosters and external tank Dec. 5. The Shuttle was rolled out to Launch Pad 39B on Dec. 10. The SPACEHAB module, which had previously been transported out to the pad, was transferred from the Payload Changeout Room and installed into the orbiter's payload bay on Dec. 12.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

December 12, 1996
KSC Contact: Bruce Buckingham
KSC Release No. 146-96

NEW APOLLO/SATURN V CENTER TO OFFICIALLY OPEN NEXT WEEK

Members of the media are invited to attend a ribbon cutting ceremony marking the official start of public tours through Kennedy Space Center's new Apollo/Saturn V Center. The event will be held on location at the just completed facility on Dec. 17 beginning at 11:30 a.m.

The Apollo/Saturn V Center is located about 2 miles north of the Vehicle Assembly Building on the Kennedy Parkway, near the current Banana Creek VIP Shuttle launch viewing site.

The centerpiece on display in NASA's new 100,000 square foot attraction is the recently refurbished 363 foot-long Apollo-era Saturn V rocket. This is the same vehicle that for the past 20 years had been displayed near the Vehicle Assembly Building at KSC. This Saturn V has been a KSC landmark since 1976 when it was a part of the U.S. Bicentennial Exposition of Science and Technology. Now, instead of being on display outdoors, it will be permanently displayed in a controlled environment along with a Command Service Module that had earlier been located in the former Flight Crew Training Facility in KSC's industrial area.

The grand opening ceremony will begin at 11:30 a.m. with remarks by:

- Hugh Harris, Director, Public Affairs, NASA, KSC
- James Ball, Chief, Visitor Center Branch, NASA, KSC
- Rick Abramson, President and Chief Operating Officer, Delaware North Parks Services of Spaceport, Inc.
- Edward O'Connor, Jr., Executive Director, Spaceport Florida Authority
- Gene Thomas, Deputy Director, KSC
- Eugene Cernan, Astronaut (Gemini 9, Apollo 10, and Apollo 17)

The Apollo/ Saturn V Center showcases one of only three moon rockets remaining in existence. Other attractions inside the Center include new artifacts and historical displays and two film theaters. The theaters will feature two new presentations produced for the Apollo/Saturn V Center. The "Firing Room Theater" brings the viewer into a dramatic sense of the original Apollo-era firing room with multi-screen presentations. The "Lunar Surface Theater" re-stages the historical moments of the flight of the first mission to land a man on the Moon, Apollo 11.

Other events scheduled for the opening day ceremony include the visit of about 250 Brevard County school children who will be allowed to see up-close the Saturn V rocket, the most powerful rocket ever built, and talk with Astronaut Gene Cernan, the last man to walk on the Moon.

Press interested in attending the opening day ceremonies should be at the KSC Press Site no later than 10:30 a.m. Tuesday, Dec. 17, for transport to the Center.

Delaware North Park Services of Spaceport, Inc., the Kennedy Space Center Visitor Center concessioner, will provide commemorative press kits available at the Apollo/Saturn V Center.

NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

December 12, 1996
KSC Contact: Bruce Buckingham
KSC Release No. 147-96

TCDT MEDIA OPPORTUNITY WITH STS-81 CREW SET FOR NEXT WEEK

The crew of Space Shuttle mission STS-81 will be at Kennedy Space Center next week for the Terminal Countdown Demonstration Test (TCDT).

The TCDT is held prior to each Space Shuttle flight providing the crew of each mission opportunities to participate in simulated countdown activities at KSC. The TCDT ends with a mock launch countdown culminating in a simulated main engine cutoff. The crew also spends time undergoing emergency egress training exercises at the pad and they have an opportunity to view and inspect their mission payloads in the orbiter's payload bay.

The six-member crew of mission STS-81 is scheduled to arrive at KSC's Shuttle Landing Facility (SLF) at about 11 a.m. Sunday, Dec. 15. No media opportunity will be available for this event.

On Monday, news media representatives will have an opportunity to speak informally with and photograph the crew at Pad 39B. Media interested in participating in this question and answer session should be at the KSC Press Site by 7:30 a.m. Monday for transport to the pad. This session will be carried live on NASA TV.

