Chronology of KSC and KSC Related Events for 1994

Ken Nail, Jr.

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CHRONOLOGY OF KSC

AND KSC RELATED EVENTS

FOR 1994

BY KEN NAIL, JR.

KSC LIBRARY ARCHIVIST

FOREWORD

This 1994 Chronology is published to fulfill the requirements of KMI 2700.1 (as revised) to describe and document KSC's role in NASA programs.

Materials for this Chronology were selected from a number of published sources. The document records KSC events of interest to historians and other researchers. Arrangement is by date of occurrence, though the source cited may be dated one or more days after the event.

Materials were researched and prepared for publication by Historian-Archivist Ken Nail, Jr., of Sherikon Space Systems, Inc. Each entry in this Chronology has been headlined for the convenience of researchers and other readers.

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Walter L. Covington
Center Services

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JANUARY

January 2:PETER JOHNSON AWARDED SNOOPY

Peter Johnson (Cocoa, FL), a lead instrumentation system engineer in the Shuttle Management and Operations Directorate has been awarded a Silver Snoopy by astronaut **James H. Newman.** Johnson was recognized for contributions in adding a cable to the Space Shuttle Discovery to carry data from the Orbiter's computers to a laptop computer in the crew cabin. Newman told Johnson: "Your readiness to consider a new idea, willingness to work to keep costs very low and ability to coordinate and integrate the efforts at KSC made this project possible." ["KSC Engineer Earns Silver Snoopy Honor," FLORIDA TODAY, p. 9E, Jan. 2, 1994.]

[]WORKERS BACK FROM HOLIDAY BREAK

Workers at Kennedy Space Center returned to their jobs today facing a tight launch processing schedule for the upcoming February 3 mission of Discovery on STS 60. "If we don't use any overtime, we don't have much time to spare. And that's the plan - to proceed at a normal pace and try not to work overtime," said KSC spokesman **George Diller.** Tomorrow, workers will lift the vehicle up onto its Orbiter transporter in the processing hangar. On January 4, Discovery will be towed from the OPF to the Vehicle Assembly Building where the vehicle will be mated with its external tank and solid rocket boosters. Rollout is planned for January 10. On January 6, Discovery's prime payload - the Wake Shield Facility - will be delivered to Launch Complex 39A along with BREMSAT, a German science satellite. Already in place in the cargo Bay is SPACEHAB, a nine-foot-long module inside of which the astronauts will conduct a dozen science experiments. The astronauts are expected to arrive at Kennedy Space Center next week to take part in Discovery's STS 60 terminal countdown demonstration test. The crew includes: Commander **Charles Bolden,** Pilot **Kenneth D. Reightler** and Mission Specialists **Sergei Krikalev, Franklin Chang-Diaz, N. Jan Davis** and **Ronald M. Sega.** [Halvorson, FLORIDA TODAY, p. 2A, Jan. 2, 1994; Halvorson, FLORIDA TODAY, p. 2A, Jan. 3, 1994.]

January 3:STS 60: ROLLOUT SET FOR JAN. 10

Today, in Orbiter Processing Facility Bay 3, workers are raising the landing gears of Discovery and bolting the vehicle to the Orbiter transporter as part of the preparations to tow the Space Shuttle to the Vehicle Assembly Building tomorrow at 8 a.m. "We'll back the Orbiter out of the processing facility and then move it just a few hundred yards to the north door of the VAB," said KSC spokeswoman **Lisa Malone.** In the VAB, Discovery will be mated to its mission external tank and solid rocket boosters. The STS 60 mission's Wake Shield Facility is expected to arrive at Launch Complex 39A on the morning of January 6. Rollout of Discovery to LC 39A is targeted for January 10, starting at 7:30 a.m. The 8 day, 6 hour mission will utilize a crew of six and

is scheduled to land at Kennedy Space Center. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Jan. 3, 1994; Halvorson, FLORIDA TODAY, p. 2A, Jan. 3, 1994;Halvorson, **FLORIDA TODAY**, p. 1A, Jan. 10, 1994; Halvorson, **FLORIDA TODAY**, pp. 1A-2A, Jan. 11, 1994.]

[]STS 62/STS 59: PROCESSING PROGRESS

Columbia is being processed for STS 62, its next mission, in OPF Bay 2. Targeted for early March, the flight is planned to be 13 days, 23 hours in duration and to land at KSC's Shuttle Landing Facility. Today, workers are powering up the vehicle for the first time since the Christmas/New Year holidays. They will open the vehicle's payload Bay doors, install auxiliary power unit No. 2, conduct a functional test of the crew module hatch and proceed with water spray boiler servicing. Columbia's three main engines will be installed next week. Meanwhile, in OPF Bay 1, Endeavour is undergoing post STS 59 mission processing. The Orbiter will be powered up today and its payload Bay doors opened. Workers will remove the heat shields from around the vehicle's main engines and test the radar altimeter. On the work schedule is the removal of the vehicle's three main engines. Endeavour's next mission, STS 68, will deploy the Space Radar Lab-1 during a flight which will last for 9 days and five hours and employ a crew of six. The early April mission will end with a Kennedy Space Center landing on the space center's SLF. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Jan. 3, 1994.]

January 5:GOLDIN: MARS OBSERVER REPORT

"Today NASA received the report of the independent board charged with investigating the loss of the Mars Observer mission. I am extremely gratified that the board, chaired by Dr. **Timothy Coffey** of the Naval Research Laboratory, turned in a professional report. Their analysis was fair, exhaustive and technically rigorous. I have just asked Dr. **Wes Huntress** (Associate Administrator for NASA's Office of Space Science) to conduct a thorough review of the findings and recommendations. He will report back to me in the near future on the corrective actions that will be taken by NASA to preclude the types of problems we encountered during this mission. NASA works on the cutting edge of science and technology, and space is a harsh environment in which to work. However, the Coffey report also candidly pointed out management and technical concerns that must be addressed. I am confident that NASA and our contractors will learn valuable lessons for the future. I am proud of NASA's continuing openness in the handling of Mars Observer failure. The spotlight that we put on today's report was similar to the way we opened our doors to the world when the spacecraft was first lost. We believe the American public deserves a full accounting and we will take the appropriate corrective actions. We have a number of planetary exploration missions planned for the coming decade which promise to greatly expand our knowledge of the solar system and pave the way for exciting missions in the next century. Therefore, it is imperative that we fully grasp the lessons provided by Dr. Coffey and his team." [Wheeler, **FLORIDA TODAY**, p.

1A, Jan. 7, 1994; Halvorson, **FLORIDA TODAY**, pp. 1A-2A, Jan. 6, 1994; **STATEMENT BY NASA ADMINISTRATOR DANIEL S. GOLDIN ON THE MARS OBSERVER INVESTIGATION REPORT**, Jan. 5, 1994. See Appendix; "Broken Fuel Line May Have Killed Mars Probe," **USA TODAY**, Jan. 6, 1994; Wilford, **THE NEW YORK TIMES**, Jan. 6, 1994; "NASA Can't Say Why Mars Probe Failed," **THE SUN**, Jan. 6, 1994; "Mars Observer's Failure Is Tied to Fuel-Line Leak," **THE WALL STREET JOURNAL**, p. B6, Jan. 6, 1994; Sawyer, **THE WASHINGTON POST**, p. A3, Jan. 6, 1994; Hotz, **LOS ANGELES TIMES**, Jan. 6, 1994; Date, **THE ORLANDO SENTINEL**, pp. 1A & 4A, Jan. 6, 1994.]

[]SATELLITE DELIVERY EXPECTED

The Wake Shield Facility will be delivered to Launch Complex 39A today along with two other smaller payloads for installation into the Space Shuttle Discovery's payload bay in preparation for its upcoming STS 60 mission. One of the payloads will be a canister containing six small metal balls that will be ejected into space as part of a space debris study; another payload is a small German science satellite which will study the space environment in low Earth orbit. No delays are expected in the rollout of Discovery to LC 39A despite the replacement of a metal sphere which serves as a connection point for the Shuttle to its external tank. Liftoff is expected between 7:10 and 9:40 a.m. on February 3; landing is planned for February 11 at Kennedy Space Center. [Halvorson, **FLORIDA TODAY**, Jan. 6, 1994.]

January 7:CONNECTIONS TESTED

Today, Shuttle technicians will commence testing the connections [electrical and mechanical] between the Discovery and its launch platform, external tank and boosters, according to Kennedy Space Center spokesman **Bruce Buckingham**. Most of the tests will be conducted inside the Vehicle Assembly Building, Buckingham said. Part of the Orbiter's cargo [the Space Radar Laboratory] is already inside the vehicle's payload Bay; other major portions of the cargo will be delivered to the vehicle on the pad. In other NASA news, **Carolyn Huntoon** was named to head the Johnson Space Center, the first woman to hold such a position; **Porter Bridwell** will head Marshall Space Flight Center and **Donald Campbell** takes the helm at Lewis Research Center. [Halvorson, **FLORIDA TODAY**, p. 2A, Jan. 6, 1994; Halvorson, **FLORIDA TODAY**, p. 2A, Jan. 7, 1994; Halvorson, **FLORIDA TODAY**, p. 2A, Jan. 8, 1994.]

January 10:SIR-C/X-SAR STATUS REPORT

A major milestone for the Jet Propulsion Laboratory's Spaceborne Imaging Radar C/X-Band Sympathetic Aperture Radar (SIR-C/X-SAR) occurs today when the instrument begins preparation for upcoming critical tests with a Shuttle simulator at Kennedy Space Center. SIR-C/X-SAR is scheduled for launch aboard the Space Shuttle Endeavour now targeted for early April 1994 as part of NASA's Space Radar Laboratory (SRL) and Mission to Planet Earth. Scientists will use the radar data collected by SIR-C/X-SAR to study Earth as an entire environmental system. The radar will be used to observe the vegetation structure and seasonal changes

of forests and wetlands and to study geologic changes such as volcanic eruptions, major earthquakes and erosion. The radar instrument will be moved today to the Cargo Integrated Test Equipment (CITE) stand at KSC to begin three weeks of tests and final preparations prior to being loaded into Endeavour's payload Bay in mid-February.

"This will verify the electrical interfaces and readiness before SIR-C/X-SAR is integrated with the Space Shuttle Orbiter," said **Mike Sanders**, JPL's SIR-C Project Manager. "This is a very intense period in our program." SIR-C, built by JPL and the Ball Communications Systems Division for NASA, is a two-frequency radar including L-band (23-cm wavelength) and C-band (6-cm wavelength). SIR-C will have the capability to transmit and receive horizontally and vertically polarized waves at both frequencies. X-SAR is built by Dornier and Alena Spazio companies for the German Space Agency, Deutsche Agentur fuer Raumfahrtangelegenheiten (DARA), and the Italian space agency, Agenzia Spaziale Italiana (ASI). It is a single-polarization radar operating at X-band (3-cm wavelength). JPL manages SIR-C for NASA's Office of Mission to Planet Earth. [**PAYLOAD STATUS REPORT**, Jan. 10, 1994.]

[]DISCOVERY MOVES TO PAD

The Space Shuttle Discovery made its way out of the Vehicle Assembly Building this morning at 7:30 a.m. and headed for Launch Complex 39A for the first leg of its STS 60 mission. Discovery's six-member crew will include Commander **Charles F. Bolden Jr.**, Pilot **Kenneth S. Reightler** and Mission Specialists **Franklin R. Chang-Diaz, N. N. Jan Davis, Ronald M. Sega** and **Sergei K. Krikalev**. The Space Radar Laboratory, the mission 's prime cargo, is already inside the vehicle. Still to be installed are: "a dish-shaped satellite that will fly in formation 40 miles from Discovery, creating a wake where a near-perfect vacuum should make it possible to manufacture ultra-pure semiconductor materials"; "a canister containing six small metal balls that will be ejected into space as part of a space debris study"; and "a small German science satellite that will be used to study the space environment in low Earth orbit." Later today, technicians will start making electrical and mechanical connections between the vehicle and the launch pad. [Halvorson, **FLORIDA TODAY**, p. 1A, Jan. 10, 1994; Halvorson, **FLORIDA TODAY**, pp. 1A-2A, Jan. 11, 1994; "Discovery Moved to Pad for Launching In 3 Weeks," **THE ORLANDO SENTINEL**, Jan. 11, 1994; "Space Shuttle Rolled Out for February Launch," **THE WASHINGTON TIMES**, Jan. 11, 1994.]

January 12:CRIPPEN: MORE LAYOFFS IMMINENT

More jobs will be lost at Kennedy Space Center, in the neighborhood of a "few hundred," according to KSC Director **Robert L. Crippen**. "It's the same thing we've said all along, that we are going to continue to draw down. We'd like to do it mainly through attrition, but we will be talking a few hundred. It isn't going to be any numbers larger than what we've been looking at in the past." Lockheed spokesman **J. B. Klump** acknowl-

edged that reductions have been on the minds of everyone. "Reductions in the work force looks to be inevitable this year and involuntary layoffs will play some sort of role in that. Right now we don't know to what degree." [Banke, **FLORIDA TODAY**, p. 7A, Jan. 13, 1994; SEE ALSO: Halvorson, **FLORIDA TODAY**, pp. 1A-2A, June 13, 1994.]

January 13:NASA: HUBBLE SERVICING A SUCCESS

NASA Administrator **Daniel S. Goldin** today declared that last month's Space Shuttle mission [STS 61] to service the Hubble Space Telescope (HST) had been fully successful in correcting the vision of the telescope's optical components. The announcement, accompanied by the first new images from HST, followed the initial 5 weeks of engineering check-out, optical equipment and instrument calibration. Word of the success came at a press conference at NASA's Goddard Space Flight Center (Greenbelt, MD). Goldin was joined in making the initial announcement by Dr. **John H. Gibbons**, Assistant to the President for Science and Technology, and Senator **Barbara A. Mikulski** (MD), Chair, Appropriations Subcommittee on VA, HUD and Independent Agencies.

"This is phase two of a fabulous, two-part success story," Goldin said. "The world watched in wonder last month as the astronauts performed an unprecedented and incredibly smooth series of space walks. Now we see the real fruits of their work and that of the entire NASA team. Men and women all across this agency committed themselves to this effort. They never wavered in their belief that the Hubble Space Telescope is a true international treasure," Goldin said. "Now we are going to look at the origins of our universe," Mikulski said. "What a wonderful victory this is for the Hubble team of astronauts, astronomers, scientists and engineers. Together they are moving American science and technology into the 21st century with exciting new opportunities for scientific and economic progress." [**NASA/KSC RELEASE: 94-7**; Jan. 13, 1994; Halvorson, FLORIDA TODAY, p. 1A & 8A, Jan. 14, 1994.].

[]DISCOVERY'S TCDT STARTS TODAY

Discovery's STS 60 crew will be on hand today for the two-day terminal countdown demonstration test. Yesterday the astronauts practiced emergency egress [escape] procedures which include driving the escape vehicle, "a tank-like armored personnel carrier." Today the crew will practice launch tower escapes and, for the last three hours of the test, they will board the Orbiter and take their flight seats as the test counts down to a simulated launch. Astronaut **N. N. Jan Davis** commented on the run-through saying, "It's a real team effort. We really appreciate all the hard work by the folks down here at KSC and throughout NASA to make this all possible." This Discovery crew will include Russian cosmonaut **Sergei K. Krikalev** who is to deploy and retrieve an experimental semiconductor factory. [Halvorson, **FLORIDA TODAY**, p. 2A, Jan. 13, 1994; SEE ALSO: Halvorson, **FLORIDA TODAY**, p. 1A, Jan. 12, 1994.]

January 14:KRIKALEV JOINS IN TCDT

"He – **Sergei Krikalev** – got a good feel for what it's going to be like on launch day, suiting up and going to the pad, then climbing into the Orbiter and strapping in," said KSC spokeswoman **Lisa Malone** about the Russian's participation in Discovery's STS 60 terminal countdown demonstration test at KSC this week. "I got to hear Serge give his `go' for launch. You can tell he has a little bit of an accent, but his English is pretty good," she said. "This will be the first time we'll have a Russian cosmonaut inside a Shuttle as it sits on the launch pad," said KSC spokesman **Bruce Buckingham.** Krikalev and fellow crew member **Franklin Chang-Diaz** were on the Orbiter's middeck for the test in the seats they'll occupy next month when Discovery commences its STS 60 mission. The crew also includes Commander **Charles Bolden,** Pilot **Kenneth D. Reightler** and Mission Specialists **N. Jan Davis** and **Ronald M. Sega.** "I hope that this will prove to be a continuation of the ongoing effort between our two countries in terms of space exploration," said STS 60 Commander Bolden. Krikalev also commented on the similarities and differences between Russian and U.S. launch facilities: "They're different because in Russia they don't have as much water as you have around. But construction is about the same." The mission will be eight days in duration; it will utilize the remote manipulator system or robot arm, take part in a space debris test and place into orbit a German satellite. [Banke, FLORIDA TODAY, p.1B, Jan. 14, 1994; Halvorson, FLORIDA TODAY, p. 8A, Jan. 15, 1994.]

[]STS 60: PROCESSING UPDATE

The STS 60 crew members are at KSC for the terminal countdown demonstration test which will conclude today. The crew is scheduled to depart for Houston, TX, at about 2 p.m. today. Crew members include: Commander **Charles F. Bolden Jr.**, Pilot **Kenneth S. Reightler** and Mission Specialists **Sergei K. Krikalev, Franklin R. Chang-Diaz, N. N. Jan Davis** and **Ronald M. Sega.** Shuttle interface stray voltage and interface verification tests have been completed for Discovery which is located at Launch Complex 39A. Main engine flight readiness tests and valve leak checks are finished as are solid rocket booster hydraulic closeouts and Orbiter mid-body umbilical mates. Work in progress today: terminal countdown demonstration test; external tank umbilical mate closeouts; preparations for loading hypergolic reactants into the Orbiter; inertial measurement unit calibrations and closure of the payload Bay doors. STS 60 work scheduled for next week: helium signature test; opening of the payload Bay doors; payload interface verification test; Launch Readiness Review and pre-launch propellant loads. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Jan. 14, 1994.]

[]STS 62 UPDATE

Orbiter/payload pre-installation interface tests have been completed while Columbia has been in OPF Bay 2; water spray boiler servicing is also complete. Currently, technicians are working on a number of tasks, including: main engine securing and main

propulsion system leak checks; chin panel closeouts; Orbiter aft closeouts; checks of auxiliary power unit number 3; orbital maneuvering system functional checkout; humidity separator tests and potable water servicing and solid rocket booster stacking operations in the VAB high Bay 1. STS 62 work scheduled for next week: clearing the OPF Bay for hazardous deservicing operations on Endeavour in OPF Bay 1; heat shield installation; external tank door functional checks; ammonia servicing and the crew equipment interface test. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Jan. 14, 1994.]

[]STS 59: SPACE RADAR LABORATORY

Endeavour is located in the Orbiter Processing Facility's Bay 1 where it is undergoing post STS 61 mission deservicing and STS 59 processing. Completed tasks include: aft helium tank vent and trickle purge activations; fuel cell single cell voltage tests; master events controller initiator verifications. Work in progress: waste management post flight servicing; draining auxiliary power units of hypergolic reactants and main propulsion system leak and functional tests. STS 59 work scheduled for next week: removing the left hand orbital maneuvering system pod; power reactant storage and distribution system test; auxiliary power unit leak and functional checks. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Jan. 14, 1994.]

January 15:BOOSTERS DECLARED SAFE

An independent investigative panel headed by aerospace engineer **Max Faget** has declared that the Space Shuttle's solid rocket boosters do not pose a hazard to the Orbiter or its crew. "The bottom line is that Max' team concurred with he assessment that was made by (NASA) and (booster manufacturer) Thiokol," said Shuttle Program Director **Brewster H. Shaw Jr.**. Concern had been expressed over spikes of increased pressure inside the SRBs on liftoff. Faget's team concluded: changes to the boosters are "neither required nor recommended;" NASA should continue to monitor booster performance to ensure proper functioning of the boosters. The panel agreed with engineers that the spikes are caused by a buildup of molten liquid, known as slag, which is a byproduct of the combustion in the rocket. [Banke, FLORIDA TODAY, pp. 1A-2A, Jan. 16, 1994.]

January 17:PROCESSING CONTINUES DESPITE HOLIDAY

Today is a federal holiday: the birthday of Martin Luther King, Jr. However, processing work on Discovery continues in full swing because many contractor employees work on the holiday, preferring to bank the day for use during the Christmas holidays. So the holiday, according to Kennedy Space Center spokesman **Bruce Buckingham**, "doesn't really change our operations." Today workers will begin a test at Launch Complex 39A which attempts to detect leaks in the Discovery's main engine plumbing. Later in this week, the Orbiter's on-board storage tanks will be filled with the fuel used to power the orbital maneuvering system. [Banke, FLORIDA TODAY, p. 2A, Jan. 17, 1994.]

January 18:STS 60: ENGINES PASS TEST

Discovery passed a vitally important engine test today permitting senior NASA managers to agree on a plan to launch NASA's first Space Shuttle of 1994 on February 3. The helium signature test is routinely performed on Shuttles prior to launch. "That verifies that we have no leaks in the main propulsion system or the engines. It was the major test for the engines at the launch pad," said **Lisa Malone**, KSC spokeswoman. Hazardous propellants will be loaded tomorrow; these will power the Orbiter's two maneuvering engines and 44 steering jets. The STS 60 mission features the involvement of Russian cosmonaut **Sergei K. Krikalev** as part of the astronaut exchange program; Krikalev will operate the remote manipulator system (robot arm) during the mission. The crew will also take part in a space debris test and deliver a small German science satellite to orbit. [Halvorson, FLORIDA TODAY, p. 2A, Jan. 19, 1994; Halvorson, FLORIDA TODAY, p. 4A, Jan. 18, 1994.]

January 20:STS 60 PROCESSING UPDATE

Workers at Launch Complex 39A have completed the loading of nitrogen tetroxide oxidizer into Discovery's onboard tanks; they have also finished their microbial sampling of the astronauts' drinking water. Currently, pad workers are loading hydrazine fuels and are expected to conclude this operation by midnight tonight; meanwhile, the pad is closed to all other work. STS 60 work scheduled: reopen the payload Bay doors on the third shift tomorrow morning; conduct the interface verification test for the GAS Bridge with BREMSAT/ODERACS tomorrow; the Flight Readiness Review is set for January 25. [**SPACE SHUTTLE STATUS REPORT**, Jan. 20, 1994.]

[]STS 62/59 PROCESSING ACTIVITIES

In the OPF, aft main engine compartment closeouts on Columbia are in process. The crew equipment interface test with the STS 62 astronauts is set for January 21 beginning at 7:00 a.m. In OPF Bay 1 where Endeavour is being processed for the STS 59 mission, fuel cell installation and drag chute installation are complete. A retest of the right-hand inboard actuator is in process and leak and functional testing of the auxiliary power units is set for January 21. Meanwhile, in the Vehicle Assembly Building, mating of the STS 62 external tank to its solid rocket boosters is set for January 21. Members of the STS 59 flight crew are currently participating with the payload test team in the Mission Sequence Test for Space Radar Laboratory while in the Operations and Checkout Building. Out at Launch Complex 39B, liquid hydrogen is being offloaded from two rail cars into the spherical hydrogen cryogenic storage tank. Also, a wave of tanker trucks are delivering liquid oxygen. [**SPACE SHUTTLE STATUS REPORT**, Jan. 20, 1994.]

January 21:GOES-I COMES TO FLORIDA

The Goes-I weather satellite, to be launched aboard an Atlas Centaur rocket in mid-April, arrived today by C-5A air cargo plane at KSC's Shuttle Landing Facility. This is the first spacecraft to be launched in the new advanced series of geostationary weather satellites for the National Oceanic and Atmospheric Administration (NOAA). The satellite will be transported today to Astrotech in Titusville where final testing and fueling will be performed. The spacecraft will be transported to Launch Complex 36 at the end of March for mating to the AC-73 Atlas 1 vehicle manufactured by General Dynamics. GOES-I is a three-axis internally stabilized weather satellite which will be the first to have the capability of providing pictures while performing atmospheric sounding. These functions can be performed independently and simultaneously using sensors which are in constant view of the Earth. Current spin-stabilized satellite sensors view the Earth about five percent of the time.

The launch of GOES-I is currently targeted for April 12. The spacecraft will be called GOES-8 in orbit and after checkout will be positioned over the equator at 75 degrees west longitude. This coincides with a position over the Atlantic Ocean between North Carolina and Bermuda. GOES-J will be launched next year which will then create an Eastern and Western satellite in what is called the GOES-Next series. The Atlas 1 AC-73 rocket which will launch GOES-I arrived at Cape Canaveral Air Force Station by C-5 air cargo plane from General Dynamics (San Diego, CA) on January 13. Erection of the launch vehicle on Pad 36-B is scheduled to begin next week with the Atlas stage on Monday, January 24, and the Centaur upper stage on Wednesday, January 26. The GOES-I Spacecraft is built for NASA and NOAA by Space Systems/LORAL (Palo Alto, CA). Major GOES-I subcontractors include ITT Aerospace Communications Division (Fort Wayne, IN), which built the satellite's imager and sounder; Panametrics (Waltham, MA), which built the high-energy proton and alpha detector, energetic particles sensor and the X-Ray sensor; Schonstadt Instrument Company (Reston, VA),which built the magnetometer.

NASA's Goddard Space Flight Center (Greenbelt, MD) is responsible for the project management of the GOES Program including final testing in Florida. NOAA manages the operational spacecraft program. The Kennedy Space Center is responsible for government oversight of the ATLAS-1 processing activities for the AC-73, integration of the GOES-I Spacecraft with the launch vehicle and launch countdown activities. The Lewis Research Center (Cleveland, OH) is responsible for the NASA launch services management. General Dynamics Corporation Commercial Launch Services (San Diego, CA) is under contract to Lewis Research Center to provide launch services. NASA's Office of Mission to Planet Earth, Headquarters, Washington, D.C., is responsible for GOES-I program management and associated government oversight. [**NASA/ KSC Release No. 2-94**, Jan. 21, 1994; Banke, FLORIDA TODAY, p. 2A, Jan. 21, 1994.]

January 24:STS 60: DISCOVERY WORK RESUMES

"The weekend off was already built into the schedule in an effort to reduce overtime," said KSC spokeswoman **Lisa Malone** about the return today of Discovery processing workers to Launch Complex 39A. Tasks set for this week include: final prelaunch preparations inside the Orbiter's rear engine compartment; loading the two contingency spacesuits to be used by **N. N. Jan Davis** and **Franklin R. Chang-Diaz** should anything go wrong during the STS 60 mission; purging the external tank to check for leaks prior to filling the tanks with liquid hydrogen and liquid oxygen and the installation of ordnance. The vehicle's thrusters are getting a thorough cleaning to wash out any residue of the toxic rocket propellants. The processing technicians are reported to be using an "off-the-shelf" Water Pic to clean each of the 38 main thrusters. The week's activities will be followed by another weekend of low processing activity prior to the targeted February 3 launch of Discovery. [Banke, FLORIDA TODAY, p. 4A, Jan. 22, 1994; Halvorson, **FLORIDA TODAY**, p. 5A, Jan. 26, 1994; Banke, **FLORIDA TODAY**, p. 2A, Jan. 25, 1994.]

January 26:STS 60 TO LAUNCH FEB. 3

"We're confident we'll be launching in a week," said KSC spokesman **Bruce Buckingham** about today's decision by NASA managers to launch Discovery on February 3. The mission, STS 60, will be the first Shuttle flight to carry a Russian cosmonaut, Sergei K. Krikalev. Another cosmonaut - Vladimir Titov - is set to fly in a subsequent flight a year from now. Between 1995 and 1998 five American astronauts will spend a total of two years aboard Mir, the Russian space station. The announcement of the February launch date, which came at the conclusion of the STS 60 flight readiness test, followed specially ordered tests after excessive wear was found on metal coils within an engine heat exchanger on Columbia. A broken coil could lead to an inflight explosion. [Halvorson, FLORIDA TODAY, p. 1A, Jan. 27, 1994.]

[]ANOMALY INVESTIGATION REPORT

The board appointed by **Jeremiah Pearson III**, Associate Administrator for Space Flight, to study the cause of the anomaly experienced during Shuttle Mission STS 51 last September has completed its investigation. During deployment of the ACTS communication satellite, commands intended to initiate a single explosive cord firing actually resulted in the simultaneous firing of both the primary and back up cord. This resulted in the rupture of a containment tube and release of debris into the cargo Bay of Shuttle Discovery. Dr. **Robert Wingate** of NASA's Langley Research Center, (Hampton, VA), served as Chairman of the Investigation Board. The final report, submitted by Dr. Wingate and his team, describes the primary and contributing causes for the anomaly and makes recommendations for corrective actions. [**NASA/KSC Note to Editors: 94-8**, Jan. 26, 1994.]

January 27:STS 60: WAKE SHIELD FACILITY

At the conclusion of the Flight Readiness Review at KSC yesterday, Shuttle mission managers selected February 3 as the official date to launch Discovery on its STS 60 mission. Other completed tasks include: final tests on the Shuttle main engine heat exchangers; final ordnance operations and pressurization of the hypergolic fuel system. Work in progress today: thruster wash and drying operations; Orbiter aft closeouts; launch countdown preparations. STS 60 work scheduled: closing Orbiter aft doors for flight; external tank purges; start of the countdown at 4:00 a.m. EST on January 31; and STS 60 crew arrival slated for 2:30 p.m. January 31. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Jan. 27, 1994.]

[]STS 62: HEAT SHIELDS INSTALLED

Columbia is undergoing pre-STS 62 processing in OPF Bay 2; technicians have completed main engine heat shield installation, auxiliary power unit servicing and checkout, orbital maneuvering system redundant electrical verification. Work in progress: Orbiter aft, midbody and forward closeouts; main engine final leak checks; orbital maneuvering system structural leak check; final payload Bay cleaning; Orbiter/external tank mate preparations in VAB. STS 62 work scheduled: final payload Bay closure; final aerosurface checks; landing gear functional checks; Orbiter rollover to the VAB, targeted for February 1. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Jan. 27, 1994.]

[]SPACE RADAR LABORATORY

Fuel cell number 1 functional checks have been completed on Endeavour while the Orbiter remains in OPF Bay 1. Work in progress: auxiliary power unit leak and functional checks; power reactant storage and distribution system test; payload Bay door and radiator checks; stacking of solid rocket boosters in VAB high Bay 3. STS 59 work scheduled: deliver the left-hand orbital maneuvering system pod to OPF and install in Orbiter; aerosurface hydraulic operations. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Jan. 27, 1994.]

[]DESIGN FLAW CAUSED EXPLOSION

A design error that was ten years old led to an ordnance failure aboard Discovery last year. System designer Orbital Sciences Corp.'s spokeswoman **Laura Ayres** said, "We accept full responsibility. The problem was in the electrical wiring design. Fortunately, it's very easy to correct, which we will do to make sure it doesn't happen again." Firing commands had erroneously been sent to both primary and back-up explosives and almost 24 bits of shrapnel were sent flying through Discovery's cargo Bay during the launching operation of the satellite. [Halvorson, **FLORIDA TODAY**, p. 1A, Jan. 28, 1994.]

January 28:COCKPIT WINDOW REPLACEMENT

A blemish which measured 3-1000ths of an inch in width and depth was found in the outer of three panes in a Discovery cockpit window; the window will be replaced. "We're not going to have a big gaping hole between the outside world and the crew module. We're just going to replace the outside pane," said Kennedy Space Center News Chief **Lisa Malone.** The repair work is not expected to delay Discovery's launch on its STS 60 mission. The six-member crew includes: Commander **Charles F. Bolden Jr.,** Pilot **Kenneth D. Reightler, Jr.,** and Mission Specialists: **Sergei K. Krikalev, N. N. Jan Davis, Franklin R. Chang-Diaz** and **Ronald M. Sega.** [Halvorson, **FLORIDA TODAY**, p. 2A, Jan. 29, 1994.]

FEBRUARY

February 1: STS 60: LAUNCH MINUS TWO DAYS

The countdown for Discovery's launch continues as planned today. The pad was cleared from late last night until about 8 a.m. this morning for the planned pyrotechnic initiator control resistance test and for the loading of the onboard cryogenic tanks with the liquid hydrogen and liquid oxygen reactants. These reactants provide electricity to the Orbiter while in space and drinking water for the crew. Today, the Orbiter mid-body umbilical unit (OMBUU) is being demated. Orbiter communications activation and final vehicle and facility closeouts are also underway. Tomorrow, preparations will be made to retract the rotating service structure to launch position at about 11 a.m. Tanking is scheduled to begin at about 10:50 p.m. Wednesday (February 3).

Forecasters indicate a 20 percent probability of weather prohibiting launch. The primary concerns are marginally low temperatures. On launch morning, the winds at the pad are expected to be from the northwest at 7 - 10 knots; temperature 44 - 46 degrees F; visibility 7 miles; and clouds scattered at 2,000 and 10,000 feet and broken at 25,000 feet. The 24-hour-delay forecast reveals a similar forecast and lists a 40 percent chance of violation. The six-member astronaut crew for this mission arrived at KSC's Shuttle Landing Facility Monday (January 31) at about 2:30 p.m. Today they will be involved with checking out their mission plans and fit checks of their equipment. They are scheduled for some free time this morning and will be ready for sleep at about 6 p.m. They will be awakened again at about 2 a.m. tomorrow. [Halvorson, **FLORIDA TODAY**, p. 1A, Jan. 31, 1994; Halvorson, **FLORIDA TODAY**, pp. 1A & 4A, Feb. 1, 1994; Banke, **FLORIDA TODAY**, p. 4A, Feb. 1, 1994; Halvorson, **FLORIDA TODAY**, pp. 1A & 4A, Feb. 3, 1994; Halvorson, **FLORIDA TODAY**, p. 1A, Feb. 2, 1994; **KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Feb. 1, 1994.]

[]STS 60: EXPERIMENT INSTALLATION TODAY

Final payload prelaunch preparations begin tonight at Pad A on Complex 39 with the late stowage of time critical experiments aboard SPACEHAB-2 and will continue on February 2 on Discovery's mid-deck. The SPACEHAB module will be powered up for flight at 5 p.m. today. Then, at launch time minus 33 1/2 hours which is at 9:40 p.m., SPACEHAB-2 stowage activities will begin with the "MVAK" operation, which stands for Module Vertical Access Kit. Specially trained technicians from SPACEHAB Incorporated and McDonnell Douglas, will be lowered down inside the SPACEHAB-2 module. To be installed by the technicians are ASTROCULTURE, an experiment to validate the performance of plant growth technologies in the microgravity environment of space, and ORSEP, an organic separation of cells and polymers experiment which could produce a pure laboratory materials sample not achievable in gravity. An Interface Verification Test (IVT) for each experiment will follow. Next, support equipment will be installed aboard SPACEHAB-2 for two experiments which are located on Discovery's mid-deck; the Commercial Generic Bioprocessing Appa-

ratus (CGBA) and the Commercial Protein Crystal Growth (CPCG) experiment. Also undergoing installation at this time is the support equipment necessary for the Stirling Orbiter Refrigerator Freezer unit (SORF). In addition, SPACEHAB-2 flight data files to be used by the astronauts will be installed, and the Three Dimensional Microgravity Accelerometer (3-DMA) and the SORF will be powered on for the flight. Conclusion of the SPACEHAB-2 MVAK activities is planned for 2:40 a.m. on February 2 at the launch minus 28 - 1/2 hour mark in the countdown.

Approximately 7 - 1/2 hours later, the mid-deck stowage operations will follow with the installation of the CGBA and CPCG experiments and followed by a brief Interface Verification Test. Then the Bioserve Pilot Laboratory (BPL) experiment trays will be installed. This experiment is designed to mix sample fluids to gather biomedical and fluid science data. This will be followed by installation of the experiment trays for CGBA. Next to be placed into the mid-deck will be the Immunology-Mission 1 (Immune-1) experiment consisting of 12 rodents for the study of a drug to suppress reduction in the biological systems and chemical reactions under the influence of microgravity. All STS 60 time critical experiments should be in place by 4:40 p.m. on February 2, or launch minus 14 1/2 hours. [**NASA/KSC News Release No. 6-94**, Feb. 1, 1994.]

February 3:STS 60: DISCOVERY & KRIKALEV LAUNCH

The Space Shuttle Discovery, carrying five Americans and one Russian, rocketed into orbit right on time at 7:10 a.m. EST this morning. Krikalev's inclusion in the STS 60 mission marked the first joint venture between the U.S. and the former Soviet Union in 18 years. The launch from the Kennedy Space Center was without problems and put Discovery in its desired 190-nautical mile circular orbit. Shortly after reaching orbit, the STS 60 crew began checking Discovery's systems and activating the commercially developed SPACEHAB laboratory module and several of its experiments. The crew also activated one group of the payload Bay Getaway Special experiments. SPACEHAB module experiments that were activated included the Organic Separation of Cells payload, which is designed to investigate cell separation techniques for possible pharmaceutical and biotechnology processing, and the Equipment for Controlled Liquid Phase Sintering Experiment package, a furnace designed to explore the possibilities of creating stronger, lighter and more durable metals for use in bearings, cutting tools and electronics.

SPACEHAB middeck experiments that were activated included Immune-1, which will look at the immune system of rats in orbit, and the Commercial Protein Crystal Growth package, which is attempting to grow large, well-ordered protein crystals so that their structures can be more easily studied. Commander **Charles Bolden**, Pilot **Kenneth D. Reightler** and Payload Specialists **Franklin Chang-Diaz**, **N. Jan Davis**, **Sergei Krikalev** and **Ronald M. Sega** were running about two hours behind on a very busy timeline and flight controllers were looking for ways to trim the timeline and put the crew to bed on time at 6:10 p.m. EST. The crew's long workday began about 2:30 a.m. Operations with the

Stirling Orbiter Refrigerator/Freezer will be postponed, and Reightler was removed from the list of test subjects for the joint U.S./Russian medical experiments for the day. Several steps were taken out of the timeline for other subjects in that set of experiments. The first on-orbit television downlinked by the crew at 2:18 p.m. EST showed Sergei Krikalev, the first Russian to fly aboard an American spacecraft, in the SPACEHAB module. [Halvorson, **FLORIDA TODAY**, pp. 1A-2A **MISSION CONTROL CENTER STS 60 STATUS REPORT #1**, Feb. 3, 1994.]

February 8:STS 62: USML-2

The Space Shuttle Columbia continues to remain in VAB Bay 1 where it is being readied for rollout for its March 3 launch on STS 62. The U. S. Microgravity Payload-2 (USMP-2) has been transported to Launch Complex 39B. Columbia has been hard mated to its external tank. Today, technicians are making mechanical and electrical monoball mates, verifications and closeouts; they are shifting the USMP-2 to the PCR or payload changeout room at the launch pad and they are conducting Shuttle interface verification tests. STS 62 work scheduled: umbilical leak checks; rollout to LC 39B on February 10; hot firing of an APU at the pad and launch pad validations. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Feb. 8, 1994.]

[]STS 59: ENDEAVOUR (OV-105)

Endeavour is currently being processed in OPF Bay 1 for its early April mission - STS 59. Completed tasks include: the removal of Orbiter window number 6; removal of the right hand orbital maneuvering system pod; auxiliary power unit leak and functional checks; payload Bay door and radiator checks. Work in progress: checkout of the left hand orbital maneuvering system pod; payload premate tests and inspections; main propulsion system tests; power reactant storage and distribution system tests, decay leak checks and checkouts; stacking of solid rocket boosters in VAB high Bay 3. STS 59 work scheduled: installation of replacement right hand orbital maneuvering system pod; external tank door functional test; ammonia system servicing ; payload service kit installation and checkout; closeout and clean payload Bay in preparation for installation of Space Radar Laboratory. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Feb. 8, 1994.]

February 9:WHITEHEAD: DEPUTY AA FOR AERONAUTICS

Dr. **Robert E. Whitehead** has been named Deputy Associate Administrator for NASA's Office of Aeronautics, NASA Headquarters, Washington, D.C. "Bob Whitehead has made outstanding contributions to the development of NASA's subsonic programs," said Dr. **Wesley L. Harris**, Associate Administrator for Aeronautics, "and we are fortunate to have him in this position as we pursue our goals of improving U.S. competitiveness in civil aviation." Prior to this appointment, Whitehead had been Director for Subsonic Transportation since January 1992. He joined NASA in 1989 as Assistant Director, Aeronautics (Rotocraft) and, in January 1990, became Acting Assistant for Aeronautics (General Aviation

and Transport Aircraft). Whitehead received B.S. (1967), M.S. (1969) and Ph.D. (1971) degrees in engineering mechanics, all from the Virginia Polytechnic Institute and State University. He is a member of the American Institute of Aeronautics and Astronautics and the American Helicopter Society. [**NASA/KSC Release: 94-23**, Feb. 9, 1994.]

February 10:STS 62: COLUMBIA ROLLS OUT

Rollout of the Space Shuttle Columbia (OV 102) from the Vehicle Assembly Building to Launch Pad 39B occurred today with first motion of the crawler transporter coming at 3:15 a.m. Columbia will be making its 16th space flight. Columbia, perched atop the transporter, made the 4.2-mile trip to the launch pad in over 6 hours. The vehicle had been transferred from the Orbiter Processing Facility to the Vehicle Assembly Building on February 3. While in the VAB, the Orbiter was stacked with its solid rocket boosters and external tank on mobile launcher platform 1 in the building's high Bay 1. Following mating operations, the vehicle underwent a series of interface tests to verify all electrical and mechanical systems. Columbia's launch on its STS 62 mission is currently targeted for March 3 at 8: 54 a.m. EST. The mission is planned for two weeks. Columbia carries onboard the United States Microgravity Laboratory (USMP) on its second flight and the Office of Aeronautics and Technology (OAST-2) payload. The STS 62 Flight Readiness Review is set to take place at KSC on February 16, after which a firm launch date will be announced. Also next week, the 5-member crew for the mission will arrive at the space center for the required pre-flight terminal countdown demonstration test. Crew members for STS 62 are: Commander **John H. Casper**, Pilot **Andrew M. Allen**, and Mission Specialists **Pierre J. Thuot**, **Charles D. Gemar**, and **Marsha S. Ivins**. [**NASA/KSC News Release No. 11-94**, Feb. 10, 1994.]

[]STS 62: COLUMBIA ROLLS OUT

Columbia began the long journey of its STS 62 mission today when it left the VAB at 3:15 a.m. At Launch Complex 39B, workers completed a Shuttle Interface Test, having made connections between the launch pad and the Orbiter and gained access to the vehicle. STS 62 work scheduled: hot firing of auxiliary power unit no. 2 tomorrow; installation of payloads next week; Launch Readiness Review starting on February 14; Countdown Demonstration Test February 15-17 and the STS 62 Flight Readiness Review on February 16. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Feb. 10, 1994.]

[]STS 59: SPACE RADAR LAB-1

Workers in OPF Bay 1 have completed a functional test of the external tank umbilical door and, in the Vehicle Assembly Building, they have stacked the right forward assembly/nose cone. Currently, STS 59 workers are preparing to install the right orbital maneuvering system pod; conducting thruster flushing and drying operations; implementing a premate test of the Orbiter connections to the payload; conducting leak checks and servicing of the fluids and gas lines and servicing the potable water system. Endeavour's STS 59 main engines will be installed next

week. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Feb. 10, 1994.]

February 11:STS 60: LANDING TODAY AT KSC

The Space Shuttle Discovery is set to land today at Kennedy Space Center at 12:44 EST, ending its STS 60 mission where it began on February 3, 1994. The landing is planned for the 130th orbit at mission elapsed time of 8 days, 5 hours and 34 minutes. Deorbit burn will occur, barring unforeseen weather complications, on orbit 129 at about 11:38 a.m., at 8 days, 4 hours and 28 minutes. A second landing opportunity occurs on orbit 131 at about 2:17 p.m. A single landing opportunity is available for Edwards Air Force Base, CA, at 3:47 p.m. EST. Should landing not be possible today, two additional opportunities for landing at Kennedy Space Center exist for tomorrow at about 12:59 p.m. and 2:32 p.m.; there are two opportunities available on the 12th at Edwards Air Force Base as well. During descent for landing at the space center today, Discovery will enter Florida airspace near Jacksonville and travel southeast down the northeastern coast of the state. Discovery will pass over the cities of St. Augustine, Daytona Beach and Titusville before landing at the SLF. [**NASA/KSC News Release No. 9-94**, Feb. 10, 1994; SEE Appendices for a chart of previous KSC landings and for a discussion of landing weather constraints.]

[]DISCOVERY LANDS AT 2:19 PM

"Welcome home, Discovery. Great job," was how astronaut **Charles J. Precourt** greeted the crew of Discovery as it landed at 2:19 p.m. EST today on KSC's Shuttle Landing Facility runway 15. "You've paved the way for a new era of cooperation in human spaceflight," Precourt added. Landing occurred one orbit late on orbit 131 of STS 60. The vehicle was towed to OPF Bay 3 beginning at 7:40 p.m. It was spotted in the OPF at 9:27 p.m. A complete post-flight analysis is being drawn up today. All brake assemblies, landing gear struts and tires looked good following touchdown. [Halvorson & Banke, **FLORIDA TODAY**, pp. 1A-2A, Feb. 12, 1994; **KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Feb. 14, 1994; Banke, **FLORIDA TODAY**, p. 5A, Feb. 13, 1994.]

February 14:POST STS 60 SERVICING

Discovery has been jacked up and leveled in OPF Bay 3 following its return from the STS 60 mission and workers have conducted offloading operations of residual cryogenic reactants. Workers today are gaining access to the Orbiter and destowing mid-deck payloads and flight equipment. They are also conducting main engine post flight drying and inspections and thruster inspections, as well. Post-flight processing scheduled: powering up the Orbiter; opening the Orbiter's payload Bay doors; destowing the SPACEHAB experiment and removing SPACEHAB and the Wake Shield Facility. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Feb. 14, 1994.]

[]STS 62: USMP-2; 0AST-2

Columbia has completed its rollout to Launch Complex 39B and the hot firing of auxiliary power unit number 2; pad and vehicle umbilical connections have been made and the payload Bay doors are now open. Work in progress: installation of payloads from the changeout room into the Orbiter payload Bay; hydraulic system circulation and sampling operations; external tank and orbiter umbilical closeouts; thruster washing and inspections; preparations to load hypergolic fuels into the vehicle; launch pad validations; Launch Readiness Review. STS 62 work scheduled: main engine flight readiness test; hypergolic fuels loading; terminal countdown (CDT) demonstration test; crew arrival at 9:30 a.m. tomorrow; Flight Readiness Review February 16; TCDT ending at 11 a.m. February 17. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Feb. 14, 1994.]

[]STS 59: SPACE RADAR LABORATORY

Endeavour's first mission after the highly successful STS 61 - Hubble Space Telescope Repair - will be STS 59 whose prime payload is the Space Radar Laboratory. Currently, the Orbiter is in OPF Bay 1. While in the OPF, workers have installed a replacement right hand orbital maneuvering system pod and conducted an external door functional test. Work in progress currently: payload premate testing, service kit installation and checkout; closeout and clean payload Bay in preparation for installation of Space Radar Laboratory; right hand orbital maneuvering system pod verifications; thruster washing and inspections; transfer Space Radar Laboratory payload to the Orbiter Processing Facility; stacking of the solid rocket boosters in the Vehicle Assembly Building high Bay 3. STS 59 work scheduled: installation of the Space Radar Laboratory into the Orbiter February 15 and installation of Orbiter window number 6. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Feb. 14, 1994.]

[]INTERNATIONAL STEEL WINS KSC CONTRACT

International Steel Industries, Inc. [Orlando, FL] has been awarded a $762,000 contract to replace approximately 4,500 linear feet of piping and remove minor asbestos insulation in the LC-39 area. The existing pipes were installed in the early 80s and are being replaced due to deterioration from ground water saturation and other time related problems. These leaks have the potential of interrupting water flow to the Orbiting Processing Facility (OPF). Work will begin this month and is expected to be completed by mid-December. The design calls for all of the lines to be above ground, going underground only to cross roads and railways. Piping contains compressed air, and chilled and hot water. The chilled and hot water are used for air conditioning and heating to maintain OPF temperature and humidity requirements. The compressed air line is used throughout the OPF during Orbiter processing for a variety of tasks. International Steel, a small business firm, will do all work related to the above, including installation of a personnel land bridge, fence removal and repair, and pipe supports to accommo-

date employees working around the installation. [**NASA/KSC Release No. 13-94**, Feb. 14, 1994.]

February 15:STS 62: Launch Readiness Review

Columbia's STS 62 crew arrived at Kennedy Space Center at 9:30 a.m. today to take part in the mission's terminal countdown demonstration test (TCDT) while will run from February 16 through February 17. Also, the STS 62 Flight Readiness Review is scheduled to begin at 10:00 a.m. February 16. An official launch date is expected to be announced following this meeting. Mission payloads have been installed from the payload changeout room into the vehicle's payload Bay. Other completed tasks include: external tank and Orbiter umbilical mates and closeouts; mate and leak check Orbiter mid-body umbilical unit; Launch Readiness Review. Work in progress today: main engine flight readiness test; hydraulic system circulation and sampling operations; thruster washing and inspections; preparations to load hypergolic fuels into the Orbiter; launch pad validations. STS 62 work scheduled: hypergolic fuels loading and a helium signature test. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Feb. 15, 1994.]

