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Chronology of KSC and KSC Related Events for 2007

Elaine E. Liston

Chronology of KSC and KSC Related Events for 2007

*Elaine E. Liston,
InDyne, Inc., Kennedy Space Center, Florida*

NASA STI Program ... in Profile

Since its founding, NASA has been dedicated to the advancement of aeronautics and space science. The NASA scientific and technical information (STI) program plays a key part in helping NASA maintain this important role.

The NASA STI program operates under the auspices of the Agency Chief Information Officer. It collects, organizes, provides for archiving, and disseminates NASA's STI. The NASA STI program provides access to the NASA Aeronautics and Space Database and its public interface, the NASA Technical Report Server, thus providing one of the largest collections of aeronautical and space science STI in the world. Results are published in both non-NASA channels and by NASA in the NASA STI Report Series, which includes the following report types:

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- **CONTRACTOR REPORT.** Scientific and technical findings by NASA-sponsored contractors and grantees.

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- **TECHNICAL TRANSLATION.** English-language translations of foreign scientific and technical material pertinent to NASA's mission.

Specialized services also include creating custom thesauri, building customized databases, and organizing and publishing research results.

For more information about the NASA STI program, see the following:

- Access the NASA STI program home page at <http://www.sti.nasa.gov>
- E-mail your question via the Internet to help@sti.nasa.gov
- Fax your question to the NASA STI Help Desk at (301) 621-0134
- Phone the NASA STI Help Desk at (301) 621-0390
- Write to:
NASA STI Help Desk
NASA Center for AeroSpace Information
7115 Standard Drive
Hanover, MD 21076-1320

FOREWORD

This 2007 Chronology is published to describe and document KSC's role in NASA's progress.

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 compiled for publication by Archivist Elaine E. Liston.

Comment on the Chronology should be directed to the John F. Kennedy Space Center, Archives, LIBRARY-E, Kennedy Space Center, Florida, 32899. The Archivist may also be reached by e-mail at Elaine.Liston-1@ksc.nasa.gov, or (321) 867-1515.

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JANUARY

January 1: News Breaks – Contact with experiments regained

U.S. Air Force controllers have regained contact with the TacSat-2 orbiting experimental package after a faulty ground-segment configuration broke off communications for 2.5 days shortly after its Dec. 16 launch. The mission was proceeding as planned late last week. Meanwhile, a 10-lb. NASA biology experiment that rode piggyback on the mission was performing well and returning data. Both were launched from a new commercial facility on Wallops Island, VA., on an Orbital Sciences Minotaur I rocket. ["News Breaks," Aviation Week & Space Technology, January 1, 2007, p 18.]

January 3: Titan 1 rocket lands at Cape for students

One of the country's earliest intercontinental ballistic missiles, the Titan 1 quickly became a symbol for American military might during the Cold War. The landmark missile was displayed in front of Titusville High School from 1971 to 2005. The Kiwanis Club of Titusville established the Save the Rocket Foundation to raise money for its restoration, but the machine was too far gone to restore. Last September, the Titan 1 was transferred from the high school to Cape Canaveral Air Force Station, where it is being used as a training aid for students in Brevard Community College's aerospace technology program. ["Titan 1 rocket lands at Cape for students," Florida Today, January 3, 2007, p 1B.]

January 4: Kennedy retires, Parsons takes helm of KSC

Bill Parsons today assumes the role as the ninth director of KSC. In September, NASA Administrator Michael Griffin named Parsons to succeed Jim Kennedy who is retiring from the agency. Parsons has served as the center's deputy director since February. "The thousands of people who make up the team at Kennedy are the most talented and dedicated group of professionals I have had the honor to work with," said Parsons. "I look forward to the future and being a part of completing the International Space Station, and launching the vehicles that will take us back to the moon." ["Kennedy retires, Parsons takes helm of KSC," KSC Countdown, January 4, 2007.]

NASA braces for possible exploration hit on Capitol Hill

Amid signs the incoming Democratic leadership plans to pass a full-year continuing resolution (CR) for fiscal 2007 and move on to the fiscal 2008 budget request early in the year, the space agency's legislative office warns that exploration accounts face deep hits. According to an internal legislative affairs memo for senior agency managers, first reported by the NASA Watch web site, holding '07 spending to '06 levels under a CR amounts to a \$520 million cut from the requested amount and "could cause a widening of the current four-year gap" in U.S. human spaceflight after the shuttle retires in 2010. Particularly hard hit would be the Orion crew exploration vehicle and Ares I crew launch vehicle, which are ready to ramp up their spending to meet a 2014 deadline for the first human flight. Even so, powerful NASA backers like Sen. Barbara Mikulski (D-Md.) has yet to weigh in publicly. And the Orion project, at least, can hang on for a little while at '06 levels. The new Orion prime contract with Lockheed Martin allows full funding through June 2007, says Caris A. (Skip) Hatfield, the project manager. Other impacts are still under study, but "we're OK for the next few months," Hatfield says. E-mail distribution. (2007). [Aviation Week's

Aerospace Daily & Defense Report Re: "NASA braces for possible exploration hit on Capitol Hill," [Electronic]. Vol. 221, No. 2, [January 4, 2007.].]

Delta 4 rocket readied for launch at Cape

After a two-hour delay, workers lifted a United Launch Alliance Delta 4 Heavy rocket to the vertical position on the launch pad. When it lifts off in the spring, it will be only the second time one of these has ever been launched from Cape Canaveral Air Force Station. The first launch from the Cape was December 2004, but the rocket failed to completely deliver its test payload to the desired orbit -- missing one of the test flight's eight objectives. Web posted. (2007). [Delta 4 rocket readied for launch at Cape [Online]. Available WWW: <http://www.floridatoday.com/> [2007, January 4].]

January 5: Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-010507. **Mission: STS-117** - 21st International Space Station Flight (13A) - S3/S4 Truss Segment Solar Arrays ; Vehicle: Atlantis (OV-104); Location: Orbiter Processing Facility Bay 1; Launch Date: No earlier than March 16, 2007; Launch Pad: 39A; Crew: Sturckow, Archambault, Reilly, Swanson, Forrester and Olivas; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. Technicians powered down orbiter Atlantis in Orbiter Processing Facility bay 1 prior to the holidays. Over the holiday period, thermal protection system waterproofing was completed. Final system testing and processing continues in preparation for the vehicle's roll over to the Vehicle Assembly Building, scheduled for Feb. 7. The external tank scheduled to fly with Atlantis, designated ET-124, arrived at Kennedy Space Center from the Michoud Assembly Facility in New Orleans prior to the holidays. On Dec. 28, the barge brought the tank to the turn basin in the Launch Complex 39 area, and the tank was offloaded into the Vehicle Assembly Building. The next day, the tank was lifted into the checkout cell for final processing prior to being mated to the solid rocket boosters in high bay 1, scheduled for Jan. 19. **Mission: STS-118** - 22nd International Space Station Flight (13A.1) - S5 Truss Segment; Vehicle: Endeavour (OV-105); Location: Orbiter Processing Facility Bay 2; Launch Date: No earlier than June 28, 2007; Launch Pad: 39A; Crew: Kelly, Hobaugh, Williams, Morgan, Mastracchio, Caldwell and Anderson; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. Endeavour remains in Orbiter Processing Facility bay 2, and technicians continue preparing the vehicle for its first launch in nearly five years. The vehicle has undergone an extensive modification period, including the addition of all of the return-to-flight safety modifications added to both Discovery and Atlantis. The payload bay doors were closed for the holiday period and were reopened on Thursday. Technicians continue checkout and servicing of the water spray boiler system. Auxiliary power unit and main propulsion system leak and functional testing is complete. The Ku-band antenna was deployed Thursday. Preparations are under way for left-hand orbiter maneuvering system pod installation, scheduled for Tuesday. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, January 5.]

January 7: Ares I passes review milestone in its development

NASA has completed the Ares I crew launch vehicle system requirements review -- the first such milestone for a U.S. human-rated launch vehicle system in more than 30 years. This review brings the agency one step closer to developing a new mode of space transportation for astronauts on missions to explore the moon, Mars and other destinations. The system

requirements review confirmed that the Ares I system requirements were complete, validated and responsive to mission requirements. It also confirmed that the Ares I architecture and design concept can fulfill the mission objectives and that the Ares project is ready to begin engineering design activities. The Ares preliminary design review is scheduled for mid-2008. Web posted. (2007). [Ares I passes review milestone in its development [Online]. Available WWW: <http://www.spaceflightnow.com/> [2007, January 8].]

Early space probes studied

Two NASA space probes that visited Mars 30 years ago may have stumbled upon alien microbes on the Red Planet and inadvertently killed them, a scientist theorizes in a paper released Sunday. The problem was the Viking space probes of 1976-77 were looking for the wrong kind of life and didn't recognize it, the researcher said in a paper presented at a meeting of the American Astronomical Society in Seattle. This new report, based on a more expansive view of where life can take root, may have NASA looking for a different type of Martian life form when its next Mars spacecraft is launched. A new NASA Mars mission called Phoenix is set for launch this summer, and one of the scientists involved said he is eager to test the new theory about life on Mars. ["Early space probes studied, **Florida Today**, January 8, 2007, p 1A.]

January 8: Lawsuit: KSC cafeteria firm served outdated meat to space workers

A former culinary worker, Carolyn Vargas, who worked at a Kennedy Space Center cafeteria, is suing her former employer, Lackmann Culinary Services of Woodbury, N.Y, for using weeks-old outdated food, usually disguised in spicy dishes like chili or barbecue. The company denies the claim. In court records, Vargas says Lackmann, which operates seven different cafeterias at Kennedy Space Center, told her to lie to a health inspector and falsely post-date food labels before inspections. Vargas claims in her lawsuit that at least one of the three entries served each day by Lackmann would be "spoiled, contaminated, or otherwise not fit for human consumption." Not so, said Heath Braunstein, Lackmann's director of food safety. He said Lackmann actually does about six times better than average in its inspections by the state. Lawsuit: Web posted. (2007). [KSC cafeteria firm served outdated meat in dishes for space workers [Online]. Available WWW: <http://www.floridatoday.com> The Flame Trench blog [2007, January 8].]

Famous flag, meatball on VAB get facelift

Working on scaffolding secured high above the ground, painters are freshening up the huge American flag and the NASA logo on the south side of Kennedy Space Center's 52-story Vehicle Assembly Building. The flag is 209 feet long and 110 feet wide, or about the size of a 60-plane hangar bay on an aircraft carrier. The blue field on the flag is the size of a regulation basketball court, and its 50 stars each are six feet wide. Each of the 13 stripes are the size of a standard interstate highway lane -- wide enough to accommodate 18-wheelers or the tour buses that haul visitors around the spaceport. The NASA logo, affectionately known as the "meatball," measures about 132 feet by 110 feet and covers 12,300 square feet. The flag and a U.S. bicentennial logo were painted on the side of the building in 1976 in celebration of the 200th anniversary of the United States of America. The job required 6,000 gallons of paint. In 1998, NASA repainted the flag and replaced the bicentennial symbol with the NASA logo. The Vehicle Assembly Building was erected in the early 1960s for the assembly of the U.S. Saturn 5 rockets that carried American astronauts and their cargoes to

the moon. It now serves as the assembly building for U.S. space shuttles and will be used to erect new moon rockets when the U.S. sends astronauts back to the lunar surface around 2018. Web posted. (2007). [Famous flag, meatball get facelift [Online]. Available WWW: <http://www.floridatoday.com/> The Flame Trench blog [2007, January 8].]

January 9: NASA picks finalists for 2011 Mars mission

NASA has selected two spacecraft as finalists for a 2011 mission to Mars as part of the agency's Mars Scout program. The Mars Atmosphere and Volatile Evolution (MAVEN) mission would study the planet's upper atmosphere and ionosphere to seek clues about the planet's climate and habitability. The Great Escape mission would also study the planet's upper atmosphere to understand its dynamics and evolution, as well as look for traces of potentially biogenic compounds like methane in the atmosphere. NASA will select one of the two missions in late 2007 for launch in 2011. The mission will be the second in the Mars Scout program of relatively low-cost Mars missions, with a cost cap of \$475 million. The first Mars Scout mission, the Phoenix Lander, is scheduled for launch this August. Web posted. (2007). [NASA picks finalists for 2011 Mars mission [Online]. Available WWW: <http://www.spacetoday.net/> [2007, January 9].]

January 10: Shuttle and NASA/ISS Launch Schedules and Manifest

Shuttle manager Wayne Hale has rallied his troops ahead of the four STS missions in 2007 - with the fifth projected as moving to 2008 on the latest manifest - preparing them for "an outstanding year." As NASA continue to make major refinements to their shuttle schedule, NASA administrator Mike Griffin also emphasized that continuing to learn the safest way to approach the final flights of the three orbiters is paramount in the agency's plans. Orbiters Atlantis and Endeavour will be tasked with carrying out the 2007 schedule, with four major International Space Station (ISS) assembly missions. Discovery was set to join in on the fifth launch of the year with STS-123 - and that officially remains the case - although that has slipped to January. While the manifest reflects the slip of STS-123 to January, such slips aren't made official until nearer the launch date. While the manifest is constantly evolving - as it has over the life of the shuttle program - it currently reflects the continuation of the 4.5 flights per year which NASA has been able to achieve since Columbia made her debut on STS-1. "I have consistently said that if we could take the time necessary to get things going properly that we could get back to our historical operational tempo of 4.5 launches per year on the average that we would easily finish the Station by the time it was necessary to retire the Shuttle," Griffin noted. Current FAWG/Shuttle and NASA/ISS Launch Schedules and Manifest:

2007

January 18 - Progress M-59 (24P)
March 16 - STS-117 (13A) - Atlantis - S3/S4 (possible launch date is March 15)
April 9 - Soyuz TMA-10 (14S)
May 12 - Progress M-60 (25P)
[June 9 - STS-318 (LON for STS-117) - Endeavour]
June 28 - STS-118 (13A.1) - Endeavour - S5, Spacehab-SM, ESP3
July 25 - Jules Verne (ATV-1)
[August 24 - STS-320 (LON for STS-118) - Atlantis]
September 3 - Progress M-61 (26P)
September 7 - STS-120 (10A) - Atlantis - Node 2, PDGF
[September 28 - STS-322 (LON for STS-120) - Discovery (possible launch date is October

19)]

October 6 - Soyuz TMA-11 (15S)

November - STS-122 (1E) - Discovery - Columbus, ICC-Lite (possible launch dates are November 5 or 27)

November 15 - Progress M-62 (27P)

[November 24 - STS-323 (LON for STS-122) - Endeavour]

2008

January - STS-123 (1J/A) - Endeavour - JEM ELM-PS, SLP-D1 with SPDM Dextre (possible launch dates are January 14 or 17)

January 29 - Progress M-63 (28P)

[February 15 - STS-324 (LON for STS-123) - Atlantis]

February 29 - STS-124 (1J) - Atlantis - JEM PM with JEM RMS

April 8 - Soyuz TMA-12 (16S)

July 10 - STS-119 (15A) - Endeavour - S6

September 11 - STS-125 (HST-SM4) - Atlantis

[September 18 - STS-326 (LON for STS-125 and STS-119) - Discovery]

October 9 - STS-126 (ULF2) - Discovery - MPLM, LMC

2009

January 15 - STS-127 (2J/A) - Endeavour - JEM EF, ELM-ES, SLP-D2

April 9 - STS-128 (17A) - Discovery - MPLM, LMC

July 9 - STS-129 (ULF3) - Endeavour - ELC1, ELC2

July - HTV (HTV-1)

September 30 - STS-130 (19A) - Discovery - MPLM, LMC

TBD - MLM (3R) - ERA

2010

[January 14 - STS-131 (ULF4/CLF) - Endeavour - ELC3, ELC4]

April 1 - STS-132 (20A) - Discovery - Node 3 with Cupola

[July 9 - STS-133 (ULF5/CLF) - Endeavour - ELC5, ELC1]

Web posted. (2007). [[Online]. Available WWW: <http://www.spaceflight.com/> [2007,

January 10]

Parsons meets the press

New Kennedy Space Center Director Bill Parsons held an informal round table with reporters this morning, six days after taking the reins of America's spaceport. He replaces Jim Kennedy, who announced his retirement last year and left the post earlier this month. Parsons began his NASA career in shuttle operations at KSC in 1990 and returned in 2006 as deputy director. His resume includes stints as manager of the shuttle program and director of NASA's Stennis Space Center in Mississippi. Here are the high points from the discussion: * Most of the questions to Parsons were related to possible job cuts at KSC as NASA moves closer to the shuttle's 2010 retirement date and transitions to the Constellation program that eventually will send flights to the moon. There are estimates that KSC's workforce of about 2,100 civil servants and 15,000 contractors could shrink by as many as 5,000 jobs. While there were no new specifics on the subject, like his predecessor, Parsons conceded there would be reductions. The hope is that some of the losses will be offset by creating new jobs in different areas and bringing "non-traditional" work to KSC. "I do see some changes and I do probably see some reductions from time to time, but there will probably be surges in different areas, whether it be construction or whatever," Parsons said. "This workforce that we keep talking about, it may not be the same stable workforce that

we've had out here over the life of the space shuttle program, but there will be work being done here at the Kennedy Space Center at a level that is very close to the budget we have today. How that is spread around again will be different." * NASA managers continue to study what changes will be made to KSC's existing infrastructure. As the Constellation program's needs are further defined during 2007, decisions will begin to be made about modifying and mothballing current shuttle facilities. KSC officials are studying the possibility of beginning some work on KSC's Launch Pad 39B. The pad, which saw its last planned shuttle launch in December, is expected to host the first Constellation launch currently planned for mid-2009. However, the pad still must be available for an emergency shuttle flight in late-2008 when NASA sends a mission to service the Hubble Space Telescope. * Parsons doesn't expect to handle his job as KSC director much differently than Kennedy. Both spent considerable time in the shuttle program early in their careers. Parsons' work as shuttle program manager and Kennedy's deputy gives him lots of experience for his new job. "I don't think there is going to be a great deal of difference," Parsons said. "There is a proven workforce here. We have a lot of confidence in how we set up our processes and what we do. Do Jim and I have different styles? We probably do." Web posted. (2007). [Parsons meets the press [Online]. Available WWW: <http://www.orlandosentinel.com/> [2007, January 10].]

January 11: NASA Science uses Metrics

It's official: the moon is on the metric system. NASA is returning to the moon, and the agency has decided to use metric units for all future lunar operations. ["NASA Science," KSC Countdown, January 11, 2007.]

January 12: Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-011207. **Mission: STS-117** - 21st International Space Station Flight (13A) - S3/S4 Truss Segment Solar Arrays; Vehicle: Atlantis (OV-104); Location: Orbiter Processing Facility Bay 1; Launch Date: No earlier than March 16, 2007; Launch Pad: 39A; Crew: Sturckow, Archambault, Reilly, Swanson, Forrester and Olivas; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. Final vehicle closeouts are under way in preparation for technicians to move Atlantis to the Vehicle Assembly Building on Feb. 7. This week, the payload bay was cleaned and the doors were closed. The doors will be cycled one last time and the payload bay doors will be closed for flight next week. The external tank scheduled to fly with Atlantis, designated ET-124, is in the checkout cell in the Vehicle Assembly Building for final processing prior to being mated to the solid rocket boosters in high bay 1. Space Shuttle Program managers will hold a review on Jan. 16 to determine the readiness to mate the tank with the boosters. Once the review is complete and the "go ahead" has been given, the tank will be attached on Jan. 19. **Mission: STS-118** - 22nd International Space Station Flight (13A.1) - S5 Truss Segment; Vehicle: Endeavour (OV-105); Location: Orbiter Processing Facility Bay 2; Launch Date: No earlier than June 28, 2007; Launch Pad: 39A; Crew: Kelly, Hobaugh, Williams, Morgan, Mastracchio, Caldwell and Anderson; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. Endeavour remains in Orbiter Processing Facility bay 2, and technicians continue preparing the vehicle for its first launch in just over four years. The vehicle has undergone an extensive modification period, including the addition of all of the return-to-flight safety upgrades added to both Discovery and Atlantis. This week, technicians installed the left-hand orbiter maneuvering system pod on the vehicle and they are now performing interface verification. Main propulsion system leak, functional and electrical checkout was successfully completed.

Water spray boiler checkout and servicing began Thursday and will continue today. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, January 12.]

January 17: THEMIS to provide new understanding of substorm life cycle
NASA's THEMIS, the Time History of Events and Macroscale Interactions during Substorms mission, is set to venture into space and help resolve the mystery of what triggers geomagnetic substorms. For the first time, scientists will get a comprehensive view of the substorm phenomena from Earth's upper atmosphere to far into space, pinpointing where and when each substorm begins. Substorms are atmospheric events visible in the northern hemisphere as a sudden brightening of the Northern Lights. THEMIS also will provide clues about the role of substorms in severe space weather and identify where and when substorms begin. THEMIS' five identical probes will be the largest number of scientific satellites NASA has ever launched into orbit aboard a single rocket. This unique constellation of satellites will line up along the sun-Earth line, collect coordinated measurements every four days, and be ready to observe more than 30 substorms during the two-year mission. Data collected from the five probes will pinpoint where and when substorms begin, a feat impossible with any previous single-satellite mission. THEMIS is set to launch in mid-February aboard a Delta II rocket from Launch Complex 17-B at Cape Canaveral Air Force Station. THEMIS is the fifth medium-class mission under NASA's Explorer Program, which provides frequent flight opportunities for world-class scientific investigations from space within the heliophysics and astrophysics science areas. ["THEMIS mission to provide new understanding of substorm life cycle," **NASA News Release #07-011**, January 17, 2007.]

January 18: NASA might launch Atlantis a day early
NASA might move up the March 16 launch of shuttle Atlantis to put more time between the International Space Station construction mission and the arrival of a Russian capsule carrying new crew members. Delaying the shuttle flight until late April, after the crew rotation mission, would make it more difficult to complete station assembly before a 2010 deadline. Senior NASA managers are expected to decide on Jan. 25. A March 15 launch would come at 6:42 a.m. ["NASA might launch Atlantis a day early," **Florida Today**, January 18, 2007, p 1A & 7A.]

January 19: Spacehab cuts 36 jobs in Houston, at Cape
NASA contractor Spacehab, Inc. has restructured and cut about 36 jobs at the company's headquarters in Houston and at its payload-processing facility in Cape Canaveral, company officials said Friday. Before the job cuts, Spacehab employed about 220 people, representing a 16 percent workforce reduction. The company has three facilities – the Houston headquarters, a shuttle payload-processing facility in Cape Canaveral and a satellite payload-processing facility in Titusville operated by Spacehab subsidiary Astrotech Space Operations. The Titusville facility was not affected by the job cuts. ["Spacehab cuts 36 jobs in Houston, at Cape," **Florida Today**, January 20, 2007, p 1C & 2C.]

Ask the Administrator on the InsideNASA Web site

A new "Ask a Question" feature is now available to NASA employees in the "Administrator's Corner" on the InsideNASA Web site at: <http://insidenasa.nasa.gov>

Employees are invited to use the new online feature to submit a question regarding the agency and its programs to Administrator Griffin. He will see all questions and make every effort to answer as many questions as possible, but time constraints may preclude answering every question. Current plans call for posting questions and the administrator's responses at a regular interval, depending on the volume of questions asked. The new feature is part of an effort to improve dialogue and communications within the agency by allowing individual employees across the agency to share their questions and concerns directly with senior management. E-mail distribution. (2007). ["Ask the Administrator on the InsideNASA Web site," [Electronic]. KSC-NASA-INC-Message-Center [KSC-NASA-INC-Message@mail.nasa.gov], [January 19, 2007.].]

Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-011907. **Mission: STS-117** - 21st International Space Station Flight (13A) - S3/S4 Truss Segment Solar Arrays; Vehicle: Atlantis (OV-104); Location: Orbiter Processing Facility Bay 1; Launch Date: Targeted for March 16, 2007; Launch Pad: 39A; Crew: Sturckow, Archambault, Reilly, Swanson, Forrester and Olivas; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. Final vehicle closeouts are under way in preparation for technicians to move Atlantis to the Vehicle Assembly Building on Feb. 7. This week, technicians worked to close out the forward reaction control system, the midbody and aft areas. The payload bay doors were cycled and closed for flight. The payload bay door strongbacks were removed Thursday. Final orbiter power down is scheduled for Jan. 25. Today, the external tank scheduled to fly with Atlantis, designated ET-124, was moved from the checkout cell in the Vehicle Assembly Building to be mated to the solid rocket boosters in high bay 1. Space Shuttle Program managers held a review on Tuesday and gave the "go ahead" to mate the tank with the boosters. **Mission: STS-118** - 22nd International Space Station Flight (13A.1) - S5 Truss Segment; Vehicle: Endeavour (OV-105); Location: Orbiter Processing Facility Bay 2; Launch Date: Targeted for June 28, 2007; Launch Pad: 39A; Crew: Kelly, Hobaugh, Williams, Morgan, Mastracchio, Caldwell and Anderson; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. Endeavour remains in Orbiter Processing Facility bay 2 and technicians continue preparing the vehicle for its first launch in just over four years. The vehicle has undergone an extensive modification period, including the addition of all of the return-to-flight safety upgrades added to both Discovery and Atlantis. This week, technicians completed main propulsion system leak, functional and electrical checkouts. Late Thursday, the first of three space shuttle main engines. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, January 19.]

January 24: Pad 39A tested to avoid STS-116 anomaly

United Space Alliance and NASA engineers have successfully carried out a power outage test on Pad 39A, following a large scale power loss that occurred just as shuttle Discovery was leaving the Pad 39B on STS-116 last December. The test - which was carried out at the weekend - was ordered in the wake of the 39B anomaly, which caused a cascade of power loss to elements of the pad and Mobile Launch Platform (MLP) at T-0, nearly causing loss of power to the Hardware Interface Modules (HIMs). The HIMs relay commands from the Firing Room at the Kennedy Space Center (KSC) to the ground support equipment at the pad. The loss of a HIM would not of endangered Discovery, due to fail safe/redundancy and the ability to scrub, added to the information pointing to the failure happened at the

exact moment Discovery started to lift off the pad. However, it did lead to a long night for the 'pad rats' at KSC. 'One of the power supplies on the MLP failed at T-0 and this made for a little bit of a long night for the people doing post-launch securing, which is plenty hazardous,' noted one source. 'It would've been a bad night indeed (for the facility, at least) had they been lost.' Another source also noted it took several hours longer to safe the pad due to the power anomaly: 'Some of the HIMs are new and utilized for first time for this launch. It was a longer night for the safing teams, approx. 4.5 hours before Engineering could get HIMs needed for ordnance safing powered up, and teams on pad for safing activities.' Early information on what was the source of the fault points to an electrical fault in the Payload Changeout Room (PCR) at the pad, which caused a cascade throughout some of the pad and MLP systems. 'The fault was power supply in the PCR (Payload Changeout Room), which took a dump, resulting in a cascade to racks in the MLP,' noted source information. 'The MLP is now fixed.' The weekend of evaluations on Pad 39A, classed as 'PAD A Power Outage Testing,' was deemed a success. 39A will carry out the remaining shuttle launches, bar 39B's final role as the pad that will host LON-326 - the rescue mission contingency for the launch of STS-125 to the Hubble Space Telescope in September 2008. The pad will then be officially handed over to Constellation for modification work ahead of the Ares I-1R test flight in 2009. The test evaluated the pad's Integrated Network Control System (INCS), which is a highly automated network system that sends data and commands between the Shuttle Launch Control Center (LCC) and the hardware end items, including connectivity with 40,000 end items located within 28 separate ground systems, all dispersed to 10 facilities over 16 square miles. 'A complete power outage test was conducted at Pad A on Saturday morning,' noted a NASA Ops report. 'The primary purpose of this test is INCS validation. Call to stations was scheduled for 0600 hrs, with the outage occurring at daylight, approx. 0715 hrs, and lasted approx. 15 minutes. All three medium voltage power feeders (518, 612, and 606) were taken down, and then restored sequentially. 'After successful completion of the power out test, an outage was carried out on UPS 10 & 10A and 11 & 11A for approximately 10 minutes on each UPS. The purpose of this test is to verify the output of the UPS power system in event of a loss of UPS power in support of the INCS modification. 'The driver for this test is the power anomaly experienced directly after STS-116 launch at Pad B in December.' The results of the tests proved there aren't any outstanding issues with Pad 39A, as power was restored successfully, following the powerdowns. Web posted. (2007). [Pad 39A tested to avoid STS-116 anomaly [Online]. Available WWW: <http://www.nasaspacesflight.com/> [2007, January 24].]

Shuttle launch date reset for March 15

A move to launch shuttle Atlantis a day earlier than planned will give NASA an extra opportunity to get its next International Space Station assembly mission off the ground before a March 29 deadline, officials said Wednesday. Atlantis and six astronauts now are scheduled to blast off from Kennedy Space Center at 6:43 a.m. March 15. Liftoff had been slated for March 16. The 11-day flight must launch by March 29 so the astronauts can complete their work and depart the station 72 hours before the planned April 9 launch of a Russian Soyuz spacecraft with a new station crew. Station project managers prefer a three-day gap between the departure of a shuttle and arrival of a Soyuz. The gap gives the onboard station crew time to prepare for the Soyuz arrival. ["Shuttle launch date reset for March 15," **Florida Today**, January 25, 2007, p 1A.]

Heading for the Hall of Fame

Two veterans of Hubble Space Telescope servicing missions and an astronaut who now is director of Johnson Space Center will be inducted into the U.S. Astronaut Hall of Fame on May 5. All three – Michael Coats, Steven Hawley and Jeffrey Hoffman – were members of NASA's 1978 astronaut class. ["Heading for the Hall of Fame," **Florida Today**, January 24, 2007, p 3B.]

January 25: Endeavour prepped for return to flight

Sidelined since the 2003 Columbia accident, the orbiter Endeavour is being put back together and is scheduled to launch on an International Space Station construction mission in late June. Veteran astronaut Scott Kelly will command a crew that includes mission specialist Barbara Morgan, who will be NASA's first "educator astronaut" to fly in space. Morgan served as back-up to Teacher-In-Space Christa McAuliffe, who was killed along with six other astronauts in the 1986 Challenger accident. The 21st anniversary of the accident is this coming Sunday. Pilot Charlie Hobaugh and mission specialists Richard Mastracchio and Dafydd Williams of the Canadian Space Agency round out the crew. Their spaceship is being readied for flight in Bay No. 2 of the Kennedy Space Center Orbiter Processing Facility, where technicians are bonding heat shield tiles to the underside of the 122-foot-long spaceship. Preparations for landing gear tests also are under way. The shuttle's three liquid-fueled main engines already have been installed in the orbiter, and one of its two hump-like Orbital Maneuvering System pods was delivered to the processing hangar earlier this week. The pods house the orbiter's twin maneuvering engines, which are fired to circularize the shuttle's orbit after launch into space. With the shuttle flying upside down and backward, the engines also are ignited to slow the ship enough to drop it out of orbit and onto an atmospheric reentry an hour before an end-of-mission landing. Small thrusters used to steer the orbiter in space also are housed in the pods, which are made primarily of a graphite epoxy composite material and aluminum. Each pod is 21.8 feet long and 11.37 feet wide at its aft end and 8.41 feet wide at its forward end, with a surface area of approximately 435 square feet. Built to replace Challenger, the orbiter is scheduled to emerge from its hangar on May 18, making a quarter-mile move to the Vehicle Assembly Building. Crane operators will hoist the ship atop a mobile launcher platform and then attach it to an external tank equipped with twin solid rocket boosters. Endeavour's payload -- a short spacer that will provide a bridge between starboard sections of the station's central truss -- will be moved to the launch pad 39A on May 22. The fully assembled shuttle is scheduled to roll out to the pad on May 25. Kelly and his crew will take part in a practice countdown on June 7. Liftoff of NASA's 119th shuttle mission is scheduled for June 28. Web posted. (2007). [Endeavour prepped for return to flight [Online]. Available WWW: <http://www.floridatoday.com/> *The Flame Trench* [2007, January 25].]

NASA to Observe Day of Remembrance

On Monday, Jan. 29, NASA will observe a Day of Remembrance honoring those members of the NASA Family who lost their lives while furthering the cause of exploration and discovery. In their memory, flags across the agency will fly at half-staff. E-mail distribution. (2007). ["NASA to Observe Day of Remembrance," [Electronic]. KSC-NASA-INC-Message-Center [KSC-NASA-INC-Message@mail.nasa.gov], [January 25, 2007.].]

January 26: Get set for lots of launches

A two-year lull is over, and the tempo of launches at Kennedy Space Center and Cape Canaveral Air Force Station is about to pick up. Look for NASA to launch four or five

shuttle missions this year as the agency ramps up construction of the International Space Station, the assembly of which is supposed to be completed by September 2010. United Launch Alliance, a new joint venture that combines the Atlas and Delta rocket families, will stage its maiden launch from Cape Canaveral in February. The nascent company aims to follow up with a brisk flight rate of more than one launch per month. A total of 20 shuttle and rocket missions are on the books for launch this year – double the number that blasted off here in 2006 and nearly three times the seven missions launch in 2005. [“Get set for lots of launches,” **Florida Today**, January 26, 2007, p 1A & 9A.]

Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-012607. **Mission: STS-117** - 21st International Space Station Flight (13A) - S3/S4 Truss Segment Solar Arrays; Vehicle: Atlantis (OV-104); Location: Orbiter Processing Facility Bay 1; Launch Date: Targeted for March 15, 2007; Launch Pad: 39A; Crew: Sturckow, Archambault, Reilly, Swanson, Forrester and Olivas; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. On Wednesday, the Space Shuttle Program signed a change request moving the STS-117 targeted launch date to March 15, one day earlier than originally planned. Final vehicle closeouts are under way in preparation for technicians to move Atlantis to the Vehicle Assembly Building on Feb. 7. Technicians completed the flight deck closeout and are working to finish closing out the forward area. The final vehicle power down and main landing gear functional test is scheduled for Jan. 29. Aft structural leak test preparations began today, and the test will begin early next week. On Jan. 31, technicians will perform the final weight and center-of-gravity measurements on the vehicle and the orbiter transporter system will be brought into the bay on Feb. 1. Last week, the external tank scheduled to fly with Atlantis, designated ET-124, was moved from the checkout cell in the Vehicle Assembly Building to be mated to the solid rocket boosters in high bay 1. Technicians are completing the final foam application and strut closeouts in preparation for attaching the orbiter on Feb. 7. At Pad A, technicians performed a payload canister fit check. The canister will be used to transport the payload for the mission, the S3/S4 solar arrays, scheduled to go to the pad on Feb. 18.

Mission: STS-118 - 22nd International Space Station Flight (13A.1) - S5 Truss Segment; Vehicle: Endeavour (OV-105); Location: Orbiter Processing Facility Bay 2; Launch Date: Targeted for June 28, 2007; Launch Pad: 39A; Crew: Kelly, Hobaugh, Williams, Morgan, Mastracchio, Caldwell and Anderson; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. Endeavour remains in Orbiter Processing Facility bay 2, and technicians continue preparing the vehicle for its first launch in just over four years. The vehicle has undergone an extensive modification period, including the addition of all of the return-to-flight safety upgrades added to both Discovery and Atlantis. Last week, technicians installed Endeavour's three space shuttle main engines. On Tuesday, the right-hand orbital maneuvering system pod was moved into the bay. Inspections then began in preparation for the pod to be installed on the vehicle, scheduled for early next week. Tile installations continue around the nose landing gear door to support the upcoming landing gear functional test. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, January 26.]

January 27: Apollo 1, Lessons Learned from a Tragedy

Forty years after three Apollo astronauts died in a launch pad training exercise, the tragedy's role as a pivotal moment in the Space Age never has been clearer. Some of the 200 family

members, former astronauts and well-wishers who attended the remembrance ceremony Saturday emphasized that point while honoring the lives of Gus Grissom, Ed White and Roger Chaffee. The event marking the 40th anniversary of the Apollo 1 fire took place on a sun-splashed winter morning in front of the Space Memorial Mirror at the Kennedy Space Center Visitor Complex. On January 27, 1967, a fire erupted inside the Apollo spacecraft at Launch Complex 34 during a preflight test. All three astronauts died: Virgil I "Gus" Grissom, Command Pilot, Edward H. White, II, Senior Pilot and Roger B. Chaffee, Pilot. ["Apollo 1, Lessons Learned from a Tragedy," Orlando Sentinel, January 28, 2007, p B1 & B5.

Ceremony remembers fallen U.S. astronauts

Dr. Patrick Simpkins, director of engineering at Kennedy Space Center, was only 7 years old when astronauts Roger Chaffee, Ed White and Gus Grissom lost their lives in the Apollo 1 tragedy. "The crew of Apollo 1 did not know us, but we will always know all of them," Simpkins said Saturday during an Astronaut Memorial Ceremony at Sand Point Park in Titusville. This year's ceremony highlighted the 40th anniversary of a capsule fire that killed the three Apollo 1 astronauts on the launch pad at Cape Canaveral. ["Ceremony remembers fallen U.S. astronauts," Florida Today, January 28, 2007, p 1B & 5B.]

Power problem tanks Hubble's top camera

The Hubble Space Telescope camera that astronomers use most has stopped working. A power problem tripped a fuse and forced the Advanced Camera for Surveys offline Saturday. Astronauts installed the camera in 2002. It quickly produced the Ultra Deep Field view, a mesmerizing image that is the most comprehensive portrait ever of the visible universe. Hubble was launched in 1990 and since then has been hailed as the most important scientific instrument since Galileo's telescope. The malfunction is not crippling. Astronomers can use other Hubble instruments. Next year, NASA plans to launch a shuttle mission to Hubble. Astronauts would install new batteries, gyroscopes and thermal blankets. ["Power problem tanks Hubble's top camera," Florida Today, January 30, 2007, p 1A.]

January 29: NASA assigns crew for Japanese Lab and Canadian Robotics Mission

NASA has assigned the crew for space shuttle mission STS-123. The flight will deliver both the first component of the Japanese Experiment Module Kibo and the new Canadian Dextre robotics system to the International Space Station. Navy Capt. Dominic L. Gorie will command the Space Shuttle Endeavour on the STS-123 mission, targeted for launch in December 2007. Air Force Col. Gregory H. Johnson will serve as the pilot. Mission specialists will include NASA astronauts Richard M. Linnehan; Air Force Maj. Robert L. Behnken; and Navy Capt. Michael J. Foreman. Japan Aerospace Exploration Agency astronaut Takao Doi also will serve as a mission specialist. The mission will deliver a new station crew member to the complex and return another to Earth. Those individuals will be announced at a later date. Foreman had been assigned to the STS-120 shuttle mission but has been reassigned to STS-123. Astronaut Stephanie Wilson, who flew on last year's STS-121 mission, will replace Foreman as a mission specialist on STS-120, targeted for launch in September 2007. STS-123 is the first in a series of flights that will launch components to complete the Kibo laboratory. The mission also will deliver the Canadian Space Agency's Dextre robotic system, a smaller manipulator equipped with two arms and designed to work with Canadarm2 to perform finer maintenance tasks that normally would be accomplished

with spacewalks by astronauts on the International Space Station. The mission will include four spacewalks to install the new hardware. STS-123 will be the fourth spaceflight for Gorie and Linnehan, the second spaceflight for Doi and the first spaceflight for Johnson, Behnken and Foreman. ["NASA assigns crew for Japanese Lab and Canadian Robotics Mission," **NASA News Release #07-16**, January 29, 2007.]

Money worries loom as NASA plots missions to Mars, moon
NASA's moon mission is on financially safe ground, but a congressional budget crunch could mean other parts of the agency will suffer. The anticipated shortfall – at least \$500 million – stems from inaction on Capitol Hill. When Congress adjourned in 2006, lawmakers left undone nearly every major spending bill needed for fiscal year 2007. To tie up these loose ends, Democratic leaders said they would fund most 2007 spending at 2006 levels. For NASA, this approach hurts. Without guarantees, NASA officials may have to cut money from some projects if it intends to launch new initiatives – including its goal to ramp up manned space flight. A budget focus on exploration seems to favor the Kennedy Space Center, which has a large stake in ongoing shuttle missions and NASA's new generation of human spaceflight. For one, NASA intends to help finish all major work on the International Space Station before the shuttle is retired in 2010 and KSC workers are needed for cycling shuttles into low-Earth orbit. Plus, KSC was among the sites picked to help launch Orion, the new spacecraft for NASA's astronauts. An estimated 300 workers at the center would be used for this new project. For both these reasons "it is unlikely the funding shortfall will affect Kennedy Space Center in a measureable way" in the short term, said Bryan Gulley, a spokesman for Democratic Sen. Bill Nelson of Florida. ["Money worries loom as NASA plots missions to Mars, moon," **Orlando Sentinel**, January 29, 2007, p A1 & A9.]

January 30: Orion takes its place at KSC

NASA handed Lockheed Martin the keys Tuesday to a Kennedy Space Center factory where workers will assemble Orion spacecraft bound for the moon, Mars or other celestial destinations. In a ceremony inside the 1960s-era factory, NASA officials noted that the future of the historic facility where Apollo spacecraft were prepared for launch once was in question. But a deal between Lockheed Martin and the state of Florida will keep the five story facility in operation for years to come. Opened for business in 1964, the building served as the spacecraft processing hangar for crew capsules and lunar landers during the Apollo moon-landing project. The nation's first space station – Skylab – was readied for launch in the building during the 1970s. It was used to process the European-built Spacelab pallets and pressurized modules that flew on 20 shuttle mission between 1983 and 1998. A few International Space Station components have undergone testing in the building since then, but the expansive high bay in the facility has had no real anchor tenant during the past several years. The company chose the O&C building for the final assembly and integration of Orion spacecraft – a decision made in part by the facility's proximity to the launch pads. An equally key factor was the \$45 million in incentive money and financial assistance that the state offered Lockheed Martin. Some \$35 million of that money will be used to upgrade and modify the O&C. Additionally, the state anteed up \$735,000 to prepare the facility for the Orion work. ["Orion takes its place at KSC," **Florida Today**, January 31, 2007, p 3B.]

Thunderbird 8 arrival at Kennedy Space Center

A U.S. Air Force Thunderbird F-16D aircraft landed at the Shuttle Landing Facility. The pilot, Tad Clark, formally announce that Kennedy Space Center Visitor Complex will host the inaugural World Space Expo from Nov. 3 to 11, featuring an aerial salute by the Thunderbirds on its opening weekend. The Expo will create one of the largest displays of space artifacts, hardware and personalities ever assembled in one location with the objective to inspire, educate and engage the public by highlighting the achievements and benefits of space exploration. E-mail distribution. (2007). ["Thunderbird 8 arrival at Kennedy Space Center," [Electronic]. KSC-NASA-INC-Message-Center [KSC-NASA-INC-Message@mail.nasa.gov], [January 30, 2007.].]

January 31:

NASA broke law during Kerry visit, agency says

Kennedy Space Center must train workers and contractors to obey political electioneering rules after a federal oversight agency announced this week that officials broke the law during a John Kerry political rally at the spaceport in 2004. The senator's visit attracted national attention, not because of what the Democratic nominee said, but because of what he wore. Kerry donned a powder-blue protective bunny suit so he could climb inside one of NASA's shuttle orbiters. The standard VIP photographs of him drew jokes from political pundits and television comics who thought he looked goofy. The U.S. Office of Special Counsel investigated whether federal campaign rules were violated when the space center used government resources to broadcast the Kerry rally to employees across the spaceport. They found the law was broken. The investigators determined, however, the reason was incorrect legal advice. So the only punishment for KSC is expanded training on federal electioneering rules as they pertain to government facilities and employees. ["NASA broke law during Kerry visit, agency says," Florida Today, January 31, 2007, p 1A.]

NASA to fly historic Jamestown artifact, mementos on Space Shuttle

To honor early American explorers, NASA will fly into space four coins and a nearly 400-year-old artifact from historic Jamestown. The items will be aboard space shuttle Atlantis during mission STS-117, targeted for launch in March. The artifact, a metal cargo tag reading "Yames Towne," was unearthed at Jamestown, the site of the first permanent English settlement in the Americas in 1607. Upon completion of the flight, it will have logged more than 4 million miles during four centuries, traveling from England to Jamestown and round trip to the International Space Station. Two sets of Jamestown commemorative coins, authorized by Congress and recently issued by the U.S. Mint, also will fly aboard Atlantis. The tag, found at the bottom of a well during an archeological dig at the site of James Fort on Jamestown Island, most likely is a discarded shipping tag from a crate or a trunk arriving from England around 1611. "This artifact clearly marks Jamestown as a destination -- our nation's first 'address.' It demonstrates the development of trade patterns crucial to the survival of the colony," said William M. Kelso, director of archaeology at the Association for the Preservation of Virginia Antiquities. Each commemorative coin set contains a \$5 gold piece and a silver dollar with visual references to Jamestown's legacies. When returned from space, NASA will present one set to Governor Kaine for display at Jamestown Settlement, a 17th century living history museum. The second set will be displayed at the National Park Service's Historic Jamestown Visitor Center. NASA will return the shipping tag to Historic Jamestown for display in its Archaearium, a new archaeological museum showcasing items unearthed during the past 13 years in excavations that include the long-lost remains of James Fort. For centuries, the fort was believed to have

eroded into the James River. [“NASA to fly historic Jamestown artifact, mementos on Space Shuttle,” **NASA News Release #07-17**, January 31, 2007.]

During January: Ares IV

NASA is considering an unmanned reprise of the 1968 Apollo 8 lunar mission to test thermal protection and other systems on the Orion crew exploration vehicle, using an interim “Ares IV” variant of NASA’s planned crew launch vehicle. Scott Horowitz, associate administrator for exploration systems, says a full-up test of an unpiloted Orion vehicle returning from the Moon would give designers a better idea of just how much thermal protection the vehicle needs, and some valuable data points on how it would perform in the proposed “skip-entry” flight profile that would bring it into the atmosphere, then out again, before a final plunge to Earth’s surface. [“Ares IV,” **Aviation Week & Space Technology**, January 29, 2007, p 23.]

FEBRUARY

February 1: **NASA to highlight next space station component**

On Tuesday, Feb 6, at 10:30 a.m. EST, NASA's Kennedy Space Center in Florida will showcase the next element to be added to the International Space Station. The starboard 3/4 truss segment will launch aboard Space Shuttle Atlantis on mission STS-117, targeted for March 15. The element will be added to the 11-segment integrated truss structure, the station's backbone. The integrated truss structure eventually will span more than 300 feet. The S3/S4 truss has two large solar arrays and will provide one-fourth of the total power generation for the completed station. The S3/S4 truss is expected to be loaded into a transportation canister on Wednesday, Feb. 7, in preparation for its targeted journey to the launch pad on Feb. 12. ["NASA to highlight next space station component," **NASA Media Advisory #M07-016**, February 1, 2007.]

February 2: **Space Shuttle Processing Status Report**

Space Shuttle Processing Status Report #S-020207. **Mission: STS-117** - 21st International Space Station Flight (13A) - S3/S4 Truss Segment Solar Arrays; Vehicle: Atlantis (OV-104); Location: Orbiter Processing Facility Bay 1; Launch Date: Targeted for March 15, 2007; Launch Pad: 39A; Crew: Sturckow, Archambault, Reilly, Swanson, Forrester and Olivas; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. During the Space Shuttle Program's orbiter rollout milestone review today, managers determined that the vehicle was ready to rollover to the Vehicle Assembly Building next week on Feb. 7. In Orbiter Processing Facility bay 1, final vehicle closeouts are under way and early this week Atlantis was powered down for rollover. Final tire pressure checks for flight have been completed, and the landing-gear strut pressurization for flight is complete. The forward compartment is closed out, with the crew hatch closed for rollover. The left and right T-0 umbilical disconnects are complete. Aft structural leak tests were successfully completed, and later today, technicians will perform the final weight and center-of-gravity measurements on the vehicle. The orbiter transporter system will be brought into the bay this weekend. In the Vehicle Assembly Building, technicians are completing the final closeout operations on the external tank and solid rocket boosters in preparation for attaching the orbiter on Feb. 7. At Pad A, the rotating service structure was successfully rotated from mate to park position, and pad system validations are under way. **Mission: STS-118** - 22nd International Space Station Flight (13A.1) - S5 Truss Segment; Vehicle: Endeavour (OV-105); Location: Orbiter Processing Facility Bay 2; Launch Date: Targeted for June 28, 2007; Launch Pad: 39A; Crew: Kelly, Hobaugh, Williams, Morgan, Mastracchio, Caldwell and Anderson; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. Endeavour remains in Orbiter Processing Facility bay 2, and technicians continue preparing the vehicle for its first launch in just over four years. The vehicle has undergone an extensive modification period, including the addition of all of the return-to-flight safety upgrades added to both Discovery and Atlantis. This week, technicians installed the right-hand orbital maneuvering system pod, which provides thrust while the vehicle is on orbit. OMS pod verification tests are now under way. With both OMS pods on board, all of Endeavour's major flight components are now installed for flight. The forward reaction control system heater tests and vernier thruster inspections were completed this week, and the air data probe functional test is complete. The payload hardware components are being installed in the midbody, which will configure Endeavour to receive the S5 truss segment. Web posted. (2007). [NASA's Space Shuttle Processing Status

Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, February 2.]

NASA Moon-Impactor mission passes major review

NASA's drive to return astronauts to the moon and later probe deeper into space achieved a key milestone recently when agency officials approved critical elements of a moon impact mission scheduled to launch in October 2008. NASA's unmanned Lunar Crater Observation and Sensing Satellite, known as LCROSS, will strike the moon near its south pole in January 2009. It will search for water and other materials that astronauts could use at a future lunar outpost. Scott Horowitz, associate administrator of the agency's Exploration Systems Mission Directorate, led a confirmation review panel that recently approved the detailed plans, instrument suite, budget and risk factor analysis for the satellite. ["NASA Moon-Impactor mission passes major review," **NASA News Release #07-21**, February 2, 2007.]

NASA's Shuttle Atlantis set for move to Vehicle Assembly Building

On Wednesday, Feb. 7, Atlantis is scheduled to move from the Orbiter Processing Facility at NASA's Kennedy Space Center to the Vehicle Assembly Building. Once there, crews will attach Atlantis to its external fuel tank and twin solid rocket boosters. The first motion of the shuttle aboard the Crawler-Transporter is expected at 6 a.m. EST. Atlantis' targeted launch window opens March 15. During its 11-day mission to the International Space Station, the STS-117 crew of six astronauts will deliver a fourth segment for the station's backbone. They also will unfurl new solar arrays and fold up an old set of arrays during the 21st shuttle mission to the station. ["NASA's Shuttle Atlantis set for move to Vehicle Assembly Building," **NASA Media Advisory #M07-017**, February 2, 2007.]

February 5: Astronaut jailed in attack

A NASA astronaut is being held without bail after police say she attacked her rival for another astronaut's attention at Orlando International Airport on Monday. Lisa Marie Nowak drove more than 12 hours from Texas to meet the 1 a.m. flight of a woman who had also been seeing the astronaut Nowak pined for, according to Orlando police. Nowak -- who was a mission specialist on a space shuttle Discovery flight last summer -- was wearing a trench coat and wig and had a knife, BB pistol and latex gloves in her car, reports show. They also found diapers, which Nowak told police she used so she wouldn't have to stop on the 1,000-mile drive. Reports show that after U.S. Air Force Capt. Colleen Shipman's flight arrived, Nowak followed her to the airport's Blue Lot for long-term parking, tried to get into Shipman's car and then doused her with pepper spray. Nowak, 43, is charged with attempted kidnapping, battery, attempted vehicle burglary with battery and destruction of evidence. Police considered her such a danger that they requested she be held without bail in the Orange County Jail, reports show. A married mother of three, Nowak told police she was "involved in a relationship with," Bill Oefelein, another NASA astronaut, which she categorized as "more than a working relationship but less than a romantic relationship," according to the charging affidavit. Oefelein, who piloted the most recent shuttle flight in December but never flew on the same shuttle mission as Nowak. Nowak found out Oefelein was involved with Shipman and planned a trip to Orlando to talk to Shipman about their relationships with Oefelein, reports show. She also told police the BB gun "was going to be used to entice Ms. Shipman to talk with her." Shipman, an engineer assigned to the 45th Launch Support Squadron at Patrick Air Force Base near the Kennedy Space Center, told

police she was flying home from Houston. Shipman told police that after waiting two hours to get her luggage, she noticed a woman in a trench coat waiting near the airport taxi stand. When Shipman boarded a shuttle bus to long-term parking, the woman followed, according to police. When Shipman got into her car in the Blue Lot on Cargo Road, reports show, she heard "running footsteps" coming toward her. Nowak tried to open the car door, then claimed she needed a ride, or use of a cell phone. "No. If you need help, I'll send someone to help you," Shipman responded, reports show. Nowak claimed she could not hear and started to cry. "Ms. Shipman rolled her window down about 2 inches, so Mrs. Nowak could hear her . . . Mrs. Nowak sprayed some type of chemical spray into the vehicle, at Ms. Shipman's face," a detective wrote. Shipman sped away to the parking lot's toll booth, where she asked a parking employee to call police. The first officer to reach the Blue Lot saw the suspect drop something black into a trash can at one of the parking shuttle stops. Within minutes, Shipman identified Nowak as her attacker. A steel mallet, several feet of rubber tubing and hand-written directions to Shipman's home were recovered from Nowak's car, which was parked at a nearby LaQuinta Inn, reports show. Picked up shortly before 4 a.m., Nowak was questioned until about 5 p.m., when police took her to the County Jail. Her arrest may be the first-ever felony charges filed on an active-duty astronaut, according to the space agency. "Her status as an astronaut with NASA is currently unchanged. I cannot speculate on what might happen beyond that," said James Hartsfield, a NASA spokesman at the Johnson Space Center in Houston, where Nowak and Oefelein work. Nowak's biography shows she is a 1985 graduate of the U.S. Naval Academy at Annapolis, with a degree in aerospace engineering, and a former test pilot who has logged more than 1,500 hours of flight in at least 30 types of aircraft. She joined the space program in 1996. Three members of her astronaut class died in the 2003 shuttle Columbia disaster. A Navy captain, Nowak flew aboard last summer's 12-day flight to re-supply the international space station and test safety features and repair techniques. "A lot of my training is what you might think of as a Flight Engineer on ascent and entry," she said in a pre-flight interview on the NASA Web site. "I sit behind and between the pilot and commander and help coordinate things and keep the big picture." A Navy commander, Oefelein, 41, is a former test pilot who attended Topgun, the U.S. Navy Fighter Weapons School. The father of two children has flown more than 3,000 hours in about 50 types of aircraft. In December, he logged 308 hours in space. Web posted. (2007). [Astronaut jailed in attack [Online]. Available WWW: <http://www.orlandosentinel.com/> [2007, February 6].]

Statement regarding the status of Lisa Nowak

The following is a statement from Michael Coats, director of NASA's Johnson Space Center in Houston, regarding the status of astronaut Lisa Nowak. "We are deeply saddened by this tragic event. The charges against Lisa Nowak are serious ones that must be decided by the judicial system. She is officially on 30-day leave and has been removed from flight status and all mission-related activities. We will continue to monitor developments in the case." ["Statement regarding the status of Lisa Nowak," **NASA News Release #07-23**, February 6, 2007.]

\$17.3 billion NASA request starts shuttle retirement

Space Shuttle Atlantis may make its final flight next year as NASA continues its shift to the Orion crew exploration vehicle, but the agency's \$17.3 billion FY '08 budget request doesn't take into account expected congressional action limiting FY '07 spending to FY '06 levels. Although Administrator Michael Griffin has said the agency will try to insulate Orion and its

Ares I launcher from the effects of a continuing resolution working its way through Congress that would trim some \$545 million from the agency's FY '07 request, he warned that the legislation threatens to extend the gap in U.S. human space access beyond the 2010-2014 period currently on the books. The FY '08 budget top-line Griffin presented Feb. 5 follows the out-year plan contained in the agency's '07 request. But the House-passed continuing resolution also shifts funding levels within those set in FY '06, with the effect of cutting human spaceflight by \$677 million, of which \$577 million would come from exploration systems. Near-term, NASA probably can follow through on its plans to start the shift to Orion by retiring Atlantis after it flies the final Hubble Space Telescope servicing mission late next year. But Griffin and exploration systems officials who briefed reporters said it isn't clear that even the Orion/Ares I development can stay on track under the House figure. The Senate is set to begin debate on the issue next week, and once President Bush signs the ultimate legislation, NASA and other affected agencies will have 30 days to report their plans for meeting the lower figures. E-mail distribution. (2007). [Aviation Week's Aerospace Daily & Defense Report Re: "\$17.3 billion NASA request starts shuttle retirement," [Electronic]. Vol. 221, No. 24, [February 6, 2007.].]

February 7: NASA's Shuttle Atlantis Rolls to Vehicle Assembly Building
NASA's space shuttle Atlantis completed a milestone to move it one step closer to a targeted March launch. Early Wednesday drivers moved Atlantis from the Orbiter Processing Facility to the Vehicle Assembly Building at NASA's Kennedy Space Center in Florida. Atlantis, perched on top of the giant, 76-wheel Crawler-Transporter, began its move at 6:19 a.m. EST. It arrived in the Vehicle Assembly Building at 7:24 a.m. In the assembly building, technicians will attach Atlantis to its propulsion elements, an external fuel tank and twin solid rocket boosters. Following those operations, final integration, preparations and closeouts will begin in preparation for flight. The next milestone for Atlantis is the 3.4-mile trip to Launch Pad 39A in preparation for its 11-day mission, designated STS-117, to continue construction of the International Space Station. The crew's six astronauts will install a new truss segment, retract a set of solar arrays and unfold a new set on the starboard side of the station. Lessons learned from two previous missions will provide the astronauts with new techniques and tools to perform their duties. First motion of the vehicle out of the building is targeted for 7 a.m. ["NASA's Shuttle Atlantis Rolls to Vehicle Assembly Building," **NASA News Release #07-25**, February 7, 2007.]

February 8: NASA Solicits Ideas for Constellation ground work
NASA has issued a request for information soliciting ideas on ground processing services for its Constellation Program and the next generation of space vehicles. The request seeks input from industry to assist NASA in planning for the acquisition of ground processing, assembly, integration, test, launch and recovery services at the Kennedy Space Center in Florida. These services will support the Orion crew exploration vehicle, the Ares I crew launch vehicle and the Ares V cargo launch vehicle beginning with the first Constellation Program flight tests and continuing with actual missions to the International Space Station and the moon. NASA hopes to issue a draft request for proposals in Spring 2008 and to award a contract in Summer 2009. The Constellation family of spacecraft is being developed by NASA's Exploration Systems Mission Directorate. ["NASA Solicits Ideas for Constellation ground work," **NASA News Release #07-36**, February 8, 2007.]

February 9: Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-020907. **Mission: STS-117** - 21st International Space Station Flight (13A) - S3/S4 Truss Segment Solar Arrays; Vehicle: Atlantis (OV-104); Location: Vehicle Assembly Building High Bay 1; Launch Date: Targeted for March 15, 2007; Launch Pad: 39A; Crew: Sturckow, Archambault, Reilly, Swanson, Forrester and Olivas; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. On Wednesday, Atlantis rolled from the Orbiter Processing Facility to the Vehicle Assembly Building, where it was lifted into high bay 1 and mated to the external fuel tank. Orbiter power application is scheduled for Sunday. Close-out operations continue on the fuel tank and solid rocket boosters, with thermal protection system foam trimming under way. The STS-117 payload is scheduled to be transferred to Launch Pad 39A on Monday. The shuttle is set to roll out to the pad on Feb. 14. **Mission: STS-118** - 22nd International Space Station Flight (13A.1) - S5 Truss Segment Vehicle: Endeavour (OV-105); Location: Orbiter Processing Facility Bay 2; Launch Date: Targeted for June 28, 2007; Launch Pad: 39A; Crew: Kelly, Hobaugh, Williams, Morgan, Mastracchio, Caldwell and Anderson; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. Endeavour remains in Orbiter Processing Facility bay 2, and technicians continue preparing the vehicle for its first launch in more than four years. The vehicle has undergone an extensive modification period, including the addition of all of the return-to-flight safety upgrades added to both Discovery and Atlantis. This week, technicians installed fuel cell No. 3 and completed fuel cell coolant loop servicing. The shoulder installation for the orbiter boom sensor system, which is a robotic arm extension, was installed and final fit checks are complete. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, February 9.]

February 12:

Planetary Scientist selected to lead mission directorate

NASA Administrator Michael Griffin announced Monday that Dr. S. Alan Stern will be the agency's associate administrator for the Science Mission Directorate, effective April 2. Stern succeeds Dr. Mary L. Cleave who announced her retirement. ["Planetary Scientist selected to lead mission directorate," **NASA News Release #07-38**, February 12, 2007.]

NASA announces three International Space Station crews

NASA and its international partners have named the crews that will live and work aboard the International Space Station for the next two years. The crew members make up three expeditions to the station and represent four space agencies. The assignments include the first long-duration station flight for a Japan Aerospace Exploration Agency (JAXA) astronaut and the second long-duration station flight for an astronaut from the European Space Agency (ESA). The JAXA and ESA astronauts will work on the installation and checkout of the Japanese Experiment Module Kibo and European Columbus laboratories on the station. NASA astronaut and veteran station crew member Peggy A. Whitson will command Expedition 16, set to begin in fall 2007. The flight engineers for the mission include cosmonaut and Russian Air Force Col. Yuri I. Malenchenko, ESA astronaut and French Air Force Brig. Gen. Leopold Eyharts and NASA astronaut Garrett E. Reisman. Malenchenko will command the Russian Soyuz spacecraft that will carry him and Whitson to the station and return them to Earth in spring 2008. They will join NASA astronaut Daniel M. Tani aboard the station. Eyharts will fly to the station on space shuttle mission STS-122, which is expected to deliver the Columbus lab this fall. Eyharts will remain on the station to oversee activation and checkout of the laboratory, while Tani takes the shuttle home. Reisman will fly on shuttle Endeavour's STS-123 mission to replace Eyharts. Reisman will

remain on the station for about six months and return on shuttle mission STS-119, targeted for summer 2008. Russian Air Force Lt. Col. Sergei Volkov will command Expedition 17. Expedition 17 flight engineers include cosmonaut Oleg D. Kononenko and NASA astronaut Sandra H. Magnus. Kononenko will command the Soyuz spacecraft that will carry him and Volkov to the station in spring 2008 and bring them home in fall 2008. Magnus will arrive on STS-119 and remain aboard the station. Magnus will return on the STS-126 mission targeted for summer 2008. NASA astronaut and station veteran Air Force Lt. Col. E. Michael Fincke will command Expedition 18. Expedition 18 flight engineers include cosmonaut and veteran station crew member Russian Air Force Col. Salizhan S. Sharipov, JAXA astronaut Koichi Wakata and NASA astronaut Gregory E. Chamitoff. Sharipov will command the Soyuz that will carry him and Fincke to the station in fall 2008 and back to Earth in spring 2009. Wakata will fly to the station on STS-126 to replace Magnus. Magnus will return to Earth on STS-126. Chamitoff will fly to the station on the STS-127 mission, targeted for winter 2008, the third and final flight for assembly of the Japanese Kibo lab. Wakata will return to Earth on STS-127. Chamitoff will return home on a later shuttle or Soyuz mission. ["NASA announces three International Space Station crews," **NASA News Release #07-39**, February 12, 2007.]

Atlantis valve issue delays rollout - STS-120 moving up

Atlantis' rollout to Launch Pad 39A has been delayed until at least Thursday morning, as engineers work an unspecified valve issue ahead of STS-117. Meanwhile, NASA managers have been discussing moving Atlantis' STS-120 launch date up by about 12 days, in order to add lighting opportunities for ET photography, and in mitigation of spacecraft congestion on the International Space Station (ISS), caused by the arrival of both Russia's Soyuz and Europe's Automated Transfer Vehicle (ATV). It is not yet clear as to the specific problem with Atlantis - currently stacked to ET-124 and boosters inside the Vehicle Assembly Building (VAB) - with further details expected early Tuesday. Web posted. (2007). [STS-107 Columbia landing journal [Online]. Available WWW: <http://www.nasaspaceflight.com/> [2007, February 12].]

February 14: Delta launch forecast: 80 percent "go"

NASA and prime contractor United Launch Alliance are pressing ahead with preparations for a planned launch Friday of a Delta 2 rocket and five science satellites, and the weather forecast looks good. The 12-story rocket and its payload -- a quintet of spacecraft that will study the Northern and Southern lights -- are scheduled to blast off from Launch Complex 17B at Cape Canaveral Air Force Station during a window that will extend from 6:08 p.m. to 6:23 p.m. Friday. Air Force meteorologists say there is an 80 percent chance that the weather will be acceptable for launch. The main concern is the possibility of ground winds greater than 23 knots during the last four minutes of the countdown. Web posted. (2007). [Delta launch forecast: 80 percent "go" [Online]. Available WWW: <http://www.floridatoday.com/> The Flame Trench blog [2007, February 14].]

February 15: Shuttle Atlantis moves to pad, crew ready for Countdown Test

The space shuttle Atlantis arrived at its launch pad at NASA's Kennedy Space Center, Fla., at 3:09 p.m. EST on top of the giant vehicle known as the crawler transporter. The next milestone for the upcoming mission, STS-117, is a full launch dress rehearsal as the six-member crew prepares to continue building the International Space Station. The crawler transporter began carrying Atlantis out of Kennedy's Vehicle Assembly Building at 8:19 a.m.

It traveled just under 1 mph during the 3.4 mile journey. While at the pad, the shuttle will undergo final testing, payload installation and a "hot fire" test of auxiliary power units. When testing is completed, the rotating service structure will be moved around the vehicle for protection. Atlantis' targeted launch date is March 15. During the 11-day mission, the crew will install a new truss segment, retract a set of solar arrays and unfold a new set on the starboard side of the station. The launch marks the first liftoff from Pad 39A in four years. The astronauts and ground crews for the mission will participate in a launch dress rehearsal, known as the terminal countdown demonstration test, Feb. 21 to 23 at Kennedy. The test provides the crew of each shuttle mission with an opportunity to participate in various simulated countdown activities, including equipment familiarization and emergency egress training. The crew includes Commander Rick Sturckow, Pilot Lee Archambault and mission specialists Jim Reilly, Patrick Forrester, Steven Swanson and John "Danny" Olivas. ["Shuttle Atlantis moves to pad, crew ready for Countdown Test," **NASA Media Advisory #M07-24**, February 15, 2007.]

Alliance takes off with rocket

A Delta 2 rocket is set to blast off on a satellite-delivery mission that will mark the beginning of a new era of launch operations on Florida's Space Coast. Standing 12 stories tall, the sporty blue-and-white rocket is scheduled to set sail from launch pad 17B at Canaveral Air Force Station between 6:05 and 6:23 p.m. Friday (February 16). The first will be the first from Cape Canaveral for United Launch Alliance, a joint venture of The Boeing Co. and Lockheed Martin Corp. that merges the venerable Delta and Atlas rocket families, as well as a local work force of 784 people. It also will be an early measure of the melding of once-bitter competitors from two different corporate cultures that have their own long-standing traditions and modes of operation. "We're going about it very cautiously," said Rick Navarro, the company's director of Delta launch operations. The 50-50 partnership combines Delta and Atlas rocket production, engineering, test and launch operations for U.S. government missions. The company's aim is to reduce the cost of launching U.S. military and civil government spacecraft. Alliance officials estimate annual savings of \$100 million to \$150 million. About 3,800 people work for United Launch Alliance, which is headquartered in Denver. The work force at Cape Canaveral includes 559 who work on the Delta 2 and Delta 4 rockets developed by Boeing, and 225 who work on the Lockheed Martin Atlas 5. ["Alliance takes off with rocket," **Florida Today**, February 16, 2007, p 1C & 3C.]

February 16: NASA marks 45th anniversary of Americans in orbit

NASA commemorates the 45th anniversary of Americans in orbit with a special multimedia salute to the original Mercury astronauts and new interviews with Sen. John Glenn, Scott Carpenter and Walter Schirra. On Feb. 20, 1962, an Atlas rocket successfully carried Glenn and the hopes of an entire nation into orbit aboard Friendship 7, a flight that ushered in a new era of space travel that eventually led to Americans walking on the moon by the end of the 1960s. "Glenn's achievement came at a time when there were many unknowns about the ability of humans to survive in space," said NASA Deputy Administrator Shana Dale. Glenn was soon followed into orbit by colleagues Carpenter, Schirra and Gordon Cooper. Their fellow Mercury astronauts Alan Shepard and Virgil "Gus" Grissom flew earlier suborbital flights, and Donald "Deke" Slayton was grounded by a medical condition until the Apollo-Soyuz Test Project in 1975. NASA remembers the achievements of its first generation of explorers through special programming and interviews on NASA Television and an

extraordinary interactive feature on the agency's Internet site, www.nasa.gov. ["NASA marks 45th anniversary of Americans in orbit," **NASA News Release #07-45**, February 16, 2007.]

NASA Commercial Space Partners Complete Milestones

Two companies that are receiving NASA Commercial Orbital Transportation Services funds achieved significant milestones this month in their efforts to develop and demonstrate space cargo launch and delivery systems. Space Exploration Technologies (SpaceX) completed a preliminary design review for its first orbital demonstration mission. Rocketplane Kistler completed a system requirements review for its cargo services system. The two companies want to offer commercial delivery services for cargo, and possibly crews, to the International Space Station in the future. In August 2006, NASA and the companies signed Space Act Agreements that established a series of milestones and criteria for assessing progress toward their individual goals. ["NASA Commercial Space Partners Complete Milestones," **NASA News Release #07-46**, February 16, 2007.]

February 17: NASA moves Apollo 1 capsule to new storage facility

NASA moved the Apollo 1 capsule and related materials approximately 90 feet to a newer, environmentally-controlled warehouse at NASA's Langley Research Center in Hampton, Va., on Saturday, Feb. 17. The move provides better protection for the spacecraft. Astronauts Lt. Col. Virgil I. Grissom, Lt. Col. Edward H. White, and Roger B. Chaffee died when a flash fire swept through the spacecraft during a launch pad test at Cape Canaveral, Fla., on Jan. 27, 1967. Originally known as the AS-204 mission, it was renamed Apollo 1 in honor of the crew. As directed by the Apollo 204 Review Board, the capsule has been maintained at Langley. The review board's accident report made recommendations that led to design and engineering changes and increased the overall safety for future Apollo missions and six successful lunar landings. ["NASA moves Apollo 1 capsule to new storage facility," **NASA News Release #07-44**, February 17, 2007.]

NASA's THEMIS mission launches to study geomagnetic substorms

NASA's THEMIS mission successfully launched Saturday, Feb. 17, at 6:01 p.m. EST from Pad 17-B at Cape Canaveral Air Force Station, Fla. THEMIS stands for the Time History of Events and Macroscale Interactions during substorms. It is NASA's first five-satellite mission launched aboard a single rocket. The spacecraft separated from the launch vehicle approximately 73 minutes after liftoff. By 8:07 p.m. EST, mission operators at the University of California, Berkeley, commanded and received signals from all five spacecraft, confirming nominal separation status. The mission will help resolve the mystery of what triggers geomagnetic substorms. Substorms are atmospheric events visible in the Northern Hemisphere as a sudden brightening of the Northern Lights, or aurora borealis. The findings from the mission may help protect commercial satellites and humans in space from the adverse effects of particle radiation. THEMIS' satellite constellation will line up along the sun-Earth line, collect coordinated measurements, and observe substorms during the two-year mission. Data collected from the five identical probes will help pinpoint where and when substorms begin, a feat impossible with any previous single-satellite mission. NASA's Launch Services Program at the Kennedy Space Center was responsible for the launch of THEMIS aboard a Delta II rocket. The United Launch Alliance, Denver, provided launch

service. ["NASA's THEMIS mission launches to study geomagnetic substorms," **NASA News Release #07-47**, February 17, 2007.]

February 20: NASA looking for new landing zone

NASA resisted local efforts in the 1960s to borrow its unused land for a wildlife refuge and national seashore. The fledgling space agency relented but worried it might one day need the land for expansion and have a tough time getting it back. Fast forward 40 years. After putting men on the moon and an international space station into orbit, NASA needs a place to land the next generation of space flight vehicles. So the agency is having "very preliminary" talks with officials from the Merritt Island National Wildlife Refuge and the Canaveral National Seashore to find a location for a landing and recovery zone. The area would need to be a cleared circle about 6,000 feet across, said Jim Ball, spaceport development manager. The seashore and refuge include 167,000 acres between New Smyrna Beach and Titusville, much of that owned by NASA. But the U.S. Fish and Wildlife Service and the National Park Service share management responsibilities for the land and the threatened and endangered species that live there. NASA asked the other two agencies to help identify the most practical and environmentally suitable location to land reusable elements that might be a part of a private, commercial space transportation system. The agency wants to encourage development of a reliable, lower cost option for delivering cargo and possibly crew to the international space station. NASA sponsored a competition, inviting companies to propose a system to demonstrate Commercial Orbital Transportation Services or COTS. Two companies were chosen to build demonstration projects, Space Exploration Technologies of El Segundo, Calif., and Rocketplane Kistler of Oklahoma City. The companies can choose where to base their operations, Ball said. There's no shortage of locations interested in the economic benefits of becoming a spaceport, he said, but there's "considerable interest" in continuing the traditional use of the Cape as a launch site. Web posted. (2007). [NASA looking for new landing zone [Online]. Available WWW: <http://www.news-journalonline.com/> [2007, February 20].]

February 21: Shuttle astronauts arrive at KSC

The Atlantis astronauts arrived at Kennedy Space Center today and said they are ready for a whirlwind three days of training at the nation's shuttle homeport. Led by veteran space flier Rick Sturckow, the astronauts took off from Ellington Field near Johnson Space Center in Houston in two waves, starting around 11 a.m., flying sleek, white-and-blue T-38 training jets. The astronauts all had arrived by 1 p.m. and were greeted by NASA Launch Director Mike Leinbach, Atlantis Flow Director Angie Brewer and former astronaut Jerry Ross, now a NASA manager. The astronauts will take part in emergency training at launch pad 39A Thursday and a practice countdown for their planned March 15 launch on an International Space Station assembly mission. On Friday, the shuttle astronauts will suit up in their partial pressure launch-and-entry suits and then head out to pad 39A, where they will board shuttle Atlantis for the last few hours of the practice countdown. The crew also includes pilot Lee Archambault and mission specialists James Reilly, Steven Swanson, Patrick Forrester and John "Danny" Olivas. The astronauts are scheduled to deliver a 17.5-ton station truss segment equipped with the third of four sets of massive American solar wings. Launch time on March 15 will be 6:43 a.m. Web posted. (2007). [Shuttle astronauts arrive at KSC [Online]. Available WWW: <http://www.floridatoday.com/> The Flame Trench blog [2007, February 21].]

Spacehab Dismisses RDM Claim with NASA

SPACEHAB, Incorporated, a leading provider of commercial space services, today announced that the Company has filed for a formal dismissal with prejudice of all litigation against NASA relating to losses incurred by SPACEHAB as a result of the 2003 Space Shuttle Columbia accident. In January 2004 the Company initiated a formal proceeding against NASA in which the Company was seeking damages in the amount of \$87.7 million for the loss of its Research Double Module (RDM) as a result of the Columbia accident. In October 2004, NASA responded to this claim with the determination that its liability was \$8.2 million, including interest, and paid SPACEHAB this amount. SPACEHAB subsequently filed an appeal with the Armed Services Board of Contract Appeals and over the past two years, the two parties have proceeded with preparations for a court hearing planned for July 2008. The Company also filed a tort claim in November 2004, seeking damages of \$79.7 million for the loss of the RDM, to which the court granted a motion in June 2006 to stay the case until resolution of the Company's contract claim appeal. Based upon the information available to the Company, SPACEHAB believes that the potential benefits that may be achieved by dismissing the claim against NASA, who is the Company's largest customer, outweigh any potential benefits that may be achieved by continuing the litigation of claims against the agency. The company intends to focus its limited resources on current market opportunities and new business initiatives. Web posted. (2007). [Spacehab Dismisses RDM Claim With NASA [Online]. Available WWW: <http://www.spaceref.com> [2007, February 21].]

February 23: Countdown rehearsal at KSC

Six astronauts went out to the pad this morning to board shuttle Atlantis for a countdown dress rehearsal with the Kennedy Space Center launch team. The drill gave the crew and ground support teams a chance to test emergency procedures for evacuating the orbiter if something goes wrong during the real countdown next month. The crew is scheduled to launch early the morning of March 15 on a construction mission to the International Space Station. As of right now, launch processing remains on track for that launch. Web posted. (2007). [Countdown rehearsal at KSC [Online]. Available WWW: <http://www.floridatoday.com> Flame Trench blog [2007, February 23].]

Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-022307. **Mission: STS-117** - 21st International Space Station Flight (13A) - S3/S4 Truss Segment Solar Arrays; Vehicle: Atlantis (OV-104); Location: Launch Pad 39A; Launch Date: Targeted for March 15, 2007; Launch Pad: 39A; Crew: Sturckow, Archambault, Reilly, Swanson, Forrester and Olivas; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. The STS-117 crew arrived at Kennedy Space Center Wednesday to participate in the Terminal Countdown Demonstration Test (TCDDT), a launch dress rehearsal. The rehearsal includes emergency egress training at the launch pad and a practice run of the final launch countdown, during which the crew climbs aboard Atlantis and executes the checklist for the final hours of the simulated countdown. Earlier in the week, the STS-117 payload was installed into Atlantis' cargo bay. In addition, technicians continued their preparations for the hypergolic propellant load, scheduled for next week. Shuttle interface testing and validation testing of launch pad systems are also under way. **Mission: STS-118** - 22nd International Space Station Flight (13A.1) - S5 Truss Segment; Vehicle: Endeavour (OV-105); Location: Orbiter Processing Facility Bay 2; Launch Date: Targeted for June 28, 2007; Launch Pad: 39A; Crew: Kelly, Hobaugh, Williams,

Morgan, Mastracchio, Caldwell and Anderson; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. Endeavour remains in Orbiter Processing Facility bay 2, and technicians continue preparing the vehicle for its first launch in more than four years. The vehicle has undergone an extensive modification period, including the addition of all of the return-to-flight safety upgrades added to both Discovery and Atlantis. This week, technicians completed preparations for the mating of the aft orbital maneuvering system pod to the reaction control system. Final mate and interface verification is scheduled for the weekend. Work is also under way to prepare the orbiter for installation of the orbiter boom sensor system, which is a robotic arm extension. Final testing of the orbiter's fuel cells was completed this week. **Mission: STS-122;** Vehicle: Discovery. Processing of Discovery, which returned from the STS-116 mission on Dec. 22, continues in Orbiter Processing Facility bay 3. The right-hand orbital maneuvering system pod was removed this week. Technicians are busy working on Discovery's electrical system, preparing for the installation of the new station-to-shuttle power transfer system (SSPTS) modification. This system will allow the orbiter and International Space Station to share power, which will enable the orbiter to remain docked for longer periods of time. Work is also under way to change out Discovery's cockpit windows, with the removal and replacement of window No. 8 completed this week. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, February 23].]

February 26: NASA starts shuttle fuel loading

A hazardous fuel-loading operation is under way at Kennedy Space Center today as NASA continues to ready shuttle Atlantis for a planned March 15 launch on an International Space Station construction mission. With the 18-story shuttle perched on launch pad 39A, engineers are loading toxic rocket propellant into onboard storage tanks that will feed the shuttle's twin orbital maneuvering engines and its nose-and-tail steering jets. Housed in hump-like pods on either side of the orbiter's tail, the maneuvering engines will help boost Atlantis into orbit and also will slow the spaceship so it can reenter the atmosphere at the end of its 11-day mission. The steering jets will be used to make smaller course corrections in flight. They will enable mission commander Rick Sturckow to carry out the precision piloting required to dock the orbiter at the station when both ships are speeding around Earth at 17,500 mph, or five miles a second. Engineers this week also will load propellants into the shuttle's three Auxiliary Power Units, which will be used to gimbal Atlantis' three main engines and operate valves within them during a nine-minute climb into orbit. The turbine-driven units also will provide the hydraulic power needed to control the shuttle's wing flaps and rudder-speedbrake; retract 17-inch liquid hydrogen and liquid oxygen umbilicals within the orbiter at external tank jettison; deploy the main and nose landing gear, main landing gear brakes and anti-skid devices; and enable nose wheel steering. The hydraulic power units that will be used to gimbal the nozzles on the shuttle's solid rocket boosters also will be fueled up this week. Kyle Herring, a spokesman for NASA's Johnson Space Center, said launch preparations are continuing without problems. "Everybody is pretty happy with the way things are going," he said. The launch will be the first of four or five shuttle missions NASA hopes to launch in 2007. The targeted liftoff time for Atlantis on March 15 is 6:43 a.m. . Web posted. (2007). [NASA starts shuttle fuel loading [Online]. Available WWW: <http://www.floridatoday.com> The Flame Trench blog [2007, February 23].]

February 27: NASA completes contract award for space program operations

NASA has completed a modification to convert the letter contract with United Space Alliance (USA), LLC, of Houston, to a fully defined contract covering space shuttle and International Space Station program operations for a base period from Oct. 1, 2006, through Sept. 30, 2010. The contract is valued at \$6.34 billion. The contract includes five, one-year options, thereafter totaling a potential period of performance of nine years to 2015. Efforts under the Space Program Operations Contract include work and support for mission design and planning; software development and integration; astronaut and flight controller training; system integration; flight operations; vehicle processing, launch and recovery; vehicle sustaining engineering; and flight crew equipment processing. It is a cost reimbursement contract, with provisions for award and performance fees. Work in support of this contract is performed at NASA's Johnson Space Center, Houston, Kennedy Space Center, Fla., Marshall Space Flight Center, Huntsville, Ala., and other subcontractor locations USA deems appropriate to complete the work. ["NASA completes contract award for space program operations," **NASA Contract Release #C07-08**, February 27, 2007.]

Hail damage forces Shuttle Atlantis off launch pad

NASA decided Tuesday to roll the space shuttle Atlantis off its launch pad and back inside the Vehicle Assembly Building at the Kennedy Space Center. Managers made the decision after a hail storm Monday damaged the orbiter's External Tank. A new target launch date has not been determined, but teams will focus on preparing Atlantis for liftoff in late April. On Monday, a severe thunderstorm with golf ball-size hail caused what could be 1,000 to 2,000 divots in the giant tank's foam insulation and minor surface damage to about 26 heat shield tiles on the shuttle's left wing. Further evaluation of the tank is necessary to get an accurate accounting of foam damage and must be done in the Vehicle Assembly Building, where the entire tank can be more easily accessed. The shuttle is expected to be moved off the pad by early next week. Once an up-close look at the damage is complete, the type of repair required and the time needed for that work can be determined. Atlantis' flight, STS-117, to the International Space Station will be scheduled sometime after a Russian Soyuz spacecraft returns from the station. The Soyuz is delivering new station crew members and returning others back to Earth in late April. Adequate time is needed between the Soyuz undocking and the shuttle's arrival to the station. STS-117 Commander Rick Sturckow, Pilot Lee Archambault and mission specialists Jim Reilly, Patrick Forrester, Steven Swanson and John "Danny" Olivas will continue training at NASA's Johnson Space Center, Houston, as they await a new target launch date. During the 11-day mission, the astronauts will work with the station crew and ground teams to install a new truss segment, unfold a new set of solar arrays and retract one array on the starboard side of the station. Space Shuttle Program managers are gathered at the Kennedy Space Center for the traditional Flight Readiness Review for the mission. During the two-day meeting, NASA managers and engineers assess any risks associated with the mission and determine whether the shuttle's equipment, support systems and procedures are ready for flight. The meeting, scheduled for Tuesday and Wednesday, will continue as planned. ["Hail damage forces Shuttle Atlantis off launch pad," **NASA News Release #07-60**, February 27, 2007.]

February 28: Griffin: First Manned CEV Flight May Slip To 2015

NASA Administrator Michael Griffin told Senate lawmakers Feb. 28 that the first launch of the Orion Crew Exploration Vehicle (CEV) with astronauts aboard is likely to slip to early 2015 as a result of the budget cut contained in the recently passed fiscal 2007 continuing

resolution. "I am projecting a four- to six-month slip in our first launch date for the Orion and Ares," Griffin told members of the Senate Commerce Subcommittee on Space, Aeronautics and Related Sciences. Any further delay would cause NASA to miss the 2014 deadline for the Orion's debut mandated by President Bush when he first announced the Vision for Space Exploration in January 2004. Bush also set a deadline of 2010 for the space shuttle's retirement and 2020 for the return of astronauts to the surface of the moon. Web posted. (2007). [Griffin: First Manned CEV Flight May Slip to 2015 [Online]. Available WWW: <http://www.aviationweek.com> [2007, March 1].]

Griffin: Don't judge NASA by Nowak

NASA didn't recognize astronaut Lisa Nowak's mental condition before she allegedly attacked a romantic rival in an airport parking lot last month, the space agency's chief said Wednesday. During a Senate hearing about NASA's budget, NASA Administrator Mike Griffin was asked about the bizarre case. Nowak allegedly donned diapers to avoid bathroom stops and took off on a cross-country trip armed with a steel mallet, a four-inch knife and a BB pistol. Specifically, U.S. Sen. Byron Dorgan, D-N.D. and a member of the Senate Subcommittee on Space, Aeronautics and Related Sciences, wanted to know whether NASA was looking at the psychological screening performed on applicants for the astronaut corps. "The allegations against Capt. Nowak are, of course, very serious, and it's a legal matter. It's in the legal system. I just will not address those allegations," Griffin said. "But clearly she is in major trouble, and clearly we failed as an institution to recognize that she was very troubled." Griffin noted that NASA is forming two separate groups (one with outside experts from "high-performance, high-stress" organizations in the military services) to examine the agency's screening procedures. He said those studies would be made available to Dorgan once they are complete. Griffin, an engineer with three decades of experience in the U.S. space program, also said NASA's astronaut corps should not be judged by the actions of one. Nowak, who flew as a mission specialist on NASA's second post-Columbia test flight in July, is on a 30-day leave of absence from the agency. The married mother of three is charged with attempted murder, attempted kidnapping and three other crimes. ["Griffin: Don't judge NASA by Nowak," **Florida Today**, March 1, 2007, p 7A.]

During February: Downsizing

NASA has its share of budget woes, but it won't be able to fix them by retiring space shuttle early. The agency has tentatively decided to ground Atlantis following the Hubble servicing mission scheduled for late next year, since after that the orbiter is slated for overhaul and maintenance that could last almost until the fleet is retired in 2010. Space operations managers are studying whether it would make sense to fly Atlantis once more after the Hubble mission to help finish space station assembly, says Bill Gerstenmaier, associate administrator for space ops. But either way, the number of orbiters actually flying is "not a big cost driver," since Atlantis will be kept "kind of in a flight-ready configuration" as a source of space parts for the life of the program. ["Downsizing," **Aviation Week and Space Technology**, February 12, 2007, p 19.]

MARCH

March 1: Atlas V cleared for STP-1 launch

United Launch Alliance (ULA) managers have concluded that there is no risk to their Atlas V vehicle for the March 9 launch of STP-1, following investigations into the commonality issue between their Lockheed Martin rocket and the failure of Sea Launch's Zenit 3SL vehicle carrying NSS-8 on January 30. The ULA launch from Cape Canaveral is a six satellite mission to be carried by the Atlas V. The launch - which will also debut ESPA ring payload adaptor - has been delayed since its initial launch date back in October. Web posted. (2007). [Atlas V cleared for STP-1 launch [Online]. Available WWW: <http://www.nasaspaceflight.com/> [2007, March 1].]

Budget cuts to delay Orion, NASA warns

A cut of half a billion dollars in NASA's exploration program approved by Congress last month will push the first manned flight of the agency's new Orion spacecraft into early 2015, NASA administrator Mike Griffin warned Congress Wednesday. In a hearing on the agency's budget by the space subcommittee of the Senate Commerce Committee, Griffin said that the cut would force the agency to slip development of the Orion spacecraft by four to six months, meaning that the first flight would not take place until early 2015. NASA had previously planned to meet a deadline set by President Bush when he announced the Vision for Space Exploration three years ago to have Orion, previously known as the Crew Exploration Vehicle, enter service by the end of 2014. Senators expressed concern about the effects of an extended gap between the retirement of the shuttle in 2010 and the introduction of Orion, and said they would look into ways to give NASA authority to transfer money from other agency programs or other solutions to make up for the shortfall. Web posted. (2007). [Budget cuts to delay Orion, NASA warns [Online]. Available WWW: <http://www.spacetoday.net/> [2007, March 2].]

Fuel to be removed from space shuttle

NASA officials decided to remove propellants from space shuttle Atlantis before returning the spacecraft to the Vehicle Assembly Building. The decision stems from a Monday severe thunderstorm that pummeled the shuttle with golf ball-sized hail, producing as many as 2,000 "divots" in the shuttle's external fuel tank's foam insulation and damaging about 26 heat shield tiles on the shuttle's left wing. National Aeronautics and Space Administration officials at the Kennedy Space Center said the necessity of removing the fuel will delay the rollback, now expected to occur Sunday or Monday. NASA said further evaluation of the tank must be done in the Vehicle Assembly Building, where the entire shuttle can be more easily accessed. A new target launch date will be set after the damage is assessed and the time needed for repairs can be determined but NASA said teams will focus on preparing Atlantis for a late April launch. Web posted. (2007). [Fuel to be removed from space shuttle [Online]. Available WWW: <http://www.upi.com/> [2007, March 1].]

Stephen Hawking to go weightless at KSC

Famed physicist Stephen Hawking is going to experience weightlessness on a space tourism flight taking off from Kennedy Space Center. Professor Hawking, a best-selling author and expert on gravity, is signed up for a weightless flight from the Shuttle Landing Facility on April 26, according to Zero Gravity Corporation. The company, which is providing parabolic simulated zero-gravity flights to tourists, announced this morning what is likely to

be its highest profile flight yet. In the company's written release, Hawking is quoted as saying, "As someone who has studied gravity and black holes all of my life, I am excited to experience first hand weightlessness and a zero-gravity environment." Hawking thanked the company for making the opportunity available to him personally, and to others who are disabled. The company says it arranged the flight in part to demonstrate its interest in making the flights accessible to people with disabilities, but also to benefit charitable organizations, including Easter Seals. Two additional slots on the flight will be auctioned off for charity. The experience culminates, following some basic training, with a 90-minute excursion over the Atlantic Ocean aboard G-Force One. The modified Boeing 727 jet flies a series of parabolic maneuvers. The sharp ascent and descent of the airplane gives participants the experience of feeling weightless, simulating what they might feel in a real space flight. NASA and the Russians have long used the same kind of process to train astronauts for space missions. Web posted. (2007). [Stephen Hawking to go weightless at KSC [Online]. Available WWW: <http://www.floridatoday.com/> The Flame Trench blog [2007, March 1].]

Shuttle rollback pushed back

Shuttle Atlantis won't roll back to its Kennedy Space Center assembly building until Sunday because NASA is draining toxic rocket fuel out of storage tanks aboard the vehicle. The fuel off-loading operation is being done just in case the shuttle has to be disassembled to complete repairs to the ship's hail-hammered external tank. If that turns out to be the case, the shuttle's International Space Station assembly mission might be delayed beyond late April. And if the tank cannot be repaired at KSC, then the mission likely will be postponed until June. The off-loading operation involves draining nitrogen tetroxide and monomethyl hydrazine from storage tanks that feed the shuttle's twin maneuvering engines as well as its 44 nose-and-tail steering jets. The same propellants are being drained from the shuttle's three Auxiliary Power Units, which provide the hydraulic power needed to steer the shuttle's three engines in flight and control its wing flaps, rudder-speedbrake, landing gear, brakes and nosewheel steering system during atmospheric reentry and landing. The Hydraulic Power Units that enable the nozzles on the shuttle's twin solid rocket boosters to be gimballed also are being drained. The concern is that toxic rocket fuel could leak if the shuttle is disassembled and towed back to its processing facility. NASA now is planning to remove the shuttle's payload from the ship's cargo bay early Saturday. The 17.5-ton station truss segment will be moved into holding cell at launch pad 39A. The six-hour trip from pad 39A to the assembly building is scheduled to begin at 7 a.m. Sunday. Web posted. (2007). [Shuttle rollback pushed back [Online]. Available WWW: <http://www.floridatoday.com/> The Flame Trench blog [2007, March 1].]

March 2: Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-030207. **Mission:** STS-117 - 21st International Space Station Flight (13A) - S3/S4 Truss Segment Solar Arrays; **Vehicle:** Atlantis (OV-104); **Location:** Launch Pad 39A; **Launch Date:** Targeted for April 2007; **Launch Pad:** 39A; **Crew:** Sturckow, Archambault, Reilly, Swanson, Forrester and Olivas; **Inclination/Orbit Altitude:** 51.6 degrees/122 nautical miles. Preparations are underway at Launch Pad 39A to roll back the STS-117 Shuttle stack to the Vehicle Assembly building. Roll back is currently targeted for Sunday morning. STS-117 is returning to the VAB so that engineers and technicians can thoroughly inspect the shuttle for hail damage that resulted from a violent storm on Monday evening. Once inspections are complete, a decision will be made on the type of repair

necessary and the time needed for that work. On Thursday, workers at the pad offloaded the fuel and oxidizer from the orbiter maneuvering system tanks. The orbiter's payload bay doors are open, and work is underway to remove the payload from the cargo bay today. Demating of the shuttle from the pad systems will continue through Saturday, with rotation of the pads' rotating service structure scheduled for early Sunday morning. Earlier in the week, the Space Shuttle Program managers met for a 2-day STS-117 Flight Readiness Review. During this meeting managers and engineers review risks associated with the mission and determine whether the shuttle's equipment, support systems and procedures are ready for flight. At the conclusion of the FRR, there was a unanimous decision to proceed with the STS-117 mission, pending resolution of the open work to make necessary repairs to the hail damage on the shuttle. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, March 2.]

March 3: Nowak avoids attempted murder charge

Prosecutors in Florida have charged NASA astronaut Lisa Nowak with attempted kidnapping and other crimes after she attacked a romantic rival last month, but will not be charged with attempted murder. Nowak will face charges of attempted kidnapping, burglary, and misdemeanor battery after attempting to attack Colleen Shipman in an airport parking lot in Orlando in the early morning hours of February 5th. Nowak was arrested immediately after the attack and, at that time, prosecutors said they planned to include a more serious charge of attempted murder against Nowak. The astronaut, who flew on the STS-121 shuttle mission last year, was released on bail several days after the attack and returned home to Houston; she was placed on 30-day leave by NASA. A trial date has not been set. If convicted, Nowak could face up to life in prison. Web posted. (2007). [Nowak avoids attempted murder charge [Online]. Available WWW: <http://www.spacetoday.net/> [2007, March 3].]

March 4: Shuttle back inside VAB

Shuttle Atlantis is back inside the Vehicle Assembly Building after a six-hour-plus rollback from its oceanside launch pad for repairs. The shuttle, badly battered by a freak hail storm last Monday, will be thoroughly inspected and work will begin soon to repair any damage that could pose a threat to the spaceship and crew in flight. The shuttle reached the VAB around 2 p.m., and then eased into a bay where it will be surrounded by work platforms. Most of the hail damage was done to the insulating foam near the very top of the 15-story tall external tank. NASA deemed it impossible to make repairs to those hard-to-reach spots at the launch pad. The wind-blown hail dinged, gouged and scratched the insulating foam on the tank as well as some of the black heat-shielding tiles on the orbiter's belly. It is not yet known what repairs, if any, must be done to the orbiter itself. The uncertainty has left NASA without a firm launch date. The agency hopes that KSC workers will be able to identify the problems, make the repairs and get the shuttle back out to Pad 39A later this month in preparation for a possible April launch. The earliest date would be a few days after April 20, when a Russian Soyuz departs the space station. The shuttle could launch anytime from late April to late May. Web posted. (2007). [Shuttle back inside VAB [Online]. Available WWW: <http://www.floridatoday.com/> The Flame Trench blog [2007, March 4].]

Congress to review NASA probe report

White officials have agreed to release a confidential report by April 2 that details a federal investigation of NASA Inspector General Robert Cobb, congressional sources said. Cobb, a White House political appointee, has been NASA's inspector general since April 2002. Investigators from the Department of Housing and Urban Development were told to conduct the inquiry and then forward their findings to the President's Council on Integrity and Efficiency. NASA Administrator Michael Griffin also is reviewing the findings. ["Congress to review NASA probe report," **Orlando Sentinel**, March 7, 2007, p A7.]

March 7: Statement Regarding the Status of Lisa Nowak

U.S. Navy Capt. Lisa Nowak's detail as a NASA astronaut has been terminated, effective March 8, by mutual agreement between NASA and the U.S. Navy. Nowak, an active duty naval officer, began her detail with NASA following selection as a member of the astronaut class of 1996. She flew one mission, STS-121 in 2006. NASA requested an end to the detail because the agency lacks the administrative means to deal appropriately with the criminal charges pending against Nowak. Because Nowak is a naval officer on assignment to NASA, rather than a NASA civil servant, she is not subject to administrative action by NASA. Nowak will receive her next assignment from the U.S. Navy. NASA's decision to terminate Nowak's detail does not reflect any position by NASA on the criminal charges pending in Florida. ["Statement Regarding the Status of Lisa Nowak," **NASA News Release #07-26**, March 7, 2007]

NASA Completes Key Review of Orion Spacecraft

NASA has established a requirements baseline for the Orion crew exploration vehicle. The Orion Project completed its system requirements review in cooperation with its prime contractor, Lockheed Martin, March 1. The review marked the first major milestone in the Orion engineering process and provided the foundation for design, development, construction and safe operation of the spacecraft that will carry explorers to Earth orbit, to the moon, and eventually to Mars. The detailed requirements established in this review will serve as the basis for ongoing design analysis work and systems testing. The Orion review followed an overall review of requirements for the Constellation Program that was completed in November. Similar reviews are planned later this spring for ground and mission operations systems that will support Constellation launch systems and space flight operations ground infrastructure. Once all project-level reviews are complete, the Constellation Program will hold another full review to update baseline requirements. A lunar architecture systems review of equipment associated with surface exploration and science activities on the moon is expected in the spring of 2009. ["NASA Completes Key Review of Orion Spacecraft," **NASA News Release #07-58**, March 7, 2007.]

Pad 39B's transition

NASA managers are continuing to build their roadmap for Pad 39B's transition to Ares, in tandem with keeping the pad available to host one final shuttle, a shuttle they hope they'll never have to launch. Work will be conducted - including the construction of three giant lightning towers - around the pad for Ares, prior to the Hubble mission (STS-125), which will launch from 39A with Atlantis, while Discovery is sat on 39B as the rescue shuttle. Plans by Constellation for the 600ft high towers that will protect Ares I from lightning strikes, and a presentation to NASA's PRCB (Program Requirements Control Board) relating to the Hubble LON (Launch On Need) role, show the attention surrounding Pad 39B only intensified after its 'final' launch, carried out in December 2006 with STS-116. Web posted.

(2007). [Pad 39B's transition [Online]. Available WWW: <http://www.nasaspaceflight.com/> [2007, March 7].]

Launch pad damage delays Delta 4 flight

The planned April 1 launch of a Delta 4-Heavy rocket and a missile warning satellite is being delayed because of damage done at its launch pad during a recent countdown dress rehearsal. The United Launch Alliance rocket and its payload -- a Defense Support Program spacecraft -- are not expected to fly before mid-April. Officials with Air Force Space and Missile Systems Center in Los Angeles said the satellite-delivery mission was postponed after two structural cracks were discovered in the metallic launch table beneath the rocket at Launch Complex 37 at Cape Canaveral Air Force Station. The cracks were found after a so-called Wet Dress Rehearsal -- a propellant loading test and practice countdown. An investigation team is working to determine the root cause of the problem. A new target date will be set after the investigation is complete and data from the dress rehearsal has been reviewed. Web posted. (2007). [Launch pad damage delays Delta 4 flight [Online]. Available WWW: <http://www.floridatoday.com/> the flame trench blog [2007, March 7].]

March 8: Atlas 5 launches satellites

A prototype robotic service station is speeding around the planet today on a \$300 million mission to show that spacecraft can be autonomously tuned up and refueled in orbit. Mounted atop a 19-story Atlas 5 rocket, the next-generation servicing satellite and a companion craft were lofted into orbit after a night launch from Cape Canaveral Air Force Station. The Atlas roared off its launch pad at 10:10 p.m. Thursday. Four other spacecraft designed to test advanced technologies also were onboard, but the Orbital Express promises to be revolutionary. "What we're trying to do here with Orbital Express is refuel satellites, repair them and upgrade them," said Air Force Lt. Col. Fred Kennedy, program manager with the Defense Advanced Research Projects Agency. If successful, the mission could "change the paradigm of how we operate in space," he said. An ability to autonomously refuel, repair and upgrade spacecraft would radically change satellite design. The Orbital Express includes two spacecraft. One is a servicing satellite equipped with a robotic arm, a tank full of rocket fuel and a spare battery. The other is a spacecraft that is to be fueled in orbit. It will be outfitted with the battery, too. Web posted. (2007). [Atlas 5 launches satellites [Online]. Available WWW: <http://www.floridatoday.com/> [2007, March 9].]

March 9: Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-030907. **Mission: STS-117** - 21st International Space Station Flight (13A) - S3/S4 Truss Segment Solar Arrays; Vehicle: Atlantis (OV-104); Location: Vehicle Assembly Building; Launch Date: Targeted for April 2007; Launch Pad: 39A; Crew: Sturckow, Archambault, Reilly, Swanson, Forrester and Olivas; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. On Sunday, Atlantis rolled from Launch Pad 39A to the Vehicle Assembly Building, where employees spent the week positioning platforms around the shuttle to allow for inspections and repairs to hail-damaged areas. Inspections of the external tank are expected to be completed next week. Some foam sanding has begun in the nose cone area of the tank. Inspections are finished for the solid rocket boosters and nearly complete for the orbiter, with 20 of 28 hail-damaged areas, all on the left side of the vehicle, already repaired. **Mission: STS-118** - 22nd International Space Station Flight (13A.1) - S5 Truss Segment; Vehicle: Endeavour (OV-105); Location: Orbiter Processing Facility Bay 2; Launch Date: Targeted for June 28, 2007; Launch Pad: 39A;

Crew: Kelly, Hobaugh, Williams, Morgan, Mastracchio, Caldwell and Anderson; Inclusion/Orbit Altitude: 51.6 degrees/122 nautical miles. Endeavour remains in Orbiter Processing Facility bay 2, and technicians continue preparing the vehicle for its first launch in more than four years. The vehicle has undergone an extensive modification period, including the addition of all of the return-to-flight safety upgrades added to both Discovery and Atlantis. This week, technicians successfully completed fuel cell No. 2 coolant loop reservicing. The payload premate testing is under way. Checkout and interface verification for the orbital maneuvering system and the forward reaction control system was completed. Hydraulic system/flight control system checkout has concluded. The thermal barriers of the nose landing gear door are being installed prior to the landing gear functional test. **Mission: STS-122** - 24th International Space Station Flight (1E) - Columbus Laboratory; Vehicle: Discovery (OV-103); Location: Orbiter Processing Facility Bay 3; Launch Date: Targeted for Fall 2007; Launch Pad: TBD; Crew: Frick, Poindexter, Walheim, Love, Melvin, Schlegel and Eyharts; Inclusion/Orbit Altitude: 51.6 degrees/122 nautical miles. Processing of Discovery, which returned from the STS-116 mission on Dec. 22, continues in Orbiter Processing Facility bay 3. Technicians are busy working on Discovery's electrical system, preparing for the installation of the new Station to Shuttle Power Transfer System modification. This system will allow the orbiter and International Space Station to share power, which will enable the orbiter to remain docked for longer periods of time. Work is also under way to replace thermal tile around the main landing gear door and the external tank doors with a stronger tile, known as BRI tile. Water spray boiler No. 1 installation was completed, and main propulsion system flow liner inspections are under way. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, March 9].]