On Tuesday, the crew will take part in simulated launch day events, including entering the orbiter Atlantis fully suited and experiencing a simulated main engine cut-off. Following TCDT, the crew is scheduled to depart KSC for their homes in Houston for final flight preparations.

Atlantis is now targeted for launch on Jan. 12 at 4:22 a.m. EST. Mission STS-81 will be the fifth docking mission with the Russian space station Mir. The mission is expected to last about 10 days.

Crew members for mission STS-81 are: Commander Michael Baker, Pilot Brent Jett, and Mission Specialists Jerry Linenger, John Grunsfeld, Marsha Ivins and Jeff Wisoff.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

December 13, 1996
KSC Contact: Joel Wells
KSC Release No. 148-96

KSC WINS COMPETITION ADVOCACY AWARD

Kennedy Space Center's efforts to enhance competition for federal contracts by easing the bidding process for all businesses have once again been recognized nationally with the prestigious Competition Advocacy Award from NASA Headquarters.

The award, which KSC has won for three of the last four years, recognizes several steps KSC has taken to open up the procurement process, specifically to small and small disadvantaged businesses that may have had difficulty obtaining bidding information in the past.

The award recognizes efforts that have been made to identify barriers to competition and the efforts undertaken by a center to eliminate those barriers. "KSC's strength comes from two significant areas: the personal commitment of KSC Deputy Director Gene Thomas, the center's competition advocate, and the team efforts from the technical and procurement community including prime contractors," said Ann Watson, deputy director of the Procurement Office.

Thomas' involvement includes ensuring industry representatives receive quality information about the center's procurement needs; personally evaluating each request for a contract requiring limited or no bidding; and attending Acquisition Strategy Meetings to assure that all aspects of forthcoming acquisitions promote competition.

Thomas also serves as KSC's Ombudsman for Acquisition, an agency program that facilitates communication between NASA and current and potential contractors. In that role he makes time to personally meet with companies seeking to do business with KSC.

Watson, who also serves as KSC's small business specialist, developed the center's Central Industry Assistance Office (CIAO) which gives companies an outlet for describing their products or services while at the same time learning about NASA's needs.

One of the key factors in the office's success boils down to communication. "We're very honest," Watson said. "We feel it's important that businesses conserve their resources if a particular situation does not apply to them."

Businesses have found the process of matching their services to NASA's needs has become much more precise through several efforts unique to KSC.

The annual Business Opportunities Expo, which celebrated its 7th anniversary in 1996, brings representatives from industry, NASA and contractors together to share information about needs and services. The event has become one of the premier business opportunity events in the southeast.

Joint counseling sessions, held twice weekly at the CIAO, give businesses the opportunity to meet with representatives of NASA and major contractors without having to obtain security clearance for access to the center. Since its inception in 1994, approximately 40 percent of the companies counseled have received either prime contracts or subcontracts.

The Internet has become a very effective tool in the distribution of contract information to multiple sources. In addition to posting of procurement announcements and solicitations, business opportunities are made available on a NASA-wide search engine and subscription service.

KSC procurement efforts have also linked with the center's Technology Transfer Office. The Florida NASA Business Incubator Center, which recently opened through a partnership between the state, Brevard Community College and NASA, is also providing information on KSC procurements to tenants.

The Contractor Awards Ceremony provides recognition not only for the top contractors of the year but also for nominees.

The efforts have helped NASA to find suppliers that might never have applied for contracts in the past, Watson said. "That's where competition comes in," she said. "And that's what drives reasonable prices."

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NASA News Release
ON LINE
JOHN F. KENNEDY SPACE CENTER

December 18, 1996
KSC Contact: Dennis Armstrong
KSC Release No. 149-96

EDUCATIONAL INSTITUTIONS DO THEIR HOLIDAY SHOPPING AT KSC

While most of us have spent the past several weeks in malls doing our holiday shopping, it has become a common sight to see teachers from schools across the state of Florida entering the gates at Kennedy Space Center with a similar mission in mind. Arriving in empty buses, trucks, vans or cars, they can be seen departing later in the day with their vehicles packed with bulky boxes full of computers, printers, monitors, mouses and cables - all destined for use by students at their schools.