[]STS 59: ENDEAVOUR

In the Orbiter Processing Facility's Bay 1, workers have completed payload premate testing, service kit installation and checkout of the Space Shuttle Endeavour in pre-rollover processing for STS 59. Work in progress today: closeout and cleaning of the payload Bay in preparation for installation of the STS 59 prime payload - Space Radar Laboratory; thruster washing and inspections; transferring the SRL payload to the OPF; stacking of solid rocket boosters in VAB high Bay 3; delivery of Space Radar Laboratory to the Orbiter Processing Facility. STS 59 work scheduled: installation of the Space Radar Laboratory into Endeavour's payload Bay and Orbiter window inspections. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Feb. 15, 1994.]

[]STS 64: LIDAR IN SPACE TECHNOLOGY EXPERIMENT

Contingency spacesuits have been removed from Discovery which is located in OPF Bay 3. Work in progress today for STS 64: Orbiter power up; SPACEHAB experiments destow; opening Orbiter payload Bay doors; continuing to establish access to the Orbiter after the recent completion of STS 60; destowing of mid-deck payloads and flight equipment; main engine post flight drying and inspections; thruster inspections and toxic vapor checks; fuel cell number 1 flow checks. STS 64 work scheduled: removal of SPACEHAB and the Wake Shield Facility and Gas Bridge Assembly. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Feb. 15, 1994.]

February 16:SPEEGLE WINS KSC CONTRACT

Speegle Construction, Inc. (Cocoa, FL) has won a $729,745 contract to construct the Transporter Canister Facility Operations

Support Building. The new office building will be located in Kennedy Space Center's Industrial Area adjacent to the Canister Rotation Facility (CRF), and will be occupied by NASA and contractor support personnel. As part of the payload canister transportation system, KSC has two canisters in which Shuttle payloads are moved from processing facilities to the launch pad, or to an Orbiter Processing Facility (OPF) high Bay. The canisters are maintained and stored in the CRF. Additional work incorporated into the contract provides for elevator equipment, a parking lot, driveways and sidewalks. The fixed-price contract requires Speegle Construction to complete all work within 240 days and after notice to proceed. [**NASA/KSC News Release No. 17-94**, Feb. 16, 1994.]

[]STS 62: MARCH 3 LAUNCH DATE

At the conclusion of STS 62's terminal countdown demonstration test, NASA managers announced that they had chosen March 3 as the day Columbia would lift off on its 14-day mission. The crew includes: Commander **John H. Casper**, Pilot **Andrew M. Allen** and Mission Specialists: **Pierre J. Thuot, Charles D. Gemar** and **Marsha S. Ivins**. Liftoff should occur between 8:54 a.m. and 10:24 a.m. ["NASA Sets Launch Date For Columbia Mission," **THE WASHINGTON TIMES**, Feb. 17, 1994; Halvorson, **FLORIDA TODAY**, p. 1B, Feb. 16, 1994; Banke, **FLORIDA TODAY**, p. 4A, Feb. 17, 1994.]

February 18:NASA BUDGET CUTS

NASA Headquarters has announced a realignment of the Kennedy Space Center's Core Electronics Contract held by the Harris Space Systems Corporation at its Rockledge (FL) facility due to budget restrictions in the Space Shuttle Program and constraints within the Space Station budget. The Harris contract, awarded in June 1989, will be reduced by approximately $95 million from its current estimated value of $355 million to approximately $260 million. The contract revision calls for work completion by late 1995 rather than the original September 1997. Under the contract, Harris Space Systems Corporation was to engineer, design, develop, manufacture and sustain a replacement Checkout, Control and Monitor System (CCMS II) for the Space Shuttle Launch Processing System, and a Test, Control and Monitor System (TCMS) for future Space Station and check-out activities. The contract realignment calls for a halt to all CCMS II work being performed by Harris and reduces the scope of the Space Station TCMS effort to the establishment of minimal capabilities. The existing Checkout, Control and Monitor System (CCMS), which is a major part of KSC's highly automated Launch Processing System (LPS) housed in the Complex 39 Launch Control Center, will continue to be maintained and used to process and launch the Space Shuttle. The contract alignment is effective immediately. [Halvorson, **FLORIDA TODAY**, pp. 1A-2A, Feb. 20, 1994; **NASA/KSC Release No. 20-94**, Feb. 18, 1994.]

[]STS 62: USMP-2 UPDATE

The Terminal Countdown Demonstration Test (TCDT) for Columbia's upcoming STS 62 mission has been completed as have onboard

cryogenic system checks and inertial measurement unit calibrations. Work in progress today: helium signature test; troubleshooting communications loop between Orbiter and Launch Control Center; thruster washing and inspections; foam insulation application on Orbiter/external tank umbilicals; preparations to load hypergolic fuels into Columbia. STS 62 work scheduled: prelaunch hypergolic fuel loading and pressurization; opening payload Bay doors; Orbiter/payload interface verification testing; commencement of Orbiter aft engine compartment closeouts; prelaunch countdown preparations and setups; ordnance installations; installation of emergency spacesuits; purging of the external tank. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Feb. 18, 1994.]

[]STS 62: SHUTTLE MAIN ENGINE TEST

The STS 62 Terminal Countdown Demonstration Test [TCDT] has been underway at Kennedy Space Center, according to spokesman **Bruce Buckingham.** "It's always a good test not only for the crew but for the launch team. It gives them a chance to work out any bugs in the system." Communications problems marred the test this morning. The major test of the main engines comes this afternoon when technicians will conduct the helium signature leak test. Preparations will also continue to prepare the Orbiter's onboard tanks for being filled with hazardous propellants; the fuel will power the vehicles's 44 steering jets on orbit. [Halvorson, **FLORIDA TODAY**, p. 5A, Feb. 18, 1994.]

[]STS 59: SPACE RADAR LABORATORY UPDATE

Endeavour is in OPF Bay 1 where technicians have just completed verifications of reaction control system mates. Work in progress today: installation of Space Shuttle main engines; Orbiter window inspections; water spray boiler checkouts; stacking of the STS 59 mission solid rocket boosters in VAB high Bay 3. Next week, STS 59 processing activities include: payload electrical connections and interface verifications; crew equipment interface test (CEIT); main propulsion system verifications; main engine securing and heat shield installation. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Feb. 18, 1994.]

[]STS 64: PROCESSING REPORT

Discovery is OPF Bay 3 undergoing processing for its September 1994 mission, STS 64. Technicians in the facility have established access to the Orbiter since its return from STS 60; conducted fuel cell number 1 flow checks and have opened the payload Bay doors. Work in progress today: troubleshooting the Wake Shield Facility in-flight anomaly; preparing to deservice the hypergolic fuel system; payload electrical demates; main engine post-flight inspections; post-flight window inspections; drag chute hardware removal. STS 64 work scheduled for next week: removal of SPACEHAB, the Wake Shield Facility and the GAS Bridge Assembly from the Orbiter's payload Bay; deservice the hypergolic fuel system/auxiliary power units; prepare to remove the APUs; post-flight thermal protection system repairs. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Feb. 18, 1994.]

[]KSC A 'WONDER OF THE UNITED STATES'

The American Society of Civil Engineers (ASCE) will designate the Kennedy Space Center as one of the "Seven Wonders of the United States" next week in conjunction with National Engineers Week, Feb. 20-26. Cited as the nation's principal center for the test, checkout and launch of space vehicles and payloads, the ASCE said KSC is a permanent memorial to the crucial role of the American civil engineers in the conquest of space. "Being selected as one of the Seven Wonders of the United States is a distinction everyone at KSC can be proud of and a real tribute to our nation's gateway to space," said KSC Director **Robert L. Crippen**. The center was created on Merritt Island and the adjacent coastal strand in the 1960s for Project Apollo's leaps to the moon. It has since been modified extensively for the Space Shuttle program and for the Space Station assembly and servicing missions to be launched from here later in the decade. Criteria used in evaluating America's wonders include service to the well-being of people and communities, uniqueness, pioneering aspects in design and construction, extent to which the work has become a benchmark for later projects and great size and beauty. The other landmarks chosen as Seven Wonders this year by the ASCE are: Golden Gate Bridge; Hoover Dam; Interstate Highway System; Panama Canal; Trans-Alaska Pipeline; and the World Trade Center. [**NASA/KSC Release No. 21-94**, Feb. 18, 1994.]

[]SECOND DELTA 2 LAUNCH ATTEMPT

"We're ready and all systems are go," said McDonnell Douglas Aerospace's spokeswoman **Anne McCauley** of her company's second attempt to launch its Delta 2 launch vehicle. The rocket will send into orbit a Galaxy 1R satellite built by Hughes Communications. The new satellite will replace Galaxy 1 launched in 1982 and will handle television cable services such as HBO, ESPN and The Disney Channel. A sensor problem prevented a launch on February 9. The sensors did not detect the correct pressure within the rocket engines which steer the Delta 2 and the mission was scrubbed; the sensors have since been replaced. [Banke, **FLORIDA TODAY**, p. 5A, Feb. 18, 1994.]

February 22:IVEY'S WINS CONSTRUCTION CONTRACT

Ivey's Construction, Inc. (Merritt Island, FL) was recently awarded a $393,575 contract to replace two substations and switchgear at Kennedy Space Center's Shuttle Landing Facility. The two substations, located at each end of the 15,000-foot long runway, provide power to the Precision Approach Path Indicator (PAPI) lights that are used for KSC Shuttle landings and other aircraft. Modified for the unique landing approach of the Orbiter, a set of PAPI lights are positioned at 7,500 feet and 6,500 feet from each end of the runway's threshold to help guide the Shuttle to a safe touchdown. To date, a total of 19 Shuttle landings have occurred at KSC. The fixed price contract requires Ivey's Construction, Inc. to complete all work within 400 days after notice to proceed. [**NASA/KSC Release No. 19-94**, Feb. 22, 1994.]

[]INTERNATIONAL STEEL WINS CONTRACT AT KSC

International Steel Industries, Inc. (Orlando, FL) was recently awarded a $644,000 contract to construct a facility that will house ground coolant and hydraulic system equipment for the Space Shuttle. The protective enclosure will be constructed in the Launch Complex 39 area adjacent to the Orbiter Processing Facility (OPF). The contract also provides for access roads and relocation of the following: electrical power pedestal, fire hydrant, water main valve, environmental control system, hard ducts and water shower. The fixed-price contract requires International Steel to complete all work within one year after notice to proceed. [**NASA/KSC No. 23-94**, Feb. 22, 1994.]

[]STS 62: PROPELLANTS LOADED ONBOARD

At Launch Complex 39B, technicians have completed the loading of propellants into Columbia's onboard storage tanks. Work in progress at the pad today includes: preparations for final ordnance operations; washing orbital maneuvering system thrusters; interface verification testing between the payloads; closeouts of the aft compartment; launch countdown preparations. STS 62 work scheduled: begin launch countdown at 9:00 a.m., Monday (February 28); clear pad tonight for ordnance operations; pressurize the hypergolic propellant system for flight ; install two contingency spacesuits in the Orbiter's airlock; purge the external tank February 25. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Feb. 22, 1994.]

[]STS 59: SPACE RADAR LAB-1

Endeavour's three main engines have been installed in preparation for its April liftoff on STS 59. Workers in the Vehicle Assembly Building have also completed stacking the mission's solid rocket motor segments. Preparations are underway today for the Orbiter to payload interface verification test; checkout and servicing of the water spray boilers and installation of windows. STS 59 work scheduled: mating the external tank to the solid rocket boosters and the Crew Equipment Interface Test set for February 25. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Feb. 22, 1994.]

[]STS 64: LIDAR IN SPACE EXPERIMENT

In the OPF Bay 3, work is underway in preparing Discovery for its
September STS 64 mission. Workers in the OPF have removed the Wake Shield Facility from the Orbiter's payload Bay and removed the drag chute hardware. Work in progress includes: validation of the Orbiter's power system and main propulsion system helium system leak and functional tests. Deservicing residual hypergolic propellants is slated for February 23. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Feb. 22, 1994.]

February 23:STS 62: ORDNANCE INSTALLED

Workers at Launch Complex 39B have completed final ordnance installation on Columbia for its STS 62 mission, presently slated to lift off at 8:54 a.m. on March 3. Yesterday, workers conducted the USMP-2/OAST-2 Interface Verification Test (IVT) and finished foaming the external tank/Orbiter umbilical insulation. Hypergolic tank pressurization is underway today as are resistance checks of the pyrotechnic devices. STS 62 work scheduled: resumption of aft main engine compartment closeouts; resumption of countdown preparations; resumption of aft OMS/RCS thruster washing and drying; installation of contingency EVA spacesuits; external tank purges; start of the countdown clock at 9:00 a.m. February 28 and arrival of the five-member crew of STS 62 on the 28th at about 1:30 p.m. There are currently no unresolved issues or matters of concern which would delay liftoff on March 3. In Houston, the crew of STS 62 -Commander **John H. Casper**, Pilot **Andrew M. Allen** and Mission Specialists **Charles D. Gemar**, **Pierre J. Thuot** and **Marsha S. Ivins** - held a press conference to discuss next week's launch. Commander John H. Casper commented on the research the mission will carry out: "There is the potential for a number of important benefits and applications to come out of this flight. But the payoff is not always right away. And that's the way it is with this flight," he said. [**SPACE SHUTTLE STATUS REPORT**, Feb. 23, 1994; Halvorson, **FLORIDA TODAY**, p. 6A, Feb. 24, 1994.]

[]PROCESSING ACTIVITIES

In Orbiter Processing Bay 1, the Interface Verification Test is underway today between Endeavour and its prime cargo for STS 59, the Space Radar Laboratory in the Orbiter's payload Bay. Troubleshooting of the Orbiter's payload flight data recorders continues. Data dropouts have been experienced between the recorders and the Ku-band system. The end-to-end communications test on Thursday should reveal whether this is a ground configuration problem only, or whether the recorders will need to be repaired, or removed and replaced. The Crew Equipment Interface Test (CEIT) with the STS 59 astronauts is set for February 25. STS 59 solid rocket booster preparations for external tank mating are now being completed today. Overnight the external tank was removed from a test cell in Bay 2 and lowered to a transporter in the transfer aisle. The ET/SRB mating operations are set for tonight. Discovery is being processed in OPF Bay 3; main propulsion system leak checks are underway there now. The flight deck is being deconfigured. Bay 3 will be cleared of non-essential personnel tonight for the hypergolic deservicing. OMS pod functional tests are scheduled for February 25. Removal of the Wake Shield Facility from the payload Bay canister was rescheduled for today due to a ground support equipment issue. It will then be transported to Hangar S on Cape Canaveral Air Force Station. Removal of the GAS bridge is scheduled for February 24. The SPACEHAB-2 module will be removed from the payload canister on the 25th and will be transported to the SPACEHAB Processing Facility at Port Canaveral. [**SPACE SHUTTLE STATUS REPORT**, Feb. 23, 1994.]

[]CAMERON REPRESENTS NASA IN RUSSIA

As part of the new partnership effort between the United States and Russia, NASA today announced that astronaut **Kenneth D. Cameron** (Col., USMC) has been selected to manage NASA operational activities at Star City and at the Russian control center at Kaliningrad. As Director of Operations-Russia, Cameron will work with Russian Space Agency engineers and flight controllers on the U.S.- Russian cooperative program and work to bring about continued and enhanced cooperation between NASA and the Russian Space Agency. Cameron's responsibilities will include supervising NASA astronaut training at Star City, developing training syllabi for Shuttle crew members for the Russian Space Station Mir rendezvous missions and coordinating training for scientific experimenters; establishing and maintaining operations, operational relationships, plans and procedures to support flight operations, the Russian Space Agency in joint Shuttle/Mir flights and Space Station development, assembly and operations. Cameron is expected to command one of the early Space Shuttle docking missions to the Russian Space Station Mir.

Cameron and fellow astronauts **Norman E. Thagard**, M.D., and **Bonnie J. Dunbar**, Ph.D., who recently were named as the prime and backup crew members for a 3-month flight on the Russian space station Mir, will leave the Johnson Space Center, Houston, for Star City, today. Thagard and two cosmonauts will be launched aboard a Russian rocket to Mir in March 1995. Three months later, the crew of mission STS 71 will dock Space Shuttle Atlantis to Mir, the first of up to 10 Shuttle visits that will be made to the Russian space station over the 1995-1997 time frame. Cameron has flown twice on the Shuttle. He was the Pilot on Atlantis' STS 37 mission in 1991 to deploy the Compton Gamma Ray Observatory. He served as Commander of Discovery's STS 56 flight in 1993 to continue studies of the Earth's atmosphere as part of a series of missions called Atmospheric Laboratory for Applications and Science. Cameron received a bachelor of science degree in aeronautics and astronautics from the Massachusetts Institute of Technology in 1978 and a master of science degree in the same field from MIT in 1979. Cameron was selected to be an astronaut in 1984. [Halvorson, **FLORIDA TODAY**, p. 2A, Feb. 20, 1994; **NASA News Release: 94-017**, Feb. 23, 1994.]

February 24:STS 62: PROPELLANT SYSTEM PRESSURIZED

At Launch Complex 39B, technicians have finished pressurizing the hypergolic propellant system for flight; conducted final ordnance operations and completed interface verification testing between the payloads. Work in progress: washing orbital maneuvering system thrusters; closeouts of the aft compartment; launch countdown preparations; purges of the external tank; installation of two contingency spacesuits in airlock. STS 62 work scheduled: beginning the launch countdown at 9:00 a.m. February 28 and the arrival of the STS 62 flight crew: Commander **John H. Casper**; Pilot **Andrew M. Allen**, and Mission Specialists: **Pierre J. Thuot**, **Charles D. Gemar** and **Marsha S. Ivins**. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Feb. 24, 1994; **NASA/KSC News Release No. 24-94**, Feb. 24, 1994.]

[]STS 59: ENDEAVOUR PROCESSING UPDATE

Workers in the Vehicle Assembly Building have completed stacking of solid rocket motor segments; in OPF Bay 1, other workers have finished interface verification testing of the payload. Work in progress today: payload end-to-end tests; checkout and servicing of the water spray boilers; leak checks of the newly installed windows; testing of the main propulsion system and main engines; mating of the external tank to the solid rocket boosters in the VAB. A crew equipment interface test has been scheduled for tomorrow. Discovery is undergoing post-STS 60 deservicing in OPF Bay 3. Workers have offloaded residual oxidizer hypergols and work related to the deservicing continues today. STS 64 work scheduled: validation of the Orbiter's power system; main propulsion system leak and functional tests; functional checks of the orbital maneuvering system. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Feb. 24, 1994.]

February 25:DNE TECHNOLOGIES WINS KSC CONTRACT

NASA's Kennedy Space Center has selected DNE Technologies, Inc. (Wallingford, CT) as the contractor to replace Hardware Interface Modules (HIM) at Kennedy Space Center. HIM's are electronic boxes that provide the computer interface between various KSC facilities, including payload processing and Shuttle processing facilities, and ground support equipment (GSE). They also support the interface for launch critical functions between the GSE and the Space Shuttle. The electronic boxes are part of the launch processing system used to command, control and monitor the Space Shuttle GSE for launch and launch processing. Each Hardware Interface Controller box is about 44 inches tall and includes about 40 individual processing cards. The firm-fixed-price contract will run for up to five years. The first period of the contract is valued at $4.8 million for three first article HIMs and advance materials for the production. The total value of the contract is estimated at $13 million and is based on an estimated 250 HIMs in standard and ruggedized versions, which have been shock tested for use on launch facilities. The new HIMs are being procured to replace 20-year-old existing equipment; the procurement is through a small business set aside contract. [**NASA/KSC Release No. 22-94**, Feb. 25, 1994.]

[]STS 62: REAR COMPARTMENT WORK

Technicians at Launch Complex 39B will complete their preparations in the Space Shuttle Columbia's rear engine compartment in preparation for NASA's second Shuttle flight of 1994. Before the area is closed out, photographs will document the condition of the area inside the engine compartment. "That will be the big job of the day. It's one of the last things you do before you start the countdown," according to Kennedy Space Center spokeswoman **Lisa Malone**. The crew will arrive on February 28 only a few hours after the countdown for STS 62 has begun. Crewmembers include Commander **John H. Casper**, Pilot **Andrew M. Allen** and Mission Specialists **Sam Gemar**, **Marsha S. Ivins** and

Pierre J. Thuot. The two-week mission is expected to conclude with a 7:58 a.m. landing at KSC's Shuttle Landing Facility on March 17. [Halvorson, **FLORIDA TODAY**, p. 2A. Feb. 26, 1994.]

February 28:ASTRONAUTS ARRIVE FOR STS 62

The five-member crew of Columbia's STS 62 mission arrived today at Kennedy Space Center's Shuttle Landing Facility. The crew, which includes Commander **John H. Casper**, Pilot **Andrew M. Allen** and Mission Specialists: **Pierre J. Thuot, Charles "Sam" Gemar** and **Marsha S. Ivins**, pronounced themselves ready to undertake the two week flight. "Because of the tremendous potential benefits of these microgravity experiments," said Commander Casper, "I strongly feel that this flight symbolizes the very best in American technological leadership." Astronaut "Sam" Gemar said on his arrival, "We're anxious to get out there on Thursday [March 3] and go fly this beast." Four years ago, on Atlantis's STS 36, two of the present crew of Columbia were crewmates: John H. Casper and Pierre J. Thuot. [Banke, **FLORIDA TODAY**, p. 4A, March 1, 1994.]

[]NASA ORDERS NEW, LIGHTER TANK

A new, aluminum alloy external tank that NASA is ordering from Martin Marietta would be lighter than the current version by 8,000 pounds; each new tank would cost $59 million. The new, lighter tank would increase cargo-carrying capacity by as much as a third and help reach the Russian space station Mir with a larger cargo. That latter point is vital to the timely and efficient construction of the redesigned international space station. ["NASA Orders New Lightweight Fuel Tank," **FLORIDA TODAY**, p. 4A, March 1, 1994.]

MARCH

March 2:WEATHER ERODES LAUNCH CHANCES

NASA officials, noting the high winds and seas which dominate current conditions, said today that the anticipated launch of Columbia on her March 4 STS 62 mission could be in doubt. The weather is described as "dicey." High winds could interfere with plans to move LC 39A's service structure away from the Shuttle and make operation of the SRB recovery vessels in the Atlantic difficult. The chances that weather will delay Columbia's launch were put at 70% by Air Force meteorologists. [Halvorson, **FLORIDA TODAY**, p. 1A, March 2, 1994; "Storm Postpones Launching of Space Shuttle Till Friday," **THE NEW YORK TIMES**, March 3, 1994; "Shuttle Delay...," **USA TODAY**, p. 3A, March 3, 1994; "Bad Weather Forces NASA to Postpone Shuttle Liftoff," **THE PHILADELPHIA INQUIRER**, March 3, 1994.]

[]NEW DOCKING DEVICE FOR DISCOVERY

The Space Shuttle Discovery will be fitted with a new docking device to enable it to dock with the Russian Space Station Mir; unlike Atlantis, however, the work will be done here at Kennedy Space Center, according to NASA Shuttle Program Director **Brewster H. Shaw Jr.**. "That's in the plan," said Shaw, "unless it becomes more cost-effective to do the work somewhere else." Atlantis is being modified at Rockwell International's Palmdale, California, plant. KSC spokesman **Ed Campion**, explained that Discovery's modifications will be less extensive than those made to Atlantis and that when Discovery underwent modifications at Kennedy Space Center, design and engineering work for the docking changes was done at that time. Shaw noted that NASA has to modify two Orbiters to enable it to fly its planned ten missions to the Mir. [Halvorson, **FLORIDA TODAY**, p. 4A, March 3, 1994.]

March 4:WEATHER FAVORABLE FOR STS 62 LAUNCH

Columbia's two-week STS 62 mission lifted off at 8:53 a.m. this morning and, for a change, it looks as though the weather cooperated. NASA's Manager of Launch Integration **Loren J. Shriver**, himself a Space Shuttle veteran, said of the liftoff, "Turned out to be a beautiful day and a very beautiful launch." Launch Director **Robert B. Sieck** spoke in a similar vein, saying, "The term smooth countdown certainly applies." The launch vibration and noise was so strong that it set off car alarms seven miles from Launch Complex 39A. Commenting on the new "long johns" being worn by Commander **John H. Casper** and Pilot **Andrew M. Allen**, Casper said, "Like the [**FLORIDA TODAY**] said, `We are as cool as a chilled martini at sunset.'" The new high-tech underwear circulates cold water through 230 feet of tubing and are designed to help keep astronauts comfortable up to and through launch. Houston capcom **Ken Cockrell** replied, "I must be taking the wrong paper. But I'll take your word for it." Forecasters from the U. S. Air Force predicted an 80 percent chance of favorable weather. Rough crosswinds caused NASA officials to scrub yesterday's planned launch. The only concerns are in the Atlantic where high seas imperil the recovery ships' safe opera-

tion. The five person crew includes Commander Casper, Pilot Allen and Mission Specialists **Pierre J. Thuot, Charles Gemar** and **Marsha S. Ivins.** [Halvorson, **FLORIDA TODAY**, p. 4A, March 4, 1994; "Experienced Crew Aboard Columbia," **FLORIDA TODAY**, p. 4A, March 4, 1994; Banke, **FLORIDA TODAY**, p. 5A, March 4, 1994; Halvorson, **FLORIDA TODAY**, p. 1A, March 5, 1994; Tamman, **FLORIDA TODAY**, pp. 1B-2B, March 5, 1994; Harwood, **THE WASHINGTON POST**, March 5, 1994; Dunn, **THE WASHINGTON TIMES**, p. A5, March 5, 1994; Dunn, **THE PHILADELPHIA INQUIRER**, March 5, 1994; "Oldest Shuttle Lifts Off For 16th Time," **THE SUN**, March 5, 1994; "Space Shuttle Is In Orbit, **THE CHRISTIAN SCIENCE MONITOR**, March 7, 1994.]

March 7:SEDS NEXT FLIGHT

The second mission of NASA's Small Expendable-tether Deployer System (SEDS-2) is scheduled to be launched no earlier than 10:32 pm EST March 9 from Space Launch Complex 17 at the Cape Canaveral Air Force Station, FL. It will be a secondary payload on a U.S. Air Force Delta II rocket carrying a NAVSTAR Global Positioning System Satellite. Deployment of the SEDS-2 payload is planned to begin approximately 66 minutes after the Delta liftoff. The instrumented package is to unreel for an additional 109 minutes, reaching a maximum planned distance of 12.4 miles (20 km) from the deployer, in a downward (toward Earth) direction. The SEDS project is intended to demonstrate a versatile and economical way of delivering smaller payloads, such as micro-satellites, to higher orbits or downward toward Earth's atmosphere. The second mission will investigate how well SEDS permits controlling the dynamics of payload deployment. The SEDS project is sponsored by NASA's Office of Space Systems Development (Washington, D.C.) and is managed by the Marshall Space Flight Center (Huntsville, AL). The payload is managed by the Langley Research Center (Hampton, VA). The Goddard Space Flight Center (Greenbelt, MD) is responsible for integrating SEDS with the launch vehicle. Tether Applications (Chula Vista, CA) is the inventor and developer of SEDS. [**NASA/KSC News Release No: 94-35**, March 7, 1994.]

March 10:TETHERED SATELLITE SYSTEM TO FLY AGAIN

NASA Administrator **Daniel S. Goldin** and Italian Space Agency (ASI) Special Administrator **Giampietro Puppi** have confirmed the reflight of the Tethered Satellite System (TSS). Target date for the mission is February 1966. NASA and ASI long have planned this reflight but a formal commitment awaited US congressional approval for NASA to spend FY 1994 funds. TSS originally was flown on the Space Shuttle STS 46 mission launched July 1992. TSS deployment was curtailed when mechanical interference in the deployer reel assembly prevented full deployment of the satellite. The TSS reflight will focus on science objectives not accomplished on the STS 46 mission. NASA and ASI completed a study last year of the jointly-developed TSS and confirmed their judgment of its usefulness as a unique Shuttle-based experiment carrier. The TSS could place a satellite into the Earth atmospheric regions that are difficult to study. These regions lie above the range of high altitude balloon

flights and below the altitude of free-flying science satellites. The mission announced today will complete demonstration of the technology of deploying satellites on long, gravity-gradient stabilized tethers in space and through scientific investigations, to verify the value of such systems for scientific and technological research. TSS consists of a deployer system, 13.47 miles (21.68 km) of tether and a 1,139 pound (517 kg), 5 foot (0.15 m) in diameter spherical satellite. The satellite, developed by the Italian Space Agency, contains payload, service and propulsion modules. The payload module will carry several science instruments while the service module houses power, data handling telemetry and navigation systems. Other TSS-1 instruments — such as the Italy-developed core equipment - are mounted in the Space Shuttle Orbiter's cargo Bay. [**KSC/NASA Release: 94-40**, March 10, 1994.]

March 10:STS 59: COOLANT LOOP CHECKS

Endeavour is being readied in OPF Bay 1 for its April STS 59 mission. Completed tasks include: final landing gear tire pressure checks; flight control frequency response tests, with the exception of elevon checks which will be made at the launch pad, and Orbiter coolant loop checks. Work in progress in the OPF: structural leak checks; aft engine compartment closeouts; installation of main engine protective carrier panels. STS 59 activities scheduled: Orbiter transfer to the Vehicle Assembly Building [March 14]; retracting landing gear; weight and center-of-gravity measurements and checks; main propulsion system hydrogen flow control valve installation work which will be completed at the pad. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, March 10, 1994.]

[]STS 64: LAUNCH TARGET IN SEPTEMBER

Discovery's next mission is targeted for September 1994. Prior to that, however, Columbia is targeted to fly on mission STS-65 in July and Endeavour on mission STS 68 in August. Atlantis is scheduled to return to KSC from California in June. In OPF Bay 3, Discovery has undergone preparations to remove its main engines; the forward reaction control system has been checked out; the main engine heat shields have been removed; fuel cell number 1 has been removed and replaced and the inertial measurement units have been installed. Work in progress: TACAN system tests; fuel cell no. 1 inspections; inertial measurement unit checks removal and replacement of Orbiter window number 1; inspection of the main propulsion system; orbital maneuvering system pod checkouts. The Orbiter's main engines are scheduled for removal. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, March 10, 1994.]

March 13:MAUST WINS SILVER SNOOPY

Titusville's **Linda Maust** has been awarded a Silver Snoopy by astronaut **Tom Akers** for "exemplary performance" in her duties. Maust is a security assistant at Kennedy Space Center for the Installation Management & Operations Directorate (IM) of the space center. ["Security Assistant Gets Silver Snoopy Award," **FLORIDA TODAY**, p. 9E, March 13, 1994.]

[]LINENGER ADDED TO LIDAR MISSION

Mission Specialist **Jerry Linenger** has been added to the Discovery's crew for STS 65 which is expected to launch on September 9. The five other members of the crew will be Commander **Richard N. Richards**, Pilot **L. Blaine Hammond Jr.** and Mission Specialists **Carl J. Meade, Mark C. Lee** and **Susan J. Helms.** Linenger, said Chief Astronaut **Robert "Hoot" Gibson,** was added to the crew to "better distribute the work load" for the mission. The prime payload for the flight is the LIDAR In-Space Technology Experiment. The payload is a space platform which will use laser sensors to make atmospheric measurements. This will be the first Shuttle flight for **Linenger.** ["New Crew Member Named to September Shuttle Flight," **FLORIDA TODAY**, p. 9E, March 13, 1994.]

March 15:PALMDALE MODIFICATIONS TO CONTINUE

Space Shuttle Director **Thomas E. Utsman,** formerly Deputy Director of Kennedy Space Center, announced today that NASA's intent is to accomplish all major modification work on the Space Shuttle fleet at Rockwell International's facility in Palmdale, CA. In arriving at this decision, Utsman cited several factors including the expanding requirements associated with the Russian cooperative effort, the ability to support future operations of the International Space Station Program and the desire to continue to prelaunch process the Shuttle Orbiters for flight at KSC in the most efficient manner possible. "After evaluating the location for performing major modifications to the Space Shuttle Orbiters, I believe the best policy is to continue to perform these modifications at the Palmdale facilities. This will allow the KSC team to concentrate all its efforts on the safe and efficient Shuttle vehicle prelaunch processing," said Utsman. "This decision will allow the Shuttle Orbiter major modification effort to be performed by approximately 300 workers located at Palmdale while the 7,000 KSC member team can concentrate their efforts on safe and efficient vehicle processing," he said. Atlantis, undergoing major modification work at Palmdale to allow it to dock with the Russian Space Station Mir, is scheduled to return to KSC in June in preparation for the STS 66 mission this fall. Following that mission, Atlantis will fly the first docking mission with Mir on Shuttle Mission STS 71, scheduled for launch in June 1995.

Future major modification work scheduled at Palmdale will include preparing a second Orbiter - Discovery - to have the ability to dock with the Russian Space Station Mir so that it can help support the first phase of the new Russian cooperative effort. Phase One consists of up to 10 Space Shuttle-Mir missions including rendezvous, docking and crew transfers between 1995 and 1997. The Space Shuttles will assist with crew exchange, resupply and payload activities for Mir. Discovery is also set to have installed the initial work associated with the Multifunctional Electronic Display System [MEDS], a 5th cryogenic tank set, the same Mir modifications done to Atlantis so that Discovery can support Phase One cooperative efforts and have the

removal of the internal airlock and installation of a new external airlock to support the future International Space Station Program. The decision to continue major modification work at Palmdale and make a second Orbiter capable of Mir docking will have a slight impact on the near-term Shuttle manifest.

Columbia, currently in orbit on its STS 62 mission, is next in line for major modification work; it will be sent to Palmdale following STS 65, its next mission. The STS 67/ASTRO-2 mission, originally scheduled for Columbia in December 1994, will be flown aboard Endeavour in early January 1995. Columbia is expected to arrive at Palmdale in September 1994 with work projected to last seven to eight months. Among the improvements scheduled for Columbia is the initial work associated with the MEDS system. Discovery will be sent to Palmdale following the STS 70 mission and will arrive in Palmdale in September 1995, where it will remain for seven to eight months. Following modifications, it will fly a docking mission with Mir on STS 79 in June 1996. To obtain the maximum efficiency while the modification work is underway, normal inspections and evaluations associated with the Orbiter Modifications Down Period [OMDP] also will be performed at Palmdale. Each Orbiter is required to go through an OMDP about every 3 years so technicians can make structural evaluations on the various Shuttle systems. [**NASA/KSC Release: 94-44**, March 15, 1994; Halvorson, **FLORIDA TODAY**, p. 2A, March 19, 1994.]

March 16: ENDEAVOUR PROCESSING ON TRACK

While the astronauts aboard Columbia's STS 62 mission prepare for a return to Kennedy Space Center, technicians at the space center are readying Endeavour for next month's launch on STS 59 mission. Extra inspections have been ordered to ensure that the vehicle's turbopumps are not cracked. A minor crack had been discovered inside a turbopump which flew on the STS 61 mission to repair the Hubble Space Telescope. Inspections of the STS 59 mission turbopumps have shown no cracks and processing is continuing toward an April launch. [Banke,"Astronauts Reluctantly Pack for Home," FLORIDA TODAY, p. 4A, March 17, 1994; Banke, "Endeavour's Preparation On Schedule," FLORIDA TODAY, p. 4A, March 17, 1994.]

March 17: COLUMBIA HEADS HOME TOMORROW

Columbia, the oldest member of the Space Shuttle fleet, heads home to Kennedy Space Center tomorrow; landing is targeted for 8:09 a.m. EST. The STS 62 mission will have lasted from March 4 until March 18 and may end a single orbit shy of a new duration record. A second landing opportunity will occur on orbit 225 at 9:42 a.m. EST. On March 19, there are two further opportunities for landing at KSC - at 7:50 a.m. and at 9:23 a.m. There have been 19 previous landings at the space center, the latest being the February 11 landing of Discovery at the conclusion of STS 60. [**NASA/KSC Release No. 34-94**, March 17, 1994.]

[]SPACE STATION PROGRAM MILESTONE

The International Space Station Program will cross a major milestone next week when program managers from NASA, the international partners and the contractor community meet to review and evaluate the design status of the orbiting laboratory. At the System Design Review (SDR), set for March 23 and 24 at the Johnson Space Center (JSC), program managers will validate overall technical requirements for the space station and take a preliminary look at how the requirements will be accomplished. "This is where we move from concepts to hardware implementation," said **Randy Brinkley**, Space Station Program Manager. "This is by far the most important technical milestone in the program since last year's redesign of the station. The SDR will lock in the key technical elements of the system as well as the schedule and cost."

The SDR will include managers from NASA; the Canadian Space Agency; the European Space Agency (ESA); the Italian Space Agency (Agenzia Spaziale Italiana); the Japanese Space Agency (NASDA); the Russian Space Agency; the prime contractor Boeing; and Tier 1 subcontractors Rocketdyne and McDonnell Douglas. The SDR will establish the technical baseline of the entire program and is an extension of the SDR process conducted in December. The SDR documentation has been reviewed concurrently by program analysis and integration teams and integrated product teams. NASA, the international partners, Boeing and the Tier 1 subcontractors all have participants on the teams developing the SDR documents.

The 2-day meeting is intended to be an executive summary and overview of the SDR process results. Participants will review the operation and utilization concept, the baseline assembly sequence and assembly operations. For the International Space Station Program, this includes the specifications for the U.S. on-orbit components, U.S. ground components, ESA's Columbus Laboratory Module and the Japanese Experiment Module. Participants will also look at the basic design of the station's core systems including electrical power; thermal control; life support; guidance, navigation and control; propulsion; command and data handling; communications and tracking; and extravehicular activities. Risk and affordability also will be assessed. The analysis at SDR will demonstrate the feasibility of the requirements and establish the physical and functional interfaces between system elements including software and hardware.

The overall objective of the meeting is to reach a consensus among program managers on the technical validity, design and completeness for the space station system specifications; the operations concept; requirements for interfaces with the Space Shuttle and Russian launch vehicles; and to refine cost and program schedules. This is an important checkpoint for the program. Brinkley said, "This review gives us an opportunity to assess the developing design to ensure that it meets program objectives and requirements." Over the next year, the space station team will refine the design to more detailed levels and

finalize it at the Critical Design Review currently scheduled for April 1995.

"Since last year's redesign of the space station, NASA has made significant progress with the international partners and contractor team to provide — on schedule and within budget — a world-class, space-based research facility," Brinkley said. "By using about 75 percent of the hardware planned for Space Station Freedom, NASA has been able to maintain its investment to date while redesigning the system to be less expensive and more capable," he said. "The international community of researchers, scientists and industry that comprises the International Space Station users will have access to an unprecedented amount of power, volume and crew time to conduct investigations in the microgravity environment of space," Brinkley concluded. [**NASA NEWS Release: 94-45**, March 17, 1994.]

[]THORNTON NAMED TO STS 73 CREW

Dr. **Kathryn C. Thornton** has been named Payload Commander of the second United States Microgravity Laboratory Mission (USML-2) scheduled for launch in the fall of 1995 aboard the Columbia. Also chosen as a mission specialist was Dr. **Catherine G. Coleman** (Captain, USAF). STS 73, presently scheduled to last 16 days, will become the longest mission in Space Shuttle program history and is designed to continue laying the foundation for microgravity research conducted over extended durations in space. USML-2 follows the first microgravity laboratory mission, STS 50 flown in June and July 1992. The mission will continue the series of Shuttle flights dedicated to studying microgravity materials processing technology through research sponsored by government, industry and academia. The mission will focus on materials science, biotechnology, combustion science, the physics of fluids and many other scientific experiments to be housed in the pressurized Spacelab module.

For Thornton, STS 73 will be her fourth Shuttle flight. She first flew aboard Discovery on a Department of Defense mission (STS 53) in November 1989. Her second flight was in May 1992 on the maiden voyage of Endeavour (STS 49) to rescue and repair the Intelsat spacecraft and to examine assembly techniques for large space structures such as the international space station. On that flight, Thornton evaluated assembly techniques during 1 of 4 spacewalks. Thornton's most recent flight in December 1993 was aboard Endeavour as a member of the crew sent to carry out the first servicing of the Hubble Space Telescope (STS 61). On that flight, she was 1 of 4 astronauts that conducted a record 5 spacewalks. Coleman will be making her first flight on the Space Shuttle. She was selected to be an astronaut in 1992. Coleman graduated from W. T. Woodson High School (Fairfax, VA) in 1978. She earned a bachelor of science degree in chemistry from the Massachusetts Institute of Technology in 1983 and a doctorate in polymer science and engineering from the University of Massachusetts in 1991. Since completion of astronaut training, Coleman has supported the Astronaut Office Mission Support Branch, assisting with flight software verification in the Shuttle Avionics Integration Laboratory. [**NASA/KSC News Release 94-47**, March 17, 1994.]

[]EMPLOYMENT DECLINE IN AEROSPACE INDUSTRY

Employment in the U.S. aerospace industry dropped below 1 million in 1993 for the first time in 15 years, according to a survey this week by the industry's major trade organization. Production and administrative positions were the hardest hit, with losses of 48,000 and 33,000 jobs, respectively, said the Aerospace Industries Association, which represents the largest defense contractors. Since 1989, when industry employment peaked, 471,000 jobs have been lost. ["Aerospace Employment Falls," **THE SUN**, March 18, 1994.]

March 18:ROLM TELECOMMUNICATIONS CONTRACT

The ROLM Company (Vienna, VA) was recently awarded a $2,177,913 contract to provide a Digital Voice Telecommunications System [DVTS] for the new Space Station Processing Facility (SSPF) located in Kennedy Space Center's Industrial Area. The DVTS will provide telephone service to employees in the new building. Most of the work will be done at the manufacturer's facility of ROLM's affiliated company Siemens Stromberg-Carlson (Lake Mary, FL). The work to be performed includes the manufacture, installation, and testing of the telecommunications system, as well as training on operation and maintenance of the system. Digital telephone instruments are also included in the contract. [**NASA// KSC Release No. 35-94**, March 18, 1994.]

[]COLUMBIA ENDS STS 62 AT KSC

Columbia made a pinpoint landing on Kennedy Space Center's Shuttle Landing Facility his morning at 8:09 EDT. Inspections of the vehicle revealed some "minor technical problems" and a few damaged tiles. The mission began with a liftoff March 4 and when it landed today it was only one hour short of a new Shuttle flight duration record. "It would have been nice to get the record," said STS 62 Commander **John H. Casper**, but he noted, "I think we did a lot of good things." [Banke, **FLORIDA TODAY**, p. 1A, March 18, 1994; **FLORIDA TODAY**, p. 1A, March 19, 1994, "Shuttle Returns to Florida Base," **THE NEW YORK TIMES**, March 19, 1994; "Columbia Lands Safely In Florida After Second-Longest Shuttle Trip," **THE SUN**, March 19, 1994; "Space Shuttle Columbia Lands In Florida," **THE WASHINGTON TIMES**, March 19, 1994; Harwood, **THE WASHINGTON POST**, March 19, 1994.]

March 24:STS 59 LAUNCH DATE: APRIL 7

NASA managers today set April 7, 1994, as the official launch date for Shuttle Mission STS 59. Space Shuttle Endeavour, with a six-person crew, will conduct the first flight of the Space Radar Laboratory payload which will provide scientists around the world with a unique vantage point for studying how the Earth's global environment is changing. The launch on April 7 from the Kennedy Space Center is currently planned for 8:07 a.m. EDT at the start of a 2 1/2 hour launch window. The launch team is protecting an option in the countdown timeline which would allow Endeavour to launch one hour sooner at 7:07 a.m.

EDT. By building flexibility into the launch time, NASA managers can evaluate predicted climatological and atmospheric conditions for the KSC area during the final part of the countdown and then select the optimum time for launch. A specific launch time will be decided no later than 24 hours before launch. The planned STS 59 mission duration is 9 days, 5 hours, 7 minutes. A launch on April 7 at 8:07 a.m. EDT would produce a landing at 1:14 p.m. EDT on April 16 at Kennedy Space Center. Leading the STS 59 crew will be Mission Commander **Sidney M. Gutierrez** who will be making his second flight. Pilot for the mission is **Kevin P. Chilton** who is making his second flight. The four mission specialists aboard Endeavour are **Linda M. Godwin**, the STS 59 Payload Commander who will be making her second flight, **Jerome Apt** who will be making his third flight, **Michael R. "Rich" Michael Clifford** who will be making his second flight and **Thomas D. Jones** who will be making his first flight. [**NASA News Not to Editors: N94-26**, March 24, 1994; Banke, **FLORIDA TODAY**, p. 7A, March 24, 1994.]

[]STATION READY IN 2002

Space Station Program Manager **Dan Tam** said today that the Space Station should be ready with a fully operational station by 2002, even though NASA is currently undergoing a major restructuring effort. Tam said, "We feel a lot better today than we have in the history of the ...program." The Congressional Budget Office, however, predicted that the agency's budget trimming efforts would be unsuccessful and suggested that the agency should consider scrapping either the Space Station or the Space Shuttle Program. [Hoversten, **USA TODAY**, p. 1A, March 25-27, 19944.]

[]STS 59: Flight Readiness Review

The STS 59 Flight Readiness Review was held at Kennedy Space Center this morning; following the review, NASA mission managers decided on April 7 as the official launch date for the Space Shuttle Endeavour. The six-member crew for STS 59 is at KSC for the standard terminal countdown demonstration test which ended today with a simulated T-0 at 11 a.m. The crew is scheduled to depart for Houston at about 4:30 p.m. today. The mission crew includes: Commander **Sidney M. Gutierrez**, Pilot **Kevin P. Chilton** and Mission Specialists **Linda M. Godwin, Jerome "Jay" Apt, Michael R. U. Michael Clifford** and **Thomas D. Jones.**

The mission's helium signature test has been completed and checks have been made of the main propulsion system hydrogen flow control valve. Work in progress today: preparations for prelaunch hypergolic propellant loading; inertial measurement unit calibrations; vehicle hydraulic closeout operations; thruster washing and microwave scanning beam landing system tests. STS 59 work scheduled: prelaunch hypergolic propellant load; aft engine compartment closeouts; installation and checkout of the mission's contingency spacesuits; ordnance installation and hypergolic reactant pressurization. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, March 24, 1994.]

[]STS 65: INTERNATIONAL MICROGRAVITY LABORATORY-2

Aft thruster and payload Bay radiator inspections for Discovery's STS 65 mission have been completed while the Orbiter is in OPF Bay 2. Work in progress: removal of the SSBUV payload; auxiliary power unit inspections; hypergolic deservice preparations; post-flight window inspections and the installation of inertial measurement units. STS 65 work scheduled: removal of the US Microgravity Payload and OAST payload; forward reaction control system functional checkouts and main engine inspections. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, March 24, 1994.]

[]STS 65: LIDAR IN-SPACE TECHNOLOGY EXPERIMENT

Discovery is being processed for its STS 65 mission while the Orbiter is in OPF Bay 3. Payload Bay radiator strongbacks have been installed and cycle checks have been made of the external tank doors. Work in progress includes: water spray boiler leak and functional checks; main propulsion system verification tests; right hand orbital maneuvering system pod removal preparations; payload radiator functional checks; window inspections. STS 65 work scheduled: cycle checks of the external tank doors. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, March 24, 1994.]

[]CBO: NASA NEED TO REFOCUS

According to a just released Congressional Budget Office report NASA needs to refocus its mission, perhaps by ending its manned space flight program. "If's NASA's problem is trying to do too much with too few dollars," the report stated, "one solution is to do less. By explicitly foregoing some (programs), budget costs could be reduced. Moreover, the likelihood would be increased that NASA could actually achieve results and obtain benefits in the areas in which its resources were concentrated." NASA Administrator **Daniel S. Goldin** took issue with the report, saying, "Any of the three alternatives put forth in the CBO report would destroy the essential balance between human spaceflight, space science and leading-edge aeronautics," he said. "NASA will not back away...nor will we lose the courage to conduct the kind of program the American public wants - lean, bold and visionary." [Eisler, **FLORIDA TODAY**, pp. 1A-2A, March 25, 1994; SEE ALSO: Appendix No. 6.]

March 28:ENDEAVOUR MISSION THIRD OF YEAR

The Space Shuttle Endeavour's STS 59 launch will be the third mission of 1994 and preparations for the flight continue to go smoothly toward the countdown a week from today., Commander **Sidney M. Gutierrez**, speaking about the upcoming mission, said, "We're going to be busy 24 hours a day up there. We're going to be using the lab to look back down on the Earth and study a lot of things on the Earth." Gutierrez, who is making his second flight on the Shuttle, is commanding the mission whose crew includes Pilot **Kevin P. Chilton**, Payload Commander **Linda M. Godwin**,

Flight Engineer **Michael R. U. "Rich" Michael Clifford** and Mission Specialists **Jerome (Jay) Apt** and **Thomas D. Jones.** The crew of Endeavour arrives at Kennedy Space Center on April 4 to prepare for the April 7 launch. [Halvorson, FLORIDA TODAY, p. 3A, March 28, 1994.]

