

NASA/TM—2009—214758



Chronology of KSC and KSC Related Events for 2008

*Elaine E. Liston
KSC Library Archives
Kennedy Space Center, Florida*

February 2009

NASA STI Program ... in Profile

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NASA Center for AeroSpace Information
7115 Standard Drive
Hanover, MD 21076-1320

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*Elaine E. Liston
KSC Library Archives
Kennedy Space Center, Florida*

National Aeronautics and
Space Administration

*Kennedy Space Center
Kennedy Space Center, FL 32899-0001*

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Hanover, MD 21076-1320
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FOREWORD

This 2008 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@nasa.gov, or (321) 867-1515.

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JANUARY

January 2: NASA spending bill requires work force strategy report to Congress

The fiscal 2008 omnibus spending bill that Congress plans to send to President Bush for final approval requires NASA to deliver a report within 90 days of the bill's enactment on how it plans to minimize job losses as it transitions from the space shuttle to the successor Orion and Ares vehicles. The report must describe specific initiatives NASA has undertaken, or plans to undertake, "to maximize the utilization of existing civil service and contractor work forces at each of the affected centers," efforts to distribute work "equitably" between centers, new work being secured for the affected centers, and "overall projections of future civil service and contractor work force levels at the affected centers." E-mail distribution. (2007). [Aviation Week's Aerospace Daily & Defense Report Re: "NASA spending bill requires work force strategy report to Congress," [Electronic]. Vol. 225, No. 1, [January 2, 2008].]

NASA awards Orion integration support contract

Barrios Technology Ltd. of Houston will perform integration services for NASA's Orion project under a three-year small business contract, NASA announced Dec. 18, 2007. The contract has a base value of \$29 million but could be worth up to \$49 million with two one-year options. Barrios will provide critical products and services supporting development of the Orion vehicle, which will transport astronauts 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. E-mail distribution. (2007). [Aviation Week's Aerospace Daily & Defense Report Re: "NASA awards Orion integration support contract," [Electronic]. Vol. 225, No. 1, [January 2, 2008].]

NASA extends external tank production through 2010

NASA has signed a \$465.7 million contract modification with Lockheed Martin extending all activities associated with the production of space shuttle external tanks to 2010, when the shuttle is slated to retire. The cost-plus-award fee/incentive fee contract brings the total value of the original October 2000 contract to nearly \$3 billion, covering 17 external tanks. Lockheed Martin produces the tanks at the Michoud Assembly Facility in New Orleans. E-mail distribution. (2007). [Aviation Week's Aerospace Daily & Defense Report Re: "NASA extends external tank production through 2010" [Electronic]. Vol. 225, No. 1, [January 2, 2008].]

A rose headed for orbit

A rose named after the Tournament of Roses is scheduled to be on the next mission of the NASA space shuttle Atlantis. The rose was grown in the Wrigley Gardens at the Tournament of Roses Association headquarters in Pasadena, and then dried in preparation for the shuttle mission. The rose was selected by Bayer Advanced Garden Expert Lance Walheim, and will be one of the personal items taken into space on STS-122 by his brother, astronaut Rex Walheim, who will be the lead spacewalker during the mission. Lance Walheim is also the author of more than 30 gardening books, including *Roses for Dummies*. Web posted. (2008). [A rose headed for orbit [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, January 2].]

January 3: NASA managers to review STS-122 launch schedule

NASA managers will review prospects for launching space shuttle Atlantis this month at a teleconference Jan. 3, as analysis continues on the electrical connector that is believed to be responsible for the intermittent problems that postponed a launch attempt in December. Wayne Hale, the space shuttle program manager, was scheduled to brief reporters after the regular Program Requirements Control Board (PRCB) teleconference concludes Jan. 3. Among agenda items for the PRCB this week are the status of planning to replace the connector that passes through the wall of

the shuttle's external tank to the engine cutoff (ECO) sensors that signal when the liquid hydrogen levels near depletion. A Dec. 18 tanking test traced the problem to the connector, which was removed from the Atlantis external tank early on Dec. 30 and sent to Marshall Space Flight Center for testing. A replacement incorporating modifications is being prepared, and managers were to discuss its installation during the PRCB telecom. NASA said Jan. 2 that if the managers approve installation of the replacement, the work will be done at Kennedy Space Center's Launch Complex 39A "over the next few days." However, the shuttle program has dropped a Jan. 10 "placeholder" launch date, and it is uncertain whether managers will try to set a new date during the Jan. 3 telecon. E-mail distribution. (2007). [Aviation Week's [Acrospace Daily & Defense Report](#) Re: "NASA managers to review STS-122 launch schedule" [Electronic]. Vol. 225, No. 2, [January 3, 2008.].]

Shuttle troubles hang on into '08

NASA still doesn't know when it will be able to launch shuttle Atlantis – or when it will be able to send off the four other missions that are scheduled to go to the international space station and the Hubble telescope this year. At a news conference Thursday, engineers said that Atlantis, whose Dec. 6 launch was scrubbed because of problems with fuel sensors, now won't launch before Jan. 24 and more likely sometime in February. That, in turn, will delay the scheduled Valentine's Day launch of Endeavour until sometime in March at the earliest – and could have a domino effect on the three other launches scheduled for later in the year. Deputy shuttle-program manager John Shannon told reporters that until the fuel-sensor problem plaguing Atlantis is fixed, NASA can't determine who subsequent missions will be affected. But he said he remained confident that the agency will be able to finish building the space station, fix the Hubble telescope and retire the shuttle by 2010. ["Shuttle troubles hang on into '08," [Orlando Sentinel](#), January 4, 2008, p A12.]

Zero Gravity signs \$25M deal with NASA

NASA has signed a \$25 million, five-year deal with a private company that will provide weightlessness training and research flights. "The Zero Gravity Corporation flights will be complementary to the flights NASA already has," NASA spokesman Tabatha Thompson said. Zero-G, based in Las Vegas, makes weekend recreational flights from different locations across the United States, including Kennedy Space Center. NASA said its contract calls for between one and 20 flight weeks of five days during the year. Additionally, weekend flights from KSC will not be interrupted. "We will continue public flights from KSC as scheduled," said Peter H. Diamandis, chief executive officer and co-founder of Zero-G. "The additional NASA research flights will initiate from Johnson Space Center or Glenn Research Center in Ohio." Flights now scheduled from KSC include ones on Jan. 19 and 20 and Feb. 23. ["Zero Gravity signs \$25M deal with NASA," [Florida Today](#), January 4, 2008, p 1C.]

January 4: Shuttle managers set an ECO sensor repair

NASA managers have authorized technicians to replace an electrical connector suspected as the cause of intermittent failures of engine cutoff (ECO) sensors in space shuttle Atlantis' liquid hydrogen tank, but have not yet set a firm launch date for the STS-122/1E International Space Station (ISS) assembly mission. At the regular weekly teleconference of the Program Requirements Control Board (PRCB) Jan. 3, shuttle program managers cleared plans to install a modified connector leading through the wall of the big external tank to the ECO sensors inside that are designed to ensure the orbiter's main engines shut down safely. In parallel, engineers at Marshall Space Flight Center will run bench tests on the modified connector to characterize its performance when exposed to liquid hydrogen. John Shannon, deputy shuttle program manager, said the testing work would take about two weeks, while the installation of the modified connector at the Kennedy Space Center launch pad should be finished by Jan. 10. After that, thermal protective ablator material and overlying foam insulation must be reapplied to the tank. Shannon said he asked the relevant NASA organizations to protect for a Jan. 24 launch date, but conceded that would be "a stretch." A more

likely date would be in the Feb. 2-7 timeframe, he said, pending approval by range officials in Florida and concurrence from the station program, which must coordinate the shuttle launch with a planned Russian Progress launch Feb. 7 and other activities in orbit. Problems with the sensors forced NASA to postpone a planned December 2007 launch of the STS-122/1E mission, which is to deliver Europe's Columbus laboratory module to the ISS. After a tanking test pinpointed the connector as the likely source of the electrical problem, crews removed it Dec. 30 and sent it to Marshall for analysis. E-mail distribution. (2007). [Aviation Week's Aerospace Daily & Defense Report Re: "Shuttle managers set an ECO sensor repair" [Electronic]. Vol. 225, No. 2, [January 3, 2008].]

NASA says shuttle Atlantis won't lift off before Jan. 24

NASA still doesn't know when it will be able to launch shuttle Atlantis -- or when it will be able to send off the four other missions that are scheduled to go to the international space station and the Hubble telescope this year. At a news conference Thursday, engineers said that Atlantis, whose Dec. 6 launch was scrubbed because of problems with fuel sensors, now won't launch before Jan. 24, and more likely sometime in February. That, in turn, will delay the scheduled Valentine's Day launch of Endeavour until sometime in March at the earliest -- and could have a domino effect on the three other launches scheduled for later in the year. Deputy shuttle-program manager John Shannon told reporters that until the fuel-sensor problem plaguing Atlantis is fixed, NASA can't determine how subsequent missions will be affected. But he said he remained confident that the agency will be able to finish building the space station, fix the Hubble telescope and retire the shuttle by 2010. To get Atlantis off the ground, NASA engineers need to fix the engine cutoff sensors at the base of the shuttle's external fuel tank, whose failure forced back-to-back launch postponements last month. They think soldering together connectors on a plug that links the wires from the fuel sensors inside the tank to the shuttle's computer will resolve the problem. But they still must do tests to make sure that the fix will work. Assuming it does, Shannon said, NASA would try to get Atlantis ready for a Jan. 24 launch. Instead, he said, it's more likely that the launch will be Feb. 2 at the earliest, or Feb. 7 if managers decide to conduct another fueling test. But those dates conflict with the scheduled Feb. 7 docking at the space station of an unmanned Russian Progress resupply ship. Under current rules, Progress and the shuttle can't be at the station simultaneously because of the workload that imposes on the station's three-person crew. As a result, said space-station-program manager Mike Suffredini, NASA might have to delay the Atlantis launch until later in February. The remaining scheduled launches for 2008 include Discovery on April 24, to take the Japanese-made Kibo laboratory to the space station; Atlantis on Aug. 7, to repair the Hubble Space Telescope; and Endeavour on Sept. 18. NASA needs at least five weeks between launches to ready another shuttle, so any delays early in the year could affect the later launches. Atlantis was poised to lift off Dec. 6 to carry a European-built laboratory named Columbus to the space station when the fuel sensors failed late in the countdown. The problem recurred during a second launch attempt, prompting NASA to conduct a fueling test just before Christmas. Web posted. (2008). [NASA says shuttle won't lift off before Jan. 24 [Online]. Available WWW: <http://www.orlandosentinel.com/> [2008, January 4].]

NASA Astronaut at Daytona Speedway Event for 50th Milestones

Astronaut Andrew Feustel will participate in NASCAR's Preseason Thunder Fan Fest at Daytona International Speedway, Fla., on Tuesday, Jan. 8. The appearance is in celebration of NASA's 50th anniversary and the Daytona International Speedway's 50th running of the Daytona 500 in 2008. Feustel will ride around the track, or take "hot laps," in an official track vehicle. Immediately afterward, he will be available for media interviews behind the Pit Road wall. Reporters interested in participating in these interviews should contact John Yembrick at 202-358-0602 by 6 p.m. EST on Monday, Jan. 7. To make arrangements to cover the day's activities, please request access by faxing a letter from an assignment editor to the speedway at 386-947-6798. Letters must be received by 4:30 p.m. on Monday, Jan. 7. The schedule of events includes: (All times Eastern); 9 a.m. - Sprint FanZone opens; 1 p.m. - NASA Television segment with Feustel, Sprint FanZone; 5:30 p.m. -

Feustel does "hot laps" around the speedway; 6 p.m. - Media interviews with Feustel behind the wall on Pit Road. Technology developed for the space program has helped NASCAR drivers increase their performance and stay safe over the years. They wear cooling suits similar to what astronauts wear during a spacewalk. Foam that NASA developed for aircraft seats protects racecar drivers' necks in crashes. In addition to participating in the fan festival, NASA will fly three Daytona 500 flags aboard an upcoming space shuttle flight. Speedway officials plan to wave one of the flags to begin the 2008 installment of the Daytona 500, while another will be presented to the winning driver. NASA will keep the third. Feustel will fly on the space shuttle mission to the Hubble Space Telescope. The mission will extend and improve the observatory's capabilities through 2013. Launch is targeted for August 2008. ["NASA Astronaut at Daytona Speedway Event for 50th Milestones," **Media Advisory #M08-02**, January 4, 2008.]

January 6: Manchester artist's work will hang at Kennedy Space Center

Rick Costello is an artist who paints the galaxy in acrylic and oil, each painting featuring stars, the Earth and the moon. Each painting is astronomically correct: The celestial objects are painted to scale. So far, he has amassed a collection of 16 paintings, including one recently commissioned by NASA that will be hung in the permanent exhibit at the Kennedy Space Center. "It was a really great moment for me," Costello said recently, recalling when NASA agreed to use his work. Web posted. (2008). [Manchester artist's work will hang at Kennedy Space Center [Online]. Available WWW: <http://www.boston.com/> [2008, January 6].]

January 7: Missed Opportunity

NASA will skip a launch window for Mars for the first time in a decade in 2011 because of a delay in the selection process for the next Mars Scout mission forced by an undisclosed conflict of interest on the board that evaluates Scout mission proposals. The conflict was discovered in November, when NASA reviewed concept study proposals from the two Scout mission finalists. The evaluation board of members chosen from NASA, industry and the science community was disbanded and an entirely new board formed. Although the resulting delay was only four months, it left the program without enough schedule reserve for a safe launch in 2011, says Doug McCuiston, Mars exploration program director at NASA headquarters in Washington. Launch opportunities to Mars occur only every 26 months, making 2013 the next available slot. ["Missed Opportunity," **Aviation Week & Space Technology**, January 7, 2008, p 14.]

January 8: NASA Announces Details of Hubble Servicing Mission

NASA scientists and a space shuttle astronaut today outlined details of a challenging mission that will repair and upgrade the Hubble Space Telescope in 2008. The Hubble servicing mission, designated STS-125, will equip the orbiting observatory with far greater capabilities than ever had before to explore the nature and history of our universe. Space Shuttle Atlantis is scheduled to lift off in August with a crew of seven astronauts and a cargo of equipment, tools and new instruments on the fifth and final mission to service the venerable telescope, which orbits 350 miles above the Earth. The shuttle also will carry an IMAX camera to record the historic mission for a film scheduled for release in 2010. At the winter meeting of the American Astronomical Society, Alan Stern, associate administrator for the Science Mission Directorate at NASA Headquarters, Washington, said, "Hubble is, without exaggeration, a national treasure, and all of NASA is looking forward to seeing it receive this tune up and upgrade. I think Americans are going to be excited when they see the results of this exciting shuttle mission flower into new discoveries about the solar system and the larger universe we live in. And let's face it; it doesn't get much more exciting than sending a team of astronauts and sophisticated high-tech instruments to make the Hubble better than it ever was before." The 11-day shuttle mission features five spacewalks. During those spacewalks, astronauts will install two powerful new science instruments, a new set of the gyroscopes that help stabilize the telescope, and batteries and thermal blankets to extend Hubble's operational life until at least 2013. Also, if all goes well, a degrading Fine Guidance Sensor unit, one of three aboard Hubble, will be

replaced with a refurbished unit to help maintain the telescope's ability to point and focus on astronomical objects throughout the universe. "As both an astronaut and an astronomer, the opportunity to go back to Hubble is more than a dream come true," said John Grunsfeld, who will be the mission's lead spacewalker. "This mission promises to be quite challenging. NASA has put together the most experienced Hubble crew ever, with three Hubble veterans. The crew and mission team are in full throttle training, looking forward to launch and the hard work of servicing Hubble." Astronauts will attempt the first ever on-orbit repair of two existing instruments - the Space Telescope Imaging Spectrograph (STIS) and the Advanced Camera for Surveys (ACS). The ACS was the most-used instrument on the telescope until its failure last January after five years of operations. The STIS - the most sophisticated spectrograph ever on Hubble - took detailed pictures of celestial objects and separated light into its components to diagnose the physical conditions of galaxies, stars, planets and nebulae. The new instruments to be installed on the telescope are the Cosmic Origins Spectrograph, or COS, and the Wide Field Camera 3, or WFC3. Among its many goals, COS will probe the "cosmic web." This large-scale structure of the universe has its form determined by the gravity of dark matter and can be traced by galaxies and intergalactic gas. COS also will explore how this web has evolved over billions of years and the role it plays in the formation and evolution of galaxies. The WFC3 will be Hubble's first "panchromatic" camera, providing wide field-of-view and remarkably sharp images over a wide range of colors to supplement other imaging capabilities aboard the Hubble. "Our goal for this mission is to leave Hubble at the apex of its scientific capabilities," said David Leckrone, Hubble senior project scientist at NASA's Goddard Space Flight Center, Greenbelt, Md. "Our two new instruments, plus the hoped-for repairs of STIS and ACS, will give astronomers a full 'tool box' with which to attack some really profound problems, ranging from the nature of dark matter and dark energy, to the chemical composition of the atmospheres of planets around other stars." Scientists are confident that some of Hubble's greatest discoveries are yet to come. "With the new capabilities we expect to have after this shuttle servicing mission, I fully expect Hubble's most impressive accomplishments to lie in its future, eclipsing even its well-known past successes," Stern said. ["NASA Announces Details of Hubble Servicing Mission," **NASA News Release #08-001**, January 8, 2008.]

ASRC Aerospace Contributes to NASA's Constellation System

ASRC Aerospace Corporation is providing design and development engineering, systems engineering, configuration management, three dimensional modeling and visualization, and project management services to the National Aeronautics and Space Administration's (NASA) Exploration Systems Mission Directorate (ESMD), Constellation Program (CxP) Ground Operations (GO) Project for processing the Ares 1/Orion vehicles at the Kennedy Space Center (KSC). NASA recently awarded ASRC Aerospace a three-year extension to the original five-year University-affiliated Spaceport Technology Development Contract (USTDC). As part of this contract ASRC Aerospace is contributing to the design, development and activation of NASA's ground support equipment and systems used for processing the Constellation Program elements at KSC. "Our team is providing personnel who can introduce lessons learned through program management, systems engineering, design and operations experience from previous human space flight development programs," explained Dick Lyon, Vice President of Florida Operations for ASRC Aerospace. "The company is assisting KSC in concept development and oversight of processing facilities and systems, command and control systems, mechanical structures, fluids systems, communications and data systems, and logistics systems." The primary focus for ASRC Aerospace is to assist KSC in the design, development, implementation and sustaining engineering of those previously mentioned systems and facilities. The design effort will continue through the Ares 1/Orion project and into the Ares V project development phase. Web posted. (2008). [ASRC Aerospace contributes to NASA Constellation System [Online]. Available WWW: <http://www.businesswire.com/> [2008, January 6].]

January 9:

Aeronautics Associate Administrator Lisa Porter Is Leaving NASA

NASA Associate Administrator for Aeronautics Lisa Porter is leaving NASA to be the Director of the Intelligence Advanced Research Projects Activity (IARPA). Her last day at NASA will be 1 February 2008. Jaiwon Shin will be the acting AA for Aeronautics. Web posted. (2008). [Aeronautics Associate Administrator Lisa Porter is Leaving NASA [Online]. Available WWW: <http://www.spaceref.com/> [2008, January 9].]

January 10: Team confident of shuttle sensor fix

A NASA-contractor team is on the verge of solving a sensor problem that grounded shuttle Atlantis and brought a halt to International Space Station construction. Working long hours through the holidays, the team employed a sensor repair that solved similar trouble with Atlas and Titan rockets in the mid-1990s. Atlantis, as a result, should be flying in short order. "I think the majority of the community is very confident that we've found where the problem is and that we've got the right fix," said NASA electrical engineering chief Stephen Swichkow. "It worked for the Atlas." NASA scrubbed two Atlantis launch attempts in December when a sensor system on its external tank failed during fuel-loading operations. The low-level fuel sensors provide a back-up means of shutting down the shuttle's three main engines, which are typically turned off by flight computers at a predetermined time and velocity. Mounted on a bracket inside the bottom of the 15-story tank, the four sensors register liquid hydrogen levels and signal the computers when the amount remaining reaches low levels. They are intended to make sure the engines don't drain the tank dry with potentially catastrophic consequences. If the sensors inaccurately register low levels, a premature engine shutdown -- and an unprecedented emergency landing attempt -- could follow. A failure to detect low levels could result in an engine continuing to run without fuel, potentially sparking a fire or explosion. Engineers think supercold liquid hydrogen caused wiring within the connectors to contract. Frozen condensation then formed, blocking electrical signals between flight computers and the sensors. An apparent solution came to light when engineers from United Launch Alliance noted that the Centaur upper stages of Atlas and Titan rockets had similar trouble in late 1994. In those cases, technicians soldered wires and pins within connectors to ensure electrical connectivity within the Centaur propellant system. The idea of soldering wires within the shuttle connectors was pitched, and then NASA enlisted a small team from ULA: Atlas electrical manager James Whelan and technicians Bob Arp and Kevin Wyckoff -- veterans who all had done soldering work on Centaur connectors. The shuttle connectors proved difficult to work with due to their diminutive size and the close proximity of pins within the connectors. "It was very exacting. These pins are extremely close together, and you have to have an extremely steady hand and a very proficient technician to do this work," said Kenny Reaume, an electrical systems engineer with Lockheed Martin, which makes Atlas and Titan rockets as well as shuttle external tanks. "I can't understate that. It's certainly delicate work, and those guys impressed me." The reworked shuttle connectors will be installed this week in the Atlantis external tank. Swichkow said NASA has "a high degree of confidence" that the sensor system now will work. "I couldn't be more excited about it," Reaume said. "It's been the highlight of my career getting to work on something like this," he added. "To be part of a fix -- if it does indeed cure it -- it's going to be something I'll be telling my grandkids." Web posted. (2008). [Team confident of shuttle sensor fix [Online]. Available WWW: <http://www.floridatoday.com/> [2008, January 10].]

NASA sets new February 7 launch date for shuttle

NASA set February 7 as the new date for a launch on a space shuttle of Europe's Columbus laboratory to the International Space Station, officials said on Thursday. The rescheduled date depends on whether the flight of a Russian cargo ship, scheduled for the same day, can be changed. The station can support only one docked vehicle at a time. Two attempts last month to launch Columbus in the loading bay of the space shuttle Atlantis were canceled due to problems with an emergency engine cutoff system. Columbus will be Europe's first permanent space laboratory. Last week, NASA optimistically reserved January 24 for the lab's launch, but work to replace and analyze

suspect components will bump the flight to February, said NASA spokesman Steve Roy. So far, inspections, X-rays and pressure tests of the device believed to be the cause of Atlantis' electrical problem have turned up nothing, Roy added. Engineers are trying to determine why sensors in the shuttle's fuel tank relayed false readings during launch attempts on December 6 and December 9, as well as during a fueling test later in the month. The sensors are part of a backup system to shut down the shuttle's three hydrogen-burning main engines in case the tank runs out of fuel due to a leak or other problems during the 8.5-minute climb to orbit. Running the engines dry could trigger a catastrophic explosion. NASA believes the problem is with a three-part connector plate in the wall of the shuttle's tank. The suspect device was removed and sent to the Marshall Space Flight Center in Huntsville, Alabama, for analysis. Web posted. (2008). [NASA sets new February 7 launch date for shuttle [Online]. Available WWW: <http://www.reuters.com/> [2008, January 10].]

NASA's Moon Mission Spacecraft Undergoing Tests

NASA's next mission to Earth's closest astronomical body is in the midst of integration and testing at NASA's Goddard Space Flight Center in Greenbelt, Md. The Lunar Reconnaissance Orbiter, known as LRO, will spend at least a year mapping the surface of the moon. Data from the orbiter will help NASA select safe landing sites for astronauts, identify lunar resources and study how the moon's environment will affect humans. Various components of the avionics and mechanical subsystem are in the process of going through their qualification program. Six instruments and one technology demonstration aboard the spacecraft will provide important data to enable a safe and productive human return to the moon. The six instruments are scheduled to arrive at Goddard in the coming months for integration. The spacecraft will ship to NASA's Kennedy Space Center, Fla., in August in preparation for launch. The orbiter and the Lunar Crater Observation and Sensing Satellite will launch aboard an Atlas V rocket in late 2008. ["NASA's Next Moon Mission Spacecraft Undergoing Critical Tests," **Press Release #08-004**, January 10, 2008.]

January 11:

NASA lays out shuttle schedule as ECO sensor testing continues

Shuttle managers have outlined a tentative return to flight schedule for the fleet, pending verification that the Atlantis STS-122 external tank on Launch Complex 39A is indeed ready for launch on a mission to carry the European Columbus laboratory to the International Space Station. But engine cutoff (ECO) sensor system testing continues. If test data are favorable, the Atlantis launch will be officially scheduled for as early as Feb. 7, to avoid conflicts with a Russian Progress tanker also set for launch to the ISS in early February. The launch of Endeavour on STS-123 with the logistics module for the Japanese Kibo module could then take place about March 11-17. The launch of Kibo, the largest of the research facilities for the ISS, could then take place as early as April 24. If NASA is able to carry out this schedule for the first half of the year, then later missions like the Hubble Space Telescope flight planned for August may be able to hold to their existing schedules for 2008, when NASA hopes to fly six shuttle missions. E-mail distribution. (2007). [Aviation Week's [Aerospace Daily & Defense Report](#) Re: "NASA lays out shuttle schedule as ECO sensor testing continues," [Electronic]. Vol. 225, No. 8, [January 11, 2008].]