Nelson: NASA budget requests threaten CEV schedule

If the Bush administration continues to fund NASA below the levels authorized by Congress, by the end of fiscal 2008 the agency will be more than \$3 billion short of the funding required to keep the Orion Crew Exploration Vehicle and other programs on schedule, according to Sen. Bill Nelson (D-Fla.). "For the third straight year, the administration has not requested the full, authorized amount for NASA specified in the NASA Authorization Act of 2005," said Nelson, who chairs the Senate Commerce Subcommittee on Space, Aeronautics and Related Sciences. The authorization act called for a total NASA budget of \$17.9 billion in FY '07 and \$18.7 billion in FY '08. The continuing budget resolution gave NASA only \$16.2 billion in FY '07 and Bush's request for FY '08 is \$17.3 billion, yielding a total deficit of \$3.1 billion, according to Nelson's office. "If we continue on this president's path, we face an extended period when the United States will have no human access to space," Nelson said in an update. "This is unacceptable - especially at a time when other nations are aggressively developing space technology." In testimony before Nelson's subcommittee last week, NASA Administrator Michael Griffin revealed that the continuing budget resolution that NASA is operating under for fiscal 2007 - which effectively cuts more than half a billion dollars from the agency's topline - is likely to cause the Orion to miss the 2014 deadline originally set by Bush for its operational debut and slip into early 2015 (DAILY, March 2). Given the space shuttle's 2010 retirement, this would leave nearly a five- year gap during which the U.S. will have no indigenous human space flight capability. Any further "long delays" to the CEV could lead to job cuts at NASA, Nelson said. "Our space program would be dealt a tremendous blow if layoffs at the Cape

precipitated a 'brain drain' like the one NASA experienced in the post-Apollo downturn of the late 1970s," he said. Nelson has asked Griffin to calculate how much additional money NASA would need to accelerate the CEV's debut to as early as 2012. He plans to "press for additional money" for the project this spring, he said. E-mail distribution. (2007). [Aviation Week's Aerospace Daily & Defense Report Re: "Nelson: NASA budget requests threaten CEV schedule," [Electronic]. Vol. 221, No. 46, [March 9, 2007.].]

March 10: NASA's AIM spacecraft arrives at Vandenberg for April 25 launch

NASA's Aeronomy of Ice in the Mesosphere (AIM) spacecraft arrived March 10 at Vandenberg Air Force Base, Calif., in anticipation of its April 25 launch aboard a Pegasus XL rocket. The spacecraft features three instruments designed to study polar mesospheric clouds located at the edge of space. The mission will help explain why these clouds form and what has caused them to become brighter and more numerous, as well as appear at lower latitudes, in recent years. E-mail distribution. (2007). [Aviation Week's Aerospace Daily & Defense Report Re: "NASA's AIM spacecraft arrives at Vandenberg for April 25 launch," [Electronic]. Vol. 221, No. 48, [March 13, 2007.].]

March 12: ISS Module from Japan Arrives at NASA

The Experiment Logistics Module Pressurized Section for the Japanese Experiment Module arrived at NASA's Kennedy Space Center in Florida early Monday, March 12. The Japanese Experiment Module is composed of three segments and is known as Kibo, which means "hope" in Japanese. Kibo is Japan's first human space facility and its primary contribution to the station. It will enhance the unique research capabilities of the orbiting complex by providing an additional environment in which astronauts can conduct science experiments. The Experiment Logistics Module Pressurized Section will serve as an on-orbit storage area for materials, tools and supplies. It can hold up to eight experiment racks and will attach to the top of another larger pressurized module. The ship carrying the module departed Feb. 7 from Yokohama, Japan, for the United States. Kibo's various components will be assembled in space during the course of three shuttle missions. The first of those three missions, STS-123, will carry the Experiment Logistics Module Pressurized Section aboard the space shuttle Endeavour, targeted for launch in 2007. ["International Space Station Module From Japan Arrives at NASA," **NASA News Release #07-63**, March 12, 2007.]

Safety analysis needed to clear shuttle's tank repairs

Amid ongoing inspections of the shuttle Atlantis's hail-damaged external fuel tank, engineers are optimistic they can make unprecedented repairs at the Kennedy Space Center, avoiding a lengthy launch delay to late June. Until the assessment is complete, NASA officially continues to hold out some hope for a launch attempt in late April, after a Russian mission to the international space station. But engineers say a flight in early to mid May appears much more likely. And that assumes a detailed, yet-to-be-completed analysis shows repaired foam high above the shuttle won't come off in flight and, if any does, the timing and expected debris size won't pose any significant additional risk of catastrophic impact damage to the shuttle's heat shield. "The jury is still out on that," said one NASA manager. That's at least in part because some of the damaged insulation up near the tip of the fuel tank needs to be repaired by spraying on new foam, a so-called "non-standard" procedure that will require test sprays on a mockup before engineers are cleared to attempt repairs on the flight hardware. Relatively shallow pits and dings can be repaired by "sand-and-blend" techniques

and in cases of moderate damage, foam can be poured into depressions and then sanded as required. NASA managers had hoped to launch Atlantis on the first of five planned 2007 shuttle missions March 15. But during a freak thunderstorm that moved over pad 39A on Feb. 26, the shuttle's external tank was blasted by hail, suffering more than 1,000 pits and gouges in its foam insulation. Atlantis, shielded by moveable weather protection panels, was relatively unscathed. But NASA managers ultimately decided to move the shuttle back to the Vehicle Assembly Building for detailed inspections and, if possible, repairs. After erecting access platforms, engineers used a grid system to characterize and pinpoint damage across all areas of the tank. NASA managers initially were concerned they might have to move Atlantis to a tank slated for use by the shuttle Endeavour this summer, a tank not scheduled for delivery until early April. Moving to a new tank would have delayed Atlantis's launch to around June 21. NASA's damage assessment is not yet complete, but during meetings late last week, engineers said they were much more optimistic about making repairs in the Vehicle Assembly Building, with Atlantis still attached, and avoiding a more lengthy delay to late June. Web posted. (2007). [Safety analysis needed to clear shuttle's tank repairs [Online]. Available WWW: <http://www.spaceflightnow.com/> [2007, March 12.]

U.S. Navy Capt. Lisa Nowak

U.S. Navy Capt. Lisa Nowak will take up duties on the staff of the Naval Air Training Command at NAS Corpus Christi, Tex., after her assignment as a NASA astronaut was terminated last week. Nowak faces felony charges in Florida stemming from an alleged stalking incident at the Orlando airport Feb. 5, and already had been replaced as capcom on the upcoming STS-117 mission. Nowak's detail was terminated one day after the National Air and Space Museum awarded the STS-121 shuttle mission team its 2007 Current Achievement Trophy. Nowak flew as a robotic arm operator on that mission. ["News breaks, Americas, U.S. Navy Capt. Lisa Nowak," **Aviation Week & Space Technology**, March 12, 2007, p 18.]

March 14: Hubble could last until 2010 without shuttle visit

The Hubble Space Telescope could survive in orbit without a servicing mission until 2010, the year the space shuttles are set to retire, NASA chief Mike Griffin said today. Contrary to earlier reports, the window to reach Hubble and repair its ailing batteries and gyroscopes does not close after December 2008, Griffin said in response to a question posed during a hearing of the House Appropriations Subcommittee on Commerce, Justice and Science. NASA originally estimated it could fly a servicing mission to the aging space telescope by early 2008, but shifted the flight to September of that year so a second shuttle could be ready in case a rescue mission were necessary, Griffin said. Hubble's batteries and gyroscopes are being carefully managed by ground controllers to keep the telescope alive while it awaits a fourth, and probably final repair mission, said Colleen Hartman, acting associate administrator for space science who was at the hearing with Griffin and other agency officials. But every month the mission is delayed, costs NASA \$10 million to keep the servicing mission together, according to Griffin. The agency wants to get the Hubble mission completed in September of 2008 as currently scheduled to avoid additional costs, Griffin said. A report from the Government Accountability Office, citing NASA estimates, set the cost of the Hubble servicing mission at between \$1.7 billion and \$2.4 billion. Griffin did not have an up to date cost estimate and told lawmakers he would provide that information later. Web posted. (2007). [Hubble could last until 2010 without shuttle visit

[Online]. Available WWW: <http://www.floridatoday.com/> The Flame Trench blog [2007, March 15.]

NASA estimates \$750M needed in FY '09-10 to maintain CEV schedule

NASA will need an additional \$350 million in fiscal 2009 and \$400 million FY '10 to reverse the effect of the FY '07 continuing budget resolution and put the Orion Crew Exploration Vehicle (CEV) back on schedule to debut in 2014, Administrator Michael Griffin told House appropriators March 13. The continuing resolution, which freezes NASA's budget at FY '06 levels, amounts to a \$545 million cut to the agency's topline compared to its FY '07 request. Griffin told lawmakers earlier this month that the appropriations bill further directs a reduction to human spaceflight of \$677 million, \$577 million of which is coming out of exploration - primarily the Orion and Ares Crew Launch Vehicle. This will push the Orion's manned debut back an estimated six months to 2015. Restoring the funding later to regain schedule will cost more than the original amount cut, Griffin said, because "money added later always costs more than money taken away now." By March 15 NASA is due to deliver to Congress its FY '07 operating plan, which will detail precisely how it proposes to deal with the funding cut. The slip to 2015 would mean NASA will miss President Bush's originally announced deadline of 2014 for the Orion's manned debut. E-mail distribution. (2007). [Aviation Week's Aerospace Daily & Defense Report Re: "NASA estimates \$750M needed in FY '09-10 to maintain CEV schedule," [Electronic]. Vol. 221, No. 49, [March 14, 2007.].]

March 15: NASA Space Station Module in Perfect "Harmony"

Ever since it was designed for the International Space Station, it has been known as the Node 2 module. Now thanks to students from across the United States, Node 2 also will be known as "Harmony." At an event Thursday at NASA's Kennedy Space Center, Fla., NASA announced the new name. Harmony is being prepared at Kennedy for its space shuttle Atlantis flight, designated STS-120, targeted for launch in 2007. Members of the STS-120 crew and managers who are preparing Harmony for launch took part in the naming event. The name was chosen from an academic competition involving more than 2,200 kindergarten through high school students from 32 states. The Node 2 Challenge required students to learn about the space station, build a scale model and write an essay explaining their proposed name for the module that will serve as a central hub for science labs. Harmony was built for NASA in Europe. It is approximately 21 feet long and 14 feet in diameter. Harmony joins three other named U.S. modules on the station: the Destiny laboratory, the Quest airlock and the Unity node. This is the first U.S. piece of the space station named by people outside of NASA. ["NASA Space Station Module in Perfect "Harmony" With New Name," **NASA News Release #07-65**, March 15, 2007.]

Kodiak Launch Complex pad to get upgrade

A launch tower at the Kodiak Launch Complex is getting a 1.5 million dollar face lift. A contract was awarded this week to Dunkin and Bush Incorporated, an industrial contractor based in Redmond, Washington. Pat Ladner with the Alaska Aerospace Development Corporation says Dunkin and Bush was the only firm to submit a bid for the project during an open, competitive process. The tower stands more than 150 feet high and is one of two built for missile launching and testing. It has been used once since its construction was completed in 2000. Work on the structure will begin later this month, with completion set

for August. Ladner says the roof and tower will be sandblasted to get rid of accumulated rust. Then coats of special paint made to withstand Kodiak's maritime atmospheric conditions will be applied. Web posted. (2007). [Kodiak Launch Complex pad to get upgrade [Online]. Available WWW: <http://www.ktva.com/alaska/> [2007, March 15.]

Delays threaten station timetable

NASA's task to fix a hail-hammered shuttle fuel tank creates uncertainties about its ability to resume International Space Station assembly this spring and launch European and Japanese science labs by year's end. A potential three-month delay in the next shuttle flight raises questions about agency plans to finish building and outfitting the station by a September 2010 deadline set by President Bush. But officials hope Atlantis and six astronauts can set sail during a launch period from April 22 through May 21. Otherwise, the crew will not fly before June 8. A recovery plan for the next shuttle mission should be complete late next week. Once the fleet is retired, NASA will have no guaranteed way to launch large spare parts like heavy gyroscopes that keep the station flying properly in orbit. The devices have proven to be prone to failure, and they are just one example of spare parts needed to keep the station flying safely. Also to be hauled up: extra shielding to protect the station from micrometeorite or debris strikes that could penetrate the hull, destroying the outpost and killing all aboard. NASA studies predict there is a 55 percent chance of a penetrating strike over a 10-year period. The chance of a catastrophic strike: nine percent. The extra shielding and other measures would reduce those odds to 29 percent and 5 percent, respectively. NASA is in a bind. The agency must retire the shuttle on time so it can afford to build a replacement. Even at this point, the replacement will not be ready to fly before late 2014. Web posted. (2007). [Delays threaten station timetable [Online]. Available WWW: <http://www.floridatoday.com/> [2007, March 15.]

March 16: Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-031607. **Mission: STS-117** - 21st International Space Station Flight (13A) - S3/S4 Truss Segment Solar Arrays; Vehicle: Atlantis (OV-104); Location: Vehicle Assembly Building; Launch Date: Targeted for April 2007; Launch Pad: 39A; Crew: Sturckow, Archambault, Reilly, Swanson, Forrester and Olivas; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. Space Shuttle Atlantis, now parked in high bay No. 1 of the Vehicle Assembly Building, continues to undergo inspection for hail damage. Special scaffolding and access platforms have been erected to allow for the mapping and inspection of the external fuel tank, and repair methods and criteria are being developed. Repairs to the orbiter's thermal protection system tiles are nearly complete, and technicians are preparing to conduct non-destructive evaluation of the vehicle's reinforced carbon-carbon panels on the left wing leading edge using thermography equipment. Shuttle program managers plan to meet next week to assess the damage and repair status. **Mission: STS-118** - 22nd International Space Station Flight (13A.1) - S5 Truss Segment; Vehicle: Endeavour (OV-105); Location: Orbiter Processing Facility Bay 2; Launch Date: Targeted for June 28, 2007; Launch Pad: 39A; Crew: Kelly, Hobaugh, Williams, Morgan, Mastracchio, Caldwell and Anderson; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. Endeavour remains in Orbiter Processing Facility bay 2, and technicians continue preparing the vehicle for its first launch in more than four years. The vehicle has undergone an extensive modification period, including the addition of all of the return-to-flight safety upgrades added to both Discovery and Atlantis. This week, technicians completed checkout of the trajectory control sensor system, and the payload pre-mate testing is nearly finished.

Preparations are under way for the installation of the orbiter boom sensor system, which is a 50-foot extension for the shuttle's robotic arm. The waste contamination system checkout is complete. Testing of the aerosurface control system has also concluded. This involved moving flight control systems such as the elevons, body flap and rudder speed break using the hydraulic systems. **Mission: STS-122** - 24th International Space Station Flight (1E) - Columbus Laboratory; Vehicle: Discovery (OV-103); Location: Orbiter Processing Facility Bay 3; Launch Date: Targeted for Fall 2007; Launch Pad: TBD; Crew: Frick, Poindexter, Walheim, Love, Melvin, Schlegel and Eyharts; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. Processing of Discovery, which returned from the STS-116 mission on Dec. 22, continues in Orbiter Processing Facility bay 3. Work on the installation of the new Station to Shuttle Power Transfer System continues in the forward, mid-body and aft sections of the vehicle. This system will allow the orbiter and International Space Station to share power, which will enable the orbiter to remain docked for longer periods of time. Work is also under way to prepare for the installation of fuel cell No. 2. Technicians continue replacing thermal tile around the main landing gear door and the external tank doors with a stronger tile, known as BRI tile. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, March 16.]

NASA Names Janet Petro Deputy Director of Kennedy Space Center

NASA today selected Janet Petro as the new deputy director of the agency's Kennedy Space Center, Fla., effective April 29. Petro succeeds William (Bill) W. Parsons, who assumed the position as the director of the center in January. Prior to joining NASA, Petro served in various management positions for Science Applications International Corporation, also known as SAIC, where she provided extensive program management and technical leadership since December 2000. She directly interacted with senior-level government customers, and was responsible for overseeing program and project managers and providing operational guidance on various technical projects. "I am extremely pleased that Janet has decided to join the leadership team at Kennedy," said Parsons. "She brings with her a strong technical management background and extensive engineering leadership that is directly applicable to the challenging future here at Kennedy." At SAIC, Petro held positions of increasing responsibility within the corporation's Satellite Beach Subsurface Engineering and Data Center Operations, including division and deputy operations manager. She directed technical teams in the design, installation and sustainment support for the Subsurface Engineering and Logistics Support contract. In SAIC's St. Petersburg division, she led the Cooperative Engagement Capability Pre-Planned Product Improvement Program Team in developing supportability products for an upgraded signal data processing assembly. "I am honored I was selected to join the talented team of professionals at KSC and feel excited to be a part of the tremendously important mission we have been given," said Petro. Earlier in her career, Petro held various senior management positions with McDonnell Douglas Aerospace, including program manager for overseeing and executing a classified \$13-million U.S. Department of Defense program at Cape Canaveral Air Force Station, Fla. The program involved integrating, supporting and coordinating payloads onto various space vehicles at U.S. Air Force and NASA facilities. Petro served as a captain in the U.S. Army's aviation branch. She holds a bachelor's degree in engineering from the U.S. Military Academy at West Point, N.Y., and a Master of Science degree in business administration

from Boston University Metropolitan College. ["NASA Names Janet Petro New Deputy Director of Kennedy Space Center," **NASA News Release #09-07**, March 16, 2007.]

March 20: Delta 4 rocket to be disassembled at Cape

A United Launch Alliance Delta 4-Heavy rocket destined to launch a U.S. missile warning satellite will be disassembled so recent launch pad damage can be repaired, officials said Tuesday. No new launch date has been set for the 23-story rocket, which still stands at Launch Complex 37 at Cape Canaveral Air Force Station. But the repairs likely will delay the launch until late summer. The Defense Support Program satellite to be launched on the rocket is equipped with a powerful infrared telescope and sensors designed to instantaneously spot missile launches anywhere in the world. The spacecraft have provided missile warning to the president and top military officials since the 1970s. The mishap and the resulting delay are the latest in a series of problems for the Delta 4-Heavy vehicle, which is designed to haul the nation's heaviest and most critical national security satellites into orbit. Web posted. (2007). [Delta 4 rocket to be disassembled at Cape [Online]. Available WWW: <http://www.floridatoday.com/> The Flame Trench blog [2007, March 20.]

March 21: KSC beefs up marketing staff

The Kennedy Space Center Visitor Complex marketing team has added four employees to gear up for the Memorial Day weekend opening of the Shuttle Launch Experience. Among them are veterans of Florida attractions Universal Orlando, Gatorland and Cypress Gardens. Andrea Farmer, public relations manager for the Visitor Complex, said the thrill ride is in its testing phase. "We're going through testing, testing the hydraulics, the braking system," she said. "We're looking forward to Memorial Day." "With these additions, we're fully staffed in preparation for the opening of Shuttle Launch Experience," Director of Marketing Tom Olson said. Web posted. (2007). [KSC beefs up marketing staff [Online]. Available WWW: <http://www.floridatoday.com/> [2007, March 21.]

Shuttle launch likely delayed until May

Repairing damage to a space-shuttle fuel tank from a freak hailstorm probably will push the next launch of Atlantis from April to mid-May, NASA planning documents show. Managers were meeting on Wednesday to assess the repair plan and set a new target launch date for Atlantis, which is scheduled to fly to the international space station to deliver and install a third set of solar arrays. Planning documents show a targeted launch date of around May 11. NASA intended to launch the shuttle on March 15 but the ship had to be returned to a processing hangar to repair insulation on Atlantis' fuel tank. The foam was damaged during a severe hailstorm that passed over the Kennedy Space Center in Florida on February 26. The shuttle was being prepared for launch at a seaside launch pad when the storm hit. NASA has until May 21 to launch the shuttle, or it must wait until June 8 for more launch attempts. Between those dates, the sun's position is unsuitable for the shuttle to be docked at the station. Shuttle manager Wayne Hale has said the program can withstand the delay without a long-term impact on the space-station construction schedule. NASA must finish building the \$100 billion outpost, a partnership of 16 countries, by 2010, when the shuttles are to be retired. The agency needs at least 13 flights to finish the job. Two resupply missions to the station and a servicing call to the Hubble Space Telescope also are planned. Web posted. (2007). [Shuttle launch likely delayed until May [Online]. Available WWW: <http://www.cnn.com/> [2007, March 21.]

School at KSC clears 1st hurdle

Lawmakers with an affinity for Florida's space program are pushing legislation to create a new high school residence program tied to Kennedy Space Center. The proposal to create the Governor's School for Science and Technology cleared its first House committee on Tuesday despite uncertainty about funding. The bill devotes \$1 million over two years to launch the school in Brevard County. It would operate under the Florida Virtual School program and could be housed at Kennedy Space Center or nearby. Theoretically, the school would offer advanced courses in math, science and technology. Web posted. (2007). [School at KSC clears 1st hurdle [Online]. Available WWW: <http://www.floridatoday.com/> [2007, March 21.]

State lawmakers mark Space Day

Lawmakers look to the stars today, official Space Day at the Florida Capitol. Space agencies and their lobbyists are on hand for the annual event, promoting a greater state investment in Florida's aerospace industry. "If we don't start spending more, we'll lose it," said Rep. Dave Murzin, R-Pensacola. In the morning, a delegation will meet with Lt. Gov. Jeff Kottkamp, followed by a House floor introduction by Rep. Bob Allen, R-Merritt Island. Among the visiting dignitaries are Thomas Boothiller, vice commander of the 45th Space Wing at Patrick Air Force Base, and William Parsons, director of the Kennedy Space Center. Back-to-back receptions are scheduled at the Challenger Space Center in Tallahassee. Web posted. (2007). [State lawmakers mark Space Day [Online]. Available WWW: <http://www.floridatoday.com/> [2007, March 21.]

Tank repair plan due today

NASA faces an external tank repair job unprecedented in magnitude, but a history of similar repairs makes the agency confident the work can be done without creating the type of debris hazard that doomed Columbia and its crew. At a meeting today, NASA managers will determine how long the repairs might take. The answer could force NASA to swap the hail-damaged tank attached to shuttle Atlantis with a new one, a move that likely would stall International Space Station construction until June. "The desire is to be able to repair and fly the (damaged) tank," said Kyle Herring, a spokesman for NASA's Johnson Space Center in Houston. "It probably does put you in the June window if you swap tanks. But obviously, we are still hopeful that we don't have to do that." Atlantis and six astronauts had been scheduled to launch March 15 on a station construction mission, but its 15-story tank was battered by hail during a Feb. 26 storm. NASA moved Atlantis back to its assembly building for repairs March 4. Inspectors since have spotted more than 2,500 divots and gouges in thermal insulation covering the metal alloy tank, which is filled with supercold propellants prior to flight. The foam is designed to prevent ice buildups that could break off in flight, damaging shuttle heat shield components. Web posted. (2007). [Tank repair plan due today [Online]. Available WWW: <http://www.floridatoday.com/> [2007, March 21.]

March 23:

Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-032307. **Mission: STS-117** - 21st International Space Station Flight (13A) - S3/S4 Truss Segment Solar Arrays; Vehicle: Atlantis (OV-104); Location: Vehicle Assembly Building; Launch Date: Targeted for April 2007; Launch Pad: 39A; Crew: Sturckow, Archambault, Reilly, Swanson, Forrester and Olivas; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In high bay No. 1 of the Vehicle Assembly Building, work is under way to repair hail damage to the STS-117 external fuel tank, ET-124.

Special scaffolding and access platforms have been erected to allow access to the tank and orbiter for inspections and repairs. Foam repairs on the liquid hydrogen tank, which is located on the bottom of the ET, are complete. Repairs to the orbiter thermal protection system tiles are complete, and technicians completed non-destructive evaluations of the vehicle's reinforced carbon carbon panels on the left wing leading edge, using thermography equipment. No damage was detected. Shuttle Program managers met on Wednesday to assess the damage and repair status, and decided to continue work on repairing ET-124. Managers will meet again in early April to decide whether to use ET-124 or substitute a new tank, ET-117, which is scheduled to arrive at KSC on April 10. **Mission: STS-118** - 22nd International Space Station Flight (13A.1) - S5 Truss Segment; Vehicle: Endeavour (OV-105); Location: Orbiter Processing Facility Bay 2; Launch Date: Targeted for June 28, 2007; Launch Pad: 39A; Crew: Kelly, Hobaugh, Williams, Morgan, Mastracchio, Caldwell and Anderson; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. Endeavour remains in Orbiter Processing Facility bay 2, and technicians continue preparing the vehicle for its first launch in more than four years. The vehicle has undergone an extensive modification period, including the addition of all of the return-to-flight safety upgrades added to both Discovery and Atlantis. This week, the orbiter boom sensor system, which is a 50-foot extension for the shuttle's robotic arm, was delivered to OPF No. 2. It is scheduled for installation in two weeks. Payload bay configuration and closeout is under way, and the orbiter's potable water system has been successfully checked out. The orbiter docking system airflow verification testing is complete. **Mission: STS-122** - 24th International Space Station Flight (1E) - Columbus Laboratory; Vehicle: Discovery (OV-103); Location: Orbiter Processing Facility Bay 3; Launch Date: Targeted for Fall 2007; Launch Pad: TBD; Crew: Frick, Poindexter, Walheim, Love, Melvin, Schlegel and Eyharts; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. Processing of Discovery, which returned from the STS-116 mission on Dec. 22, continues in Orbiter Processing Facility bay 3. Work on the installation of the new station to shuttle power transfer system (SSPTS) continues in the forward, mid-body and aft section of the vehicle. This system will allow the orbiter and International Space Station to share power, which will enable the orbiter to remain docked for longer periods of time. Fuel cell No. 2 is being installed today, and technicians continue to replace thermal tile around the main landing gear door and the external tank doors with a stronger tile, known as BRI tile. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, March 23.]

March 26: NASA may change orbiters for manifest solution

NASA managers have started to evaluate manifest options to mitigate schedule issues, following the continuing realignment of STS-117's launch date targets due to the ongoing repairs to ET-124. Managers are assessing the option of switching orbiters on three upcoming missions, STS-120 - to Discovery, STS-122 - to Atlantis, and STS-124 - to Discovery, in order to allow the possibility of four 2007 missions, even if STS-117 is delayed until June. Currently, two windows are on the table for Atlantis, starting with NET (No Earlier Than) May 11 - in a launch window extending through to May 20 - and NET June 17, should NASA decide next month that they will demate Atlantis and re-stack with ET-117. 'SSP (Space Shuttle Program) is still pursuing ET repairs that may support launch in the May 11-20 time frame,' noted Shuttle manager Paul Hill - recently selected as the Deputy of the Mission Operations Directorate (MOD). Web posted. (2007). [NASA may change

orbiters for manifest solution [Online]. Available WWW: <http://www.nasaspaceflight.com/> [2007, March 26.]

March 28: Space, labor leaders differ on KSC future

Space industry managers and labor leaders gave starkly contrasting views of Kennedy Space Center's future during a Senate hearing Wednesday. The impact of a four- or five-year absence of manned launches from Cape Canaveral could be devastating, said Johnny Walker, a representative of more than 2,500 union members employed at the space center.

"Certainly the launch team is nervous," Walker said at Wednesday's hearing of the Space, Aeronautics and Related Sciences Subcommittee. "All the folks on the Cape are nervous." Walker's anxiety contrasted with assurances offered by William Gerstenmaier, a top NASA manager, that the space agency has an orderly transition planned for the end of the shuttle era in 2010. "We have as good a plan as we can at this point," said Gerstenmaier, associate administrator for space operations. The subcommittee's chairman, Sen. Bill Nelson, D-Orlando, again expressed concern about the gap between retirement of the shuttles and the first operational launch of the Orion crew capsule, now expected in 2015. "What we have to do is keep this gallant little program that has been such an inspiration to the American people on course," Nelson said. A main worry for many on the Space Coast is that an extended launch hiatus will repeat the regional downturn seen in the 1970s when the Nixon administration and Congress pulled the plug on the Apollo program. NASA and its main shuttle contractor, United Space Alliance, have yet to offer solid numbers on how many jobs could be lost after the shuttles are retired. In written testimony, Walker observed that employment at Kennedy Space Center is projected to drop to about 9,500 from its present level of approximately 15,000. Web posted. (2007). [Space, labor leaders differ on KSC future [Online]. Available WWW: <http://www.floridatoday.com/> [2007, March 29.]

NASA workers hustle to repair damaged tank

Every job on the to-do list for repairing shuttle Atlantis' damaged external tank seems to be a custom order. One team engineered and erected made-to-order scaffolding so workers can kneel or lie within inches of the hard-to-reach spots at the tip of the 15-story tank. That is where most of the divots and gouges caused by last month's freak hailstorm are. Another group knelt and laid on the scaffolding to sand a half-inch layer of foam off the pockmarked dome of the tank because shuttle engineers determined the hail dings were so close together they couldn't be repaired individually as is usually done. Instead, workers toting spray guns will stand on suspended platforms and apply a fresh layer of foam over the tank's nose cone, a job that requires so much precision that NASA prefers it be done by a robot in the New Orleans factory where the tanks are built. The unique and extensive nature of the repair work is keeping at least 100 people at the Kennedy Space Center scrambling while shuttle engineers and managers across the country assess the fastest way to get shuttle Atlantis back out to the launch pad. Repairs to the bottom two-thirds of the giant orange tank are complete. So are patches to dozens of heat-shielding tiles on the orbiter's belly. The most challenging repairs are just beginning, with down-to-the-wire engineering assessments still not finished. A critical decision point comes in a couple of weeks. On April 10, about the time a new external tank arrives at KSC from the factory, NASA managers plan to decide whether to finish the repairs and launch Atlantis with the current tank or trade it for a new one. Shuttle planners also are working on jostling the launch schedule. The repair has to be done, regardless of whether the tank attached to Atlantis flies on this mission or not. The

external tank will be used on a future mission, so it must be repaired. ["NASA workers hustle to repair damaged tank," **Florida Today**, March 29, 2007, p 7A.]

March 29: Boeing unveils Ares 1 team

The Boeing Co. announced Wednesday its corporate suppliers if it wins a major NASA contract to produce components for the next generation of manned spacecraft from Kennedy Space Center. If Boeing wins, most of the work will be done at Marshall Space Flight Center in Huntsville, Ala., and at the Michoud Assembly Facility in New Orleans. The company expects some of the work may be done on the Space Coast or benefit companies with a presence here. How much and the number of jobs involved is uncertain, said Jim Chilton, Boeing's vice president of Exploration Launch Systems. A separate future contract for launch preparation is expected to involve much more work on the Space Coast. Chilton said the production contract is estimated to be worth \$900 million or more. The contract involves building the upper-stage for the Ares I rocket. The Ares I will transport the Orion crew exploration vehicle to low Earth orbit for NASA's program to return astronauts to the moon by 2020. "Our team is composed of industry leaders with experience in their Ares I upper stage roles," Chilton said. "We don't want to add risk to NASA's program. Our team was built around NASA requirements." Boeing announced the following companies will be included on its team of suppliers: Chickasaw Nation Industries; Hamilton Sundstrand, a subsidiary of United Technologies Corp.; Moog Inc.; Northrop Grumman Corp.; Orion Propulsion Inc.; SUMMA Technology Inc.; United Space Alliance; and United Launch Alliance. Web posted. (2007). [Boeing unveils Ares 1 team [Online]. Available WWW: <http://www.floridatoday.com/> [2007, March 29.]

Boeing Florida Operations VP to Retire

Former NASA astronaut and space shuttle flight engineer Bruce Melnick, vice president of Boeing Florida Operations, retires from The Boeing Company on April 1. Melnick led the company's Florida team for more than 10 years in providing engineering, facilities and maintenance support to NASA and the U.S. Department of Defense for the space shuttle, International Space Station (ISS) and Delta rocket programs. "Bruce Melnick has done a tremendous job in leading Boeing's Florida Space Coast efforts," said Brewster Shaw, vice president and general manager, Boeing Space Exploration. "He has demonstrated strong leadership and an unwavering dedication to Space Exploration and a commitment to successful program execution." Boeing Space Exploration Vice President and Constellation Program Manager John Elbon has been named the acting Florida site senior executive and will continue to lead the company's pursuit of NASA's Constellation program elements from Houston, Texas. Web posted. (2007). [Boeing unveils Ares 1 team [Online]. Available WWW: <http://www.boeing.com/> [2007, March 29.]

March 30: Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-033007. **Mission: STS-117** - 21st International Space Station Flight (13A) - S3/S4 Truss Segment Solar Arrays; Vehicle: Atlantis (OV-104); Location: Vehicle Assembly Building; Launch Date: Targeted for April 2007; Launch Pad: 39A; Crew: Sturckow, Archambault, Reilly, Swanson, Forrester and Olivas; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles In high bay No. 1 of the Vehicle Assembly Building, work is under way to assess and repair hail damage to the STS-117 external fuel tank, ET-124. Special scaffolding and access platforms have been erected to allow access to the tank and orbiter for inspections and repairs. Foam repairs on the liquid hydrogen tank,

which is located on the bottom of the external tank, are complete. The focus is currently on repairs to the liquid oxygen tank. Shuttle program managers will meet on or about April 10 to decide whether to use ET-124 or substitute it with a new tank, ET-117, which is scheduled to arrive at KSC in early April. **Mission: STS-118** - 22nd International Space Station Flight (13A.1) - S5 Truss Segment; Vehicle: Endeavour (OV-105); Location: Orbiter Processing Facility Bay 2; Launch Date: Targeted for June 28, 2007; Launch Pad: 39A; Crew: Kelly, Hobaugh, Williams, Morgan, Mastracchio, Caldwell and Anderson; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. Endeavour remains in Orbiter Processing Facility bay 2, and technicians continue preparing the vehicle for its first launch in more than four years. The vehicle has undergone an extensive modification period, including the addition of all of the return-to-flight safety upgrades added to both Discovery and Atlantis. This week, initial nose landing gear door closure was performed. Preparations are under way for the installation next week of the orbiter boom sensor system, which is a 50-foot extension for the shuttle's robotic arm. Technicians completed testing the audio/visual communications systems on the orbiter. The shuttle main engine "eyelids," which are thermal barriers that protect the aft compartment, were installed. Preparations are under way for the installation of the engine mounted heat shields. **Mission: STS-122** - 24th International Space Station Flight (1E) - Columbus Laboratory; Vehicle: Discovery (OV-103); Location: Orbiter Processing Facility Bay 3; Launch Date: Targeted for Fall 2007; Launch Pad: 39-A; Crew: Frick, Poindexter, Walheim, Love, Melvin, Schlegel and Eyharts; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. Processing of Discovery, which returned from the STS-116 mission on Dec. 22, continues in Orbiter Processing Facility bay 3. The installation of the new station-to-shuttle power transfer system was completed this week. This system will allow the orbiter and International Space Station to share power, enabling the orbiter to remain docked for longer periods of time. The orbiter power system validation was also finished this week. Technicians continue replacing thermal tile around the main landing gear door and the external tank doors with a stronger tile, known as BRI tile. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, March 30.]

NASA managers praise tank repair effort

As NASA managers head towards the April 10th decision on which External Tank Atlantis will fly with on STS-117, the ongoing ET repair effort has received heaps of praise from both Shuttle manager Wayne Hale and Bill Gerstenmaier, NASA associate administrator for space operations. Gerstenmaier also noted the changes to the upcoming launch schedule will be clarified around the same time as the tank decision, although that meeting has been deferred until April 16. The amount of resources being concentrated on United Space Alliance and Lockheed Martin efforts to repair ET-124 back to flight status is epitomized by the huge amounts of daily assessment documentation, as engineers continue with the option of trying to save the tank from having to be shipped back to the Michoud Assembly Facility (MAF). Those efforts were praised by Gerstenmaier, when he was asked for a status update by Senator Bill Nelson at Wednesday's 'Transitioning to a Next Generation Human Space Flight System' hearing at the US Senate. 'This is one of the best activities I've ever seen in the human spaceflight area,' he noted. 'We have Lockheed Martin - who manufactures the tank for us, and the United Space Alliance - who do the processing at the Cape. Those two contractor organizations are working together better than I've seen two contractor organizations work. 'The teaming, the spirit, and the cooperation of the folks working on

this tank is phenomenal. They are passing engineering data back and forth, they are making progress every day on repairing the tank and they are doing just a great job. They are actually mocking up the spray area in New Orleans, so that technicians can practice what they'll be doing back in Florida to finish up and complete.' Those mock tests at MAF relate to the 'non standard' repair areas of the tank, ensuring the processes and techniques are mapped out for the technicians inside the Vehicle Assembly Building (VAB). The ability to successfully repair those areas of the tank is one of the key factors on whether ET-124 will fly with Atlantis on STS-117. Web posted. (2007). [NASA managers praise tank repair effort - clarify flight schedule [Online]. Available WWW: <http://www.nasaspaceflight.com/> [2007, March 30.]

During March: High Clouds

Crews at Vandenberg AFB, Calif., will start mating NASA's Aeronomy of Ice in the Mesosphere (AIM) spacecraft to its Pegasus XL launch vehicle early next month in preparation for planned Apr. 25 launch date. The spacecraft, NASA's seventh Small Explorer mission, will study polar clouds that form in the atmosphere's coldest part, some 50 miles above the surface. AIM's three instruments – an imager, a solar occultation experiment for atmospheric temperature and other cloud-environment measurements, and a cosmic dust counter – will investigate why the clouds are changing and their possible relation to global climate change. The Center for Atmospheric Sciences at Hampton, Va., heads the mission. Orbital Sciences Corp. designed and built AIM. ["High Clouds," Aviation Week & Space Technology, March 19/26, 2007, p 31.]

APRIL

April 2: NASA Nobel Prize Recipient to Lead Chief Scientist Office

NASA's new Science Mission Directorate Associate Administrator Alan Stern has appointed NASA scientist and 2006 Nobel Prize recipient John Mather to lead the Office of the Chief Scientist at Headquarters in Washington. Mather and his staff in the newly created office will be chief advisors to Stern. ["NASA Nobel Prize Recipient to Lead Chief Scientist Office," **NASA News Release #07-08**, April 2, 2007.]

Lawmakers want NASA inspector removed

Two congressmen Monday asked President Bush to fire NASA inspector general Robert Cobb after an independent investigation determined he verbally abused employees and appeared to lack independence. The investigation by the president's Council on Integrity and Efficiency found that Cobb berated and cursed at employees and did not report or release information about wrongdoing that might embarrass the space agency of its former boss, Sean O'Keefe. The investigators probed allegations that Cobb grew too close to then-administrator O'Keefe and created the appearance that he was not fulfilling the independent watchdog role assigned to an inspector general. In particular, investigators took issue with Cobb failing to report the theft or loss of national security data from the space agency. They also said he acted to prevent the release of a Crime Stoppers segment on the alleged theft of a ring from the finger of one of the deceased Columbia astronauts during the recovery effort following the Feb. 1, 2003, shuttle disaster. Current NASA Administrator Michael Griffin wrote the investigating agency to say he was sending Cobb to training sessions to correct the behavior of an abusive work environment. ["Lawmakers want NASA inspector removed," **Florida Today**, April 3, 2007, p 5A.]

Astronaut to discuss marathon run in April interviews

NASA astronaut Suni Williams will discuss her upcoming 2007 Boston Marathon run aboard the International Space Station during media interviews planned for Wednesday, April 4 at 1:20 p.m. CDT. Williams, an accomplished marathoner, is an official entrant in the Boston Marathon and will run the race on a station treadmill. She qualified for the race, along with fellow astronaut Karen Nyberg, as one of the top 100 female finishers in the January 2006 Houston Marathon. Williams will be the first astronaut to officially run in a marathon from space. ["Astronaut to discuss marathon run in April 4 interviews," **NASA Media Advisory #M07-33**, April 2, 2007.]

April 3: Kibo component weighed in at KSC

The warehouse wing of a Japanese science laboratory is being weighed in this week at Kennedy Space Center in preparation for its launch next year to the International Space Station. Known as the Logistics Module, the orbital storage facility will be the first of three major components that make up the lab, which is named "Kibo" -- the Japanese word for "hope." It ultimately will be positioned atop a long pressurized laboratory module that will be berthed to the U.S. Harmony connecting node. The multihatch Harmony node will serve as the gateway between the U.S., Japanese and European sections of the station. The Kibo lab also will feature a "back porch" -- a large external pallet where experiments can be exposed to the space environment. A robotic arm will be attached to the outside of the Kibo lab so that experiments on the pallet can be manipulated. The Logistics Module arrived at

Kennedy Space Center in March after a three-month trip from Tsukuba Space Center. It was uncrated in the KSC Space Station Processing Facility and then lifted onto a scale with an overhead crane on Monday. Weight and center-of-gravity tests will be performed before the module is moved into a work stand at the facility. The module had been slated to launch in December but shuttle schedule delays likely will push the mission back to February 2008. Web posted. (2001). [NASA launches satellite to study magnetosphere [Online]. Available WWW: <http://www.floridatoday.com/> The Flame Trench blog [2007, April 3].]

April 4: Size-conscious NASA will need astronauts who fit the profile

As early as 2009, applicants to the astronaut corps will face new size limits, including on weight and sitting height. That's a result of NASA's plan to retire the space shuttle in 2010 and switch entirely to smaller vehicles. The exact limits haven't been determined because new vehicles are still in development. Since shuttle flights began in 1981, NASA has restricted only height. The last time it recruited a new batch of astronauts, in 2003, the minimum height was 4 feet, 10½; the maximum was 6 feet, 4 inches. "It would be the wrong thing to do to select people who aren't going to fit in your spaceship," says Duane Ross, NASA's head of astronaut selection. The shuttle is shaped roughly like an airplane and is 122 feet long. The vehicles that will take its place are ball-shaped and much smaller: •The cockpit of the Russian Soyuz spacecraft is 7 feet wide and can hold three people. The Soyuz already carries a few U.S. astronauts to orbit each year. After the shuttle retires, the Soyuz will be astronauts' only ride to space until at least 2015, unless NASA-funded private firms succeed in building a new vehicle. The Soyuz's crew must meet a variety of limits. •The U.S. Orion spacecraft, on the drawing board to replace the shuttle, will be 16½ feet wide. It is slated to make its first manned flight in 2015 and is supposed to carry astronauts to the International Space Station and, in about 2020, to the moon. "The goal is to accommodate the largest population possible," says Scott Horowitz, NASA's top official for the new spacecraft and moon exploration. Only people under a certain weight can be protected by the Orion systems that shield the crew in an emergency landing, he says. That weight is unknown. In the 1990s, Americans Wendy Lawrence (who's 5-foot-3) and Scott Parazynski (6-foot-2) were barred from Soyuz flights because of their height. The Soyuz was modified, but not before the pair became known as "Too Short" and "Too Tall." Web posted. (2007). [Size-conscious NASA will need astronauts who fit the profile [Online]. Available WWW: <http://www.usatoday.com/> [2007, April 4].]

NASA finishes fresh face on giant meatball

NASA this week finished repainting the world's largest meatball as storm repairs that stem from three hurricanes back in 2004 continue at the nation's primary spaceport. The giant American flag on Kennedy Space Center's Vehicle Assembly Building is being repainted, too, and that work is nearing completion. Working on scaffolding secured high above the ground, painters since early this year have been freshening up the flag and the NASA logo, which are on the south side of the 52-story landmark. The building sustained millions of dollars of damage when hurricanes Charley, Frances and Jeanne swept through central Florida during a nine-week span in August and September 2004. The flag is 209 feet long and 110 feet wide, or about the size of a 60-plane hangar bay on an aircraft carrier. The blue field on the flag is the size of a regulation basketball court, and its 50 stars each are six feet wide. Each of the 13 stripes are the size of a standard interstate highway lane -- wide enough to accommodate 18-wheelers or the tour buses that haul visitors around the spaceport. The NASA logo, affectionately known as the "meatball," measures about 132 feet by 110 feet and

covers 12,300 square feet. The flag and a U.S. bicentennial logo were painted on the side of the building in 1976 in celebration of the 200th anniversary of the United States of America. The job required 6,000 gallons of paint. In 1998, NASA repainted the flag and replaced the bicentennial symbol with the NASA logo in celebration of the agency's 40th anniversary. The Vehicle Assembly Building was erected in the early 1960s for the assembly of the U.S. Saturn 5 rockets that carried American astronauts and their cargoes to the moon. It now serves as the assembly building for U.S. space shuttles and will be used to erect new moon rockets when the U.S. sends astronauts back to the lunar surface around 2018. Web posted. (2007). [NASA finishes fresh face on giant meatball [Online]. Available WWW: <http://www.floridatoday.com/> The Flame Trench blog [2007, April 4].]

NASA ride set to blast off

Would-be astronauts will get the chance to experience a launch into space starting this Memorial Day weekend, NASA's Kennedy Space Center Visitor Complex announced today. Shuttle Launch Experience, a \$60 million launch simulation ride that let visitors experience the sensations of a space shuttle voyage to Earth's orbit, will open May 25. The ride has been three years in the making, the Visitor Complex said. Shuttle Launch Experience was designed by BRC Imagination Arts -- the company that designed the Visitor Complex's Apollo/Saturn V Center -- in collaboration with other companies. Web posted. (2007). [NASA ride set to blast off [Online]. Available WWW: <http://www.orlandosentinel.com/> [2007, April 4].]

April 5: Shuttle propulsion system inspections ordered

With external tank repairs in high gear, NASA managers today ordered removal of the shuttle Atlantis's three main engines for inspections to make sure no contamination is present in the ship's hydrogen fuel lines. While engineers are hopeful the work can be completed under the umbrella of external tank repairs, getting Atlantis off before its May launch window closes remains a major challenge. The latest issue involves small bits of silicon rubber RepliSet, used to help detect cracks in main propulsion system fuel line flow liners that were found in the shuttle Discovery recently, prompting concern about similar contamination in Atlantis and Endeavour. The RepliSet technique is used before and after a shuttle flight to make exact three-dimensional impressions of the fuel line flow liners to look for signs of potentially catastrophic cracks. Engineers apparently missed a small bit of the material after impressions were made in Discovery's flow liners between two of its most recent flights. NASA managers want to make sure no similar contamination is present in the main propulsion systems of the other orbiters. "This was an easy decision to make," said a NASA official. "No one wants contamination in the propulsion system." Assuming no other problems are found, engineers say Atlantis's main engines can be removed, the inspections carried out and the engines reinstalled without impacting when the shuttle will eventually take off on a space station assembly mission. The long pole in the tent remains the work needed to repair extensive hail damage to the foam insulation on the top of the ship's external fuel tank. Senior NASA managers plan to meet April 10 to discuss whether to press ahead with tank repairs for a possible May launch or whether to switch Atlantis to the external tank slated for use by the shuttle Endeavour for the next flight on the manifest. That tank, ET-117, is scheduled to arrive at the Kennedy Space Center on Friday. Switching Atlantis to ET-117 would delay launch to mid June. NASA managers want to stick with the current tank, ET-124, if at all possible. Web posted. (2007). [Shuttle propulsion system

inspections ordered [Online]. Available WWW: <http://www.spaceflightnow.com/> [2007, April 5].]

Judge to Seal Psychological Files in Trial of Former Astronaut

A judge said Thursday that he would seal any psychological evaluations of Capt. Lisa M. Nowak, the former astronaut accused of trying to kidnap a romantic rival. He also ordered lawyers in the case not to issue press releases, and he scheduled a hearing for Monday to determine whether additional documents should be sealed. The judge, Marc L. Lubet of Orange County Circuit Court, warned that continuing communication by lawyers with the news media "will keep this case stoked up in the press," and he said he would like to keep the trial in Orange County "if at all possible." Captain Nowak, of the Navy, was arrested in February and later fired by NASA after, according to an arrest affidavit, she confronted a rival for the affections of a fellow astronaut in an Orlando airport parking lot and attacked her with pepper spray. Web posted. (2007). [Judge to Seal Psychological Files in Trial of Former Astronaut [Online]. Available WWW: <http://www.nytimes.com/> [2007, April 5].]

April 6: Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-040607. **Mission: STS-117** - 21st International Space Station Flight (13A) - S3/S4 Truss Segment Solar Arrays; Vehicle: Atlantis (OV-104); Location: Vehicle Assembly Building; Launch Date: Targeted for no earlier than May 2007; Launch Pad: 39A; Crew: Sturckow, Archambault, Reilly, Swanson, Forrester and Olivas; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In high bay No. 1 of the Vehicle Assembly Building, work is under way to assess and repair hail damage to the STS-117 external fuel tank, ET-124. Special scaffolding and access platforms have been erected to allow access inspections and repairs. Foam repairs on the liquid hydrogen tank, which is located on the bottom of the ET, are complete, and the focus is currently on repairs to the liquid oxygen tank. Shuttle Program managers will meet on April 10 to decide whether to use ET-124 or substitute a new tank, ET-117, which arrived at KSC today. Shuttle Program managers decided this week to inspect the main propulsion systems on Atlantis and Endeavour for contamination after a small amount of material was found during routine post-flight inspections in one engine that flew on the STS-116 mission of Discovery in December 2006 and one engine that flew on the STS-121 mission of Discovery in July 2006. The contaminant is a substance called RepliSet, which is a material used to make a mold of the flow liner surface. It is used to check for cracks and imperfections. The inspections can be accomplished within the timeframe of the hail damage recovery effort, with no impact to the launch schedule for STS-117. **Mission: STS-118** - 22nd International Space Station Flight (13A.1) - S5 Truss Segment; Vehicle: Endeavour (OV-105); Location: Orbiter Processing Facility Bay 2; Launch Date: Targeted for June 28, 2007; Launch Pad: 39A; Crew: Kelly, Hobaugh, Williams, Morgan, Mastracchio, Caldwell and Anderson; Inclination/ Orbit Altitude: 51.6 degrees/122 nautical miles. Endeavour remains in Orbiter Processing Facility bay 2, and technicians continue preparing the vehicle for its first launch in more than four years. The vehicle has undergone an extensive modification period, including the addition of all of the return-to-flight safety upgrades added to both Discovery and Atlantis. This week, the orbiter boom sensor system (OBSS) was installed in the vehicle. The OBSS is a 50-foot extension for the shuttle's robotic arm. Closeout of the payload bay compartments is under way. The wing leading edge instrumentation system flight batteries were installed, and the space-to-space orbiter radio system checks are complete and good. Preparations are under way for removal of Endeavour's three main engines for contaminant inspection. **Mission:**

STS-122 - 24th International Space Station Flight (1E) - Columbus Laboratory; Vehicle: Discovery (OV-103); Location: Orbiter Processing Facility Bay 3; Launch Date: Targeted for Fall 2007; Launch Pad: 39A; Crew: Frick, Poindexter, Walheim, Love, Melvin, Schlegel and Eyharts; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. Processing of Discovery, which returned from the STS-116 mission on Dec. 22, continues in Orbiter Processing Facility bay 3. The orbiter's thermal protection system waterproofing is 90 percent complete. Leak checks on fuel cells No. 1 and 3 are complete and good. Servicing of the water spray boiler system began this week, and fuel cell coolant servicing continues. Wire tray closeouts in the mid-body are ongoing, and cargo bay closeouts are under way. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, April 6.]

NASA chief set to cut projects

To overcome a half-billion-dollar shortfall this year, NASA plans to eliminate a robotic mission to the moon, cut educational programs for schoolchildren and delay a new line of manned spacecraft. NASA Administrator Michael Griffin has warned Congress for weeks that approved cuts of more than \$500 million from NASA's \$16.8 billion funding request would postpone launching the space shuttle's successor beyond a target date of 2014. But a new budget blueprint sent from NASA to Congress shows cuts to the space agency would affect more than just the Constellation program, which oversees NASA's planned mission to carry astronauts to the moon and Mars. A robotic mission to the moon would be eliminated to help free up more than \$100 million. The agency also aims to cut programs that encourage student experiments, cancel the construction of a new education complex and reduce funding for an upcoming asteroid-research mission. ["NASA chief set to cut projects," **Orlando Sentinel**, April 6, 2007, p A3.]

April 7: Fuel tank arrives at KSC

A new external tank arrived Friday at the Florida launch site, positioning NASA managers for a decision that will determine whether shuttle Atlantis is slated to launch in May or June. The tank is scheduled to fly with orbiter Endeavour on an International Space Station assembly mission later this year. But managers might decide Tuesday to use it to replace shuttle Atlantis' tank, which sustained significant damage during a Feb. 26 hail storm. The launch of Atlantis then would be delayed until mid-June. The other option is to continue repairs to the damaged tank, enabling NASA to try to launch Atlantis by a May 21 deadline. "That's certainly not out of the realm of possibility," said Kyle Herring, a spokesman for NASA's Johnson Space Center in Houston. "The desire is to stay on that tank." In any case, NASA managers have decided to remove Atlantis' three main engines so engineers can inspect propellant lines within the orbiter. Four small pieces of silicon rubber recently were found in lines on Discovery, and managers want to make certain there are no contaminants in Atlantis' lines. NASA uses the silicon material before and after flights to make impressions of any small blemishes or cracks within the propellant lines. Engineers then can determine whether any minor defect enlarges. Debris in a propellant line could degrade engine performance or even lead to a catastrophic failure in flight. The new tank arrived at Port Canaveral after an 850-mile trip from the Michoud Assembly Facility in New Orleans. With the barge trailing about a quarter-mile behind it, the ship then hugged the East Coast of Florida, and made its way up the Banana River toward the turn basin just east of the Kennedy Space Center Vehicle Assembly Building. NASA had planned to launch Atlantis

and six astronauts on March 15, but its tank was damaged during a violent thunderstorm. The agency is facing a May 21 deadline to get the shuttle off the ground. Atlantis can't launch between May 21 and June 8 because sun angles will be such that the space station's solar wings would not be able to generate enough electricity to support joint operations with a visiting shuttle. A switch to the new tank would delay launch until around June 16 or June 17. Web posted. (2007). [Fuel tank arrives at KSC [Online]. Available WWW: <http://www.floridatoday.com/> [2007, April 7].]

April 9: U.S. Astronaut Hall of Fame Induction Ceremony
Veteran Space Shuttle Astronauts Michael L. Coats, Steven A. Hawley and Jeffrey A. Hoffman will join an elite group of American space heroes as they are inducted into the U.S. Astronaut Hall of Fame during a public ceremony at Kennedy Space Center Visitor Complex on Saturday, May 5 at 3:00 p.m. They will join the ranks of legendary space pioneers like Neil Armstrong, John Glenn, Alan Shepard, Sally Ride and John Young. This is the sixth group of Space Shuttle astronauts named to the U.S. Astronaut Hall of Fame. Earlier inductees represent the Mercury, Gemini, Apollo, Skylab and Apollo-Soyuz programs. With the addition of Coats, currently the director of Johnson Space Center; Hawley, whose mission helped deploy the Hubble Space Telescope; and Hoffman, the first astronaut to log 1,000 hours aboard the space shuttle, the U.S. Astronaut Hall of Fame will have honored 66 of America's space explorers. Web posted. (2007). [U.S. Astronaut Hall of Fame Induction Ceremony [Online]. Available WWW: www.Hospitality1st.com/PressNews/ [2007, April 9].]

Takei treks to KSC, promotes diversity

Actor George Takei played the helmsman of the original USS Enterprise on the classic TV series "Star Trek," but he was in awe Monday at Kennedy Space Center when he saw engineers and technicians making space travel a reality. "I'm an actor. We just created the illusion of space. But here, the real thing is being done," Takei said. "What I see being done here is really the launching pad of the future." Takei, 69, is best known for playing Mr. Sulu on the cult classic, which aired from 1966 through 1969. He and the fictional crew of the Starship Enterprise explored space and defended the United Federation of Planets. He came to KSC to talk with workers about the value of diversity in complex team efforts. "Star Trek certainly demonstrated that. We had visual diversity -- an African woman, an Asian man, a pointy-eared alien. But you also heard the diversity -- the Scottish accent of the engineer, the Russian accent of our navigator, the southern drawl of our doctor," he said. Web posted. (2007). [Takei treks to KSC, promotes diversity [Online]. Available WWW: www.floridatoday.com/ [2007, April 10].]

April 10: NASA targets June launch for Space Shuttle Atlantis
NASA is targeting June 8 as the next possible launch opportunity for space shuttle Atlantis' STS-117 mission to the International Space Station. Tuesday's decision by agency management followed a meeting that reviewed the progress in repairing insulating foam on the shuttle's external fuel tank, which was damaged during a sudden hail storm Feb. 26 at NASA's Kennedy Space Center, Fla. That damage required engineers to repair approximately 2,660 sites on the tank. The meeting also included an assessment of using the repaired external tank for the STS-117 mission versus swapping to one that arrived last week from the manufacturing plant in New Orleans. Managers decided to finish repairs to Atlantis' current tank and use it for STS-117. The tank that arrived Friday will be prepared

for space shuttle Endeavour's STS-118 mission to the space station and now is targeted for launch in August. "The workforce has done an amazing job of assessing and repairing the tank so far, but the sheer volume of repairs dictates moving the launch target to June," said Space Shuttle Program Manager Wayne Hale. June 8 is the opening of the next available launch window for Atlantis to go to the station. STS-117 Commander Rick Sturckow, Pilot Lee Archambault and mission specialists Jim Reilly, Patrick Forrester, Steven Swanson and John "Danny" Olivas will continue training at NASA's Johnson Space Center, Houston. During the 11-day mission, the astronauts will work with the station crew and ground teams to install a new, girder-like truss segment, unfold a new set of solar arrays and retract one array on the starboard side of the station. ["NASA targets June launch for Space Shuttle Atlantis," **NASA News Release#07-83**, April 10, 2007.]

Grissom doctors moonlight for NASA

Two Reserve doctors from Grissom Air Reserve Base have front row seats for space shuttle takeoffs and landings to help astronauts in case of emergencies. Lt. Col. (Dr.) Scott Phillips or Maj. (Dr.) Greg Pinnell, both from the 434th Aerospace Medicine Squadron here, work for NASA as part of a 30-member medical rescue team for NASA. "We're there in case a survivable mishap occurs," Colonel Phillips said. "We can be there to rescue and treat the astronauts." Even though the team consists of 30 members from throughout the country, not everyone is assigned to work a takeoff or a landing. Colonel Phillips has worked 10 takeoff and landings during his tenure with the program, while Major Pinnell has worked seven missions. Participants must have survival training and advanced cardiac and life support training. Both reservists said they hope they never have to use their training, but they maintain preparedness. Web posted. (2007). [Grissom doctors moonlight for NASA [Online]. Available WWW: <http://www.af.mil/news/story.asp?id=123048220> [2007, April 10].]

Dawn arrives in Florida

The Dawn spacecraft arrived at Astrotech Space Operations in Titusville, Fla., at 9 a.m. EDT today. Dawn, NASA's mission into the heart of the asteroid belt, is at the facility for final processing and launch operations. Dawn's launch period opens June 30. "Dawn only has two more trips to make," said Dawn project manager Keyur Patel of NASA's Jet Propulsion Laboratory in Pasadena, Calif. "One will be in mid-June when it makes the 15-mile journey from the processing facility to the launch pad. The second will be when Dawn rises to begin its eight-year, 3.2-billion-mile odyssey into the heart of the asteroid belt." The Dawn spacecraft will employ ion propulsion to explore two of the asteroid belt's most intriguing and dissimilar occupants: asteroid Vesta and the dwarf planet Ceres. Now that Dawn has arrived at Astrotech near NASA's Kennedy Space Center, final prelaunch processing will begin. Technicians will install the spacecraft's batteries, check out the control thrusters and test the spacecraft's instruments. In late April, Dawn's large solar arrays will be attached and then deployed for testing. In early May, a compatibility test will be performed with the Deep Space Network used for tracking and communications. Dawn will then be loaded with fuel to be used for spacecraft control during the mission. Finally, in mid-May, the spacecraft will undergo spin-balance testing. Dawn will then be mated to the upper stage booster and installed into a spacecraft transportation canister for the trip to Cape Canaveral Air Force Station. This is currently scheduled for June 19, when it will be mated to the Delta II rocket at Pad 17-B. Web posted. (2007). [Dawn arrives in Florida [Online]. Available WWW: <http://www.spaceflightnow.com> [2007, April 11].]

April 11:

NASA's historical art exhibit returns to BCC planetarium

Local residents can see bits of NASA history through new eyes by viewing the "Milestones in NASA's History" art exhibit on display at the Brevard Community College Planetarium and Observatory on the Cocoa campus. The 11 prints of original artwork were originally housed at NASA and have been on a traveling tour, which began at the planetarium, then went to the Melbourne Airport, the Government Center in Viera, and finally are back at the planetarium where they will be displayed through July. "Each opportunity to engage with our space program art, allows all of us to see and feel the real potential for our future in space, as we embark on the exciting vision for space exploration," said Luis Berrios, NASA's program design specialist, in a press release. "The NASA art collection represents an important source of inspiration for the general public that embraces and celebrates the glorious achievements of the U.S. Space Program." It is presented in partnership with the BCC planetarium Brevard Cultural Alliance Inc., Brevard County's Art in Public Places and NASA Kennedy Space Center. Web posted. (2007). [NASA's historical art exhibit returns to BCC planetarium [Online]. Available WWW: <http://www.floridatoday.com> [2007, April 11].]

NASA turns to past for ideas

NASA's next piloted spaceship probably will parachute to the ground in the western United States at the end of its missions, but it also will be capable of landing in the ocean after a launch failure. So NASA and the military squadron that will be responsible for rescue operations is reaching out to veterans from the Apollo moon-landing project, trying to learn everything they can about capsule recovery operations. "We want to get off on the right foot and make sure we're going to head down the right path. We want to learn from history and push forward and take it to the next level," said Brig. Gen. Susan Helms, commander of the Air Force's 45th Space Wing, which coordinates Department of Defense emergency support for U.S. human spaceflight missions. "The bottom line is that regardless of the end-of-mission landing mode, we must still re-establish and support a water-landing capability. That's very important," added Don Hammel, NASA's lead landing and recovery engineer for Orion spacecraft. NASA's Mercury, Gemini and Apollo spacecraft all were designed to splash down in an ocean, where water provides enough of a cushion to obviate the need for braking rockets like those used on Russian and Chinese spacecraft. On NASA's first two Mercury flights, helicopters dropped a cable to the spacecraft so it could be lifted out of the ocean and placed on the deck of an awaiting ship. That practice was changed when NASA's Liberty Bell 7 spacecraft sank. Its hatch was inadvertently jettisoned after splashdown with astronaut Gus Grissom aboard. NASA then began equipping its spacecraft with floatation collars. They kept the craft afloat and also provided a platform for recovery and rescue divers. The added buoyancy enabled the floating craft to be brought alongside ships, where cranes lifted them onto decks. The new Orion spacecraft will be Apollo-style capsules that will employ parachutes, airbags and perhaps retrorockets to slow their descent. Small rockets atop the capsules will be able to pull the spacecraft and crews away from a launch vehicle in the event of an emergency on the launch pad. So NASA and the Air Force are calling on graybeards from the Apollo program to advise those planning Orion recovery operations. The first in what is expected to be a series of meetings was held at Patrick Air Force Base earlier this month. Web posted. (2007). [NASA turns to past for ideas [Online]. Available WWW: <http://www.floridatoday.com> [2007, April 11].]

Atlantis won't launch until June at earliest

NASA will continue repairs to a hail-damaged shuttle external tank, but launch of Atlantis and the resumption of International Space Station assembly will be delayed until June to finish the work, officials said Tuesday. The postponement will keep a U.S. astronaut at the outpost for an extra two months, but the rookie flight engineer took the news in stride. "It really doesn't matter. I have lots to do up here," said Sunita "Suni" Williams, who was ferried up to the station on Discovery in December and will remain there until at least August. "There's going to be a lot going on. So, for me, it really won't change the way I operate up here." Williams stands to set a U.S. record for the longest space mission. Current station skipper Michael Lopez-Alegria will establish a new benchmark -- 214 days -- when he returns to Earth on April 20 aboard a Russian Soyuz spacecraft. Williams will pass that in mid-July. Russian cosmonaut Valeri Polyakov set the world record -- 438 days -- in the 1990s. Atlantis and six astronauts had been slated to launch March 15 on a mission to deliver a 17.5-ton truss segment and new solar wings to the orbiting outpost. But a violent hailstorm Feb. 26 damaged its 15-story external tank, which is filled with more than half a million gallons of propellant before launch. More than 2,600 divots and gouges were found in thermal insulation that covers the metal alloy tank. NASA considered replacing the tank with one delivered to Kennedy Space Center last Friday. But managers decided that work was going well enough to press ahead with repairs to the damaged tank. The earliest potential launch date is June 8. Web posted. (2007). [Atlantis won't launch until June at earliest [Online]. Available WWW: <http://www.floridatoday.com> [2007, April 11].]

April 13:

Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-041307. **Mission: STS-117** - 21st International Space Station Flight (13A) - S3/S4 Truss Segment Solar Arrays; Vehicle: Atlantis (OV-104); Location: Vehicle Assembly Building; Launch Date: Targeted for June 8, 2007; Launch Pad: 39A; Crew: Sturckow, Archambault, Reilly, Swanson, Forrester and Olivas; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In high bay No. 1 of the Vehicle Assembly Building, technicians and engineers continue the repair work on the hail-damaged STS-117 external fuel tank, ET-124, following a decision this week by Space Shuttle Program managers to target a launch date of June 8 using the repaired tank. Preparations are under way for the removal of Atlantis' three main engines to inspect for flow liner contamination. This work can be accomplished within the time frame of the hail damage recovery effort, with no impact to the launch schedule for STS-117. **Mission: STS-118** - 22nd International Space Station Flight (13A.1) - S5 Truss Segment; Vehicle: Endeavour (OV-105); Location: Orbiter Processing Facility Bay 2; Launch Date: Targeted for August 2007; Launch Pad: 39A; Crew: Kelly, Hobaugh, Williams, Morgan, Mastracchio, Caldwell and Anderson; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. All three orbiter main engines were removed from Endeavour this week to allow for flow liner contaminant inspections. The orbiter boom sensor system was removed for mechanical repairs on the boom pedestals. The boom is scheduled to be reinstalled next week. The forward external airlock hatch functional test was successfully completed, and closeout of the payload bay compartments is under way. ET-117, the external fuel tank to be used for STS-118, arrived at KSC April 6 and will be moved next week to the Vehicle Assembly Building, where it will be placed in a checkout cell in high bay No. 2 for processing. **Mission: STS-122** - 24th International Space Station Flight (1E) - Columbus Laboratory; Vehicle: Discovery (OV-103); Location: Orbiter Processing Facility Bay 3; Launch Date: Targeted for Fall 2007; Launch Pad: 39A; Crew: Frick, Poindexter, Walheim, Love, Melvin, Schlegel and Eyharts;

Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. Processing of Discovery, which returned from the STS-116 mission on Dec. 22, continues in Orbiter Processing Facility bay 3. Mechanical and electrical mates and leak checks of fuel cell No. 2 are done. Coolant servicing for fuel cell No. 2 is complete. Water spray boiler system servicing and checkout continues. Wire tray closeouts in the midbody are ongoing and cargo bay closeouts are under way. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, April 13.]

April 14: NASA Paid \$26.6M to Columbia Families

NASA paid \$26.6 million to the families of seven astronauts who died aboard space shuttle Columbia – a settlement that has been kept secret for more than 2 ½ years. The space agency recruited former FBI Director William Webster, also a former federal judge, to act as a mediator and adviser in negotiating the out-of-court settlements, according to documents released to the Orlando Sentinel through a federal Freedom of Information Act request. “The Columbia astronauts were our friends and co-workers,” said NASA spokesman Allard Beutel. “Our concern always has been with the crew’s families and their loss, and as a result NASA didn’t announce details of the settlement in an effort to protect the personal privacy of the Columbia families.” [“NASA Paid \$26.6M to Columbia Families,” **Orlando Sentinel**, April 15, 2007, p A1 & A8.]

April 15: NASA updates Shuttle target launch dates

During a meeting Monday at NASA's Johnson Space Center, agency officials revised the target launch dates for space shuttle flights during the next 12 months. The space shuttle and International Space Station programs agreed to the changes during a meeting to evaluate options following the STS-117 mission's delay, which was caused by hail damage to the external fuel tank. Flights beyond April 2008 have not been assessed. Both shuttle and station program officials will continue to consider options for the remainder of the shuttle flights and those target launch dates are subject to change. Upcoming shuttle missions:

- STS-117 targeted for no earlier than June 8, 2007, on Atlantis
- STS-118 targeted for no earlier than Aug. 9, 2007, on Endeavour
- STS-120 targeted for no earlier than Oct. 20, 2007, on Discovery instead of Atlantis
- STS-122 targeted for no earlier than Dec. 6, 2007, on Atlantis instead of Discovery
- STS-123 targeted for no earlier than Feb. 14, 2008, on Endeavour
- STS-124 targeted for no earlier than April 24, 2008, on Discovery instead of Atlantis

The shuttles for STS-120, 122 and 124 were exchanged to best meet the demands of the missions and to have the least amount of impact on the flight schedule. [“NASA updates Shuttle target launch dates,” **NASA News Release #07-89**, April 15, 2007.]

April 16: Space odyssey: Astronaut runs her Boston Marathon

NASA astronaut Sunita "Suni" Williams completed her version of the Boston Marathon on Monday -- more than 210 miles above Earth. "I'm done! Woo hoo!" Williams told Mission Control after running 26.2 miles on a treadmill at the international space station. Already traveling at 17,500 mph, Williams started the race on time at 10 a.m. ET with race No. 14,000 taped to the front of the treadmill as the space station passed over the Pacific Ocean. She finished, unofficially, 4 hours, 23 minutes and 46 seconds later as the station traveled over Russia. Web posted. (2007). [Space odyssey: Astronaut runs her Boston Marathon [Online]. Available WWW: <http://www.cnn.com> [2007, April 17.]

April 17: No booms are heard, so tests please KSC

A Cold War-era jet blasted through the sky over the Kennedy Space Center on Tuesday, gathering test data about what kind of noise nuisance frequent space tourism flights from here may cause nearby residents. The anecdotal results: the sonic booms created by tests of the F-104 fighter jet while out over the Atlantic Ocean could not be heard back on shore at the space center. Data from sensors along the coast was not ready immediately, but KSC's Jim Ball was all smiles with the audible results. "I didn't hear a thing here at KSC, which is good news," said Ball, the manager spearheading NASA's efforts to find alternate uses for the unique Shuttle Landing Facility and nearby supporting facilities. NASA, KSC and Florida officials hope that, perhaps before the end of this decade, private spacecraft are able to launch tourist flights into space from the three-mile-long runway where orbiters have landed for decades. Part of the process necessary to make such flights possible is determining the potential impact on nearby buildings, businesses and residents. One of the possible impacts: the startling and ground-shaking sonic booms that such craft might make as they zoom out of KSC to the north and east. The thundering noise can shake buildings, even rattling pictures off walls, under certain conditions. Computer models could replicate the potential impact from sonic booms at a certain location, and a certain altitude, over the ocean. But NASA took advantage of a chance to partner with a private company that owns an aircraft capable of producing real sonic booms along the flight path. The F-104, a former military jet now owned by Starfighters Inc. of Clearwater, zoomed out of KSC on a path north and then east over the Atlantic. The jet is capable of simulating the path a horizontally-launched space flight might take out of KSC, as well as the speeds that would create the sonic booms at a similar location and altitude. The data gathered is just one piece of several layers of data that NASA or private space companies would need to obtain the appropriate licenses or approvals for tourist flights. FAA officials were on hand for Tuesday's tests. NASA made a deal with Starfighters to share the data from the flights in exchange for use of the shuttle runway and support facilities on Tuesday and for some future test flights. In some cases, if Starfighters is using the shuttle facilities to gather data for itself, the company will reimburse some of NASA's costs. The experiment in question is being run by Florida Institute of Technology researcher Sam Durrance, a former astronaut who has for years been closely involved in space-related economic development in the state. Ball and other officials are not discussing specific targets for when commercial space flights might launch off the shuttle runway, citing a long list of unresolved issues and factors that will affect a timeline. The test work now happening is laying the groundwork, however, according to KSC Director Bill Parsons, who observed Tuesday's flights as well. Web posted. (2007). [No booms are heard, so tests please KSC [Online]. Available WWW: <http://www.floridatoday.com> [2007, April 18].]

Japanese lab segment welcomed to KSC

Kennedy Space Center this morning officially welcomed one of the parts of a Japanese science complex soon to be launched and attached to the International Space Station. The Experiment Logistics Module Pressurized Section of the Japanese Experiment Module arrived at KSC about one month ago to begin getting ready for launch. A ceremonial welcoming event (seen in the image at left) has just begun, around 9 a.m., at the KSC Space Station Processing Facility, where the component is awaiting its flight to the station. Japan's entire laboratory complex will be flown to the station, aboard space shuttles, on three different flights. The science facility is known as Kibo, which means Hope in Japanese. The

pressurized section welcomed to the launch site in the ceremony today is the storage area for materials, tools and supplies. As many as eight racks loaded with science experiments can be stored inside. The section being welcomed to KSC this morning attaches to another larger pressurized module once it arrives in orbit. The launch of the pressurized section is currently targeted for February of next year. Web posted. (2007). [Japanese lab segment welcomed to KSC [Online]. Available WWW: <http://www.floridatoday.com/> the flame trench blog [2007, April 18].]

Lobbying for Space Congress

A group of local aerospace engineers is striving to revive the old Space Congress and plans to host a symposium later this month at Florida Solar Energy Center. Once considered the world's premier aerospace conference, the space congress debuted in 1962 and was staged annually by the Canaveral Council of Technical Societies. Held each April, it consistently drew the most influential people in the aerospace industry. Then in 2005, the congress was combined with the Cape Canaveral Spaceport Symposium another notable community conference. But in 2006, the joint event was moved to Orlando and subsequently canceled. That decision left the Space Coast without an annual space conference. Now, volunteers from the local council of technical societies plan a three-day Space Visions Congress that will open April 26. ["Lobbying for Space Congress," **Florida Today**, April 18, 2007, p 3B.]

April 18: Always wanted to know what flying in the space shuttle feels like?

Kennedy Space Center is introducing a new ride that promises to let hundreds of visitors a day experience the exhilaration of a space shuttle launch, all in the name of education. The \$65 million Shuttle Launch Experience sounds a lot like a highly popular thrill ride at a certain internationally famous theme park within driving distance of Cape Canaveral. But Kennedy Space Center's Visitor Complex said its new attraction is designed to inform even as it entertains. "This is the largest single development in the history of the visitor complex," said Daniel LeBlanc, the visitor complex's chief operations officer. "It takes our storytelling to a whole new level." The new ride will debut officially on Memorial Day weekend, with a soft opening earlier in May. It can accommodate as many as 1,400 people an hour, though LeBlanc said the complex isn't expecting that large a volume. Nevertheless, the ride is a giant leap for the 40-year-old visitor complex, which until now has offered guests passive attractions such as the IMAX movie theater and the Saturn V rocket exhibit. "We have a lot of artifacts and history here, but the modern visitor wants more than a static display," LeBlanc said. "We wanted to do something motion-based with our storytelling here. Visitors really want to learn more about the shuttle program, and they also want to experience a launch." The ride is housed in a 44,000-square-foot building, which visitors enter through a gantry walkway. Once inside the building, they are seated in any of four simulator cabins, each holding as many as 44 people. The cabin faces a large projection and plasma television screen held on robotic arms. The ride simulates a launch, replete with vibrations and jolts. Once in space, riders get a view of the Earth when a likeness of payload-bay doors opens. Unlike Walt Disney World's Mission: Space ride, the visitor center's equipment doesn't spin and won't increase G-force pressure on its occupants. Though the space shuttle program will end in several years, LeBlanc said the ride should have much greater longevity. "Getting kids excited about the space program is really a key here," LeBlanc said. "In fact, it is really the reason for building the Shuttle Launch Experience." Jerry Aldrich, president of Amusement Industry Consulting in Orlando, said it makes sense

to install a ride in what has been a tribute to the history of the space program, and he said it would only enhance the educational mission of the Cape Canaveral complex. "People go to the Cape to get an education along with being entertained," Aldrich said. "Museums are putting in rides not only to educate but to entertain. After all, it is getting harder and harder to get people's attention." Web posted. (2007). [Always wanted to know what flying in the space shuttle feels like? Now you can [Online]. Available WWW: <http://www.orlandosentinel.com> [2007, April 18].]

Bruce Willis to rock KSC

Bruce Willis and his band will be rocking the rocket garden at Kennedy Space Center Visitor Complex at 7:30 p.m. Aug. 2. Tickets will be available to the public at a date to be announced later, according to Andrea Farmer, spokeswoman for the Visitor Complex. About 5,000 people are expected to attend the show. The blues performance is part of the Netflix LIVE! On Location series of concerts and will be followed by an outdoor screening of Willis' flick "Armageddon," which features a space mission to save Earth from an asteroid. Web posted. (2007). [Bruce Willis to rock KSC [Online]. Available WWW: <http://www.floridatoday.com> [2007, April 18].]

April 20: Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-042007. **Mission: STS-117** - 21st International Space Station Flight (13A) - S3/S4 Truss Segment Solar Arrays; Vehicle: Atlantis (OV-104); Location: Vehicle Assembly Building; Launch Date: Targeted for June 8, 2007; Launch Pad: 39A; Crew: Sturckow, Archambault, Reilly, Swanson, Forrester and Olivas; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In high bay No. 1 of the Vehicle Assembly Building, technicians and engineers continue repairing foam on the hail-damaged STS-117 external fuel tank, ET-124. The poured foam repairs are nearly complete, and technicians are trimming and sanding repair sites. Spray foam repairs are scheduled to begin next week. Due to the amount of tank repair work remaining, the rollout of Atlantis to the launch pad is now scheduled for May 12. This six-day change should not affect the June 8 target launch date. Preparations are complete for the removal of Atlantis' three main engines to inspect for flow liner contamination. Engine removal is scheduled to begin next week. This work can be accomplished within the time frame of the tank repair. **Mission: STS-118** - 22nd International Space Station Flight (13A.1) - S5 Truss Segment; Vehicle: Endeavour (OV-105); Location: Orbiter Processing Facility Bay 2; Launch Date: Targeted for Aug. 9, 2007; Launch Pad: 39A; Crew: Kelly, Hobaugh, Williams, Morgan, Mastracchio, Caldwell and Anderson; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. Two of the three orbiter main engines have been inspected and reinstalled. All three engines were removed last week to allow for flow liner contaminant inspections. No RepliSet contamination was found in any of the flow liners. The orbiter boom sensor system, which was removed for mechanical repairs on the boom pedestals, was reinstalled this week. The system and the shuttle arm will be deployed today, and technicians will begin installing the sensor packs in the boom. The nose landing gear wheel/tire assembly was installed this week, and the steering and brake tests are complete. ET-117, the external fuel tank to be used for STS-118, is scheduled to be transported from the barge in the turn basin to the Vehicle Assembly Building on April 30. The tank will then be lifted into a checkout cell in high bay No. 2 West for processing. **Mission: STS-120** - 23rd International Space Station Flight (10A) - U.S. Node 2; Vehicle: Discovery (OV-103); Location: Orbiter Processing Facility Bay 3; Launch Date: Targeted for Oct. 20, 2007; Launch Pad: 39A; Crew: Melroy, Zamka, Parazynski,

Wheelock, Wilson, Nespoli and Tani; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 3, water spray boiler system servicing and checkout continues. Wire tray closeouts in the midbody are ongoing and cargo bay closeouts are under way. The forward reaction control system will be delivered to the facility's bay No. 3 today and installed next week. Functional testing on all three fuel cells is complete. Inspections of the main propulsion system flow liners are finished. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, April 20.]

First man on moon returns to Brevard

The first man to walk on the moon returned to Cocoa Beach on Thursday, inconspicuously blending into a group of the nation's foremost aerospace experts. One of only two or three U.S. astronauts who are household names, Neil Armstrong was among two dozen people meeting to advise NASA on agency aeronautics, science and space exploration programs. Armstrong, 76, who commanded the Apollo 11 moon-landing mission in July 1969, now serves as chairman of the aeronautics committee of the NASA Advisory Council. Sitting at a long rectangular grouping of tables in a hotel ballroom, he and fellow committee members briefed council colleagues on an encounter Wednesday with an examiner from the White House Office of Management and Budget. "The aeronautics budget is hit about as hard as any, I think," Armstrong said. The examiner, J.D. Kundu, was scrutinizing all of NASA's aeronautics programs for their relevance within President Bush's overall budget, the quality of the projects and the agency's performance on them. The message, according to Armstrong: "Aeronautics is important, but we have other things that are very, very important." Web posted. (2007). [First man on moon returns to Brevard [Online]. Available WWW: <http://www.floridatoday.com> [2007, April 20].]

April 23: NASA stretches out Orion development by two years

NASA has added \$385 million to Lockheed Martin's development contract for the Orion Crew Exploration Vehicle (CEV), delaying the company's original targeted delivery date for the vehicle by two years to synchronize its arrival with other Constellation program hardware. The contract modification brings the value of the development portion of the contract, known as Schedule A, from \$3.9 billion up to \$4.3 billion, and extends it through 2013. The modification also adds two tests of Orion's launch abort system, while dropping production of a pressurized cargo carrier for the International Space Station from the design phase. The modification was planned in advance and is not the result of program cost growth or the fiscal 2007 continuing resolution that slashed NASA's budget and caused the Orion's expected operational debut to slip to 2015, according to agency officials. Before Lockheed Martin won the Orion prime contract last year, "we asked the contractors to come in with the most aggressive date they could deliver an Orion vehicle," said Scott Horowitz, associate administrator for exploration systems. Lockheed's target was August 2011, but later budget actions dictated that other Constellation hardware - including the Ares I rocket that boosts the Orion to orbit - would not be ready at the same time. NASA had always planned on "resyncing" the contract, Horowitz said during a teleconference April 20. Lockheed Martin's new delivery date for the CEV is 2013. The extra abort tests, set to take place in 2008, were not deemed necessary by Lockheed Martin in its original proposal, but NASA has chosen to insert them, said Skip Hatfield, NASA's Orion project manager. There will be a pad abort and high-altitude abort test in 2008, then another pad and high-altitude test in

2009. Delivery of the Orion still must take place well in advance of planned launch dates to take into account the development problems that are likely to crop up, Horowitz said. "If I write the contract to deliver the vehicle at the very last minute, there is no schedule or reserve for anybody to use when the inevitable happens," Horowitz said. "So the internal dates ... must be more aggressive than the guaranteed date that we promise." NASA now expects the Orion's operational debut with astronauts to take place in early 2015. The Orion will make an unmanned orbital test flight about six months prior to that flight, according to Hatfield. The Orion contract is divided into three sections, known as Schedule A, B and C. Schedule A is the development portion of the contract, B is production and C is sustainment. The \$385 million and two years added to Schedule A will be mostly offset by corresponding reductions in Schedules B and C, which should leave the overall prime contract value steady at about \$8 billion, Hatfield said. E-mail distribution. (2007). [Aviation Week's Aerospace Daily & Defense Report Re: "NASA studying Titan IV phaseout as it plans shuttle retirement," [Electronic]. Vol. 222, No. 16, [April 23, 2007].]

April 24: NASA finishes flag facelift at KSC

A crew working at dizzying heights is putting the finishing touches on the giant American flag on the south side of the Kennedy Space Center Vehicle Assembly Building, where shuttle Atlantis is being readied for a June 8 launch. The red-white-and-blue makeover is part of a larger effort to repair more than \$100 million in damage done during hurricanes Charley, Frances and Jeanne, which swept through the nation's prime launch operations center area during a difficult nine-week period in August and September 2004. Working on scaffolding secured high above the ground, painters also freshened up the NASA logo on the same side of the 52-story building. The flag is 209 feet long and 110 feet wide, or about the size of a 60-plane hangar bay on an aircraft carrier. The blue field on the flag is the size of a regulation basketball court, and its 50 stars each are six feet wide. Each of the 13 stripes are the size of a standard interstate highway lane -- wide enough to accommodate 18-wheelers or the tour buses that haul visitors around the spaceport. The NASA logo measures about 132 feet by 110 feet and covers 12,300 square feet. The flag and a U.S. bicentennial logo were painted on the side of the building in 1976 in celebration of the 200th anniversary of the United States of America. The job required 6,000 gallons of paint. In 1998, the flag was repainted and the bicentennial symbol was replaced with the NASA logo during a celebration of the agency's 40th anniversary. The Vehicle Assembly Building was erected in the early 1960s for the assembly of the U.S. Saturn 5 rockets that carried American astronauts and their cargoes to the moon. It now serves as the assembly building for U.S. space shuttles and will be used to erect new moon rockets when the U.S. sends astronauts back to the lunar surface around 2018. Web posted. (2007). [NASA finishes flag facelift at KSC [Online]. Available WWW: <http://www.floridatoday.com> [2007, April 24].]

NASA's AIM satellite to launch April 25 aboard Pegasus

Orbital Sciences Corp. and NASA are in the final stages of preparation for launching the agency's Aeronomy of Ice in the Mesosphere (AIM) satellite aboard an Orbital-built Pegasus rocket during a seven-minute launch window opening at 1:23 p.m. Pacific time April 25. Orbital also built the AIM spacecraft, which is slated to spend two years studying polar mesospheric clouds. The spacecraft program is being overseen by Hampton University of Hampton, Va., assisted by the University of Colorado and Virginia Tech University. The AIM mission is part of NASA's ongoing series of Small Explorer missions that use small satellites for Earth or space science missions. E-mail distribution. (2007). [Aviation Week's

Aerospace Daily & Defense Report Re: "NASA's AIM satellite to launch April 25 aboard Pegasus," [Electronic]. Vol. 222, No. 18, [April 25, 2007.].]

April 25: NASA's AIM spacecraft launched aboard Pegasus

NASA's Aeronomy of Ice in the Mesosphere (AIM) spacecraft has begun its two-year mission to study high-altitude ice clouds following its successful launch aboard a Pegasus XL rocket April 25. Orbital Sciences Corp. built both the spacecraft and the Pegasus launch vehicle, which was released from its Stargazer L-1011 carrier aircraft about 100 miles offshore west-southwest of Point Sur, Calif., at 1:26 p.m. Pacific time. About 10 minutes later the 440-pound spacecraft separated from its launcher and was delivered into orbit approximately 375 miles above the Earth, inclined at 97.77 degrees to the equator. Mission controllers will spend the next several days checking out the spacecraft and ensuring all systems are working. E-mail distribution. (2007). [Aviation Week's Aerospace Daily & Defense Report Re: "NASA's AIM spacecraft launched aboard Pegasus," [Electronic]. Vol. 222, No. 20, [April 27, 2007.].]

April 26: NASA to rotate station astronauts on next shuttle mission

After several months working aboard the International Space Station, NASA astronaut Suni Williams will come back to Earth aboard the space shuttle Atlantis, targeted for launch June 8. That shuttle mission, STS-117, will carry her successor, astronaut Clay Anderson, to the station to begin his duty as an Expedition 15 flight engineer. The exchange of Anderson and Williams was originally planned for the STS-118 mission, now targeted for launch in August. However, that flight, first set to fly in June, had to be postponed after an unexpected hail storm damaged Atlantis' external fuel tank and delayed STS-117. NASA managers approved the crew rotation Thursday morning after a more detailed review determined there would be no impact on space station operations or future shuttle mission objectives. Since an earlier crew rotation was possible, NASA managers decided it would be prudent to return Williams and deliver Anderson sooner rather than later. With the new plan, Williams' mission on the station will be approximately the same length as originally anticipated. Williams, a Massachusetts native, launched to the station Dec. 9, 2006, aboard the space shuttle Discovery as part of the STS-116 mission. During her stay, she set a record for spacewalks by a female astronaut by conducting four excursions for a total of 29 hours and 17 minutes. Upon Williams' return, she will have accumulated more time in space than any other woman. ["NASA to rotate station astronauts on next shuttle mission," **NASA News Release #07-93**, April 26, 2007.]

SpaceX gets OK to launch at Cape

A startup firm founded by Internet mogul Elon Musk has won long-awaited approval from the U.S. Air Force to launch its Falcon rockets from Cape Canaveral. SpaceX, of El Segundo, Calif., says it aims to launch science, military and commercial spacecraft for as little as half the cost of competing space vehicles, such as The Boeing Co.'s Delta and Lockheed Martin Corp.'s Atlas rockets. So far, SpaceX has test flown its Falcon 1 rocket twice from an island in the Pacific Ocean. The first one blew up on liftoff, and the second one failed to deliver its payload to the target orbit. But the development effort appears on track to result in a viable space launcher. In terms of size, the Falcon 1 is comparable in class to the Delta 2 rocket that has launched military satellites and space probes from the Cape for decades. SpaceX has plans to offer medium- and heavy-lift versions of its Falcon rocket in the future. The Pad 40 facility was appealing to the company because of its capability to support all

three sizes of Falcon rockets. For now, Delta and Atlas launchers remain the only two rockets currently launching from Cape Canaveral. Both fleets are marketed by United Launch Alliance, the Boeing-Lockheed partnership. SpaceX has been vying since its founding in 2002 to break the two fleets' hold on the U.S. launch-services market. SpaceX got approval Wednesday for a five-year license from Air Force Space Command to operate Launch Complex 40, the recently deactivated former home of the retired Titan 4 rocket. Gen. Kevin Chilton, commander of Air Force Space Command, said in a written statement that the deal was good news for the company, the Air Force and the country. Web posted. (2007). [SpaceX gets OK to launch at Cape [Online]. Available WWW: <http://www.floridatoday.com> [2007, April 26].]

April 27: Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-042707. **Mission: STS-117** - 21st International Space Station Flight (13A) - S3/S4 Truss Segment Solar Arrays; Vehicle: Atlantis (OV-104); Location: Vehicle Assembly Building; Launch Date: Targeted for June 8, 2007; Launch Pad: 39A; Crew: Sturckow, Archambault, Reilly, Swanson, Forrester, Olivas and Anderson; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In high bay No. 1 of the Vehicle Assembly Building, technicians and engineers continue repairing foam on the hail-damaged STS-117 external fuel tank, ET-124. Spray foam repairs are scheduled to begin Monday. Workers have begun disassembling the special scaffolding built for the foam repair work, to allow for the removal next week of Atlantis' three main engines to inspect for flow liner contamination. **Mission: STS-118** - 22nd International Space Station Flight (13A.1) - S5 Truss Segment; Vehicle: Endeavour (OV-105); Location: Orbiter Processing Facility Bay 2; Launch Date: Targeted for Aug. 9, 2007; Launch Pad: 39A; Crew: Kelly, Hobaugh, Williams, Morgan, Mastracchio, and Caldwell; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. All three main engines have been reinstalled after an inspection of the engine flow liners showed no contaminant. Engine leak checks are complete. Technicians are now in the process of completing the engine interface connections and installing the engine heat shields. Nose landing gear door rigging began this week, and preparations are under way for installation of the tunnel adapter, which is located in the midbody between the external airlock and a container used to transport experiments and cargo. ET-117, the external fuel tank to be used for STS-118, is scheduled to be transported from the barge in the turn basin to the Vehicle Assembly Building on April 30. The next day, the tank will be lifted into a checkout cell in high bay No. 2 for processing. **Mission: STS-120** - 23rd International Space Station Flight (10A) - U.S. Node 2; Vehicle: Discovery (OV-103); Location: Orbiter Processing Facility Bay 3; Launch Date: Targeted for Oct. 20, 2007; Launch Pad: 39A; Crew: Melroy, Zamka, Parazynski, Wheelock, Wilson, Nespoli and Tani; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 3, technicians have installed the orbiter's remote manipulator system, also known as the shuttle arm, or RMS. Checkout and servicing of water spray boiler No. 1 is complete. The forward reaction control system was installed this week. . Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, April 27.]

Physicist Hawking experiences zero gravity

Astrophysicist Stephen Hawking floated free in zero gravity Thursday, becoming the first person with a disability to have the experience. The zero-gravity flight in a modified jet creates the experience of microgravity during 25-second plunges -- called parabolas -- over

the Atlantic Ocean. "It was amazing," Hawking, paralyzed by a progressive neurological disorder, said afterward through an electronic device. "The zero-G part was wonderful and the full-G part was no problem. I could have gone on and on. "Space, here I come." Hawking, a mathematics professor at the University of Cambridge who has done ground-breaking work on black holes and the origins of the universe, has amyotrophic lateral sclerosis, also known as Lou Gehrig's disease. He cannot speak or move. He is one of the best-known theoretical physicists of his generation and also wrote the book "A Brief History of Time." A doctor and three nurses monitored Hawking throughout the Zero Gravity Corp. flight. The scientist floated in the air, free of his wheelchair and electronic communication gear for the first time in 40 years. Web posted. (2007). [Physicist Hawking experiences zero gravity [Online]. Available WWW: <http://www.floridatoday.com> [2007, April 27].]

April 29: NASA to test new system at WSMR

Old-timers at White Sands Missile Range area will see a familiar sight in the upcoming years when NASA begins testing of the emergency abort system for the new Orion space vehicle planned to replace the aging space shuttle. The abort system for the new vehicle will allow astronauts to escape from a malfunctioning rocket by activating smaller rocket engines mounted on top of the command module, the part of the spacecraft where the astronauts ride and control the rocket. When a hazardous situation is detected aboard the rocket, the escape system will be activated, starting the escape rockets and pulling the command module free and flying it to safety. The way this system operates is based on the systems used in early spaceflight during programs like Mercury and Apollo, whose systems were also tested on the missile range. The advantage of the new system is that it will have the ability to detach the command module and fly it to safety even after the rocket has already launched. The system works by firing small rockets on a tower mounted to the command module. The rockets fly the module off the main rocket and away from the launch pad, using a combination of maneuvering rockets and small fold out wings, called canards, to steer itself and get into position to detach the command module. Once the module is detached, it will fall clear of the escape tower and deploy parachutes to slow its descent, ultimately firing a set of small retro rockets to slow the module even more moments before it hits the ground. While the escape tower is technology that NASA has used on previous space vehicles, the retro rockets are a new system originally developed by the Army that NASA hasn't used before. Testing of the abort system is scheduled to begin in the fall of 2008 and continue until 2012 if the program stays on schedule. The first tests will be with just a mock-up command module designed to have the same dimensions and weight, but no rockets except those on the escape system will be used. Web posted. (2007). [NASA to test new system at WSMR [Online]. Available WWW: <http://www.alamogordonevents.com/> [2007, April 29].]

Beachside beacon is back

Cape Canaveral Lighthouse, the landmark tower that has served as a beacon to mariners for more than 150 years, came to life – and light – once again Sunday night after more than a year of darkness. "We're surprised at how bright it is," said George Diller, treasurer for the lighthouse foundation. Diller said the more than \$1 million restoration project was probably one of the most significant lighthouse restoration works since the early days of the U.S. Lighthouse Services. The lighthouse on Cape Canaveral Air Force Station is the only lighthouse in the country operated by the Air Force, which owns the structure and land.

The Coast Guard is responsible for the operation of the light. ["Beachside beacon is back," Florida Today, April 30, 2007, p 1A & 5A.]

April 30: Observance of National Day of Prayer 2007 at Kennedy Space Center

A Kennedy Space Center observance of the National Day of Prayer will be held on May 3, 2007, from 11 a.m. to 12 p.m., in the Kennedy Space Center Training Auditorium. E-mail distribution. (2007). [Parsons, W.W. Re: "Observance of the National Day of Prayer 2007 at Kennedy Space Center" [Electronic]. [April 30, 2007.]

During April: Crews at Kennedy Space Center

Crews at Kennedy Space Center will pull all three engines on the space shuttle Atlantis to ensure a putty-like silicone used to gauge changes in fuel-pipe liners hasn't contaminated the propulsion system. Post-flight inspections of engines flying in the No. 3 position on the shuttle Discovery found traces of the "RepliSet" material in the preburners. It apparently had been left behind, upstream of the engine, when crews used the material to make before-and-after molds to see if there were changes in the fuel flow liners during flight. That raised concerns about foreign object damage to an engine, and led the shuttle program's weekly top-level Program Requirements Control Board to order the inspection on Atlantis and Endeavour. The flow liner issue caused a stand-down in shuttle operations in 2002, and RepliSet impressions were ordered during the recovery from the unrelated Columbia accident the following year. ["Americas – Crews at Kennedy Space Center," Aviation Week & Space Technology, April 9, 2007, p 16.]

MAY

May 1: CRS report questions NASA numbers, shuttle schedule

It is difficult to assess NASA's true spending plan because of changes in the agency's financial formula in the years it uses for comparison, according to a recent report by the Congressional Research Service (CRS). The CRS's March brief also calls into question the space shuttle launching plan in relation to the planned schedule for the International Space Station (ISS). For fiscal year 2008, the Bush administration has requested \$17.3 billion for NASA, an increase of 6.5 percent from the fiscal 2007 appropriation of \$16.2 billion. But getting hard-and-fast comparisons is no easy task, the CRS reported. Addressing the shuttle plans in relation to the new proposed spacecraft, Orion, the report said, "The gap between the end of shuttle flights in 2010 and the planned availability of Orion in 2014 raises several issues. Some analysts are concerned that placing a fixed termination date on the shuttle may create schedule pressure similar to that identified as a contributing factor in the Columbia disaster. Some question whether the United States should be dependent on Russia to launch U.S. astronauts to the ISS during the gap period. A major concern is how NASA will retain its skilled work force during the transition from shuttle to Orion, especially if Orion's schedule slips and the gap lengthens." E-mail distribution. (2007). [Aviation Week's Aerospace Daily & Defense Report Re: "CRS report questions NASA numbers, shuttle schedule," [Electronic]. Vol. 222, No. 22, [May 1, 2007.].]

Nelson Calls for 2nd NASA Official to Resign

U.S. Sen. Bill Nelson said in a letter on Tuesday there is "dysfunctional" oversight of NASA as evidenced by the discovery that the space agency's top lawyer personally destroyed internal records. As a result, Nelson said, NASA's general counsel, Mike Wholley, should resign immediately. Previously, Nelson and other lawmakers called on President George W. Bush to remove the agency's inspector general, Robert Cobb, who serves as independent watchdog over NASA. In an interview last Friday, Wholley admitted to destroying recordings of a recent meeting between Griffin, Cobb and Cobb's staff, in part because he didn't want them to become public under the federal government's Freedom of Information Act, according to Nelson's letter to Griffin. In addition to now calling for Wholley's resignation, Nelson renewed the call for Cobb's removal. Among other things, Cobb allegedly failed to report the loss of an estimated \$1.9 billion worth of rocket engine designs. A report by the Integrity Committee of the President's Council on Integrity and Efficiency, which oversees the inspectors general at federal agencies, found Cobb "engaged in abuse of authority" and created an appearance that he lacked independence over the agency he was supposed to oversee through audits and investigations. According to Nelson's letter, Wholley largely ignored the Integrity Committee's report in recommending to Griffin that corrective action for Cobb include management training. Under the Inspector General Act of 1978, the president appoints independent officials to monitor every Cabinet department and the larger federal agencies, including NASA. Web posted. (2007). [Nelson calls for 2nd NASA official to resign [Online]. Available WWW: <http://www.local6.com/> [2007, May 1].]

NASA rethinking death in mission to Mars

How do you get rid of the body of a dead astronaut on a three-year mission to Mars and back? When should the plug be pulled on a critically ill astronaut who is using up precious oxygen and endangering the rest of the crew? Should NASA employ DNA testing to weed

out astronauts who might get a disease on a long flight? With NASA planning to land on Mars 30 years from now, and with the recent discovery of the most "Earth-like" planet ever seen outside the solar system, the space agency has begun to ponder some of the thorny practical and ethical questions posed by deep space exploration. Some of these who-gets-thrown-from-the-lifeboat questions are outlined in a NASA document on crew health obtained by The Associated Press through a Freedom of Information Act request. NASA doctors and scientists, with help from outside bioethicists and medical experts, hope to answer many of these questions over the next several years. "As you can imagine, it's a thing that people aren't really comfortable talking about," said Dr. Richard Williams, NASA's chief health and medical officer. "We're trying to develop the ethical framework to equip commanders and mission managers to make some of those difficult decisions should they arrive in the future." One topic that is evidently too hot to handle: How do you cope with sexual desire among healthy young men and women during a mission years long? Sex is not mentioned in the document and has long been almost a taboo topic at NASA. Williams said the question of sex in space is not a matter of crew health but a behavioral issue that will have to be taken up by others at NASA. The agency will have to address the matter sooner or later, said Paul Root Wolpe, a bioethicist at the University of Pennsylvania who has advised NASA since 2001. "There is a decision that is going to have to be made about mixed-sex crews, and there is going to be a lot of debate about it," he said. The document does spell out some health policies in detail, such as how much radiation astronauts can be exposed to from space travel (No more radiation than the amount that would increase the risk of cancer by 3 percent over the astronaut's career) and the number of hours crew members should work each week (No more than 48 hours). But on other topics -- such as steps for disposing of the dead and cutting off an astronaut's medical care if he or she cannot survive -- the document merely says these are issues for which NASA needs a policy. Web posted. (2007). [NASA rethinking death in mission to Mars [Online]. Available WWW: <http://www.cnn.com/> [2007, May 1].]

May 2: Shuttle launch date may slip again

A scheduled June 8 launch of space shuttle Atlantis on a mission to the International Space Station appears increasingly fragile as the vehicle's rollout to Launch Complex 39A has slipped a week to about May 12. NASA and United Space Alliance managers had hoped that an Atlantis main engine changeout and repair of hail damage to its external tank would allow rollout by about May 6. But they have added an extra week for work that remains to be done in the Kennedy Vehicle Assembly Building (VAB). A June 8 launch is still possible, but there is virtually no margin left to make that date if other delays occur. The rollout has been delayed to allow more time to complete tank insulation patching using spray techniques never before done in the VAB. The engine changeout timing is also affected by the tank repair because some scaffolding needed for that job hampers access to the engines. The shuttle's engines are being changed due to fears of possible contamination from earlier processing. E-mail distribution. (2007). [Aviation Week's Aerospace Daily & Defense Report Re: "Shuttle launch date may slip again" [Electronic]. Vol. 222, No. 23, [May 2, 2007].]

External tank repairs enter second phase

NASA set out Tuesday on a second phase of repairs to shuttle Atlantis' hail-battered external tank, work that will determine whether the agency can resume International Space Station construction as planned in early June. Normally done with robotics in the factory, the

unprecedented work requires technicians to spray an aerodynamically smooth layer of thermal insulation on the curved portion near the top of the bullet-shaped tank. Engineers built mock-ups and developed step-by-step procedures to prepare for the high-precision repairs, and technicians practiced manual sprays. NASA has never flown a tank repaired with this technique. "There's a lot of confidence that everything is going to go smoothly," said June Malone, a spokeswoman for NASA's Marshall Space Flight Center in Huntsville, Ala. The work is critical to NASA's plans to launch Atlantis and seven astronauts around June 8 on a mission to deliver a new 17.5-ton truss segment to the international outpost. The launch had been scheduled for March 15 but was postponed when the shuttle's 15-story tank sustained serious damage during a Feb. 26 hailstorm. Technicians already have fixed more than 2,100 of some 2,600 dents, divots and gouges in foam insulation covering the central and lower portions of the tank. NASA also is inspecting the orbiter's main propulsion system propellant lines in an effort to spot any contamination that could trigger an engine failure in flight. Web posted. (2007). [External tank repairs enter second phase [Online]. Available WWW: <http://www.floridatoday.com/> [2007, May 2].]

Japan Prepares Space Station's Largest Laboratory for Flight

Pieces of the largest laboratory to launch towards the International Space Station (ISS) are coming together and Japan couldn't be happier. More than two-thirds of the Japan Aerospace Exploration Agency's (JAXA) Kibo laboratory awaits NASA shuttle rides to the space station early next year at the U.S. agency's Cape Canaveral, Florida spaceport. Altogether, engineers are poring over two JAXA pressurized modules and a pair of robotic arms as they await next year's delivery of external experiment platform to complete Kibo, also known as the station's Japanese Experiment Module (JEM). "JEM is the first Japanese human [spaceflight] facility," said Kichiro Imagawa, JAXA's JEM development project manager. "I think it's very important for Japan to develop them and launch them successfully." JAXA has spent about \$3 billion developing Kibo, whose name means 'Hope,' Imagawa said. The laboratory's total cost, however, is about twice that when including the module's planned orbital operations and ground mission control center in the Space Station Operations Facility at Tsukuba Space Center, which sits just north of Tokyo in Ibaraki Prefecture, Japan, he added. The first piece of JAXA's laboratory was slated to launch towards the ISS in December of this year, though NASA pushed the flight to February 2007 following delays with its next shuttle mission, STS-117 aboard Atlantis. "We at JAXA have been waiting for JEM's launch for more than 10 years, so two more months of delay is not a big problem," Imagawa said. Web posted. (2007). [Japan Prepares Space Station's Largest Laboratory for Flight [Online]. Available WWW: <http://www.usatoday.com/> [2007, May 2].]