March 30:STS 59 UPDATE

The countdown for mission STS 59 is scheduled to begin at 11 a.m. EDT Monday, April 4, for a planned liftoff at 8:07 a.m. Thursday, April 7. Considered in the schedule is the option to launch Endeavour as much as an hour earlier (7:07 a.m.). This alternative will be implemented the day prior to launch day if mission managers judge the weather may not be acceptable at 8:07 a.m. but could be acceptable earlier. Morning fog is often a concern for visibility at KSC this time of year. Completed tasks include: preparations for prelaunch hypergolic propellant operations; microwave scanning beam landing system tests; prelaunch hypergolic propellant load; start of aft engine compartment closeouts. Work in progress today: ordnance installation; hypergolic reactant pressurization; thruster washing. Work scheduled for STS 59: crew arrival at 8:00 a.m. Monday, April 4; start of countdown at 11 a.m. April 4; checkout of contingency spacesuits; aft closeouts; external tank purges; launch countdown preparations; airlock closeouts. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, March 30, 1994; Banke, **FLORIDA TODAY**, p. 6A, April 1, 1994.]

[]STS 65: IML-2 UPDATE

Technicians in OPF Bay 2 have removed the payloads from Columbia; implemented hypergolic deservicing preparations and installed the Shuttle's inertial measurement units. Work in progress: auxiliary power unit and hypergolic deservice operations during which time the OPF Bay is closed to other work due to hazardous operations. STS 65 work scheduled: forward reaction control system functional checkout; main propulsion system leak and functional tests; orbital maneuvering system functional and checkout operations; water spray boiler leak and functional tests; removal of the remote manipulator system. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, March 30, 1994.]

[]STS 64: LIDAR EXPERIMENT MISSION

Window inspections of Discovery have been completed while the Orbiter is in OPF Bay 3; payload radiator functional checks have also been implemented. Work in progress today: water spray boiler leak and functional checks; main propulsion system verification tests; right hand orbital maneuvering system pod removal preparations; thruster wash operations. Ammonia system servicing is on the schedule. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, March 30, 1994.]

[]SIECK HONORED FOR SPACE WORK

Robert B. Sieck, Kennedy Space Center's Shuttle Launch Director since 1986, is this year's recipient of the Kurt H. Debus Award. The award is named for KSC's first Center Director and is given annually to a Floridian who has contributed to the advancement of the nation's space program. **Gerry Oppliger**, chairman of the award committee and President of Lockheed Space Operations Company said, **"Bob Sieck** is a most deserving recipient of this award.. In leading the KSC launch team, Bob has an outstanding record of success." Oppliger noted that Sieck has presided over the successful launch of 36 Space Shuttle missions. [Banke, **FLORIDA TODAY**, p. 5A, March 31, 1994.]

APRIL

April 1: 92 CIVIL SERVANTS TAKE EARLY OUT & $25 K

As part of the Clinton Administration's attempt to downsize the federal bureaucracy, 92 civil servants at Kennedy Space Center will accept early retirement along with a cash incentive of up to $25,000. KSC has had 180 people sign up for the early retirement program, but there is only enough money for 92. Human Resources Director **James Jennings** said, "We have a criteria that we have to go through to see who has top priority to go out." Jennings said that to qualify for the "buyout," a KSC employee must have put in 25 years of federal government service or be at least 50 years old with 20 years of federal service. Jennings added, "This gets rid of some of the higher pay grades and will possibly allow us to bring in some younger people into the organization next year." [Causey, **THE WASHINGTON POST**, Feb. 28, 1994; Hughes, **THE FEDERAL TIMES**, Feb. 28, 1994; Rivenbark, **THE FEDERAL TIMES**, Feb. 28, 1994; Barr, **THE WASHINGTON POST**, p. A25, Feb. 24, 1994; Banke, **FLORIDA TODAY**, p. 4A, April 2, 1994.]

April 3: GUTIERREZ FIRST HISPANIC COMANDER

When **Sidney Gutierrez** goes into space on Endeavour's STS 59 mission, he will be the first Hispanic Shuttle Commander. "Being a commander is very important to me, and I'm also very proud of my Hispanic heritage," said Gutierrez, who is a descendant of Mexican immigrants. The Albuquerque (NM) native said, "I was fortunate to grow up in New Mexico in an area where I saw many Hispanics in positions of importance, so I never felt there was any limitation on what I could do based on my ethnic background. I grew up to realize that not all people grow up in areas like that." When he advises young people who want to succeed him in the astronaut corps, Gutierrez tells them: "Set your goals high. Don't limit your dreams by any preconceived notions about what you may nor not be able to do because of your ethnic background." [Banke, **FLORIDA TODAY**, p. 1A, April 3, 1994; Banke, **FLORIDA TODAY**, p. 1A, April 4, 1994.]

April 4: DELAY FOR STS 59

NASA has delayed the launch of Endeavour on its STS 59 mission so that technicians can conduct special tests of critical engine parts to ensure that the parts won't break in-flight. "The inspections are definitely the prudent thing to do. That's the nature of the Shuttle business - to play it as safe as possible," said Kennedy Space Center spokesman **Bruce Buckingham.** The suspect parts - called vanes - have sharp, pointed tips which might crack and break off during liftoff causing dangerous debris, according to Marshall Space Flight Center's spokeswoman **June Malone.** Debris in the area of the main engine turbopumps could cause the engines to shutdown and imperil the Shuttle's launch. Liftoff must come by Saturday [April 9] or wait till April 14 because of an upcoming Atlas rocket launch at Cape Canaveral. [Halvorson, **FLORIDA TODAY**, p. 1A, April 5, 1994.]

April 5:STS 59 UPDATE

The countdown for STS 59 is currently holding at T-27 hours as a result of yesterday's decision by mission management to make additional inspections on Endeavour's three main engines. The decision to perform the borescope inspections on the engines, specifically the high pressure oxidizer turbopumps, was a result of engineers at Rockwell International's Canoga Park (CA) plant discovering smaller than perceptible vanes, or stationary guides, in the preburner that directs the flow of the liquid oxygen through the pump. Managers will be meeting again today to discuss the results of the inspections. Because of this decision, the launch of Endeavour was moved from Thursday (April 7) to Friday (April 8). The two-and-a-half-hour window opens at 8:06 a.m. (Remaining in the schedule is the option to launch Endeavour as much as an hour earlier at 7:06 a.m. This alternative will be implemented the day prior to launch day if mission managers judge the weather may not be acceptable at 8:06 but could be acceptable earlier. The forecast indicates a 60 percent probability of weather prohibiting launch on Friday with the primary concerns being for low ceilings and winds exceeding runway crosswind limits.

Work in progress today: continued inspections of the main engines' high pressure oxidizer turbopumps; verification of Shuttle power on system, data processing and flight control systems; preparations to load onboard cryogenic reactants; awaiting final results from engine analysis. STS 59 work scheduled: pyrotechnic initiator controller (PIC) tests; loading of cryogenic reactants aboard power reactant storage and distribution system tanks starting at 8:00 a.m. tomorrow; retraction of the rotating service structure at 11:00 a.m. April 8 and external tank loading operations commencing at 11:46 pm. April 8. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, April 5, 1994.]

[]ENDEAVOUR PASSES NEW TESTS

Endeavour passed a series of precautionary inspections of its three main engines, so NASA managers have given the go ahead to launch on Friday, April 8. "When we find shortcomings, we take great care to make sure we maintain flight safety, and if the schedule has to be pushed, then that's what happens," said NASA's Deputy Manager for Space Shuttle Main Engines, **Boyce Mix.** "The way our system is, we were supposed to catch [the flaws in turbopumps]. Something in the process has broken down and now we have to understand that and fix it." The STS 59 launch window is set for between 8:06 a.m. and 10:36 a.m. EDT, though weather concerns might push it to an hour earlier start. [Banke, **FLORIDA TODAY**, p. 1A-2A, April 6, 1994; "Pumps Tested, Endeavour Cleared for Liftoff Friday," **THE WASHINGTON TIMES**, April 6, 1994; "Slight Leak Won't Affect Shuttle Launch," **THE WASHINGTON TIMES**, April 7, 1994; "Countdown for Shuttle Resumes," **THE WASHINGTON POST**, April 7, 1994.]

April 7:STS 59: WEATHER THE ONLY CONCERN

The countdown to Friday's STS 59 launch is continuing with no

problems being worked; the only concern at present is the weather. Air Force meteorologists are predicting only a 40% chance of conditions sufficient to launch. A cold front headed for Central Florida today will bring with it low clouds and rain. Since the tests of main engine turbopumps eliminated concerns about their safety, the countdown is proceeding uneventfully. "The Orbiter's in good shape. We've declared victory on the pumps, and we're ready to fly," said Shuttle Test Director **Mike Leinbach**. NASA managers are even talking about extending the mission a day to have more time for Earth mapping projects. Presently, however, landing is scheduled for Kennedy Space Center on April 17. [Banke, **FLORIDA TODAY**, p. 1A, April 7, 1994; Lo Lordo, **THE SUN**, April 8, 1994.]

April 8:STS 59 SCRUBBED

Today's scheduled launch of the Space Shuttle Endeavour was scrubbed at about 10:45 a.m. due to unacceptable weather at Kennedy Space Center. Specifically, low clouds at the early part of the window and higher than allowable crosswinds at the Shuttle Landing Facility toward the end of the launch period violated launch constraints. Currently the launch team is performing the 24-hour scrub turnaround option and they are pressing toward a second launch attempt tomorrow at 7:05 a.m. EDT. The countdown clock has been recycled to reflect T-11 hours and holding. The countdown will resume at 5:45 p.m. today. At the pad, the external tank is being drained of its liquid cryogenic reactants. At about 10:45 p.m. today operations will commence to again load the external tank with more than 500,000 gallons of liquid hydrogen and liquid oxygen.

Forecasters indicate a 20 percent probability of weather prohibiting launch tomorrow. Winds tomorrow are expected to be from the northeast at 10-15 knots; temperature 66-71 degrees Fahrenheit, visibility 7 miles. The six-member astronaut crew egressed the vehicle after the scrub decision and have begun their 24-hour recycle for a launch attempt tomorrow. Later, they will be given a briefing on tomorrow's launch weather outlook, make last minute adjustments to their flight plans and complete their review of launch day activities prior to their scheduled sleep times. Tomorrow the crew is scheduled to depart for the pad at 3:50 a.m. On hand to view the launch were Director **Ron Howard** and actor **Tom Hanks** who are planning a film based on the ill-fated mission of Apollo 13. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, April 8, 1994; Banke, **FLORIDA TODAY**, p. 1A, April 9, 1994; Redick, **FLORIDA TODAY**, pp. 1A & 4A, April 9, 1994.]

April 9:ENDEAVOUR BEGINS STS 59 WITH ROAR

Following yesterday's scrub of the STS 59 launch, liftoff came right on time this morning at 7:05, just at sunrise. Astronaut **Jay Apt**, speaking from onboard Endeavour said, "The sunrise is just beautiful. This is an incredible way to commute to work." Pilot **Kevin Chilton** added, "That was quite a ride. You've got six happy people up here." Other crewmembers include: **Linda M. Godwin**; Commander **Sidney Gutierrez** and Mission Specialists **Michael R. U. "Rich" Michael Clifford** and **Thomas D. Jones**. Sat-

urday, following the liftoff, Launch Director **Robert B. Sieck** said, "Yesterday, Mother Nature teased us and it got kind of frustrating at the end, and today she was very kind and we had a great launch." On hand for today's liftoff was Hollywood motion picture director **Ron Howard** who is in Florida working on a film about the Apollo 13 mission. Landing at Kennedy Space Center is now expected to occur April 19. ["Film Director....," [Photograph], **FLORIDA TODAY**, p. 6A, April 10, 1994; Banke, **FLORIDA TODAY**, pp. 1A & 6A, April 10, 1994; Harwood, **THE WASHINGTON POST**, April 10, 1994; Lo Lordo, **THE SUN**, April 10, 1994; Wilford, **THE NEW YORK TIMES**, April 10, 1994; Cowen, **THE CHRISTIAN SCIENCE MONITOR**, April 11, 1994.]

April 13:GOES LAUNCHED FROM CCAFS

The launch was the pretty part, the exciting part. Now we have to go to work," said NASA's Goes Mission Manager **Marty Davis.** Liftoff of the much delayed mission came at 2:04 this morning aboard an Atlas rocket. The satellite was injected into an egg-shaped orbit that ranges from 90 to 23, 127 miles from Earth. Over the next two weeks, maneuvering thrusters will adjust the orbit in a manner that will upgrade the satellite's lifespan from five years to eight. The new Geostationary Environmental Observational Satellite will be able simultaneously to use both its imager and sounder and thereby improve the ability of meteorologists to predict the development and movement of severe storms such as hurricanes. The latest GOES Satellite is the first in a series of five. [Halvorson, **FLORIDA TODAY**, pp. 1A-2A, April 14, 1994.]

April 15:AMF EDUCATION CENTER OPENS IN JUNE

The Center for Space Education will open its doors at Spaceport USA in June, according to Astronauts Memorial Foundation President **James DeSantis.** "We built this building $7.50 at a time," DeSantis remarked today. "And that has added up to $6.2 million that we needed to put up this building." DeSantis spoke on the occasion of a $100,000 corporate donation to the Center from Rockwell International Space Systems Division. The money was presented to the foundation by vice president and general manager of Rockwell's KSC Division, **Lee Solid**, who said: "The center fits well with our commitment to educating our youth." The Space Mirror Memorial at the Spaceport was also constructed by the Astronauts Memorial Foundation. [Halvorson, **FLORIDA TODAY**, p. 1B, April 16, 1994.]

April 18:ENDEAVOUR TO LAND TOMORROW

Endeavour is scheduled to land at Kennedy Space Center's Shuttle Landing Facility tomorrow at 11:52 a.m. on the first of two landing opportunities in Florida. At landing time, winds should be out of the east at 8 - 14 knots, clouds scattered and a chance of offshore rains within 30 miles of the strip. STS 59's crew includes Commander **Sid Gutierrez**, Pilot **Kevin Chilton** and Mission Specialists **Jay Apt**, **Rich Michael Clifford , Linda Godwin** and **Tom Jones.** [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, April 18, 1994.]

[]FUTURE SHUTTLE FLIGHTS ANNOUNCED

NASA today released its updated Mixed Fleet Manifest reflecting the flight schedule for Space Shuttle/Space Station missions through Calendar Year 1997 and expendable launch vehicle (ELV) missions through Calendar Year 2001. Notable among Space Shuttle/Space Station missions is the inclusion of 10 Shuttle flights to the Russian Space Station Mir to take place between 1995 and 1997. These represent the first of three phases of the International Space Station Program's cooperative activities. Launch of the first Shuttle SPACELAB-MIR mission, STS 71, is targeted for May 1995. This latest manifest update includes the reflight of the Tethered Satellite System in March of 1996, the next Hubble Space Telescope Servicing Mission in August 1997 and the first U. S. element launch of the International Space Station Program in December 1997. The manifest also reflects the recently-announced Orbiter Maintenance Down Period decision to modify and refurbish the Shuttle fleet at the Rockwell Space Systems Division (Palmdale, CA). Official Shuttle launch dates are set at the Flight Readiness Reviews held several weeks prior to each mission.

The U.S. commercial, expendable launch vehicle fleet continues to provide NASA with a reliable and efficient access to space for a variety of payloads supporting space science missions. On May 6, 1994, NASA is scheduled to launch its last Scout rocket from Vandenberg Air Force Base (CA). The Scout launch, NASA's 118th over a 34-year period, will carry the Department of Defense MSTI-2 payload into polar orbit. The first NASA flight of the Pegasus rocket, carrying the Total Ozone Mapping Spectrometer, is scheduled for June 22, 1994. The last launch of the Atlas-E ELV for NASA will be Sept. 29, carrying the NOAA-J satellite. The first west coast launch of a Delta-II ELV will be NASA's Polar mission, originally scheduled for later this year (currently under review), while the first west coast launch of the new Atlas IIAS vehicle is scheduled for June 1998, which will carry the EOS-AM-1 Satellite. [**NASA News Release: 94-61**, April 18, 1994.]

[]STS 65 STATUS REPORT

The extended duration Orbiter pallet has been installed in the cargo Bay of Columbia. In preparation for the upcoming STS 65 mission, technicians have checked the newly installed tank set on the EDO and completed water spray boiler servicing and checkouts. Work in progress: electrical checks of the extended duration Orbiter pallet; removal of the main engine heat shields; preparations for removal of the main engines; auxiliary power unit number 3 checks; orbital maneuvering system functional and checkout operations. STS 65 work scheduled: power reactant storage and distribution system checks; preparations to install the Spacelab tunnel adapter and removal of the main engines. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, April 18, 1994.]

[]STS 64: LITE PAYLOAD

Discovery's freon coolant loop number 1 has been deserviced; the right hand orbital maneuvering system (OMS) has been transported to the hypergolic maintenance facility. Work in progress today includes: landing gear checks; ammonia system servicing; thruster wash operations; main propulsion system verification tests; and flash evaporator system checks. STS 64 work scheduled: deservicing the Orbiter freon coolant loop number 2; payload Bay electrical and mechanical reconfiguration and complete landing gear area tile inspections and work. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, April 18, 1994.]

April 19:STS 59: LANDING DELAYED BY WEATHER

Both of Endeavour's landing opportunities were waved off today due to clouds over KSC's Shuttle Landing Facility. Mission managers will allow the Orbiter and crew to remain in space and make another landing attempt on the first of two opportunities tomorrow at Kennedy Space Center at 11:29 a.m. and 1:01 a.m. (EDT). Two opportunities also exist at Edwards Air Force Base (CA) at 12:54 and 2:26 p.m. (EDT). Tomorrow's weather forecast at KSC calls for winds out of the southeast at 8-14 knots, clouds scattered and a chance of showers within 30 miles of the strip. The STS 59 crew includes: Commander **Sid Gutierrez**, Pilot **Kevin Chilton** and Mission Specialists **Jay Apt, Rich Michael Clifford, Linda Godwin** and **Tom Jones**. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, April 19, 1994.]

[]MISSION UPDATES: STS 65 & STS 64

Main engine heat shields have been removed from Columbia as part of the processing effort for its upcoming STS 65 mission in July. Work in progress includes: electrical checks of extended duration Orbiter pallet; preparations for removal of the main engines; auxiliary power unit no. 3 checks; orbital maneuvering system functional and checkout operations. STS 65 work scheduled: power reactant storage and distribution system checks; preparations to install the Spacelab tunnel adapter and removal of the main engines. Meanwhile, work continues in preparing Discovery for its STS 64 mission set for early September. Hydraulic system tests on Discovery were completed today. Work currently under way: landing gear checks; ammonia system servicing; thruster wash operations; main propulsion system verification tests; flash evaporator system checks. STS 64 work scheduled: deservicing the Orbiter freon coolant loop no. 2; payload Bay electrical and mechanical reconfiguration; complete landing gear area tile inspections and work. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, April 19, 1994.]

April 20:ENDEAVOUR LANDS AT EDWARDS AFB

The Space Shuttle Endeavour landed safely today at Edwards Air Force Base (CA) on runway 22. The vehicle's main gear touched down on the concrete runway at 12:54.30 p.m. EDT. Wheels stop was at 12:55.23 p.m. EDT. The decision to land at Edwards came after both Kennedy Space Center landing opportunities were waved

off due to clouds over KSC's Shuttle Landing Facility and rain within 30 miles of the facility. About 200 space center employees will depart for Edwards AFB tonight to begin Endeavour's post-flight servicing and prepare the vehicle for return to KSC. The cross-country return ferry flight is expected to begin early next week. STS 59's crew included: Commander **Sid Gutierrez,** Pilot **Kevin Chilton**; Mission Specialists **Jay Apt, Michael Clifford, Linda Godwin** and **Tom Jones. [KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** April 20, 1994; Banke, **FLORIDA TODAY**, p. 1A & 4A, April 21, 1994.]

[]STS 65: PROCESSING UPDATE

Orbital maneuvering system functional and checkout operations for STS 65 have been completed while the Space Shuttle Columbia undergoes processing in OPF Bay 2. The main engine heat shields have also been removed. Work in progress: removing the main engines; power reactant storage and distribution system checks; electrical checks of extended duration orbiter pallet and auxiliary power unit no. 3 checks. STS 65 work scheduled: preparations to install the Spacelab tunnel adapter. The STS 65 mission is targeted for early July and is expected to last for 13 days and 18 hours. **[KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** April 20, 1994.]

[]STS 64: LIDAR PAYLOAD

The Space Shuttle Discovery is undergoing processing for its STS 64 mission in OPF Bay 3 at Kennedy Space Center. Completed processing tasks include: flash evaporator system checks; landing gear checks; thruster wash operations and hydraulic system tests. Work in progress today: ammonia system servicing; deservicing of Orbiter freon coolant loop no. 2; main propulsion system verification tests; testing of Orbiter microwave scanning beam landing system. Scheduled STS 64 work: payload Bay electrical and mechanical reconfiguration and complete landing gear area tile inspections and re-work. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** April 20, 1994.]

April 22:ENDEAVOUR IN CALIFORNIA

The Orbiter Endeavour has been jacked and leveled and the cryogenic offloading is occurring today. The first set of Space Radar Laboratory data tapes were shipped to the Jet Propulsion Laboratory (Pasadena, CA) yesterday afternoon as scheduled. The remainder of the tapes are being shipped today. The Space Tissue Loss (STL) experiment is at the Buckhorn Life Sciences Facility at Dryden Flight Research Facility and investigators are reportedly satisfied with the quality of the results. At this time Endeavour is scheduled to be mated to the 747 Shuttle Carrier Aircraft (SCA) on Monday (April 25), depart California on the following day and arrive in Florida on April 27. However, the trip is subject to further schedule refinement and also depends on favorable weather conditions. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** April 22, 1994 and **KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** April 25, 1994.]

[]STS 65: COLUMBIA'S NEXT MISSION

Columbia's three main engines have been removed during the Orbiter's stay in OPF Bay 2 this week; leak checks of the cryogenic reactant system; checkout of extended duration Orbiter pallet and drag chute packing at the parachute facility have also been completed. Current work in support of STS 65 includes: testing of the microwave scanning beam landing system (MSBLS); removal and replacement of #3 main engine yaw actuator; installation of the Spacelab tunnel adapter; auxiliary power unit leak and functional checks; tile water proofing. Scheduled activities: servicing of the Orbiter's Spacelab coolant lines; main propulsion system leak and functional checks; drag chute installation; waste containment system installation; crew hatch functional test; testing of hydraulic systems and Orbiter flight controls; payload installation. **[KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, April 22, 1994.]

April 25:INTERNATIONAL MICROGRAVITY LABORATORY-2

Columbia's main engines have been removed and checks of the power reactant storage and distribution system have been made; the Orbiter is currently in OPF Bay 2 undergoing processing activities for the STS 65 mission. Work in progress today: auxiliary power unit leak and functional check preparations; electrical checks of extended duration Orbiter pallet; installation of the drag chute; main propulsion system helium system checks; preparations to install the Spacelab tunnel adapter. Scheduled tasks include: auxiliary power unit leak and functional checks and the installation of the Spacelab tunnel adapter. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, April 25, 1994.]

[]LIDAR IN-SPACE TECHNOLOGY EXPERIMENT

Discovery, located in OPF Bay 3, is undergoing STS 64 processing activities. Ammonia system servicing has just been completed as have the deservicing of the Orbiter freon coolant loop no. 2 and testing of the Orbiter microwave scanning beam landing system (MSBLS). Technicians have a number of activities underway today: complete landing gear area tile inspections and work; cycling of main landing gear; payload Bay electrical and mechanical reconfiguration; main propulsion system verification tests; flash evaporator system checks. Scheduled tasks include: installation of the drag chute and preparations to install the right hand orbital maneuvering system. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, April 25, 1994.]

April 26:ENDEAVOUR'S FERRY FLIGHT & RETURN

Plans for Endeavour's departure from Edwards Air Force Base (CA) have been delayed due to high winds on the California dry lake bed. Work to install the Orbiter's protective engine cone and mate the Orbiter to the 747 Shuttle Carrier Aircraft (SCA) were halted last night because of the weather. Efforts to continue the remaining work will begin later today. At this time, departure from Edwards is unlikely to occur before tomorrow morning. The two-day ferry flight back to KSC will include a refueling

stop at Dyess Air Force Base (Abilene, TX) and an overnight stay at Robins Air Force Base (Warner Robins, GA). If weather en route permits, Endeavour should arrive at Kennedy Space Center late morning on April 28. Once at KSC, the Orbiter will be towed to OPF Bay 1 where processing will begin for its next mission, STS 68, targeted for August. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, April 26, 1994;Halvorson, **FLORIDA TODAY**, p. 6A, April 28, 1994; Halvorson, **FLORIDA TODAY**, p. 5A, April 29, 1994.]

[]BACCHUS: SPACE STATION SUPPORT CRITICAL

A Space Congress meeting for 1995 may be irrelevant if this year's participants in the 31st annual Space Congress fail to become more active in supporting NASA's Space Station and preserving its place in the FY 1995 budget. That was the stark message presented by Congressman **Jim Bacchus** in his keynote address to this year's Space Congress. "If you really care about what you're doing, about the life you're leading, and you really care about our future in space, you'll do it," he told the Space Congress. "We always seem to survive, if only by a vote or two, and maybe we will again, but this year it's far worse than ever." He encouraged space center employees and other NASA supporters to support the program financially in fund-raising for grass-roots campaigns to save the Space Station and space program. Shuttle Astronaut **Charles Walker** said, "The space program will not survive unless people can connect to it." A lot of Shuttle activity, he implied, has little of the excitement potential of the Hubble Repair Mission. Astronaut **David A. Wolf** said, "Laboratory research is small steps and many wrong turns. If we can't excite our public about this, then we've really got a problem." [Banke, **FLORIDA TODAY**, p. 8A, April 27, 1994.]

[]RODDENBERRY'S ASHES TAKEN TO SPACE

Star Trek creator **Gene Roddenberry**'s ashes were secretly taken into space aboard a Space Shuttle during the past three years. NASA officials confirmed that the ashes had flown, but did not know on which flight they were flown. The fact that the ashes had been carried into space was revealed by Roddenberry's widow, actress **Majel Barrett Roddenberry** who said, "Gene was in love with space, with the unknown, with the future. He would have given anything to have been able, just once, to go into that great galaxy he dreamed about, where so few men have gone before. While he lived, it was not possible. Sometime between the last day of Gene's life and today, nearly three years later, a beautiful Space Shuttle broke the bounds of Earth and disappeared into the final frontier. It carried the ashes of Gene Roddenberry." [Banke, **FLORIDA TODAY**, p. 8A

April 28:UTSMAN TO RETURN TO KSC

Associate Administrator for Space Flight **Jeremiah Pearson III** today announced key personnel changes in the Office of Space Flight (OSF), NASA Headquarters, Washington, D. C. Effective immediately, **Thomas D. Utsman**, currently Deputy Associate Administrator (Space Shuttle), OSF, will return to the Kennedy Space

Center (KSC) to become Special Assistant to the Associate Administrator, OSF. **Bryan D. O'Connor**, OSF Deputy Assistant Administrator will replace Utsman and also serve as Space Shuttle Program Director. Effective May 9, **Richard Wisniewski**, who retired from NASA in 1990 after a government career spanning 35 years, is returning to NASA to replace O'Connor as Deputy Associate Administrator, OSF.

Pearson also announced that **Michael Mann**, Deputy Associate Administrator (Management), OSF, has been named Deputy Associate Administrator (Management) for NASA's Headquarter's Office of Mission to Planet Earth. Wisniewski also will serve as Acting Deputy Administrator (Management), OSF. As Space Shuttle Program Director, O'Connor will assume responsibility for the management of the Space Shuttle Program. O'Connor, a former NASA astronaut, served as commander of the first Spacelab Life Sciences mission, STS 40, in June 1991, and as pilot on mission 61-B in November 1985. During the period following the Challenger accident [January 28, 1986], O'Connor served as Assistant to the Shuttle Program Manager from March 1986 until February 1988. O'Connor helped guide the effort that led to the resumption of Shuttle flights in September 1988. He is a distinguished Marine Corps pilot and graduate of the U.S. Navy Test Pilot School. He also is a graduate of the U.S. Naval Academy and earned a Masters of Science degree in Aeronautical Systems from the University of West Florida. O'Connor served as an astronaut from 1980 to 1991.

Utsman will be returning to KSC where he held a number of key positions, including Deputy Director from August 1985 until his assignment to NASA Headquarters in January 1990. Utsman's first assignment at NASA Headquarters was Deputy Associate Administrator for Space Flight (Management) which he held for approximately 6 months prior to being named Deputy Associate Administrator in June 1990. He was named Space Shuttle Director in June 1992. Utsman began his career in 1963 as a facilities design engineer for the Apollo Program. He holds a Bachelor of Science degree in Mechanical Engineering from the University of Michigan and a Masters degree in Management from Florida State University.

Wisniewski is currently Director, Program Analysis Group, General Research Corp. (Vienna, VA). His last position at NASA was as the Deputy Associate Administrator (Institutions), OSF. The Deputy Associate Administrator, OSF, is responsible for resources, policy and plans, human resources and management of the four Space Flight installations: Kennedy Space Center, Johnson Space Center, Marshall Space Flight Center and Stennis Space Center. Wisniewski began his career at the Lewis Research Center (Cleveland, OH) as an aeronautical research engineer. He was staff scientist for the OSF during the Apollo Program, Director of Advanced Concepts in the former Office of Aeronautics and Space Technology and Deputy Associate Administrator for the Center Operations in the former Office of Management (Washington, D.C.). Wisniewski has a Bachelor of Science degree in physics from John Carroll University.

Mann was named Deputy Associate Administrator (Management), OSF, in July 1993. Prior to that, he served as Director, Resource Management, responsible for managing the OSF's budget. Before joining the OSF, he spent 9 years in NASA's Comptroller's Office in a variety of cost analysis and resources management positions including Deputy Director, Resources Analysis Division. In that position Mann had oversight responsibility for all NASA programs and played a key role in the development of NASA program control and financial management policies. A U.S. Army veteran, Mann is a graduate of the Virginia Polytechnic Institute with an MBA in Operations Research. [**NASA/KSC Release: 94-66**, April 28, 1994; Halvorson, "Ex-Astronaut to Head Space Shuttle Program," **FLORIDA TODAY**, p. 9E, May 15, 1994.]

[]NAME CHANGE FOR CCAFS

The new name for Cape Canaveral Air Force Station is Cape Canaveral Air Station by order of Air Force Chief of Staff **Merrill McPeak**. According to the 45th Space Wing's spokeswoman **Terri Bracher**, "There's nothing mysterious about it. It's part of Gen. McPeak's initiative to preserve Air Force heritage through unit redesignation." Cape Canaveral is one of nine installations re-named Air Station primarily due to the fact that it is supported by the larger Patrick Air Force Base. Road signs, however, will not be changed right away; that will happen "when it becomes necessary" to save taxpayer money, according to Bracher. [Halvorson, **FLORIDA TODAY**, p. 5A, April 29, 1994.]

[]TITAN LAUNCH RESCHEDULED

The Air Force's launch of its Titan 4 rocket has been delayed until at least May 3 so workers can replace suspect batteries. The new launch window is set for between 11:20 a.m. and 1:30 p.m. The exact launch time will not be announced due to security considerations. This will mark the fourth Titan 4 launch. [Halvorson, **FLORIDA TODAY**, p. 5A, April 28, 1994.]

[]SATELLITES: BUILD 'EM OR FIX 'EM

"We have to figure out how to do more with less," **Frank Cepollina** told the participants in the 31st Space Congress at Cocoa Beach. Cepollina was NASA's Hubble Space Telescope Manager. He said that orbital "make-overs" might be the most efficient use of scarce budgetary resources and that the "capability to fix orbiting spacecraft is well developed." **Al Diaz**, NASA's Deputy Associate Administrator of Space Science, told the attendees: "This is a time when the national environment demands a change in the way we do things. The watchwords are adjusting to new realities and expectations." Today's Meet the Astronauts event - to which the public is invited at no charge - will include astronauts: **Janice E. Voss Ford**, **Kevin R. Kregel** and **Chris Hadfield**. [Banke, **FLORIDA TODAY**, p. 5A, April 28, 1994.]

MAY

May 2:ENDEAVOUR RETURNS TODAY

The Space Shuttle Endeavour arrived at Kennedy Space Center's Shuttle Landing Facility at about 9:55 a.m. today following a three-day weather delayed ferry-flight from California atop its 747 Shuttle Carrier Aircraft. The Orbiter/747 departed from Edwards Air Force Base (CA) April 29 and spent the evening at Biggs Army Airfield (El Paso, TX). On Saturday (April 30), the pair departed Biggs, stopped briefly for refueling at Dyess Air Force Base (Abilene, TX) and continued to Little Rock Air Force Base (AK), where it remained until this morning. At about 7:10 a.m., the SCA and Orbiter resumed the trip to Kennedy Space Center. On arrival, the Orbiter was demated from the SCA and towed to Orbiter Processing Facility Bay 1 where processing is to begin for its next mission, STS 68, currently targeted for mid-August. [Halvorson, **FLORIDA TODAY**, p. 2A, May 1, 1994; **KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, May 2, 1994; Halvorson, **FLORIDA TODAY**, p. 2A, May 2, 1994; Halvorson, **FLORIDA TODAY**, p. 2A, May 3, 1994.]

[]INTERNATIONAL MICROGRAVITY LABORATORY-1

Technicians in OPF Bay 2 have installed the Spacelab Tunnel Adapter in the payload Bay of Columbia in preparation for its STS 65 mission, set currently for early July. The Orbiter's drag chute has also been installed. Work in progress: auxiliary power unit leak and functional checks; ammonia servicing and main propulsion system helium system checks. STS 65 work scheduled: preparations for installation of the Shuttle Main Engines; transfer of the IML-1 payload to the Orbiter Processing Facility and installation in the Orbiter; and mating of the external tank to the mission's solid rocket boosters. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, May 2, 1994.]

[]STS 64: LITE UPDATE

The flash evaporator system for Discovery's STS 64 mission has been installed while the Orbiter is undergoing processing in OPF Bay 3. Complete landing gear area tile inspections and work are concluded and the vehicle's drag chute has been installed. Work in progress: freon coolant system leak checks; preparations to install the right hand orbital maneuvering system; payload Bay electrical and mechanical reconfiguration; main propulsion system verification checks and flash evaporator system checks. STS 64 work scheduled: the installation of the right hand orbital maneuvering system. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, May 2, 1994.]

May 3:STS 65 UPDATE

The Space Shuttle Columbia is being readied for its July 8 STS 65 launch in OPF Bay 2; technicians there have just completed auxiliary power unit leak and functional checks. Work currently in progress: preparations for ammonia servicing; main propulsion system helium system checks; preparations to install main

engines, payload premate tests and to mate the external tank to the mission's solid rocket boosters. STS 65 work scheduled: ammonia servicing; installation of main engines; transfer of the IML-2 payload to the OPF and installation in the Orbiter and mating of the external tank to the solid rocket boosters. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, May 3, 1994.]

[]DICK YOUNG RETIRES FROM DOME

Dick Young retired today, after providing world-wide news media and the general public with information about NASA for 25 years, the last six as chief of Kennedy Space Center's Media Services Branch. He will be succeeded by **Ed Harrison**, a 36-year NASA veteran who currently serves as chief of the Public Affairs Visitor Center Office. Young began his career with NASA as a public information specialist in 1969. From 1975 until his promotion to chief, Media Services Branch, Young served as news chief for the Kennedy Space Center.

Harrison began his NASA career in 1958 at Langley Research Center (Hampton, VA) as a photographic laboratory technician. In December 1961, he moved to Florida with the NASA Space Task Group, which was absorbed into KSC in 1964. At that time he was assigned to the KSC Public Affairs Public Information Branch. Harrison has spent most of his career working with news media representatives in the audio-visual area and served as the lead from 1980-1990. In his new position, Harrison will be responsible for planning and administering an information program designed to keep the public informed, through the news media, of activities, results and significance of aerospace programs conducted at KSC [**NASA/KSC News Release:** , May 3, 1994; Halvorson, **FLORIDA TODAY**, p. 9E, May 15, 1994.]

[]STS 68 & 64: STATUS REPORT

Endeavour, which returned by ferry flight to Kennedy Space Center yesterday, has been demated from its 747 Shuttle Carrier Aircraft and towed to OPF Bay 1. Work in progress today: post-flight servicing; accessing the aft engine compartment and removing the engine tailcone. Removal of the Space Radar Laboratory for post-flight inspections has been scheduled. Meanwhile, technicians in OPF Bay 3 are continuing to process Discovery for its September STS 64 mission. The Orbiter's flash evaporator system has been installed and the vehicle's landing gear tile inspections are complete. Work in progress today for STS 64 includes: flash evaporator system checks; freon coolant system leak checks and servicing; preparations to install the right hand orbital maneuvering system; payload Bay electrical and mechanical reconfiguration; and main propulsion system verification checks. STS 64 work scheduled: transfer of the right hand orbital maneuvering system to the OPF and its installation on Discovery. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, May 3, 1994.]

[]TITAN 4 FINALLY LAUNCHES

The Air Force's Titan 4 launch vehicle lifted off this morning

at 11:55 a.m. on a northerly trajectory; it carried a $1 billion signals intelligence satellite which had been under development for more than ten years. The Titan itself had been on the launch pad 1054 days prior to the commencement of its mission today. "This successful launch is a giant step in providing assured access to space for this nation's largest and most vital heavy payloads," said Col. **Joseph Sovey**, Director of the Titan Program for the U.S. Air Force. The Director of Space Policy for the Federation of American Scientists [Washington, D. C.], on the other hand, said: "We just launched a satellite that is going to go up and monitor a Soviet adversary that doesn't exist anymore." [Halvorson, **FLORIDA TODAY**, p. 1A, May 3, 1994; Halvorson, **FLORIDA TODAY**, pp. 1A-2A, May 4, 1994.]

May 7: SPACE RADAR LABORATORY MOVED

The Space Radar Laboratory, prime payload for an August 18 Space Shuttle mission, has been loaded into the cansiter-transporter and moved from a hangar to the Operations and Checkout Building in the KSC Industrial Area. "It's an ambitious schedule. We're going to have to work some overtime and some weekends to get the lab ready to fly." The SRL flew most recently on Endeavour's latest mission and mapped 18 million square miles of the Earth. The early return to space was planned to allow scientists to study seasonal changes. Meanwhile, the launch of NASA's last Scout rocket was delayed yesterday due to bad weather at Vandenberg Air Force Base in California. The launch was re-scheduled for today. [Halvorson, **FLORIDA TODAY**, p. 7A, May 6, 1994; Halvorson, **FLORIDA TODAY**, p. 1A, May 2, 1994; Halvorson, **FLORIDA TODAY**, p. 4A, May 7, 1994.]

[]OPPLIGER WINS ACHIEVEMENT AWARD

GERRY OPPLIGER, President of Lockheed Space Operations Company, was awarded the annual Achievement Award at this year's Space Congress (Cocoa Beach, FL). The citation said that he had "contributed outstanding managerial, technical and leadership skills at the helm of the 7,000-person strong Shuttle Processing Team" at KSC. It continued: "As a direct result of his personal contributions, his team has racked up outstanding records of mission performance while maintaining the highest standards of safety and quality." ["Lockheed Chief Wins Industry's Top Award," **FLORIDA TODAY**, p. 9E, May 8, 1994.]

May 9: LOCKHEED CUTS 271 JOBS

Lockheed Space Operations Company has issued pink slips to 183 of its employees today, for a total of 250 since April 1993. Since that time, 900 Kennedy Space Center contractor employees have lost their jobs as a result of increasingly deep NASA budget cuts. Last week 156 civil servants retired, taking advantage of the federal government's new buyout program which gave each employee up to $25,000 as an inducement to retire. Of the 271 who were laid off today, 88 chose to leave voluntarily, according to Lockheed spokesman **J. B. Klump**. [Causey, **THE WASHINGTON POST**, April 22, 1994; Causey, **THE WASHINGTON POST**, April 28, 1994; Causey, **THE WASHINGTON POST**, May 5, 1994; Causey, **THE WASHINGTON POST**, May 9, 1994; de Yampert, **FLORIDA TODAY**, p. 1A,

May 10, 1994; "Lockheed Cuts Total 271," **FLORIDA TODAY**, p. 14C, May 9, 1994.]

May 10:COLUMBIA/PAYLOAD HOOKUPS TODAY

Today in OPF Bay 2, technicians forge ahead with plans to launch Columbia on its next mission - STS 65 - in July; they will be loading a trailer sized-laboratory into the Orbiter's payload Bay making electrical hookups between the Orbiter and Spacelab. Kennedy Space Center spokesman **George Diller** said, "It's fairly simple plug-in work. There's nothing complicated about it." Workers also commenced the first day of a four-day effort to install Columbia's STS 65 main engines.; the first was installed today and the job was expected to be concluded by May 11. Rollover to the Vehicle Assembly Building is targeted for a month from today-June 10; rollout to the pad is planned for July 15. [Halvorson, **FLORIDA TODAY**, p. 2A, May 10, 1994; Halvorson, **FLORIDA TODAY**, p. 2A, May 11, 1994.]

May 11:LAST ENGINE INSTALLED FOR STS 62

Columbia's third main engine was installed today as preparations for an early July launch continued. The installation of the three engines was completed a full day ahead of schedule. "We [attribute] that to hard work and to the fact that we're not going to just stand around," said **Bruce Buckingham**, Kennedy Space Center spokesman. Electrical hookups of the engines are to be completed May 13. Meanwhile, technicians began the process of verifying electrical connections between the Orbiter and the Spacelab module in the cargo Bay. Columbia will be rolled over to the Vehicle Assembly Building about June 10. [Halvorson, **KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, p. 5A, May 12, 1994.]

May 12:STS 65: ET MATED TO SRB'S

Processing activities for Columbia's STS 65 mission continue in OPF Bay 2 and the VAB where the external tank has been mated to the mission's solid rocket boosters. The Space Shuttle Main Engines [SSMEs] have also been installed in the Orbiter. Work in progress includes: wing leading edge corrosion checks; crew module and tunnel adapter leak checks; main engine securing and Spacelab/Orbiter interface verification testing. STS 65 work scheduled: crew equipment interface test [CEIT] and the installation of the Spacelab tunnel into Columbia's payload Bay. The STS 65 mission is targeted to launch at 1:06 p.m. on July 8 and land at KSC on July 22 at approximately 6:55 a.m.; the flight is planned to last for 13 days and 18 hours. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, May 12, 1994; Halvorson, **FLORIDA TODAY**, p. 5A, May 12, 1994.]

[]UPDATES: STS 68 & STS 64

In OPF Bay 1, technicians processing the Space Shuttle Endeavour for its STS 68 mission have completed fuel cell single cell voltage tests. Today, technicians activities include: checkout of the forward reaction control system; removing GAS cans from

the payload Bay; removing main engine heat shields and carrier panels; solid rocket booster stacking in the Vehicle Assembly Building. The STS 68 mission is targeted for mid-August; it will carry a crew of six on a 9 day, 5 hour mission. NASA spokespersons indicate that the mission may be lengthened by one day. Meanwhile, the Space Shuttle Discovery is being processed for its STS 64 mission in OPF Bay 3. STS 64 will feature a crew of six and a nine day duration in early September. Technicians have transferred the Orbiter's right hand orbital maneuvering system pod to the Orbiter Processing Facility and installed it on Discovery. Current tasks include: water spray boiler checkout and servicing; preparations to install auxiliary power units (APUs); payload Bay electrical and mechanical reconfiguration; main propulsion system verification tests; orbital maneuvering system pod interface verification tests. The installation of the Orbiter's APUs has been scheduled. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, May 12, 1994.]

[]EMPLOYEES MOVE INTO SSPF

The first 57 Kennedy Space Center workers moved into the new Space Shuttle Processing Facility this past weekend and approximately 50 to 75 workers a week will be moved into the building until the end of August. At that time, the building's resident work force will number between 850 and 1000; the number will rise to 1057 eventually. KSC spokesman **Bruce Buckingham** said of the move, "They are going to be there to activate the building, to get it up and running." **Ray Lugo**, Chief of KSC's facilities validation and utilization office said, "What we're trying to do is bring the people closer to where the work will be happening." The Space Shuttle Processing Facility is the largest single construction project undertaken at Kennedy Space Center since the days of the Apollo program. [Halvorson, **FLORIDA TODAY**, p. 6A, May 13, 1994.]

May 15:NEXT HUBBLE MISSION SET

In August of 1997, NASA will revisit the Hubble Space Telescope to service the orbiting telescope for the second time. In March, 1996, an Italian Tethered Satellite System will be flown aboard the Space Shuttle. Between 1995 and 1997, ten missions will be flown to the Russian space station Mir. Making return appearances in space over the next few years will be the European Retrievable Carrier [EURECA], the Wake Shield Facility [WSF] whose first flight was unsuccessful and commercial SPACEHAB experiment modules will be flown in January 1995; January, July and December of 1996 and in June and October of 1997. ["NASA Sets Next Hubble Mission," **FLORIDA TODAY**, p. 10E, May 15, 1994.]

May 16:SPACELAB IVT COMPLETED

In Orbiter Processing Facility Bay 2, technicians have completed Columbia's Spacelab/Orbiter interface verification test. Work in progress: wing leading edge corrosion checks; crew module and tunnel adapter leak checks and main engine securing. STS 65 work scheduled: crew equipment interface test; installation of

the Spacelab tunnel adapter into Columbia's payload Bay and commencement of midbody and aft final closeouts. Columbia's STS 65 mission is targeted for July 8 at 1:06 p.m.; landing is to occur 13 days and 18 hours later at KSC on July 22 at 6:55 a.m. Columbia will carry a crew of 7 astronauts. The Space Shuttle Atlantis has been undergoing inspections and modifications at Palmdale, California, for future docking missions with the Russian space station Mir. Atlantis, which last flew in July/August 1992, was ferried to the Rockwell International Orbiter manufacturing facility on October 18, 1992. Current plans have Atlantis being ferried back to Kennedy Space Center on Saturday, May 28, as processing continues for its next mission, STS 66, in October 1994. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, May 16, 1994.]

[]MISSION UPDATES: STS 68 & STS 64

Technicians have loaded Endeavour's mass memory units (MMUs) and removed the Orbiter's main engine heat shields and carrier panels as processing for its mid-August STS 68 mission proceeds. Today, OPF Bay 1 workers are deservicing the vehicle's freon coolant loop, checking out Endeavour's forward reaction control system and, in the Vehicle Assembly Building, the STS 68 mission solid rocket boosters are being stacked. STS 68 activities scheduled: removal of the main engines and completion of hypergolic fuel offloading. Meanwhile, in OPF Bay 3, the Space Shuttle Discovery is being processed for its early September STS 64 mission. The vehicle's APU number 3 has been installed as has been the right hand orbital maneuvering system pod. Work in progress today: installation of auxiliary power units; freon coolant loop servicing; water spray boiler checkout and servicing; payload Bay electrical and mechanical reconfiguration; main propulsion system verification tests and an orbital maneuvering system pod interface verification test and crossfeed connections. STS 64 work scheduled includes: drag chute installation and checkouts; beginning of preparations to move the Orbiter temporarily to the Vehicle Assembly Building for storage due to the return of Atlantis from California. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, May 16, 1994.]

May 17:STS 65: IML-2 UPDATE

In Orbiter Processing Facility Bay 2, technicians have completed crew module and tunnel adapter leak checks of Columbia as part of STS 65 processing operations. Work in progress: wing leading edge corrosion checks; main engine securing; Spacelab experiment stowage; transfer of the Spacelab tunnel to the OPF. STS 65 work scheduled: crew equipment interface test (CEIT); installation of the Spacelab tunnel into the Orbiter's payload Bay; commencement of midbody and aft final closeouts. Launch of the STS 65 mission is scheduled for July 8 at approximately 1:06 p.m. The mission is planned to conclude at Kennedy Space Center 13 days and 18 hours after launch. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, May 17, 1994.]

[]ENDEAVOUR'S HEAT SHIELDS REMOVED

Endeavour is being processed for its mid-August STS 68 mission in OPF Bay 1; technicians have completed checking out the forward reaction control system. They have also deserviced the vehicle's freon coolant loop and removed the Orbiter's main engine heat shields and carrier panels. Today in the OPF, workers are removing the main engines; in the VAB, STS 68 processing team technicians are stacking the mission's solid rocket boosters. Scheduled tasks for the mission include: completing hypergolic fuel offloading and removing radiators from the vehicle. Endeavour will carry a crew of six into space for a nine day mission. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, May 17, 1994.]

[]STS 64: LIDAR IN-SPACE TECHNOLOGY EXPERIMENT (LITE)

In Orbiter Bay 3, next to Columbia, Discovery is being processed for an early September launch on the STS 64 mission which features the Lidar In-Space Technology Experiment. The mission is expected to last 9 days and carry a crew of six. Technicians in the OPF have completed water spray boiler checkout and servicing and the installation of Auxiliary Power Unit number 3. Work in progress today: installation of auxiliary power units; freon coolant loop servicing; payload Bay electrical and mechanical configuration; main propulsion system verification tests; orbital maneuvering system pod interface verification test and crossfeed connections. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, May 17, 1994.]