Quartet elected to U.S. Astronaut Hall of Fame

Four veteran shuttle mission commanders will be inducted into the U.S. Astronaut Hall of Fame in May, raising the number of space explorers so honored to 70. Joining the likes of John Glenn, Neil Armstrong and Sally Ride will be an astronaut who served on the Russian Mir space station, one who started construction of the International Space Station, another who now is NASA's chief of safety and the commander of the mission that hauled up the storied Hubble Space Telescope. The 2008 inductees will be John Blaha, Robert Cabana, Bryan O'Connor and Loren Shriver. The quartet will join during a public ceremony to be held on May 3 at Kennedy Space Center. They were selected by a committee of current Hall of Fame astronauts, former NASA officials and flight directors, historians, journalists and other space authorities. The process is administered by the Astronaut

Scholarship Foundation. The four represent the seventh group of shuttle astronauts named to the U.S. Astronaut Hall of Fame. Earlier inductees include astronauts from the Mercury, Gemini, Apollo, Skylab and Apollo-Soyuz programs. Web posted. (2008). [Quartet elected to U.S. Astronaut Hall of Fame [Online]. Available WWW: <http://www.floridatoday.com/> [2008, January 11].]

January 13: Atlantis nears new target launch date of Feb.7

Installation of Atlantis' engine cutoff (ECO) sensor external connector replacement hardware was completed Sunday. Meanwhile, testing of the ECO sensor system connector hardware continues at Marshall Space Flight Center. Space shuttle main engine ball seal leak checks were performed Jan. 10 with no issues. The solid rocket booster hydraulic retest took place Jan. 11. The target date for launch of Atlantis is now Feb. 7. On Endeavour, the orbiter galley functional checks were completed Jan. 11 with no issues. Removal and replacement work will take place this week on the purge, vent and drain valve, which is part of the non-breathing air conditioning system. The main landing gear struts' weight on wheels leak check was scheduled for Monday. The external tank and solid rocket boosters for the STS-123 launch were mated on Jan. 10 in the VAB. On Discovery, the thermal control system checkout was completed with no anomalies. Drag chute alignment and installation were completed Jan. 10. Space shuttle main engine No. 1 liquid oxygen transducer leak checks were also performed that day. ["Atlantis nears new target launch date of Feb. 7, Shuttle Update," **Countdown**, January 15, 2008.]

January 15: Sensor fix clears way for launch

Launch crews installed a soldered replacement fuel-sensor connector in shuttle Atlantis' external tank. And tests in Alabama have proven engineers' theory that the original connector failed under super-cold temperatures it was exposed to after fueling. So NASA appears to have fixed the problem that led to intermittent signals from the low-level fuel sensors, a problem that has delayed the shuttle launch about two months. "We are into installing the re-application of the foam insulation," NASA spokesman George Diller said. The foam patch should be complete by the end of the week. Next week, normal shuttle processing will begin toward a Feb. 7 launch. Cryogenic testing at Marshall Space Flight Center in Alabama produced evidence that the original connector, with friction pins and sockets, failed due to being cooled by liquid hydrogen to 423 degrees below zero. One pin failed completely and others gave low voltage readings, which indicate a faulty connection. "It confirms the hypothesis that this is the cause of the problems," Marshall Space Flight Center spokesman Steven Roy said. To make the fix, technicians soldered leads on the outside of the connector, where a diagnostic test showed the circuit had been interrupted. Atlantis and seven astronauts are bound for the International Space Station to deliver the European Columbus science lab. Web posted. (2008). [Sensor fix clears way for launch [Online]. Available WWW: <http://www.floridatoday.com/> [2008, January 15].]

Martinez: Hurry up with new spacecraft

Republican Sen. Mel Martinez said Tuesday he favors increasing NASA's budget more quickly to develop a new spacecraft, rather than extending the life of the aging space shuttles. "At some point I think it becomes very difficult (to fly the shuttle), as we've seen with the delays we've had just in this particular launch," Martinez said Tuesday before speaking to a meeting of the Space Coast Tiger Bay club and the National Space Club Florida Committee at the Hilton Melbourne Rialto Place. However, he again voiced support for shortening the gap between the end of the shuttle program in 2010 and the beginning of the Constellation program at least five years later. "That gap of time is critical," Martinez said. "We have a national security imperative in being pre-eminent in space," Martinez said, citing the Global Positioning System satellite, as well as military communications satellites. Kennedy Space Center employs about 14,500 civil service and contractor workers. As estimated 3,000 to 5,000 jobs could be lost as NASA transitions from the shuttle to a manned space

capsule. Martinez said state officials must work together to convince the nation that the space industry is important to national security. ["Martinez: Hurry up with new spacecraft," **Florida Today**, January 16, 2008, p 1B & 5B.]

January 16: Appeal freezes trial for Nowak

The trial for former astronaut Lisa Nowak has been postponed until the state's appeal on an earlier court decision is resolved; the Orlando judge presiding over the case has ruled. Prosecutors hope the Fifth District Court of Appeal in Daytona Beach reverses a lower court's order to bar use of Nowak's statements to police and evidence from her car if the case ever goes before a jury. It's unclear when the appeals court will rule. ["Appeal freezes trial for Nowak," **Orlando Sentinel**, January 17, 2008, p B4.]

January 18: Rudy pledges to support space industry

Presidential contender Rudy Giuliani will make a 90-minute private tour of Kennedy Space Center before an afternoon meeting with Brevard officials, who hope to encourage the Republican candidate to make increased funding for the space industry a campaign issue. The former New York City mayor will tour a spacecraft assembly building and will view shuttle Atlantis on Pad 39A, where it is being prepped for a Feb. 7 launch. After the tour, Giuliani will meet with space industry officials in Port Canaveral. He was the only candidate to accept an invitation from the Economic Development Commission of Florida's Space Coast. Web posted. (2008). [Rudy pledges to support space industry [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, January 18].]

Foam application nearly finished

A newly installed feed-through connector has been tested and technicians are in the process of re-applying the foam insulation. Several rounds of spraying, curing and shaping are required, NASA spokesman Candrea Thomas said. "It should all be finished by Monday," she said. Atlantis is scheduled to launch Feb. 7 on a construction mission to the International Space Station. After a two-month delay to correct intermittent signals from low-fuel sensors, the shuttle will deliver the European Columbus laboratory. Atlantis will also return flight engineer Dan Tani to Earth. All repair work on Atlantis is scheduled to be finished by Jan. 24, after which normal processing of the shuttle will begin, said Thomas. Web posted. (2008). [Foam application nearly finished [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, January 18].]

Moon Stuck Space leaders work to replace lunar base with manned asteroid missions

Some of the most influential leaders of the space community are quietly working to offer the next U.S. president an alternative to President Bush's "vision for space exploration"--one that would delete a lunar base and move instead toward manned missions to asteroids along with a renewed emphasis on Earth environmental spacecraft. Top U.S. planetary scientists, several astronauts and former NASA division directors will meet privately at Stanford University on Feb. 12-13 to define these sweeping changes to the NASA/Bush administration Vision for Space Exploration (VSE). Abandoning the Bush lunar base concept in favor of manned asteroid landings could also lead to much earlier manned flights to Mars orbit, where astronauts could land on the moons Phobos or Deimos. Their goals for a new array of missions also include sending astronauts to Lagrangian points, 1 million mi. from Earth, where the Earth's and Sun's gravity cancel each other out and spacecraft such as replacements for the Hubble Space Telescope could be parked and serviced much like Hubble. The "alternate vision" the group plans to offer would urge far greater private-sector incentives to make ambitious human spaceflight plans a reality. There would also be some different "winners and losers" compared with the Bush vision. If the lunar base is deleted, the Kennedy Space Center could lose additional personnel because there would be fewer Ares V launches and no lunar base infrastructure work that had been assigned to KSC. On the other hand, the Goddard Space

Flight Center and National Oceanic and Atmospheric Administration near Washington, along with the Jet Propulsion Laboratory (JPL) in California, would gain with the increased space environmental-monitoring goal. Numerous planetary managers told Aviation Week & Space Technology they now fear a manned Moon base and even shorter sorties to the Moon will bog down the space program for decades and inhibit, rather than facilitate, manned Mars operations--the ultimate goal of both the Bush and alternative visions. The first lunar sortie would be flown by about 2020 under the Bush plan. If alternative-vision planners have their way, the mission could instead be flown to an asteroid in about 2025. Web posted. (2008). [Moon Stuck [Online]. Available WWW: <http://www.spaceflightnow.com/> [2008, January 18].]

NASA: Unbuilt rocket to moon needs big fix

NASA is wrestling with a potentially dangerous problem in a spacecraft, this time in a moon rocket that hasn't been built yet. Engineers are concerned that the new rocket meant to replace the space shuttle and send astronauts to the moon could shake violently during the first few minutes of flight, possibly destroying the entire vehicle. NASA officials hope to have a plan for fixing the design as early as March, and they do not expect it to delay the goal of returning astronauts to the moon by 2020. "NASA has an excellent track record of resolving technical challenges," NASA administrator Michael Griffin said. The concern isn't the shaking on the first stage of the Ares I rocket, but how it affects everything that sits on top, including the Orion crew capsule. The first launch of astronauts aboard Ares I and Orion is set for March 2015. ["NASA: Unbuilt rocket to moon needs big fix," Orlando Sentinel, January 19, 2008, p A18.]

Moonwalker Film to Raise Funds for Apollo Memorial

The only astronauts to set foot on the moon will share tales of their journey Saturday in a film screening to raise funds for a monument to their Apollo lunar missions. "The Wonder of it All" looks to understand the men who walked on the moon, instead of the science and technology behind the Apollo missions. The result is a highly personal and affecting history of the U.S. effort to send men to the moon. "We're all about the guys," said Jeffrey Roth, director of the film. The film will screen at the Kennedy Space Center Visitor Complex in Cape Canaveral, Fla., to help raise funds for a monument honoring NASA's Apollo lunar program. Many of the Apollo astronauts share early childhood fantasies of flying like sci-fi hero Buck Rogers, and later pursued careers as military pilots. Their eagerness to push limits meant they had to mentally prepare themselves for the risks and uncertainties of the space program, as those became evident during the infamous Apollo 1 fire and the Apollo 13 accident in space. The film also sheds some light on the less-joyful experiences of the Apollo program, such as returning astronauts being egged by student protesters or a personal struggle with alcoholism and depression. By the end, astronauts reflect upon a spiritual experience in space that transcends the boundaries of human knowledge — and allows film viewers to appreciate that other component of the space program beyond rockets and spacecraft. "Wonder of it All" is one in a series of recent films, which include "In the Shadow of the Moon" and "Magnificent Desolation," that focus on the personal stories of those few humans who set foot on the lunar surface. Web posted. (2008). [Moonwalker film to raise money for Apollo Memorial [Online]. Available WWW: <http://www.space.com/> [2008, January 18].]

NASA Selects Jaiwon Shin to Head Aeronautics Research

Jaiwon Shin has been named as NASA's associate administrator for the Aeronautics Research Mission Directorate in Washington. ["NASA Selects Jaiwon Shin to Head Aeronautics Research," Press Release #08-014, January 18, 2008.]

January 19: Scaled fined for July accident

California regulators have fined Scaled Composites over \$25,000 for an accident last July that killed three employees working on the propulsion system for the SpaceShipTwo suborbital vehicle. The

California Division of Occupational Safety and Health (Cal/OSHA) levied the fines, totaling \$25,780, for violations of workplace safety codes, including lack of training in hazardous materials, notably nitrous oxide. The three employees were killed, and three others injured, when a nitrous oxide explosion took place during a "cold flow" test of a propulsion system at Mojave Air and Space Port in California. The hybrid propulsion system is being developed for SpaceShipTwo, a commercial suborbital spacecraft under development for Virgin Galactic. Scaled officials said they fully cooperated with Cal/OSHA during the investigation and said that the company has already implemented new procedures. Web posted. (2008). [Scaled fined for July accident [Online]. Available WWW: <http://www.spacetoday.net/> [2008, January 19].]

January 20: New Rocket Has Problem with Vibration

NASA is working to solve a potentially dangerous vibration problem in its next generation of launching vehicles. Engineers are concerned that a new rocket, the Ares I, which will replace the space shuttle and send astronauts on their way to the moon, could shake violently during the first minutes of flight. The problem is common to solid rocket boosters. If not corrected, the shaking, which arises from the powerful first stage of the rocket, could "shake apart the whole structure," said Paul Fischbeck, an engineering professor at Carnegie Mellon University. "They know it's a real problem," said Professor Fischbeck, who has consulted on risk issues with NASA. The concern is not the shaking of the first stage, but how it affects everything that sits on top: the Orion crew capsule, instrument unit and a booster. NASA officials said they hoped to have a plan for fixing the design as early as March and did not expect the problem to delay the goal of returning astronauts to the moon by 2020. Web posted. (2008). [New Rocket Has Problem with Vibration [Online]. Available WWW: <http://www.nytimes.com/> [2008, January 20].]

January 21: Rocket could bring hundreds of jobs to Fla.

NASA's shuttle booster manufacturer will unveil a new rocket today that it aims to launch from Cape Canaveral as part of an enterprise that could bring about 350 jobs to Florida. The venture could pump more than \$300 million into the state's economy in the next eight years -- a time when up to 3,500 jobs likely are to be lost as a result of the shutdown of NASA's shuttle fleet. "This is very significant for Florida," said Joel Crook, director of advanced planning for Alliant Techsystems (ATK) of Edina, Minn., the world's largest producer of solid rocket motors. ATK and Lockheed Martin were enlisted by Chicago-based startup PlanetSpace Inc., forming one of several teams vying for \$175 million now up for grabs from NASA. The seed money is meant to spur development of a private U.S. system to launch cargo and astronaut crews to the International Space Station after the shuttles retire in 2010. The projected economic impact on Florida through 2016 is \$313 million. Space Florida, an organization created by the state Legislature to promote and develop the aerospace industry, is working with PlanetSpace as well as other companies competing for the NASA money. Officials there say a new commercial launch services business would be a welcome addition to the Space Coast. "Any and all businesses that we are able to help come here and employ people and use these facilities, it's all great for the state of Florida," Space Florida spokeswoman Deborah Spicer said. Web posted. (2008). [Rocket could bring hundreds of jobs to Fla. [Online]. Available WWW: <http://www.floridatoday.com/> [2008, January 21].]

Romney makes no promise of funding

On a private tour of Kennedy Space Center, presidential hopeful Mitt Romney peeked into the space shuttle Atlantis on Monday and didn't whiff the smell of new hardware in the aging spacecraft. But the Republican candidate, now the Florida frontrunner, wasn't prepared to pledge another billion or two, if elected, to freshen NASA's prospects of maintaining a human space program past 2010, when the last shuttle flight is scheduled. A "gap" of at least five years is expected before the U.S. will develop and fly another spacecraft with human passengers. Thousands of jobs could be lost in Brevard County. "I'm prepared to study it thoroughly," said the cautious candidate, who made stops

at Jacksonville, Daytona, Orlando and Cape Canaveral on Monday. Romney reprised rival Rudy Giuliani's Friday visit with about 50 space industry members in a roundtable sponsored by the Economic Development Commission of Florida's Space Coast. Web posted. (2008). [Romney makes no promise of funding [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, January 21].]

January 22: Space becomes primary frontier as candidates court voters

For the first time in decades, space policy is emerging as a presidential campaign issue and, political strategists say, could become a decisive factor in the race to the White House. In the run-up to Florida's Jan. 29 primary, candidates have begun to talk about their views on the future of human space exploration. On Friday, former New York Mayor Rudy Giuliani stopped at Kennedy Space Center to pledge he would give NASA the money it needs to return Americans to the moon and go to Mars. On Monday, former Massachusetts Gov. Mitt Romney followed suit. "I support the NASA program, the president's vision program, which consists of a manned space mission back to the moon, as well as an ongoing mission to Mars," Romney said. But he declined to commit to more funding without more study. Months earlier, leading Democratic contenders Hillary Clinton and Barack Obama articulated dramatically different visions. Obama's plan to raid NASA's budget to fund his education program caused an eruption from space supporters, especially in Florida, which could lose thousands of jobs when the space shuttle retires in 2010. As issues go, space policy can't match immigration or health care or the economy. But experts say candidates are going beyond the lip service traditionally paid to the issue. And for the first time, space policy is being linked to larger issues such as national security, global warming and U.S. competitiveness with China's growing space program. "What's remarkable is that candidates are crafting policies and positions on space long before they have even been chosen by the parties," said Roger Launius, a space historian and curator at the Smithsonian Institution. "The last time space was an issue for presidential candidates this early in an election was in 1960." The renewed interest is driven in part by the fact that NASA is facing its biggest crisis since the end of the Apollo era in the 1970s, with the space shuttle scheduled to retire in 2010 and the future of the next-generation Constellation program uncertain. Web posted. (2008). [Space becomes primary frontier as candidates court voters in I-4 corridor [Online]. Available WWW: <http://www.orlandosentinel.com/> [2008, January 22].]

January 23: NASA is confident sensor troubles fixed

NASA believes it has put sensor signal problems behind it, and next week the agency will begin moving toward the Feb. 7 launch of Atlantis on a construction mission to the International Space Station. At Kennedy Space Center, technicians are shaping and coating foam over a replaced sensor connector at Pad 39A. The repair work will be finished by Friday, and normal shuttle processing will begin next week, NASA spokesman Candrea Thomas said. Intermittent readings from low-fuel sensors in the external tank caused launches to be scrubbed on Dec. 6 and 9. However, two series of tests indicated that replacing the suspect connector and soldering the outside leads will solve the problem. Cryogenic tests earlier this month showed the old connector failed where NASA engineers had suspected. During tests this week, a new connector with soldered leads maintained a circuit down to 423 degrees below zero, which the connector will encounter when the external tank is filled with liquid hydrogen. Final approval of the Feb. 7 launch date likely will come Jan. 30 at an Executive Flight Readiness Review. The crew of seven astronauts will arrive at Kennedy Space Center at 1 p.m. Feb. 4. Atlantis' third launch attempt is scheduled for 2:45 p.m. Web posted. (2008). [Space becomes primary frontier as candidates court voters in I-4 corridor [Online]. Available WWW: <http://www.floridatoday.com/> [2008, January 23].]

Ares I program seeks shuttle flight data

Managers of NASA's Ares launch vehicle project are in early discussions with their space shuttle counterparts over using a shuttle launch early next year to gather flight-test data on a potentially

dangerous vibration that ground-test data suggest might occur in the Ares I first stage. That stage is to be a five-segment version of the four-segment reusable solid rocket motor (RSRM) that is fired in pairs to boost the shuttle stack off the launch pad. "Conservative" calculations of the potential frequency and amplitude of a thrust oscillation that could occur in the Ares I first stage as it nears burnout suggest the vibration could damage critical components and harm the crew. Those calculations are based on static ground tests of four-segment boosters conducted over the history of the shuttle program, and some very limited information extracted from data collected during shuttle flights for other purposes, according to Steve Cook, Ares Projects Office manager. To get better data, Ares project engineers want to mount pressure sensors inside an operational shuttle RSRM, probably for a flight early in 2009, to measure the changes in pressure inside the motor as it burns. Cook said Jan. 22 the planning is in the early stages. "What we'd like to do is put some instrumentation on the motor and on the shuttle itself to, one, understand the forcing function in flight, and two, what kind of response is it transmitting into the shuttle," Cook said. "This is not something we've tried to go off and measure before." In-house project calculations presented in October 2007 during the Ares I system definition review warned that the thrust oscillation inside a five-segment RSRM motor - a normal phenomenon in solid-fuel rocket motors - could set up a harmful resonance with the structure above it. E-mail distribution. (2008). [*Aviation Week's Aerospace Daily & Defense Report* Re: "Ares I program seeks shuttle flight data to quantify thrust-oscillation issue," [Electronic]. Vol. 225, No. 15, [January 23, 2008].]

Survey: No astronaut ever seen drunk on launch day

There's been only one incident of a NASA crew member being impaired by drugs or alcohol close to a launch, but never on a launch day, according to a new survey of active-duty astronauts and flight surgeons. The person was seen to be impaired in the time leading up to the launch because of an apparent interaction between prescription medication and alcohol. "Medical personnel in performing their routine preflight monitoring assessed the situation and determined there was no impact to flight readiness, or risk to safe operations," said astronaut Ellen Ochoa, who is also deputy director of the Johnson Space Center. "We really can't say too much else due to medical privacy." The few details available seem to suggest a simple mistake rather than a binge drinking episode. The incident didn't occur on a launch day, and survey respondents were unanimous in indicating that none of them had ever observed an intoxicated crew member on a launch day. Nonspecific reports of astronauts who were drinking or hung over on launch day first surfaced last summer in a report by a panel of outside experts looking into NASA's astronaut health care policies. That report was commissioned after astronaut Lisa Nowak's arrest last year after allegations that she assaulted a romantic rival. NASA officials wanted to find out if managers, co-workers or doctors could have done anything differently to detect any behavioral or mental health problems that she may have shown. In a full investigation concluded in August, Bryan O'Connor -- NASA's chief of safety and mission assurance -- asked astronauts from every flight crew going back to the early 1990s to go on the record in identifying any crew mates who might have been impaired by alcohol on launch day. He failed to turn up any additional details regarding the drinking allegations, and NASA Administrator Michael Griffin wrote them off at the time as an "urban myth." However, agency managers commissioned the survey to try to further identify problems that might need fixing related to astronaut health care and safety, and to ask astronauts again about the drinking issues -- this time with the protection of anonymity. At a press conference in Washington on the day of the release, lead author Dr. Richard Bachmann Jr., a colonel in the Air Force, outlined a more complicated state of affairs. "Members of the medical and astronaut communities raised significant concerns regarding barriers to communication," he said. "They described instances where medical personnel or fellow astronauts raised concerns about an astronaut's fitness for flight due to astronaut use in the immediate preflight period, and these concerns appeared to them to be disregarded or overridden." He recommended NASA conduct exactly the sort of anonymous survey released Wednesday. Web posted. (2008). [Survey: No

astronaut ever seen drunk on launch day [Online]. Available WWW: <http://www.cnn.com/> [2008, January 23].]

Nelson pushes space in D.C.

Local efforts to ease the economic impact of the shuttle's imminent retirement continue today and Thursday with a visit to Washington, D.C., by Brevard County Commissioner Chuck Nelson and economic development officials. Nelson, who is expected to meet with representatives from NASA and the U.S. Department of Energy as well as local congressional delegates, is taking over commission leadership on space issues from Truman Scarborough, who is in his final year on the commission. The two-day trip was organized and paid for by the Economic Development Commission of Florida's Space Coast. ["Nelson pushes space in D.C.," **Florida Today**, January 23, 2008, p 1B.]

United Launch Alliance names 2 execs

United Launch Alliance President and Chief Executive Officer Michael Gass on Wednesday named Rick Navarro as director of Delta 2 programs and Jerry Jamison as director of launch operations. Both men previously served in the capacity of director of launch operations since Dec. 1, 2006 when United Launch Alliance was formed. ["United Launch Alliance names 2 execs," **Florida Today**, January 24, 2008, p 1C.]

January 24: Shuttle workers still wanted

Thousands of space shuttle workers are being promised a financial safety net if they stick it out until the end of the program. NASA and contractor United Space Alliance plan to give enhanced severance packages to shuttle workers when they are laid off and additional "completion bonuses" to certain highly skilled employees who stay as long as they are needed. In some of these cases, long-time workers could get a total of as much as a year's pay after they finish with the company. The space agency and its contractors have talked in vague terms about the possibility of such incentive packages before, but United Space Alliance chief executive officer Dick Covey said Wednesday that the company has notified eligible employees of the details within recent weeks. The aim of the incentives is two-fold. First, the company wants to keep certain highly skilled space workers on the payroll so they will be available when needed for work on the rockets and spaceships being developed to replace the space shuttles. Second, NASA and USA want to make sure those workers have some financial security so they can remain focused on their jobs of carrying out the final 13 missions of the space shuttle program safely and on schedule. The last mission is scheduled for 2010. Also being offered: retraining programs to help workers translate their work experience on the space shuttle to other high-tech, highly detailed jobs that might be available elsewhere after the space shuttles retire. USA also is working to get laid-off shuttle workers priority hiring status on other projects with partners Boeing and Lockheed Martin. The combined incentives may help soothe Kennedy Space Center workers who are anxious about the impending end of the shuttle program. NASA has made it clear the Ares rockets and Orion crew vehicles being developed for the Constellation project will require thousands fewer workers than the space shuttles. Brevard County government studies estimate about 3,500 current KSC workers will not have jobs on the new program. Another 3,000 or so could need additional training to stay on. Hardest hit will be United Space Alliance, which employs about 6,000 to 6,500 people on the Space Coast. Covey said internal studies show his company, which employs about 10,000 people nationwide, will be about half its size after the shuttles retire -- even under best-case scenarios where USA wins every contract it goes after. Web posted. (2008). [Shuttle workers still wanted [Online]. Available WWW: <http://www.floridatoday.com/> [2008, January 24].]