NASA has been providing surplus government equipment at KSC to schools under the Stevenson-Wydler Act for several years, and computer systems have always been at the top of their shopping list. In recent months, approximately 1200 systems became available as a result of computer upgrades at the space center, and KSC made a special effort to get the word out to the schools. The response has been overwhelming. NASA received requests for a total of more than 11,000 computer systems. While systems have been provided to schools as far away as Charleston, SC, the first-come first-served policy has resulted in most of them being assigned to Florida schools.

Glenda Waring, media specialist for the Imperial Estates Elementary School in Titusville, FL, is a good example of the way teachers in our own community are making use of the KSC program. "When we heard about the program, we immediately forwarded our request to KSC and received 20 fully-functioning computer systems. These, in combination with other computer bits and pieces we had previously received through KSC's teacher program, allowed us to establish a 34-unit computer laboratory for our Kindergarten through 6th grade student body. It would have taken us at least two or three more years to set up our lab without KSC's help."

A letter from the head of the math department at Murdock Middle School in Port Charlotte, FL, and co-signed by about 100 students, put their thoughts in perspective. The letter says, " All the eighth grade students on the Seahawk team at Murdock Middle School would like to thank you for taking an active part in our education. The computers you donated to our school have allowed us to experience real life math. Math is now more exciting and the computers help us understand more of what is going on in our world today."

Students at the L. A. Ainger Middle School in Rotonda West, FL are using their computers to work problems such as calculating the speed of sound. Students have also conducted computerized motion studies involving pulleys, inclined planes, levers and students on rollerblades to test Archimedes' Principle and Newton's Laws of motion.

Since announcing its one-time surplus computer donation program about four months ago, KSC has received approximately 360 requests and has already distributed nearly 800 systems to Florida schools. Of these, 252 systems were received by 13 local schools. An additional 400 systems have been assigned to other schools and are projected for delivery within the next few months.

KSC Director Jay Honeycutt noted: "In NASA, we always have considered it to be one of our primary goals to help prepare young people to move the nation's space program and other high tech ventures into the future. The surplus computer initiative is one of over a hundred programs we offer at KSC to help teachers and students across the

country."

While the one-time supply of complete surplus computer systems has been depleted, KSC property disposal officials would like to remind schools that surplus computer components, parts and other equipment are still available for teachers to obtain at regularly scheduled intervals. For more information on registering for this program, please contact the KSC Property Disposal Office at (407) 867-7790.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

December 18, 1996
KSC Contact: Joel Wells
KSC Release No. 150-96

SANTA HAS NASA'S GREEN LIGHT TO USE SHUTTLE LANDING FACILITY

The Kennedy Space Center's Shuttle Landing Facility will again be available for emergency landings by venerable old Saint Nick should problems develop during his annual visit to the world's children. This continues a tradition established shortly after the opening of the SLF in the 1970s.

The SLF was completed in the late 1970s as part of the center's buildup for Space Shuttle operations. The 15,000-foot-long, 300-foot-wide landing strip is among the world's largest and could provide a welcome haven for Santa Claus in the event of reindeer problems or mechanical difficulties with his new, high-tech sleighs.

Santa has gone to high-tech, state-of-the-art sleighs in recent years due to the increasing population of kids and the greater workload this has imposed. His reindeer aren't getting any younger, either, and the new, lighter sleighs are made of advanced composite materials to lighten their burden.

Space Shuttle orbiters are guided to precision landings at the Spaceport's SLF by a Tactical Air Navigation (TACAN) system and Microwave Scanning Beam Landing System (MSBLSS). Santa has equipped his new sleighs with flight units capable of establishing contact with them should a landing here be necessary.

Other recent improvements include improved brakes, enhanced nose runner steering and braking parachute. Santa has also incorporated stealth technology into the new designs to reduce their radar profiles. "I have to make deliveries in countries that are not at peace with one another," said Claus. "Even though the kids have behaved themselves, some of the grown-ups' anti-aircraft guns still pose a threat to my reusable launch vehicle."

No government expense is involved in making the SLF available to Saint Nick on Christmas Eve. No personnel will be on duty and the automated landing systems will be left on in the automatic mode.

Has Santa ever had to make a forced landing at KSC?