May 18:RKT CONSTRUCTORS WINS KSC CONTRACT

RKT Constructors, Inc. (Titusville, FL) has been awarded a $3,208,000 contract to refurbish and upgrade hardware that controls and distributes chilled water used in the air-conditioning systems for the Vehicle Assembly Building (VAB) and other major Space Shuttle processing and launch facilities in Kennedy Space Center's Launch Complex 39 Area. Under the terms of the contract, the firm will have until April 1996 to complete the work in the Utility Annex located on the west side of the VAB. The effort will include the replacement and refurbishment of motor control centers, chilled water pumping system and associated electrical and piping work. The Utility Annex contains five water chillers and pumping equipment that provides chilled water for the heating, ventilation and air-conditioning (HVAC) system for the VAB area. The chilled water is also distributed from the Annex through piping that runs to the HVAC systems of the Launch Control Center (LCC), the three Orbiter Processing Facility (OPF) high and low Bays, the Thermal Protection System (TPS) building and the Processing Control Center (PCC). The refurbishment and upgrading of the 30-year-old chilled water system is necessary to extend its operating lifetime and to improve energy efficiency and water conservation. The latter two goals will be achieved by replacing existing single-stage water pumps with more modern, three-stage units that are designed to distribute precise amounts of water to each building. The operation and monitoring of all major air-conditioning systems at KSC

is conducted remotely by a Complex Control System inside the LCC, which is connected with facility HVAC systems throughout the center. [**NASA/KSC News Release No. 57-94,** May 18, 1994.]

[]ASTRONAUT RESCUE EXERCISE

In the unlikely event that the crew of a Space Shuttle had to bail out of the vehicle shortly after launch, the U. S. Air Force's 45th Space Wing would be responsible for rescuing the astronauts. That is the point of the annual exercise which takes place tonight between 7 p.m. and 5 a.m. off the coast of Brevard County. "We are not releasing the exact location of the exercise (off shore) so there is a better simulation of a real-world situation and response," said Lt. Col. **Pete Colbert,** director of the exercise. Tonight the Air Force will test a new locator device which will help to locate the astronauts in the dark. [Banke, **FLORIDA TODAY**, p. 2A, May 18, 1994; Bumpus-Hooper, **THE ORLANDO SENTINEL**, May 17, 1994.]

May 20:CRIPPEN: DON'T CUT JOBS!

"We've been working very hard over the past few years to trim our work force," said KSC Director **Robert L. Crippen** in reference to Congressional efforts to cut Space Shuttle missions. "We've been bringing it down significantly, and we're going to continue to do that into 1995. But I am not comfortable with continuing the downslope that we've been going on in terms of reductions. We've worked it very hard, and I want to level off for a while." Crippen went on to say that a stable work force was also important to Shuttle flight safety. "Truthfully, I would like to see us stabilize at about the level that we're going to be at in 1995 to give us a couple of years at least of operational experience at that level." [Halvorson, **FLORIDA TODAY**, p. 1A, May 21, 1994.]

May 24:VAN ALLEN HONORED

NASA and the American Geophysical Union (AGU) honored pioneering space scientist Dr. **James A. Van Allen,** Professor Emeritus at the University of Iowa in a ceremony on his 80th birthday. The ceremony was held at the AGU's 75th anniversary meeting in Baltimore (MD) today. NASA presented Dr. Van Allen with an original computer painting commemorating his distinguished half-century career studying planetary magnetospheres and cosmic rays. Dr. Van Allen is most well-known for his discovery of the belt of radiation around the Earth that bears his name. His radiation-measuring equipment aboard the first successful American satellites, Explorers 1 and 3, launched in 1958, provided data for the first space-age scientific discovery - the existence of a doughnut-shaped region of charged particle radiation trapped by the Earth's magnetic field.

Dr. Van Allen and his team also provided instruments for other NASA missions including energetic charged particle detectors aboard the Venus-bound Mariner 2 and Mars-bound Mariner 4, an energetic charged particle detector on the Explorer 35 (the first American spacecraft to orbit the Moon), and energetic

charged particle detectors aboard the Jupiter-bound Pioneers 10 and 11. Dr. Van Allen's instruments aboard Pioneer 10 contributed to the discovery of the magnetosphere and radiation belts of Jupiter and the radiation belts of Saturn. In addition to studying Jupiter and Saturn, Dr. Van Allen and his team used Pioneer 10 and 11 data to study the galactic cosmic rays in the solar system. The AGU's Space Physics and Aeronomy Section also sponsored a special Van Allen Symposium featuring speakers on past
accomplishments, recent important results and future prospects in a number of areas in which Dr. Van Allen has made significant contributions. [**NASA/KSC News Release: 94-91, May 24, 1994; "NASA Honors Van Allen With Achievement Award**, "**FLORIDA TODAY**, p. 2A, May 25, 1994 ; "Pioneer Space Scientist Lauded by NASA, AGU," **FLORIDA TODAY**, p. 9E, June 12, 1994.**]**

[]KRIKALEV PLANTS TREE AT KSC

Sergei K. Krikalev, Russian cosmonaut who flew aboard Discovery's STS 60 mission, brought a national tradition with him to Kennedy Space Center today. With a small crowd of KSC employees on hand for the occasion, Krikalev planted a 12-foot live oak tree between the Headquarters Building and the Astronaut Training Facility. "We have this tradition in Baikonur. I think in future, more and more frequently, American astronauts who fly on Russian missions will plant trees in Russia, and Russian cosmonauts who fly on U.S. missions will plant trees here," Krikalev said. cosmonaut **Vladimir Titov** is scheduled to fly aboard Discovery next February and the following month, American astronaut **Norman Thagard** will ride a Soyuz to a docking with the Russian space station Mir. [Halvorson, **FLORIDA TODAY**, p. 2A, May 25, 1994.]

May 25:SPACE BUDGET AND JOBS

California Governor **Pete Wilson** today raised the issue of the nationwide impact of further deep cuts in the NASA budget. He said that deeper cuts will speed the loss of the nation's aerospace engineering capacity and cost thousands of jobs nationwide. Wilson spoke at a gathering of industry leaders who plan a lobbying campaign of the State's Congressional delegation. Referring to the Space Station Program, now under increasing Congressional scrutiny, Wilson said: "The Space Station is going to be a sizable investment, but it's one we can't afford not to make. We can't afford to lose the opportunity to make sure our nation remains a world leader - not just in space, but in science, and in the marketplace." **Harold Ammond** of the Council of Scientists and Professional Engineers added, "What we're telling [Congressional Representatives] is, if you continue to lose these positions, be aware that if you need us in the future...it will take us 10 years to get you an engineer." [Fiore, **LOS ANGELES TIMES**, May 11, 1994; Lipton, **HUNTSVILLE NEWS**, pp. A1 & A5, May 11, 1994; Holton, **THE ORLANDO SENTINEL**, May 12, 1994; Eisler, **FLORIDA TODAY**, May 12, 1994; Clayton, **HOUSTON CHRONICLE**, May 13, 1994; Carney, **HOUSTON POST**, May 13, 1994; Banke, **FLORIDA TODAY**, May 16, 1994; Lawler, **SPACE NEWS**, p. 7, May 16-22, 1994; Eaton, **PLAIN DEALER**, May 18, 1994; Holton,

THE ORLANDO SENTINEL, May 18, 1994; Sawyer, **THE WASHINGTON POST**, May 20, 1994; Leary, **THE NEW YORK TIMES**, Specht, **FLORIDA TODAY**, p. 8A, May 26, 1994.]

May 26:STS 66: ATMOSPHERIC STUDY OBJECTIVES

"This mission - STS 66 - has the most intricate suite of instruments ever assembled to study the chemistry of the atmosphere. Not only are we measuring the amount of ozone in the atmosphere around the globe, we are measuring the chemicals in the atmosphere that could cause the breakdown of ozone," asserted Mission Commander **Donald R. McMonagle.** McMonagle will be making his third Space Shuttle flight. He will be accompanied on the mission by Pilot **Curtis L. Brown, Jr.**(second flight), and Mission Specialists: **Scott E. Parazynski** (first flight), **Joseph R. Tanner** (first flight) and **Jean-Francois Clervoy** (first flight). The Atmospheric Laboratory for Applications and Science (ATLAS)-3 is a primary payload; other payloads include the Cryogenic Infrared Spectrometer Telescope for Atmosphere (CRISTA) and the Shuttle Pallet Satellite (SPAS)-1. Among other objectives will be the tracking of so-called "greenhouse gases" thought to be involved in the process called "global warming." [Halvorson, **FLORIDA TODAY**, p. 4A, May 27, 1994; Rockwell, "Reporter's Space Flight Notebook," March 1994.]

May 27:STS 65: IML-2 UPDATE

Technicians in Orbiter Processing Bay 2 have completed landing gear functional checks of Columbia and have installed the main engine heatshields. Work in progress: hydraulic flight control checks; final spacelab experiment horizontal stowage; Orbiter midbody, aft engine compartment and spacelab closeouts; installation of the wing leading edge reinforced carbon-carbon panels and the brake anti-skid test. STS 65 work scheduled: beginning of the final payload Bay cleaning and leak checks and closing the payload Bay doors. Columbia's STS 65 crew will have seven members for the 13 day, 18 hour mission scheduled to begin at 1:06 p.m. on July 8. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, May 27, 1994.]

[]SPACE RADAR LABORATORY-2

Technicians preparing the Space Shuttle Endeavour for its mid-August STS 68 mission in OPF Bay 1 have completed water spray boiler functional checks. Presently, they are working to install and checkout the Orbiter's drag chute; making orbital maneuvering system functional checks; installing a power reactant storage and distribution helium tank and stacking solid rocket booster segments in the Vehicle Assembly Building. Meanwhile, Discovery was moved to the VAB high Bay 3 yesterday at about 1 p.m. for temporary storage due to the imminent return of the Space Shuttle Atlantis from modification operations in California. No work or access is planned for Discovery while it is in the VAB; only a trickle purge of the reaction control systems will be activated. Discovery will remain in the VAB until it is replaced by Columbia on June 10. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, May 27, 1994.]

[]ATLANTIS BEGINS FERRY TRIP FROM CALIFORNIA

The Orbiter Atlantis, atop NASA's 747 Shuttle Carrier Aircraft, departed Palmdale, CA, today en route to Tinker Air Force Base, OK, following a 19-month period of vehicle enhancements and modifications. Departure from Palmdale occurred about 8:40 a.m. EDT; arrival at Tinker is expected about 12:30 p.m. EDT. Once at Tinker, the 747 will be refueled and the weather will be assessed. A decision will then be made either to remain at Tinker overnight or to continue eastward to either Ft. Campbell, KY, or Robins AFB, GA. It remains unlikely that Atlantis will be able to make it all the way back to KSC today. In that event, the trip will be continued tomorrow or whenever conditions permit. Once Atlantis is back at KSC, it will be moved into Orbiter Processing Facility Bay 3, recently vacated by Discovery, and prepared for its next flight, STS 66, scheduled for launch in October. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, May 27, 1994.]

May 28:BARNES ELECTRICAL WINS KSC CONTRACT

Barnes Electrical Co. Inc. (Pensacola, FL) has been awarded a $2.7 million contract to expand the electrical capacity of a power distribution substation at Kennedy Space Center. The company will have until June 11, 1996, to complete the contracted work which will expand the electrical capability of the C-5 substation in the Launch Complex 39 area. The C-5 station distributes electricity to major Space Shuttle processing buildings such as the VAB, OPF, LCC, the Shuttle Landing Facility and Launch Complexes 39A and B. Barnes will install two additional transformers and associated breakers and be responsible for redistributing existing power loads at the C-5 substation. ["Pensacola Firm Wins KSC Contract," **FLORIDA TODAY**, p. 10E, May 29, 1994.]

May 29:ATLANTIS COMES HOME, AGAIN

A year ahead of its scheduled docking with the Russian Space Station Mir, the Space Shuttle Atlantis has come home from California to be processed for the notable mission. "That first flight will probably be like the Hubble (Space Telescope) repair mission," according to the vehicle's processing manager, **Conrad Nagle**. "There's going to be a lot of attention." Atlantis will fly seven of the ten planned docking missions and the first of these flights is set to begin a year from today. Discovery will handle the other three flights. Atlantis was in California to be modified with the Mir missions in view; most of the changes involved rewiring the vehicle so an Atlantis/Mir linking could be controlled from both U.S. and Russian control panels in the Shuttle crew cabin. Those panels will be installed following Atlantis next mission, now planned for October 27.

Now that KSC has all four Orbiters on site, Shuttle Processing Managers once again face daunting planning challenges and limited space. "It's really not a bad position to be in. We've got all the resources here we need to handle four Orbiters," commented KSC spokesman **Bruce Buckingham**. "There is some exte-

rior work that can be done and some limited work inside the crew module. It's basically going to be buttoned up and monitored until an OPF Bay clears up. On June 10, Columbia is scheduled to move out of its OPF hangar and move to the Vehicle Assembly Building; that will make room for Discovery. A few weeks later Columbia will be flown to California for further upgrades and modifications. [Banke, **FLORIDA TODAY**, p. 4A, May 27, 1994; Halvorson, **FLORIDA TODAY**, p. 1A, May 30, 1994.]

May 30:RUSSIANS TO OPEN KSC OFFICE

Six Russian space officials will occupy a new office at Kennedy Space Center as early as December of this year. The office will support the Shuttle missions on which the Orbiter will dock with the Russian space station Mir. "They'll probably get here when their hardware gets here," according to Atlantis Processing Manager **Conrad Nagle.** December is when NASA officials expect the Russian docking device to arrive at KSC for installation in a Space Shuttle. Nagle said, "We're going to go the extra mile to make sure it all goes smooth. There may be a few surprises, but we don't expect anything significant." There are ten missions to Mir planned; Atlantis will make seven of them and Discovery will fly the other three. The missions are scheduled to occur between May 1995 and November 1997. "We're making a lot of commitments to that date, and we're going to make that date," said Nagle. [Halvorson, **FLORIDA TODAY**, p. 1A, May 31, 1994.]

JUNE

June 1: FULL FLEET AT KSC

"The next four flights will be with four different Orbiters, and we haven't done that in quite a while," commented KSC spokesman **Bruce Buckingham.** His comments came after the return to KSC of the Space Shuttle Atlantis which had been in California for a year undergoing modifications to make it ready for its seven docking missions with the Russian Space Station Mir. On July 8, Columbia will be launched on a two-week space science mission. Endeavour's next mission is August 10; the mission is for environmental research. Discovery flies September 9 on an atmospheric sciences mission and on October 27, Atlantis begins an 11-day environmental research mission. [Halvorson, **FLORIDA TODAY**, p. 4A, May 27, 1994; Halvorson, **FLORIDA TODAY**, pp, 1A-2A, June 1, 1994.]

June 3: NASA/CSA PLAN ANNOUNCED

NASA and the Canadian Space Agency (CSA) announced today that they have reached an agreement, in principle, which will put U.S./Canadian space cooperation on a long-term, stable footing. The arrangement between the two space agencies provides for expanded and enhanced cooperation in a number of areas such as space science, microgravity research and the Mission to Planet Earth, and Canada's continuation as a full partner in the International Space Station Program. "I am very pleased that Canada will remain a full partner in the International Space Station Program," said NASA Administrator **Daniel S. Goldin.** "Canada's participation is extremely important to the success of this program," he said.

CSA will retain responsibility for developing the Mobile Servicing System for the Space Station. To that end, CSA will complete the development of the Space Station Remote Manipulator System and the Mobile Remote Servicer Base System. CSA also will complete the detailed design of the Special Purpose Dexterous Manipulator (SPDM), but will defer the decision on whether to manufacture the SPDM until 1997. NASA and CSA also agreed to consider expanded cooperation in other areas. NASA and CSA are exploring cooperation on the Radarsat-2 program, building on the already agreed Radarsat-1 cooperation in which CSA provides the spacecraft and NASA contributes a medium class launch.

CSA also has proposed two cooperative science small satellite (Smallsat) missions under Canadian mission management to be developed with NASA's participation. NASA and CSA will establish a joint study group to define the science priorities and other details for specific cooperative projects. Based on the recommendation of the joint study group, NASA and CSA will pursue a detailed agreement where NASA would provide selected experiments and up to two small class launches. NASA and CSA also have agreed on new joint microgravity activities using DC-9 aircraft and sounding rockets. This will be done on a primarily cooperative basis, with NASA and CSA sharing most of the data from the missions. In addition, NASA will provide opportunities for one

Canadian astronaut flight per year during the Space Shuttle/ Russian Space Station Mir docking missions and Space Station assembly. [**NASA News Release: 94-89**, June 3, 1994.]

June 7:MIKULSKI TO NASA: HACK AWAY

Senator **Barbara Mikulski (D-MD)** told NASA Administrator **Daniel S. Goldin** that NASA had best prepare itself for further cuts and said that the agency's $14.24 billion budget request would be an extremely hard sell in the U.S. Congress this year. "We consider the 1995 budget we face our toughest year on record. Without solutions from the Administration...NASA would end up with no better than $13.7 billion for 1995 in the Senate. In my judgment, a NASA 1995 appropriation of $13.7 billion would do serious, and perhaps irreparable, harm to America's space program," the Maryland Senator said. [Mikulski, **SPACE NEWS**, May 30-June 12, 1994; "NASA Told to Cut Budget," **THE NEW YORK TIMES**, p. A18, June 8, 1994; "Spending Cuts Loom, Mikulski Warns NASA," **BALTIMORE SUN**, p. 3A, June 8, 1994; Carney, **HOUSTON POST**, p. A-6, June 8, 1994; Clayton, **HOUSTON CHRONICLE**, June 8, 1994; Eisler, **FLORIDA TODAY**, pp. 1A-2A, June 8, 1994; Halvorson, **FLORIDA TODAY**, pp. 1A & 7A, June 12, 1994; "National Report: Senator Tells NASA to Cut Spending," **CHICAGO TRIBUNE** , p. 4, June 8, 1994.]

June 9:KEEPING SHUTTLES DRY

Kennedy Space Center processing team members have had their work schedules complicated by the continual rain in Brevard County this week. They've been "shuttling" Shuttles between Orbiter Processing Facilities and the Vehicle Assembly Building both to facilitate processing activities and to keep the $2 billion vehicles out of the rain. Yesterday, Columbia was moved from the OPF to the VAB and was passed in transit by Discovery, which had been in a stowage Bay of the VAB. Discovery took over Columbia's place in the OPF hangar. [Halvorson, **FLORIDA TODAY**, p. 3A, June 9, 1994.]

June 10:RUSSIANS END KSC VISIT

A five-member delegation from Russia and five representatives of NASA ended their week-long visit to Kennedy Space Center today, according to KSC spokeswoman **Lisa Malone.** "They essentially met with representatives of all our different organizations," she said. While at the space center, the Russian visitors toured all major facilities, particularly the buildings at which the docking system and solar arrays will be readied for launch. The Russian Space Agency (RSA) and its subcontractors (including Energia) will open a resident office at the space center in December. [Halvorson, **FLORIDA TODAY**, p. 2A, June 10, 1994.]

June 13:STS 65: TESTING TODAY

Technicians will be conducting two critically important tests today at Kennedy Space Center. First, they will test the electrical and mechanical connections between Columbia and its mobile launch platform. Columbia's STS 65 flight is scheduled to last two weeks, starting on July 8. In the Operations & Check-

out Building, payload technicians will commence testing the main radar antenna which makes up the Space Radar Laboratory (SRL). The SRL is Endeavour's prime cargo on its next mission and will be moved to the Orbiter's hangar by June 29. KSC spokesman **George Diller** said, "Right now, our preparations for the next two Shuttle missions are right on schedule." The target date for Endeavour's STS 68 mission is August 18. Discovery will fly STS 66 later in the year. [Banke, **FLORIDA TODAY**, p. 2A, June 11, 1994.]

June 15:EG&G FLORIDA TO CUT WORK FORCE

Base Operations Contractor EG&G Florida, Inc. announced today that it will eliminate 140 jobs by September 1; two other major contractors recently announced other layoffs. The work force reduction is being implemented in anticipation of a reduced NASA budget for 1995. EG&G spokesperson **Judy Casper** said that the company "will try to meet its goal through attrition and voluntary resignations and doesn't know how many it will be forced to lay off." Positions will be cut across the full scope of the Base Operations Contract. [Liden, **FLORIDA TODAY**, p. 12C, June 16, 1994; Bumpus-Hooper, **THE ORLANDO SENTINEL**, p. 1A, Aug. 14, 1994.]

[]PUBLIC SUPPORT FOR SPACE EXPLORATION STRONG

A recent Yankelovich Partners poll revealed strong public support for the U. S. space program:

*75 percent want NASA to keep flying its four-Orbiter Space Shuttle fleet
*73 percent say the U.S. should "initiate joint space missions with other countries."
*81 percent say the space program increases the understanding of Earth's weather, climate and environment.
*70 percent say the program will help develop new technologies that will "improve productivity and help keep America economically competitive in the world."
*90 percent agree that "reading or hearing about the space program is a good way to teach kids about science.
*68 percent support plans to build a Space Station.
[Lawler, **SPACE NEWS**, p. 1, June 13-19, 1994; Eisler, **FLORIDA TODAY**, p. 1A, June 15, 1994; Halvorson, **FLORIDA TODAY**, pp. 1A & 4A, June 16, 1994.]

June 18:KSC EMPLOYEES WIN AWARDS

Astronaut **Scott Horowitz** recently awarded Silver Snoopys to NASA employees **Donna Cox** and **Krista Shaffer.** Cox is a continual improvement specialist with NASA Human Resources and Management Systems Office; she was recognized for taking the lead in planning and coordinating recent Quality Month activities.
Shaffer's award recognized her efforts in completing the field investigation of the crawlerway utilities tunnel where the road turns to Launch Complex 39B. Meanwhile, United Technologies USBI named **Ronald Hilpertshauser** its employee of the month for April. "NASA Employees Get Silver Snoopy Pins," **FLORIDA TODAY**,

p. 9E, June 19, 1994.]

June 20:GOLDIN: BUDGET FIGHT A PRIORITY

The budget fight over the Space Station Program is more important than ever this year, according to NASA Administrator **Daniel S. Goldin.** "It almost seems that it's become an annual summer ritual - another summer, another vote on the Space Station," the Administrator said in an address at the National Press Club. "But this summer is different," he said. The difference, he noted, is that the station has become a key foreign policy tool since Russia joined the International Space Station partnership. "We have to take risks," Goldin continued, "not just for ourselves, but for our children and the quality of their lives into the next century....The object of the space program is to catalyze America's future." [Eisler, **FLORIDA TODAY**, p. 2A, June 21, 1994.]

June 22:STS 65: PAD VALIDATIONS COMPLETED

At Launch Complex 39A, pad validations have been completed for Columbia's July 8 STS 65 launch. A helium signature test has also been completed. Today, launch processing technicians are conducting the standard terminal countdown demonstration test, replacing the outer pane of window number 6 on Columbia and making preparations for the prelaunch propellant load. A flight readiness review has been scheduled for tomorrow along with the prelaunch propellant loading. In OPF bay 1, workers processing Endeavour for its STS 68 mission have removed the Orbiter's auxiliary power unit number 1 and mated the mission's external tank and twin solid rocket boosters. Today OPF workers will be installing a replacement auxiliary power unit no. 1; conducting main propulsion system verifications and implementing electrical mates of the STS 68 external tank and solid rocket boosters. Scheduled STS 68 processing activities include: payload bay door cycle checks and auxiliary power unit servicing and checkout. [Halvorson, **FLORIDA TODAY**, p. 2A, June 19, 1994; Halvorson, **FLORIDA TODAY**, p. 4A, June 23, 1994; **KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, June 22, 1994; **NASA NEWS: Note to Editors**: NASA Sets July 8 As Date for Next Shuttle Launch, June 23, 1994.]

[]STS 64 & 66: UPDATES

In Orbiter Processing Bay 2, workers processing Discovery for its September STS 64 mission have concluded flash evaporator functional checks. Today, work in progress includes: preparations for main engine installation; payload bay mechanical reconfiguration; auxiliary power unit leak and functional tests; main propulsion system checks; LITE interface verification tests. STS 64 work scheduled: installation of mission main engines; 17 inch disconnect inspections; Orbiter/payload interface verification tests. Meanwhile, in OPF Bay 3, work is underway on the newly refurbished Orbiter Atlantis. Payload bay door inspections have already been completed. Work underway today includes: radiator mechanical functional checks; drag chute installation; electrical system validation tests; water

spray boiler checkouts. The next planned mission for Atlantis is targeted for early October and will deploy ATLAS-3 and CRISTA-SPAS. STS 66 work scheduled includes: Orbiter reaction control system functional checks; the installation of the remote manipulator arm (RMS) and auxiliary power unit leak and functional checks. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, June 22, 1994.]

June 23:STS 65 TO LAUNCH JULY 8

The Flight Readiness Review for STS 65 ended today and July 8 is now the officially chosen launch date for Columbia's next mission. The crew of STS 65 will include: Commander **Robert D. Cabana**, Pilot **Jim Halsell**, Payload Commander **Richard Hieb**, Flight Engineer **Carl Walz** and Mission Specialists **Leroy Chiao** and **Donald Thomas**. The seventh member of the crew is Japanese heart surgeon Dr. **Chiaki Mukai**, who would be the first Japanese woman in space. The astronauts will be working continually in the Spacelab, a trailer-sized laboratory in Columbia's cargo bay. Landing is planned to occur July 22 at 6:39 a.m. on Kennedy Space Center's Shuttle Landing Facility. [Halvorson, **FLORIDA TODAY**, p. 6A, June 24, 1994.]

[]SPACE STATION PLAN EXPECTED TO PASS HOUSE

The Space Station project is expected to survive a vote in the U. S. House of Representatives today, according to a top NASA official. "Within NASA we've taken a look at the vote, and we think it's going to be a win for NASA and a win for the Space Station," said **Wilbur Trafton**, head of NASA's International Space Station project. "I'm not going to predict the margins at this time, but we all hope it's more than one vote," Trafton said. That's the margin of its passage last year. At Kennedy Space Center this week, NASA is officially opening the Space Station Processing Facility which is managed by **Ruth Gardner**. The building, which already is home for 300 employees, will eventually house more than 1,000. **John T. Conway**, KSC Director of Payload Management and Operations, said, "In about 1997, you're going to see about 1,100 people from all over the world working together as a team on the floor of this building, assembling the Space Station, getting it ready to fly." The first Space Station components are expected to arrive in June 1997. KSC Director **Robert L. Crippen** said that in the event the Space Station project is killed, the building would be used to process Space Shuttle cargoes, but he expected a bright future for the building in NASA's service: "This building has a large amount of capability and versatility," he said. "I expect in my rocking chair some day to see the colony that we're going to put on the moon and the hardware for the flight to Mars going through this building." [Carney, **THE HOUSTON POST**, June 23, 1994; Clayton, **THE WASHINGTON TIMES**, p. A3, June 23, 1994; Cousineau, **THE UNION LEADER**, June 22, 1994; Halvorson, **FLORIDA TODAY**, p. 6A, June 24, 1994; Eisler, **FLORIDA TODAY**, p. 4A, Aug. 3, 1994.]

June 24:SRL-2 READY FOR ENDEAVOUR

Space Radar Laboratory 2 (SRL-2), the primary payload for STS 68, is ready to be transported from the Operations and Checkout Building (O & C) to the Orbiter Processing Facility (OPF). This is a significant event in preparation for Endeavour's planned launch in August. In OPF Bay 1 SRL-2 will be installed into the payload bay of Endeavour. Today testing was completed which functionally verified the radar antenna and the associated experiments mounted on the Spacelab pallet. SRL-2 will be installed in the payload bay of Endeavour on June 29. This will be followed by a two-day Interface Verification Test on July 6 to verify electrical connections and payload readiness. A final test of the X-SAR instrument is scheduled to be conducted on July 11. This will complete the major prelaunch tests.

SIR-C/X-SAR will again provide images and geophysical measurements of topography, vegetation, deforestation and soil erosion, ocean dynamics, wave fields and wind fields, volcanism and tectonic activity. Approximately 30 million square miles of the Earth will be surveyed using C-band, X-band and L-band radar instruments. Also flying together again with the SIR-C/X-SAR instruments is the Measurement of Atmospheric Pollution from Satellites (MAPS) instrument which will study carbon monoxide concentrations in the middle troposphere on a global scale. Launch of STS 68 is targeted for the third week of August. The C-band, X-band and L-band instruments are a joint project between NASA, the German Space Agency and the Italian Space Agency. The Jet Propulsion Laboratory (Pasadena, CA) manages the SIR-C/X-SAR project for NASA. The Langley Research Center (Hampton, VA) is responsible for the MAPS instrument. Both are sponsored by NASA's Office of Mission to Planet Earth. [**NASA/ KSC Release No. 67-94**, June 24, 1994.]

[]ATLAS ROCKET LAUNCHED FROM CAPE

A $138 million military satellite was launched aboard an Atlas rocket today from Cape Canaveral Air Station. This was the first Atlas launch since the General Dynamics Space Systems Division was acquired by Martin Marietta for $208 million on May 2. "Obviously the launch was a great way to start our partnership," said Martin spokeswoman **Julie Andrews**. Martin Marietta also builds the larger Titan rockets. The Atlas carried a Hughes Space and Communications Co. satellite which will replace a satellite launched in 1978. "We're confident that all that is going well and that we'll hand the satellite over to the Navy on time," said Hughes spokesman **Donald O'Neal**. [Halvorson, **FLORIDA TODAY**, p. 6A, June 24, 1994; Halvorson, **FLORIDA TODAY**, p. 1A, June 25, 1994; Halvorson, **FLORIDA TODAY**, pp. 1A-2A, Aug. 3, 1994.]

June 27:EG&G AND UNION NEGOTIATE

BOC Contractor EG&G Florida, one of three prime contractors at Kennedy Space Center - is continuing to negotiate with the International Association of Machinists and Aerospace Workers District 166. The previous contract expired June 3; it had covered

500 EG&G and 250 subcontractor employees. Since early June, a federal mediator has been involved in the contract negotiations. Neither EG&G spokeswoman **Judy Casper** nor union officials would discuss the details of the contract dispute. ["EG&G, Union Negotiating," **FLORIDA TODAY**, p. 20C, June 28, 1994.]

June 29:SPACE STATION BUDGET PASSES HOUSE

Daniel S. Goldin, Administrator of NASA, issued the following statement in reaction to today's vote in the House of Representatives which defeated an amendment to terminate the Space Station program: "The House of Representatives made a courageous decision to continue to build the International Space Station. It was a vote for America and for the American people, and a vote for our future. This is a new Space Station, made bigger, better, and more powerful and more capable by our collaboration with our international partners in Russia, Europe, Canada and Japan. It's a stronger program, guided by a restructured management team which is keeping the program on track, on schedule and on cost. The budget passed today by the House provides for a balanced space and aeronautics program. I am committed to maintaining that balance, and will continue to work with the Congress to ensure that NASA continues to pursue bold, cutting edge programs that will deliver to the American people. Brevard County's Congressman **Jim Bacchus** said, "A strong vote for the Space Station in the House should truly demoralize the opposition in the Senate. We're accelerating around the corner. Of all the votes on the Space Station, this is undoubtedly the most significant." Vice President **Al Gore** said that the House vote "signals the end of doubt about America's commitment to space exploration." [Holton, **THE ORLANDO SENTINEL**, June 10, 1994; "NASA Space Station Survives Cuts," **PLAIN DEALER**, June 10, 1994; Sawyer, **THE WASHINGTON POST**, p. A4, June 27, 1994; Eisler, **FLORIDA TODAY**, p. 2A, June 28, 1994; Eisler, **FLORIDA TODAY**, p. 1A, June 30, 1994; **NASA Release: 94-106**, June 29, 1994; Halvorson, "Budget Battle Just Beginning," and "Victory Seen As Vote of Confidence," **FLORIDA TODAY**, p. 7A, June 30, 1994; "House OKs Funding For Space Station," **THE WASHINGTON TIMES**, p. A15, June 30, 1994; Hitt, **THE WALL STREET JOURNAL**, p. B4, June 30, 1994; Boyd, **THE PHILADELPHIA INQUIRER**, June 30, 1994; Pianin, **THE WASHINGTON POST**, p. A15, June 30, 1994; "Still Wrong Choice On Space Station, **THE MILWAUKEE JOURNAL**, p. A10, July 1, 1994; Pike, **THE ORLANDO SENTINEL**, pp. G-1 & G-10, July 3, 1994.]

[]ENGINE COMPUTER FAILURE WON'T STOP LAUNCH

An aft engine computer which failed tests today will not be allowed to halt progress toward the launch of Columbia's STS 65 mission on July 8. The defective computer will be replaced and new engine readiness tests conducted. Even with the extra work occasioned by the changeout, no delay is anticipated, though, as Kennedy Space Center spokesman **Bruce Buckingham** said, "...we're going to have to work part of the July 4 weekend." The computer, about the size of a small filing cabinet, will be replaced today inside one of the three main engines. The engine computer is designed to detect engine failures and automatically shut down main engines either on the pad or in flight. In addi-

tion, the computers routinely test themselves during launch preparations. Though the original launch preparation plans called for testing to be concluded July 1, workers now expect to continue through July 3. [Halvorson, **FLORIDA TODAY**, p. 8A, June 30, 1994.]

JULY

July 1: ARNOLD ALDRICH RETIRES FROM NASA

Arnold D. Aldrich, NASA Associate Administrator for Space Systems Development, is retiring effective July 3, after 35-years of service to the Agency. Aldrich joined NASA in 1959 and held a number of significant flight operations and project management positions at the Johnson Space Center and its predecessor organizations during the Mercury, Gemini, Apollo, Skylab, Apollo-Soyuz and Space Shuttle programs. In 1986 he was named Director of the National Space Transportation System (Space Shuttle Program) in Washington where he held the entire range of recovery activities required to return the Shuttle fleet to flight following the Challenger accident. He subsequently served as Associate Administrator for Ar\aeronautics, Exploration and Technology, where he provided leadership for advancement of technologies for civil aviation, military aviation and for future space missions. In his current assignment, Aldrich has led a number of NASA's large space flight system programs including Space Station Freedom, the Advanced Solid Rocket Motor and the National Launch System. He also has directed a wide range of advanced programs in support of future space flight requirements and was the architect and Program Manager for the first contract between NASA and an organization in the Russian Federation. [**NASA News Release: 94-108,** July 1, 1994.]

July 5: STS 65 COUNTDOWN STARTS

The eldest Space Shuttle begins the countdown to its STS 65 mission which is set to commence July 8 at 12:43 p.m. The 17th Columbia mission will feature a two-week Spacelab science mission and number among its crew the first Japanese woman astronaut Dr. Chiaki Mukai, a heart surgeon in her non-astronaut life. The seven crew members are expected to arrive at Kennedy Space Center's Shuttle Landing Facility this afternoon at approximately 12:30 p.m. Early in the morning on July 8, workers will begin to load propellants into the Shuttle's external tank. The launch window is a lengthy one, running from 12:43 p.m. until 3:13 p.m. Landing is expected to be at KSC at 6:43 a.m. July 22. [Banke, **FLORIDA TODAY**, p. 2A, July 5, 1994.]

July 6: STRIKE AT KENNEDY SPACE CENTER

International Association of Machinists and Aerospace Workers District 166 workers today walked off their jobs at Kennedy Space Center to protest the recent contract officer of EG&G Florida, Inc. As presented in **FLORIDA TODAY**, the strike was called because the company's best offer includes: *"Small pay raises. Raises would consist of a 2 percent bonus the first year, a 2 percent wage increase the second year and another 2 percent increase the third. The average union salary is about $17 an hour, so a 2 percent increase equals about $700 annually. *"Increased health insurance costs. The weekly cost for a family would jump from $3 to $20 for the best health plan, an increase of $884 a year. Single coverage, which is now free, would increase to $10 weekly, an increase of $520 a year.

Deductibles and maximum out-of-pocket expenses would also increase." EG&G Florida spokeswoman **Judy Casper** commented, "We're bewildered that union officials have taken this stance. With economic conditions what they are now, it's unbelievable. They know we're having to lay off workers in September." She added that if the strike were prolonged, the company might have to hire replacement workers. Speaking for NASA, **Bruce Buckingham** said, "NASA is aware of union negotiations and will remain neutral. The strike will have no effect whatsoever on Columbia's launch countdown." [de Yampert, **FLORIDA TODAY**, p. 10C, June 29, 1994; de Yampert, **FLORIDA TODAY**, pp. 19C & 20C, July 6, 1994; Spear, **THE ORLANDO SENTINEL**, pp. B-1 & B-6, July 7, 1994.]

July 8:COLUMBIA LAUNCHES STS 65

The Space Shuttle Columbia launched its STS 65 mission today at 12:53 p.m.; the mission will be the 17th for the oldest Shuttle in the fleet. Mission Commander **Robert D. Cabana** said just after launch, "We're looking forward to a super two weeks up here." Weather was the only prelaunch concern at Kennedy Space Center and Air Force meteorologists predicted a 40% chance of early afternoon thunderstorms. The liftoff is attended by dozens of reporters from Japan; the crew includes surgeon Dr. **Chiaki Mukai**. "A lot of attention is being given to this mission," said **Yoshiro Ishizawa** who is executive director of Japan's space agency NASDA. "People are keeping a close eye on this mission," he said. The President of the National Space Development Agency of Japan, **Masato Yamano** said, "The first Japanese woman astronaut will play a key role in this mission, and that is significant." Meanwhile, a labor dispute between Base Operations Contractor EG&G Florida, Inc. and the International Association of Machinists and Aerospace Workers led to a strike by 750 members of the union on July 5. [Halvorson, **FLORIDA TODAY**, p. 1A, July 8, 1994; "Columbia Lifts Off On Time, " **THE SUN**, July 9, 1994; "Space Shuttle's `Beautiful' Launch Starts 2-Week Life-Science Mission," **THE WASHINGTON TIMES**, July 9, 1994.]

July 12:EG&G AND UNION TALK TODAY

Base Operations Contractor EG&G Florida, Inc. and striking International Association of Machinists and Aerospace Workers members met today with a federal mediator this morning to discuss the current job action by the union. The meeting produced no immediate results and no further meetings have been scheduled. The strike began July 5 in protest of EG&G's contract offer, which includes 2 percent raises and increased health insurance costs. ["EG&G, Union Set to Meet Today," **FLORIDA TODAY**, p. 10C, July 12, 1994; "EG&G, Union Produce No Results," **FLORIDA TODAY**, p. 10C, July 13, 1994.]

July 14:JUDGE ENJOINS STRIKERS

Brevard-Seminole Circuit Judge **Lawrence Johnston** has ordered EG&G Florida strikers to comply with three rules of conduct while picketing at north and south entrances to Kennedy Space Center. The pickets must stand six feet from the edge of the road; no more than 50 picketers can gather on either side of the

road; strikers must not threaten, cause property damage or cause personal injury. EG&G spokeswoman **Judy Casper** said, "The reason we went after the injunction is because we want to protect all our employees, the strikers as well as those coming in and out of the gates. [de Yampert, **FLORIDA TODAY**, p. 1A, July 15, 1994; de Yampert, **FLORIDA TODAY**, pp. 11C & 10C, July 16, 1994.]

[]CENTER FOR SPACE EDUCATION OPENS

"It's the only education center of its type; it's the culmination of a dream," said **James DeSantis**, President of the Astronauts Memorial Foundation about the opening of the Center for Space Education which opened at Spaceport USA today. The center was established to train teachers to do their jobs better by using the latest technology. The center will organize conferences, workshops and training programs for teachers who will have the opportunity to see "cutting-edge" technology demonstrated by manufacturers. The building (44,000 square feet) has classrooms, a library and training rooms. The Center for Space Education was conceived and built as a memorial to the seven astronauts who flew aboard Challenger on its 51-L mission. [Donnelly, **FLORIDA TODAY**, p. 1A, July 15, 1994'; Evans, **FLORIDA TODAY**, July 16, 1994 .]

[]TRANSPORTER BREAK-DOWN

One of two crawler transporters used to haul Space Shuttles to the launch pads broke down this week; even so, the launch schedule is not expected to be disrupted, according to NASA. Spokeswoman **Lisa Malone** said that one of sixteen metal steering arms was damaged during a move to the launch pad to pick up a mobile launch platform. The arm was removed and examined at a space center workshop with no immediate estimate of repair costs available. [Halvorson, **FLORIDA TODAY**, p. 6A, July 15, 1994.]

[]COCKPIT CAMERA RECORDS STS 65 LAUNCH

"As you can see, it vibrates pretty good," said Columbia Commander **Robert Cabana** of the video taken during the Shuttle's STS 65 launch. The camera -about the size of a lipstick tube - filmed the launch from the rear of the vehicle's cockpit. IMAX film producers are interested in filming a launch from inside the Shuttle. Currently at the Spaceport USA, the IMAX film entitled "Destiny in Space,"is being shown in the IMAX theater. The film is narrated by Leonard Nimoy, famed as Mr. Spock in Gene Roddenberry's Star Trek television series and the motion picture series. The cockpit video was shown on NASA Select television and there are presently no plans to make the film more widely available. [Spear, **THE ORLANDO SENTINEL**, July 15, 1994.]

[]SENATE VOTES FOR NASA BUDGET

NASA's $2.1 billion Space Station budget has been approved in the Senate Appropriations Committee and its subsidiary subcommittee which oversees space operations. Opponents of the Space Station may yet mount a challenge to the program's funding when

the appropriations bill reaches the Senate floor for a vote. A conference committee of House and Senate members will meet to iron out differences in the bills introduced in each house. [Tucci, **SPACE NEWS 3**, July 11-17, 1994; "Panel OKs Space Station Budget," **FLORIDA TODAY**, p. 6A, July 15, 1994.]

July 16:APOLLO 11 LAUNCH COMMEMORATED

The excitement generated by the launch of Apollo 11 on July 16, 1969, was recalled today when more than 200 persons - space center employees, Brevard County residents and visitors - gathered in the Rocket Garden at Spaceport USA for the 25th anniversary of the historic first moon-landing mission. The original launch commentator for the Apollo 11 - **Jack King** - was on hand to attend the recreation of the final two minutes of the countdown. At T-0, two model Saturn rockets were launched. VIPs on hand for the event included Apollo 17 astronaut **Eugene Cernan**, U. S. Senator **Bob Graham**, U. S. Rep. **Jim Bacchus** and the Kennedy Space Center Director **Robert L. Crippen**. Both Bacchus and Cernan said the anniversary and the attendant ceremonies would encourage them to redouble their efforts to secure funding for the proposed Space Station. [Banke, **FLORIDA TODAY**, June 15, 1994; Floyd and Reakes, **FLORIDA TODAY**, pp. 1A & 12A, July 17, 1994; Evans, **FLORIDA TODAY**, p. 1B, July 16, 1994; Spear, **THE ORLANDO SENTINEL**, July 17, 1994; Donnelly, **FLORIDA TODAY**, pp. 1B-2B, July 16, 1994.]

[]STS 65: ROOF BLOWN OFF BUILDING

Columbia's liftoff created such a blast that it tore the roof off a building near Launch Complex 39A. "There was absolutely no way the vehicle or its crew were in danger because of this roof," commented NASA spokesman **Bruce Buckingham**. "The vehicle was already several hundred feet off the ground when the roof flew off a shed." The Shuttle's exhaust plume threw the corrugated steel roof of the building about 50 feet in the opposite direction from the rising Shuttle. Buckingham concluded, "Obviously, the exhaust was blowing things away from the vehicle." [Halvorson, **FLORIDA TODAY**, p. 6A, July 17, 1994.]

July 20:ARMSTRONG: PLACES TO GO BEYOND BELIEF

"We have only completed a beginning," said **Neil Armstrong** at a White House Apollo 11 anniversary ceremony. "we leave you much that is undone. There are great ideas undiscovered, breakthroughs available...places to go beyond belief." President **Bill Clinton** spoke for the nation saying, "The world was captivated not only by the risk and the daring...they were captivated because the landing meant again that the human experiment in conquering new and unchartered worlds was reborn. In that sense, it was not an end, but a beginning.... Our commitment to the space program is strong and unwavering. The best way to honor these men and all the others who have helped us so much is to continue that quest. Many have risked their lives and some have given their lives so that we could go forward. I honestly hope to recommit ourselves to their spirit of discovery." NASA Administrator **Daniel S. Goldin** said, "The landing on the moon was

a celebration to life. I don't view it as a high-water mark for what the human spirit can achieve. I view it as proof that we can do the impossible." [Eisler, **FLORIDA TODAY**, pp. 1A-2A, July 21, 1994.]

[]NASA NEWS RELEASES GO ONLINE

Distribution of news releases and other informational materials from NASA Headquarters goes high-tech starting July 25. On that date, NASA Headquarters will no longer distribute news releases, contract announcements or notes-to-editors by mail. Use of electronic distribution services such as the Internet, Compuserve and Fax-on-Demand will become the primary means of informing the news media and the public about NASA activities and programs. Text-only versions of mission press kits also will be available via on-line services. "We are excited by the possibilities inherent in this new way of doing business," said **Geoffrey H. Vincent**, Deputy Associate Administrator for Public Affairs and head of the Agency's public affairs Internet steering group. "Over time, this change will save the taxpayers hundreds of thousands of dollars and will allow us to meet our customers' needs in a much more effective and efficient manner."

The changeover to electronic distribution of news material has been planned for almost a year, Vincent noted. "The Internet is quickly evolving, and we hope to evolve with it," he said. "In the years ahead, vast amounts of information on space exploration, from news releases to historical documents and photographs - eventually even video - will be available not just to reporters, but to teachers, students and anyone else who wishes to access it." Use of the Internet to obtain information on space-related topics is one of the fastest growing aspects of the service, he added. "Since July 8, for example," Vincent said, "there have been more than 90,000 inquiries on a computer server at the Jet Propulsion Laboratory for information on the collision of Comet Shoemaker-Levy 9 with the planet Jupiter. This is just one example of the tremendous interest that exists, and the virtually unlimited possibilities of this new technology."
The NASA Headquarters Internet database will contain NASA news releases, mission press kits, contract announcements, notes-to-editors, fact sheets and other publications. NASA press releases can be obtained 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. Informational materials also will be available from a data repository known as an anonymous FTP (File Transfer Protocol) server at ftp.pao.hq.nasa.gov under the directory /pub/pao. Users should log on with the user name "anonymous" (no quotes), then enter their E-mail address as the password. Within the /pub/pao directory there will be a "readme.txt" file explaining the directory structure.

An additional service known as fax-on-demand will enable users to access NASA informational materials from their fax machines.

Users calling (202) 358-3976 may follow a series of prompts and will automatically be faxed the most recent Headquarters news releases they request. Users with Compuserve accounts can access NASA press releases by typing "GO NASA" (no quotes) and making a selection from the categories offered. The headquarters Newsroom also will operate an automated telephone system for users with problems accessing these information resources. The number is (202) 358-4043. [**NASA News Release: 94-121**, July 20, 1994.]

July 22:KSC READIES FOR COLUMBIA'S LANDING

Columbia will return to Kennedy Space Center from its STS 65 mission this morning at 6:47 a.m., if the weather permits. NASA Flight Director **Jeff Bantle** said, "Right now the weather forecast is very good for both Friday and Saturday, but as we all know with the history of KSC weather, sometimes that can change on us." Should there be a delay in landing, the decision will probably be to stay in space another day because of time critical experiments which need to get to researchers at KSC right away and because of the $1 million price tag to ferry a Space Shuttle from California to Kennedy Space Center. [Halvorson, **FLORIDA TODAY**, p. 5A, July 22, 1994.]

July 23:COLUMBIA RETURNS WITH RECORD

Setting a new Space Shuttle record of 15 days, the Space Shuttle Columbia returned to Kennedy Space Center this morning at 6:38 a.m. Mission Commander **Robert Cabana** said, "It's great to be home and we're all feeling great." Columbia achieved the length of mission record when poor weather conditions over the Shuttle Landing Facility compelled Mission Control to extend the STS 65 flight for a 15th day. Shortly after landing, time-critical experiments were removed from Columbia and the Shuttle was towed to its hangar. "This is the important part of the mission, when the scientists get their samples," said **Robert Snyder**, Mission Scientist from the Marshall Space Flight Center (Huntsville, AL). "In some cases," he added, "this is going to take many months, up to possibly several years in the cases where this huge amount of data has to be analyzed." September 1995 will see Columbia make its next mission into space on a microgravity research flight. Maintenance crews found a large, flattened fish on the Shuttle runway when they were sweeping it down after Columbia's landing; "speculation had it that an osprey or eagle, frightened by the descending Shuttle's double sonic booms, may have dropped it," reported **THE ORLANDO SENTINEL** [Banke, **FLORIDA TODAY**, p. 1A, July 24, 1994; Spear, **THE ORLANDO SENTINEL**, July 27, 1994; "NASA Adds Road Kill to Mission Firsts," **THE ORLANDO SENTINEL**, July 24, 1994.]

[]LIGHTHOUSE MARKS 100TH YEAR

The Cape Canaveral Lighthouse marks a full century at is current site this year. The anniversary was celebrated this year by the Brevard Museum of History and Natural Science with an open house. **Frank Childers**, NASA retiree and author of **The History of the Cape Canaveral Lighthouse**, was on hand for the centennial

festivities. The lighthouse is located on Cape Canaveral Air Station, only a 100 yards from a gantry. [Bartoszek, **FLORIDA TODAY**, p. 1B, July 24, 1994.]