NASA: Still committed to Earth Sciences

Hoping to flight widespread perceptions that it emphasizes human space flight at the expense of research, NASA stressed the importance the agency places on its Earth science programs, including those that monitor global warming. "We're very fortunate indeed. We wouldn't be able to have discussions on climate change and we wouldn't have a research program on climate change it wasn't for the data that NASA brings home," NASA Administrator Mike Griffin said Thursday at a news briefing. NASA earmarked \$5.5 billion of its current budget, or about 32 percent, for its science programs, Griffin said. Overall, 46 percent of the science budget is devoted to study Earth and its environment. Griffin said NASA will request roughly the same amount in next year's budget, which the White House will unveil in the coming weeks. NASA plans to launch two Earth observing missions this year. The first, scheduled for June, will study climate change, sea level rise and ocean circulation. The second mission, slated for December, will collect carbon dioxide measurements from space. ["NASA: Still committed to Earth Sciences," Florida Today, January 25, 2008, p 9A.]

January 27: NASA Remembers Three Space Tragedies

The end of January marks a somber time for NASA with the anniversary of the three major tragedies in the history of U.S. spaceflight. On Jan. 27, 1967, three of the first group of NASA astronauts - Virgil "Gus" Grissom, Edward White and Roger Chaffee - died during a routine ground test of the Apollo capsule, later named Apollo 1. These were the first U.S. astronaut deaths associated with spaceflight. Sadly, that accident was not the last such tragedy. The highly anticipated Jan. 28, 1986, launch of Space Shuttle Challenger, which carried the first teacher-astronaut, Christa McAuliffe, was watched live by many around the nation, including school children. But 73 seconds after takeoff, the shuttle erupted in a fireball that killed the entire crew. Seventeen years later, tragedy struck NASA once again. On Feb. 1, 2003, following a 16-day science mission, the space shuttle Columbia broke apart upon re-entry, killing the entire crew: U.S. astronauts Rick Husband, Willie McCool, Michael Anderson, Kalpana Chawla, David Brown, Laurel Clark and Israeli astronaut Ilan Ramon. After all three accidents, new protocols immediately were implemented to prevent the problems in the future, including: The hatch for the Apollo capsule was reworked to allow faster egress, wiring was redone, flammable materials inside the cabin were replaced with flame-retardant items and the cabin pressure was lessened; The O-rings for the shuttle's solid-rocket boosters were redesigned after the Challenger disaster; Foam debris hitting the shuttle was strictly scrutinized after the loss of Columbia, according to the NASA History Web site.; Despite the risks, astronauts continue to risk their lives. "The spirit of exploration is truly what it is to be human," astronaut Stephen Robinson said in an August 2005 audio message on flight STS-114, which directly followed the Columbia disaster. **Web posted.** (2008). [NASA Remembers Three Space Tragedies [Online]. Available WWW: <http://www.space.com/> [2008, January 27].]

US spysat fails, will deorbit

A US reconnaissance satellite has failed in orbit and will reenter in about a month, government officials confirmed Saturday. The unidentified spacecraft has lost all power in orbit and has failed to respond to commands from the ground and is slowly losing altitude. At its current rate, the spacecraft would reenter the Earth's atmosphere in late February or early March. Officials did not identify the satellite in question, but reports indicated the spacecraft was the size of a "small bus", suggesting that it is a photo reconnaissance satellite. Other reports indicate it was an NRO satellite launched on a Delta 2 in December 2006 that failed shortly after reaching orbit. **Web posted.** (2008). [US spysat fails, will deorbit [Online]. Available WWW: <http://www.spacetoday.net> [2008, January 27].]

January 28: Shuttle launch and spacewalk preps in work

NASA is plunging ahead with preparations for three shuttle launches in the next 14 weeks while astronauts aboard the International Space Station gear up for crucial spacewalking repair work this week at the outpost. At launch pad 39A at Kennedy Space Center, technicians are rigging up

ordnance on shuttle Atlantis, which is tentatively scheduled to launch Feb. 7 on a mission to haul the European Columbus science laboratory to the station. The small pyrotechnic devices are used to separate the shuttle from its launcher platform, solid rocket boosters and external tank in flight. Final connections are to be made Tuesday, and NASA managers will gather at KSC on Wednesday for an executive-level Flight Readiness Review. There has been some talk of moving the launch date up to Feb. 6, but managers are expected to firm up Feb. 7 at the review. Despite fuel-level sensor problems that delayed the Atlantis launch two months, NASA still intends to launch six missions this year. Endeavour is slated to launch the first sections of the Japanese Kibo science research facility on March 11. Discovery still is scheduled to fly the Kibo pressurized lab module on April 24. The fifth and final Hubble Space Telescope servicing mission is being targeted for launch around Aug. 28, and station assembly missions are being slated for around Oct. 16 and Dec. 4. Web posted. (2008). [Shuttle launch and spacewalk preps in work [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, January 28].]

January 30: Data from Columbia tragedy aids NRO satellite re-entry

Re-entry debris data and analysis derived from the space shuttle Columbia accident is being applied to Pentagon studies of how much of the failed National Reconnaissance Office NROL-21 spacecraft will survive re-entry heating and strike Earth in late February or early March. Several hundred pounds of spacecraft debris could land anywhere between 58.5 deg. north and south latitude. The orbit overflies all of the world's most populated areas. But statistically, the debris is far more likely to land harmlessly in an ocean, since water underlies more than 90 percent of the ground track. Contrary to news media reports that say the spacecraft is as large as a school bus weighing up to 20,000 pounds, the failed satellite is actually one of the smallest launched in the last several years by the NRO, and is nowhere near that size. The main body of the spacecraft is no more than about 15 feet long by about 8 feet wide, and likely is smaller than that - based on the limits of the Delta II payload shroud. The spacecraft was launched from Vandenberg Air Force Base, Calif., on Dec. 14, 2006, but failed shortly after the successful launch because the vehicle's software became locked in a safe-hold status. E-mail distribution. (2008). [Aviation Week's [Aerospace Daily & Defense Report](#) Re: "Data from Columbia tragedy aids NRO satellite re-entry planning," [Electronic]. Vol. 225, No. 20, [January 30, 2008.].]

Bent radiator hose discovered

After a kinked radiator hose was found on Discovery, NASA engineers opened the payload bay doors and found the same kinked flexible hose on Atlantis, which is at the launch pad nearly ready for a Feb. 7 launch to the International Space Station. "It's supposed to be straight," NASA spokesman Allard Beutel said. An engineering team is working to determine whether the bent hose poses a danger of leaking. The hose apparently has flown several times before being discovered, said Beutel. Engineers are concerned that the kinked hose could leak during the mission, taking out a freon coolant loop, which cools the orbiter once the payload doors are closed before re-entry. The system containing the hose, 1 to 1.5 inches in diameter, could be isolated if it leaked during a mission, said Beutel. "No leaks were seen," said Beutel, who added that the team would determine whether the hose needed to be replaced. The issue certainly will come up at today's Executive Flight Readiness Review now going on. Other issues at the FRR include confirming the Feb. 7 launch date, and confirming a three of four working launch criteria for low-fuel sensors, which have been plagued by intermittent signals. Web posted. (2008). [Bent radiator hose discovered [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, January 30].]

ULA restructures Delta 2 program

Facing the loss of one of its biggest customers, the United Launch Alliance (ULA) announced Tuesday that it was restructuring its Delta 2 launch vehicle program to keep it operation for the long term. The medium-lift Delta 2 is used primarily by the US Air Force and NASA, but the Air Force is

phasing out its use of the vehicle in favor of the larger Delta 4 and Atlas 5 EELV rockets. The restructuring involves reducing the amount of facilities used by the Delta 2 program and taking advantage of unspecified synergies with the larger EELV programs. That restructuring is designed to allow the Delta 2 to continue operations at lower launch rates while maintaining "competitive" prices. ULA, a joint venture of Boeing and Lockheed Martin, started operations in late 2006 to operate both the Atlas and Delta vehicle families. Web posted. (2008). [ULA restructures Delta 2 program [Online]. Available WWW: <http://www.spacetoday.net/> [2008, January 30].]

NASA Gives 'Go' for Space Shuttle Launch

NASA senior managers completed a review Wednesday of space shuttle Atlantis' readiness for flight. Pending closure of an issue with a shuttle radiator hose, the STS-122 mission will launch Feb. 7 at 2:45 p.m. EST. During an inspection of Atlantis Tuesday, one of four hoses that carry Freon to the shuttle radiators in the payload bay was found bent and not properly retracted in its storage box. The others were fully retracted into their storage boxes, as expected. Teams are continuing to gather data and assess any potential forward work. Managers will convene Saturday to further review and analyze what, if any, remaining work is required before launch. Atlantis' launch date was announced at the conclusion of Wednesday's executive-level Flight Readiness Review. The one-day video teleconference meeting was led from NASA Headquarters in Washington. 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. The first executive-level Flight Readiness Review for STS-122 was held Nov. 30. The STS-122 mission was delayed in December 2007 after failures occurred in a fuel sensor system while Atlantis' external fuel tank was being filled. A tanking, or fueling, test on Dec. 18, 2007, revealed that open circuits in the external tank's feed through connector were the most likely cause of false readings in the system during launch attempts on Dec. 6 and Dec. 9. A modified connector was designed with pins and sockets soldered together. Both the original and modified connector configurations were subjected to testing that verified that the new design corrects the open circuits found in the original connector. The sensor system is one of several that protect the shuttle's main engines by triggering their shut down if fuel runs unexpectedly low. NASA's current Launch Commit Criteria require that three of the four engine cutoff, or ECO, sensors function properly before liftoff from the Kennedy Space Center in Florida. ["NASA Gives 'Go' For Space Shuttle Launch," **Press Release #08-029**, January 30, 2008.]

Kennedy will host foreign ambassadors Thursday

NASA and the U.S. State Department will welcome ambassadors from more than 45 countries to Kennedy Space Center on Thursday. The visit, one of the largest tours undertaken by the diplomatic corps, is part of the State Department's new Experience America program that hosts tours of cities and towns across the United States in an effort to make exploring America more accessible to the Washington, D.C., diplomatic corps. ["Kennedy will host foreign ambassadors Thursday," **Countdown**, January 29, 2008.]

January 31: Explorer 1's flight 50 years ago ignited space race

Fifty years ago today, missile pioneers thrust the United States into a space race with the Soviet Union, launching America's first "man-made moon." Ike Rigell and Terry Greenfield peered through tinted green bulletproof glass in a blockhouse at Launch Complex 26 as an Army rocket lit up night skies over the Atlantic coast. Kelly Fiorentino stood in a Quonset hut on an island in the Bahamas, ready to transmit a second-stage ignition signal -- a precisely-timed switch-flip critical to propelling the Explorer 1 satellite into orbit. And on that frigid Friday night in Huntsville, Ala., Norm Perry and dozens of Army Ballistic Missile Agency workers shivered beneath loudspeakers in a downtown square. A telltale beep-beep finally blared out about an hour and 45 minutes after launch, signaling mission success. The crowd erupted in cheers. Surreptitiously shipped as "Missile 29," the first-stage

of the rocket arrived at Cape Canaveral in late December and was hidden away in a hangar. Erected at pad 26A on Jan. 16, its upper stages and the Explorer 1 satellite were added as a scheduled Jan. 29 launch date approached. Launch preparations reached a feverish pitch, but the northern hemisphere's jet stream dipped down to Florida, producing 180 mph winds aloft. The launch was scrubbed on Jan. 29 and again on Jan. 30. Then the Jupiter C rocket finally blasted off at 10:48 p.m. Jan. 31, propelling America on course to catch and ultimately surpass the Soviets in a race to the moon. For Rigell and others involved, it was a sight and a night to savor. "You couldn't get tired of hearing the breaking news," he said. "We had a satellite in orbit." Web posted. (2008). [Explorer 1's flight 50 years ago ignited space race [Online]. Available WWW: <http://www.floridatoday.com/> [2008, January 31].]

NASA Pays Tribute to Fallen Astronauts with Safety Exhibit

A NASA exhibit focusing on safety will pay tribute to the crews of the Columbia STS-107 mission, Challenger STS-51L mission and Apollo 1 mission. It will be on display Feb. 1 - 21 in the lobby of the Operational Support Building I. The exhibit, which includes recovered Columbia hardware, reflects on the importance of each person's contributions to safety in spaceflight. The display will tour every NASA location this year. E-mail distribution. (2008). [KSC-Internal-Comm Re: "NASA Pays Tribute to Fallen Astronauts with Safety Exhibit" [Electronic]. [January 31, 2008].]

FEBRUARY

February 1: NASA prepares hose repair plan for Atlantis

In a simple fix, a kinked Freon hose likely will be pushed back into its storage box on Monday (February 4) as Atlantis' payload bay doors are closed in preparation for a Thursday launch. During re-entry, Atlantis' crew will rely on a backup system to cool the orbiter payload bay if the hose unexpectedly fails. "We're seeing a path to fly (Thursday)," NASA spokesman George Diller said. Launch would be at 2:45 p.m. NASA officials today intend to reveal details of their plan to work around the kinked hose, which X-rays show is undamaged and has not leaked. Opening the payload bay doors during the mission would pull the hose out of its storage box. It might kink again when the doors close just before re-entry. But the shuttle crew would not be threatened even if the hose failed, said Diller. "For landing we have a completely manageable scenario," said Diller. "We don't know what that hose'll do." Web posted. (2008). [NASA prepares hose repair plan for Atlantis [Online]. Available WWW: <http://www.floridatoday.com/> [2008, February 1].]

Beatles have ticket to ride to deep space with NASA

Now this is a magical mystery tour. NASA has been beaming songs to astronauts since 1965 (maiden voyager: *Hello, Dolly!* to Gemini 6), but for the first time, the agency will be sending a tune to deep space. On Monday [February 4th], *Across the Universe* will travel across the universe. It's part of NASA's year-long 50th anniversary celebration and also marks exactly 40 years since The Beatles recorded the song. The Fab Four and NASA share a cozy history. *Here Comes the Sun*, *Ticket to Ride* and *A Hard Day's Night* have been transmitted as wake-up calls to astronauts, and Paul McCartney was the first person whose live music was relayed into space (his *Good Day Sunshine* was routed to the International Space Station in 2005). Informed of NASA's plans, McCartney sent a message: "Amazing! Well done, NASA! Send my love to the aliens." Fans around the globe plan to play *Universe* as it's dispatched at the speed of light toward the North Star at 7 p.m. ET/4 PT. [NASA Beams Beatles Song to Space](#) Web posted. (2008). [Coming attractions: Beatles have ticket to ride to deep space with NASA [Online]. Available WWW: <http://www.usatoday.com/> [2008, February 1].]

Fallen astronauts honored

All fallen astronauts were honored today at a ceremony marking five years since the breakup of Columbia STS-107. The event was held at the Kennedy Space Center Visitor Complex. Before the ceremony the family of Columbia Commander Rick Husband placed roses at the Space Mirror Memorial. Left to right: Matthew Husband, 12, Bill Thompson (Evelyn's new husband), Laura Husband, 17, and Evelyn Husband-Thompson. Five years after Columbia broke apart over east Texas, the shuttle commander's widow still bears the grief of that day. She was the keynote speaker at the annual commemoration of fallen astronauts. Her grief has been softened by time, love and progress. And while the shuttle has returned to flight, Husband-Thompson has also restarted her life, remarrying three weeks ago, writing a book, and continuing to raise her children, Matthew, 12, and Laura, 17. "It's just proof that life does go on," said Laura Husband, whose father left a videotape for her to play each day he was to be in space. Husband-Thompson has relied on a deep religious faith throughout her ordeal, but she said she has also been supported by the space agency. "NASA has stood by us through thick and thin," she said. Legendary shuttle Commander Eileen Collins spoke of her resolve after the Columbia accident. She led the first shuttle mission back to space, STS-114 in 2005. Collins said astronauts risk their lives out of a love of flying and a belief that space exploration is important to everyone on Earth. "Those are strong motivations," she said. "All I know was I was not going to quit (after the Columbia accident), and my crew was not going to quit." Finally, NASA Administrator Mike Griffin read a letter from President Bush and assured the crowd of several hundred that NASA officials appreciate the risks astronauts take. Web posted. (2008). [Fallen astronauts honored [Online]. Available WWW: <http://www.floridatoday.com/> [2008, February 1].]

February 2: Bent hose unlikely to postpone launch try

A 16-foot pole with a V-shaped end will be used to press down a kinked Freon hose just before Atlantis' payload bay doors are closed Sunday, setting Kennedy Space Center launch crews on course for a scheduled Thursday afternoon liftoff attempt. "They'll use this to help work the flex hose into the protective box," NASA spokesman Candrea Thomas said. Other preparations continue for Atlantis' launch at 2:45 p.m. The KSC employee designated to wield the pole has practiced the operation several times in Huntington Beach, Calif., Thomas said. The V is 3.5 inches wide by 3 inches tall. The payload bay doors will close a day ahead of schedule to allow time to deal with any unexpected problems. The Atlantis crew members are scheduled to arrive about 10:30 a.m. Monday, and the countdown is set to begin at 5 p.m. Riding the 3,376th vehicle to rise from Cape Canaveral, the Atlantis' crew will deliver the European Columbus module to the International Space Station. The hose will come out of the storage box when Atlantis opens its payload bay doors in orbit, and the hose likely will bend again when the doors are closed just before re-entry. A backup cooling system exists. NASA engineers are developing plans in case the hose ruptures during the mission. That part of the system could be isolated. However, the shuttle might be required to leave orbit at the first opportunity. Web posted. (2008). [Bent hose unlikely to postpone launch try [Online]. Available WWW: <http://www.floridatoday.com/> [2008, February 2].]

February 3: Mission is possible, NASA past shows

Countdown to the planned launch Thursday of shuttle Atlantis will pick up this week while another clock ticks away. Today is 971 days and counting until a Sept. 30, 2010, deadline to complete the International Space Station and retire NASA's aging shuttle fleet. The deadline set by President Bush in 2004 creates the same type of schedule pressure cited as a contributing cause to the 1986 Challenger disaster and 2003 Columbia accident. But senior NASA officials say the agency can safely fly 12 more station assembly flights and a fifth and final Hubble Space Telescope servicing mission in just more than two and a half years. "People frequently ask me, 'Can we complete the International Space Station by the time the president and Congress have directed us to retire the space shuttle?' "said shuttle program manager Wayne Hale." "And my answer is, 'Yes. We have plenty of margin.' " Thursday's scheduled launch of Atlantis, seven astronauts and the European Columbus science laboratory will mark NASA's eighth mission since Columbia. As it stands, the shuttle fleet is operating in bursts interrupted by technical problems and natural disasters. "I think we've easily got the capability to go fly the four flights a year that we need to go do to accomplish the manifest," NASA space operations Chief Bill Gerstenmaier said. "We're going to take each flight one at a time, work through them at the right pace and then just go fly as we need to go fly," he said. "I think we're cognizant of the overall schedule environment, but that doesn't drive us. We'll take the delays we need to take, and we'll deal with the consequences." Web posted. (2008). [Mission is possible, NASA past shows [Online]. Available WWW: <http://www.floridatoday.com/> [2008, February 3].]

February 4: NASA's proposed 2009 budget calls for \$17.6 billion

President Bush's budget request for the 2009 fiscal year keeps NASA on track to transition from the space shuttle to the Constellation program and puts additional emphasis on robotic science missions to study the Earth and the universe, senior agency officials said Monday. The agency's total budget request, the last for this administration, is a 1.8 percent increase from this year's enacted budget, totaling \$17.614 billion. The largest uptick is in the exploration systems directorate, which would receive \$3.5 billion under the administration's plan. Much of money for exploration will fund hardware tests for the Ares 1 rocket, including the Ares 1-X mission that will launch from the Kennedy Space Center in April 2009. Other portions of the exploration budget will maintain funding for COTS, a government-sponsored program to incite development of a commercial system to transport crew and cargo to the international space station. About \$2.6 billion would be set aside during the next five years to purchase transportation to the station, which will be unreachable by U.S.

government craft for up to five years. That money could either buy services from U.S. companies or foreign vehicles, most likely the Russian Progress and Soyuz resupply and crew rotation ships, according to Bill Gerstenmaier, associate administrator for space operations. For the first time since Bush directed NASA to return to the moon in 2004, the exploration division will receive more funding the space shuttle program. Many of the space shuttle's contracts will be completed in the next year ahead the vehicle's retirement in 2010, Gerstenmaier said. Space operations would receive \$5.775 billion during the fiscal year, which begins on Oct. 1. The space shuttle program would get \$2.982 billion and the space station is slated for \$2.06 billion in funding as the shuttle continues assembly missions to the station. Web posted. (2008). [NASA's proposed 2009 budget calls for \$17.6 billion [Online]. Available WWW: <http://www.spaceflightnow.com/> [2008, February 4].]

Astronauts arrive as Atlantis' countdown begins

The Atlantis astronauts arrived at Kennedy Space Center today as NASA prepared to pick up a three-day countdown to the planned launch Thursday of the shuttle, its seven-member crew and the European Columbus science lab. Led by veteran astronaut Steve Frick, the crew includes pilot Alan Poindexter and mission specialists Rex Walheim, Leland Melvin, Stanley Love and two European Space Agency astronauts: Hans Schegel of Germany and Leopold Eyharts of France. The countdown for Atlantis' Thursday launch began at 5 p.m. An Air Force weather forecast shows a 60 percent chance of unfavorable weather during the 2:45 p.m. launch. The mission could be delayed by rain, clouds and possible lightning. However, skies would clear quickly and forecasts show an 80 percent chance of favorable launch weather on Friday. Web posted. (2008). [Atlantis' countdown has begun [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, February 4].] Web posted. (2008). [Atlantis astronauts arrive at KSC [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, February 4].]

February 5: Ultimate test for shuttle sensor fix comes Thursday

LeRoy Cain, manager of shuttle integration at the Kennedy Space Center, said today he is confident the redesigned connectors intended to fix on-going problems with low-level fuel sensors in the shuttle Atlantis' external tank will work properly Thursday when the ship is fueled for takeoff. But engineers will be paying close attention to the sensors and if any problems develop that might cast doubt on the fix, the shuttle will remain on the ground. "We expect to see the system work perfectly normally and we expect to see completely nominal results when we ... cover up the sensors and they're initially wetted (with super cold liquid hydrogen rocket fuel)," Cain said. "If they see any failures, we'll respond to those per the pre-planned contingency procedures. But I expect to see a completely nominal system, I have very high confidence that the resolution we came to here on this system is very solid." The space shuttle's external tank is equipped with a variety of propellant level sensors, including four at the bottom of the hydrogen section that are known as engine cutoff - ECO - sensors. The ECO sensors serve as a backup system to make sure a shuttle doesn't run out of fuel while the engines are still running because of some other problem. During attempts to launch Atlantis on Dec. 6 and 9, multiple ECO sensor circuits failed to work properly. Subsequent analysis, including results of a fueling test Dec. 18, indicated the problems were the result of temperature-induced gaps in the pins and sockets of a connector that routes sensor data out of the tank to the shuttle. The solution was to solder the connector pins and sockets together, eliminating any possibility of more open circuits when the hardware is chilled to liquid hydrogen temperatures. NASA managers are so confident the fix will work, they agreed to use the normal launch commit criteria, which calls for three of the four ECO sensors to be operational for a launch to proceed. But Cain said any failure Thursday will be closely scrutinized to make sure it's not something that could affect the other sensors or is the result of a problem with the redesigned connector. Web posted. (2008). [Ultimate test for shuttle sensor fix comes Thursday [Online]. Available WWW: <http://www.spaceflightnow.com/> [2008, February 5].]

Poor weather becomes a worry

Facing a good chance of unfavorable weather on launch day, senior NASA managers today will grapple with a pair of technical issues in addition to weather concerns. They must approve a flight plan in case a kinked Freon hose leaks and review the replacement of a failed connector in Atlantis' external tank, but both are issues thoroughly aired already and likely to meet approval. An Air Force forecast shows a 60 percent chance of unfavorable weather around the launch time, 2:45 p.m. Thursday. The mission could be delayed by rain, clouds and lightning. "It's going to be somewhere over Central Florida on Thursday," shuttle weather officer Kathy Winters said. However, skies are expected to clear quickly and the forecast calls for an 80 percent chance of favorable launch weather on Friday. The countdown for Atlantis' launch began at 5 p.m. Monday. Two launch attempts were scrubbed Dec. 6 and 9 after intermittent signals from a low-fuel sensor. NASA engineers believe that replacing a connector on the external tank and soldering the leads will keep the sensors working when the tank is filled with super-cold fuel Thursday morning. Web posted. (2008). [Poor weather becomes a worry [Online]. Available WWW: <http://www.floridatoday.com/> [2008, February 5].]