Train carrying shuttle rockets derails

A train carrying reusable solid rocket booster segments for the space shuttle derailed in western Alabama Wednesday, leaving at least two people injured, a NASA spokeswoman said. The train was on its way to Kennedy Space Center in Florida from Utah, where the rocket booster segments are manufactured, when the accident happened around 10 a.m. ET near Pennington, Alabama, about 100 miles west of Montgomery, spokeswoman Katherine Trinidad said. One of the injured was an employee of ATK, the company that makes the segments, and the other was a railroad employee, she said. The two were airlifted to Mobile, Alabama, said George Torres, a spokesman for ATK. The fuel inside the segments is ammonium perchlorate, which has the consistency of a rubber eraser. Because it is a solid,

nothing has spilled out of the railcars, Trinidad said. The train, which had 16 cars, went off the tracks in a forested area after a bridge collapsed, she said. Not all of the cars carrying the eight segments derailed. No residents or nearby communities are at risk, and the fuel cannot explode unless it is deliberately detonated, Trinidad said by telephone from Washington. However, once the fuel is ignited, it cannot be extinguished. NASA considers the situation stable, she said. This is the second time this train has derailed on its journey from Utah, Trinidad said. On Friday, a few wheels went off the track in Kansas, but no cars turned over, she said. The segments will be sent back to Utah for inspection by the manufacturer. They had been intended for use in the October 20 launch of the space shuttle Discovery, NASA officials said. The derailment is not expected to affect that launch, the officials said, because NASA has an ample supply of other segments available. Web posted. (2007). [Train carrying shuttle rockets derails [Online]. Available WWW: <http://www.cnn.com/> [2007, May 2].]

NASA Supports Train-Derailment Recovery in Alabama

Officials from NASA and ATK Launch Systems, Edina, Minn., are assisting the Federal Railroad Administration during its investigation of a train derailment Wednesday morning near Pennington, Ala. The train was carrying space shuttle reusable solid rocket motor segments from the ATK Launch Systems manufacturing site in Brigham City, Utah, to NASA's Kennedy Space Center, Fla. "Several members of the NASA family were injured in this serious accident. Today our prayers are for those who have been injured and their families. Our employees work in hazardous jobs every day, and it is our goal to keep them safe," said NASA's Space Shuttle Program Manager Wayne Hale. The special train carrying only solid rocket motor segments and a passenger car to monitor their transportation was crossing a bridge or a trestle, which collapsed under the locomotives. Six people were injured when the two locomotives and the passenger car dropped about 10 feet and turned on their sides. One of the cars carrying a solid rocket motor segment is also on its side. The remaining cars containing seven solid rocket motor segments and two aft exit cone segments are upright. The hardware was intended for use on shuttle Discovery's STS-120 mission in October and shuttle Atlantis's STS-122 mission in December. These segments are interchangeable, and ATK Launch Systems has replacement units that could be used for the shuttle flights, if necessary. Each segment weighs approximately 300,000 lbs. and is protected by a white or yellow colored fiberglass cover during shipment. The condition of the rocket motor segments will be assessed as soon as teams conduct a full inspection. Solid Rocket Motor segments have been transported across country by rail for more than 26 years with an excellent record of safe transportation. ["NASA Supports Train-Derailment Recovery in Alabama," **NASA News Release #07-97**, May 2, 2007.]

Ride should reel in dollars

The Shuttle Launch Experience – Brevard County's first major theme park-style attraction – is expected to provide a boost to the Space Coast tourism industry. And, to coincide with the May 25 debut of the Shuttle Launch Experience at the Kennedy Space Center Visitor Complex, area hotels are offering discounted rooms and packages that include tickets to the Visitor Complex. "We package with very few hotels," said Dan LeBlanc, chief operating officer of the Visitor Complex. "It's not a major distribution network for the tickets, but it's important that we sell the tickets through the hotels. We appreciate the hotels that sell our tickets." The \$60 million Shuttle Launch Experience is designed to give riders a chance to feel what the astronaut feel when they lift off in a space shuttle. It will be one of the major

debuts at a U.S. tourist attraction this year. ["Ride should reel in dollars," **Florida Today**, May 3, 2007, p 1C & 2C.]

May 3: Veteran Astronaut Walter Schirra Dies

Pioneering astronaut Walter "Wally" Schirra, the only man who flew in all three of America's first human space projects - Mercury, Gemini and Apollo - died Wednesday night. He was 84. Schirra's family reported he died of natural causes. Schirra was one of America's original seven astronauts, selected in 1959, and was commander of the first crew to fly into space aboard an Apollo capsule, Apollo 7, following the tragic launchpad fire that claimed the lives of the crew of Apollo 1. "With the passing of Wally Schirra, we at NASA note with sorrow the loss of yet another of the pioneers of human spaceflight," NASA Administrator Michael Griffin said. "As a Mercury astronaut, Wally was a member of the first group of astronauts to be selected, often referred to as the Original Seven." Schirra's first space flight was piloting the fifth Mercury mission on Oct. 3, 1962, orbiting Earth six times in 9 hours and 13 minutes. During the flight he took hundreds of photos of Earth and space phenomena. Schirra's capsule, Sigma 7, splashed down only 5 miles from the recovery carrier. As commander of Gemini 6-A, which launched on Dec. 15, 1965, Schirra flew with astronaut Tom Stafford on a mission that included the first rendezvous of two manned, maneuverable spacecraft. Gemini 6-A and Gemini 7 flew in formation for five hours, as close as one foot to one another. During his 11-day Apollo 7 flight, which began Oct. 11, 1968, he and fellow crewmembers Walt Cunningham and Donn Eisele tested the Apollo systems and proved Apollo was ready to take astronauts to the moon. "We shared a common dream to test the limits of man's imagination and daring," Schirra wrote of America's early astronauts. "Those early pioneering flights of Mercury, the performances of Gemini and the trips to the moon established us once and for all as what I like to call a spacefaring nation. Like England, Spain and Portugal crossing the seas in search of their nations' greatness, so we reached for the skies and ennobled our nation." Schirra retired from the Navy as a captain and from NASA in 1969 and became a commentator with CBS News. His enthusiasm and knowledge of the space program coupled with his charismatic on-the-air presence made him an even more widely known national and international figure. He complemented CBS anchorman Walter Cronkite and the two became a powerful space-coverage team. Schirra worked for CBS from 1969 to 1975. He also engaged in a range of business activities and in 1979 formed his own consultant company, Schirra Enterprises. After leaving NASA, he participated in a number of television presentations and films, and served as national spokesman for several organizations and companies. He also held numerous directorships for a variety of businesses, in addition to his consulting work. He also wrote two books, "We Seven" published in 1960 and "Schirra's Space" published in 1988. Schirra's military awards included the Navy Distinguished Service Medal, three Distinguished Flying Crosses, three Air Medals, two NASA Distinguished Service Medals, the NASA Exceptional Service Medal and the Philippines Legion of Honor. Schirra lived in Rancho Santa Fe, Calif. ["Veteran Astronaut Walter Schirra Dies," **NASA News Release #07-100**, May 3, 2007.]

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officer of the Kennedy Space Center Visitor Complex. "It's not a major distribution network for the tickets, but it's important that we sell the tickets through the hotels. We appreciate the hotels that sell our tickets." The \$60 million Shuttle Launch Experience is designed to give riders a chance to feel what the astronauts feel when they lift off in a space shuttle. It will be one of the major debuts at a U.S. tourist attraction this year. Web posted. (2007). [Ride should reel in dollars [Online]. Available WWW: <http://www.floridatoday.com/> [2007, May 3].]

Questionable cuts take toll at NASA

Already feeling financially pinched NASA's space science programs are being squeezed even more as they move down the agency's priority list behind ongoing space flight programs, a panel of scientists told a House committee Tuesday. Between \$3 billion and \$4 billion has been siphoned from science programs to help pay for replacement of the shuttle fleet and completion of the International Space Station, said Lennard Fisk, a member of the National Research Council's Space Studies Board. "There is no way to remove that much money from the budget without causing disruptions in ongoing programs and distortion to the balance among programs," he told members of the House Science and Technology Subcommittee on Space and Aeronautics. Future science programs, including basic research, student training and new mission planning, are being jeopardized because of inadequate funding for NASA, he said. "It is being asked to do too much with too little, and as a result, all components of the agency, including science, are sub-optimally funded," he told the panel. The chairman of the committee, Colorado Democratic Rep. Mark Udall, agreed NASA's science programs face "a significant disruption" if the financial squeeze continues. Web posted. (2007). [Questionable cuts take toll at NASA [Online]. Available WWW: <http://www.floridatoday.com/> [2007, May 3].]

Weldon: Dems will wreck NASA budget

U.S. Rep. Dave Weldon, M.D. (R-FL) today excoriated the Democratic leadership for failing to allow a vote on an amendment he proposed that would have kept Congress from raiding NASA's budget to fund a 35% increase for the National Science Foundation (NSF). "It's increasingly clear that Democratic leaders have our manned space program in their crosshairs," said Weldon. Weldon noted that at the hearing to introduce his proposal, Rep. Dennis Cardoza (D-CA), who sits on the powerful Rules Committee, said he opposed the amendment because he was 'not convinced' of the need for human space exploration. Weldon originally introduced the amendment after the Democrats proposed an astounding 35% percent (\$2 billion) funding increase for NSF this year alone. The proposed increase was made possible earlier this year when Democrats cut a half-a-billion dollars from NASA funding. NASA and NSF are funded through the same budget account and compete for the same pot of money. "Democrats are on a glide path to cripple our manned Space program. It's time the space community saw this for what it is: an assault on our commitment to build the Shuttle replacement, return to the moon, and maintain our strategic advantage in space. It's also an assault on the civilian workers and contractors who are about to have their lives disrupted because Democrats can't divert NASA funding fast enough to their other priorities." Earlier this month, Weldon joined a bipartisan group of 17 lawmakers in calling for a summit with the Bush Administration to discuss the space program's funding shortages. Ironically, seven of the lawmakers who signed that letter had just voted for half-a-billion in cuts to NASA's budget. Web posted. (2007). [Weldon: Dems will wreck NASA

budget [Online]. Available WWW: <http://www.floridatoday.com/> The Flame Trench blog [2007, May 3].]

Female mission commanders tour KSC

The astronauts destined to be the first female to command the International Space Station and the second to command a shuttle mission checked out a new outpost hub during a stopover at Kennedy Space Center earlier this month. Peggy Whitson, who served as a flight engineer and U.S. science officer aboard the station in 2002, will take the helm of the outpost during Expedition 16, a six-month tour that is scheduled to begin in October. The expedition is expected to be the first with a quadruple crew rotation. If all goes as planned, Whitson and Malenchenko will live and work with U.S. astronauts Clay Anderson, Daniel Tani and Garrett Reisman as well as French flyer Leopold Eyharts of the European Space Agency. Anderson will be onboard the station when Whitson and Malenchenko arrive. Tani will fly up on Discovery in October and be replaced by Eyharts, who will be ferried to the outpost aboard Atlantis in December. Reisman is scheduled to launch on Endeavour next February, replacing Eyharts. Veteran NASA astronaut Pam Melroy will command the shuttle mission aimed at delivering Tani and the U.S. Harmony module to the outpost. Set for launch aboard Discovery in October, the multihatch module will serve as a gateway between the U.S., European and Japanese segments of the outpost. The European Columbus laboratory and the Japanese Kibo science facility will be moored at two of its ports. A veteran astronaut who piloted two previous flights to the station, Melroy will become only the second woman to command a shuttle mission. Former NASA astronaut Eileen Collins was the first. She commanded a 1999 mission to deploy the Chandra space observatory and NASA first post-Columbia test-flight in 2005. Both Whitson and Melroy were at the KSC Space Station Processing Facility last week to check out the Harmony module, which also is known as Node 2. Web posted. (2007). [Female mission commanders tour KSC [Online] Available WWW: <http://www.floridatoday.com/> The Flame Trench blog [2007, May 3].]

May 4: NASA Awards Heat Shield Material Contracts For Orion Spacecraft

NASA has selected The Boeing Company, Huntington Beach, Calif., and Textron Systems, Wilmington, Mass., to develop alternate heat shield materials for the Orion crew exploration spacecraft. The two contracts for Alternate Block 2 Thermal Protection System (TPS) Materials and Heat Shield Systems Advanced Development will support development and testing of three alternative heat shield materials, designs and manufacturing processes. Under the contracts, the companies will work to ensure the technologies are mature enough to become viable backups if there are difficulties with the primary material. NASA's Constellation Program is developing Orion as America's primary vehicle for future human space exploration. Orion will carry astronauts to the International Space Station by 2015, with a goal of landing astronauts on the moon no later than 2020. The Orion TPS Advanced Development Project, led by Ames Research Center, Moffett Field, Calif., was established to develop a heat shield to protect Orion during its return from low-Earth orbit or the moon. In September 2006, Boeing was awarded a contract to develop the primary heat shield material, Phenolic Impregnated Carbon Ablator (PICA), manufactured by its subcontractor, Fiber Materials, Inc., Biddeford, Maine. The alternate materials will be developed fully only if the primary material does not perform to Orion Project specifications. NASA will assess and evaluate all of the Alternate Block 2 TPS materials through initial testing and select the most

promising of the materials for further development, if needed. The Alternate Block 2 contract awarded to Boeing has an approximate value of \$10 million, including all options, and calls for Boeing to perform early investigation of a proprietary material, the Boeing Phenolic Ablator (BPA). The contract awarded to Textron has a value of approximately \$24 million, including all options, and calls for Textron Systems to perform early investigation of two proprietary material options, Avcoat (used on Apollo) and Dual Layer. Each contract has a 16-month performance period from May 4, 2007, until Aug. 31, 2008. ["NASA Awards Heat Shield Material Contracts For Orion Spacecraft," **NASA Contract Release #C07-23**, May 4, 2007.]

Museum schedules GPS Ground Antenna dedication

The Global Positioning Systems Wing with the 45th and 50th Space Wings has scheduled a dedication ceremony for the GPS Transportable Ground Antenna exhibit at the Air Force Space and Missile Museum at Cape Canaveral Air Force Station, Fla., May 24. Web posted. (2007). [Museum schedules GPS Transportable Ground Antenna dedication [Online] Available WWW: <http://www.afspc.af.mil/news/story.asp?id=123052074> [2007, May 4].]

Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-050407. **Mission: STS-117** - 21st International Space Station Flight (13A) - S3/S4 Truss Segment Solar Arrays; Vehicle: Atlantis (OV-104); Location: Vehicle Assembly Building; Launch Date: Targeted for June 8, 2007; Launch Pad: 39A; Crew: Sturckow, Archambault, Reilly, Swanson, Forrester, Olivas and Anderson; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In high bay No. 1 of the Vehicle Assembly Building, technicians and engineers continue repairing foam on the hail-damaged STS-117 external fuel tank, ET-124. Spray foam repairs began this week, and an area on the "ogive pencil point" (at the top of the tank) is scheduled to undergo a spray foam repair this weekend. Atlantis' three main engines were removed this week for flow liner contamination inspections, which are now complete. A small piece of RepliSet found in the engine No. 2 flow liner has been removed. The silicon rubber RepliSet is used in making 3-D impressions that help to detect cracks in the main propulsion system fuel line flow liners. Engine No. 3 has been reinstalled, and engineers are reinstalling engines No. 1 and 2. **Mission: STS-118** - 22nd International Space Station Flight (13A.1) - S5 Truss Segment; Vehicle: Endeavour (OV-105); Location: Orbiter Processing Facility Bay 2; Launch Date: Targeted for Aug. 9, 2007; Launch Pad: 39A; Crew: Kelly, Hobaugh, Williams, Morgan, Mastracchio, Caldwell and Drew; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. Workers in Orbiter Processing Facility bay 2 are installing the orbiter engine heat shields and have completed the engine interface connections. Technicians are also working on modifications to the orbiter's engine cutoff sensor wiring. This work involves rerouting new wires and installing new resistors. The crew hatch carrier panel fit check was successfully completed this week. Checkout of the orbiter's three inertial measurement units is complete. These units are part of the orbiter's navigation system. Nose landing gear door rigging continues, and orbiter aft closeout work began this week. ET-117, the external fuel tank to be used for STS-118, was transported Monday from the barge in the turn basin to the Vehicle Assembly Building. The next day, the tank was lifted into a checkout cell in high bay No. 2 for processing. **Mission: STS-120** - 23rd International Space Station Flight (10A) - U.S. Node 2; Vehicle: Discovery (OV-103); Location: Orbiter Processing Facility Bay 3; Launch Date: Targeted for Oct. 20, 2007; Launch Pad: 39A; Crew: Melroy, Zamka, Parazynski, Wheelock, Wilson, Nespoli and Tani; Inclination/Orbit Altitude: 51.6

degrees/122 nautical miles. In Orbiter Processing Facility bay No. 3, workers have completed verifying the forward reaction control system interface connections. New, stronger tile known as BRI tile is being installed around the main landing gear doors and the external tank doors. Checkout of the "station to shuttle power transfer system" is under way. Technicians are also working on modifications to the orbiter's engine cutoff sensor wiring. This work involves rerouting new wires and installing new resistors. APU lube oil servicing is complete, and functional testing of the atmospheric revitalization pressure control system, part of the orbiter's life support system, is in progress. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, May 4.]

May 5: Astronauts enter hall of fame

Shuttle robot arm operator Steve Hawley was flying along at five miles a second about 380 miles above Earth with the future of NASA in his mechanical grasp. Looming five stories tall with its golden solar wings gleaming against black space, the Hubble Space Telescope was in his control, snared at the end of the 50-foot crane, ready to be released into Earth orbit. It was a career highlight for Hawley, now director of astromaterials research and exploration science at Johnson Space Center in Houston. His next big moment comes today when he and two colleagues -- veteran shuttle fliers Michael Coats and Jeffrey Hoffman -- are inducted into the U.S. Astronaut Hall of Fame. The three make up the hall's "Class of 2007." They will be honored at a 3 p.m. ceremony at the Apollo-Saturn 5 Center at Kennedy Space Center. Anybody who purchases an admission ticket to the KSC Visitor Complex today may attend. Web posted. (2007). [Astronauts enter hall of fame [Online] Available WWW: <http://www.floridatoday.com/> [2007, May 5].]

May 7: Expendable Launch Vehicle Status Report

Expendable Launch Vehicle Status Report #ELV-050707. **Mission: Dawn;** Launch Pad: Cape Canaveral Air Force Station, Fla.; Launch Vehicle: Delta II 7925-H; Launch Date: NET June 30, 2007; Launch Time: 5:13:15 p.m. EDT. Comprehensive spacecraft system performance testing continues. Instrument final alignment is under way. A test of the spacecraft's primary communications antenna is scheduled for May 21. The spacecraft solar arrays will be attached and deployed May 21 - 24. No spacecraft issues or concerns have arisen during testing to date. Web posted. (2007). [NASA's Expendable Launch Vehicle Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/launchingrockets/status/2007/index.html> [2007, May 7.]

NASA may use Safran Vulcain rocket engine for Ares stage

European aerospace interests have been buzzing this spring with the possibility that NASA may turn to the Safran Vulcain rocket engine for the upper stage of its Ares I crew launch vehicle if it can't develop the Apollo-heritage J2-X for the job. The European LOX/hydrogen engine has comparable performance to what is hoped for the J2-X, a derivative of the Saturn V upper stage engine, and while it isn't human-rated, it has a lot more run time than what is basically a new Pratt & Whitney Rocketdyne development. Officials from the U.S. space agency have heard the pitch, but for now they're not buying. "Could we buy another engine from another nation," asks Administrator Michael Griffin. "Of course, but then what happens to U.S. capability in that arena? It's not my goal to spend U.S. tax dollars building up the aerospace establishments of other nations. It's not going to happen under me." E-mail distribution. (2007). [Aviation Week's Aerospace Daily & Defense Report Re:

"NASA may use Safran Vulcain rocket engine for Ares CLV stage," [Electronic]. Vol. 222, No. 26, [May 7, 2007.].]

May 8: UA's Phoenix Mars Lander sent to Kennedy Space Center

The University of Arizona's Phoenix Mars Lander arrived safely in Florida after a short flight Monday in preparation for its eight-month journey into space. The Phoenix Mars mission will seek evidence of water and habitable conditions near the planet's northern polar region. The lander was moved from Lockheed Martin Corp.'s Littleton, Colo., Space Systems facility to the Kennedy Space Center in Florida, where it will be integrated with a Delta II launch vehicle that will carry it to Mars, said Gary Napier, a Lockheed Martin spokesman. The lander, enclosed in an environmentally controlled steel container measuring 13 feet wide by 17 feet long by 13 feet tall, was loaded Monday morning into the rear of a C-17 transport at Buckley Air Force Base for the trip from Colorado to Florida, Napier said. The flight landed about 4:35 p.m. on the same runway used by returning NASA space shuttles, Napier said. After landing, workers began taking the container off the airplane. Then it was placed in a holding center at the Kennedy Space Center. This afternoon the transport container will be moved to a clean room where the lander will be unpacked, he said. The next few months will be spent preparing the lander and launcher for the Aug. 3 launch. The Phoenix Mars Lander is designed, built and operated for NASA by UA's Lunar and Planetary Laboratory in partnership with the Jet Propulsion Laboratory, Lockheed Martin and the Canadian Space Agency. Web posted. (2007). [UA's Phoenix Mars Lander sent to Kennedy Space Center [Online]. Available WWW: <http://www.tucsoncitizen.com/> [2007, May 8.]

Thunderbirds buzz Kennedy Space Center

A flock of U.S. Air Force Thunderbird F-16 jets buzzed Kennedy Space Center this week to promote a space exposition to be held at NASA's shuttle homeport later this year. The KSC Visitor Complex will host the inaugural World Space Expo from Nov. 3 through Nov. 11, and the Thunderbirds will take part by flying an aerial salute during the opening weekend of the event. NASA officials say the exposition is expected to create one of the largest displays of space artifacts, hardware and personalities ever assembled into one location. The idea is to inspire, educate and engage the public by highlighting the achievements and benefits of space exploration. Web posted. (2007). [Thunderbirds buzz Kennedy Space Center [Online]. Available WWW: <http://www.tucsoncitizen.com/> [2007, May 10.]

May 9: NASA moves external tank

NASA took a step toward the planned August launch of shuttle Endeavour earlier this month when the external tank for its mission was lifted into a checkout cell in Kennedy Space Center's Vehicle Assembly Building. Designated ET-117, the tank was lifted from a transporter on the floor of the 52-story building to a point where it could be moved over a crossbeam and into the checkout cell. The lift was performed by a crew of expert crane operators employed by United Space Alliance. Delivery inspections and initial processing for launch will take place in the checkout cell, which is located on the northwest side of the building. Endeavour and a crew of astronauts are scheduled to launch Aug. 9 on a mission to deliver the S5 truss segment to the International Space Station. NASA plans to start stacking a pair of solid rocket boosters for the mission around May 21. The external tank is to be lifted out of the checkout cell and mated to the solid rocket boosters around June 12. The orbiter Endeavour is scheduled to be mated to the external tank-booster set around June 30, and the fully assembled shuttle is to be rolled out to launch pad 39A around July 9.

Web posted. (2007). NASA moves external tank [Online]. Available WWW:
<http://www.floridatoday.com/> [2007, May 9.]

Space Shuttle Contingency Training Exercise

Personnel from NASA's Dryden Flight Research Center, Kennedy Space Center and Edwards Air Force Base conducted a training exercise this past weekend that would enable them to effectively handle the rescue of a space shuttle crew in the unlikely event of a landing mishap at the base. The exercises are held periodically to train Air Force fire/rescue and medical crews in aiding the shuttle crew in exiting the shuttle after a simulated landing mishap on or near the Edwards runway, escaping from the mishap area, and after triage assessment, safely evacuating injured crew members. Although NASA's Kennedy Space Center in Florida is the landing site of choice for space shuttle missions, Edwards AFB remains the primary alternate landing site in case weather or other situations preclude Florida as a landing option. ["Space Shuttle Contingency Training Exercise," **NASA News Release #07-21**, May 9, 2007.]

May 10: NASA mulling alternate stage separation scheme for Ares I
NASA is considering an alternate stage separation scheme for its Ares I rocket that would use struts driven by compressed gas rather than the modified shuttle hardware in the current design, and is asking industry to weigh in. The current design uses Space Shuttle Booster Separation Motors (renamed Booster Deceleration Motors, or BDMs) to separate the Ares I after the first stage has spent its fuel and prior to upper-stage ignition. The gas strut system has been suggested "as a preferable alternative with cost, additional payload mass to orbit, reduction in hardware and operations complexity, and safety cited as potential advantages," NASA said in a request for information (RFI). The current thinking is that the six-foot struts would need to exert a force of about 7,000 pounds, driven by the expansion of compressed gas within a cylinder surrounding the strut and its piston. NASA is conducting a trade study comparing this process to the baseline BDM design. NASA wants industry to provide information on commercially available technology that could support the gas strut design. Responses are due May 25. This alternate design effort is part of NASA's responsibilities on the Ares I program, and is not duplicating any work that will be performed by the upper-stage contractor, according to the agency. "Information provided will be used internal to NASA and will not be included in the evaluation process for the Upper Stage RFP [request for proposals]," NASA said. Boeing and ATK are leading the teams vying to build the Ares I upper stage, and the winner will be chosen by late August or September. The Ares I is slated to begin boosting the Orion vehicle and its astronaut crew to orbit starting in 2015. E-mail distribution. (2007). [Aviation Week's Aerospace Daily & Defense Report Re: "NASA mulling alternate stage separation scheme for Ares I" [Electronic]. Vol. 222, No. 29, [May 10, 2007.].]

Shuttle crew members shift; another added to STS-118

Shuttle Update: NASA astronaut and Air Force Col. Benjamin Alvin Drew will join the crew of the STS-118 space shuttle mission, targeted for launch Aug. 9. Drew will take a seat that opened when astronaut Clayton Anderson was moved to shuttle Atlantis' STS-117 flight, which is targeted to launch June 8. Anderson will begin a long-duration mission on the International Space Station, and current station crew member Suni Williams will return to Earth aboard Atlantis. Shuttle Endeavour will carry Drew on his first spaceflight. He will serve as a mission specialist during STS-118, which will deliver another segment to continue

building the station for completion by 2010. ["Shuttle crew members shift; another added to STS-118," **Countdown**, May 10, 2007.]

May 11:

NASA Completes Constellation Ground Operations Review

NASA has established a requirements baseline for ground systems to be developed in support of the Constellation Program. The systems requirements review was conducted at NASA's Kennedy Space Center in Florida on May 5. "Completion of the systems requirements review marks a major milestone in executing the development of ground systems, as well as operations strategies to support the next generation of space vehicles," said Tip Talone, Constellation's Ground Operations Project manager at Kennedy. The space center will be the launch site for future missions to low Earth orbit, the moon and other destinations in the solar system. The review was an in-depth look at the basic capabilities necessary to support space vehicle integration and ground processing; launch processing infrastructure, including the vehicle assembly building, launch pads and launch control center; launch vehicle protection systems; launch checkout and control; crew safety and emergency egress; and fault tolerance requirements for the systems. Agency and contractor engineers from across the country reviewed the requirements. The requirements will be applied to all launch, landing and recovery activities for the Orion crew exploration vehicle, Ares I crew launch vehicle and Ares V cargo launch vehicle. The ground operations team established plans for ensuring the requirements will be clearly communicated to hardware developers so the systems developed will comply with all relevant agency program and project requirements. After completion of all project-level reviews, the Constellation Program plans an integrated review in late May to update and synchronize all Constellation Program baseline requirements. ["NASA Completes Constellation Ground Operations Review," **NASA News Release #07-112**, May 11, 2007.]

Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-051107. **Mission: STS-117** - 21st International Space Station Flight (13A) - S3/S4 Truss Segment Solar Arrays; Vehicle: Atlantis (OV-104); Location: Vehicle Assembly Building; Launch Date: Targeted for June 8, 2007; Launch Pad: 39A; Crew: Sturckow, Archambault, Reilly, Swanson, Forrester, Olivas and Anderson; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In high bay No. 1 of the Vehicle Assembly Building, repairs to the foam on the hail-damaged external fuel tank ET-124 are nearly complete, and technicians and engineers are preparing Atlantis for its rollout to Launch Pad 39A, currently scheduled for May 16. Atlantis' three main engines, which were removed last week to allow for inspection of the flow liners, have all been reinstalled, and final checkout and testing are under way. **Mission: STS-118** - 22nd International Space Station Flight (13A.1) - S5 Truss Segment; Vehicle: Endeavour (OV-105); Location: Orbiter Processing Facility Bay 2; Launch Date: Targeted for Aug. 9, 2007; Launch Pad: 39A; Crew: Kelly, Hobaugh, Williams, Morgan, Mastracchio, Caldwell and Drew; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. Members of the STS-118 crew are in Orbiter Processing Facility bay No. 2 today and will be there Saturday for the crew equipment interface test. The test provides an opportunity for the crew to review equipment in the crew cabin and cargo bay of the orbiter, and to review in-flight maintenance procedures. Earlier in the week, technicians installed the tunnel adapter, which is located in the midbody between the external airlock and a container used to transport experiments and cargo. Completion of the installation signifies closeout of the orbiter's midbody. Technicians continued work this week on modifications to the orbiter's engine cutoff sensor wiring.

Work also continues on closeout of the orbiter maneuvering system and the orbiter aft.

Mission: STS-120 - 23rd International Space Station Flight (10A) - U.S. Node 2; Vehicle: Discovery (OV-103); Location: Orbiter Processing Facility Bay 3; Launch Date: Targeted for Oct. 20, 2007; Launch Pad: 39A; Crew: Melroy, Zamka, Parazynski, Wheelock, Wilson, Nespoli and Tani; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 3, workers continue modifications to the orbiter's engine cutoff sensor wiring. Functional testing of the atmospheric revitalization pressure control system, part of the orbiter's life support system, is under way. Workers are also preparing for servicing of the ammonia boiler, which is a heat exchanger that helps cool the hydraulic system. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, May 11.]

Expendable Launch Vehicle Status Report

Expendable Launch Vehicle Status Report #ELV-051107. Mission: Dawn; Location: Astrotech Space Operations Facility; Launch Pad: 17-B; Launch Vehicle: Delta II 7925-H; Launch Date: NET June 30, 2007; Launch Window: 5:13:15 p.m. - 5:33:15 p.m. EDT. Mission system performance testing continues and is planned to finish Friday. A test of the spacecraft's primary communications antenna is scheduled for May 21. The spacecraft solar arrays will be attached and deployed May 21 - 24. The spacecraft will be moved to Astrotech's Hazardous Processing Facility for fueling on May 26. Mission: Phoenix; Location: Payload Hazardous Servicing Facility; Launch Pad: 17-A; Launch Vehicle: Delta II 7925; Launch Date: Aug. 3, 2007; Launch Time: 5:35:18 a.m. EDT. Spacecraft spin-balance testing is under way. The spacecraft will be powered to begin testing on May 14. The heat shield will be installed on May 15, and a separation test will then be performed. The spacecraft's electrical power system will undergo a final performance test on May 17. The flight software will be loaded aboard the spacecraft on May 21. Web posted. (2007). [NASA's Expendable Launch Vehicle Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/launchingrockets/status/2007/index.html> [2007, May 11.]

4, 3, 2, 1 . . . it's almost here

With two weeks to go in the countdown until the launch of the Kennedy Space Center Visitor Complex's shuttle simulator attraction, the \$60 million ride is taking final shape. From the outside, the Shuttle Launch Experience looks like a big, gray box. But, on the inside, visitors are taken to a whole new world — a world where they become astronauts preparing for their first shuttle launch. The ride will give visitors a simulated look inside the space shuttle — from astronaut training, to the force of 3Gs felt by real astronauts strapped into the crew cabin. Contractors and members of construction crews are finishing up the attraction, racing to be done in time for its May 25 opening. What sets the Shuttle Launch Experience apart from theme-park attractions is that it was designed with the input of former space shuttle commander Rick Searfoss, in an effort to recreate an actual shuttle liftoff. Educational videos run throughout the attraction, placed in areas of the winding passage outside that leads would-be astronauts to the "briefing area" inside, and then inside of the crew cabins, where most of the experience takes place. First, four groups of 44 passengers are briefed in a rotunda on what their mission will entail and what they can expect. The ground shakes and smoke billows, as visitors prepare to walk to their crew cabin. Once in the crew compartment, astronauts strap into their seats and prepare for

launch. The 44 seats are on a platform set at a 7-degree angle. As the rumbling and shaking of liftoff commence — recreating an ascent to the heavens — hydraulics lift the platform an additional 62 degrees off the ground. Technology enables the feeling of being pulled deep into the seat, as the shuttle takes off away from Earth. After the vehicle reaches its simulated “maximum dynamic pressure,” or “Max Q,” around seven miles away from Earth, the effects in the cabin begin to change. The external tanks fall away, and the simulated jettison causes a jolt to the riders. The main engine cutoff occurs, and the cabin pitches forward 20 degrees. Then, weightlessness is simulated. The payload doors open above, and riders see what Earth looks like from 200 miles above. As the visitors exit the attraction, they move through a star-studded black sky to a ramp that circles downward and out of the building. Riders must be at least 4 feet tall to go on Shuttle Launch Experience. Final touches are being put on the ride. Special cushions are being attached to the seats in the four crew cabins. Many other changes have been made to the Visitor Complex, which is operated by Delaware North Companies Parks & Resorts on behalf of NASA. There is a new bus loop, additional walkways, various expansions, and more plants and landscaping. There have been upgrades to other attractions at the Visitor Complex, like the Explorer shuttle orbiter mock-up, the children’s play area and an addition in the form of an area called NASA Central, which will open in time for the debut of the Shuttle Launch Experience. The Visitor Complex is hoping for an overall 10 percent to 15 percent increase in attendance at Brevard County’s most popular paid tourist attraction. Web posted. (2007). [4, 3, 2, 1 . . . it’s almost here [Online]. Available WWW: <http://www.floridatoday.com/> [2007, May 11.]

NASA managers confident of fixes

The finishing touches are being completed on shuttle Atlantis’ hail-damaged external tank and project managers think the repairs will hold up well in flight. There’s a high degree of confidence that they’ll remain intact,” said Kyle Herring, a spokesman at NASA’s Johnson Space Center in Houston. Engineering analyses are being done to determine the probability of a foam loss from a repaired area of Atlantis’ tank and the chance of breakaway foam causing severe damage. The results will be examined during a flight readiness review May 30 to 31 at Kennedy Space Center. A firm launch date will be selected then. NASA also repaired hail damage to 26 heat shield tiles on Atlantis’ left wing. Extra inspections were performed on the orbiter’s main propulsion system propellant lines, too. Atlantis and seven astronauts are to deliver a new central truss segment to the space station. The 17.5-ton girder is equipped with a new set of power-producing solar wings. The mission is the first of four station assembly flights scheduled this year. Five were planned before the hail storm. At least 13 more are required to finish the \$100 billion station before a 2010 presidential deadline. Web posted. (2007). [NASA managers confident of fixes [Online]. Available WWW: <http://www.floridatoday.com/> [2007, May 11.]

Mannheim Steamroller heads to KSC

Mannheim Steamroller is scheduled to play a concert at Kennedy Space Center Visitor Complex at 8 p.m. May 26. The concert follows the debut of the \$60 million Shuttle Launch Experience shuttle simulator attraction, which opens May 25 at the visitor complex. The instrumental group Mannheim Steamroller is known for its digital-classic-rock style, and particularly its Christmas music. Mannheim Steamroller recorded sound from the last space shuttle liftoff at Kennedy Space Center, and that will be incorporated into its music. Web posted. (2007). [Mannheim Steamroller heads to KSC [Online]. Available WWW: <http://www.floridatoday.com/> [2007, May 11.]

May 12: KSC chief says more tech work needed

NASA's Kennedy Space Center is facing tough times, and new business will have to be lured to keep the work force at its current level when the nation's shuttle fleet is retired in 2010, the center's director said Friday. An extended gap between the shuttle's final International Space Station construction mission and the first piloted flights of new Apollo-style moon capsules also will make it difficult to retain critical skilled workers, he said. The state of Florida and local economic-development leaders consequently need to seal more deals like one which will bring final integration and assembly of the Orion spacecraft to NASA's prime launch operations center. "It's going to take that kind of effort for us to be able to hold onto this work force and to keep the work force at a level that we think is an appropriate level here at the Kennedy Space Center," Kennedy Space Center Director Bill Parsons told 200 people at an annual briefing for community leaders. The coastal spaceport now is the largest employer in Brevard County, with about 15,000 contractor and civil-service workers. The NASA work done there pumps about \$3.7 billion into the state economy each year. About \$1.6 billion of that is spent in Brevard. Factor in what economists call "the multiplier effect" -- jobs created to serve the work force -- and KSC is responsible for 36,750 paychecks in the county. The number of people working at KSC, however, is expected to drop dramatically when NASA shuts down the shuttle program. Fewer people will be needed to launch moon rockets and Orion spacecraft, and a five-year hiatus in NASA's human spaceflight program is forecast. Potential job loss estimates range from 5,000 to 8,000, and NASA is trying to avoid the type of exodus of expertise that followed the shutdown of the Apollo moon-landing program in the 1970s. The multiplier effect raises the number of potential job losses to 12,250 to 19,560. The tough times at KSC will be exciting, nonetheless, Parsons said. NASA plans up to 15 more shuttle missions to complete the International Space Station and service the agency's flagship Hubble Space Telescope. The first four of those flights are scheduled for launches on June 8, Aug. 9, Oct. 20 and Dec. 6. The first test-flight of an Ares 1 rocket -- the vehicle NASA will use to launch Orion space capsules -- is scheduled for April 2009. Final assembly of the capsules will be done at a KSC processing facility that is being refurbished with \$35 million in state money. A new commercial launch services company -- SpaceX of El Segundo, Calif. -- is scheduled to start launching Falcon 9 rockets on test flights next September. The company has an agreement to use Launch Complex 40 at Cape Canaveral Air Force Station. NASA is hoping the company will be able to launch cargo -- and potentially astronauts -- to the international station after the shuttle is retired. If successful, that would be the type of new business needed to help maintain local work-force levels. "We're going to need fewer people (to launch moon missions). So it's going to be very important that we try to capture different kinds of jobs here at the Kennedy Space Center," Parsons said. "We may not have the exact same number of people working here at the Kennedy Space Center, but we need to make it just as close as we possibly can. And that's what we're all trying to do, trying to accomplish." Web posted. (2007). [KSC chief says more tech work needed [Online]. Available WWW: <http://www.floridatoday.com/> [2007, May 12.]

May 14: Damaged Shuttle Booster Segments Returned to ATK

Four solid-rocket booster segments riding near the front of the freight train that derailed May 2 in Alabama are headed back to Utah where their manufacturer, Alliant Techsystems (ATK), will either use them for ground tests or thoroughly refurbish them. George Torres, a spokesman for Magna, Utah-based ATK Launch Systems Group, said May 9 that NASA

and ATK determined over the weekend of May 5-6 that the four booster segments riding toward the back of the train are probably still fit for flight and so will continue on to Florida. Once the booster segments arrive at Kennedy Space Center, they will undergo extensive inspection before NASA approves their use for an upcoming space shuttle mission. NASA and ATK officials said the freight train was traveling under 4.7 miles (six kilometers) per hour when the raised roadbed it was crossing collapsed, causing the front of the train to go off the tracks. The two locomotives fell onto their sides, pulling a passenger car with them, injuring six people. Four booster-carrying flatbed cars toward the front of the train also derailed, with one falling over onto its side. The other four boosters were on cars toward the back of the train and remained upright and on the tracks during the accident, the cause of which is still under investigation. June Malone, a spokeswoman for NASA Marshall Space Flight Center in Huntsville, Ala., said data recorders on board the train to monitor ride conditions found that only the four boosters near the front of the train were jostled hard enough in the accident to disqualify them for flight. "We have accelerometers on those cars," Malone said. "The four in the front have acceleration data outside of the guidelines. The four in the back were within the guideline." Torres said the four boosters cleared to travel on to Florida were back in transit May 9 and were expected to reach Kennedy Space Center May 14. Web posted. (2007). [Damaged Shuttle Booster Segments Returned to ATK [Online]. Available WWW: <http://www.space.com/> [2007, May 14.]

Storms may delay shuttle rollout

NASA expected to gain an extra day in the launch schedule by rolling Atlantis to the launch pad beginning around 4 a.m. today, giving the shuttle team additional time to load a 17-plus ton girder into the cargo bay for the planned June 8 liftoff. The earlier-than-planned rollout to the pad gives the launch team a fourth contingency day between now and June 8 – backup days that would be available to the team to deal with unexpected problems that sometimes crop up once the shuttle is at the pad. However, thunderstorms predicted for this morning could keep the shuttle in the Vehicle Assembly Building. "Right now, the big factor is lightning," Kennedy Space Center spokesman George Diller said Wednesday. Technicians were to report at midnight Monday to prepare the shuttle for the six-hour trip to the launch pad. The tank shows the speckled repairs of hundreds of patches because the new foam is lighter in color than the original coat of insulation. While NASA has flown with similar small patches on previous missions, the number of repairs on this tank is far higher than the agency has tested in flight. ["Storms may delay shuttle rollout," **Florida Today**, May 15, 2007, p 1B.]

May 15: NASA's Shuttle Atlantis Rolls back Out to Launch Pad

Space shuttle Atlantis is back at its launch pad at NASA's Kennedy Space Center, Fla. Teams are preparing Atlantis for its mission, STS-117, to the International Space Station. Launch is targeted for June 8. Atlantis rolled out of Kennedy's Vehicle Assembly Building at 5:02 a.m. EDT Tuesday on a massive crawler transporter. Traveling less than 1 mph, the journey ended with Atlantis atop the launcher pedestals at Launch Pad 39-A at 11:47 a.m. The total trip time was six hours and 45 minutes. Electrical and mechanical connections of Atlantis to the launch pad are under way. With the refurbishment of Pad 39-A, this launch will be the first from the pad in four years. Atlantis originally was targeted for launch in March, but a hail storm damaged foam insulation on the shuttle's external fuel tank and forced managers to roll the spacecraft back into the Vehicle Assembly Building to make repairs. Atlantis' payload, consisting of the S3/S4 truss, will be installed into the shuttle's payload bay on

Wednesday. Beginning May 23, propellants will be loaded into Atlantis' storage tanks. The propellant will be used by the orbital maneuvering system and reaction control system to move the spacecraft while it is in orbit. The flight readiness review meeting, where the official launch date is scheduled, will be held May 30-31 at Kennedy. For a launch on June 8 at 7:37 p.m., the 43-hour countdown would begin on June 5. STS-117 Commander Rick Sturckow, Pilot Lee Archambault and mission specialists Jim Reilly, Patrick Forrester, Steven Swanson, John "Danny" Olivas and Clay Anderson are scheduled to arrive at Kennedy on June 4. During their 11-day mission, the astronauts will work with the space station crew and ground teams to install the girder-like S3/S4 truss segment, unfold a new set of solar arrays and retract one array on the starboard side of the station. STS-117's terminal countdown demonstration test, which is a launch dress rehearsal, was held in February and will not need to be repeated. ["NASA's Shuttle Atlantis Rolls Back Out to Launch Pad," NASA News Release #07-116, May 15, 2007.]

Hall Appoints Feeney to Top GOP Position on Space and Aeronautics Subcommittee

Ranking Member Ralph Hall (R-TX) today announced the appointment of Rep. Tom Feeney (R-FL) to Ranking Member of the Space and Aeronautics Subcommittee. Feeney replaces Rep. Ken Calvert (R-CA), who recently accepted a position on the House Appropriations Committee. "I am very pleased to appoint Congressman Feeney to be the new Ranking Member of the Subcommittee on Space and Aeronautics," Hall said. "Feeney has a wealth of knowledge about America's space programs, and he will be an articulate and effective leader on our subcommittee. I look forward to working with him to help ensure America's continued leadership in space exploration and research." Upon accepting the new position, Feeney made the following statement: "I am honored to lead GOP efforts on the Space and Aeronautics Subcommittee. I look forward to working with Chairman Mark Udall (D-CO) to continue America's space predominance. I will use my new position to ensure America retains its preeminence as a spacefaring country and maintain its leadership in the aerospace industry. America's space and aviation endeavors must remain second-to-none in order to protect our national security and to sustain economic growth. My top priorities are to promote America's Vision for Space Exploration and to sustain the vitality of all NASA centers including the Kennedy Space Center. I will fight to continue the progress NASA has made in returning the Space Shuttle to regular flight and developing the Shuttle's successor -- the Constellation Program. It is my hope to ensure the transition from the Shuttle program to Constellation will have minimal impact on the human spaceflight workforce." Web posted. (2007). [Hall Appoints Feeney to Top GOP Position on Space and Aeronautics Subcommittee [Online]. Available WWW: <http://www.spaceref.com/> [2007, May 15.]

Shuttle sitting on the launch pad

The shuttle Atlantis reached the launch pad about 11 a.m., after a 3.5-mile trip from the Vehicle Assembly Building. The shuttle left the VAB at 5:02 a.m. today. Despite a threat of thunderstorms, NASA officials determined the chance of lightning was minimal and rain did not come. Repairs to the hail-damaged external tank are complete. The speckled tip of the external fuel tank shows the marks of repairs. NASA officials are confident the repairs will withstand the force of the trip to orbit, however, such extensive repairs have never been tested in flight. The early rollout could give NASA a fourth contingency day at the pad as workers prepare to load a 17.5-ton truss bound for the International Space Station on the

June 8 target launch date. Web posted. (2007). [Shuttle sitting on the launch pad [Online]. Available WWW: <http://www.floridatoday.com/> the flame trench blog [2007, May 15.]

May 16:

Promotional campaign to lead up to shuttle attraction kickoff

It takes more than top mechanical design and vision to launch an attraction. As the Kennedy Space Center Visitor Complex prepares to debut the Shuttle Launch Experience to the media and to the public, its executives will have to use a lot of imagination. "It's the type of attraction with a great story line, and that really helps," said Jerry Aldrich, president of Amusement Industry Consulting in Orlando. Aldrich has overseen the installation of many simulator-based attractions, inside and outside the United States. "They have to have a good story to tell, and that's where NASA certainly has an advantage," Aldrich said. In preparation for the Shuttle Launch Experience debut on May 25, a promotional campaign has swung into high gear at the KSC Visitor Complex. Newspaper, magazine, television and Internet stories play a big role in promoting the attraction. Various campaigns have begun, including national newspaper and television campaigns, consumer promotion and a family vacation sweepstakes. The marketing campaign features three 30-second television spots that focus on the excitement of the \$60 million Shuttle Launch Experience. The television campaign started Sunday on Discovery Channel, Sci-Fi Channel and Travel Channel. A newspaper coupon ad appeared in more than 1,200 newspapers Sunday. The ad, offering people a \$5 savings on admission to the Kennedy Space Center Visitor Complex, will run again Sunday. The design team, NASA astronauts and attraction experts created an authentic experience, deploying sophisticated motion technology, special-effects seats, and high-fidelity visual and audio presentations to simulate a space shuttle launch. Shuttle Launch Experience combines the detailed accounts of astronaut experiences with the expertise of design engineers to produce an unique attraction experience. . Web posted. (2007). [Promotional campaign to lead up to shuttle attraction kickoff [Online]. Available WWW: <http://www.floridatoday.com/> [2007, May 16.]

MPPF to be used for fueling operations

Kennedy Space Center's MPPF (Multi Payload Processing Facility) has been selected as the location to perform Orion fueling operations, after the replacement vehicle for the shuttle is assembled and checked out at KSC's Operations and Checkout (O&C) building. The MPPF was designed and built to handle hypergolic propellants, and is already configured to handle MMH (monomethyl hydrazine). The only addition to the facility will be the handling of N2O4 (nitrogen tetroxide). Web posted. (2007). [MSFC developing a moon garage for lunar rovers [Online]. Available WWW: <http://www.nasaspaceflight.com/> [2007, May 16.]

Dawn and Phoenix missions on schedule

Two NASA science missions, one to Mars the other to a pair of asteroids, remain on schedule for mid-summer launches. The Delta II rocket that will carry the Dawn spacecraft to the asteroid belt went to the booster processing facility Wednesday, where it will be fitted with the explosives that will destroy the rocket if it flies off course and threatens a populated area. Dawn is on schedule to blast off June 30, United Launch Alliance manager of launch operations Larry Penepent said today. "We're scheduled to transfer this today, and we've transferred it today," said Penepent. Dawn will visit two of the solar system's largest asteroids, which have remained intact since they formed. Ceres and Vesta are in the asteroid belt between Mars and Jupiter. They evolved very differently and could provide clues to the

formation of our solar system. Meanwhile, Phoenix is on schedule to launch Aug. 3 on a mission to an ice-rich region on Mars' North Pole. Technicians on Wednesday tested the engine control systems. With a robotic arm, Phoenix will search for water and evidence of conditions that could support life. Additionally, an Air Force global positioning system satellite is scheduled to launch on another Delta II rocket as early as the end of August. Web posted. (2007). [Dawn and Phoenix missions on schedule [Online]. Available WWW: <http://www.floridatoday.com/> the flame trench blog [2007, May 16.]

May 17: NASA's talent pool shallow, studies say

When NASA was in its moon-landing heyday, the space agency had 36,000 employees and many of the best your scientific minds in the country – some in key leadership positions. Now, when the agency is being asked to return man to the moon and head on to Mars, it has fewer than half that number of employees and is not attracting enough of the best and brightest college graduates, according to two recent reports that examined NASA's work force needs. Authors of those reports, a NASA administrator and representative of its unionized engineers, agreed during a House Science committee hearing Thursday that the agency needs to do more to attract young scientists and retain its existing workers. The hearing was focused on the recommendations made in reports by the National Research Council and the National Academy of Public Administration. The research council's report, released in early May, said NASA has too few program and project managers and systems engineers with experience in human space flight to execute President Bush's Vision for Space Exploration plan. The public administration group's report focused on pushing NASA to better monitor and plan for its work force needs. Its most controversial recommendation was for Congress to provide NASA with limited emergency authority to force older employees to retire. Toni Dawsey, chief human capital officer for NASA, said the agency has been implementing a plan to improve its work force. Since 2004, 700 of the 2,500 NASA hires came directly from college or were recent graduates. ["NASA's talent pool shallow, studies say," **Florida Today**, May 18, 2007, p 1A & 6A.]

May 18: Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-051807. **Mission: STS-117** - 21st International Space Station Flight (13A) - S3/S4 Truss Segment Solar Arrays; Vehicle: Atlantis (OV-104); Location: Launch Pad 39A; Launch Date: Targeted for June 8, 2007; Crew: Sturckow, Archambault, Reilly, Swanson, Forrester, Olivas and Anderson; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. Space Shuttle Atlantis arrived back at Launch Pad 39A on Tuesday, following repairs to the foam on its hail-damaged external fuel tank. Mission STS-117 was originally targeted for launch in mid-March, before a severe thunderstorm in late February generated hail that pelted the tank, ET-124. Pad operations are proceeding on schedule. Launch pad validation is complete, and the S3/S4 payload has been installed in Atlantis' payload bay. Preparations have begun for hypergolic propellant loading, which is scheduled for next week. The orbiter weather protection curtain walls have been extended, providing additional protection to the vehicle. **Mission: STS-118** - 22nd International Space Station Flight (13A.1) - S5 Truss Segment; Vehicle: Endeavour (OV-105) Location: Orbiter Processing Facility Bay 2; Launch Date: Targeted for Aug. 9, 2007; Launch Pad: 39A ; Crew: Kelly, Hobaugh, Williams, Morgan, Mastracchio, Caldwell and Drew; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. Members of the STS-118 flight crew completed the crew equipment interface test last week, reviewing equipment in Endeavour's crew cabin and payload bay. Leak checks have been completed between the

crew module, airlock and tunnel adapter. The orbiter docking system centerline cameras, used during rendezvous and docking with the International Space Station, have been aligned. Technicians continue working to close out the orbiter aft, the midbody and the left and right wings. Hydraulic operations are under way for aerosurface and landing gear positioning.

Mission: STS-120 - 23rd International Space Station Flight (10A) - U.S. Node 2; **Vehicle:** Discovery (OV-103); **Location:** Orbiter Processing Facility Bay 3; **Launch Date:** Targeted for Oct. 20, 2007; **Launch Pad:** 39A; **Crew:** Melroy, Zamka, Parazynski, Wheelock, Wilson, Nespoli and Tani; **Inclination/Orbit Altitude:** 51.6 degrees/122 nautical miles. Servicing of the ammonia boiler system, a heat exchanger that helps cool the hydraulic system, was completed early this week. The drag chute, which helps slow the orbiter after landing on the runway, was installed. Functional testing of the atmospheric revitalization pressure control system, part of the orbiter's life support system, continued this week. The orbiter docking system mechanism has been tested and will be stowed for flight. Modifications to Discovery's engine cutoff sensor wiring continue. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, May 18.]

May 22: Aeronca Pilot Enters Restricted Airspace Near KSC

The pilot of an Aeronca Champ was intercepted after entering restricted airspace Tuesday around Kennedy Space Center, and flying near the space shuttle Atlantis and its launch pad. "He came pretty close (to the shuttle)," KSC spokesman George Diller said. "He was within sight of the shuttle launch pad, and you would think that would have set off alarm bells -- that he would have realized he was somewhere he shouldn't be." The pilot reportedly took off from Fort Pierce, flew up the east Florida coast, and entered restricted airspace near Launch Complex 40 at Cape Canaveral Air Force Station around 11:15 am. The decommissioned Titan rocket pad is just a few miles south of KSC's launch pad 39A, where Atlantis is being prepped for launch June 8, according to Florida Today. Controllers at KSC spotted the green-and-white Champ and summoned a NASA security helicopter, Diller said. By the time the helicopter took off and picked up the plane's radar trail, however, it had exited restricted airspace. The pilot did contact air traffic controllers at an air field in Daytona Beach. He was instructed to land at Ormond Beach Airport -- which he did, escorted by a sheriff's office helicopter from the Volusia County Sheriff Department. Deputies met the unidentified pilot at the airport where the aircraft was searched for explosives and drugs but nothing suspicious was found. NASA and the Federal Aviation Administration are investigating the incident, Diller said. The pilot is being questioned by FBI agents. The incident has not disrupted the planned launch. KSC restricted airspace stretches from Oak Hill north of the spaceport, to the midpoint of the Indian River to the west, Port Canaveral to the south and a boundary a few miles east of KSC and the Air Force Station, according to Diller. He said it is well-defined on aeronautical charts, but pilots unfamiliar with the area sometimes stray within the restricted airspace unintentionally. Pilots have not been allowed within the area since 9/11. "We rarely have a problem with local pilots. It's usually somebody not familiar with the airspace," Diller said. Web posted. (2007). [Aeronca Pilot Enters Restricted Airspace near KSC [Online]. Available WWW: <http://www.acro-news.net/> [2007, May 23.]

NASA readies Dawn for asteroid encounter

A spacecraft destined to shed new light on the origins and evolution of the solar system is undergoing extensive solar wing testing this week as NASA prepares to launch it on a mission into the asteroid belt. Mounted atop a United Launch Alliance Delta 2 rocket, NASA's Dawn spacecraft is scheduled to blast off from Launch Complex 17B at Cape Canaveral Air Force Station on June 30. The launch window that day will stretch from 5:13 p.m. to 5:33 p.m. The spacecraft will be setting sail on a mission to study the solar system's two largest protoplanets, Ceres and Vesta. Flying within the asteroid belt between Mars and Jupiter, Dawn will swing by Vesta in October 2011 and Ceres in February 2015. It will be the first spacecraft to study two asteroids on the same mission. A suite of sophisticated instruments on the spacecraft will enable scientists to study the structure and composition of the two asteroids, which formed shortly after the birth of the solar system some 4.6 billion years ago. The goal is to better understand the conditions present at the origin of the solar system and the processes that were ongoing during the early stages of its evolution. Web posted. (2007). [NASA readies Dawn for asteroid encounter [Online]. Available WWW: <http://www.floridatoday.com/> the flame trench blog [2007, May 22.]

NASA faces battle over toxic fuel plan for Orion

NASA has decided to load the Orion crew launch vehicle with its hypergolic fuels before it reaches the pad and before it reaches the Kennedy Space Center's vehicle assembly building for stacking on to the Ares I crew launch vehicle. The decision could pose safety challenges during ground processing. Hypergolics are fuels and oxidisers that remain liquid at room temperatures and pressures and ignite on contact, requiring no ignition source. But they are toxic and require special handling. Common hypergolic fuels are hydrazine, monomethyl hydrazine and unsymmetrical dimethyl hydrazine. The oxidiser is usually nitrogen tetroxide or inhibited red-fuming nitric acid. "They have committed to off-line hypergolic servicing of the Orion with a back-up capability at the pad, so I expect to see some early operational and safety problems with Orion's 9,000kg [20,000lb] of hypergolics being stored and handled in the assembly building," says a NASA space program source. "They are, in effect, treating Orion like they would a very large unmanned probe that is normally loaded offline before installation. Only the quantities involved are significantly higher and the manned complexity of the ship requires considerably more testing and interface verifications after installation," he adds. The decision is part of the requirements baseline established by NASA for ground systems at Kennedy to support the Constellation program. Despite completing its ground systems review, the space agency has delayed an industry day that was to provide information on the planned July 2009 award of a contract for ground processing services. With the request for proposals to be published in early September, NASA had planned an industry day in early April, but it was cancelled and, almost two months later, no new date has been set. The Kennedy ground systems requirements baseline was set after an examination of the capabilities needed to support Ares launcher, Orion crew vehicle and Artemis lunar lander integration and ground processing launch processing infrastructure, including the vehicle assembly building, launch pads and control center vehicle protection systems checkout and control crew safety and emergency egress and fault tolerance requirements. After completion of all of the Constellation program's project-level assessments, an integrated review in late May will be used to update and synchronise all of the program's baseline requirements. Web posted. (2007). [NASA faces battle over toxic fuel plan for Orion [Online]. Available WWW: <http://www.flightglobabl.com/> [2007, May 22.]

May 23: NASA develops 'smart' weather balloons for launch sites

NASA is developing small, cheap "smart balloons" to monitor weather conditions around rocket pads on launch days. The announcement comes only a few months after a space shuttle fuel tank was severely damaged during a sudden and unexpected hailstorm before a launch. NASA's Kennedy Space Center (KSC) has fast-tracked a team from the technology company ENSCO, based in Melbourne, Florida, US, to build the balloons using technology developed for smart dust - tiny devices capable of sensing their environment and transmitting the data home. "We were working on a 10- to 15-year timescale for smart dust," says ENSCO team leader Mark Adams. "Then they asked us what we could do in nine months." Adams has already made impressive progress, says Rosemary Baize at KSC's technology transfer office. The solar-powered balloons carry temperature, pressure, humidity and GPS sensors. They are also equipped with transmitters that can work together as a mesh network or, if the balloons drift too far apart, send data back via satellite links. The balloons, which are filled with helium, weigh only 130 grams and are the size of a beach ball. They have been tested on the Florida coast over the last few months. The team is currently addressing a few teething problems. "Of the eight balloons we've launched, we've had data from only three of them," says Adams. Most of the problems have stemmed from a tiny experimental GPS system the team is using to reduce weight. When the GPS device fails, the balloon continues to transmit data but the readings are useless because the balloon's location is unknown. Another problem is that the Sun tends to heat the sensors, giving false temperature and humidity readings. "We're working on better shielding for the sensors," he says, adding that this should be a fairly straightforward engineering challenge. The team is about to test a swarm of balloons operating together for the first time. "That's when NASA will evaluate the program again," says Adams, who announced the project this week at the Nanotech 2007 conference in Santa Clara, California, US. "But we could be ready for daylight launches within a year or so." Night flying will be more difficult for the solar-powered balloons. "But with the right kind of power management to save power at night, we could fly them day and night, more or less forever," says Adams. Weather data is sparse around launch sites because aircraft, unmanned aerial vehicles (UAVs) and even ordinary weather balloons and kites are banned from flying near launch sites before lift-off because of their potential to drift into the flight path. However, the smart balloons have a built-in self-destruct mechanism that releases their helium, bringing them to the ground just before launch or if they stray too close to the pad. The plan is to launch five balloons around the launch site at hourly intervals and use the data to create detailed models of the local weather before the launch. The balloons can be reused, but in practice they are blown so far that most are lost. At \$500 each, however, the balloons are relatively cheap. "Collecting the data in this way is much more cost-effective than using aircraft or conventional balloons," says Baize. Web posted. (2007). [NASA develops 'smart' weather balloons for launch sites [Online]. Available WWW: <http://space.newscientist.com/> [2007, May 23.]

May 24: Reviews Document NASA's Progress on Next Human Spacecraft

NASA this week wrapped up six months of system requirements reviews for the Orion spacecraft, the Ares launch vehicles and other support systems, bringing together the Constellation Program's list of basic capability needs. The Constellation Program is developing a new space transportation system that will take astronauts to Earth orbit, the moon, and eventually to Mars. The basic program architecture for design, development, construction and operation of the rockets and spacecraft remains unchanged as a result of

the reviews, but it now has a firmer foundation built through extensive requirements allocation, reconciliation, analyses and validation testing. A "baseline synchronization" on May 23 followed individual systems requirements reviews, or SRRs, by the Constellation Program and the Orion, Ares, Ground Operations, Mission Operations and Extravehicular Activity (spacewalk) projects. The synchronization effort was designed to identify any conflicts or gaps between and among the projects and the program and to establish a plan for resolving those issues. "This has been an eventful spring, known as the 'season of SRRs,'" said Jeff Hanley, Constellation Program manager at NASA's Johnson Space Center, Houston. "This summer will bring a new season of rolling system definition reviews that will finish our requirements for initial mission capability and set us up for our first preliminary design reviews." The Constellation requirements work was completed at the same time the program was dealing with other significant challenges, including development of an integrated test schedule, a mission manifest and a budget profile that will support its next 20 years of work. The program also closely followed the work of NASA's Lunar Architecture Team, which is formulating the requirements for a lunar surface outpost development and scientific research activities. A lunar architecture system requirements review is expected in spring of 2009. "This is an impressive accomplishment in a short period of time, and I'm pleased with the dedication and cooperation across projects and attention to detail that has gotten us this far," said Chris Hardcastle, Constellation Program systems engineering and integration manager at Johnson. The next series of reviews will begin with the Orion system definition review in August and continue through another Constellation Program baseline synchronization in March 2008. System definition reviews focus on emerging designs for all transportation elements and compare the predicted performance of each element against the currently baselined requirements. The next significant milestones for the Constellation Program are a preliminary design review series in summer 2008 and a critical design review series in early 2010. ["Reviews Document NASA's Progress on Next Human Spacecraft," **NASA News Release #07-122**, May 24, 2007.]

May 25: Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-052507. **Mission: STS-117** - 21st International Space Station Flight (13A) - S3/S4 Truss Segment Solar Arrays; Vehicle: Atlantis (OV-104); Location: Launch Pad 39A; Launch Date: Targeted for June 8, 2007; Crew: Sturckow, Archambault, Reilly, Swanson, Forrester, Olivas and Anderson; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. At Launch Pad 39A, operations are proceeding on schedule for a June 8 launch. This week, the hypergolic propellants were loaded into the orbiter and solid rocket boosters. Extra Vehicular Mobility Unit Nos. 1 and 2 (space suits) were installed in the orbiter airlock. Functional testing of the external fuel tank camera is complete, and the lens cover has been installed. Loading of the liquid oxygen and liquid hydrogen storage tanks, which will provide fuel for the shuttle's external fuel tank, is complete. A Flight Readiness Review, a two-day meeting to assess preparations for Atlantis' mission, will be held on May 30-31. **Mission: STS-118** - 22nd International Space Station Flight (13A.1) - S5 Truss Segment; Vehicle: Endeavour (OV-105); Location: Orbiter Processing Facility Bay 2; Launch Date: Targeted for Aug. 9, 2007; Launch Pad: 39A; Crew: Kelly, Hobaugh, Williams, Morgan, Mastracchio, Caldwell and Drew; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. Endeavour's payload bay closeouts are complete, and the payload bay doors were closed for rollover to the Vehicle Assembly Building. The strongbacks, which are used to support the doors, have been removed. Preparations are under way for the landing gear functional test, which is scheduled for next week. System

checks are under way, with the Forward Reaction Control System thruster verification complete. In high bay No. 1 of the Vehicle Assembly Building, stacking of the solid rocket boosters for STS-118 has begun. The left aft and the right aft sections of the boosters were lifted into the bay Wednesday and Thursday. The left aft center segment will be lifted into the bay Friday night. **Mission: STS-120** - 23rd International Space Station Flight (10A) - U.S. Node 2; Vehicle: Discovery (OV-103); Location: Orbiter Processing Facility Bay 3; Launch Date: Targeted for Oct. 20, 2007; Launch Pad: 39A; Crew: Melroy, Zamka, Parazynski, Wheelock, Wilson, Nespoli and Tani; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. Inspections of Discovery's gap fillers, which are located between the thermal tiles, are complete. Testing of the Shuttle to Station Power Transfer System is under way. Power Reactant Storage and Distribution System testing is complete. Functional testing of the atmospheric revitalization pressure control system, part of the orbiter's life support system, continued this week. Modifications to Discovery's engine cutoff sensor wiring continue, as does the installation of BRI tile around the main landing gear doors and external tank doors. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, May 25.]

Expendable Launch Vehicle Status Report

Expendable Launch Vehicle Status Report #ELV-052507. **Mission: Dawn**; Location: Astrotech Space Operations Facility; Launch Pad: 17-B; Launch Vehicle: Delta II 7925-H; Launch Date: June 30, 2007; Launch Time: 4:50:13 - 5:10:13 p.m. EDT. Solar array installation and deployment tests are scheduled to be completed Friday. The spacecraft is scheduled to move to the hazardous processing facility on May 28. Xenon for the Ion Propulsion System is scheduled to be loaded aboard June 1-2. Hydrazine, used for spacecraft control and maneuvering, will be loaded aboard June 6. The Delta II first stage, originally set for hoisting into the launcher on Wednesday, has been rescheduled for May 28 due to high wind conditions at Pad 17-B. This will be followed next week by attachment of the nine solid rocket boosters. **Mission: Phoenix**; Location: Payload Hazardous Servicing Facility Launch Pad: 17-A; Launch Vehicle: Delta II 7925; Launch Date: Aug. 3, 2007; Launch Time: 5:35:18 a.m. EDT. The spacecraft's flight software will be loaded aboard Friday. Guidance navigation and control system performance testing is scheduled for May 30-31. Web posted. (2007). [NASA's Expendable Launch Vehicle Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/launchingrockets/status/2007/index.html> [2007, May 25.]

Lt. Governor at KSC to launch 'Experience'

Lt. Gov. Jeff Kottkamp travels to Kennedy Space Center this morning to help launch a \$60 million tourist attraction. Kottkamp appears at the Visitor's Complex at 10:30 a.m. to inaugurate the "Shuttle Launch Experience." Opening to the public this weekend, the attraction is housed in the six-story Shuttle Launch Simulation Facility that takes visitors through the steps of a shuttle launch. Groups of 44 patrons are strapped to a platform that jolts them through the 3-g experience of liftoff, the thump of booster separation and the sudden stop of main engine cut off. Web posted. (2007). [Lt. Governor at KSC to launch 'Experience' [Online]. Available WWW: <http://www.floridatoday.com/> [2007, May 25.]

NASA ships Billy O back to the Navy

The male astronaut involved in the Lisa Nowak love triangle is being shipped back to the U.S. Navy, NASA officials said today. Shuttle pilot William Oefelein was told Wednesday that his detail to NASA will end on June 1. "The Navy and NASA mutually agreed to end his detail to NASA," said Kylie Clem, a spokeswoman at NASA's Johnson Space Center in Houston. "NASA has determined that his detail is no longer required for the purposes for which it was originally granted." Clem said Oefelein completed his assignment as the pilot of shuttle Discovery on an International Space Station assembly mission in December. Consequently, he'll be returning to the Navy, she said. Oefelein has yet to receive his orders, but his next stop likely will be Naval Network Warfare Command in Little Creek, Va. The command is responsible for delivering and operating the reliable, secure and battle-ready computer and communications systems needed to support global naval operations. Web posted. (2007). [NASA ships Billy O back to the Navy [Online]. Available WWW: <http://www.floridatoday.com/> the flame trench blog [2007, May 25.]

'Shuttle Launch Experience' Now Open

NASA's Kennedy Space Center Visitor Complex officially opened Shuttle Launch Experience on Friday (May 25). Joining Florida Lt. Governor Jeff Kottkamp and key officials for the attraction's premiere were NASA veteran astronauts including Charlie Bolden, Rick Searfoss, John Young, Robert Crippin, Buzz Aldrin and Al Worden. The culmination of three years of development by veteran Space Shuttle astronauts, renowned attraction experts and a design team under the guidance of NASA, Shuttle Launch Experience sends visitors through a simulation of launching into Earth's orbit from Kennedy Space Center, the birthplace of American space exploration, minutes from Orlando. Through sophisticated motion technology, special effects seats and high fidelity presentations, the unique experience immerses visitors in the sensations of launching into space – going fully vertical in the process. Kennedy Space Center Director Bill Parsons and Kennedy Space Center Visitor Complex Chief Operating Officer Daniel LeBlanc joined first Space Shuttle Commander John Young and Pilot Robert Crippen for the inaugural launch of Shuttle Launch Experience. Astronauts and visitors embarked on the new attraction, becoming the first crews of terrestrial explorers to feel the effects of the Space Shuttle's rush to Earth's orbit. Web posted. (2007). ["'Shuttle Launch Experience' Now Open at the Kennedy Space Center," Press release Delaware North Parks, May 25, 2007.]

May 29: Cracked pad 37 on the mend

The 23rd and last defense satellite of its kind is back on schedule for a mid-August launch, after damage to pad 37 delayed the launch. Carried to a 23,000-mile orbit on a Delta IV Heavy rocket, DSP-23 will be the last of a series of spacecraft first launched in 1970. The DSP satellites help detect missile or spacecraft launches and nuclear explosions using sensors that record infrared emissions from these intense sources of heat. During Desert Storm, the satellite system marked the launches of Iraqi Scud missiles and provided warnings to civilians and military forces in Israel and Saudi Arabia. The launch, originally scheduled for March, was delayed when two structural cracks were found in the metal launch table at pad 37. An investigation found that a liquid oxygen leak during a countdown test exposed the launch table to super-cold temperatures, most likely causing the cracks. The leak appeared to be from vacuum jacketed liquid oxygen propellant lines inside the launch table, which are used to fill the booster tanks. The lines were replaced in 2006, but a cause for the leak has not been determined. Repairs are on schedule, said Mike Rein, spokesman for United Launch Alliance. The 5,000-pound satellite will be carried into orbit aboard ULA's Delta IV Heavy,

which is configured by binding three Delta IV common core rocket boosters together. It will be only the second Delta IV Heavy to blast off from the Cape. The first launch was in December 2004, when the maiden flight failed to deliver its payload to the desired orbit -- missing one of the test mission's eight objectives. Web posted. (2007). [Cracked pad 37 on the mend [Online]. Available WWW: <http://www.floridatoday.com/> [2007, May 29.]

May 30: 'Dirty Finger Al' served outdated food at KSC cafeteria, kitchen witnesses testify

Have you or someone you know eaten food prepared by "Dirty Finger Al" at a Kennedy Space Center cafeteria? That's the sobriquet for Lackmann Food Services employee Al Motto, according to Joseph Georges, a onetime executive chef at KSC and now an instructor at the Orlando Culinary Academy. Georges' allegations are part of a lawsuit in a case filed in federal court in Orlando by former employee Carolyn Vargas against the Woodbury, N.Y.-based contractor that operates the seven KSC cafeterias. The original complaint, first reported by Brevard Watchlist in January, claimed Lackmann Food Services used weeks-old outdated food, usually disguised in spicy dishes like chili or barbecue. The company denied the allegation at the time, saying it actually does about six times better than average in its state inspections. But Georges says the allegations match his observations of six years ago. In a sworn affidavit, he says he saw Motto put rotten vegetables into soup and cook rancid chicken in Lackmann's cafeteria in the headquarters building. Georges also said Motto kept a dumpster within three feet of the back door so employees could dump out-of-date food when a health inspector visited. "Al Motto was absolutely grotesque in his hygiene because of his filthy hands and fingers and his open, oozing sores while he was cooking," Georges says in the document, now part of the court file. "In culinary circles in Orlando, he is known as 'Dirty Finger Al.'" Motto said he knew about the allegations in Vargas's lawsuit but declined to talk about it. "I will not make any comments," Motto said. With that, he hung up. Georges also said Lackmann bought "correctional grade" food to serve at the space center, so called because it is used in correctional facilities. Vargas said Motto typically prepared Salisbury steak and meat loaf with his bare hands and that Lackmann had served potatoes so rotten that they tasted like iodine. "It grossed me out," Vargas said. "All I could think was that someone could come down with botulism and it could be fatal." Web posted. (2007). ['Dirty Finger Al' served outdated food at KSC cafeteria, kitchen witnesses testify [Online]. Available WWW: <http://www.floridatoday.com/> Brevard Watch List blog [2007, May 30.]

Atlantis looking good for June 8 as FRR continues

NASA managers are midway through their two day Flight Readiness Review (FRR), with all elements of flight rationale being evaluated for Atlantis' launch. NASA is working towards announcing June 8 as the official launch date for STS-117. The only issue that is gaining some level of discussion relates to the aluminum housing/inserts for flange bolts that hold the Low Pressure Oxidizer Turbo Pump (LPOTP) in place inside the main engines. However, this has received a waiver and flight rationale. At present, the main threats to the June 8 launch remain the weather, possible complications arises from the two EVAs being undertaken by Expedition 15 on the International Space Station (ISS), or a future problem ahead of lift-off. All concerns with ET-124 were addressed ahead of rollout from the Vehicle Assembly Building (VAB) and no further issues have been noted since. The same can also be said about evaluations surrounding Atlantis' Composite Overwrap Pressure Vessels. One issue that is being discussed at the FRR relates to the LPOTP. This gained

attention at last week's Program Control Requirements Board (PRCB) meeting, which ultimately approved a waiver, allowing STS-117 to proceed, with future waivers expected for the next two flights. 'The aluminum housing of the Low Pressure Oxidizer Turbo Pump (LPOTP) utilizes silver plated A-286 inserts for the flange-bolt female threads,' noted NASA information. 'One of the O5 joint inserts on LPOTP 4606 pulled out during joint installation stretch (preload) operations at SSC (Stennis Space Center). 'Since this was the third occurrence of insert pullout in five years (and the eighth overall), folks began thinking this was more than just a random failure type happening. There has been however, no evidence of joint leakage in program history.' The cause is believed to be related to corrosion, and the observed issue poses no issue to flight safety. However, evaluations proceeded to work on the instance of two adjacent bolts show the same problem. 'Analysis shows that one bolt out poses no problems and 1.2 Factor of Safety is maintained even with 10 of 14 uniformly spaced bolts remaining. What is not known is the capability remaining if two or more adjacent bolts lose preload. 'In the problem history, most 'seem' to be associated with age life of >16 yrs, although there have also been occurrences at 5-10 yrs. Corrosion was noted on only one of the problem inserts, and that was on a 28-yr LPOTP housing.' Most importantly, the PRCB meeting emphasized that Atlantis doesn't even have one of the raised inserts. Endeavour was also checked, and found to have no raised inserts either. On OV-104 (STS-117) visual inspections have confirmed no raised inserts, and the preload has been reconfirmed on all. The LPOTP housings are also 'low time' relative to fleet experience. Also, haz gas monitoring is in place in the aft compartment during launch count. 'Based on the Acceptance Rationale, the PRCB accepted the waiver for STS-117 only and will entertain a waiver for STS-118 and STS-120 when those inserts have been inspected and preload verified. Oversized inserts have been ordered and will replace the standard insert as they become available.' Given the above, the FRR wouldn't normally have this subject discussed further. However, due to a dissenting opinion from a MSFC (Marshall Space Flight Center) manager - which is very much encouraged in the new openness of NASA evaluations - NASA managers have decided to give his opinion an airing. Web posted. (2007). [Atlantis looking good for June 8 as FRR continues [Online]. Available WWW: <http://www.nasaspaceflight.com/> [2007, May 30.]

Phoenix readies for launch

NASA's next Mars spacecraft arrived this month at Kennedy Space Center, where the lander will be readied for a late-summer launch on a mission to search for signs of past or present microbial life in the Martian arctic. Riding atop a United Launch Alliance Delta 2 rocket, the Phoenix spacecraft is scheduled to blast off from Cape Canaveral Air Force Station at 5:35 a.m. Aug. 3. The liftoff will propel the top-shaped craft on a nine-month journey to Mars, a planet that scientists think was once warmer, wetter and perhaps more hospitable to primitive life. The delivery to KSC marked the start of a three-month campaign to perform final checkouts of spacecraft systems and scientific instruments. The spacecraft arrived at KSC after a cross-country trip from its manufacturing plant in Denver. It was transported to a payload processing facility in the KSC Industrial Area, where it was uncrated and readied for extensive tests of its systems and science instruments. NASA contractor United Launch Alliance will begin building up a Delta 2 rocket at Launch Complex 17A in the third week of June. The rocket's first stage will be hoisted and then nine strap-on solid rocket boosters will be raised and attached to it. The second stage will be added in early July followed by the spacecraft about three weeks later. The rocket's payload fairing -- the protective nosecone that will surround the lander -- will be installed a week before liftoff. The lander's arrival at

the launch site buoyed the spirits of program managers and project scientists. "We're excited to be going back to Mars," said Ed Sedivy, program manager with spacecraft manufacturer Lockheed Martin. The mission is a joint endeavor of the U.S., Canada, Denmark, Switzerland, Germany and Finland. Web posted. (2007). [Phoenix readies for launch [Online]. Available WWW: <http://www.floridatoday.com/> [2007, May 30.]

NASA managers mull shuttle engine issue

A potential shuttle main engine problem that could trigger a catastrophic failure in flight will be discussed by NASA managers during a flight readiness review for the upcoming launch of shuttle Atlantis, but liftoff likely will remain set for June 8. With seven astronauts on board, Atlantis is tentatively scheduled to blast off from launch pad 39A at Kennedy Space Center at 7:38 p.m. June 8, setting sail on an 11-day International Space Station assembly mission. The launch date and time are expected to be firmed up during a two-day flight readiness review that began this morning at KSC. Among topics on the agenda: a potential problem with bolts that hold low-pressure turbopumps in their housings within the shuttle's three liquid-fueled main engines. Engineers uncovered evidence that sleeve-like inserts the bolts are screwed into could be corroded. If so, the inserts and the bolts could come loose, triggering a potentially catastrophic leak of liquid oxygen in flight. But it appears that the silver-plated inserts on Atlantis' engines are not old enough to have rusted. Moreover, boroscope inspections showed the bolts appear to be in good condition. Nonetheless, managers will review the issue and consider an option to delay the Atlantis flight until August so that inserts on the shuttle's engines can be replaced. "It's obviously going to be discussed thoroughly," said Kyle Herring, a spokesman for NASA's Johnson Space Center in Houston. "Both sides will be brought to management, and then they'll be able to make a decision." Powered by liquid oxygen and liquid hydrogen, the shuttle's three main engines ignite 6.6 seconds prior to liftoff and run throughout an 8.5-minute climb into orbit. The 18-inch by 18-inch Low Pressure Oxidizer Turbopumps are six-stage turbines that boost the pressure of liquid oxygen in the engines. The pressure boost enables a High-Pressure Oxidizer Turbopump to operate at high speeds without running dry. The issue cropped up when one of the 14 inserts holding a low-pressure turbopump in an engine being tested at Stennis Space Center in Bay St. Louis, Miss., pulled out of its bolt hole. It was the third occurrence in five years -- and the eighth in the history of the shuttle program -- so NASA launched an investigation. Engineers found that inserts that are greater than 16 years old have a tendency to fail due to corrosion. NASA ordered the replacement of all inserts with oversized versions that have been treated with anti-corrosion material. A waiver was signed to allow the Atlantis launch to proceed because the inserts in its engines range from three to nine years old and their condition was verified through extra inspections before Atlantis was returned to its launch pad earlier this month. In addition, engineers recorded no leakage during routine tests conducted in preparation for the upcoming launch. Senior managers will be asked to approve the waiver at the flight readiness review. The two-day management meeting is expected to wrap up about noon Thursday. Web posted. (2007). [NASA managers mull shuttle engine issue [Online]. Available WWW: <http://www.floridatoday.com/> The Flame Trench blog [2007, May 30.]

May 31:

NASA Gives "GO" For Space Shuttle Launch on June 8

On Thursday, NASA senior managers selected June 8 as the official launch date for space shuttle Atlantis. Commander Rick Sturckow and his six crewmates are scheduled to lift off at 7:38 p.m. EDT on the STS-117 mission to the International Space Station. During the 11-

day mission and three spacewalks, the crew will work with flight controllers at NASA's Johnson Space Center, Houston, to install a 17-ton segment on the station's girder-like truss and deploy a set of solar arrays. The mission will increase the International Space Station's power capability in preparation for the arrival of new science modules from the European and Japanese space agencies. Atlantis' launch date was announced at the Flight Readiness Review. During the two-day meeting, top NASA and contractor managers assess any risks associated with the mission and determine whether the shuttle's equipment, support systems and procedures are ready for flight. The first Flight Readiness Review for STS-117 was held Feb. 27-28. A hail storm on Feb. 26, however, damaged Atlantis' external fuel tank and delayed the planned mid-March launch. "While we cannot control the weather, this team can ensure that when we do launch, it will be as safely as possible," said Associate Administrator for Space Operations Bill Gerstenmaier, who chaired the meetings. "This second Flight Readiness Review was as thorough as the first. The discussions were open, healthy, and are evidence of a team that is ready for a complicated and important station assembly mission." Joining Commander Sturckow on STS-117 will be Pilot Lee Archambault and mission specialists Patrick Forrester, Steven Swanson, John "Danny" Olivas, Jim Reilly and Clayton Anderson. Anderson will replace current station crew member Sunita Williams, who has lived on the station since December. Williams will return to Earth on Atlantis. ["NASA Gives "GO" For Space Shuttle Launch on June 8," **NASA News Release #07-127**, May 31, 2007.]

Increased Defense around KSC For Shuttle Launch

The North American Aerospace Defense Command and the U.S. Air Force will greatly step up combat air patrols around Kennedy Space Center in the days leading up to the countdown and planned launch of the space shuttle Atlantis on the STS-117 mission June 8. A mix of F-15s and F-16s from several Air National Guard units assigned to the First Air Force are to be on patrol early next week to thwart any airborne terrorist attack against the shuttle. Some of the fighters also will fly air defense deterrence missions in the days before scheduled liftoff. The deterrence missions are designed to be seen by citizen pilots - and potential terrorists - that might be in the area. They will involve the fighters flying low approaches into airports in the Kennedy Space Center area. The F-15s and F-16s, assisted by Airborne Warning and Control Systems (AWACS), also are to be refueled in a highly visible manner by KC-135 tankers to make their presence abundantly known to pilots not up on the no-fly rules around Kennedy, and any potential airborne terrorists that would be shot down by these combat air patrols. Web posted. (2007). [Increased Defense Around KSC For Shuttle Launch [Online]. Available WWW: <http://www.aviationweek.com/> [2007, May 31.]

Atlantis passes readiness review for next week's flight

NASA managers today wrapped up a two-day flight readiness review and cleared the shuttle Atlantis and its seven-member crew for blastoff June 8, at 7:38 p.m., on a hail-delayed mission to deliver a new set of solar arrays to the international space station. "We had a very good review over the past day and half," said Bill Gerstenmaier, director of space operations at NASA headquarters. "I have two things I'd like to announce. First, we've set the launch date for June 8 at 7:38 in the evening. And the second thing is that there was no hail storm the evening before the meeting began." Launch originally was scheduled for March 15, but the flight was delayed in the wake of a freak hail storm Feb. 26 - the day before the original flight readiness review - that caused major damage to foam insulation protecting the shuttle's

external tank. That damage has now been repaired, and shuttle Program Manager Wayne Hale said there are no other major issues to be resolved. "We have a team, particularly in the external tank area, that was hit with this unforeseen and unexpected occurrence of the hail storm," he said. "In spite of a great deal of work that had to be done, they accomplished it in a very professional manner. ... We are extremely confident, we have done perfectly good repairs and we will have a tank that is safe to fly." The astronauts are scheduled to fly to the Kennedy Space Center from Houston Monday evening, arriving around 6:30 p.m. If all goes well, engineers will begin Atlantis' countdown at 9 p.m. Tuesday. "The processing out at the launch pad is going extremely well," said Launch Director Mike Leinbach. "We got our ordnance on board the ship last night, we'll be pressurizing our hypergolic and MPS (main propulsion system) tanks over the weekend, we have one more round of battery charging for the payload and we'll be ready to pick up the launch countdown Tuesday night. Atlantis' launch period extends through July 19. But a Lockheed Martin Atlas 5 rocket carrying a classified National Reconnaissance Office payload is scheduled for launch from the Cape Canaveral Air Force Station the morning of June 14. NASA can make four attempts to launch Atlantis over a five-day period - June 8, 9, 11 and 12 - before standing down for the Atlas and to top off on-board supplies of hydrogen and oxygen. The shuttle launch period would reopen on June 17, regardless of whether the Atlas went on June 14 or 15. Web posted. (2007). [Atlantis passes readiness review for next week's flight [Online]. Available WWW: <http://www.spaceflightnow.com/> [2007, May 31.]

During May: Spacecraft and launch vehicle processing

Spacecraft and launch vehicle processing at the Kennedy Space Center and Cape Canaveral are building to a peak for two planned planetary launches this summer. The Jet Propulsion Laboratory Dawn spacecraft is set for a June 30 launch to the asteroid Vesta and dwarf planet Ceres, and on Aug. 3 the JPL Phoenix lander will lift off for Mars. Phoenix is scheduled to arrive at Kennedy from a Lockheed Martin facility near Denver. The spacecraft will begin a final series of tests but unlike previous Mars landers, it already will have been largely integrated inside its aeroshell. Only the bottom and landing gear will be visible. Launch-site technicians will conduct final tests on Phoenix inside the shell and also attach its Mars atmospheric entry heat shield. Phoenix is designed to emerge from the aeroshell only moments before touchdown on Mars in May 2008. To hit its planetary launch window, Phoenix must lift off by Aug. 25. Meanwhile, the Dawn spacecraft built by Orbital Sciences already is well into final assembly at the Astrotech commercial processing facilities near the Cape. Its Delta II Heavy booster is also being erected on Launch Complex 17B. Final Dawn instrument tests are beginning, and solar arrays spanning 65 ft. are to be installed May 21-24. The arrays will power Dawn's ion propulsion system to drive the spacecraft into orbit around Vesta in October 2011 and then out of orbit in 2012 and on toward Ceres. Dawn must launch by July 19. ["Spacecraft and launch vehicle," **Aviation Week & Space Technology**, May 7/14, 2007, p 23.]

JUNE

June 1: Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-060107. **Mission: STS-117** - 21st International Space Station Flight (13A) - S3/S4 Truss Segment Solar Arrays; Vehicle: Atlantis (OV-104); Location: Launch Pad 39A; Launch Date: June 8, 2007; Crew: Sturckow, Archambault, Reilly, Swanson, Forrester, Olivas and Anderson; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. At the Launch Readiness Review meeting this week, Space Shuttle Program managers officially set the STS-117 launch date for June 8. At Launch Pad 39A, operations are proceeding on schedule to meet that date. This week, the orbiter, ground and solid rocket booster pyro initiator circuit resistance tests were completed. The orbiter midbody umbilical unit mate operations were also performed. Aft closeout operations are under way, with completion scheduled for this weekend. Stowage of flight crew equipment is in progress, and ordnance installation is complete. This weekend, the orbiter's main engines, orbital maneuvering system and forward reaction control system will be pressurized for flight. **Mission: STS-118** - 22nd International Space Station Flight (13A.1) - S5 Truss Segment; Vehicle: Endeavour (OV-105); Location: Orbiter Processing Facility Bay 2; Launch Date: Targeted for Aug. 9, 2007; Launch Pad: 39A; Crew: Kelly, Hobaugh, Williams, Morgan, Mastracchio, Caldwell and Drew; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 2, Endeavour's aero surfaces, such as the elevons, body flaps and rudder speed brake, are configured for modal testing, which checks the structural integrity of the vehicle. Nose landing gear door rigging is nearing completion. Closeout of the orbiter's aft and forward sections is under way. Work is also nearing completion on structural leak checks of the orbital maneuvering system pods, forward compartment and forward reaction control system. In high bay No. 1 of the Vehicle Assembly Building, stacking of the solid rocket boosters continues for STS-118. **Mission: STS-120** - 23rd International Space Station Flight (10A) - U.S. Node 2; Vehicle: Discovery (OV-103); Location: Orbiter Processing Facility Bay 3; Launch Date: Targeted for Oct. 20, 2007; Launch Pad: 39A; Crew: Melroy, Zamka, Parazynski, Wheelock, Wilson, Nespoli and Tani; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. Testing of the "shuttle to station power transfer system" is complete. Functional testing of the atmospheric revitalization pressure control system, part of the orbiter's life support system, continued this week. Modifications to Discovery's engine cutoff sensor wiring continue, as does the installation of BRI tile around the main landing gear doors and external tank doors. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, June 1.]

NASA Starts Space Shuttle Atlantis Countdown June 5

NASA will start the launch countdown for space shuttle Atlantis' STS-117 mission at 9 p.m. EDT Tuesday, June 5, at the T-43 hour point. The countdown includes 27 hours, 32 minutes of built-in hold time leading to a preferred launch time at approximately 7:38 p.m. EDT Friday, June 8. The launch window extends an additional five minutes. During the 11-day mission, Atlantis' crew will resume construction of the International Space Station, working with the station crew to install the girder-like S3/S4 truss segment, unfold a new set of solar arrays and retract one array on the starboard side of the station. This mission is the

118th space shuttle flight, the 28th flight for Atlantis and the 21st U.S. flight to the International Space Station. STS-117 is scheduled to land at NASA's Kennedy Space Center, Fla., on Tuesday, June 19. Atlantis' last mission was STS-115 in September 2006. For the upcoming STS-117 mission, Atlantis rolled out to Launch Pad 39-A from Kennedy's Vehicle Assembly Building on May 15. Atlantis originally was targeted for launch in March, but a hail storm damaged foam insulation on the shuttle's external fuel tank and forced managers to roll the spacecraft back into the Vehicle Assembly Building to make repairs. With the refurbishment of Pad 39-A, this launch will be the first from the pad in four years. STS-117 Commander Rick Sturckow, Pilot Lee Archambault and mission specialists Jim Reilly, Patrick Forrester, Steven Swanson, John "Danny" Olivas and Clayton Anderson are scheduled to arrive at the Kennedy Space Center on June 4. Expedition 15 Flight Engineer Sunita Williams will return to Earth from the space station aboard Atlantis. The flight will carry Expedition 15/16 Flight Engineer Clayton Anderson to the station. He will return home aboard space shuttle Discovery on mission STS-120. ["NASA Starts Space Shuttle Atlantis Countdown June 5," **NASA Media Advisory #M07-61**, June 1, 2007.]

NASA confident of launch

With NASA engineers confident in the safety of extensive repairs to the external tank, space shuttle Atlantis remains on schedule for a 7:38 p.m. June 8 launch. During a two-day Flight Readiness Review at Kennedy Space Center, engineers and managers examined at least 100 technical issues and discussed the tank repairs for half a day. At the conclusion of the review, they gave the go-ahead to proceed toward a launch countdown next week. "Everybody was 'go,' " shuttle program manager Wayne Hale said Thursday, after the review. Assuming a worst-case scenario, engineers calculated a 1 in 650 chance of damage from a debris strike in flight. However, studies indicate that most of the possible foam loss from repairs would fly away from the orbiter. A Feb. 26 hailstorm damaged the foam-coated tank and caused a three-month launch delay. Some 2,500 divots were repaired and the nose was shaved and resurfaced. Similarly-repaired tanks have weathered 47 flights, and repair techniques have been tested in wind tunnels, with heat and in vacuums. On a separate matter, Hale said suspect bolt sleeves in the shuttle's main engines were inspected and found safe to fly. Atlantis will deliver a giant girder and solar panel that are part of a central truss, components that will help prepare the station for the addition of European and Japanese science laboratories later this year and next year. Landing is scheduled for 2:44 p.m. June 19. ["NASA confident of launch" **Florida Today**, June 1, 2007. p1B & 4B.]

KSC food contractor denies problems

A food-safety official at the company that operates the cafeterias at Kennedy Space Center responded today to allegations that a kitchen worker named "Dirty Finger Al" served spoiled food. Heath Braunstein, the director of food safety for Lackmann Culinary Services, said the company "takes great pride in the quality of food that we serve." He said Lackmann Culinary Services serves more than 1 million meals a year at the seven cafeterias it operates at Kennedy Space Center and has never had a reported case of food-borne illness. The allegations are contained in a federal lawsuit by former culinary worker Carolyn Vargas who says she was fired after she reported problems with spoiled, outdated meat and other food being served to space center workers. Witness Joseph Georges, a one-time executive chef at KSC and now an instructor at the Orlando Culinary Academy, said in a sworn affidavit that he saw Lackmann employee Al Motta put rotten vegetables into soup and cook rancid chicken in Lackmann's cafeteria in the KSC headquarter's building. He said Motta was

"absolutely grotesque in his hygiene because of his filthy hands and fingers and his open, oozing sores while he was cooking. In culinary circles in Orlando, he is known as 'Dirty Finger Al.' " Says food-safety director Braunstein: "Mr. Motta and all of our chefs, managers and employees follow all required sanitary practices -- including regular, frequent hand washing and the use of food handler gloves when handling any food products." He said Vargas and Georges are disgruntled former employees. "Mr. Georges in fact was employed by our company for just a few months and was subsequently terminated due to failing a required screening test," Braunstein said. Braunstein said managers and chefs label and date all food and promptly throw out any food that has spoiled or exceeded the date by which it is supposed to be used. Web posted. (2007). [KSC food contractor denies problems, says 'Dirty Finger Al' washes, wears gloves [Online]. Available WWW: <http://www.floridatoday.com/> Brevard watch blog [2007, June 1].]

June 2: Union Strike Possible at USA?

The local chapter of International Association of Machinist and Aerospace Workers representing employees in the NASA KSC area has rejected an offer from United Space Alliance. There is a 5 day cooling off period now in effect during which both sides will try and work out their differences. Should no agreement be reached the employees could go on strike - perhaps as early as 9 June. The next shuttle mission is scheduled to launch on 8 June. No word yet as to whether this threat of a strike will affect launch preparations for STS-117. Web posted. (2007). [Union Strike Possible at USA? [Online]. Available WWW: <http://www.nasawatch.com/> [2007, June 2].]

Officials seeking \$5M for retraining

The Brevard Workforce Development Board is seeking a \$5 million federal grant to help workers at Kennedy Space Center find new jobs in the area as NASA plans to phase out the space shuttle program in coming years. The Brevard Workforce Development Board has applied for the U.S. Department of Labor grant with the Florida High Tech Council, a coalition of economic-development organizations and community colleges promoting high-tech industry in Central Florida. A decision from the Department of Labor on the grant application is expected sometime this month. The money would be used for job-training and placement services for workers laid off from the shuttle program, with the goal of helping them find other high-wage jobs in technology fields in Brevard County and across Central Florida, said Lisa Rice, the board's president and executive director. "Five million dollars is a drop in the bucket" for what may be needed for job training and placement if there are massive layoffs at Kennedy Space Center, Rice said. Rice said officials have not specified the extent of potential job losses at KSC. "We've heard everything from there won't be much impact to up to 10,000" jobs lost, she said. There are about 70 applicants for the Labor Department grants, but "we were told only 13 will be selected" to receive the grants, Rice said. If selected, the board would receive the money over a three-year period. The first phase of the program would include a "work-force capabilities and skills analysis" of Space Center workers. The job training would come in the second phase, and the last phase would involve regional planning geared to economic development. NASA plans to retire the shuttle fleet in 2010, with flights of the next-generation moon rockets and Orion spacecraft expected to begin several years after that. Web posted. (2007). [Officials seeking \$5M for retraining [Online]. Available WWW: <http://www.floridatoday.com/> [2007, June 2].]

Orbiters feel pains of aging

NASA is moving to protect ground crews, astronauts and VIPs from potential disaster, closing shuttle Atlantis' launch pad to all but essential personnel even before a three-day countdown starts Tuesday. No up-close-and-personal tours will take place at Kennedy Space Center's launch pad 39A next week after NASA finishes pressurizing helium and nitrogen tanks aboard the 22-year-old spaceship, which is scheduled to launch at 7:38 p.m. Friday. The precaution is being taken to reduce the risk created by aging pressure vessels in the orbiter that could burst, triggering a rocket fuel fire or explosion that might injure or kill workers and seriously damage the launch pad. Web posted. (2007). [Orbiters feel pains of aging [Online]. Available WWW: <http://www.floridatoday.com/> [2007, June 2].]

Despite NASA's weird year, Atlantis crew has focused on mission

This has been a weird year for the U.S. space agency, more notable for contributing a story line for the TV series "Law & Order" than for spaceflight. NASA bosses hope a June 8 launch of the shuttle Atlantis and a successful mission to the international space station will fade some of the past months' more sensational scenes. Predictably, Atlantis commander Rick Sturckow said he and his crew haven't been distracted from their preparations for continuing construction of the space station. "We've just been focused on our training and are ready to go," Sturckow said. But NASA has had several months' worth of troubling distractions. In February, astronaut Lisa Nowak, the married mother of three children, was arrested on charges that she tried to kidnap a woman who had won the affections of her astronaut-paramour. Nowak has pleaded not guilty and her trial is set for September. She had been scheduled to work on this mission's ground team, working with the astronauts in space and Mission Control, but NASA dismissed her a month after her arrest. As NASA looked forward to a March shuttle launch that would return the agency to a more positive light, golfball-sized hail from a freak February storm pocked Atlantis' fuel tank. Liftoff was canceled. A few months later, with just six weeks left until the new June launch date, a seventh astronaut, Clayton Anderson, was added to Atlantis' crew — a jarring adjustment that meant working overtime to get Anderson on track with his duties during the mission. There also was a murder-suicide at Houston's Johnson Space Center and the derailment of a train carrying rocket booster segments for future shuttle flights. Neither event directly involved Atlantis' mission. "I think life presents challenges in many shapes and sizes and part of the way we deal with those challenges shapes who we are," Anderson told The Associated Press recently. "They weren't the greatest of times, but I'm looking forward to (Atlantis) getting off and cranking back up again so we can focus on the things that are positive." Atlantis had been scheduled to lift off in mid-March as the first space shuttle mission of the year. But the hail storm left thousands of dings to the insulation foam that prevents ice from building up on the external fuel tank. Technicians painstakingly sanded down damaged foam and applied new foam to the 154-foot-tall external tank. "They have shown real American grit in being able to face adversity and keep on doing what needs to be done to advance the American space program," shuttle program manager Wayne Hale said of the technicians. NASA's ambitious schedule of five space flights this year was cut to four because of the Atlantis delay. That led to more rejiggering, bumping Anderson up to this flight instead of his planned August mission on space shuttle Endeavour. He will replace astronaut Sunita "Sunni" Williams as a crew member on the space station. Atlantis will deliver a third pair of solar arrays, a mirror image of another 17 1/2 -ton segment delivered to the space station last September aboard Atlantis. The crew is scheduled to take three spacewalks; a fourth

may be added. NASA managers also are leaving open the possibility of extending the mission to 13 days if all the tasks can't be done in 11 days. Web posted. (2007). [Despite NASA's weird year, Atlantis crew has focused on mission [Online]. Available WWW: <http://www.chron.com/> [2007, June 2].]

Broken crane delays Dawn launch

A broken crane has stopped preparations for the June 30 launch of a spacecraft bound to study two asteroids. The crane broke Wednesday and at least three days of work have been lost. It's not clear when NASA's Dawn mission will launch, but the delay will increase until the machine is fixed. "It's a day-for-day slip," Kennedy Space Center spokesman Bill Johnson said. The crane mechanism sits above the Delta II rocket at pad 17A at Cape Canaveral Air Force Station. The part called the sheave nest, which guides cables, malfunctioned during the installation of a solid rocket booster. No damage to the rocket was reported. Neither NASA officials nor the military could estimate when the crane would be repaired. Dawn will visit two of the solar system's largest asteroids, which have remained intact since they formed. Ceres and Vesta are in the asteroid belt between Mars and Jupiter. They could provide clues to the formation of our solar system. Web posted. (2007). [Broken crane delays Dawn launch [Online]. Available WWW: <http://www.floridatoday.com/> [2007, June 2].]

June 3: Shuttle workers vote to strike

A union representing about 570 United Space Alliance space shuttle program workers at the Kennedy Space Center voted to strike Saturday morning after unsuccessful contract negotiations. The bargaining team for the International Association of Machinist and Aerospace Workers rejected the company's contract offer calling it "substandard" compared with other aerospace companies, said Lynn Beattie, a member of the bargaining team and former Local 2061 president. Health care and retirement benefits were among the major contract grievances. Both sides will have a chance to solve the conflict during a five-day "cooling off period" but the union could strike as early as midnight June 9. In a statement released Saturday, the company said it would use other employees to prepare for upcoming launches if a strike occurs. Local 2061 provides various support services such as machinists, electric technicians, air-conditioning mechanics, painters and elevators technicians. Web posted. (2007). [Shuttle workers vote to strike [Online]. Available WWW: <http://www.floridatoday.com/> [2007, June 3].]

Scientists worry about loss of Delta II rockets

The Delta II has a phenomenal record. With 123 launches, its reliability record comes in at 98.3 percent. It has also been the brightest spot for Boeing and then United Launch Alliance in an otherwise anemic commercial market. Its success, and the unique role it plays in the domestic satellite-launch market, has scientists worried. A May 2 meeting of the Subcommittee on Space and Aeronautics, part of the House Committee on Science and Technology, was almost funereal. Garth Illingsworth, an astronomer at the University of California in Santa Cruz, worried about "the cost of launch vehicles with the demise of the Delta II launchers. This has the potential to be a serious issue for the small-to-medium scale (scientific) missions." Alan Stern, NASA's associate administrator for the Science Mission Directorate, called the Delta II "the reliable workhorse for launching science missions." Stern lamented that "the supplier of that launcher is getting out of the Delta II business in favor of larger and more expensive Evolved Expendable Launch Vehicles." Several experts,

citing the end of the Delta II program, called for greater U.S. investment in research to come up with ways to reduce the cost of launch vehicles. Many experts expressed concerns that EELVs are Cadillacs when, for many science missions, a Volkswagen would do. Web posted. (2007). [Scientists worry about loss of Delta II rockets [Online]. Available WWW: <http://www.decaturdaily.com/> [2007, June 3].]

Rescuers practice for bailout

Rescuers from the 920th Rescue Wing jumped into the Atlantic Ocean from an HH-60G Pave Hawk helicopter hovering low about 30 miles off the coast of Port Canaveral. The exercise was a simulated space shuttle accident that sent seven astronauts into the ocean. About 80 members of the 920th Rescue Wing from three squadrons and members of the 103rd Rescue Squadron of the New York Air National Guard, in addition to NASA personnel, participated in the exercise in anticipation of the shuttle mission set for Friday. The 920th Rescue Wing's primary mission is combat rescue, but its mission also includes supporting shuttle and rocket launches. ["Rescuers practice for bailout," **Florida Today**, June 4, 2007, p 3B.]

June 4:

NASA may leave door open for Webb telescope servicing

While NASA is doing everything it can to ensure that its upcoming James Webb Space Telescope won't need to be serviced by astronauts like the Hubble telescope following its 2013 launch, the agency may leave the door open to the possibility. When orbiting at the second Lagrange point roughly 1,000,000 miles from Earth, Webb will be too far out for any current manned spacecraft to reach. But NASA is nonetheless considering adding a lightweight grapple fixture to the telescope that might allow for future manned or robotic spacecraft to rendezvous with it in the event it requires "emergency servicing." Once engineers complete their study of the grapple next year, they will present the results to NASA headquarters in Washington, where the final decision will be made. E-mail distribution. (2007). [Aviation Week's Aerospace Daily & Defense Report Re: "NASA may leave door open for possible Webb telescope servicing," [Electronic]. Vol. 222, No. 45, [June 3, 2007.].]