July 26:ENDEAVOUR'S ROLLOUT TO COST $46 K

"It's not like you're hauling a train load of coal. You're moving a national resource," remarked KSC spokesman **Bruce Buckingham** about the $46,587.50 it will cost to roll the Space Shuttle Endeavour to its launch pad on July 27. A cost breakdown shows that gasoline for the 3.5 mile trip costs $437.50. Wages for NASA contractor workers (at about $35 per hour) will cost about $8,400. Crawler transporter maintenance, including materials, costs $32,500 and the wages for workers doing maintenance on the crawler transporter are $5,250. Buckingam said that since the moving operation is for 21.5 million pounds (shuttle and transporter), the cost is reasonable. "That's a tremendous amount of weight to be moved and balanced and leveled. For the handful of times we do this every year, and the equipment we have to keep on hand to do the job, I think it's a great deal." The Space Shuttle Endeavour is expected to launch on August 18; it will carry six astronauts and NASA's Space Radar Laboratory, which flew in April aboard Endeavour. [Halvorson, **FLORIDA TODAY**, p. 2A, July 26, 1994; Halvorson, **FLORIDA TODAY**, p. 1A, July 28, 1994..]

July 27:ENDEAVOUR PAD TESTS TODAY

Technicians at Launch Complex 39A are preparing to conduct a series of important launch pad tests now that Endeavour has been rolled out to the pad. Rollout began at 12:24 a.m. yesterday morning and, traveling at about 1 mph, the 3.5 mile trip was over at 6:33 a.m. EDT when the Space Shuttle was reported harddown at the pad. The testing begun today is to verify electrical and mechanical connections between Endeavour and the pad. [Halvorson, **FLORIDA TODAY**, p. 2A, July 27, 1994; Kay Grinter, Press Site Librarian.]

July 28:WEATHER MAY DELAY ATLAS LAUNCH

Evening thunderstorms may delay today's scheduled launch of an Atlas rocket; the launch window is from 7:54 p.m. and 9:26 p.m. Thunderstorms are expected to move into the Central Florida area late in the afternoon. "I hate to be the one to put a dark cloud over the issue, but we will have a few of those to deal with," said Air Force weather officer **Joel Tumbiolo**, 45th Space Wing. Weather constraints drop to forty percent for a Saturday launch. [Halvorson, **FLORIDA TODAY**, pp. 1A-2A, July 28, 1994.]

July 29:GAY DEBUS DIES AT 79

Irmgard Helene "Gay" Debus died today at home today; she was 79. Mrs. Debus, who was born in Frankfurt, Germany, was the widow of **Kurt H. Debus**, first KSC Director. She came to Brevard County in 1956 from Alabama. .As the wife and right hand of the Director of the space center, Mrs. Debus was called the First Lady of the Space Center and fulfilled many ceremonial duties

as official hostess to visiting dignitaries including the King and Queen of Afghanistan, the President of India and the President of South Korea. "This nation owes a debt of gratitude to Dr. Debus for all his contributions, and my experience has been that the spouse is essential in all those accomplishments. Mrs. Debus was a very important part of that team. She was very gracious, and we will all miss her very much," [Forrest S.] McCartney [former KSC Director] said. "She was a great lady who served as a great hostess to many dignitaries," said **George English**, a recently retired Manager [of the Executive Staff] at the space center. "She will be missed by many." Survivors include her daughters, **Ute Debus** (Great Falls, VA) and **Siegred Debus-Northcutt** (Satellite Beach, FL) and three grandchildren. [Simpson, **FLORIDA TODAY**, p. 3B, July 30, 1994.]

August

August 1:STS 68: SPACE RADAR LABORATORY

Technicians processing Endeavour at Launch complex 39A have completed hydraulic closeouts. Today the schedule includes: STS 68 crew arrival for the mission's terminal countdown demonstration test (TCDT); KSC's launch readiness review; launch pad validations; main engine leak checks; preparations for prelaunch propellant loads; preparations for the helium signature test. STS 68 work scheduled: helium signature list; terminal countdown demonstration test; prelaunch propellant load and the flight readiness review on August 4. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Aug. 1, 1994; "Astronauts Jet In To KSC," (Photo), **FLORIDA TODAY**, p. 1A, Aug. 2, 1994.]

[]STS 64: LIDAR-IN-SPACE TECHNOLOGY

Technicians preparing Discovery for its upcoming STS 64 mission have completed the following tasks: mating the external tank with its solid rocket boosters; final aerosurface checks; payload interface verification tests; auxiliary power unit leak and functional tests. Today, processing activities included: payload bay cleaning; closing payload bay doors for the Orbiter's move to the Vehicle Assembly Building [VAB]; Orbiter aft engine compartment closeouts. STS 64 work scheduled: Orbiter weight and center of gravity checks; loading the stacked vehicle onto the Orbiter transporter; transferring the completed Space Shuttle to the VAB. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Aug. 1, 1994.]

[]STS 66: ATLAS-3/CRISTA-SPAS

Atlantis is scheduled to launch on its STS 66 mission in late October of this year. Presently, however, it is undergoing processing activities in OPF Bay 3. Completed tasks include: installation of the forward reaction control system; transporting the forward reaction control system to the OPF; fuel cell system checks; orbital maneuvering system interface tests; orbital maneuvering system crossfeed connections. Today, work is proceeding on the following tasks: freon coolant loop deservice; main propulsion system leak and functional checks; forward reaction control system interface checks. Preparations are also underway to install the mission's payload: ATLAS-3/CRISTA-SPAS. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Aug. 1, 1994.]

[]COLUMBIA READYING FOR CALIFORNIA TRIP

Columbia is currently in OPF Bay 1 where work is continuing to prepare it for transfer to Palmdale, CA, for the scheduled Orbiter maintenance down period [OMDP]. Currently in work on Columbia are preparations to remove the waste containment system and work to deservice the auxiliary power units (APUs). Transfer of Columbia to the west coast is set to occur in mid-October. When Columbia returns to KSC early in 1995, processing will begin for its next mission - STS 73- which is tentatively

set for the summer of 1995. The prime payload for the flight is the United States Microgravity Laboratory-3. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Aug. 1, 1994.]

August 2:NASA BUDGET DEBATE IN SENATE TODAY

The United States Senate takes up the question of the size of NASA's budget today; the expectation is that the Senate's action will mirror the action of the House in passing the agency's Space Station budget, despite the efforts of Arkansas Senator **Dale Bumpers.** The House agreed in June to support the Space Station. The Senate debate on the budget should take two days. U. S. Rep. **Jim Bacchus** (D-M.I., Florida), said, "The momentum has been building since the House vote and there's no reason to believe that we won't do as well or better than we've always done in the Senate." [Eisler, **FLORIDA TODAY**, p. 1B, Aug. 2, 1994; SEE ALSO: **NASA News Release 94-127,** Appendix Item 10.]

August 3:SENATE SAYS YES TO SPACE STATION!

By a vote of 64-36, the United States Senate refused to kill the Space Station Program, this year at least. "The Space Station," said NASA Administrator **Daniel S. Goldin,** "is no longer just a design or a dream. We are building hardware." The Senate budget bill, which must still be passed in its final form, then reconciled with the House version, provides for $14.4 billion for NASA in fiscal year 1995. The House version provided less, around $14 billion. Both bills, however, include NASA's basic request of $2.1 billion for the Space Station. [Eisler, **FLORIDA TODAY**, p. 1A, Aug. 4, 1994; "Space Station Survives Senate Vote, GAO Report," **WASHINGTON TIMES**, p. A20, Aug. 4, 1994; "Senate Approves Funds For Space Station," **THE WASHINGTON POST**, A8, Aug. 4, 1994; Graham, **HUNTSVILLE NEWS**, P. 1A, Aug. 4, 1994.]

[]ATLAS LAUNCHED FROM CAPE CANAVERAL

Martin Marietta's 14-story Atlas launch vehicle lifted off tonight at 7:57 a.m.; its payload was a new television communications satellite and joins a similar one launched in 1993. The two will soon provide up to 150 channels to subscribers of cable systems in the 48 contiguous states. The launch was the 12th commercial Atlas mission and second since Martin Marietta purchased General Dynamics Space Systems Division last May. [Banke, **FLORIDA TODAY**, p. 2A, Aug. 4, 1994.]

August 4:LABOR NEGOTIATIONS RESUME

A federal mediator will be included in labor negotiations today when contract talks between EG&G Florida, Inc. and the International Association of Machinists and Aerospace Workers resume today at the Holiday Inn in Titusville, FL. **Roger Kendrick,** head of the striking union, was not available for comment on the renewal of contract talks, but EG&G Florida's spokeswoman **Judy Casper** revealed that the union had given the company some alternatives concerning health care coverage. She provided no details. [Reid, **FLORIDA TODAY**, p. 12C, Aug. 4, 1994.]

[]ENDEAVOUR TO LAUNCH AUG. 18

"We're in good shape and everything looks like its falling right in place," said KSC spokesman **Bruce Buckingham**; the date for Endeavour's STS 68 mission has been officially set for August 18. The mission will include six astronauts: Commander **Mike Baker**, Pilot **Terry Wilcutt** and Mission Specialists **Steve Smith**, **Jeff Wisoff**, **Dan Bursch** and **Tom Jones**. Launch for the environmental tracking mission is set to occur within a window running from 6:54 and 9:24 a.m.; landing is planned for Kennedy Space Center's Shuttle Landing Facility at 11:36 a.m. Like its April mission, Endeavour will map portions of the Earth's surface with highly sophisticated radars housed in the cargo bay. Scientists want to discover how Earth changes from one season to the next. **Steve Nagel** holds the current record for shortest time between Shuttle missions at 128 days; if STS 68 goes on time, the new record holder will be Tom Jones whose elapsed time would be 120 days. Jones flew most recently on Endeavour's April mission. [Banke, **FLORIDA TODAY**, p. 2A, Aug. 5, 1994; **Launch Advisory**, Aug. 5, 1994.]

August 7:AWARDS RECOGNITION FOR ADAMEK, SELLERS

Ed Adamek, Director of Safety, Reliability and Quality Assurance for Lockheed Space Operations Co. has been awarded NASA's Public Service Medal. The award was presented by KSC Director **Robert L. Crippen** and Deputy Director **James A. "Gene" Thomas**. Lockheed spokesmen said that under Adamek's leadership "virtually all of the major safety indicators" in Shuttle processing work had improved. **Michelle Sellers**, Senior Materials Controller for USBI, has been named United Technologies USBI's Team Member of the Month. She was selected for the award for "her high level of productivity, accurately kitting more than 25,000 flight hardware pick lists in support of solid rocket booster operations" at KSC. ["Lockheed Safety Chief Gets Service Medal," **FLORIDA TODAY**, p. 9E, Aug. 7, 1994; "USBI Controller Named Team Member for July," **FLORIDA TODAY**, p. 9E, Aug. 7, 1994.]

August 8:NASA SCIENCE DATA ON INTERNET

NASA today selected BDM Federal, Inc. (McLean, VA) to form a Remote Sensing Public Access Center (RSPAC) for demonstrating, testing and transferring technology to help provide public use of Earth and space science data over the Internet. The intent of the new center is to stimulate broad public use, via the Internet, of the very large remote sensing databases - maintained by NASA and other agencies - to stimulate U. S. economic growth, improve the quality of life and contribute to the implementation of a National Information Infrastructure.. "We are looking forward to working with BDM to assist the public in accessing and using NASA data," said **Lee B. Holcomb**, NASA's Director for High Performance Computing and Communications. "We envision that this center will play a key role in developing universal access to the products of NASA's Earth and space science research." BDM will receive $12.8 million under a cooperative agreement to establish the RSPAC, which will demonstrate, test and facilitate remote sensing database applications and new

digital library technologies. BDM will be supported by West Virginia University Research Corp. (Morgantown, W. VA) and Jardon and Howard Technologies (Winter Park, FL). The West Virginia University/NASA Independent Verification and Validation Facility (Fairmont, W. VA) will be the central site for RSPAC activities. The center will extend access to remote sensing data beyond the usual scientific community. By providing Internet access and user help, remote sensing data now will be available to the educational community (from K-12 to the university level), television and print media, libraries and hobbyists. Because this data will be available over the Internet, non-traditional users will have much greater ease of access than in the past. [**NASA NEWS Release: 94-131**, Aug. 8, 1994.]

August 9:BROKEN SEAL DELAYS ROLLOVER

The rollover of the Space Shuttle Discovery has been delayed by a broken seal found on a ground line. Officials decided to check the other seals in Discovery's plumbing for pieces of the broken seal; the pieces were found in a hydraulic line. Concerning the rollover delay, Kennedy Space Center spokesman **Bruce Buckingham** said, "We've got some contingency time, but not an extraordinary amount." To insure that the hydraulic system contains no other debris, the system will be flushed and a suspect valve replaced. Rollover is projected to occur the morning of August 11 and Discovery will then be mated to its external tank and solid rocket boosters. The Discovery processing team may have to work overtime in order to meet the August 18 launch date, according to Buckingham, who said that the rest of the launch preparations remain on schedule. [Banke, **FLORIDA TODAY**, p. 5A, Aug. 10, 1994.]

[]STS 68: SRL-2

Contingency spacesuits have been installed in the Space Shuttle Endeavour and checks of its main propulsion system pressure transducers have been made in preparation of the Orbiter for its STS 68 mission. Today workers will be installing ordnance and pressurizing hypergolic reactants; the latter operation requires closing Launch Complex 39A. In addition, workers are conducting Orbiter aft engine compartment closeouts, countdown preparations and checking out the contingency spacesuits prior to closing the airlock. The STS 68 crew is expected to arrive Monday, August 15, at approximately 8:15 a.m.; launch countdown commences on the 15th at 11 a.m. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Aug. 9, 1994.]

[]ATLAS-3/CRISTA-SPAS STATUS

In late October, the Space Shuttle Atlantis returns to space with its STS 66 mission. The mission's prime payload is the ATLAS-3/CRISTA-SPAS. The Orbiter's launch processing team has completed the following tasks: raising the landing gear; installing a new flash evaporator system; installing the Orbiter's forward reaction control system and deservicing the freon coolant loop. Today's work includes: main propulsion system leak

and functional checks; forward reaction control system interface tests and forward module closeouts. STS 66 work scheduled: preparations to install the ATLAS-3 payload and stacking of the solid rocket boosters in the Vehicle Assembly Building. The STS 66 mission will have a crew of six and is expected to last for ten days and 20 hours with a landing planned for Kennedy Space Center. Meanwhile, the Space Shuttle Columbia is in OPF Bay 1 where work is continuing to prepare it for transfer to Palmdale, CA, for the scheduled Orbiter maintenance down period (OMDP). Transfer of Columbia to the west coast is scheduled to occur in mid-October. When Columbia returns to Kennedy Space Center early next year, processing will begin for mission STS 73 scheduled for the late summer of 1995. The Spacelab tunnel adapter has been removed already and the three main engines will be removed next week. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Aug. 9, 1994.]

August 11:ENDEAVOUR LAUNCH ON SCHEDULE

The push toward the countdown for STS 68 is continuing without a problem. The rear engine doors of Endeavour will be closed today marking a key milestone in launch preparations. The six-man crew is expected to arrive at Kennedy Space Center at 8:30 a.m. August 15 with the launch to start at 11 a.m. On the 18th, Endeavour should launch between 6:54 a.m. and 9:24 a.m. Landing is set to occur at the Shuttle Landing Facility at 11:36 a.m. on August 28. Meanwhile, the rollout of Discovery to Launch Complex 39B is being re-evaluated. The rollout had been planned for next week; if it is delayed until after Endeavour launches on the 18th, contractor personnel would have to work overtime to meet the September 9 launch target for Discovery's STS 64 mission. [Halvorson, **FLORIDA TODAY**, p. 2A, Aug. 12, 1994.]

August 12:LAUNCH WORKERS TO GET LABOR DAY OFF

"The schedule already was fairly tight. (The new plan) will just make it a little tighter," said Kennedy Space Center spokesman **Bruce Buckingham** of the plan to enable KSC to give its employees the Labor Day weekend off. Rollout of Discovery will be delayed four days till August 18. The new plan calls for: "installing main propulsion system temperature sensors in the [VAB] rather than at the launch pad" and "conducting key preparations for the loading of toxic rocket fuels over a four-day period rather than a seven-day period." Launch remains targeted for September 9. [Halvorson, **FLORIDA TODAY**, Aug. 13, 1994.]

August 15:SHUTTLE SCHEDULES TIGHT

"If the hardware isn't good to us, we'll take whatever slips or schedule impacts that go with that," remarked KSC Launch Director **Robert B. Sieck** about the tight launch schedule NASA faces at the space center. The tight schedule imposes a severe strain on KSC resources at a time when officials are balancing a desire to fly on time with concerns about cost cutting and safety. Endeavour's countdown for STS 68 begins today at 11 a.m. and is scheduled to launch August 18 at about 6:54 a.m.; the Space Shuttle Discovery is due for rollout to Launch Complex 39B at

11:30 p.m. on the 18th. The terminal countdown demonstration test for its STS 64 mission runs August 23-24. Endeavour will return to Kennedy Space Center on August 28 and September 9, Discovery launches on its 19th mission, STS 64. Meanwhile workers will be preparing Atlantis for a mid-October launch - STS 66. The mission will be the Orbiter's first since 1992 when it was ferried to California for scheduled maintenance. Columbia will make the trip to California in late October. Launch Director Sieck said, "This launch scenario has been on the books for some time." He added that money had been saved from earlier missions to help pay for additional expenses, including overtime, incurred now. [Banke, **FLORIDA TODAY**, p. 1A-2A, Aug. 15, 1994; Halvorson, **FLORIDA TODAY**, p. 2A, Aug. 17, 1994.]

[]ASTRONAUTS ARRIVE; STORMS MAY TOO

A low pressure system heading toward Brevard County from the Bahamas might imperil the launch plans for STS 68. "This has the potential to bring in a lot of clouds, thunderstorms and rainstorms come launch time," said NASA Test Director **John Guidi**. NASA officials said that the current weather system - Tropical Storm Beryl - will not likely affect launch plans because the system is heading north an away from Cape Canaveral. Guidi added, "We have a 60 percent chance of favorable conditions, but that is highly variable depending on the direction of [Beryl and another developing storm] systems." Should bad weather delay the Thursday launch, attempts can be made through August 22; afterwards, an impending launch - August 25 - of an Air Force Titan 4 would further delay the STS 68 launch. The STS 68 crew includes: Commander **Mike Baker**, Pilot **Terry Wilcutt**, Mission Specialists: **Steve Smith**, **Jeff Wisoff**, **Dan Bursch** and Payload Commander **Tom Jones**, who flew an identical mapping mission on Endeavour in April. [Banke, **FLORIDA TODAY**, p. 1B, Aug. 16, 1994; Oliver, **THE ORLANDO SENTINEL**, Aug. 16, 1994.]

August 16:STS 68: LAUNCH MINUS 2 DAYS

The countdown for mission STS 68 and the launch of Endeavour on August 18 continues as planned today. Loading of the cryogenic reactants [propellants] is continuing and expected to be complete by about 5:30 p.m. Following cryogenic loading and when the pad is reopened, technicians will reenter the aft engine compartment for additional closeout work. During the Mission Management Team meeting this afternoon, it was decided to send technicians back into the Orbiter's aft engine compartment to check the tightness of bolts securing the three Auxiliary Power Unit fuel pump filter covers. The work will take about 16 hours, or two shifts, to complete. No impact to launch is expected. Questions about Endeavour's bolts were raised when the bolts on Discovery, currently in the Vehicle Assembly Building, were found to be loose. Tomorrow, preparations will be made to retract the rotating service structure to launch position at about 11 a.m. Loading of the external tank with cryogenic propellants is scheduled to begin at about 10:34 p.m. Wednesday.

Air Force weather forecasters are currently indicating a 40 percent probability of weather prohibiting launch on the 18th. The

primary concerns are for a chance of showers, low clouds and possible thunderstorm debris clouds. Tropical Storm Beryl is located over the Florida panhandle and Georgia and is not expected to pose a threat to launch activities. Another system developing in the Atlantic Ocean east of the Bahamas is nearly stationary. During Thursday's launch window, the winds at Launch Complex 39A are expected to be from the south at 7-12 knots; temperature 74-78 degrees Fahrenheit; visibility 7 miles; and clouds scattered at 2,000-6,000 feet, 8,000-11,000 feet, and broken from 25,000-28,000 feet. The 24-hour and 48-hour-delay forecast reveals similar conditions and forecasters list a 40 percent and 30 percent change of violation respectively. Mission Commander **Mike Baker** said, "[The mission] is designed to help us understand our planet, what makes it work and what we can do to help it out." Astronaut **Thomas David Jones**, who flew a nearly identical mission in April, said, "This is the start of a very important process in which space-based platforms and instruments can return the information we need to preserve and protect the environment." The six-member astronaut crew arrived at Kennedy Space Center's Shuttle Landing Facility at about 8:30 a.m. August 15; today they will be involved in check-out out their mission plans and fit checks of their equipment. Launch of STS 68 is set for 6:54 a.m. EDT, August 18 with a landing 10 days, 4 hours and 40 minutes later at KSC's Shuttle Landing Facility at 11:36 a.m. EDT [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Aug. 16, 1994; Banke, **FLORIDA TODAY**, p. 1A-2A, Aug. 17, 1994; Banke, **FLORIDA TODAY**, p. 2A, Aug. 17, 1994; Halvorson, **FLORIDA TODAY**, Aug. 17, 1994; "Wind Gusts of 75 MPH Blast KSC," **FLORIDA TODAY**, p. 1A, Aug. 17, 1994.]

August 17:STS 68: "READY TO FLY"

"The vehicle is in good shape. We're ready to go fly," said Shuttle Program Manager **Brewster Shaw** today as the countdown for STS 68 continued leading up to a 6:54 a.m. EDT launch. Technicians have attended to several minor problems throughout the countdown which has otherwise been smooth and on schedule. Shaw continued saying, "[Commander **Mike Baker** reminded me] ever since they started training for this flight their launch date was Aug. 18. I think that's nice that sometimes works out for us." The minor pre-launch fixes included: tightening several bolts on a filter cover that is located inside Endeavour's rear engine compartment; ensuring a hydraulic power unit was working properly inside the Orbiter's solid rocket boosters; replacing several temperature sensors inside the Shuttle's main propulsion system which had bad welds. [Banke, **FLORIDA TODAY**, p. 1A, Aug. 18, 1994.]

August 18:STS 68: LAUNCH ABORT

The countdown to launch of STS 68 reached 1.9 seconds when a failed engine caused an abort of the liftoff. "We were quite obviously very concerned," said **Deidra Baker**, wife of Shuttle Commander **Michael Baker**. "I don't think anybody's happier than the families that the safety systems worked and everybody's OK." In the Launch Control Center these mission managers' statements followed each other in rapid succession: "Ignition systems are

safe." "All main engines are on standby." "Primary safing is complete." "No leaks detected at this time." "Everything appears to be safe with the crew." Commander Baker recalled his thoughts concerning the abort: "You get a lot of rumble and a little bit of vibration and then you're ready for that big kick of the SRB's and it just didn't happen." He added that the final countdown "seemed longer than usual."

Following the STS 68 launch abort this morning, Shuttle managers made decisions tonight concerning the upcoming launch schedules. The Shuttle Discovery is scheduled to roll out to Launch Complex 39B tonight as planned with first motion at 11:30 p.m. EDT. Discovery is scheduled to be launched on Mission STS 64 on September 9. With the possibility of severe weather conditions in the KSC area next week, managers decided to have only one vehicle on a launch pad. Officials decided to roll the Shuttle Endeavour back to the Vehicle Assembly Building early next week where the three main engines will be replaced. The STS 68 mission is now targeted for launch the first week of October. Launch of Mission STS 66 remains planned for the last week of October. [Banke, **FLORIDA TODAY**, p. 1A, Aug. 18, 1994; **KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Aug. 18, 1994; Banke, **FLORIDA TODAY**, pp. 1A and 6A, Aug. 19, 1994; Merzer, **THE MIAMI HERALD**, pp. 1A & 10A, Aug. 19, 1994; Leary, **THE NEW YORK TIMES**, p. A12, Aug. 19, 1994; Harwood, **THE WASHINGTON POST**, p. A3, Aug. 19, 1994; "Shuttle Shuts Off As Clock Reads Zero," **THE WASHINGTON TIMES**, p. A4, Aug. 19, 1994; Banke, **FLORIDA TODAY**, p. 2A, Aug. 27, 1994.]

August 19:STS 64: LIDAR IN SPACE EXPERIMENT (LITE)

Discovery's rollout to Launch Complex 39B was harddown this morning at []. Main propulsion system temperature sensors were installed and the Shuttle interface test was completed. At the pad today, workers will conduct pad validations and implement a hot firing of three auxiliary power units (APUs). STS 64 work scheduled for next week: rotating the service structure around the vehicle by 8 a.m. Aug. 20; crew arrival for the terminal countdown demonstration test (TCDT) at approximately 9:30 a.m. August 22; conduct the helium signature test on August 23; begin the TCDT at 11 a.m. August 24 and begin the prelaunch propellant load on August 25 and 26. Discovery's STS 64 mission will be launched September 9 and will carry six astronauts. A landing is planned for Kennedy Space Center on September 19 following the 8 day, 20 hour mission which features the Lidar-in-Space Technology Experiment. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Aug. 19, 1994.]

[]STS 68: ROLLBACK TO VAB

"You get a lot of rumble and a little bit of vibration and then you're ready for that big kick of the SRBs and it just didn't happen," said STS 68 Commander **Michael A. Baker**. Then he added that the final countdown to launch "seemed longer than usual." What he referred to was the abort of Endeavour's STS 68 mission with 1.9 seconds remaining in the countdown. In the Launch Control Center a series of assertions filled the air: "Ignition systems are safe." All main engines are on standby." "We have

no fire detectors tripped at this time." Primary safing is complete." "No leaks detected at this time." "Everything appears to be safe with the crew." Baker's wife, Deidra said later, "We were quite obviously very concerned. I don't think anybody's happier than the families that the safety systems worked and everybody's OK." Launch had been aborted at very nearly the last second by an engine failure. In addition to Baker, the crew included Pilot **Terrence Wilcutt**, and Mission Specialists: **Daniel W. Bursch, Thomas D. Jones, Steven L. Smith** and **Peter J. K. Wisoff.** Today's abort was the latest of any of the five launch pad aborts in Shuttle Program history.

Mission managers have decided to return Endeavour to the VAB Tuesday morning [August 23], remove and replace all three main engines, and roll back out to Launch Complex 39A in the second week of September. (The new main engines for Endeavour will be the ones originally slated to be installed on Atlantis.) The target launch period for mission STS 68 is now set for the first week of October. Workers at LC 39A have completed post-scrub securing of Endeavour; the rotating service structure has been extended around the vehicle and the STS 68 crew has returned to Johnson Space Center [Houston, TX]. Today, workers at the pad will continue with extended scrub turnaround operations; connect the Orbiter mid-body umbilical unit to the vehicle and off-load cryogenic reactants at 4:00 p.m. STS 68 work scheduled for next week: main engine inspections beginning August 20; deservicing of hypergolic reactants and disconnecting ordnance on August 21; rolling the Orbiter back to the VAB on August 23; start removing the three main engines August 26. The launch of STS 68 will be rescheduled for early October. [Merzer, **THE MIAMI HERALD**, pp. 1A & 10A, Aug. 19, 1994; **KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Aug. 19, 1994.]

[]STS 66: ENGINES SLATED FOR STS 68

Since Endeavour will be using the main engines originally destined for Atlantis, engine installation for Atlantis will not occur next week as planned but will occur after Atlantis is rolled over to the VAB in late September. The current plans are for Atlantis to use the engines that recently flew on Columbia for its late October STS 66 mission.. Workers processing Atlantis in OPF Bay 3 have completed freon coolant loop servicing. Main propulsion system leak and functional checks and forward reaction control system interface tests have been completed. Today, workers are servicing auxiliary power units and conducting Ku-band and radar system tests. STS 66 work scheduled for next week: transport of the ATLAS-3 payload to the Orbiter Processing Facility [OPF] on August 22; installation of the ATLAS-3 payload on August 23; Orbiter/payload interface verification test on August 24. The solid rocket boosters for STS 66 will continue stacking operations in the Vehicle Assembly Building. The Space Shuttle Columbia is in OPF Bay 1 where work continues in preparation for its transfer to Palmdale, CA, for the scheduled Orbiter maintenance down period (OMDP). When Columbia returns to Kennedy Space Center in 1995, processing will begin for its STS 73 mission, tentatively set for late summer 1995. The three main engines and the forward reaction control

system have been removed. Today, the payload doors will be opened following completion of the structural checks on the vehicle. Work next week includes removing the Orbiter's left hand orbital maneuvering system pod. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Aug. 19, 1994.]

August 21:AWARDS: PICO & KORTE

Jose Pico has been named the Thiokol Corp. Employee of the Month at Kennedy Space Center. Pico is a project engineer in the quality department of the company. He was honored "for his extensive work in developing a series of computer routines that resulted in more efficient operations" for Thiokol. **Michel Korte**, an engineering planner for USBI, has been selected as the National Property Management Association's Shuttle Chapter Property Person of the Year. She received the same award from her company earlier in the year. She was honored "for her meticulous management of government-owned equipment assigned to her organization" for its use under its contract with NASA. Since 1988, Korte has been department custodian for the Parachute Refurbishment Facility. ["Thiokol Project Engineer Receives Monthly Award," **FLORIDA TODAY**, p. 9E, Aug. 21, 1994; "USBI Employee Given NPMA's Annual Award," **FLORIDA TODAY**, p. 9E, Aug. 21, 1994.]

August 24:FORECASTS GOOD FOR TITAN LAUNCH

Preparations for the launch of a Titan 4 rocket from Cape Canaveral Air Station continue to progress and the weather appears to be cooperating for tomorrow's 3:30 a.m. liftoff. Forecasters are predicting a 90% chance of favorable weather. A dangerous propellant spill over the weekend has caused no delay. This will be the third of four Titan launches from Cape Canaveral this year. [Halvorson, **FLORIDA TODAY**, pp. 1A & 6A, Aug. 21, 1994; Halvorson, **FLORIDA TODAY**, pp. 1A-2A, Aug. 22, 1994; "Air Force Says Fuel Leak Won't Delay Titan Launch," **THE ORLANDO SENTINEL**, Aug. 23, 1994; Halvorson, **FLORIDA TODAY**, p. 1A, Aug. 24, 1994; Banke, **FLORIDA TODAY**, p. 11A, Aug. 25, 1994.]

[]INTERNET GRANTS AWARDED BY NASA

NASA today selected 15 organizations to receive a total of $20 million to help develop applications and technologies as a part of the Agency's efforts to provide public use of Earth and space science data over the Internet. Some of the projects are joint ventures that also will receive funding through other sources. The remote sensing database (RSDB) applications will make the information more accessible to a wider audience than in the past. The digital library technology (DLT) projects will advance the technologies in use by digital libraries and offer new paths for the libraries of tomorrow. These selections closely follow the Remote Sensing Public Access Center award announced August 8, 1994. Additional RSDB application and DLT awards will be made in the near future. [**NASA News Release: 94-138**, Aug. 24, 1994.]

August 25:TITAN IV/CENTAUR LAUNCH DELAYED

This morning's launch attempt of a Titan IV/Centaur carrying a classified Department of Defense payload from Complex 41 at Cape Canaveral Air Station, FL, was postponed due to poor weather conditions. At approximately T-3 minutes and 14 seconds, a weather hold was called as thick clouds with a potential for triggered lightning drifted into the area. The launch attempt was originally delayed because of poor atmospheric conditions. Mission managers working in close coordination with Brevard County Disaster Preparedness held the launch to ensure there would be no danger to the general public from a potential hazardous cloud. The next available launch opportunity is Saturday, August 27, with a launch period between 2:15 a.m. and 5:53 a.m. EDT. A final decision on a definite launch date will be made later today. [**UNITED STATES AIR FORCE NEWS RELEASE**, 94-0, Aug. 25, 1994; "Stormy Weather Delays Titan Liftoff of Spy Satellite," **THE ORLANDO SENTINEL**, Aug. 28, 1994; "Titan 4 Rocket...," [Photograph], **FLORIDA TODAY**, p. 1A & 11A, Aug. 28, 1994.]

[]DISCOVERY LAUNCH SCHEDULE CLOUDED BY PROBLEMS

Three technical problems plaguing the Space Shuttle Discovery may yet delay the STS 64 mission from its expected September 9 launch. First, there is a shortage of liquid oxygen temperature sensors available for use in Discovery's main propulsion system plumbing. Second, a liquid oxygen valve inside the Orbiter was replaced after tests showed it sticking. Third, an auxiliary power unit (APU) did not come up to speed during a launch pad testing-firing. Kennedy Space Center spokesman **Bruce Buckingham** said, "The schedule is tight, but we've got another notch left in our belt if we need to use it." [Banke, **FLORIDA TODAY**, p. 2A, Aug. 25, 1994; Banke, **FLORIDA TODAY**, pp. 1A-2A, Aug. 26, 1994; Halvorson, **FLORIDA TODAY**, pp. 1A-2A, Sept. 31, 1994.]

August 26:EG&G, UNION TO MEET

Federal mediators will join EG&G Florida, Inc. and the leaders of the striking International Association of Machinists and Aerospace Workers. EG&G's **John Wood** and union leader **Roger Kendrick** will meet at 10 a.m. tomorrow at the Titusville Holiday Inn, according to EG&G spokeswoman **Judy Casper**. No details of the meeting's agenda were announced. [Reid, **FLORIDA TODAY**, p. 12C, Aug. 27, 1994.]

August 27:TITAN LAUNCHED SUCCESSFULLY

The Air Force successfully launched its Titan 4 and its classified payload early this morning. "The entire Titan team pulled together to make this one of our smoothest Titan launches ever," said Lt. Col. **Larry James**, Commander of the 5th Space Launch Squadron at Cape Canaveral Air Station. "We are moving forward," James continued, "to make Titan an on-time, operational system our customers depend on, and this launch further demonstrates our ability to put America's heavy payloads into orbit." Liftoff came from Launch Complex 41 at 4:58 a.m.; offshore thun-

derstorms delayed the launch for two hours. This morning's successful effort marked the third launch in six months. [Banke, **FLORIDA TODAY**, p. 11A, Aug. 28, 1994; "Titan Shoulders Mystery Satellite," **THE ORLANDO SENTINEL**, p. A-3, Aug. 28, 1994.]

August 28:SSME #3 SENT FOR TESTING

Endeavour's main engine #3 is on its way today to a test stand in Mississippi where engineers will try to recreate the problem which caused the August 18 launch abort of the vehicle's STS 68 mission. The results of the testing may affect the September 9 launch effort of Discovery on its STS 64 mission. Meanwhile preparations continue for Discovery's flight, according to KSC spokesman **Bruce Buckingham.** Workers at the Launch Complex 39B will test the Orbiter's main engine valves and check the liquid oxygen plumbing. A valve had been found to be sticking in an earlier test, officials said. The STS 64 launch readiness review will take place at Kennedy Space Center August 31 and the final "go for launch" will be determined following September 7's mission management team meeting. If all goes according to expectations, launch should occur on September 9. [Banke, **FLORIDA TODAY**, p. 2A, Aug. 27, 1994; Banke, **FLORIDA TODAY**, p. 5A, Aug. 29, 1994; "Endeavour Update," **FLORIDA TODAY**, p. 1A, Sept. 3, 1994.]

[]ENDEAVOUR APU PASSES TEST

"Everything went fine," said Kennedy Space Center spokesman **Bruce Buckingham** of yesterday's Auxiliary Power Unit test at the space center. Endeavour's APU was suspect after the launch abort August 18, but engineers theorized that by firing the APU again, "the turbine system essentially would loosen up and work properly without requiring any repair." The test was delayed from 10 a.m. until 5:30 p.m. to allow range officials to proceed with the launch of a Titan 4 rocket from Cape Canaveral Air Station earlier in the morning. Buckingham said that the delay would not impact the effort to launch Discovery on September 9. Engineers are still awaiting test results from the firing of Endeavour's SSME #3 in Mississippi. [Banke, **FLORIDA TODAY**, p. 1A, Aug. 28, 1994.]

August 29:STS 64: SPACESUITS CHECKED

Workers at Launch Complex 39B are checking out the contingency spacesuits aboard Discovery which is now only 11 days away from a September 9 liftoff on its STS 64 mission. Two spacesuits, fitted with small thrusters, will be tested by STS 64 crew members **Carl Meade** and **Mark Lee** while Discovery is in orbit. KSC spokesman **George Diller** said, "We had a blue-skies, green-light weekend. If our luck holds out, we won't have any work to do next Sunday or Monday," the Labor Day holiday. The luck referred to by Diller had to do with the testing of Endeavour's main engine number 3 in Mississippi this past weekend In that test, NASA engineers will attempt to duplicate the failure of the engine which caused the August 18 abort of the STS 68 launch

of Endeavour. Removal of Endeavour's other two main engines has continued at Kennedy Space Center and all three should be replaced by August 30. The six-member crew of STS 64 includes: Commander **Richard N. Richards**, Pilot **L. Blaine Hammond**, and Mission Specialists: **Carl J. Meade, Mark C. Lee, Susan J. Helms** and **Jerry M. Linengar**. [Halvorson, **FLORIDA TODAY**, p. 2A, Aug. 30, 1994; http://www.ksc.nasa.gov/shuttle/missions/sts-64/mission-sts-64.html.]

August 30:STRIKE CONTINUES

Roger Kendrick, head of the striking International Association of Machinists and Aerospace Workers-166, had no comment on a contract package presented to the union by EG&G today. The package included "changes in work rules, classification of workers and the method of employee bidding for shift changes," according to EG&G Florida spokeswoman **Judy Casper**. The next mediated negotiations were scheduled for September 27. Union members assert that EG&G's offer of a pay increase is "canceled out" by an increase in health insurance premiums. ["Union, EG&G At Impasse," **FLORIDA TODAY**, p. 10C, Aug. 31, 1994; Reid, **FLORIDA TODAY**, pp. 1A-2A, Sept. 5, 1994.]

August 31:STS 64: PROBLEMS PERSIST

"We want to be absolutely sure that we're all ready to go and everybody feels comfortable with the status of the vehicle before we go. And right now there are some open questions," said Shuttle Project Manager **Loren Shriver** about the pre-launch problems plaguing Discovery's STS 64 mission preparations. He added, "So we're going to reserve judgment and not be flippant about it. We are not going to feel compelled by the schedule to say right now that we have to go for the ninth." NASA's Associate Administrator for Space Flight **Jeremiah Pearson III** echoed Shriver in saying, "I was very satisfied with the results of the [Flight Readiness Review]. We have some open issues which will be thoroughly worked by the Shuttle team and we will not proceed with the launch of Discovery until they are properly resolved. Safety remains our top priority." The tentative launch target, however, remains September 9. The main engine test of Endeavour's SMME 3 will occur September 1 or 2. In addition, Discovery's main engine valves will undergo further tests. Finally, an investigation is underway into defective connectors which route computer commands to the explosive devices used to separate the Shuttle from its boosters and external tank. If there is a substantial delay in launching, Discovery may be blocked by the planned launches of Endeavour on October 2 and Atlantis on October 27. [Halvorson, **FLORIDA TODAY**, pp. 1A-2A, Sept. 1, 1994; "NASA: More Problems With Discovery Could Delay Launch," **THE ORLANDO SENTINEL**, Sept. 1, 1994; **NASA Note to Editors: N94-64**, Aug. 31, 1994.]

[]STS 64: FLIGHT CONTROL

Flight Control for STS-64, the 19th flight of Discovery, will follow the procedures and traditions common to U.S. manned space flights since 1965, when the Mission Control Center (MCC) was

first used. The responsibility for Shuttle operations will revert to the MCC (Houston), once Discovery's two solid rocket boosters ignite. Mission support in the MCC will begin 5 hours prior to launch and continue through landing. The Space Shuttle Orbiter's operations will be conducted from Flight Control Room One (FCR-1) in Building 30 at the Johnson Space Center. Voice communications with the Orbiter will be as standard from the MCC using the call signs "Houston" and "Discovery." The teams of flight controllers will alternate shifts in the control center and in nearby analysis and support facilities. The handover between each team takes about an hour and allows each flight controller to brief his or her replacement on developments during the previous two shifts. The MCC flight control teams for this mission will be referred to as the Ascent/Entry Team, the Orbit 1 Team, Orbit 2 Team and the Planning Team. The Ascent/Entry Team and the Orbit 1 Team will be led by Flight Director **Wayne Hale**. The Orbit 2 shift will be conducted by Lead STS-64 Flight Director **Al Pennington**. The Planning Team will be led by Flight Director **Bill Reeves**. [**NASA/JSC Release: 94-059**, Aug. 31, 1994.]

SEPTEMBER

September 1: SPACE STATION AGREEMENT SIGNED

Nasa and the Boeing Company today announced agreement on the key elements of the prime contract for the International Space Station. The agreement establishes, for the first time, a joint position by NASA and its prime contractor on the scope of work, program schedule, cost ceiling and fee arrangement by fiscal year and at completion; establishes contractual terms and conditions; and clears the way for finalizing the contract before the end of the year. Space Station Program Director **Wilbur Trafton** said the agreement reinforces NASA's confidence that the station will be completed on schedule and within the budget limits set by the President and ratified recently by both Houses of Congress.

Randy Brinkley, Space Station Program Manager, noted the agreement marks the third major program milestone completed on schedule this year following the System Design Review in March and the signing of a contract in June with Russia's Space Agency. "The agreement is a testament to months of intensive effort by the joint NASA/contractor teams which have reviewed every facet of the program in search of the efficiencies and cost savings needed to keep the program on schedule and within budget," Brinkley said. "We now have the ingredients in place, including a strong, well-defined team, to devote our attention to building the station," said **Larry Winslow**, Boeing Space Station Vice President. "This agreement provides the structure and direction that we all understand and can apply to the challenges ahead." Boeing currently is operating under a letter contract signed in February. The letter contract will remain in force while remaining details are worked out on the definitized contract in the next few months. The next major milestone for the International Space Station Program is the Interim Design Review scheduled for March 1995. Launch of the first element of the station, the FGB propulsion and control module, remains on schedule for November 1997. [**NASA News Release: 94-144**, Sept. 1, 1994.]

September 2: ENGINE TEST TODAY

A critical test of a failed Endeavour main engine took place this morning in Mississippi under the watchful eyes of NASA engineers. After studying the results of the test, NASA managers will: determine that the problem which aborted Endeavour was unique and would allow launch plans for STS 64 to proceed; delay all future Shuttle flights indefinitely if the conclusion is reached that all Shuttle engines need fixing. Meanwhile NASA managers at KSC have two concerns about Discovery: a liquid oxygen valve has failed a recent test and a paperwork investigation is underway to determine whether a set of critical electrical connectors have been installed properly. Since connectors may not be inspected or fixed at the launch pad, Discovery may have to be rolled back to the Vehicle Assembly Building if changes are necessary. [Banke, **FLORIDA TODAY**, p. 1A, Sept. 2, 1994; "NASA: More Problems With Discovery Could Delay Launch," **THE ORLANDO SENTINEL**, Sept. 1, 1994.]

[]CREW NAMED FOR 2ND MIR DOCKING

NASA's second Space Shuttle mission to rendezvous and dock with the Russian Space Station Mir, scheduled for October 1995, will be commanded by U.S. Marine Corps Colonel **Kenneth D. Cameron.** Joining Cameron on the STS 74 mission are U. S. Air Force (USAF) Lieutenant Colonel **James D. Halsell, Jr.,** Pilot, and USAF Colonel **Jerry L. Ross,** U. S. Army Lieutenant Colonel **William S. McArthur, Jr.** and Canadian Air Force Major **Chris A. Hadfield.** The primary objective of the six-day flight is to attach a permanent Russian docking module to an Orbiter docking system using the Shuttle's robot arm, before placing the docking module onto the Mir Space Station, where it will remain for use during future joint U.S.-Russian missions. Throughout the flight, various life sciences investigations will be performed. Cameron, 44, has flown twice before on the Shuttle, during STS-37 in April 1991 and STS-56 in April 1993. Most recently he was NASA Director of Operations, Russia, where he worked with Russian trainers, engineers and flight controllers to support the training of astronauts at Star City and to enhance continued cooperation between NASA and Russia's Space Agency. Halsell, 37, flew on the STS-65 mission in July. Ross, 46, flew on the STS 58 mission in October 1993. McArthur, 43, flew on the STS 58 mission with Ross. Hadfield, 35, has not yet flown on a Space Shuttle mission. [**NASA/KSC Release: 94-145,** Sept. 2, 1994.]

September 3:POSITIVE ENGINE TESTS IN MISSISSIPPI

The suspect Discovery engine #3 passed its test in Mississippi and provided STS 64's Mission Manager's with the opportunity to proceed with the countdown, but a decision will have to come quickly. The Discovery astronauts - a six member crew - are expected to arrive at Kennedy Space Center tomorrow afternoon and the countdown is set to begin at 9:00 p.m. Questions facing Mission Managers include the following: What caused the August 18 abort that kept Endeavour on the pad? Why did a liquid oxygen valve inside the Orbiter's propulsion system's plumbing stick in a half-open position? Is Discovery's explosive ordnance system properly installed and prepared to operate safely? The managers will meet September 6. [Banke, **FLORIDA TODAY**, p. 1A, Sept. 4, 1994; "NASA Test-Fires Engine That Aborted August Launch," **THE ORLANDO SENTINEL**, Sept. 4, 1994.]

September 6:STS 64: SEPTEMBER 9 LAUNCH DATE

NASA has officially set September 9 as the launch date for STS 64. The decision to proceed with the launch came after Shuttle managers reviewed and closed the three open issues that remained at the conclusion of last week's Flight Readiness Review (FRR) meeting. One of the issues from the STS 64 FRR was the pending testing and analysis on the Shuttle Main Engine which caused the STS 68 launch pad abort on August 18. Over the weekend, the engine was test fired at Stennis Space Center (Bay St. Louis, MS). Data from that test, along with other analyses, support the conclusion that there are no concerns with the hardware, software or procedures that will be used for the STS 64 launch.

Another issue from the STS 64 FRR involved examination of a cable pin connector used on the Shuttle system. After reviewing processing paperwork and over 100 similar connectors, all of which were found to be within standard, NASA managers concluded that the failure of the one connector to fasten properly was an isolated incident.

The final issue was with fill/drain valves in Discovery's main propulsion system which had exhibited some unusual behavior during checkout operations. One valve was removed and inspected. The remaining valves were all tested and x-rayed and found to be in proper working order. The countdown for the launch of Discovery will begin at 9:00 p.m. today at the T minus 43-hour mark. Over the next three days, the launch team will complete final processing work on Discovery and its payloads. The liftoff on September 9 is planned for 4:30 p.m. EDT at the start of a 2 1/2 hour launch window. The STS 64 mission duration is 8 days, 20 hours, 11 minutes. An on-time launch on September 9 would result in a landing at 12:41 p.m. EDT on September 18, 1994, at the space center's Shuttle Landing Facility. [**NASA Note to Editors: N94-65**, Sept. 6, 1994; **KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Sept. 6, 1994.]

[]STS 64: COUNTDOWN UNDERWAY

The countdown for the STS 64 mission began tonight looking toward a launch on Friday during a window which begins at 4:30 p.m. and ends at 7 p.m. A threat of stormy weather still remains. The STS 64 crew arrived at 12:30 p.m. "We're looking forward to getting this mission under way," said Commander **Richard Richards**. He spoke on arrival at KSC's Shuttle Landing Facility along with five fellow crew members. Richards continued his arrival remarks saying, "It feels like a normal launch count now because we have slowly transitioned from talking about hardware problems to worrying about what we normally worry about, which is the weather." Launch managers resolved three hardware problems that had threatened to delay the mission. Kennedy Space Center spokesman **Bruce Buckingham** said, "The schedule was always on the back burner. We were aware of it, but we were committed to resolving all of our safety issues first before we fly." [Banke, **FLORIDA TODAY**, p. 1A, Sept. 7, 1994; **KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Sept. 6, 1994.]

September 8:STS 64: WEATHER FORECAST GOOD

With a favorable weather forecast in hand, NASA Mission Managers are proceeding toward a launch of STS 64 at 4:30 p.m. tomorrow. A frayed hose in Discovery's engine compartment was replaced September 6; there have been no other countdown problems. Air Force meteorologists are predicting an 80 percent chance for weather acceptable for launch. Discovery's six astronauts will deploy a solar science satellite and retrieved during the mission which is set to last almost nine days. ["Weather Good for Discovery Launch," **FLORIDA TODAY**, p. 5A, Sept. 8, 1994.]

[]STS 64: WEATHER ONLY CONSTRAINT

"We who commit Space Shuttles to flight are 100 percent `go' for launch, and if we get some good weather, we'll be out of here," said Shuttle Program Manager **Brewster Shaw.** The forecast for launch remains rated as 80 percent favorable. Rain or low clouds are the only possible constraints. If the launch is postponed today, the launch must go on Saturday or face a possible 3-week delay because of the scheduled launches of a Navy Trident missile, an Air Force Titan and a commercial Atlas. These are all booked for launches in September which would preclude Discovery's landing during the period. [Halvorson, **FLORIDA TODAY**, p. 1A, Sept. 8, 1994.]