Jobs at KSC may be lost in cutbacks

NASA expects to shed as many as 1,000 workers from its space-shuttle program in 2009 -- including an unspecified number at Kennedy Space Center -- as part of a \$17.6 billion budget outlined Monday by the White House. The job cuts represent the first major reduction of NASA's work force since President Bush decided to retire the shuttle in 2010 to make way for Constellation, a new program that aims to take astronauts to the moon by 2020 and Mars afterward. "While it will require a great deal of sacrifice of time and effort from many thousands of people in NASA and industry across this great country to turn this unifying vision into a reality, it also requires a sustained commitment from all of us," said Shana Dale, deputy NASA administrator. William H. Gerstenmaier, associate administrator for space operations, said fewer workers would be needed as the shuttle program winds down. In addition, NASA has pushed to reduce the costs of the Constellation program, including the number of people required to design and build the craft. All that is doubly worrisome for KSC, where the shuttle is prepared for flight and launched. Constellation isn't scheduled to launch until March 2015; in the interim, as many as 5,000 of KSC's 15,000 contractors and civil-service workers could lose their jobs. The budget proposal released Monday does little to shorten that gap. It is about \$300 million more than this year's budget, while NASA officials estimated in November the agency would need an additional \$2 billion over three years to close the gap. Gerstenmaier would not specify where NASA planned to cut the estimated 1,000 workers in 2009. But he said the losses could be lower if the agency finds a way to transition workers into the Constellation program. One "big advantage" for KSC, he said, is that most of its workers will still be needed in 2009 to launch the shuttle's remaining missions to complete the international space station. But in 2010, many of those jobs will disappear. ["Jobs at KSC may be lost in cutbacks," Orlando Sentinel, February 5, 2008, p A5.]

Critics: New NASA Rocket Flawed

The rocket that NASA is betting on to return humans to space after the space shuttle retires is in trouble. Assailed by a loud chorus of critics, hobbled by a lack of money and beset by technical problems, the Ares I launch vehicle is suffering from a growing perception that it is another NASA project that will never get off the ground. In particular, some critics have urged that NASA ditch the untested Ares, a so-called "stick" rocket powered by five segments of the solid rocket boosters used on the shuttle, in favor of the Atlas V401, which is already used by the military and CIA to reliably launch spy satellites into orbit. NASA argues that the Atlas V as it stands is not robust enough to lift its 25-ton Orion crew capsule into space. Nonetheless, the news that entrepreneurs intend to employ an off-the-shelf rocket -- one that NASA rejected as being too expensive and unsafe to modify for its purposes -- was immediately seized on by Ares I critics. Lockheed insists its studies, including one done in 2004 for NASA, show that the Atlas V can be fitted with the necessary escape systems and

safety devices at a modest cost. NASA considered, and rejected, the use of Atlas V to replace the space shuttle, which is scheduled to be retired in 2010. The agency concluded that modifying the rocket to carry the heavy Orion crew capsule into space would be more costly and less safe than the Ares design. [Critics: New NASA Rocket Flawed," Orlando Sentinel, February 6, 2008, p A1 & A8.]

February 6: Weather worsens to 70% "no go"

The Air Force weather forecast predicts at 70 percent chance of unfavorable weather at launch time for Atlantis, which is 2:45 p.m. EST Thursday. The chance of unfavorable weather for Friday also has increased to 40 percent. A massive front over the southeastern U.S. is expected to pass over Cape Canaveral on Thursday. Web posted. (2008). [Weather worsens to 70% "no go" [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, February 6].]

Rooms with a view

A start-up company planning a space hotel is considering launching crew and cargo from Cape Canaveral starting in late 2011. American aerospace giant Lockheed Martin would upgrade its Atlas 5 rocket for human space flight as part of the endeavor -- a potential economic boon for the state of Florida. "It's very encouraging," said Steve Kohler, president of Space Florida, a state agency working to bring Bigelow Aerospace of Nevada to Florida's Space Coast. "It's exciting," added Lynda Weatherman, president and chief executive officer of the Economic Development Commission of Florida's Space Coast. The new venture could help offset the anticipated loss of 2,500 to 3,500 Florida jobs when NASA retires its shuttle fleet in late 2010. The number of jobs that might be created remains unclear. Bigelow intends to build a commercial complex in low Earth orbit that would be visited by space tourists, scientific researchers and perhaps astronauts from countries that would like to become space-faring nations. The company already has designed, fabricated and launched two pathfinder spacecraft, Genesis 1 and Genesis 2. The prototype habitat modules were launched from Russia in 2006 and 2007. Mike Gold, corporate counsel with the company, said the firm is negotiating with Lockheed Martin Commercial Launch Services, which markets Atlas 5 missions. United Launch Alliance, a joint venture partnership of Lockheed Martin and Boeing, would provide the launch services at Cape Canaveral Air Force Station. The partnership launches Atlas 5 rockets from Complex 41 there. Bigelow plans to launch six missions in its first year of operation. Web posted. (2008). [Rooms with a view [Online]. Available WWW: <http://www.floridatoday.com/> [2008, February 6].]

Worker falls from ladder

An unidentified worker fell from a ladder at pad 39A early Wednesday afternoon and was flown by helicopter to a local hospital. NASA officials initially said there were no obvious signs of injury, but the United Space Alliance worker was placed on a back board as a precaution. NASA and United Space Alliance declined to identify the worker or elaborate on his condition, citing medical privacy concerns. The worker was flown on First Flight to Holmes Regional Medical Center in Melbourne, which also could not identify the worker or his condition because no name had been released. NASA said the man fell from an 8-foot ladder and landed on the mobile launcher platform, where shuttle Atlantis is being readied for a scheduled launch this afternoon to the International Space Station. Web posted. (2008). [Worker falls from ladder [Online]. Available WWW: <http://www.floridatoday.com/> [2008, February 7].]

Scientists to launch paper planes from space

A spacecraft made of folded paper zooming through the skies may sound far-fetched, but Japanese scientists plan to launch paper planes from the International Space Station to see if they make it back to Earth. On Wednesday the University of Tokyo researchers tested small, origami planes made of special paper for 30 seconds in 482 degrees Fahrenheit heat and wind at seven times the speed of

sound. The planes survived the wind tunnel test intact. The theory is that paper craft, being much lighter than space shuttles, may escape the worst of the friction and heat that much heavier space shuttles face on re-entry to the atmosphere. "Paper planes are extremely light so they slow down when the air is thin and can gradually descend," said Shinji Suzuki, a professor of aerospace engineering. Suzuki said the technology might one day be used for unmanned spacecraft. The team has asked a Japanese astronaut to release the 8-inch planes, made from paper chemically treated to resist heat and water, from the space station. It will take several months for the craft to reach Earth, and there is no way to predict their landing spot if they make it, Suzuki said. "It's going to be the space version of a message in a bottle. It will be great if someone picks one up," he said. "We are thinking of writing messages on the planes saying 'if found, please contact us' in a couple of languages." Web posted. (2008). [Scientists to launch paper planes from space [Online]. Available WWW: <http://www.msnbc.com/> [2008, February 6].]

February 7: Sensors pass initial testing

NASA is continuing to gas up Atlantis after a critical-but-troublesome fuel sensor system passed initial tests deemed key to proceeding with plans to launch the shuttle at 2:45 p.m. EST. The 15-story tank now is 40 percent full. Four fuel-level sensors that failed back in December now appear to be working properly. Under NASA launch rules, three of the four must be operating in order to commit a shuttle and its crew to flight. The so-called Engine Cutoff Sensors serve as a key back-up system for shutting down the shuttle's main engines in flight. A sensor failure could lead to a premature engine shutdown, triggering an unprecedented emergency landing attempt. And a failure also could allow the engines to run dry and break apart in flight -- a catastrophic failure mode. The four sensors were immersed in liquid hydrogen just after 6 a.m. and then a series of tests began about 20 minutes later. NASA Launch Commentator George Diller reported that all four sensors appear to be operating properly. NASA engineers will continue to monitor sensor system circuits. Another state-of-health check will come at the end of fuel-loading operations -- around 8:20 a.m. -- and then a final test would be conducted when NASA enters a planned T-9 minute hold around 2 p.m. today. Web posted. (2008). [Sensors pass initial testing [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, February 7].]

Atlantis launches

The space shuttle Atlantis lifted off from pad 39A on a long-delayed mission to deliver a European laboratory module to the International Space Station. Atlantis lifted off on schedule at 2:45 pm EST (1945 GMT) and entered orbit eight and a half minutes later. There were no technical problems reported during the countdown, and weather conditions, which were forecast to be poor, cleared enough to permit the launch. Three pieces of foam were filmed falling from the external tank. The shuttle crew will inspect the thermal tile to determine if it was damaged. Atlantis is scheduled to dock with the ISS at 12:25 pm EST (1725 GMT) Saturday. The primary purpose of the 11-day STS-122 mission is to deliver the Columbus lab module to the station. The module is Europe's major contribution to the station. Two European astronauts are among the shuttle's seven-person crew; one of the two will remain on the station as ISS astronaut Dan Tani returns with the shuttle crew. Web posted. (2008). [Atlantis launches [Online]. Available WWW: <http://www.spacetoday.net/> [2008, February 7].] ["Columbus sails again," **Florida Today**, February 8, 2008, p 1A & 7A.]

Shuttle success means some ties are cut

Why did Doug Lyons show up for the post-launch news conference with only half of his necktie? Its space shuttle program tradition for first-timers in certain positions in the Kennedy Space Center Launch Control Center to have their ties cut in half after launch. One of those positions is launch director, a job Lyons fulfilled for the first time. "I'm honored," the grinning Lyons said the bizarre-looking remnant of his tie. The two pieces will end up framed for display. ["Shuttle success means some ties are cut," **Florida Today**, February 8, 2008, p 6A.]

Griffin: No mass layoffs lurking

NASA's sun-setting shuttle program will see a significant reduction in the number of people it employs in 2009, but mass layoffs are not expected at Kennedy Space Center. In fact, NASA Administrator Mike Griffin says normal agency attrition and retirement rates, along with transfers to lunar exploration, may eliminate any need for pink slips at the Florida spaceport. "You're not going to see 1,000 jobs come out of the KSC area next year. That's not going to happen," Griffin said in an interview Thursday. "Just because the shuttle program is not paying for somebody to work doesn't mean that NASA is not paying somebody to work. We've got more than one account at NASA." NASA is working under a September 2010 deadline to finish construction of the International Space Station and retire its aging shuttle fleet. The agency is developing new Ares rockets and Orion spacecraft to return astronauts to the moon by 2020. Unveiled earlier this week, NASA's budget request for 2009 calls for shuttle program funding to be cut to \$2.9 billion from almost \$3.3 billion this year. At the same time, funding for NASA's Constellation program -- the moon effort -- would rise to \$3 billion in 2009 from about \$2.4 billion this year. Griffin said the drop in the shuttle budget is "the equivalent of about 1,000 jobs across the shuttle program. But that's across the shuttle program -- all 17,000 people," he added. "They aren't all here." NASA's shuttle program work force is spread from Florida to California. Four NASA field centers -- including Johnson Space Center in Houston, Marshall Space Flight Center in Huntsville, Ala., and Stennis Space Center in Bay St. Louis, Miss. -- are heavily involved. Local government studies show up to 3,500 people might find themselves without work when the shuttle program shuts down. Griffin could not pinpoint the number of KSC shuttle workers who might end up in the unemployment line in 2009. But he indicated the number likely will not be large. He said the anticipated decrease in the size of the shuttle work force is about 6 percent. Normal attrition and retirement approaches that rate, and Griffin said many might transfer to the moon program. Web posted. (2008). [Griffin: No mass layoffs lurking [Online]. Available WWW: <http://www.floridatoday.com/> [2008, February 8].]

February 8: Griffin: Lost contracts fuel criticism of NASA

NASA Chief Michael Griffin lashed out this week at criticisms of his agency's pace plans and new rocket designs, saying they are being fueled by big aerospace companies that are desperate to win back agency contracts. "This is not so much an argument that people are having with NASA," he said during an interview with the *Orlando Sentinel*. "It's about winning contractors versus losing contractors, and losing contractors spotting an opportunity coincident with an election year to reopen what was a settled issue three years ago." Changing course now, he said, would be costly, ill-advised and almost certainly result in disaster for America's civil space program. Griffin promoted NASA's Constellation program that is supposed to send humans to the moon, and possibly to Mars, as "a good policy" with sticking with. His defense comes against the background of growing criticism of NASA plans at a time when the return-to-the-moon program is under increasing scrutiny. Recent reports of technical problems with the Ares I rocket, which is being developed to send the Orion capsule to the moon, are feeding a growing perception that it is just another NASA idea that will never get off the ground. "The technical work is going really well," he said. But a number of top space-exploration advocates, policy experts and scientists, including some who initially supported the program, have been questioning whether NASA can finish Ares on schedule at a price taxpayers will accept. Griffin said that so far, no presidential candidate from either party has sought information about Constellation. Some of the sniping at Constellation arises from resentment many space scientists feel about the loss of funding for unmanned missions. More sniping comes from some rocket engineers who have disliked the project since NASA in 2005 chose to build the Ares I rather than buying the Atlas V. "It is all just noise," Griffin said. "I trust the Congress enough, and my relationships with the Congress enough, to believe that Congress is not going to write a law telling me to go purchase Atlas V's and cancel Ares I." ["Griffin: Lost contracts fuel criticism of NASA," *Orlando Sentinel*, February 9, 2008, p A1 & A16.]

February 10: Atlas V Pad at Vandenberg AFB Ready

It's been a hurry-up-and-wait situation for United Launch Alliance's refurbishment of the nearly half-century old Space Launch Complex-3 here, but a strengthened new pad is now ready to debut Atlas Vs on the Pacific Coast. The first mission liftoff, scheduled on Feb. 26, is for the National Reconnaissance Office using an Atlas V in a 411 configuration—a 4-meter (13.1-ft.)-diameter payload fairing, one Aerojet solid rocket booster (SRB) motor and a single Pratt & Whitney RL10 Centaur upper stage. Although classified, mission L-28 is believed to be a signals intelligence satellite bearing an attached Space-Based Infrared System Highly Elliptical Orbit payload for missile defense. This will be the second Sbirs HEO payload launched from here; the first was lofted two years ago for the NRO as part of the L-22 mission that inaugurated West Coast operations for Delta IV. Web posted. (2008). [Atlas V Pad at Vandenberg AFB Ready [Online]. Available WWW: <http://www.aviationweek.com/> [2008, February 10].]

February 11: Endeavour rolls to assembly building

The orbiter Endeavour is in the Kennedy Space Center Vehicle Assembly Building after a move this morning from its shuttle processing hangar. Mounted atop a 76-wheel transporter, the \$1.8 billion spaceship was backed out of Bay No. 2 of the Orbiter Processing Facility at 7:36 a.m. About 100 workers escorted the orbiter as it was wheeled into the 52-story assembly building. The quarter-mile move took about 20 minutes to complete. The orbiter will be hoisted about a mobile launcher platform and then connected to an external tank with attached solid rocket boosters. The fully assembled shuttle is scheduled to roll out to launch pad 39A a week from today. Endeavour and seven astronauts are scheduled to launch March 11 on a mission to delivery a two-armed Canadian robot and the first section of the Japanese Kibo science research facility to the International Space Station. Web posted. (2008). [Endeavour rolls to assembly building [Online]. Available WWW: <http://www.floridatoday.com/> [2008, February 11].]

NASA Assigns Crews for STS-127 and Expedition 19 Missions

NASA has assigned crews for the STS-127 space shuttle mission and the Expedition 19 International Space Station mission. The STS-127 mission will deliver the final components of the Japan Aerospace Exploration Agency's Kibo laboratory to the station. Expedition 19 will double the size of the resident crew on the complex, expanding it to six people. Mark L. Polansky will command the shuttle Endeavour for STS-127, targeted to launch in 2009. Marine Corps Lt. Col. Douglas G. Hurley will serve as the pilot. Mission specialists are Navy Lt. Cmdr. Christopher J. Cassidy, Thomas H. Marshburn, David A. Wolf and Julie Payette, a Canadian Space Agency astronaut. The mission will deliver Army Col. Timothy L. Kopra to the station to join Expedition 18 as a flight engineer and science officer and return Japanese astronaut Koichi Wakata to Earth. Hurley, Cassidy, Marshburn and Kopra will be making their first trips to space. Expedition 19 will be commanded by cosmonaut and Russian Air Force Col. Gennady Padalka. In March 2009, he will command the Soyuz spacecraft that will launch him and astronaut Michael R. Barratt to the station. Astronaut Nicole P. Stott will join them, arriving on the STS-128 shuttle mission to replace Kopra. She will serve as a flight engineer and science officer and return to Earth on the next Soyuz spacecraft. Barratt and Stott will be making their first trips to space. In May 2009, cosmonaut and Russian Air Force Lt. Col. Yuri Lonchakov will command a Soyuz spacecraft that will launch to join Expedition 19 in progress on the station. With Lonchakov will be European Space Agency astronaut Frank De Winne of Belgium and Canadian Space Agency astronaut Robert B. Thirsk. Their arrival will expand the station's crew size to six for the first time. Lonchakov and De Winne will serve as flight engineers on the station and return on the Soyuz with Stott. Thirsk also will serve as a flight engineer and will return to Earth on STS-129. Expedition 19 will include visits by two space shuttle missions that will equip the station with the additional facilities needed to support a six-person crew. Expedition 19 also will prepare the station for the later arrival of Russian research modules and additional docking ports. ["NASA

Assigns Crews for STS-127 and Expedition 19 Missions,” **Press Release #08-052**, February 11, 2008.]

Did China spy on NASA?

Federal officials Monday arrested a former Boeing engineer on charges of stealing trade secrets from the space-shuttle program, Delta IV rocket and other projects and sending them to agents of the Chinese government. In an indictment filed in California, prosecutors accused Dongfan “Greg” Chung, 72, a shuttle engineer, with acting as an agent of the Chinese in a case spanning 30 years. According to the indictment, Chung traveled to China to deliver lectures on technology involving the shuttle and other programs, and to meet with officials and agents of the government. Chung did not report his travels to Boeing or Rockwell, as required, the indictment said. [“Did China spy on NASA?” **Orlando Sentinel**, February 12, 2008, p A1 & A10.]

February 12: Lab’s opening also an ending

Mike Kinslow is keeping close tabs on the Atlantis astronauts and the commissioning of the European Columbus science laboratory this week at the International Space Station. A payload flow manager with The Boeing Co., Kinslow shepherded the 10-ton lab through launch preparations at Kennedy Space Center, and he knows its arrival at the station is historic. “It’s been largely a U.S. – Russian complex so far, and this is the first mission where we are bringing the Europeans – the Italians, the French, the different international countries and companies – together to do this work,” he said. “So it’s really been an exciting adventure.” The Columbus lab arrived at NASA’s shuttle homeport on May 30, 2006, and The Boeing Co., which hold the prime payload processing contract at KSC, began launch preparations with its European counterparts. For Kinslow, the Columbus mission is one of the highlights of a career that stretches back to the Apollo moon-landing project in the late 1960s and early 1970s. The space program veteran also worked on Skylab, the nation’s first space station, and the Delta rocket program before taking his current post as shuttle payload manager in 1990. “I’ve got one of the best jobs at Kennedy Space Center,” he said. [“Lab’s opening also an ending,” **Florida Today**, February 13, 2008, p 3B.]

NASA’s Space Shuttle Endeavour to Move to Launch Pad

Space shuttle Endeavour is scheduled to roll out to Launch Pad 39A at NASA’s Kennedy Space Center, Fla., on Monday, Feb. 18, as preparations move forward for the STS-123 mission. Endeavour is targeted to lift off March 11 on a 16-day mission to the International Space Station. The first motion of the shuttle out of Kennedy’s Vehicle Assembly Building is scheduled for 7 a.m. EST. 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 on top of 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. [“NASA’s Space Shuttle Endeavour to Move to Launch Pad Monday,” **Media Release #M08-028**, February 12, 2008.]

February 13: NASA: Mars rover could be delayed

NASA’s flagship mission to land a nuclear-powered rover on Mars is facing development problems and ballooning costs that could threaten its scheduled launch next year. NASA Administrator Michael Griffin told a congressional hearing this month that engineers had to redesign the heat shield on the Mars Science Laboratory after tests showed the protective layer would not survive entering the Martian atmosphere. The extra work is expected to add \$20 million to \$30 million to the \$1.8 billion price tag, already \$165 million over budget. NASA is still aiming for a 2009 launch, but the space agency is also mulling alternative voyages in 2010 and 2011, Griffin told the House Science and Technology Committee on Feb. 13. [“NASA: Mars rover could be delayed,” **Orlando Sentinel**, February 29, 2008, p A4.]

February 14: Shutdown no threat to shuttle, ISS

Shuttle Atlantis and seven astronauts will be brought back to Earth before the U.S. tries to shoot down a doomed spy satellite, officials said Thursday. Moreover, the \$100 billion International Space Station and its multinational crew will not be endangered during what will be an unprecedented orbital intercept, the officials said. "We looked very carefully at increased risks to the shuttle and the station, and broadly speaking, they are negligible," NASA Administrator Mike Griffin told reporters in a Pentagon news briefing. President Bush decided to try to shoot down the failed National Reconnaissance Office spacecraft to avert the chance that it would re-enter Earth's atmosphere and expose people to toxic rocket fuel. The attempt to destroy the failed satellite won't be made until after Atlantis lands at 9:06 a.m. Wednesday. The station's location will be taken into account to make sure it is not in the line of fire. ["Shutdown no threat to shuttle, ISS," **Florida Today**, February 15, 2008, p 1A & 13A.]

NASA Updates Shuttle Target Launch Dates

NASA officials on Thursday revised the target launch dates for space shuttle flights during the second half of 2008. The space shuttle and International Space Station programs agreed to the changes during a meeting at NASA's Johnson Space Center to evaluate options following the STS-122 mission delay. The next two shuttle flights, STS-123 on Endeavour targeted for March 11 and STS-124 on Discovery targeted for April 24, are being assessed and coordinated with NASA's international partners. Any decision on those launch dates will take place after the current STS-122 mission lands. Late 2008 shuttle mission target launch dates are: Aug. 28 - Atlantis(STS-125) to service the Hubble Space Telescope Oct. 16 - Endeavour(STS-126) to deliver equipment to the International Space Station Dec. 4 - Discovery (STS-119) to deliver the final set of solar arrays to the station. Flights beyond 2008 have not been assessed. Both shuttle and station program officials are considering options for scheduling the remainder of the shuttle flights. ["NASA Updates Shuttle Target Launch Dates," **Press Release #08-056**, February 14, 2008.]

February 15: NASA Awards Solid Rocket Motors Contract Modification

NASA has awarded a contract modification valued at \$812.5 million to ATK Launch Systems Inc., of Brigham City, Utah, for continued delivery of space shuttle reusable solid rocket motors. The modification changes the current contract to align production to 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 Inc. will produce and refurbish flight and ground-test reusable solid rocket motors for the Space Shuttle Program 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," **Contract Release #C08-031**, February 15, 2008.]

NASA Updates Endeavour's Move to Launch Pad

Space shuttle Endeavour's rollout to Launch Pad 39A at NASA's Kennedy Space Center, Fla., has been rescheduled for 12:01 a.m. on Monday, Feb. 18. Endeavour is targeted to lift off March 11 on the 16-day STS-123 mission to the International Space Station. The first movement of the shuttle will be approximately seven hours earlier than previously scheduled. The fully assembled space shuttle, consisting of the orbiter, external fuel tank and twin solid rocket boosters, will be mounted on a Mobile Launcher Platform and delivered to the pad on top of 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. ["NASA Updates Endeavour's Move to Launch Pad Monday," **Media Advisory #M08-034**, February 15, 2008.]

February 16: Satellite doesn't worry astronauts

Astronauts aboard the international space station say they are not worried about the U.S. Navy's upcoming attempt to shoot down a falling spy satellite in their neighborhood this week. The dramatic shoot-down will be attempted after shuttle Atlantis undocks from the station and returns to Earth on Wednesday. "We don't have any concerns," Atlantis' commander Steve Frick said Saturday during an interview from space. "We're going to be safely on the ground before they take any action, and the satellite is going to be well below the space station, so we don't expect any problems." The shuttle will land at either Kennedy Space Center or Edwards Air Force Base in California. NASA will staff the backup landing site in California in case of problems that prevent a Florida touchdown. ["Satellite doesn't worry astronauts," Orlando Sentinel, February 17, 2008, p A 15.]