"We have no actual proof," commented an SLF manager, who spoke only with assurances of anonymity. "But the morning after a real cold Christmas several years ago we found a twisted sleigh runner we've never been able to account for."

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

September 20, 1996
KSC Contact: George H. Diller
Release No. I96-8

VIEWS OF MARS SPACECRAFT PROCESSING AVAILABLE

Internet users can view NASA's preparations of two spacecraft that soon will be bound for Mars. Still images of processing of the Mars Global Surveyor and Mars Pathfinder are available from the Kennedy Space Center, FL. The pictures, which are "frame grabs" from television cameras, are updated every 90 seconds.

The McDonnell Douglas Delta II rocket that will launch the Mars Global Surveyor will be stacked on Pad A at Complex 17 starting Sept. 20. Live video from the launch pad will be available and also will be provided from Pad 17-B for the Mars Pathfinder vehicle when stacking begins.

The internet address for images of Mars Global Surveyor and the Delta launch vehicle at Complex 17 is:

http://www.ksc.nasa.gov/payloads/missions/mgs/video.html

The internet address for Mars Pathfinder images is:

http://www.ksc.nasa.gov/payloads/missions/pathfinder/video.html

Mars Global Surveyor is scheduled to be launched November 6 and Mars Pathfinder on December 2. Both spacecraft will be launched from Cape Canaveral, FL.

The missions are managed by the Jet Propulsion Laboratory, Pasadena, CA, for NASA's Office of Space Science, Washington, DC.

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NASA Media Advisory ON LINE

JOHN F. KENNEDY SPACE CENTER

January 19, 1996
Note to Editors: N96-3

LAUNCHES AND SCIENCE BRIEFINGS SCHEDULED FOR POLAR AND NEAR

NASA managers yesterday approved the schedule for the launches of the upcoming Polar and Near Earth Asteroid Rendezvous (NEAR) missions, both to be launched on Delta-II rockets built by McDonnell Douglas. The strategy calls for processing to proceed towards launch on February 2 for Polar at Vandenberg Air Force Base, CA (VAFB) and February 16 for NEAR at Cape Canaveral Air Station, FL (CCAS).

However, on or before January 26, the management team will again assess the situation based on the readiness of NEAR. If processing on NEAR is on schedule with no known constraints to meet its February 16th launch, the Polar launch will be rescheduled to February 22. Managers explain that since a single Delta launch team is responsible for both launches, there is not sufficient turnaround time to support a February 2 launch on the West coast and a February 16 launch on the East coast. There is no constraint to a February 22 launch of Polar at VAFB and the previously-scheduled launch of the Space Shuttle STS-75 mission from Kennedy Space Center, FL.

SCIENCE BRIEFINGS

The Polar science briefing will be held Tuesday, January 30, at 2 p.m. EST, at the Goddard Space Flight Center, Greenbelt, MD (GSFC), in the Visitor Center on Soil Conservation Rd. Participants will be: Dr. Mario Acuna, ISTP/GGS Project Scientist, GSFC; Dr. Robert Hoffman, Deputy Polar Project Scientist, GSFC; Dr. Robert Carovillano, GGS Program Scientist, NASA HQ; Dr. Mary Hudson, Darmouth College, NH; Dr. David Chenette, Lockheed Palo Alto Research Lab, CA; and Joseph Dezio, Project Manager, Global Geospace Project, GSFC.

The NEAR science briefing will be held Tuesday, February 6, at 2 p.m. EST at the NASA Headquarters auditorium, 300 E St., SW, Washington DC (West lobby). Participants will be Dr. John Kerridge, NEAR Program Scientist, NASA HQ; Dr. Andrew Cheng, NEAR Project Scientist, Johns Hopkins University Applied Physics Laboratory (JHU/APL) and other panelists to be announced later.

Both briefings will be carried live on NASA Television via Spacenet 2 Transponder 5, Channel 9, at 69 degrees West longitude. The frequency is at 3880.0 megahertz, audio at 6.8 megahertz. There will be 2-way question and answer capability for reporters covering the briefings from participating NASA Centers.