September 9:DISCOVERY LAUNCHED, LATE IN WINDOW

Discovery revived the stalled launch schedule with a cloud-skirting liftoff that had been delayed by storms for an hour and 53 minutes. "We'll see you all in about a week," radioed STS 64 Commander **Richard N. Richards** to mission managers only minutes before launch. Launch Director **Robert B. Sieck** commented, "The hardware performance speaks for itself." [Halvorson, **FLORIDA TODAY**, p. 1A, Sept. 10, 1994; Burnett, **THE ORLANDO SENTINEL**, Sept. 9, 1994; Misselhorn, **FLORIDA TODAY**, p. 5B, Sept. 10, 1994; McKenna, **AVIATION WEEK & SPACE TECHNOLOGY**, pp. 23-24, Sept. 19, 1994.]

September 10:ENDEAVOUR NEXT UP FOR LAUNCH

Now that Discovery has been launched successfully, Endeavour is the next Orbiter scheduled for launch at Kennedy Space Center. "Discovery's launch takes a little bit of the veil from what the rest of the year's schedule is going to look like," according to **Bruce Buckingham**, a spokesman for the space center. Endeavour is tentatively set to liftoff on October 2 and carry into orbit the Space Radar Laboratory. The Orbiter's engines have been replaced and the vehicle will be rolled out to Launch Complex 39A either late tomorrow night or early on September 12. Atlantis is slated for a late October or early November launch, depending on when the vehicle can have its engines installed. ["Endeavour Next Orbiter In Lineup," **FLORIDA TODAY**, p. 5B, Sept. 10, 1994.]

[]FOUR RECEIVE NASA SCHOLARSHIPS

The 1994 NASA College Scholarship Fund grants have been made and awards were made to four children of KSC NASA employees. The recipients were: **Kimberly Lynn Pargeon** (daughter of employee **Macel Pargeon**); **Ellen Lin** (daughter of employee **Gary Lin**); **Benjamin Darong Yu** (son of employee **Ping Yu**) and **Richard Joseph Hurt** (son of employee **George Hurt**). Kennedy Space Center Director spoke at the presentation of the grant awards; **Robert L. Crippen** said, "You have every right to be proud of the young person sitting beside you. NASA always has been a strong advocate of higher education, and I want to encourage your pursuit of a graduate degree." ["KSC Dependents Receive Scholarship Fund Money," **FLORIDA TODAY**, Aug. 11, 1994.]

[]NASA EMPLOYEES WIN SNOOPYS

NASA employees **Jeannie Ruiz** (Titusville, FL) and **Timothy R. Honeycutt** (Melbourne, FL) have been awarded NASA's prestigious Silver Snoopy Award for service to NASA's Space Shuttle astronauts. Ruiz is a lead mechanical engineer in the Payload Management and Operations Directorate. In presenting the Snoopy to Ruiz, astronaut **Scott Horowitz** said, "In particular, your knowledge and practical experience, combined with your exceptional organization skills and attention to detail, have allowed KSC to improve the timeliness for late installation of middeck experiments into the Orbiter." Honeycutt is an electronics engineer in the Engineering Development Directorate and was recognized for his leadership on a project to upgrade the Launch Complex 39 paging system. Astronaut Horowitz said of Honeycutt's efforts, "The paging system is an important link in the communications during the launch countdown, thus making a significant contribution to the safety of the astronauts." ["Two NASA Workers Get Snoopy Awards," **FLORIDA TODAY**, Aug. 11, 1994.]

September 14:ATLAS LAUNCH DELAYED

Martin Marietta's Atlas rocket launch will now take place October 5 during a window which runs from 1:53 a.m. until 3:53 a.m.; a suspect electrical harness requires testing and that has caused a six-day delay. The harness system "measures the amount of propellant used by the rocket's Centaur upper stage in flight." Tests will be made of the system because it had given spurious readings during a recent practice countdown. Martin Marietta's launch schedule includes two additional commercial launches by the end of the year, one in November and the other in December. [Halvorson, **FLORIDA TODAY**, p. 2A, Sept. 15, 1994.]

September 15:RUNWAY TO BE RESURFACED

NASA has begun resurfacing the runway at the Kennedy Space Center, a move that will improve the wear on Shuttle tires and potentially lead to an expansion of the Return to Launch Site landing crosswind flight rule. Raising crosswind limits from the current constraint of 15 knots would increase launch probabilities from the spaceport on Florida's Atlantic coast. A small increase could substantially reduce
the days in which crosswinds are too high for orbiters to land back at the Shuttle runway at Kennedy if an emergency occurred immediately after launch. The runway resurfacing also will improve safety for end of mission landings at KSC. The resurfacing follows a series of successful tests with Space Shuttle tires and a new runway resurfacing technique using NASA's CV-990 Landing Systems Research Aircraft (LSRA). "Shuttle launches involve complicated choreography," said Space Shuttle Operations Director Brewster Shaw. "This includes not only the conditions that apply to launching out of the atmosphere and into space, but also weather and winds at several locations around the world in case problems force us to make an immediate landing. By raising the Shuttle crosswind limits, something we have studied in a very conservative and methodical way, we can enhance our

capability to launch on a given day." The LSRA is highly modified to duplicate the landing weight, speed and side slip of the Space Shuttle. The converted jetliner carries a landing gear test fixture that can test orbiter tires at up to 140,000 lbs. of load. It was originally developed as a Space Shuttle landing systems testbed, but can be used to test a variety of aircraft landing systems. The LSRA was developed and is operated by NASA's Dryden Flight Research Center, Edwards, Calif.

During the latest series of testing at Kennedy, the LSRA team studied three different runway surfaces to determine the best landing conditions for the orbiter. A resurfacing technique using a Skidabrader machine was chosen and the entire 15,000-foot runway at Kennedy will be resurfaced. The runway surface treatment machine, which looks like an ice rink resurfacing vehicle, propels tiny steel shot onto the runway to pulverize the rough surface and create a much smoother finish. These tests are part of a comprehensive effort by the Shuttle program to evaluate crosswind limits under which an orbiter can safely land. Tests with the CV-990 complement data which is being collected during actual Space Shuttle landing approaches. These data are being
used to obtain a better understanding of orbiter handling characteristics at landing speeds in various crosswind conditions.

"If we can save the Shuttle program eight days of delay we will have paid for the entire LSRA program," said Christopher Nagy, chief CV-990 engineer. The cost to modify the aircraft into a test facility and operate it through this fiscal year was $12 million. "The orbiter and all of its systems, with the exception of the tires, were designed and built to handle a 20-knot cross wind," said Robert Baron, CV-990 program manager. "During the tests to certify them up to 20 knots of crosswind, we hit tire loads of up to 140,000 lbs...way above their design limits...and they held up
consistently beyond their rated capacities." According to Baron, no changes are required to the tires to increase their crosswind limits. The CV-990 logged 26 flights during the most recent phase of testing at Kennedy, bringing the total to 101 flights since the aircraft was modified into a test facility. Along with improving orbiter landing capabilities, the CV-990 test team produced data to help update Space Shuttle simulators used by NASA's Johnson Space Center, Houston, and Rockwell International. [**NASA/KSC Release: 94-153**, Sept. 15, 1994.]

September 16:<u>STS 68: SEPT. 30 LAUNCH DATE</u>

NASA managers today targeted September 30 for launching the Space Shuttle Endeavour on its STS 68 mission; the primary payload is the Space Radar Laboratory (SRL). The 2-1/2-hour launch window on the 30th opens at 7:16 a.m., EDT. SRL, which first flew last April, will again give scientists highly detailed information that will help them distinguish between human-induced environmental changes and other natural forms of change. The SRL science team will compare SRL-2 data to SRL-1 data to study changes in the environment between spring and autumn. The STS 68 crew will be commanded by **Michael Baker** and piloted by

Terrence Wilcutt. Rounding out the crew are Payload Commander **Thomas Jones,** and three additional Mission Specialists: **Steven Smith, Daniel W. Bursch** and **Jeff Wisoff.** Endeavour, whose three main engines were replaced following an unsuccessful launch attempt on August 18, will be making its seventh flight - the 65th of the Space Shuttle Program. [**NASA/KSC Release: 94-154,** Sept. 16, 1994.]

[]OVERTIME COSTS FORCE EARLIER LAUNCH

Thousands of dollars which would have been paid in overtime wages will be saved by the decision to move up Endeavour's launch date by three days. "The fact that you can do a whole three-day countdown during a regular business week saves the bulk of the money. It's a significant savings," said Kennedy Space Center spokesman **George Diller.** NASA officials added that the September 30 launch date leaves little or no contingency time. Endeavour will be making its second STS 68 launch attempt, having aborted August 18 with 1.9 seconds left before liftoff. [Halvorson, **FLORIDA TODAY**, p. 2A, Sept. 17, 1994.]

September 19:LANDING PROSPECTS "IFFY"

"It's probably about 60 percent no-go" for a landing of Discovery today at Kennedy Space Center, according to NASA Mission Operations Director **Randy Stone.** The first opportunity to land at KSC will come at 2:23 p.m., the second at 3:55. There are two backup opportunities at Edwards Air Force Base, CA, at 5:24 p.m. and at 6:56 p.m. Discovery has enough consumables - food and water - to stay in space until Wednesday. The flight was originally planned to end September 18, but an extra day was added to the mission to allow for additional time to gather scientific information. [Halvorson, **FLORIDA TODAY**, p. 1A, Sept. 19, 1994.]

September 20:STS 64 ENDS IN CALIFORNIA

Blame it on the weather. Stormy weather kept the Space Shuttle Discovery from landing at Kennedy Space Center today; instead, mission managers opted for a mission ending touchdown at Edwards Air Force Base (CA) in the Mojave Desert. Discovery ended its 11-day mission in California at 5:13 p.m. EST. Commander **Richard N. Richards** has landed in California on three of his four Shuttle flights. Former astronaut **Loren Shriver,** now a senior Shuttle manager, said that "although engineers still have to review performance data from Discovery's flight, there are no problems that would stop Endeavour's flight." Endeavour's August 18 attempt to undertake its STS 68 mission was aborted at 1.9 seconds before liftoff when its computers shut down as a safety precaution. The engines have since been tested, notably in a recent test in Mississippi. [Halvorson, **FLORIDA TODAY**, p. 1A, Sept. 21, 1994.]

September 21:FALL LAUNCH SCHEDULE CHANGES

The Air Force and NASA are shuffling the launch schedule to the extent of swapping launch dates for the next Titan 4 liftoff and

that of Atlantis. The Shuttle was to have launched October 27 and will now be scheduled to begin its STS 66 mission on November 3. The Air Force's Titan 4 has been rescheduled for the October 27 date that Atlantis is vacating. Atlantis is being delayed a week because there is a shortage of Space Shuttle main engines which occurred when Endeavour was given engines originally assigned to Atlantis. The Titan launch on October 27 was made possible by an "easier than expected clean-up of its formerly contaminated payload." Lt. **Dave Honchul,** Air Force spokesman, said: "We've discovered that the problem was not as severe as we originally thought, and since the Shuttle moved off Oct. 27th, the Titan moved up to the 26th." As for the contamination, Honchul added, "We haven't got a good feel for the cause yet." Future launches include the STS 68 of Endeavour on September 30; the October 5 launch of a Martin Marietta Atlas rocket; the November 1 launch of a McDonnell Douglas Delta rocket - followed on November 3 with Atlantis; and the November 12 launch of another Atlas rocket. [Halvorson, **FLORIDA TODAY**, p. 2A, Sept. 22, 1994.]

September 27:STS 68: LAUNCH MINUS 1 DAY

Endeavour is at Launch Complex 39A awaiting liftoff Friday at 7:16 a.m. At the pad, the countdown for STS 68 has begun; the aft engine compartment has been closed and all ordnance connections have been made. There are no current issues or concerns which would prohibit launch. Current processing activities include: avionics system checkout; navigation aids activation; preparation for cryogenic reactant loading. STS 68 work scheduled: loading of cryogenic reactants; retracting of the rotating service structure and tanking operations are to begin at 11 p.m. tomorrow. The probability of launch weather criteria violation on September 29, September 30 or October 1 is 30%. The six-member STS 68 crew arrived for the second launch attempt at 8:15 a.m. [Banke, **FLORIDA TODAY**, pp. 1A & 5A, Sept. 29, 1994; **KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Sept. 27, 1994; **STS-68 Launch Weather Outlook For Friday, September 30,** Sept. 27, 1994.]

[]ORBITER UPDATES

The Space Shuttle Discovery, atop its Shuttle Carrier Aircraft, arrived at Kennedy Space Center this morning at 11:24 a.m. At the Shuttle Landing Facility, the Orbiter will be demated and towed to OPF Bay 2. Discovery landed at 5:30 p. m. EDT yesterday at Kelly Air Force Base [San Antonio, TX] and departed this morning at 8:15 a.m. EDT. Atlantis, meanwhile, continues to undergo preparations for its upcoming STS 66 flight. In OPF Bay 3, a leak check of the crew compartment is being performed today; the main engine installation will commence today with the emplacement of engine #3. Tomorrow engine #2 will be installed followed by engine #1 on September 29. The vehicle will be rolled over to the Vehicle Assembly Building either late on October 3 or early on October 4. In the Vertical Processing Facility, the interface verification test of the CRISTA-SPAS STS 66 payload began on Friday and was not completed till last night. The prime payload will be moved to the launch pad on

October 5. The eldest Shuttle, Columbia, has had its ferry flight tail cone installed and will be installed on the Orbiter Transporter for its trip to the mate-demate device at the SLF following Endeavour's STS 30 launch. The Columbia with its Shuttle Carrier Aircraft will depart Kennedy Space Center at 8:00 a.m. October 1 and make stops in Huntsville (AL), Houston (TX), and El Paso (TX) before completing its journey at the Rockwell plant in Palmdale (CA). [Halvorson, **FLORIDA TODAY**, p. 1A, Sept. 28, 1994; **KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Sept. 27, 1994.]

September 28:UNION'S HEALTH PROPOSAL FAILS

The International Association of Machinists and Aerospace Workers Lodge 166 strike against EG&G Florida, Inc. and its subcontractors continues and, at 86 days, is one of the longest in NASA history. The union made a health insurance proposal to EG&G today, but the Base Operations Contractor rejected it. Company spokeswoman **Judy Casper** said, "We have made clear that the offer we have made is our best and final offer. There is no compromise on the amount of money available for raises and health insurance." The major sticking point in the strike talks is the matter of health insurance. The union proposed an alternative to the company's insurance program but the proposal was rejected by EG&G. [Reid, **FLORIDA TODAY**, p. 16C, Sept. 29, 1994.]

September 29:STS 68: IN ORBIT AT LAST

The launch of the Space Shuttle Endeavour on mission STS 68 occurred right on time today at 7:16 a.m. EDT. This was the 65th launch of the Space Shuttle and the 7th for the Orbiter Endeavour. No significant issues were worked throughout the duration of the countdown. Post launch inspections of the pad reveal no unusual damage to the pad surface or the mobile launcher platform. The solid rocket booster retrieval ships have reached the spent boosters. They are plugged and under tow back to Port Canaveral. They are scheduled to arrive at the Port at about 10 a.m. Saturday. The six member crew of STS 68 includes: Commander **Michael Baker**, Pilot **Terry Wilcutt** and Mission Specialists **Steve Smith**, **Daniel W. Bursch**, **Peter Wisoff** and **Thomas D. Jones**. Landing is set for 11:58 a.m. on October 11 at Kennedy Space Center. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Sept. 30, 1994; Banke, **FLORIDA TODAY**, p. 2A, Oct. 4, 1994.]

[]STS 66 UPDATE

The Space Shuttle Atlantis is currently being readied in Orbiter Processing Facility Bay 3 for transport to the Vehicle Assembly Building on Monday, October 3. This weekend, efforts will center on completing the weight and center of gravity checks on the vehicle and mating Atlantis to the Orbiter transport system. Rollover to the Vehicle Assembly Building is set to occur late Monday evening [October 3]. Once in the VAB, Atlantis will be lifted and mated to the external tank. Rollout of the Shuttle to Pad 39B is scheduled for Monday, October 10. No official

launch date has been set for STS 66, but officials are targeting early November for the nearly 11-day mission. The primary payloads for the flight are ATLAS-3 and CRISTA-SPAS. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Sept. 30, 1994.]

[]DISCOVERY, COLUMBIA UPDATES

Discovery returned to Kennedy Space Center on Tuesday, September 27, following its landing at Edwards Air Force Base, CA, and subsequent ferry flight return. Discovery was towed to Orbiter Processing Facility Bay 2 at about 7 a.m. Wednesday, September 28. Work next week will center on opening the payload bay and continuing post-flight inspections. Discovery's next mission - STS 63 - is planned to occur in early February 1995 and will carry a crew of 6 astronauts. The Orbiter will fly to and around the Russian Space Station Mir and will conduct experiments in Spacehab-3. Meanwhile, Columbia is in OPF Bay 1 where work continues in preparation for transferring the vehicle for a scheduled six-month maintenance down period (OMDP). Plans to ferry Columbia to California on Saturday were delayed today due to anticipated adverse weather at Kennedy Space Center this weekend. Columbia is now scheduled to depart no earlier than Monday, October 3. The vehicle will be rolled to the Shuttle Landing Facility (SLF) later Sunday (October 2) afternoon and mated with the 747 Shuttle Carrier Aircraft. When Columbia returns to Kennedy Space Center early next year, processing will begin for mission STS 73 scheduled for launch in late summer 1995. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Sept. 30, 1994.]

OCTOBER

October 1:GORE: COLUMBIA WILL FLY

While in Brevard County for a political function today, Vice President **Al Gore** expressed optimism that Columbia will remain an active member of the Space Shuttle fleet: "We do not think there's going to be any mothballing of a Shuttle. We're also going to hold everyone to the national commitment we made to ourselves that never will we cut personnel below levels that will compromise safety. Never again." The Vice President did not cite an instance where smaller numbers of personnel alone had ever created a safety problem. Gore continued, saying, "Director **Goldin** is expressing a great deal of confidence that we're going to be able to manage this latest congressional cutback [of $141 million], because it's not of the size that some might have anticipated earlier. Actually, the expansion of the International Space Station Program to include the Russians and their expertise and experience has built more support for America's space program than it has had in a long time." [Coleman, Ivory and Platt, **FLORIDA TODAY**, p. 11A, Oct. 2, 1994.]

October 3:ATLAS LAUNCH FORECAST GOOD

A Martin Marietta Atlas is poised to launch from Cape Canaveral Air Station October 5 between 1:53 and 3:53 a.m. The commercial rocket will carry an INTELSAT communications satellite which will be used for telephone and television transmissions along the western U. S. coast. Meteorologists rate the chances of launch at 80%. "The rain and endless cloud cover will be slowly moving out of the area. The winds will be my main concern," said **Joel Tumbiolo**, Weather Adviser for the Air Force's 45th Space Wing. Final readiness reviews are underway and prospects appear positive, according to **Richard Gibb**, Martin Marietta's Site Director. The liftoff will be only the second in which strap-on boosters have been used with an Atlas rocket; the first instance was December 15 last year when an AT & T Telstar satellite was orbited. [Cabbage, **FLORIDA TODAY**, p. 2A, Oct. 4, 1994; Halvorson, **FLORIDA TODAY**, p. 2A, Oct. 5, 1994; Halvorson, **FLORIDA TODAY**, p. 2A, Oct. 6, 1994.]

October 4:STS 68: ON ORBIT UPDATE

The initial post-flight assessments of the solid rocket boosters at Hangar AF indicate no unexpected conditions and no anomalies. Booster disassembly inspections will continue throughout the day. The crew of STS 68 includes Commander **Michael Baker**, Pilot **Terry Wilcutt**, and Mission Specialists **Steven Smith**, **Daniel W. Bursch**, **Peter Wisoff** and **Thomas D. Jones**. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Oct. 4, 1994.]

[]STS 66: ATLANTIS UPDATE

Today, workers will mate the external tank and boosters to be utilized by the Space Shuttle Atlantis in next month's STS 66 mission. The mission will feature as primary payloads the Atlas-3/Crista-Spas experiments. The Orbiter has been moved from

the OPF to the Vehicle Assembly Building's High Bay; first motion occurred today at 8:25 p.m. The vehicle has been rotated to the vertical position and lifted into the High Bay. STS 66 work scheduled: removal and replacement of the scratched outside pane of the no. 6 window; the Shuttle interface test and rollout to Launch Complex 39B on October 10. STS 66 is targeted for launch on November 10 at 7:42 a.m. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Oct. 4, 1994.]

[]STS 63: DISCOVERY NEWS

The Discovery's flight control frequency response test has been completed in preparation for its STS 63 mission; the mission is currently targeted for early February. Workers in OPF Bay 2 have also gained access to the Orbiter's aft engine compartment and removed the ferry flight tailcone from the vehicle. Today, technicians will open the vehicle's payload bay doors and make structural checks and tests. Forward reaction control system functional checks are scheduled. The STS 63 mission is scheduled to last for just over 8 days and employ a crew of six. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Oct. 4, 1994.]

[]COLUMBIA READIED FOR OMDP

Columbia will be placed on the Orbiter transporter tonight and be moved from OPF Bay 1 to OPF Bay 3 tomorrow to allow for open bay work in Bay 1. On Friday (October 7), Columbia will be transported to the Shuttle Landing Facility for a Saturday ferry flight departure to Palmdale, CA, for the Orbiter's scheduled six-month Orbiter maintenance down period (OMDP). When Columbia returns to KSC early in 1995, processing will begin for mission STS 73 tentatively set for launch in late summer 1995. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Oct. 4, 1994.]

[]PARTNERSHIP FOR TECHNOLOGY

A new type of cost-sharing partnership to develop advanced technology for both NASA and industry was expanded at Kennedy Space Center when a follow-on agreement was recently signed to build an additional type of signal processor for both Space Shuttle processing and commercial use. Under the new agreement, KSC and its partners will design and develop the Advanced Data Acquisition System (ADAS) that will be used in a future system to interpret engineering data coming from sensors at the Space Shuttle launch pads during liftoff. The ADAS also has commercial applications for use, such as in test range telemetry systems.

"ADAS was spawned from our success in developing our first targeted technology through this partnership," said **Bill Sheehan,** Chief of KSC Technology Programs and Commercialization Office. "The team was able to produce a production prototype of the Advanced Universal Signal Conditioning Amplifier (USCA) in less than a year. This process could normally take three to five years if it had been developed in the traditional manner." The cost-sharing partnership is the first of its kind in the country

and is based on NASA's new dual-use concept, Sheehan said. The concept calls for the formulation of NASA-industry teams to work together from the ground up to develop new technology for both agency and commercial use. In addition to saving development time, the KSC/State of Florida-pioneered partnership provides cost-saving, economic development and educational benefits, Sheehan pointed out. The partners include KSC, the State of Florida's Technological Research and Development Authority (TRDA), Loral Test and Information Systems (LTIS), Brevard Community College and Bethune-Cookman College. The TRDA, LTIS and KSC are each funding one-third of the project development costs.

"Under this arrangement, we and LTIS will both benefit by gaining a product at far less expense than if each had to develop the product on our own," Sheehan said. "The state benefits from helping promote economic development in Florida, while the colleges are able to expand their educational programs by having engineering co-ops participate in a working program to develop new technology." The co-ops from Bethune-Cookman will be involved in the ADAS project, Sheehan added. [**NASA/KSC Release No. 114-94**, Oct. 4, 1994.]

October 5:VISITOR PROGRAM CONTRACT BIDS

Bids have been received for the concession contract to manage and operate Kennedy Space Center's Public Visitor Program and the facilities of Spaceport USA. Companies that submitted bids for the concession agreement include: The Bionetics Corporation (Hampton, VA); Delaware North Parks Service (Buffalo, NY); and TW Recreational Services (Spartanburg, SC), the incumbent contractor. The successful offeror will operate Spaceport USA and conduct a variety of educational and information programs, including providing tours of Kennedy Space Center and portions of Cape Canaveral Air Station. Spaceport USA attracts the largest attendance of any NASA visitor center and ranks as one of Florida's top attractions. In 1993, an estimated 2.4 million people visited Spaceport USA. Entirely self-supported, Spaceport USA's gross revenues totaled nearly $40 million last year. NASA expects to enter into a new concession agreement covering a 10-year period beginning May 1, 1995, with an option to extend for one 5-year period. [**NASA/KSC Release No. 115-94**, Oct. 5, 1994.]

October 6:EXTRA DAY FOR ENDEAVOUR AUTHORIZED

STS 68 Mission Managers today announced that Endeavour has been granted an additional day in space to conduct further Space Radar Laboratory activities. Landing is now set for Kennedy Space Center's Shuttle Landing Facility on Tuesday, October 11, at 11:38 a.m. EDT. A second landing opportunity exists at 1:08 p.m. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Oct. 6, 1994.]

[]STS 66: TANK/SRBS MATED

In the Vehicle Assembly Building, technicians have completed the mating of the STS 66 external tank with its solid rocket boost-

ers. Atlantis has now been moved to the VAB, rotated to its vertical position and hoisted up into High Bay 3. Today, technicians are undertaking to install the Orbiter's heatshield, secure the main engines, remove and replace the scratched outer pane of the no. 8 window and conduct the Shuttle interface test. STS 66 work scheduled: rolling the Orbiter out to Launch Complex 39B on the early morning of Monday, October 10, and conducting launch pad validations. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Oct. 6, 1994.]

[]STS 63: MIR RENDEZVOUS/SPACEHAB

Discovery is undergoing preparations for its STS 63 in early February of 1995. Technicians working on the Orbiter in OPF Bay 2 have completed the flight control frequency response test; they have accessed the vehicle's aft engine compartment and removed the ferry flight tailcone. Today, technicians are conducting structural checks and tests, inspecting the main engines and removing the vehicle's tire and wheel assembly. STS 63 work scheduled: closing the payload bay doors; forward reaction control system functional checks and TACAN activation and testing. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Oct. 6, 1994.]

[]STS 73: U.S. MICROGRAVITY LABORATORY

Columbia has been placed on the Orbiter transporter and will be rolled over to the Shuttle Landing Facility early Friday [October 7] morning. The Orbiter will be mated to the 747 Shuttle Carrier Aircraft for a scheduled Saturday ferry flight departure to Palmdale, CA. Once in California, Columbia will undergo a scheduled six-month Orbiter maintenance down period (OMDP). When Columbia returns to KSC early next year, processing will begin for its STS 73 mission which is set to launch in late summer 1995. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Oct. 6, 1994.]

[]SUCCESSFUL ATLAS LAUNCH: 2:35 A.M.

This morning at 2:35, Martin Marietta's Atlas launch vehicle was successfully launched from Cape Canaveral Air Station. The Atlas manufacturer is planning to launch 13 more missions before the end of 1995. "The launch team down here is up to the challenge. It's going to be a very, very busy 14 months," said Martin Marietta spokeswoman **Julie Andrews.** This morning's Atlas 2AS rocket carried an INTELSAT satellite in its nosecone; the satellite was deployed 28 minutes after launch. [Halvorson, **FLORIDA TODAY**, pp. 1B-2B, Oct. 7, 1994.]

October 7:STS 68, 66 UPDATES

Endeavour will conclude its STS 68 mission at Kennedy Space Center on Tuesday, October 11, at 11:36 a.m. EDT. A second landing opportunity exists at 1:06 p.m. Mission Managers have extended the duration of the mission by one day. The members of the STS 68 crew are: Commander **Michael A. Baker**, Pilot **Terrence W. Wilcutt** and Mission Specialists: **Steven L. Smith, Daniel W.**

Bursch, Peter J. K. Wisoff and **Thomas David Jones.**

Preparations for next month's STS 66 mission continued today at the space center. Technicians have removed and replaced Orbiter window number 8 and have mated Atlantis with its external tank and solid rocket boosters in the VAB; the stack is now in the VAB High Bay 1. Today, workers are installing heatshields, securing the Orbiter's main engines, conducting the Shuttle interface test and making rollout preparations for the transport of Atlantis to the pad on October 10. Scheduled activities include: the rollout, pad validations, opening the payload bay doors and the installation of the ATLAS-3/Crista-Spas payload. The six-member crew will arrive at Kennedy Space Center for the terminal countdown demonstration test which will be conducted October 14. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Oct. 7, 1994.]

[]STS 69: MIR RENDEZVOUS MISSION

The Space Shuttle Discovery remains in Orbiter Processing Facility Bay 2 where the vehicle is being processed for its STS 69 mission, tentatively scheduled for early February 1995. The Orbiter's payload bay doors have been closed; the flight control frequency response test has been concluded; technicians have gained access to the Orbiter's aft engine compartment and they have removed the ferry flight tailcone. Today, workers have conducted structural checks and tests, made main engine inspections and removal preparations and removed tire and wheel assemblies. STS 69 work scheduled for next week" forward reaction control system functional checks; TACAN activation and tests; removal of LITE and Spartan 201 payloads and removal of the vehicle's main engines. The STS 69 mission will last just over eight days and employ a crew of six astronauts. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Oct. 7, 1994.]

[]STS 73: USML MISSION UPDATE

Columbia's next mission will be STS 73, now scheduled for late summer 1995. Today, however, Columbia was transported to the Shuttle Landing Facility early this morning where it departed the Orbiter Processing Facility at about 4 a.m. About 6 a.m. it was in the Mate Demate device being mated to the 747 Shuttle Carrier Aircraft for a scheduled sunrise October 8 ferry flight departure for Palmdale (CA). In the Rockwell International plant in Palmdale, Columbia will undergo a scheduled six-month Orbiter maintenance down period (OMDP). Columbia will be ferried back to Kennedy Space Center early next spring and processing will begin then for the STS 73 mission. The prime payload for the flight will be the United States Microgravity Laboratory-2. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Oct. 7, 1994; **KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Oct. 11, 1994.]

October 9:USBI EMPLOYEES OF THE MONTH AWARDS

Veronica Ortiz-Allen and **Rick Kelly,** respectively, have been chosen August and September Employees of the Month by USBI.

Ortiz-Allen was recognized for saving the company money by search for and deletion of obsolete business forms. She was also cited for her positive attitude and enthusiasm. "Veronica goes beyond the call of duty. She is always willing to help others, offering rather than waiting to be asked. Her conscientiousness saved the company considerable expense with the deletion of 155 company forms," said **Kathie Hughes**, who is the Supervisor of Ms. Ortiz-Allen, a USBI employee for six years. **Rick Kelly** was awarded September Employee of the Month for "excellence in maintaining chemical water treatment for USBI's air conditioning systems at the booster assembly and refurbishment facility." Kelly's supervisor - **Al Puskus** - said, "As a direct result of his superior efforts, the chillers' heat transfer surfaces have been kept impeccably clean and operating at peak efficiency. This helps reduce energy consumption and maintenance problems in a critical system that supports operations." ["USBI Workers Receive Employee Awards," **FLORIDA TODAY**, p. 9E, Oct. 9, 1994.]

[]ROCKWELL WORKERS WIN SNOOPYS

The Silver Snoopy Award has been given to six Rockwell employees for contributions to safety and success in the manned spacecraft program. The award winners were: **Debra Gray** (Port St. John); **Phillip Koon** (Orlando); **Joe Barron** (Cape Canaveral); **John Madeiros** (Titusville); **Jack Klein** (Cocoa); and **Charlotte Todd** (Merritt Island). Astronauts gave the employees a Silver Snoopy poster, framed certificate and a pin flown on a recent Space Shuttle mission. ["Rockwell Workers Honored by Astronauts," **FLORIDA TODAY**, p. 9E, Oct. 9, 1994.]

[]47 KSC EMPLOYEES WIN HONOREE AWARDS

The Honoree Award - sponsored by the Manned Space Flight Awareness Program - has been given to 47 civil service and contractor employees. The honorees were given a special reception in their honor at which astronauts and senior NASA and space industry officials were present. They also viewed the STS 64 launch from a special VIP viewing site. The award winners included civil servants: **William Roy**, **Randy Jordan**, **Denise Bressler**, **John Bryan Boatright**, **Kay Heck**, **Laurette Brown**, **Francis Merceret** and **C. Wayne Ranow**. Contractor employees were : **Harold Kennedy III** (Sherikon Space Systems, Inc.); **Paula Daniels**, **Judith Lynna Frisbee**, **Alvin Lightsey** and **Christine Tobin** (EG&G Florida, Inc.); **Donald Tan** (HFS, Inc.); **David Fraine** (Thiokol Corp.); **Wynn Rostek** (I-Net); **Carole McCormick** (Northrup Grumman Corp.); **Jean Paille** (Martin Marietta Manned Space Systems); **Zoltan Nagy** (Wiltech Corp.); **Kyle Fair** (Schuller International, Inc.); **Lawrence Grzyll** (Mainstream Engineering Corp.); **Richard Horton** (Allied Signal Controls and Accessories); **Daniel Sweety** (Rockwell Aerospace, Rocketdyne Division); **Jan Johnston** (ET Inc.); **Philip Arsenault**, **Ayse Isil Black** and **Patricia A. Maguire** (Rockwell Aerospace, Space Systems Division); **Carmen Charlton**, **Denise Chreist** and **Lois Kroupa** (United Technologies, USBI Co.); **Harold Baker**, **Jr.**, **Jose Figueroa**, **Scott Gray**, **Sherry Reed** and **Brian Tucker** (McDonnell Douglas Space and Defense Systems-KSC); and Lockheed Space Operations Co. employees: **Dean Breaux**, **Raymond Campion**, **William Childers**, **James Crews**, **Roberto**

Galinanes, Ellis Hall, Charles Hallett, Jesse Harris, Nancy Holzen, Randall Kelso, Benjamin Pruden and **Alexis Walker.** ["NASA Honors Civil, Contractor Workers,"**FLORIDA TODAY**, p. 9E, Oct. 9, 1994.]

October 10:STS 68, 66 UPDATES

Endeavour's landing is set for Kennedy Space Center's Shuttle Landing Facility on Tuesday, October 11, at 11:36 a.m. EDT, on the 182nd orbit. A second landing opportunity exists at 1:06 p.m. on orbit 183. Weather forecasts suggest that cloudy skies will prevent a KSC landing and that a landing at Edwards Air Force Base, CA, is likely. Endeavour has already had an unplanned 11th day in space. While in orbit, the crew of Endeavour spotted smoke along the Kuwait and Iraq border where tensions have increased because of Iraqi troop movements in the area. Meanwhile, the Space Shuttle Atlantis continues to undergo preparations for its November 3 launch. The Orbiter rolled out to Launch Complex 39B on October 9; first motion out of the VAB came at 10:30 p.m. Workers have completed the installation of the vehicle's heatshield; the main engines have been secured and the Shuttle interface test has been completed. Today, technicians at LC 39B will conduct pad validations and rotate the service structure to a position around the Orbiter. STS 66 work scheduled includes: opening the payload bay doors and the installation of the payload; the crew arrival for the terminal countdown demonstration test which occurs October 14. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Oct. 10, 1994; **NASA/KSC News Release No. 117-94**, Oct. 10, 1994; "Shuttle Atlantis...[Photo]," **FLORIDA TODAY**, p. 1B, Oct. 11, 1994; Banke, **FLORIDA TODAY**, pp. 1A & 6A, Oct. 11, 1994.]

October 11:ENDEAVOUR LANDS AT EDWARDS

Endeavour's two landing opportunities at Kennedy Space Center today were waved off due to clouds and the potential for rain in the area of the landing facility. Endeavour was then directed to land at Edwards Air Force Base (CA). Landing at Edwards occurred at 1:02 p.m. EDT today on concrete runway 22. Main gear touchdown came at 1:02.09 p.m. EDT. The Mission Elapsed Time was 11 days, 5 hours, 46 minutes and 9 seconds. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Oct. 11, 1994.]

[]STS 66: PAYLOAD BAY DOORS OPENED AT PAD

The Space Shuttle Atlantis is now located at Launch Complex 39B from which it will be launched on its STS 66 mission on November 3. The launch time is 11:56 a.m. EST. Once at the pad, the rotating service structure was moved to surround the vehicle; the main engines were secured and the vehicle's payload bay doors were secured. Today, technicians conducted pad validations; installed payloads and made main engine leak checks. The STS 66 crew is expected to arrive today at 4:45 p.m. STS 66 scheduled work includes: crew emergency egress training and the terminal countdown demonstration test set for October 14. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Oct. 11, 1994.]

[]STS 63 MIR RENDEZVOUS UPDATE

The Discovery is located in OPF Bay 2 where it is being processed for its early February STS 63 mission. Completed tasks include: tire and wheel assembly removal; closing of the payload bay doors; completion of the flight control frequency response test and gaining access to the vehicle's aft engine compartment. Currently, technicians are conducting forward reaction control system functional checks; preparing to remove the LITE and Spartan 201 payloads from the Orbiter; conducting structural checks and tests and inspecting main engines and preparations for their removal. STS 63 work scheduled includes: TACAN activation and testing; removal of the LITE and Spartan 201 payloads and removal of the Space Shuttle main engines. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Oct. 10, 1994.]

[]DISCOVERY: PAYLOAD BAY DOORS OPENED

In Orbiter Processing Facility Bay 2 technicians processing Discovery have completed structural checks and tests; tire and wheel assembly removal; opened payload bay doors; finished the flight control frequency response test and deployed the vehicle's Ku-band antenna. Today, workers will continue main engine removal preparations, forward reaction control system functional checks and preparations to remove the LITE and Spartan 201 payloads. STS 63 work scheduled includes: TACAN activation and test; removal of the LITE and Spartan 201 payloads and removal of the Space Shuttle main engines. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Oct. 10, 1994; **KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Oct. 11, 1994.]

[]COLUMBIA: OFF TO CALIFORNIA FOR OMDP

Columbia, riding atop the 747 Shuttle Carrier Aircraft, departed Kennedy Space Center's Shuttle Landing Facility at 8:45 a.m. Saturday, October 8, and arrived in Huntsville, AL, where it remained Saturday and Sunday nights. The Orbiter/SCA departed Huntsville this morning at about 8:05 a.m. EDT for Ellington Field (Houston, TX) to refuel before continuing the trip to Palmdale, CA, where it will undergo a scheduled six-month Orbiter maintenance down period (OMDP). When Columbia returns to KSC early next year, processing will begin for mission STS 73 scheduled for launch in late summer of 1995. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Oct. 10, 1994; **KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Oct. 11, 1994.]

October 13:STS 66: PAYLOAD SERVICING

The initial CRISTA-SPAS cryogenic servicing for the STS 66 mission has been completed. Today, workers are conducting Atlantis's terminal countdown demonstration test (TCDT). Additional tasks today include: crew compartment stowage activities for the TCDT; astronaut pad emergency egress training; main propulsion system leak checks; preparations for the STS 66 Flight Readiness Test and preparations for the pre-launch storable pro-

pellant loading. STS 66 work scheduled: TCDT T-0 at 11:00 a.m. October 14; KSC Launch Readiness Review on October 14; the Flight Readiness Test will be conducted October 14-15 and the CRISTA-SPAS interface verification test (IVT) will be conducted October 17. There are presently no issues or concerns being worked. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Oct. 13, 1994.]

[]SHUTTLE FLEET UPDATE

The Space Shuttle Discovery is in OPF Bay 2 where its main engines are being removed. The LITE-1 and Spartan payloads were removed from the payload bay yesterday and overnight were transported to the Operations and Checkout Building. The vehicle's next mission will be STS 63 which is tentatively scheduled for February 1995. At NASA's Dryden Research Facility [Edwards Air Force Base, CA], Endeavour is positioned in the mate-demate device. Overnight, the Space Radar Laboratory data tapes were turned over to couriers from the Jet Propulsion Laboratory for delivery to Pasadena, CA. The residual cryogenic reactants are being offloaded today. Afterwards inspections of the water spray boilers are scheduled. The ferry flight back to KSC is set to begin October 17. Columbia is at the Rockwell plant in Palmdale, CA; it is currently being removed from the 747 Shuttle Carrier Aircraft. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Oct. 13, 1994.]

October 14:STS 66: ON SCHEDULE; NO CONCERNS

Preparations for the launch of Atlantis on its STS 66 mission are proceeding on schedule; there are presently no issues of concern to mission managers. The terminal countdown demonstration test [TCDT] was completed at 11:00 a.m. today; an astronaut Orbiter emergency egress simulation was conducted and crew members took part in launch pad safety training. Both the flight readiness test [FRT] and the KSC launch readiness review [LRR] are underway. STS 66 work scheduled: flight readiness test conclusion; CRISTA-SPAS interface verification test; ATLAS battery charging; helium signature test; calibration of the inertial measurement units [IMU]; storable propellant loading; auxiliary power unit [APU] hot firing. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Oct. 14, 1994.]

[]STS 63: DISCOVERY UPDATE

In OPF Bay 2, Discovery's main engine removal is complete. Yesterday testing of the radar altimeter and the Ku-band communications system was performed. Also, the waste containment system was deserviced. In the Operations and Checkout Building, the LITE and Spartan payloads were removed from the payload canister yesterday. Today Spartan is being transported to Hangar AO where its data tapes will be removed and the spacecraft will be prepared for its next spaceflight in February 1995. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Oct. 14, 1994.]

[]STS 67: ASTRO-2

At NASA's Dryden Flight Research Facility at Edwards Air Force Base, Endeavour is positioned in the mate-demate device. The residual cryogenic reactant offloading is complete. Preparations are underway for inspections of the water spray boiler system today. It is believed likely that the water tank associated with water spray boiler #3 had leakage during landing. The ferry flight back to KSC is scheduled to begin on October 17. A two-day ferry flight is planned. Meanwhile, at the Rockwell plant in Palmdale, CA, Columbia was removed from the 747 Shuttle Carrier Aircraft yesterday and towed to the hangar. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Oct. 14, 1994.]

October 17:ENDEAVOUR: READY FOR FERRY FLIGHT

The Space Shuttle Endeavour has been mated to the 747 Shuttle Carrier Aircraft and turn-around operations at Edwards Air Force Base are completed. Departure from Edwards AFB is scheduled for the morning of October 18 at dawn. A weather briefing will be held today at Edwards to determine the itinerary back to Kennedy Space Center. Endeavour landed at Edwards on October 11 because of inclement weather in Florida. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Oct. 17, 1994.]

[]STS 66: TCDT COMPLETED

At Kennedy Space Center, the terminal countdown demonstration test [TCDT] for the STS 66 mission of Atlantis has been completed along with the crew's emergency egress training. In addition, other required tasks have been completed, i.e., main engine leak checks; launch readiness review; hydraulic operations; pad validations; main engine flight readiness testing and the installation of the mission payload. Today, pad workers are conducting the mission's helium signature test; cavity purges and leak checks; payload interface verification tests; and preparations to load hypergolic fuels. STS 66 work scheduled: loading of hypergolic fuels; hot firing of three auxiliary power units and, on October 19, the flight readiness review which is conducted prior to every Shuttle mission. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Oct. 17, 1994.]

[]DISCOVERY PROCESSING FOR STS 63

Technicians in Orbiter Processing Facility Bay 2 have removed Discovery's main engines and the main engine heatshields. The LITE and Spartan 201 payloads have also been removed. They have completed the TACAN activation and testing, made structural checks and tests and completed tire and wheel assembly removal. Today, technicians will make preparations to remove the forward reaction control system and preparations to off-load residual hypergolic fuels. On the processing schedule are the removal of the forward reaction control system and the installation of the Orbiter's drag chute. Discovery's STS 63 mission is scheduled for early February and will last for just over eight days. Landing is planned to occur at Kennedy Space Center four hours into the ninth day of the mission. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Oct. 17, 1994.]

October 18:ENDEAVOUR: WEATHER HALTS FERRY FLIGHT

The Orbiter Endeavour has been mated to the 747 Shuttle Carrier Aircraft and turn-around operations at Edwards Air Force Base are complete. Departure from Edwards had been scheduled for this morning but were again postponed due to weather concerns in Texas. Endeavour will remain at Edwards today and make attempts to depart at first light tomorrow pending additional weather assessments. The itinerary back to Kennedy Space Center will be determined at a weather briefing to be held tonight at Edwards. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Oct. 18, 1994.]

[]STS 66: PAYLOAD INSTALLED

At Launch Complex 39B, the ATLAS/CRISTA-SPAS payload has been installed in the Atlantis cargo bay. Other STS 66 tasks completed include: cavity purges and leak checks and payload interface verification tests. Technicians are today involved in conducting the mission's helium signature test, making preparations to load hypergolic fuels, calibrating inertial measurement units and charging the ATLAS payload battery. STS 66 work scheduled: loading hypergolic fuels, opening the rotating service structure, hot firing the three auxiliary power units and conducting the flight readiness review tomorrow. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Oct. 18, 1994.]

[]STS 63: PAYLOADS REMOVED FROM DISCOVERY

Discovery continues to undergo processing activities in Orbiter Processing Facility Bay 2 where hydraulic operations have been completed. The Orbiter's main engines and heat shields have been removed as have the LITE and Spartan 201 payloads. Today, technicians will install the vehicle's drag chute, prepare to remove the forward reaction control system and to off-load hypergolic fuels. STS 63 work scheduled: removal of the forward reaction control system and off-loading of hypergolic fuels. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Oct. 18, 1994.]

October 19:STS 66 TO LAUNCH NOV. 3

NASA today targeted November 3 as the launch date for Space Shuttle mission STS 66, the third flight of an Earth observing payload called ATLAS [Atmospheric Laboratory for Applications and Science]. Shuttle Atlantis and a six person crew will be launched during a window extending from 11:56 a.m. to 12:58 p.m. EDT. The 11-day mission is scheduled to end November 14 with a landing at the Kennedy Space Center. The November 3 launch date is predicated upon a successful launch of the Wind spacecraft from the Eastern Test Range on November 1 aboard a Delta rocket. The STS 66 crew is led by Commander **Donald R. McMonagle,** Pilot **Curtis Brown.** Mission Specialists are **Ellen Ochoa, Joseph Tanner, Jean Francois-Clervoy** and **Scott E. Parazynski.** The remote sensing laboratory aboard Atlantis will study the Sun's energy output, the middle atmosphere's chemical makeup and how these

factors affect global ozone levels. STS 66 will mark the 66th launch of the Space Shuttle and the 13th flight of Atlantis. [**NASA/KSC Press Release: 94-173,** Oct. 19, 1994.]

October 20:STS 66: FRR COMPLETED

The Space Shuttle Atlantis continues to undergo preparations for its November 3 STS 66 mission. The mission's flight readiness review (FRR) has been completed as has the CRISTA-SPAS interface verification test (IVT). Technicians are currently loading storable propellants and will begin to load fuel tonight. STS 66 work scheduled: auxiliary power hot firing; helium signature leak test; installation of contingency EVA spacesuits; loading mass memory units with computer software; final ordnance work; external tank purge; arrival of the STS 66 crew is expected at 11:30 a.m. October 31 and the countdown will begin at 4:00 p.m. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Oct. 20, 1994.]

[]DISCOVERY, ENDEAVOUR UPDATES

Discovery's next mission, STS 63, will carry Spacehab-3 and Spartan as prime cargo and will feature a rendezvous with the Russian Space Station Mir. The vehicle is being processed now in the OPF where the forward reaction control system was removed last night and transported to the Hypergolic Maintenance Facility in the KSC Industrial Area this morning. Today the Orbiter's payload bay deconfiguration is underway. Offloading the residual hypergolic propellants is scheduled for Saturday. Endeavour, riding atop the 747 Shuttle Carrier Aircraft (SCA) departed Dyess Air Force Base (Abilene, TX) this morning at 11 a.m. After a refueling stop at Eglin Air Force Base in the Florida panhandle, the duo departed at 3:30 p.m. bound for KSC. The mated pair landed on the Shuttle Landing Facility at 5:05 p.m., according to NASA officials. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Oct. 20, 1994.]

[]STRIKE TALKS IN WASHINGTON

The official word from EG&G Florida spokeswoman **Judy Casper** is: "We are continuing to meet in Washington and progress is being made." Discussions between EG&G (BOC Contractor) and the International Association of Machinists are being held at the Federal Mediation and Conciliation Service headquarters in Washington. Union spokesman **Rene Garcia** said, "That the talks will go on through the weekend is pretty significant. I thought before it started that if they stayed up there it would be good news." If the strike lasts beyond October 23, it will be the longest strike in KSC history. Boeing workers struck for 111 days in 1978. Kennedy Space Center Director **Robert L. Crippen** has joined the process to the extent of urging an agreement. Joining Crippen were officials of NASA and the Department of Labor. "All the issues are being discussed, including health insurance, general wage and increases and work rules. While no resolution has been reached, the parties are working hard to settle their differences," said IAM General Vice President **R. Thomas Buffenbarger**. [Reid, **FLORIDA TODAY**, pp. 14C & 13C, Oct. 15,

1994; Reid, **FLORIDA TODAY**, p. 18C, Oct. 21, 1994; Hebert, **USFMCS News Release**, Oct. 21, 1994.]

October 24:BUSINESS EXPO PLANS

The Kennedy Space Center Small Business Council is gearing up for the fifth annual KSC Business Opportunities Expo to be held at the Port Canaveral Cruise Terminal 5 on November 1 from 9:00 a.m. till 3:00 p.m. Admission is free. "If your market is the Space Coast, don't miss Expo `94. Whether your firm is large or small, seeking government or commercial contacts, this event provides the ultimate opportunity to meet with the area's major players under one roof," said **Ann Watson**, the NASA/KSC small business specialist. The event unites KSC purchasing and technical representatives with more than 200 potential suppliers, and promotes teamwork and networking among the exhibitors. Counselors from NASA, other government agencies and the KSC prime contractors will be on hand to answer questions and discuss upcoming business opportunities. Exhibits will feature a wide range of the latest concepts and technologies with applications to the space program. [**NASA/KSC Release No. 121-94**, Oct. 24, 1994.]