February 18: Thunderbirds fly by Endeavour on pad

The U.S. Air Force Air Demonstration Squadron, a.k.a. the Thunderbirds, buzzed shuttle Endeavour on launch pad 39A at Kennedy Space Center today. Flying its famed four-aircraft diamond formation with another flying solo, the Thunderbirds made two passes by the pad around 10:15 a.m. EST, or about an hour after the Rotating Service Structure was moved around Endeavour to provide access to workers while protecting the ship from inclement weather. The shuttle reached the pad just before sun-up after an overnight move from the Vehicle Assembly Building. The Thunderbirds fly F-16 Fighting Falcon aircraft manufactured by Lockheed Martin. The highly maneuverable air-to-air combat fighter also serves as a tactical bomber. The aircraft carries a smoke-generating system in place of a 20mm cannon. Web posted. (2008). [Thunderbirds fly by Endeavour on pad [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, February 18].]

Shuttles being shuttled

NASA's shuttle fleet was on the move Monday on the ground and well above it as Endeavour rolled onto its launch pad at Kennedy Space Center and Atlantis headed toward a hurry-up homecoming. Atlantis and its seven astronauts left the International Space Station aiming for a 9:07 a.m. Wednesday landing at KSC. Crews working on Endeavour, meanwhile, will be hard-pressed to have that shuttle ready for an planned March 11 launch on a mission to deliver the first part of a Japanese laboratory to the outpost. Ken Tenbusch, the NASA manager in charge of Endeavour launch preparations, said there is no extra time in a tight schedule. "We're going to be working seven days a week, 22 straight days until we get the vehicle off the pad," he said. NASA's more immediate focus is on bringing Atlantis and its crew back to Earth before the Navy attempts to obliterate a failed National Reconnaissance Office spacecraft. Both KSC and a back-up landing site in California will be open on Wednesday, and NASA fully intends to get the shuttle on the ground that day. Clear skies and light winds are expected at KSC, and there's only a slight chance of rain showers at the Majave Desert military base that day. ["Shuttles being shuttled," Florida Today, February 19, 2008, p 1B & 4B.]

February 19: NASA dampens spaceport dreams

In a sharp blow to Florida, NASA on Tuesday chose Virginia-based Orbital Sciences to develop a spacecraft to supply the international space station after the space shuttle is retired in 2010. Company officials said they had not chosen a launch site but were leaning toward Wallops Flight Facility on Virginia's Eastern Shore. That decision could undermine Florida's ambitions to be the nation's spaceport. "We have been looking at both Florida and Wallops as potential [launch] sites," said Antonio Elias, executive vice president of Orbital Sciences, in Dulles, Va. "Out standing – as a Virginia-based company – is that we would favor the home state." Elias said both KSC and Wallops lack the facilities to launch its rockets and that efforts by each to accommodate Orbital Sciences could play a role in their decision. "Our preference is Wallops, but we have not closed the door," Elias said. Orbital Sciences will get \$170 million in NASA funding through 2010, beating out

companies that had promised to bring hundreds of jobs to Florida. ["NASA dampens spaceport dreams," **Orlando Sentinel**, February 20, 2008, p A1 & A8.]

A mission with urgency

A group representing the space industry will launch a mission to Tallahassee on March 6, and their success is vitally important this year. Aerospace is the state's third largest industry behind tourism and agriculture, but competition is on the horizon, and a shrinking space budget threatens the statewide industry. This year's Space Day message will be carried to the Legislature with urgency. "During this transition period from shuttle to the next phase of human space flight, it's imperative that we join forces to address work force transition and infrastructure issues," said 2008 Space Day Chairman Pedro Medelius. Medelius, associate program manager with ASRC Aerospace, has organized with state lawmakers. The group also plans to meet with the governor and lieutenant governor. Aerospace industries exist in 46 of the state's 67 counties. Some \$44 billion is distributed across Florida. Space Day participants include: NASA, the Air Force, Space Florida, ASRC Aerospace, ATK, Astrotech, Boeing, Delaware North, Dynamac, L-3 Communications, ITT Industries, Lockheed Martin, Pratt & Whitney Rocketdyne, Space Gateway Support, Space Coast Launch Services, Space Foundation, United Space Alliance, SAIC and Wyle Labs. ["A mission with urgency," **Florida Today**, February 20, 2008, p 3B.]

NASA Partners With Orbital Sciences for Space Transport

NASA selected Orbital Sciences Corporation of Dulles, Va., to develop and demonstrate commercial orbital transportation services that could open new markets and pave the way for contracts to launch and deliver crew and cargo to the International Space Station. NASA and Orbital Sciences signed a funded Space Act Agreement under the Commercial Orbital Transportation Services Project, known as COTS. The new partner will receive approximately \$170 million in federal funds to supplement its privately-funded efforts. The selection of Orbital Sciences brings to seven the number of partners in which NASA is investing through COTS. NASA selected SpaceX of El Segundo, Calif., as a partner in August 2006. NASA is partnering with an additional five companies through unfunded agreements. NASA is providing approximately \$500 million to stimulate the commercial space transportation market and help develop safe, reliable and cost-effective access to and from low Earth orbit. ["NASA Partners With Orbital Sciences For Space Transport Services," **Press Release #08-058**, February 19, 2008.]

February 20: Atlantis makes 67th shuttle landing at Kennedy

Completing the STS-122 mission, space shuttle Atlantis landed on runway 15 at Kennedy on time at 9:07 a.m. Wednesday. When the seven astronauts left the crew transport vehicle, they were greeted by NASA Associate Administrator for Space Operations William Gerstenmaier, Director of Mission Launch Integration LeRoy Cain and Shuttle Launch Director Mike Leinbach. ["Atlantis makes 67th shuttle landing at Kennedy," **Countdown**, February 21, 2008.]

NASA lands 1, preps 1

About 20 days after Atlantis landed safely, Endeavour is scheduled to make a similar construction mission in space. In an overnight launch March 11, the shuttle will carry another scientific laboratory for one of the United States' partners at the space station. The 37-foot Japanese module will be delivered in the shortest shuttle turnaround since the Columbia accident. Having delivered the European Columbus laboratory, Atlantis landed Wednesday at 9:07 a.m. at Kennedy Space Center. Columbus transformed the station by expanding the ability to create scientific data. To complete six launches this year, NASA first must skirt orbital traffic in March and April, such as scheduled flights of the Europeans' Automated Transfer Vehicle, a Russian Soyuz craft, and Atlas 5 and Delta II expendable rocket launches. In a shift in that tight schedule on Wednesday, NASA announced that late delivery of an external tank will delay Discovery's April 24 mission to May 25. The tank cannot

be delivered in time for a May 7 launch. And between May 7 and 25, the sun's angle on the space station won't generate enough power for a docked shuttle. Picking up the original flight schedule, Atlantis will fly again Aug. 28 on a mission to repair the Hubble Space Telescope. Launch director Mike Leinbach said the increased pace eliminates a major danger: complacency. Atlantis' recent mission has changed the look of the space station and its balance of power and control. Europeans, who waited years for Columbus to be launched, had to wait an additional two months for NASA to correct intermittent signals from sensors. After slight redesign, the mission went off Feb. 7 relatively free of mechanical problems. The fuel sensors worked, a bent Freon tube slid back into place, and the thermal protection system received minimal damage before re-entry. Shortly before the 67th shuttle landing at KSC, twin sonic booms thundered across the landing strip as Atlantis winged in for a landing at 225 mph, some 50 mph faster than the landing speed of a 747. Atlantis returned to Earth on the 46th anniversary of John Glenn's first orbital flight. Web posted. (2008). [NASA lands 1, preps 1 [Online]. Available WWW: <http://www.floridatoday.com/> [2008, February 21].]

Navy missile intercepts decaying satellite

A missile launched from a US Navy ship in the Pacific late Wednesday hit a defunct satellite in a decaying orbit, although officials said it could take up to a day to determine the results of the intercept. The Navy launched a single modified SM-3 missile from the cruiser USS Lake Erie at 10:26 pm EST Wednesday (0326 GMT Thursday), hitting the USA 193 satellite moments later at an altitude of 247 kilometers. Pentagon officials said the impact appeared to be a direct hit, but it would take up to 24 hours to measure the results of the intercept, including whether the spacecraft's fuel tank was ruptured. The US announced a week ago that it planned to break up the satellite, an experimental reconnaissance satellite that failed shortly after launch in December 2006, before the spacecraft performed an uncontrolled reentry. The primary reason for the intercept, officials said, was to prevent the satellite's fuel tank, which contains over 450 kilograms of frozen hydrazine fuel, from surviving the reentry intact. Others have speculated the intercept is a means to prevent any sensitive technology on the satellite from falling into foreign hands, as well as to demonstrate the US's missile defense capabilities. Web posted. (2008). [Navy missile intercepts decaying satellite [Online]. Available WWW: <http://www.spaceflightnow.com/> [2008, February 21].]

NASA Updates Target Launch Date for Shuttle Discovery

NASA is targeting May 25 at 7:26 p.m. EDT for the launch of the space shuttle Discovery's STS-124 mission from the Kennedy Space Center, Fla. The flight originally was targeted for April 24. Fuel sensor system repair work on STS-122 and STS-123 delayed final preparations of Discovery's external fuel tank. The tank is expected to arrive at Kennedy in early March. Also, the shuttle cannot launch to the International Space Station between May 7 and 25 because the angle of the sun with respect to the plane of the station's orbit is too high to generate sufficient solar power for the mission. Discovery's launch date move will not affect the remainder of the shuttle manifest. Shuttle and station program officials will continue to evaluate Discovery's liftoff date and are protecting the option to launch the shuttle a few days earlier. During the mission to the space station, the shuttle and its seven-member crew will deliver the pressurized module and the robotic arm of the Japan Aerospace Exploration Agency's Kibo laboratory. ["NASA Updates Target Launch Date for Shuttle Discovery," **Press Release #08-062**, February 20, 2008.]

February 22: NASA names new space shuttle program manager

John Shannon, chairman of NASA's Mission Management Team and the man responsible for the conduct of space shuttle missions, was named manager of the shuttle program today, replacing N. Wayne Hale, a veteran ascent-entry flight director who helped steer NASA's recovery from the 2003 Columbia disaster. Shannon, a former flight director known for his self-assured, no-nonsense management style, takes over at a critical time for NASA as the agency attempts to finish construction of the international space station and fly a final 12 shuttle missions before retiring the

winged orbiters in 2010. "John Shannon is completely ready to take the reins in NASA's most critical program," Hale said in a NASA statement. "His leadership skills are well established, and the shuttle program will do well under his care." Shannon joined NASA in 1988 and in four years was leading the shuttle guidance, navigation and flight control office in mission control. He became the youngest flight director in NASA history in 1993 and served as deputy director of NASA's Columbia Task Force in the wake of the 2003 shuttle accident. He was named deputy shuttle program manager in November 2005 and chairman of the Mission Management Team. The NASA statement did not provide any insight into what led to the management shuffle, saying only that Hale had been named deputy associate administrator for strategic partnerships at the Johnson Space Center in Houston. In that capacity, the statement said, Hale will provide "strategic leadership to foster cooperative partnerships that help achieve NASA goals, build alliances across the public and private sectors, and improve U.S. competitiveness and economic growth." With the possible exception of NASA Administrator Mike Griffin, Hale has been the most visible face of the shuttle program since NASA's return to flight following the 2003 Columbia disaster. Web posted. (2008). [NASA names new space shuttle program manager [Online]. Available WWW: <http://www.spaceflightnow.com/> [2008, February 21].]

February 24: STS-122: Reviewing Atlantis' IFAs - Parachute failure tops list
Atlantis, now undergoing post-flight deservicing inside OPF-1 (Orbiter Processing Facility), has already received her expansive mission report. The IFA (In Flight Anomaly) Reviews have already been presented to the PRCB (Program Requirements Control Board) - with the main focus of attention on the failure of one of the Solid Rocket Booster (SRB) parachutes, which damaged the left hand booster. STS-122 is being classed as the 'cleanest' flight - by way of TPS (Thermal Protection System) health and lack of issues with Atlantis herself - for many a year. The list of post-flight funnies is remarkably small; this is a credit to the engineering team and all the folks who did hands-on work at the OPF. The propulsion systems operated flawlessly. Ed Mango led ECO sensor system resolution team can now class the issue as closed, with all future tanks now utilizing the soldering of the pins mitigation method on the LH2 Feed-through connector as the baseline. No further issues are expected for the remaining shuttle countdowns. Atlantis performed extremely well on orbit, with only a handful of issues reported. Three IFAs have been reviewed, with none a constraint to STS-123's upcoming launch on March 11. Several camera views caught the stinger falling off the aft of Atlantis, recorded at T-3.463 seconds. While no damage resulted from the loss of the tile, it will be evaluated for database purposes, along with post flight processing inside the OPF. Activation problems with the Columbus module were soon resolved by controllers on the ground, along with minor issues with the video downlink that was not picture perfect during some elements of the mission. Web posted. (2008). [STS-122: Reviewing Atlantis' IFAs – Parachute failure tops list [Online]. Available WWW: <http://www.nasaspaceflight.com/> [2008, February 24].]

Space Center expansion plans threaten hot fishing spot

Worry is spreading through the regional angling community that Kennedy Space Center's plan for a new launch complex involves permanently closing the Mosquito Lagoon from Haulover Canal south. That would halt fishing on half of a sport fishing area so treasured it's known as "The Redfish Capital of the World," not to mention badly tarnishing the allure of a resource that attracts untold thousands of dollars to local economies. Space Center officials said nothing has been decided yet but would not rule out possible closures. And they are holding a series of meetings to hear people's concerns, beginning this week in Titusville and New Smyrna Beach. NASA wants to build a 200-acre Commercial Vertical Launch Complex on one of two potential sites. The first is by the beach just south of the existing shuttle launch pads. The second is at the water's edge of the Mosquito Lagoon and at a crossroads of public access leading to boat ramps at Haulover Canal, Bio Lab Road and Eddy Creek as well as to Playalinda Beach, Merritt Island National Wildlife Refuge and Cape Canaveral National Park. "We have not determined yet when or how much of these areas will need

to be closed for either of the two proposed new launch sites," NASA spokesman George Diller said. But a 125-page study on the project's feasibility notes the lagoon site's "proximity to Kennedy Parkway North, A. Max Brewer Parkway and Playalinda Beach Road could pose security problems." "All three roads will be closed during fueling and launch operations," the report continues. "There are several possible solutions for this, such as moving the roads or precluding public access. The former is expensive and time-consuming. The latter will be very unattractive to the public." Jim Ball, the Space Center's development manager, said the study, contracted out to Reynolds, Smith & Hill Inc., an architectural and engineering firm at Merritt Island, "does not represent a position NASA has taken regards what the impacts would be." The two proposed launch complex sites were selected on the weight of that report, though Space Center officials also acknowledge the new complex is meant to attract multiple users. And when rockets or the space shuttle launch, an extended security perimeter is enforced for public safety. Ball said Space Center officials have no idea how much use the facility might see and they won't even have an estimate until a draft assessment is published this summer. Web posted. (2008). [Space Center expansion plans threaten hot fishing spot [Online]. Available WWW: <http://www.new-journalonline.com/> [2008, February 24].]

February 25: Endeavour crew makes great escape

Endeavour's astronauts ran through a practice countdown for their planned March 11 launch today, capping the traditional training exercise with an escape drill at Kennedy Space Center's launch pad 39A. Clad in bright orange partial-pressure launch-and-entry suits and wearing helmets, the astronauts exited the side hatch of Endeavour and crossed the orbiter access arm, moving quickly toward the northwest side of the 195-foot level of the launch tower. The hurry-up came after a simulated main engine shutdown and launch pad abort as countdown clocks hit T-Minus four seconds. It mimicked what an astronaut crew would do in the event of a fire, explosion, hazardous gas leak or other emergency at the launch pad. NASA's twin shuttle launch pads each are equipped with a so-called slidewire basket system that comprise seven baskets, each of which is capable of carrying four people off the tower. No one rode down the slidewires during the drill. NASA safety officials deemed that an unnecessary risk. Dubbed the Terminal Countdown Demonstration Test, or TCDT, the practice countdown and the emergency egress drill represents the last major training exercise for the astronauts at KSC. They'll head back to Houston later today and then return March 7 for the start of the real countdown to launch. Endeavour is scheduled to blast off at 2:31 a.m. EST March 11, heading for a rendezvous and docking at the International Space Station two days later. The astronauts plan five spacewalks during a mission aimed at delivering the first section of the Japanese Kibo science research facility to the station. The spaceship and its crew must be off the ground by March 23 in order to complete the mission and depart the station before the early April launch of the Expedition 17 crew to the outpost. Web posted. (2008). [Endeavour crew makes great escape [Online]. Available WWW: <http://www.floridatoday.com> *the flame trench blog* [2008, February 25].]

NASA issues Environmental Assessment for Shuttle Transition

NASA has issued a draft programmatic environmental assessment on potential impacts resulting from the Space Shuttle Program's move toward retirement in 2010 and the transition to the Constellation Program. The assessment concludes that, because of the use of shuttle components and facilities by the Constellation Program, potential environmental impacts from disposing of the shuttle program's real and personal property would be minimal to moderate, depending on the property disposition method. The study also assesses the social and economic influence of the shuttle program on the regions around NASA's major centers. Analysis shows that the contribution of the shuttle program is relatively modest in proportion to the overall economic activity of the regions, less than one percent, except in the Kennedy Space Center, Fla., region, where it is less than three percent. The National Environmental Policy Act requires federal agencies to consider the potential environmental consequences of their proposed actions before deciding whether and how to proceed.

NASA developed this draft programmatic environmental assessment to help make informed decisions on the best options for disposing of shuttle assets. The draft programmatic environmental assessment examines the effects of implementing a centralized process to dispose of shuttle program real and personal property. Real property includes items such as buildings, structures and land, while personal property includes items such as flight hardware, parts, and materials. While the shuttle program is scheduled for retirement in 2010, disposition activities for excess property are underway and may extend several years past the final flight in 2010. Options for disposal of property include reuse by other NASA programs, storing for future NASA use, demolition, or release to the General Services Administration for disposition. NASA will accept public comments on the draft programmatic environmental assessment through March 28, 2008. The final programmatic environmental assessment is expected to be complete in spring 2008. An appendix in the final programmatic environmental assessment will include public comments and NASA's responses. NASA expects to provide a formal decision on the method of the shuttle program property disposition activities in early 2009. ["NASA issues Draft Programmatic Environmental Assessment for Shuttle Transition," **Press Release #08-066**, February 25, 2008.]

Residents rail against launch pad

Don't mess with the Merritt Island National Wildlife Refuge. That was the sentiment of more than 65 people who spoke Monday at Titusville City Hall at two jam-packed public hearings aimed at gathering input about a NASA plan to allow construction of a commercial vertical launch complex at Kennedy Space Center. The input will go into creating an environmental assessment report for the proposed complex by the fall. The privately owned center would operate on about 200 acres of KSC, on previously undeveloped Merritt Island National Wildlife Refuge land. It would include two separate launch pads, a common rocket and ground support test facility, and common propellant storage. But the plan didn't get high praise from residents at the meetings, who railed against NASA's decision to consider a site near the Mosquito Lagoon because it could block access to the wildlife refuge. ["Residents rail against launch pad," **Florida Today**, February 26, 2008, p 1A & 5A.]

February 26: NASA mulls effect of failures of booster chute on Endeavour

NASA is analyzing two separate solid rocket booster parachute failures that occurred during the launch of Atlantis earlier this month and assessing their possible effect on Endeavour's STS-123 mission, planned for a March 11 liftoff. A Flight Readiness Review (FRR) later this week will review the recovery system malfunctions that occurred on both of Atlantis' boosters during the STS-122 launch Feb. 7. None of the problems involved flight safety or propulsion aspects of the ATK solid rocket motors and both were towed back to Kennedy Space Center (KSC) without difficulty. Also, no delay of STS-123 will occur because of the booster issues. But the failure of one of three large recovery parachutes to open properly on the flight's left solid booster will result in the shuttle program scrapping the aft skirt for the booster that would normally be refurbished and reused. A camera on the booster used to track any foam debris coming off the external tank also keeps running to watch the three parachutes deploy. The camera showed that when the three 136-foot diameter main chutes were deployed, one of the three immediately developed what grew to be a 25-foot hole at the top of its canopy. This resulted in the chute never opening properly, instead streaming uselessly as the booster descended toward the Atlantic Ocean 150 miles northeast of KSC. Each booster weighs about 200,000 pounds once its propellant is used during the launch. The descent on just two instead of three good chutes meant the impact with the water was much greater than normal, bending the aft skirt and resulting in a hydrazine leak from its hydraulic power unit used to swivel the booster nozzle for steering. An investigation has started into what caused the parachute failure. This was the 10th time in the history of the program that a parachute failure has occurred. The worst parachute failure was early in the 1980s, when an entire solid rocket booster sank and was never recovered. E-mail distribution. (2008). [Aviation Week's Aerospace Daily & Defense Report

Re: "NASA mulls effect of failures of booster chute on Endeavour flight," [Electronic]. Vol. 225, No. 38, [February 26, 2008.]

NASA still mum on job losses

Communities near Kennedy Space Center could feel the impact of the space shuttles' retirement more than regions surrounding other NASA field centers, according to an agency report released Monday. The reason: the space shuttle program accounts for a bigger share of this area's economy. Space shuttle work represents less than 1 percent of economic activity in NASA communities in other states, but nearly 3 percent of economic activity in the central Florida region surrounding the spaceships' launch and landing base. The assessment is part of a new report, released Monday, outlining the economic and environmental impacts of the space shuttle fleet's retirement on communities across the United States. The document declares the impact on wildlife, other environmental concerns and traffic -- among other factors -- as minimal. The economic impact is rated slightly higher, but the report stresses that no specific numbers are available because it's still unknown how many workers will be needed for the rockets and spaceships replacing the shuttles. "A detailed analysis of changes in employment and expenditures at each Center is precluded by the fact that the Constellation Program is at an early stage of development and would be subject to adjustments and changes as requirements become better defined," said the draft Space Shuttle Program Programmatic Environmental Assessment. That has been the stock answer from NASA about the impact on jobs since President Bush announced in 2004 that the space shuttle fleet would be retired in 2010 and replaced with a new fleet of rockets and spaceships targeted for missions to the moon and someday Mars. NASA has since said that the replacement fleet won't be operational until around 2015 and will require fewer people to operate. The exact number remains an open question. While NASA has not provided figures, prime shuttle operator United Space Alliance estimates its workforce could shrink by half after the final shuttle flight. Congress, the news media and local government officials have been pressing NASA for detailed estimates for several years. Web posted. (2008). [NASA still mum on job losses [Online]. Available WWW: <http://www.floridatoday.com> [2008, February 26].]

Traveling display moves viewers

It is flat-out the most moving flight safety display in the history of U.S. space exploration. Encased in a glass triangle is one of the cockpit windows the lost crew of Columbia would have looked out as the ship's payload bay doors swung shut prior to an ill-fated atmospheric re-entry in February 2003. There's a charred piece of the wing panel that was struck 82 seconds into flight by a wedge of external tank foam insulation, blasting open a six- to 10-inch hole that went undetected in flight. There's a severely damaged thermal tile from the shuttle's left wing -- one that burned from the inside out as the orbiter encountered extreme reentry temperatures that topped 3,000 degrees Fahrenheit. And there the commander's Translational Hand Controller -- the "stick" shuttle skipper Rick Husband fought mightily with in a hopeless bid to steer his crippled spaceship back to safety at its Kennedy Space Center homeport. The names of the 17 astronauts who died in the 1967 Apollo 1 launch-pad fire, the 1986 shuttle Challenger disaster and the Columbia accident are inscribed in the display, along with the following message: "Everyone that touches a mission, on every level, is responsible for what it represents and the lives that are involved." More than a few of the people got choked up when they took in the display during a recent stay in an office building in the Launch Complex 39 area at KSC. "The fact that NASA is using, for the very first time, recovered Columbia pieces -- that obviously has real impact when people see it," KSC spokesman Allard Beutel said. "People have had an emotional response." A cockpit switch panel is displayed behind the glass. The Columbia crew would have used it to control the fuel drain and purge system on the shuttle's lefthand orbital maneuvering engine, which propelled the spaceship onto its final trajectory. The Crew Module Side Hatch Pyro-Initiator T-Handle also is displayed. It would have been used to jettison the orbiter's side hatch had the astronauts been able to bail out of the shuttle. The display

was quietly unveiled in the lobby of the KSC Operations and Support Building No. 1 on the eve of the fifth anniversary of the Columbia accident. It traveled to Johnson Space Center in Houston late last week. During the next nine months, it will tour 11 additional NASA field centers and facilities for thousands of workers to see. "This is intended for the entire NASA community -- both civil service and contractors," Beutel said. "We wanted to have a safety message that had a real impact on the employees." ["Traveling display moves viewers," **Florida Today**, February 27, 2008, p 3B.]