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NASA Media Advisory ON LINE

JOHN F. KENNEDY SPACE CENTER

January 26, 1996
Note to Editors N96-4

LAUNCH OF NEAR ON SCHEDULE, POLAR LAUNCH RETARGETED; POLAR SCIENCE BRIEFING RESCHEDULED

With all prelaunch preparations proceeding smoothly, managers have decided that the Near Earth Asteroid Rendezvous (NEAR) mission, will be NASA's next expendable vehicle launch. Liftoff is scheduled for Feb. 16 from Pad B at Launch Complex 17, Cape Canaveral Air Station, FL. The launch window extends from 3:53:07 p.m. to 3:54:07 p.m. EST, a duration of one minute.

Launch of NASA's Polar spacecraft, to occur from NASA's Space Launch Complex 2 at Vandenberg Air Force Base, CA (VAFB), has been retargeted to Feb. 22. The launch window extends from 3:22 a.m. to 3:47 a.m. PST, a duration of 25 minutes. Activities to prepare for the Polar launch also have been going well and the spacecraft was erected atop the McDonnell Douglas Delta II rocket on Tuesday, Jan. 23.

The Polar Science Briefing has been rescheduled to Friday, Feb. 9, at 2 p.m. EST, at the Goddard Space Flight Center, Greenbelt, MD (GSFC), Visitor Center on Soil Conservation Rd. Participants will be: Dr. Mario Acuna, ISTP/GGS Project Scientist, GSFC; Dr. Robert Hoffman, Deputy Polar Project Scientist, GSFC; Dr. Robert Carovillano, GGS Program Scientist, NASA HQ; Dr. Mary Hudson, Dartmouth College, NH; Dr. David Chenette, Lockheed Palo Alto Research Lab, CA; and Joseph Dezio, Project Manager, Global Geospace Project, GSFC.

The NEAR Science briefing will be held as previously scheduled on Tuesday, Feb. 6, at 2 p.m. EST at the NASA Headquarters auditorium, 300 E St., SW, Washington DC (West lobby). Participants will be Andrew Cheng, NEAR Project Scientist, Johns Hopkins University Applied Physics Laboratory (JHU/APL); Robert W. Farquhar, NEAR Mission Manager, JHU/APL; Joseph Ververka, Cornell University, Ithaca, NY; Jacob I. Trombka, NASA/GSFC; Maria T. Zuber, MIT, Cambridge, MA, and NASA/GSFC.

Both briefings will be carried live on NASA Television via Spacenet 2, Transponder 5, Channel 9, at 69 degrees West longitude. The frequency is at 3880.0 megahertz, audio at 6.8 megahertz. There will be 2-way question and answer capability for reporters covering the briefings from participating NASA Centers.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

March 11, 1996
Note to Editors: N96-18

MANAGERS TARGET MARCH 21 AS LAUNCH DATE FOR NEXT SHUTTLE MISSION

Following a flight readiness review today, Space Shuttle managers are continuing to plan on March 21 as the launch date for Space Shuttle Atlantis on Mission STS-76. The STS-76 mission is the third in a series of missions between America's Space Shuttle and Russia's space station Mir.

During the meeting, solid rocket motor managers discussed further their findings into the anomaly seen in o-rings of the nozzle to case joint for the boosters used in the STS-75 launch. An additional review is planned for Friday, March 15, 1996.

"We take flight issues like this very seriously and as is always the case, this problem is being aggressively investigated by both the Shuttle and safety communities" said George Abbey, Director, Johnson Space Center, who chaired the review meeting. "The teams working this issue have examined many areas including the way the boosters are processed, the thermal constraints on the system, possible failure scenarios and performance data from previous flights."

The March 21 launch of Atlantis is planned for 3:35 a.m. EST from Kennedy Space Center's (KSC) Launch Complex 39-B. The available launch period, or "window," to launch Atlantis is approximately seven to ten minutes each day.

The STS-76 mission is scheduled to last approximately nine days. Docking with Mir will occur on flight day three. An on- time launch and nominal mission duration would have Atlantis and crew returning to Earth on March 30 with a landing at KSC's Shuttle Landing Facility at approximately 8:04 a.m. EST.