October 25:STS 66: ATLAS-3/CRISTA-SPAS

The Space Shuttle Atlantis's first mission since returning from California is STS 66 which is scheduled to launch November 3 from Launch Complex 39B. Technicians at the pad have completed Orbiter mid-body umbilical leak checks and loading of hypergolic fuels, water spray boiler inspections and have opened the vehicle's payload bay doors. Today, workers are implementing aft engine compartment close-outs and installing and checking out contingency space suits. STS 66 work scheduled: ordnance installation; pressurizing hypergolic reactant tanks; purging the external tank and completing aft close-outs. Atlantis will launch at 11:56 a.m.EST on a mission lasting for 10 days and 20 hours. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Oct. 25, 1994.]

[]STS 63: DISCOVERY PROCESSING UPDATE

Discovery continues to undergo processing activities in OPF Bay 2 where the vehicle's forward reaction control system has been removed; hydraulic operations have been conducted and the Space Shuttle main engines and heatshields have been removed. Today's processing activities include: preparations to off-load hypergolic fuels; auxiliary power unit leak checks; ammonia servicing; functional checks of the orbital maneuvering system; stacking solid rocket boosters in the Vehicle Assembly Building. STS 63 work scheduled: installation of the drag chute and off-loading of residual hypergolic reactants. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Oct. 25, 1994.]

[]STS 67-ASTRO-2

The Space Shuttle Endeavour is in Orbiter Processing Facility Bay 1 where technicians have completed preparations to open the vehicle's payload bay doors and have gained access to the aft engine compartment. Today's activities: removing water spray

boiler no. 3; post-mission inspections; opening payload bay doors; removing the tailcone. STS 67 work scheduled: removal of the main engine heatshields; removal of STS 68 payloads and off-loading of residual hypergolic reactants. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Oct. 25, 1994.]

October 26:STS 66: ORDNANCE INSTALLED

At Launch Complex 39B, pad technicians have installed the STS 66 mission ordnance and loaded the hypergolic fuels. Technicians installed and checked out the contingency space suits in Atlantis and have conducted water spray boiler inspections. Today, workers will pressurize hypergolic reactant tanks and implement aft engine compartment closeouts. STS 66 scheduled work: purging of the external tank; completion of the aft closeouts; final payload servicing prior to launch on November 3 and closing of the payload bay doors for flight. Launch is set for 11:56 a.m. EST. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Oct. 26, 1994.]

[]STS 63: PRSD TESTS FINISHED

The Space Shuttle Discovery is in Orbiter Processing Facility Bay 2 where technicians have just completed the vehicle's power reactant and distribution storage (PRSD) tests. Today's tasks include: preparations to off-load hypergolic fuels; auxiliary power unit leak and functional checks; ammonia servicing; functional checks of the orbital maneuvering system; stack solid rocket boosters in the Vehicle Assembly Building. Scheduled STS 63 tasks: the installation of the mission drag chute and off-loading of residual hypergolic reactants. The STS 63 mission is expected to launch in early February and will carry a crew of six. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Oct. 26, 1994.]

[]STS 67: IN LATE FEBRUARY

In OPF Bay 1, technicians processing the Space Shuttle Endeavour have removed the vehicle's water spray boiler number 3, opened the Orbiter's payload bay doors and removed Endeavour's tailcone. Today, workers will conduct post-mission inspections and main engine and aerosurface repositioning. The processing schedule includes: removing Endeavour's main engine heatshields, removing the STS 68 payloads and off-loading residual hypergolic reactants. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Oct. 26, 1994.]

October 27:STS 66: ATLANTIS GETS TORQUE TEST

Managers decided today to perform a special torque test on the Space Shuttle Atlantis' three water spray boilers. Six water valves (2 on each boiler) and the associated piping will be checked for potential weaknesses or corrosion. The test was deemed necessary following discovery of a failed valve on one of Endeavour's boilers. Aft closeout work will be extended through the weekend. No impact to launch is expected. At LC 39B, technicians have completed several tasks: pressurizing of the hy-

pergolic reactant tanks; installation and checkout of the mission's contingency space suits; airlock closeouts; ordnance installation; loading of hypergolic fuels. Today, pad techs will purge the external tank; implement aft engine compartment closeouts; and conduct water spray boiler inspections. STS 66 work scheduled includes: completion of aft closeouts; final payload servicing for flight and closing the payload bay doors for flight on November 3. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Oct. 27, 1994.]

[]STS 63: AMMONIA SERVICING

In OPF Bay 2, technicians have completed ammonia servicing and power reactant and storage distribution [PRSD] tests on Discovery. Today, OPF techs will prepare to off-load hypergolic fuels; conduct auxiliary power unit leak and functional checks; make functional checks of the orbital maneuvering system (OMS); and stack the mission's solid rocket boosters in the Vehicle Assembly Building. On the schedule: installation of the mission's drag chute and off-loading of residual hypergolic reactants. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Oct. 27, 1994.]

[]STS 67: TAILCONE REMOVED

Endeavour's ferry flight tailcone has been removed; Endeavour's STS 68 mission concluded in California and was ferried by to KSC aboard the Shuttle Carrier Aircraft. The vehicle's payload bay doors have been opened and its water spray boiler number 3 has been removed. Today OPF Bay 1 workers will conduct post-mission inspections; deservice the water spray boilers; and will carry out main engine and aerosurface repositioning. STS 67 work scheduled: removal of the main engine heatshields; removal of STS 68 payloads and off-loading of hypergolic reactants. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Oct. 27, 1994.]

October 28:KSC TO HONOR CONTRACTORS

Seven Kennedy Space Center contractors will be honored at the Fiscal Year 1994 Contractor Awards Ceremony, hosted by the KSC Small and Disadvantaged Business Council, on October 31 at Spaceport USA. The event will be held from 5:30 - 7:30 p.m. in the IMAX 2 Theater at the Galaxy Center. Named as the Large Business Contractor of the year for fiscal 1994 was McDonnell Douglas Space and Defense Systems, the payload ground operations contractor at KSC. The honor is given to a prime contractor which shows exemplary support for businesses in the small, small disadvantaged and women-owned categories. Not only did McDonnell Douglas increase their goals in work awarded in 1994 to companies meeting these criteria, they went the extra mile and exceeded them. McDonnell Douglas also was recognized for helping Kennedy to meet the congressionally established goal of awarding 8 percent of contract work each year to small disadvantaged businesses. Additional award recipients include:

Small Business Contractor - W. & J. Construction Co. (Cocoa,

FL), for its work in completing the recently opened Payload Spin Test Facility-Replacement building.

Small Disadvantaged Business Contractor - Lavandera Electric Co. (Tampa, FL), contracted to replace the perimeter lights at Launch Complex 39, Pad B.

Woman-Owned Small Business Contractor - I-Net Inc. (Bethesda, MD), the engineering support contractor at KSC.

Small Business Subcontractor - Power Systems & Controls (Richmond, VA), supplier of rotary uninterruptible power systems.

Small Disadvantaged Business Subcontractor - Space Coast Computers (Cocoa Beach, FL), supplier of integrated computer systems and on-site maintenance services.

Woman-Owned Small Business Subcontractor - Yang Enterprises, Inc. (Oviedo, FL), provider of system and software development and services.

Kennedy Space Center Director **Robert L. Crippen** will present each honoree with an engraved plaque. [**NASA/KSC Release No. 123-94**, Oct. 28, 1994.]

October 31:ROCKWELL SHUTTLE CONTRACT EXTENDED

The Kennedy Space Center today awarded Rockwell International Corp.'s Space Systems Division (Downey, CA) a $1.4 billion contract to continue providing Shuttle Orbiter logistics operations requirements. The cost-plus-award-fee contract covers a basic five-year period during Fiscal Years 1995 to 1999. In addition, the contract features two options: a one-year option for FY 2000 and a four-year option covering FY 2001 to 2004. Under the terms of the contract, Rockwell will continue providing flight and ground support equipment (GSE) spares, overhaul and repair services, depot operations and enhancements, logistics management support, sustaining engineering for GSE and support for the Shuttle Orbiter's thermal protection system. Rockwell will continue providing these services from their locations at the NASA Shuttle Logistics Depot, Cape Canaveral and Kennedy Space Center in Florida and in Downey, CA. Kennedy has maintained responsibility for the Shuttle logistics contract since 1986, when the function was transitioned from the Johnson Space Center (Houston, TX). [Banke, **FLORIDA TODAY**, pp. 1A-2A, Nov. 1, 1994; **NASA/KSC News Release: C94-hh**, Oct. 31, 1994.]

NOVEMBER

November 1:STS-66: COUNTDOWN BEGINS

The countdown for STS 66 and the launch of Atlantis at 11:56 a.m. November 3 continues as planned today. The countdown began yesterday at 4:00 p.m. at the T-43 hour mark. No technical issues are being worked. The pad will be cleared today for loading the onboard cryogenic tanks with the liquid hydrogen and liquid oxygen reactants. Reactant loading will provide electricity for the Orbiter and crew while in space and drinking water as a by-product during their 11-day mission. After the cryogenics are loaded, the Orbiter's mid-body umbilical unit will be demated and retracted into the fixed service structure. Final vehicle and facility closeouts will also be underway. Tomorrow, preparations will be made to retract the rotating service structure to launch position at about 1 p.m. Loading of the external tank with cryogenic propellants is scheduled to begin at about 3:36 a.m. Thursday, November 3.

Air Force weather forecasters are currently indicating a 30 percent probability of weather prohibiting launch on November 3. The primary concerns are for a slight chance of showers and a cloud ceiling below 8,000 feet. During Thursday's launch window, the winds at Pad B are expected to be from the northeast at 8-13 knots; temperature 77 degrees F; visibility 7 miles; and clouds scattered at 3,000-6,000 feet and 25,000-28,000 feet. The 24-hour-delay forecast reveals similar conditions with forecasters listing a 40 percent chance of violation. The six-member astronaut crew arrived at KSC's Shuttle Landing Facility at about 11:30 a.m. yesterday. Today they will be involved with checking out their mission plans and fit checks of the equipment. The six member crew includes: Commander **Donald R. McMonagle;** Pilot **Curtis L. Brown, Jr.;** Mission Specialists: **Ellen Ochoa; Joseph R. Tanner; Jean-Francois Clervoy** and **Scott E. Parazynski.** [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Nov. 1, 1994.]

November 2:LAUNCH MINUS 1

The countdown for mission STS-66 and the launch of Atlantis tomorrow at 11:56 a.m. EST continues on schedule today. No serious technical issues are being worked by the management team and no problems have been reported from the pad. Yesterday operations to load the cryogenic reactants were completed at about 10:00 p.m. The Orbiter's midbody umbilical unit has been demated from the Orbiter and retracted into the fixed service structure. This was followed by final vehicle and facility closeouts. Later today, the 10 rodents which will fly on the Shuttle will be loaded into the Orbiter's mid-deck storage facilities. Preparations are presently underway to retract the rotating service structure (RSS) to launch position. The RSS move is set for about 1:00 p.m. today. Loading of the external tank with cryogenic propellants is scheduled to begin at about 3:36 a.m. tomorrow. Air Force weather forecasters are currently indicating a 30 percent probability of weather prohibiting a launch tomorrow. The primary concerns are for a cloud ceiling

below 8,000 feet and a chance for exceeding the crosswind limits and the Shuttle Landing Facility. Today, the six-member astronaut crew will be given a briefing on tomorrow morning's launch weather outlook at Kennedy Space Center and the TAL sites in Spain and Africa. Also today, the crew will receive a final payload briefing and they will make last minute adjustments to their flight plans while completing their review of launch day activities. Tomorrow, the crew will depart for Launch Pad 39B at about 8:41 a.m. The crew includes Commander **Donald R. McMonagle**, Pilot **Curtis L. Brown, Jr.** and Mission Specialists: **Ellen Ochoa, Joseph R. Tanner, Jean-Francois Clervoy** and **Scott E. Parazynski.** [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Nov. 2, 1994; Halvorson, **FLORIDA TODAY**, p. 1A, Nov. 3, 1994; "Closer Look At the Crew of Atlantis," **FLORIDA TODAY**, p. 2A, Nov. 3, 1994.]

November 3:STS-66 LAUNCH SUCCESS

The launch of the Space Shuttle Atlantis on mission STS-66 occurred today at 11:59:43 a.m. EST. The countdown was held for three minutes and 43 seconds at the T-5 minute mark as managers discussed the weather at the transoceanic abort landing [TAL] sites. This was the 66th launch of the Space Shuttle and the 13th for the Orbiter Atlantis. No significant technical issues were worked throughout the duration of the countdown. Post-launch inspections of the pad reveal no unusual damage to the pad surface or the mobile launcher platform. The solid rocket booster retrieval ships have reached the spent boosters. Divers have recovered the parachutes and the ships will begin towing the boosters back to Port Canaveral later today. The STS-66 crew includes: Commander **Donald R. McMonagle**, Pilot **Curtis L. Brown Jr.**, and Mission Specialists: **Ellen Ochoa, Joseph R. Tanner, Jean-Francois Clervoy** and **Scott E. Parazynski.** [Halvorson, **FLORIDA TODAY**, p. 1A & 6A, Nov. 4, 1994; **KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Nov. 3, 1994; **KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Nov. 4, 1994.]

November 4:STS-63: MISSION UPDATE

Discovery is undergoing processing activities for the first launch of 1995, the STS 63 mission which will feature the Mir Rendezvous; the deployment of Spartan 201 and the operation of Spacehab-3. Technicians in OPF Bay 2 have off-loaded residual hypergolic reactants, removed the left-hand OMS pod; and stacked the mission's solid rocket boosters in the Vehicle Assembly Building. Today they conducted payload bay radiator functional checks and installed the vehicle's drag chute. Work scheduled for November 7-12 includes: auxiliary power unit functional checks; removal and reconfiguration of the Spacehab water lines and mating the external tank with the solid rocket boosters in the VAB. The target launch date for STS-63 is now set for February 2 at 12:40 a.m. EST. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Nov. 4, 1994.]

[]STS-67-ASTRO-2

The Space Shuttle Endeavour is in OPF Bay 1; technicians processing the Orbiter have off-loaded residual hypergolic reac-

tants and removed the STS-68 payloads. Today they are removing the vehicle's main engines and main engine heatshields; they are also conducting forward reaction control system checks. STS 67 work scheduled for next week: removal of the GAS can payload; preparations to remove auxiliary power unit no. 1 and functional checks of the Orbital maneuvering system pods. The STS 67 mission is tentatively targeted for late February 1995 in the early morning hours. The Endeavour crew will number seven astronauts. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Nov. 4, 1994.]

November 8:STS 63: TESTING IN OPF

In Orbiter Processing Facility Bay 2, technicians have completed the nose wheel steering test and the external tank door functional test for Discovery's STS 63 flight. Today, tasks include: mating the external tank to its mission solid rocket boosters in the Vehicle Assembly Building; preparations to install the Spacehab tunnel adapter; Spacehab Crew Equipment Interface Test; configuration of the payload bay for Spacehab; functional tests of the airlock crew hatch and of the nose landing gear; torque test of the water spray boilers; main propulsion system leak and functional tests; thermal protection tile waterproofing. STS 63 work scheduled: functional test of the brakes and testing of the air data probe. The mission is tentatively targeted for February 2, 1995, lifting off at 12:40 a.m. and carrying a crew of six, including: Commander **James D. Wetherbee,** Pilot **Eileen Marie Collins,** Mission Specialists **C. Michael Foale, Janice E. Voss, Bernard A. Harris, Jr.,** and **Vladimir Titov.** The payloads for the mission are Spacehab-03, the Mir Rendezvous and Spartan 204. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Nov. 8, 1994; **Reporter's Space Flight Note Pad,** Nov. 1994.]

[]ENDEAVOUR (STS 67) ASTRO-2

The extended duration Orbiter pallet is being prepared for installation into Endeavour (OV-105). Functional testing of the right and left orbital maneuvering system pods is scheduled for November 9. Work to remove and replace the Orbiter's mid-body electrical power distribution system continues. Work to remove and replace the No. 2 fuel cell has been completed. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Nov. 8, 1994.]

[]CHILTON, READDY GET MIR MISSIONS

NASA astronauts **Kevin P. Chilton** (Colonel, USAF) and **William F. Readdy** (Captain, Naval Reserve) will command the third and fourth Space Shuttle/Mir docking missions, respectively. The flights are currently designated STS-76 and STS-79. These flights are two of the seven scheduled Shuttle/Mir missions between 1995 and 1997 that include rendezvous, docking and crew transfers with the Russian space station. The Space Shuttle will assist with crew exchange, resupply and payload activities for Mir. Under Chilton's command, the third Shuttle/Mir Mission scheduled for March 1996, will transfer one of the six astronaut crewmembers for a four-month stay on the Russian space station.

The 10-day STS-78 mission also will include life and materials science experimentation in a pressurized module mounted in Atlantis' payload bay. Under Readdy's command, the fourth docking mission in July 1996 will drop off another astronaut and bring home the astronaut launched on STS-76. In addition to conducting experiments within a pressurized module, the mission will feature a spacewalk to transfer several experiments from the Shuttle's payload bay to the docking module on the Mir station. The mission is currently scheduled for 10 days.

Kevin P. Chilton, 39, has flown twice aboard the Space Shuttle Endeavour - the maiden voyage on STS 49 in May 1992 and most recently on the STS 59 mission in April 1994. STS-49 included a triple rendezvous with a stranded Intelsat communications satellite before the successful capture during a record eight and a half-hour spacewalk. The mission also included a variety of medical, scientific and operational tests. The STS-59 mission was dedicated to mapping the Earth's environmental changes using a variety of radar and air pollution measuring instruments mounted in the payload bay as part of the first Space Radar Laboratory mission. Nearly 500 Orbiter maneuvers were conducted throughout the mission to assist with fine pointing of the radar instruments in the payload bay.

William F. Readdy, 42, also has flown on two Shuttle missions, STS-42 in January 1992 and STS-51 in September 1993 - both aboard Discovery. He most recently was NASA manager of operational activities at Star City, Russia, supporting training and preparations of NASA astronauts at the Gagarin Cosmonaut Training Center at Star City. On STS-42, Ready participated in various scientific experiments carried out as part of the International Microgravity Laboratory mission, which included the conduct of 55 experiments provided by investigators from 11 countries. ON STS-51, Readdy participated in the deployment of the Advanced Communications Technology Satellite, and the deploy, rendezvous and retrieval of stellar objects. The mission also included a seven-hour spacewalk designed to evaluate tools and techniques used during the Hubble Space Telescope first servicing mission and on future space missions. [**NASA/KSC Releases No: 94-185**, Nov. 8, 1994.]

November 9:<u>STS-66 PROCESSING ACTIVITY</u>

While Discovery has been in the Orbiter Processing Facility Bay 2, it has been undergoing processing for its February STS-66 mission which features Spacehab-3. The Spacehab Crew Equipment Interface Test has been completed along with mating of the external tank to its solid rocket boosters. Technicians have implemented a functional test of the airlock crew hatch, a deployment test of the air data probe and a functional test of the nose landing gear. The water spray boiler torque test and main propulsion system LH2 leak and functional testing are also complete. Current STS-66 tasks include: preparations for the functional test of the Orbiter's brakes; preparations to install the Spacehab tunnel adapter; configuring the payload bay for Spacehab; thermal protection tile waterproofing and another partial Orbiter Crew Equipment Interface Test. STS-66 work

scheduled: brake anti-skid test; water spray boiler servicing; landing gear functional test and testing of the microwave scanning beam landing system. The STS 66 mission, which is scheduled for launch on February 2 at 12:40 a.m., will utilize a crew of six. The mission is planned to end with a landing at Kennedy Space Center on February 10 at 4:55 a.m. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Nov. 9, 1994.]

[]ENDEAVOUR (STS-67) ASTRO-2

The extended duration Orbiter pallet is being prepared for installation. Functional testing of the right and left orbital maneuvering system pods is underway today. The forward reaction control system has been installed and checked out. The aft reaction control system has been installed and checkout is underway. Work to remove and replace the mid-body electrical power distribution system has been completed and the orbiter was powered on this morning. Work to remove and replace the No. 2 fuel cell has been completed and checkout is underway. Removal and replacement is probable. In the Vehicle Assembly Building, solid rocket booster stacking for STS-67 has begun. Atlantis, now orbiting Earth on its STS-66 mission, is expected to land at Kennedy Space Center on either November 14 or November 15 just before 8:00 a.m. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Nov. 9, 1994.]

November 10:MISSION UPDATES: 66 & 63

On flight day 8, Atlantis continues to orbit the earth and to conduct environment-related experiments and photography. The mission is expected to land at Kennedy Space Center on November 14 at approximately 7:30 a.m. The only major concern at present is Tropical Storm Gordon which is gathering force in the Atlantic Ocean, southeast of Florida. Meanwhile, processing work continues on Discovery for its STS 63 mission now scheduled for February 2 of next year. Technicians working on the Orbiter in OPF Bay 2 have installed the vehicle's drag chute; made payload bay radiator functional checks and mated the mission's external tank with its solid rocket boosters in the Vehicle Assembly Building. Today, OPF workers will prepare to install the mission's Spacehab tunnel adapter; reconfigure the payload bay water lines; conduct water spray boiler borescope checks and brake anti-skid tests. STS 63 work scheduled: landing gear functional checks; testing of the microwave scanning beam landing system; preparations to install the STS 63 main engines and preparations to install the forward reaction control system. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Nov. 10, 1994.]

[]STS 67: ASTRO-2 MISSION

The Space Shuttle Endeavour is undergoing processing for next year's STS 67 mission in Orbiter Processing Facility Bay 1. While there, technicians have recently removed the vehicle's main engines; made forward reaction control system functional checks and removed the GAS [Getaway Specials] can payload. Today's processing activities include: functional checks of the

orbital maneuvering system pods and preparations to remove and replace fuel cell number 2. STS 67 work scheduled: removal and replacement of the no. 2 fuel cell and preparations to install the extended duration Orbiter pallet. The STS 67 mission, tentatively set for late February 1995, will employ a crew of seven astronauts and last for approximately 13 1/2 days, culminating in a landing at Kennedy Space Center. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Nov. 10, 1994.]

November 11:MIR RENDEZVOUS MISSION

In early February, the Space Shuttle Discovery on its STS 63 mission will rendezvous with the Russian Mir Space Station and conduct experiments with the Spartan payload and Spacehab-3. Technicians in OPF Bay 2 have conducted water spray boiler borescope checks and brake anti-skid tests. Today, OPF techs are making preparations to install the Spacehab tunnel adapter; reconfigure the payload bay water lines; conduct landing gear functional checks and test the microwave scanning beam landing system. STS 63 work scheduled for next week: preparations to install the main engines; installation of the forward reaction control system; water spray boiler leak and functional checks and crew compartment leak checks. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Nov. 11, 1994.]

[]STS 67: MISSION PROCESSING ACTIVITIES

Endeavour's main engines have been removed and forward reaction control system functional checks have been performed. The Get Away Special canister has been removed from the payload. Today, preparations are being made to remove and replace fuel cell no. 2 and main propulsion system verification checks are also being made. STS 67 work scheduled for next week: functional checks of the orbital maneuvering system [OMS] pods; removal and replacement of fuel cell no. 2 and installation of the extended duration orbiter pallet. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Nov. 11, 1994.]

November 13:STORM MAY SEND ATLANTIS TO CALIFORNIA

"In a word, the weather forecast for KSC is lousy," said NASA Flight Director **Jeff Bantle** about the prospects of landing Atlantis at KSC at the conclusion of its STS 66 mission. Late-season tropical storm Gordon is preparing to hit South Florida, but the winds and rain it is producing has Shuttle mission managers rethinking their plans to land Atlantis at Kennedy Space Center tomorrow; the vehicle will likely come down in California at Edwards Air Force Base about mid-day.. "[The storm] is already affecting the Bahamas. It's a large circulation that's expected to turn northwest and west," said **Lixion Avila**, Hurricane Specialist with the National Hurricane Center in Coral Gables, Florida. The storm was expected to make landfall late on the 14th or the morning of the 15th. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Nov. 11, 1994; Halvorson, **FLORIDA TODAY**, p. 2A, Nov. 14, 1994; "Gordon Spares Guantanamo, But May Hit Florida," **FLORIDA TODAY**, p. 2A, Nov. 14, 1994; **NASA/KSC News Release No. 129-94**, Nov. 11, 1994.]

November 14:STS 66 ENDS AT EDWARDS AFB

The Space shuttle Atlantis glided to a flawless landing on Edwards Air Force Base (CA), runway 22 this morning, completing its almost 11-day long study of the atmosphere on Shuttle mission STS 66. Atlantis's main gear touched down at 9:33:45 a.m. central. Nose gear touchdown followed 11 seconds later at 9:33:56 a.m., and the spacecraft's wheels came to a stop at 9:34:34 a.m. central time, completing the mission with a total duration of 10 days, 22 hours, 34 minutes and 51 seconds. Atlantis, on its 13th flight, completed 175 orbits and traveled about 4,554,791 miles. The crew is expected to return to Ellington Air Field (Houston, TX) this evening. [Halvorson, **FLORIDA TODAY**, p. 1A, Nov. 15, 1994; **MISSION CONTROL CENTER STS-66 STATUS REPORT #20**, Nov. 14, 1994; **KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Nov. 14, 1994.]

[]STS 63 PROCESSING UPDATE

Landing gear functional checks of Discovery have been completed as has been a test of the microwave scanning beam landing system. Today, technicians in the OPF Bay 2 will prepare Discovery for the installation of the Spacehab tunnel adapter and of the vehicle's main engines. They will reconfigure the payload bay's water lines, conduct Ku-band antenna tests; implement water spray boiler leak and functional checks and check the crew compartment for leaks. STS 63 work scheduled: installation of the Spacehab tunnel adapter and the forward reaction control system. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Nov. 14, 1994.]

[]ENDEAVOUR'S MAIN ENGINES REMOVED

In OPF Bay 1, technicians have removed Endeavour's main engines, its Get Away Special canister payload and conducted functional checks of the vehicle's forward reaction control system. Today OPF technicians will remove and replace the vehicle's no. 2 fuel cell, stack the STS 67 solid rocket boosters in the Vehicle Assembly Building, conduct functional checks of the orbital maneuvering system pods and make main propulsion system verification checks. The installation of the extended duration Orbiter pallet into Endeavour's payload bay has been scheduled in upcoming STS 67 processing activities. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Nov. 14, 1994.]

November 15:EDUCATION AGREEMENT SIGNED

Chief Executive Officers of the nation's 28 largest aerospace contractors have teamed up with NASA and the U.S. Department of Education in an ambitious plan to improve the nation's mathematics, science and technology goals. "American industry understands that education is critical to our nation's future economic competitiveness," said NASA Administrator **Daniel S. Goldin.** "Nearly 30 CEOs of the nation's top aerospace companies today joined together to ensure that the students of today are the engineers, scientists and inventors who will keep American

business at the top of the ladder tomorrow." To help meet this goal, Goldin, U.S. Department of Education Deputy Secretary **Madeleine Kunin** and the 28 CEOs signed a collaborative agreement during a ceremony today at NASA Headquarters. This new agreement establishes a mission to work cooperatively in areas of mutual interest and activities to help improve students' performance in science and mathematics, increase public scientific literacy, promote a strong teacher workforce, help prepare an adequate pipeline of scientific and technical professionals including underrepresented groups.

During the signing ceremony, Kunin applauded this joint government and industry initiative to support GOALS 2000 and the nation's education reform efforts. Under the leadership of NASA, the NASA-Industry Education Initiative originated in 1991 as a voluntary cooperative effort to refine and align current and planned education activities to support the nation's education reform strategies and to accomplish the national education goals. [**NASA/KSC News Release: 94-190**, Nov. 15, 1994.]

[]STS-66: ATLANTIS TOWED TO MATE/DEMATE DEVICE

Following yesterday's landing, KSC's Shuttle Recovery Team towed Atlantis to the Mate Demate Device and hooked up ground power. All middeck experiments have been removed. Today, the team will continue performing preliminary post-flight vehicle inspections and prepare to drain residual fluids from the vehicle. The rest of the KSC Recovery Team departed Orlando this morning and will arrive in California today. Atlantis is scheduled to depart Dryden on November 20. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Nov. 15, 1994.]

[]STS 63: SPACEHAB SERVICED

STS-63 is tentatively scheduled to launch on February 2 of next year; meanwhile, Discovery is undergoing processing activities in Orbiter Processing Facility Bay 2. Technicians have tested the Orbiter-to-payload connectors and serviced water lines for Spacehab. Today, OPF techs prepared to install the Spacehab tunnel adapter, conducted water spray boiler leak and functional checks and made landing gear functional checks. STS-63 work scheduled: installation of three main engines, installation of the forward reaction control system and crew compartment leak checks. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Nov. 15, 1994.]

[]NO. 3 FUEL CELL INSTALLED/ENDEAVOUR

The Space Shuttle Endeavour is being prepared for its next mission - STS-67 - in Orbiter Processing Facility Bay 1; the vehicle has had its no. 3 fuel cell installed and functional checks run of its forward reaction control system. Today, technicians are replacing Endeavour's rudder speed brake power drive unit, conducting a functional checkout of the orbital maneuvering system pods and preparing to install the extended duration Orbiter pallet. STS-67 work scheduled includes installation of the extended duration Orbiter pallet and forward reaction con-

trol system functional checks. The STS-67 mission is tentatively scheduled for a nearly 14-day flight commencing in late February. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Nov. 15, 1994.]

November 16:ATLANTIS/DISCOVERY UPDATES

The Space Shuttle Atlantis is scheduled to depart Edwards Air Force Base on Nov. 20 with its arrival at Kennedy Space Center's Shuttle Landing Facility set for as early as November 21. Preliminary investigative reports indicated a total of 89 hits occurred on the lower surface of the Orbiter's thermal protection system (TPS) of which 22 had a major dimension of one inch or greater. Meanwhile, technicians processing Discovery for next year's first Shuttle launch - STS 63 - have completed Ku-band antenna tests, water spray boiler leak and functional checks, crew compartment leak checks and main propulsion system liquid hydrogen leak and functional checks. Today, OPF Bay 2 technicians will install the Spacehab tunnel adapter, prepare to install the vehicle's main engines, reconfigure payload bay water lines and landing gear functional tests. STS 63 work scheduled: installation of the forward reaction control system and the installation of the Orbiter's main engines. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Nov. 16, 1994.]

[]ENDEAVOUR: MAIN ENGINES REMOVED

Technicians in OPF Bay 1 have removed Endeavour's main engines, made forward reaction control system functional checks and removed the Get Away Special canister payload from the vehicle's payload bay. Today, technicians' tasks include: removal and replacement of fuel cell no. 2; functional checks of orbital maneuvering system pods; main propulsion system verification checks; stacking solid rocket boosters in the Vehicle Assembly Building. The stacking operations are being delayed until the winds from Tropical Storm Gordon subside. The installation of the extended duration orbiter
pallet has been scheduled. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Nov. 16, 1994.]

[]JEREMIAH PEARSON RESIGNS

Major General **Jeremiah W. Pearson** (Ret.), United States Marine Corps. today announced his resignation as the Associate Administrator for the Office of Space Flight, NASA. Dr. **Wayne Littles** was named as the new Associate Administrator. Littles is currently the NASA Chief Engineer and former Deputy Director of the Marshall Space Flight Center (Huntsville, AL). "These past two-and-one-half years at NASA have been tremendously rewarding to me," Pearson said. "We've made great strides in the human space flight program during that time. We have found new efficiencies in the Space Shuttle budget while maintaining our strong commitment to safety. We've brought Russia into the redesigned Space Station partnership. And we've set the stage for an exciting future in human space flight. I'm extremely proud of our accomplishments and gratified to have had the opportunity to lead this talented group of people at NASA. Now I'm looking forward

to new challenges and opportunities." NASA Administrator **Daniel S. Goldin** accepted Pearson's resignation and praised his service. "Jed Pearson's contributions to the Office of Space Flight have been significant," Goldin said. "Numerous contributions to Shuttle safety and performance have been made and we wish General Pearson all the success in the future." In announcing the appointment of Littles to the post of Space Flight Associate Administrator, Goldin said, "Dr. Littles brings great experience and leadership to the Office of Space Flight and will continue to play a major role to ensure America's leadership in space, and to help NASA build an exciting future on this new frontier." [Halvorson, **FLORIDA TODAY**, p. 2A, Nov. 17, 1994; **NASA News Release: 94-191**, Nov. 16, 1994; Feldstein, **THE HOUSTON POST**, p. A-11, Nov. 17, 1994.]

November 17:ATLANTIS RETURNS TO SLF NOV. 21

The Orbiter Atlantis is scheduled to depart Edwards Air Force Base [CA] on November 21 with arrival at KSC's Shuttle Landing Facility on November 21. Atlantis will depart California at first light on November 20 and remain overnight at an as yet to be determined location. Arrival at Kennedy Space Center on the 21st is expected around noon. Final post-flight reports indicated that a total of 148 hits occurred on the Orbiter's various surfaces, of which 28 had a major dimension of one inch or greater. One further note of interest: the waste water dump ice deposit on the forward section of the left-hand payload bay door, as observed during on-orbit videos, was still attached during landing and measured about 8 inches by 4 inches by 2 inches. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Nov. 17, 1994.]

[]STS-63: TUNNEL ADAPTER INSTALLED

The Space Shuttle Discovery [OV-103] is being processed for its February 2, 1995, mission; the Orbiter is in OPF Bay 2 where technicians have installed the mission's Spacehab tunnel adapter, made fuel cell no. 3 checks and conducted Ku-band tests. Today, technicians are preparing to install the vehicle's main engines, conduct crew compartment leak checks, reconfigure the payload bay water lines and implementing landing gear functional tests. STS-63 work scheduled for next week: installation of the forward reaction control system; installation of the main engines; remote manipulator system functional checks. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Nov. 17, 1994.]

[]STS-67: ENDEAVOUR LAUNCHES IN LATE FEBRUARY

Endeavour will launch on its STS-67 mission in late February next year; it will be the second launch of the year following Discovery's February 2 STS-63 mission. Endeavour is currently undergoing processing activities in OPF Bay 1 where the vehicle's main engines have been removed and where forward reaction control system functional checks have been made. Today, Orbiter Processing Facility Bay 1 techs are removing and replacing fuel cell no. 2, conducting functional checks of the orbital maneuvering system pods; main propulsion system checks and

stacking the mission's solid rocket boosters in the Vehicle Assembly Building. STS-67 work scheduled: installing the extended duration Orbital pallet; beginning of auxiliary power unit servicing; continuation of functional checks of the orbital maneuvering system pods; completion of the payload bay reconfiguration and main landing gear tile inspections. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Nov. 17, 1994.]

November 18:WEATHER ENDANGERS 1995 LAUNCH SCHEDULE

Shuttle Launch Director **Robert B. Sieck** predicts a weather-impacted Shuttle launch schedule in 1995. "From a weather standpoint," he said to a meeting of the Cape Canaveral Chapter of the American Meteorological Society, we couldn't have planned it worse." He noted also that there are three five-minute launch windows on the schedule and "there isn't going to be a lot of time to talk about weather. Either it's going to be good or it isn't." Short windows are the result of the orbits required to rendezvous or dock with the Mir Space Station. All eight of the 1995 missions are scheduled to occur in the stormiest months of Florida's weather calendar. [Banke, **FLORIDA TODAY**, p. 7A, Nov. 19, 1994.]

November 20:HUMBERT NAMED MEDICAL DIRECTOR AT KSC

Paul Humbert has been named Medical Director of EG&G Florida's Medical Services operation at Kennedy Space Center. Humbert, an EG&G employee since 1986, has served in command positions at several Air Force medical facilities in Florida and Hawaii. Humbert had served as Deputy Medical Director under Dr. **Paul Buchanan**. ["EG&G Deputy Medical Director Named Chief," **FLORIDA TODAY**, p. 9E, Nov. 20, 1994.]

[]TAYLOR NAMED USBI EMPLOYEE OF MONTH

David Taylor has been named as USBI's October Employee of the Month by United Technologies' USBI team member. Taylor is a senior material controller in his company's supply and transportation department. He was selected for his work in the tool calibration processes where he coordinates a variety of jobs in support of the solid rocket booster productions operations at USBI's booster assembly and refurbishment facility. Taylor's supervisor, **John Kawejsza**, said "David is a very consistent employee, at above average performance. " ["USBI Material Controller Employee of the Month," **FLORIDA TODAY**, p. 9E, Nov. 20, 1994.]

November 22:ATLANTIS DUE TO RETURN TO KSC

The Space Shuttle Atlantis is due to return to the Kennedy Space Center this morning, having spent the night at Eglin Air Force Base in northwest Florida. The flight should take an hour and allow the Shuttle Carrier Aircraft and its Shuttle to make a pass over the beaches. "That's part of the standard plan - to bring the Orbiter up the coast, weather permitting," said **Bruce Buckingham**, a spokesman for the space center. At Atlas 2A launch vehicle was also scheduled for launch from Cape Canaveral

Air Station this morning. Air Force meteorologists forecast a 90% chance of weather favorable to the launch of the Atlas 2A launch vehicle, but the attempt was scrubbed with four seconds remaining on the countdown clock. The abort was called by computer, according to Martin Marietta spokeswoman **Julie Andrews**. "There was no engine activity at all. Nothing. The computer did its job and safely aborted the launch. ["Shuttle Scheduled to Arrive at Kennedy This Morning," **THE ORLANDO SENTINEL**, p. A-6, Nov. 22, 1994; "Doubleheader On Tap Today: Shuttle Due; Atlas Set to Launch," **FLORIDA TODAY**, p. 2A, Nov. 22, 1994; Banke, **FLORIDA TODAY**, p. 6A, Nov. 23, 1994; Halvorson, **FLORIDA TODAY**, p. 1A-2A, Nov. 23, 1994.]

November 23:KSC ADDS TO FLORIDA ECONOMY

Space related employment and contracts at NASA's Kennedy Space Center yielded a $1.36 billion boost to Florida's economy during the 1994 fiscal year which ended September 30. This figure represents $1.23 billion in Florida contracts and purchases along with $131 million in civil service personnel compensations. Ninety-six percent of the Florida dollars, or $1.18 billion, were expended within Brevard County. Of this expenditure, $1.14 billion went to contractors operating on-site at the space center. An additional $43.4 million went to off-site businesses in Brevard County, while $46.5 million was awarded to Florida businesses outside the county. Out-of-state purchases totaled about $81 million.

Furthermore, KSC exceeded its socioeconomic goals, established by the Small Business Administration, by awarding over $68 million in contracts to small, disadvantaged and women-owned businesses located around the country. The total number of federal employees at KSC was 2,435 during the same period. While 3,162 people held construction and tenant jobs at KSC, the majority of the workers - almost 10,900 - were employed by the on-site contractors. Overall, approximately 16,500 workers were employed at KSC through the close of the fiscal year on September 30. Major contractors at KSC include Lockheed Space Operations Company, the Shuttle Processing Contractor; EG&G Florida, Inc., the Base Operations Contractor; McDonnell Douglas Aerospace, Space and Defense Systems, KSC, the Payload Ground Operations Contractor; and Rockwell International Corp., the Shuttle Orbiter Logistics Support Contractor. [**NASA/KSC Release No. 130-94**, Nov. 23, 1994.]

[]DOCKING HARDWARE TO ARRIVE AT KSC

The first major Space Shuttle hardware required for the upcoming Shuttle/Mir docking missions is scheduled to arrive at Kennedy Space Center. The Orbiter Docking System (ODS) was shipped from integration contractor Rockwell Aerospace's plant (Downey, CA) via a C-5 cargo plane to KSC's Shuttle Landing Facility. The ODS was procured through Rockwell, from Russian entity RSC Energia (formerly NPO Energia) which manufactured it. It will be installed in the payload bay of the Orbiter Atlantis and remain there for at least seven Shuttle/Mir dockings currently scheduled, beginning with STS-71 in late May/early June 1995.

The dockings constitute one of the major elements of Phase 1 of the International Space Station program, a cooperative effort among the United States, Russia, Canada, Japan, and the member nations of the European Space Agency.

The ODS will function as the connection point on the Orbiter side for docking with the Krystall module on Mir, while also serving as a corridor through which astronauts and cosmonauts can pass. It consists of an external airlock, a truss structure, and a Russian-made docking mechanism called the Androgynous Peripheral Docking System (APDS) mounted on the top of the airlock. For the docking flights, the external airlock will function as a passageway rather than as a true airlock. The ODS will be installed in the forward section of the Orbiter Atlantis' payload bay, and connected to the Orbiter's internal airlock via a tunnel adapter.

The ODS will undergo processing in the Extended Duration Orbiter (EDO) Facility, located in the Vehicle Assembly Building in the Launch Complex 39 area. After being uncrated, it will be hoisted to an upright position and begin preflight checkout. Equipment such as cameras and laser controls will be installed here at KSC. The processing schedule currently calls for the ODS to be transferred to the Orbiter Processing Facility (OPF) on February 20, 1995, for installation in the cargo bay of Atlantis. The Spacelab module will follow, with transfer from the Operations and Checkout Building currently scheduled for March 17, 1995. Additional tests, including an end-to-end test involving the flight crew, will be performed in the OPF to verify the hardware. The shipment from Rockwell also included a piece of Russian-built test equipment called the Passive Docking System, which simulates the APDS interface on the Krystall docking port, allowing a realistic test of the actual docking sequence. [**NASA/KSC News Release: 131-94**, Nov. 23, 1994.]

[]DYNAMIC CORP. WINS LIFE SCIENCES CONTRACT

Kennedy Space Center today awarded Dynamac Corp, (Rockville, MD) a life sciences support services contract potentially worth $61.3 million. The contract supports KSC's Biomedical Operations and Research Office and the Payload Management and Operations Directorate in program management support for life sciences activities. The work includes processing medical, biomedical and biological flight experiments for launch and landing in addition to continuing research on NASA's Controlled Ecological Life Support System (CELSS), a bioregenerative concept for long-term space travel. Dynamac will also be responsible for environmental and ecological monitoring of the space center's premises, located on the Merritt Island National Wildlife Refuge. The refuge is home to endangered and threatened animal species such as scrub jays, manatees, sea turtles and other wildlife. Dynamac will continue space biology research efforts in plant growth and development in space, conduct life sciences research and development efforts and maintain laboratories and facilities at Kennedy Space Center. Dynamac's one-year basic period of performance will begin January 1, 1995, with six one-year contract options extending until 2001. Work will be per-

formed at Kennedy and on Cape Canaveral Air Station at NASA's Life Sciences Research Facility. Competition for the cost-plus-award-fee contract was conducted as a small business set aside. [**NASA/KSC News Release: C94-kk,** Nov. 23, 1994.]

[]STS-63 MISSION UPDATE

Technicians in Orbiter Processing Bay 2 have completed the installation of the main engines and the forward reaction control system in the Space Shuttle Discovery in preparation for the vehicle's February 1995 STS-63 mission. Work in progress: functional testing of the remote manipulator system; forward reaction control system interface verification test; Orbiter mid-body closeouts; checkout and servicing of the water spray boiler system; potable water servicing and establishment of the main engine mechanical and electrical connections. STS-63 work scheduled: Spacehab tunnel/tunnel adapter leak test (November 28); move of the payload canister from the Operations and Checkout (O & C) Building to OPF Bay 2 (November 28) and next week: installation of the Spacehab-3 laboratory module, the Spartan payload and the main engine heat shields beginning November 29. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Nov. 23, 1994.]

[]ENDEAVOUR'S NEXT MISSION

Functional testing of the Endeavour's orbital maneuvering system is currently underway in the OPF. Next week water spray boiler No. 3 is slated for installation. Endeavour's No. 6 window will be removed and replaced and the other windows will be polished. Routine thermal protection system maintenance continues and the aft area tiles will be waterproofed. Also on the schedule is testing of the Orbiter's S-band and Ku-band communications systems. The navigation systems will also be tested including the TACAN, microwave scanning beam landing system (MSBLS) and the Global Positioning System (GPS) receiver. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Nov. 23, 1994.]

[]MIR DOCKING

The Space Shuttle Atlantis arrived in OPF Bay 3 at 4:17 a.m. today after being towed from the mate-demate device at the Shuttle Landing Facility. Work to jack and level the Orbiter and to establish access is in work. The Orbiter/Mir docking adapter is scheduled to arrive at the Shuttle Landing Facility tonight between 8 and 9 p.m. If the arrival occurs before 9 p.m. it will be offloaded and transported to the Vehicle Assembly Building. If arrival should occur after that time offloading will occur on Friday. [Halvorson, **FLORIDA TODAY,** p. 1A-2A, Nov. 23, 1994; **KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Nov. 23, 1994.]

[]KRAFT HEADS WORKFORCE REVIEW

Dr. **Christopher C. Kraft,** former Director of the Johnson Space Center, will form and lead an external independent team to review data from the Space Shuttle Functional Workforce Review and make recommendations to Administrator **Daniel S. Goldin** for

implementation, Goldin announced today. The Space Shuttle Functional Workforce Review was initiated in September 1994 to evaluate the resources and the requirements being expended on human space flight - with program safety the first priority. Kraft's team, which will be formed by the first week in December, is charged with evaluating the current process and procedures for conducting Space Shuttle operations at the Johnson, Kennedy, Marshall and Stennis Space Centers and related contractor activities with the intent of recommending a new and more optimum operating structure. Kraft's team also will provide recommendations on a plan to transition to any new organizational structure. Initial efforts will focus on Kennedy Space Center operations. As part of his charter, Kraft will review the management and contractual relationships for the operation of the Space Shuttle program. Kraft's team will review related Space Station activities, as required, to ensure the necessary Space Shuttle Program support of the International Space Station. The effort will be supported as required by NASA and reviews with the various NASA Centers and involved contractors will be an integral part of the effort. It is expected that

Kraft's team will complete their work and make recommendations by March 15, 1995. [**NASA/KSC News Release: 94-197**, Nov. 23, 1994.]

November 25:JOHN W. MACE DEAD AT 76

John William Mace (Melbourne, FL) died at home today. The longtime resident of Cocoa Beach, FL, was both a 25-year Army veteran and a 26-year NASA employee. At the time of Mace's retirement in 1989, he was Chief of the Administrative Services Offices in Support Operations. During his tenure at Kennedy Space Center, he received two sustained superior ratings. Mace is survived by his wife of 45 years, Mary. [Vigoda, **FLORIDA TODAY**, Nov. 27, 1994.]

November 28:NEWS CENTER MOVES

Kennedy Space Center's News Center and Public Affairs Media Services personnel have temporarily relocated into trailers near the Complex 39 Press Site. Construction will begin soon for a permanent building to replace the existing geodesic dome that has served as the staging area for all news media activities at KSC since 1982. It is estimated that construction of the new facility will be complete by the third quarter of next year. [**NASA/KSC News Release No. 132-94**, Nov. 28, 1994.]

[]STS-69: MAIN ENGINES INSTALLED

Discovery's main engines have been installed in preparation for the vehicle's next mission: STS-69. The Orbiter is currently undergoing pre-mission processing in Orbiter Processing Bay 2. Other processing tasks have also been completed: water spray boiler checks; installation of the forward reaction control system; reconfiguration of the payload bay water lines and remote manipulator system functional checks. Today, technicians in the OPF will conduct main engine inspections, prepare to install the

vehicle's payloads and implement electrical mates of the forward reaction control system. The installation of the Spartan and Spacehab payloads has been scheduled. The STS-69 mission has been planned to commence on February 2, 1995, and will carry a crew of six for the expected 8 day mission. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Nov. 28, 1994.]

[]STS-67: ASTRO-2

The Space Shuttle Endeavour's prime payload for its late February launch on STS-67 will be ASTRO-2. A crew of seven astronauts will fly aboard the youngest vehicle in the Shuttle fleet for almost two weeks. Currently, however, the Orbiter is being processed for the mission in OPF Bay 1; completed processing tasks include: main landing gear tile inspections; complete payload bay reconfiguration; installation of the extended duration Orbiter pallet and removal and replacement of fuel cell no. 3. Today, technicians are implementing electrical mating of the

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the necessary Space Shuttle Program support of the International S
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-J-0ç Úle mission to undertake the first Mir Docking. Atlantis's mission is targeted for late May next year. Presently, however, the Orbiter is being processed in OPF Bay 3. The vehicle has been demated from the Shuttle Carrier Aircraft and rolled from the Shuttle Landing Facility to the OPF where technicians will jack and level the vehicle. Today, OPF technicians will install the payload bay door strongbacks and prepare to open the payload bay doors. They will also access the aft engine compartment. STS-71 work scheduled: a frequency response test; removal of the engine tailcone; opening the payload bay doors and removal of the payloads. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Nov. 28, 1994.]

November 29:STS-63: RMS CHECKS

The Space Shuttle Discovery continues to undergo pre-STS-63 processing in the OPF Bay 2. Electrical mates of the forward reaction control system [FRCS] have been completed. Technicians have conducted water spray boiler checks and remote manipulator functional checks have been made. Today technicians are conducting main engine inspections and preparations to install the mission payloads. The payloads are also being transported to the Vehicle Assembly Building today. STS-63 work scheduled: the installation of the Spartan and Spacehab payloads tonight and the installation of the left-hand orbital maneuvering system pod. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Nov. 29, 1994.]