NASA to start STS-117 launch countdown on June 5

NASA will start the launch countdown for STS-117 at 9 p.m. Eastern time on Tuesday, June 5, at the T-43 hour point. The countdown includes 27 hours, 32 minutes of built-in hold time leading to a preferred liftoff time at approximately 7:38 p.m. Friday, June 8. During the 11-day assembly mission to the International Space Station, shuttle Atlantis' crew will help install the S3/S4 truss segment, unfold a new set of solar arrays and retract one array on the station's starboard side. E-mail distribution. (2007). [Aviation Week's Aerospace Daily & Defense Report Re: "NASA to start STS-117 launch countdown on June 5," [Electronic]. Vol. 222, No. 45, [June 3, 2007.].]

Pad 17 crane to be fixed mid-week

Preparations for the delayed launch of NASA's Dawn spacecraft from launch complex 17 are expected to resume mid-week, when a broken crane is expected to be repaired, said a spokesman for the U.S. Air Force. The crane broke Wednesday, and apparently caused at least a week's delay in the scheduled June 30 launch. The broken crane mechanism sits above the Delta II rocket. No damage to the rocket was reported. The Dawn spacecraft will visit two of the solar system's largest asteroids, which have remained intact since they

formed. Ceres and Vesta are in the asteroid belt between Mars and Jupiter. They evolved very differently and could provide clues to the formation of our solar system. Web posted. (2007). [Pad 17 crane to be fixed mid-week [Online]. Available WWW: <http://www.floridatoday.com/> the flame trench blog [2007, June 4].]

Atlantis crew arrives at KSC

Seven astronauts arrived safely from Houston on Monday, ready to enter quarantine and begin the countdown this evening for a 7:38 p.m. Friday launch. During the crew's traditional arrival in T-38 jets, Commander Rick Sturckow said the astronauts also completed an aviator's tradition of inspecting their craft, whose external tank underwent massive repairs after a February hailstorm damaged the foam shell. "We just flew by the launch pad. It looks good," said Sturckow, a Marine combat pilot on his third mission to the International Space Station. NASA engineers last week said similar external tank repairs have proven safe on 47 flights. After arrival Monday, the crew inspected the Atlantis' cargo before the cargo bay doors close today at 10 a.m. The crew is now quarantined from family and friends to keep them from becoming ill in space. Led by Sturckow, the crew includes pilot Lee Archambault, an Air Force colonel, and spacewalkers James Reilly, Steven Swanson, Patrick Forrester and John Olivas. An additional crew member, Clayton Anderson, will remain on the station, replacing Sunita "Suni" Williams, who returns on Atlantis after seven months in space. Atlantis will deliver a truss and solar array to prepare the station to operate scientific laboratory modules scheduled for delivery later. Web posted. (2007). [Atlantis crew arrives at KSC [Online]. Available WWW: <http://www.floridatoday.com/> [2007, June 5].]

June 5: Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-060507. **Mission: STS-117** - 21st International Space Station Flight (13A) - S3/S4 Truss Segment Solar Arrays; Vehicle: Atlantis (OV-104); Location: Launch Pad 39A; Launch Date: June 8, 2007; Crew: Sturckow, Archambault, Reilly, Swanson, Forrester, Olivas and Anderson; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. Launch preparations remain on schedule for Friday's 7:38 p.m. EDT launch of space shuttle mission STS-117. Atlantis' aft compartment is closed for flight, and all of the orbiter's main engines, the orbital maneuvering system and the forward reaction control system have been pressurized. The payload bay doors were opened Monday to accomplish payload battery charging and will be closed for flight today. Last evening, Atlantis' crew arrived at Kennedy Space Center and began final preparations for launch. The call to stations for the launch team will be at 8:30 EDT tonight. The official launch countdown will begin at 9:00 p.m. EDT. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, June 5.]

NASA Shuttle Engine Upgrades Improve Safety and Reliability

A main engine computer upgrade will fly on space shuttle Atlantis during the STS-117 mission, targeted for launch June 8. The upgrade is part of NASA's continuing efforts to improve space shuttle safety and reliability. The Advanced Health Management System, or AHMS, will provide new monitoring and insight into the performance of the two most critical components of the space shuttle main engine: the high-pressure fuel turbopump and the high-pressure oxidizer turbopump. This latest improvement is to the controller, the on-engine computer that monitors and controls all main engine operations. The improvement allows an engine to shut down during launch if vibration levels exceed safe limits. AHMS

consists of advanced digital signal processors, radiation-hardened memory and new software. Space shuttle main engines operate at greater temperature extremes than any mechanical system in common use today. These powerful engines are clustered at the aft end of the shuttle and have a combined thrust of more than 1.2 million pounds. Each is 14 feet long, is seven and one-half feet in diameter at the nozzle exit, weighs approximately 7,750 pounds and generates more than 12 million horsepower. ["NASA Shuttle Engine Upgrades Improve Safety and Reliability," **NASA News Release #07-130**, June 5, 2007.]

A Piece of the Past Hitches A Ride On Next Space Shuttle Mission

A small piece of early American history will become the latest space traveler with the liftoff of NASA's space shuttle Atlantis. Atlantis is scheduled to launch Friday, June 8 at 7:38 p.m. EDT for the STS-117 mission to the International Space Station. A nearly 400-year-old metal cargo tag bearing the words "Yames Towne" and some commemorative mementoes are packed in Atlantis' middeck floor cargo space for the roundtrip flight to the International Space Station. Their hitchhike through the galaxy honors this year's 400th anniversary of Jamestown, Va., the first permanent English settlement in North America. "We found the tag at the bottom of a well during a dig at the James Fort," said William M. Kelso, director of archaeology at Historic Jamestowne for the Association for the Preservation of Virginia Antiquities. "It appears to be a discarded shipping tag from a crate or trunk that arrived from England around 1611. The artifact clearly marks Jamestown as a destination - our nation's first address." NASA has teamed with Jamestown 2007 to promote the spirit of exploration then, now and in the future. The artifacts' out-of-this-world trip is just one of a number of events held during the last 18 months that have commemorated the nation's pioneering spirit. When the one-inch in diameter artifact lands back on Earth, it will have logged more than four million miles spanning four centuries. It will have traveled from England to Jamestown, then to and from the space station. Two sets of Jamestown commemorative coins, authorized by Congress and issued by the U.S. Mint, also are on Atlantis. NASA will return the shipping tag to Historic Jamestowne where it will join hundreds of other artifacts in a new archaeological museum called the Archaearium. Since 1994, archaeologists at the Jamestown Rediscovery project have dug up more than a million items, including the long-lost remains of James Fort. For centuries, the fort was believed to have eroded into the James River. ["A Piece of the Past Hitches A Ride On Next Space Shuttle Mission," **NASA News Release #07-131**, June 5, 2007.]

USA plans to use substitute workers

United Space Alliance is making plans to use substitute workers to temporarily fill space shuttle program jobs, if 570 union workers go on strike at Kennedy Space Center. The contract stalemate between United Space Alliance — NASA's main shuttle contractor — and Local 2061 of the International Association of Machinists and Aerospace Workers comes in the days leading up to Friday's scheduled launch of the shuttle Atlantis. Some job assignments for the launch would be affected only if the launch is delayed, because the earliest a strike would occur is Sunday, company and union officials said Tuesday. Atlantis already is on the launch pad, and most of Local 2061's work in preparing for the launch has been completed, United Space Alliance spokeswoman Tracy Yates said. She said the union represents about 10 percent of the company's work force at Cape Canaveral. Yates said there are some union jobs that would need to be temporarily filled by engineers, technicians and others on the company's payroll if there is a strike before the

launch. Web posted. (2007). [USA plans to use substitute workers [Online]. Available WWW: <http://www.floridatoday.com/> [2007, June 5].]

Delta 2 launch set for weeklong delay

NASA's mission to a pair of asteroids is expected to blast off at least a week later than planned, but repairs will begin this week to a broken crane that halted launch preparations late last week. The Dawn spacecraft had been set to launch June 30 on a Delta 2 rocket from launch pad 17A at the Cape Canaveral Air Force Station. Now, the launch is off until sometime in early July; although, the exact launch date has not been finalized. The crane, which sits above the Delta 2 rocket at the pad and will be used to hoist rocket stages and the spacecraft itself into position, broke down Wednesday. No damage was done to the launch vehicle. Web posted. (2007). [Delta 2 launch set for weeklong delay [Online]. Available WWW: <http://www.floridatoday.com/> [2007, June 5].]

Bad-food complaints 'hard to believe,' NASA says

NASA isn't giving much credence to reports that cafeteria diners at Kennedy Space Center were served spoiled, outdated food, in part by a worker referred to in a lawsuit as "Dirty Finger Al." Space agency spokesman Bill Johnson responded to earlier report by saying Kennedy Space Center cafeterias are held to more stringent standards than regular area restaurants. Cafeteria workers are inspected each day before they work, he said. "It's really hard to believe that any of the things that we heard actually happened because of what we require them to do," Johnson said. The allegations of bad food are contained in a federal lawsuit by former culinary worker Carolyn Vargas who says she was fired after she reported problems with spoiled, outdated meat and other food served to space center workers. Johnson said Lackmann Culinary Services serves more than 5,000 meals a day at Kennedy Space Center. The Woodbury, N.Y.-based contractor operates seven KSC cafeterias and undergoes regular inspections. Web posted. (2007). [Bad-food complaints 'hard to believe,' NASA says [Online]. Available WWW: <http://www.floridatoday.com/> [2007, June 5].]

June 6: Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-060607. **Mission: STS-117** - 21st International Space Station Flight (13A) - S3/S4 Truss Segment Solar Arrays; Vehicle: Atlantis (OV-104); Location: Launch Pad 39A' Launch Date: June 8, 2007; Crew: Sturckow, Archambault, Reilly, Swanson, Forrester, Olivas and Anderson; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. The countdown for the launch of space shuttle mission STS-117 began as planned Tuesday at 9 p.m. EDT, when clocks in the Launch Control Center began counting backward from the T-43 hour mark. Launch is scheduled for 7:38 p.m. EDT Friday. Atlantis' astronauts arrived at Kennedy Space Center Monday evening and have been practicing landings in the Shuttle Training Aircraft, conducting fit checks of their launch-and-entry suits, reviewing their timelines and undergoing medical exams. Launch preparations continue as planned. Following a four-hour built-in hold at the T-27 hour mark, the countdown resumes at 6:30 p.m. EDT today. Transfer of the hydrogen and oxygen reactants will then begin. These will flow through the orbiter mid-body umbilical unit into the power reactant storage and distribution system tanks located beneath the payload bay. These reactants will be used by Atlantis to generate power during the mission. The umbilical unit will be secured once this loading is complete at about 1 a.m. EDT Thursday, when the countdown enters a hold at the T-19 hour mark. There is a 30-percent chance that conditions will not meet the weather criteria for launch Friday. The main concern is

thunderstorms with associated anvil clouds. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, June 6.]

Expendable Launch Vehicle Status Report

Expendable Launch Vehicle Status Report #ELV-060607. **Mission: Dawn**; Location: Astrotech Space Operations Facility; Launch Pad: 17-B; Launch Vehicle: Delta II 7925-H; Launch Date: July 7, 2007; Launch Time: 4:09:31 - 4:36:22 p.m. EDT. At Pad 17-B, the Delta II first stage was hoisted into the launcher on May 28 after a postponement due to high wind at the launch pad. Technicians then began working to erect the nine solid rocket boosters. A mechanical problem with the crane used to hoist and mate the first set of three boosters stalled further launch vehicle build-up. As a result of the crane problem at the pad, the launch of Dawn has been retargeted for July 7. Repairs to the crane are now complete. The operations to attach the solid rocket boosters resumed today. The second stage is planned to be hoisted atop the first stage on June 20. Due to the change in the launch date, the planned loading of xenon for the ion propulsion system was rescheduled. The operation began Tuesday night and is under way today. Hydrazine, used for spacecraft control and maneuvering, is scheduled to be loaded on June 10. The spacecraft will be transported to Pad 17-B for mating to the Delta II on June 26. **Mission: Phoenix**; Location: Payload Hazardous Servicing Facility; Launch Pad: 17-A; Launch Vehicle: Delta II 7925; Launch Date: Aug. 3, 2007; Launch Time: 5:35:18 a.m. EDT. Spacecraft processing is on schedule. The landing radar was integrated with the spacecraft on Tuesday, and testing is now under way. An entry, descent and landing system verification test is scheduled for June 7 - 8. Web posted. (2007). [NASA's Expendable Launch Vehicle Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/launchingrockets/status/2007/index.html> [2007, June 6.]

NASA troubleshooting shuttle tank lines

NASA engineers were troubleshooting a possible problem Wednesday with lines connecting the external fuel tank to space shuttle Atlantis, the only remaining concern about the first shuttle flight of the year. The countdown clock began ticking Tuesday night (June 5), and forecasters predicted a 70 percent chance the weather would be favorable for launching Atlantis at 7:38 p.m. ET on Friday. The only technical problem remaining for engineers was a concern that two lines that connect Atlantis to its external fuel tank may not fit correctly. The problem was found in the tank for space shuttle Endeavour, which is in a hangar being prepared for a launch in August. Those lines were being replaced. Engineers wanted to make sure the same problem wasn't found on Atlantis' tank so there wouldn't be a chance of a hydrogen fuel leak. "We're off looking at that right now," NASA test director Jeff Spaulding said. "All the tests to date and all the leak checks have been satisfactory." Technicians planned to start fueling the shuttle's power cells, and the vehicle's payload doors were shut Tuesday. "Everything is in excellent shape," said Robbie Ashley, the mission's payload manager. The launch originally was set for mid-March but was postponed after a freak hail storm caused thousands of dings in the insulating foam on Atlantis' external tank. Technicians spent more than two months making painstaking repairs to the tank. During the 11-day mission, Atlantis and its seven astronauts will deliver a new segment and a pair of solar arrays to the international space station and rotate out a crew member at the orbiting outpost. Web posted. (2007). [NASA troubleshooting shuttle tank lines [Online]. Available WWW: <http://www.cnn.com/> [2007, June 6.]

Astronaut's ring mystery resurfaces

There is no conclusive evidence one way or the other, according to long-secret documents detailing a quest by the Texas Rangers, the FBI and NASA to get to the bottom of a claim by a funeral home worker who helped in the disaster recovery in 2003. The man told police a ring disappeared from the body of astronaut Laurel Clark in the chaotic hours after Columbia broke apart trying to return to the Earth and the spaceship's wreckage rained down across a large swath of rural Texas and Louisiana. Kept quiet for four years now, some details about the case are trickling out in documents related to the ongoing investigation into whether NASA Inspector General Robert W. Cobb has diligently done his job as an agency watchdog. The questions about the missing ring have become part of an intensifying political battle in Washington between NASA Administrator Mike Griffin and influential members of Congress who want Cobb fired. The ring will come up in Cobb's testimony before Congress on Thursday. NASA's photographic experts determined Clark was not wearing a ring when she donned her gloves moments before the shuttle began its ill-fated re-entry on Feb. 1, 2003. "It became clear that there was no ring on the finger of the astronaut and, therefore, there was no credible evidence of a theft," Cobb wrote in written testimony to Congress in preparation for the hearing Thursday. "Public suggestion that persons involved in the recovery effort were involved in such a heinous crime would have been most inappropriate." One recovery worker told police he saw a ring that later vanished. Investigators disagreed about whether photos taken during the recovery showed a ring. Dozens of other witnesses were questioned and nobody else reported actually seeing a ring, though several had heard of it. NASA experts concluded "all pictorial data was consistent and indicated no evidence that a ring was present." Web posted. (2007). [Astronaut's ring mystery resurfaces [Online]. Available WWW: <http://www.floridatoday.com/> [2007, June 6].]

NASA gives crew final OK for liftoff

A hail-weary NASA team endured an hours-long thunderstorm that swept across Kennedy Space Center late Wednesday, worrying about warnings of half-inch hail and high winds that could threaten Friday's scheduled launch of shuttle Atlantis. A freakish February hail storm already delayed this launch by three months, gouging thousands of divots in the external tank's foam insulation and forcing the shuttle off its launch pad and inside for repairs. The ominous storm warning Wednesday afternoon overshadowed an otherwise problem-free countdown, which continued with no technical issues capable of stopping the planned 7:38 p.m. Friday launch. NASA managers met for a traditional two-days-before-launch review and cleared Atlantis and seven astronauts for a construction flight to the International Space Station. Then the launch team was left watching darkening skies, and joking about how they did not want to discuss hail any more after months spent patching up Atlantis' external tank. "We would have to be so unlucky to get more hail on this tank," shuttle launch director Mike Leinbach said before stopping himself. "I better not go into that." "I'd be real happy if we just stopped talking about hail," quipped launch integration manager Leroy Cain to a bit of uncomfortable laughter. After a couple hours of heavy rain and spectacular lightning bolts ripping through thick clouds, the storm subsided with no indication of hail or serious incidents at the launch pad. Storms could continue today and Friday at the space center, but forecasters said Wednesday that they expect those storms will move west and away from Pad 39A before launch time. There remains a 30 percent chance that weather conditions could prevent the Friday night launch, shuttle weather officer Kathy Winters said. If the

launch is delayed to Saturday or Sunday, the chance of unacceptable weather is 40 percent. The concern is that a sea breeze will keep thunderstorms near the coastal launch pad later into the evening. Otherwise, NASA has cleared up all technical issues to arise so far. Web posted. (2007). [NASA gives crew final OK for liftoff [Online]. Available WWW: <http://www.floridatoday.com/> [2007, June 7].]

June 7: Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-060707. **Mission: STS-117** - 21st International Space Station Flight (13A) - S3/S4 Truss Segment Solar Arrays; Vehicle: Atlantis (OV-104); Location: Launch Pad 39A; Launch Date: June 8, 2007; Crew: Sturckow, Archambault, Reilly, Swanson, Forrester, Olivas and Anderson; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. Preparations continue at the Kennedy Space Center for the launch of space shuttle mission STS-117 at 7:38 p.m. EDT Friday. Atlantis' power-producing fuel cells were loaded with liquid hydrogen and liquid oxygen early Thursday morning after severe thunderstorms caused a delay of several hours. These reactants will provide launch managers with the opportunity to try four launch attempts in five days, should that become necessary. No lightning strikes or hail were reported at Launch Pad 39A. While some operations began later than originally scheduled, much of the remaining work is being performed in parallel and no impact to the planned launch time is expected. Final preparations of the space shuttle main engines are under way, and workers are activating communications systems and stowing final items into Atlantis' crew cabin. Solid rocket booster recovery ships Freedom Star and Liberty Star departed KSC at noon today. Meanwhile, the STS-117 crew continues practicing landings in the Shuttle Training Aircraft. The rotating service structure is scheduled to retract at 10:30 tonight, and fueling of the external tank is planned for 9:12 a.m. Friday. There is a 20-percent chance that conditions will not meet the weather criteria for launch Friday. The main concern is clouds associated with inland thunderstorms. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, June 7.]

NASA Updates Shuttle Target Launch Date for Hubble Mission

NASA managers officially are targeting Sept. 10, 2008, for the launch of the fifth and final space shuttle servicing mission to the Hubble Space Telescope. During the 11-day flight, Atlantis' seven astronauts will repair and improve the observatory's capabilities through 2013. Mission planners have been working since last fall, when the flight was announced, to determine the best time in the shuttle manifest to support the needs of Hubble while minimizing the impact to International Space Station assembly. NASA also will support a "launch on need" flight during the Hubble mission. In the unlikely event a rescue flight becomes necessary, shuttle Endeavour currently is planned to lift off from Launch Pad 39-B at NASA's Kennedy Space Center, Fla. However, managers constantly are evaluating the manifest to determine the best mission options. Shuttle missions beyond the Hubble flight still are being assessed. Shuttle and station program officials will continue to consider options for the remainder of the shuttle flights to complete construction of the space station by 2010, when the fleet will be retired. Those target launch dates are subject to change. ["NASA Updates Shuttle Target Launch Date for Hubble Mission," NASA News Release #07-135, June 7, 2007.]

Service tower clears way for shuttle launch

The Rotating Service Structure began moving away from the space shuttle orbiter around 11 p.m., exposing Atlantis on the pad in the bright flood lights. The movement of the giant rotating tower clears the way for tomorrow evening's launch of Atlantis. You can now see the illuminated shuttle on the pad unobstructed by all of the metal scaffolding that has shrouded the vehicle for weeks now. A series of final inspections is on tap for later tonight and, during the overnight hours, crews will continue working to prep the space shuttle for fueling. That could begin not long after 9 a.m. Mission managers meet in the 8 a.m. hour to make a go or no go call on tanking. Web posted. (2007). [Service tower clears way for shuttle launch [Online]. Available WWW: <http://www.floridatoday.com/> The Flame Trench blog [2007, June 7].]

Autograph show

Tonight's screening of the motion picture "The Wonder of It All" comes during the Universal Autograph Collectors Club Astronaut Autograph Show running through Saturday at Kennedy Space Center. UACC has had astronaut autograph shows for the past five years in various cities. This is the first time it will be at Kennedy Space Center Visitor Complex. Appearing at the autograph show are more than two dozen space program luminaries, including Buzz Aldrin, Alan Bean, Charles Duke, Guenter Wendt, Gene Kranz, Edgar Mitchell, James Lovell, Gene Cernan, Walt Cunningham and Scott Carpenter. Also appearing will be Bill "Jose Jiminez" Dana. The three-day event features lectures, tours, autograph signings, meet-and-greets and a banquet. The schedule includes lectures and tours 9 a.m. to 5 p.m. today. The autograph shows run 9 a.m. to 5 p.m. Friday and 9 a.m. to 4 p.m. Saturday in the Debus Conference Facility at KSC. A banquet is scheduled for 7 p.m. Saturday at the Apollo/Saturn V Center at KSC. Web posted. (2007). [Autograph show [Online]. Available WWW: <http://www.floridatoday.com/> The Flame Trench blog [2007, June 7].]

'Pencil sharpener' helped repair tank

The successful repair of the shuttle Atlantis' main tank was helped by the quick invention of a sanding tool dubbed "the pencil sharpener." A February hailstorm left 4,200 dings in the metal tank's foam insulation. Nearly 1,500 of these gouges were on the ogive, an area just below the metal nosecap. The ogive is two feet wide and about 19 feet in circumference. Designed and pieced together in less than two weeks, the pencil sharpener restored the aerodynamic curve to the tank's foam-covered nose. Glenn Lapeyronnie, a mechanical engineer in Lockheed Martin's tool design group at the Michoud assembly plant in New Orleans, designed and built the 96-pound tool. The hail damage caused a three-month delay in the shuttle launch. Last week, shuttle managers expressed confidence in the repairs because the repair technique has been tested on 47 shuttle flights. "We just don't lose foam off repairs," shuttle program manager, Wayne Hale said. ["Pencil sharpener' helped repair tank," **Florida Today**, June 8, 2007, p 7A.]

June 8: Military defends shuttle's airspace

The Department of Defense has been providing mission support for the launch of Atlantis this week, and Maj. Maria Quon reports that job will not end until the shuttle lands. "We have two missions here for the Department of Defense," she said. "NORAD's mission is to protect the shuttle and its flight space. The Northern Command is prepared to conduct astronaut rescue in case of emergency." Both F-16s and the newer F-22A Raptors have been

involved in mission support. Two F-16s flew around the Space Coast on Wednesday for deterrence, using a method Quon described as "low and slow" to bring their presence to the attention of regular pilots -- or anyone with bad intentions. Quon couldn't say what was in the air on Thursday, but she described that day's task as "irregular air patrols" flown significantly higher than those on the previous day. Friday belonged to the Raptors and combat air patrol. Six Raptors were available, with two in the air at once protecting the area of temporary flight restriction established by NASA and the Federal Aviation Administration. Beginning seven hours before launch, the restricted area was extended to 30 nautical miles around and 18,000 feet above Launch Pad 39-A. That lasted until 8:23 p.m. Boating and other restrictions also were in place. The Raptor, based in Langley, Va., is the Air Force's newest fighter and has significant air-to-air and air-to-ground capabilities. It was chosen for this mission because of its "speed, range, maneuverability and lethality," according to Maj. Gen. Hank Morrow in information provided by the Air Force. Quon, who is based in Colorado Springs, said those involved in the mission will return to their bases shortly after launch but will redeploy for the landing of Atlantis. "We are on standby until the shuttle lands," she said. "When the shuttle prepares to land, we will deploy teams to White Sands (N.M.), Edwards (Calif.) and Kennedy Space Center." Web posted. (2007). [Military defends shuttle's airspace [Online]. Available WWW: <http://www.floridatoday.com/> [2007, June 8].]

Sun rises on launch day at KSC

The sun is rising over the Kennedy Space Center and space shuttle Atlantis waiting on its pad for launch later tonight. The launch crews at the spaceport are going through final testing and checks to ready the external tank for fueling. Mission managers are to meet about two hours from now, beginning around 8:30 a.m., to go over any last issues before clearing the team to begin pumping liquid hydrogen and liquid oxygen into the external tank. The fueling operation could begin as early as 9:12 a.m., though the official schedule does not call for tanking to start until a half-hour later. Web posted. (2007). [Sun rises on launch day at KSC [Online]. Available WWW: <http://www.floridatoday.com/> the flame trench blog [2007, June 8].]

No Problems As Atlantis Launch Nears

Forecasters predicted an 80 percent chance that the weather would allow NASA to launch its first space shuttle mission of the year at 7:38 p.m. Friday. After a three-month delay, NASA entered the final day of a launch countdown for space shuttle Atlantis Thursday with no major technical problems looming and a forecast for promising weather. Engineers were not working on any technical problems, said Steve Payne, NASA test director. A freak storm set back the mission in late February, when golf-ball-size hail knocked thousands of pockmarks in the insulating foam of Atlantis' external tank as it stood on the launch pad. Atlantis was moved from the launch pad back to the Vehicle Assembly Building and the original launch date in mid-March was postponed. NASA managers chose to repair the tank rather than swap it out for another, and scores of engineers and technicians worked over two months to remove sand down and reapply foam to the tank. "We had a great deal of effort for this repair work," said Roy Worthy, external tank/solid rocket booster NASA vehicle manager. "We have complete confidence in our repair technique. ... We're ready to fly." Some of the engineers and technicians worked 16-hour days devising the repairs, including mechanical engineer Glenn Lapeyronnie, who created from scratch in 10 days a 7 1/2-foot tool to trim foam around the nose cone, where the tank had the most damage. During the

11-day mission, Atlantis and its seven astronauts will deliver a new segment and a pair of energy-producing solar panels to the international space station. NASA hopes to fly at least 13 more construction missions to the space station before the space shuttle fleet is grounded in 2010. The space agency also wants to fly a single mission to repair the Hubble Space Telescope, which officials said Thursday would be in September 2008. Web posted. (2007). [No Problems As Atlantis Launch Nears [Online]. Available WWW: <http://www.washingtonpost.com/> [2007, June 8].]

Launch of STS-117

Liftoff of Atlantis on mission STS-117 to the International Space Station from Launch Pad 39A was on-time at 7:38:04 p.m. EDT. The shuttle is delivering a new segment to the starboard side of the International Space Station's backbone, known as the truss. Three spacewalks are planned to install the S3/S4 truss segment, deploy a set of solar arrays and prepare them for operation. STS-117 is the 118th space shuttle flight, the 21st flight to the station, the 28th flight for Atlantis and the first of four flights planned for 2007. Web posted. (2007). [Launch of STS-117 [Online]. Available WWW: <http://mediaarchive.ksc.nasa.gov/detail.cfm?mediaid=32380> [2007, June 8].]

Media makes sense of clouds

It takes a lot to get the crowd of reporters at Kennedy space Center's press site riled up, but those curvy clouds did the trick. An hour or so after space shuttle Atlantis' launch Friday evening, photographers and writers were running from building to building, banging on doors and hollering to each other. Here's what happened: For the final six and half minutes of the trip into orbit, the shuttle's main engines combine liquid hydrogen and liquid oxygen, and essentially leave behind only water vapor. The steam from those main engines is practically invisible. But for the first two minutes after liftoff, the shuttle gets about 30 million horsepower from the pair of solid rocket boosters. The smoke plume from the boosters tends to linger around the launch site and drift with the wind. Over the course of an hour or so after launch, the winds twisted and pulled at the plume. The picturesque squiggly clouds hung over the Vehicle Assembly Building. The clouds were drifting at just the right height to catch rays of sunlight sent from beyond the horizon and produced some special effects. ["Media makes sense of clouds," **Florida Today**, June 13, 2007, p 3B.]

Noted Author, Lucy Hawking, to Fly With Zero Gravity Corporation on June 9

Lucy Hawking, daughter of Professor Stephen Hawking -- the world-renowned physicist and expert on gravity -- will fly aboard Zero Gravity Corporation's weightless experience on its June 9 Father's Day flight. This will be her opportunity to share the same weightless experience enjoyed by her father on April 26, 2007 out of the Kennedy Space Center. This flight will also will serve as research for a children's book she is co-writing with her father on space. Her flight will depart from the Shuttle Landing Facility at the Kennedy Space Center in Central Florida. Professor Hawking proclaimed his zero-gravity flight to be "amazing" and that he hoped many would follow him in this incredible opportunity, now available to the general public. His daughter is one of many who've been inspired to fly with ZERO-G following his historic flight. "For my father, experiencing zero gravity for the first time was a dream come true; for a moment, he was free," said Lucy Hawking. "I think most people who saw the footage of him on his zero gravity trip were very moved by the sight of him released from his wheelchair and everyone has commented on how happy he looked -- he

did have the biggest wrap-around grin I've ever seen! I'm thrilled to follow his lead with ZERO-G and understand weightlessness myself. Sharing this experience with him is a precious, once-in-a-lifetime opportunity for me. It's very special." The Sharper Image and Space Florida, both of whom sponsored Professor Hawking's flight, also will sponsor Lucy Hawking's seat. Sharper Image is now selling ZERO-G seats nationwide; the ZERO-G Experience™ is featured on the cover of the company's June Father's Day catalogue. The experience offered by ZERO-G is the only commercial opportunity on Earth for individuals to experience true "weightlessness" without going to space. This is the identical weightless flight experience used by NASA to train its astronauts and used by Ron Howard and Tom Hanks to film "Apollo-13." Weightless flight is an experience that few have tried, but those who have call it amazing and life-changing. Web posted. (2007). [Noted Author, Lucy Hawking, to Fly With Zero Gravity Corporation on June 9 [Online]. Available WWW: <http://new.marketwire.com.com/> [2007, June 8].]

June 10: Union workers decide to hold off on strike

A strike at Kennedy Space Center was postponed Sunday when the union representing 570 workers at United Space Alliance agreed at the urging of a mediator to return to the bargaining table. The workers were set possibly to walk off the job. Members assigned to shuttle recovery were to stay on during the current mission. But Henry Groton Jr. of the Federal Mediation and Conciliation Services in Orlando asked both sides to return to negotiations, the International Association of Machinists and Aerospace Workers Local 2061 announced Sunday. Union members voted June 2 to strike after contract negotiations fell apart. A union representative called the contract "substandard" in relation to contracts at other aerospace companies. Proposals related to health care and retirement benefits are among the points workers rejected. The strike was set to begin Sunday, after a five-day cooling off period that began Tuesday. Instead, workers agreed to continue under current conditions until the meetings are finished. Web posted. (2007). [Union workers decide to hold off on strike [Online]. Available WWW: <http://www.floridatoday.com/> [2007, June 11].]

June 11: Mission extended two days; blanket repair ordered

NASA's Mission Management Team decided Monday to extend the shuttle Atlantis' mission by two days and to add a fourth spacewalk Sunday. That will give the astronauts enough time to complete their space station assembly tasks and fix a pulled-up insulation blanket on one of the ship's aft rocket pods. Flight controllers plan to make a decision Tuesday on whether to add the blanket repair to the third or fourth spacewalk. Web posted. (2007). [Mission extended two days; blanket repair ordered [Online]. Available WWW: <http://www.spaceflightnow.com/> [2007, June 11].]

June 14: Expendable Launch Vehicle Status Report

Expendable Launch Vehicle Status Report #ELV-061407. **Mission: Dawn;** Location: Astrotech Space Operations Facility; Launch Pad: 17-B; Launch Vehicle: Delta II 7925-H; Launch Date: July 7, 2007; Launch Time: 4:09:31 - 4:36:22 p.m. EDT. NASA is investigating a minor mishap affecting the Dawn spacecraft. On June 11, during a procedure to prepare the spacecraft for spin-balance testing, the back of a solar array panel was slightly damaged by a technician's tool. No solar cells were broken. The necessary minor repairs will be made this weekend. There is no impact to the launch date of July 7. Loading of xenon for the ion propulsion system was completed last week. Hydrazine, used for spacecraft

control and maneuvering, was loaded aboard June 10. The spacecraft was then weighed and placed on a spin table for a series of spin tests that are currently under way. Dawn will be mated to its associated upper-stage booster on June 21 and transported to Pad 17-B for mating to the Delta II on June 26. At Pad 17-B, the operations to attach the Delta II solid rocket boosters to the first stage are complete. The second stage is planned to be hoisted atop the first stage on Friday. **Mission: Phoenix**; Location: Payload Hazardous Servicing Facility; Launch Pad: 17-A; Launch Vehicle: Delta II 7925; Launch Date: Aug. 3, 2007; Launch Time: 5:35:18 a.m. EDT. The cruise system verification test is complete. The planned testing of the landing radar is complete for now and will be resumed later. Next week, technicians will install the parachute and associated mortar and ordnance. The solar array also will be deployed on the cruise stage for a planned test. The first stage of the Delta II will be hoisted into the launcher at Pad 17-A on June 18. Web posted. (2007). [NASA's Expendable Launch Vehicle Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/launchingrockets/status/2007/index.html> [2007, June 14.]

Shuttle workers ready to strike

A union representing 580 space shuttle program workers at the Kennedy Space Center indicated that a strike is looming, after an unsuccessful meeting Wednesday with a federal mediator. "We will be going on strike," union spokesman Bob Wood said. "I don't see much of anything that would stop it at this point. That's what we're moving toward." Representatives of the International Association of Machinists and Aerospace Workers Lodge 2061 and District 166 met with United Space Alliance and the Federal Mediation and Conciliation Service, seeking to resolve a contract dispute. The union said the company's proposal remained unchanged from one the union previously rejected. "The union is extremely disappointed with the unwillingness of the United Space Alliance to agree to a resolution that is fair for the workers," Local 2061 President Lew Jamieson said. "The workers at KSC have said over and over they will not agree to a substandard contract." Union officials have said the company's proposals related to health care and retirement benefits are among the provisions the union doesn't like. The breakdown in negotiations comes less than week after Friday's launch of Atlantis. Union members on June 2 voted to authorize a strike. Under union rules, no further votes by union rank-and-file membership are required. The union Negotiating Committee will determine if and when the strike begins. Workers covered by the contract include machinists, electric technicians, air-conditioning mechanics, painters and elevator technicians, among other jobs. Web posted. (2007). [Shuttle workers ready to strike [Online]. Available WWW: <http://www.floridatoday.com/> [2007, June 14].]

Space station oxygen, water computers fail

Russian computers that control the international space station's orientation and supply of oxygen and water have failed, potentially extending the space shuttle's mission -- or cutting it short. Russian engineers aren't sure why the computers stopped working. A failure of this type has never occurred before on the space station. The station is operated primarily by the Russian and U.S. space agencies, with contributions from the Canadian, European and Japanese space agencies. "We have plenty of resources, so we have plenty of time to sort this out," said Mike Suffredini, NASA manager of the space station program. But the computer failure could extend space shuttle Atlantis' mission by at least a day and, in a worst-case scenario, force the space station's three crew members to return to Earth early if

the computers aren't fixed. Atlantis' mission had already been extended from 11 to 13 days so that astronauts can go on a spacewalk to repair a thermal blanket covering an engine pod that peeled up during launch. Web posted. (2007). [Space station oxygen, water computers fail [Online]. Available WWW: <http://www.floridatoday.com/> [2007, June 14].]

Shuttle workers strike at KSC

Union workers on the space shuttle program at Kennedy Space Center went on strike today at 10 a.m. after being "very disappointed" during a last-ditch meeting Wednesday with a mediator and their employer, United Space Alliance. Members of the International Association of Machinists and Aerospace Workers Local 2061 walked off their jobs and begin picketing at several entrances to Kennedy Space Center, as well as the company's offices in Cape Canaveral and Titusville. The union has about 580 members assigned to various space shuttle support jobs. United Space Alliance - NASA's main space shuttle contractor - was putting its strike plan into action, which includes reassigning employees to other duties to cover for the striking workers and beginning the process of hiring some "subcontractors" as replacement workers, said company spokeswoman Tracey Yates. Both sides declined to discuss details of the proposed three-year contract. At noon, an estimated 150 people held signs at the State Road 3 entrance on Merritt Island.. Their cars were parked on the side of the road. Some of them wore pins that said "No Scabs". Web posted. (2007). [Shuttle workers strike at KSC [Online]. Available WWW: <http://www.floridatoday.com/> [2007, June 14].]

Chef says he and KSC contractor clean, but dirty nickname put career in 'toilet'

Al Motta, a onetime chef at a Kennedy Space Center cafeteria who was dubbed "Dirty Finger Al" in a federal lawsuit, says his hands are clean. And accusation's he served bad food are false, he said. The unfortunate moniker appeared in a sworn affidavit by a former executive chef at Kennedy Space Center. That man is a witness in a lawsuit filed by a former culinary worker who said she was fired after she reported problems with spoiled, outdated meat and other food served to space center workers. The former chef criticized Motta's hygiene and said he watched Motta put rotten vegetables in soup and cook rancid chicken in a cafeteria in the KSC headquarters building. Motta is an employee at Lackmann Culinary Services which serves more than 5,000 meals a day at Kennedy Space Center and operates seven cafeterias there. Heath Braunstein, Lackmann's director of purchasing and food safety, said Motta is performing his assigned duties and has not been disciplined. "We are disheartened and outraged by the false allegations of an Executive Chef, Joseph Georges, who was employed by Lackmann Culinary Services at the Kennedy Space for only four months," Braunstein said. "Mr. Georges statements have impugned and destroyed the good name and reputation of Al Motta, a long-term and valued Lackmann Employee. It is highly irresponsible to rely upon uncorroborated and clearly false statements made by Mr. Georges, who was terminated due to his failing a required standard drug screening test." Web posted. (2007). [Chef says he and KSC contractor clean, but dirty nickname put career in 'toilet' [Online]. Available WWW: <http://www.floridatoday.com/> The Watch List blog [2007, June 14].]

Baby monitor's picking up the space shuttle

What do you get when you cross a baby monitor and a science teacher? Apparently, live feeds off a NASA space mission. When Palatine mom Natalie Meilinger switched on the

family's baby monitor Sunday, instead of her 3-month-old son Jack, what came up were images of astronauts walking around inside the space shuttle. "I knew exactly what it was," said Meilinger, a science teacher at Lions Park School in Mount Prospect. She and her husband, Tom, were immediately hooked. They started telling friends. She told other teachers at work, but no one believed her until she brought in proof. On Tuesday, the student's last day of school, she showed a video of the baby monitor to the class. The space shuttle Atlantis lifted off last Friday from NASA's Kennedy Space Center in Florida. The seven-member crew is continuing construction of the International Space Station. Anyone can go online and watch a live video of the mission, so NASA officials say it's likely the baby monitor is picking up a signal from somewhere. "It's not coming straight from the shuttle," said NASA spokeswoman Brandi Dean. "People here think this is very interesting and you don't hear of it often - if at all." The monitor is manufactured by Summer Infant, and Meilinger says when she contacted company reps, they'd never heard of anything like this. Web posted. (2007). [Baby monitor's picking up the space shuttle [Online]. Available WWW: <http://www.dailyherald.com/> [2007, June 14].]

Atlas V launch scrubbed for today

A problem with the range safety system that protects the people and property from an out-of-control rocket mishap has forced the cancellation of today's Atlas V launch. The launch and range safety teams worked into the final minutes of the window trying to get the system cleared for flight, but could not do so. About 11:40 a.m., the mission director decided to scrub the launch. A new liftoff time will be set for Friday morning. It should be 11:04 a.m. The Atlas V is carrying a pair of spy satellites for the NRO. The weather forecast for a Friday launch attempt calls for an 80 percent chance of acceptable conditions. Web posted. (2007). [Atlas V launch scrubbed for today [Online]. Available WWW: <http://www.floridatoday.com/> The Flame Trench blog [2007, June 14].]

June 15: Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-061507. **Mission: STS-117** - 21st International Space Station Flight (13A) - S3/S4 Truss Segment Solar Arrays; Vehicle: Atlantis (OV-104); Official Launch Date: June 8, 2007; Expected KSC Landing Date/Time: June 21, 2007, 1:52 p.m. EDT; Crew: Sturckow, Archambault, Reilly, Swanson, Forrester, Olivas and Anderson; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. Today is Flight Day 8 for STS-117 and Atlantis is docked to the International Space Station. Crew members Jim Reilly and John Olivas are preparing for the week's third spacewalk, a 6.5-hour excursion to repair a thermal blanket on the orbiter and assist in folding up a solar array on the station. On Tuesday, the crew unfurled the solar array attached to the newly installed S3/S4 truss segment, which was transported to the station on Atlantis. On Monday, Reilly and Olivas conducted the first spacewalk to connect S1/S3 power cables, release launch restraints and solar array blanket box restraints, and install solar alpha rotary joint drive lock assemblies. On Wednesday, crew members Patrick Forrester and Steve Swanson conducted the second spacewalk, during which they helped to retract the 2B solar array wing and prepared the solar alpha rotary joint between the S3 and S4 truss segments for rotation. **Mission: STS-118** - 22nd International Space Station Flight (13A.1) - S5 Truss Segment; Vehicle: Endeavour (OV-105) Location: Orbiter Processing Facility Bay 2; Launch Date: Targeted for Aug. 9, 2007; Launch Pad: 39A; Crew: Kelly, Hobaugh, Williams, Morgan, Mastracchio, Caldwell and Drew; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility Bay No. 2 this morning, workers installed metal structures called

"strongbacks" on Endeavour's payload bay doors to allow the doors to be cycled open and closed to verify non-interference with thermal tiles. The orbiter positive pressure test was successfully completed this week. Functional testing is complete on Endeavour's landing gear and on the external tank doors. Closeout of the orbiter's aft and forward sections is under way. In high bay No. 1 of the Vehicle Assembly Building, stacking of the solid rocket boosters for STS-118 is complete. Platforms are being configured for the mating of the external tank and solid rocket boosters, which is scheduled for Sunday. **Mission: STS-120 - 23rd International Space Station Flight (10A) - U.S. Node 2; Vehicle: Discovery (OV-103); Location: Orbiter Processing Facility Bay 3; Launch Date: Targeted for Oct. 20, 2007; Launch Pad: 39A; Crew: Melroy, Zamka, Parazynski, Wheelock, Wilson, Nespoli and Tani; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles.** In Orbiter Processing Facility bay No. 3, aft closeout work is under way. Functional testing of the atmospheric revitalization pressure control system, part of the orbiter's life support system, is complete. Modifications to Discovery's engine cutoff sensor wiring continue, as does the installation of BRI tile around the main landing gear doors and external tank doors. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, June 15.]

Strikers get a hot welcome from weather on picket lines

Thursday was the first day of possibly many on the picket lines for striking shuttle program workers. Members of the International Association of Machinists and Aerospace Workers Local 2061 began a strike Thursday morning over stalled contract negotiations with their employer, United Space Alliance, NASA's main shuttle contractor. "It's hot out here," Local 2061 President Lew Jamieson said after a few hours on the picket line. No new contract talks had been scheduled between the two sides as of late Thursday. The union has about 570 members who work at Kennedy Space Center in various shuttle support jobs, composing roughly 10 percent of the company's local workforce. The workers began picketing around the clock at entrances to Kennedy Space Center and at the company's offices in Cape Canaveral and Titusville. Some wore pins that stated "No Scabs," a reference to the company's plan to bring in replacement workers. The strike is not expected to affect the shuttle Atlantis mission, which launched Friday from the space center. Web posted. (2007). [Strikers get a hot welcome from weather on picket lines [Online]. Available WWW: <http://www.floridatoday.com/> [2007, June 15].]

Investigate NASA's lawyer, panel leaders tell DOJ

The leaders of a congressional panel have asked the Justice Department to investigate NASA's general counsel to determine whether he committed a crime by intentionally destroying records of a controversial meeting between the agency's chief and its embattled inspector general. Michael Wholley should be investigated for "possible prosecution for obstruction of justice and destruction of government records," according to a letter sent Thursday by Rep. Brad Miller, the Democratic chairman of the House Science and Technology Subcommittee on Investigations and Oversight, and Rep. Jim Sensenbrenner, the panel's top Republican. Wholley testified before the committee last month, admitting he destroyed all copies of an April 10 meeting between NASA Administrator Michael Griffin and the agency's inspector general, Robert Cobb. Cobb has been accused of abusing his authority and being too chummy with his bosses. Also at that meeting were members of Cobb's office. In his testimony, Wholley said he took compact disc recordings of the

meeting, snapped them in half, and then threw them away. One of the reasons for destroying the recordings is that he didn't want them to be made available to the public under federal freedom of information laws, he testified. Web posted. (2007). [Investigate NASA's lawyer, panel leaders tell DOJ [Online]. Available WWW: <http://www.floridatoday.com/> [2007, June 15].]

U.S. rejects idea of abandoning space station

A U.S. space agency official rejected suggestions today that the international space station might have to be abandoned at some point if a failed computer system operated by NASA's Russian partners couldn't be restored. "There is nobody in this agency, or as far as I know in the Russian agency, that thinks this vehicle is at risk of being lost, not even remotely," said Mike Suffredini, space station program manager. "I have no plans to de-man the space station." In the past, NASA and Russia have talked about operating the space station without people. If astronauts did have to leave, they'd be able to come back safely, Suffredini said. "But we're really not there," he added. "We work problems like this all the time." He said there was no urgency now that would require the crew of the outpost, which orbits about 200 miles above Earth, to come home. "We have plenty of (oxygen) gas to keep the crew on orbit for some time," Suffredini said. Meanwhile, two astronauts from the space shuttle Atlantis, which arrived one week ago to continue construction work on the space station, began a spacewalk with two assignments: to disconnect a connector on a newly installed power-conducting truss that is a key suspect in the computer glitch, and repair a torn thermal blanket that helps protect the shuttle from heat on its return flight to Earth next week. NASA suspects the connector because the Russian computers blinked out at about the same time the connector went on line. The connector isn't required for station operations until a later power hook-up, Suffredini said. Web posted. (2007). [U.S. rejects idea of abandoning space station [Online]. Available WWW: <http://www.chron.com/> [2007, June 15].]

Atlas 5's NRO launch

The United Launch Alliance Atlas 5 rocket lifts off at 11:12 a.m. June 15 from Cape Canaveral's Complex 41 on the classified NROL-30 mission for the U.S. National Reconnaissance Office. Web posted. (2007). [Atlas 5's NRO launch [Online]. Available WWW: <http://www.spaceflightnow.com/> [2007, June 15].]

Shuttle blanket fixed on spacewalk

Spacewalkers completed repairs to the torn insulation blanket on the shuttle's rear engine pod Friday, but had to leave a vent cover held in place with a tether before they moved on to retract a balky solar array. In about three hours, spacewalker Danny Olivas completed the blanket repair, while James Reilly tussled with the sticky hydrogen vent cover, which was left tethered in place. During the spacewalk, astronauts learned that Russian computers had come back online after the cosmonauts isolated a faulty switch. This allowed Olivas and Reilly to avoid disconnecting a suspect power cable. After five hours, the spacewalkers moved on and began to retract a 7-year-old solar array. "Danny, fluff the right blanket," said Forrester, after the first retraction attempt. With guidance from the spacewalkers, the solar array folded smoothly but slowly. The spacewalkers "fluffed" the solar panels and slowly retracted the solar array. The slow retraction was completed about seven hours into a spacewalk scheduled to last only 6 1/2 hours. On Sunday, Pat Forrester and Steve Swanson will make a fourth spacewalk to complete several "get ahead" tasks to prepare the ISS for the

addition of two laboratories that will be powered by the solar arrays installed Monday. Web posted. (2007). [Shuttle blanket fixed on spacewalk [Online]. Available WWW: <http://www.floridatoday.com/> [2007, June 16].]

June 16: Former Atlas launch towers knocked down at Complex 36

Two historic Atlas rocket launch gantries made of metal and memories were brought down by chest-thumping explosions Saturday morning, erasing Complex 36 from the Cape Canaveral skyline after five decades of space missions. Complex 36 was built in the early 1960s for Atlas-Centaur rockets that deployed many of NASA's early space exploration probes to Mercury, Venus, Mars, Jupiter and Saturn, plus robotic voyages to the moon that prepared for human landings. Dozens of satellites that expanded communications around the globe and bolstered U.S. national security also flew from the site's two pads over the years, making Complex 36 one of America's longest serving launch sites. Pad 36A saw 69 launches from 1962 through August 2004 and Pad 36B had 76 flights from 1965 until February 2005. But times change and the Atlas program opted to retire its older rocket configurations. The new Atlas 5 Evolved Expendable Launch Vehicle made its home at Complex 41 on the northern edge of Cape Canaveral Air Force Station, rendering Complex 36 no longer necessary. Lockheed Martin secured the complex following the final launch two years ago, removed equipment and turned over the site to the Air Force for a multi-million dollar decommissioning and cleanup project. The umbilical towers on the pads were torn down last fall and Saturday's explosive toppling of the 20-story mobile service towers completed the demise of the Atlas era at Complex 36. After a brief countdown on the warm, sunny morning, former Complex 36 workers, Air Force officials and the news media watched as pad 36B had its lower supports blown out, allowing the structure to tip over and smash into the ground at 9:59 a.m. Then went pad 36A at 10:11 a.m. with more deafening explosions followed a few seconds later by the crushing sounds of impact. "It is an emotional feeling because of the history of it," said NASA spokesman and launch commentator George Diller. His first launch commentary was an Atlas flight from Complex 36. Web posted. (2007). [Former Atlas launch towers knocked down at Complex 36 [Online]. Available WWW: <http://www.spaceflightnow.com/> [2007, June 16].]

Rocket has glitch, but it's manageable, official says

A rocket carrying an intelligence-gathering payload for the Pentagon suffered a technical problem after its launch, officials said. But they were confident Saturday that its secretive mission would be performed. The Atlas 5 rocket launched Friday morning, hauling a payload from the National Reconnaissance Office, a division of the Department of Defense. The launch was successful, but the rocket's Centaur upper stage later had a "technical anomaly which resulted in minor performance degradation," the NRO said. ["Rocket has glitch, but it's manageable, official says," Orlando Sentinel, June 17, 2007, p A6.]

June 18: NASA and ESA Sign Agreements for Future Cooperation

At a ceremony held Monday at the International Paris Air Show at Le Bourget, France, NASA Administrator Michael Griffin and European Space Agency (ESA) Director General Jean-Jacques Dordain signed two agreements defining the terms of cooperation on the James Webb Space Telescope (JWST) and the Laser Interferometer Space Antenna (LISA) Pathfinder mission. Although it will operate over a different range of wavelengths, the James Webb Space Telescope is considered the successor to the Hubble Space Telescope. Its launch is targeted for 2013 and it will operate for at least five years. The telescope is a

mission of international cooperation between NASA, ESA and the Canadian Space Agency to investigate the origin and evolution of galaxies, stars and planetary systems. At the heart of the observatory is a large telescope, which has a primary mirror measuring 21.3 feet in diameter (compared to 7.9 feet for Hubble) that provides a relatively large field of view. A set of four sophisticated instruments, including a fine guidance sensor for precision pointing, will combine superb imaging capability at visible and infrared wavelengths with various spectroscopic modes to learn about the chemistry and evolution of objects in our universe. The telescope will operate well outside the Earth's atmosphere at a spot in space called the second Lagrangian point or "L2" located 1 million miles -- or four times farther than the moon's orbit -- in the direction opposite the sun. From this location, the observatory is expected to revolutionize our view of the cosmos as Hubble has. According to the agreement, NASA is responsible for the overall management and operation of the JWST mission and will build the spacecraft, the telescope and the platform that will house the instruments. ESA will provide an Ariane 5 ECA rocket for the telescope's launch. ["NASA and ESA Sign Agreements for Future Cooperation," **NASA News Release #07-139**, June 18, 2007.]

Expendable Launch Vehicle Status Report

Expendable Launch Vehicle Status Report #ELV-061807. **Mission: Dawn**; Location: Astrotech Space Operations Facility; Launch Pad: 17-B; Launch Vehicle: Delta II 7925-H; Launch Date: July 7, 2007; Launch Time: 4:09:31 - 4:36:22 p.m. EDT. Over the weekend, Dutch Space personnel completed the solar array repair on Dawn as planned and spacecraft processing continues on schedule. Dawn will be mated to its associated upper-stage booster on Thursday and transported to Pad 17-B at Cape Canaveral Air Force Station for mating to the Delta II on June 27. At Pad 17-B, the Delta II second stage was hoisted atop the first stage on June 15. **Mission: Phoenix**; Location: Payload Hazardous Servicing Facility; Launch Pad: 17-A; Launch Vehicle: Delta II 7925; Launch Date: Aug. 3, 2007; Launch Time: 5:35:18 a.m. EDT; Installation of the parachute and associated mortar and ordnance is under way. A deployment of the solar array on the cruise stage is planned for Wednesday and a solar array lighting test is scheduled for Friday. The first stage of the Delta II was hoisted into the launcher today at Pad 17-A. Attachment of the nine solid rocket boosters to the first stage will be performed Tuesday through Thursday. Hoisting of the Delta II second stage atop the first stage is scheduled for June 26. Web posted. (2007). [NASA's Expendable Launch Vehicle Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/launchingrockets/status/2007/index.html> [2007, June 18.]

Secret NRO ocean surveillance spacecraft in wrong orbit

Two top secret National Reconnaissance Office (NRO) ocean surveillance spacecraft were placed in the wrong orbit June 15 when the 200-foot-tall Atlas V rocket they were riding on stopped firing too early in space following launch from Cape Canaveral, Fla. The top secret satellites separated safely from the malfunctioning booster, however, and have enough rocket propellant to continue their mission, an official said on background. The U.S. Air Force, which managed the Atlas V launch, and the NRO have begun an official investigation into the launch and malfunction. The \$83 million Atlas V used in the launch is a model 401 with no solid rocket boosters. The Atlas V is built by Lockheed Martin and uses a Lockheed Martin Centaur upper stage with a Pratt & Whitney RL10 rocket engine powered by liquid oxygen and liquid hydrogen. United Launch Alliance (ULA) now runs the Atlas program and managed the launch in conjunction with NRO and the Air Force's 45th Space Wing that

operates Cape Canaveral Air Force Station. E-mail distribution. (2007). [Aviation Week's Aerospace Daily & Defense Report Re: "Secret NRO ocean surveillance spacecraft in wrong orbit," [Electronic]. Vol. 222, No. 55, [June 18, 2007.].]

June 19: Space Shuttle Atlantis passes final inspection for landing

Hours after undocking from the international space station Tuesday, Atlantis' seven astronauts finished a final inspection of the space shuttle to make sure its heat shield was ready to re-enter Earth's atmosphere. Atlantis' 13-day mission was scheduled to end with landing at 1:54 p.m. ET on Thursday, although the weather at Kennedy Space Center looked iffy. Continuing a tradition, space station commander Fyodor Yurchikhin rang a bell and said "Atlantis departing" as the space shuttle pulled away. Pilot Lee Archambault steered Atlantis away from the space station and went on a quick trip around the station to photograph the solar arrays the crew installed on the half-built home 220 miles above Earth. More than an hour after undocking, a piece of debris that looked like a blanket and at least five tiny flashing particles floated by the space station. While NASA engineers are still reviewing video and photographs and don't know what the piece of debris might be, the flashing particles could be pieces of ice that are a byproduct of the shuttle's jets, said Cathy Koerner, flight director. Mike Suffredini, NASA's space station program manager, said initial analysis of the piece of debris doesn't indicate it came from the space station and points to it being a small object. "It's not a big concern," he said. Results of the final inspection of the heat shield won't be ready until Wednesday, said Koerner, but problems aren't anticipated. Web posted. (2007). [Space Shuttle Atlantis passes final inspection for landing [Online]. Available WWW: <http://www.cnn.com/> [2007, June 19].]

New escape system a wild ride

A new launch pad under design by NASA will include a hair-raising escape system dubbed "the roller coaster." When the launch pad at Kennedy Space Center in Florida is completed in 2012, it will include an emergency feature that will allow astronauts to jump into tram cars atop the pad's tower and whiz down a track to safety, NASA Ruth Gardner says. One design under consideration shows the cars hurtling over a 90-degree cliff before plunging vertically toward the ground – with the passengers face down. NASA is redesigning the launch pad and planning escape routes as it develops a replacement for the space shuttle, which will retire in 2010. The next spaceship, a capsule named Orion, is scheduled to take astronauts to orbit starting in 2015 and eventually to the moon. The Orion isn't built, but its general design is settled, allowing NASA to design a pad and figure out ways to escape. The launch pad tower will be 370 feet tall. Even so, the tram cars will whisk crews to safety in only 85 seconds, says Gardner, Kennedy's manager of ground operations planning for the new ship. Engineers have not settled on the escape track's path, so it might not bend quite as much as 90 degrees. ["New escape system a wild ride," Florida Today, June 20, 2007, p 3B.]

June 20: Astronauts pack up cabin for Thursday landing

Keeping tabs on threatening weather, the Atlantis astronauts faced a busy day in space today, packing up equipment, setting up a recumbent seat for returning space station flier Sunita Williams and testing the shuttle's control systems to make sure they're ready for re-entry and landing Thursday at the Kennedy Space Center. Deorbit ignition is planned for 12:50 p.m. Thursday with landing on tap at 1:55 p.m. There are no technical problems with the space shuttle and the only question mark is the weather. As of late Tuesday, the KSC forecast

called for scattered clouds at 3,000 feet, a broken deck at 5,000 feet, overcast at 12,000 feet, winds gusting to 13 knots from 210 degrees and thunderstorms within 30 nautical miles. The low ceilings and lightning activity both violate NASA's landing flight rules. The outlook in Florida remains questionable Friday and into the weekend. An updated forecast will be available later today and entry flight director Norm Knight plans to brief reporters on his entry strategy during a 5 p.m. news conference. Web posted. (2007). [Astronauts pack up cabin for Thursday landing [Online]. Available WWW: <http://www.spaceflightnow.com/> [2007, June 20].]

June 21: NASA says Atlantis okay to land, despite "mistake"

NASA said on Wednesday it "made a mistake" in its calculations about a tear in space shuttle Atlantis' heat protection, but that it should not prevent the ship's safe return to earth. Deputy shuttle program manager John Shannon told reporters that NASA engineers believe an area beneath a torn heat-resistant blanket near the shuttle's tail had gotten hotter than they first thought during Atlantis' launch into space on June 8. While the difference in temperatures was relatively small -- 410 degrees Fahrenheit (210 degrees Celsius) instead of 350 degrees Fahrenheit (177 degrees Celsius) -- and would not have damaged the shuttle, but errors involving shuttle heat shields raise eyebrows since the Columbia disaster in 2003. "When they modeled it, they made a mistake," Shannon said of the original analysis. "It's pretty obvious we don't like to make mistakes. Nobody does." Despite the error, officials said the shuttle was on course for landing on Thursday at Kennedy Space Center in Florida if weather permits. Shannon blamed the error on a faulty assumption about what materials were beneath the inches-long (centimeters) tear. The error was spotted when astronaut Danny Olivas went out to repair the blanket, which protects part of the shuttle from heat when it is in the earth's atmosphere. Instead of a cushioning layer NASA had expected, there was a graphite material. Shannon, in a briefing at Johnson Space Center, blamed bad paperwork for the mistake, but said the error posed no threat to Atlantis. "Is it any kind of concern to us? No, it's not," he said. Later, shuttle managers officially deemed the shuttle fit for landing, NASA said. Landing flight director Norm Knight said NASA hopes to bring Atlantis back to Kennedy Space Center in Florida on Thursday, but the weather forecast is for low clouds and possible nearby thunderstorms, both of which would prevent landing. "I know the forecast now is no-go, but weather changes," Knight said. "If weather doesn't cooperate we will keep the crew safe and the vehicle safe and go around for another day." If Atlantis cannot land on Thursday, NASA will consider directing it to Edwards Air Force Base in California on Friday, he said. The shuttle has enough supplies to stay in space until Sunday. Web posted. (2007). [NASA says Atlantis okay to land, despite "mistake" [Online]. Available WWW: <http://www.alertnet.org/thenews/newsdesk/N20305140.htm> [2007, June 21].]

Payload bay door decision

It is 10 minutes before the scheduled closing of the payload bay doors on the shuttle Atlantis, which would clear the way for NASA to take a shot at landings today at Kennedy Space Center. Steps already are being taken in orbit that seem to indicate entry flight director Norm Knight intends to take advantage of both landing opportunities today, hoping for a sudden clearing of the bad weather over KSC. The reasoning is to not waste any landing opportunities, even in the face of poor weather at KSC today. The weather at Edwards Air Force Base in California is iffy the next couple of days too, with stronger than allowed crosswinds a possibility on both Friday and Saturday. Knight wants to be ready to

give the go-ahead to land in case the weather suddenly improves or there's a small window of opportunity. The weather looked bleak at KSC on the last shuttle landing attempt back in December right up until minutes before the order to fire the shuttles engines for re-entry. A slight window of opportunity opened and against almost everyone's predictions, the shuttle landed at KSC. Web posted. (2007). [Payload bay door decision [Online]. Available WWW: <http://www.floridatoday.com> The Flame Trench blog [2007, June 21].]

June 22: Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-062207. **Mission: STS-117** - 21st International Space Station Flight (13A) - S3/S4 Truss Segment Solar Arrays; Vehicle: Atlantis (OV-104); Official Launch Date: June 8, 2007; Official Landing Date: June 22, 2007; Crew: Sturckow, Archambault, Reilly, Swanson, Forrester, Olivas and Williams. The crew of STS-117 completed its nearly two-week mission to the International Space Station today, landing at Edwards Air Force Base at 3:49 p.m. EDT. The orbiter's wheels came to a stop after 13 days, 20 hours, 12 minutes and 44 seconds in space. While docked at the station on Sunday, the crew completed a fourth and final spacewalk. During the outing, crewmembers Patrick Forrester and Steven Swanson moved a TV camera from a stowage platform to the S3 truss, verified the configuration of drive lock assembly No. 2, and removed the last six launch restraints from the solar array rotary joints. They also installed a computer network cable on the Unity node, opened the hydrogen vent valve on the Destiny laboratory, and tethered two orbital debris shield panels. On Monday, the crew transferred supplies from Atlantis to the station. On Tuesday, Atlantis undocked and executed a fly-around of the station, sending back imagery of the new configuration of the solar arrays. The space station now has four U.S. solar array wings tracking the sun through each orbit of the Earth. Later in the day, the crew completed a survey of the orbiter's thermal protection system using the shuttle arm and boom extension. At NASA's Dryden Flight Research Center at Edwards Air Force Base, Atlantis will be prepared for its ferry flight back to KSC that will occur in about one week.

Mission: STS-118 - 22nd International Space Station Flight (13A.1) - S5 Truss Segment; Vehicle: Endeavour (OV-105); Location: Orbiter Processing Facility Bay 2; Launch Date: Targeted for Aug. 9, 2007; Launch Pad: 39A; Crew: Kelly, Hobaugh, Williams, Morgan, Mastracchio, Caldwell and Drew; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 2 this week, workers successfully completed the frequency response testing of the orbiter's flight control system. Pressurization of the nose landing gear and main landing gear struts has ended. Tile work around the payload bay door hinges is under way, and the main propulsion system valves have been configured for rollout. The forward external tank/orbiter yoke (attach point) has been installed. The shuttle main engine covers are installed, and the engines are ready for the vehicle's rollover to the Vehicle Assembly Building, currently scheduled for July 2. In the Vehicle Assembly Building, transfer of External Tank No. 117 from its checkout cell to the mobile launch platform in high bay No. 1 was completed on Sunday. The hard mating of the external tank and solid rocket boosters was completed that evening. The shuttle interface test is under way, and other scheduled processing of the tank and booster stack continues.

Mission: STS-120 - 23rd International Space Station Flight (10A) - U.S. Node 2; Vehicle: Discovery (OV-103); Location: Orbiter Processing Facility Bay 3; Launch Date: Targeted for Oct. 20, 2007; Launch Pad: 39A; Crew: Melroy, Zamka, Parazynski, Wheelock, Wilson, Nespoli and Tani; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 3, aft closeout work is under way. The orbiter docking mechanism has been stowed for flight. Checkout and servicing of water spray boiler No. 1 is scheduled for

completion today. Modifications to Discovery's engine cutoff sensor wiring are complete, along with the installation of BRI tile around the main landing gear doors and external tank doors. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, June 22.]

NASA Awards Payload Processing Contract

NASA's Launch Services Program has awarded a pair of indefinite-delivery/indefinite-quantity contracts to Astrotech Space Operations in Titusville, Fla., and Spaceport Systems International in Colorado Springs, Colo. The companies will provide the necessary facilities to perform payload processing services for NASA missions launching from Vandenberg Air Force Base, Calif. The aggregate value of available firm-fixed-price orders under the two contracts could be worth up to \$35 million over a maximum of four years, which includes two 1-year options. Astrotech and Spaceport Systems International will use their respective Vandenberg facilities to support the final assembly of spacecraft and encapsulate them before they are taken to the launch pad. While processing requirements differ depending on the spacecraft and mission, they usually include final assembly and testing, integration with a third stage or adapter, propellant loading and spin balancing. Such tasks typically begin about three months before the scheduled launch. Astrotech is a subsidiary of SPACEHAB, Inc., Webster, Texas, and operates payload processing facilities in Titusville and at Vandenberg. The company was incorporated in 1984 as a commercial launch payload processor. Spaceport Systems International is in partnership with ITT Corporation, White Plains, N.Y. The company's facilities are used to process payloads for NASA and commercial interests. ["NASA Awards Payload Processing Contract," **Contract Release #C07-26**, June 22, 2007.]

NOAA recognizes KSC as a stormready community

Officials from NOAA's National Weather Service have recognized John F. Kennedy Space Center at Cape Canaveral, Fla., as a StormReady community. Home to NASA's space shuttle launch program, KSC is the first government site in the state and the eighth in the nation to be recognized as StormReady. At a special ceremony today, Scott Rayder, NOAA chief of staff, presented a recognition letter and StormReady signs to Kennedy Space Center Director, William W. Parsons. The StormReady recognition will be in effect for three years when the facility will go through a renewal process. "I am very pleased and proud to say that the Kennedy Space Center has met StormReady certification requirements. A proactive approach to hazardous weather preparedness enabled KSC to receive this status," said Parsons. "We now know we have a highly effective severe weather action plan, as well as an effective notification process for the work force when it is necessary." To be recognized as StormReady, a community must: * Establish a 24-hour warning point and emergency operations center; * Have more than one way to receive severe weather forecasts and warnings and to alert the public; * Create a system that monitors local weather conditions; * Promote the importance of public readiness through community seminars; * Develop a formal hazardous weather plan, which includes training severe weather spotters and holding emergency exercises. Web posted. (2007). [NOAA's National Weather Service Recognizes John F. Kennedy Space Center as a Stormready Community [Online]. Available WWW: <http://www.noaanews.noaa.gov/stories2007/s2882.htm> [2007, June 22].]

Shipman arrives with former astronaut, tells her side of story

It took 90 minutes for Air Force Captain Colleen Shipman to tell her side of the love triangle in the case of former astronaut Lisa Nowak's alleged attempt to kidnap her in February from an Orlando International Airport parking lot. Shipman and former astronaut Bill Oefelein left the King Reporting Office in Suntree holding hands and smiling. Neither made any comments as they got into attorney Kepler Funk's black Porsche SUV. Funk said he had told Shipman to "go in and tell the truth" this morning. Nowak told police she drove from Houston to Orlando to talk with Shipman about their mutual love interest, former shuttle pilot Oefelein. Nowak carried with her a duffle bag filled with a BB pistol, wig, trench coat, hat, knife, steel mallet, surgical rubber tubing and black plastic garbage bags. Nowak is charged with attempted kidnapping, battery and attempted vehicle burglary with a battery. Oefelein was fired from NASA last month. Nowak was fired by NASA as an astronaut in March. Nowak remains a U.S. Navy captain and Oefelein continues as a U.S. Navy commander. A status hearing is scheduled for July 29 in front of Orange County Circuit Judge Marc Lubet at 8:30 a.m. Nowak's trial is scheduled to begin Sept. 24. Web posted. (2007). [Shipman arrives with former astronaut, tells her side of story [Online]. Available WWW: <http://www.floridatoday.com/> [2007, June 22].]

June 23: Atlantis avoids early retirement – will keep flying to 2010
NASA managers have decided to manifest shuttle orbiter Atlantis with missions through to 2010, cancelling her previously planned retirement in 2008. Information gained from STS-122 - the next flight of Atlantis - processing documentation, along with the latest FAWG (Flight Assignment Working Group) manifests, confirm the addition of two further missions for the orbiter, to follow after STS-122 and her flagship STS-125 mission to service the Hubble Space Telescope. Atlantis was originally set to retire in 2008 after the Hubble mission. Given the shuttle program is due to end in 2010, the subsequent OMDP (Orbiter Maintenance Down Period) - which would have taken at least a year - it was decided her retirement in 2008 was deemed to be the best course of action. Atlantis would have remained inside an OPF (Orbiter Processing Facility) and maintained to near flight ready condition, to be used as a parts donor for her two sisters, Discovery and Endeavour. This decision has now been reversed, with Atlantis taking two missions which were previously allocated to either Discovery or Endeavour. Previously Endeavour's mission, STS-127 will deliver the final element of the Japanese Experiment Module - the EF (Exposed Facility 'Terrace') - which will be located outside the port cone of the JAXA Pressurized Module (PM) core component - set to fly with Discovery on STS-124 (April 24, 2008). The other mission Atlantis is likely to take is STS-131 (ULF4), carrying the CBC, Russian Docking Cargo Module, manifested to fly NET January 28, 2010. With this extension to Atlantis' operational lifetime, certain elements of the OMDP can still be safely carried out during pre/post-launch processing intervals. Web posted. (2007). [Atlantis avoids early retirement – will keep flying to 2010 [Online]. Available WWW: <http://www.nasaspacesflight.com/> [2007, June 23].]

June 24: Cape's Delta 4 rocket launch pad repaired
With cracks on its launch pad freshly patched up, the giant Delta 4-Heavy rocket has returned to the oceanfront complex aiming for a middle-of-the-night blastoff in late August to haul a missile observation satellite into orbit for the U.S. Air Force. The booster had rolled out to the pad once already, traveling from the assembly hangar to Cape Canaveral's Complex 37 in early January for a planned April launch on its first operational flight. Delta 4-Heavy is the biggest unmanned rocket available in the U.S. inventory today. But plans for

an early spring launch were dashed when the pad's massive table that supports the rocket cracked during a countdown dress rehearsal on February 28. Supercold liquid oxygen leaked from plumbing inside the table, enabling the frigid temperatures of the escaping cryogenic oxidizer to create small fractures in the metallic structure. "The direct cause (of the leak) was found to be a high cycle fatigue failure in the flexible bellows sections of the vacuum-jacketed liquid oxygen fill and drain lines in the launch table. This suggests these cracks may have resulted from flow-induced vibrations in the lines," according to information provided by the Launch and Range Systems Wing at the Air Force's Space and Missile Systems Center. While the cracks didn't put the rocket in jeopardy, the Launch and Range Systems Wing said, repairs had to be made before the mission could lift off. At the end of March, crews removed the United Launch Alliance rocket from the pad and put it in temporary storage within the nearby hangar while repairs were made to the table and fuel lines. Two locations on the table had sustained the structural cracks - in the starboard and center bays below those two rocket stages, where the liquid oxygen equipment is situated - and each fracture had several "spider" cracks that were much smaller in length. Engineers implemented repair plans to restore the pad and remove the troublesome fuel lines. In addition, new safeguards to prevent such a problem from repeating in the future are being formed. With the repairs completed and the launch complex once again ready to welcome a rocket, the Delta 4-Heavy rode horizontally to the pad aboard a diesel-powered transporter last Monday, June 18. The pad's erector system powered by hydraulic pistons lifted the rocket vertically atop the pad table on Tuesday. If all goes well, liftoff is targeted for August 28 during a window extending from approximately 2:37 to 4:30 a.m. EDT (0637-0830 GMT). Web posted. (2007). [Cape's Delta 4 rocket launch pad repaired [Online]. Available WWW: <http://www.spaceflightnow.com/> [2007, June 24].]

June 25: Atlantis heading home Friday

Atlantis is set to start her cross-country piggyback ride back to Florida on Friday, returning back at KSC just as Endeavour starts rolling over to the Vehicle Assembly Building (VAB). Atlantis is currently undergoing a level of post flight processing at the Edwards Air Force Base, following her return to Earth last Friday. Among the usual cleaning up of remaining propellants from the orbiter's engines, engineers are carrying out a full repair to the port OMS Pod blanket - ahead of the flight - after the EVA-3 repaired joint came slightly loose during Friday's return. Web posted. (2007). [Atlantis heading home Friday - ISS may need to avoid Chinese debris [Online]. Available WWW: <http://www.nasaspaceflight.com/> [2007, June 25].]

June 26: NASA Establishes New Office to Study Cosmic Phenomena

NASA has created a new office to study in more detail some of the universe's most exotic phenomena: dark energy, black holes and cosmic microwave background radiation. The new Einstein Probes Office will facilitate NASA's future medium-class science missions to investigate these profound cosmic mysteries. The office will be housed in the Beyond Einstein Program Office at NASA's Goddard Space Flight Center, Greenbelt, Md. ["NASA Establishes New Office to Study Cosmic Phenomena," **NASA News Release #07-143**, June 26, 2007.]

'We're returning to the moon'

U.S. Sen. Mel Martinez on Monday pledged to help minimize the time between the end of NASA's shuttle program and the first flights of new Apollo-style spacecraft. In a news

conference after meeting with Kennedy Space Center officials, Martinez said a gap longer than the five-year hiatus now envisioned would be devastating to the state of Florida. "The economic impact that (KSC) has on the region's economy -- and I'm not just talking about Cocoa and the surrounding areas, I'm talking about all of Central Florida and frankly, all of Florida -- would be dramatic. It would be stark," said Martinez, R-Orlando. "And so what we need to do is make sure that we continue to be there and fight for the program. . . to ensure that the worst-case scenario doesn't happen. We don't want to get there." A six-year hiatus in U.S. human space flight between the close of the Apollo program in 1975 and the first shuttle flight in 1981 triggered a severe economic depression in Brevard County. The local economy now is much more diversified, but KSC remains the area's largest employer with about 14,500 civil service and contractor workers. That number, however, is expected to drop significantly after the shuttle fleet is retired in 2010. NASA won't need nearly as many people to operate the Orion spacecraft. Martinez said he and NASA officials did not discuss the number of jobs that might be lost. Web posted. (2007). ['We're returning to the moon' [Online]. Available WWW: <http://www.floridatoday.com> [2007, June 26].]

NASA aims to launch Endeavour 2 days early

NASA aims to move up the planned launch of shuttle Endeavour to Aug. 7 while Atlantis is headed for a weekend return to Kennedy Space Center. Now scheduled for Aug. 9, the launch of Endeavour on an International Space Station construction mission will mark the orbiter's first flight since 2002. Shuttle managers are expected to move the target date during a meeting Thursday. NASA plans to move Endeavour from its processing hangar to the 52-story Vehicle Assembly Building next Monday, three days early. The fully assembled shuttle is set to be rolled out to Pad 39A about July 9. Atlantis, meanwhile, appears to have come through its station assembly mission relatively unscathed. Inspectors found just 10 heat-shield tiles with gouges greater than an inch long. Technicians this week are preparing Atlantis for a ferry flight back to KSC. The orbiter landed Friday at Edwards Air Force Base in California because of bad weather at the Cape. Atlantis will be bolted to the top of a modified 747 jet, which is to leave Edwards on Friday. The trip probably will take at least two days. Web posted. (2007). [NASA aims to launch Endeavour 2 days early [Online]. Available WWW: <http://www.floridatoday.com> [2007, June 26].]

June 27: NASA's Shuttle Endeavour Set for Move to VAB

In preparation for the STS-118 mission to the International Space Station, NASA is scheduled to rollover space shuttle Endeavour from its hanger, the Orbiter Processing Facility, to the Kennedy Space Center's Vehicle Assembly Building on Monday, July 2. In the Vehicle Assembly Building, crews will mate Endeavour to its external fuel tank and twin solid rocket boosters. The next milestone for Endeavour is the 3.4-mile rollout to Launch Pad 39A, planned for July 11. Endeavour is targeted for launch in early August. During the 11-day mission to the station, Endeavour's crew of seven astronauts will add the Starboard 5 (S5) segment to the right side of the station's backbone, or truss, deliver 5,000 pounds of supplies and conduct repairs. The mission will be Endeavour's first flight in more than four years. The shuttle has undergone extensive modifications, including the addition of safety upgrades already added to shuttles Discovery and Atlantis. Endeavour also features new hardware, such as the Station-to-Shuttle Power Transfer System that will allow the docked shuttle to draw electrical power from the station and extend its visits to the orbiting lab. ["NASA's Shuttle Endeavour Set for Move to Vehicle Assembly Building," **NASA Media Advisory #M07-76**, June 27, 2007.]

Expendable Launch Vehicle Status Report

Expendable Launch Vehicle Status Report #ELV-062707. **Mission: Dawn;** Location: Astrotech Space Operations Facility; Launch Pad: 17-B; Launch Vehicle: Delta II 7925-H; Launch Date: July 7, 2007; Launch Time: 4:09:31 - 4:36:22 p.m. EDT. In preparation for the upcoming July 3 Flight Readiness Review, the mission team is working to resolve several issues. These include engineering checkouts and analysis on solid rocket motor attachment points strength; cork insulation repair; battery replacement; and additional technical checkouts of the launch vehicle. Managers also are ensuring that all tracking elements will be in place to support the July 7-11 launch window. The Dawn spacecraft arrived at Pad 17-B this morning and was hoisted atop the Delta II launch vehicle. The Flight Program Verification, an integrated test to verify that the launch vehicle and the spacecraft are working together, is scheduled for June 29. The fairing will be installed around the Dawn spacecraft atop the rocket on July 1. **Mission: Phoenix;** Location: Payload Hazardous Servicing Facility; Launch Pad: 17-A; Launch Vehicle: Delta II 7925; Launch Date: Aug. 3, 2007; Launch Time: 5:35:18 a.m. EDT. The solar array lighting test and installation of the spacecraft parachute are complete. Spacecraft fueling is scheduled for July 2-3. Spin balance testing is scheduled for July 11-12. At Pad 17-A, the attachment of the nine solid rocket boosters to the Delta II first stage is complete. Hoisting of the second stage atop the first stage is scheduled for June 28. Web posted. (2007). [NASA's Expendable Launch Vehicle Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/launchingrockets/status/2007/index.html> [2007, June 27.]

Rocket has life-saving mission

NASA plans to use a powerful rocket to get astronauts on its new spaceship to safety if an emergency forces the mission to be aborted as the vehicle heads to orbit. A computer system at Mission Control would be able to fire a rocket that would hurl the crew capsule out of harms' way, said Greg Stover, NASA's launch-abort system manager. The U.S. spacecraft to boast such a system was the Apollo, which carried me to the moon. For several seconds, the crew would feel crushed by a force 15 times that of gravity. By comparison, passengers on amusement park rides feel pressures of two to three times the force of gravity. Harrowing as the ride may be, the \$500 million abort rocket is designed to make the new spaceship – a silo-shaped capsule called the Orion – a safer vehicle than the space shuttle. The Orion is supposed to take astronauts to orbit and the moon after the shuttle's retirement, scheduled for 2010. ["Rocket has life-saving mission," **Florida Today**, June 27, 2007, p 3B.]

June 29: Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #062907. **Mission: STS-117** - 21st International Space Station Flight (13A) - S3/S4 Truss Segment Solar Arrays; Vehicle: Atlantis (OV-104); Official Launch Date: June 8, 2007; Official Landing Date: June 22, 2007; Crew: Sturckow, Archambault, Reilly, Swanson, Forrester, Olivas, Anderson and Williams. At NASA's Dryden Flight Research Center at Edwards Air Force Base in California, Atlantis has undergone a week of preparation for its ferry flight back to KSC aboard the shuttle carrier aircraft. This modified Boeing 747 airplane transports the orbiter in piggyback fashion. The first opportunity for the flight is Saturday and will be dependent on weather conditions across the country. **Mission: STS-118** - 22nd International Space Station Flight (13A.1) - S5 Truss Segment ; Vehicle: Endeavour (OV-105); Location: Orbiter Processing Facility Bay 2;

Launch Date: Targeted for Aug. 7, 2007; Launch Pad: 39A; Crew: Kelly, Hobaugh, Williams, Morgan, Mastracchio, Caldwell and Drew; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 2, Endeavour is undergoing final preparations for rollover to the Vehicle Assembly Building early on Monday, with the orbiter's mating to the transporter scheduled for Saturday. During the week, workers completed functional testing of the payload bay doors, closed them for flight and removed the strongbacks, which are metal structures that allow for the movement of the doors. The main landing gear and nose landing gear tires are pressurized for flight. The forward, mid and aft sections of the orbiter are closed out for flight. The orbiter's weight and center of gravity are being measured today. In the Vehicle Assembly Building, processing of the STS-118 external tank and solid rocket boosters continues. This weekend, platforms will be configured for the orbiter mate. **Mission: STS-120** - 23rd International Space Station Flight (10A) - U.S. Node 2; Vehicle: Discovery (OV-103); Location: Orbiter Processing Facility Bay 3; Launch Date: Targeted for Oct. 20, 2007; Launch Pad: 39A; Crew: Melroy, Zamka, Parazynski, Wheelock, Wilson, Nespoli and Tani; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 3, aft closeout work is under way. Checkout of the hydraulic system for water spray boiler No. 1 is finished. Testing is in progress on the auxiliary power units, as well as the external tank doors for proper closure and fit. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, June 29.]

During June: Dueling Dates

NASA exploration engineers are working to a September 2013 initial operating capability (IOC) for the Orion crew vehicle, defined as a full-up flight with a crew to the International Space Station for rendezvous, proximity operations, at least one docking and other orbital shakedown tests. But at current funding levels, there is only a 50-50 chance of making that date. The odds improve to two out of three if the date is March 2015. That's when Administrator Michael Griffin has been telling Congress the Orion can fly at the funding level set for Fiscal 2007 under a continuing resolution adopted after lawmakers fell behind in their appropriations process. Scott Horowitz, the associate administrator for exploration systems, says the first flight would advance roughly one month for every \$100 million that can be brought forward in the budget. But it still will take about three years to build flight hardware, so the IOC date is a moving target highly dependent on test results. ["Dueling Dates," **Aviation Week & Space Technology**, June 11, 2007, p 23.]

Commercial Space

Three more companies have signed up with NASA to take part in the Commercial Orbital Space Transportation System (COTS) program, which is spending almost \$500 million in seed money to spur a private-sector route to the International Space Station. SpaceDev, Spacehab and Constellation Services International won't get any of that money, which has already been split between SpaceX and Rocketplane Kistler. But the three entrepreneurial space businesses will get information from NASA on the U.S. space agency's requirements for the COTS program, including NASA's human-rating criteria. Under the non-reimbursable Space Act agreements, all three companies will work on building and flying cargo vehicles to low Earth orbit and SpaceDev will also try to develop human-rated transport. NASA has already signed unfunded COTS agreements with Transformational Space Corp. and PlanetSpace Inc. "Now there are a total of five private companies

cooperating with NASA by dedicating entirely private funding to help establish a robust commercial space transportation industry,” says Scott Horowitz, associate administrator for exploration systems. [“Commercial Space,” Aviation Week & Space Technology, June 25, 2007, p 17.]

JULY

July 1: No speeding tickets at KSC

Deputized Kennedy Space Center security officers have been ordered not to issue state traffic tickets to spaceport workers caught speeding on the government compound. About 22 deputized security officers, employed by contractor Space Gateway Support, were told in a May 22 memo from center director Bill Parsons' office they could only give speeding motorists a less-severe KSC ticket. Those tickets must be signed by the worker's supervisor and returned, but carry no fine or other penalties. County court records show 43 Florida Uniform Traffic Citations were headed out in May. The number of state tickets issued peaked at 138 in October before beginning to fall. "It's an authority issue. We're not here to enforce state law," space center director of external relations Lisa Malone said of the private security force, some of whom have been deputized by the county sheriff as law enforcement officers. "They should pay attention to protecting NASA assets." NASA officials have met twice with Sheriff Jack Parker about undeputizing the 22 security officers, who alone have authority to issue state citations on the government installation. The total spaceport security force is about 320 officers, who are authorized to carry weapons. ["No speeding tickets at KSC," **Florida Today**, July 2, 2007, p 1A & 5A.]

July 2: Release of Public Information to the Media

As Kennedy Space Center's (KSC's) high-profile achievements continue to capture the attention of the world, NASA's launch operations center receives thousands of public information requests from the media each year. These range from simple requests, such as interviewing an engineer or taking up-close photos of a Space Shuttle, to more intensive requests like gaining escorted access to a high-security area. It's important that employees understand that NASA desires a culture of openness. Consistent with NASA's policy on the release of information to the media, available at www.nasa.gov/communication policy, employees may speak to the press and the public about their work. The policy explains many ways to offer the best communication in sharing NASA's message with the public. NASA employees who receive a request from a media representative should coordinate with KSC's News Center at 321-867-2468 so that our Public Affairs Officers can help in providing the most appropriate information concerning NASA activities at the Center. Contractor employees should work with their companies' public affairs offices. Public Affairs Representatives must be on hand during media visits to KSC primarily for safety and security reasons. They also facilitate discussions between employees and media but do not tell employees what to say. The Agency's policy on releasing information guarantees that NASA employees may share their conclusions with the media but requires that they draw a distinction between professional conclusions and personal views that may go beyond the scope of their specific technical work or beyond the range of the Agency. As NASA Administrator Mike Griffin said, "Decisions concerning the newsworthiness of the numerous activities within NASA must be made and carried out in a coordinated fashion, but with views from all parties considered." We remain committed to the standard of open communication across KSC. E-mail distribution. (2007). [Parsons, W. W. Re: "Release of Public Information to the Media" [Electronic]. **CD Comm #2007-11**, [July 2, 2007].]

NASA delays Atlantis' return

To avoid the risk of flying through a thunderstorm, NASA officials kept Atlantis in Kentucky Monday night. The shuttle, and the 747 ferrying it, will attempt to leave Fort

Campbell early this morning. It is scheduled to arrive at Kennedy Space Center at 8:30 a.m. Weather permitting, the 747 carrying Atlantis will fly up the beach low enough for the public to see. "Our intention is to fly up the beach to share the orbiter and carrier," NASA spokeswoman Jennifer Tharpe said Monday. Pilots traditionally have flown from about the Pineda Causeway to Kennedy Space Center. Bad weather still could delay the takeoff from Fort Campbell, Ky., or force the shuttle to head directly for the landing strip at KSC. Meanwhile, at KSC, Endeavour was rolled into the Vehicle Assembly Building where today it likely will be mated to external fuel tanks and solid rocket boosters. Several hundred technicians, engineers and managers lined the roadway between Orbiter Processing Facility Bay No. 2 and the 52-story assembly building during the quarter-mile move, which began about 7:25 a.m. Mounted atop a 76-wheel transporter, the orbiter entered the assembly building about 45 minutes later. ["NASA delays Atlantis return," **Florida Today**, July 3, 2007, p 1B.]

July 3: Expendable Launch Vehicle Status Report

Expendable Launch Vehicle Status Report #ELV-070307. **Mission: Dawn**; Launch Pad: 17-B; Launch Vehicle: Delta II 7925-H; Launch Date: July 7, 2007; Launch Time: 4:09:31 - 4:36:22 p.m. EDT. The flight readiness review was completed on Tuesday. All technical issues were cleared. Mission managers will hold a teleconference on Wednesday to discuss the availability of telemetry assets. If it is determined there are sufficient aircraft and ship assets available, the team will proceed with propellant loading on Thursday. Web posted. (2007). [NASA's Expendable Launch Vehicle Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/launchingrockets/status/2007/index.html> [2007, July 3.]

July 5: Competition for Columbia memorial is downplayed

Memorials to the seven fallen Columbia astronauts abound across the East Texas debris field, from a makeshift log cross near Hemphill to a park in Lufkin. What doesn't exist nearly 4 1/2 years after the shuttle disintegrated upon re-entry is a formal national monument. That's something U.S. Rep. Louie Gohmert, R-Tyler, wants to rectify with a resolution that has passed the House and awaits action by a Senate committee. House Resolution 807, similar to one that passed the Senate during the past session, would instruct the Interior Department to study where to erect one or more National Park Service monuments to the astronauts and recovery workers. The bill specifies four locations — Hemphill, San Augustine, Lufkin and Nacogdoches — but leaves open other possibilities. A memorial could be set at one site or several. Most of the human remains were found near Hemphill in Sabine County. Nacogdoches saw myriad pieces of shuttle falling on streets, buildings and yards. Lufkin hosted the first command center, and San Augustine was the central staging area for debris pickup. The National Park Service opposed the bill, asking instead that a \$250,000 study be authorized to determine where a memorial should go. Senators agreed, but the revised measure never made it to President Bush's desk. Web posted. (2007). [Competition for Columbia memorial is downplayed [Online]. Available WWW: <http://www.chron.com/> [2007, July 5].]

NASA Postpones Dawn Spacecraft Launch

Saturday's scheduled launch of NASA's Dawn spacecraft aboard a United Launch Alliance Delta II rocket has been postponed 24 hours. A lightning advisory early Thursday interrupted fueling of the Delta II second stage rocket. Also, the temperature of the vehicle's

second stage was too warm for the fueling process to begin. However, the fairing temperature has been lowered so that another attempt can be made Friday, July 6, pending acceptable weather. Dawn's launch countdown dress rehearsal is now scheduled for Friday. The launch window on Sunday, July 8, extends from 4:04 p.m. to 4:33 p.m. EDT. Weather for launch still may be an issue with a 60% chance of it not meeting launch criteria on Sunday. ["NASA Postpones Dawn Spacecraft Launch," **NASA Media Advisory #M07-082**, July 5, 2007.]

July 6: Dawn Launch Moves To No Earlier Than Monday July 9
The launch of NASA's Dawn spacecraft aboard a Delta II rocket has been rescheduled to no earlier than Monday, July 9. Because of difficulties with a downrange telemetry aircraft and the availability of a tracking ship, a launch attempt cannot be made before that time. Also, Friday's weather forecast raised the possibility that the loading of propellants aboard the Delta II rocket's second stage might not be completed in time to support a launch before Monday. The launch window for Monday is 3:56 p.m. to 4:25 p.m. EDT. According to weather forecasts, there is a 40 percent chance of unfavorable conditions for launch. ["Dawn Launch Moves To No Earlier Than Monday July 9," **NASA Media Advisory #M07-083**, July 6, 2007.]

Shuttle Endeavour to Move to Pad, Crew Ready for Countdown Test

NASA's space shuttle Endeavour is targeted to roll out to Launch Pad 39A at NASA's Kennedy Space Center, Fla., on Tuesday, July 10, as preparations for the STS-118 mission continue. First motion of Endeavour is scheduled for 12:01 a.m. EDT. After rollout, the next milestone will be a July 16-19 dress rehearsal of launch, which includes a practice countdown. Endeavour is targeted to lift off Aug. 7 on an 11-day mission to the International Space Station. The fully assembled space shuttle, consisting of the orbiter, external tank and twin solid rocket boosters, will be mounted on a Mobile Launcher Platform and delivered to the pad atop a crawler transporter. The crawler will travel slower than 1 mph during the 3.4-mile journey. The process is expected to take approximately six hours. The July 16-19 event, known as the Terminal Countdown Demonstration Test, will feature astronauts and ground crews participating in a launch dress rehearsal. The test provides the crew of each shuttle mission with an opportunity to practice various simulated countdown activities, including equipment familiarization and emergency egress training. ["Shuttle Endeavour to Move to Pad, Crew Ready for Countdown Test," **NASA Media Advisory #M07-084**, July 6, 2007.]

Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-070607. **Mission: STS-118** - 22nd International Space Station Flight (13A.1) - S5 Truss Segment; Vehicle: Endeavour (OV-105); Location: Vehicle Assembly Building; Launch Date: Targeted for Aug. 7, 2007; Launch Pad: 39A; Crew: Kelly, Hobaugh, Williams, Morgan, Mastracchio, Caldwell and Drew; Inclination /Orbit Altitude: 51.6 degrees/122 nautical miles. On Monday morning, Endeavour rolled from Orbiter Processing Facility bay No. 2 to the Vehicle Assembly Building. On Tuesday, the orbiter was transferred via crane from the VAB transfer aisle to high bay No. 1 and attached to the external fuel tank/solid rocket booster stack. Mating and launch processing operations are under way in preparation for a rollout to Launch Pad 39A, which is currently targeted for no earlier than July 10. The STS-118 payload will be transferred to Launch Pad

39A early Saturday, weather permitting. **Mission: STS-120** - 23rd International Space Station Flight (10A) - U.S. Node 2; Vehicle: Discovery (OV-103); Location: Orbiter Processing Facility Bay 3; Launch Date: Targeted for Oct. 20, 2007; Launch Pad: 39A; Crew: Melroy, Zamka, Parazynski, Wheelock, Wilson, Nespoli and Tani; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 3, aft closeout work continues. The orbiter boom sensor system, which is the 50-foot robotic arm extension, was delivered to the bay this week and is being installed today. Floodlight electronic assemblies No. 1 and 2 were installed and mated this week. These units control the lights in the payload bay. Testing of the auxiliary power units is complete, along with testing of the external tank doors for proper closure and fit. **Mission: STS-122** - 24th International Space Station Flight (1E) - Columbus Module; Vehicle: Atlantis (OV-104); Location: Orbiter Processing Facility Bay 1; Launch Date: Targeted for Dec. 6, 2007; Launch Pad: 39A; Crew: Frick, Poindexter, Schlegel, Eyharts, Love, Melvin and Walheim; Inclination /Orbit Altitude: 51.6 degrees/122 nautical miles. Atlantis returned to Kennedy Space Center from the Dryden Flight Research Center landing site on Tuesday at 8:24 a.m. aboard the Shuttle Carrier Aircraft, a modified Boeing 747 airplane. The orbiter was demated from the aircraft and towed to Orbiter Processing Facility bay 1, arriving just after 5 p.m. on Wednesday following several weather delays. Operations are under way to remove the tail cone, which was installed for protection during the ferry flight. Window inspections are complete and soft covers have been installed. Workers are inspecting the orbiter's thermal protection system, including the wing leading edge reinforced carbon-carbon panels, as well as the chin panel and nose cap. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, July 6.]

That's some toilet: NASA pays \$19M for a new loo

In space, a loo costs a lot. NASA has agreed to pay \$19 million for a Russian-built toilet system for the international space station. The figure may sound astronomical for a toilet in space, but NASA officials said it was cheaper than building their own. "It's akin to building a municipal-treatment center on Earth," NASA spokeswoman Lynnette Madison said Thursday, explaining the cost of the new toilet system. Web posted. (2007). [That's some toilet: NASA pays \$19M for a new loo [Online]. Available WWW: <http://www.orlandosentinel.com/> [2007, July 6].]

July 7: NASA Mission to Asteroid Belt Rescheduled For September Launch

The launch of NASA's Dawn spacecraft, a mission that will explore the two largest objects in the asteroid belt in an effort to answer questions about the formation of our solar system, has been rescheduled to September. The decision was made Saturday to move the launch to September after careful review by NASA's Science Mission Directorate officials, working with Dawn mission managers, the Dawn principal investigator, and with the concurrence of the NASA Administrator. Primary reasons for the move were a combination of highly limited launch opportunities for Dawn in July and the potential impact to launch preparations for the upcoming Phoenix Mars Lander mission, set for early August. A September launch for Dawn maintains all of the science mission goals a July launch would have provided. ["NASA Mission to Asteroid Belt Rescheduled For September Launch," NASA News Release #07-150, July 7, 2007.]

July 9: Mars probe will search for evidence of underground ice

NASA will soon send a robotic craft to the north pole of Mars to land and dig for evidence of underground ice and signs of chemical activity linked to micro-organisms. The Phoenix lander is scheduled to lift off from Cape Canaveral Air Force Station, Fla., on Aug. 3 during the pre-dawn, scientists said Monday. The \$420 million mission was designed to verify that readings of high hydrogen concentrations, made five years ago by NASA's Odyssey spacecraft, come from ice underground. While the Martian terrain appears to be desert-like on a global scale, the readings suggest the ice content of the soil at the north and south poles could be as much as 50 percent. Phoenix is equipped with an 8-foot robot arm that can dig nearly 2 feet into the soil. Samples from the excavations will be vaporized in an oven aboard the lander so that instruments can measure combinations of carbon, hydrogen, oxygen and other elements known as organic chemicals that are linked to bacterial activity. Web posted. (2007). [Mars probe will search for evidence of underground ice [Online]. Available WWW: <http://www.chron.com/> [2007, July 9].]

Engineers staff stations for shuttle rollout

A team of NASA and contractor engineers have reported for duty at Kennedy Space Center tonight as preparations for shuttle Endeavour's move to its oceanside launch pad continue at the nation's prime spaceport. A call-to-stations took place at KSC as scheduled at 8 p.m., and the team launched into final preparations for the 3.5-mile move from the Vehicle Assembly Building to launch pad 39A. First motion remained scheduled for 12:01 a.m., and it appears the weather is clear at this point. Web posted. (2007). [Engineers staff stations for shuttle rollout [Online]. Available WWW: <http://www.floridatoday.com/> The Flame Trench blog [2007, July 9].]

July 10: Endeavour rollout moved to 10 p.m. tonight

Shuttle Endeavour's move to the launch pad is being pushed back to 10 p.m. tonight due to bad weather that is expected to be in the Kennedy Space Center area early today. Endeavour had been slated to roll out to launch pad 39A at midnight, but the 3.5-mile move was rescheduled for 3 a.m. NASA managers then delayed the trip until tonight because the weather forecast called for rain during the time the shuttle would have been traveling to the pad from the Vehicle Assembly Building. Call-to-stations for the rollout will be at 6 p.m. The delay is not expected to push back a planned Aug. 7 launch. Web posted. (2007). [Endeavour rollout moved to 10 p.m. tonight [Online]. Available WWW: <http://www.floridatoday.com/> The Flame Trench blog [2007, July 10].]

16% of union members cross picket lines as USA strike continues

About 16 percent of the space shuttle program workers at Kennedy Space Center who are part of a striking union have crossed the picket lines and continued working, according to NASA contractor United Space Alliance. Ninety-three workers in the 570-member International Association of Machinists and Aerospace Workers Local 2061 are not participating in the strike against United Space Alliance, the company said. "There's all kinds of motivations that drive people across the picket lines," Local 2061 President Lew Jamieson said Monday. "Some have financial considerations, and some don't understand what we're trying to accomplish here." On Friday, those on strike started collecting \$150 weekly financial assistance checks from a union fund. They have struck since June 14, and there is no end in sight, officials said. Also, many of the strikers have found temporary jobs to help

make ends meet. Web posted. (2007). [16% of union members cross picket lines as USA strike continues [Online]. Available WWW: <http://www.floridatoday.com/> [2007, July 10].]

NASA aims for Sept. 7 launch of Dawn probe

NASA is aiming to launch its Dawn spacecraft in early September and will have about six weeks to get the \$450 million mission to the asteroid belt under way, officials said Monday. The next window of opportunity -- Sept. 7 through about Oct. 17 -- also sets NASA up for a morning liftoff, avoiding the seasonal afternoon thunderstorms that hampered efforts to launch this month. "Everything looks good for September," said Kurt Lindstrom, program executive for solar system exploration at NASA Headquarters in Washington, D.C. "We don't see any impediments to a launch on Sept. 7." The \$267 million spacecraft is destined to become the first to orbit two planetary bodies, the asteroids Vesta and Ceres. But the robotic explorer must be launched when the planets are properly aligned for an 8-year journey through the inner solar system. Thunderstorms and problems with a tracking ship and aircraft forced NASA to skip afternoon launch opportunities last Saturday, Sunday and Monday. Typical summer weather patterns were expected to continue the next couple of weeks, so NASA gave up on five afternoon launch opportunities between next Sunday and July 19. The Dawn delay clears the way for NASA to focus on the planned Aug. 3 launch of the Mars Lander Phoenix. That spacecraft must be launched by Aug. 24 to put it in course for an arrival next May on the icy north pole of the red planet. Web posted. (2007). [NASA aims for Sept. 7 launch of Dawn probe [Online]. Available WWW: <http://www.floridatoday.com/> [2007, July 10].]

July 11: Scolese to Succeed Geveden as NASA Associate Administrator
NASA Associate Administrator Rex Geveden announced Wednesday that he will leave the agency at the end of July to join Teledyne Technologies as the president of Teledyne Brown Engineering, Huntsville, Ala. NASA Administrator Michael Griffin has selected Christopher Scolese to succeed Geveden as associate administrator, the No. 3 position in the agency. Scolese, who currently serves as NASA's chief engineer, joined the space agency in 1987. He also has served as deputy director of the Goddard Space Flight Center in Greenbelt, Md., and deputy associate administrator in the Office of Space Science, where he directed NASA's space science flight program, mission studies, technology development and overall contract management of the Jet Propulsion Laboratory in Pasadena, Calif. ["Scolese to Succeed Geveden as NASA Associate Administrator," **NASA News Release #07-152**, July 11, 2007.]

Space Shuttle Endeavour Moves to Launch Pad

Space shuttle Endeavour completed a 3.4-mile journey to launch pad 39A at NASA's Kennedy Space Center, Fla., on Wednesday shortly after 3 a.m. EDT. After a one-day weather delay, Endeavour left Kennedy's Vehicle Assembly Building at 8:10 p.m., Tuesday, traveling at less than 1 mph atop a massive crawler-transporter. While at the pad, the shuttle will undergo final testing, payload installation and a "hot fire" test of auxiliary power units. After final testing, the rotating service structure will be moved around the vehicle to protect it from the elements. Endeavour is targeted to lift off Aug. 7 on an 11-day STS-118 mission to the International Space Station. Endeavour's crew includes Commander Scott Kelly, Pilot Charlie Hobaugh and mission specialists Tracy Caldwell, Rick Mastracchio, Barbara Morgan, Alvin Drew and Canadian Space Agency astronaut Dave Williams. The crew is due to arrive at Kennedy's Shuttle Landing Facility at approximately 7 p.m. on July 16 to participate in the

Terminal Countdown Demonstration Test, a launch dress rehearsal. ["Space Shuttle Endeavour Moves to Launch Pad," **NASA News Release #07-153**, July 11, 2007.]

Nation loses its Lady Bird

Lady Bird Johnson, the former first lady who championed conservation and worked tenaciously for the political career of his husband, Lyndon B. Johnson, died Wednesday, a family spokeswoman said. She was 94. Mrs. Johnson and her daughter, Mrs. Charles Robb, visited Kennedy Space Center in November 1968. In addition to viewing the nation's space exploration launch facilities, the First Lady presented achievement awards and service medals to KSC personnel and organizations for outstanding service to NASA. ["First Lady to Visit Spaceport," **Spaceport News**, November 21, 1968, p 1. "Nation loses its Lady Bird," **Florida Today**, July 12, 2007, p 1A & 5A.]

July 13:

Scott Horowitz Announces Departure from NASA

Scott J. "Doc" Horowitz, associate administrator for NASA's Exploration Systems Mission Directorate, has announced plans to leave the agency in October. Horowitz, a retired U.S. Air Force colonel who served as commander or pilot on four space shuttle missions, now leads NASA's efforts to develop the new family of spacecraft that will return astronauts to the moon by 2020. Horowitz is stepping down for personal reasons. ["Scott Horowitz Announces Departure from NASA," **NASA News Release #07-154**, July 13, 2007.]

Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-071307. **Mission: STS-118** - 22nd International Space Station Flight - S5 Truss Segment; Vehicle: Endeavour (OV-105); Location: Launch Complex 39A; Launch Date: Targeted for Aug. 7, 2007; Crew: Kelly, Hobaugh, Williams, Morgan, Mastracchio, Caldwell and Drew; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. Shortly after 8 p.m. Monday, Endeavour rolled out of the Vehicle Assembly Building, arriving at Launch Pad 39A about seven hours later. Connection of the shuttle and mobile launch platform systems to the pad systems immediately began, and validation of the systems is complete. A test firing of the auxiliary power units on the orbiter showed that they operated normally. Following this hot fire test, the rotating service structure was moved into the mate position, wrapping around the orbiter to provide weather protection and access for workers. Checkouts of the shuttle systems are under way. The hydraulic main engine and aerosurface frequency response test is complete. The orbiter payload bay doors will be opened tonight, with payload installation scheduled for Sunday. **Mission: STS-120** - 23rd International Space Station Flight - U.S. Node 2; Vehicle: Discovery (OV-103) Location: Orbiter Processing Facility Bay 3; Launch Date: Targeted for Oct. 20, 2007; Launch Pad: 39A; Crew: Melroy, Zamka, Parazynski, Wheelock, Wilson, Nespoli and Tani; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 3, checkout of the flash evaporator system heater is complete. Testing of the engine cutoff sensor system, payload pre-mate testing and rigging of the latching mechanism for the orbiter boom sensor system are all under way. Workers are preparing the orbiter for installation of two of the three engines, scheduled for this weekend. Stacking of the STS-120 solid rocket boosters in the Vehicle Assembly Building is scheduled to begin next week. **Mission: STS-122** - 24th International Space Station Flight - Columbus Laboratory Module; Vehicle: Atlantis (OV-104); Location: Orbiter Processing Facility Bay 1; Launch Date: Targeted for Dec. 6, 2007; Launch Pad: 39A; Crew: Frick, Poindexter, Schlegel, Eyharts, Love, Melvin and Walheim; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In

Orbiter Processing Facility bay No. 1, overall inspection of the orbiter's thermal protection system is about 80 percent complete. This includes thermography inspection of the left and right wing reinforced carbon-carbon panels, along with the chin panel and nose cap. The main landing gear tires have been removed, the strongbacks were installed on the payload bay doors, and the doors have been opened. The forward reaction control system thruster and vernier inspection began this week, as did removal of the main engine dome heat shields. Preparations for engine removal are under way. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, July 13.]

Expendable Launch Vehicle Status Report

Expendable Launch Vehicle Status Report #ELV-071307. **Mission: Phoenix**; Location: Payload Hazardous Servicing Facility; Launch Pad: 17A; Launch Vehicle: Delta II 7925; Launch Date: Aug. 3, 2007; Launch Time: 5:35:18 a.m. EDT; Engineers successfully performed the spin testing of Phoenix this week. Mating of Phoenix to the upper-stage booster is scheduled for July 17. Final installation of the heat shield onto the cruise stage will occur July 18. Phoenix will be transported to Pad 17A and mated to the Delta II on July 23. **Mission: Dawn**; Location: Pad 17-B; Launch Pad: 17B; Launch Vehicle: Delta II 7925-H; Launch Timeframe: September. Dawn remains atop the Delta II launch vehicle at Pad 17B. The spacecraft will be removed from the launch vehicle and returned to a payload processing facility late next week. Program managers are working to determine a specific launch date based on the launch window for the mission's science objectives, the availability of the Eastern Range, and the necessary tracking, data and telemetry support. Web posted. (2007). [NASA's Expendable Launch Vehicle Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/launchingrockets/status/2007/index.html> [2007, July 13.]

House committee approves NASA budget

The House Appropriations Committee passed on Thursday an appropriations bill that includes \$17.6 billion for NASA, nearly \$300 million more than originally requested. The full committee approved the Commerce, Justice, and Science appropriations bill during a hearing Thursday in largely the same form that an appropriations subcommittee approved in June. The bill fully funds key exploration projects like Orion and Ares 1, but adds additional money for space science, education, and aeronautics programs. The bill is somewhat different from the Senate's version, which the Senate Appropriations Committee passed in late June; the Senate's version increases NASA's overall budget by \$150 million and has different funding levels for specific programs. Both the full House and Senate have yet to act on the spending bills, which will later have to be reconciled in a conference committee. Web posted. (2007). [House committee approves NASA budget [Online]. Available WWW: <http://www.spacetoday.net/> [2007, July 13.]

Houston, we have a shuttle typo

NASA scrambled someone out to pad 39A with a new sign that has the orbiter Endeavour's name spelled correctly, and then posted a photo at the Kennedy Space Center's web site. When the shuttle was rolled out to its seaside launch complex Wednesday, one item was missing: the "u" in Endeavour. The orbiter is named after HM Bark Endeavour, the ship commanded by 18th century explorer James Cook; the name also honored Endeavour, the Command Module of Apollo 15. This is why the name is spelled in the British English

manner, according to Answers.com. Web posted. (2007). [House committee approves NASA budget [Online]. Available WWW: <http://www.floridatoday.com/> [2007, July 13].]

Endeavour unscathed in hail storm

A hailstorm that swept across Kennedy Space Center missed shuttle Endeavour, avoiding a possible repeat of the February hailstorm that caused a three-month delay in the launch of Atlantis. "There's no hail at the pad," said KSC spokesman Bill Johnson about 4:15 p.m., minutes after pea-sized hail fell near the Vehicle Assembly Building. Shuttle workers were monitoring the storm to watch for any rain damage. An external tank mated to the orbiter Atlantis was seriously damaged during a Feb. 26 hailstorm, delaying a plan to launch an International Space Station assembly mission on March 15. More than 2,500 divots, dents and gouges in thermal protection foam covering the aluminum lithium tank had to be repaired. Atlantis finally launched on June 8. Web posted. (2007). [Endeavour unscathed in hail storm [Online]. Available WWW: <http://www.floridatoday.com/> The Flame Trench blog [2007, July 13].]

July 14: US Mint to show unseen gold space coins

Six months before the U.S. Mint issued the first Sacagawea dollar coins on January 27, 2000, 12 specially-minted 22k gold Sacagawea coins made a launch of a very different type. The dozen dollars were carried in to orbit aboard the space shuttle Columbia to commemorate the flight of Eileen Collins, the first female U.S. astronaut to command a spaceflight. The 12 well-traveled coins — 1.8 million miles over the course of 80 orbits in 4 days, 22 hours and 50 minutes — were chosen as the best strikes from a set of 39 dollars struck at the Mint's West Point, New York facility in June 1999. The remaining 27 coins were destroyed. Originally, the Mint had planned to exhibit the gold coins at museums to promote the release of the Sacagawea dollar and potentially the sale of similar gold versions to the public. The gold coins' creation however, hadn't been to regulation, and the marketing program was canceled. Instead, the 12 space flown coins were moved to the Fort Knox Bullion Depository in 2001, where they have been in storage since. That is, until August 10, 2007, when the U.S. Mint plans to publicly display the dozen doubloons for the first time. The 12 coins that flew in space were on STS-93, the 94th shuttle mission, the 26th flight of Columbia and the 21st shuttle night launch from Kennedy Space Center, Florida. In addition to marking the first mission commanded by a woman (Collins), the flight deployed the third of NASA's four "Great Observatories", the Chandra X-Ray telescope. STS-93 flew for five days between July 23 and 27, 1999. Web posted. (2007). [US Mint to show unseen gold space coins [Online]. Available WWW: <http://www.collectSPACE.com/> [2007, July 14].]

July 16: NASA Awards Upper Stage Engine Contract for Ares Rockets

NASA has signed a \$1.2 billion contract with Pratt and Whitney Rocketdyne Inc., of Canoga Park, Calif., for design, development, testing and evaluation of the J-2X engine that will power the upper stages of the Ares I and Ares V launch vehicles. The contract includes ground and test flight engines. It continues work that began on June 2, 2006, under a preliminary letter contract with Pratt and Whitney Rocketdyne. NASA awarded the cost-plus-award fee contract to Pratt and Whitney Rocketdyne on a sole-source basis, NASA determined that no other existing capability meets its architecture requirements and is able to be extended to future exploration missions to the moon and beyond. The contract performance period extends through Dec. 31, 2012. Engines for operational missions will be purchased through a separate contract. The J-2X is an evolved version of two historic

predecessors: the powerful J-2 engine that propelled the Apollo-era Saturn IB and Saturn V rockets, and the J-2S, a simplified version of the J-2 that was developed and tested in the early 1970s. Pratt and Whitney Rocketdyne designed and developed both the J-2 and the J-2S and has been responsible for producing, refurbishing and improving them. The J-2X engine will incorporate significant upgrades to meet higher performance and reliability requirements for the Ares vehicles. Ares I is an in-line, two-stage rocket that will transport the Orion crew exploration vehicle to low Earth orbit. Orion will accommodate as many as six astronauts. The first stage will consist of a single reusable solid propellant rocket booster similar to those used on the space shuttle, with an additional fifth segment. The second, or upper, stage will consist of a J-2X liquid oxygen- and liquid hydrogen-fueled main engine and a new upper stage fuel tank. Ares V will enable NASA to launch a variety of science and exploration payloads, as well as key components needed to go to the moon and later to Mars. Ares V, a heavy lift launch vehicle, will use five RS-68 liquid oxygen- and liquid hydrogen-fueled engines mounted below a larger version of the space shuttle's external tank and two five-segment solid propellant rocket boosters for the first stage. The upper stage will use the same J-2X engine as the Ares I. ["NASA Awards Upper Stage Engine Contract for Ares Rockets," **NASA Contract Release #C07-030**, July 16, 2007.]

Endeavour crew arrives for launch training

Endeavour's crew arrived at KSC Monday evening for safety training and a countdown dress rehearsal before their 7:03 p.m. Aug. 7 launch. Commander Scott Kelly expressed the crew's pleasure at being at KSC, their hope for good weather on launch day and their appreciation to the hardworking technicians who are preparing the shuttle on Pad 39A. "We look forward to flying (Endeavour) for all the people who have put their heart and soul into this vehicle," said Kelly. He introduced the crew, pilot Charlie Hobaugh and five mission specialists: Tracy Caldwell, Al Drew, Rick Mastracchio, Barbara Morgan and Dave Williams of the Canadian Space Agency. At the International Space Station, the crew will install a truss, replace a gyroscope, test a power system, and deliver cargo and spare parts. During training the crew will ride a tank that could take them safely away from the shuttle during a malfunction, they will spend three hours Thursday morning strapped in their seats in Endeavour. Web posted. (2007). [Endeavour crew arrives for launch training [Online]. Available WWW: <http://www.floridatoday.com/> the flame trench blog [2007, July 16].]

July 17: NASA Administrator Names Ryschkewitsch as New Chief Engineer

NASA Administrator Michael Griffin has named Michael Ryschkewitsch as the agency's chief engineer. He succeeds Christopher Scolese, who Griffin selected as NASA's associate administrator on July 11. As chief engineer, Ryschkewitsch is responsible for the overall review and technical readiness of all NASA programs. The Office of the Chief Engineer assures that the agency's development efforts and missions operations are being planned and conducted on a sound engineering basis with proper controls and management of technical risks. Since October 2005, Ryschkewitsch served as the deputy center director for NASA's Goddard Space Flight Center in Greenbelt, Md. ["NASA Administrator Names Ryschkewitsch as New Chief Engineer," **NASA News Release #07-156**, July 17, 2007.]

July 18: Is the USA strike getting too bitter?

I thought we ought to pass this item along here since there's been so much discussion in the blog lately about the ongoing strike by a contingent of United Space Alliance workers, who

remain off the job at Kennedy Space Center in a dispute with NASA's prime shuttle operations contractor. Yesterday, a guy in Port St. John reported that his car and house were vandalized and branded with the word "scab." The man was a worker who'd crossed the picket line. There's no way to know what happened beyond speculation, but certainly this contentious labor battle continues to grow more bitter. James Celli of Port St. John walked out of his house early Sunday morning and found all four tires on his 2003 Chevrolet Monte Carlo flattened, and the words USA Scab scrawled in black spray paint all over his vehicle, according to the complaint. He also found the word "scab" scrawled on his garage. Scab is a slang word that refers to someone who works while others are on strike. The 570-member International Association of Machinists Local 2061 has been on strike since June 14. Union officials have said the issues with USA are wide-ranging, such as retirement benefits, wage increases, performance bonuses and health care insurance. Contract negotiations have stalled. Celli told deputies he worked at USA and had recently crossed the picket line to go back to work. He joined about 16 percent of the space shuttle program workers at Kennedy Space Center who returned to the job, some for financial reasons. They each receive \$150 each week from the union while on strike. Deputies turned over the complaint to the general crimes unit to investigate. Web posted. (2007). [Is the USA strike getting too bitter? [Online] Available WWW: <http://www.floridatoday.com/> The Flame Trench blog [2007, July 18].]

July 19: Shuttle crew rehearse launch

The crew of space shuttle Endeavour, including teacher-turned-astronaut Barbara Morgan, climbed aboard Thursday in a dress rehearsal for next month's launch. Just as they will on liftoff day, now set for August 7, the seven spacesuited astronauts strapped into their seats inside the recently refurbished Endeavour. The spacecraft hasn't flown since December 2002. After the countdown clock ticked down to four seconds, the seven astronauts climbed out in an emergency escape drill. "It was as smooth as it could have been," NASA spokesman George Diller said. "It did exactly what the countdown dress rehearsal is supposed to do." The practice countdown capped three days of launch training by the crew at Kennedy Space Center. The astronauts were scheduled to head back to Houston later Thursday. Shuttle commander Scott Kelly told reporters on Wednesday that Endeavour had no major technical issues which could delay a launch. Morgan was the back-up to teacher-in-space Christa McAuliffe who died with six astronauts when Challenger blew apart 73 seconds into lift-off in 1986. Morgan said she was reminded that Endeavour had replaced Challenger. She has been waiting 22 years to fly into space. She returned to teaching at an Idaho elementary school after the Challenger accident but represented the space agency as the teacher in space designee in the following years. In 1998, NASA selected her as a full-fledged astronaut. Web posted. (2007). [Shuttle crew rehearse launch [Online]. Available WWW: <http://www.cnn.com/> The Flame Trench blog [2007, July 19].]

July 20: Expendable Launch Vehicle Status Report

Expendable Launch Vehicle Status Report #ELV-072007. **Mission: Phoenix;** Location: Payload Hazardous Servicing Facility; Launch Pad: 17-A; Launch Vehicle: Delta II 7925; Launch Date: Aug. 3, 2007; Launch Time: 5:35:18 a.m. EDT. Mating of Phoenix to the upper-stage booster occurred Tuesday, July 17. Spacecraft engineers installed the heat shield onto the cruise stage Thursday, July 19. This was the last major milestone in spacecraft processing before going to the launch pad. Technicians are installing the integrated Phoenix payload into the payload transportation canister today. Phoenix will be transported to Pad

17-A for mating to the Delta II on Monday, July 23. At Pad 17-A, a simulated flight test of the Delta II was performed on Tuesday, July 17. This is an electrical and mechanical test of all events that the first and second stage of the vehicle will perform during ascent. A "LOX leak check" was conducted on Wednesday, July 18. This involves loading the Delta II first stage with liquid oxygen to verify its integrity and also serves as a countdown certification for the launch team. **Mission: Dawn**; Location: Pad 17-B; Launch Pad: 17-B; Launch Vehicle: Delta II 7925-H; Launch Timeframe: September. Dawn remains atop the Delta II launch vehicle at Pad 17-B. The spacecraft will be removed from the launch vehicle on Saturday, July 21, and returned to the Astrotech payload processing facility near NASA's Kennedy Space Center. A firm date for launch is still being determined based on the launch window for the science of the mission, the availability of the Eastern Range and the necessary tracking, data and telemetry support. The launch opportunity extends from Sept. 7 to Oct. 15. Web posted. (2007). [NASA's Expendable Launch Vehicle Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/launchingrockets/status/2007/index.html> [2007, July 20.]

Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-072007. **Mission: STS-118** - 22nd International Space Station Flight - S5 Truss Segment; Vehicle: Endeavour (OV-105); Location: Launch Pad 39A; Launch Date: Targeted for Aug. 7, 2007; Launch Pad: 39A; Crew: Kelly, Hobaugh, Williams, Morgan, Mastracchio, Caldwell and Drew; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. At Launch Pad 39A, preparations continue for the launch of Endeavour on STS-118. The orbiter's payload was installed on July 15. The helium signature test, which checks for leaks in the main propulsion system, is complete. Technicians continue checking out the shuttle systems after finishing the external tank and solid rocket booster camera tests. Work is under way to prepare for the loading of hypergolic propellants, which will begin July 23. These propellants will power the solid rocket booster hydraulic power units and Endeavour's orbital maneuvering system, forward reaction control system and auxiliary power units. Workers continue filling the liquid oxygen and liquid hydrogen storage tanks at the pad. This fuel will be transferred to the external fuel tank shortly before launch. Mating of the orbiter midbody umbilical unit, the connection point that allows for servicing of the orbiter's fuel cells, will be completed today. The STS-118 crew traveled to Kennedy Space Center this week to participate in the terminal countdown demonstration test, which includes a countdown dress rehearsal, emergency egress training and a checkout of the crew cabin configuration. **Mission: STS-120** - 23rd International Space Station Flight - U.S. Node 2; Vehicle: Discovery (OV-103); Location: Orbiter Processing Facility Bay 3; Launch Date: Targeted for Oct. 20, 2007; Launch Pad: 39A; Crew: Melroy, Zamka, Parazynski, Wheelock, Wilson, Nespoli and Tani; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 3, Discovery's main engines No. 1 and 2 have been installed, as have the heat shields for those engines. Engine cutoff sensor system and payload premate testing are complete. Rigging of the latching mechanism for the orbiter boom sensor system is complete and the system has been installed for flight. Stacking of the STS-120 solid rocket boosters in the Vehicle Assembly Building began this week, with the left aft booster and left aft center segments delivered and mated to the mobile launch platform. **Mission: STS-122** - 24th International Space Station Flight - Columbus Laboratory Module; Vehicle: Atlantis (OV-104); Location: Orbiter Processing Facility Bay 1; Launch Date: Targeted for Dec. 6, 2007; Launch Pad: 39A; Crew: Frick, Poindexter, Schlegel, Eyharts, Love, Melvin and Walheim; Inclination/Orbit Altitude:

51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 1, the orbiter's dome heat shields and main engines have been removed. The checkout of the forward reaction control system is complete. Windows No. 5 and 6 were removed and replaced. The orbiter boom sensor system has been removed and inspected, with reinstallation set for next week. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, July 20.]

NASA studies shuttle O-ring seal issue

A NASA team is studying why recent batches of O-rings have a higher-than-usual number of specks of unmixed rubber, similar to bits of flour in a partially mixed bowl of cake batter. If such specks are too large or too close together, they can make the rings stiffer. The specks, detected by X-ray, are about the size of a grain of salt. NASA has done weeks of testing on the O-ring issue. Initial tests show the rings with the defects are as strong and resilient as they should be, but more tests will be run through Saturday, says Jody Singer, head of NASA's solid-rocket motor project. "As of right now, we find nothing that gives us concern," she says. The extra testing is likely to "validate what we think we know, which is that it is not a safety-of-flight concern." Engineers started to raise questions three to four months ago, when they noticed a rise in unmixed specks. The rings passed all tests for resiliency and strength. A retooled Endeavour, making its first flight in more than four years, includes O-rings with a higher number of unmixed specks. Because the rings passed all their quality tests, there is no reason not to use them, says David Beaman, a deputy solid-rocket manager. Even so, studies continue. Engineers want to understand how the manufacturing process has changed, to prevent future problems, Singer says. "We're re-examining the situation to make sure there's nothing we missed," Beaman says. Web posted. (2007). [NASA studies shuttle O-ring seal issue [Online]. Available WWW: <http://www.floridatoday.com/> [2007, July 20].]

July 23: Phoenix on launch pad, Dawn returns to Astrotech

Phoenix was mated to the upper-stage booster July 17. Spacecraft engineers installed the heat shield onto the cruise stage July 19. This was the last major milestone in spacecraft processing before going to the launch pad. Technicians installed the integrated Phoenix payload into the payload transportation canister July 20. Phoenix was transported to Pad 17-A for mating to the Delta II Monday (July 23). Dawn was removed from the Delta II launch vehicle on Saturday (July 21) and returned to the Astrotech payload processing facility near NASA's Kennedy Space Center. A firm date for launch is still being determined based on the launch window for the science of the mission, the availability of the Eastern Range and the necessary tracking, data and telemetry support. The launch opportunity extends from Sept. 7 to Oct. 15. ["ELV Update: Phoenix on launch pad, Dawn returns to Astrotech," **Countdown**, July 24, 2007.]

July 24: NASA fuels shuttle systems for August flight

NASA is loading toxic rocket propellants into storage tanks aboard shuttle Endeavour today as the agency continues preparations for the planned Aug. 7 launch of an International Space Station assembly mission. With the spaceship perched on Kennedy Space Center's launch pad 39A, engineers today will be pumping the fuel monomethyl hydrazine into the orbiter's Orbital Maneuvering System and Forward Reaction Control System. The shuttle's twin maneuvering engines primarily are used to slow the ship enough to drop it out of orbit and

begin atmospheric reentry and an hour-long freefall toward a landing site. The ship's 44 reaction control steering thrusters are used for precision piloting and small course corrections in orbit. Also to be fueled up today: the Hydraulic Power System on the shuttle's twin solid rocket boosters. The system is used to gimbal bell-shaped nozzles on the boosters during ascent. The same systems and the shuttle's Auxiliary Power Units were loaded with the toxic oxidizer nitrogen tetroxide on Monday. The APUs provide the hydraulic power needed to steer the shuttle's main engines during ascent and operate the ship's aerosurfaces, landing gear, brakes and nosewheel steering during atmospheric reentry and landing. The APU system will be fueled with monomethyl hydrazine on Wednesday. The hypergolic fuel-loading -- "hyper load" for short -- is a hazardous operation, so the pad is cleared of all but essential personnel. The pad will reopen for orbiter aft closeouts and spacesuit functional tests on Thursday. Web posted. (2007). [NASA fuels shuttle systems for August flight [Online]. Available WWW: <http://www.floridatoday.com/> The Flame Trench blog [2007, July 24].]

Sheriff, KSC reps seek deal on costs of law enforcement

Sheriff Jack Parker and Kennedy Space Center officials are meeting this week to work out an agreement for the space agency to reimburse the county when deputies are called to enforce state laws on the spaceport grounds. The private security guards who previously handled those cases on KSC property have been undeputized and stripped of state arrest powers because space center leadership said NASA's contractor could not legally enforce state laws on the federal government installation. The special deputies turned in their credentials last week, without Parker's approval or knowledge, said sheriff's department spokesman Lt. Andrew Walters said. Walters said deputies will respond to calls from KSC, even though the center has no service contract with the sheriff's office. Sheriff's deputies now must respond to calls outside of KSC's gates and adjoining federal property that runs for miles around the center. Parker intends to charge KSC for the service, which will include making arrests and investigating automobile accidents and crimes. Speeding motorists at KSC will now face lesser penalties because the private security officers no longer can issue Florida Uniform Traffic Citations, which carry fines and the potential for other consequences such as rising insurance premiums. Last month, KSC officials directed security contractor Space Gateway Support to stop issuing the state citations to KSC workers. The SGS officers can issue only an administrative traffic citation that must be signed by a supervisor and returned. They can detain criminals only until sheriff's deputies arrive. About 22 of 340 KSC security officers were special deputies until last week. Parker supported the special deputy program this month in a letter to KSC leaders. "I continue to believe the current special deputy program is very cost-effective as compared to what a service contract will cost, even in a limited-services scenario," Parker wrote. KSC administrators said they want the officers to focus on protecting KSC, not enforcing state laws. Web posted. (2007). [Sheriff, KSC reps seek deal on costs of law enforcement [Online]. Available WWW: <http://www.floridatoday.com/> [2007, July 24].]

Whitson will be the first woman to lead space station

After six months aboard the international space station in 2002, NASA astronaut Peggy Whitson knew what she wanted more than anything else. It was the chance to go back. She is training to return to the station in early October, this time as the first woman to command it. Whitson joined a pair of male Russian cosmonauts on her 2002 mission. It was her first trip into space. "I really had a phenomenal time. It was probably the most satisfying work

experience I've ever had in my life. I really didn't want to see it end," Whitson said at a news conference Monday at NASA's Johnson Space Center. This time, she will launch with cosmonaut Yuri Malenchenko, who has commanded long missions aboard the orbital outpost as well as Russia's former Mir space station. They will be joined by an ever-changing lineup of U.S. and European astronauts for what space agency officials suggested may be the "Super Bowl" of voyages to the orbital base. During her tenure, the station is scheduled to receive European and Japanese science modules and an external Canadian robotic device, as well as the first delivery of science gear and other supplies aboard a new unmanned European cargo capsule. A 35,000-pound solar power module also will have to be moved from the center to one end of the station, a task never before attempted. Web posted. (2007). [Whitson will be the first woman to lead space station [Online]. Available WWW: <http://www.chron.com/> [2007, July 24].]

July 25:

White House criticizes House appropriators' NASA bill

The Bush administration criticized House appropriators' fiscal 2008 plus-ups of NASA's aeronautics, education and science requests in a statement July 24, saying that the increases would create "unsustainable out year funding requirements." The appropriators added a total of \$313.1 million to the administration's \$17.31 billion topline request in their version of the agency's spending bill. The White House also is concerned about the appropriators' cut of \$85 million from the Tracking and Data Relay Satellite (TDRS) program. While the committee said in its report on the bill that the cut "should not affect the viability of the system," the administration disagrees, saying it "would reduce the future system availability of critical space communications capabilities for NASA and other partner agencies." The TDRS spacecraft relay information from NASA's low-Earth orbiting spacecraft down to ground control stations. NASA is pursuing a replacement system and plans to make an award in the fall. E-mail distribution. (2007). [Aviation Week's Aerospace Daily & Defense Report Re: "White House criticizes House appropriators' NASA bill," [Electronic]. Vol. 223, No. 17, [July 25, 2007].]

As shuttle strike drags on, NASA taking steps to ensure safety

Associate Administrator for Space Operations William Gerstenmaier says NASA has taken extra steps to ensure that the ongoing strike by roughly 570 space shuttle workers at Kennedy Space Center is having no impact on safety. "We've made sure that we are processing the vehicles in a safe manner," he told Congress July 24. NASA has provided more insight and oversight during "critical activities" in shuttle processing, particularly for operations inside the Vehicle Assembly Building (VAB), and brought in more safety inspectors, he said. Shuttle Endeavour is preparing for launch on mission STS-118 early next month, and stacking of the solid rocket boosters for Discovery's STS-120 mission in October has begun, according to Gerstenmaier. Members of the International Association of Machinists and Aerospace Workers (IAM) Local 2061 went on strike last month after contract negotiations with shuttle prime United Space Alliance (USA) broke down (DAILY, June 15). The workers were involved in shuttle processing and support tasks, and included operators of fixed and mobile cranes as well as maintainers for the shuttle's mammoth crawler transporter. E-mail distribution. (2007). [Aviation Week's Aerospace Daily & Defense Report Re: "As shuttle strike drags on, NASA taking steps to ensure safety," [Electronic]. Vol. 223, No. 17, [July 25, 2007].]

Report cites NASA on cost estimates

NASA got credit for steps taken to transition shuttle retirement to the next stage of human spaceflight, but a new congressional audit said the agency must pick up the pace for providing details about the cost. Many of NASA's transition and retirement activities will continue after the space shuttle program retired in 2010, the Government Accountability Office notes in its report Wednesday. Yet the agency lacks estimates for such activities beyond then. "Without cost estimates, NASA does not have the information needed to support the budget preparation process, assess the costs of addressing its supplier challenges, or account for how NASA will fund transition and retirement activities once the space shuttle program comes to an end," wrote Cristina Chaplain, GAO's director of acquisition and sourcing management. "This is NASA's biggest transition effort since landing humans on the moon more than three decades ago and then initiating the space shuttle program a few years later," Chaplain said. More than 1,500 suppliers support the shuttle program. About 230 are considered the sole certified source providers for their item or service. Congress had asked the GAO to examine NASA's transition plan and its processes for managing its supplier base. ["Report cites NASA on cost estimates," **Florida Today**, July 26, 2007, p 5A.]

July 26: NASA Gives 'Go' for Shuttle Launch on Aug. 7

On Thursday, NASA managers set Aug. 7 as the official launch date for space shuttle Endeavour's STS-118 mission to the International Space Station. Liftoff from NASA's Kennedy Space Center, Fla., is scheduled for 7:02 p.m. EDT. Endeavour's launch date was announced following the traditional Flight Readiness Review at Kennedy. During the two-day meeting, top NASA and contractor managers assessed any risks associated with the mission and determined that the shuttle's equipment, support systems and procedures are ready for flight. Commander Scott Kelly and his six crewmates are scheduled to arrive at Kennedy at 5 p.m. Friday, Aug. 3, for final launch preparations. The countdown is scheduled to begin at 9 p.m. Saturday, Aug. 4. During the 11-day mission, Endeavour's crew will add another truss segment to the expanding station, install a new gyroscope on the complex and add an external spare parts platform. The flight will include at least three spacewalks. The crew will debut a new system that enables docked shuttles to draw electrical power from the station to extend visits to the outpost. If this system functions as expected, three additional days will be added to the STS-118 mission. Joining Kelly on the flight will be Pilot Charlie Hobaugh and mission specialists Tracy Caldwell, Rick Mastracchio, Barbara R. Morgan, Alvin Drew and Canadian Space Agency astronaut Dave Williams. The mission will be Endeavour's first flight in more than four and a half years. The spacecraft has undergone extensive modifications, including the addition of safety upgrades already added to shuttles Discovery and Atlantis. ["NASA Gives 'Go' for Shuttle Endeavour Launch on Aug. 7," **NASA News Release #07-166**, July 26, 2007.]

Report: NASA Employee Stole More Than \$150,000

Elizabeth Ann Osborne, 52, who resigned in October after 31 years at the space agency, pleaded guilty to embezzling public money as part of an agreement made with the U.S. Attorney's Office on July 17. "I'm feeling shock and disbelief," said Kim Myrick, who worked alongside Osborne at Kennedy Space Center for several years. According to court documents, Osborne admitted to using her Bank of America government credit card for 426 fraudulent transactions. The cards were issued by NASA to employees for use on all purchases of \$2,500 and below. Osborne has yet to be sentenced. She will have to pay back the money she stole and she may be sentenced to prison, as well. Web posted. (2007).

[Report: NASA Employee Stole More Than \$150,000 [Online]. Available WWW: <http://www.local6.com/> [2007, July 26].]

Computer Sabotaged

A space program worker deliberately damaged a computer that is supposed to fly aboard shuttle Endeavour in less than two weeks, an act of sabotage that was caught before the equipment was loaded onto the spaceship, NASA said on Thursday. The unidentified employee, who works for a NASA subcontractor, cut wires inside the computer that is supposed to be delivered to the International Space Station by Endeavour, said Bill Gerstenmaier, NASA's space operations chief. The worker also damaged a similar computer that was not meant to fly to space. "Some wires were cut on the inside of the unit," Gerstenmaier said. "It is currently being investigated by the inspector general's office." The sabotage occurred outside of Florida. Gerstenmaier did not identify the subcontractor or where the damage took place. NASA's inspector general office is investigating. NASA hopes to fix the computer and launch it Aug. 7, as planned, aboard Endeavour. The computer is designed for use aboard the space station, not the shuttle, and the damage would have posed no danger to either shuttle or station astronauts, Gerstenmaier said. Web posted. (2007). [Computer Sabotaged [Online]. Available WWW: <http://www.local6.com/> [2007, July 26].]

Blast at desert spaceport kills 2, injures 4

An explosion at an airport home to Scaled Composites -- the builder of the first private manned rocket to reach space -- killed two people and left four seriously hurt Thursday, a Kern County Fire Department official says. It happened at the Mojave Air and Space Port during a test of a new rocket motor for SpaceShipTwo -- a spaceship being built for Virgin Galactic, Richard Branson's space tourism company, a source said. The motor uses nitrous oxide, the source said. A spokeswoman for the spaceport, about 80 miles north of Los Angeles, said the blast was on a remote pad. Web posted. (2007). [Blast at desert spaceport kills 2, injures 4 [Online]. Available WWW: <http://www.cnn.com/> [2007, July 26].]

Report: Drunk astronauts allowed on shuttle

Astronauts were allowed to fly after flight surgeons and other astronauts warned they were so drunk they posed a flight-safety risk on at least two occasions, an aviation weekly reported Thursday. It cited a special panel studying astronaut health, which found "heavy use of alcohol" before launch that was within the standard 12-hour "bottle-to-throttle" rule, according to Aviation Week & Space Technology. It reported the finding on its Web site. A NASA official confirmed the health report contains claims of alcohol use by astronauts before launch, but said the information is based on anonymous interviews and is unsubstantiated. The official didn't want to be named because NASA plans a news conference Friday to discuss the panel's findings. The panel was created following the arrest in February of former space shuttle flier Lisa Nowak, who was implicated in a love triangle. NASA's space operations chief, Bill Gerstenmaier, said Thursday it would be inappropriate for him to discuss the matter before the report is released on Friday. Asked if he had ever personally had to deal with a safety issue involving an inebriated astronaut in space, Gerstenmaier replied: "The obvious answer is no. I've never had any instances of that." "There's not been a disciplinary action or anything I've been involved with regarding this type of activity," he said. The Aviation Week report doesn't make clear when the alleged incidents occurred, nor does it say whether the intoxication involved crew members who

have no role in flying the shuttle or whether it was the pilot and commander. NASA plans to release findings of a pair of reviews -- one by the outside committee and the other by an internal panel -- into astronauts' health Friday. The independent panel's NASA consultant and its eight members, which include Air Force experts in aerospace medicine and clinical psychiatry, did not immediately return phone messages or e-mails from the Associated Press Thursday afternoon. Aviation Week said the report citing drunkenness does not deal directly with Nowak or mention any other astronaut by name. Nowak is accused of attacking the girlfriend of a fellow astronaut -- her romantic rival -- with pepper spray in a parking lot at Orlando International Airport. Fired by NASA in March, she has pleaded not guilty to charges of attempted kidnapping, battery and burglary with assault. Web posted. (2007). [Report: Drunk astronauts allowed on shuttle [Online]. Available WWW: <http://www.cnn.com/> [2007, July 26].]

TV show host gets down, dirty in crawler

The men who keep the shuttle crawler transport moving crawl under and inside its belly, greasing gears and replacing belts to make sure the monstrous beast that lugs the shuttle to its launch pad stays in top working order. It's a dirty job. They know it, and they let the Discovery Channel's "Dirty Jobs" host Mike Rowe know it by getting him to crawl inside the giant trucks that move the crawler and scrape grease out from the frame. He found out for himself just how dirty a job it is when he visited Kennedy Space Center in January to tape a segment for his dirt-under-the-fingernails show that examines the filthiest, greasiest, most disgusting jobs on Earth. On Aug. 7, the day of the next scheduled shuttle launch, viewers can see for themselves just how dirty a job it is to make sure the shuttle crawler transport keeps moving. The 20-minute "Space Crawler Maintenance" segment is coupled with a segment on a painter for the Mackinac Bridge in Michigan. Rowe cleaned buckets of grease off one of the massive belt frames with mechanical technician Pat Wiley and adjusted the belt, Griffith said. He also pulled the shore power cable in preparation to fire up the transport, then rode in the drive cab with an engineer for about 200 feet, Griffith said. Many of the United Space Alliance technicians and mechanics who maintain that giant ride probably won't be working when the show airs. Web posted. (2007). [TV show host gets down, dirty in crawler [Online]. Available WWW: <http://www.floridatoday.com/> [2007, July 26].]

July 27:

NASA Selects Lightning Protection System Contractor

NASA has selected Ivey's Construction Inc. of Merritt Island, Fla., to build a new lightning protection system for Launch Pad 39B at the Kennedy Space Center. The system will support launches of the Constellation Program's Ares I rockets. The lightning protection system is designed to reduce the probability of a direct lightning strike to the Ares I and associated launch equipment during processing and other activities prior to flight. Under the contract, the company will provide all labor and materials to fabricate and construct three 600-foot, self-supporting structural steel towers and an overhead wire system with associated conductors. Ivey's Construction Inc. will receive a fixed-price contract for \$27,915,000. The system is expected to be complete by March 2010. ["NASA Selects Lightning Protection System Contractor," **NASA Contract Release #C07-033**, July 27, 2007.]

NASA Moves Forward With Astronaut Assessments

NASA Deputy Administrator Shana Dale said the agency is moving forward to implement many of the recommendations contained in two studies released Friday about astronaut

health and behavioral assessments. The two reviews were made public prior to a news conference in Washington, five months after the agency requested that an independent external committee conduct a comprehensive review of health services available to astronauts. Both studies were initiated in the aftermath of the arrest in February of former astronaut Lisa Nowak. The first assessment of astronaut behavioral medicine procedures, an internal review, was completed by NASA's Johnson Space Center, Houston, earlier this week. The second assessment, a broader review by outside experts called the Astronaut Health Care System Review Committee, was organized by NASA Chief Health and Medical Officer Dr. Richard Williams. "The review committee, chaired by Air Force Col. Richard Bachmann, commander of the U.S. Air Force School of Aerospace Medicine, completed a valuable task on short notice and I would like to acknowledge the group's dedication and time commitment to this important review," Dale said. "We are committed to improving the behavioral care and assessment procedures for astronauts. We believe the resulting modifications will be good for the astronaut corps and for NASA." Dale said NASA immediately will address four primary areas of concern: NASA Chief of Safety and Mission Assurance Bryan O'Connor, a former astronaut, began an extensive examination Friday focusing on allegations of improper alcohol use. O'Connor will review all existing policies and procedures related to alcohol use and astronaut medical fitness prior to flight. The goal is to ensure that risks to flight safety are dealt with by appropriate authorities, and, if necessary, elevated through a transparent system of senior management review and accountability. NASA's Medical Policy Board, made up of senior internal and external medical experts, will further assess the medical and behavioral findings and recommendations in the two reviews. The board will institute behavioral health assessments as a part of annual flight physicals for all astronauts. The agency will develop an astronaut code of conduct and has engaged NASA's astronaut corps to help develop the formal guidelines. The astronauts already have started to develop an initial set of recommendations and agency leadership will establish a collaborative process to create an official code. To address organizational culture issues outlined in the reports, NASA will conduct a series of internal assessments, including anonymous surveys to be completed by astronauts and flight surgeons, to provide feedback and gather information. The goal is to improve communications and ensure leadership is responsive to concerns and complaints. "We are moving as quickly as we can on the recommendations, and Administrator Mike Griffin and I will closely monitor progress on these issues," Dale added. "After the review is completed, it is our intention to share the findings with the public, to the maximum extent possible." ["NASA Moves Forward With Astronaut Assessments," **NASA News Release #07-167**, July 27, 2007.]

Expendable Launch Vehicle Status Report

Expendable Launch Vehicle Status Report #ELV-072707. **Mission: Phoenix;** Location: Launch Pad 17-A; Launch Vehicle: Delta II 7925; Launch Date: Aug. 3, 2007; Launch Time: 5:35:21 a.m. EDT; Phoenix was transported to Pad 17-A at Cape Canaveral Air Force Station for mating to the Delta II on Monday, July 23. The flight program verification test was conducted successfully on Wednesday, July 25. This is an electrical test that confirms the Delta II and Phoenix are working together as an integrated system. Technicians are installing the Delta II payload fairing around the Phoenix spacecraft Friday. The Delta II second stage is scheduled to be loaded with its complement of storable propellants on July 31. The mobile service tower, or gantry, is scheduled to be retracted from around the Delta II at 8:30 p.m. on Thursday, Aug. 2, for launch the next morning. **Mission: Dawn;**

Location: Astrotech payload processing facility; Launch Pad: 17-B; Launch Vehicle: Delta II 7925-H; Launch Timeframe: Sept. 7 - Oct. 15. A firm date for launch is still being determined based on the launch window for the science of the mission, the availability of the Eastern Range and the necessary tracking, data and telemetry support. The launch of Dawn is currently expected to occur no later than Sept. 26; however, a launch date as early as Sept. 7 is being preserved in planning schedules. Dawn was removed from the launch vehicle on Sunday, July 22. The spacecraft was returned to the Astrotech payload processing facility near Kennedy Space Center at 7:30 a.m. that day. No processing activities are currently scheduled. Web posted. (2007). [NASA's Expendable Launch Vehicle Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/launchingrockets/status/2007/index.html> [2007, July 27.]

Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-072707. **Mission: STS-118** - 22nd International Space Station Flight - S5 Truss Segment; Vehicle: Endeavour (OV-105); Location: Launch Pad 39A; Launch Date: Aug. 7, 2007; Crew: Kelly, Hobaugh, Williams, Morgan, Mastracchio, Caldwell and Drew; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. At Launch Pad 39A, preparations continue for the launch of Endeavour on STS-118. The hypergolic propellants have been loaded into the solid rocket booster hydraulic power units and Endeavour's orbital maneuvering system, forward reaction control system and the auxiliary power units. Technicians have stowed the extravehicular mobility units (spacesuits) in the orbiter and are performing functional checkout of the suits. Workers are also loading flight crew equipment and supplies into the crew cabin. Closeout of the orbiter aft is under way. The payload bay doors were opened today to allow for payload closeouts, including camera tests on the shuttle robotic arm and the extension, known as the orbiter boom sensor system. During the flight readiness review this week at Kennedy Space Center, NASA managers cleared STS-118 for flight and set an official launch date of Aug. 7.

Mission: STS-120 - 23rd International Space Station Flight - U.S. Node 2; Vehicle: Discovery (OV-103); Location: Orbiter Processing Facility Bay 3; Launch Date: Targeted for Oct. 20, 2007; Launch Pad: 39A; Crew: Melroy, Zamka, Parazynski, Wheelock, Wilson, Nespoli and Tani; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 3, all three of Discovery's main engines have been installed, as have the heat shields for those engines. Engine leak and functional tests are complete. Technicians removed and replaced window No. 7. The right-hand orbital maneuvering system pod has been delivered to the bay and preparations are under way for its installation next week. The STS-120 solid rocket boosters are being stacked in the Vehicle Assembly Building. The external fuel tank for STS-120 is scheduled to arrive at KSC via barge from the Michoud Assembly Facility in New Orleans on Sunday. The tank will be lifted into a checkout cell in the Vehicle Assembly Building on Monday. **Mission: STS-122** - 24th International Space Station Flight - Columbus Module; Vehicle: Atlantis (OV-104); Location: Orbiter Processing Facility Bay 1; Launch Date: Targeted for Dec. 6, 2007; Launch Pad: 39A; Crew: Frick, Poindexter, Schlegel, Eyharts, Love, Melvin and Walheim; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 1, the orbiter boom sensor system has been removed, inspected and reinstalled in the orbiter. Windows No. 1, 2, 4, 5 and 6 have been removed and replaced. The external tank door push test, which measures actuator performance, is complete. Technicians are performing hypergolic fuel system testing on the orbital maneuvering system pods. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW:

<http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, July 27.]

Former NASA worker admits embezzling more than \$157K

For four years, NASA employee Elizabeth Ann Osborne was a pretty big spender. The only wrinkle was that the money wasn't hers. Between 2001 and 2005, she didn't mind splurging for a hotel room whenever family or friends came to visit. She was a regular at Best Buy for her electronics needs, and she enjoyed a taste for jewelry and clothing from Sears. For everyday purchases, her preferences were simple -- Wal-Mart. Osborne will be sentenced during the next few months for embezzling \$157,394.21 from NASA, her employer of 31 years. A court date has not been set. The 52-year-old woman pleaded guilty to embezzling public money as part of a plea agreement made with the U.S. Attorney's Office on July 17. The agreement was filed in federal court in Orlando on Thursday. According to court documents, Osborne admitted to using her Bank of America government credit card for 426 fraudulent transactions. NASA issued the cards to employees for use on all purchases of \$2,500 and below. The idea was that doing so would simplify the acquisition process. Employees were trained on how to use the card and told it was to be used only for government purchases. Osborne claimed the purchases were for the Kennedy Space Center Conference Center, known as the Beach House, where astronauts stay before launches. But during a routine audit in March 2006, the NASA Office of Inspector General found that several items -- including furniture, furnishings and electronic equipment supposedly purchased for the Beach House -- were missing. Osborne was asked to provide receipts for the missing items, which she did, but they proved to be falsified. As part of the plea deal, Osborne agreed to make full restitution of the money she embezzled. She also agreed to cooperate in future possible embezzling investigations involving other NASA employees. In return, the government will recommend the judge sentence Osborne to the lowest possible sentence. She faces a maximum sentence of 10 years in prison and \$250,000 in fines. "The defendant understands that this recommendation or request is not binding on the court," the agreement reads. Web posted. (2007). [Former NASA worker admits embezzling more than \$157K [Online]. Available WWW: <http://www.floridatoday.com/> [2007, July 27].]

Sabotage won't delay Endeavour flight

A space station computer deliberately damaged in an act of sabotage will be fixed and launched next month as intended aboard shuttle Endeavour, NASA officials said Thursday. The damage was done at a subcontractor factory and was not related to the machinist's strike against shuttle contractor United Space Alliance that enters its seventh week today, officials said. The damage would not have jeopardized the astronauts aboard the shuttle or the station, NASA space operations chief Bill Gerstenmaier said. Gerstenmaier said he had no idea why someone would want to damage the computer, which is designed to retrieve data from strain gauges on the station's central truss. "I don't want to speculate on motivation," he said. Had the sabotaged unit flown, NASA would have been forced to replace it before truss sensor data could be gathered for engineering evaluation. Gerstenmaier said the sabotage was reported to NASA by the subcontractor in mid-July. Inspectors at the subcontractor factory found electrical wiring within a qualification unit had been intentionally cut. NASA inspectors then checked a flight computer the subcontractor had delivered to KSC for launch aboard Endeavour. The wiring in it had been severed, too. The damaged flight computer is being repaired and will be installed as planned in the station's U.S. Destiny science laboratory after it is delivered to the outpost by Endeavour's

crew. The sabotage is being investigated by NASA's inspector general. Web posted. (2007). [Sabotage won't delay Endeavour flight [Online]. Available WWW: <http://www.floridatoday.com/> [2007, July 27].]

Houston-area company supplied sabotaged computer

A Houston-area company supplied a sabotaged computer that was to fly aboard shuttle Endeavour in less than two weeks, but was found before being loaded onto the spaceship for a trip to the international space station, an official said Friday. Invocon Inc., an electronics research and development firm based in Conroe, Texas, has not yet identified any suspects or motives, said Invocon program director Kevin Champaigne. "We don't know if it was just one person or if it was more than one," he said. Invocon manufactured the unit for Boeing Co., NASA's main contractor for the space station, he said. NASA's inspector general office is also investigating the incident, which the agency detailed at a news conference Thursday where officials said the damaged hardware did not pose a safety risk. The hardware, which is about half the size of a briefcase, was slated to be installed inside the space station to collect data from strain gauges on an outside beam. Invocon found severed wires in an identical unit they were testing last week, and alerted Boeing so it could check the space-bound unit and another that was in storage. Both were found to have similar damage. Invocon, a 20-year-old company that employs about 30 people, has worked with Boeing since 2004. Web posted. (2007). [Houston-area company supplied sabotaged computer [Online]. Available WWW: <http://www.floridatoday.com/> [2007, July 27].]

Astronaut-health panel was told of heavy pre-flight alcohol use

A panel reviewing astronaut health issues in the wake of the Lisa Nowak arrest was told that on at least two occasions astronauts were allowed to fly after flight surgeons and other astronauts warned they were so intoxicated that they posed a flight-safety risk. The panel also reported "heavy use of alcohol" by astronauts in crew quarters before launch, within the standard 12-hour "bottle to throttle" rule applied to pilots of conventional aircraft. A NASA spokesman declined comment on the findings, which were obtained by Aviation Week & Space Technology. A press conference July 27 will discuss the report. At the direction of Administrator Michael Griffin, NASA Chief Medical Officer Richard Williams set up the panel to review astronaut medical and psychological screening after Nowak was arrested in Orlando, Fla., Feb. 5 on charges of attempted murder and attempted kidnapping for allegedly stalking and threatening a woman who was dating another astronaut. The attempted murder charge was dropped. The panel is composed of military and civilian government physicians, psychologists, lawyers, safety experts and astronauts under the chairmanship of U.S. Air Force Col. Richard Bachmann, dean of the Air Force School of Aerospace Medicine. Panel members visited Johnson Space Center in April to gather information from flight surgeons and the astronaut office on astronaut health screening. Separately, Griffin ordered JSC Director Mike Coats to review intake and ongoing psychological screening for astronaut candidates and astronauts, and to recommend changes if necessary. Griffin also directed Coats, himself a former astronaut, to "determine whether there were any areas of concern - any leading indicators we might have picked up on, based on Lisa Nowak's dealings with other astronauts or NASA employees," in the words of Deputy Administrator Shana Dale. In announcing creation of the two panels on Feb. 7, Dale said "while there is no specific, separate psychological examination for a shuttle flight, NASA health care providers are experienced in all aspects of health care, including behavioral health, and they certainly look for any potential issues or problems." If the

accounts collected by the Bachmann panel in its interviews with astronauts and flight surgeons are accurate, the panel's report could trigger another round of management reforms at JSC like those that followed the 2003 Columbia accident. At that time the Columbia Accident Investigation Board warned that engineering managers had become complacent and operated in a "culture of invincibility" that contributed to the faulty decisions that preceded the disaster. Although originally established after Nowak's highly public arrest, the Bachmann panel report apparently does not deal directly with Nowak or mention any other astronaut by name. Coats' findings also will be part of the July 27 press conference, according to the agency spokesman. Both the Coats and Bachmann panel reports will be released prior to the press conference, which will include Dale, Bachmann, Williams and astronaut Ellen Ochoa, director of flight crew operations at JSC, NASA said. E-mail distribution. (2007). [Aviation Week's Aerospace Daily & Defense Report Re: "Astronaut-health panel was told of heavy pre-flight alcohol use," [Electronic]. Vol. 223, No. 19, [July 27, 2007.].]

July 28:

Russia denies astronaut was drunk aboard Soyuz

Russia's space agency denied Saturday that an astronaut could have flown drunk aboard a Soyuz spacecraft from its Baikonur cosmodrome, reacting to allegations reported by the chairman of an independent U.S. panel on astronaut health. The panel chairman, Air Force Col. Richard Bachmann Jr., said Friday it was told about multiple instances involving alcohol. One of the two most detailed cases involved an astronaut drinking heavily before flying on a Soyuz spacecraft headed to the international Space Station, he said. He cited unverified interviews, saying it was not the panel's mission to investigate the allegations. "We categorically deny the possibility that this could have happened at Baikonur," Igor Panarin, spokesman for the Russian Space Agency, Roskosmos, told The Associated Press. "In the days at Baikonur before the launch, this is absolutely impossible. They are constantly watched by medics and psychiatrists." Russian cosmonaut Anatoly Solovyov told the AP that the tight medical requirements and the demands of the job ahead made it inconceivable that either astronauts or cosmonauts could fly drunk. ["Russia denies astronaut was drunk aboard Soyuz," Florida Today, July 30, 2007, p 7A.]

July 30:

NASA Starts Space Shuttle Endeavour Countdown Aug. 4

NASA will start the launch countdown for space shuttle Endeavour's STS-118 mission at 9 p.m. EDT Saturday, Aug. 4, at T-43 hours. The countdown includes 27 hours, 3 minutes of built-in hold time leading to a preferred launch time at 7:02 p.m. EDT Tuesday, Aug. 7. The launch window extends an additional five minutes. During the 11-day mission to the International Space Station, Endeavour's crew will add another truss segment to the expanding station, install a new gyroscope and add an external spare parts platform. The flight will have at least three spacewalks. It also will debut a new system that enables docked shuttles to draw electrical power from the station to extend visits to the outpost. If this system functions as expected, three additional days will be added to the STS-118 mission. ["NASA Starts Space Shuttle Endeavour Countdown Aug. 4," **NASA Media Advisory #07-093**, July 30, 2007.]

July 31:

NASA Postpones Phoenix Launch

Friday's scheduled launch of NASA's Phoenix Mars Lander aboard a United Launch Alliance Delta II rocket has been postponed 24 hours. The two available launch times on Saturday, Aug. 4, are 5:26:34 a.m. and 6:02:59 a.m. EDT. Due to a forecast for severe weather around

the Kennedy Space Center launch pad in Florida on Tuesday afternoon, fueling of the second stage will not be completed. Although fueling is expected to be finished Wednesday morning, there is insufficient contingency time in the schedule to move forward with the launch on Friday. ["NASA Postpones Phoenix Launch," **NASA Media Advisory #07-097**, July 31, 2007.]

Delta 2 launch set back a day

NASA aims to launch its Phoenix Mars Lander on Saturday because thunderstorms that swept into the Cape Canaveral area Tuesday delayed a critical fuel-loading operation. There is a back-up launch opportunity Sunday, but after that, NASA would have to decide whether to postpone either the time-critical Mars mission or the scheduled launch next Tuesday of shuttle Endeavour. "They'll cross that bridge when and if they get to it," said George Diller, a spokesman for NASA's Kennedy Space Center. The Mars mission now is set to blast off during one of two single-second launch windows: 31 seconds after 5:24 a.m. Saturday or 55 seconds after 6:02 a.m. Liftoff is precisely timed to put the spacecraft on course for a circuitous, 423-million-mile journey to Mars. Landing in the northern polar region of the planet is scheduled May 25. A United Launch Alliance Delta 2 rocket is to loft the Phoenix Mars Lander from Complex 17A at Cape Canaveral Air Force Station. ["Delta 2 launch set back a day," **Florida Today**, August 1, 2007, p 4A.]

During July: Dextre Delivered

Engineers at Kennedy Space Center will begin final flight verification tests of Canada's "Dextre" special purpose dexterous manipulator in preparation for its scheduled February 2008 launch on the shuttle Endeavour's STS-123/IJ/A mission to the ISS. MacDonald, Dettwiler and Associates Ltd. delivered the complex robotic device to KSC. Once installed on the end of the Canadarm2 robotic arm, Dextre will give astronauts a sense of "touch" for delicate robotic operations outside, reducing the need for dangerous and time-consuming spacewalks. ["Dextre Delivered," **Aviation Week & Space Technology**, July 9, 2007, p 15.]

AUGUST

August 1: Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-080107. **Mission: STS-118** - 22nd International Space Station Flight - S5 Truss Segment; Vehicle: Endeavour (OV-105); Location: Launch Pad 39A; Launch Date: Aug. 7, 2007; Crew: Kelly, Hobaugh, Williams, Morgan, Mastracchio, Caldwell and Drew; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. At Launch Pad 39A, preparations continue for the launch of Endeavour on STS-118. The payload bay doors have been closed for flight. Functional testing of the extravehicular mobility units (spacesuits) is complete. The shuttle ordnance connections have been made. Orbiter aft closeout work continues. Engineers are working to resolve an abnormal leak rate in the orbiter crew cabin. The problem has been traced to one of two positive pressure-relief valves which ensure that the crew cabin does not become over-pressurized. A plan has been approved to remove and replace the suspect valve using a valve from Atlantis. This work will begin tonight and be completed on Thursday. After further analysis of data, engineers have determined that it will not be necessary to remove and replace thermostats on APU No. 1. The thermostat data characteristic, while not customary, is not in violation of specifications and is understood by engineers. Therefore, this will not require further action prior to the STS-118 mission. Technicians have installed the thermal curtains on the aft skirts of the solid rocket boosters. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, August 1.]

As shuttle strike drags on, NASA taking steps to ensure safety

Launch of the Phoenix Mars Lander from Cape Canaveral on a Delta II rocket has been postponed by a day to Aug. 4 because of the threat of severe thunderstorms on July 31 during fueling of the launcher's second stage. There are two liftoff options for Aug. 4. The first opportunity is at 5:26 a.m. EDT and the second at 6:02 a.m. EDT. The launch delay has so far not affected the planned August 7 launch of space shuttle Endeavour on the STS-118 mission to the International Space Station. E-mail distribution. (2007). [Aviation Week's Aerospace Daily & Defense Report Re: "As shuttle strike drags on, NASA taking steps to ensure safety," [Electronic]. Vol. 223, No. 22, [August 1, 2007.].]

Valve likely caused crew cabin leak

NASA technicians believe they've found the source of a crew cabin leak in shuttle Endeavour. Test performed overnight showed the persistent leak appears to be a positive pressure relief valve behind the toilet, said NASA spokesman Bill Johnson at Kennedy Space Center. "They think they've found the problem valve," he added. The valve is not part of the toilet. A second test to confirm the hard-to-reach leak was expected to be complete by 10 a.m. The leak was first discovered during the weekend. Technicians plan to cannibalize a valve from shuttle Atlantis, which is at KSC being prepared for a later mission. Johnson said that replacing the valve should not delay Endeavour's scheduled launch at 7:02 p.m. on Aug. 7. Web posted. (2007). [Valve likely caused crew cabin leak [Online]. Available WWW: <http://www.floridatoday.com/> The Flame Trench blog [2007, August 1].]

Ecliptic Celebrates a Decade of Successful RocketCam(TM) Launches

Ten years ago today, the first successful launch of the popular RocketCam video system onboard a Delta II rocket, launched NASA's Advanced Composition Explorer spacecraft. Since 1997, RocketCam systems have been employed successfully on 53 of 53 launches – 51 onboard rockets as the host platform and 2 onboard spacecraft. Notable projects supported by RocketCam include numerous NASA launches of spacecraft, the X-prize SpaceShip One, space shuttle launches, and multiple launches of the new Atlas 5 and Delta 4 rockets. Future RocketCam applications include every remaining shuttle launch planned for the program (three separate views); launches onboard commercial and government spacecraft heading to various Earth orbits, the Moon and possibly Mars; various efforts in the emerging space tourism and entrepreneurial space arena; and missile defense efforts. RocketCam fans should expect to see on average one launch per month for the next several years. Web posted. (2007). [Ecliptic Celebrates a Decade of Successful RocketCam(TM) Launches [Online]. Available WWW: <http://www.prwire.com/> [2007, August 1].]

Bagian Denies Charge

Dr. James P. Bagian, the astronaut-physician cited by unnamed government sources as the prime advocate of publishing allegations that astronauts flew under the influence of alcohol, categorically denied Aug. 1 that that was the case. "That's totally false," said Bagian when asked if he had insisted on release of the charges while he was a member of the panel NASA convened to review astronaut mental-health screening. Bagian is now chief patient-safety officer at the U.S. Veterans Affairs Dept. The eight panel members reported on July 27 that they had been told of two incidents "where astronauts had been so intoxicated prior to flight that flight surgeons and/or fellow astronauts raised concerns to local on-scene leadership regarding flight safety." "We were very careful about what we wrote in the report, and by careful I meant to try to be clear and not say things we didn't mean, and try as best we could to make sure things weren't misconstrued, especially about the particular thing about alcohol," Bagian said, stressing that the accounts were conveyed to illustrate a larger issue of astronaut health and flight safety. ["Bagian Denies Charge," Aviation Week & Space Technology, August 13, 2007, p 30.]

NASA worker pleads guilty

For the second time in a matter of days, a Kennedy Space Center worker has agreed to plead guilty to embezzling from NASA. Judith Lynna Frisbee, 46, of Titusville has admitted to defrauding the space agency out of \$120,577 by falsifying records and inflating expense reports related to a space flight awareness program. Frisbee worked for spaceport contractor Space Gateway Support. Frisbee faces a maximum penalty of 20 years in prison and a fine of up to \$250,000. However, the plea agreement filed in U.S. District Court in Orlando said prosecutors would recommend a more lenient prison sentence to the judge. The agreement was filed in court on Monday and made public on Tuesday. The plea agreement calls for Frisbee to repay NASA the entire amount stolen. Frisbee's attorney, Kepler Funk, was not available for comment. On Thursday, the plea agreement for another veteran space center employee who admitted to embezzling \$157,394 from NASA was filed in federal court in Orlando. The court documents said Elizabeth Ann Osborne, 52, used her government credit card to make purchases for electronics, jewelry, clothes and other items for herself. Osborne resigned from her position with NASA in October. Part of her responsibilities were to assure compliance with credit card rules and policies established by NASA's procurement office. Frisbee was an administrative assistant whose duties included serving on the Space Flight Awareness Committee. She was responsible for organizing and

attending events aimed at raising awareness about human space flight. As part of her job, Frisbee would buy items for those events with her personal checks or credit cards and then submit expense reports. The contractor would reimburse Frisbee, but then bill the costs to NASA. The fraudulent claims happened between 2001 and 2005, according to court records. As in Osborne's case, they were uncovered as part of a routine audit. Web posted. (2007). [NASA worker pleads guilty [Online]. Available WWW: <http://www.floridatoday.com/> [2007, August 1].]

August 2: NASA Extends Space Shuttle Main Engine Contract

NASA has signed a \$975 million contract extension with Pratt and Whitney Rocketdyne Inc., of Canoga Park, Calif., to maintain the agency's fleet of space shuttle main engines until the orbiter is retired in 2010. The contract began on April 1, 2006. It is scheduled to conclude Sept. 30, 2010. The \$975 million contract extension brings the total value of the cost-plus-award/incentive fee contract to slightly more than \$2.05 billion. Pratt and Whitney Rocketdyne supports the Shuttle Propulsion Office at NASA's Marshall Space Flight Center in Huntsville, Ala.; the Space Shuttle Program Office at NASA's Johnson Space Center in Houston; and the Space Operations Mission Directorate at NASA Headquarters in Washington. The contract includes maintenance and refurbishment of existing shuttle main engines at NASA's Kennedy Space Center, Fla. Each space shuttle is powered by three of the sophisticated engines, the world's only reusable rocket engines. During launch, each of the 7,750-pound engines burns liquid hydrogen and liquid oxygen, fed from the shuttle's external tank. Each engine generates approximately 400,000 pounds of thrust, which works with the shuttle's twin solid rocket boosters to power the spacecraft to orbit. ["NASA Extends Space Shuttle Main Engine Contract," **Contract Release #C07-34**, August 2, 2007.]

Valve from Atlantis to be installed today

A pressure relief valve removed from shuttle Atlantis passed inspection tests and this morning will be installed in Endeavour. Testing took longer than expected, but technicians should be able to replace the faulty valve today, said NASA spokesman George Diller at Kennedy Space Center. Testing the cannibalized valve after installation could be finished by tonight, said Diller. The 4-inch by 6-inch valve prevents air pressure from going too high in the shuttle. The 10-year-old valve passed tests in February and May, but failed a pressure check on the launch pad during the weekend. After installation of the valve, crew cabin pressure will be tested in Endeavour before countdown begins on Saturday. NASA officials expect no launch delays at this point. The crew cabin is also tested for pressure leaks after the astronauts board on launch day. Web posted. (2007). [Valve from Atlantis to be installed today [Online]. Available WWW: <http://www.floridatoday.com/> the flame trench blog [2007, August 2].]

Bruce Willis' Blues Band Performs for 7,000 at Kennedy Space Center

Some 7,000 people showed up to watch Bruce Willis and his blues band perform at the Kennedy Space Center's rocket garden. Fans cheered as Willis sang and played the harmonica, filling the moments between songs by bantering with the crowd. "We love playing for you," Willis said at Thursday night's show. "Even when it's hot." The 52-year-old actor starred in the 1998 sci-fi movie "Armageddon," which was shown on a giant inflatable screen across the lawn from the stage after the concert. In the film, Willis leads a group to

destroy a giant asteroid headed toward Earth. Parts of the movie were filmed at the Kennedy Space Center. Willis' screen credits also include "The Sixth Sense" and the "Die Hard" films. The concert was part of a series called "Netflix LIVE! On Location." The series features classic movies and celebrity musical performances. Web posted. (2007). [Bruce Willis' Blues Band Performs for 7,000 at Kennedy Space Center [Online]. Available WWW: <http://www.foxnews.com/> [2007, August 2].]

August 3: NASA's Space Shuttle Mission Postponed 24 Hours

The launch of space shuttle Endeavour on mission STS-118 has been postponed 24 hours to allow the shuttle processing team additional time to complete routine work before liftoff. The launch now is targeted for Wednesday, Aug. 8, at 6:36 p.m. EDT from NASA's Kennedy Space Center in Florida. The additional day will provide time to complete the processing and allow the countdown to begin at 8 p.m. Sunday. As originally planned, the STS-118 crew will arrive at Kennedy at 5 p.m. Friday. ["NASA's Space Shuttle Mission Postponed 24 Hours," **Media Advisory #07-098**, August 3, 2007.]

NASA Announces Web Coverage of Next Space Shuttle Mission

A prelaunch webcast, live blogs, podcasts, pictures and videos highlight NASA's Web coverage of space shuttle Endeavour's STS-118 mission to the International Space Station. NASA will provide ongoing updates online at: <http://www.nasa.gov/shuttle> A live webcast featuring astronaut Joan Higginbotham, who flew aboard space shuttle Discovery in December 2006, will start the in-depth coverage of the mission at 11:30 a.m. EDT on Aug. 7. A blog will update the countdown continuously, beginning about six hours before Endeavour is scheduled to lift off on Aug. 8 at 6:36 p.m. Originating from NASA's Kennedy Space Center in Florida, the blog is the definitive Internet source for information leading up to launch. During the 11-day mission, Endeavour's crew of seven astronauts will conduct at least three spacewalks. They will install new station components, replace one of the outpost's attitude control gyroscopes, deliver 5,000 pounds of supplies and add a segment to the right side of the station's backbone, or truss. Visitors to NASA's shuttle Web site can read about the crew's progress and watch the spacewalks, which will be broadcast live from the space station. The NASA blog also will detail Endeavour's landing at the conclusion of the mission. ["NASA Announces Web Coverage of Next Space Shuttle Mission," **Media Advisory #07-099**, August 3, 2007.]

August 4: Probe Blasts Off for Mars

A robotic dirt and ice digger blasted off Saturday on a 422 million-mile journey to Mars that NASA hopes will culminate next spring in the first landing within the red planet's Arctic Circle. The unmanned Delta II rocket carrying the Phoenix Mars Lander rose from its seaside pad at 5:26 a.m., exactly on time, and hurtled through the clear moonlit sky. It was easily visible for nearly five minutes, a bright orange speck in a spray of stars. The Phoenix Mars Lander won't be looking for evidence of life on Mars but rather traces of organic compounds in the baked and moistened samples. Such compounds would be a possible indicator of conditions favorable for life, either now or once upon a time. If organic compounds are present on Mars, they're more likely to have been preserved in ice. That's why NASA is aiming for the planet's high northern latitudes, where ice is almost certainly lurking just beneath the surface. The 772-pound lander will stretch 18 feet across once its solar panels are deployed on Mars, and its weather mast will tower 7 feet. Phoenix should

help pave the way for human visitors, especially if it confirms the presence of water ice in large amounts near the pole, said Michael Meyer, NASA's lead Mars scientist. That would be a tremendous resource, he noted. Web posted. (2007). [Probe Blasts Off for Mars [Online]. Available WWW: <http://www.cnn.com/> [2007, August 4].]

August 5: Shuttle Endeavour's leak caused by debris

Tests revealed that Endeavour's once-puzzling crew cabin leak was caused by small piece of debris, NASA officials said today during a mission status briefing at Kennedy Space Center (KSC). After a week of hunting for the leak aboard the newly retrofitted space shuttle, the valve was replaced and tested. "We found a tiny piece of debris in the sealing surface, which was causing that slight leak rate. There's nothing systemic wrong with any of the valves," said NASA test director Steve Payne, adding that removing the grit fixed the valve. "We just finished a leak check ... early this morning, and it is very, very tight," Payne said of Endeavour's crew cabin. Web posted. (2007). [Shuttle Endeavour's leak caused by debris [Online]. Available WWW: <http://www.space.com/> [2007, August 5].]

Shuttle countdown begins

The countdown began at 8 p.m. Sunday for Endeavour's mission to the International Space Station. Bad weather and a crew cabin air leak, caused by a fleck of debris in a pressure relief valve, has caused the launch to slip a day, to 6:36 p.m. Wednesday. Weather forecasts show a 70 percent chance the shuttle can launch on time. And the 11-day mission, likely will be extended by three days, if a system to receive power from the space station works properly. The crew of seven includes astronaut/educator Barbara Morgan, who will operate a robotic arm during spacewalks and who will conduct six hours of teaching from space. ["Shuttle countdown begins," **Florida Today**, August 6, 2007, p 1A.]

August 6: NASA, Microsoft Launch Collaboration with Immersive Photography

On Monday, NASA and Microsoft Corporation of Redmond, Wash., released an interactive, 3-D photographic collection of the space shuttle Endeavour preparing for its upcoming mission to the International Space Station. Endeavour is scheduled to launch from NASA's Kennedy Space Center in Florida on Wednesday, Aug. 8 at 6:36 p.m. EDT. For the first time, people around the world can view hundreds of high resolution photographs of Endeavour, Launch Pad 39A, and the Vehicle Assembly Building at Kennedy in a unique 3-D viewer. NASA and Microsoft's Live Labs team developed the online experience using hundreds of photographs and a photo imaging technology called Photosynth. Using a click-and-drag interface, viewers can zoom in to see intimate details of the shuttle booster rockets or zoom out for a more global view of the launch facility. The software uses photographs from standard digital cameras to construct a 3-D view that can be navigated and explored online. The NASA images can be viewed at Microsoft's Live Labs at: <http://labs.live.com> "This collaboration with Microsoft gives the public a new way to explore and participate in America's space program," said William Gerstenmaier, NASA's associate administrator for Space Operations, Washington. "We're also looking into using this new technology to support future missions." "With Photosynth, we take pictures of an environment and knit them together into an experience that people can move through like a 3-D video game," said Microsoft Live Labs Architect Blaise Aguera y Arcas. "NASA provided us with some outstanding images, and the result is an experience that will wow anyone wanting to get a closer look at NASA's missions." The NASA collections were created in collaboration

between Microsoft's Live Lab, Kennedy and NASA's Ames Research Center, Moffett Field, Calif. ["NASA, Microsoft Launch Collaboration with Immersive Photography," **NASA News Release #07-170**, August 6, 2007.]

NASA retools for Constellation

While space shuttle Endeavour awaited its scheduled Wednesday launch from pad 39A at Kennedy Space Center, NASA officials were showing off the future Monday a mile and a half away. Pad 39B is where an Orion capsule perched on an Ares I rocket is supposed to launch in 2014, kicking off the Constellation program that will return man to the moon. NASA shuttle fleet is not scheduled for retirement until September 2010, but the agency, worried about losing its skilled work force in the interim, has not waited to start the transition. The first test flight of an Ares rocket is scheduled for April 2009. "We're trying to move this program forward and get some momentum going," said Jeff Hanley, Constellation program manager. NASA is using a combination of financial incentives, employee recognition and career plotting to show thousands of key workers that have a future in the new program, which will replace the 26-year-old shuttle program. Constellation's goal is to return humans to the moon by 2020, where they can build a base that will support later missions to Mars. At KSC, Launch Pad 39B still belongs to the shuttle, but plans are under way to modify it in time for the 2009 Ares test flight and eventually replace the steel structure above the concrete pad with one specifically designed for Constellation. Once the shuttle program ends, pad 39A will be converted to handle the larger Ares V Cargo Launch Vehicle that will carry the materials for a moon base into space. Renovations at the Launch Control Center are in full swing too, with Firing Room 1 already gutted for Constellation. Interior changes to the Vehicle Assembly Building will allow access to the rocket and capsule at the right places, but the building is big enough for the 358-foot-tall Ares V. The crawlers will be beefed up to handle the weight of an Ares V. In another facility down the road, the aluminum skirt at the bottom of the shuttle's solid rocket boosters is being modified for use on the first Ares test flight. Nearby a building one used for the Apollo moon program is being converted to manufacture the Orion capsule. And at the Parachute Refurbishment Facility, parachutes from shuttle missions are being repaired, tested and repacked side by side with new parachutes for Ares rockets. ["NASA retools for Constellation," **Orlando Sentinel**, August 7, 2007, p B1 & B5.]

August 7: NASA Develops Wireless Tile Scanner for Space Shuttle Inspection

A new space shuttle tile inspection method using NASA-built, wireless scanners is replacing manual inspection. The new process begins with the upcoming shuttle mission, STS-118. Technicians have been using six new scanners to look for cracks and other imperfections in some of the 24,000 tiles that cover space shuttle Endeavour. The agency designed and built the new tools at NASA's Ames Research Center in Moffett Field, Calif. In the past, workers at Kennedy visually analyzed tiles and measured dings and cracks with small hand-held scales. "The new method is much faster and more accurate because the depth and volume measurements of the flaws and their locations are wirelessly transmitted into a computer database," said Joe Lavelle, a senior engineer and project manager at Ames. "This tool allows the inspectors to determine with very high confidence whether a shuttle tile needs to be replaced or just repaired." "When they made the measurements manually with the scales, they had to estimate the volume of flaws to a worst-case value because they could not precisely measure the volume with any accuracy," Lavelle explained. "With this scanner, they

will actually save tiles and the time-consuming process of replacing them." The thermal tiles on the space shuttle protect it from the extreme heat generated during re-entry into the Earth's atmosphere. After each shuttle lands, technicians go through a very rigorous and lengthy process to assess the surface of the tiles for any damage. Each scanner weighs approximately 2.9 pounds and is about the size and shape of a small teapot. Technicians place the machine on the tile's flaw to scan it. In about three seconds, the data are computerized and archived. Engineers can scrutinize computerized 3-D pictures of the flaws. The images show the length, width and depth of the flaws on the surface of the tiles. Although engineers designed the instrument to scan space shuttle tiles, it also could scan reinforced carbon-carbon material used on the leading edges of the shuttle's wings. ["NASA Develops Wireless Tile Scanner For Space Shuttle Inspection," **NASA News Release #07-171**, August 7, 2007.]

Shuttle like new after upgrades

Ready to fly for the first time in five years, the orbiter Endeavour looks the same as the last time it launched in late 2002. Fresh off an extensive overhaul, Endeavour is equipped with a new cockpit, modern satellite navigation gear, advanced main engine sensors and a power system that will allow it to stay longer at the International Space Station. All in all, more than 150 miles of wiring have been inspected, some 13,156 safety checks have been carried out and 194 modifications have been made since NASA sidelined the spacecraft. "It's like a new space shuttle," NASA shuttle program manager Wayne Hale said. "It's been completely inspected from stem to stern for any defects in the wiring, any structural corrosion, and it's come out clean. Built to replace Challenger after that orbiter and seven astronauts were lost in a 1986 explosion, Endeavour first flew in May 1992 on a dramatic mission during which astronauts rescued a stranded communications satellite. A Hubble Space Telescope servicing crew flew up to the flagship observatory aboard Endeavour, and the first U.S. segment of the international station was deployed from the \$1.8-billion spaceship. NASA's newest shuttle orbiter has flown 19 missions and tallied 206 days in low Earth orbit. Web posted. (2007). [Shuttle like new after upgrades [Online]. Available WWW: <http://www.floridatoday.com/> [2007, August 7].]

August 8: NASA's Shuttle Endeavour Begins Mission to the Space Station

The space shuttle Endeavour and its seven-member crew lifted off at 6:36 p.m. EDT Wednesday from NASA's Kennedy Space Center in Florida. The astronauts are on their way to the International Space Station for an assembly mission, designated STS-118. "This is serious business we're in here," said Endeavour's Commander Scott Kelly to the shuttle launch director shortly before lift off. "I'm proud of your team for getting Endeavour ready to go fly. I'm also proud of my crew and the rest of the astronaut office for the competence and professionalism and consistently making something that is incredibly difficult look easy." Kelly then added, "We'll see you in a couple of weeks, and thanks for loaning us your space shuttle." Endeavour is scheduled to dock to the station on Friday. During the 11-day mission, the crew will add the Starboard 5 (S5) truss segment to the right side of the station's backbone. The segment will provide clearance between sets of solar arrays. The flight will include at least three spacewalks during which the astronauts will install a new gyroscope and external spare parts platform to the station. Endeavour's mission will debut a new system that enables docked space shuttles to draw electrical power from the station to extend visits to the outpost. If this system functions as expected, three additional days and a spacewalk will be added to the flight. Joining Kelly on the crew are Pilot Charlie Hobaugh and mission

specialists Tracy Caldwell, Rick Mastracchio, Barbara R. Morgan, Alvin Drew and Canadian Space Agency astronaut Dave Williams. This is the first flight for Morgan, the teacher-turned-astronaut whose association with NASA began 22 years ago when she was selected as the backup in the Teacher in Space Project. This mission is the 119th space shuttle flight, the 20th flight for Endeavour and the 22nd U.S. flight to the International Space Station. The mission is Endeavour's first flight in more than four years. The shuttle underwent extensive modifications, including the addition of safety upgrades already added to shuttles Discovery and Atlantis. ["NASA's Shuttle Endeavour Begins Mission to the Space Station," **NASA News Release #07-173**, August 8, 2007.]

Shuttle Commander: Alcohol Report Lacks Facts

Astronaut Scott Kelly is never one to mince words, and there is no doubt he is not very happy about the rumors that NASA astronauts have mixed alcohol and rocket fuel, so to speak. The shuttle Endeavour commander called CNN Space Correspondent Miles O'Brien on Monday from the astronaut crew quarters here at the Cape. He had just penned a scathing letter to the editor responding to that bombshell report last week that implied astronauts on three occasions violated the so called "bottle-to-throttle" rule. In short, astronauts had flown on the shuttle, on T-38 jets and a Russian Soyuz rocket either drunk or at least hung over. "To imply that my crew or I would ever consider launching on our mission in anything but the best possible condition is utterly ridiculous," Kelly penned in the letter. "It is beyond my comprehension that anyone in the astronaut office would consider doing what is suggested in this report." So what was reaction inside the Astronaut Office? "I think it was just shock," said Kelly who finds the unverified stories hard to believe. Would these type A-plus overachievers -- so focused on realizing their lifelong dream of spaceflight -- really risk it all for one last tall boy after last call? The report says "alcohol is freely used in crew quarters." "What the hell does that mean?" said Kelly. "It depends on the person's opinion. If you don't drink any alcohol at all, having a beer a month before the flight might be someone's definition of wrong, I don't know." "It makes us sound like some sort of frat house," said Kelly. "I have never seen that." The report does not offer any facts to substantiate the claims. The committee was charged simply with looking into how well NASA cares for the mental health of its astronauts after the arrest of now former astronaut Lisa Nowak. She was charged with assaulting a romantic rival after a bizarre sprint halfway across the country. Kelly said he is "shocked that a report like this was released without any facts. I mean, it is hard to believe." The policy is no secret. Astronauts are supposed to put 12 hours between their last drink and the next flight. Simple as that. Everyone knows the rules. And if an astronaut were determined to violate those rules on the day of a shuttle launch, he or she would be hard pressed as shuttle crews launch to space at the end of their day. Kelly and his crew awoke at 8 a.m. ET this morning and their launch is slated for 6:36 p.m. ET. So to break the rules, they would have to be swilling booze at breakfast. As for the rest of their day, well, let's just say on launch day astronauts do not get much privacy. "You have these cameras all over that you would think would see something, somebody would notice something," said Kelly. "Not to mention the fact that we are actually professionals and we wouldn't do that." Web posted. (2007). [Shuttle Commander: Alcohol Report Lacks Facts [Online]. Available WWW: <http://www.cnn.com/> [2007, August 8].]

Space Club honors pioneers

A former Kennedy Space Center director, a steely-eyed missile man and one of the only surviving members of the Bumper launch team will be honored next week in Cocoa Beach.

The National Space Club's Florida Committee will give Jay Honeycutt, Charles Murphy and Norris Gray the group's 2007 Lifetime Achievement Awards during a luncheon Aug. 14 at the Doubletree Oceanfront Hotel. "Jay, Charlie and Norris each have made significant contributions to the space community through their impressive careers," club chairman Adrian Laffitte said in a news release. "The Space Club is proud to acknowledge their achievements." Web posted. (2007). [Space Club honors pioneers [Online]. Available WWW: <http://www.floridatoday.com/> [2007, August 8].]

August 9: NASA Requests Proposals for Ares I Mobile Launcher Construction

NASA has issued a request for proposals for Ares I mobile launcher construction. Ares I is the rocket that will transport the Orion crew exploration vehicle and its crew and cargo to low Earth orbit. The mobile launcher proposals are due to NASA's Kennedy Space Center in Florida on Sept. 6, 2007. The request for proposals states the procurement approach for obtaining the mobile launcher system. The mobile launcher will be used as a platform to assemble, test and service Ares I in existing facilities, transport the rocket to the pad, and support launches. The selected contractor will supply all labor, materials and equipment to build the mobile launcher structure and its associated facility systems. These systems include utilities, fire safety, communications, lighting, elevators and life support. The request for proposal includes an option for an additional Ares I mobile launcher. The contract to build the Ares I mobile launcher will be awarded through a full and open competition and managed by Kennedy. A selection is expected in February 2008. ["NASA Requests Proposals For Ares I Mobile Launcher Construction," **NASA News Release #07-174**, August 9, 2007.]

Shuttle puts 1st teacher in space

Shuttle Endeavour blasted beyond Earth's atmosphere Wednesday evening, fulfilling the challenge laid out by President Reagan in 1984 to put a teacher in space. Endeavour roared from its launchpad at Kennedy Space Center at 6:36 p.m. -- exactly on schedule -- in front of a cheering crowd of thousands, including many teachers who originally competed with Barbara Morgan and her predecessor, Christa McAuliffe, to be the first teacher in space. "Morgan racing toward space on the wings of a legacy," NASA mission commentator Rob Navias said as Endeavour rose into a hazy blue sky. The ship was built in 1990 to replace Challenger, which exploded 73 seconds after liftoff in 1986, killing McAuliffe and six other astronauts. Eight and a half minutes after launch, Endeavour slid into orbit 140 miles up. Navias said, "For Barbara Morgan and her crewmates, class is in session." Looking on was the widow of Challenger's last commander. "The Challenger crew -- my husband Dick Scobee, the teacher Christa McAuliffe -- they would be so happy with Barbara Morgan," June Scobee Rodgers said. "It's important that the lessons will be taught because there's a nation of people waiting, still, who remember where they were when we lost the Challenger, and they remember a teacher was aboard." All day, the countdown rolled along smoothly with no serious issues. Even the weather held, with concerns about afternoon showers dissipating as launch time approached. "The weather is great; Endeavour's ready to fly," KSC launch director Mike Leinbach radioed the crew shortly before liftoff. "Good luck, Godspeed and have some fun up there." Commander Scott Kelly replied, "We'll see you in a couple weeks, and thanks for loaning us your space shuttle." NASA managers also said launch video shows only minimal foam loss from the ship's external tank during flight. Four or five small pieces appeared to break free late in the flight, said Associate Administrator Bill

Gerstenmaier, at a point in the ascent too high to do damage. "Overall, this was one of the cleanest [launches] we've seen," NASA Administrator Mike Griffin said. Web posted. (2007). [Shuttle puts 1st teacher in space [Online]. Available WWW: <http://www.orlandosentinel.com/> [2007, August 9].]

NASA says tank appears to have performed well

Preliminary analysis of launch photography indicates about nine small bits of foam insulation came off the shuttle Endeavour's external fuel tank during the climb to space Wednesday. But only three are believed to have possibly struck the orbiter and there are no obvious signs of any impact damage, officials said today. "Very quiet day at the Mission Management Team," said MMT Chairman John Shannon. "It looked like the launch was extremely successful yesterday. About all we did in the way of data assessment was, we looked at the external tank photography that's automatically taken at separation and we saw nothing significant. It looks like the tank has been very consistent over the last several flights and there was good performance out of it from a debris standpoint. We're not looking at anything significant at all." The three incidents listed by Shannon occurred at 24, 58 and 173 seconds after launch. The first incident may have involved a bit of "purge barrier" used around a propellant feed line prior to launch that appeared to strike the rear of the shuttle's body flap. Similar debris events have been seen on past flights and no major damage was found. The second piece of debris appeared to cause slight discoloration, or a spray, when it hit the shuttle's right wing, but Shannon said "it's really, really hard to see" and engineers do not believe it represents a serious problem. The third event happened well beyond the first 135 seconds of flight when the air is still thick enough to produce the kind of impact velocities that can cause damage. Shannon said all three areas will be photographed in detail Friday - along with the rest of the shuttle's heat shield - during final approach to the international space station. In a now-routine post-Columbia maneuver, Commander Scott Kelly will guide Endeavour through a slow 360-degree back flip just a few hundred feet below the lab complex so the station crew can photograph the heat shield with powerful digital cameras. It will take several more days for analysts to review launch photography, radar data and wing leading edge sensor data recorded during launch and laser scans of the shuttle's nose cap and wing leading edge panels that were carried out by the astronauts today. Along with the rendezvous pitch maneuver photography expected Friday, engineers also must assess film from cameras mounted in the shuttle's twin solid-fuel boosters that will provide additional views of Endeavour's fuel tank. Shannon said film from the boosters should be in hand by late this weekend, after the spent boosters are towed back to port. Along with giving engineers high-resolution views of the heat shield, the rendezvous pitch maneuver Friday also is expected to confirm two doors on the belly of the shuttle that cover propellant feedline inlets after external tank separation are properly closed for re-entry. Web posted. (2007). [NASA says tank appears to have performed well [Online]. Available WWW: <http://www.spaceflightnow.com/> [2007, August 9].]

NASA: no evidence of intoxicated astronauts

NASA officials said yesterday that an internal review has failed to turn up any evidence to date that astronauts were intoxicated during shuttle launches or other flight activities. The review, being led by former astronaut Bryan O'Connor, the agency's chief of safety and mission assurance, was started last month after an independent review of overall astronaut health issues claimed that there were at least two occasions where astronauts were intoxicated to the point where others were concerned about mission safety. Agency officials

said a review of the last ten years of shuttle missions failed to turn up evidence of the allegations, but the investigation would continue until all shuttle missions are reviewed. NASA administrator Mike Griffin said Wednesday that he has "difficulty attaching credibility to the charges" leveled in last month's report. NASA plans to complete its internal review before a September 6th congressional hearing on the subject. Web posted. (2007). [NASA: no evidence of intoxicated astronauts [Online]. Available WWW: <http://www.spacetoday.net/> [2007, August 9].]

Machinists Union to Testify Before House Science Committee

The International Association of Machinists and Aerospace workers (IAM) has been requested to appear before the House Science and Technology Committee to testify about issues concerning the workplace at the National Aeronautics and Space Administration (NASA) facility in Cape Canaveral, FL. The IAM's testimony comes in the wake of recent allegations that NASA facility systems are suffering from management indiscretion and misconduct. "We welcome the opportunity to testify about the serious issues faced by workers at NASA's facility at Cape Canaveral," said Johnny Walker, District 166 Directing Business Representative who will be testifying for the IAM. The IAM represents more than 2,000 workers at NASA facilities at Cape Canaveral and the Kennedy Space Center. The House Science and Technology Committee has jurisdiction over NASA and plans to hold hearings on NASA workplace issues and ongoing NASA programs. Web posted. (2007). [Machinists Union to Testify Before House Science and Technology Committee on NASA Workplace Issues [Online]. Available WWW: <http://www.nasawatch.com/> [2007, August 9].]

Endeavour crew wrestles with fuel cell glitch

En route to the International Space Station, Endeavour's astronauts are wrestling with a minor problem with the shuttle's critical power-generation system. A blaring alarm triggered by a faulty fuel cell pressure controller woke the five-man, two-woman crew in the middle of the night, but the problem is not expected to have an impact on the duration of the mission. The device is used to turn on and off heaters on one of five liquid oxygen tanks tied to the shuttle's three fuel cells, which combine liquid oxygen and liquid hydrogen to generate electricity to power all spaceship systems. Failure of more than one of the fuel cells would force NASA to consider bringing Endeavour back to Earth, but the problem with the pressure controller is relatively benign. Pilot Charlie Hobaugh and other crewmates are troubleshooting the problem, and it looks as if the astronauts will have to manually activate and deactivate the heaters on the oxygen tank during the course of the mission. "A minor inconvenience for the astronauts," said NASA flight commentator Rob Navias. Web posted. (2007). [Endeavour crew wrestles with fuel cell glitch [Online]. Available WWW: <http://www.floridatoday.com/> the flame trench blog [2007, August 9].]

Boeing, local union reach agreement

Machinist union workers in the space shuttle payload processing program have reached a new contract with The Boeing Co., the company said today. The three-year agreement affects 92 workers in the Checkout, Assembly and Payload Processing program at Kennedy Space Center. The workers belong to the International Association of Machinists and Aerospace Workers Local 1163. Meanwhile, roughly 500 workers in the International Association of Machinists and Aerospace Workers Local 2061 are still on strike against United Space Alliance, NASA's main shuttle contractor. The company is a joint venture of

Boeing and Lockheed Martin Corp. The strike at Kennedy Space Center began June 14 after Local 2061 leaders and company officials failed to reach a contract agreement. Boeing's contract with Local 1163 goes into effect Sunday. The terms of the agreement were not immediately disclosed. Web posted. (2007). [Boeing, local union reach agreement [Online]. Available WWW: <http://www.floridatoday.com/> The Flame Trench blog [2007, August 9].]

ELV Update: Dawn takes breather

A firm date for the launch of the Dawn spacecraft is still being determined based on the launch window for the science of the mission, the availability of the Eastern Range and the necessary tracking, data and telemetry support. The launch is currently expected to occur no later than Sept. 26; however, a launch date as early as Sept. 7 is being preserved in planning schedules. ["Dawn takes breather waiting for launch in September," **Countdown**, August 9, 2007.]

August 10: NASA Administrator Announces Senior Leadership Appointments

On Friday, NASA Administrator Michael Griffin named Richard J. Gilbrech as associate administrator for the Exploration Systems Mission Directorate, the NASA division designing the next generation of spacecraft to return astronauts to the moon and eventually journey to Mars. Gilbrech currently serves as the director of NASA's Stennis Space Center in Mississippi. Griffin also named Robert D. Cabana, deputy director of NASA's Johnson Space Center in Houston, to replace Gilbrech as center director at Stennis. Gilbrech will succeed Scott Horowitz, who will leave his position in early October to pursue interests outside NASA. ["NASA Administrator Announces Senior Leadership Appointments," **NASA News Release #07-175**, August 10, 2007.]

Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-081007. **Mission: STS-118** - 22nd International Space Station Flight - S5 Truss Segment; Vehicle: Endeavour (OV-105); Official Launch Date: Aug. 8, 2007; Expected Landing Date: Aug. 19, 2007; Crew: Kelly, Hobaugh, Williams, Morgan, Mastracchio, Caldwell and Drew; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. Today is Flight Day 3 for STS-118. Endeavour is on orbit after launching from Pad 39A at KSC at 6:36 p.m. on Aug. 8. On Thursday, the crew conducted a photographic survey of the orbiter's thermal protection system using the robotic arm and extension boom. Today Commander Scott Kelly successfully flipped the orbiter using the rendezvous pitch maneuver prior to docking at the International Space Station. Docking occurred at 2:02 p.m. EDT. **Mission: STS-120** - 23rd International Space Station Flight - U.S. Node 2; Vehicle: Discovery (OV-103); Location: Orbiter Processing Facility Bay 3; Launch Date: Targeted for Oct. 23, 2007; Launch Pad: 39A; Crew: Melroy, Zamka, Parazynski, Wheelock, Wilson, Nespoli and Tani; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 3 this week, workers installed the right-hand orbital maneuvering system pod and connections are in work. Forward, mid-body and aft closeout work continues. Checkout of the orbiter's communications system is also in work. Stacking of the STS-120 solid rocket boosters in the Vehicle Assembly Building is complete, and closeout work is under way. **Mission: STS-122** - 24th International Space Station Flight - Columbus Module; Vehicle: Atlantis (OV-104); Location: Orbiter Processing Facility Bay 1; Launch Date: Targeted for Dec. 6, 2007; Launch

Pad: 39A; Crew: Frick, Poindexter, Schlegel, Eyharts, Love, Melvin and Walheim; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Bay No. 1, workers are installing new, stronger tiles, known as BRI tiles, around the main landing gear doors. Hydraulic positioning of the body flap and elevons is complete. The main landing gear tires were installed. Removal and replacement of fuel cell No. 3 due to abnormal voltage readings is under way. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, August 10.]

NASA eyeing likely gash on Endeavour

Concerned NASA officials said Friday that there appears to be a 3-inch-by-3-inch gouge in a heat shield tile on shuttle Endeavour's underbelly, possibly caused by a piece of ice breaking off of the fuel tank 58 seconds after liftoff. Shuttle managers plan to use lasers on the end of the shuttle's 100-foot robot arm and extension to get a detailed image of the divot Sunday, said John Shannon, chairman of the mission-management team. Once the size and depth of the gouge are determined, NASA engineers will determine what it could mean for re-entry and whether repair is necessary. NASA analysts spotted a total of nine pieces of debris breaking free during launch, most of them foam from the shuttle's external fuel tank. At least three debris pieces were thought to have struck the shuttle. ["NASA eyeing likely gash on Endeavour," **Orlando Sentinel**, August 11, 2007, p A1 & A14.]

Former astronaut Nowak asks court to remove ankle monitor

Lisa Nowak's ankle monitor is bulky, costly, can't be allowed to get wet and sticks out of her Navy uniform boot. Nowak, accused of trying to abduct her rival in an astronaut love triangle, can't exercise or "adequately supervise" her children at the pool. And traveling by plane is a "hassle." These are some of the reasons listed in a defense motion filed Thursday in Orange Circuit Court. "Defendant has scrupulously followed all instructions connected with electronic monitoring," Nowak's attorney Donald Lykkebak wrote in the four-page request. "If released from the requirement of electronic monitoring, Defendant will continue to obey all Court Orders connected with her pre-trial release including the restriction to travel in Brevard County." State Attorney's Office spokeswoman Danielle Tavernier said she couldn't comment about the issue. The motion will be addressed in court. Nowak, 44, a mission specialist on shuttle Discovery's flight in July 2006, was charged with attempted kidnapping and burglary with assault, which is punishable by up to life in prison. She also was charged with misdemeanor battery. She is accused of driving from Houston to Orlando International Airport to confront Air Force Capt. Colleen Shipman, who was dating Nowak's love interest, Bill Oefelein, then also an astronaut. On Feb. 6, Nowak posted \$25,500 bail at the Orange County Jail and was fitted with a global-positioning ankle monitor with a built-in cell phone that tracks where she is anywhere in the world. It costs her \$105 a week. That's \$2,940 so far. The batteries, which are supposed to last 12 to 15 hours, buzz at times after only four to eight hours. When a battery is low, Nowak has one to two minutes to change it before a loud siren goes off. A telephone call will follow from the monitoring station. Later this month, Nowak is expected to fly from Houston to Orlando to appear at a hearing at the Orange County Courthouse. Web posted. (2007). [Release me from ankle monitor, former astronaut Lisa Nowak asks court [Online]. Available WWW: <http://www.nytimes.com/> [2007, August 10.]

No day in court for KSC chili allegations

A federal lawsuit that made unappetizing allegations about rancid chicken, poor hygiene and a worker derisively nicknamed "Dirty Finger Al" in space-center cafeterias has been quietly settled. Carolyn Vargas, a former culinary worker who says she was fired after she reported problems with spoiled meat and other food being served to workers at Kennedy Space Center, reached a settlement with Lackmann Culinary Services, a Woodbury, N.Y.-based contractor that operates seven KSC cafeterias. Mark Tietig, the Merritt Island attorney who represents Vargas, declined to comment. The case was dismissed on June 26 in Orlando after Vargas and Lackmann reached a settlement. Neither party announced the settlement or would discuss the terms. Web posted. (2007). [No day in court for KSC chili allegations [Online]. Available WWW: <http://www.floridatoday.com/> Brevard Watchlist blog [2007, August 10.]

August 11: Softball-sized foam hit Endeavour, NASA says

A softball-sized piece of foam from a bracket on shuttle Endeavour's fuel tank ricocheted onto the shuttle's underbelly 58 seconds after launch, leaving a gouge in two heat-shield ties, NASA said late Saturday. NASA expects to get a 3-D picture of how deep the divot is after sweeping the area with cameras and lasers. "It was a bad bounce," said John Shannon, chairman of the mission-management team. "We feel like we have the culprit." A series of brackets hold a fuel-feed line in place that runs along the length of the external fuel tank between the tank and the shuttle. There is a history of ice forming between the 17-inch pipe between the brackets and the tank and prying off foam. "It is a little bit of a concern because it seems to be something that has happened to us frequently," Shannon said. A change in tank design should fix the problem, although it won't be ready for the next three shuttle flights. Mission managers agreed Saturday that in case of an emergency the shuttle would be cleared to land as is, Shannon said. ["Softball-sized foam hit Endeavour, NASA says," Orlando Sentinel, August 12, 2007, p A16.]

August 13: NASA Issues Draft Constellation Environment Impact Statement

NASA has issued a draft environmental impact statement on potential environmental impacts associated with the Constellation Program. NASA's Constellation Program is developing a space transportation system that is designed to return humans to the moon by 2020. The Draft Programmatic Environmental Impact Statement concludes that localized and global environmental impacts associated with implementing the Constellation Program would be comparable to past or ongoing NASA activities. This draft examines the effects of development, testing and operation of spacecraft and support systems associated with Constellation Program activities through the early 2020s. NASA plans to use multiple government and contractor facilities in implementing the program. The spacecraft to be developed include the Orion crew exploration vehicle, the Ares I crew launch vehicle, the Ares V cargo launch vehicle, the lunar lander, and other cargo systems. Orion, launched atop the Ares I, would be capable of docking with the International Space Station or with cargo launched to low Earth orbit by the Ares V for transit to the moon or future missions to Mars. Since the Constellation Program will be based largely upon components and facilities used in the Space Shuttle Program, the potential environmental impacts are expected to be similar. The principal activities associated with Constellation that could result in potential environmental impacts include rocket engine tests, rocket launches, construction of new facilities and modifications to existing facilities. Publicly identified issues resulting from the scoping meetings include the economic impact of the Constellation Program on local jobs

near NASA centers, risks to the public through launch and reentry of the Orion spacecraft, noise associated with launch events and impacts to animal species in the Kennedy Space Center, Fla., area from construction and launch activities. Other issues included the socio-economic impacts of decommissioning the space shuttle and implementing the Constellation Program. ["NASA Issues Draft Constellation Environment Impact Statement," **NASA News Release #07-200**, August 13, 2007.]

Inspection Finds Debris Penetrated Shuttle's Tiles

A close-up laser inspection by astronauts on the space shuttle Endeavour revealed on Sunday that a three-and-a-half-inch gouge penetrates all the way through thermal tiles on the shuttle's belly, and left NASA officials urgently calculating whether a spacewalk for repairs is needed. A chunk of insulating foam ricocheted off a fuel tank and smacked the shuttle during liftoff last week, carving out the gouge. The unevenly shaped gouge, which straddles two side-by-side heat shield tiles and the corner of a third, is 3.5 inches long and just over 2 inches wide. The inspection on Sunday showed that the damage went through the one-inch-thick thermal tiles, exposing the felt material sandwiched between the tiles and the shuttle's aluminum frame. Mission managers expect to decide Monday or Tuesday whether to send astronauts out to patch the gouge. Engineers are trying to determine whether the marred area can withstand the searing heat of atmospheric re-entry at the flight's end. Heating tests will be conducted on similarly damaged samples. "We have really prepared for exactly this case, since Columbia," said John Shannon, chairman of the mission management team. "We have spent a lot of money in the program and a lot of time and a lot of people's efforts to be ready to handle exactly this case." The damaged tiles are near the right main landing gear door. In a stroke of luck, they are beneath the aluminum framework for the right wing, which would offer extra protection during the ride back to Earth. The area is subjected to as much as 2,300 degrees in re-entry. A hole large and deep enough could lead to another disaster like the loss of the Columbia. Endeavour will remain docked at the space station until Aug. 20, for a record 10-day stay. Mission managers on Sunday approved the prolonged visit based on the successful testing of a new shuttle system that draws power from the station. Web posted. (2007). [Inspection Finds Debris Penetrated Shuttle's Tiles [Online]. Available WWW: <http://www.nytimes.com/> [2007, August 13.]

IAM Sues NASA for Misconduct

The International Association of Machinists and Aerospace Workers (IAM) today filed suit in the United States District Court in the District of Columbia against the National Aeronautics and Space Administration (NASA) for interfering in the negotiations for a new contract for almost 500 workers represented by IAM Local Lodge 2061 in Cape Canaveral, Florida. The IAM-represented employees provide launch services to NASA through the United Space Alliance (USA), a joint venture of Lockheed Martin and the Boeing Co. "NASA management is violating the law by attempting to dictate the terms of the economic package between the United Space Alliance and the IAM," said IAM International President R. Thomas Buffenbarger. "That interference is a violation of the Service Contract Act and it has harmed the dedicated IAM workers who are a key part of America's space program." The suit alleges that NASA violated its duty under the Service Contract Act and regulations implementing that act by telling the United Space Alliance that it would not reimburse USA for any increased labor costs in a new agreement with the IAM. Federal law requires NASA and other federal agencies to remain neutral in the collective bargaining process between federal contractors and the unions representing their employees. Federal agencies are also

required to reimburse federal contractors for labor cost increases if they are the result of bona fide collective bargaining. Federal agencies have an explicit mechanism for protesting any increase they deem excessive by requesting a review by the Department of Labor, which NASA tried to circumvent by direct intervention in negotiations. "The IAM's proposals have been reasonable and in line with other related contracts at NASA," said IAM Southern Territory General Vice President Robert Martinez. "NASA intentionally undermined the negotiations process between United Space Alliance and the IAM by injecting itself into the negotiating process that should be solely between the IAM and the contractor." Negotiations between the IAM and USA began in mid-2007. The parties were unable to reach an agreement because of NASA's interference and IAM-represented employees were forced on strike on June 14, 2007. Web posted. (2007). [IAM sues NASA for misconduct [Online]. Available WWW: <http://www.goiam.org/content.cfm?cID=11067> [2007, August 13.]

Stennis director Gilbrech to replace Horowitz as ESMD chief

Richard J. Gilbrech, director of NASA's Stennis Space Center, will take over in October as associate administrator for the Exploration Systems Mission Directorate, responsible for developing the launch vehicles, spacecraft and other systems intended to enable a human return to the moon and eventual exploration beyond that. He will replace Scott Horowitz, who is leaving the agency. Robert D. Cabana, like Horowitz a veteran shuttle astronaut and now deputy director of Johnson Space Center, will replace Gilbrech as director of Stennis. E-mail distribution. (2007). [Aviation Week's Aerospace Daily & Defense Report Re: "Stennis director Gilbrech to replace Horowitz as ESMD chief," [Electronic]. Vol. 223, No. 30, [August 13, 2007.].]

August 14: Mice are riding along with Endeavour's crew

Some of the passengers on space shuttle Endeavour, in its seventh day in orbit, have to cope with the effects of weightlessness on an unusual appendage: their tails. In addition to seven astronauts, Endeavour's occupants include 24 black lab mice. They're being used to test a drug to prevent muscle atrophy, a side effect of living in zero-gravity. All are female, because male mice have a stronger smell and are less desirable roommates in the shuttle's close confines. Mice and rats have flown on more than two dozen shuttle missions since the spacecraft's first flight in 1981, but no rodents have rocketed to orbit and made it back to Earth since 2001. The mice on Endeavour are low-maintenance traveling companions. They eat food bars attached to trays that slide into their cages. Strong jets of air shove their waste onto a filter. The astronauts won't have to do anything more than look into the three cages daily to check on the mice, says Louis Stodieck, head of Bioserve Space Technologies, a non-profit research center overseeing the experiment. Even so, the crew "will probably get to know them fairly well because they'll be seeing them every day," he says. The astronauts probably shouldn't get too attached. After landing on Earth, the mice will undergo muscle exams in tiny scanning machines and then will be euthanized so their cells can be studied. Web posted. (2007). [Mice are riding along with Endeavour's crew [Online]. Available WWW: <http://www.usatoday.com/> [2007, August 14.]