The STS-76 mission will be the 16th mission for Atlantis and the 76th for the Space Shuttle system.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

March 18, 1996
Note to Editors: N96-21

TUESDAY BRIEFINGS INCLUDE NASA BUDGET PRESS CONFERENCE

A briefing on NASA's fiscal year 1997 budget request will be held at 3:30 p.m. EST on Tuesday, March 19 in the auditorium of NASA Headquarters, 300 E St., SW, Washington, DC.

NASA Administrator Daniel S. Goldin will present the Agency's budget request and answer questions. A summary of the budget request will be distributed to news media at the beginning of the briefing.

Also on Tuesday, NASA will present a Space Station status briefing from the Johnson Space Center, Houston, TX at 2 p.m. EST. Later in the afternoon, a pre-launch status briefing for the STS-76 mission, scheduled to liftoff Thursday, will be held at the Kennedy Space Center following the budget press conference. That briefing is tentatively scheduled for 4:30 p.m. EST.

All three briefings will be carried live on NASA Television on Spacenet 2, transponder 5, channel 9, C-Band, located at 69 degrees West longitude, with horizontal polarization. The frequency is 3880.0 megahertz, with audio on 6.8 megahertz.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

March 18, 1996
Note to Editors: N96-22

STS-76 COUNTDOWN BRIEFINGS/LAUNCH COVERAGE--March 18-21

Beginning today, a series of briefings will be held at NASA's Kennedy Space Center, FL, in connection with the upcoming launch of the Space Shuttle Atlantis on mission STS-76. Launch is scheduled for Thursday, March 21 at 3:35 a.m. EST.

Daily countdown status briefings will be held to update news media on final processing activities for the launch. A pre-launch news conference will be held March 19th at 4:30 p.m., to discuss STS-76 mission readiness and objectives.

Attached is a listing of the times, subjects and participants for each of the scheduled briefings. Also noted on the schedule are key STS-76 pre-launch activities and NASA TV replays.

- end -

NASA press releases and other information are available automatically by sending an Internet electronic mail message to domo@hq.nasa.gov. In the body of the message (not the subject line) users should type the words "subscribe press-release" (no quotes). The system will reply with a confirmation via E-mail of each subscription. A second automatic message will include additional information on the service. Questions should be directed to (202) 358-4043.

STS-76 MISSION PRE-FLIGHT BRIEFINGS & KEY EVENTS
(All times listed are EST)

L-4 DAYS (Sunday, March 17, 1996)

11:59 p.m. - STS-76 Crew Arrival at KSC SLF

L-3 DAYS (Monday, March 18, 1996)

2:00 a.m. - Begin STS-76 Launch Countdown

9:00 a.m. - Countdown Status Briefing
John Guidi, Shuttle Test Director
Lesa Roe, STS-76 Payload Manager
Ed Priselac, Shuttle Weather Officer

9:30 a.m. - Replay of STS-76 Crew Arrival
Noon - NASA Video File

L- 2 DAYS (Tuesday, March 19, 1996)

9:00 a.m. - Countdown Status Briefing

John Guidi, Shuttle Test Director
Lesa Roe, STS-76 Payload Manager
Ed Priselac, Shuttle Weather Officer

Noon - NASA Video File

2:00 p.m. - Space Station Press Conference (from JSC)
Randy Brinkley, Space Station Program Director, JSC
Bill Shephard, Deputy Mgr., Space Station International Affairs, JSC

3:30 p.m. - NASA Budget Press Conference (from HQ)

4:30 p.m. - STS-76 Pre-Launch Press Conference
Tommy Holloway, NASA Shuttle Program Manager, JSC
Frank Culbertson, Shuttle-Mir Phase One Program Acting Dir., NASA
Valery Ryumin, Phase Onde Director, RSC Energia
Dr. Arnauld Nicogossian, Dep. AA, Office of Life & Microgravity Sciences
Bob Sieck, Director of Shuttle Operations, JSC
Capt. Scot Heckman, Launch Weather Officer

L-1 DAY (Wednesday, March 20, 1996)

9:00 a.m. - Countdown Status Briefing
John Stealey, NASA Test Director
Lesa Roe, STS-76 Payload Manager
Capt. James Sardonia, Launch Weather Officer

Noon - NASA Video File

10:00 p.m. - Begin NASA TV Coverage of STS-76 Launch

LAUNCH DAY (Thursday, March 21, 1996)