[]ATLAS LAUNCHES AT 5:21 A.M.

"It couldn't have gone better. It was a 100 percent mission success from the Cape," said **Mike Wynne,** Martin Marietta's General Manager about this morning's successful launch of an Atlas 2A rocket at 5:21. Orion Net spokeswoman, **Jennifer Alston** said, "I think everyone had a tear in their eye. It really was spectacular. There is no comparison to seeing it go up against a dark sky." The Atlas payload was a $340 million Orion 1 spacecraft which will provide an important communications link for commercial enterprises in Europe and North America. [Banke, **FLORIDA TODAY**, p. 1B, Nov. 28, 1994; Banke, **FLORIDA TODAY**, p. 1A, Nov. 30, 1994.]

[]ENDEAVOUR TO DEPL0Y ASTRO-2

The Space Shuttle Endeavour is being processed for its next mission, STS-67. The primary payload of the mission is the deployment of ASTRO-2. Technicians working on Endeavour in OPF Bay 1 have installed the extended duration Orbiter pallet for the nearly two-week mission. The techs have also removed and re-

placed fuel cell no. 3. At work today, the technicians will make electrical mates of the EDO, conduct functional checks of the orbital maneuvering system pods; make main propulsion system verification checks and Ku-band antenna checks. Other technicians in the Vehicle Assembly Building will stack the mission's solid rocket boosters. STS-67 work scheduled: beginning of auxiliary power unit servicing and installation of water spray boilers. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Nov. 29, 1994.]

[]ATLANTIS PROCESSING UPDATE

Near where Endeavour is being processed, the Space Shuttle Atlantis is being readied for next year's STS 71 mission which is to dock for the first time with Mir, the Russian Space Station. The vehicle has been jacked and levelled in the OPF. The mission's Orbiter Docking System [ODS] has arrived and been transported to the Vehicle Assembly Building. Today's processing tasks include: installing the payload bay door strongbacks and preparing to open the payload bay doors; accessing the aft engine compartment; removal of the engine tailcone; initial inspections of the Orbiter Docking System. STS-71 work scheduled: a frequency response test; opening of the payload bay doors and removal of mission payloads. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Nov. 29, 1994.]

November 30:STS-63: SPARTAN INSTALLED

While the Space Shuttle Discovery has been in OPF Bay 2 it has undergone processing activities for its next mission - STS-63 - scheduled for February 2, 1995. Recently completed tasks include: installation of SPARTAN and Spacehab payloads; transported payloads to Orbiter Processing Facility; crew module and Spacehab leak tests; water spray boiler checks and remote manipulator system functional checks and deployment. Today, OPF technicians working on Discovery are: conducting main engine securing and inspections; install the main engine heatshields; mating the spacehab module to the Orbiter and preparing to transport and install the left hand orbital maneuvering system. STS-63 work scheduled: installation of the left-hand orbital maneuvering system pod and the payload interface verification test. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Nov. 30, 1994.]

[]STS-67: ELECTRICAL MATES OF EDO

Endeavour, youngest of the four-vehicle Shuttle fleet, is in OPF Bay 1 being prepared for its late February mission - STS-67. Ku-band antenna checks have been completed and fuel cell no. 3 has been functionally checked. The extended duration Orbiter pallet [EDO] has been installed and electrically mated. Today, techs will install the vehicle's water spray boilers, being auxiliary power unit servicing, conduct main propulsion system verification checks and stack the mission's solid rocket boosters in the Vehicle Assembly Building. STS-67 work scheduled: functional checks of the orbital maneuvering system pods and payload premate tests. [**KENNEDY SPACE CENTER SPACE SHUTTLE STA-**

TUS REPORT, Nov. 30, 1994.]

[]STS-71: ATLANTIS TAILCONE REMOVED

In OPF Bay 3, the Space Shuttle Atlantis has had its ferry flight tailcone [main engine cover] removed and has been jacked and levelled. Receiving inspections of the Orbiter Docking System has been completed and technicians have gained access to the aft engine compartment. Today, processing technicians will conduct a frequency response test, install payload bay door strongbacks and make preparations to open Atlantis' payload bay doors. Initial inspections of the Orbiter Docking System will be conducted along with other Orbiter structural checks. Scheduled tasks concern opening the vehicle's payload bay doors and removing payloads from the Orbiter's last mission - STS-66. The next mission for Atlantis is targeted for late May and will be the first Shuttle docking with Russia's Mir Space Station. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Nov. 30, 1994.]

DECEMBER

December 1:STS-63: SPACEHAB-3

The Spacehab module has been mated to Discovery in preparation for the Orbiter's STS-63 mission, a rendezvous with Russia's Mir Space Station. Both the Crew Cabin and the Spacehab have been tested for leaks and the remote manipulator system functional checks and deployment have been completed. Today, OPF technicians will secure the main engines and conduct inspections. They will also install the main engine heatshields, service the potable water system and prepare to install the left-hand orbital maneuvering system. Next week's workload includes: transporting and installation of the left OMS pod, a payload interface verification test, beginning the Orbiter aft engine compartment closeouts and conducting the crew equipment interface test [CEIT]. Discovery's STS-63 mission is targeted for February 2, 1995, and will carry a crew of six astronauts. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Dec. 1, 1994.]

[]STS-67: ASTRO-2

Endeavour's STS-67 mission has been rescheduled from late February to early March to allow for additional time between it and the preceding mission, STS-63. Meanwhile, OPF technicians have installed the extended duration Orbiter pallet [EDO] into Endeavour. Fuel cell no. 3 has been functionally checked and electrical mates of the EDO pallet have been made. Today, technicians will install and service the vehicle's water spray boilers, closeout the payload bay and stack the mission's solid rocket boosters in the Vehicle Assembly Building. Next week's processing schedule for STS-67 includes: main propulsion system verification checks, functional checks of the orbital maneuvering system pods and payload premate tests. [Borenstein, **THE ORLANDO SENTINEL**, Dec. 1, 1994; **KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Dec. 1, 1994.]

[]STS-71: FIRST MIR DOCKING MISSION

Atlantis will be the first Space Shuttle to dock with the Russian Mir Space Station; that will occur in late May next year. Meanwhile, in OPF Bay 3, technicians continue to process the vehicle for its mission. The frequency response test has been completed and the payload door strongbacks have been installed and preparations made to open the payload bay doors. Workers have also gained access to the aft engine compartment. Today, workers will open those payload bay doors and make initial inspections of the Orbiter Docking System. They will also conduct Orbiter structural checks. Next week's schedule includes the removal of STS-66 payloads which remain in the payload bay, the cyclng of the payload bay doors and a functional test of the forward reaction control system. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Dec. 1, 1994.]

[]STS-63: PAYLOAD STATUS

The STS-63 payloads were moved from the Operations and Checkout

Building to Bay 2 of the Orbiter Processing Facility during the afternoon of November 29 and were installed into the payload bay of Discovery in the evening. The interface verification test [IVT] to verify the electrical connections will be performed over a three-day period shortly. The initial portion of the Spacehab-3 IVT will be performed on Friday, December 2. Day 2 of the IVT will be performed on Monday, December 5 completing Spacehab testing. Also to be performed during Part 2 will be the Oderacs IVT. Day 3 of the testing, performed on December 6, will include testing of the Spartan payload. [**PAYLOAD STATUS REPORT**, Dec. 1, 1994.]

[]STS-67: ASTRONOMY-2

The Astronomy-2 [ASTRO-2] payload is in a test stand of the low bay in the Operations and Checkout (O & C) Building. Final functioning testing of the three ultraviolet telescopes has been completed. Closeouts are now underway including top of the consumables used for cooling and closing out the thermal blankets. Transportation to the Orbiter Processing Facility is planned to occur sometime between December 12 and 15. This will be followed by an Interface Verification Test [IVT] on December 19-20 which will verify connections and commanding of the payload. An end-to-end test verifying the communications systems and network paths for the Astro-2 data will follow on December 21. The IVT and end-to-end testing may be rescheduled for after the holidays depending on the actual installation of Astro-2. [**PAYLOAD STATUS REPORT**, Dec. 1, 1994.]

[]STS-71: LATE MAY ATLANTIS MISSION

Experiment integration of the Spacelab racks is finished and the Interface Verification Test has been successfully completed. The Mission Sequence Test, a compressed version of the mission timeline, was finished yesterday with four of the STS-71 astronauts participating. Spacelab module systems testing began this week. The experiment racks will be integrated into the Spacelab module on or about January 4. The ATLAS-3/CRISTA-SPAS payloads will be removed from Atlantis on Monday December 5. Atlas will be returned to NASA Spacecraft Hangar AM. There the CRISTA instruments will be deintegrated from the SPAS carrier and returned to the principal investigators. The SPAS will be returned to Deutsche Aerospace in Germany by the first of the year before Christmas. [**PAYLOAD STATUS REPORT**, Dec. 1, 1994; Halvorson, **FLORIDA TODAY**, p. 1B, Dec. 1, 1994.]

[]LOCKHEED GIVEN $21.9 MILLION BONUS

NASA gave Lockheed the highest bonus allowed - $21.9 million for the company's successful processing to launch status four Space Shuttles in six months. "We consider this the highest compliment NASA could pay us," said LSO president **Gerry Oppliger**. The award for performance may be given no more often than every six months. **Jay Honeycutt**, Director of Shuttle Management of Operations for NASA, said the processing contractors "continue to provide a first-rate product to orbit while reducing overtime and (managing with) decreasing resources. The overall perfor-

mance continued at the exceptional level I have come to expect," he said. The overall value of the Shuttle Processing Contract (SPC) is $4.45 billion. [Banke, **FLORIDA TODAY**, p. 13A, Dec. 2, 1994.]

December 2:REVIEW TEAM MEMBERS NAMED

Dr. **Christopher C. Kraft,** former director of Johnson Space Center, today named the members of the independent review team that will develop by March 15 a proposal for innovative concepts and tools for managing the Shuttle program. The team, made up of aerospace executives, business leaders and current and former NASA officials, was chartered by NASA Administrator **Daniel S. Goldin.** Kraft was named to head the team on Nov. 23. Kraft announced a five-member team including:

***Frank Borman,** former Eastern Airlines Chief Executive Officer and retired astronaut;

***George W. Jeffs,** former President of Rockwell International's North American Aerospace Operations;

***Robert E. Lindstrom,** former Senior Vice President and General Manager, Space Operations, Thiokol Corp. and retired manager of the Space Shuttle Projects Office at the Marshall Space Flight Center, Huntsville, AL;

***Thomas E. Maultsby,** General Research Corp. Vice President and former Senior Department of Defense representative to NASA Headquarters.

***Isom A. Rigell,** former Vice President, Florida Space Operations for United Space Boosters Inc., and retired Director, Shuttle Payloads and former Director, Launch Vehicle Operations at the Kennedy Space Center , FL.

Technical advisors to the team will include:

***Jay Honeycutt,** Director for Shuttle Management and Operations at the Kennedy Space Center.

***David C. Leestma,** Director of Flight Crew Operations at the Johnson Space Center.

***William S. Mackey,** Houston businessman and former Chairman of the Board of Lifemark Corp.

***John W. O'Neill,** Director of Missions Operations at the Johnson Space Center.

***George F. Page,** former Deputy Director of the Kennedy Space Center.

***Cary H. Rutland,** Solid Rocket Booster Project Manager at the Marshall Space Flight Center.

***Robert B. Sieck,** Launch Director at the Kennedy Space Center.

The team will assemble at the Kennedy Space Center December 5 to begin an assessment of Space Shuttle management and operations. The review team plans two days of meetings next week with NASA managers and contractors involved in Shuttle operations at KSC. They will convene the following week December 12 at the Johnson Space Center for meetings with NASA and contractor personnel involved with Shuttle management and operations from both Johnson and Marshall. [Halvorson, **FLORIDA TODAY**, p. 2A, Dec. 3, 1994; **NASA/KSC Release No. 94-200**, Dec. 2, 1994.]

[]DISCOVERY: PROCESSING UPDATE

The installation of Discovery's STS-63 main engines has been completed as has been the forward reaction control system. The installation of the Spacehab-3/Spartan 204/ODERACS/GLO payloads has also been accomplished. Today, OPF Bay 2 technicians are conducting a Spacehab payload interface verification test (IVT) and a crew module/Spacehab positive pressure leak test. The techs are also working on Orbiter mid-body closeouts, potable water servicing, preparations to install the left OMS pod and to install the main engine heat shields. STS 63 work scheduled: removal and replacement of the engine No. 2 actuator; continuation of the Spacehab IVT, ODERACS/GLO IVT, installation of the left orbital maneuvering system pod; start of the aft main engine compartment closeouts and the crew equipment interface test (CEIT). [**SPACE SHUTTLE STATUS REPORT**, Dec. 2, 1994.]

[]ENDEAVOUR/ATLANTIS UPDATES

Endeavour is being processed for its upcoming STS-67 mission and, today, technicians are installing the vehicle's main engines No. 2 and No. 3 yaw actuators. Fuel cell voltage tests are also occurring. Work to install the water spray boilers No. 1 and No. 3 is complete and checkout is in work. Mass memory unit No. 2 has been removed and replaced and is ready for retest. The payload bay doors were opened last night in preparation for removal of the ATLAS-3, CRISTA-SPAS and SSBUV payloads from the cargo bay of Atlantis. Orbiter deconfiguration from STS-66 is continuing. [**SPACE SHUTTLE STATUS REPORT**, Dec. 2, 1994.]

December 5:STS-63: PAYLOADS INSTALLED

Technicians in Orbiter Processing Bay 2 have been preparing Discovery for its February 1995 launch on STS-63. Tasks just completed include: installation of the Spacehab-3 module, Spartan 204 and ODERACS/GLO; installation of the main engine heat shields and the completion of the crew module/Spacehab positive pressure leak test. Currently, technicians are concluding the Spacehab-3 payload interface verification test; conducting the ODERACS/GLO interface verification test; completing the Orbiter mid-body closeouts; potable water servicing and making electrical connections of main engine No. 2 yaw actuator. STS-63 work scheduled: Spartan IVT; installation of left orbital maneuvering system pod; begin aft main engine compartment closeouts; crew equipment interface test. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Dec. 5, 1994.]

[]ENDEAVOUR: ASTRO-2

Checkout of main engine No. 2 and No. 3 yaw actuators is being performed today. Fuel cell voltage tests have been completed. Work to install water spray boiler No. 3 continues. Water spray boiler No. 2 installation and checkout is complete. Mass memory unit No. 2 has been removed and replaced and has now been loaded with software in preparation for retest. The functional test of the external tank door has been completed. Reconfiguration of the payload bay for Astro-2 is finished and associated payload electrical systems are being tested in preparation for payload installation about the middle of the month. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Dec. 5, 1994.]

[]STS 71: MIR DOCKING

The ATLAS-3 and CRISTA-SPAS payloads are being removed today. Atlas-3 will be taken to the Operations and Checkout Building for deintegration. CRISTA-SPAS will be taken to NASA Spacecraft Hangar AM for removal of the data tapes. The CRISTA instruments will be returned to the principal investigators in the United States and Germany. Also, about the first of the new year, the SPAS carrier will be returned to Germany. The SSBUV will be removed from he payload bay on December 6. Other work today includes a functional test of the Orbiter's forward reaction control system. Preparations are underway for the pending removal of the right orbital maneuvering system pod for its routine maintenance at the Hypergolic Maintenance Facility in the KSC Industrial Area. In the Vehicle Assembly Building High Bay 3, stacking of the left forward booster segment is occurring today. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Dec. 5, 1994.]

December 6:STS 63: CEIT UNDERWAY

In OPF Bay 2, technicians have completed the Spacehab-3 interface verification test (IVT) and an ODERACS/GLO interface verification test and potable water servicing. Today, the technicians are conducting Orbiter mid-body closeouts; a crew equipment interface test (CEIT) sharp edge inspection; installation of the left orbital maneuvering system pod; removal and replacement of window No. 8 and a Spartan interface verification test. STS-63 work scheduled: Ku-band antenna test; begin aft main engine compartment closeouts; main engine electrical testing and a test of the microwave scanning beam landing system [MSBLS]. [**SPACE SHUTTLE STATUS REPORT,** Dec. 6, 1994.]

[]STS 67/71 UPDATES

Installation of the cryogenic lines in Endeavour for the extended duration Orbiter pallet is in work today.
Reconfiguration of the payload bay for Astro-2 is complete. Associated payload electrical systems are being tested in preparation for payload installation about the middle of the month.
The ATLAS-3 and CRISTA-SPAS payloads were removed from Atlantis yesterday as planned. The SSBUV is being removed from the pay-

load bay today. Functional testing of the forward reaction control system is continuing today. Preparations are underway to remove and replace aft reaction control system thruster R3R due to difficulty with the fuel injector. Testing is being performed on the Orbiter's flash evaporator system. Fuel cell voltage testing has resumed. The Orbiter main propulsion system quick disconnect systems are being leak checked. Window cleaning and polishing is now in work. [**SPACE SHUTTLE STATUS REPORT,** Dec. 6, 1994.]

December 8:STS 63: OMS POD INSTALLED

The Space Shuttle Discovery continues to undergo processing for the first mission of 1995, STS-63, which is scheduled to launch February 2 with a crew of six. In OPF Bay 2, technicians have installed the vehicle's left-hand orbital maneuvering system pod; finished potable water servicing and completed main engine securing and inspections. Today, technicians are conducting a payload interface verification test; making Spartan electrical connector checks; conducting an orbital maneuvering system pod interface verification tests; conducting aft engine compartment closeouts and installing main engine heat shields. STS-63 work scheduled: crew equipment interface test; orbital maneuvering system pod crossfeed connections; closing the payload bay doors for flight. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Dec. 8, 1994.]

[]STS-67: FLIGHT CONTROL TESTS COMPLETED

Technicians preparing Endeavour for its March STS-67 mission have completed hydraulic flight control tests. They have also finished installing the water spray boiler; made nose wheel steering checks; payload bay closeouts and conducted functional checks of the orbital maneuvering system pods. Today OPF techs are conducting payload premate tests; main propulsion system verification checks; extended duration Orbiter pallet leak checks and, in the Vehicle Assembly Buildings, technicians are stacking the mission's solid rocket boosters. STS-67 work scheduled: clearing the OPF Bay 2 for work on disconnecting auxiliary power unit number 1; installation of ASTRO-2 payload; beginning of the aft engine compartment closeouts; and preparations to install the main engines. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT,** Dec. 8, 1994.]

[]MORE LAYOFFS AHEAD

Special NASA panels are conducting a job by job analysis of the agency workforce because of impending cuts in Shuttle operations budgets. Administrator **Daniel S. Goldin** said in a recent speech, "We just can't afford to spend billions of dollars on a single project and take decades to complete it. Instead of building Battlestar Galacticas, we going to concentrate on small projects we can build cheaply and more quickly." Deputy Center Director **James A. "Gene" Thomas** said that the four centers involved in running the Shuttle Program will have to absorb an-

other $90 million in cuts, primarily in employment. [Banke, **FLORIDA TODAY**, p. 1A, Dec. 9, 1994.]

[]MIR DOCKING MISSION: STS 71

The Space Shuttle Atlantis is scheduled to be the first of the fleet to dock with the Russian Space Station, Mir. That mission is planned to occur as STS-71 in late May of next year with a crew size of 7 or 8 astronauts. Technicians processing Atlantis for the mission have completed fuel cell leak checks; removed payloads and opened payload bay doors. Today, processing technicians will make Orbiter structural checks; main propulsion system verification checks; remove the remote manipulator system and make main engine pump torque checks. Scheduled STS-71 activities: cycling the payload bay doors and off-loading hypergolic propellants. [Halvorson, **FLORIDA TODAY**, p. 1A, Dec. 7, 1994; **KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Dec. 8, 1994.]

December 9:HIRE "HIRED" AS ASTRONAUT

"I don't remember what I said, but it was something along the lines of `Wow!'," said Kennedy Space Center's **Kathryn `Kay' Hire** about the news from NASA manager **David Leestma** that she had been chosen to join the astronaut corps. "I'm very excited. This is something I've wanted for a long time, and it's finally coming together." Hire is the first KSC employee chosen to become an astronaut. Former astronaut **Mike McCulley**, now a Lockheed manager, said, "We had been clamoring for years that KSC needed a representative in the astronaut corps. This is really an outstanding achievement for Kay, for Lockheed and all of KSC," he added. Kennedy Space Center Associate Director **Al Parrish** said, "We are very pleased that a person involved in Shuttle processing at KSC has been selected. She has been a great asset to KSC, we know she'll do the same great job as an astronaut." The Alabama-born Hire was also a member of the second class to admit women at the U.S. Naval Academy. [Banke, **FLORIDA TODAY**, pp. 1A-2A, Dec. 9, 1994.]

[]STS-63: PROCESSING UPDATE

OPF Technicians working in the processing flow for Discovery's next mission - STS-63 - have installed the vehicle's main engine heatshields and the left-hand orbital maneuvering system pod. They have also completed potable water servicing and secured and inspected the Orbiter's main engines. Today, these workers will make a Spartan electrical interface modification; conduct an orbital maneuvering system pod interface verification test; make aft engine compartment closeouts and final engine checks and conduct auxiliary power unit no. 2 inspections and verifications. STS-63 work scheduled for next week: crew equipment interface test (CEIT); complete payload interface verification checks; main engine clearance and final aerosurface checks; orbital maneuvering system pod crossfeed connections; Orbiter mid-body closeouts; closing of payload bay doors for

flight. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Dec. 9, 1994.]

[]STS-67: ASTRO-2

Technicians continue processing activities for Endeavour's STS-67 mission which is currently scheduled for early March 1995. Completed tasks to-date include: extended duration orbiter pallet leak checks; hydraulic flight control tests; water spray boiler installation; nose wheel steering checks; payload bay closeouts; functional checks of orbital maneuvering system pods. OPF Bay 1 technicians today are working on clearing the bay for work on disconnecting the auxiliary power unit no. 1 and stacking the solid rocket boosters for the mission in the Vehicle Assembly Building. STS-67 work scheduled for next week: continuing the payload premate tests; installing ASTRO-2 payload and interface verification checks; beginning the aft engine compartment closeouts and beginning preparations to install the vehicle's main engines. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Dec. 9, 1994.]

[]STS-71 ORBITER STRUCTURAL CHECKS

In OPF Bay 3, technicians are conducting Orbiter structural checks on the Space Shuttle Atlantis. They are also making main propulsion system verification checks; main engine pump torque checks and closing the payload bay doors. Completed tasks include: removal of the remote manipulator system; fuel cell leak checks and removal of payloads. STS-71 tasks set for next week: offloading hypergolic reactants, opening the payload bay doors and removing and replacing the orbital maneuvering system thrusters. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Dec. 9, 1994.]

[]STS-63: PAYLOAD STATUS

The interface verification test [IVT] of the STS-63 payloads with Discovery began on Friday, December 2, with Spacehab-3. The test concluded successfully on Monday, December 5. On that day, testing of the ODERACS and GLO payloads was also successfully completed. The Spartan IVT was begun on Tuesday, Dec. 6. During testing a communications problem was found between Discovery's flight deck and Spartan. The problem has been traced to a misconfigured connector on the Spartan payload. Testing performed yesterday has shown that reconfiguring the opposing connector on Discovery's aft flight deck to reflect the misconfiguration of the Spartan connector allows proper communication to be established. This solution is being implemented today and an IVT re-test will be performed on Monday [December 12]. There is no schedule impact. The communications circuit is necessary to assure Spartan's state of health and proper configuration before it is released from the remote manipulator arm. Engineers are also troubleshooting a low light camera on Spartan which has been installed as a test to provide an additional aid for the grapple of Spartan during retrieval. This is not mission critical. [Halvorson, **FLORIDA TODAY**, p. 1A, Dec. 12, 1994; **PAYLOAD STATUS REPORT**. Dec. 9, 1994.]

[]STS-67: ASTRO-2

The Astronomy-2 [Astro-2] payload is in a test stand of the low bay in the Operations and Checkout (O & C) Building. Closeouts are now complete including top off of the consumables used for supercooling the instruments and closing out the thermal blankets. The payload will be installed into the payload canister on December 13. It will be transported to bay 1 of the Orbiter Processing Facility and installed into the payload bay of Endeavour on December 14. The IVT will be conducted on December 16 and December 19 to verify connections and commanding of the payload. An end-to-end test verifying the communications systems and network paths for the Astro-2 data will on January 11. [**PAYLOAD STATUS REPORT**, Dec. 9, 1994.]

[]UPDATES: STS-71/STS-66

The Spacelab systems testing is continuing and is expected to be completed today. The IVT of the experiments with the racks has been completed and individual experiment checkout is underway. This will continue to be performed over the next two weeks. Rack 7 which consists of the laboratory stowage lockers is being installed on the Spacelab floor and is the final rack to be installed. All of the experiment racks installed on the Spacelab floor are now scheduled to be installed into the Spacelab module on January 6. The Atlas-3/CRISTA-SPAS payloads were removed from the payload bay of Atlantis on Monday, December 5. Atlas was returned to the Operations and Checkout Building and placed in a test stand for deintegration. CRISTA-SPAS was returned to NASA Spacecraft Hangar AM. The two data tapes were removed on December 6 to begin analysis. The CRISTA instruments are being deintegrated from the SPAS carrier and returned to the principal investigators. The SPAS will be returned to Deutsche Aerospace in Germany about the first of the new year. [**PAYLOAD STATUS REPORT**, Dec. 9, 1994.]

December 10:STS 63 TO VIEW CARGO TODAY

Discovery's STS-63 crew will be a Kennedy Space Center today to look over the vehicle and the cargo which includes a commercial laboratory module and an astronomy satellite. KSC spokesman **Bruce Buckingham** said of the visit: "This will be the first time they've seen the Orbiter with the payloads installed." The crew includes Commander **James Wetherbee** and the first female Shuttle Pilot **Eileen Collins**. The remainder of the crew includes: Mission Specialists: **Michael Foale, Janice Voss** and **Bernard Harris**. The STS-63 mission is expected to commence February 2 and last for more than 8 days, concluding with a landing on KSC's Shuttle Landing Facility. [Halvorson, **FLORIDA TODAY**, p. 2A, Dec. 10, 1994.]

[]APOLLO-ERA CRANE DISMANTLED

An Apollo-era crane which costs $60,000 annually to maintain is being dismantled as a cost-saving measure. "It's kind of hard to take," said Lockheed's **Don Becker** who has been given the job

of breaking up cranes at both Shuttle pads; the second is to come down next spring. "The uses for the cranes have diminished over the past several years and it doesn't justify the expense of maintaining it," he said. A complete refurbishing of the cranes would cost $700,000 which is not available. "A cost analysis said it would be cheaper to use a mobile crane at the launch pads than to use the hammerhead cranes," according to KSC spokesman **Bruce Buckingham**. The spokesman added, "Our launch pictures won't look the same." [Banke, **FLORIDA TODAY**, pp. 10E & 9E, Dec. 11, 1994; Borenstein, **THE ORLANDO SENTINEL**, Dec. 2, 1994.]

December 12:STS-63: APU 2 REPLACEMENT

The decision was made today to remove nd replace auxiliary power unit no. 2 due to possible cracks in the unit's exhaust housing. No impact to rollout to pad B to or to the launch date is expected. The crew equipment interface test [CEIT] has been completed as have orbital maneuvering system pod interface verification tests and main engine securing and inspections. Today, OPF technicians: conducted Spartan interface verification checks and aft engine compartment closeouts; made preparations to remove and replace auxiliary power unit no. 2 and made main engine checks. STS-63 work scheduled: completion of payload interface verification checks; made main engine clearance and final aerosurface checks; orbital maneuvering system pod crossfeed connections; Orbiter midbody closeouts and closing payload bay doors for flight. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Dec. 12, 1994.]

[]STS-67: OMS PODS CHECKED

In OPF Bay 1, the orbital maneuvering system pods have been functionally checked; payload premate tests have been conducted and, in the VAB, the STS-67 mission boosters have been stacked and are ready for mating with Endeavour. Today, auxiliary power unit No. 1 will be removed and replaced and the main propulsion system will undergo verification checks. STS-67 work scheduled: mating of the solid rocket boosters with the external tank in the VAB; installation of ASTRO-2 payload and interface verification checks; beginning of aft engine compartment closeouts; beginning preparations to install the main engines. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Dec. 12, 1994.]

[]STS-71: 1ST MIR DOCKING

Atlantis is in Orbiter Processing Facility Bay 3 where it is being prepared for its late May mission to be the first Shuttle to dock with the Russian Space Station Mir. In the runup to that mission, processing technicians have closed the vehicle's payload bay doors; made main engine pump torque checks and conducted fuel cell leak checks. Today the technicians will make Orbiter structural checks and conduct main propulsion system verification checks. STS-71 work scheduled: offloading of hypergolic reactants; re-opening the payload bay doors and removing and replacing the orbital maneuvering system thrusters. [**KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT**, Dec. 12, 1994.]

[]CRIPPEN ANNOUNCES RESIGNATION

Robert L. Crippen, fifth Director of Kennedy Space Center, today announced he will leave NASA effective January 21 after more than 25 years with the agency. Crippen plans to explore opportunities in the private sector, however, he has no specific plans at this time. In making the announcement, he said, "I have been proud to be part of the NASA and the KSC team. I know they will continue to carry on our tradition of safe, successful and efficient launches." NASA Administrator **Daniel S. Goldin** said, "Bob Crippen is one of the giants of our nation's space exploration efforts and he will leave large shoes to be filled. Crip's contributions to NASA and the Shuttle program have been enormous, from making the first historic flight of the Space Shuttle, to
running the Kennedy Space Center. We wish him well, and thank him for his dedicated service to NASA and to America."

Director Crippen also acknowledged that he had grown weary of the budget cutting process: "There is going to be continued pressure on that budget to get costs out of the Shuttle. I know that. Standing up and trying to oppose that or at least to keep a reasonable rate on it is going to be tough," he said. "I think I've carried that flag for long enough, and it's time for somebody else to worry about it. I see my leaving NASA as an opportunity for me to move on to do something else. I do not see it as some symbol where we're going to violate any safety constraints," he said.

Crippen has been director of KSC since January 1, 1992. He moved to KSC from NASA Headquarters where he had served as Director, Space Shuttle Program for two years. Prior to that time he had been Deputy Director of the Shuttle Program, based at KSC. These positions placed Crippen in a senior management role in the Launch Control Center for the 41 Space Shuttle launches since the Challenger accident, 22 of those as Center Director. Crippen joined NASA as an astronaut at the Johnson Space Center in September 1969 following the cancellation of the USAF Manned Orbiting Laboratory (MOL) program. He served as a member of the astronaut support crew for the Skylab 2, 3, and 4 missions and for the Apollo-Soyuz Test Project. Crippen was the pilot of the first orbital test flight of the Space Shuttle Program — STS-1, launched April 12, 1981 - and was he commander of three Shuttle flights: STS-7, June 18-24, 1983; STS-41C, April 6-13, 1984; and STS 41G, October 6-13, 1984.

Born September 11, 1937, in Beaumont, TX, Crippen received a bachelor of science degree in aerospace engineering from the University of Texas in 1960. He was commissioned through the Navy's Aviation Officer Program. As a Navy Pilot from June 1962 to November 1964, he completed a tour of duty aboard the aircraft carrier USS Independence. He later attended the USAF Aerospace Research Pilot School at Edwards Air Force Base, CA. Upon graduation he remained at Edwards as an instructor until his selection for the USAF MOL program in October 1966.

Crippen's accomplishments have earned him many notable awards: the NASA Exceptional Service Medal in 1972; five awards in 1981, including the Department of Defense Distinguished Service Award, the American Astronautical Society of Flight Achievement Award, the National Geographic Society's Gardiner Greene Hubbard Medal and installation in the Aviation Hall of Fame. In 1982 he won the Federal Aviation Administration's Award for Distinguished Service, the Goddard Memorial Trophy and the Harmon Trophy. In addition, Crippen earned four NASA Space Flight medals. Director Crippen has scheduled a press conference for 1:30 p.m. tomorrow in the KSC Press Site auditorium. [**KENNEDY SPACE CENTER News Release**, Dec. 12, 1994; Notice to Editors, Dec. 12, 1994; Halvorson, **FLORIDA TODAY**, pp. 1A & 3A, Dec. 13, 1994; Halvorson, **FLORIDA TODAY**, p. 1A, Dec. 13, 1994; Cabbage, **FLORIDA TODAY**, p. 5A, Dec. 13, 1994; Eisler, **FLORIDA TODAY**, p. 5A, Dec. 13, 1994.]

December 13:STS-63: CEIT COMPLETED

Technicians in OPF Bay 2 have completed Discovery's Crew Equipment Interface Test (CEIT) in preparation for the vehicle's STS-63 mission February 2. A retest has been completed of the Spartan Interface Verification Test and potable water servicing is also finished. Currently, OPF techs are conducting aft main engine compartment closeouts, Orbiter mid-body closeouts; testing Orbiter hydraulics and flight controls , checking the orbital maneuvering system's crossfeed system and preparing to remove the vehicle's No. 2 auxiliary power unit. STS-63 work scheduled includes: removal of the No. 2 APU, final payload closeouts and closure of the payload bay doors. [KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT, Dec. 13, 1994.]

[]STS-67/STS-71 UPDATES

In the Operations and Checkout Building, the Astro-2 payload is being installed into the payload canister today in preparation for going to the Orbiter Processing Facility Wednesday morning. Installation into the payload bay of Endeavour is set for Wednesday evening. Cleaning of Endeavour's payload bay is underway today in preparation for the Astro-2 installation. Preparations are also underway for Atlantis's hypergolic system deservicing and removal of the three auxiliary power units scheduled to occur later this week. [KENNEDY SPACE CENTER SPACE SHUTTLE STATUS REPORT, Dec. 13, 1994.]

[]FIRST 1995 MISSION MAY BE DELAYED

A problem with an auxiliary power unit (APU) may cause a delay in the first 1995 Shuttle mission which has been scheduled till now for February 2, 1995. KSC spokesman **Bruce Buckingham** said, "We're going to do our very best to maintain our February 2 launch date, even if it means working all the weekends at the launch pad in January, which it probably will. Replacement of the suspect APU was ordered when engineers discovered a metal housing on the unit's exhaust duct which might have been weakened during processing activities, according to Buckingham. Removal and replacement of Discovery's problem APU can be accom-

plished this week, but more testing is in prospect for the system. Meanwhile, this Friday's planned launch of a Titan 4 rocket may be delayed a day because of problems with ground equipment. [Halvorson, **FLORIDA TODAY**, p. 2A, Dec. 14, 1994.]

December 14:STS-63: TESTING & CLOSEOUTS

In Orbiter Processing Facility Bay 2, technicians have completed Spacehab closeouts and have tested Orbiter hydraulic systems and flight controls and the Ku-band antenna. Today, technicians are installing window No. 8; finishing Orbiter mid-body closeouts; completing final payload bay cleaning and closeouts; removing auxiliary power unit No. 2; working on Spartan electrical closeouts and aft compartment insulation foaming. They are also taking main engine No. 1 nozzle x-rays and borescoping. STS-63 work scheduled: payload bay door radiator closeouts and door closures. [**SPACE SHUTTLE STATUS REPORT**, Dec. 14, 1994.]

[]STS-67/71 UPDATES

The Astro-2 payload is being installed into Endeavour's payload bay today in preparation for the vehicle's early March 1995 mission. The Space Shuttle Atlantis is being processed for the mid-summer Mir Docking mission STS-71. the electrical configuration of the forward bulkhead for the Orbiter docking system is underway. In the Vehicle Assembly Building, the electrical checkout of the Orbiter docking system continues. Preparations are underway for hypergolic system deservicing and removal of the vehicle's three auxiliary power units tomorrow. [**SPACE SHUTTLE STATUS REPORT**, Dec. 14, 1994.]

[]DOCKING MISSION DELAYED TO JUNE

Because there will be a delay in launching a new module for the Russian Space Station Mir, the STS 71 mission of Atlantis will be delayed from May till June at the earliest. A meeting of American and Russian mission managers held at Johnson Space Center is now targeted the June 8-10 time frame. "Three are a whole set of reasons for the delay," said RSC Energia Manager **Valery Ryumin.** One of the major reasons for the launch schedule change was that delivery of American-made experiment equipment was held up at the Russian border by customs officials. Meanwhile, the investigation of suspect APU welds is underway with sophisticated camera equipment. If welds are found to be inadequate, an entire main engine would have to be replaced. [Halvorson and Banke, **FLORIDA TODAY**, p. 2A, Dec. 15, 1994.]

December 15:STS-63: SPARTAN/SPACEHAB CLOSEOUTS

Discovery remains in OPF Bay 2 where it is being processed for the first mission of 1995, STS-63. The mission is currently scheduled to run February 2-10 and carry a crew of six astronauts. Processing technicians have closed out both the Spartan and Spacehab payloads and made payload bay door radiator closeouts.They have also completed the installation of window No. 8. Work in progress today includes: checkout or replacement auxiliary power unit No. 2, Orbiter mid-body electrical

testing and closeouts, final payload bay cleaning, payload bay door closure, orbital maneuvering system pod interface verification testing, main engine No. 1 nozzle x-rays and borescoping and aft compartment insulation foaming. OMS pod leak checks are scheduled for December 16. [**SPACE SHUTTLE STATUS REPORT**, Dec. 15, 1994.]

[]ENDEAVOUR/ATLANTIS PROCESSING ACTIVITIES

The Astro-2 - STS-67 - payload was installed into Endeavour's payload bay yesterday afternoon. Electrical connections are being established today. Water spray boiler checkout and servicing is underway today. Preparations are also occurring for the installation of auxiliary power unit No. 1. Hypergolic deservicing of Atlantis's orbital maneuvering system and reaction control systems is being performed today and the auxiliary power units are being removed. Post mission troubleshooting of two reaction control system thrusters is being performed. Post-mission troubleshooting is also being performed on general purpose computer No. 1 and preparations are beginning to remove and replace the unit. Troubleshooting the Ku-band communications antenna is occurring. Preparations are underway to remove and replace windows No. 1 and No. 2. [**SPACE SHUTTLE STATUS REPORT**, Dec. 15, 1994.]

[]PAYLOAD STATUS UPDATES

The retest of the Spartan 204 payload [for Discovery's upcoming STS-63 mission] has been successfully completed. Closeouts of Spartan and Spacehab-3 were completed yesterday. The payload bay doors will be closed for flight tonight. Based on a February 2 launch, the Spacehab experiments will be installed at launch pad 39-B in two parts, on January 23 and January 31. Astro-2 [Astronomy-2] is being prepared for Endeavour's STS-67 mission in early March. In the Operations and Checkout Building, the Astro-2 payload was installed into the payload canister on Tuesday. Yesterday morning it was transported to OPF Bay 1 and installed into the payload bay yesterday afternoon. Electrical connections were established during the evening and today the fluid connections are being established. The Interface Verification Test [IVT] to verify the connections is scheduled to be performed on January 5-6. The End-to-End test is scheduled for January 11. This will verify the communications links between the payload and mission control in Houston and with the Astro-2 mission operations control center at the Marshall Spaceflight Center in Huntsville, AL.

Spacelab systems have been tested which will be utilized aboard Atlantis on its STS-71 mission. A change has been made to the software of the Lower Body Negative Pressure Experiment as a result of the Mission Sequence Test performed last month. A retest of this experiment is scheduled for next December 20. Installation of experiment rack 7 which contains the Spacelab module's storage lockers has been rescheduled from last week to occur next week. In NASA Spacecraft Hangar AM, deintegration of the CRISTA instruments from the SPAS platform has been completed and experiment deintegration is now underway. In the Operations

and Checkout Building, post-mission troubleshooting of the Atlas-3 Millimeter Atmospheric Sounder (MAS) instrument has revealed a faulty memory chip on a memory board. A failure analysis is being performed. [**PAYLOAD STATUS REPORT**, Dec. 15, 1994.]

[]HONEYCUTT TO SUCCEED CRIPPEN

Jay F. Honeycutt was named to become the sixth Director of the John F. Kennedy Space Center today by NASA Administrator **Daniel S. Goldin.** Honeycutt succeeds **Robert L. Crippen** who is leaving the Agency January 21. In making the announcement, Goldin said, "Jay has been an accomplished member of NASA's human space flight team for many years. He understands spacecraft processing, launch operations and flight operations, and I believe he will an exceptional Director of this vital field center." Crippen said, "I am very pleased that Jay will be succeeding me as Center Director. He has made major contributions to KSC and the Agency as Director of Shuttle Management and Operations while at KSC. In particular, he has greatly improved the efficiency of the Shuttle team. I know he will carry on the KSC tradition of safety and excellence."

Honeycutt began his U.S. Government career at Redstone Arsenal (Huntsville, AL) in 1960 and joined NASA in 1966. In 1967 he became Chief, Vehicle Simulation Section in the Flight Operations Directorate at the Johnson Space Center (Houston, TX). He later became the Assistant Chief of the Flight Training Branch in 1969 and Chief in 1974. In 1976 he was promoted to Assistant tot he Director of Flight Operations. He became the technical assistant to the Associate Administrator for Space Transportation System at NASA Headquarters in 1981 and moved back to JSC as Assistant to the Director, Space Shuttle Program in 1982. Before moving to his present job at KSC in 1989, he served in a number of management capacities including Manager, STS Integration and Operations and Special Assistant to the Associate Administrator for Space Flight, NASA Headquarters. From 1987 to 1989 he was Deputy Manager of the Space Shuttle Program. During his career, he has earned a number of significant awards including two NASA Exceptional Service Medals and NASA's Outstanding Leadership Medal. [**NASA/KSC Release No. 94-214**, Dec. 15, 1994.]

December 16:LAUNCH PROCESSING UPDATES

In Orbiter Processing Facility Bay 2, Discovery's payload bay doors have been closed for its STS 63 mission on February 10. Work in progress includes: checkout of replacement auxiliary power unit No. 2; Orbiter mid-body electrical testing and closeouts; checkout of orbital maneuvering system flight controls; orbital maneuvering system pod interface verification testing; orbital maneuvering system pod leak checks; main engine No. 1 nozzle x-rays and borescoping and aft compartment closeouts. STS 63 work scheduled: closeouts of the crew compartment; preparations to conclude work for the 10-day holiday period; rollover to the VAB on or about January 4 and rollout to Launch Complex 39B on or about January 11. [**SPACE SHUTTLE STATUS REPORT**, Dec. 16, 1994; **SPACE SHUTTLE STATUS REPORT**, Dec. 19, 1994.]

[]ENDEAVOUR/ATLANTIS PROCESSING

Installation of the Astro-2 payload into Endeavour's cargo bay is complete as is the establishment of the electrical and fluid connections. Testing will begin after the holidays. Water spray boiler checkout and servicing is continuing. Preparations are underway for the installation of the three main engines next week. Installation of auxiliary power unit No. 1 is scheduled for later tonight or Monday. Hypergolic deservicing of Atlantis's orbital maneuvering system and reaction control systems is continuing today as well as the post flight removal of the auxiliary power units. Tonight preparations will begin to remove and replace general purpose computer No. 1. Troubleshooting the Ku-band communications antenna will continue. Preparations are underway to remove and replace windows No. 1 and No. 2. [**SPACE SHUTTLE STATUS REPORT,** Dec. 16, 1994.]

December 19:STS-67/STS-71 UPDATED

Installation of Endeavour's three main engines for the STS-67 mission is underway. The right orbital maneuvering system has been removed for rework of wiring on the signal conditioner. Auxiliary power unit No. 1 has been reinstalled and connections are being established. The drag chute has been installed; checkout and servicing of the water spray boilers is continuing. Hypergolic deservicing of the orbital maneuvering system and reaction control systems of Atlantis is continuing today as well as the post flight removal of the auxiliary power units. Preparations will then begin to secure the Orbiter for the holiday period. [**SPACE SHUTTLE STATUS REPORT,** Dec. 19, 1994.]

December 20:DISCOVERY'S OMS/RCS SYSTEMS TESTED

Technicians working to prepare the Space Shuttle Discovery for its February 2 STS 63 mission have completed electrical testing of the vehicle's orbital maneuvering and reaction control systems. The workers have also completed aft main engine closeouts, Orbiter mid-body closeouts and closure of the payload bay doors for flight. Work in progress: checkout of replacement auxiliary power unit No. 2, aft main engine compartment structural leak check; orbital maneuvering system/reaction control system closeouts, main engine No. 1 nozzle testing and analysis and closeouts of the crew compartment. STS-63 work scheduled: preparations to conclude work for the 10-day holiday period, rollover to the Vehicle Assembly Building on or about January 4 and rollout to Launch Complex 39B on or about January 11. [**SPACE SHUTTLE STATUS REPORT,** Dec. 20, 1994.]

[]ORBITER PROCESSING FOR 1995 MISSIONS

Endeavour: Installation of the main engine is continuing. Engine No. 1 was installed yesterday and Engine No. 2 is being installed today. Ku-band antenna testing will be completed today and the antenna will be stowed for flight tomorrow. Rework of the right orbital maneuvering system pod signal conditioner continues. Checkout and servicing of the water spray boilers is

continuing and potable water servicing is also underway. Atlantis: Hypergolic deservicing of the orbital maneuvering system and reaction control systems will conclude today. Troubleshooting of the flash evaporator system and the payload bay floodlight system is underway. In addition, work has begun on the main propulsion system helium leak and functional test. Preparations will begin to secure the Orbiter for the holiday period tomorrow. The launch teams' Christmas holidays begin on December 23 and run until January 3. During that period no Orbiter processing activity will occur and no status reports will be issued. [**SPACE SHUTTLE STATUS REPORT**, Dec. 20, 1994.]

December 21:STS-63: PREFLIGHT TESTING

Orbital maneuvering system and reaction control system testing has been completed for Discovery's STS-63 mission on February 2 of next year. In addition, aft main engine compartment closeouts and closure of the payload bay doors have also been completed. Work in progress: main landing gear strut pressurization and leak check, main landing gear test cycling and closure for flight, aft main engine compartment structural pressure check, main engine No. 1 nozzle testing and analysis, closeouts of the crew compartment and preparation of Discovery for its rollover to the Vehicle Assembly Building. STS-63 work scheduled: preparations to conclude work for the upcoming holiday period; rollover to the VAB set for January 4 with rollout to Launch Complex 39B coming on January 11. [**SPACE SHUTTLE STATUS REPORT**, Dec. 21, 1994.]

[]PROCESSING UPDATES FOR ENDEAVOUR/ATLANTIS

Endeavour: Installation of the main engines is continuing. Engine No. 1 was installed on Monday [December 19] and Engine No. 2 was installed yesterday. Engine No. 3 will not be installed until it is determined whether it will be necessary to use the engine on Discovery instead. The sleep stations are undergoing installation. Rework of the right orbital maneuvering system pod signal conditioner continues. Checkout and servicing of the water spray boilers is continuing and potable water servicing is also underway. The payload bay doors will be closed tonight as part of preparations to secure for the holidays. Atlantis: Hypergolic activities are continuing today to allow for additional post-mission troubleshooting of the auxiliary power unit system. Later today the Ku-band antenna will be stowed and the payload bay doors will be closed as part of preparations to secure for the holidays. [**SPACE SHUTTLE STATUS REPORT**, Dec. 21, 1994.]

December 22:STS-63 PROCESSING UPDATE

Discovery [OV-103] continues to undergo processing activities for its February 2, 1995, STS-63 mission. The vehicle is in OPF Bay 2 where technicians have just completed aft engine compartment closeouts; aft main engine compartment leak checks; closure of the payload bay doors for flight and Orbiter power down for the Christmas/New Year's Day holidays. Work in progress for the mission includes: closeouts of the crew compartment; leak checks of the crew compartment; closeout of main engine No. 1 nozzle; closeout of the mid-body avionics bay; pressurization of

the main landing gear struts; preparations for weight and center of gravity determination; preparation of Orbiter for rollover tot he Vehicle Assembly Building; securing the Orbiter for the Christmas holidays. STS-63 work scheduled: the weight and center of gravity determination January 3; rollover to the VAB on or about January 4; rollout to Launch Complex 39B on or about January 11 and the terminal countdown demonstration test on January 19-20. Propulsion engineers have cleared Discovery's main engine No. 1 for flight. [**SPACE SHUTTLE STATUS REPORT**, Dec. 22, 1994.]

[]LAST PRE-HOLIDAY PROCESSING

Endeavour: Engine No. 2 is being secured. Engine No. 3 will be installed after the holidays. Drag chute installation is in work. Rework of the orbital maneuvering system pod signal conditioner continues. Checkout and servicing of the water spray boilers is complete. Potable water servicing continues. Last night the payload bay doors were closed and the Orbiter powered down for the Christmas holidays. Atlantis: Hypergolic trouble-shooting and deservicing activities are complete. Preparations are underway to secure the Orbiter for the Christmas holidays. The Orbiter will be powered down and the payload bay doors will be closed tonight. [**SPACE SHUTTLE STATUS REPORT**, Dec. 22, 1994.]

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15. Supplementary Notes

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16. Abstract

The document is intended to serve as a record of KSC events and is a reference source for historians and other researchers. Arrangement is by day and month and individual articles are attributed to published sources.

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