Due to new debris threat, NASA considers delaying next shuttle flight

NASA is pondering whether the next space shuttle mission in October should be delayed for modifications to thwart a new external tank (ET) debris threat, following the discovery of a

serious tile divot on Endeavour. The STS-118 crew conducted a focused inspection of the belly tile damage Aug. 12 using laser imaging sensors on the Orbiter Boom Sensor System (OBSS). The key area of concern is a damaged area extending 3.48 x 2.31 inches and spanning two tiles. The next shuttle flight, STS-120, currently is set for launch Oct. 24. NASA now must decide if it should delay the flight until brackets holding the 17-inch Oxygen feed line are modified to prevent ice buildup like that implicated in the insulation impact damage to Endeavour. Engineers believe ice that formed in the bracket played a role in popping off insulation from the spot 58 seconds into Endeavour's launch Aug. 8. The insulation, possibly mixed with ice, bounced off the shuttle ET aft attachment frame and flew into the belly, where it left three inconsequential dings and the deeper gouge that is raising concern. A new titanium bracket is planned to enter service by mid-2008, since engineers have known the current steel configuration is more conducive to ice formation. What they did not know was that vehicle aerodynamics could bounce debris liberated from a lower bracket off the ET attach struts and into the orbiter belly. Three ETs have been built without the modification, including the ET for STS-120. At its deepest, the divot on Endeavour reaches or exceeds the tile's 1.1-inch depth to either the filler bar immediately under the tile or the thin felt strain isolation pad that underlies all tile configurations to ensure they move independently of orbiter structure during re-entry heating. NASA is trying to determine whether the 2,000-degree Fahrenheit re-entry heating at the point of the gouge could reach the orbiter's aluminum structure. The shuttle is due to return to Earth Aug. 22. E-mail distribution. (2007). [Aviation Week's Aerospace Daily & Defense Report Re: "Due to new debris threat, NASA considers delaying next shuttle flight," [Electronic]. Vol. 223, No. 31, [August 14, 2007.].]

NASA clears Endeavour for three more days in space

Mission managers have cleared the space shuttle Endeavour to remain docked to the International Space Station (ISS) three extra days, after new hardware that lets the orbiter draw power from the station's solar arrays proved itself. The crews were notified Aug. 12, shortly after finishing a focused inspection of thermal-tile damage on the orbiter's belly, that the SSPTS met engineering expectations and could supplement the orbiter fuel cells sufficiently to slow consumption of the liquid hydrogen and oxygen they use to make electricity. The decision to extend the mission from 11 to 14 days will provide STS-118 crewmember Dave Williams, a veteran Canadian Space Agency astronaut, a fourth extravehicular activity (EVA) under current planning. He and fellow astronaut Rick Mastracchio are scheduled to go outside together a third time on Aug. 15 to continue preparations for future missions, and then ISS Expedition 15 flight engineer Clay Anderson was to accompany Williams on an extra EVA enabled by the new Station-to-Shuttle Power Transfer System (SSPTS). That will allow the total docked mission to run for 10 days, easing the time pressure on the crew to transfer some 5,100 pounds of supplies. It will also allow the shuttle to transfer extra oxygen to the station, as well as the water produced by the fuel cells, before returning to Earth as early as Aug. 22. E-mail distribution. (2007). [Aviation Week's Aerospace Daily & Defense Report Re: "NASA clears Endeavour for three more days in space," [Electronic]. Vol. 223, No. 31, [August 14, 2007.].]

Contract sets stage for launches

A new \$1.8 billion NASA contract is setting the stage for a series of Kennedy Space Center launches aimed at testing a new moon rocket and a new spaceship for U.S. Astronauts. The contract calls for Alliant Techsystems of Utah to design, develop and test the first stage of

NASA's Ares 1 and Ares 5 moon rockets. The Ares 1 rocket will be used to launch Orion spacecraft – Apollo-style capsules that will propel astronauts on moon missions. The Ares 5 rocket will launch propulsion modules and lunar landers that will dock with Orion spacecraft in low-Earth orbit. The first Ares 1 test flight with a four-segment booster, a dummy upper stage and an Orion capsule mock-up is scheduled for April 2009. A suborbital test flight is scheduled for September 2012. An unpiloted test flight of the Orion spacecraft is scheduled for March 2013, and a piloted, two-week shakedown of the ship is planned for September 2013. The contract is the second of four major pacts NASA intends to award for the Ares 1 rocket. A contract for its second-stage engine was signed with Pratt & Whitney Rocketdyne in June. ["Contract sets stage for launches," **Florida Today**, August 15, 2007, p 1C.]

August 15: Valve in Atlas failure replaced in all EELVs

A valve that prompted a fuel leak during the failed launch of an Atlas 5 rocket in June has been replaced in both the Atlas 5 and Delta 4 fleets. The valve is being replaced with one that the U.S. Air Force and United Launch Alliance are confident will work properly. The U.S. Air Force has issued a statement summarizing the progress in its investigation of the Atlas 5 launch of a pair of ocean surveillance craft for the National Reconnaissance Office. The top-secret spy sats were dropped off miles short of orbit after the upper-stage engine cut off seconds too soon. The cause: a fuel leak prompted by a liquid hydrogen valve that didn't close properly in extreme cold temperatures experienced during the Atlas flight. The valve is part of the Pratt & Whitney Rocketdyne RL10 engine and is common to both of the Air Force's Evolved Expendable Launch Vehicles (EELVs): the Atlas 5 and Delta 4. Hence, the Atlas anomaly impacted the entire military medium and heavy lift fleet. However, the Air Force statement indicates the issue is solved and launches of U.S. military and intelligence spacecraft will resume next month. The suspect LH2 valve has been replaced on both vehicles, which are erected on their launch pads at Cape Canaveral Air Force Station awaiting flight. The Air Force announcement said the launches were reset with new dates, but those dates have been known for some. In short, the Atlas 5 is set to fly first on Sept. 13. The Delta 4 target is Oct. 4. Web posted. (2007). [Valve in Atlas failure replaced in all EELVs [Online]. Available WWW: <http://www.floridatoday.com/> The Flame Trench blog [2007, August 15.]

August 16: New debris area bigger problem since Columbia, NASA says
Deputy Space Shuttle Program Manager John Shannon says a review of space shuttle flight history has found that the particular piece of foam that damaged Endeavour during its launch Aug. 8 has "liberated" during ascent with greater frequency since the 2003 Columbia accident than before. Following the accident, managers extended the countdown for an hour after the tank that holds liquid oxygen and liquid hydrogen propellant is filled to give the ice-inspection team more time to find dangerous ice buildups. Ironically, engineers now suspect that the extra time may be allowing a greater buildup of ice behind the foam over the bracket, which then pops the foam off the bracket during launch. If they decide that is the case, shortening the countdown after the tanks are filled might reduce the problem. Shannon repeated an earlier Mission Management Team assessment that the damage isn't severe enough to endanger the crew or the orbiter, but that it could force a lengthy delay before the next mission. The damage, caused when a piece of foam weighing 0.21 pounds bounced off a strut as it fell from a steel bracket 58 seconds after launch and smashed into the tiles, has been declared an "in-flight anomaly." That means engineers must either find a way to prevent it from happening again, or find an engineering rationale that it is safe to fly

without a major fix. E-mail distribution. (2007). [Aviation Week's Aerospace Daily & Defense Report Re: "New debris area bigger problem since Columbia, NASA says," [Electronic]. Vol. 223, No. 33, [August 16, 2007.].]

KSC buildings to be demolished

A list of shuttle facilities at the Kennedy Space Center (KSC) that will be demolished between 2010 and 2012 - including all three Orbiter Processing Facilities (OPFs) - has been produced. All three OPF's will be demolished between 2010 and 2012, in addition to the Hypergol Maintenance Facility (HMF) and SSME (Space Shuttle Main Engine) work shop. At the Shuttle Landing Facility, the shuttle specific landing aids will be taken down in addition to the Orbiter Mate-Demate Device. All TAL sites will be abandoned, as they belong to the foreign nations. Some facilities that may be modified to support Constellation include the STS Flight Simulator (Orion simulators), Space Station Processing Facility (Station support until de-orbit and possible use for Orion processing), and the Payload Canister Rotation Facility. Their fates are currently classed as 'undecided.' Modifications to the sound suppression system at Pad 39B and the MLP (Mobile Launch Platform) are scheduled to be finished by the beginning of next year, ahead of the 2008 test flight of the Ares I-X. LCC (Launch Control Center) firing room 1 will be activated in August 2008. The FSS (Fixed Service Structure) modifications to support interface with the dummy upper stage and flight monitoring equipment of the Ares I-X will be completed by Jan. 2009. The lightning mast on the FSS and the VAB high bay 3 work platforms are also scheduled for Jan. 2009. Other information notes that the Mobile Launcher for Ares 1 - currently at the 60 percent stage of its design' review - will have a total rollout mass, including vehicle, of around 12.5 million pounds (567,000kg). For comparison, Saturn V had a total rollout mass of 12.63 million pounds and the shuttle has a rollout mass of 12.02 million lbs. The dry weight of the Ares I will be 2.2 million lbs (1,000,000 kg), and the tower will weigh 2 million lbs (907,000 kg). The rest of the weight is in the MLP base, support systems, and ground support equipment. Web posted. (2007). [landings to be splashdowns - KSC buildings to be demolished [Online]. Available WWW: <http://www.nasaspaceflight.com/> [2007, August 16.]

August 17: Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-081707. **Mission: STS-118** - 22nd International Space Station Flight - S5 Truss Segment; Vehicle: Endeavour (OV-105); Official Launch Date: Aug. 8, 2007; Expected KSC Landing Date: Aug. 22, 2007; Crew: Kelly, Hobaugh, Williams, Morgan, Mastracchio, Caldwell and Drew; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. Today is flight day 10 for STS-118. After extensive engineering analyses and testing, the Mission Management Team decided Thursday evening that damaged tile on the underbelly of the orbiter does not pose a threat to the crew or the vehicle, and no repair will be made. During the week, the crew conducted three successful spacewalks. During these excursions outside the International Space Station, crew members installed the Starboard 5 truss element, removed and replaced control moment gyroscope 3 on the Z1 truss, relocated several pieces of hardware outside the station to make way for the arrival of future station components, and retrieved experiments. On Tuesday, the crew worked from inside the station, using the robotic arms on the shuttle and the station to unberth external stowage platform 3 from Endeavour's payload bay and install it on the P3 truss. On Saturday, a fourth spacewalk will take place, during which two experiment containers located outside the station will be retrieved, two antennae will be installed and

several other tasks will be completed. **Mission: STS-120** - 23rd International Space Station Flight - U.S. Node 2; Vehicle: Discovery (OV-103); Location: Orbiter Processing Facility Bay 3; Launch Date: Targeted for Oct. 23, 2007; Launch Pad: 39A; Crew: Melroy, Zamka, Parazynski, Wheelock, Wilson, Nespoli and Tani; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 3 this week, forward, midbody and aft closeout work continues. The auxiliary power unit tank pressurization is complete. Freon coolant loop No. 1 and 2 top-off and sampling is finished. Technicians performed hydraulic operations to position the shuttle main engines for rollover. Testing of the orbital maneuvering system flight controls and gimbal system was successful. Functional testing of the radiators, located on the payload bay doors, is under way. Stacking of the STS-120 solid rocket boosters in the Vehicle Assembly Building is complete and closeout work is under way. **Mission: STS-122** - 24th International Space Station Flight - Columbus Module; Vehicle: Atlantis (OV-104); Location: Orbiter Processing Facility Bay 1; Launch Date: Targeted for Dec. 6, 2007; Launch Pad: 39A; Crew: Frick, Poindexter, Schlegel, Eyharts, Love, Melvin and Walheim; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 1, work began this week on modifications to the orbiter's engine cutoff sensor wiring, which involves rerouting new wires and installing new resistors. Workers also continued installing new, stronger tiles, known as BRI tiles, around the main landing gear doors. Installation of the main propulsion system tanks is under way. Removal of the left-hand orbital maneuvering system pod to allow for a valve replacement is scheduled for later today. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, August 17.]

Worker stole \$157,000-plus from NASA

The bill's total - \$157,384.21 -- but none of the money belonged to Elizabeth Ann Osborne. Authorities said it was the property of her now-former employer, NASA. Osborne, 52, pleaded guilty Thursday in federal court to embezzling money from the space agency, where she had worked for 31 years. According to court documents, her job was to outfit the living quarters for astronauts' families and dignitaries. Instead, Osborne used a NASA-issued bank card to shop for herself and later falsified records to cover it up. When NASA reviewed Osborne's purchases from January 2001 to November 2005, it found 426 fraudulent purchases. They included trips to Best Buy, Sears and Lowe's. She shopped at Wal-Mart 127 times to buy gift cards and groceries. The total there was more than \$51,000, according to Osborne's plea agreement. "She has let herself, her family and NASA down and . . . is remorseful and continues to do what is right to make amends for her misconduct," he said. Osborne could face up to 10 years in prison, a fine of \$250,000 and three more years of supervision. She also must pay back NASA. Web posted. (2007). [Worker stole \$157,000-plus from NASA [Online]. Available WWW: <http://www.orlandosentinel.com/> [2007, August 17.]

Atlas V, Delta IV get new RL10 valve

A modified hydrogen valve design less susceptible to freezing up in extremely cold temperatures will be fitted into Pratt & Whitney RL10 upper-stage engines in Atlas V and Delta IV launchers to prevent a recurrence of the early engine shutdown that took place June 15 during the launch of two National Reconnaissance Office (NRO) ocean surveillance spacecraft at Cape Canaveral on an Atlas V. As a result of the RL10 valve freeze-up, the two

NRO spacecraft were placed in lower-than-planned, but still usable, orbits (DAILY, July 23). They have been climbing higher with about two maneuvers each per week since the incident. Extensive testing by Pratt & Whitney and United Launch Alliance has duplicated the failure and resulted in a modified design approved by the U.S. Air Force and NRO. The valve issue has had minimal impact on upcoming launches. The Atlas V launch of the first new Wideband Global Satcom (WGS) spacecraft is set for Sept. 13 from the Cape, after only about a two-week slip. And the Delta IV Heavy carrying the final Defense Support Program missile warning satellite has been delayed about five weeks to Oct. 4. But its delay has less to do with the valve and more to do with the need to carry out a third countdown rehearsal with the vehicle fueled. E-mail distribution. (2007). [Aviation Week's Aerospace Daily & Defense Report Re: "Atlas V, Delta IV get new RL10 valve," [Electronic]. Vol. 223, No. 34, [August 17, 2007].]

August 18: Mating of boosters and tank delayed

The mating of the STS-120 external tank with its solid rocket boosters, scheduled for Monday at Kennedy Space Center, will be delayed to study foam loss from the liquid oxygen feed line. Launch integration manager Leroy Cain made the announcement late Friday. A small piece of foam, likely pried away by ice, fell off Endeavour's external tank during liftoff and gouged a 3-inch divot in the shuttle's thermal tile underbelly. "We've come to understand that's a (foam) loss we can expect," Cain said. "It's a serious problem for us and we recognized we need to resolve it before we go fly." Cain said he did not expect the delayed mating to move back the Oct. 23 launch of STS-120, which is shuttle Discovery. However, he added that solving the foam loss problem might delay missions scheduled for launch in early December and February. By April, a tank with a new design will be available. Titanium brackets are being installed to reduce foam loss. An engineering team has examined several possible solutions, including trimming away some foam and spraying a kind of oil to prevent ice buildup. Reducing the time between fueling and launch has been suggested to reduce ice buildup. "They've determined there may be more foam in that area than we need," said Cain, who estimated the tank and the SRBs could be joined within a week and a half. Processing the shuttle for launch could then continue. Web posted. (2007). [Mating of boosters and tank delayed [Online]. Available WWW: <http://www.floridatoday.com/> [2007, August 18.]

NASA making plans with storm in mind

As Hurricane Dean pushes toward the Gulf of Mexico, NASA might move up Endeavor's Wednesday landing to Tuesday and even cut short or cancel today's spacewalk. "We'd really like to protect an option to end the mission on Tuesday," said Leroy Cain, launch integration manager and a chairman of the Mission Management Team. Shortening today's spacewalk would give the shuttle crew time to speed undocking, make a final examination of the spacecraft and prepare for an earlier landing. A decision was expected by this morning. "In all likelihood, it would be some scaled down version (of the spacewalk)," Cain said. Commander Scott Kelly said moving up the landing was possible. "It would certainly be a long day," said Kelly, who also endorsed NASA's decision not to repair a 3-inch gouge on the thermal tile. "I agree absolutely 100 percent with the decision not to repair," Kelly said at a Friday press conference from space. Kelly said that tests showed the aluminum skin beneath the damage would reach only 340 degrees, well below the metal's melting point. Only one engineering group of about 30 felt the repair should be performed to minimize the risk of damage to the shuttle. Also on Friday, lead shuttle flight director Matt Abbott said

that bringing Endeavour home Tuesday would avoid relocating the mission control staff. The present forecast shows the storm pressing down on the Texas coast by Wednesday. A slight change of direction to the north would threaten Houston, the home of Mission Control. In an emergency, mission controllers would fly to Kennedy Space Center in Florida, an option Abbot said he hopes to avoid, since equipment at KSC is designed for launch, not landing. "It's definitely not the same as being here at home," Abbott said. "Our objective is to get the mission completed from here in Houston." Johnson Space Center officials have begun identifying critical personnel, in case hurricane closedown procedures must begin this weekend. Web posted. (2007). [NASA making plans with storm in mind [Online]. Available WWW: <http://www.floridatoday.com/> [2007, August 18.]

August 19: NASA Moves Up Landing Because of Hurricane

With Hurricane Dean headed toward the Gulf of Mexico, the space shuttle Endeavour undocks from the International Space Station today, a day early, and is scheduled to land Tuesday. The worry is that the hurricane may threaten Houston, site of mission control, the Johnson Space Center. In that case, NASA would transfer flight operations to the Kennedy Space Center in Florida, where the shuttle is scheduled to land. Moving the landing day forward to Tuesday should preclude that possibility. Hurricane Dean was expected to pass south of Houston, with landfall in northern Mexico, but mission managers decided to take precautions in case the storm takes a right turn. "It would be irresponsible for us to not pay attention to this storm," LeRoy Cain, chairman of the mission management team, said at a news conference yesterday. For the shuttle to land Tuesday, astronauts had to finish packing up and close the hatches to the space station last night. This required shortening a fourth spacewalk by the Endeavour's astronauts yesterday to five hours from the planned six and a half. The astronauts retrieved two experiments from the outside of the space station that will return to Earth on the Endeavour. After undocking this morning, the shuttle crew will spend a couple of days preparing for landing, including conducting another inspection of the shuttle's nose cone and the leading edge of the wings to make sure they did not suffer any damage from micrometeoroids while docked to the space station. If the storm is approaching Houston, flight controllers will land the Endeavour at one of three sites on Tuesday — either at the Kennedy center or at backup sites in California and New Mexico. If it is not approaching Houston, and weather does not permit landing in Florida, controllers will have the shuttle stay in orbit another day before considering backup sites. The Endeavour has enough supplies to stay in orbit until Friday, but barring a major mechanical problem, it will land no later than Thursday. Web posted. (2007). [NASA Moves Up Landing Because of Hurricane [Online]. Available WWW: <http://www.nytimes.com/> [2007, August 19.]

August 20: Pioneering NASA Spacecraft Mark Thirty Years of Flight

NASA's two venerable Voyager spacecraft are celebrating three decades of flight as they head toward interstellar space. Their ongoing odysseys mark an unprecedented and historic accomplishment. Voyager 2 launched on Aug. 20, 1977, and Voyager 1 launched on Sept. 5, 1977. They continue to return information from distances more than three times farther away than Pluto. "The Voyager mission is a legend in the annals of space exploration. It opened our eyes to the scientific richness of the outer solar system, and it has pioneered the deepest exploration of the sun's domain ever conducted," said Alan Stern, associate administrator for NASA's Science Mission Directorate, Washington. "It's a testament to Voyager's designers, builders and operators that both spacecraft continue to deliver

important findings more than 25 years after their primary mission to Jupiter and Saturn concluded." For the past 19 years, the twin Voyagers have been probing the sun's outer heliosphere and its boundary with interstellar space. Both Voyagers remain healthy and are returning scientific data 30 years after their launches. Voyager 1 currently is the farthest human-made object at a distance from the sun of about 9.7 billion miles. Voyager 2 is about 7.8 billion miles from the sun. ["Pioneering NASA Spacecraft Mark Thirty Years of Flight," **NASA News Release #07-205**, August 20, 2007.]

August 21: Shuttle Endeavour Crew Returns Home after Successful Mission

The space shuttle Endeavour and its crew are home after completing a 13-day journey of more than 5.2 million miles in space. Endeavour's STS-118 mission successfully added another truss segment, a new gyroscope and external spare parts platform to the International Space Station. Endeavour's Commander Scott Kelly, Pilot Charlie Hobaugh and mission specialists Tracy Caldwell, Rick Mastracchio, Barbara R. Morgan, Alvin Drew and Canadian Space Agency astronaut Dave Williams landed at NASA's Kennedy Space Center in Florida on Tuesday at 12:32 p.m. EDT. Williams, Mastracchio and station flight engineer Clayton Anderson, with the help of their crewmates, made four spacewalks to accomplish the construction tasks. The spacewalkers also completed work in preparation for upcoming assembly missions, such as relocating an equipment cart and installing support equipment and communication upgrades. During the mission, a new system that enables docked shuttles to draw electrical power from the station to extend visits to the outpost was activated successfully. Because the system worked, two additional days were added to Endeavour's mission. STS-118 was the 119th space shuttle flight, the 22nd flight to the station, the 20th flight for Endeavour and the second of four missions planned for 2007. Although managers addressed several issues with Endeavour's heat shield, including a small gouge in the protective tile on the orbiter's belly, inspections in orbit revealed no critical damage. Endeavour's thermal protection system was declared safe for re-entry on Monday. The orbiter will be processed immediately for its next flight, targeted for February 2008. With Endeavour and its crew safely home, the stage is set for the next phase of International Space Station assembly. Preparations continue for space shuttle Discovery's scheduled launch in October of the STS-120 mission to deliver the pressurized Node 2 connecting module to the station. ["Shuttle Endeavour Crew Returns Home after Successful Mission," **NASA News Release #07-177**, August 21, 2007.]

August 21: NASA unlikely to modify tanks

NASA is leaning toward launching shuttle Discovery on Oct. 23 without external tank changes despite heat-shield damage done to Endeavour during its blastoff earlier this month. The agency also aims to launch Atlantis and a European science laboratory to the International Space Station on Dec. 6. The tank is covered with 4,000 pounds of foam insulation designed to keep ice from building up when a shuttle is fueled for flight. NASA spent about \$235 million after Columbia to reduce the amount of foam that could come off the tank. Engineers knew foam could pop off the fuel-line brackets that shed insulation on Endeavour's flight but never considered whether damage could be done if foam pinballed into heat-shield tiles. Five of the aluminum brackets hold the liquid oxygen line to the outside of the tank. Two different types of foam and cork laced with bonding material form bracket covers 3 inches wide, 5 inches long and 2 ½ inches thick. NASA tank Chief John Chapman at Marshall Space Flight Center said five potential bracket modifications are being

examined. Each is designed to minimize ice build-up while reducing foam. Griffin and Gerstenmaier will be briefed later this week, but any modification will be a hard sell. "It is better to leave it alone and not change it and understand where we are, or is it better to go change it?" Gerstenmaier said. Added Griffin: "The presumption is in fact against change." ["NASA unlikely to modify tanks," **Florida Today**, August 22, 2007, p 1A & 3A.]

August 22: Former teacher feels queasy after landing

Gravity made Barbara Morgan woozy after a 220-mph landing Tuesday during which the shuttle dove to a perfect touchdown on a trajectory seven times steeper than the approach of a commercial jet. While the other six members of Endeavour's crew inspected the spacecraft's underbelly, Morgan remained in a medical van. At a crew press conference five hours later, she was still dizzy. "The room still spins a little bit, but that's OK," the 55-year-old astronaut said. "My first plan is to get rid of the room spinning, and that should happen pretty soon. It's actually pretty interesting if you could be in my body." After Endeavour's launch on Aug. 8, Morgan, like 70 percent of those who travel to space, was disoriented for several days. "It took me a while at first to get used to the microgravity," she said. "When you wanted to turn yourself rightside up, you couldn't." Eventually she adjusted, and by the middle of the mission, observers could tell she was comfortable in space and performing her jobs as remote arm operator and payload specialist. She also conducted two question-and-answer sessions with school children on Earth. Astronauts Dave Williams, a Canadian, and Al Drew, an Air Force helicopter test pilot, helped with in-space demonstrations of tooth brushing, drinking and washing in weightlessness. Morgan's flight brings a NASA program full circle. Selected as backup Teacher in Space to the late Christa McAuliffe in 1985, Morgan trained with McAuliffe and witnessed the 1986 Challenger accident. Though one teaching session was lost when Endeavour's mission was cut short a day because of Hurricane Dean, Morgan plans to continue her teaching efforts with NASA on Earth. Both teaching and being an astronaut are challenging, and both are rewarding, she said. "There's a great sense of pride to be involved in a human endeavor that takes us all farther," she said. Web posted. (2007). [Former teacher feels queasy after landing [Online]. Available WWW: <http://www.floridatoday.com/> [2007, August 22.]

Robot mechanic goes to space

A mechanical workman will appear at the International Space Station in February to take over some of the spacewalking duties now performed by astronauts. Dextre, a Canadian-built robot, swings two 11-foot arms and weighs nearly 3,500 pounds. When he comes to life, drawing 1,400 watts of electricity, he could relieve humans at the space station of many of the average 18 spacewalks they do for routine maintenance. "It'll be a historic moment in robotics," Dan Rey, Dextre integration manager with the Canadian Space Agency, said. "Three generations from now, humans will be on the moon and robots will have helped get them there." Dextre is the third and final component of the Canadian Mobile Servicing System, which includes Canadarms 1 and 2. It holds lights, video equipment, a stowage platform and three robotic tools. While one arm will grasp the station for support, Dextre can pivot at the waist and guide payloads with the seven joints on each arm. A typical task would be to replace a 200-pound battery and engage the connectors. Spacewalks take two weeks of preparation and cleanup, so a huge amount of time would be saved. In addition to allowing astronauts to escape routine maintenance, the robot would be able to handle unexpected work. Though it's 12 feet tall, Rey calls Dextre a robotic surgeon. The first of the arm's nine pieces went up on the Endeavour mission. The other eight pieces will go up

on a mission in February. The robot will require spacewalking astronauts about 2 hours to assemble. And while the machine has been designed to last for 15 years, its creators expect it to last much longer. Web posted. (2007). [Robot mechanic goes to space [Online]. Available WWW: <http://www.floridatoday.com/> [2007, August 22.]

August 23: Lawyer: Ex-astronaut Nowak wants ankle-bracelet removed
The lawyer for Lisa Nowak -- the former NASA astronaut accused of assaulting a romantic rival -- will ask a judge Friday to throw out her statements to police, suppress evidence collected from her car and remove her ankle-bracelet monitor. The pretrial hearing, during which witnesses will be called -- and Nowak may testify -- is set to start at 9 a.m. ET in the 9th Judicial Circuit Court of Florida. NASA ended Nowak's assignment as an astronaut in March after she allegedly assaulted Air Force Cpt. Colleen Shipman, who was dating Nowak's former love interest, Navy Cmdr. Bill Oefelein. Nowak, a captain in the U.S. Navy, allegedly drove nearly 900 miles from Houston, Texas, to Orlando, Florida, wearing adult diapers to cut down on the number of stops she needed to make, in order to confront Shipman, according to an initial police report. She was apprehended in the parking lot at Orlando International Airport after Shipman claimed Nowak attacked her. Airport surveillance tapes show Nowak donning a disguise while waiting for Shipman to arrive, then following her, police said. Shipman told police that Nowak approached her car in the airport parking lot, and asked her for help with a dead battery. Web posted. (2007). [Lawyer: Ex-astronaut Nowak wants ankle-bracelet removed [Online]. Available WWW: <http://www.cnn.com/> [2007, August 23.]

NASA and Internet Archive Team to Digitize Space Imagery
NASA and Internet Archive of San Francisco are partnering to scan, archive and manage the agency's vast collection of photographs, historic film and video. The imagery will be available through the Internet and free to the public, historians, scholars, students, and researchers. Currently, NASA has more than 20 major imagery collections online. With this partnership, those collections will be made available through a single, searchable "one-stop-shop" archive of NASA imagery. NASA selected Internet Archive, a nonprofit organization, as a partner for digitizing and distributing agency imagery through a competitive process. The two organizations are teaming through a non-exclusive Space Act Agreement to help NASA consolidate and digitize its imagery archives using no NASA funds. Web posted. (2007). [NASA and Internet Archive team to digitize space imagery [Online]. Available WWW: <http://www.spaceref.com/> [2007, August 23.]

August 24: Space Shuttle Processing Status Report
Space Shuttle Processing Status Report #S-081707. **Mission: STS-118 - 22nd International Space Station Flight - S5 Truss Segment; Vehicle: Endeavour (OV-105); Official Launch Date: Aug. 8, 2007; Official KSC Landing Date: Aug. 21, 2007; Crew: Kelly, Hobaugh, Williams, Morgan, Mastracchio, Caldwell and Drew; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles.** Endeavour touched down at Kennedy Space Center at 12:32 p.m. EST on Aug. 21, completing a 13-day journey to the International Space Station. The mission was cut short by a day because of the potential threat to the Houston area posed by Hurricane Dean. Prior to the Sunday undocking from the station, Mission Specialist Dave Williams and station Flight Engineer Clay Anderson conducted the final spacewalk of the mission on Saturday. They installed the external wireless instrumentation system antenna, attached a stand for the shuttle's robotic arm extension boom and retrieved two materials

experiment containers. The spacewalk was trimmed by two hours to allow for a day-early hatch closing. Endeavour is now in Orbiter Processing Facility bay No. 2, where post-flight inspections and processing are under way. Endeavour's payload will be removed this weekend. **Mission: STS-120** - 23rd International Space Station Flight - U.S. Node 2; Vehicle: Discovery (OV-103); Location: Orbiter Processing Facility Bay 3; Launch Date: Targeted for Oct. 23, 2007; Launch Pad: 39A; Crew: Melroy, Zamka, Parazynski, Wheelock, Wilson, Nespoli and Tani; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 3 this week, forward, midbody and aft closeout work continues. Final payload bay door closing is scheduled for next week. The orbiter docking system pyro testing is under way. The external door functional testing is complete, as is final testing of the engine cutoff sensor wiring modifications. Stacking and closeout of the STS-120 solid rocket boosters in the Vehicle Assembly Building has finished. Mating of the external tank to the boosters has been postponed, pending completion of foam repair work that will be done on the tank's liquid oxygen feedline support brackets. **Mission: STS-122** - 24th International Space Station Flight - Columbus Module; Vehicle: Atlantis (OV-104); Location: Orbiter Processing Facility Bay 1; Launch Date: Targeted for Dec. 6, 2007; Launch Pad: 39A; Crew: Frick, Poindexter, Schlegel, Eyharts, Love, Melvin and Walheim; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 1, technicians continue making modifications to the orbiter's engine cutoff sensor wiring. This work involves rerouting new wires and installing new resistors. Workers also continued installing new, stronger tiles, known as Boeing Reusable Insulation (BRI) tiles, around the main landing gear doors. Installation of the main propulsion system tanks is complete, with leak checks planned next week. Waterproofing of the orbiter's thermal protection system is planned for Sunday. The left-hand orbital maneuvering system pod was removed to allow for a valve replacement. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, August 24.]

NASA to fix foam; launch still set for Oct. 23

NASA is going to remove and replace cracked foam covers on the external tank for shuttle Discovery's upcoming mission to the International Space Station, but launch remains scheduled for Oct. 23. The extra work, however, will push back preparations for the planned Dec. 6 launch of Atlantis and a European science laboratory, making it less likely NASA will be able to send up that mission during a short seven-day window. A chunk of foam the size of a baseball broke free from one of five aluminum brackets that held the liquid oxygen feedline to the tank used during Endeavour's Aug. 8 launch on an International Space Station assembly mission. The foam ricocheted off a metal strut attaching the tank to Endeavour, damaging fragile heat shield tiles on the underside of the orbiter. NASA ordered up x-ray inspections of the brackets on the tank being readied for the planned Oct. 23 launch of Discovery. The 15-story tank now is located in the checkout cell on the northwest side of the Kennedy Space Center Vehicle Assembly Building. The x-rays showed evidence of small hairline cracks in four of the five foam-and-cork covers that keep ice from building up on the brackets. Two different types of foam and cork laced with an epoxy bonding material are used to form the bracket covers, which are about three inches wide, five inches long and 2.5 inches thick. The cracks all were found in the cork layers of the covers. Shuttle program manager Wayne Hale said the covers will be removed and then replaced with ones fashioned only from foam. The higher-density cork would be left out of the mix. The repair work on the foam covers on Discovery's tank is expected to take about

nine days. That would leave about five days padding in the schedule leading to the Oct. 23 target date. Web posted. (2007). [NASA to fix foam; launch still set for Oct. 23 [Online]. Available WWW: <http://www.floridatoday.com/> The Flame Trench blog [2007, August 24.]

New Deputy Director Selected at NASA Glenn

Ramon "Ray" Lugo III has been named the Deputy Director at NASA's Glenn Research Center in Cleveland. Lugo succeeds Richard S. Christiansen who retired in May. Lugo currently serves as deputy program manager of the Launch Services Program at NASA's Kennedy Space Center, Fla. "I had the opportunity to work with Ray during my tenure as Deputy Center Director at Kennedy," said NASA Glenn Director Dr. Woodrow Whitlow Jr. "He's an outstanding engineer and a great strategic thinker with lots of energy. He will be a strong addition to the Glenn staff and the Ohio community." Lugo expressed his excitement about the new position. "I'm looking forward to the broad challenges and the new responsibilities I'll now have at Glenn and, of course, I will very much enjoy working with Dr. Whitlow once again," said Lugo. As the launch services deputy program manager, Lugo is responsible for program execution guaranteeing access to space for the delivery of on-time, on-orbit, and on-cost launch assets satisfying government-wide space transportation requirements. Lugo began his NASA career at Kennedy in 1975 as a cooperative education student. His first assignment was in the Construction and Modifications Branch as an engineer responsible for construction modifications to Launch Complex 39A in preparation for the first space shuttle launch. Since becoming a member of the Senior Executive Service in 2001, he served as the Executive Director of the Cape Canaveral Spaceport Management Office. Other leadership positions include Director and Deputy Director of Expendable Launch Vehicle Services; Manager of Facilities and Support Equipment Division in the Space Station Project Office; and Chief, Business Office of the Joint Performance Management Office. ["New Deputy Director Selected at NASA Glenn," **NASA News Release #07-030**, August 24, 2007.]

NASA jobs in transition

About 100 small business representatives gathered in Cocoa Beach on Thursday, learning how to participate in NASA's Constellation program, the next generation of the agency's space exploration. The six-hour NASA Constellation Small Business Forum included talks from Kennedy Space Center representatives, and also from prime contractors, such as The Boeing Co., Harris Corp., Lockheed Martin Corp. and Pratt & Whitney Rocketdyne Inc. Representatives of small businesses from all across Florida attended the forum. Officials launched NASA's Constellation program -- the umbrella name for the space agency's moon, Mars and beyond visionary agenda -- in 2004. Last year, NASA awarded Lockheed Martin the contract to build the Constellation program's crew exploration vehicle. Lockheed promised final assembly and checkout operations for the vehicle, known as the CEV, will be at KSC. As the space shuttle program nears retirement, Florida lawmakers and economic development officials are desperately trying to ensure the state maintains a preeminent role in space travel. Small business has a role in that, said Lynda Weatherman, chief executive officer and president of the Economic Development Commission of Florida's Space Coast, one of the sponsors of Thursday's small-business forum. Web posted. (2007). [NASA jobs in transition [Online]. Available WWW: <http://www.floridatoday.com/> [2007, August 24.]

August 26: Disney to honor Astronauts

Walt Disney World will host ceremonies honoring the crew of the just-concluded NASA space shuttle Endeavour mission and the achievement of teacher-turned-astronaut Barbara Morgan on Sept. 10. This will be the first official appearance of the STS-118 crew after returning to Earth on Tuesday. Disney's Epcot and Magic Kingdom theme parks will be the backdrop as park guests and schoolchildren interact with the Endeavour astronauts. Highlights include astronaut Barbara Morgan unveiling a new addition to the Mission: SPACE attraction; interview opportunities with the STS-118 crew; and the astronauts serving as honorary grand marshals in the Magic Kingdom's afternoon parade down Main Street, U.S.A. Web posted. (2007). [Disney to honor Astronauts [Online]. Available WWW: <http://www.floridatoday.com/> [2007, August 26.]

August 28: NASA Selects Ares I Upper Stage Production Contractor
NASA on Tuesday selected The Boeing Co., Huntsville, Ala., as the contractor to provide manufacturing support for design and construction of the upper stage of the Ares I rocket. Ares I will launch astronauts to the International Space Station and eventually help return humans to the moon. Boeing will provide support to a NASA-led design team during the design phase and will be responsible for production of the Ares I upper stage. Boeing will manufacture a ground test article, three flight test units and six production flight units to support NASA's flight manifest through 2016. Final assembly of the upper stage will take place at NASA's Michoud Assembly Facility in New Orleans. The contract type is cost-plus-award-fee and the period of performance is Sept. 1, 2007, through Dec. 31, 2016. The estimated contract value for design team support and the manufacture of the test units and six production flight units is \$514.7 million. The selection resulted from a full and open competition. ["NASA Selects Ares I Upper Stage Production Contractor," **NASA Contract Release #C07-40**, August 28, 2007.]

Kennedy Space Center to become Moonport again
While the space shuttle fleet continues its countdown to retirement, Kennedy Space Center teams are already at work to transition the Florida spaceport into the home of the Ares rocket family that promises to carry astronauts to the moon by the end of the next decade. The space shuttle program is facing a September 2010 deadline to complete at least 12 more missions. Two additional flights are also on the books to deliver extra supplies to the international space station if time permits. The shuttle is being retired in favor a new generation of vehicles to haul astronauts and cargo to the space station, the moon and eventually into the solar system. The Ares rocket fleet is a centerpiece of the Constellation program, which also includes the Orion spacecraft that will ferry astronauts to and from the space station and the moon. The Ares 1 rocket will launch the piloted Orion capsule into Earth orbit for both station and lunar missions. Standing more than 300 feet tall, the two-stage rocket will include a modified five-segment solid rocket booster from the shuttle program and a cryogenic upper stage powered by the J-2X engine derived from the Apollo program. The heavy-lifting Ares 5 rocket is expected to become operational a few years later. The 358-foot-tall rocket will haul cargo into orbit for lunar missions using twin five-segment solid rocket boosters, a large first stage with five RS-68 engines from the Delta 4 rocket program, and an Earth Departure Stage with a single J-2X engine. The Ares 5 will be the most powerful rocket ever developed, according to NASA officials. Web posted. (2007). [Kennedy Space Center to become Moonport again [Online]. Available WWW: <http://www.floridatoday.com/> [2007, August 28.]

August 29: NASA Safety Review Finds No Evidence of Improper Alcohol Use by Astronauts before Space Flight

A NASA safety review released Wednesday found no evidence to support claims that astronauts were impaired by alcohol when they flew in space. NASA chief of Safety and Mission Assurance Bryan O'Connor conducted the month long review to evaluate allegations included in the Astronaut Health Care System Review Committee's report, which was released in late July. "I have said many times during the past weeks that NASA takes these allegations very seriously -- just as we would any issues that could impact the safety of our missions," NASA Administrator Michael Griffin told a news conference at NASA Headquarters. "But at the same time, I also have said that the stories cited in the report seem improbable to those of us familiar with the astronauts' rigorous and very public activities during the hours leading up to a space flight." ["NASA Safety Review Finds No Evidence of Improper Alcohol Use by Astronauts before Space Flight," **NASA News Release #07-184**, August 29, 2007.]

NASA Awards Reusable Solid Rocket Motors Contract Modification

NASA has awarded a contract modification valued at \$681 million to ATK Launch Systems of Brigham City, Utah, for continued delivery of space shuttle reusable solid rocket motors. The modification reforms and extends the current contract to align production to new launch schedule requirements through Sept. 30, 2010. The modification reflects adjustments made in the shuttle manifest and makes deliveries consistent with the planned retirement of the space shuttle in September 2010. ATK Launch Systems will provide hardware and sustain engineering support to the Space Shuttle Program through the contract completion date on this cost-plus-award fee contract, which was awarded in October 1998. Work will be performed at the contractor's plants in Brigham City and Clearfield, Utah, along with facilities at NASA's Marshall Space Flight Center in Huntsville, Ala., and NASA's Kennedy Space Center, Fla. ["NASA Awards Reusable Solid Rocket Motors Contract Modification," **NASA Contract Release #C07-41**, August 29, 2007.]

Weldon: Close spaceflight gap

An anticipated five-year hiatus in NASA human spaceflight would leave the U.S. unacceptably reliant on Russia to fly American astronauts into space, U.S. Rep. Dave Weldon said Wednesday. The White House and Congress, consequently, should increase NASA's budget to minimize the gap between the 2010 retirement of the nation's shuttle fleet and the first flights of Apollo-style Orion spacecraft, the congressman said. "This is not just a NASA issue. It's a foreign policy issue as well," Weldon, R-Indialantic, and a member of the House Appropriations Committee, told reporters after a town hall meeting at Kennedy Space Center. "Do we, the richest country on the face of the Earth, want to be dependent on Russia to launch our men and women into space?" he said. "To me, it's not a good scenario." NASA plans to retire its aging shuttle fleet in 2010 and build two new rockets and Orion capsules to launch astronauts on missions to the International Space Station, the moon and Mars. President Bush ordered NASA to have the Orion spacecraft ready for its first piloted flight in 2014. The agency aimed to accelerate launch plans by two years. But Congress kept NASA's 2007 budget at 2006 levels, effectively cutting \$700 million from the development effort. The first piloted Orion flight now is targeted for March 2015. As it stands, the U.S. will have to rely on Russia to fly American astronauts to the \$100 billion International Space Station during the gap. NASA would need an infusion of hundreds of

millions of dollars in 2009 and 2010, and then an extra billion dollars in both 2011 and 2012, to close the projected gap, Weldon said. Web posted. (2007). [Weldon: Close spaceflight gap [Online]. Available WWW: <http://www.floridatoday.com/> [2007, August 29.]

'Star Wars' icon to soar with shuttle

May the force be with shuttle Discovery and seven astronauts on an October mission to the International Space Station. Coming from a galaxy far, far away, the lightsaber wielded by Luke Skywalker in "Star Wars" will fly aboard the orbiter three decades after the classic movie opened. The lightsaber will be on display at the visitor complex at Johnson Space Center in Houston through Labor Day. Then it will be shipped to Kennedy Space Center and packed into Discovery. NASA spokesman James Hartsfield said the sci-fi sword would remain stowed throughout the shuttle's 13-day mission. NASA sets aside a small amount of space on every mission to fly commemorative items. Discovery is scheduled to launch Oct. 23. ["Star Wars' icon to soar with shuttle," **Florida Today**, August 29, 2007, p 1A.]

August 30: Covey to take helm at USA as McCulley retires

The U.S. astronaut who piloted NASA's first post-Challenger shuttle flight and commanded a crucial mission to fix the myopic Hubble Space Telescope will take the helm next month at United Space Alliance. Richard Covey will take the post of Chief Executive Officer for USA when Michael McCulley, also a former astronaut and shuttle pilot, retires. McCulley will retire Sept. 28 after a 38-year career as a naval aviator, shuttle astronaut and highly regarded space industry executive. Daniel Brandenstein, who also was a shuttle pilot and mission commander, will step into Covey's current position and serve as Chief Operating Officer of the company, which serves as NASA's prime shuttle fleet operator. Web posted. (2007). [Covey to take helm at USA as McCulley retires [Online]. Available WWW: <http://www.floridatoday.com/> the flame trench blog [2007, August 30.]

Space Debris Punched Hole In Endeavour's Radiator

NASA has discovered that Endeavour suffered the worst damage from space debris in the 26-year history of the shuttle program during its mission last week. The damage was just discovered during inspections in the hangar. Space debris punched a hole right through a radiator on the shuttle. The hole is just over one-third of an inch wide. The hole was not in a critical area of the shuttle, but went right through the part it hit. The radiator that was hit is a part that isn't inspected for damage in orbit because it is stowed in the shuttle when it is coming back to Earth. In another picture of the damage posted on NASASpaceflight.com, the area where the debris exited shows mangled metal. A spacewalking astronaut told News 13 that a spacesuit can survive a hole that big for 30 minutes if the debris doesn't kill the astronaut by hitting a vital organ and if it doesn't hit the life support of the spacesuit. The last shuttle hit by space debris in the radiator was Atlantis last September. That hole was only a third the size of the one found on Endeavour. Web posted. (2007). [Space Debris Punched Hole In Endeavour's Radiator [Online]. Available WWW: <http://www.cfnews13.com/> [2007, August 30.]

Gap in spaceflights: Is U.S. pride at risk?

U.S. Rep. Dave Weldon sounded the alarm Wednesday that the four-year gap between American human spaceflight programs is a threat to national pride. Between town-hall meetings with workers at the Kennedy Space Center, Weldon, R-Indialantic, told reporters that Congress needs to give NASA more money. He said the money would shorten the time

between the retirement of the space-shuttle fleet in 2010 and the start of the Constellation program in 2014. During the four-year gap, NASA is expected to rely on Russia to get astronauts and supplies to and from the international space station. "Do we, the richest country on the face of the Earth, want to be dependent on Russia to launch our men and women into space?" Weldon said. Weldon, wearing a space-shuttle tie and lapel pin, also suggested the gap could delay President Bush's goal of returning to the moon. Weldon said that, although he supported the president's plan for space exploration that would eventually lead to Mars, "it had the appearance to me of a plan that was hatched in the Office of Management and Budget." Weldon said NASA should keep the shuttle flying past 2010 or come up with a viable alternative, such as accelerating the Constellation program, which would require billions of additional dollars. The town-hall meetings were closed to all but workers at Kennedy Space Center. Thousands of space workers nationwide are expected to lose their jobs when the shuttle program ends. Web posted. (2007). [Gap in spaceflights: Is U.S. pride at risk? [Online] Available WWW: <http://www.orlandosentinel.com/> [2007, August 30.]

Striking machinists to rally at Space Center

Striking machinists will stage a rally at the gates to Kennedy Space Center on Thursday in a bid to shore up support for a work stoppage that has taken crane operators and other key personnel off the job at the nation's prime spaceport, Local 6 News partner Florida Today reported. More than 400 members of the International Association of Machinists and Aerospace Workers Local 2061 have been on strike since June 14. Many members plan to meet in front of the U.S. Astronaut Hall of Fame south of Titusville near the intersection of U.S. 1 and state Road 405 for the rally. Officials said that Tom Buffenbarger, president of the national IAM, will be in attendance. They are urging all members to be there. Three picket sites continue to be staffed, and a giant inflatable rat has been gracing those at the north and south ends of the space center. The third picket line is located at the corner of state Road 405 and Grissom Parkway. That site is located west of Gate 3 at the space center and near a major United Space Alliance office building. No deal between the two sides appears imminent. Bargaining teams from the company and the union still have not resumed negotiations, and both parties appear to be waiting for a federal mediator to step in and force both sides back to the table. Web posted. (2007). [Striking machinists to rally at Space Center [Online]. Available WWW: <http://www.local6.com/> [2007, August 30.]

Ex-Astronaut can take off ankle bracelet

A former NASA astronaut accused of assaulting a romantic rival at a Florida airport can take off her electronic tracking bracelet while she awaits trial, a judge ruled Thursday. Although the alleged victim, Air Force Capt. Colleen Shipman, testified earlier this month that she remains afraid of Nowak and wants the monitor to remain, Shipman "chose to travel to the defendant's hometown of Houston, Texas, on three or four occasions ... to visit her boyfriend" since the incident, Lubet wrote. "During these trips ... the electronic monitoring GPS device afforded no protection or benefit to Ms. Shipman, as the defendant could freely move about Houston," Lubet wrote. "Under these circumstances, it is clear to this court that the electronic monitoring GPS device does not fulfill its intended purpose of protecting Ms. Shipman." Lubet also cited Nowak's lack of a prior criminal record. Web posted. (2007). [Ex-Astronaut can take off ankle bracelet [Online]. Available WWW: <http://www.cnn.com/> [2007, August 30.]

No preflight drunkenness

Likening one claim to an urban legend, frustrated NASA Administrator Mike Griffin said Wednesday there was no evidence to back allegations that astronauts were drunk just before missions. "I think our guys are doing a heck of a job. I think these allegations are not true," Griffin said at a news conference that followed a month-long NASA investigation. The investigation arose from a July report by an outside committee created to look into NASA's health care system after former astronaut Lisa Nowak was accused of attacking and trying to kidnap Air Force Capt. Colleen Shipman in February. That committee said it was told of two incidents: * An astronaut who was intoxicated the day of a shuttle launch. The launch was scrubbed, but the astronaut was allowed to fly a jet. * An astronaut on a Russian Soyuz mission to the International Space Station who was so drunk the night before the launch that a flight surgeon stayed with him out of fear he might choke to death. As to the second claim, Griffin said: "I can say categorically that that anecdotal story did not happen." The flight surgeon who was reportedly involved was interviewed and told a completely different story that included "nothing of concern," Griffin said. He declined to provide details. Bryan O'Connor, NASA's chief of safety and a former astronaut, said he found nothing to verify either story during interviews with most of the current and former astronauts and flight surgeons, other staff members, and after reviewing reports and complaints filed anonymously within NASA. Neither O'Connor nor Griffin asked the health study committee to reveal the anonymous sources of the two stories, one of which the committee said was an astronaut. Griffin said he did not have the power and would not want to compel the independent panel to reveal its sources, who had been promised anonymity. NASA's inspector general also is looking into the claims, but Griffin said because of the office's independence he did not know whether it would seek to find out the sources. Other revelations in the report: * All current flight surgeons at NASA sent a joint statement last Thursday saying they had never seen any astronaut impaired before flight. * Alcohol is available for use while off-duty in crew quarters at Johnson Space Center in Houston and Kennedy Space Center. It is mostly beer and wine, O'Connor said, but he reported finding a half-full bottle of tequila. * Astronauts and others interviewed said alcohol and drinking in crew quarters, which astronauts enter about a week before shuttle launches, is "substantially less" than in the 1980s and early 1990s. Another discovery made during the investigation is that NASA, while testing employees suspected of drug use, never implemented a 1991 law requiring creation of an alcohol-testing program for civilian employees. Work on that will now begin. Web posted. (2007). [No preflight drunkenness [Online]. Available WWW: <http://www.floridatoday.com/> [2007, August 30.]

August 31: Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-083107. **Mission: STS-120** - 23rd International Space Station Flight - U.S. Node 2; Vehicle: Discovery (OV-103); Location: Orbiter Processing Facility Bay 3; Launch Date: Targeted for Oct. 23, 2007; Launch Pad: 39A; Crew: Melroy, Zamka, Parazynski, Wheelock, Wilson, Nespoli and Tani; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 3 this week, forward and aft closeout work continues. The midbody closeouts are complete. Closeout of the crew cabin airlock is under way. The orbiter's main engines have been configured for rollover. Workers are installing hard covers on the orbiter's windows. Stacking and closeout of the STS-120 solid rocket boosters in the Vehicle Assembly Building are finished. Mating of the external fuel tank to the boosters is targeted for Sept. 5, pending completion of foam repair work that is being done on the tank's liquid oxygen feedline

support brackets. **Mission: STS-122** - 24th International Space Station Flight - Columbus Module; Vehicle: Atlantis (OV-104); Location: Orbiter Processing Facility Bay 1; Launch Date: Targeted for Dec. 6, 2007; Launch Pad: 39A; Crew: Frick, Poindexter, Schlegel, Eyharts, Love, Melvin and Walheim; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles; In Orbiter Processing Facility bay No. 1, workers continue making modifications to the orbiter's engine cutoff sensor wiring. This work involves rerouting new wires and installing new resistors. Inspections of the main propulsion system flow liners are complete, and the drag chute door has been installed. Orbiter power system validation will begin next week after the vehicle is powered up. **Mission: STS-123** - 25th International Space Station Flight - Kibo Logistics Module, Dextre Robotics System; Vehicle: Endeavour (OV-105); Location: Orbiter Processing Facility Bay 2; Launch Date: Targeted for Feb. 14, 2008; Launch Pad: 39A; Crew: Gorie, Johnson, Linnehan, Doi, Behnken, Foreman and Reisman; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 2, two tiles damaged during the flight of STS-118 have been removed for inspection and testing. The orbiter structure beneath the tile impact area has been inspected, and engineers have found no evidence of heat-related damage. Additionally, three-dimensional measurements of the damage site found no appreciable change in volume resulting from heat affects. Also during inspections, two micro-meteorite impacts were observed on the payload bay door radiators. They did not damage any of the radiator Freon coolant loops and did not reach the outer skin of the payload bay doors. These impact areas can be repaired. Spacehab, part of the STS-118 payload, was removed from Endeavour's payload bay and returned to the Space Station Processing Facility. Validation of the orbiter's main engine pneumatics and power systems is complete. Workers have completed post-flight thermography inspection of the reinforced carbon-carbon, or RCC, on the nose cap. Thermography inspection of the left- and right-hand wing leading edge RCC panels is under way. Preparations are being made for the forward reaction control system functional test. Workers are deservicing the hypergolic fuel system today. The orbiter's three main engines will be removed next week. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, August 31.]

KSC center's Geis will lead attractions

Steve Geis, director of operations for the Kennedy Space Center Visitor Complex, has been elected 2007-08 chairman of the board for the Florida Attractions Association. The Florida Attractions Association represents 90 attractions, working to promote and advance the interests of the attraction industry. "The Florida Attractions Association has a long and proud tradition, and the list of past chairs is a 'who's who' of pioneers in the industry," Geis said. "I am honored to join such an illustrious group, and thrilled with the opportunity to serve the FAA membership." ["KSC center's Geis will lead attractions," **Florida Today**, August 31, 2007, p 1C & 2C.]

SEPTEMBER

September 1: Layoffs Hit Kennedy Space Center

SGS, the base operations contractor for KSC, will layoff 75 employees. The employees include engineering support and environmental services workers along with space center police and firefighters. NASA and the Air Force originally told SGS to lay off 115. The company was able to get that number reduced to 75. NASA points out that the space shuttle's replacement will not require as many workers. Once the space shuttle is retired in 2010, more employees will have to find a new place to work. Web posted. (2007). [CFN Exclusive: Layoffs Hit Kennedy Space Center [Online]. Available WWW: <http://www.cfnews13.com/> [2007, September 1].]

Shuttle weathers storm

Kennedy Space Center resumed preparations for the planned launch of Atlantis after the spaceport and the shuttle came through Ernesto unscathed. "We're in great shape," said KSC Spokeswoman Tracy Young. Added center spokesman Bruce Buckingham, "We didn't even have to send out our damage assessment team." Ernesto had weakened considerably by the time it swept through central Florida on Wednesday evening. There was no apparent damage to Atlantis or its \$372 million payload, a new truss segment for the International Space Station. The peak wind at launch pad 39B, where the shuttle is being readied for flight, was 44 mph. The total amount of rainfall recorded was 4.16 inches. A 56-mph gust was measured by instrumentation at the top of a 500-foot weather tower north of the Vehicle Assembly Building. The winds turned out to be "far less than we had anticipated," Buckingham said. No damage was done to two Boeing Delta 2 rockets being readied for launch at nearby Cape Canaveral Air Force Station either. Web posted. (2007). [Shuttle weathers storm [Online]. Available WWW: <http://www.floridatoday.com/> [2007, September 1].]

September 4: NASA IG examines KSC problem tracking

NASA's Inspector General has issued a report saying that the agency could improve the way it tracks problems with the shuttle fleet at Kennedy Space Center. NASA employs a so-called Problem Reporting and Corrective Action (PRACA) system to track problems and their root causes, document corrective actions and provide a database the agency can use to prevent recurrence. The agency's Office of Inspector General audited the system and said that it included inaccurate and incomplete data, and that KSC should put in place a means to improve the system. The IG is not the first time find fault with the system. The Columbia Accident Investigation Board found that the system did not enable NASA to adequately track a long history of the type of external tank foam shedding that led to the 2003 loss of Columbia and its seven astronauts. A separate board that investigated wiring problems that led to a five-month grounding of the shuttle fleet in 1999 expressed similar concerns. NASA shuttle program manager Wayne Hale said the system is considered "extremely important" to the agency and that a team of technical experts is coming up with a plan to address the recommendations made by the IG. Web posted. (2007). [NASA IG examines KSC problem tracking [Online]. Available WWW: <http://www.floridatoday.com/> blog: the flame trench. [2007, September 4].]

September 5: NASA Partners with Discovery Communications for 50th Anniversary

NASA and Discovery Communications will join in a broad media partnership to commemorate the space program's 50th anniversary. The space agency, which was created by the National Aeronautics and Space Act, began operations on Oct. 1, 1958. The announcement was made Wednesday in New York at a premiere screening of "In the Shadow of the Moon," a film in which crew members from NASA's Apollo missions tell their story in their own words. Discovery Channel will air the world television premiere of the film in the summer of 2008. "This partnership with Discovery enables NASA to bring the excitement of 50 years of exploration and discovery to a wider audience," said Robert Hopkins, NASA chief of Strategic Communications, Headquarters, Washington. "This leverages NASA's compelling content with Discovery's state-of-the-art production capability and technology to tell the NASA story - past, present and future - through a variety of media and platforms." The partnership will encompass on-air and online components as well as grassroots activities throughout 2008, including educational workshops and local screenings. Special programming on Discovery in the spring and summer of 2008 will celebrate NASA with never-before-seen archival footage. Podcasts and interactive features at Discovery's Web site will enable viewers and users to take a closer look at NASA's history and its plans for the future. "We honor not only 50 years of wonder, achievement and surprise; but also look toward a bright future of new discoveries. Our planned 2008 specials and series documenting NASA's greatest moments will inspire a new generation to explore and innovate," said Jane Root, president and general manager, Discovery Channel and The Science Channel, Silver Spring, Md. NASA and Discovery are teaming through a non-exclusive Space Act Agreement with no exchange of funds. ["NASA Partners with Discovery Communications for 50th Anniversary," **NASA News Release #07-186**, September 6, 2007.]

Faulty valve delays Atlas launch

The next scheduled rocket launch from the Space Coast was pushed back about a week so workers can finish replacing a fuel valve identical to one that froze up in flight last month and caused an Atlas 5 rocket to leave two spy satellites in the wrong orbit. The launch of the military communications satellite is set for 8:10 p.m. Sept. 21 from Launch Complex 41 at Cape Canaveral Air Force Station, 45th Space Wing spokesperson Ken Warren said. The launch had been scheduled for Sept. 13. The last Atlas 5 launch from Cape Canaveral was June 15. A fuel leak in flight caused the rocket's upper stage engine to shut down too soon, and the launcher failed to deliver its top-secret ocean surveillance spacecraft to the right orbit. The valve that caused the fuel leak has been replaced in both the Atlas 5 and Delta 4 rocket fleets. The next Atlas 5 will carry the first of five Wideband Global Satellites, which will provide as much communication power as the entire existing system. U.S. tactical forces will rely on WGS to connect quickly with the Defense Information Systems Network. Web posted. (2007). [Faulty valve delays Atlas launch [Online]. Available WWW: <http://www.floridatoday.com/> [2007, September 5].]

County plans for NASA hit

Efforts to help workers in Brevard County and elsewhere in the state weather the space shuttle program's 2010 retirement may cost \$75 million over three years, local work force experts said Wednesday. "We have to move quickly," said Lisa Rice, president of the Brevard Workforce Development Board. Rice joined economic development and education

officials at the second Brevard County Commission workshop on the topic in the past month. All agreed a coordinated campaign must begin immediately to anticipate job training needs, attract new businesses and lobby political leaders in Tallahassee and Washington for funding. An estimated 3,500 to 10,000 people ranging from NASA employees and contractors to the merchants who sell them office supplies could lose jobs by 2012 because of the program's end. Leaders' concerns about the planned gap in manned space flight until 2015 go beyond the potential \$1.5 billion hit to Brevard's economy to questions about national security, as the country becomes more dependent on Russia and China for launches. Web posted. (2007). [County plans for NASA hit [Online]. Available WWW: <http://www.floridatoday.com/> [2007, September 6].]

September 6: Adventure aviator Steve Fossett is missing

Steve Fossett remains missing for two days now. A search continues in and around Nevada. He apparently has been missing since taking off in a single-engine plane from a Nevada ranch sometime Monday evening. Fossett is a famed adventurer and one of his most recent headline-grabbing escapades was based out of the Kennedy Space Center's Shuttle Landing Facility. Fossett took off from KSC's unique shuttle runway on what turned out to be the longest nonstop flight without refueling. He made it around the world once and then crossed the Atlantic again on the 2006 flight, which was sponsored by British tycoon Richard Branson. His total distance: 26,389 miles. Web posted. (2007). [Adventure aviator Steve Fossett is missing [Online]. Available WWW: <http://www.floridatoday.com/> The Flame Trench blog [2007, September 6].]

Construction of the O&C Revitalization

Construction of the O&C Revitalization, Phase 2 Has Started. The construction includes the north wing, third floor west half, as well as an electrical duct bank in front of the O&C Building. The third floor west half is now closed to all personnel not directly involved with the project. A fence will be installed on the northwest corner to isolate the staging area of the contractors. ["Construction of the O&C Revitalization, Phase 2 Has Started,"

Countdown, September 6, 2007.]

September 7: Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-090707. **Mission: STS-120** - 23rd International Space Station Flight - U.S. Node 2; Vehicle: Discovery (OV-103); Location: Orbiter Processing Facility Bay 3; Launch Date: Targeted for Oct. 23, 2007; Launch Pad: 39A; Crew: Melroy, Zamka, Parazynski, Wheelock, Wilson, Nespoli and Tani; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 3, forward and aft closeout work continues. Work is under way to test for orbiter structural leakage and positive pressure. Final orbiter power down is scheduled for next week. In the Vehicle Assembly Building, external tank No. 120 was transferred on Wednesday from its checkout cell to high bay No. 1 for mating to the solid rocket boosters. Closeout work is now under way, including mechanical and electrical connections of the tank and boosters. **Mission: STS-122** - 24th International Space Station Flight - Columbus Module; Vehicle: Atlantis (OV-104); Location: Orbiter Processing Facility Bay 1; Launch Date: Targeted for Dec. 6, 2007; Launch Pad: 39A; Crew: Frick, Poindexter, Schlegel, Eyharts, Love, Melvin and Walheim; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 1, modifications are finished on the orbiter's engine cutoff sensor wiring. This involved rerouting new wires and installing new resistors. Orbiter power system

validation is complete. Technicians finished waterproofing the orbiter's thermal protection system last weekend. Checkout and verification of the orbiter's remote manipulator system, also known as the shuttle arm, is under way. **Mission: STS-123** - 25th International Space Station Flight - Kibo Logistics Module, Dextre Robotics System; Vehicle: Endeavour (OV-105); Location: Orbiter Processing Facility Bay 2; Launch Date: Targeted for Feb. 14, 2008; Launch Pad: 39A; Crew: Gorie, Johnson, Linnehan, Doi, Behnken, Foreman and Reisman; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 2, deservicing of the hypergolic fuel system is complete. Functional testing of the forward reaction control system is finished, as well as post-flight thermography inspections of the right and left wing leading edges. The engine dome heat shields have been removed and preparations are under way for removal of the three shuttle main engines next week. Technicians are preparing for the functional checkout of the left and right orbital maneuvering system pods, scheduled for next week. They are also removing the STS-118 payload support hardware. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, September 7.]

Fear may be NASA problem

NASA needs to improve internal communications and work harder to chip away at its image as an institution where fear of ostracism and retribution routinely hush potential critics, lawmakers told agency leaders Thursday. During a congressional hearing called to discuss an independent review of NASA's health care system for astronauts, lawmakers questioned steps the agency has taken to address all the concerns the review found -- and not just its most controversial one. In July, the panel reported two alleged cases involving excessive drinking by preflight astronauts. The reports stem from interviews conducted with employees volunteering information, cloaked by the promise of anonymity. The allegations prompted NASA to conduct its own internal investigation. Last week, the agency said it failed to find any corroborating evidence of such drinking incidents -- or that NASA supervisors dismissed concerns expressed by a flight surgeon in the matter, another charge that surfaced in the report. The chairman of the independent panel defended his committee's findings. Air Force Col. Richard Bachmann, a veteran military physician, suggested the difference in the two reports might stem from fear of professional retribution among those within the agency since NASA's internal review did not provide anonymity to those interviewed. Bachmann defended the findings in his panel's report, suggesting that recent comments dismissing its findings on alcohol use would only hurt the agency's work environment. Bryan O'Connor, the NASA safety chief who conducted the internal review, said it was possible that some of the people who were interviewed may have been reluctant to speak up. "There's always a chance that someone may not feel totally comfortable speaking to their safety guy," he said. NASA Administrator Michael Griffin, who recently compared the allegations of intoxicated astronauts to urban legends, repeated his assertion the agency is addressing all of the concerns expressed by the independent panel. The agency is preparing an anonymous survey to help reveal any other continuing concerns that employees may have about safety issues or other findings made by the panel. Web posted. (2007). [Fear may be NASA problem [Online]. Available WWW: <http://www.floridatoday.com/> [2007, September 7.]

September 8: Court postpones Nowak hearing

A pretrial hearing in the State of Florida vs Lisa Marie Nowak case originally scheduled for Tuesday has been continued, according to court officials. The next hearing will be the continuation of the suppression hearing on Sept. 19 at 9 a.m. The hearing will focus on two motions to throw out Nowak's statement to police and any evidence found in her car. More than six hours of testimony was heard on Aug. 24 in the matter, but the hearing had to be continued before lawyers could finish. Nowak, a U.S. Navy captain, is charged with attempted kidnapping, battery and attempted vehicle burglary with a battery in connection with her alleged attack on U.S. Air Force Capt. Colleen Shipman over their mutual love interest -- former astronaut and U.S. Navy Commander Bill Oefelein. Nowak's attorney recently filed paper's noting his intent to use an insanity defense if the case goes to trial. Web posted. (2007). [Court postpones Nowak hearing [Online]. Available WWW: <http://www.floridatoday.com/> [2007, September 8.]

September 9: NASA plan to alter STS-120 launch countdown

Shuttle Launch Director Mike Leinbach has drawn up a plan to alter the countdown for the upcoming STS-120 launch of Discovery, with an aim to reduce ice build-up on the External Tank (ET). The plan - which will go to the STS-120 Flight Readiness Review for full approval - involves reducing the T-3 hour hold by 30 minutes, added to ensuring the tanking process does not start before it is scheduled. Ice, which is both a debris hazard and a mechanism for liberating foam off the ETs during ascent, builds up on the tank when it's filled with the super-cold liquid oxygen and liquid hydrogen ahead of launch. To mitigate ice build-up, the tanks are covered in foam insulation. However, that foam can liberate off the tank during ascent due to the massive aerodynamic stresses the stack undergoes on the ride uphill. Finding the balance of reducing the amount of foam that can liberate off the tank, versus what is required for thermal protection, has been an ongoing process for NASA, especially after the loss of Columbia. Another problem relates to small areas of ice that can still build-up in certain areas of the tank. One such area is in the small gaps inside the five LO2 feedline brackets, required to allow the 17 inch diameter pipe to flex as thousands of gallons of propellant are sucked towards the orbiter's main engines. Those brackets have previously shed foam, but only came into focus after a liberation event 58 seconds into the launch of Endeavour during STS-118. Web posted. (2007). [NASA plan to alter STS-120 launch countdown [Online]. Available WWW: <http://www.nasaspaceflight.com/> [2007, September 9.]

September 10: Amid NASA turbulence, Congress stays on board

With NASA pushing ahead with plans for exploring the moon and Mars, administrator Michael Griffin acknowledged last week that scandals and reports of astronaut misconduct have "shaken public confidence" in his agency. Congress, however, is standing by NASA, ignoring a veto threat in an attempt to fund space endeavors with more money than President Bush's \$17.3 billion request for the 2008 fiscal year. The House approved \$17.8 billion in funding for the space agency this summer, and the Senate Appropriations Committee passed its version of the budget at \$17.5 billion. The full Senate has yet to vote on most of its spending bills and the NASA budget is likely to be rolled into a much broader package later this year. Bush has promised to veto spending bills that would break the president's \$933 billion cap on the portion of the federal budget decided by congressional appropriations committees. Congress, controlled by Democrats, has exceeded the limit by \$23 billion. Still, Griffin said, lawmakers' support for a larger NASA budget "expressed, in no uncertain terms, the confidence the Congress of the United States does have in what

we're doing." Web posted. (2007). [Amid NASA turbulence, Congress stays on board [Online]. Available WWW: <http://www.chron.com/> [2007, September 10.]

World Space Expo at Kennedy Space Center Celebrates 50 Years in Space

Kennedy Space Center plays host to the inaugural World Space Expo, celebrating NASA's 50 years in space exploration. World Space Expo will take place from Thursday, November 1, 2007 through Sunday, November 4, 2007 at Kennedy Space Center Visitor Complex east of Orlando, Florida. "Working with NASA, we are gathering together some of the most exciting efforts in space exploration into a comprehensive space exposition, World Space Expo. The event will give all who attend a glimpse of mankind's space achievements from the place that sends people into space," said Daniel LeBlanc, Chief Operating Officer, Kennedy Space Center Visitor Complex, host of the four-day event. "The Aerial Salute to 50 Years in Space featuring the U.S. Air Force Thunderbirds will mark only the second time an air show has been held at Kennedy Space Center, with special viewing from the NASA Causeway." World Space Expo is a unique event to celebrate humanity's first 50 years in space with a look forward to exploring the moon and beyond. Among the many featured participants for the four days will be renowned aerospace heroes John Glenn and Scott Carpenter and the Pioneering Women of Aerospace forum, featuring Eileen Collins and other prominent female space veterans. World Space Expo is sponsored by Space Florida, the principal organization charged with fostering the growth of Florida's space industry by the State of Florida, and Florida's Space Coast Office of Tourism. Aerial Salute to 50 Years in Space, November 3-4, 2007. Web posted. (2007). [World Space Expo at Kennedy Space Center Celebrates 50 Years in Space [Online]. Available WWW: <http://www.prnewswire.com/> [2007, September 10.]

After space, it's Disney World

Walt Disney World Resort hosted the astronauts from the latest space shuttle mission with a range of festivities Monday, and gave a special thanks to teacher-turned-astronaut Barbara Morgan, honoring her with a plaque at Mission: Space. "This event honors all of us teachers by helping children dream," Morgan said. The Endeavour astronauts also answered questions from guests, and served as grand marshals of the afternoon parade. The crew – Commander Scott Kelly, Pilot Charles Hobaugh, and mission specialists Tracy Caldwell, Al Drew, Morgan, Richard Mastracchio, and Dave Williams -- returned to Earth on Aug. 21. Morgan's plaque joins other messages there from such luminaries as Neil Armstrong, Galileo Galilei, Stephen Hawking, John F. Kennedy, Charles Lindbergh and Carl Sagan. ["After space, it's Disney World," **Florida Today**, September 11, 2007, p 1C.]

September 11: NASA Anniversary, Shuttle Crew and Science Highlighted at Nextfest

NASA Deputy Administrator Shana Dale will unveil the agency's 50th anniversary logo and participate in an X PRIZE Foundation announcement at WIRED Magazine's NextFest at the Los Angeles Convention Center, Sept. 13-16. The agency will showcase its current and future technologies, and NextFest attendees can meet the crew of the most recent space shuttle flight. Dale and astronaut Scott Kelly will introduce the space shuttle's STS-118 crew, including mission specialist and former educator Barbara R. Morgan, at NextFest's opening ceremonies on Education Day, Sept. 13, at 10 a.m. PDT in the South Hall Plaza.

["NASA Anniversary, Shuttle Crew and Science Highlighted at Nextfest," **NASA Media Advisory #M07-116**, September 11, 2007.]

Dawn asteroid probe back on the launch pad again

The long-awaited voyage of NASA's Dawn space probe to rendezvous with a pair of small worlds in the asteroid belt has returned to the launching pad for departure from Earth in two weeks' time. "From here, the only way to go is up," said Keyur Patel, Dawn project manager at the Jet Propulsion Laboratory. "We are looking forward to putting some space between Dawn and Mother Earth and making some space history." The eight-year, 3.2-billion-mile mission is scheduled for liftoff from Florida's east-central coast on Wednesday, September 26 at 7:25 a.m. EDT. The morning's available launch period will extend to 7:54 a.m. After being grounded earlier this summer by an assortment of factors, Dawn was pulled off its United Launch Alliance Delta 2-Heavy rocket at Cape Canaveral's pad 17B two months ago. The spacecraft was placed in protective storage while engineers proceeded to launch the Mars-bound Phoenix Lander atop another Delta rocket from neighboring pad 17A in early August. Rocket-related delays, troubles arranging downrange tracking assets to monitor the launch and a rapidly closing launch window in July forced NASA officials to make the unusual decision of postponing the Dawn liftoff after the satellite was already on the pad. Senior agency managers opted to go with the Phoenix launch first, putting Dawn second in NASA's launch lineup. Web posted. (2007). [Dawn asteroid probe back on the launch pad again [Online]. Available WWW: <http://www.spaceflightnow.com/> [2007, September 11.]

September 12: Judge delays trial for Lisa Nowak

A trial date of Sept. 24 for former astronaut Lisa Nowak has been pushed back, a spokeswoman for Nowak's attorney Donald Lykkebak said Tuesday. "There will be no trial date until Judge (Marc) Lubet rules on the defense motions to suppress," said spokeswoman Marti Mackenzie. Circuit Court Judge Lubet signed a continuance order Monday. Nowak, 44, is charged with attempted kidnapping, battery and burglary with assault. She has pleaded not guilty, though her attorney has filed notice of intent to use an insanity defense. Pretrial hearings on the case are scheduled for Sept. 19 on motions to throw out Nowak's arrest interview with police and the search of her car. Web posted. (2007). [Judge delays trial for Lisa Nowak [Online]. Available WWW: <http://www.floridatoday.com/> [2007, September 12.]

VAB work hinders schedule

Foam repair is not the only threat to NASA's chance of launching two more space shuttle missions before the end of 2007. The other hurdle is the traffic jam inside the mammoth Vehicle Assembly Building. Decades of exposure to salty seaside conditions corroded and rusted parts of the gigantic metal doors that cover each of the 45-story openings through which space shuttles must roll on their way out to the launch pads at Kennedy Space Center. So a few years ago, NASA took on a multimillion dollar effort to replace the doors on one of the two high bays facing the launch pads. That left the space shuttle program with just one bay in which they could stack shuttles for launch. The work was supposed to be finished a year ago, but is behind schedule. Repairs to the foam on the external tank for Discovery's October mission means that vehicle will not be stacked and rolled to the pad until about one month later than planned. Consequently, assembly of Atlantis' stack on a mobile launch platform will begin weeks behind schedule for a December flight. "No good

deed goes unpunished," shuttle program manager Wayne Hale said. "The agency for 40 years neglected the Vehicle Assembly Building down in Florida. We have a magnificent structure that's going to be used by subsequent programs and we let it face the ocean breeze and all of that salt air. The mechanisms there have corroded and rusted to the point where we were concerned we might not be able to open the doors to get the launch vehicle out and that's clearly unacceptable." Now, the work is set to be complete by around Nov. 1, Hale said. That means NASA has to finish out the year stacking shuttles in just one of the high bays. Right now, that bay is occupied by Discovery's mobile launch platform and partial stack. "For the last two years, we've been working with only one high bay and it's been a real constraint. We have to plan our work carefully and make sure that we do what we need to do," Hale said. The original plan was to move Discovery out to the launch pad about a month earlier than is really necessary for a late October launch. The repairs to the tank's foam, which were prompted by a foam hunk that cut a deep gouge in Endeavour's heat shielding tiles during the last mission, have backed things up. Repairs are ongoing and the stacking of the solid rocket boosters, external tank and orbiter on the launch platform may not be complete until near the end of this month. That's in plenty of time for the scheduled Oct. 23 launch or maybe a couple days later, Hale said. But it means work won't start on stacking Atlantis for the scheduled Dec. 6 launch until the end of this month, at the earliest. Further complicating the situation is a short launch window for the December mission, which will deliver the Europeans' Columbus science laboratory. The shuttle can't be at the station during certain times of year when the angle of the sun makes it either too hot or too cold for the vehicles' thermal systems. Atlantis must launch by about Dec. 13 or wait until next year. Still, Hale's team continues to assess options to keep the December flight on schedule. It's possible that nothing will be known until Discovery's stack is actually out of the way and on its way out to the pad. Web posted. (2007). VAB work hinders schedule [Online]. Available WWW: <http://www.floridatoday.com/> [2007, September 12.]

NASA was looking into astronaut meltdowns

NASA e-mails released Wednesday indicate the space agency was looking for ways to prevent astronaut meltdowns just three months before one-time shuttle flier Lisa Nowak was arrested in a scandalous love triangle. The e-mails from late last year show that space program employees interviewed the former colleagues and the "common-law wife" of ex-astronaut Charles Brady Jr. after he committed suicide in July 2006. It seemed to be an effort to find behavioral clues that could be a tip-off in future cases. "Following Charles Brady's suicide, NASA employees at the Johnson Space Center felt it would be beneficial to see if there were any 'lessons learned' that could be gained by speaking with friends and family of the former astronaut. The interviews were conducted on a confidential basis," said David Steitz, a NASA spokesman in Washington. NASA refused to release any notes from NASA doctors, managers or astronauts regarding Brady's suicide, saying those were considered personal and private materials. The space agency also refused to release any records, reports or transcripts of mental health checks for Nowak, again citing privacy issues. NASA quickly established an independent medical panel to assess its handling of astronauts' mental and behavioral issues. The panel's findings in July — reports of astronauts being drunk before their launches on at least two occasions, and flight surgeons' concerns being disregarded — continue to spark controversy. Nowak's attorney has filed notice of intent to use a temporary insanity defense against the charges of attempted kidnapping, battery and burglary with assault. She suffered from major depression, obsessive-compulsive disorder, insomnia

and "brief psychotic disorder," according to her attorney. ["NASA was looking into astronaut meltdowns," **Florida Today**, September 13, 2007, p 3A.]

September 13: NASA may pull plug on Rocketplane

NASA could reallocate most of a \$207 million investment in commercial spacecraft development if it terminates an agreement with Rocketplane Kistler next month. NASA issued a default letter last week, after the private company failed to meet two benchmarks -- one financial, the other technical -- in the effort to use government funds to jump-start development of privately funded spacecraft that would carry cargo and astronauts to orbit. As part of the Commercial Orbital Transportation Services, or COTS, competition, NASA had pledged up to \$207 million to Rocketplane Kistler, which failed to raise an additional \$500 million, as required under its agreement with the space agency. If NASA pulls the plug in 30 days, the agency would lose about \$32 million on the investment in the private spacecraft. "If the agreement were terminated, there would be about \$175 million in unspent funds," NASA spokeswoman Beth Dickey said. Rocketplane is not required to return any of the \$32 million. Termination of Rocketplane's agreement would leave California-based SpaceX as the only company in the COTS program, which was devised in hopes that a private provider would develop a spacecraft to take crew and cargo to the International Space Station after the shuttle fleet is retired in 2010. Web posted. (2007). NASA may pull plug on Rocketplane [Online]. Available WWW: <http://www.floridatoday.com/> The Flame Trench blog [2007, September 13.]

KSC set to host space expo

Kennedy Space Center will host the inaugural World Space Expo, a consumer show that celebrates NASA's 50 years in space exploration. The event will be Nov. 1-4 at the Kennedy Space Center Visitor Complex. The event will include air shows put on by the U.S. Air Force Thunderbirds Aerial Demonstration Squadron, which will fly over the NASA Causeway, on Nov. 3 and 4; admission to the Visitor Complex; and educational opportunities throughout the four days. "We've been working on putting this together for more than a year," said Dan LeBlanc, chief operating officer of the Kennedy Space Center Visitor Complex. "First of all, it's NASA's 50th anniversary, and a large-scale event in the fall is a great idea." LeBlanc said the World Space Expo is something new for the Kennedy Space Center, and the November dates are intended to help the tourism industry during what typically is a sluggish time. The Air Force Thunderbirds and other pilots will give an Aerial Salute to 50 Years in Space. It will mark only the second time an air show has been held at Kennedy Space Center, with special viewing from the NASA Causeway. Among the featured participants for the four days are John Glenn and Scott Carpenter, two of the original Mercury 7 astronauts; as well as the Pioneering Women of Aerospace forum, featuring Eileen Collins and other female astronauts. World Space Expo is sponsored by Space Florida, which is charged with fostering the growth of Florida's space industry by the state of Florida; and Florida's Space Coast Office of Tourism. Confirmed exhibitors include SpaceX; the Federal Aviation Administration's Office of Commercial Transportation; and the X Prize Foundation, featuring a full-scale model of SpaceShipOne. The NASA Pavilion will feature displays from NASA centers from around the country, showcasing their areas of expertise and specialization. NASA's 50th anniversary touring exhibit and an aerospace design art exhibit will celebrate NASA's heritage. NASA's international partners also have been invited to exhibit. A historic Vostok capsule, Russia's first habitable spacecraft flown in the early 1960s, will be on display. A schedule of speakers will keep audiences focused on

space, including select Space Florida Space Days activities, educational programming and high-altitude weather balloon releases which feature live video feeds from the edge of space. Confirmed speakers include Glenn and Carpenter; Collins; space shuttle astronaut and Air Force 45th Space Wing Cmdr. Susan Helms; Peter Diamandis, chairman and president of the X Prize Foundation, and founder, chairman and chief executive officer of Zero Gravity Corp.; FAA Associate Administrator Patricia Smith; Anousheh Ansari, the first female space tourist; and Air Force Thunderbird pilots. Web posted. (2007). KSC set to host space expo [Online]. Available WWW: <http://www.floridatoday.com/> the flame trench blog [2007, September 13.]

September 14: Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-091407. **Mission: STS-120** - 23rd International Space Station Flight - U.S. Node 2; Vehicle: Discovery (OV-103); Location: Orbiter Processing Facility Bay 3; Launch Date: Targeted for Oct. 23, 2007; Launch Pad: 39A; Crew: Melroy, Zamka, Parazynski, Wheelock, Wilson, Nespoli and Tani; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay 3, forward and aft closeout work is complete. The payload bay doors were opened this week in order to install the tool stowage assembly that will be used by crew members on orbit to test tile repair techniques. The payload bay doors are now closed for rollover, and the vehicle has been powered down. The orbiter weight and center of gravity have been determined. This is the final task prior to transferring Discovery to the orbiter transporter in preparation for rollover to the Vehicle Assembly Building. Rollover is scheduled for 6:30 a.m. Sept. 19. In the Vehicle Assembly Building, mating closeout work continues on the external fuel tank and solid rocket boosters in high bay 1. **Mission: STS-122** - 24th International Space Station Flight - Columbus Module; Vehicle: Atlantis (OV-104); Location: Orbiter Processing Facility Bay 1; Launch Date: Targeted for Dec. 6, 2007; Launch Pad: 39A; Crew: Frick, Poindexter, Schlegel, Eyharts, Love, Melvin and Walheim; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay 1, checkout and verification of the orbiter's remote manipulator system, also known as the shuttle arm, are complete. Technicians are reinstalling the left orbital maneuvering system pod, which was removed for a valve repair. System testing continues in the vehicle. Technicians are checking out the water spray boiler system. ET-125, the external fuel tank for mission STS-122, arrived at Kennedy via barge at 12:30 p.m. today. The tank was then offloaded and transported to the Vehicle Assembly Building, where it will be lifted into a checkout cell on Saturday to allow for processing. **Mission: STS-123** - 25th International Space Station Flight - Kibo, Dextre; Vehicle: Endeavour (OV-105); Location: Orbiter Processing Facility Bay 2; Launch Date: Targeted for Feb. 14, 2008; Launch Pad: 39A; Crew: Gorie, Johnson, Linnehan, Doi, Behnken, Foreman and Reisman; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay 2, the three shuttle main engines have been removed for inspection and processing. Hydraulic operations are under way this week. This involves repositioning the orbiter's aero surfaces, such as the body flaps, rudder speed brake and elevons, to allow for tile inspections. Technicians are performing functional tests of the orbital maneuvering system pods. Post-flight deconfiguration of the payload bay is also in progress. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, September 14.]

Talks focus on life after the shuttle

Government and industry leaders today will propose that Florida help insure companies against damages in launch accidents as one of several ways to make the spaceport here more economically attractive to new space ventures. The idea is just one of several to be discussed today during the Florida Speaker's Forum on Space and Technology, according to a document summarizing some of the proposals Brevard County officials intend to pursue with Gov. Charlie Crist and the state Legislature. Today's discussion, beginning at 8:30 a.m. at the Florida Solar Energy Center on the Cocoa campus of Brevard Community College, will feature a series of short talks by people representing as many as 20 local, state and federal government agencies and private space contractors. It is free and open to the public. The four-hour event is focused on identifying what government and industry leaders need to start doing to prepare for the scheduled 2010 retirement of the space shuttle fleet, which could lead to the loss of thousands of high-paying technical jobs in the northern part of the county. The event will air on county public television as part of an effort to increase public awareness of issues related to the shuttle's retirement. Among the ideas being proposed is having the state indemnify launch services companies in the event of an accident, cutting one of the most expensive costs associated with startup space ventures -- insurance. If the cost of insuring those launches can somehow come down, Florida might gain an economic advantage over other sites vying to lure in some of the nascent space companies cropping up across the United States. Studies by the government and private companies have long identified the high cost of such insurance as an issue for budding space companies. Another key agenda item: urging Gov. Charlie Crist and key state officials to leverage Florida's political might to make sure NASA's new moon-Mars program continues to be funded and that substantial portions of the work continue to be based in Brevard County or at least in Florida. The county also plans to push for a new state economic development incentive aimed specifically at luring or keeping space companies, similar to incentives now provided for defense contractors in the sunshine state. Among the incentives to be considered on top of that are some added benefits for space workers who might lose their jobs -- even temporarily -- during the transition following the space shuttle orbiters' retirement. ["Talks focus on life after the shuttle," **Florida Today**, September 14, 2007, p 1A & 8A.]

September 17: Hydraulic leak could delay roll out

A leaking hydraulic seal in the right-hand landing gear of Discovery can't be fixed until Wednesday, when the vendor will arrive to make the repair. The repair will delay rollover and could delay the roll out to the launch pad, scheduled for Sept. 27, said NASA spokesman George Diller. "There's a leak in the strut," said Diller, who said repair plans likely would be announced later today. Discovery is scheduled to launch Oct. 23 on a construction mission to the International Space Station: Web posted. (2007). Hydraulic leak could delay roll out [Online]. Available WWW: <http://www.floridatoday.com/> the flame trench blog [2007, September 17.]

September 18: NASA Opens Applications for New Astronaut Class

NASA is accepting applications for the 2009 Astronaut Candidate Class. Those selected could fly to space for long-duration stays on the International Space Station and missions to the moon. "We look forward to gathering applications and then being able to select from the largest pool possible," said Ellen Ochoa, NASA's chief of Flight Crew Operations at the Johnson Space Center. "Continuing our impressive record in successfully carrying out challenging human spaceflight missions depends on maintaining a talented and diverse astronaut corps." To be considered, a bachelor's degree in engineering, science or math and

three years of relevant professional experience are required. Typically, successful applicants have significant qualifications in engineering or science, or extensive experience flying high-performance jet aircraft. Teaching experience, including work at the kindergarten through 12th grade level, is considered qualifying. Educators with the appropriate educational background are encouraged to apply. After a six-month period of evaluation and interviews, NASA will announce final selections in early 2009. Astronaut candidates will report to Johnson in the summer of 2009 to begin the basic training program to prepare them for future spaceflight assignments. NASA will accept applications through July 1, 2008. ["NASA Opens Applications for New Astronaut Class," **NASA News Release #07-196**, September 18, 2007.]

Machinists union, space alliance to resume talks

The Machinists union at Kennedy Space Center and NASA space shuttle contractor United Space Alliance will return to contract negotiations Thursday in hopes of ending a more than three-month strike. The two sides and a federal mediator have scheduled negotiating sessions for Thursday and Friday at an undisclosed location in Cape Canaveral, company and union officials said today. "We're hopeful that we'll have a contract by Friday evening," said Lew Jamieson, president of the International Association of Machinists and Aerospace Workers Local 2061. When asked if an agreement will be reached this week, United Space Alliance spokeswoman Tracey Yates said: "It's difficult to predict. Our goal is the same as it's always been. We have every intention of negotiating in good faith." If an agreement is reached between the company and union representatives, the union's membership would need to vote to approve it before the strike would end, Jamieson said. The union went on strike June 14 after the two sides failed to agree on a three-year deal. About 444 workers are on strike, and are continuing to picket in shifts at entrances to the Space Center. The company has hired 140 replacement workers and has assigned 182 regular employees additional duties to continue work on the shuttle program, and prepare for the launch of shuttle Discovery, scheduled for Oct. 23. ["Machinists union, space alliance to resume talks," **Florida Today**, September 19, 2007, p 1C.]

Vandenberg Delta II rockets WorldView 1 aloft

The DigitalGlobe Ball Aerospace WorldView 1 spacecraft is undergoing early checkout in a 270-nautical-mile polar orbit following launch onboard a United Launch Alliance Delta II from Vandenberg Air Force Base, Calif. Sept. 18. The spacecraft has half-meter panchromatic resolution. This is four times greater than any previous commercial imaging spacecraft. The flight, which lifted off at 11:35 a.m. EDT, also marked the 75th straight launch success by a Delta II since 1997. The WorldView flight clears the way for use of a Delta II Sept. 26 at Cape Canaveral to launch the solar electric powered Dawn spacecraft to the asteroid belt to orbit two proto-planets. The first WorldView 1 spacecraft will operate in a black and white panchromatic mode, but its second spacecraft set for launch in late 2008 will have eight multispectral bands. GeoEye will launch its first high resolution multispectral spacecraft with half-meter resolution from Vandenberg during the first quarter of 2008, also on a Delta II. E-mail distribution. (2006). [Aviation Week's [Aerospace Daily & Defense Report](#) Re: "Vandenberg Delta II rockets WorldView 1 aloft," [Electronic]. Vol. 223, No. 56, [September 19, 2007].]

September 19: Discovery awaits key cargo

Discovery's cargo for the International Space Station is ready to be loaded aboard the shuttle. The Harmony module – 21 feet long, 14 feet in diameter and 31,500 pounds – will be mounted into Discovery's payload bay, likely in early October, after the orbiter has moved to the launch pad. The 2,666-cubic-foot module will continue the expansion of the space station's habitable volume and sets the stage for further growth by providing a node to connect up to four laboratories and dock a shuttle. It is about the volume of a 10-foot-by-30-foot room with an eight-foot ceiling. When Harmony is attached to its home on the International Space Station, the Japanese and European laboratories will be the first attached to the module, which will provide a life support conduit. Those modules will be delivered on later shuttle missions. The expansion makes room for additional crew members, who will conduct scientific work that will pave the way to return to the moon and go on to Mars. Originally named Node 2, Harmony received its official name during a contest involving 2,200 students in 32 states. Six schools suggested "Harmony," which was chosen because it symbolized international cooperation and the node's role in connecting international partners. ["Discovery awaits key cargo," **Florida Today**, September 19, 2007, p 3B.]

September 20: Falcon 9 could soar from Cape next year

A heavier-lift version of a new American-made rocket could launch from a former Titan pad at the Cape Canaveral Air Force Station as early as next year. The first Falcon 9, which is similar in scale to United Launch Alliance's Delta 4 and Atlas 5 rockets, is scheduled to be erected on dormant pad 40 next fall. A launch could come within months, according to Space Exploration Technologies chief executive officer Elon Musk. Musk acknowledged that schedule delays are not unusual in development of a new launch vehicle and it is too early to commit to a specific target date for liftoff of the new U.S. launcher. Still, the rocket is in production and testing and the plans remain on track for late next year. "It's hard to say when the launch will occur because we will launch when we're ready, not based on some arbitrary time," Musk said Wednesday during a presentation at the Space 2007 conference in Long Beach, Calif. The tanks, engines and other components of the larger version of the company's new rocket are under construction at its facility in El Segundo, Calif. Test firings at a Texas facility are on track as well. So far, the company has launched two of its Falcon 1 rockets from the Marshall Islands in the Pacific Ocean. The first vehicle barely got off the launch pad before failing and the second failed to reach its target orbit because of a gas bubble that caused an early engine shutdown. A third Falcon 1 launch is planned for early next year. ["Falcon 9 could soar from Cape next year," **Florida Today**, September 20, 2007, p 5A.]

Union, Alliance breaks off talks again

The Machinists union at Kennedy Space Center and NASA shuttle contractor United Space Alliance broke off negotiations Thursday after a daylong attempt to reach a contract agreement and end the union's three-month strike. Previously, the two sides had scheduled another negotiating session today, but that was canceled after Thursday's impasse. "After meeting with the (union's) negotiation team all day on Thursday, negotiations were terminated without meaningful progress, and no further negotiations are scheduled at this time," United Space Alliance spokeswoman Tracy Yates said. The International Association of Machinists and Aerospace Workers Local 2061 spokesman Bob Wood called the company's latest proposals "extremely regressive." "They were moving completely backward," Wood said. "This was not an attempt to negotiate." He also said it was the company that "walked out of the negotiations." The two sides had agreed through a federal

mediator to resume negotiations aimed at ending a strike that started June 14. The two sides previously had broken off negotiations. About 444 union members are taking part and have been picketing in around-the-clock shifts at entrances to the Space Center. The company has hired 140 replacement workers has assigned 182 employees additional duties on the shuttle program for the launch of Discovery, scheduled for Oct. 23. ["Union, Alliance breaks off talks again," **Florida Today**, September 21, 2007, p 1C.]

September 21: Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-092107. **Mission: STS-120** - 23rd International Space Station Flight - U.S. Node 2 (Harmony); Vehicle: Discovery (OV-103); Location: Orbiter Processing Facility Bay 3; Launch Date: Targeted for Oct. 23, 2007; Launch Pad: 39A; Crew: Melroy, Zamka, Parazynski, Wheelock, Wilson, Nespoli and Tani; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 3, workers replaced four seals and their associated components on the right-hand main landing gear strut after a hydraulic fluid leak was discovered during the "weight on wheels" test. The landing gear has been reassembled and testing is under way. If all tests are successful, Discovery will roll over to the Vehicle Assembly Building on Sunday morning. In the assembly building, mate closeout work is complete on the external fuel tank and solid rocket boosters in high bay No. 1, and preparations are in progress for the orbiter mate on Monday. Rollout to Pad 39A is targeted for Sept. 30. **Mission: STS-122** - 24th International Space Station Flight - Columbus Module; Vehicle: Atlantis (OV-104); Location: Orbiter Processing Facility Bay 1; Launch Date: Targeted for Dec. 6, 2007; Launch Pad: 39A; Crew: Frick, Poindexter, Schlegel, Eyharts, Love, Melvin and Walheim; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility Bay No. 1, workers have reinstalled the left orbital maneuvering system pod, which was removed for a valve repair, and interface verification is under way. Technicians continue checkout of the water spray boiler system. Preparations for engine installation, which is scheduled for next week, are also in progress. Checkout of the orbiter docking system is complete. ET-125, the external fuel tank for STS-122, was lifted into a checkout cell in the Vehicle Assembly Building last weekend, and processing of the tank is under way. A mobile launch platform was moved into high bay No. 3 of the assembly building this week, and stacking of the STS-122 solid rocket boosters is scheduled to begin next week. **Mission: STS-123** - 25th International Space Station Flight - Kibo, Dextre; Vehicle: Endeavour (OV-105); Location: Orbiter Processing Facility Bay 2; Launch Date: Targeted for Feb. 14, 2008; Launch Pad: 39A; Crew: Gorie, Johnson, Linnehan, Doi, Behnken, Foreman and Reisman; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 2, functional testing of the orbital maneuvering system pods is nearing completion. The main landing gear tires were removed to allow for brake inspection. The orbiter boom sensor system was removed from the orbiter to allow for inspection of the pedestals, which support the boom in the payload bay. Air data probe inspections are complete. Freon coolant loop No. 1 has been de-serviced. Repair work began this week on the left-hand radiator, which was damaged by micrometeoroid impacts during the last mission. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, September 21.]

Salute to Brevard Residents Free Weekend

To show its gratitude for 40 years of support from Brevard County residents, the KSC Visitor Complex will host the eighth annual Salute to Brevard Residents, a free weekend and food drive, Sept. 21-23. Brevard residents and up to five guests will enjoy free admission to the Visitor Complex for this three-day celebration. Guests are encouraged to bring canned goods and nonperishable food items to benefit the Central Brevard Sharing Center, North Brevard Charities and South Brevard Sharing Center. While not mandatory for complimentary admission, the suggested donation is one food item or canned good per guest. ["Salute to Brevard Residents Free Weekend and Food Drive at the KSC Visitor Complex Sept. 21-23," **Countdown**, September 13, 2007.]

September 24: NASA Postpones Dawn Spacecraft Launch

The launch of NASA's Dawn spacecraft aboard a United Launch Alliance Delta II rocket has been postponed 24 hours. Fueling of the launch vehicle's second stage was unable to be completed on Sunday because of weather conditions at the launch pad. The launch now is scheduled for Thursday, Sept. 27, at the opening of a window that extends from 7:20 a.m. to 7:49 a.m. EDT. For reporters planning to establish remote cameras at the launch pad, set up has been rescheduled and will take place at 9 a.m. on Wednesday, Sept. 26. ["NASA Postpones Dawn Spacecraft Launch," **NASA Media Advisory, #M07-121**, September 24, 2007.]

IMAX Camera Returns to Space to Chronicle Hubble Space Telescope

IMAX Corporation and Warner Bros. Pictures announced Monday that, in cooperation with NASA, the IMAX 3D camera is scheduled to return to space in 2008 aboard the space shuttle during STS-125 for production of a new film. Set for release in early 2010, IMAX will chronicle the life story of the Hubble Space Telescope. The IMAX 3D camera made its first voyage into space in 2001 for the production of "Space Station 3D." The Hubble IMAX 3D film will mark Warner Bros. Picture's first venture into space. Veteran astronaut Scott D. Altman will command the final space shuttle mission to Hubble when the orbiter lifts off in late 2008. Navy Reserve Capt. Gregory C. Johnson will serve as pilot. Mission specialists are veteran spacewalkers John M. Grunsfeld, Michael J. Massimino, and first-time space fliers Andrew J. Feustel, Michael T. Good and K. Megan McArthur. The Hubble servicing mission is an 11-day flight. Following launch, the shuttle will rendezvous with the telescope on the third day of the flight. Using the shuttle's mechanical arm, the telescope will be placed on a work platform in the cargo bay. Five separate spacewalks will be needed to accomplish all of the mission objectives. Among work scheduled during the mission is the installation of two new instruments, the Cosmic Origins Spectrograph (COS) and Wide Field Camera 3 (WFC3). The COS is the most sensitive ultraviolet spectrograph ever flown on Hubble. The instrument will probe the cosmic web, the large-scale structure of the universe whose form is determined by the gravity of dark matter and is traced by the spatial distribution of galaxies and intergalactic gas. WFC3 is a new camera sensitive across a wide range of wavelengths (colors), including infrared, visible, and ultraviolet light. It will have a broad capability to study the planets in our solar system, the early and distant galaxies beyond Hubble's current reach, and nearby galaxies with stories to tell about their star formation histories. Other planned work includes installing a refurbished Fine Guidance Sensor that replaces one degrading unit of the three already aboard. The sensors control the telescope's pointing system. An attempt also will be made to repair the Space Telescope Imaging Spectrograph. Installed in 1997, it stopped working in 2004. The instrument is used for high

resolution studies in visible and ultraviolet light of both nearby star systems and distant galaxies, providing information about the motions and chemical makeup of stars, planetary atmospheres and other galaxies. Astronauts will attempt to repair the Advanced Camera for Surveys, which stopped working in January 2007. The instrument consists of three imagers that are equipped with a variety of filters and dispersers that detect light from the ultraviolet to the near infrared. It was installed during the March 2002 servicing mission (SM3B). The Hubble Space Telescope is an international cooperative project between NASA and the European Space Agency. ["IMAX Camera Returns to Space to Chronicle Hubble Space Telescope," **NASA News Release #07-209**, September 24, 2007.]

September 26: NASA's Space Shuttle Discovery to Move to Launch Pad
Space shuttle Discovery is scheduled to roll out to Launch Pad 39A at NASA's Kennedy Space Center, Fla., on Saturday, Sept. 29, as preparations for the STS-120 mission move forward. Discovery is targeted to lift off Oct. 23 on a 14-day mission to the International Space Station. The first motion of the shuttle out of Kennedy's Vehicle Assembly Building is planned at 8 p.m. EDT. The 3.4-mile journey to the launch pad is expected to take about six hours. ["NASA's Space Shuttle Discovery to Move to Launch Pad," **NASA Media Advisory #M07-123**, September 26, 2007.]

September 27: Dawn Spacecraft Successfully Launched
NASA's Dawn spacecraft began its 1.7 billion mile journey through the inner solar system to study a pair of asteroids Thursday at 7:34 a.m. EDT. The Delta 2 rocket, fitted with nine strap-on solid-fuel boosters, safely climbed away from the Florida coastline and launch complex 17B at the Cape Canaveral Air Force Station. "We have our time machine up and flying," said Dawn Principal Investigator Christopher Russell of the University of California, Los Angeles. Dawn is scheduled to begin its exploration of Vesta in 2011 and Ceres in 2015. The two icons of the asteroid belt are located in orbit between Mars and Jupiter and have been witness to so much of our solar system's history. By using the same set of instruments at two separate destinations, scientists can more accurately formulate comparisons and contrasts. Dawn's science instrument suite will measure shape, surface topography and tectonic history, elemental and mineral composition as well as seek out water-bearing minerals. A critical milestone for the spacecraft comes in is acquiring its signal. The launch team expects that to occur in approximately 2-3 hours. ["Dawn Spacecraft Successfully Launched," **NASA News Release #07-212**, September 27, 2007.]

September 28: Space Shuttle Processing Status Report
Space Shuttle Processing Status Report #S-092807. **Mission: STS-120** - 23rd International Space Station Flight - U.S. Node 2 (Harmony); **Vehicle: Discovery (OV-103)**; **Location:** Vehicle Assembly Building; **Launch Date:** Targeted for Oct. 23, 2007; **Launch Pad:** 39A; **Crew:** Melroy, Zamka, Parazynski, Wheelock, Wilson, Nespoli and Tani; **Inclination/Orbit Altitude:** 51.6 degrees/122 nautical miles. On Sunday, Discovery rolled from Orbiter Processing Facility bay No. 3 to the Vehicle Assembly Building. The orbiter was transferred on Monday to high bay No. 1, where it was attached to the external fuel tank on the mobile launch platform. Engineers and technicians spent the week performing attachment operations, closing out electrical and mechanical connections on the shuttle stack. The shuttle interface test is nearing completion. Rollout to Pad 39A is targeted for Saturday evening, with arrival at the pad early Sunday, Sept. 30. On Thursday, the STS-120 payload was transported to Launch Pad 39A and transferred to the payload changeout room on the

rotating service structure. **Mission: STS-122** - 24th International Space Station Flight - Columbus Module; Vehicle: Atlantis (OV-104); Location: Orbiter Processing Facility Bay 1; Launch Date: Targeted for Dec. 6, 2007; Launch Pad: 39A; Crew: Frick, Poindexter, Schlegel, Eyharts, Love, Melvin and Walheim; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 1, workers have completed interface verification on the left orbital maneuvering system pod. Pyro mates of the orbiter docking system are complete. Technicians continue checking out the water spray boiler system. Discovery's three main engines were installed this week. The auxiliary power unit leak test and functional electrical checkout are finished. Friday and Saturday, the STS-122 crew will be at Kennedy Space Center for the crew equipment interface test, during which the astronauts will review the configuration of equipment in the crew cabin and payload bay. In the Vehicle Assembly Building, processing continues on ET-125, the external fuel tank for the STS-122 mission. Stacking of the solid rocket boosters began on Thursday, with the transfer of the left aft booster to the mobile launch platform high bay No. 3. **Mission: STS-123** - 25th International Space Station Flight - Kibo, Dextre; Vehicle: Endeavour (OV-105); Location: Orbiter Processing Facility Bay 2; Launch Date: Targeted for Feb. 14, 2008; Launch Pad: 39A; Crew: Gorie, Johnson, Linnehan, Doi, Behnken, Foreman and Reisman; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 2, freon coolant loop No. 1 pressurization and leak checks are complete and servicing is under way. The orbiter's body flap and elevons were repositioned to allow for inspections. Functional testing of the external tank doors is finished. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, September 28.]