Atlas rocket launch delayed

The West Coast debut for an Atlas 5 rocket has been delayed, but officials remained mum on the details. The United Launch Alliance rocket had been targeting departure for early Friday morning from Space Launch Complex-3 on south Vandenberg Air Force Base. Officials would not say when the rocket's departure might be rescheduled. "We don't have a new date yet," a National Reconnaissance Office spokeswoman said. Officials confirmed Tuesday that liftoff had been delayed, but did not disclose the reason, saying only that they were working on a written statement that hadn't been approved for release by day's end. The 19-story-tall rocket is poised to carry a top-secret spacecraft for the NRO, and mark the first since SLC-3 was modified for the Atlas 5 rocket family. Atlas 5, and the Delta 4 family of rockets, were created for the Air Force's Evolved Expendable Launch Vehicle Program, designed to simplify space boosters and reduce costs. Web posted. (2008). [Atlas rocket launch delayed [Online]. Available WWW: <http://www.lompocrecord.com> [2008, February 27].]

NASA Announces Agency Quality Award Winners

NASA has presented its highest honor for quality and technical performance, the George M. Low Award, to four companies committed to innovative management, process quality and customer service. The awards were presented Tuesday at NASA's fifth annual Project Management Challenge Conference in Daytona Beach, Fla. Winners received a trophy with a medallion alloyed with material flown to the moon on Apollo 11. The 2007 Low Awards were given in the business service and product categories. Lockheed Martin Mission Services of Houston, nominated by NASA's Johnson Space Center, Houston, received the award for the large business service category. Sierra Lobo Inc. of Milan, Ohio, nominated by NASA's Marshall Space Flight Center, Huntsville, Ala., won the small business service category. Pratt & Whitney Rocketdyne Inc. of Canoga Park, Calif., also nominated by Marshall, won the award for large business product. ASRS Aerospace Corporation of Cape Canaveral, Fla., nominated by NASA's Kennedy Space Center in Cape Canaveral, won the small business product award. The agency also recognized four finalists: Boeing Space Operations Company, Cape Canaveral; Oceaneering International Inc., Houston; Space Systems Division at Jacobs Engineering, Huntsville; and the National Institutes of Aerospace, Hampton, Va. Established in 1985, NASA's Excellence Award for Quality and Productivity demonstrates the agency's commitment to promote excellence and continual improvement by challenging the NASA's contractor community to be a global benchmark of quality management practices. In 1990, the award was renamed in memory of George M. Low, an outstanding NASA leader who contributed greatly during his 27-year tenure. Low was the deputy administrator from 1969-1976 and a leader in the early development of NASA's space programs. ["NASA Announces Agency Quality Award Winners," **Press Release #08-070**, February 26, 2008.]

February 27: Griffin previews NASA center work force projections

NASA Administrator Michael Griffin offered Senate lawmakers a preview of an upcoming congressionally mandated report on projected center work force levels during testimony on Capitol Hill Feb. 27. As expected, hardest hit by the planned 2010 retirement of the space shuttle will be Kennedy Space Center (KSC) in Florida and the Michoud Assembly Facility in New Orleans. KSC will experience a net reduction of "at least several thousand" contractors as the space shuttle is retired, Griffin told members of the Senate Commerce Subcommittee on Space, Aeronautics and

Related Sciences. NASA hopes to recoup some of that number by assigning new duties to KSC, but the budget to support those new roles and missions "doesn't materialize until after the shuttle is retired," he added, so at least a temporary drop in employment is unavoidable. At Michoud, where the shuttle's external tanks are built, "we expect that the NASA employment will drop from about 1,900 today to under 600, somewhere down around 500, for a time, before coming back up" as work ramps up on the Ares rockets. "Broadly speaking," Griffin doesn't expect major reductions at Marshall Space Flight Center in Huntsville, Ala., or Johnson Space Center in Houston, Texas. No reductions are expected at Goddard Space Flight Center in Greenbelt, Md., Glenn Research Center in Cleveland, Ohio, or the Jet Propulsion Laboratory in Pasadena, Calif. Griffin promised more detailed answers on all 10 of NASA's field centers in the full report, which is due to Congress March 24. NASA must update the report at six-month intervals. Subcommittee Chairman Bill Nelson (D-Fla.) pressed Griffin on the issue of sustaining NASA's human spaceflight work force during the downtime between the shuttle's retirement and the introduction of the Orion and Ares I vehicles, projected for early 2015. "We don't want to go through what we went through after the shutdown of Apollo," Nelson said. He suggested some of the work force issues at KSC might be solved by accelerating Phase D of NASA's Commercial Orbital Transportation Services (COTS) program, which would develop commercial crew transportation capability to the space station. Griffin promised to report back on the feasibility of the idea. E-mail distribution. (2008). [Aviation Week's [Aerospace Daily & Defense Report](#) Re: "Griffin previews NASA center work force projections," [Electronic]. Vol. 225, No. 40, [February 28, 2008.].]

Space debris keeps Atlas 5 grounded

Forget about weather or technical glitches as reasons for a two-week delay for the first Atlas 5 rocket launch from Vandenberg Air Force Base. It's debris. In a one paragraph explanation released Wednesday, the National Reconnaissance Office explained why the rocket launch was delayed from Friday to sometime in mid-March. "The NRO will postpone its launch of mission NROL-28 approximately two weeks as a precautionary move to avoid possible debris from the NRO experimental satellite, which was intercepted last Wednesday (Feb. 20)," the statement says. "When established, the revised date will be posted." NRO, made up the military and CIA, is the office that designs, builds and operates the spy satellites. That experimental NRO satellite, which also launched from Vandenberg, failed shortly after arriving in orbit in 2006. Fearing the full amount of fuel on the board could pose a hazard to people on Earth when the satellite dropped from orbit, Pentagon officials devised a plan to use a Navy missile and shoot the craft. That effort succeeded Feb. 20, shattering the satellite into 3,000 fragments, most of which have already burned up upon re-entering the atmosphere. Officials said earlier this week that about 150 pieces, none larger than a football, remain in space, but are expected to re-enter the atmosphere in several days. The Atlas 5 rocket, which stands 19 stories tall, will launch from a modified Space Launch Complex-3 on South Base. That launch is reportedly planned to occur during the early morning hours. Web posted. (2008). [Space debris keeps Atlas 5 grounded [Online]. Available WWW: <http://www.lompocrecord.com> [2008, February 28].]

SpaceX COTS demo flight slips to March 2010

NASA says that SpaceX is projecting a slip of six to nine months in the first flight of its Falcon 9 rocket under the agency's Commercial Orbital Transportation Services (COTS) program. The mission, to demonstrate cargo transfer to the space station, is now planned for March 2010. The delay is due to technical issues with the new Merlin 1C engine that were "recently resolved," as well as launch site preparations at Cape Canaveral, where the mission was shifted from its original site at Kwajalein Atoll in the Marshall Islands. E-mail distribution. (2008). [Aviation Week's [Aerospace Daily & Defense Report](#) Re: "SpaceX COTS demo flight slips to March 2010," [Electronic]. Vol. 225, No. 40, [February 28, 2008.].]

NASA needs bigger Ares V to meet lunar requirements

NASA's planned Ares V heavy lift vehicle can't meet its lunar-mission requirements as currently conceived, and will need beefing up. The agency is studying a variety of options to boost the lift capability of the big new rocket, currently scheduled to begin development before the end of 2010 under the fiscal 2011 federal budget. Initially planned as the largest launch vehicle ever built, the Ares V has grown as engineers in NASA's Constellation Program gain a better understanding of the vehicles that will be needed to send four humans to the moon for a seven-day stay, and eventually to build on that early presence into a lunar outpost where astronauts can live for as long as six months at a time. But even with expansion from earlier concepts to a full 10-meter diameter all the way up to the fairing that will cover the Altair lunar lander, allowing the upper stage to carry more propellant, Ares V still falls short, according to Phil Sumrall, advanced planning manager in the Exploration Launch Projects Office at Marshall Space Flight Center. "The payload requirements are very driving and very difficult to get to, and frankly our vehicle today is close but doesn't quite meet those mission requirements," Sumrall told the Third Space Exploration Conference & Exhibit here Feb. 26. In gross terms, the Ares V needs to send about 75.1 metric tons into trans-lunar injection, including margins. But the vehicle as conceived today can only throw 63 or 64 metric tons, Sumrall said, which leaves it "actually a couple of tons short of where we need to be, without margin." Currently the vehicle consists of a big "core stage" powered by five RS-68 engines burning liquid oxygen and liquid hydrogen, and a cryogenic upper Earth Departure Stage powered by the J-2X upgrade of the Saturn V upper-stage engine already in development for the Ares I upper stage. To get under way, the Ares V will also use two strap-on five-segment versions of the four-segment reusable solid rocket motor (RSRM) that will also serve as the Ares I first stage. Options under study to increase the throw weight of the boosters and core stage include variations on adding a sixth RS-68 to the core stage, and extending the length of the solid boosters by another half-segment. That could be accomplished either with an inert "spacer" or a live half-segment. In both cases the change would extend the core-stage internal thrust structure at the top of the boosters and allow the stage to carry more liquid hydrogen for its engines. Also in the trade space are composite casings for the boosters that would save weight and could be designed to withstand higher internal pressures than the current steel cases. If a sixth RS-68 is added and the boosters are extended with a live half-segment, the Ares V would hit 75.1 metric tons without the need for composite cases. Sumrall stressed that the options he presented are "a snapshot in time" and may be revised later. "We're trying to identify options that will allow us to get the performance that we need," he said. Under present thinking, on a lunar mission the Ares V would launch first from Kennedy Space Center with an Altair lander under its fairing, followed one orbit later by the Ares I carrying a four-seat Orion crew exploration vehicle. After about four days of "loitering" in low Earth orbit to dock with the Orion, the Earth Departure Stage would restart to drive the Orion/Altair combination to the moon. E-mail distribution. (2008). [Aviation Week's Aerospace Daily & Defense Report Re: "NASA needs bigger Ares V to meet lunar requirements," [Electronic]. Vol. 225, No. 40, [February 28, 2008].]

KSC Web Site Gets a Fresh New Look

As part of NASA's agency-wide Web site redesign, the new Kennedy Space Center home on the Web will make its debut on Feb. 28. In addition to the updated look similar to the main NASA site, Kennedy's new redesign offers easier navigation to allow users to go straight to popular pages. Bolder images and better content organization set against a space-related background help the new site convey to the world the excitement of Kennedy Space Center. E-mail distribution. (2008). [KSC-Internal-Comm Re: "KSC Web Site Gets a Fresh New Look" [Electronic], [February 27, 2008].]

NASA Awards Constellation Program Support Contract

NASA has awarded SGT Inc. of Greenbelt, Md., a contract for support services for Constellation Program, which is developing new spacecraft to travel beyond low Earth orbit. The Constellation fleet includes the Orion crew vehicle, the Ares I and Ares V launch vehicles and Altair human lunar

lander. The small business contract has a potential value of \$60 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, NASA's Langley Research Center in Hampton, Va., and NASA's Marshall Space Flight Center in Huntsville, Ala. SGT Inc. will provide program planning and control services supporting the Constellation Program. Services include the program's business management, configuration and data management, requirements analysis and integration, schedule management and integration and technology protection. The base period of the indefinite-delivery, indefinite-quantity, cost-plus-award-fee contract is three years, effective April 11. The contract's base value is not to exceed \$60 million. Two one-year extension options are available and could bring the total contract value to \$100 million. ["NASA Awards Constellation Program Support contract," **Contract Release #C08-007**, February 27, 2008.]

February 29: NASA approves Mar. 11 launch

NASA managers at a noon press briefing confirmed that Endeavour will launch at 2:28 a.m. EST March 11. The 16-day mission will include five spacewalks and is scheduled to be the longest stay to date at the International Space Station. "The teams are ready to go launch on March 11," Bill Gerstenmaier, NASA's associate administrator for space operations, said. "It's a full 16-day mission." A Japanese logistics module and a Canadian robot will fly up on the shuttle, and a European cargo carrier will be near the station during the mission. The Automated Transfer Vehicle will dock at the space station after the shuttle departs. "This is an extremely international flight," said Gerstenmaier. Endeavour's flight comes on the heels of the previous mission of Atlantis. "We landed STS-122 nine days ago," said John Shannon, the newly appointed shuttle program manager. Endeavour must launch by March 12 or it must wait until after the March 15 launch of a Delta II/GPS mission from Cape Canaveral. The shuttle then must lift off before March 23 to avoid conflict with a Russian launch to the space station. The FRR went smoothly after a persistent problem with signals from low-fuel sensors was repaired before the last launch. "No issues," NASA spokesman Kyle Herring said. By this evening, technicians will finish loading toxic propellants into tanks that feed the shuttle's 44 steering jets, the twin Orbital Maneuvering System engines and the Auxiliary Power Units. The shuttle crew of seven arrives from Houston in a week to prepare for the launch. The countdown begins at 2 a.m. EST March 8. Web posted. (2008). [NASA approves Mar. 11 launch [Online]. Available WWW: <http://www.floridatoday.com> *the flame trench blog* [2008, February 28].]

NASA Awards External Tank Contract Modification

NASA has signed a \$47.5 million contract modification with Lockheed Martin, New Orleans, for space shuttle external fuel tanks. The modification aligns and extends all activities associated with the production contract to include final assembly of one tank, partial manufacture of a tank and the acquisition of the component parts for one additional tank to serve as spares. 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 in October 2000, to \$2.93 billion. The contract calls for the delivery of 18 external tanks to NASA. Work 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 Awards External Tank Contract Modification," **Contract Release #C08-008**, February 29, 2008.]

During February: Flight Data, Long-Planned Ares I-X Test Instrumented

Engineers are adding instrumentation to the first full-scale flight vehicle of NASA's Ares I crew launch vehicle development in an effort to gather real data about vibrations from its solid-fuel first stage that initially were predicted to be seriously excessive. Those predictions, which could mean expensive modifications to the Ares I and the Orion crew exploration vehicle that will ride atop it, are based largely on ground-test data. Managers hope results from the Ares I-X flight test will give them a much better idea of just how bad the problem is, and what it will take to solve it. In the works since August 2006, the Ares I-X vehicle is scheduled to lift off from Launch Complex 39B at Kennedy Space Center on Apr. 15, 2009. Its flight will mark the beginning of the transition from the space shuttle to the next U.S. human launcher. The Ares I-X test will use a four-segment RSRM to fly a simulated Ares I upper stage and Orion crew launch vehicle, drawing data from some 750 instruments to learn as much as possible about the flight dynamics of the stack. The Ares I project already is negotiating with the shuttle program office to install sensors in an RSRM on a shuttle mission early next year to gather data on thrust oscillation – a common phenomenon in solid-fuel rockets – and how it transfers to the shuttle. Meanwhile, the Orion design has altered since work started on its simulation. The shape that will ride atop the Ares I-X stack is the “604” Orion configuration, which has been modified more than once since the simulation design was frozen and now carries the designation “607.” The test flight will be the first to use modified space shuttle ground infrastructure – itself modified from its original Saturn V support design – to launch a version of the shuttle follow-on vehicle. Plans call for the Ares I-X project to begin building up its vehicle on a mobile launch platform as soon as the shuttle program turns it over, probably late this year. The entire 320-ft.-tall vehicle will be stacked in the Vehicle Assembly Building's Bay 3, which will require little modification, and then rolled to Launch Complex 39B, which will need some changes to give technicians access to the vehicle up to the interstage region that will correspond to the top of the shuttle external tank. Above that, access to instruments and other equipment will be via ladders inside the hollow vehicle. NASA wants to keep both launch pads at KSC available for shuttles through the STS-125 Hubble servicing mission, now scheduled in late August on Atlantis, since a quick rescue mission would be needed if the orbiter's thermal protection system is damaged. After that, the ground adaptations will begin in earnest. [“Flight Data, Long-planned Ares I-X Test Instrumented For Vibration,” Aviation Week & Space Technology, February 25, 2008, p 36-37.]

MARCH

March 1: NASA set on 16-day shuttle mission

Endeavour could make the longest mission to the International Space Station, launching at 2:28 a.m. March 11. NASA managers approved the launch time Friday after a flight readiness review where no major engineering obstacles appeared. The 16-day mission will include five spacewalks. The plan to spend nearly 12 days docked at the International Space Station would set a record. The longest previous docked mission was STS-120 in October. During that 15-day mission, Discovery spent nearly 11 days at the space station. Endeavour will deliver a Japanese logistics module and a two-armed Canadian robot. An automated European cargo carrier near the station during the mission will dock at the space station after the shuttle departs. "This is an extremely international flight," said Bill Gerstenmaier, NASA's associate administrator for space operations. Endeavour's flight comes on the heels of the previous Atlantis mission, which launched Feb. 7. "We landed STS-122 nine days ago," said John Shannon, newly appointed shuttle program manager. If Endeavour doesn't launch by March 12, it must wait until after the March 15 launch of a Delta 2 rocket carrying a Global Positioning System satellite from Cape Canaveral. Web posted. (2008). [NASA set on 16-day shuttle mission [Online]. Available WWW: <http://www.floridatoday.com/> [2008, March 1].]

Thermal tiles' rebirth to save KSC jobs

Ceramic heat-protection tiles – for three decades, the fragile symbol of the space-shuttle era – have gained an unexpected new lease on life. Long assumed to be destined for the engineering garbage can as NASA abandons the shuttle for a new spaceship, the tiles have made a comeback as part of the thermal-protection system of the Orion space capsule that is supposed to return astronauts to the moon in 2020. Even better for the beleaguered work force at Kennedy Space Center – which expects to lose thousands of jobs when the shuttle is retired in 2010 – the tiles will be manufactured and applied to the sides of the Orion capsule at KSC. But only as few as 10 tile technicians will remain, down from an estimated several hundred today. No technology has caused more general exasperation in the space-shuttle program than the 24,000 tiles, each applied by hand, that protect the shuttle's belly and the underside of its wings from the searing heat of re-entry into the Earth's atmosphere. The tiles' return is partly a result of the engineering challenges dogging the Constellation program. Thrust issues with the Ares I rocket forced engineers to look for ways to lighten the Orion capsule. United Space Alliance has not officially been awarded the new tile contract and would not comment. The company also won't say how many employees now work on shuttle tiles, though the number has been estimated to be at least a few hundred. ["Thermal tiles' rebirth to save KSC jobs," Orlando Sentinel, March 1, 2008, p A1 & A18.]

March 3: Making a Big Splash

Space shuttle engineers continue to analyze recovery-system malfunctions on both of the solid-fuel boosters that launched the orbiter Atlantis on the STS-122/1E mission last month. None of the problems involved flight safety or propulsion aspects of the ATK solid rocket motors, and both were towed back to the Kennedy Space Center without difficulty. No delay of the upcoming STS-123/1J/A is expected because of the booster issues, either. But the shuttle program will have to scrap the aft skirt from the flight's left-hand booster because one of the large recovery parachutes failed to open properly. Normally, the skirt would be refurbished and reused. A camera on the booster used to track any foam debris coming off the external tank showed that when the three 136-ft.-dia. Main chutes were deployed, one of them immediately developed what grew to be a 25 ft. home in the top of its canopy. The descent on just two instead of three good chutes meant the impact with the water was much greater than normal, bending the aft skirt and resulting in a hydrazine leak from its hydraulic power unit used to swivel the booster nozzle for steering. The right-hand booster had a lesser problem. Its parachutes functioned properly, but at touchdown failed to separate, complicating recovery work by divers. This was the tenth parachute failure in the history

of the program; the worst occurred in the early 1980s when an entire solid rocket booster sand and was never recovered. ["Making a Big Splash," *Aviation Week & Space Technology*, March 3, 2008, p 16.]

March 4: GLAST spacecraft arrives in Florida

NASA's Gamma-ray Large Area Space Telescope, or GLAST, arrived today at the Astrotech payload processing facility near the Kennedy Space Center to begin final preparations for launch, according to a NASA press release. Liftoff of GLAST aboard a Delta II rocket is currently targeted for 11:45 a.m. EDT on May 16. GLAST is a collaborative mission with the U.S. Department of Energy, international partners from France, Germany, Italy, Japan and Sweden, and numerous academic institutions from the U.S. and abroad. The spacecraft will explore the most extreme environments in the universe, and answer questions about supermassive black hole systems, pulsars and the origin of cosmic rays. It also will study the mystery of powerful explosions known as gamma-ray bursts. After preparations, GLAST is scheduled to be transported to Pad 17-B at Cape Canaveral Air Force Station on May 1. The rocket that will launch GLAST is a Delta II 7920-H, manufactured and prepared for launch by United Launch Alliance. It is a heavier-lift model of the standard Delta II that uses larger solid rocket boosters. The first stage is scheduled to be erected on Pad 17-B the week of March 17. Web posted. (2008). [GLAST spacecraft arrives in Florida [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, March 4].]

NASA TV to Broadcast Launch of Europe's Station Cargo Ship

NASA Television coverage of the maiden launch of the European Space Agency's "Jules Verne" Automated Transfer Vehicle, or ATV, to the International Space Station will begin Saturday, March 8, at 9:15 p.m. CST. Liftoff of the ATV on an Ariane 5 rocket is set for 10:04 p.m. CST from the launch site in Kourou, French Guiana. Television coverage originating from the launch site will be provided by ESA and Arianespace. The launch coverage will air live on NASA TV and will include supplementary coverage originating from NASA's Johnson Space Center. The ATV is a 22-ton unpiloted resupply ship that will carry up to eight tons of cargo to the complex. The vehicle will have the capability to reboost the station's altitude through its four primary engines. Along with the Russian Progress cargo craft that periodically carry supplies to the station, the ATV also will transport equipment, experiments and fuel to the complex. The spacecraft will be controlled by engineers at the ESA ATV Control Center in Toulouse, France, working together with flight controllers at the Russian Mission Control Center in Korolev, outside Moscow, and at Johnson. ["NASA TV to Broadcast Maiden Launch of Europe's Station Cargo," **Media Advisory #M08-047**, March 4, 2008.]

March 5: Launch countdown preparations continue smoothly.

The auxiliary power unit area has been closed out. Flame deflectors have been moved to the launch position. Hyper/Main propulsion system pressurization and closeouts are scheduled to begin today, United Space Alliance spokesman David Waters said. Liquid hydrogen was taken off tankers yesterday to fill up the liquid hydrogen sphere, which will be used to fill the shuttle's tanks for launch. The airlock is being closed out today and final helium tank pressurization is scheduled to start tonight. Helium tanks, which pressurize propellants, are pressurized in stages, due to tests that showed the aging tanks have some danger of rupturing when filled. "No issues headed toward the crew's flying to Florida on Friday evening," NASA spokesman Kyle Herring said. The crew is in quarantine. They will perform ascent and re-entry simulations in Houston before heading to Florida. Endeavour and seven astronauts will carry the first segment of the three-part Japanese Kibo laboratory to the International Space Station. A two-armed Canadian robot also will be hauled up, along with the station's next flight engineer - Garrett Reisman. The current flight engineer, Leopold Eyharts of the European Space Agency, will return to Earth on the shuttle. Five spacewalks are planned. The 15-day, 18-hour flight is scheduled to land at 8:35 p.m. March 26. The flight could

make a record stay of nearly 12 days at the space station, thanks to a new power transfer system that allows the shuttle to draw power from the station and conserve its fuel cells. On his fourth spaceflight, Commander Dominic Gorie will be joined on STS-123 by Pilot Gregory H. Johnson and mission specialists Robert L. Behnken, Mike Foreman, Rick Linnehan, Garrett Reisman and Japanese astronaut Takao Doi. The launch countdown begins at 3 a.m. EST on Saturday. Web posted. (2008). [Launch countdown preparations continue smoothly [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, March 5].]

March 6: Promoters talk space at Capitol

A coalition of about 20 space-related businesses and interests came together Thursday during the annual Space Day at the Capitol to promote the space industry's value as an economic engine. More than 70 individuals walked House and Senate hallways, buttonholing legislators to make the case that the state needs to step up if Florida is to maintain its role as a national leader in space technology, commercial ventures and exploration. Aerospace industries exist in 46 of the state's 67 counties. About \$44 billion is distributed across Florida. "We want to make legislators aware of the economic importance of the aerospace industry to the entire state, not just to Brevard County," said Pedro Medelius of ASRC Aerospace, chairman of the Space Day steering committee. To help keep space industry in Florida, the group is pushing several bills that would help create increased job and work force training, develop new or improved spaceport infrastructure, recruit and retain related businesses through tax incentives, and fund education programs to provide an employment base. ["Promoters talk space at Capitol," **Florida Today**, March 7, 2008, p 1B & 4B.]

Senators try to give NASA \$1B

For the second year in a row, Senate lawmakers are trying to give NASA an extra \$1 billion. The Senate Budget Committee passed a bill Thursday that recommends increasing the space agency's 2009 budget beyond the proposal submitted by President Bush. The panel approved a \$18.7 billion funding request for NASA – about \$1 billion more than the White House proposal. Last year, the Senate approved a \$1 billion addition to the NASA budget to help the agency recoup financial losses after the shuttle Columbia disaster. But the money failed to make it into the final budget approved by the president, who threatened to veto any spending beyond his original request. ["Senators try to give NASA \$1B," **Florida Today**, May 7, 2008, p 11A.]