3:35 a.m. - LAUNCH OF SPACE SHUTTLE ATLANTIS

4:35 a.m. - Post-Launch Press Conference
Loren Shriver, Mgr., Shuttle Program Launch Integration
Jim Harrington, KSC Launch Director

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

May 7, 1996
KSC Contact: George Diller
NOTE TO EDITORS: N96-31

NASA SETS MAY 19 AS LAUNCH DATE FOR MISSION STS-77

At the conclusion of a flight readiness review meeting today, NASA managers set May 19, 1996 as the official launch date for the agency's next Space Shuttle mission, designated STS-77. The original target date of May 16 was not available on the Eastern Range schedule.

NASA's fourth Shuttle mission of 1996 will involve Shuttle Endeavour and a six-person crew performing microgravity research aboard the commercially owned and operated SPACEHAB Module. The crew also will deploy and retrieve a research satellite and perform rendezvous operations with a test satellite.

Launch of Endeavour on May 19 is scheduled for 6:30 a.m. EDT at the opening of a 2 1/2 hour available launch window. The STS-77 mission is forecast to last just over 10 days. Mission Control in Houston will be closely monitoring power consumption and cryogenic fuel reserves associated with the Shuttle's power system during the flight. Mission managers will have an option of shortening the mission one day if necessary. An on-time launch and nominal mission duration would result in a landing on May 29 a little after 7 a.m. EDT at Kennedy Space Center's Shuttle Landing Facility.

The STS-77 crew is commanded by John Casper, making his fourth Shuttle flight. The pilot for the mission, Curt Brown, is making his third flight. There are four mission specialists assigned to the flight. Andrew Thomas, serving as Mission Specialist-1, is making his first flight. Mission Specialist-2 is Dan Bursch who is making his third flight. Mario Runco, serving as Mission Specialist-3, also is making his third flight. Mission Specialist-4 is Canadian astronaut Marc Garneau, who is flying in space for the second time.

STS-77 will be the 11th flight of Endeavour and the 77th mission flown since the start of the Space Shuttle program in 1981.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

June 6, 1996
KSC Contact: Bruce Buckingham
Note to Editors: N96-38

NASA SETS JUNE 20 AS LAUNCH DATE FOR MISSION STS-78

At the conclusion of a flight readiness review meeting today, NASA managers set June 20, 1996, as the official launch date for the agency's next Space Shuttle mission - designated STS-78. NASA's fifth Shuttle mission of 1996 will involve Shuttle Columbia and a seven-person crew working with the Life and Microgravity Sciences (LMS) payload being carried in the pressurized Spacelab module in the Shuttle's cargo bay. The LMS payload consists of various experiments designed to examine how human beings and other living organisms along with various materials change in a weightless environment.

Launch of Columbia on June 20 is scheduled for 10:49 a.m. EDT at the opening of a 2 1/2 hour available launch window. The STS-78 mission duration is currently planned for 15 days, 22 hours, 20 minutes. However, Mission Control will be carefully managing and monitoring Columbia's electrical power comsumption with an eye towards extending the flight one day so additional science work can be performed. If the extension day happens, the mission duration would become 16 days, 22 hours, 2 minutes thus making the STS-78 flight NASA's longest Shuttle mission to date. An on-time launch and one day mission extension would set Columbia up for a landing on July 7 at 8:51 a.m. EDT at the Kennedy Space Center.

The STS-78 crew will be commanded by Terrence T. Henricks. The pilot for the mission is Kevin R. Kregel. The three mission specialists assigned to the flight are Richard M. Linnehan, Susan J. Helms, who is also the STS-78 Payload Commander, and Charles E. Brady. There also are two payload specialists serving as part of the STS-78/LMS crew--Jean- Jacques Favier from the French Atomic Energy Commission (CEA) and an astronaut of the French Space Agency (CNES), and Robert Brent Thirsk from the Canadian Space Agency (CSA).

STS-78 will be the 20th flight of Columbia and the 78th mission flown since the start of the Space Shuttle program in April 1981.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

November 6, 1996
KSC Contact: George H. Diller
KSC Mars Global Surveyor Launch Status Report: 3:00 p.m.