September 30: Discovery in place for launch

Shuttle Discovery rolled out to its Kennedy Space Center launch pad Sunday, marking the start of a final push to the planned Oct. 23 launch of an International Space Station assembly mission. The schedule, however, is extremely tight. NASA has but one day of leeway, so any significant technical problems could force the agency to readjust the launch schedule. "It's not a lot of extra time. But you have to take things one step at a time," KSC spokesman Allard Beutel said. "If something else crops up that we have to deal with, then we'll have to deal with it." NASA is facing a presidential deadline to finish the station and retire its shuttle fleet by Sept. 30, 2010. So Sunday marked three years and counting for 13 more station assembly flights and a Hubble Space Telescope servicing mission. The upcoming Discovery launch will be the third this year, and NASA will have just a seven-day window between Dec. 6 and Dec. 13 to send up a fourth and final 2007 flight. After that, the sun angle on the station would be such that its solar wings could not generate enough electricity to power both the outpost and a docked shuttle orbiter. In addition, radiators on the linked spacecraft would not be able to shed enough of the heat generated during docked operations. The next launch opportunity would be about Jan. 2. Discovery rolled up onto its oceanfront launch pad about six hours after it emerged from the KSC Vehicle Assembly Building. Web posted. (2007). Discovery in place for launch [Online]. Available WWW: <http://www.floridatoday.com/> [2007, October 1.]

USA aims to replace striking workers

United Space Alliance said it plans to hire hundreds of workers to replace members of the Machinists union on strike at Kennedy Space Center since June 14 over failed contract

negotiations. Meanwhile, a letter dated Friday from 23 members of Congress to Michael McCulley, president and chief executive officer of United Space Alliance, encourages the company "to reach an agreement in a timely manner." The "nation is counting on a continuation" of the productive partnership between the union and the company to "ensure that the remaining shuttle missions are carried out safely and successfully," the letter states. "If we are to transition smoothly from the space shuttle program to the Ares/Orion program, we will need the talents and experience of this workforce." Web posted. (2007). USA aims to replace striking workers [Online]. Available WWW: <http://www.floridatoday.com/> the flame trench blog [2007, October 1.]

During September: Operation Dark Dune

NASA's Kennedy Space Center and the adjoining Canaveral National Seashore are using space-related hardware to protect the thousands of Loggerhead sea turtles that nest and hatch on a 43-mile stretch of pristine beach near the massive – and brightly lit – space shuttle launch pads. The KSC shoreline is one of the world's most important sea turtle hatching areas. But it is also part of the world's busiest launch sites, with dozens of facilities that need to be lighted at night. Lights lure turtle hatchlings inland, where they die, instead of out to sea. Under "Operation Dark Dune," two dozen railroad boxcars and tank cars containing pressurized helium have been lined up on a siding beside the beach near shuttle launch pad 39A and 39B to block light from the pads and other facilities from reaching the ocean, says Gail Villanueva, KSC manager for mobile pressurized systems and a former KSC environmental specialist. Environmental protection specialist Doug Scheidt, with KSC contractor Dynamac Corp., devised the idea of old boxcars blocking the light, while Villanueva recommended adding the tankers that store helium used to pressurize rockets and other systems. For years the NASA center jutting into the Atlantic has taken light-abatement measures, but recent beach erosion has reduced the height of sand dunes that provided natural light screens. ["Operation Dark Dune," **Aviation Week & Space Technology**, September 10, 2007, p 15.]

OCTOBER

October 1: Pad work picks up after shuttle rollout

NASA is set to test shuttle Discovery's main engines at Kennedy Space Center's pad 39A today as post-rollout preparations for a planned launch later this month pick up at the oceanfront complex. Discovery and seven astronauts are scheduled to blast off at 11:38 a.m. EDT Oct. 23 on a mission to deliver the U.S. Harmony module to the International Space Station. Now nestled in the Payload Changeout Room at the pad, the cylindrical module will be installed in Discovery's cargo bay on Wednesday. The shuttle's clamshell-like payload bay doors are to be opened Tuesday. Discovery was hard-down on the pad surface at 1:15 p.m. Sunday. An Apollo-era crawler transporter hauled the shuttle and its mobile launcher platform out of the Vehicle Assembly Building at 6:47 a.m. that day. Discovery's astronauts are scheduled to fly to KSC on Sunday to take part in emergency training at the launch pad and a two-day practice countdown. Led by veteran astronaut Pam Melroy, the crew includes pilot George Zamka and mission specialists Scott Parazynski, Douglas Wheelock, Stephanie Wilson and Paolo Nespoli of the European Space Agency. NASA astronaut Dan Tani will fly up to the international outpost aboard Discovery, and station flight engineer Clay Anderson -- who launched aboard Discovery in June -- will return to Earth with Melroy's crew. Web posted. (2007). [Pad work picks up after shuttle rollout [Online]. Available WWW: <http://www.floridatoday.com/> The Flame Trench blog [2007, October 1].]

KSC staffers keep wary eye on NASA cuts

NASA should get enough federal dollars in 2008 to keep it on track to return astronauts to the moon by 2020 but not enough to address the threat of thousands of future job cuts at Kennedy Space Center. Congress and the White House so far have endorsed at least \$17.3 billion for the space agency, including \$3 billion to jump-start the production of new rockets and spacecraft that will take astronauts to the moon and perhaps Mars. But the fledgling Constellation program poses two problems for workers at KSC. NASA's plans to make Constellation more efficient than the space shuttle call for a 60 percent reduction in operating costs -- including personnel. Secondly, Constellation isn't scheduled to begin launching astronauts until March 2015. With the planned retirement of the space shuttle in 2010, that leaves a four-to-five year gap between manned spaceflights. In combination, that is expected to result in job losses for as many as one third of the 15,000 civil servants and contractors at KSC, although no one -- including NASA, Congress and the unions -- claims to know the exact number. Already there are signs of cutbacks. In budget documents, NASA estimated it would reduce its pool of civil-servant jobs at KSC by 200, from about 2,100 workers in 2008 to 1,900 in 2012. In the short term, the agency has restricted hiring, started employee buyouts and will devote \$25 million in 2008 to the transition effort. It also has begun transferring equipment to Constellation. After the shuttle completes a repair mission to the Hubble Space Telescope next year, one of two shuttle-launch complexes will be reconfigured to ready it for a 2009 test of an Ares rocket, slated to be the workhorse of the Constellation program. The shuttle must keep flying until 2010 to complete all major work on the international space station, so KSC's specialized shuttle work force must remain in place. Congress hasn't helped matters. Last year, it sliced more than \$500 million from NASA's \$16.8 billion funding request. The lion's share came from Constellation, delaying its first planned launch by six months to March 2015. A similar cut isn't expected this year. A Senate spending committee and the U.S. House have each approved a NASA budget that exceeds President Bush's request of \$17.3 billion -- with full funding for the Constellation

program. Budget negotiations are ongoing. ["KSC staffers keep wary eye on NASA cuts," **The Orlando Sentinel**, October 1, 2007, p A1 & A10.]

New book chronicles NASA's first 50 years

As the world remembers the 50th anniversaries of the Space Age in 2007 and NASA in 2008, the historic legacy of the agency is captured in a new and lavishly illustrated book published by Harry N. Abrams, Inc., New York, and available October 4. Titled *America in Space*, the book is a photographic record of the greatest adventures in the history of exploration and documents NASA's many achievements during the past five decades in aeronautics, science and technology, and human spaceflight. Almost 500 stunning color and black-and-white photographs, including many never published before, were culled from NASA's archives. The images tell the agency's story, from the drama of lift-off, to tension in mission control, to the humor and humanity portrayed in the faces of astronauts, scientists, engineers, and political leaders associated with the program during the past five decades. Published in cooperation with NASA, the book features a foreword by Apollo 11 commander Neil Armstrong, with contributions from Steven Dick, NASA chief historian; Bob Jacobs, deputy assistant administrator for Public Affairs; Constance Moore, NASA lead photo researcher; Anthony M. Springer, lead, communications and education, NASA Aeronautics Research Mission Directorate; and Bertram Ulrich, NASA curator and multimedia manager ["New Book Chronicles NASA's First 50 Years," **NASA News Release #07-210**, October 1, 2007.]

NASA assigns crew for space station assembly mission

NASA has assigned the space shuttle crew for Endeavour's STS-126 mission, targeted for launch in September 2008. The flight will deliver equipment to the International Space Station that will enable larger crews to reside aboard the complex. Veteran space flier Navy Capt. Christopher J. Ferguson will command Endeavour. Air Force Lt. Col. Eric A. Boe will serve as the pilot. The mission specialists are Navy Cmdr. Stephen G. Bowen, NASA astronaut Joan E. Higginbotham, Army Lt. Col. Robert S. Kimbrough and Navy Capt. Heidemarie M. Stefanyshyn-Piper. Boe, Bowen and Kimbrough will be making their first spaceflight. Endeavour will carry a reusable logistics module that will hold supplies and equipment, including additional crew quarters, a second treadmill, equipment for the regenerative life support system and spare hardware. ["NASA Assigns Crew for Space Station Assembly Mission," **NASA News Release #07-217**, October 1, 2007.]

October 2: KSC free weekend nets 20 tons of food

Nearly 24,000 Brevard County residents donated more than 20 tons of food during the annual free weekend and food drive at Kennedy Space Center Visitor Complex. This year's food total was the most collected at the "Salute to Brevard Residents." The visitor center then donated the food to Central Brevard Sharing Center, North Brevard Charities and South Brevard Sharing Center. "Salute to Brevard Residents" was Sept. 21-23. Web posted. (2007). [KSC free weekend nets 20 tons of food [Online]. Available WWW: <http://www.floridatoday.com/> [2007, October 2].]

October 3: NASA Selects Launch Services Provider for Earth Imagery Satellite

NASA's Launch Services Program office at the Kennedy Space Center, Fla., has selected Lockheed Martin Commercial Launch Services of Littleton, Colo., for launching of the

Landsat Data Continuity Mission. The \$124 million contract award is a competed firm-fixed-price task order. It includes launch services for an Atlas V model 401 rocket, payload processing, launch vehicle integration, and the necessary tracking, data and telemetry support. The spacecraft is scheduled to be placed into a 428-mile-high polar sun synchronous orbit in July 2011, lifting off from Vandenberg Air Force Base, Calif. The Landsat Data Continuity Mission will extend the more than 30-year record of high-quality land surface measurements from previous Landsat satellites. NASA researchers use these unique data products to study, understand and predict the consequences of land surface changes. NASA's Goddard Space Flight Center in Greenbelt, Md., manages procurement and acquisitions for the Landsat Data Continuity Mission in partnership with the U.S. Geological Survey. The U.S. Geological Survey will manage the satellite after launch and in-orbit checkout. ["NASA Selects Launch Services Provider for Earth Imagery Satellite," **NASA Contract Release #C07-050**, October 3, 2007.]

NASA Selects Launch Services Provider for Juno Jupiter Mission

NASA's Launch Services Program office at the Kennedy Space Center, Fla., has selected Lockheed Martin Commercial Launch Services of Littleton, Colo., for the Juno mission to Jupiter. The \$190 million contract award is a competed firm-fixed-price task order. It includes the launch service for an Atlas V model 551 rocket, payload processing, launch vehicle integration, and the necessary tracking, data and telemetry support. The spacecraft is scheduled to lift off from Cape Canaveral Air Force Station, Fla., in August 2011 on an interplanetary trajectory to Jupiter. Juno will arrive at Jupiter in August 2016 to uncover the secrets hidden beneath the planet's thick, colorful clouds. Juno's remote sensing and gravity science measurements will characterize Jupiter's interior, atmosphere and polar magnetosphere with the primary science goal of understanding the planet's origin and evolution. A principal investigator from the Southwest Research Institute in San Antonio leads the Juno mission. ["NASA Selects Launch Services Provider For Juno Jupiter Mission," **NASA Contract Release #C07-051**, October 3, 2007.]

October 4: Transmissions from Sputnik's radios usher in space age
Sputnik 1 launched on Oct. 4, 1957, the first successfully launched satellite, starting the space race between the Soviet Union and the United States. Sputnik orbited Earth about 151 miles above the ground every 98 minutes. Two radio transmitters emitted a series of beeps announcing its presence. The satellite transmitted signals for 21 days and remained in orbit until Jan. 4, 1968. ["Transmissions from Sputnik's radios usher in space age," **Florida Today**, October 3, 2007, p 4A.]

NASA Chief: China will beat us back to the moon

The Soviets beat the United States at getting a satellite, and a man, into space. Now, the Chinese may get to the moon before the U.S. can make a return visit. Fifty years after Sputnik became the world's first artificial satellite, a new race is under way with the finish line on the moon. NASA, the former lunar champion, already is predicting defeat. "I personally believe that China will be back on the moon before we are," NASA Administrator Michael Griffin said in a low-key lecture in Washington two weeks ago, marking the space agency's 50th anniversary, still a year away. "I think when that happens, Americans will not like it. But they will just have to not like it." Griffin's candor startled many in the space community, but insiders acknowledge the reality. China has pulled off two manned

spaceflights with its own rockets and is eager to head for the moon. NASA has a 2020 deadline for returning Americans to the moon. China would like to beat that. Web posted. (2007). [NASA Chief: China will beat us back to the moon [Online]. Available WWW: <http://www.cnn.com/> [2007, October 4].]

NASA budget gets \$1B boost

The Senate decided Thursday to add \$1 billion to NASA's budget as Democrats and Republicans voted to further break President Bush's budget for domestic programs. The money would replenish NASA accounts tapped to make improvements to the space shuttle program in the wake of the crash of the Columbia shuttle. The space agency has dipped into non-shuttle accounts, such as science and other space exploration programs, for about \$2.7 billion for safety upgrades and other costs after the 2003 disaster. The funding was added to a \$56 billion measure funding science programs and the departments of Commerce and Justice for the fiscal year that began Monday. The measure isn't expected to pass until the Senate returns from a weeklong recess. ["NASA budget gets \$1B boost," **Florida Today**, October 5, 2007.]

October 5: NASA Honors Apollo Astronaut Roger Chaffee

NASA will honor the late astronaut Naval Lt. Cmdr. Roger B. Chaffee with the presentation of an Ambassador of Exploration Award for his involvement in the U.S. space program. Chaffee's wife Martha will accept the award Saturday, Oct. 6, and present it for display at Purdue University during the halftime show of the Purdue - Ohio State football game. NASA is giving the Ambassador of Exploration Award to the first generation of explorers in the Mercury, Gemini and Apollo space programs for realizing America's vision of going to the moon. NASA also is recognizing several other key individuals who played significant roles in the early space programs. The award is a moon rock encased in Lucite and mounted for public display as inspiration to a new generation of explorers who will help us return humans to the moon and eventually on to Mars and beyond. The award is part of the 842 pounds of samples collected during the six Apollo lunar expeditions from 1969 to 1972. Chaffee received a Bachelor of Science degree in aeronautical engineering from Purdue in 1957. He was one of the third group of astronaut candidates selected October 1963. In March 1966, he was chosen as a crew member for the first Apollo flight. Chaffee died on January 27, 1967, in the Apollo 1 spacecraft fire during a launch pad test at the Complex 34, Cape Canaveral Air Force Station, Florida. ["NASA Honors Apollo Astronaut Roger Chaffee, **Media Advisory #M07-127**, October 5, 2007.]

NASA's Space Shuttle Processing Status Report

NASA's Space Shuttle Processing Status Report #S-100507. **Mission: STS-120** - 23rd International Space Station Flight - U.S. Node 2 (Harmony); Vehicle: Discovery (OV-103); Location: Launch Pad 39A; Launch Date: Targeted for Oct. 23, 2007; Crew: Melroy, Zamka, Parazynski, Wheelock, Wilson, Nespoli and Tani; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. On Sunday, STS-120 was transported via the crawler transporter to Launch Pad 39A. The rotating service structure, which protects and provides access to the orbiter at the pad, was rolled into position on Monday. During the week, workers performed shuttle interface testing, orbiter/external tank leak checks and launch pad validations. The payload was installed in the orbiter on Thursday, and the sensor packs were installed on the orbiter boom sensor system. Loading of hypergolic propellants aboard Discovery is scheduled for this weekend. Next week, the terminal countdown demonstration test is

scheduled with the STS-120 astronauts and the launch team. This routine series of events includes emergency training procedures and a launch countdown dress rehearsal. After the hail monitoring system at the pad showed possible hail in the predawn hours of Wednesday, engineers fully inspected the space shuttle but found no damage. There were no radar indications of hail, though wind-driven rain may have been possible. The calibration of the hail monitoring system sensors and associated instrumentation is being assessed. **Mission: STS-122** - 24th International Space Station Flight - Columbus Module; Vehicle: Atlantis (OV-104); Location: Orbiter Processing Facility Bay 1; Launch Date: Targeted for Dec. 6, 2007; Launch pad: 39A; Crew: Frick, Poindexter, Schlegel, Eyharts, Love, Melvin and Walheim; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility Bay No. 1, workers are installing the main engine heat shields. Engine integrated testing and mate operations are complete. Technicians have also completed checkout of the water spray boiler system. Functional checkout of the external tank doors is finished. Midbody closeout and inspection work continues, with final payload bay door closure scheduled for next week. In the Vehicle Assembly Building, processing continues on ET-125, the external fuel tank for the STS-122 mission, including repairs to the liquid oxygen feedline support bracket foam. In high bay No. 3, stacking of the solid rocket boosters is under way. The right forward booster segment will be lifted to the stack this weekend. **Mission: STS-123** - 25th International Space Station Flight - Kibo, Dextre; Vehicle: Endeavour (OV-105); Location: Orbiter Processing Facility Bay 2; Launch Date: Targeted for Feb. 14, 2008; Launch Pad: 39A; Crew: Gorie, Johnson, Linnehan, Doi, Behnken, Foreman and Reisman; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 2, servicing of Freon coolant loop No. 1 is complete. Windows No. 3 and 4 were removed and replaced. Technicians continue inspecting the main propulsion system flow liners, feedlines and gimbal joints. The fuel cell single-cell voltage test is finished. Preparations for installation of BRI tile around the main landing gear doors are under way. The BRI tile is a stronger tile designed for critical areas on the orbiter. Work is in progress to configure Endeavour's payload bay for the STS-123 hardware. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, October 5].]

Atlas 5 contracts worth \$315M

United Launch Alliance of Brevard County will execute two Atlas 5 launch contracts, worth \$315 million, recently awarded to Lockheed Martin Commercial Launch Services of Littleton, Colo. Lockheed and The Boeing Co. formed United Launch Alliance to execute government launches. But work on these two contracts began before ULA was formed in 2005. A \$190 million contract funds the August 2011 launch from Cape Canaveral Air Force Station of the five-year trip Juno mission to Jupiter. The contract includes launch services for an Atlas 5 model 551 rocket, payload processing, launch vehicle integration and the necessary tracking, data and telemetry support. Juno will arrive at Jupiter in August 2016 to probe beneath the planet's thick, colorful clouds. Additionally, ULA will execute a \$124 million contract to launch a satellite for the Landsat Data Continuity Mission in July 2011 from Vandenberg Air Force Base, Calif. NASA researchers use these satellites to study, understand and predict the consequences of land surface changes. Web posted. (2007). [Atlas 5 contracts worth \$315M [Online]. Available WWW: <http://www.floridatoday.com/> [2007, October 5].]

NASA Launch Control Center evacuated

The Launch Control Center at Kennedy Space Center was evacuated this morning after a fire alarm rang out on an out-of-service bridge between the four-story facility and the towering Vehicle Assembly Building. Dozens of NASA and contractor workers gathered in marshaling areas outside the LCC and the VAB and the space center police force stopped all traffic -- including tour buses -- traveling on Saturn Causeway just south of the facilities. "It was not a drill," KSC spokesman George Diller said. "It was a real fire alarm, but it was a false alarm." A brief-but-heavy isolated rainstorm rolled over the Launch Complex 39 area as the building was being evacuated. The evacuees were able to return to their work sites within about 20 minutes. The personnel access bridge was used to route people between the VAB and the LCC during the Apollo moon-landing program but has not been in use in recent years. It was not immediately clear what triggered the alarm. Web posted. (2007). [NASA Launch Control Center evacuated [Online]. Available WWW: <http://www.floridatoday.com/> The Flame Trench blog [2007, October 5].]

U.S. space lead in jeopardy?

The United States could lose technological superiority in space during the four- to five-year gap of manned space flights between the retirement of the space shuttle and the launch of the Constellation mission, the head of Kennedy Space Center said Thursday. It's during that gap that competitors from China and Russia will be launching astronauts into space and will gain ground on the U.S. space program, said Bill Parsons, the KSC director who is overseeing the final launches of the space shuttle, two of which are scheduled before the end of the year. "I think that takes away our technological edge in the world," Parsons said, referring to the absence of manned space flights between the shuttle and Constellation. "It's a decision that this nation, this president and this Congress has to make," Parsons added, "but I feel that it really does put us at a disadvantage." Parsons' remarks came during a keynote address at a breakfast meeting arranged by the Melbourne-Palm Bay Area Chamber of Commerce that drew more than 220 people. His comments followed remarks Wednesday by NASA Administrator Mike Griffin, in which he said China likely will be back on the moon before the United States. NASA has set a 2020 deadline for returning Americans to the moon. Web posted. (2007). [U.S. space lead in jeopardy? [Online]. Available WWW: <http://www.floridatoday.com/> [2007, October 5].]

First space currency unveiled

A foreign exchange specialist has unveiled the world's first currency for use in space. Travelex worked with a team of scientists from the National Space Centre and the University of Leicester to design a currency that could withstand the stresses of space travel and the extreme environment found in the orbit around Earth. The group has dubbed the money Quasi Universal Intergalactic Denomination or Quids for short. Web posted. (2007). [First space currency unveiled [Online]. Available WWW: <http://www.channel4.com/> [2007, October 5].]

October 7: Space Shuttle Crew Lands in Florida

Space shuttle Discovery's crew is on the ground in Central Florida. The astronauts arrived Sunday night and are getting ready for what the shuttle commander called a "big week" in human space flight. "This is a wonderful moment because we actually get close to our vehicle," said Pam Melroy, the shuttle's commander. Over the next few days, Discovery's crew members will run drill after drill practicing what to do in a shuttle emergency. The

crew's mission will focus around the Harmony Module for the International Space Station. The module is about 21 feet long and will serve as a bridge between different science labs on the International Space Station. But they can't put it in place because the shuttle will be in the way. So once Discovery leaves the 31,000-pound module will be installed by the ISS crew. At about the same time, Melroy, and her crew are strapping in for drills. In Kazakhstan, an astronaut will be getting ready to ride a Russian rocket to space as the first female ISS commander. "Pretty big week for human space flight," Melroy told the press. Once the drills are done, the crew will return to Houston. But then they will be back in about two weeks for liftoff. Launch is slated for Oct. 23 at 11:38 a.m. Web posted. (2007). [Space Shuttle Crew Lands in Florida [Online]. Available WWW: <http://www.cfnews13.com/> [2007, October 8].]

October 8: Air Force holds off on Atlas launch

The Atlas 5 launch of the Wideband Global SATCOM satellite has been delayed until Wednesday (October 10). During the 24-hour delay, engineers will try to understand a possibly incorrect data signature, which differs from a Delta 4 signature. The two rockets use a common system, but engineers aren't sure what cause the difference or whether it indicates a problem. Air Force spokesmen on Monday declined to explain the trouble. "The difference has raised a question for Atlas V given the Atlas and Delta launch vehicles have some common or similar components," said a press release from the 45th Space Wing. During the last Atlas 5 launch on June 15, a leak caused by a faulty valve prevented the rocket from delivering its top-secret payload to the proper orbit. A redesigned valve has been installed on both Atlas and Delta rockets. It is scheduled for a launch window that begins at 8:22 p.m. and ends at 9:33 p.m. EDT. ["Air Force holds off on Atlas launch," Florida Today, October 9, 2007, p 2B.]

Hope fades that Fossett cheated death

With winter closing in, efforts to find aviator Steve Fossett have dwindled – along with hopes that his proven ability to cheat death enabled him to survive a plane crash in the rugged desert of northern Nevada. Lyon County Sheriff Allen Veil said Fossett's disappearance remains under investigation as a missing-person case, and authorities are not prepared to presume the aviator is dead. On March 4, 2005, Fossett completed the first solo, non-stop airplane flight around the world in the GlobalFlyer. The record setting flight took off from Kennedy Space Center's Shuttle Landing Facility. Web posted. (2007). [Hope fades that Fossett cheated death [Online]. Available WWW: <http://www.cnn.com/> [2007, October 8].]

October 9: Thousands of NASA Jobs in Jeopardy

The Space Coast is bracing for the worst and looking for help before the space shuttle program retires. In just three years, NASA plans to shut down its manned spaceflight operations until the new constellation program comes on-line around 2014. That could put 4,000 jobs at the Kennedy Space Center in jeopardy. Indirectly, 15,000 jobs could be lost, thanks to a slump in the Brevard County economy. That's why Oviedo Congressman Tom Feeney and State Representative Thad Altman are trying to soften the blow. Tuesday, they met with Governor Charlie Crist, in search of incentives that could help prevent the kind of recession Brevard had after the Apollo program was ditched in the 1970s. "We're faced with the same reality, with transitioning from shuttle to the constellation, the new vision on space,

going back to the moon and mars, so it's a serious problem, and we're going to have to be very proactive both at the state level and the federal level to ensure that we don't lose this workforce," said Altman, a Republican from Melbourne. Altman wants money to help encourage jobs in Brevard's aerospace industry. He's also looking for ways to give shuttle workers jobs in other high-tech areas. Web posted. (2007). [Thousands of NASA Jobs in Jeopardy [Online]. Available WWW: <http://www.cfnews13.com/> [2007, October 9].]

October 10: NASA safety panel considers manned vs. unmanned question

NASA's Aerospace Safety Advisory Panel (ASAP) is turning its attention to the issue of how the agency decides whether a particular mission should be manned or unmanned, and whether safety concerns are being weighed appropriately in that process. "One of our research questions has been, how do you decide, and is safety as powerful a driver in that analytical process as it should be," says retired U.S. Navy Vice Adm. Joseph Dyer, who chairs the ASAP. "The ASAP, just like Mike Griffin, are strong believers in exploration, strong believers in the importance of manned space. But we also think that manned [versus] unmanned capability represents something that should be carefully considered." Another issue the group is looking at is standardization of flight-test procedures at NASA centers. "There are multiple centers that operate flight-tests and all of them do some things very, very well," Dyer said. But "there's not the kind of sharing of best practice that we think NASA should pursue." Dyer said Griffin has responded positively to an earlier ASAP recommendation that information be appropriately filtered during space shuttle flight readiness reviews so that senior decision makers aren't inundated with details that should be decided at lower management levels. "Griffin was in agreement on that and we are seeing progress in doing just that," Dyer said. While NASA's reviews are "incredibly thorough, presented by real experts," senior managers have been forced to "search" for items of critical importance, he said. E-mail distribution. (2007). [Aviation Week's Aerospace Daily & Defense Report Re: "NASA safety panel considers manned vs. unmanned question," [Electronic]. Vol. 224, No. 8, [October 10, 2007].]

NASA studying shuttle RCC problem

NASA officials are investigating a potential problem with several leading-edge wing panels on the shuttle Discovery that could force an extended launch delay. Shuttle engineers has been studying for some time a degradation in the silicon carbide coating on three reinforced carbon-carbon (RCC) panels on the leading edges of the shuttle's wings, thought to be caused by oxidation, but had previously concluded that the degradation has stabilized. A separate analysis by the NASA Engineering and Safety Center, though, argued that oxidation was not the cause of the panel's degradation and thus NASA could not assume the situation would remain stable, and therefore recommended that the panels be replaced. The replacement process would require rolling the shuttle back to the VAB and would delay the launch by weeks. A decision on whether to replace the panels is not expected before the mission's flight readiness review next week. Discovery otherwise remains on track for a launch on October 23. Web posted. (2007). [NASA studying shuttle RCC problem [Online]. Available WWW: <http://www.spacetoday.net/> [2007, October 11].]

October 11: Bruner Named Head of Legislative and Intergovernmental Affairs

NASA Deputy Administrator Shana Dale on Thursday announced the appointment of Bill Bruner as assistant administrator for legislative and intergovernmental affairs. Bruner has

served as acting assistant administrator for the office since June. The office of legislative affairs and intergovernmental affairs develops and implements the legislative strategy to carry out NASA initiatives requiring congressional action and state and local government relations. The office also responds to requests and inquiries from congressional committees, individual members of Congress and their staffs. ["Bruner Named Head of Legislative and Intergovernmental Affairs, NASA News Release #07-222, October 11, 2007.]

NASA to Be the Featured Agency in 2008 Smithsonian Folklife Festival

NASA and the Smithsonian Institution's Center for Folklife and Cultural Heritage are partnering for the 2008 Smithsonian Folklife Festival. The festival showcasing NASA will run on the National Mall from June 25 to July 6, 2008. NASA will be only the second featured federal agency in the history of the festival, which annually attracts an audience of more than a million people. The Folklife Festival also will highlight the food and music of the state of Texas and the mountainous Asian nation of Bhutan. An annual survey of tourism agencies and convention and tourism bureaus around the country labeled the Folklife Festival as America's No. 1 tourism event. With an emphasis on audience participation, the festival program will encourage visitors to engage one on one with NASA experts in presentation areas on the Mall. The presentations are tied to NASA's mission goals in aeronautics, space exploration, science and human spaceflight. The NASA program will include live presentations, hands-on educational activities, narrative oral history sessions and demonstrations of the skills, techniques and knowledge of real rocket scientists. Exhibits will explore the spirit of inspiration, innovation, discovery and public service embodied by the agency and its personnel. ["NASA to Be the Featured Agency in 2008 Smithsonian Folklife Festival," NASA News Release #07-223, October 11, 2007.]

Kansas to blast off KSC concerts

The rock band Kansas will mark the 30th anniversary of its album "Point of Know Return" with a performance on Nov. 10 that launches the inaugural fall concert series at the Kennedy Space Center Visitor Complex. The concert series comes on the heels of the World Space Expo at the Visitor Complex from Nov. 1 through Nov. 4. The concerts will be at the KSC Rocket Garden. Other performers to play at the Visitor Complex include: Nov. 17: Josh Gracin, a country singer and American Idol alumnus. Nov. 24: Lou Gramm, the lead singer of Foreigner. Dec. 1: RPM: Rock & Pop Masters, a band backing up original lead singers of several bands, including David Pack, formerly of Ambrosia; Larry Hoppen of Orleans; and Jimi Jamison, formerly of Survivor. The concerts are included with admission to the KSC Visitor Complex. Web posted. (2007). [Kansas to blast off KSC concerts [Online]. Available WWW: <http://www.floridatoday.com/> [2007, October 11].]

October 12: First Woman Station Commander Arrives For Historic Spaceflight

NASA astronaut Peggy Whitson arrived at the International Space Station Friday to begin her tenure as the first woman to command a station mission. Whitson, Soyuz Commander and Flight Engineer Yuri Malenchenko and Malaysian Spaceflight Participant Sheikh Muszaphar Shukor docked their Soyuz TMA-11 spacecraft to the station at 10:50 a.m. EDT. The crew launched on Wednesday from the Baikonur Cosmodrome in Kazakhstan. Whitson officially will become the station commander after a ceremony Friday, Oct. 19, at approximately 3:15 p.m. EDT. This change of command event will mark the formal

handover of the station to Whitson and Malenchenko, just days before the Expedition 15 crew members and Shukor depart. Another female astronaut, space shuttle Discovery Commander Pam Melroy, will reach another milestone in late October when she and her crew arrive at the station. It will mark the first time two women have led space missions at the same time. This is Whitson's second six-month rotation aboard the orbiting complex. She previously served as a flight engineer on Expedition 5 in 2002, when she became NASA's first station science officer, conducting 21 investigations in human and life sciences. ["First Woman Station Commander Arrives For Historic Spaceflight," **NASA News Release #07-226**, October 12, 2007.]

NASA's Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-101207. **Mission: STS-120** - 23rd International Space Station Flight - U.S. Node 2 (Harmony); Vehicle: Discovery (OV-103); Location: Launch Pad 39A; Launch Date: Targeted for Oct. 23, 2007; Crew: Melroy, Zamka, Parazynski, Wheelock, Wilson, Nespoli and Tani; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. At Launch Pad 39A, the hypergolic propellants have been loaded into the solid rocket booster hydraulic power units, as well as into Discovery's orbital maneuvering system, forward reaction control system and auxiliary power units. On Thursday, the rotating service structure at the pad was rotated away from Discovery to allow for the auxiliary power unit hotfire, which was successfully completed. The rotating service structure was returned to the mate position later that day. Orbiter aft closeout work begins today. On Sunday, the STS-120 crew arrived at Kennedy Space Center for the terminal countdown demonstration test, which involves a launch dress rehearsal. Crew activities included practicing emergency egress operations at the pad, reviewing the payload bay configuration, and suiting up and climbing into the crew cabin of the orbiter to run through the prelaunch checklist. On Tuesday and Wednesday, a program-level flight readiness review was held at Kennedy. Space Shuttle Program managers concluded the review with a recommendation to proceed toward a targeted launch on Oct. 23. An agency-level review will take place on Oct. 16 at Kennedy, where an official launch date will be decided.

Mission: STS-122 - 24th International Space Station Flight - Columbus Module; Vehicle: Atlantis (OV-104); Location: Orbiter Processing Facility Bay 1; Launch Date: Targeted for Dec. 6, 2007; Launch Pad: 39A; Crew: Frick, Poindexter, Schlegel, Eyharts, Love, Melvin and Walheim; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility Bay No. 1, midbody closeout and inspection work is complete and the payload bay doors were closed for rollover. Workers continue to close out and inspect the forward and aft sections. The landing gear functional test was successfully performed. In the Vehicle Assembly Building, processing continues on ET-125, the external fuel tank for mission STS-122. Repairs to the liquid oxygen feedline support bracket foam are complete and access platforms are being removed. In high bay No. 3, stacking of the solid rocket boosters is finished. **Mission: STS-123** - 25th International Space Station Flight - Kibo, Dextre; Vehicle: Endeavour (OV-105); Location: Orbiter Processing Facility Bay 2; Launch Date: Targeted for Feb. 14, 2008; Launch Pad: 39A; Crew: Gorie, Johnson, Linnehan, Doi, Behnken, Foreman and Reisman; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 2, window No. 1 was removed and replaced this week, and the removal and replacement of window No. 6 is in progress. The external airlock upper hatch functional test is complete. Technicians continue to inspect the main propulsion system flow liners, feedlines and gimbal joints. Preparations for installation of BRI tile around the main landing gear doors continue. The BRI tile is a stronger tile designed

for critical areas on the orbiter. Work is under way to configure the payload bay for the STS-123 cargo. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, October 12].]

October 15: Weather worse for Wednesday launch

A 60 percent chance of favorable weather conditions exists on Wednesday for a Delta 2-GPS IIR-17 rocket carrying a Global Positioning Satellite. The launch window is between 8:23 and 8:38 a.m. EDT. The forecast has worsened from a 70 percent chance of acceptable weather forecast on Sunday. Clouds and rain have become more possible since a high pressure area began to weaken and move east. Scattered thunderstorms Wednesday afternoon will taper off by evening. Clouds and showers will be the concern. Riding a Delta 2 rocket with nine strap-on solid rocket boosters, the satellite will enter an orbit 11,000 miles above the earth. The GPS IIR-17(M) satellite, built by Lockheed Martin, will join the GPS constellation of 30 operational satellites. Features of the GPS IIR-M satellites include two new military signals for improved accuracy, enhanced encryption, anti-jamming capabilities, and a second civil signal to provide dual frequency capability and improve resistance to interference. The GPS IIR-17 could be the 77th consecutive Delta 2 rocket to deliver its payload safely. In 130 Delta flights since 1989, 128 have been successful. The last failure was January 1997, when a Delta II rocket exploded shortly after launch from Cape Canaveral, due to a cracked solid rocket motor. At least 25 Delta 2 rockets are scheduled to fly during the next several years. Web posted. (2007). [Weather worse for Wed. launch [Online]. Available WWW: <http://www.floridatoday.com/> The Flame Trench blog [2007, October 15].]

Shuttle Discovery's new software - from OI-32 to Windows XP

Shuttle Discovery will be flying a new upgrade to her onboard software during next week's STS-120, with the OI-32 Flight Software modification increasing the safety of orbiter operations. Noted in last week's Space Shuttle Systems Engineering and Integration Office Flight Readiness Review (FRR), it has also been revealed that the laptops onboard Discovery have also been upgraded - to Windows XP. The new software load OI-32 (Operational Increment number 32) includes a variety of increased safety modifications that will help Discovery complete her mission without a hitch. The new OI-32 load has been included into the Primary Avionics Software System (PASS) - with processes data from all control activities - including main engine firing and throttling, RCS (Reaction Control System) jets and guidance commands for landing. In the event of a PASS failure, there is a backup system (BFS - Backup Flight Software). However, due to the reliability of the orbiter's computers, this has never been required in the history of the shuttle program. Other modifications include the ability for Discovery to 'shout out' if she's got a problem, while the crew are onboard the International Space Station (ISS). Often seen on the flight deck of the orbiters, modern day laptops are used for a variety of tasks, from downloading and uploading imagery, mission documentation, and even the ability for the crew to send e-mails to friends and family in their spare time on orbit. Windows has been the preferred operating system for NASA, and this continues with the upgrade of the laptops from Windows 2000 to Windows XP, which makes its debut on Discovery with STS-120. 'STS-120 Will Be the Seventh Space Shuttle Flight of the IBM ThinkPad A31p PGSC and Associated 28V DC Power Supply (Emerald brick). It will be the first flight of Windows XP Operating System. Web posted. (2007). [Shuttle Discovery's new software - from OI-32 to

Windows XP [Online]. Available WWW: <http://www.nasaspaceflight.com/> [2007, October 15].]

October 16: Shuttle Update

At Launch Pad 39A, the hypergolic propellants have been loaded into Discovery's solid rocket booster hydraulic power units, as well as into the orbital maneuvering system, forward reaction control system and auxiliary power units. Last Thursday, the rotating service structure at the pad was rotated away from Discovery to allow for the auxiliary power unit hotfire, which was successfully completed. The rotating service structure was returned to the mate position later that day. Orbiter aft close-out work is underway. Yesterday, ordnance were installed and connected. An agency-level flight readiness review will take place today and an official launch date for Discovery's STS-120 mission will be decided. In Orbiter Processing Facility Bay No. 1, midbody closeout and inspection work is complete on Atlantis and the payload bay doors were closed for roll-over. Workers continue to close out and inspect the forward and aft sections. The landing gear functional test was successfully performed. In the Vehicle Assembly Building, processing continues on ET-125, the external fuel tank for mission STS-122. Repairs to the liquid oxygen feedline support bracket foam are complete and access platforms have been removed. In high bay No. 3, stacking of the solid rocket boosters is finished. Atlantis is targeted for launch on Dec. 6. In Orbiter Processing Facility Bay No. 2, window No. 1 was removed and replaced last week on Endeavour, and the removal and replacement of window No. 6 is in progress. The external airlock upper hatch functional test is complete. Endeavour's next mission is STS-123, targeted for launch on Feb. 14. ["Shuttle Update," **KSC Countdown**, October 16, 2007.]

NASA Gives "Go" For Space Shuttle Launch on Oct. 23

NASA senior managers Tuesday completed a detailed review of space shuttle Discovery's readiness for flight and selected Oct. 23 as the official launch date. Commander Pam Melroy and her six crewmates are scheduled to lift off at 11:38 a.m. EDT on the STS-120 mission to the International Space Station. Tuesday's meeting included a discussion about concerns raised by the NASA Engineering and Safety Center regarding the reinforced carbon carbon on three of Discovery's wing leading edge panels. This issue initially was brought before the Space Shuttle Program during a two-day, preliminary review held last week to assess preparations for Discovery's mission. "After a thorough discussion and review of all current engineering analysis, we have determined that Discovery's panels do not need to be replaced before the mission," said Associate Administrator for Space Operations Bill Gerstenmaier, who chaired Tuesday's meeting. During the shuttle's 120th mission, the shuttle and station crews will work with flight controllers at NASA's Johnson Space Center, Houston, to add a module to the station that will serve as a port for installing future international laboratories. The Harmony module will be the first expansion of the living and working space on the station since 2001. The upcoming mission also will move the first set of solar arrays installed on the station to a permanent location on the complex and redeploy them. The 14-day mission includes five spacewalks - four by shuttle crew members and one by the station's Expedition 16 crew. Discovery is expected to complete its mission and return home at 4:47 a.m. EST on Nov. 6. Joining Commander Melroy on STS-120 will be Pilot George Zamka and mission specialists Scott Parazynski, Stephanie Wilson, Doug Wheelock, Daniel Tani and Paolo Nespoli of the European Space Agency. Tani will remain aboard the station and return with the STS-122 crew, which is targeted to launch Dec. 6. Current Flight Engineer Clayton Anderson will return to Earth on Discovery after nearly five months on the station.

["NASA Gives "Go" For Space Shuttle Launch on Oct. 23," NASA News Release #07-209, October 16, 2007.]

Kennedy to host contractor expo today

Business owners interested in contracting with government agencies will get a chance to learn about the process and to network during an event today at Port Canaveral. Business Expo 2007 will be held from 9 a.m. to 3 p.m. at the port's Cruise Terminal 4. The annual trade show is open to the public at no charge. Sponsored by the NASA Kennedy Space Center Small Business Council, the 45th Space Wing and Canaveral Port Authority, the show is expected to feature more than 175 business and government exhibitors from Brevard County and elsewhere. In addition to business owners and managers, government purchasing agents can attend to learn what local and national vendors have to offer, organizers said. Exhibitors will include vendors from a variety of fields, including computer technology, communications equipment and services, and construction and safety products. Representatives from NASA, the 45th Space Wing, Kennedy Space Center prime contractors, local chambers of commerce and others will be available to give out information and answer questions about doing business with their organizations. "We're encouraging everyone involved with government contracting to be part of this extraordinary networking and information-gathering opportunity," said Connie Wilcox, Kennedy Space Center's small-business specialist. "This event has an incredible reputation for providing excellent opportunities for all who attend," she said. Web posted. (2007). [Kennedy to host contractor expo today [Online]. Available WWW: <http://www.floridatoday.com/> [2007, October 16].]

China wants role in space station

China hopes to join an international space station project that already counts leading space powers like the United States and Russia as its members, a government official said Tuesday. On Tuesday, state-run newspapers said China will launch its first lunar probe later this month, just weeks after regional rival Japan successfully sent a lunar satellite into orbit. But China does not participate in the international space station, due in part to American unease about allowing a communist dictatorship a place aboard. "We hope to take part in activities related to the international space station," Li Xueyong, a vice minister of science and technology. "If I am not mistaken, this program has 16 countries currently involved and we hope to be the 17th partner." A reporter had asked whether China in the future would be more likely to compete or cooperate with America in space. Li said China wanted to cooperate with the United States, but gave no specifics. In 2003, China launched its first manned space mission, making it the third country to send a human into orbit on its own, after Russia and the United States. Web posted. (2007). [China wants role in space station [Online]. Available WWW: <http://www.cnn.com/> [2007, October 16].]

FRR discussing launch date and RCC issue

The final Flight Readiness Review (FRR) is expected to approve October 23 as the launch date for STS-120, with the only one major outstanding issue being discussed. Concerns over the coating on three of Discovery's RCC (reinforced carbon-carbon) panels - noted by two engineers at NASA Engineering and Safety Center (NESC) - are being downplayed, after it was revealed NESC used data from Endeavour for their thermography data. Due diligence on the issue is paramount for the program, with cross agency and contractor discussions taking place over the past week and through the weekend, ranging from NASA HQ to the

United Space Alliance (USA). The RCC panels in question are on both leading edges of Discovery's wings, namely panels 9R, 12L, and 13R. Replacing these panels cannot be conducted at the pad, and would lead to the rollback of Discovery and a major launch delay. It is understood that NESC took pre-flight data of RCC panels and compared them with the current health of Discovery's panels. However, it appears NESC compared Discovery's RCC with thermography data from Endeavour's RCC - which in turn rules out commonality and flight history with Discovery. More importantly, it is assumed that this also removes the fear that the heat of re-entry is causing the problem, which downplays the concern that burn-through - as raised by NESC - is the driving force behind the call to replace the panels - panels which may have always been as the data shows, and not 'worsened' by her recent re-entries, in turn removing NESC's concern. Web posted. (2007). [FRR discussing launch date and RCC issue[Online]. Available WWW: <http://www.cnn.com/> [2007, October 16].]

House Passes Legislation Recognizing the 50th Anniversary of the Dawn of the Space Age

The U.S. House of Representatives today overwhelmingly passed a concurrent resolution (H.Con.Res. 225) honoring the 50th anniversary of the dawn of the Space Age, which occurred on October 4, 1957 with the launch of Sputnik 1. That event was followed shortly by the successful launch of the American Explorer 1 satellite, which discovered the Van Allen radiation belts among other scientific accomplishments. H.Con.Res. 225 was introduced by House Committee on Science and Technology Chairman Bart Gordon (D-TN), with Space and Aeronautics Subcommittee Chairman Mark Udall (D-CO), Energy and Environment Subcommittee Chairman Nick Lampson (D-TX), Ranking Member Ralph Hall (R-TX), and Space and Aeronautics Subcommittee Ranking Member Tom Feeney (R-FL) as original cosponsors. Web posted. (2007). [House Passes Legislation Recognizing the 50th Anniversary of the Dawn of the Space Age [Online]. Available WWW: <http://science.house.gov/press/PRArticle.aspx?NewsID=1998> [2007, October 16].]

Shuttle strike becomes longest ever at KSC

The contract standoff between the Machinists union and NASA contractor United Space Alliance has turned into the union's longest strike ever at Kennedy Space Center. The strike, which began June 14, has lasted 126 days as of today. That's longer than several Machinists union strikes at the Space Center from the 1970s to the 1990s, according to union officials. Both sides have not returned to the bargaining table since last month, when a scheduled two-day negotiating session arranged with the help of a federal mediator broke down after one day and the second day was canceled. Representatives for the International Association of Machinists and Aerospace Workers Local 2061 in Cape Canaveral have been in contact again with a federal mediator, in hopes of working toward a contract agreement. But, so far, no sessions with the company have been scheduled. Web posted. (2007). [Shuttle strike becomes longest ever at KSC [Online]. Available WWW: <http://www.floridatoday.com/> [2007, October 16].]

October 17: NASA Set to Begin Space Shuttle Discovery Countdown Oct. 20
NASA will start the launch countdown for space shuttle Discovery's STS-120 mission at 2 p.m. EDT Saturday, Oct. 20, at T-43 hours. The countdown includes 26 hours and 38 minutes of built-in hold time leading to a preferred launch time of approximately 11:38 a.m. on Tuesday, Oct. 23. The launch window extends an additional five minutes. During the 14-day mission to the International Space Station, Discovery's crew will add the Node 2 module

to the expanding station. Node 2, known as Harmony, will provide attachment points for European and Japanese laboratory modules to be installed later this year and early in 2008, respectively. The Discovery crew also will move the station's Port 6 segment of the station's backbone, or truss, and its solar arrays to a permanent position at the very end of the left side of the truss. The flight will include five spacewalks. ["NASA Set to Begin Space Shuttle Discovery Countdown Oct. 20, **NASA Media Advisory #M07-135**, October 17, 2007.]

Senate approves NASA budget

The U.S. Senate passed an appropriations bill Tuesday that gives NASA \$1 billion more than originally requested, after fending off a last-minute bid to divert some of that money to another program. The Senate passed the Commerce, Justice, and Science appropriations bill on a 75-19 vote on Tuesday after debating a number of amendments to the bill. One of the amendments debated Tuesday would have diverted \$150 million from the agency to fund the State Criminal Alien Assistance Program, which reimburses states for the costs of jailing illegal immigrants, but the amendment was shot down by a wide margin. The overall bill gives \$18.5 billion for NASA, thanks in part to an amendment the Senate approved earlier this month that adds \$1 billion to the agency's budget. The Senate version of the bill must be reconciled with the House version, which lacks the extra \$1 billion, and also faced a threatened veto from the president. Web posted. (2007). [Senate approves NASA budget [Online]. Available WWW: <http://www.spacetoday.net/> [2007, October 17].]

Risky space tourism gets a boost from a hands-off FAA

Federal Aviation Administration officials detailed their unique relationship with the emerging space-tourism industry for a gathering of air and space lawyers this month. Several firms are racing to serve people willing to pay a steep price for the privilege of floating briefly in space, perhaps in as little as two years. Some scientists believe commercial competition will fuel rapid development of space travel technology. In the Commercial Space Launch Amendments Act of 2004, Congress told the FAA to treat the industry more like an adventure business than an air carrier. The law protects the rights of those who wish to be among the first private citizens to go into space — likening them to visionaries and adventurers who knowingly take other risks like climbing mountains — while giving the people who operate the new types of unproven spacecraft the scientific latitude to learn from their first fatal mistakes. "This is an ultra-hazardous business," Patti Grace Smith, the FAA's associate administrator for Commercial Space Transportation told attendees at an American Bar Association forum on air and space law. She said part of the agency's effort to promote the industry's success means giving it room to fail. By law, the FAA cannot impose safety regulations on the industry until 2012 unless there is a serious accident in flight or if the agency — which will attend every launch and is working closely with industry professionals — detects a safety threat that companies refuse to fix. Web posted. (2007). [Risky space tourism gets a boost from a hands-off FAA [Online]. Available WWW: <http://www.usatoday.com/> [2007, October 17].]

Delta 2 GPS lifts off

A United Launch Alliance Delta 2 rocket carrying a GPS satellite lifted off at 8:23 a.m. EDT. "Looking good," said the commentator as the solid rocket motors separated. The spacecraft will separate after 68 minutes and the modernized GPS satellite will be in service within two weeks. Launched from Complex 17A on a Delta 2 rocket with nine strap-on solid rocket boosters, the satellite, built by Lockheed Martin for the U.S. Air Force,

will enter an orbit 11,000 miles above the earth. Within two weeks, the satellite will be operational, giving improved navigation signals to military and civilian GPS units, which number in the tens of millions. The GPS IIR-17 will be the 77th consecutive Delta 2 rocket to deliver its payload. At least 25 Delta 2 rockets remain to fly during the next few years. Web posted. (2007). [Delta 2 GPS lifts off [Online]. Available WWW: <http://www.floridatoday.com/> The Flame Trench blog [2007, October 17].]

NASA agrees to Oct. 23 shuttle launch date

NASA officials signed off late Tuesday on the planned October 23 launch of the space shuttle Discovery despite concerns about some of the leading-edge wing panels on the orbiter. The flight readiness review meeting Tuesday ended with officials satisfied that small cracks found in protective coating on several of the panels did not pose a safety risk to the orbiter. Previously, an independent safety office has recommended that, since the cause of the cracks had not been identified, the panels be replaced, a process that would have required rolling the shuttle back to the VAB and delay the launch by several weeks. Shuttle managers, though, concluded that the cracks posed an "acceptable risk" to the flight. Discovery is scheduled to launch on mission STS-120 at 11:38 am EDT (1538 GMT) Tuesday, October 23. The mission will deliver a new docking node to the International Space Station and also move a set of solar panels to its permanent position on the station's truss. Web posted. (2007). [NASA agrees to Oct. 23 shuttle launch date [Online]. Available WWW: <http://www.spaceflightnow.com/> [2007, October 17].]

From KSC worker to astronaut

A former NASA orbiter and payload engineer who worked at Kennedy Space Center for nine years is destined to launch on a supply run to the International Space Station next year. The mission will be the second space flight for Joan Higginbotham, a former Titusville resident who worked at KSC between 1987 and 1996. Higginbotham will serve as a mission specialist and prime robot arm operator on flight. The mission is considered key to preparing the station for larger crews -- six people rather than three -- an expansion planned in 2009. Set for launch aboard shuttle Endeavour next September, the mission will involve hauling more than 14 tons of supplies up to the outpost, including a new galley and extra sleep stations required for larger crews. Higginbotham will be responsible for hoisting an Italian cargo carrier from the shuttle's payload bay and then berthing it to a docking port on the U.S. Unity module. Higginbotham also will serve as the mission's loadmaster, supervising the delivery of all the supplies and equipment -- a record amount for a mission to the station. She'll also be in charge of loading surplus equipment and trash into the cylindrical module and then stowing it back in the shuttle's payload bay for the return trip to Earth. Web posted. (2007). [From KSC worker to astronaut [Online]. Available WWW: <http://www.floridatoday.com/> [2007, October 17].]

October 18: NASA Honors Apollo Astronaut Donn Eisele

NASA will honor the late astronaut retired Air Force Col. Donn F. Eisele with the presentation of an Ambassador of Exploration Award for his involvement in the U.S. space program. Eisele's wife Susan Eisele-Black will accept the award at 4 p.m. EDT on Tuesday, Oct. 23 at the Broward County Library, 100 South Andrews Avenue in Fort Lauderdale. NASA is giving the Ambassador of Exploration Award to the first generation of explorers in the Mercury, Gemini and Apollo space programs for realizing America's vision of going to the moon. NASA also is recognizing several other key individuals who played significant

roles in the early space programs. The award is a moon rock encased in Lucite and mounted for public display as inspiration to a new generation of explorers who will help us return humans to the moon and eventually on to Mars and beyond. The award is part of the 842 pounds of samples collected during the six Apollo lunar expeditions from 1969 to 1972. In 1968, Eisele was the command module pilot for the 11-day flight of Apollo VII with fellow astronauts Walter M. Schirra, Jr., and Walter Cunningham. Cunningham is expected to attend Tuesday's ceremony. ["NASA Honors Apollo Astronaut Donn Eisele," **NASA Media Advisory #M07-137**, October 18, 2007.]

Astronauts scoff at drinking report

This weekend as the seven astronauts relax before Tuesday's blastoff, the beer will be cold and waiting at crew quarters at Kennedy Space Center. No one will monitor how much they drink, no breath tests given. "We're all professionals," says Scott Kelly, commander of the last space shuttle mission in August. While the outside world was aghast at a medical report a few months ago suggesting two cases of drunkenness just before launch, the men and women who fly NASA's space shuttles are indignant. "It's just such an absurd thing to think that someone would even do that," said Kelly, a Navy commander. "I don't have the words to describe how ridiculous this whole thing is." He and others agree there's no harm in having a beer a day or two out, and he did just that. Their mission came just over a week after the controversial report by a special medical panel that mentioned inebriated astronauts, citing interviews with unnamed sources. What made the anonymous allegations of heavy preflight drinking even worse is that they followed by just months the arrest of Lisa Nowak. The lovelorn astronaut chased her former astronaut-boyfriend's new love interest halfway across the country and ended up in jail. She intends to plead temporary insanity. It was her case that led NASA to commission a panel of aerospace medical experts to look into the health of astronauts. Their report in late July mentioned the two unverified episodes of drunkenness. NASA's long-standing rule — unwritten but universally understood — is that alcohol is forbidden within 12 hours of a launch. No one denies that until then, "alcohol is freely used in crew quarters," as the astronaut health panel stated in its report. It based its findings on astronauts and flight surgeons who were promised anonymity. There still is no conclusive evidence that any astronauts have been intoxicated right before launch. NASA's own hunt for details came up empty after poring over 20 years' worth of records and contacting key players. The chairman of the independent astronaut health panel that issued the report, Air Force Col. Richard Bachmann Jr., contends the sources of the confidential information are too afraid to speak up. NASA is following up with an anonymous survey of its astronauts and flight surgeons. At the same time, the space agency hopes to have in place by year's end a code of conduct that spells out the prelaunch drinking ban. "If there was anything that created a problem for us, frankly it was the report," said retired Air Force Col. Pamela Melroy, the commander of the upcoming mission on Discovery. Web posted. (2007). [Astronauts scoff at drinking report [Online]. Available WWW: <http://www.chron.com/> [2007, October 18].]

NASA terminates FUSE mission after eight years

NASA's Far Ultraviolet Spectroscopic Explorer (FUSE) mission is drawing to a close after eight years in space, NASA announced Oct. 17. The FUSE satellite became inoperable in July when it lost its ability to point accurately at areas of interest. Launched in 1999, FUSE helped scientists answer important questions about the conditions in the universe immediately following the Big Bang, how chemicals disperse throughout galaxies, and the

composition of interstellar gas clouds, according to NASA. The agency will formally terminate the mission Oct. 18. E-mail distribution. (2007). [Aviation Week's Aerospace Daily & Defense Report Re: "NASA terminates FUSE mission after eight years," [Electronic]. Vol. 224, No.14, [2007, October 18].]

October 19: Columbus hatch closed for last time

Preparations of the European Columbus laboratory took an important step earlier this week with the final closure of the module's hatch ahead of the December launch to the International Space Station. Although there was no formal ceremony to mark the occasion, the hatch closure is an important milestone for all involved. "This means we are 99% ready for flight," explains Bernardo Patti, ESA's Columbus Project Manager. "All the activities related to the pressurized volume are finished. The work left to be done on the exterior is considered to be minor." The 8-metre long Columbus laboratory is currently under preparation for flight at the Space Station Processing Facility (SSPF) at NASA's Kennedy Space Center (KSC), in Florida. The team at KSC has worked hard over the past weeks to meet the schedule. "The last checkouts were completed - the module worked perfectly and all the health checks were successful," says Patti. After power shutdown the team performed a meticulous check of each zone inside the module. The hatch was then closed to 80%, leaving a gap to allow for final air purge, before being fully closed late on Tuesday afternoon. Patti: "The next time the hatch is opened will be in orbit, allowing the astronauts to enter the module for the very first time." Next up for Columbus is a Payload Readiness Review which is expected to give the green light for moving the module to the canister - a large container in which Columbus will be taken to the launch pad early in November ready to be placed inside the Space Shuttle's cargo bay. Web posted. (2007). [Columbus hatch closed for last time [Online]. Available WWW: <http://www.esa.int/> [2007, October 19].]

First female commander takes ISS helm

For the first time in history, a female astronaut has taken command of a space station. Veteran NASA astronaut Peggy Whitson (far right in image), on her second extended duration mission aboard the International Space Station, was given command of the orbiting space complex in a ceremony at 2:15 p.m. Eastern today. Her first order of business, recognizing the work done by her predecessor, soon-to-depart Russian commander Fyodor Yurchikhin. "I would really like to say that a lot of people on the ground in Moscow, and Huntsville, and Houston, appreciate all of the good work you've done," Whitson said. "It's been a very impressive mission." They exchanged a hug and matter-of-factly handed over control of the outpost. Web posted. (2007). [First female commander takes ISS helm [Online]. Available WWW: <http://www.floridatoday.com/> The Flame Trench blog [2007, October 19].]

NASA probes dangerous incident with Shuttle Training Aircraft

One of the three NASA Gulfstream Shuttle Training Aircraft (STA) is grounded following an Oct. 19 incident in which the left wingtip of an STA flying a normal aircraft landing approach to the shuttle runway at Kennedy Space Center, Fla., struck the upper branches of a tree during its final approach. Had the aircraft - already flying too low - been just slightly lower, the tree impact could have caused a potentially fatal crash. The STA had just completed flying steep shuttle training approaches with an astronaut in the left seat of the aircraft configured like the shuttle cockpit. The normal shallow landing approach - not a simulated shuttle approach - to end the flight and return to the ramp was being flown by the

aircraft's non-astronaut safety pilot in the right seat equipped with standard Gulfstream controls. Under normal NASA aircraft mishap investigation rules, the agency will not release the name of the safety pilot in command, the astronaut in the left seat, the center seat non-astronaut flight engineer and one other person onboard the aircraft until the agency forms a team to investigate the incident. However, NASA says the astronaut who was onboard was not piloting at the time and is neither a member of the STS-120 crew nor the STS-122 crew set for launch as early as Dec. 6. No one on the aircraft was injured during the incident and, except for hitting the tree, the STA made a normal safe landing. The crew did not even know they had hit the tree until ground personnel found minor damage to the left wing tip and tree debris lodged in the aircraft. The incident occurred during poor weather that had quickly moved into the area toward the end of the training session with the astronaut piloting steep shuttle approaches. The events indicate that, for reasons yet to be determined, the STA descended well below the safe approach altitude several hundred feet prior to the runway threshold. There are no trees near the threshold of either end of the runway at Kennedy. E-mail distribution. (2007). [Aviation Week's Aerospace Daily & Defense Report Re: "NASA probes dangerous incident with Shuttle Training Aircraft," [Electronic]. Vol. 224, No.17, [2007, October 23].]

October 23: Ice rule waiver being worked on to allow launch

The launch team is planning to push ahead despite an ice chunk on a liquid hydrogen fuel line, it appears based on the discussion in the Launch Control Center. A team is working on the rationale for flying with a piece of ice on the pipe, near where it connects to the orbiter. The launch team also is attempting to get concurrence from everyone involved that the rationale is solid for flight. The final inspection team completed their inspection of a four-inch piece of ice on the fuel line bracket. "It appears it's possible the ice could be diminishing in size," said the NASA TV commentator. Pictures from cameras at the pad seem to indicate less ice than was present before. The ice was found on the 17-inch liquid hydrogen umbilical fuel line that goes into the tank. The ice appeared to be 4 inches by 1.5 inches in diameter. The shuttle team is also looking into a slight hazardous gas in the aft of the orbiter. An "extremely minor" measurement of liquid hydrogen gas in the aft compartment is the issue. The early analysis is that it won't be an issue for launch because the amount is so tiny. Web posted. (2007). [Ice rule waiver being worked on to allow launch [Online]. Available WWW: <http://www.floridatoday.com/> The Flame Trench blog [2007, October 23.]

George Lucas visits KSC for launch

Filmmaker George Lucas, of Star Wars fame, is among NASA's VIP guests for today's shuttle launch. Lucas is expected to be here, in part, because the original lightsaber used by the character Luke Skywalker in the original Star Wars trilogy is aboard the space shuttle today. The iconic prop is getting a ride to orbit to mark the 30th anniversary of the 1977 release of the original "Star Wars" film (later renamed A New Hope as the fourth piece of a six-film series). In the films, Skywalker and other Jedi Knights use the futuristic swords in a battle against the evil Galactic Empire. Star Wars fans gathered at a Houston airport earlier this year as the lightsaber was handed over to NASA officials. It was on display at the Johnson Space Center's tourist complex through Labor Day before being shipped here to Florida for stowage on Discovery's middeck. Among the other big names on the list of expected VIP guests include former New York Yankees baseball player and current broadcaster Bobby Mercer and Florida Gov. Charlie Crist. Several members of Congress and

foreign dignitaries are here as well. Web posted. (2007). [George Lucas visits KSC for launch [Online]. Available WWW: <http://www.floridatoday.com/> The Flame Trench blog [2007, October 23.]

Shuttle Blasts Off Toward Space Station

Space shuttle Discovery and a crew of seven rocketed into orbit Tuesday in pursuit of the international space station, where a formidable construction job awaits them. Discovery blasted off at 11:38 a.m., ducking through clouds. It carried a giant Tinkertoy-type link that must be installed at the space station before European and Japanese laboratories can arrive. Despite a forecast calling for rain right at launch time, the weather ended up cooperating. And a chunk of ice on plumbing between the external fuel tank and Discovery - 4 inches by 1½ inches (10.2-centimeter by 3.8-centimeter) - was deemed too small by NASA to pose a serious launch hazard. It appeared to be melting as the countdown entered its final minutes. Launch director Mike Leinbach wished the crew good luck and Godspeed just before liftoff. "We're ready to take Harmony to her new home," replied Commander Pamela Melroy, referring to the new space station compartment aboard Discovery. Discovery's crew includes an Italian astronaut making his first spaceflight, Paolo Nespoli. "It's nice to be in space," Nespoli radioed minutes after reaching orbit. Discovery's fuel tank was modified following the last mission to prevent dangerous ice buildup from the super-cold liquid hydrogen and oxygen, and reduce the potential for launch debris. The patch of ice that had NASA scrambling less than two hours before launch cropped up on a pipe that carries the hydrogen from the tank into the shuttle, and was stuck mostly to a baggy material. It appeared to harmlessly break loose at the moment of liftoff, as NASA suspected it would. At least six pieces of foam insulation fell off the fuel tank during liftoff, but it was well past the crucial first two minutes and therefore posed no risk to Discovery, said Bill Gerstenmaier, NASA's space operations chief. The shuttle wings, however, were not altered in any way, even though a safety engineering group pressed for a delay because of concern over three panels with possible flaws. Melroy, only the second woman to lead a shuttle mission, expressed her confidence late last week about flying Discovery, as have many of the senior managers who decided to skip wing repairs. A possible cracking problem with the protective coating on three of the wing panels was deemed an acceptably low risk. Discovery and its crew are embarking on a two-week mission that is considered the most challenging and complex in the nine years of orbital assembly of the international space station. Web posted. (2007). [Shuttle Blasts Off Toward Space Station [Online]. Available WWW: <http://www.cbsnews.com/> [2007, October 23].]

Moon rocket on track for 2013 launch

NASA officials unveiled an ambitious testing schedule Monday that forecasts a shorter gap between the end of the space shuttle program and the first test flight with a crewed of the proposed Ares I rocket and Orion crew exploration vehicle. The Ares-Orion system, together known as Constellation, is now targeted to launch astronauts on a test flight to the International Space Station in September 2013, only three years after the shuttle program ends in 2010. The third and final crewed Ares I test flight is scheduled for September 2014. While operational flights would not begin until 2015, the U.S. might have the capability to get people to the ISS two years earlier, possibly making NASA less dependent on the Russians if the test flights remain on track. The firming up of the launch schedule could be good news for Brevard County. Some officials had estimated the system might not be available for human flights until 2014 or 2015, although NASA has said it wanted to

accelerate plans. The shorter the gap between the shuttle and its replacement, the fewer space jobs may be affected at KSC. NASA has spread work for the Ares rocket program across the 10 NASA centers, including Kennedy Space Center, where work on the parachutes is taking place. KSC also will be the launch operations center for the new rockets and the Orion human spacecraft envisioned to replace the shuttles. KSC also will be home to the final assembly and integration of the crew vehicle. Work on the transition is already under way. In December of this year, the final design decisions on the Orion spacecraft and the crew vehicle will be made. Some 5,000 pounds have been trimmed from the crew module and second stage to make sure that the launch vehicle's first stage can handle the weight. Web posted. (2007). [Moon rocket on track for 2013 launch [Online]. Available WWW: <http://www.floridatoday.com/> [2007, October 23].]

October 24: Crist shows support for shuttle program

Wowed by the launch of shuttle Discovery, Florida Gov. Charlie Crist said Tuesday that NASA and the space program are vital to the state's economic future. "NASA in Florida is a huge economic engine and creates tremendous vibrancy for the state, and so we have to show the appreciation for what this program does for our state," Crist said after Discovery and seven astronauts blasted off on an International Space Station assembly mission. Crist and an entourage traveled to Kennedy Space Center for the launch, which was the third of four planned this year. It was the fifth time Crist has been to KSC for a shuttle launch. "It was awesome. I mean, absolutely fantastic. You know, to have the opportunity as the governor of Florida, it's very humbling to see this happen from our state," he said. "It's just exciting, and I know the economic import, particularly to the Space Coast. I get it." NASA business resulted in a total economic impact of \$3.6 billion in 2006. The agency managed some 1,731 contracts in the state, and the 13,630 people working at Kennedy Space Center earned an average of \$72,000. Crist said the state government already is looking for ways to offset any job loss that might come in the wake of the shutdown of the shuttle program in September 2010. The state anted up \$45 million to bring the final assembly and integration on NASA's Orion spacecraft to the state, work that is expected to generate 300 to 400 jobs. Web posted. (2007). [Crist shows support for shuttle program [Online]. Available WWW: <http://www.floridatoday.com/> The Flame Trench blog [2007, October 24].]

'Outstanding' performance from Discovery's fuel tank

The shuttle Discovery's foam-covered external fuel tank performed well during launch Tuesday, NASA officials said today, shedding only a half-dozen pieces of insulation - all well after the period when such debris can pose an impact hazard - with no signs of damage to the orbiter's heat shield. John Shannon, chairman of NASA's Mission Management Team, said a preliminary assessment of launch imagery, television shots from the shuttle during the climb to space and imagery shot by the astronauts as Discovery separated from the tank in space showed no major problems. "We have not seen anything that would cause us any concern at all," he told reporters after an unusually short MMT meeting Wednesday. "We'll continue to look, we'll look at the solid rocket booster videos on Friday to make sure that's true, but there was nothing of any mass at all that was released during that (aerodynamically critical) time. Even the material that was released later on, we don't think it was anything that could have caused damage." Today, the Discovery astronauts inspected the shuttle's reinforced carbon carbon - RCC - nose cap and wing leading edge panels using a laser scanner and a high-resolution digital camera. While the analysis is not yet complete, engineers have not seen any obvious signs of trouble with any of the critical panels,

including three that raised concern before launch because of degradation in a protective coating. "The performance of the tank was outstanding," Shannon said. "The tank really performed well. The RCC imagery, it was the same thing, no one has seen anything that was of any concern to them. They do a much more detailed analysis as the evening goes on, we'll continue to look at it, but there was really nothing. ... Right now we have no TPS (thermal protection system) issues at all." External tank No. 120 was jokingly referred to as "Frankentank" by NASA insiders because of extensive foam dissection and modification work carried out in the wake of earlier problems. ET-120 was assigned to the first post-Columbia mission and was fueled twice before being replaced because of problems with hydrogen tank fuel sensors. The tank was sent back to Lockheed Martin's Michoud Assembly Facility in New Orleans to serve as a test article in the wake of a major foam loss during the first post-Columbia flight. It later was returned to flight status and assigned to Discovery. Shannon said ET-120's performance during Discovery's launch was not a surprise, saying "I'm extremely confident in the tanks we're flying now, but we're just making them better." Web posted. (2007). ['Outstanding' performance from Discovery's fuel tank [Online]. Available WWW: <http://www.spaceflightnow.com/> [2007, October 24].]

Astronauts check Discovery's heat shield

Discovery's seven astronauts conducted a painstaking inspection of the space shuttle Wednesday, focusing especially on three wing panels to make sure possible cracks spotted beneath the shuttle's protective coating hadn't worsened. The inspection came on the first full day of what NASA considers to be the most complicated international space station construction mission yet. The shuttle was to reach the station Thursday. Commander Pamela Melroy and her crew used a laser and camera-tipped inspection boom to check Discovery's wings and nose. The check is standard since a strike by a slab of fuel-tank foam created a hole in Columbia's wing in 2003, downing the shuttle. But the astronauts went a little more slowly to capture more detailed images of three of 44 wing panels where it is possible there are cracks beneath the coating. NASA said last week that a new inspection method, conducted before flight, uncovered the possible degradation. As the inspections were winding down late Wednesday morning, Flight director Rick LaBorde said that neither he nor others had spotted any problems of significance. The images will be examined in excruciating detail over the new few days, however, by experts on the ground. Web posted. (2007). [Astronauts check Discovery's heat shield [Online]. Available WWW: <http://www.cnn.com/> [2007, October 24].]

October 26: Aerospace firm plans 150 new jobs at KSC

While many aerospace companies dread the end of the shuttle program in 2010, ASRC Aerospace Corp. is gearing up for the next phase of U.S. space flight. The company this year plans to add about 150 people to its work force of 450 in Brevard County. "We have been hiring electrical engineers," said Pedro Medelius, ASRC Aerospace's associate program manager and chief scientist. Medelius declined to give a total payroll figure. However, he said that with the new positions, ASRC would inject an additional \$10 million into the Brevard economy. The company has about 100 projects at Kennedy Space Center. One of the most complex projects deals with lightning protection. The company carefully studies how lightning strikes and how the associated magnetism could affect launch operations for the shuttle fleet. The company also has designed lightning arrestors to protect the Ares rocket, which will replace the shuttle. The company also has completed the analysis and design of a concept for an electrostatic shield to protect a lunar base. ASRC Aerospace was

formed about 10 years ago by a group of Inuit Indians from Alaska who were looking for a place to invest profits from oil leases. The company had 220 employees at KSC in 2003. Web posted. (2007). [Aerospace firm plans 150 new jobs at KSC [Online]. Available WWW: <http://www.floridatoday.com/> [2007, October 26].]

NASA still sitting on union lawsuit

The Machinists union said Thursday what will happen with its lawsuit against NASA remains undecided, calling it "a separate issue that has to be dealt with." The lawsuit, filed in August in U.S. District Court in Washington, D.C., charges NASA with interfering in the contract negotiations between the International Association of Machinists and Aerospace Workers Local 2061 and United Space Alliance, NASA's main space shuttle contractor. The suit also accuses NASA of pressuring the company to take hard-line bargaining positions that led to and has continued the union's strike. A federal judge has granted NASA extra time to file a response to the lawsuit, said Bob Wood, the Machinists union's Southern Territory spokesman. NASA representatives declined to comment on the litigation. United Space Alliance spokeswoman Tracy Yates said the allegations in the suit are "false." She said the company has been solely responsible for its bargaining positions. Web posted. (2007). [NASA still sitting on union lawsuit [Online]. Available WWW: <http://www.floridatoday.com/> [2007, October 26].]

Union, USA labor talks to resume

After more than four months on the picket lines, representatives of the Machinists union at Kennedy Space Center and United Space Alliance will head back to the bargaining table. At the behest of a federal mediator, representatives for the company and the International Association of Machinists and Aerospace Workers District Lodge 2061 are scheduled to resume negotiations Monday and Tuesday in Cape Canaveral. The company -- a joint venture of aerospace and defense giants The Boeing Co. and Lockheed Martin Corp. -- is NASA's main shuttle contractor. The union began the strike 135 days ago, on June 14, after contract negotiations reached a standstill for the union's roughly 500 members who perform a variety of mechanical and maintenance jobs in the shuttle program. About 440 of the workers are still on strike. The two sides returned to the bargaining table last month, but negotiations broke down after one day. Yates indicated that since the strike began, the company has withdrawn its offer to provide pensions for newly hired workers represented by the union. Instead, the company has offered them only 401(k) retirement savings plans. Currently, union members can receive both. Yates said the no-pension offer for new hires would be similar to new contracts the company has reached with its other employee bargaining units. Web posted. (2007). [Union, USA labor talks to resume [Online]. Available WWW: <http://www.floridatoday.com/> [2007, October 26].]

October 29

Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-102907. **Mission: STS-120** - 23rd International Space Station Flight - U.S. Node 2 (Harmony); Vehicle: Discovery (OV-103); Location: International Space Station; Launch Date: Targeted for Oct. 23, 2007; Expected KSC Landing Date: Nov. 7, 2007; Crew: Melroy, Zamka, Parazynski, Wheelock, Wilson, Nespoli and Tani; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. Today is Flight Day 7 for STS-120. Discovery is on orbit after launching from Pad 39A at KSC at 11:38 a.m. on Oct. 23. The mission has been extended one additional day to allow additional time for further inspection of the Solar Alpha Rotary Joint. Landing is now scheduled for

Wednesday, Nov. 7. The deorbit burn will occur at 2:35 a.m. with landing at Kennedy Space Center's Shuttle Landing Facility at 3:38 a.m. EST. At Hangar AF on Cape Canaveral Air Force Station, the initial inspections and assessments of the pair of solid rocket boosters is complete, and there are no significant issues or concerns. **Mission: STS-122** - 24th International Space Station Flight - Columbus Module; Vehicle: Atlantis (OV-104); Location: Orbiter Processing Facility Bay 1; Launch Date: Targeted for Dec. 6, 2007; Launch Pad: 39A; Crew: Frick, Poindexter, Schlegel, Eyharts, Love, Melvin and Walheim; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility Bay No. 1, the Atlantis weight and center of gravity determination is being performed today. The aft, forward and midbody closeout work is complete. Orbiter system functional tests have also been completed, and the vehicle is powered down for rollover. Tire pressures were adjusted for a final time on Friday, and the thermography of the RCC leading edge wing panels was also finished. Based on visual inspections of Discovery, a final thermal blanket inspection is being performed today on the orbital maneuvering system pods. A final routine tile inspection of the vehicle is also being performed. Atlantis will be installed onto the orbiter transporter on Tuesday. Rollover to the Vehicle Assembly Building is currently planned for 7 a.m. on Sunday, Nov. 4. In high bay No. 3 of the Vehicle Assembly Building, mate closeout work continues on the STS-122 external fuel tank and solid rocket boosters. At Pad 39-A, pad turnaround activities continue in preparation for the rollout of space shuttle Atlantis from the Vehicle Assembly Building, currently targeted for Nov. 11. **Mission: STS-123** - 25th International Space Station Flight - Kibo, Dextre; Vehicle: Endeavour (OV-105); Location: Orbiter Processing Facility Bay 2; Launch Date: Targeted for Feb. 14, 2008; Launch Pad: 39A; Crew: Gorie, Johnson, Linnehan, Doi, Behnken, Foreman and Reisman; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 2, removal and replacement of windows No. 1 through 6 are now complete. Drag chute installation is complete. Leak checks of the main propulsion system are continuing. Work is under way to configure the payload bay for the STS-123 cargo. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, October 29].]

October 30: Discovery Hit by Debris

Space shuttle Discovery appears to have been hit by debris in orbit, NASA said Tuesday. Mission Control noted a strike in orbit to the space shuttle Tuesday morning. The debris hit the leading edge of the left wing of Discovery and was three times stronger than any previous space debris hit. Mission managers are now working to decide how much of a concern the debris hit is. A problem with solar arrays on the International Space Station also kept the crew busy. NASA video spotted a tear in one of the solar arrays on the ISS, as crews were working to unfurl them during a spacewalk Tuesday. The solar arrays gather power for the station. The tear posed a critical problem for the ISS, especially since the astronauts discovered a problem with the rotating solar array over the weekend. The arrays are necessary to ensure that the ISS has enough power as new parts are installed to the station. Astronauts Scott Parazynski and Doug Wheelock started the mission's third spacewalk about an hour early. Space shuttle Discovery is expected to return to the Kennedy Space Center during the pre-dawn hours of Nov. 7. Web posted. (2007). [Discovery hit by debris [Online]. Available WWW: <http://www.cfnews13.com/> [2007, October 30].]

October 31: Cape conference aims to attract space industry

Attracting new jobs in the space industry could be the result of a conference Thursday, sponsored by Space Florida, the state agency charged with developing the space industry statewide. About 100 members of the commercial space industry will attend. They range from investors to members of the government who are trying to encourage private groups to build rockets. The conference will culminate with a groundbreaking at launch complex 40, where Internet tycoon Elon Musk plans to build and launch a test rocket as early as next year. "I think we're getting some serious people here," said Space Florida President Steve Kohler, who helped bring 33,000 jobs to Pennsylvania through a program of government incentives. "It's an indication to the rest of the marketplace that Florida can be serious," Kohler said. Brevard County faces the loss of 3,000 to 5,000 high-paying space industry jobs when the space shuttle program ends in 2010. Several states and NASA are trying to court commercial space travel interests. Brig. Gen. Susan Helms, commander of the 45th Space Wing, will deliver the keynote address. A veteran of five space flights, Helms has logged 211 days in space, including a spacewalk of eight hours and 56 minutes, a world record. Kennedy Space Center Director William Parsons will deliver a welcome message. Web posted. (2007). [Cape conference aims to attract space industry [Online]. Available WWW: <http://www.floridatoday.com/> [2007, October 31].]

NASA chooses KSC as lunar lander assembly site

Kennedy Space Center workers will assemble the next lunar landers and help engineer habitats, surface vehicles and other equipment that will make up the United States' first moon base, NASA announced Tuesday. The new assignments expand Kennedy's role in the NASA moon program beyond just launch and into manufacturing and research and development projects that are crucial to the area's ability to weather the retirement of the space shuttles in 2010. NASA has said it is trying to divvy up moon work so no one site bears the brunt of economic losses from the shuttle shutdown. No dollar values or job totals were available. Budgets are yet to be finalized and contracts have not been awarded. However, the types of big projects assigned Tuesday have the potential to generate enough jobs to replace many of the estimated 2,500 to 3,500 shuttle jobs forecast to be lost around 2011. No reliable estimate, or even range, of jobs will be available until NASA finalizes the detailed requirements of each project. Funding for the moon program will not reach NASA's 10 field centers until 2011, so space agency officials still worry about losing key personnel before the end of the shuttle program. However, knowing what work will be done here helps KSC managers and workers see an incentive for staying on through the transition. Web posted. (2007). [NASA chooses KSC as lunar lander assembly site [Online]. Available WWW: <http://www.floridatoday.com/> [2007, October 31].]

During October: Atlas V Payloads

NASA's Landsat Data Continuity Mission and Juno, its Jupiter probe, both will use United Launch Alliance Atlas V boosters for the 2011 liftoffs under new contracts that were announced. Landsat will use a 401 configuration – a 4-meter (13-ft.) fairing and no strap-on boosters – for a launch from Space Launch Complex 3 at Vandenberg AFB, CA. The larger Juno payload will require the Atlas V 551 configuration of a 5-meter payload fairing and five strap-on solid rocket motor boosters to propel it to Jupiter. It will be launched from Cape Canaveral, AFS, FL. ["Atlas V Payloads," *Aviation Week & Space Technology*, October 15, 2007, p 18.]

Shake, Rattle and Roll

Engineers plan to use the next test of the space shuttle's reusable solid rocket motor (RSRM) Nov. 1 to get more data on vibration loads to be imparted on the planned RSRM-derived Ares I crew launch vehicle's first stage. In a "one-APU-out" test, engineers will validate the performance of the rocket's thrust vector control system with only one of its two Auxiliary Power Units (APUs) working. The APUs power the hydraulic system that gimbals the rocket's nozzle in ascent. ATK, prime contractor for the RSRM and Ares I's first stage, tests full-scale RSRMs roughly twice a year in Promontory, Utah. It has been adding instrumentation to guide the next-generation Ares I's development since last year. ["Shake, Rattle and Roll," Aviation Week & Space Technology, October 29, 2007, p 20.]

Finding Funding

NASA's Nuclear Spectroscopic Telescope Array (Nustar) is back, after reversal of a 2006 agency decision to halt its funding because the Science Mission Directorate was running out of money. The Small Explorer-class mission, capped at \$120 million, will count black holes with a focusing hard X-ray detector consisting of three aligned grazing incidence mirrors at the end of a deployable mast, all kept in the proper configuration with laser metrology. Now set for a 2011 launch, the Pegasus-class mission will map the sky from equatorial orbit with about 500 times the sensitivity to hard X-rays as previous instruments. ["Finding Funding," Aviation Week & Space Technology, October 1, 2007, p 18.]

Constellation: Key Dates

April 2009: Test flight of an escape tower that would help get the crew and spacecraft away from a failing launch vehicle in an emergency. September 2012: First unmanned test of the Ares I rocket. September 2013: First test flight of the Ares 1 launcher and Orion crew exploration vehicle, with humans on board, to the International Space Station. March 2014: Second test flight of Ares and Orion with crew. September 2014: Third test mission with crew. ["Constellation challenge: lose weight," Florida Today, October 23, 2007, p 5A.]

NOVEMBER

November 1: Columbus sails into space next month

The European Columbus module is buttoned up and ready to be installed in shuttle Atlantis on Nov. 12 for an early December trip to the International Space Station. The European Space Agency laboratory will ride into space 15 years after its original launch date in 1992, which was planned to commemorate the 500th anniversary of Christopher Columbus' arrival in America. The Columbus module will carry four major science racks and two solar experiments to be mounted outside the module. On an 11-day mission scheduled to launch in early December, the shuttle's robot arm will place the 25-foot-by-13 foot Columbus onto the Harmony module, where it will remain. ["Columbus sails into space next month,"

Florida Today, November 1, 2007, p 6A.]

Conference attracts space entrepreneurs

A year after its creation, Space Flight stepped up a coordinated effort to attract the commercial space industry to Brevard County by hosting a commercial space conference focusing on bringing new spacecraft and jobs to Brevard County. The conference Thursday introduced four leading space industry pioneers to about 50 state officials and space industry insiders. These entrepreneurs have attracted millions in investment, said Frank A. DiBello, chairman and CEO of ITV Group Inc. With the shuttle program ending in 2010, and a huge budget deficit likely preventing NASA's budget from growing, private industry could step in to save some 3,000 to 5,000 jobs that could be lost when the shuttle stops flying. The four leading space entrepreneurs are: Elon Musk, Internet tycoon, has launched two rockets with limited success. He has 370 employees and expects to have a Falcon 9 rocket on Launch Complex 40 at Cape Canaveral by the end of next year. Dr. Peter H. Diamandis, chairman and CEO of the X PRIZE foundation, is overseeing the Google Lunar X PRIZE. Some \$30 million is offered to a private group that lands a mechanized rover on the moon and returns photos to Earth. Robert Bigelow of Bigelow Aerospace, a contractor and hotel owner, has funded the launch of two flexible space habitats on Russian rockets. The company this week signed a letter of intent to work with Space Florida to help attract commercial rockets to Cape Canaveral. Jeff Greason, president of XCOR Aerospace, leads a California company that is designing a rocket from the engine up. It has developed several new rocket engines that might be used by other companies. The company plans to build a suborbital space plane that can carry a pilot and passenger, take off horizontally and glide back to earth. The runway at KSC's shuttle landing facility could be a spot from which to launch this venture. ["Conference attracts space entrepreneurs," Florida Today, November 2, 2007, p 3A.]

November 2: Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-110207. **Mission: STS-120** - 23rd International Space Station Flight - U.S. Node 2 (Harmony); Vehicle: Discovery (OV-103); Location: International Space Station; Launch Date: Oct. 23, 2007; Expected KSC Landing Date: Nov. 7, 2007; Crew: Melroy, Zamka, Parazynski, Wheelock, Wilson, Nespoli and Tani; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. On orbit, Flight Day 10 for mission STS-120 has been completed. Planned activities for Flight Day 11 on Saturday involve configuring Discovery and the International Space Station for the mission's fourth spacewalk, on which the astronauts will perform solar array repair activities. Landing of Discovery at the Kennedy Space Center is currently planned for Wednesday, Nov. 7.

Available landing times are 1:02 p.m. EST on orbit 238 and 2:35 p.m. EST on orbit 239. **Mission: STS-122** - 24th International Space Station Flight - Columbus Module; Vehicle: Atlantis (OV-104); Location: Orbiter Processing Facility Bay 1; Launch Date: Targeted for Dec. 6, 2007; Launch Pad: 39A. Crew: Frick, Poindexter, Schlegel, Eyharts, Love, Melvin and Walheim; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 1, Atlantis has been placed on the orbiter transporter in preparation for rollover to the Vehicle Assembly Building. The transfer is planned to begin at 7 a.m. Saturday, Nov. 3. Activities to attach Atlantis to the external tank/solid rocket booster stack will start once the orbiter is in the Vehicle Assembly Building by attaching the lifting sling. The shuttle interface test to verify that all the space shuttle elements are working as a fully integrated launch vehicle will begin on Nov. 7. Rollout from the VAB to Launch Pad 39A is scheduled for 4 a.m. Nov. 10. **Mission: STS-123** - 25th International Space Station Flight - Kibo, Dextre; Vehicle: Endeavour (OV-105); Location: Orbiter Processing Facility Bay 2; Launch Date: Targeted for Feb. 14, 2008; Launch Pad: 39A; Crew: Gorie, Johnson, Linnehan, Doi, Behnken, Foreman and Reisman; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 2, installation of replacement overhead window No. 7 has been completed. Replacement overhead window No. 8 is scheduled for Monday. A new reinforced carbon-carbon panel, RCC No. 10 right (10R), was temporarily installed on Thursday for measurements. Final installation is expected to occur late next week. Also on Thursday, technicians successfully completed the orbiter vent door functional test. Thermal protection system work continues on the main landing gear doors, wings, elevons and orbital maneuvering system pods. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, November 2].]

Internet mogul breaks ground on commercial launch complex

Before breaking ground on a new launch complex Thursday, Internet mogul-turned-rocket developer Elon Musk compared readying a rocket for launch from the Cape to opening on Broadway. "We expect to send people to the space station," said Musk, who plans to have a Falcon 9 rocket at the historic Launch Complex 40 by late 2008. "I can't say for sure when we'll launch," he added. The launch pad will undergo minor modifications, and Musk plans to build a hangar to hold the rocket horizontally until it is rolled to the pad and erected. Musk said that just as cars, computers and cellular phones get better and cheaper each year, so can rockets. Brig. Gen. Susan Helms, 45th Space Wing commander, welcomed the entrepreneur. At a conference before the groundbreaking, she said overseeing the safety of the new rockets would require the Air Force to make an extra effort. "We're in a partnership to make this all work," said Helms, a former astronaut. "We all see value in enabling these new capabilities. There is no intent to relax safety standards." Web posted. (2007). [Internet mogul breaks ground on commercial launch complex [Online]. Available WWW: <http://www.floridatoday.com/> [2007, November 2].]

Space contractor makes new offer

NASA contractor United Space Alliance, after four days of talks with representatives for the International Association of Machinists and Aerospace Workers Local 2061 in Cape Canaveral, has a new contract offer on the table for the striking workers. The union membership will hear details on the contract offer at a 10 a.m. meeting Sunday. "Neither us, nor the company, are releasing any details until we can present it to our membership," said

Bob Wood, the union's southern territory communications representative. The contract standoff between the Machinists union and United Space Alliance has turned into the union's longest strike ever at Kennedy Space Center. The strike began June 14. About 440 members of Local 2061 are on strike, and continue to staff picket lines in shifts around the clock at space center entrances. Last month Local 2061 officials traveled to the Washington, D.C., area to meet with federal officials, mediators and top-level machinist union officials about the strike. About that time, United Space Alliance began advertising to hire workers to fill the strikers' jobs. The company already has hired 149 subcontractors and enlisted 163 nonunion United Space Alliance employees to help perform the strikers' jobs. Wood refused to characterize how the membership might vote on United Space Alliance's latest contract offer. Web posted. (2007). [Space contractor makes new offer [Online]. Available WWW: <http://www.floridatoday.com/> [2007, November 2].]

Evidence against Former Astronaut Tossed

A judge agreed Friday to toss much of the evidence against Lisa Nowak, a former astronaut accused of making a diaper-assisted, 1,000-mile drive to confront a woman vying for the affections of the same space shuttle pilot. Investigators took advantage of 44-year-old Nowak, who had not slept for more than 24 hours, coercing her into giving information in a lengthy arrest interview, Orange County Circuit Judge Marc L. Lubet said. Lubet granted a defense motion to throw out comments she made during the six-hour interview and items seized during a search of her BMW, including maps to alleged victim Colleen Shipman's home, large garbage bags, latex gloves and some soiled toddler-sized diapers. Nowak's defense steadfastly denies she ever wore or soiled them to avoid stopping during her drive from Houston, but a detective said Nowak told him she had. Nowak was arrested in February after allegedly confronting Shipman, the girlfriend of former space shuttle pilot Bill Oefelein. Authorities say Nowak stalked Shipman at the Orlando airport and tried to get into her car, then attacked her with pepper spray. Shipman was able to drive away. The ruling was a big win for the defense. But evidence from a duffel bag Nowak was carrying — a steel mallet, buck knife, BB gun resembling a real 9mm handgun, gloves and six feet of rubber tubing — remains in the case. Web posted. (2007). [Evidence against Former Astronaut Tossed [Online]. Available WWW: <http://www.newsvine.com/> [2007, November 2].]

November 3: Vanguard Approaches Half a Century in Space

On March 17, 2008, the Vanguard One satellite, the oldest object in space from Planet Earth, will complete its 50th year in Earth orbit. Web posted. (2007). [Vanguard Approaches Half a Century in Space [Online]. Available WWW: <http://www.spaceref.com/> [2007, November 3].]

November 4: NASA workers' strike ends with contract

The nearly five-month strike of about 500 workers involved in space-shuttle launch operations at Kennedy Space Center ended today with ratification of a new contract, according to a news release from the International Association of Machinists and Aerospace Workers Local 2061. The workers include machinists, electrical technicians, crane operators and people who drive the giant crawler that gets the shuttle to the launch pad. They went on strike June 14 after negotiations for a new three-year contract broke down between the union and United Space Alliance, the consortium that maintains the shuttle fleet for NASA. The primary impasse was over union concerns about rising health-care costs and pension provisions. The strike didn't appear to affect the current shuttle mission. United Space

Alliance officials said earlier that they employed substitutes and subcontractors to fill in for the striking workers represented less than 10 percent of the company's Florida workforce. United Space Alliance is a joint venture between the Boeing Co. and Lockheed Martin Corp. Web posted. (2007). [NASA workers' strike ends with contract [Online]. Available WWW: <http://www.spaceref.com/> [2007, November 4].]

November 5: NASA's Space Shuttle Discovery Set to Land Wednesday

The space shuttle Discovery crew is scheduled to complete a 15-day mission to the International Space Station with a landing at NASA's Kennedy Space Center, Fla., on Wednesday, Nov. 7. The STS-120 mission began Oct. 23 and delivered the Harmony module to the station, relocated the P6 truss and featured four spacewalks. During the fourth spacewalk, the crew repaired a torn solar array on the P6 truss, enabling them to fully deploy the array. NASA managers will evaluate weather conditions at Kennedy before permitting Discovery to return to Earth. Wednesday landing opportunities are at 1:01 p.m. and 2:36 p.m. EST. The backup landing sites at Edwards Air Force Base, Calif., and White Sands Space Harbor, N.M., will not be activated on Wednesday. ["NASA's Space Shuttle Discovery Set to Land Wednesday," **NASA Media Advisory #M07-153**, November 5, 2007.]

Show roars to conclusion

The air crackled as roaring engines pushed the fighter jets faster. The planes swooped down, pitching and rolling, inducing awe from the crowd. "This is unbelievable," said Ray Giles of Kissimmee, after the Air Force's F-16 Thunderbirds made one of their signature intricate maneuvers, a high-speed inverted pass. Giles joined almost 7,000 visitors Sunday at the inaugural World Space Expo at the Kennedy Space Center, celebrating 50 years of space exploration as well as the 60th anniversary of the Air Force. It concluded the four-day expo, which featured static displays of early spacecraft, a robotics competition, and an air show highlighted by the Thunderbirds and an F-22 Raptor. Spectators boarded 44 buses at the Visitor Complex and rode out to the air show viewing area along the Banana River. They crowded near ropes set along the riverbanks and pointed their fingers, cameras and binoculars skyward as planes, including an F/A-18 Super Hornet and a World War II-era P-51, maneuvered in the clear, blue sky. They marveled as the 920th Rescue Wing demonstrated its search and rescue operations, featuring Blackhawk helicopters that hovered over the water. Web posted. (2007). [Show roars to conclusion [Online]. Available WWW: <http://www.floridatoday.com/> [2007, November 5].]

Shuttle to fly across U.S. on return to Earth

Discovery's astronauts aim to take a victory lap around the International Space Station today and head to the first atmospheric re-entry over America's heartland since the 2003 Columbia accident. Final plans are being tweaked, but a switch to a daylight landing will result in a flight trajectory that takes the shuttle orbiter across the country. Accident investigators urged NASA to mitigate over-flight risks after shuttle Columbia disintegrated during re-entry, showering 40 tons of debris on sparsely populated areas of east Texas and Louisiana. The switch from a planned predawn landing was done to reduce the difficulty of guiding an orbiter to a safe touchdown when a mission commander has but one shot at getting it right. "I can tell you just from hall talk with some of the other astronauts, the commander and pilot types, there's no question -- and it makes sense to me -- that a daylight landing is easier than a night landing," NASA lead shuttle flight director Rick LaBorde said. Commanders

have more visual cues in daylight. Unlike airliners, a shuttle essentially is a glider during re-entry and does not have engines that would enable it to fly around and attempt a second landing. NASA's post-Columbia missions have re-entered largely over open water prior to flying over parts of the Florida peninsula on the way to Kennedy Space Center. The trajectory this week could cross parts of Canada and the United States. The landing change largely is due to a shuttle mission extension. Discovery originally was slated to make a 4:47 a.m. landing Tuesday. Critical repairs to a station solar wing pushed the landing back a day, and NASA insiders raised safety concerns. The landing is slated for 1:02 p.m. Wednesday. Web posted. (2007). [Shuttle to fly across U.S. on return to Earth [Online]. Available WWW: <http://www.floridatoday.com/> [2007, November 5].]

Columbus launch puts space law to the test

Whose law will apply when Europe's Columbus space laboratory joins the US-led International Space Station in December? And what happens if astronauts from different countries get into a fight? Those were two of the questions posed at a meeting in Vienna last month to examine the contributions made by the humanities to the exploration of space. Columbus is due to be launched into orbit aboard the US space shuttle Atlantis on December 6. It will become part of the International Space Station (ISS) and the most important module supplied by the European Space Agency (ESA). The conference Humans in Outer Space – Interdisciplinary Odysseys held on October 11-12, was billed as "the first comprehensive trans-disciplinary dialogue on humans in outer space." It brought space scientists face to face with scholars from the humanities including experts in space law. It was organized jointly by the European Science Foundation (ESF), ESA and the Vienna-based European Space Policy Institute (ESPI). Dr Ulrike Bohlmann, of ESA's legal department, told the conference that space law was based on the Outer Space Treaty of 1967 which she described as "the Magna Carta of spaceflight". It has been ratified by 98 states. Following the tradition of maritime law, the treaty recognizes that states have legal jurisdiction within spacecraft registered to them. Dr Frans von der Dunk, of the International Institute of Air and Space Law at the University of Leiden, said that the space station posed new legal problems as it is being assembled from modules supplied by the United States, Russia and Japan as well as ESA. The partners rejected an initial proposal that US law should prevail throughout the space station. "It was agreed that each state registers its own separate elements, which means that you now have a piece of the US annexed to a piece of Europe annexed to a piece of Japan in outer space, legally speaking." But that didn't solve the problem of Columbus. As a collaborative European project it cannot be registered to any one state and there is no such entity as "Europe" which can exercise legal jurisdiction. So the partners had to find some novel solutions. First was criminal law - what if one astronaut gets into a fight with another? "They decided that if somebody performs an activity which may be considered criminal, it is in the first instance his own country which is able to exercise jurisdiction," Dr von der Dunk explained. Another solution was found for patent law. An invention created on the ISS will be patented in the country which has jurisdiction over the module in which the work was done. For Columbus the inventor will have the choice of patenting in either Germany or Italy, the principal contributors to the module. In practice, because of European patent agreements, it does not much matter in which country a patent is filed. The parties also agreed a new approach to civil liability. What happens if a US astronaut damages equipment in the European part of the space station? "The basic idea is that we all accept our own risks," said Dr von der Dunk. "We are all there together, we all have the same purpose to make the ISS into a big success and we

don't want that attitude, that mentality, to be disturbed by the threat of one party suing the other." Further ahead, whose law will apply if bases are established on the Moon and even on Mars? The Outer Space Treaty says that no nation can lay claim to the Moon. "Outer space, including the Moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means," said Dr Bohlmann. Jurisdiction on the Moon is not covered by existing treaties, said Dr von der Dunk. "Jurisdiction is not possible on a territorial basis. A base on the Moon can never qualify as the territory of any country in the world, so you have to find other means." It is also not clear what legal nationality a child born on the Moon would have. With many nations now active in space, and the prospect of commercial ventures such as tourism and even mining, the need for a clear and binding legal framework to govern space activities is more important than ever. The likelihood of further international agreement on space law seems remote, however, in the present political climate. The UN Moon Agreement of 1979 sets out how states should behave when exploring the Moon and other planets but has only been ratified by 13 countries, none of which has the means to go to the Moon. Until recently the humanities had little input into European space policy which has been dominated by political and industrial as well as scientific considerations. The conference is developing the 'Vienna Vision on Humans in Outer Space' which will establish a clear voice for a new and broader constituency to contribute to the future of human beings in space. Web posted. (2007). [Columbus launch puts space law to the test [Online]. Available WWW: http://www.eurekalert.org/pub_releases/2007-11/esf-clp110507.php [2007, November 5].]

November 6: NASA Honors Apollo Astronaut Scott Carpenter

NASA will honor Mercury astronaut and retired Navy Commander Scott Carpenter with the presentation of an Ambassador of Exploration Award for his involvement in the U.S. space program. Carpenter will receive the award during a evening ceremony on Nov. 10 at the Denver Museum of Nature & Science. The award will remain at the museum for display. The award is a moon rock encased in Lucite and mounted for public display as inspiration to a new generation of explorers who will help return humans to the moon and eventually travel on to Mars and beyond. The rock is part of the 842 pounds of samples collected during the six Apollo lunar expeditions from 1969 to 1972. NASA is giving the Ambassador of Exploration Award to the first generation of explorers in the Mercury, Gemini and Apollo space programs for realizing America's vision of going to the moon. NASA also is recognizing several other key individuals who played significant roles in the early space programs. NASA chose Carpenter as a Project Mercury astronaut in 1959. During his historic flight in 1962, he orbited the Earth three times and manually controlled his capsule's splashdown in the Atlantic Ocean. Following his space flight, Carpenter continued his naval career and conducted pioneering experiments as an aquanaut. ["NASA Honors Apollo Astronaut Scott Carpenter," **NASA Media Advisory #M07-154**, November 6, 2007.]

November 7: Shuttle Discovery Crew Return Home after Successful Mission

The space shuttle Discovery and its crew landed at NASA's Kennedy Space Center, Fla., on Wednesday at 1:01 p.m. EST after completing a 15-day journey of more than 6.2 million miles in space. Discovery's STS-120 mission added a key component to the International Space Station and featured an unprecedented spacewalk to repair a damaged solar array. "This mission demonstrates the value of having humans in space and our ingenuity in solving problems," said Bill Gerstenmaier, associate administrator for space operations, NASA Headquarters, Washington. "The teams on the ground worked around the clock,

along with the crews in space, to develop a plan to fix the array. Our high level of preparedness gave us the edge necessary to make this a successful mission." Discovery's crew of Commander Pam Melroy, Pilot George Zamka and mission specialists Scott Parazynski, Doug Wheelock, Stephanie Wilson, Clayton Anderson and European Space Agency astronaut Paolo Nespoli delivered the Node 2 module, known as Harmony. Harmony will provide attachment points for European and Japanese laboratories to be added later this year and early in 2008. In addition to Harmony's installation, Discovery's crew performed three spacewalks and relocated the P6 truss and solar arrays to its permanent position on the left side of the station. During the fourth spacewalk, the crew repaired a torn solar array on the truss, enabling the full deployment of the array. The crew and ground teams also worked on a problem with one of the station's Solar Alpha Rotary Joints, which allows the right side arrays to track the sun. On the second spacewalk, the joint was inspected, and metal shavings were discovered. Samples of the shavings returned with Discovery for further analysis. In the meantime, use of the joint will be limited to occasional adjustments for optimal position in relation to the sun. Melroy and Expedition 16 Commander Peggy Whitson made history on Thursday, Oct. 25, when the hatch between the space shuttle and orbiting outpost was opened. They became the first female spacecraft commanders to lead space shuttle and space station missions concurrently. NASA astronaut and station Flight Engineer Daniel Tani, who launched with the crew aboard Discovery, remained on the station. ["Shuttle Discovery Crew Return Home after Successful Mission," **NASA News Release #07-249**, November 7, 2007.]