March 7: Rookie robot joins shuttle crew

Space shuttle Endeavour is scheduled to blast off Tuesday carrying seven astronauts and an eighth passenger that is in some ways superior: a robot that will take the astronauts' place for many jobs in outer space. Dextre, as the robot is known, has two arms, each with seven joints that allow the limb to twist and bend more than a human arm. Each of its two hands has pincers to grip objects and built-in socket wrenches to drive bolts. Dextre will be able to handle items as small as a phone book and as big as a phone booth. Never before has such a sophisticated robot flown in space. "As spacewalkers, we don't want to put ourselves out of a job," Endeavour astronaut Mike Foreman says. "But I think (the robot) will be a boon." Endeavour's crew will assemble Dextre and place it on the International Space Station, where it will start work in 2009. Eventually it will shoulder tasks that would otherwise be done by astronauts during risky spacewalks. Ten years in the making, the robot has a working life of 15 years. Endeavour is scheduled to lift off 2:28 a.m. ET. During the 16-day mission, the longest flight ever to the station, the crew will perform five spacewalks, the most during any station mission. Dextre is riding to orbit in nine pieces. Over the course of three spacewalks, astronauts will attach the hands to the robot's 11-foot-long arms. Then they'll lift the arms, which on Earth would weigh 775 pounds each, to Dextre's shoulders and bolt them into place. Dextre will be able to replace nearly 140 parts of the station, such as batteries and circuit boxes. It will do so thanks to a sense of touch, which will allow it to "feel" when it needs to apply more force to slide a component into place. It's expected to aid astronauts not only with spacewalks but making repairs.

Dextre can be operated by either Mission Control or by the crew living on the station. NASA has no estimate of how many hours of astronaut time the robot will save, but the Canadian Space Agency, which built Dextre, says the robot will make repairs to the station as often as six times a year. Web posted. (2008). [Rookie robot joins shuttle crew [Online]. Available WWW: <http://www.usatoday.com/> [2008, March 7].]

NASA Wary of Relying on Russia

Tomorrow night, a European spacecraft is scheduled to blast off from French Guiana on its maiden voyage to the international space station, giving NASA and the world a new way to reach the orbiting laboratory. For NASA, however, the launch of the Jules Verne Automated Transfer Vehicle (ATV) also highlights a stark reality: In 2 1/2 years, just as the station gets fully assembled, the United States will no longer have any spacecraft of its own capable of carrying astronauts and cargo to the station, in which roughly \$100 billion is being invested. The three space shuttles will be retired by then, because of their high cost and questionable safety, and NASA will have nothing ready to replace them until 2015 at the earliest. For five years or more, the United States will be dependent on the technology of others to reach the station, which American taxpayers largely paid for. To complicate things further, the only nation now capable of flying humans to the station is Russia, giving it a strong bargaining position to decide what it wants to charge for the flights at a time when U.S.-Russian relations are becoming increasingly testy. In addition, some fear the price will be paid not only in billions of dollars but also in lost American prestige and lost leverage on the Russians when it comes to issues such as aiding Iran with its nuclear program. NASA Administrator Michael Griffin calls the situation his "greatest regret and greatest concern." For most of the five-year gap, he said, "we will be largely dependent on the Russians, and that is terrible place for the United States to be. I'm worried, and many others are worried." Despite the broad concern over NASA's future dependence on Russia, Griffin said the agency's experience with its most important space station partner has been good. The Russians helped astronauts stranded on the space station after the Columbia breakup, and they have continued to provide crew and cargo transport services -- currently as part of a \$780 million, multiyear contract. Griffin also said a new deal with the Russians has to be signed by early next year. The Russians, he said, need a three-year lead time to build a sufficient quantity of their expendable, but very dependable, Soyuz and Progress spacecraft. Web posted. (2008). [NASA Wary of Relying on Russia [Online]. Available WWW: <http://www.washingtonpost.com/> [2008, March 7].]

NASA starts configuring Atlantis for Hubble mission

NASA has started reconfiguring the space shuttle Atlantis to prepare for what may be its final mission -- the last planned servicing of the Hubble Space Telescope. Atlantis is targeted to carry the last planned crew of on-orbit repairmen to the observatory before the end of this year. That will require it to be configured differently from orbiters working on ISS assembly. A United Space Alliance crew in the Orbiter Processing Facility has started removing the orbiter docking system from in front of the airlock in the forward bulkhead of the payload bay. Later a large tilt table will be installed in the aft payload bay, where the Atlantis crew will mount the orbiting telescope after grappling it with the orbiter's robotic arm. Other modifications will add protection against debris impact to sensitive areas, since the crew will not be able to take shelter in the International Space Station if there is damage. Atlantis will carry the now-standard Orbiter Boom Sensor System that will make intensive inspections of the delicate thermal protection system. If it finds a serious problem, the crew will have to repair it or await rescue by the crew of the shuttle Endeavour, which will be positioned on the other pad at Kennedy Space Center when Atlantis is launched. NASA would like to retain Atlantis on operational status after the Hubble mission for greater flexibility in the final two years of shuttle flights, but is still weighing the budget implications of that approach and won't make a final decision for another month, says John Shannon, the newly named shuttle program manager.

E-mail distribution. (2008). [Aviation Week's [Aerospace Daily & Defense Report](#) Re: "NASA starts configuring Atlantis for Hubble mission," [Electronic]. Vol. 225, No. 46, [March 7, 2008].]

NASA Awards Safety and Mission Assurance Contract at KSC

NASA's Kennedy Space Center has awarded Millennium Engineering and Integration Company of Satellite Beach, Fla., a safety and mission assurance support services contract. The cost-plus-award-fee contract is valued approximately \$45.2 million during a four-year performance period, which includes a two-year base period and two, one-year options. The new contract consolidates several contracted activities currently supporting Kennedy's Safety and Mission Assurance Directorate requirements into a single support contract. Program offices that will be supported by the contract include the Space Shuttle Program, International Space Station Program, Launch Services Program, Constellation Program, Center Management Operations and NASA Headquarters. Services include performing risk assessments, inspections, mishap investigations, analyses, independent assessments, evaluations of work performed by other contractors and NASA organizations and maintaining applications and databases of Safety and Mission Assurance Directorate-related activities. ["NASA Awards Safety and Mission Assurance Contract at Kennedy," **Contract Release #C-08-010**, March 7, 2008.]

March 9: Shuttle fuel cell system loaded

Shuttle Endeavour's power-producing fuel cell system was topped off at Kennedy Space Center early today, clearing the way for the reopening of launch pad 39A and final preparations for a planned launch early Tuesday. Operating out of Firing Room 4 of NASA's Launch Control Center, engineers loaded liquid hydrogen and liquid oxygen into spherical storage tanks under the shuttle's payload bay liner. The chemical reactants will be combined in the orbiter's three fuel cells to generate electricity to run all spaceship systems during what promises to be the longest mission yet to the International Space Station. The work was completed at 5:55 a.m. and the pad reopened at 8 a.m. Technicians will clean and vacuum Endeavour's double-deck crew module while engineers are preparing for main engine launch preps. A tile inspection is scheduled at the launch pad this afternoon, and the twin tail service masts on the shuttle's mobile launcher platform will be prepped for fuel-loading operations that are set to begin at 5:03 p.m. Monday. No major problems are being worked at the pad. NASA Test Director Jeff Spaulding said technicians will swap out a faulty instrument used to measure hazardous gas levels at the pad. The work, however, can be done along with other preparations and will not delay the scheduled launch attempt early Tuesday. The weather forecast for launch remains very favorable. Web posted. (2008). [Shuttle fuel cell system loaded [Online]. Available WWW: http://www.floridatoday.com/the_flame_trench_blog [2008, March 9].]

ESA's Jules Verne Is In Orbit

Jules Verne, the first of the European Space Agency's Automated Transfer Vehicles (ATV), a new series of autonomous spaceships designed to re-supply and re-boost the International Space Station (ISS), was successfully launched into low Earth orbit by an Ariane 5 vehicle this morning. During the coming weeks, it will maneuver in order to rendezvous and eventually dock with the ISS to deliver cargo, propellant, water and oxygen to the orbital outpost. Lift-off occurred at 05:03 CET (01:03 local) from the Guiana Space Centre, Europe's spaceport in Kourou, French Guiana. Web posted. (2008). [ESA's Jules Verne Is In Orbit [Online]. Available WWW: <http://www.nasawatch.com/> [2008, March 9].]

March 10: After delay, Atlas 5 set for liftoff from VAFB

After a two-week delay, the West Coast's first Atlas 5 rocket reportedly has another date to debut at Vandenberg Air Force Base, with liftoff targeted for early Thursday morning. Since the United Launch Alliance Atlas will carry a top secret payload for the National Reconnaissance Office, officials said they won't release the launch time until 48 hours prior to liftoff. Previously, they had said the

rocket's departure would occur between midnight and 4 a.m. However, Western Range officials now are warning mariners to remain off the waters near South Base from 2 to 4 a.m. Thursday due to hazardous operations. The 19-story-tall space booster will blast off from Space Launch Complex-3 on South Base. Looking south from the Lompoc Valley, the hulking SLC-3 is the most eastern launch pad visible on the horizon. The launch facility was recently modified to accommodate the newest Atlas booster, which actually is a family of rockets designed to carry various size payloads to space. The rocket had been planned for Feb. 29, but was delayed two weeks over concerns about debris from the U.S. satellite that was destroyed Feb. 20 due to its decaying orbit. Web posted. (2008). [After delay, Atlas 5 set for liftoff from VAFB [Online]. Available WWW: <http://www.santamariatimes.com/> [2008, March 9].]

March 11: Shuttle Launches on 16-Day Mission

The shuttle Endeavour blazed a roaring trail into orbit as a spectacular night launch kicked off 16-day mission to the International Space Station. The shuttle was launched at the conclusion of a countdown that seemed touched by good fortune: nearly perfect weather and none of the technical problems that can cause last-minute delays. During the eight-and-a-half minute ascent, problems were announced over the communications loop with the shuttle's reaction control system, which provides thrust for maneuvers, and the flash evaporator system, which helps cool equipment until the payload bay doors are opened on orbit. Neither problem, however, interfered with Endeavour's climb to orbit. In a press briefing an hour after the launching, LeRoy Cain, the head of the mission management team at Kennedy Space Center, called the two problems "very minor issues" that could be worked around without any impact on completion of the mission. Once Endeavour was on orbit, astronaut James P. Dutton called the crew from the ground to say that a first look at launching video showed a piece of debris came off the tank 83 seconds after liftoff, but appeared to "move past the right wing" without striking the craft. "There was no impact seen," he said. In coming days, further inspection will determine whether any debris strikes occurred. The shuttle will catch up with the station and dock just before midnight on Wednesday. The STS-123 mission, the longest visit by a shuttle to the International Space Station, is packed with tasks for seven astronauts who are bringing the first part of a new Japanese laboratory, Kibo, to the station, as well as a gangly two-armed robot named Dextre. With the arrival and installation of the first piece of Kibo, components from all of the major partners in the space station — the United States, Russia, Canada, Europe and Japan — will finally be joined in the orbital outpost. The mission includes five spacewalks that will be mostly devoted to the work on Kibo and Dextre. One of the spacewalks will be devoted to testing a zero-gravity goo gun that could be used to repair small areas of damage to the shuttle's delicate heat-shedding tiles. The device was developed after the Columbia disaster on Feb. 1, 2003: the shuttle and crew were lost because insulating foam fell off of the fuel tank during ascent and damaged the craft. NASA has expended tremendous effort since then to reduce the amount of foam shed by the tank, and minute inspection of the heat shield is now part of each mission. The commander for this mission is Dominic L. Gorie, a retired Navy captain, and the pilot is Col. Gregory H. Johnson of the Air Force. Other member of the crew include Richard M. Linnehan; Capt. Michael J. Foreman of the Navy; Maj. Robert L. Behnken of the Air Force; Takao Doi, a Japanese astronaut; and Garrett E. Reisman, an astronaut who will be staying aboard the station for long-term duty. He will take the place of Gen. Léopold Eyharts, a French astronaut who has lived aboard the station since last month. Shortly before launching, the shuttle launch director, Michael D. Leinbach, opened a channel to Captain Gorie and informed him that the team backed the decision to launch. "Good luck, godspeed and we'll see you back here in 16 days," he said. Lifting of on schedule at 2:28 a.m., the shuttle lit the night with a yellowish-orange glow, and quickly punched through a low cloud bank and flew out of sight. Web posted. (2008). [Shuttle Launches on 16-Day Mission [Online]. Available WWW: <http://www.nytimes.com/> [2008, March 10].]

Astronauts Inspect Shuttle for Bird Damage

Analysts at the Johnson Space Center in Houston are examining video of what appears to be a bird slamming into the nose of the space shuttle Endeavour during its launch early Tuesday morning. It is unclear if that is the same incident that Mission Control mentioned to crew members when it told them that "We have observed one piece of debris passing the right wing at 83 seconds — no impact was seen." The astronauts will spend tonight using the orbital boom attached to the space shuttle's robotic arm to examine it inch by inch for any signs of damage to the orbiter's fragile heat shield. This mission, designated STS-123, is one of a dozen that remain on NASA's shuttle manifest. The last flight, STS-133, is tentatively scheduled for the middle of 2010. Mission STS-119 that was scheduled for later this year has been postponed; the parts it is supposed to deliver to the space station will have to wait until others are installed and working properly. Web posted. (2008). [Astronauts Inspect Shuttle for Bird Damage [Online]. Available WWW: <http://www.abcnews.com/> [2008, March 11].]

Fans fill VIP bleachers

NASA's STS-123 VIP list failed to rival those of past launches, ranging from presidents to filmmaker Steven Spielberg to NASCAR racer Jeff Gordon. Instead, 20 U.S. representatives headlined Tuesday's roster of 37 announced VIPs, which also included small contingents of Japanese and Canadian dignitaries. ["Fans fill VIP bleachers," **Florida Today**, March 12, 2008, p 8A.]

Station a sharing endeavor

Recent flights of so many international components of the International Space Station gives the appearance the United States is out-numbered in orbit. However, agreements negotiated in the 1990s before construction began give NASA a hold on a big share of the real estate aboard the growing space laboratory. The agreements give the U.S. control of 49 percent of the Europeans' Columbia lab, which was installed last month, as well as 49 percent of Japan's sprawling Kibo complex, the first piece of which will reach the station tonight. The space station will ultimately cost the partnering nations at least \$100 billion to build and operate. The Europeans' contributions include about \$2 billion for their 500-cubic meter science lab and the Japanese investment includes \$6.5 billion for their Kibo facility. Despite the cost, European and Japanese officials see their real estate in space as an important part of their future economies. So far, the Bush administration has not dedicated funding for the station beyond 2016. ["Station a sharing endeavor," **Florida Today**, March 12, 2008, p 8A.]

KSC ride wins award

The Shuttle Launch Experience is getting high marks. Kennedy Space Center Visitor Complex has been honored with the Thea Award for the attraction that debuted last May. The award, presented by the Themed Entertainment Association, honors outstanding achievement in the attraction category. "On behalf of NASA and Delaware North, we are very proud Shuttle Launch Experience is being recognized internationally as a top attraction," said Dan LeBlanc, chief operating officer of KSC Visitor Complex. NASA astronauts and engineers helped create the attraction, which simulates a shuttle launch and gives riders a first hand view of the Earth from outer space. Themed Entertainment Association is an international, non-profit organization representing 6,500 theme park industry creative specialists working in nearly 500 firms in 39 countries. KSC Visitor Complex gets more than 1.5 million visitors each year. ["KSC ride wins award," **Florida Today**, March 12, 2008, p 1C.]

March 12: Nowak hearing, trial on hold

Former astronaut Lisa Nowak's trial won't begin next month, as previously scheduled. Prosecutors on Monday filed their initial brief, appealing the exclusion of some evidence in the case. A circuit court judge determined Nowak was coerced into talking with police and allowing the search of her car following a February 2007 arrest. Nowak is charged with attempted kidnapping, battery and

burglary with assault. The former astronaut had been scheduled to go on trial starting April 7. Now, nothing can move forward until the 5th Circuit Court of Appeals in Daytona Beach acts on the appeal. The Nowak case was also scheduled for a hearing this morning, but that too was put on hold pending the appellate court decision. Web posted. (2008). [Nowak hearing, trial on hold [Online]. Available WWW: <http://www.floridatoday.com/> [2008, March 12].]

NASA Readies Hardware for Test of Astronaut Escape System

NASA has completed production of hardware for use in the first flight test of the astronaut escape system for the Constellation Program's Orion crew capsule. The hardware - a structure that simulates the Orion crew module - was designed and fabricated at NASA's Langley Research Center in Hampton, Va. The structure represents the size, outer shape and mass characteristics of the space capsule being designed to transport astronauts first to the International Space Station then on to the moon by 2020. The developmental flight test, called Pad Abort-1, will focus on the ability of Orion's launch abort system to pull the crew capsule safely away from the launch vehicle in the event of problems on the launch pad or during the climb into orbit. Planned for late 2008, the test is the first in a series of uncrewed abort flight tests to demonstrate the new system. Subsequent flight tests, including tests on a rocket that will place the launch system in "worst-case" ascent conditions, will verify that the system can execute a safe, reliable method of escape for the crew. During the developmental flight test sequence, the escape system's main abort motor will fire for several seconds, rapidly lifting the simulated crew module from a test launch pad to an altitude of approximately one mile, after which the escape system will detach, and parachutes will deploy to slow the module for landing. NASA plans two pad abort tests and three ascent abort tests at White Sands. Additionally, a parallel series of integrated Orion and Ares I rocket tests is planned at NASA's Kennedy Space Center in Florida beginning in spring of 2009. ["NASA Readies Hardware for Test of Astronaut Escape System," **Press Release #08-081**, March 12, 2008.]

Did Something Hit Shuttle on Launch?

NASA late today showed pictures of a small white object that may have hit the Space Shuttle Endeavour nine seconds after liftoff Tuesday -- but cautioned that it's far too early to tell just what the object is, or whether it's a cause for worry. "In the video it kind of looks to some folks like there might have been an impact there; what I would tell you is it's a little bit of an optical illusion," said LeRoy Cain, the Launch Integration Manager, from the mission control center in Houston. He said they would know more after Endeavour docks with the International Space Station. Shortly before docking, the station crew takes hundreds of high-resolution still pictures of the shuttle's nose and belly. They are later transmitted to Houston for study. But was it a bird? A piece of ice? A piece of foam insulation from the shuttle's external fuel tank? No saying. NASA flight director Mike Moses says the good news is that the shuttle isn't going fast enough, ten seconds into the launch, for a debris strike to be a problem. Web posted. (2008). [Did Something Hit Shuttle on Launch? [Online]. Available WWW: <http://www.abcnews.com/> [2008, March 12].]

March 13: Atlas 5 rocket launches from California for first time

The inaugural launch of an Atlas 5 rocket from California's Vandenberg Air Force Base occurred as scheduled this morning, thundering skyward at 3:02 a.m. local time (6:02 a.m. EDT) carrying a classified national security satellite. Web posted. (2008). [Atlas 5 rocket launches from California for first time [Online]. Available WWW: <http://www.spaceflightnow.com/> [2008, March 13].]

March 14: Alliance plans to save Delta 2

United Launch Alliance has a strategy to prevent the demise of the Delta 2 rocket program. The company's plan keeps the world's most reliable rocket in production beyond 2010, but the number of launches is expected to fall from six or eight per year to one or two. The ULA strategy will keep the Delta 2 program alive while the company waits and hopes for a resurgence in demand. By 2010, the

plan will phase out 200 jobs and will vacate one of the Delta 2 pads and as many as 10 buildings at Cape Canaveral Air Force Station. "There have been several accounts of its demise, (which are) far from the truth," ULA's Delta 2 program director Rick Navarro said. "We're really transforming the program from the high-rate launch program that we had for so many years to a lower launch rate program, which is really what the market wants right now." After Saturday morning's launch of the Global Positioning System IIR-19 spacecraft, which is scheduled for between 2:09 and 2:23 a.m., ULA has five more scheduled Delta 2 launches from Cape Canaveral, including two more GPS satellites and three NASA science missions. The company has a total of 16 remaining Delta 2 launches planned from the Cape and from Vandenberg Air Force Base in California. Delta 2 rocket bodies and critical parts have been stockpiled to keep the program flying at the less-frequent rate after 2010. Web posted. (2008). [Alliance plans to save Delta 2 [Online]. Available WWW: <http://www.floridatoday.com/> [2008, March 14].]

NASA Awards Institutional Support Services Contract

NASA's Kennedy Space Center has awarded Rede-Critique of Metairie, La., the contract for Kennedy institutional support services. The indefinite-delivery, indefinite-quantity contract has an estimated value of \$45 million during a four-year, six-month performance period, which includes a six-month base period and four one-year option periods. The contract consolidates various current institutional support service contracts. The offices supported by the contract include the Space Shuttle, International Space Station, Launch Services and Constellation programs, as well as Engineering, External Relations and the Kennedy center director. Services will include non-technical administrative support such as technical training, clerical support, financial management support, personnel program activity, employee development and training, employee benefits, personnel action processing, procurement acquisition and administration support, business systems support, technical training programs, and records management. ["NASA Awards Institutional Support Services Contract at Kennedy," **Contract Release #C08-012**, March 14, 2008.]

Design flaw puts crimp in \$200M robot

Flight controllers on Friday devised another plan to get electricity flowing to the various joints and arms of the space station's new robot, which is without power because of a cable design flaw. Engineers think the problem is with a cable that wasn't designed properly. Engineers on the ground put in the wrong circuitry; that was enough to create a roadblock in power and data to the robot named Dextre. The problem cable is in Dextre's transport bed, or pallet, which the astronauts are using as a staging area to put the robot together. LeRoy Cain, chairman of the mission-management team, said he did not know whether the Canadian Space Agency or NASA was at fault – or both. Preflight testing did not catch the problem because the circuitry between the ground equipment and cable was a proper match. Also on Friday, mission managers concluded that Endeavour's heat shield is in good shape and cleared the shuttle for re-entry March 26. ["Design flaw puts crimp in \$200M robot," **Orlando Sentinel**, March 15, 2008, p A17.]

Expendable Launch Vehicle Status Report

Status Report: ELV-031408. Mission: GLAST (Gamma-ray Large Area Space Telescope); Location: Astrotech payload processing facility; Launch Vehicle: Delta II 7920-H; Launch Pad: 17-B; Launch Date: May 16, 2008; Launch Window: 11:45 a.m. - 1:40 p.m. EDT. Prelaunch preparations are under way on GLAST after the spacecraft's arrival in Florida on March 4. The flight battery has been installed. The "observatory comprehensive performance tests" are now under way. Testing of the various spacecraft systems is occurring this week, including S-band communications, control and data handling systems, the propulsions system and the spacecraft's computers. Instrument testing is scheduled to begin this weekend. Late next week, the two sets of solar arrays are scheduled to be installed. At Pad 17-B on Cape Canaveral Air Force Station, buildup of the Delta II rocket is currently scheduled to begin the week of March 24 with the hoisting of the first stage. Work to attach

the nine strap-on solid rocket boosters will follow. Stacking of the second stage is currently planned for the first week of April. Web posted. (2008). [Expendable Launch Vehicle Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/launchingrockets/status/2008> [2008, March 14].]

March 15: Delta 2 launch is again flawless

The launch of a Delta 2 rocket, which will become a rare sight, lit up the very early morning sky Saturday. Delivering a 4,500-pound Global Positioning System satellite to an 11,000-mile orbit, the rocket blasted off at 2:10 a.m. from pad 17A. Spacecraft separation, which signals mission success, occurred over the Pacific a little more than an hour later. The \$75 million spacecraft joined a constellation of 31 operational satellites. It became the 80th consecutive successful launch of a payload on a Delta 2 rocket. Two more GPS missions are planned from the Cape this year on the Delta 2. By 2010, the number of Delta 2 launches will dwindle to one or two per year, prompting United Launch Alliance to transfer, retire or lay off some 80 percent of employees in the Delta 2 program. ULA will retain a core of some 50 critical employees to work the Delta 2 launches, in hopes that business will increase. The next GPS IIR-M launch is planned for June from the Cape. Web posted. (2008). [Delta 2 launch is again flawless [Online]. Available WWW: <http://www.floridatoday.com/> [2008, March 14].]

March 19: Veteran Space Shuttle Astronauts Selected for Hall of Fame

John E. Blaha, Robert D. Cabana, Bryan D. O'Connor and Loren J. Shriver 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 3, 2008. They will be welcomed to the ranks of legendary space pioneers like Neil Armstrong, John Glenn, Alan Shepard, Jim Lovell, Sally Ride and John Young – distinguished members of this unique Hall of Fame. This is the seventh 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. The 2008 inductees were selected by a committee of current Hall of Fame astronauts, former NASA officials and flight directors, historians, journalists and other space authorities. The process is administered by the Astronaut Scholarship Foundation, created in 1984 to support students seeking careers in science and technology. To be eligible, an astronaut must have made his or her first flight at least 17 years before the induction year and must be retired at least five years from NASA's astronaut corps. Candidates must be a U.S. citizen, NASA-trained and must have orbited the earth at least once. Web posted. (2008). [Veteran Space Shuttle Astronauts Selected for 2008 U.S. Astronaut Hall of Fame Induction [Online]. Available WWW: <http://hospitality-1st.com/> [2008, March 20].]