MARS GLOBAL SURVEYOR STATUS

The launch of the Mars Global Surveyor spacecraft scheduled for today aboard a McDonnell Douglas Delta II rocket has been postponed 24 hours due to shear winds observed aloft. There are two launch times on Nov. 7: 12:01 p.m. and 1:06 p.m. EST.

There is a 20 percent chance of not meeting the launch weather criteria on Thursday due primarily to a chance of showers.

Media covering the launch tomorrow should again meet at the Pass & Identification Building at Gate 1 on Cape Canaveral Air Station. Departure for Press Site 1 will be at 10:30 a.m.

NASA Television launch coverage will begin at 10:30 a.m. on Nov. 7.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

November 11, 1996
KSC Contact: Bruce Buckingham
NASA Release No. 96-232

NASA CLEARS COLUMBIA FOR FLIGHT -- LAUNCH SET FOR NOV. 15TH

Following completion of a follow-up readiness meeting today, NASA managers cleared Space Shuttle Columbia for launch on Mission STS-80 and set November 15th as the official launch date. The STS-80 launch was originally planned for earlier this month but was delayed to allow engineers additional time to complete their testing, analysis and evaluation of nozzle erosion that was found on one Reusable Solid Rocket Motor from Atlantis' September flight on STS-79.

Engineers have concluded that the most likely cause for the unusual erosion pattern seen on the STS-79 booster was due to a pocketing erosion effect triggered by slight ply distortions in the ablative material of the nozzle throat ring and normal variations in other material properties.

The manufacture of the throat ring is accomplished by wrapping the ablative material in a criss cross fashion and curing at elevated temperatures and pressures. Engineers believe that in the curing process, the material near the surface of the insulation shifts slightly, thus creating distortions near the surface.

During the motor operation when hot gas is flowing, the distortion can significantly raise stresses in the material that could result in a pocketing effect that causes the ablative material to wear away unevenly. Analysis also shows that even with the ply distortion condition in the worst possible configuration, significant safety margins are maintained.

The launch window on November 15 opens at 2:50 p.m. EST and extends for 2 1/2 hours. The STS-80 mission has a planned duration of 16 days. An on-time launch and nominal mission would result in a landing for Columbia at the Kennedy Space Center on Sunday, December 1 around 7:30 a.m. EST. The November 15 launch date is contingent upon a commercial Atlas rocket launch planned for Wednesday, November 13. If the Atlas launch is delayed one day for some reason, the Shuttle launch would move one day later due to Air Force range safety support logistics.

"I am very proud of this Shuttle team and their efforts in reviewing the nozzle issue," Space Shuttle Program Manager Tommy Holloway said. "I believe we now have a good understanding of the phenomenon seen on the STS-79 booster and are ready for Columbia's launch. The extra time we took to make sure all of the data was properly reviewed and analyzed once again demonstrates that safety remains the number one priority of this program."

The STS-80 mission is NASA's final Shuttle flight scheduled for 1996. During the mission, Columbia's astronauts, led by Commander Ken Cockrell, will deploy and retrieve two science satellites and two of the astronauts will conduct a pair of space walks to fine-tune techniques which will be used during the assembly of the International Space Station.

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NASA News Release ON LINE

JOHN F. KENNEDY SPACE CENTER

November 13, 1996, 5:45 p.m. EST
KSC Contacts: Lisa Malone/Bruce Buckingham
Launch Advisory

STS-80 LAUNCH MOVED TO NOVEMBER 19

Following a launch readiness meeting today, NASA managers have decided to postpone launch of Columbia on Mission STS-80 to Tuesday, November 19th.

The reason for the postpoment is predicted bad weather that is expected to be in the vicinity of Kennedy Space Center for the next several days. Weather forecasters are calling for improved conditions by early next week.

The STS-80 countdown will proceed to the T-11 hour mark where it will remain in an extended hold. No technical issues are currently being worked by the launch team. The STS-80 crew will remain at KSC.

The launch window on November 19 opens at 2:53 p.m. EST and extends for 2 1/ 2 hours. The mission duration is planned for 16 days. An on-time launch and nominal mission will have Columbia and her crew returning to KSC on December 5 at 7:37 a.m. EST.

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