Small Fire during Demolition at Space Launch Complex 40

On November 7, 2007 at 10:45 AM, a fire began during demolition activities at SpaceX's Space Launch Complex 40 (SLC-40). The Cape Canaveral Air Force Station Fire Department arrived 9 minutes later and promptly extinguished the flames. There were no injuries to personnel or smoke inhalation, and no damage to surrounding property. Demolition contractors using steel cutting torches were sectioning an aging structure in preparation for removal, when adjacent materials ignited. The work was monitored by a fire watch, and the fire department was summoned according to standard operating procedures. "This kind of thing is not unheard of during large scale demolition. That's why we have procedures in place. Everyone acted professionally and by the book, and fortunately no one was hurt," said Norman Bobczynski, SpaceX's launch site director. CEO Elon Musk was informed of the situation and stated that SpaceX will work closely with officials at Cape Canaveral to investigate the event and will make any changes deemed necessary. First opened in 1965, SLC-40 hosted numerous Titan launches over four decades. The most recent launch occurred in April of 2005. On November 1, 2007 SpaceX conducted an official ground breaking ceremony in preparation for transforming the site into a state of the art facility for its Falcon 9 and future Falcon 9 Heavy missions to launch commercial satellites, supply missions to the International Space Station (ISS), and eventually lofting crew carrying missions to the ISS and other orbiting destinations. Web posted. (2007). [Small Fire during Demolition at Space Launch Complex 40 [Online]. Available WWW: <http://www.spaceref.com/> [2007, November 7].]

Countdown is on and museums want to land shuttles for exhibits

When Discovery and its crew touch down at Kennedy Space Center today, only 13 more shuttle missions remain before the fleet will be retired. America's museums can hardly wait.

At least five institutions and NASA centers have been lobbying furiously over recent months for a chance to put Atlantis, Discovery or Endeavour on display when NASA pulls the program's plug in 2010. "No doubt. Everybody wants one," says Roger Launius, a curator at the Smithsonian's National Air and Space Museum in Washington, which is widely considered to be a shoo-in for one of the retired shuttles. But the competition is tough. Vying alongside the Smithsonian are the Johnson Space Center in Houston; the U.S. Space & Rocket Center in Huntsville, Ala.; the newly formed Vision for Space Exploration in Palmdale, Calif.; the National Museum of the U.S. Air Force in Dayton, Ohio; and, of course, the Kennedy Space Center in Brevard County. "You almost feel like a vulture pushing too hard right now," said Daniel LeBlanc, the chief operating officer of the Kennedy Space Center Visitor Complex. "But we hope that in the final placement, logic will prevail" and KSC will be one of the institutions selected. NASA now finds itself playing King Solomon trying to split a baby. While five museums want a shuttle, there are only three to go around. And that number may drop as NASA turns off shuttle-supply contracts and the only source of spare parts to keep the program in the air will be the shuttles themselves. "NASA already has said it intends to use at least one of the orbiters as a 'hangar queen' -- something they'll use to cannibalize pieces off of to keep the others flying," Launius said. "While that's a perfectly legitimate thing to do as the program winds down, from our perspective that's not the shuttle we want." Making it even harder for NASA is that every institution has a compelling argument why it should be the choice retirement center for an orbiter, as well as a posse of political heavyweights to back those claims. Gov. Arnold Schwarzenegger and the entire California state Legislature support the bid by Palmdale, where the orbiters were built. The Kennedy Space Center already has the most elaborate museum complex in the NASA empire. It is also the shuttles' sole launch site and their home between missions. On top of that, Florida Sen. Bill Nelson is a former shuttle astronaut. As the nerve center of NASA, Johnson Space Center's claim has received applause from the likes of Texas Sen. Kay Bailey Hutchison, and Alabama Sen. Richard Shelby is a keen supporter of the U.S. Space & Rocket Center, founded by an idea originally suggested by NASA's first leading rocket scientist, Wernher von Braun. Web posted. (2007). [Countdown is on and museums want to land shuttles for exhibits [Online]. Available WWW: <http://www.orlandosentinel.com/> [2007, November 7].]

November 8: NASA to Break Ground for Orion Test Pad at White Sands
 NASA will break ground for a new test launch pad at the U.S. Army's White Sands Missile Range, N.M., Wednesday, Nov. 14. The pad will be the site of a series of tests of a launch abort system that will help ensure the safety of astronauts aboard the new Orion spacecraft. NASA's Constellation Program is developing Orion to carry astronauts to the International Space Station, the moon and beyond. Engineers will use the test results to help design Orion's launch abort system. The first of five planned abort tests is scheduled from the new pad on Sept. 23, 2008. Two of the tests will evaluate the performance of the launch abort system at ground level. Three more tests will evaluate its performance at different altitudes. ["NASA to Break Ground for Orion Test Pad at White Sands, N.M.," **NASA Media Advisory #M07-158**, November 8, 2007.]

Kudos to KSC

The nearly 15,000 aerospace contractor and NASA employees at the Kennedy Space Center are focused on the critical launch of the shuttle Atlantis to the International Space Station with the European Columbus module. The Flight Readiness Review for the planned mid-

December launch is set for Nov. 14 at Kennedy. Rollout to Launch Complex 39A was set for Nov. 10. Columbus was moved to the pad Nov. 6, where it was being held for transfer into the orbiter by Nov. 11-12. The Kennedy team will be ready for launch as early as Dec. 6, and in fact has 4-5 days of margin to make that date if work by the ISS crew in space can support it. "The KSC team is pumped and ready to execute," says Mike Leinbach, shuttle launch director. "Huge kudos to the Kennedy team," says NASA Administrator Michael Griffin, noting the program came back from a serious delay in March because of ET hail damage, but is on the verge of its fourth flight this year. ["Kudos to KSC," **Aviation Week & Space Technology**, November 12, 2007, p 40.]

November 9: Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-110907. **Mission: STS-120** - 23rd International Space Station Flight - U.S. Node 2 (Harmony); Vehicle: Discovery (OV-103); Location: Orbiter Processing Facility Bay 3; Launch Date: Oct. 23, 2007; KSC Landing Date: Nov. 7, 2007; Crew: Melroy, Zamka, Parazynski, Wheelock, Wilson, Nespoli and Anderson; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. The STS-120 mission ended on Nov. 7 when Discovery touched down at Kennedy Space Center's runway 33 at 1:01 p.m. The mission lasted 15 days and Discovery completed 238 revolutions around the Earth and traveled 6.25 million miles. Discovery delivered the Harmony Node with its 2,600 cubic feet of pressurized volume. Harmony was placed in a temporary location and will be relocated by the Expedition 16 crew over the next three weeks, before the next shuttle mission arrives. The STS-120 crew also moved the Port 6 truss segment and its accompanying solar arrays to its permanent home at the end of the station's truss, and repaired damage done to the solar array as it was being redeployed. Discovery is now back in its hangar at Orbiter Processing Facility bay 3. Preparations are under way for offloading the residual cryogenic reactants this weekend, followed by opening the payload bay doors and the start of detailed post-flight inspections. At this time, Discovery appears to have few issues. **Mission: STS-122** - 24th International Space Station Flight - Columbus Module; Vehicle: Atlantis (OV-104); Location: Vehicle Assembly Building; Launch Date: Targeted for Dec. 6, 2007; Launch Pad: 39A; Crew: Frick, Poindexter, Schlegel, Eyharts, Love, Melvin and Walheim; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. On Nov. 3, Atlantis rolled from Orbiter Processing Facility bay 1 to the Vehicle Assembly Building, where it was lifted up and into high bay 3 to be connected to the external fuel tank on the mobile launch platform. Workers spent the week closing out connections between the solid rocket boosters, tank and orbiter, and performing interface tests to verify that all the space shuttle elements are working as a fully integrated launch vehicle. Rollout from the assembly building to Launch Pad 39A is scheduled for 4 a.m. Saturday. The Columbus laboratory module will be installed into the orbiter's payload bay on Sunday. The terminal countdown demonstration test with the STS-122 astronauts is scheduled for Nov. 18-20. **Mission: STS-123** - 25th International Space Station Flight - Kibo, Dextre; Vehicle: Endeavour (OV-105); Location: Orbiter Processing Facility Bay 2; Launch Date: Targeted for Feb. 14, 2008; Launch Pad: 39A; Crew: Gorie, Johnson, Linnehan, Doi, Behnken, Foreman and Reisman; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay 2, installation of replacement overhead window No. 8 is in progress. Installation of a new reinforced carbon-carbon panel, RCC No. 10 right (10R), is under way. Technicians are preparing the orbiter for installation of the engines, scheduled for next week. The crew module hatch functional test is nearing completion. Thermal protection system work continues on the main landing gear doors, wings, elevons and orbital maneuvering system pods. Payload pre-mate testing is under way.

Liquid oxygen tank No. 1 is installed and is undergoing leak checks. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, November 9].]

Giant rocket scheduled for launch Saturday night

The massive Delta 4-Heavy rocket is poised for its first operational launch Saturday evening from Cape Canaveral, Florida. Liftoff is targeted for 8:39 p.m. EST. The vehicle will deploy the final Defense Support Program missile warning satellite into geosynchronous orbit. Web posted. (2007). [Giant rocket scheduled for launch Saturday night [Online]. Available WWW: <http://www.spaceflightnow.com/> [2007, November 9].]

November 11: Delta 4 Heavy rocket fires away from Cape Canaveral

It is America's largest unmanned space booster. Its level of complexity causes engineers to liken it to launching three rockets at one time. And its fiery blastoffs create a dazzling yet heart-in-your-throat sight. Now, the mammoth Delta 4-Heavy has entered operational service with Saturday night's successful ascent carrying a critical surveillance satellite. Towering more than 230 feet tall and packing nearly two million pounds of thrust from its three hydrogen-fueled main engines, this rocket is built to loft big payloads. And the roomy nose cone offers spacious accommodations for exceptionally large spacecraft. The Delta 4-Heavy's characteristics make it well suited for launching a Defense Support Program (DSP) missile warning satellite into geosynchronous orbit 22,300 miles above the planet. Web posted. (2007). [Delta 4 Heavy rocket fires away from Cape Canaveral [Online]. Available WWW: <http://www.spaceflightnow.com/> [2007, November 11].]

November 13: Atlantis cleared for Dec. 6 launch

The Space Shuttle Program Flight Readiness Review, chaired by Shuttle Program Manager Wayne Hale, today cleared Atlantis for a Dec. 6 launch. A final clearance for launch must be issued at a meeting on Nov. 30. The group found no technical issues that would delay the launch. "It's just a testament to the processing and the health of the orbiter," said NASA spokesman Kyle Herring. NASA engineers in Houston, however, were working to determine the cause of a smoky smell coming from inside a spacesuit worn last week by a Russian trainee. If not cleared up, this problem could delay next week's spacewalks and push back the launch of Atlantis. Very little foam fell from the external tank during the launch of Discovery in October, which left no foam issues for this meeting that wrapped up in a day instead of the normal two. "It was the same thorough review the program does for every flight," said Herring. "It's remarkably clean." Though Atlantis has five suspect spots on its wing edges, the flight review did not address that issue. On the earlier Discovery mission, similar irregularities, discovered with a new sensing technique, were determined not to be dangerous. "That's a closed issue for this flight," said Herring. Web posted. (2007). [Atlantis cleared for Dec. 6 launch [Online]. Available WWW: <http://www.floridatoday.com/> the flame trench blog [2007, November 13].]

November 14: Boeing completes prototype heatshield for NASA's Orion

Boeing has delivered a prototype heatshield for NASA's Orion crew exploration vehicle (CEV). The 5m-diameter ablative heatshield would protect the Orion capsule during re-entry into Earth's atmosphere. The so-called thermal protection system (TPS) manufacturing development unit (MDU) was produced by Boeing Advanced Systems under

contract to NASA Ames Research Center in California. The TPS must withstand a lunar-direct return, during which the capsule will re-enter at much higher speed and generate about five times more heat than missions returning from the International Space Station. Boeing's baseline TPS is fabricated from pbepolic impregnated carbon ablator (PICA), which is produced by Maine-based Fiber Materials. PICA was selected after it performed well as the heatshield material for NASA's Stardust comet sample-return mission, the company says. The largest ablative heatshield ever produced, according to Boeing, the TPS MDU is made up of multiple pieces of PICA, each substantially larger than typical Space Shuttle tiles. This reduces parts count and complexity, the company says. NASA Ames completed an acceptance review on the heatshield in October, and Boeing has shipped the unit to NASA Kennedy Space Center in Florida for further inspection. Boeing, meanwhile, is continuing work on the flight heatshield to support an Orion TPS preliminary design review in early 2008. The Lockheed Martin-developed Orion is scheduled to make its first unmanned orbital flight in September 2012 and first manned flight no earlier than September 2013. Web posted. (2007). [Boeing completes prototype heatshield for NASA's Orion [Online]. Available WWW: <http://www.flightglobal.com/> [2007, November 14].]

November 15: NASA lifts EVA ban

NASA ended a brief ban on spacewalks on Thursday after concluding its spacesuits did not suffer from a design flaw. The ban was put into place after a Russian cosmonaut noticed a smoky odor and sensation of heat behind his neck during a ground test at the Johnson Space Center late last week. After an investigation, engineers found no evidence of an electrical or other problem with the suit; they instead believe the odor came from a canister in the suit that scrubs carbon dioxide from the suit's air. The decision clears the way for a pair of spacewalks next week by the International Space Station crew to complete the installation of the Harmony module at its permanent location on the station. Web posted. (2007). [NASA lifts EVA ban [Online]. Available WWW: <http://www.spacetoday.net/> [2007, November 16].]

Concerts at KSC

The Kennedy Space Center Visitor Complex is hosting a series of concerts as part of NASA's 50th anniversary celebration. The series began Nov. 10 with Kansas, one of the leading rock bands of the '70s and '80s. With the iconic Rocket Garden as the backdrop, the live, festival-style out-door concert will continue every Saturday at 4 p.m. for three more weeks, Nov. 17 and 24 and Dec. 1. The headliner for Saturday is Josh Gracin. On Nov. 24, it's Lou Gramm, the lead vocalist and co-writer of the multi-platinum band Foreigner. Wrapping up the series on Dec. 1 is RPM: Rock & Pop Masters. ["Concerts at KSC," **Countdown**, November 15, 2007.]

November 16: Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-111607. **Mission: STS-122** - 24th International Space Station Flight - Columbus Module; Vehicle: Atlantis (OV-104); Location: Launch Pad 39A; Launch Date: Targeted for Dec. 6, 2007; Crew: Frick, Poindexter, Schlegel, Eyharts, Love, Melvin, Walheim; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. On Nov. 10, the STS-122 shuttle stack rolled from the Vehicle Assembly Building to Launch Pad 39A, where workers are performing closeout connections and system verification checks. Atlantis' payload, including the Columbus module, was installed in the orbiter cargo bay on Sunday. Hypergolic propellant, which powers the maneuvering systems on both the

orbiter and the solid rocket boosters, has been loaded. The astronauts will arrive on Saturday for the three-day terminal countdown demonstration test. This is a countdown dress rehearsal and a training exercise for the flight crew. It will conclude on Nov. 20 with the astronauts on the flight deck of Atlantis. They will be participating in the last three hours of the simulated countdown while working with the launch team located in Firing Room 4 of the Launch Control Center. An issue with one of the helium isolation valves in Atlantis' forward reaction control system was discovered during hypergolic loading on Wednesday. The valve remains open even when it is commanded to shut. Open is the normal flight position during a mission. Technicians will continue to evaluate the issue during the weekend. Space Shuttle Program manager Wayne Hale told media during a news conference Friday that engineers will either be able to fix the problem or rely on the system's redundancy and high reliability components and fly as is. **Mission: STS-123** - 25th International Space Station Flight - Kibo, Dextre; Vehicle: Endeavour (OV-105); Location: Orbiter Processing Facility Bay 2; Launch Date: Targeted for Feb. 14, 2008; Launch Pad: 39A; Crew: Gorie, Johnson, Linnehan, Doi, Behnken, Foreman, Reisman; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 2, the three main engines have been installed on Endeavour and integrated testing with the main propulsion system begins today. Functional testing of the waste containment system is complete. Payload pre-mate testing has finished. The orbiter boom sensor system, which was recently removed from Discovery, arrived this week in the facility's bay No. 2. The system has undergone post-flight inspections and thermal blanket installation, and is being temporarily installed today to allow for fit checks. This week, technicians began working to bond BRI tiles around the main landing gear door. The rudder speed brake has been configured for flight and the orbiter drag chute is installed. **Mission: STS-124** - 26th International Space Station Flight - Kibo Pressurized Module, Japanese Remote Manipulator System; Vehicle: Discovery (OV-103); Location: Orbiter Processing Facility Bay 3; Launch Date: Targeted for April 24, 2008; Launch Pad: 39A; Crew: Kelly, Ham, Nyberg, Garan, Fossum, Hoshide; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 3, the end-of-mission/integrated roll-in operations are complete. The payload bay doors were opened last weekend and the Ku-band antenna was deployed. Orbiter power system validations and radiator inspections have finished. The orbiter boom sensor system was removed and transferred to bay No. 2 for installation in Endeavour. Inspections of the reinforced carbon-carbon panels on the wing leading edges are under way. The external airlock hatch functional test is complete. Preparations are in progress for offloading hypergolic fuel. Post-flight inspection of the thermal protection system is halfway complete. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, November 16.]

FRCS issue on Atlantis relates to wiring - 24 hour fix

United Space Alliance engineers have been troubleshooting an issue with Atlantis' FRCS (Forward Reaction Control System) oxidizer gaseous helium isolation B valve, which is "stuck" in the open position. Updating status, engineers at the pad found a loose grounding wire, which - following repairs or replacement - should clear the valve as operational by the end of the weekend, keeping STS-122 on track for a December 6 launch date. The issue was noted during pre-launch processing on Atlantis, as she moves closer to her December launch on STS-122. The valve isn't closing when commanded, so engineers this morning are conducting a 'wiggle test' on the wires, as part of an evaluation into whether the problem is

electrical, or if the valve itself is faulty. 'Picked up an IPR (Interim Problem Report) on FRCS oxidizer gaseous helium isolation B valve, which isn't closing when commanded to do so. 'Plan is to go into fuel loading, access this area tomorrow, do wiggle test on wires, and verify whether valve is stuck open or there is an electrical problem,' noted the latest Stand-up/Integration report. 'Engineering going through troubleshooting plan. Three teams formed to work on this plan: Team 1 will look at troubleshooting plan and ensure coordinated with all engineering communities. Team 2 will look at path to fly as is. Team 3 will determine what it will take to repair this valve. 'Will have data and a recommendation by Monday.' Engineers are currently at the pad checking the electrical connections for a better understanding on the problem. Web posted. (2007). [FRCS issue on Atlantis relates to wiring – 24 hour fix [Online]. Available WWW: <http://www.nasaspacespaceflight.com/> [2007, November 16].]

Ex-NASA workers sentenced

Two former NASA employees who embezzled thousands of dollars from the space agency cried in court Friday as a federal judge ordered them to prison. U.S. District Judge Anne Conway ordered Judith Lynna Frisbee, 46, of Titusville to serve 16 months and pay back the \$127,029.37 she defrauded from NASA contractor Space Gateway Support LLC by falsifying records and inflating expense reports between 2001 and 2005. She pleaded guilty in August and faced up to 20 years in prison and a \$250,000 fine. Elizabeth Ann Osborne, 52, received an 18-month sentence for using her government credit card to make \$157,394.21 worth of electronics, furniture, jewelry and other purchases for herself. She had faced up to 10 years in prison plus a \$250,000 fine after pleading guilty to the charges. Both women also were ordered to serve 150 hours of community service and three years probation, and to refrain from opening any new credit lines without a probation officer's approval. They must report to prison by 2 p.m. Jan. 15. Web posted. (2007). [Ex-NASA workers sentenced [Online]. Available WWW: <http://www.floridatoday.com/> [2007, November 17].]

November 17: Atlantis crew flies to Cape for practice countdown

The seven men set to launch aboard space shuttle Atlantis next month for delivery of the European scientific laboratory to the space station will undergo a countdown dress rehearsal this week at the Kennedy Space Center. The astronauts flew to the launch base Saturday night, touching down about 8:50 p.m. EST after a flight aboard a Shuttle Training Aircraft from Ellington Field near Houston's Johnson Space Center. "We're really excited to get back to Florida, get so close to launch and be able to practice our launch count in Atlantis - the real vehicle," commander Steve Frick told news media gathered at the runway. "We're looking forward to our training...do our launch count on Tuesday and then get home for Thanksgiving." The crew for this space station assembly mission includes pilot Alan Poindexter, mission specialists Leland Melvin, Rex Walheim, Stanley Love, Hans Schlegel and Leopold Eyharts. Eyharts will fly to the station on Atlantis and exchange places with Expedition 16 resident crew member Dan Tani. The European Space Agency's Columbus module has been tucked inside shuttle Atlantis' payload bay for the one-way ride up to the space station. The lab is Europe's main contribution to the international outpost. Liftoff is targeted for 4:31 p.m. EST (2131 GMT) on December 6, if ongoing work aboard the station that must be completed for receiving Columbus and the shuttle can be finished in time. Web posted. (2007). [Atlantis crew flies to Cape for practice countdown [Online]. Available WWW: <http://www.spaceflightnow.com/> [2007, November 17].]

November 19: 'Three amigos' craft deal for 300 to 400 space jobs

One of the most significant economic development victories in Florida history was pulled off by three graybeards with inside connections, a well-located building and a serious dollop of state money. Marshall Heard, Lee Solid and Conrad Nagel put together a package that will bring 300 to 400 jobs to Kennedy Space Center while opening up a whole new industrial base in the area -- aerospace manufacturing work instead of traditional launch operations. Those close to the deal say "the three amigos" came up with a prototype for Florida to copy as it tries to lure new work to offset drop in shuttle jobs. "That's hopefully the model they're going to follow," said Adrian Laffitte, director of Florida Government Relations for Lockheed Martin, which decided in 2006 to bring Orion spacecraft final assembly and integration work here. "Cash is king, and it talks." Heard, a former program manager who worked for a NASA contractor is a consultant for the Economic Development Commission of Florida's Space Coast and Space Florida. Solid, a retired rocket engineer and program manager is a consultant to the commission, and Nagel, a former NASA manager, works with Space Florida. Former KSC Director Jim Kennedy dubbed them "the three amigos" after they convinced him to let the winning bidder for NASA's \$7.4 billion Orion spacecraft contract do assembly work at the Operations & Checkout Building. They convinced the state to ante up \$35 million to renovate the Apollo-era facility and \$10.5 million to train launch operators for factory work. The win was a watershed for Florida and Brevard County. Long the base for launch work, the state never had much success attracting space manufacturing. Web posted. (2007). ['Three amigos' craft deal for 300 to 400 space jobs [Online]. Available WWW: <http://www.floridatoday.com/> [2007, November 19].]

Tiger Team set up to find root cause of RCC concern

NASA has set up a special Tiger Team to investigate the root cause of a potential issue with the shuttle's Reinforced Carbon-Carbon (RCC) leading-edge panels, which was highlighted at STS-120's Flight Readiness Review (FRR). The process will work in two stages - near term - with opening results expected ahead of next year's STS-123, and long term - with the full findings to be presented in nine to 12 months time. The issue was uncovered following the STS-114 mission, after a new method of inspecting the panels was developed after the loss of Columbia. Called Flash Thermography, the results produced anomalous readings near the junction between panels along the edge of the T-seal. The panel was not damaged, but based on NESC (NASA Engineering and Safety Center) concerns about possible spalling, where small pieces could flake off and possibly compromise the integrity of the heat shield, that panel was replaced. The RCC panels have always been examined with x-rays and ultrasound techniques when delivered from the factory. Web posted. (2007). [Tiger Team set up to find root cause of RCC concern [Online]. Available WWW: <http://www.nasaspaceflight.com/> [2007, November 19].]

Valve, Atlantis set for launch

Kennedy Space Center crews fixed a helium valve in Atlantis' forward control system and the shuttle crew, in town for a practice countdown, confirmed Monday that launch remains on track for Dec. 6. The valve was stuck open in its normal position and was fixed by replacing a lug on ground equipment. Web posted. (2007). [Valve, Atlantis set for launch [Online]. Available WWW: <http://www.floridatoday.com/> [2007, November 19].]

November 20: Atlantis crew aces final test

Seven astronauts stepped through a launch-day dress rehearsal Tuesday, completing their final major training exercise at Kennedy Space Center before a planned Dec. 6 launch to the International Space Station. With countdown clocks ticking, they donned partial pressure launch-and-entry suits and went to launch pad 39A, where Atlantis is being readied for flight. Then they strapped into the space ship for a practice countdown that involved 150 engineers in NASA's Launch Control Center. "It went well, and they're headed back to Houston," KSC spokesman Allard Beutel said. "The next time they come back, it will be for the real thing." The crew includes mission commander Steve Frick, pilot Alan Poindexter and five mission specialists: Leland Melvin, Rex Walheim, Stanley Love, Hans Schlegel and Leopold Eyharts. Schlegel and Eyharts are European Space Agency astronauts. NASA expects to be able to finish all preflight work on Atlantis in time to make a launch attempt Dec. 6. Liftoff time that day would be 4:31 p.m. EST. ["Atlantis crew aces final test," **Florida Today**, November 21, 2007, p 3B.]

Orion Flight Tests

Workers broke ground Nov. 14 on the launch pad that will host the first of NASA's Constellation Program flight tests. The agency will test a launch abort system for the new Orion spacecraft at the U.S. Army's White Sands Missile Range near Las Cruces, N.M. Orion's launch abort system will carry astronauts to safety in the event of a problem on the launch pad or during the spacecraft's climb to orbit. The first of five tests of the system, known as Pad Abort 1 or PA-1, is scheduled for fall 2008. Data from the series will help engineers refine the design of the launch abort system. ["Orion Flight Test," **Countdown**, November 20, 2007.]

November 21: Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-112107. **Mission: STS-122** - 24th International Space Station Flight - Columbus Module; Vehicle: Atlantis (OV-104); Location: Launch Pad 39A; Launch Date: Targeted for Dec. 6, 2007; Crew: Frick, Poindexter, Schlegel, Eyharts, Love, Melvin, Walheim; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. Last weekend, engineers and technicians successfully resolved an issue with a stuck valve in Atlantis' forward reaction control system, isolating the problem to a broken ground lug in the helium isolation valve circuit. Repairs were made and the valve is now functioning normally. Throughout the week, workers continued to validate shuttle/pad connections, and orbiter aft closeout work begins Nov. 28. Because no major issues are being worked and processing has been going well, teams will have Thanksgiving Day through Sunday off. On Saturday, Nov. 17, the STS-122 crew arrived at Kennedy Space Center for the terminal countdown demonstration test, or TCDT, which included a countdown dress rehearsal and a training exercise. The crew returned to NASA's Johnson Space Center Tuesday following the TCDT's successful conclusion. **Mission: STS-123** - 25th International Space Station Flight - Kibo, Dextre; Vehicle: Endeavour (OV-105); Location: Orbiter Processing Facility Bay 2; Launch Date: Targeted for Feb. 14, 2008; Launch Pad: 39A; Crew: Gorie, Johnson, Linnehan, Doi, Behnken, Foreman, Reisman; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 2, integrated testing of the main engines and the main propulsion system continues. Testing of the orbiter's three-string GPS system, which provides guidance on re-entry, is complete. The star tracker door functional test is complete. Window No. 7 has been removed and replaced. The payload bay door functional test is finished. Installation of BRI tile around the perimeter of the right main landing gear door is finished. Checkout of the Shuttle to Station Power Transfer System is

complete. In high bay No. 1 of the Vehicle Assembly Building, stacking of the left solid rocket booster is under way. Stacking of the right booster is scheduled to begin next week. **Mission: STS-124** - 26th International Space Station Flight - Kibo Pressurized Module, Japanese Remote Manipulator System; Vehicle: Discovery (OV-103); Location: Orbiter Processing Facility Bay 3; Launch Date: Targeted for April 24, 2008; Launch Pad: 39A; Crew: Kelly, Ham, Nyberg, Garan, Fossum, Hoshide; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 3, hypergolic fuel has been off-loaded from the orbital maneuvering system. Inspections of the reinforced carbon-carbon panels on the wing leading edges are complete. The main engine dome heat shields have been removed, and preparations are under way for removal of the three main engines next week. Functional checkout of the forward reaction control system is in progress, and window No. 1 has been removed and replaced. Post-flight inspection of the thermal protection system is 70 percent complete. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, November 21.]

NASA Amends Crew Assignment for STS-126 Mission

NASA has replaced a crew member assigned to space shuttle mission STS-126. Astronaut Donald R. Pettit will take the place of astronaut Joan E. Higginbotham, who has left NASA to accept a position in the private sector. The mission is targeted to launch in September 2008 and will deliver equipment to the International Space Station enabling larger crews to reside aboard the complex. The STS-126 mission will be Pettit's second spaceflight. Pettit will serve as a mission specialist aboard shuttle Endeavour. He joins previously named crew members Commander Christopher J. Ferguson, Pilot Eric A. Boe and mission specialists Stephen G. Bowen, Robert S. Kimbrough and Heidemarie M. Stefanyshyn-Piper. ["NASA Amends Crew Assignment for STS-126 Mission," **NASA News Release #07-259**, November 21, 2007.]

Astronaut leaving NASA

Joan Higginbotham, a former Kennedy Space Center worker who became an astronaut, is leaving the space agency and has been replaced on a shuttle mission scheduled for launch in September 2008. NASA announced Wednesday that Donald Pettit would take the place of Higginbotham, who the agency said has quit NASA for an undisclosed job in the private sector. The mission will carry supplies and equipment that will enable the International Space Station's crew to grow from three to six permanent residents. Higginbotham flew on the STS-116 shuttle mission last year. She started at KSC in 1987 and was selected to the astronaut corps in 1996. She could not immediately be reached for comment on her future job. In a written statement, the chief of the astronaut office at Johnson Space Center in Houston said of Higginbotham: "Joan has done a tremendous job as an astronaut during the past 11 years. She contributed her expertise to nearly every space shuttle and International Space Station mission. She will be missed, but we wish her the very best in her future endeavors." ["Astronaut leaving NASA," **Florida Today**, November 22, 2007, p 1B.]

Engineers present Atlantis overview to her STS-122 crew

With the STS-122 astronauts in attendance at the Kennedy Space Center (KSC) for the Terminal Demonstration Countdown Test (TDCT), engineers have taken the opportunity to present Atlantis' engineering flow overview to the crew that will fly onboard her in just over two weeks' time. The TDCT was completed on Tuesday, but not before the crew were

given a full run down of Atlantis' processing flow and modifications since her last flight - STS-117. Classed as part of the TDCT, the crew was presented an overview of significant issues that have been encountered by KSC Engineering during ground processing and testing of Atlantis, ahead of what will be her 29th flight. STS-122 was set to be her last flight to the International Space Station (ISS), though managers will soon make the official announcement that she'll gain two additional missions, following her trip to service the Hubble Space Telescope this summer on STS-125. Shuttle crews have always taken an interest in the processing flows of the orbiters they are scheduled to fly on, which includes special trips from their home base in Houston to visit the orbiters and their engineers inside the Orbiter Processing Facilities (OPFs). However, given the rigorous training (crew loading) schedule the astronauts undergo in preparation for their mission, NASA and the United Space Alliance (USA) compile an overview, for presentation at their TDCT, allowing them to review the flow's highlights. 'Because of the amount of work accomplished during an Orbiter flow, only those items which are thought to be of interest to the crew are included herein,' noted the 34 page presentation. Web posted. (2007). [Engineers present Atlantis overview to her STS-122 crew [Online] Available WWW: <http://www.nasaspaceflight.com/> [2007, November 21].]

November 28: Launch decision set for Friday

The International Space Station is ready for Atlantis, and shuttle program managers will decide Friday if the shuttle is ready for a 4:31 p.m. launch Dec. 6. "No issues. They were good with pressing ahead," NASA spokesman James Hartsfield said after a readiness review Tuesday in Houston. At the shuttle Flight Readiness Review on Friday at Kennedy Space Center, shuttle program managers are expected to give final approval for next Thursday's scheduled liftoff. The early December launch is possible because the space station crew has performed two robotic relocations and three spacewalks since Discovery delivered the Harmony module in October. The module and relocated docking port are operational. Space station commander Peggy Whitson lived up to her reputation as a hard worker, and she has been helped by U.S. flight engineer Dan Tani and cosmonaut Yuri Malenchenko. "They have all really excelled in what has been an unprecedented period of stand-alone operations without a shuttle present," Hartsfield said. "That has been a theme of this (space station) crew." Atlantis will deliver the European-built Columbus science module and the shuttle crew will take the first steps in trying to repair a solar array rotary joint that spins the solar panels that provide electricity for the space station. Web posted. (2007). [Launch decision set for Friday [Online]. Available WWW: <http://www.floridatoday.com/> [2007, November 28].]

NASCAR enters the Space Age

It will bring a whole new meaning to the term "space race," or so NASA hopes. If the agency's promotional plan pays off, millions of NASCAR fans will have their eyes glued to the skies next month when space shuttle Atlantis blasts off into orbit -- carrying three Daytona 500 race flags in its cargo bay. The green starter flags are being launched into space to celebrate the 50th running of the Daytona 500 in February, as well as NASA's own upcoming 50th anniversary. "It's great," NASA spokesman Allard Beutel said. "It will hopefully bring space to a whole new audience." NASA, working hard to wind down the shuttle program in 2010 and start its next phase of space exploration that will bring humans back to the moon, is trying to drum up public enthusiasm for an invigorated space program. And the Daytona racetrack was looking for an out-of-this-world way to celebrate its own

milestone, said David Talley, spokesman for Daytona International Speedway. NASA came up with the idea to link the two anniversaries earlier this year. Both sides are trying to arrange astronaut-driver promotional events, including a possible joint NASCAR driver-shuttle crew press event during Atlantis' 11-day mission next month. It's a logical marriage between an agency that sees itself racing back to the moon and a sport built on speed. In fact, NASA and NASCAR already have a relationship; NASA technology is used in everything from fuel cells and thermal-protection blankets in the race cars to suit-coolant systems for drivers. But this is the first time that the Daytona track and NASA have joined forces. The agency sets aside a small amount of space on every shuttle mission for commemorative items. Last month, Luke Skywalker's lightsaber flew aboard Discovery to celebrate the 30th anniversary of the Star Wars film franchise. In 2000, a small piece of fabric from Orville and Wilbur Wright's airplane flew on a shuttle mission. Now stock-car racing gets its turn. The flags had to be measured and weighed carefully to meet NASA's requirements for onboard items and will be stowed throughout the mission. Upon their return to Earth, one flag will be awarded to the winner of the 50th Daytona 500 on Feb. 17; one will go to the Daytona 500 Experience attraction at the racetrack; and the third will stay with NASA. NASA officials will announce Atlantis' launch date Friday. It is expected to be Dec. 6. Web posted. (2007). [NASCAR enters the Space Age [Online]. Available WWW: <http://www.orlandosentinel.com/> [2007, November 28].]

November 30: Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-113007. **Mission: STS-122** - 24th International Space Station Flight - Columbus Module; Vehicle: Atlantis (OV-104); Location: Launch Pad 39A; Launch Date: Dec. 6, 2007; Crew: Frick, Poindexter, Schlegel, Eyharts, Love, Melvin, Walheim; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. At Launch Pad 39A, final preparations for launch are under way. Closing out of the orbiter aft main engine compartment is scheduled for completion on Sunday, and the final aft confidence test will be performed at that time. This test verifies the integrity of all electrical systems in the aft. Installation and connection of ordnance on the orbiter and solid rocket boosters are complete. Checkout and stowage of the extravehicular mobility units, or space suits, in the orbiter airlock are finished, and the airlock has been closed for flight. The external tank and solid rocket booster closeouts will be completed today. Pressurization of the orbiter's propulsion and maneuvering systems is scheduled for tonight and closeouts will continue through the weekend. The payload bay doors will be closed for flight on Monday. Shuttle program managers met today for the agency's flight readiness review and concluded by setting Dec. 6 as the official launch date for STS-122. The astronauts are scheduled to arrive at Kennedy at 12:30 p.m. Monday, and the launch countdown will begin at 7 p.m. in Firing Room 4 of the Launch Control Center. **Mission: STS-123** - 25th International Space Station Flight - Kibo, Dextre; Vehicle: Endeavour (OV-105) Location: Orbiter Processing Facility Bay 2; Launch Date: Targeted for Feb. 14, 2008; Launch Pad: 39A; Crew: Gorie, Johnson, Linnehan, Doi, Behnken, Foreman, Reisman; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 2, integrated testing of the main engines and the main propulsion system is complete. All window installations are finished. Installation of the orbiter main engine heat shields began this week, and the orbital maneuvering system heat shields have been installed. Following electrical resistance testing of the orbiter boom sensor system, which is the 50-foot extension for the shuttle robotic arm, the boom was installed in the payload bay. Hardware that will support the STS-123 payload was also installed in the payload bay. The STS-123 crew flew to Kennedy Space

Center this week for the crew equipment interface test on Friday and Saturday. During the test, the crew gets the opportunity to become familiar with the configuration of equipment in the crew cabin and payload bay. In high bay No. 1 of the Vehicle Assembly Building, stacking of the solid rocket boosters is under way. ET-126, the external fuel tank for STS-123, arrived at Kennedy today and was transported to the transfer aisle of the Vehicle Assembly Building. The tank will be lifted into a checkout cell on Saturday to undergo processing for launch. **Mission: STS-124** - 26th International Space Station Flight - Kibo Pressurized Module, Japanese Remote Manipulator System; Vehicle: Discovery (OV-103); Location: Orbiter Processing Facility Bay 3; Launch Date: Targeted for April 24, 2008; Launch Pad: 39A; Crew: Kelly, Ham, Nyberg, Garan, Fossum, Hoshide; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 3, engine No. 2 was removed this week, and engines No. 1 and 3 will be removed next week. Functional checkout of the forward reaction control system is finished. Thermography inspection of the nose cap and chin panel is under way. The functional checkout of the orbital maneuvering system pods is also in progress. Window No. 4 was removed and replaced. Post-flight inspection of the thermal protection system is 89 percent complete. The removal and replacement of fuel cell No. 1 began today. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, November 30.]

NASA Honors Legendary Flight Director Gene Kranz

NASA will honor Eugene Francis "Gene" Kranz with the presentation of an Ambassador of Exploration Award for his involvement in the U.S. space program. The award is a moon rock encased in Lucite and mounted for public display as inspiration to a new generation of explorers who will help return humans to the moon and eventually travel on to Mars and beyond. The rock is part of the 842 pounds of samples collected during the six Apollo lunar expeditions from 1969 to 1972. NASA is giving the Ambassador of Exploration Award to the first generation of explorers in the Mercury, Gemini and Apollo space programs for realizing America's vision of going to the moon. NASA also is recognizing several key individuals who played significant roles in the early space programs. Kranz worked on NASA's Mercury, Gemini and Apollo space missions. Kranz was the lead flight director during the Apollo 13 mission. An explosion aboard the spacecraft during Apollo 13 required Kranz and other team members to help resolve the crisis and safely bring the astronauts back to Earth. Kranz was a co-recipient of the Presidential Medal of Freedom for the Apollo 13 Mission. ["NASA Honors Legendary Flight Director Gene Kranz," **NASA Media Advisory #M07-170**, November 30, 2007.]

NASA Gives "Go" for Space Shuttle Launch on Dec. 6

NASA senior managers completed a thorough review Friday of space shuttle Atlantis' readiness for flight and selected Dec. 6 as the official launch date for mission STS-122. Commander Steve Frick and his six crewmates are scheduled to lift off to the International Space Station at 4:31 p.m. EST. During the 11-day mission, the crew will install the European Space Agency's new Columbus laboratory. Columbus will expand the research facilities of the station and provide scientists around the world with the ability to conduct a variety of life, physical and materials science experiments. The mission will include at least three spacewalks, delivery of a new crew member to the station and the return of another astronaut after nearly two months aboard the station. Atlantis' launch date was announced after the conclusion of Friday's Flight Readiness Review. During the one-day meeting, top

NASA and contractor managers assessed any risks associated with the mission and determined whether the shuttle's equipment, support systems and procedures are ready for flight. Joining Commander Frick on STS-122 will be pilot Alan Poindexter and mission specialists Leland Melvin, Rex Walheim, Stanley Love and European Space Agency astronauts Hans Schlegel and Leopold Eyharts. Eyharts will replace current station crew member Dan Tani, who has lived on the outpost since October. Eyharts will return to Earth on shuttle Endeavour's STS-123 mission, currently targeted for launch on Feb. 14, 2008. ["NASA Gives "Go" for Space Shuttle Launch on Dec. 6," **NASA News Release #07-262**, November 30, 2007.]

Cargo ship could deliver jobs to KSC

Spacehab is developing a cargo ship to deliver supplies to the International Space Station after NASA's shuttles retire. The Houston Company said Thursday that it has submitted a proposal to NASA outlining its plan for an unmanned craft that could carry between 2 and 5 tons to low-Earth orbit. Final assembly, integration and checkout work would be done at the company's facilities in Titusville and Cape Canaveral. If successful, Spacehab's ARCTUS spacecraft would launch on United Launch Alliance's Atlas 5 or Delta 4 rocket from Cape Canaveral, possibly protecting or even creating hundreds of space jobs just as NASA is cutting several thousand people from its work force at Kennedy Space Center. If it wins the competition, Spacehab anticipates "substantial job growth in both the Houston and Florida locations to support the program engineering and operations requirements, although it's too premature to try to disclose just how many," company spokeswoman Eva-Marie deCardenas said. She also notes that the increased rocket launch rate to support ARCTUS flights could add to the number of ULA workers at the Cape. ["Cargo ship could deliver jobs to KSC," **Florida Today**, November 30, 2007, p 1A & 7A.]

DECEMBER

December 1: Atlantis good to go Thursday

Carrying a European laboratory module, shuttle Atlantis is scheduled to lift off Thursday for the International Space Station. The countdown would start on Monday. "We're all on track for the launch," said Bill Gerstenmaier, associate administrator for space operations, after the flight readiness review at Kennedy Space Center approved the launch date. If technology and the weather cooperate, Atlantis' mission will be the fourth this year. ["Atlantis good to go Thursday," **Florida Today**, December 1, 2007, p 1B & 4B.]

NASA leaders keep \$1.5B experiment off space shuttle

A team of 500 scientists from 16 countries has spent the past decade building a \$1.5 billion space experiment to help solve a celestial puzzle: how the cosmos has evolved since shortly after the big bang, more than 13 billion years ago. The problem: The experiment was designed to work aboard the international space station. But despite earlier agreements, NASA leaders now say they will not transport the device aboard any of the 13 remaining space shuttle flights – potentially grounding the Alpha Magnetic Spectrometer. Samuel Ting, a Nobel Prize winner and the project's lead investigator, said NASA contracted 12 years ago to fly the device to the space station. But that contract expired in 2005 – and the spectrometer won't be finished before late 2008. By then, NASA says, there won't be any room aboard the shuttles, which are scheduled to stop flying in 2010. ["NASA leaders keep \$1.5B experiment off space shuttle," **Orlando Sentinel**, December 2, 2007, p A1 & A18.]

December 3: Atlantis crew arrives at Kennedy Space Center

The Atlantis astronauts have landed at Kennedy Space Center, riding together in a Gulfstream aircraft. It is being broadcast on NASA TV. The plane touched down just a few minutes ago and the crew is expected to make remarks to reporters soon. The shuttle is scheduled to launch Thursday to deliver the 27,000-pound European Columbus laboratory to the International Space Station. Navy Cmdr. Stephen N. Frick is the mission commander, while Navy Cmdr. Alan G. Poindexter serves as pilot. Mission specialists include Air Force Col. Rex J. Walheim, Stanley G. Love, Leland D. Melvin and European Space Agency astronaut Hans Schlegel. Poindexter, Love and Melvin will be making their first spaceflight. STS-122 is the 24th shuttle mission to the International Space Station. Expedition 16 Flight Engineer Daniel Tani will return home with the STS-122 crew, while European Space Agency astronaut Leopold Eyharts will remain on the space station after riding to the space station on Atlantis. Web posted. (2007). [Atlantis crew arrives at Kennedy Space Center [Online]. Available WWW: <http://www.floridatoday.com/> the flame trench blog [2007, December 3].]

Kept in Suspense

If NASA's Fiscal 2008 budget becomes a casualty of the showdown between the Bush administration and Congress over discretionary spending, the consequences could be dire as the agency struggles to retire the space shuttle on time and pave the way for an ambitious program of lunar exploration under already severe fiscal constraints. NASA was funded under a continuing resolution for Fiscal 2007 that essentially froze spending at Fiscal 2006 levels and amounted to a \$500-million cut from its overall request. Bearing the brunt of the shortfall, the exploration program was forced to scale back technology and robotics efforts and delay the operational introduction of the Lockheed Martin-built Orion spacecraft to

March 2015 from September 2014. If the White House and Congress can't agree on a new Fiscal 2008 NASA appropriation and the agency is again funded with a continuing resolution for the entire fiscal year, it will amount to roughly a \$1-billion cut from its \$17.3-billion Fiscal 2008 request – an event that Deputy Administrator Shana Dale says would have “devastating” consequences. The current continuing resolution funding NASA and other parts of the government expires after Dec. 14, but could be extended through next September. Tom Cremins, NASA's deputy associate administrator for policy and plans, said the exploration program can handle a short continuing resolution with carryover funds. But the ultimate effect will “really depend on the length,” he says. A year-long continuing resolution could wind up pushing Orion's debut to 2016, which would miss the President's original deadline for its introduction by two years and create even more pain for an industrial base grappling with how to sustain itself during the gap after the shuttle retires. [“Kept in Suspense,” *Aviation Week & Space Technology*, December 3, 2007, p 30.]

Countdown begins for shuttle launch

The countdown for the launch of the shuttle Atlantis started Monday evening, with good weather forecast and only minor technical issues being addressed. Atlantis is scheduled to lift off on mission STS-122 at 4:31 pm EST (2131 GMT) Thursday, and weather forecasts predict an 80 percent chance of acceptable conditions for the launch at that time; weather conditions are expected to deteriorate should the launch be delayed. The only significant technical problem being addressed is a set of three dings found in foam on the external tank. Those dings will be repaired before the launch. Atlantis is carrying the European lab module Columbus, which will be installed at the new Harmony docking node added to the station on the previous shuttle mission. Web posted. (2007). [Countdown begins for shuttle launch [Online]. Available WWW: <http://www.spacetoday.net/> [2007, December 4].]

December 5: Atlantis' crew expects the unexpected

Even if all goes well, the astronauts on space shuttle Atlantis face a jam-packed mission after their launch, which is scheduled for Thursday. They've been assigned to deliver a European laboratory to the International Space Station and install it. They'll also do other construction on the station, requiring three risky spacewalks. Atlantis commander Stephen Frick hopes for a calm and uneventful trip, but, based on recent history, he knows better. “The last couple missions have been interesting,” says Frick, who will command Atlantis and its six-person crew during an 11-day flight. “We're sure stuff is going to come up.” If this year's three previous shuttle missions are any guide, Frick and his crewmates will have to rip up their carefully written plans. All three flights this year were beset by at least one unexpected crisis that, in most cases, forced the astronauts in space to scramble. The Atlantis crew already has been told that their mission may be extended by two days so they can do a last-minute spacewalk to inspect damage on the station. NASA usually spends at least a year planning a spacewalk, and the astronauts practice it a half-dozen times in a pool of water that simulates weightlessness. NASA managers on Tuesday officially approved the launch, scheduled for 4:31 p.m. ET. There's only a 10% chance that bad weather will keep Atlantis on the ground. Though NASA has taken steps to keep the difficulties of the past from popping up again, the Atlantis astronauts know there will always be new problems. Web posted. (2007). [Atlantis' crew expects the unexpected [Online]. Available WWW: <http://www.usatoday.com/> [2007, December 5].]

Delta 2 Calif. launch scrubbed at last second

A Delta 2 rocket launch was scrubbed in the final seconds of the countdown tonight because of upper-level winds at the California coastal launch site. The launch is being reset for tomorrow night at the same time -- 9:31 p.m. EST during a one-second window. The United Launch Alliance mission is scheduled to carry an Italian-built radar reconnaissance spacecraft. The winds appeared to have calmed around Vandenberg Air Force Base in the late part of the countdown, but the acceptable conditions did not hold long enough. Web posted. (2007). [Delta 2 Calif. launch scrubbed at last second [Online]. Available WWW: <http://www.floridatoday.com/> the flame trench blog [2007, December 5].]

December 6: NASA Postpones Space Shuttle Atlantis Launch

NASA has delayed Thursday's planned launch of space shuttle Atlantis on its STS-122 mission to the International Space Station. The next liftoff opportunity is Friday at 4:09 p.m. EST. Shuttle program managers decided to postpone Atlantis' launch at 9:56 a.m. because of an issue with a fuel cut-off sensor system inside the external fuel tank. This is one of several systems that protect the shuttle's main engines by triggering their shut down if fuel runs unexpectedly low. During countdown activities Thursday morning, two sensors failed a routine prelaunch check. There are four engine cut-off, or ECO, sensors inside the liquid hydrogen section of the tank, and Launch Commit Criteria require three of the four sensor systems to be functioning properly. The tank's liquid oxygen and liquid hydrogen will be drained from the tank, and preparations will begin for a possible launch attempt tomorrow. NASA's launch rules have a preplanned procedure that states in the case of ECO sensor system failure, engineers need to drain the tank and verify all the sensors are working as they go dry. This and other data will be discussed at a Mission Management Team Meeting at 2 p.m., when a decision will be made whether to attempt to launch on Friday. A news conference will follow that meeting at 4 p.m. During Atlantis' 11-day mission, the crew will install and activate the European Space Agency's Columbus laboratory, which will provide scientists around the world the ability to conduct a variety of life, physical and materials science experiments. Atlantis' crew consists of Commander Steve Frick, Pilot Alan Poindexter, mission specialists Leland Melvin, Rex Walheim, Stanley Love and European Space Agency astronauts Hans Schlegel, from Germany, and Leopold Eyharts, from France. ["NASA Postpones Space Shuttle Atlantis Launch; aims for Friday," **NASA News Release #07-266**, December 6, 2007.]

NASA Reschedules Space Shuttle Launch

The launch of NASA's space shuttle Atlantis will take place no earlier than Saturday, Dec. 8, at 3:43 p.m. EST. Thursday's scheduled liftoff from NASA's Kennedy Space Center, Fla., was postponed because of a problem with a fuel cutoff sensor system inside the shuttle's external fuel tank. The fuel cutoff sensor system is one of several that protect the shuttle's main engines by triggering their shut down if fuel runs unexpectedly low. Launch Commit Criteria require that three of the four sensor systems function properly before liftoff. Space Shuttle Program managers will hold a Mission Management Team meeting Friday at 2 p.m. to discuss the issue and determine the steps necessary to start a new launch countdown. A news conference will be held at approximately 5 p.m. after the meeting's conclusion. On Thursday morning, two of the four engine cutoff, or ECO, sensors inside the liquid hydrogen section of the tank failed a routine prelaunch check. Following the launch postponement, the tank's liquid oxygen and liquid hydrogen were drained. While the tank was being emptied, engineers monitored and collected data on the liquid hydrogen sensors that failed. During that process, another sensor gave a false reading, indicating that the tank

was "wet," when it was dry. All ECO sensors are now indicating dry as they should be. During Atlantis' 11-day mission to the International Space Station, the shuttle and station crews will work with ground teams to install and activate the European Space Agency's Columbus laboratory. The new lab will expand the station's scientific research capabilities. ["NASA Reschedules Space Shuttle Launch," **NASA News Release #07-267**, December 6, 2007.]

Launch of Delta 2 rocket Scrubbed

Today's shot at launching a Delta 2 rocket from California's Vandenberg Air Force Base carrying the second in a series of Earth-imaging radar satellites for Italy was scrubbed a little more than two minutes prior to liftoff. Countdown clocks were ticking toward an on-time liftoff only to be halted when upper level wind data from the last pre-launch weather balloon was reported into the launch team. "We just went red on the L-5 balloon," an engineer announced to the team. "We have a hold condition. Hold. Hold. Hold. We have red winds," the flight director responded as the countdown clocks stopped. The winds had been "no go" earlier in the countdown. But subsequent weather balloons dispatched to measure wind speeds and directions had found conditions were safe for the Delta to control its ascent and not exceed the structural limits of the rocket, lending hope that the launch would go off as planned. Yet when the final balloon data was posted, the wind situation was deemed "no go." The launch window was just an instant in time, a one-second opportunity to get the Delta rocket airborne and place the second COSMO-SkyMed spacecraft in the same orbital plane as the COSMO 1 satellite, which was successfully hauled into orbit by a Delta 2 rocket in June. The "instantaneous" window meant there was no chance to pause the countdown and wait for the wind situation to clear. The launch postponement was called and the team began safing the rocket and its payload. Another launch try is possible Thursday evening at 6:31 p.m. local time (9:31 p.m. EST; 0231 GMT). Weather forecasters are predicting a 60 percent chance that an incoming storm system will violate the launch rules. Web posted. (2007). [Mission Status Center [Online]. Available WWW: <http://www.spaceflightnow.com/> [2007, December 6].]

Big surge strips spark high hope

NASA is converting one of its twin shuttle launch pads for moon missions even as shuttles are being readied for liftoff at the other complex a mile and a half away. Countdown clocks on Wednesday were ticking ahead toward today's 4:31 p.m. Atlantis launch as construction crews laid the foundation for a new lightning protection system at Kennedy Space Center's launch pad 39B. Three 594-foot towers will be raised at the complex, and wire cables will be strung between them to protect NASA's Ares 1 rockets, Orion spacecraft and moon-bound astronauts. The \$27.9 million lightning protection system is being built by Ivey's Construction Inc. of Merritt Island. The lightning protection system represents one of the first work packages aimed at converting pad 39B for the Ares 1 rocket, which will stand 320 feet tall. Some 216 concrete pilings each will be driven 55 feet into the ground to form the foundation for the giant steel-and-fiberglass towers, which will be assembled horizontally and then hoisted into position by a 60-story crane. Each tower will be equipped with a network of wires and conductors that will divert lightning away from the pad and into the ground. The system is expected to be completed in January 2010. Most of the conversion work will be delayed until after the planned August launch of Atlantis from pad 39A on a Hubble Space Telescope servicing mission. The first piloted flight of an Ares 1 is scheduled to take place in March 2015. NASA plans to use pad 39A to launch Ares 5 cargo rockets.

Web posted. (2007). [Big surge strips spark high hope [Online]. Available WWW: <http://www.floridatoday.com/> [2007, December 6].]

Lawmakers want shuttle's life extended despite dangers

Despite the objections of senior NASA officials and Columbia disaster investigators, key members of Congress are pushing hard to extend the life of America's aging space-shuttle fleet beyond 2010, potentially risking astronaut lives as well as the agency's program to return to the moon. Those efforts are being readied as shuttle Atlantis sits on Launch Pad 39A waiting to lift off from Kennedy Space Center at 4:31 p.m. today. It will be NASA's fourth and final flight of 2007 -- the most in a year since the 2003 Columbia tragedy forced the grounding of the shuttle for 30 months. Four, or possibly five, flights are planned in 2008, followed by seven to eight more by September 2010, when NASA plans to retire the orbiter to make way for the next generation of manned spaceflight. It's a punishing, risky schedule -- just enough, NASA says, to finish building the international space station, repair the Hubble Space Telescope, and still leave time and money to build the next spaceship by 2015. Some members of Congress, however, have other ideas. Texas lawmakers led by Republican U.S. Sen. Kay Bailey Hutchison of Texas are drafting legislation to force the agency to fly at least one more mission to launch a \$1.5 billion antimatter experiment that NASA grounded because of other priorities. At the same time, U.S. Rep. Dave Weldon, R-Indianapolis -- anxious about preserving shuttle jobs at KSC -- wants the agency to keep flying the shuttle until the next-generation spacecraft is ready to take its place. That won't be until 2015 and may take longer if the shuttle keeps flying and NASA's budget languishes. Prominent critics and internal NASA studies say that adding more flights could put astronauts' lives at greater risk by requiring them to fly in an aging and inherently troubled system beyond its recommended retirement date. And doing so without adding more money also would delay and possibly sink the agency's moon and Mars projects. The extension of the shuttle also goes against the findings of a blue-ribbon panel that investigated the Columbia disaster. One key recommendation was that NASA retire the orbiters in 2010 or face the enormous expense of testing and refurbishing every system until it is certifiably as good as new. "Congress is flirting with fate," said former Columbia investigation board member John M. Logsdon, currently director of the Space Policy Institute at George Washington University. The panel, he said, found that the shuttle was a risky system that would only become riskier with age. In a report last month titled "NASA's Most Serious Management and Performance Challenges," the agency's inspector general said the public would accept the danger of flying until 2010 to complete the space station as long as the missions were successful. But if tragedy struck again, it added, "the merits of manned spaceflight to the moon and Mars would likely be re-evaluated." NASA Administrator Michael Griffin was blunt about the impact: "If I am directed to keep flying the shuttle but no additional money shows up, then that additional money has to come out of other programs. There is just no other source," he said. Griffin said overhead costs are at least \$3 billion a year to continue flying. NASA's total budget is about \$18 billion. Without extra money, NASA would have to rob the Constellation program -- which aims to return to the moon by 2020 -- and perhaps kill it. "If you keep flying the shuttle . . . you will never finish [Constellation] on the money that we have," Griffin said. But this year, the agency's allies in Congress haven't been able to persuade their colleagues to support even \$1 billion in extra funding next year. "We know it's an uphill battle," said Matt Mackowiak, Hutchison's spokesman, but he said his boss and others would continue to press for more money. But if that money fails to materialize, he and others acknowledged, the members will still press to

keep the shuttle flying. Web posted. (2007). [Lawmakers want shuttle's life extended despite dangers [Online]. Available WWW: <http://www.orlandosentinel.com/> [2007, December 6].]

December 7: NASA to launch Space Shuttle Atlantis no earlier than Sunday
NASA is targeting the launch of space shuttle Atlantis no earlier than Sunday, Dec. 9, at 3:21 p.m. EST from the Kennedy Space Center, Fla. Shuttle program managers made the decision after a meeting Friday to review data on a problem with a fuel cutoff sensor system inside the shuttle and its external fuel tank. Because of the length of the meeting, the managers agreed that targeting Sunday would allow the launch and management teams appropriate time to rest and prepare. The Mission Management Team will meet Saturday at 1 p.m. to decide whether to make a Sunday attempt. A news conference will be held after the meeting's conclusion. Atlantis' scheduled launch Thursday was delayed after two ECO sensors gave false readings. A third sensor failed after the tank was drained of fuel. The fuel cutoff sensor system is one of several that protects the shuttle's main engines by triggering their shut down if fuel runs unexpectedly low. During Atlantis' 11-day mission to the International Space Station, the shuttle and station crews will work with ground teams to install and activate the European Space Agency's Columbus laboratory. The new lab will expand the station's scientific research capabilities. ["NASA to launch Space Shuttle Atlantis no earlier than Sunday," **NASA News Release #07-270**, December 7, 2007.]

December 9: NASA Postpones Shuttle Atlantis Launch
NASA has delayed Sunday's launch of space shuttle Atlantis on its STS-122 mission to the International Space Station. Shuttle program managers made the decision at 7:24 a.m. EST after a failure occurred in a fuel sensor system while Atlantis' external fuel tank was being filled. One of the four engine cutoff, or ECO, sensors inside the liquid hydrogen section of the tank gave a false reading. NASA's current Launch Commit Criteria require that all four sensors function properly. The sensor system is one of several that protect the shuttle's main engines by triggering their shut down if fuel runs unexpectedly low. The Mission Management Team will meet at 9 a.m. Sunday to discuss the issue and a possible future launch date. A news conference will be held after the meeting's conclusion. Atlantis' scheduled launch on Thursday was delayed after two liquid hydrogen ECO sensors gave false readings. A third sensor failed after the tank was drained of fuel. The main objective of Atlantis' 11-day mission is to install and activate the European Space Agency's Columbus laboratory, which will provide scientists around the world the ability to conduct a variety of life, physical and materials science experiments. ["NASA Postpones Shuttle Atlantis Launch," **NASA News Release #07-272**, December 9, 2007.]

NASA Targets Space Shuttle Atlantis Launch on Jan. 2
Space shuttle Atlantis' STS-122 mission to the International Space Station now is targeted to launch no earlier than Jan. 2 from NASA's Kennedy Space Center. The liftoff date depends on the resolution of a problem in a fuel sensor system. Early Sunday, one of the four engine cutoff, or ECO, sensors inside the liquid hydrogen section of Atlantis' external fuel tank gave a false reading while the tank was being filled. NASA's current Launch Commit Criteria require that all four sensors function properly. The sensor system is one of several that protect the shuttle's main engines by triggering their shut down if fuel runs unexpectedly low. Atlantis' scheduled launch on Thursday, Dec. 6, was delayed after two liquid hydrogen ECO sensors gave false readings. The main objective of Atlantis' 11-day mission is to install and activate the European Space Agency's Columbus laboratory, which will provide

scientists around the world the ability to conduct a variety of life, physical and materials science experiments. ["NASA Targets Space Shuttle Atlantis Launch on Jan. 2," **NASA News Release #07-273**, December 9, 2007.]

December 10: Atlas-NRO mission declared a success

A classified National Reconnaissance Office spacecraft is winging its way around the planet tonight after a roaring rocket launch from Cape Canaveral Air Force Station. With the clandestine cargo nestled in its protective nosecone, a United Launch Alliance Atlas 5 rocket blasted off from Cape Canaveral Air Force Station at 5:05 p.m. EST. A crackling rumble rippled across the eastern coast of Florida as the rocket leapt off Launch Complex 41 and then arced out over the Atlantic Ocean, trailing a puffy white umbilical of smoke. The Atlas appeared to fly on a northerly trajectory, and officials with the NRO declared victory about 90 minutes after launch. "We have had a totally successful launch," NRO spokesman Rick Oborn said. The NRO would not identify the payload. Web posted. (2007). [Atlas-NRO mission declared a success [Online]. Available WWW: <http://www.floridatoday.com/> The Flame Trench blog [2007, December 10].]

December 11: No decision on Orion's landing

NASA has not decided whether the next generation of vehicles taking humans into space will return to Earth for a landing on water, ground or both, agency administrators said Monday. "We have not picked a landing mode for the Orion yet," said Rick Gilbrech, the agency's associate administrator for space explorations. NASA had hoped to make that decision by this month for Orion, which will replace the aging space shuttles and carry astronauts starting in 2015. Orion is planned to return Americans to the moon five years later, in 2020. As a matter of overall safety, the agency prefers the water landings. One of the main considerations is a 1,500-pound airbag system that will be part of Orion's landing design. Engineers are trying to determine how much of that system could be used for subsequent missions as part of a cost-saving measure, said Jeff Hanley, manager of NASA's Constellation program. But both he and Gilbrech emphasized crew safety is the top concern. "The crew has to walk away and survive," Gilbrech said. The announcement emerged from an update NASA provided to reporters Monday on the Constellation program. The discussion came less than two weeks after the release of a government audit that questioned how prepared NASA is to move ahead with the development of its Ares 1 rocket, which will be used to propel Orion. Web posted. (2007). [No decision on Orion's landing [Online]. Available WWW: <http://www.floridatoday.com/> The Flame Trench blog [2007, December 11].]

December 12: NASA Selects Prime Contractor for Ares I rocket avionics

NASA has selected The Boeing Company of Huntsville, Ala., as the prime contractor to produce, deliver and install avionics systems for the Ares I rocket that will launch the Orion crew exploration vehicle into orbit. The selection is the final major contract award for Ares I. The award resulted from a full and open competition. The Ares I launch vehicle is a key component of the Constellation Program, which will send humans to the moon by 2020 to set up a lunar outpost. Boeing will support the NASA design team leading the development of the Ares I avionics components. The company also will develop and acquire avionics hardware for the rocket and assemble, inspect and integrate the avionics system components on the upper stage. Components will be manufactured by the prime contractor's suppliers across the country. Final integration and checkout will take place at NASA's Michoud

Assembly Facility in Louisiana. The avionics are the "brains" of the Ares I and will provide guidance, navigation and control for the rocket until it reaches orbit. The avionics system is responsible for managing vehicle health and reporting it to flight controllers based on a sequence of timed events, such as engine shutdown and first stage separation. The instrument unit that contains the bulk of the avionics will be situated between the two-stage Ares I rocket and the adapter that joins Ares I to the Orion spacecraft. The system consists of onboard computers, flight controls, communications equipment and other instruments and software for monitoring and adjusting the rocket's speed and position during flight. Boeing will provide one instrument unit avionics ground test article, three flight test units and six production flight units to support integrated flight tests and missions through 2016. The contract type is cost-plus-award-fee and the period of performance is Dec. 17, 2007, through Dec. 16, 2016. The estimated value for support to the NASA-led design team and production of test and flight units is \$265,489,783. Additional tasks not included in the initial scope of the contract may be acquired up to a maximum value of \$420 million. Additional flight units may be obtained at an estimated cost of \$114,045,292 for as many as 12 additional units. The total estimated contract value is \$799,535,079. The Ares I first stage will be a five-segment solid rocket booster. The upper, second stage of the rocket will consist of a J-2X liquid-oxygen, liquid-hydrogen main engine, a new upper stage fuel tank, and the instrument unit avionics. NASA's Marshall Space Flight Center in Huntsville, Ala., manages the Ares Project for NASA's Constellation Program, based at NASA's Johnson Space Center in Houston. ["NASA Selects Prime Contractor for Ares I rocket avionics," **NASA Contract Release #C07-060**, December 12, 2007.]

Lockheed opens lab for Orion and Constellation

Lockheed Martin announced today the opening of its new space Exploration Development Laboratory in a ceremony dedicating the facility to support the National Aeronautics and Space Administration's (NASA) Project Orion and Constellation Program. Orion is America's next-generation human spaceflight vehicle that will transport up to six astronauts to and from the International Space Station and up to four to the moon and destinations beyond, beginning in 2015 after the space shuttle is retired. The new 10,000 sq. ft. Exploration Development Laboratory is a state-of-the-art test facility funded by Lockheed Martin and its teammates United Space Alliance and Honeywell as part of an integrated EDL network that includes facilities in Denver, CO, Glendale, AZ and Arlington, VA. The EDL network is designed to reduce cost and schedule risk by providing an early opportunity to perform systems level avionics and software testing for Orion in a realistic environment in the development phase of the program. "The Exploration Development Lab provides a tremendous benefit to NASA and the Lockheed Martin team as we begin a very robust test program for Orion," said Cleon Lacefield, vice president and program manager of Project Orion for Lockheed Martin Space Systems. "We are very excited to have the EDL ready and operational for Orion and Constellation so early in the development phase of the program. Testing in this new facility has already begun and we successfully completed the first Pad Abort 1 avionics systems test for Orion last week." The EDL in Houston is located adjacent to NASA Johnson Space Center, enabling the Lockheed Martin team to work closely with NASA's Project Orion and Constellation Program early in the development and testing phase to gain clarity on requirements. This location allows the team to take full advantage of the breadth of human space flight experience in Houston, including early involvement and collaboration with astronaut flight crew members and flight controllers. Initial testing of critical systems will be done in the EDL, including the

Guidance, Navigation, and Control (GN&C), Automated Rendezvous and Docking (AR&D), crew interfaces, and software development processes. Avionics system testing will be performed to reduce risk prior to abort flight testing at White Sands Missile Range and NASA Kennedy Space Center. EDL testing also will include system integration tests and mission tests that employ the team's "test like you fly" philosophy. The Lockheed Martin team also is working closely with NASA on a Human Engineering mockup that will be used to perform fact finding activities, such as reach zone, panel displays, internal lighting assessment, seat mockup and development, docking hatch development, crew stowage, hand controller development, and other human interface devices. Web posted. (2007). [Lockheed opens lab for Orion and Constellation [Online]. Available WWW: <http://www.spaceflightnow.com/> [2007, December 12].]

Sensors under trial in search for trouble

NASA hopes a Tuesday tanking test involving new instruments will reveal the cause of a fuel sensor malfunction and clear the way for the early January launch of Atlantis. With the shuttle fully fueled, instruments similar to those used by cable television companies will test five 100-foot circuits between the orbiter and sensors in the bottom of the external tank. "If the erroneous conditions repeat, which is what we think will happen, we can capture the location," shuttle program manager Wayne Hale said. Suspect sensor readings delayed launch attempts on Dec. 6 and Dec. 9. Hale said the troubleshooting procedure would not guarantee a fix before Jan. 2, the next possible launch date. "It could definitely be a little bit later than that," he said. The low-fuel sensors, when working properly, would shut down the shuttle's main engines in flight before the fuel ran dry. When the fuel runs out, turbines fly apart, damaging the orbiter and endangering the crew. The redundant sensors have never been activated in flight. Erratic readings from the sensors have delayed earlier flights, but cleared up during second launch attempts. The sensors worked perfectly during the past two launches. NASA engineers speculate the problem appears to be in connectors or wiring cooled by liquid hydrogen. A short-term engineering team recommended Tuesday's tanking test. A long-term team will examine other possible solutions, including relaxing the launch criteria to allow a launch even if not all four redundant sensors work. Web posted. (2007). [Sensors under trial in search for trouble [Online]. Available WWW: <http://www.floridatoday.com/> [2007, December 12].]

Shuttle tanking test scheduled next week

NASA has approved a hydrogen fuel "tanking test" with the space shuttle Atlantis external tank on the launch pad no earlier than Dec. 18 to help solve engine cutoff (ECO) sensor problems that have grounded the next International Space Station assembly mission until early January. The recommendations were presented at a regularly scheduled shuttle Program Requirements Review Board meeting at the Kennedy Space Center Dec. 11. Laboratory and bench testing of flight hardware unrelated to the upcoming mission also will be done to further explore ECO circuit vulnerabilities. Tests with Atlantis still at Pad 39A will include use of a Time-Domain Reflectometer (TDR) pulse generator spiced into the ECO-sensor electronics. The device will inject electrical pulses into the circuit to help determine specifically where an impedance abnormality may lie along the about 100 feet of wiring involved with the ECO system. If a fault is found, how to fix it will be another problem altogether. The Atlantis launch remains scheduled for no earlier than Jan. 2, but will not occur that soon because of the tests and holiday time off for Kennedy employees. From the standpoint of ECO-sensor safety philosophy, NASA is not planning to fly another

shuttle mission until the problem is solved with Atlantis, according to Wayne Hale, the shuttle program manager. This means the agency will not move the Atlantis launch with Europe's Columbus laboratory out of sequence and advance the launch of the shuttle Endeavour with the logistics module for Japan's Kibo laboratory, now set for Feb. 14, Hale said. E-mail distribution. (2007). [Aviation Week's Aerospace Daily & Defense Report Re: "Shuttle tanking test scheduled next week," [Electronic]. Vol. 224, No. 51, [December 12, 2007.].]

December 13: NASA Targets Space Shuttle Atlantis Launch on Jan. 10

NASA's Space Shuttle Program managers have targeted Jan. 10 for the launch of shuttle Atlantis' STS-122 mission to the International Space Station. "The workforce has stepped up to and met every challenge this year," said Wayne Hale, Space Shuttle Program manager at NASA's Johnson Space Center. "Moving the next launch attempt of Atlantis to Jan. 10 will allow as many people as possible to have time with family and friends at the time of year when it means the most. A lot has been asked of them this year and a lot will be asked of them in 2008." The liftoff date from NASA's Kennedy Space Center, Florida, depends on the resolution of a problem in a fuel sensor system. The shuttle's planned launches on Dec. 6 and Dec. 9 were postponed because of false readings from the part of the system that monitors the liquid hydrogen section of the tank. Atlantis' main objective during its STS-122 mission to the International Space Station is to install and activate the European Space Agency's Columbus laboratory, which will provide scientists around the world the ability to conduct a variety of life, physical and materials science experiments. ["NASA Targets Space Shuttle Atlantis Launch on Jan. 10," **NASA Media Advisory #M07-184**, December 13, 2007.]

December 14: Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-121407. **Mission: STS-122** - 24th International Space Station Flight - Columbus Module; Vehicle: Atlantis (OV-104); Location: Launch Pad 39A; Launch Date: Targeted for Jan. 10, 2008; Crew: Frick, Poindexter, Schlegel, Eyharts, Love, Melvin, Walheim; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. Shuttle Program managers decided Thursday to target Jan. 10, 2008, to launch the STS-122 mission. At Launch Pad 39A, preparations continue for a Dec. 18 tanking test to troubleshoot the engine cutoff (ECO) sensors. Test wiring has been spliced into an electrical harness in the aft main engine compartment connected with the ECO sensor system. The attached wiring leads to the interior of the mobile launcher platform where the time domain reflectometry (TDR) test equipment will be located. This wiring is being tested today. On Wednesday in the Vehicle Assembly Building, the TDR was connected to the external tank to be used for STS-123. This allowed a "dry" ambient temperature signature to be identified. Friday in Kennedy Space Center's cryogenic test bed facility, TDR instrumentation is being exposed to "wet" super-cold temperatures for identifying the signature of a cryogenic environment and calibrating the TDR equipment. Saturday, the TDR will be taken to the launch pad and installed. The GO2 battery recharge was completed and the GH2 battery recharge is planned for Friday. Aft Propulsion System and Forward Reaction Control System GHe QD leak checks and disconnects were completed. Hard window cover installation is complete. **Mission: STS-123** - 25th International Space Station Flight - Kibo, Dextre; Vehicle: Endeavour (OV-105); Location: Orbiter Processing Facility Bay 2; Launch Date: Targeted for Feb. 14, 2008; Launch Pad: 39A; Crew: Gorie, Johnson, Linnehan, Doi, Behnken, Foreman, Reisman; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter

Processing Facility bay No. 2, orbiter closeouts for Vehicle Assembly Building rollover continue. Main landing gear (MLG) brake installation is scheduled for today. ECL GN2 3-day decay test continues through Saturday. Final Ku-band self test and cable unwrap is complete. MEDS MDU display verification is complete and good. R5R vernier thruster flush, thruster drying and inspection, MLG strut seal remove-and-replace work, potable water servicing microbial testing, and ECL GN2 servicing and tophoff were completed this week. In high bay No. 1 of the Vehicle Assembly Building, booster integration activities continue. Stacking and joint closeouts are complete. S&A devices are installed and the LSCs will be installed today. In high bay No. 2E of the Vehicle Assembly Building, LH2/LO2 disc measurements are in work and will continue through the weekend. Preps for external tank mate will resume on Dec. 17 following Friday's external tank/solid rocket booster mate review. Final payload bay door closure for Orbiter Processing Facility rollover to the Vehicle Assembly Building is complete. **Mission: STS-124** - 26th International Space Station Flight - Kibo Pressurized Module, Japanese Remote Manipulator System; Vehicle: Discovery (OV-103); Location: Orbiter Processing Facility Bay 3; Launch Date: Targeted for April 24, 2008; Launch Pad: 39A; Crew: Kelly, Ham, Nyberg, Garan, Fossum, Hoshide; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 3, the orbiter PVD door functional test, fuel cells 1 and 3 functional checkout, and RMS turnaround verification preps were completed. Port MPMs were moved to the vertical position on Dec. 13. The MADS data recorder removal, replacement, and retest are scheduled for Friday. The floor plate, side panels and phenolic panels were installed this week for aft skirt joint closeout and floor plate installation. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, December 14:]

December 15: NASA can maintain 2008 launch schedule

Despite two launch delays last week, NASA could still pick up its original 2008 schedule by launching Atlantis on Jan. 10. A five-week turnaround between the launches of Atlantis and Endeavour would make that possible. "If we launched on the 10th (of January), it does not effect the ability to launch on Feb. 14," NASA spokesman Kyle Herring said. "All of that still fits." A Valentine's Day launch of Endeavour will return NASA to the schedule the agency proposed to complete the space station before the shuttle program ends in 2010. But if Atlantis' launch is delayed until Jan. 13 or 14, that would force a day-for-day slip in Endeavour's liftoff. Kennedy Space Center will be fueling Atlantis to trouble-shoot low-fuel sensors that gave undependable readings and caused delays of Dec. 6 and 9 launch attempts. Meeting the Jan. 10 launch date depends on finding and fixing the problem in the connections or wires that caused the suspect readings. ["NASA can maintain 2008 launch schedule," **Florida Today**, December 15, 2007, p 1A.]

December 16: Air Force studies lag in launch approvals

As the government and private industry look to lure new space business to offset the loss of space shuttle jobs, critics say the time and frustration companies face in getting Air Force approval to launch from Cape Canaveral is a competitive disadvantage. To date, the average time it takes a company to get a new rocket or commercial launch venture approved to blast off from Cape Canaveral is more than three years. Now, the Air Force is in the midst of a far-reaching reorganization that could trim one or two years -- and a lot of frustration -- from the approval process. The changes under consideration are part of a national effort called AFSO 21, which is short for Air Force Smart Operations. On Monday, the head of

the program will be at Patrick Air Force Base and Cape Canaveral Air Force Station meeting with leaders who are in the midst of overhauling how the 45th Space Wing functions. Brig. Gen. Susan Helms, a former astronaut who now commands the 45th Space Wing, said the reorganization effort's over-reaching goal is to make the service more efficient in an era when the war on terrorism requires more people and more money being devoted to conflicts overseas. The Air Force needs to find ways to operate more efficiently, so that the smaller forces can accomplish their most important missions and spend less taxpayer money doing it. Officials with SpaceX, a sort of test case for the wing's changing launch-approval process, are saying they are pleased with the progress so far. They also said that the way the Air Force handles SpaceX's preparations to launch a new Falcon 9 rocket from pad 40 at Cape Canaveral will be a sign for other commercial endeavors that things are changing at the government's eastern range. If all remains on track, the time it takes the wing to clear the Falcon 9 for flight may be less than two years. Falcon 9 is set to fly in late 2008 or early 2009, according to company schedules. "If the customer is ready to launch in two years, my goal is to be ready to support that," Helms said. Web posted. (2007). [Air Force studies lag in launch approvals Online]. Available WWW: <http://www.floridatoday.com/> [2007, December 16].]

December 17: Shuttle essentially grounded, despite launch date change

The space shuttle program is essentially grounded, at least temporarily, because of engine cutoff (ECO) sensor problems. NASA has slipped the launch target for Atlantis and the European Columbus module from an earlier target of Jan. 2 to no earlier than Jan. 10. But the change has far more to do with granting NASA government and contractor personnel time off during the holidays than an actual date to fly the mission. Had the Jan. 2 target remained in effect, it would have been difficult bureaucratically to officially grant holiday leave to thousands of employees at Kennedy Space Center, Johnson Space Center and Marshall Space Flight Center. No actual launch date will be set until after the results of a shuttle hydrogen fueling test set for no earlier than Dec. 18. That will begin what could be a long process to trace and fix the cause of repeated hydrogen engine cutoff sensor problems with STS-122 and other earlier missions, after which managers thought the problem corrected. No missions will be flown until Atlantis' problems are properly diagnosed and corrected, according to NASA. Engineers are looking at the "pass-through" electrical cables and connections between the external tank and Atlantis with increased suspicion because that is one area common to all ECO sensor difficulties. E-mail distribution. (2007). [Aviation Week's Aerospace Daily & Defense Report Re: "Shuttle essentially grounded, despite launch date change" [Electronic]. Vol. 224, No. 54, [December 17, 2007].]

Weldon to debut plan for shuttle

U.S. Rep. David Weldon today will outline legislation to extend shuttle flights beyond the scheduled 2010 retirement. Weldon, a Republican whose district is home to thousands of space workers, will announce his plan at 1 p.m. at the Kennedy Space Center Visitor Complex. President Bush has ordered the shuttles retired in 2010 and directed NASA to develop new rockets and spaceships to carry astronauts to the moon. The policy, however, limits NASA to its current funding plus inflation, so a new fleet won't fly until at least 2015. Weldon has said he does not want the Chinese and Russians to be the only countries capable of launching humans to space for five years or more. A statement from Weldon's office said his proposed legislation would keep up employment at KSC. Web posted. (2007). [Weldon

to debut plan for shuttle Online]. Available WWW: <http://www.floridatoday.com/> [2007, December 17].]

December 18: NASA Awards Orion Project Integration Services Contract

NASA has awarded a contract for Orion Project integration services to Barrios Technology Ltd. of Houston. The small business contract has a potential value of \$49 million with options. Work on the contract will be performed at NASA's Johnson Space Center in Houston, with additional work possible at NASA's Kennedy Space Center in Florida. Barrios will provide critical products and services supporting the Constellation Program's Orion Project, which is developing new spacecraft to transport people to the International Space Station, the moon and beyond. Barrios will support the project's business management, configuration and data management, requirements analysis and integration, and engineering and technical services. The procurement was a small business set-aside. The basic period of the indefinite-delivery indefinite-quantity, cost-plus-award-fee contract is three years. The contract's base value is not to exceed \$29 million. Two one-year extension options are available and could bring the total contract value to \$49 million. Science Applications International Corporation of Houston will be a major subcontractor. ["NASA Awards Orion Project Integration Services Contract," **NASA Contract Release #C07-061**, December 18, 2007.]

Space Florida Signs Teaming Agreement with PlanetSpace

Space Florida, the principal organization charged by the Florida Legislature with promoting and developing Florida's aerospace industry, announced today it recently entered into a Teaming Agreement with PlanetSpace, offering support as they prepare and submit their proposal in response to the NASA COTS request for proposal. As Florida's aerospace economic development organization, Space Florida is uniquely positioned to utilize the expertise within the organization, and the powers available as defined within the Space Act. Space Florida's role is to guide and facilitate all organizations that seek assistance and actively engage in developing next generation space industry business in Florida. "Space Florida has worked with PlanetSpace to facilitate their needs during the RFP proposal phase," stated Steve Kohler, President, Space Florida. "Through the Teaming Agreement we have established the parameters of support and development we can assist with for a planned future commercial launch site near Kennedy Space Center, if they win the bid." Space Florida drives aerospace economic development in Florida and serves as a catalyst for space-related business development, education, spaceport operations, research and development, workforce development, and financing. PlanetSpace, teaming with Lockheed Martin, ATK, and their financial advisor BMO, has submitted their proposal in response to NASA's COTS Phase 1 RFP to flight demonstrate cargo and crew delivery capability to the International Space Station (ISS). "Kennedy Space Center is a natural choice for PlanetSpace as our team expands its capabilities to provide not only crew and cargo delivery to the (ISS), but a low cost reliable commercial space transportation system to Low Earth Orbit and beyond," said Dr Chirinjeev Kathuria, PlanetSpace Chairman. PlanetSpace is moving ahead with plans to establish an orbital launch facility at Cape Canaveral, Florida, as well as the associated manufacturing, training, R&D, and integration facilities. PlanetSpace's proposed Florida economic activity could generate approximately 346 jobs annually with a cumulative economic impact to the State of Florida estimated to be \$313 million. The launch, training, R&D and manufacturing facilities are to fulfill delivery of PlanetSpace's commercial launch business plan and will include any potential contractual effort under a Space Act Agreement

with NASA for Commercial Orbital Transportation Services (COTS). Web posted. (2007). [Space Florida Signs Teaming Agreement with PlanetSpace]. Available WWW: <http://www.spaceflorida.gov/> [2007, December 18].]

December 19: Shuttle problem linked to bad connector

NASA on Tuesday traced fuel gauge failures in shuttle Atlantis' tank to a bad connector, and a top manager said he did not know how long it would take to replace the part or when the spaceship might fly. The erratic shuttle fuel gauges -- part of a critical safety system -- forced back-to-back launch delays this month. Until Tuesday's tanking test, NASA had been aiming for a January 10 liftoff of Atlantis with a European space station lab. "We're going to follow this trail where it leads us and we're going to solve this problem, and then we'll go fly ... whether it's January 10 or February 10 or March 10," shuttle program manager Wayne Hale said. Two of the four fuel gauges at the bottom of the external tank failed during Tuesday's test, and another did not work right. Special test equipment indicated open circuits in the connector that passes through the wall of the fuel tank, linking wiring between the gauges in the tank and Atlantis. It was too soon to know whether the shuttle would need to be returned to its hangar for repairs, Hale said. The space agency has been struggling with sporadic fuel gauge problems for two years, ever since flights resumed following the Columbia tragedy. The gauges prevent the shuttle's main engines from running on an empty tank, which could be catastrophic. Hale said it's unclear whether the same type of connector caused the previous problems. There could be a manufacturing defect or flawed design, or the part may have been installed improperly, he noted. The connector is less than 10 years old, "pretty new by shuttle standards." Web posted. (2007). [Shuttle problem linked to bad connector]. Available WWW: <http://www.cnn.com/> [2007, December 19].]

NASA must relaunch search for UFO data

A recent settlement in a four-year-long Freedom of Information Act court battle requires NASA to meticulously comb for documents about the Kecksburg UFO incident and report back periodically to the judge still overseeing the case. The lawsuit was filed in December 2003 in the District of Columbia by Leslie Kean, a freelance journalist, with financial support from the SciFi Channel, which ran a show that year titled 'The New Roswell: Kecksburg Exposed.' Kean pressed the case after she filed a Freedom of Information Act request earlier in 2003 and NASA said it couldn't find any documents related to Kecksburg. But Kean already knew the space agency, which had a program in the 1960s to recover and analyze space debris, had some documents. Stan Gordon, a well-known UFO and Bigfoot researcher with whom Kean was working, had information he got in response to a request he sent NASA in the 1990s. After NASA turned over about 1,000 pages of documents that filed to adequately address Kean's request, the case boiled over March 20 for federal Judge Emmet Sullivan, who had tried to move NASA along for more than three years. In a statement, NASA would say only that it was "in the process of conducting another records search." ["NASA must relaunch search for UFO data," Orlando Sentinel, December 19, 2007, p A23.]

December 20: Satellite will guide weapons

After a five-minute delay to avoid the International Space Station, a United Launch Alliance Delta 2 rocket carrying the fifth modernized Global Positioning System satellite launched successfully at 3:04 p.m. Thursday. Spacecraft separation occurred 68 minutes after liftoff. Ground stations picked up signals from the satellite on schedule. The satellite is expected to

begin working during the first week of January. The U.S. government provides the GPS signals to the world at no charge. Cell phones and banks use the timing signals from the satellites. The 30 GPS satellites provide military aircraft with signals for precise navigation and weapons control. "Today's launch moved us another step closer to modernizing the vital GPS constellation which provides 'combat effects' our warfighters depend on," said Brig. Gen. Susan Helms, commander of the 45th Space Wing. This was the 13th launch this year and the 79th successful Delta launch. The next GPS satellite will launch in March from the Cape. Designed to operate for 10 years, GPS satellites orbit the Earth at 11,000 miles every 12 hours, emitting continuous navigation signals. Web posted. (2007). [Satellite will guide weapons]. Available WWW: <http://www.floridatoday.com/> [2007, December 21].]

Bill Cuts NASA Exploration

The fiscal 2008 omnibus spending bill Congress plans to send to the White House for final approval by President Bush contains a modest cut to NASA's request for exploration funds, but a slight boost to overall science programs. Exploration - which includes development of the new Orion and Ares vehicles that will replace the space shuttle and eventually send astronauts back to the moon - would receive \$3.8 billion under the bill, which is \$270 million more than was enacted in 2007 but roughly \$124 million below the request. Science programs would receive \$5.577 billion, or \$61 million above NASA's request. Space shuttle operations would receive \$4 billion, and \$2.22 billion would be allotted for the International Space Station. The bill also includes \$556 million for cross-agency support programs. NASA's aeronautics directorate would receive \$625 million, \$81 million above the request, to fund aeronautical research, including work on fuel efficiency, air traffic patterns and emissions reduction. Web posted. (2007). [Bill Cuts NASA Exploration] Available WWW: <http://www.aviationweek.com/> [2007, December 20].]

December 21: NASA Extends Space Shuttle External Tank Contract

NASA has signed a \$465.7 million contract modification with Lockheed Martin, New Orleans, for space shuttle external tanks. The modification aligns and extends all activities associated with the production contract for the tanks to the launch schedule for the space shuttle's retirement date of 2010. The modification supports the agency's priorities of safely flying the space shuttle, completing construction of the International Space Station and NASA's long-term plan to return astronauts to the moon and beyond. The cost plus award fee/incentive fee contract will conclude Sept. 30, 2010, and brings the total value of the contract, awarded October 2000, to \$2.94 billion. The contract calls for the delivery of 17 external tanks to NASA. Work under the contract will be performed at NASA's Michoud Assembly Facility in New Orleans, NASA's Marshall Space Flight Center in Huntsville, Ala. and NASA's Kennedy Space Center, Fla. Lockheed Martin builds, assembles and tests the space shuttle external tanks for NASA at the Michoud facility. The external tank holds the liquid hydrogen fuel and liquid oxygen for the shuttle's three main engines. It is the largest single component of the space shuttle and the only part of the shuttle that is not reused. At 154 feet tall, the gigantic rust-colored tank is taller than a 15-story building and as wide as a silo, with a diameter of about 27.5 feet. During launch, the tank acts as the structural backbone for the shuttle orbiter and the solid rocket boosters attached to it. ["NASA Extends Space Shuttle External Tank Contract," **NASA Contract Release #C07-065**, December 21, 2007.]

Space Shuttle Processing Status Report

Space Shuttle Processing Status Report #S-122107. **Mission: STS-122** - 24th International Space Station Flight - Columbus Module; Vehicle: Atlantis (OV-104); Location: Launch Pad 39A; Launch Date: Targeted for Jan. 10, 2008; Crew: Frick, Poindexter, Schlegel, Eyharts, Love, Melvin, Walheim; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. A tanking test was conducted at Launch Pad 39A on Tuesday to aid in troubleshooting the cause of malfunctioning engine cutoff (ECO) sensors. Technicians spliced test wiring into the ECO sensor electrical system and used time domain reflectometry equipment to help locate the electrical anomaly. Results of the tanking test pointed to an open circuit in the feed-through connector wiring, which is located at the base of the tank. The feed-through connector passes the wires from the inside of the tank to the outside. Today technicians removed foam insulation covering the feed-through connector box, and workers from Lockheed-Martin will begin inspecting and testing the connector if approval is received for its removal next week. Shuttle program managers will meet on Dec. 27 to further review the data analysis from the tanking test conducted earlier this week and decide on a forward plan.

Mission: STS-123 - 25th International Space Station Flight - Kibo, Dextre; Vehicle: Endeavour (OV-105); Location: Orbiter Processing Facility Bay 2; Launch Date: Targeted for Feb. 14, 2008; Launch Pad: 39A; Crew: Gorie, Johnson, Linnehan, Doi, Behnken, Foreman, Reisman; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 2, orbiter closeouts continue for rollover to the Vehicle Assembly Building. The Ku-band antenna has been stowed and the payload bay doors are closed for the holiday. Testing of the hydraulic system is complete, and the aerosurfaces (body flaps, rudder speed brake, elevons) have been positioned for rollover. The wing leading edge sensor system flight batteries have been installed. The orbiter's main propulsion system is configured for flight. The external tank doors have been inspected and positioned to centerline for flight. Final inspection of the thermal protection system is nearing completion, and the tiles will be waterproofed during the holiday period. In high bay No. 1 of the Vehicle Assembly Building, booster integration and closeout activities are complete. The mate of the external fuel tank is targeted for Jan. 2, pending the outcome of the STS-122 ECO system analysis.

Mission: STS-124 - 26th International Space Station Flight - Kibo Pressurized Module, Japanese Remote Manipulator System; Vehicle: Discovery (OV-103); Location: Orbiter Processing Facility Bay 3; Launch Date: Targeted for April 24, 2008; Launch Pad: 39A; Crew: Kelly, Ham, Nyberg, Garan, Fossum, Hoshide; Inclination/Orbit Altitude: 51.6 degrees/122 nautical miles. In Orbiter Processing Facility bay No. 3, the remote manipulator system verification testing is finished. The hydrogen separator was removed and replaced. Workers continue preparations for installing BRI tiles, a new, stronger type of thermal tile, around the external tank doors and main landing gear doors. All three liquid hydrogen engine feedline eddy current inspections are complete. Web posted. (2007). [NASA's Space Shuttle Processing Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/shuttleoperations/status/2007/index.html> [2007, December 21.]

NASA Mars-probe delay may cost \$40M

NASA will wait two years longer than planned and spend an additional \$40 million to launch a half-billion-dollar probe to Mars because of an unspecified conflict of interest in the purchasing process, officials said Friday. The Mars Scout program had scheduled a 2011 launch of the \$475 million Mars atmospheric probe and was going to choose proposals for the mission from two research companies – one in Colorado and the other in Texas. But a “serious” conflict of interest in one of the proposals forced NASA to disband the board

formed to pick the proposal, officials said, declining to elaborate. The agency created an entirely new panel, and that caused a delay in awarding the contract, Mars Exploration Program Director Doug McCuistion said. And because Mars only comes close enough to Earth to launch probes every 26 months, NASA had to postpone the mission from 2011 to 2013, he said. ["NASA Mars-probe delay may cost \$40M," Orlando Sentinel, December 22, 2007, p A3.]

Kennedy Space Center Celebrates 2007 Achievements

The workers at NASA's Kennedy Space Center can reflect on 2007 as a year that celebrated the agency's rich history while adding new chapters to it. In July, Kennedy marked the 45th year as NASA's launch operations center. Its workers and managers focused on the center's diverse missions, including launching the space shuttle and spacecraft atop expendable launch vehicles, gearing up for the Constellation Program and working toward completing the International Space Station. Even though a hailstorm caused a late start, Kennedy launched three space shuttle missions this year. Atlantis' STS-117 mission brought the second and third starboard truss segments and another pair of solar power arrays to the station in June. In August, shuttle Endeavour's STS-118 mission installed a third starboard truss segment, the S5 truss, and shuttle Discovery's STS-120 mission delivered the Italian-built U.S. Harmony connecting module in October. Kennedy's employees also can be proud of the four expendable launch vehicles that lifted off this year. This includes three Cape Canaveral launches: Dawn's voyage through the inner solar system that began in September, Phoenix's journey to examine soil on Mars that launched in August, and February's THEMIS mission to study Earth's auroras. Kennedy also supported the AIM mission in April, which launched from Vandenberg Air Force Base in California to learn about high cloud formations. Work at Kennedy for the Constellation Program began moving from concept to construction. This included installing the new lightning protection system at Launch Pad 39B to support future launches of the Ares rocket and Orion spacecraft. Also, a developmental heat shield for the Orion crew exploration vehicle arrived in November at the center and will undergo testing and evaluation. Kennedy Space Center made advances on the "green power" front. NASA and BMW teamed up to test a fleet of liquid hydrogen-fueled cars that were used throughout the center during an eight-week period in the spring. And in December, NASA and Florida Power and Light signed a memorandum of understanding to study potential renewable energy projects that would be done at the center. Another first for Kennedy was hosting the World Space Expo in November. The four-day event brought together thousands of people from all over the world to celebrate the past, present and future of space exploration. With at least five space shuttle flights and 10 expendable launch vehicle missions, Kennedy's work force is preparing for an aggressive launch schedule in 2008 while continuing construction and other transition work for the new Constellation Program. ["Kennedy Space Center Celebrates 2007 Achievements," **NASA News Release #61-07**, December 21, 2007.]

December 26: Astronaut suffers loss in space

International Space Station Flight Engineer Daniel Tani dealt with some difficult and unexpected news last Wednesday, when he learned that his 90-year-old mother Rose Tani died after her car was struck by a train. Tani is working with the Expedition 16 crew, while living aboard the space station, where he has been since the STS-120 crew brought him on Oct. 25. Michael Coats, director of NASA's Johnson Space Center, Houston, released a statement the same day of Rose Tani's death. "The entire NASA family grieves with Dan on

the unexpected loss of his mother yesterday," he said. "We will work to provide Dan and his family with any assistance that they need during this difficult time." NASA offered Tani a break from his duties on the space station, but he was working as normal on Thursday. Tani was scheduled to return to Earth with the STS-122 crew on the same day that the accident occurred last week, but the STS-122 crew has not yet launched due to fuel sensor problems on Atlantis' external fuel tank that NASA is working to fix in time for a rescheduled launch date of Jan. 10. Web posted. (2007). [Astronaut suffers loss in space]. Available WWW: <http://www.chron.com/> [2007, December 27].]

NASA doing its homework

NASA plans to launch twin spacecraft from Cape Canaveral in 2011 on a mission to study the moon's gravitational field and interior. The flight is one of a series NASA intends to launch as the agency prepares to send U.S. astronauts back to the moon and ultimately to Mars and other celestial destinations. The Gravity Recovery and Interior Laboratory – or GRAIL – spacecraft will fly in formation around the moon for several months, measuring variations in mass from one place to another on the lunar surface. The variations will enable scientists to determine how much gravitational force is being exerted and the relative density and amount of material located in any one place. The spacecraft, which will be built by Lockheed Martin, also will carry cameras that will enable middle school students to take high-resolution digital images of the moon's surface as part of an interactive lunar studies program. Former NASA astronaut Sally Ride is leading the educational effort. ["NASA doing its homework," **Florida Today**, December 26, 2007, p 3B.]

December 28: Delay likely for Atlantis launch, NASA says

NASA engineers are optimistic that they are "days or weeks" from fixing the technological glitch delaying space shuttle Atlantis' mission to the international space station -- but acknowledge that it won't launch as soon as they'd hoped. Wayne Hale, manager of the space-shuttle program, told reporters Thursday that before a launch date is set, engineers must check out and repair an oversized electrical socket on the outside of Atlantis' fuel tank. "This is probably going to not allow us to fly on Jan. 10," Hale said. "We're probably going to be a little bit after that." Two weeks ago, Hale had described Jan. 10 as the earliest likely launch date. That will be delayed by days, if not weeks, he said. Atlantis has been stuck on the launchpad since Dec. 6, when fuel-gauge-like sensors at the base of its enormous external fuel tank failed. The sensors serve as a backup safety system to shut down a shuttle's three main engines before their fuel supply runs out. Running the engines on a dry tank could lead to catastrophe. The current "no earlier than" Jan. 10 launch date was announced before engineers had a good idea of what might be needed to fix the problem, which has popped up intermittently during the past two years. But they are now confident that the problem lies in electrical connectors that link wires from the sensors to the shuttle's computers. The cables connect through the fuel tank's wall via a plug like device with pins, similar to a large computer connection. Technicians last weekend removed foam insulation on the outside of the tank, exposing the plug. On Saturday, engineers will remove the connector's central plug and exterior wiring for tests, Hale said. If it turns out that the internal connector is at fault, the fix will almost certainly force NASA to roll the shuttle off the launch pad and back to the Vehicle Assembly Building at Kennedy Space Center, adding to the launch delay. Hale was adamant that, while his goal is to fly Atlantis as soon as possible, NASA first had to be sure it had found the "root cause" of the problem and made the right fix before a launch is scheduled. Web posted. (2007). [Delay likely for Atlantis

launch, NASA says]. Available WWW: <http://www.orlandosentinel.com/> [2007, December 28].]

December 29: ET-125 Connector removed to kick start major repair effort
Engineers have removed the external LH2 Feed-through connector from ET-125, beginning the next stage of the major troubleshooting that has caused the delay to STS-122's launch. Moving forward with repair Option A, engineers hope that subsequent testing will confirm the ECO (Engine Cut Off) system anomaly is specific to the external elements of the connector, allowing work to be completed at the pad, thus avoiding rollback. Thursday's PRCB (Program Requirements Control Board) meeting approved the go-forward plan of 'Option A' - which involves the removal of the external connector elements for testing, to be replaced by a 'cherry picked' replacement. A tanking test may follow, with timelines showing the completion of work is targeted for the second half of January. The stack will then have to be placed back into a launch posture, with estimates of a re-aligned launch date sometime in late January/early February. Although four shuttle departments recommended 'Option B' - which calls for rollback and the replacing of ET-125 with ET-126, Shuttle manager Wayne Hale decided to continue with Option A, in the hope that testing will confirm the problem relates only to the external connector elements. Web posted. (2007). [ET-125 Connector removed to kick start major STS-122 repair effort]. Available WWW: <http://www.nasaspaceflight.com/> [2007, December 29].]

NASA soars in space, stumbles on ground

Up, down and strange. That's the kind of year it was for NASA in 2007. It started with the felony arrest in February of a NASA astronaut on attempted kidnapping charges and included a murder-suicide at Johnson Space Center in Houston. A train carrying highly flammable shuttle booster segments derailed on its way to Kennedy Space Center in early May, and there were unsubstantiated allegations in July of heavy drinking by astronauts before launch. And there was an astounding recovery from a violent act of nature – a freak hailstorm that severely damaged an external tank on shuttle Atlantis. Atlantis and seven astronauts flew in June, hauling a solar wing truss segment to the international Space Station. The June 8 liftoff started a string of three consecutive on time shuttle launches, and NASA was on a roll until recurring problems with low-level fuel sensors forced the agency to postpone the planned December launch of Atlantis and Europe's Columbus laboratory. Other top space success stories: NASA astronaut Sunita "Suni" Williams set a record for the longest spaceflight by a woman – 195 days – and became the first astronaut to run a marathon in orbit. U.S. astronaut Michael Lopez-Alegria set an American space endurance record – 215 days – and the most total spacewalking time. Astronaut Peggy Whitson became the first female commander of the space station outpost and set a record for the most spacewalking time accumulated by a woman. Astronaut Barbara Morgan – who served as backup for Christa McAuliffe, the Teacher-in-space – flew on a station assembly mission in August. Veteran pilot Pam Melroy and station skipper Whitson became the first women to command space missions simultaneously during NASA's third and final shuttle flight of the year. NASA marked its 50th anniversary on October 1, 1957. And Kennedy Space Center began converting a shuttle launch complex for the Ares 1 rocket. ["NASA soars in space, stumbles on ground," **Florida Today**, December 29, 2007, p 1B & 4B.]

December 30: Lofty goals, missions afar will cram space agenda

The coming year is going to be a full one on Florida's Space Coast. There will be a construction boom that will triple the size of the International Space Station. Then there are the missions to Mercury, the moon and Mars. There will be 16 rocket launches. In addition, there will be a half-dozen NASA shuttle flights, including a fifth and final servicing call on the Hubble Space Telescope. If all the scheduled shuttle launches occur this year, they would be at a rate not seen since before the 2003 Columbia accident. If all goes well, NASA would have a real chance to complete construction of the station – a project that involves 100,000 people from 15 nations on four continents – as scheduled in 2010. NASA space operations Chief Bill Gerstenmaier said, "It's going to be a great time for the space station." ["Lofty goals, missions afar will cram space agenda," **Florida Today**, December 30, 2007, p 1A & 8A.]

APPENDIX A

2007 Launch History

NASA Space Shuttle Missions

| | | | |
|--------------|------------------------|--------------------------|----------------------------|
| Mission | STS-117 | STS-118 | STS-120 |
| Vehicle | Atlantis | Endeavour | Discovery |
| Payload | S3/S4 Truss | S5 Truss | Node 2 Harmony |
| Launch Date | June 8, 2007 LC-39A | August 8, 2007 LC-39A | October 23, 2007 LC-39A |
| Landing Date | June 21, 2007 EAFB | August 21, 2007 KSC | November 7, 2007 KSC |

Web posted. (2007). [Space Shuttle Launch Mission Archives]. Available WWW:
<http://www.nasa.gov/centers/kennedy/shuttleoperations/archives/2005.html> [2008, January 31].]

NASA Expendable Launch Vehicle Missions

| | | | | |
|-------------|-------------------|----------------|---------------------|--------------------|
| Mission | THEMIS | AIM | Phoenix Mars Lander | Dawn |
| Vehicle | Delta II | Pegasus | Delta II | Delta II |
| Launch Date | February 17, 2007 | April 25, 2007 | August 4, 2007 | September 27, 2007 |
| Launch Site | CCAFS, 17B | VAFB | CCAFS, 17B | CCAFS, 17B |

Web posted. (2007). [Expendable Launch Vehicle Mission Archives]. Available WWW:
<http://www.nasa.gov/centers/kennedy/launchingrockets/archives/2007.html> [2008, January 31].]

Other Eastern Range Launch Missions

| | | | |
|-------------|-----------------|---------------|------------------|
| Mission | Orbital Express | NROL | NAVSTAR |
| Vehicle | Atlas 5 | Atlas 5 | Delta 2 |
| Launch Date | March 8, 2007 | June 15, 2007 | October 17, 2007 |
| Launch Site | CCAFS, 41 | CCAFS, 41 | CCAFS, 17A |

| | | | |
|-------------|-------------------|-------------------|-------------------|
| Mission | DSP | NROL | NAVSTAR |
| Vehicle | Delta 4 Heavy | Atlas 5 | Delta 2 |
| Launch Date | November 11, 2007 | December 10, 2007 | December 20, 2007 |
| Launch Site | CCAFS, 37B | CCAFS, 41 | CCAFS, 17A |

Web posted. (2007). [Eastern Range Launch History]. Available WWW:
<http://www.patrick.af.mil/shared/media/document/AFD-061027-008.pdf> [2008, January 31].]

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