Arthur C. Clarke dies at 90

Space visionary and author Arthur C. Clarke died March 19 at his home in Sri Lanka, after reportedly suffering respiratory problems. He was 90 years old. Clarke is credited with first proposing the concept of geostationary satellite communications in a 1945 article in *Wireless World* magazine. The first geostationary telecommunications satellite, Syncom 3, was launched in 1964. In later years Clarke also championed the concept of space elevators as a low-cost means of transferring cargo to orbit. E-mail distribution. (2008). [Aviation Week's *Aerospace Daily & Defense Report* Re: "Arthur C. Clarke dies at 90," [Electronic]. Vol. 225, No. 55, [March 20, 2008].]

March 21: Late fuel tank keeps techs on their toes

A five-day delay in the arrival of a newly designed external tank is not expected to delay Discovery's May 25 launch. However, the loss of time virtually eliminates days off for technicians, Discovery flow director Stephanie Stilson said. External Tank 128, scheduled to arrive from the New Orleans factory on Thursday, was delayed by bad weather and is now scheduled to arrive Tuesday. Discovery is scheduled to be attached to the tank and a pair of solid rocket boosters on April 27 and then to roll

out to the launch pad on May 5. That schedule leaves enough time to load the 37-foot Kibo science laboratory and perform last-minute checks on the spaceship and related systems. "We feel confident," Stilson said. To make room for Kibo in the payload bay, Discovery must fly without the 540-pound orbital sensing boom used to photograph the thermal tile to check for damage. Endeavour, however, borrowed Discovery's boom for its current mission and will leave it at the International Space Station. After arriving at the space station, Discovery will pick up the boom and use it for inspections of the thermal tiles. Discovery also has been equipped with new radiator hoses to prevent kinks that worried managers during Atlantis' last mission. Also, Discovery's UHF radio is working fine. NASA managers considered borrowing Discovery's radio when Endeavour's radio would not function on its high-power mode. However, they decided that the radio's two low-power modes would suffice. Tuesday's arrival of the updated external tank marks the incorporation of all the changes recommended since the Return to Flight in 2005. The tank, which is 153.8 feet long and 27.6 feet in diameter, carries nearly 5,000 pounds of foam, which keeps ice from building up on the outside. Web posted. (2008). [Late fuel tank keeps techs on their toes [Online]. Available WWW: <http://www.floridatoday.com/> [2008, March 21].]

Astronauts double-check for shuttle damage

Endeavour's astronauts inspected their ship's thermal skin Friday for any possible damage from orbital debris, using a laser-tipped boom that will be left behind at the international space station. Shortly after reaching orbit last week, the astronauts hooked the boom to Endeavour's 50 foot robot arm to check the wings and nose for any launch damage. None was found. While docked at the station, they found no problems with the vehicle's skin. ["Astronauts double-check for shuttle damage," **Orlando Sentinel**, March 22, 2008, p A7.]

Expendable Launch Vehicle Status Report

Status Report: ELV-032108. Mission: GLAST (Gamma-ray Large Area Space Telescope); Location: Astrotech payload processing facility; Launch Vehicle: Delta II 7920-H; Launch Pad: 17-B; Launch Date: May 16, 2008; Launch Window: 11:45 a.m. - 1:40 p.m. EDT. Twin solar arrays were attached to the GLAST spacecraft on Thursday, March 20. A solar array deployment test is under way today and will be followed by a solar array illumination test on April 2. A continuation of the spacecraft comprehensive performance tests is planned for next week. This will include end-to-end communications testing through the Tracking and Data Relay Satellite (TDRS) system. At Pad 17-B on Cape Canaveral Air Force Station, buildup of the Delta II rocket will begin Monday, March 24, with the hoisting of the first stage. Work to attach the nine strap-on solid rocket boosters will follow, continuing throughout the week. Stacking of the second stage is currently planned for April 3. Web posted. (2008). [Expendable Launch Vehicle Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/launchingrockets/status/2008> [2008, March 21].]

March 24: Endeavour undocks, completes record stay at station

Endeavour is soaring toward a twilight landing at Kennedy Space Center on Wednesday, after its astronauts capped an International Space Station construction mission with an awesome victory lap. Pilot Greg Johnson guided Endeavour on a fly-around that afforded the first views of an outpost that now sports both European and Japanese segments. "Endeavour departing," station flight engineer Garrett Reisman said as he rang a bell inside the station, keeping a nautical tradition on a new orbital ocean. Endeavour's exit came 29 minutes later than planned. A massive-but-fragile U.S. solar wing had to be latched down before Endeavour could depart. The wing latched only after a second computer command was sent. Said senior NASA manager LeRoy Cain: "It's just been really remarkable." Endeavour and its crew are scheduled to land Wednesday at 7:04 p.m. -- 33 minutes before sunset. Web posted. (2008). [Endeavour undocks, completes record stay at station [Online]. Available WWW: <http://www.floridatoday.com/> [2008, March 25].]

Altair Awards

Five U.S. companies will spend 210 days evaluating NASA's concept for the planned Altair lunar lander under small contracts awarded last week (March 17-21). The lander-concept work puts the inners in the early running to build the vehicle, even though at this stage the work will fetch no more than \$350,000 for each company. Selected to generate recommendations for increasing the NASA design's technical maturity are Andrews Space, Seattle; Boeing's Houston operation; Lockheed Martin Space Systems, Denver; Northrop Grumman, El Segundo, Calif.; and Odyssey Space Research, Houston. Ultimately, NASA will plug the company recommendations into a "minimum functional" design that will serve as the starting point for development of the lander. "These studies will provide valuable input for developing a sound set of requirements for the Altair lunar lander," says Jeff Hanley, manager of NASA's Constellation Program to develop the spacecraft needed to return humans to the Moon. The U.S. space agency received more than 30 proposals for the study contracts, which total \$1.5 million. ["Altair Awards, Aviation Week & Space Technology, March 24, 2008, p 18.]

March 25: Zero-G bails on Brevard, bound for Va.

A Virginia company has purchased Zero Gravity Corp., taking from Florida the headquarters of a space-tourism company the state has agreed to pay about \$1 million for teacher flights over two years. Since 2007, Space Florida has had a nearly \$500,000-a-year contract with Zero-G to fly 120 teachers a year at a cost of more than \$3,500 per passenger. Earlier this month, the Virginia governor signed a bill allowing the company to operate tax-free in that state. The new owner, Space Adventures Ltd., is based in Vienna, Va., although company officials said the Zero-G plane will remain in Fort Lauderdale, where Zero-G previously was based. Space Adventures President and Chief Executive Officer Eric Anderson said the Virginia tax break is welcomed, although it did not influence his decision to buy the company. The company projects about 100 flights this year, and about a third of the flights will continue to originate from Florida, a company spokesman said. Zero-G provides 90-minute flights, during which passengers experience weightlessness for seven to eight minutes during 30-second climbs and dives along a parabola. Zero-G carried 2,000 passengers, including 500 teachers, in 2007, the second year. That included the \$441,000 contract to fly 120 Florida teachers on four flights. State officials say the purpose of the contract with Space Florida is to encourage science education while supporting a fledgling space tourism company. Web posted. (2008). [Zero-G bails on Brevard, bound for Va. [Online]. Available WWW: <http://www.floridatoday.com/> [2008, March 25].]

NASA has few ideas for keeping its workers

NASA has made limited progress toward thinking up ways to keep its skilled shuttle workers as the program winds down, a new Government Accountability Office report says. One problem is that the focus on returning the shuttles to flight hasn't given NASA time to assess future needs, the report says. NASA's vision for space exploration involves retiring the shuttles in 2010, after finishing assembly of the International Space Station, and developing a replacement ship to take astronauts to the moon and Mars. "Program officials indicated that they are faced with uncertainties regarding the implementation of future aspects of the Vision and lack the requirements needed on which to base their workforce planning efforts," the report says. In a letter to the GAO, Congress' auditing arm, acting NASA administrator Fred Gregory said the agency was "carefully and methodically laying the foundation that will be needed to address a comprehensive transition approach." NASA will decide whether to use shuttles to carry heavy cargo to orbit even after assembly of the station is complete, he wrote. The entire shuttle work force -- not just at Kennedy Space Center -- includes about 2,000 government workers and 15,600 through prime contractor United Space Alliance, the report said. Additional workers also support the program. NASA is still having trouble recruiting and retaining skilled workers, the report said. United Space Alliance -- a joint venture of Lockheed Martin and Boeing formed to support the shuttle program -- expects to have trouble convincing potential

workers that they'll have job security. "In addition, they said that the lack of job security may be reflected in poor morale, inattention to details, errors, accidents, absences, and attrition," the report said. NASA plans to assess its hardware and facilities this year so managers can look at how many workers will be needed. Space leaders will gather next week in Nashville to talk about the future of the shuttles and station. Web posted. (2008). [NASA has few ideas for keeping its workers [Online]. Available WWW: <http://www.floridatoday.com/> [2008, March 25].]

March 26: Shuttle makes delayed landing in Florida

The space shuttle Endeavour landed safely in Florida Wednesday evening, one orbit later than planned because of weather issues. Endeavour touched down at the Kennedy Space Center's runway at 8:39 pm EDT Wednesday (0039 GMT Thursday), concluding the 16-day STS-123 mission. The first landing attempt, one orbit and about 90 minutes earlier, was waved off because of low clouds in the area, but conditions cleared enough to permit the landing in the second and final landing window of the day. The landing brought to an end a mission that saw the successful delivery and installation of part of the Japanese Kibo laboratory and the Canadian-built Dextre robotic manipulator on the ISS. Five spacewalks took place during the mission, setting a record for a shuttle mission to the station. The shuttle also returned with a European astronaut, Leopold Eyharts, who spent a month and a half on the ISS setting up the Columbus lab module brought to the station on the previous shuttle mission; he was replaced by NASA astronaut Garrett Reisman. The next shuttle mission, STS-124, is tentatively scheduled for May 25. Web posted. (2008). [Shuttle makes delayed landing in Florida [Online]. Available WWW: <http://www.spacetoday.net/> [2008, March 26].]

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. 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. It could be worse if NASA funding levels continue on their present course, Walker said. Web posted. (2008). [Space, labor leaders differ on KSC future [Online]. Available WWW: <http://www.floridatoday.com/> [2008, March 29].]

New tank has latest design

Two important packages arrived Wednesday at Kennedy Space Center. Both were a little late. After a five-day weather delay, External Tank 128 on the barge Pegasus pulled into the KSC dock and was rolled into the Vehicle Assembly Building. Meanwhile, overhead, shuttle Endeavour was waved off from a twilight landing, but made an after-dark touchdown at 8:39 p.m. The arrival of ET-128 means NASA still can launch Discovery on the scheduled May 25 date. The tank incorporates all the new designs to minimize foam loss that were recommended after the Columbia accident in 2003. The tank has titanium brackets on the liquid-oxygen feed line, soldered ECO-sensor connectors, a

redesigned ice-frost ramp and minor changes to the metal structure. The tank will help carry Discovery to deliver the 37-foot Japanese laboratory to the International Space Station. Discovery will be mated with the tank on April 27, and will roll to the launch pad on May 4. ["New tank has latest design," **Florida Today**, March 27, 2008, p 5A.]

Group unveils craft able to take tourists to space

A new entrant emerged Wednesday in the race to launch fare-paying tourists to space and is talking with Florida officials about flying some missions from the Space Coast or Jacksonville. XCOR Aerospace, based in Mojave, Calif., unveiled a short-winged rocket-plane it says will be capable of carrying passengers on sub-orbital space flights as early as 2010. The company's proposed Lynx spacecraft would be about the size of a small private plane. XCOR says it will initially launch test missions out of the same Mojave airport where SpaceShipOne made its historic flights. XCOR said the Lynx could fly tourists from multiple spaceports because it is designed to take off like an airplane from horizontal runways like the one planned for New Mexico's desert spaceport or the existing strip at Kennedy Space Center's Shuttle Landing Facility. NASA has been trying to market the shuttle runway as a potential base for such space tourism craft after the shuttles retire in 2010. The company's test pilot, former NASA space shuttle commander Rick Searfoss, has been billing Lynx as the "greatest ride off Earth." ["Group unveils craft able to take tourists to space," **Florida Today**, March 27, 2008, p 1C.]

NASA Administrator Announces Leadership Changes

NASA Administrator Michael D. Griffin issued the following statement Wednesday regarding the announcement that Dr. S. Alan Stern, NASA associate administrator for the Science Mission Directorate, has decided to leave the agency. Griffin also announced that Dr. Edward J. Weiler, director of NASA's Goddard Space Flight Center, Greenbelt, Md., will serve as interim associate administrator. ["NASA Administrator Announces Science Mission Directorate Leadership Changes," **Press Release #08-088**, March 26, 2008.]

March 27: Auction offers far-out prizes

By winning a charity auction to support engineering scholarships, you could scuba dive with Apollo 16 moonwalker Charlie Duke, skydive with shuttle astronaut Robert "Hoot" Gibson, attend a shuttle launch with STS-1 astronaut Bob Crippen or race Apollo astronaut Al Worden at the Richard Petty Driving Experience at Disney. "I'm sure all those guys have the need for speed," said Beth Higdon, organizer of the spring auction for the Astronaut Scholarship Foundation. Other astronauts are offering prized possessions and one-on-one experiences in the online auction to raise funds to endow the scholarships. About 30 items are featured. The nonprofit Astronaut Scholarship Foundation provides scholarships to exceptional college students in science or engineering up the master's level. ["Auction offers far-out prizes," **Florida Today**, March 28, 2008, p 3B.]

NASA Awards Nitrogen Supply and Services Contract

NASA has awarded Air Liquide Large Industries of Houston the Kennedy Space Center - Cape Canaveral Air Force Station gaseous nitrogen supply and services contract. The indefinite-delivery, indefinite-quantity contract has an estimated valued of \$47.5 million during a five year period, including a three-year base period and two, one-year option periods. The contract will provide the continued supply of gaseous nitrogen for Kennedy and Cape Canaveral Air Force Station, including the continued operations and maintenance of the Kennedy pipeline system. The contract requires Air Liquide Large Industries to provide personnel, materials, and the gaseous nitrogen production facility necessary to support current and future NASA launch programs and activities at Kennedy and Cape Canaveral Air Force Station. ["NASA Awards Nitrogen Supply and Services Contract," **Contract Release #C08-016**, March 27, 2008.]

March 28: Weather delays Discovery's next launch

A six-day weather delay in delivering External Tank 128 has rippled down to affect the May 25 launch of Discovery, which will carry a giant Japan laboratory to the space station. "It's on the order of a few days," NASA spokesman Allard Beutel said of Discovery's delay. Scheduled to launch May 25, Discovery will launch about six days later. A cold front moving through the southeast last week created high winds, delaying the barge's departure with the external tank from New Orleans. High winds again delayed the tank a night in Port Canaveral. Beutel said no issues other than the weather delay are responsible for shifting the launch date. "It's not technical," he said. Beutel said Discovery's launch could be delayed to May 30 or 31, which would put it after Memorial Day and after the Mars Phoenix landing on May 25. The past two launches -- of shuttles Atlantis and Endeavour -- have blasted off on schedule free of technical glitches. NASA engineers soon should decide on a new launch target for Discovery. . Web posted. (2008). [Weather delays Discovery's next launch [Online]. Available WWW: <http://www.floridatoday.com/> [2008, March 28].]

NASA Awards Education Grant

NASA has awarded a cooperative agreement education grant to Oklahoma State University, Stillwater, to support implementation of the Interdisciplinary National Science Program Incorporating Research Experience, also known as INSPIRE, program at NASA Centers and NASA's Jet Propulsion Laboratory. The program is designed to encourage high school students to pursue careers in science, technology, engineering and mathematics (STEM). It is part of NASA's education strategy to attract and retain students in STEM disciplines. Students selected for INSPIRE will have the opportunity to participate in unique summer experiences at NASA facilities, provided access to a variety of online resources and engage in special videoconferences with NASA scientists and engineers. Under the grant, Oklahoma State University will provide administrative services for student recruitment, online resources, project logistics and program evaluation. The work will be performed at NASA's ten facilities throughout the country. NASA's Kennedy Space Center will manage the program. The basic grant's estimated cost is \$2.6 million for the first year with a potential of four one-year options. ["NASA Awards Education Grant," **Contract Release #C08-018**, March 28, 2008.]

Expendable Launch Vehicle Status Report

Status Report: ELV-032808. Mission: GLAST (Gamma-ray Large Area Space Telescope); Location: Astrotech payload processing facility; Launch Vehicle: Delta II 7920-H; Launch Pad: 17-B; Launch Date: May 16, 2008; Launch Window: 11:45 a.m. - 1:40 p.m. EDT. -The spacecraft comprehensive performance tests continue. Next week, the illumination test of the twin solar arrays is scheduled to occur on Wednesday, and they will then be stowed for flight on Thursday. Each array generates 750 watts of power for a total of 1,500 watts, the GLAST spacecraft's maximum power requirement. At Pad 17-B on Cape Canaveral Air Force Station, due to high wind, hoisting the Delta II first stage into the launcher was postponed from Monday until Wednesday, March 26. Work to attach the nine strap-on solid rocket boosters in sets of three is under way and will continue until the middle of next week. Stacking of the second stage is currently planned for April 5. Web posted. (2008). [Expendable Launch Vehicle Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/launchingrockets/status/2008> [2008, March 28].]

March 31: Late tanks may delay shuttle launches

Complicated safety changes and a tight work force are slowing production of space shuttle external tanks, likely leading to the postponement of several launches scheduled for the rest of this year. As the space agency tries to complete up to 11 more missions before retiring the shuttle fleet in 2010, all four of the remaining launches set for this year face tank-related delays. This week, bad weather slowed delivery of the external tank for Discovery's scheduled May 25 flight. The tank arrived at Kennedy Space Center on Wednesday, six days late. The launch is now expected to move back at

least that many days. This year's remaining flights could face more severe delays because of the backlog at the New Orleans tank factory. Discovery's tank was the first one built from scratch with all of the design changes ordered after the 2003 Columbia disaster. For instance, Atlantis' Aug. 28 mission to repair the Hubble Space Telescope could be delayed a month or more unless engineers across the country and technicians in New Orleans figure out how to speed up construction of the more-complicated tanks. Hubble's mission is even more complex than most. Because Atlantis is not bound for the relative safe haven of the International Space Station, two tanks must be at KSC and ready to fly so a rescue shuttle could be launched almost immediately. Atlantis' tank, known as ET-127 in the shuttle program, is scheduled to reach Florida in early May. ET-129, the tank for rescue shuttle Endeavour, is scheduled to reach KSC in late May. NASA managers will not reveal whether the tanks will be days, weeks or months late. " The slowdown is caused by changes in the meticulous application of foam insulation to about a half-dozen locations on the 153-foot fuel tanks. Sprayed on and molded by hand in crucial places, the dense foam must not form cracks that would allow ice to build up on the tank when it is filled with liquid oxygen and hydrogen. NASA and contractor engineers are re-examining the foam application process in hope of finding construction shortcuts. Web posted. (2008). [Late tanks may delay shuttle launches [Online]. Available WWW: <http://www.floridatoday.com/> [2008, March 31].]

Tiger team finds Ares I stage vibration problem is fixable

Crew performance is the limiting factor in a worrisome thrust oscillation linkage between the solid-fueled first stage of NASA's planned Ares I launch vehicle and its upper stages, according to the former shuttle commander who conceived of using a single space shuttle solid-rocket boost to launch humans toward the moon. Scott (Doc) Horowitz, a four-time shuttle veteran who later headed NASA's Exploration Systems Mission Directorate as Ares I development was getting underway, said March 28 that the tiger team assembled to address the problem has found it tractable in a way that shouldn't impede the Ares I preliminary design review coming up this summer. Early estimates of the scope of the problem were overly conservative, Horowitz said. Instead of threatening the health of the crew and damage to some vehicle hardware, the actual vibration levels generated as the solid-fuel first stage burns out can be handled with relatively straightforward mechanical fixes. Horowitz, now an independent aerospace consultant whose clients include ATK, the Ares I first-stage contractor, and a "greybeard" advisor to NASA through the NASA Engineering and Safety Center, served on the tiger team that reviewed the thrust oscillation issue after it arose last fall. Garry M. Lyles, the senior NASA engineer who headed that review panel, is scheduled to brief Congress on his findings the week of March 31. E-mail distribution. (2008). [*Aviation Week's Aerospace Daily & Defense Report* Re: "Tiger team finds Ares I stage vibration problem is fixable," [Electronic]. Vol. 225, No. 62, [March 31, 2008].]

NASA Updates Target Launch Date for Next Shuttle Flight

NASA is targeting May 31 as the launch date for shuttle Discovery's STS-124 mission to deliver the large Japanese Kibo Pressurized Module to the International Space Station. The liftoff time is approximately 5:01 p.m. EDT. NASA decided to reschedule Discovery's target launch date from May 25 to May 31 after shipment of the mission's external fuel tank from its assembly plant at the Michoud Assembly Facility in New Orleans to Florida was delayed by weather. The tank arrived at NASA's Kennedy Space Center in Florida on March 26. Additionally, NASA elected to move the liftoff date in order to avoid having the launch team work through the Memorial Day weekend. The official launch date for Discovery will be determined during the standard Flight Readiness Review held approximately two weeks before launch. Discovery's mission is the second of three flights that will launch components to complete the Japan Aerospace Exploration Agency's Kibo laboratory. The Japanese Pressurized Module will be the station's largest science laboratory, measuring 37 feet long and 14 feet in diameter, about the size of a large tour bus. The shuttle also will deliver the lab's robotic arm system that support operations outside of Kibo. The lab's logistics module, which was

installed in a temporary location during STS-123 in March, will be attached to the new lab. Mark Kelly will command the seven-member crew, which includes Pilot Ken Ham, Mission Specialists Karen Nyberg, Ron Garan, Jr., Mike Fossum, Japan Aerospace Exploration Agency astronaut Akihiko Hoshide and Greg Chamitoff. Chamitoff will replace Expedition 16/17 Flight Engineer Garrett Reisman and remain aboard the station as a member of the Expedition 17 crew. Reisman will return to Earth with the STS-124 crew. ["NASA Updates Target Launch Date for Next Space Shuttle Flight," **Media Release #M08-069**, March 31, 2008.]

APRIL

April 1: Workforce Woes

Sobering new NASA estimates that cancellation of the space shuttle in 2010 could cost up to 9,000 jobs in the aerospace sector – 6,400 of them alone at the Kennedy Space Center – is refocusing congressional pressure on the White House for additional funds to accelerate development of the Ares/Orion shuttle replacement vehicles. Lunar program development and other major efforts could offset such worst-case losses, but that remains to be seen. The timing of the impending cuts is hitting just as the national is approaching a major election, hobbled by a weakening economy – making a new manned Moon initiative a tough sell. These job loss estimates are part of an initial Workforce Transition Study that also indicates that, as bad as things are, NASA and its contractors, especially United Space Alliance – which teams Boeing and Lockheed Martin for shuttle processing – is placing a maximum effort on transitioning the workforce toward the new skill mix necessary for Ares/Orion operations. Extra funding in Fiscal 2010-11 could knock two years off a now-projected five-year gap, to 2015, when the first manned Ares/Orion can fly to the International Space Station. But realists say “don’t hold your breath” for extra White House money – from either the Bush administration – or the next one. The shuttle closedown marks a huge transition and retraining effort that spans the country and may well be the largest ever done for any aerospace project, managers believe. The NASA document projects Kennedy contractor totals between now and 2013. But they do not factor in such things as the hoped-for lunar employment. If the lunar plan is significantly delayed, the 8,000 contractors here in 2008 could drop by 600 to 7,400 by 2009. More cuts projected in the transition document could reduce contractor employment by about another 1,000 workers to 6,400-6,700 by 2010. Then things really fall off a cliff. By 2011 contractor employees here could fall sharply to only 1,600-2,300 out of the original 8,000, with another reduction from 3,100 to 2,200 on site in 2012. By 2013, the situation may stabilize and contractor employment could ratchet up as much as 3,800. [“Workforce Woes,” Aviation Week & Space Technology, April 7, 2008, p 40.]

Discovery launch set

NASA has set shuttle Discovery's next launch for 5:01 p.m. May 31. A cold front last week prevented the external tank from arriving from New Orleans until Wednesday. The delayed arrival will push back shuttle processing just as much. NASA elected to move the liftoff date in order to avoid having the launch team work through the Memorial Day weekend. The delay will affect other processing events. The external tank to solid rocket booster mating is now April 13. Discovery will roll over to the Vehicle Assembly Building on April 26 and roll out to the launch pad on May 5. The delays, however, leave enough time to load the 37-foot Kibo laboratory built by the Japanese. To make room for Kibo in the payload bay, Discovery must fly without the 540-pound orbital sensing boom used to photograph the thermal tile to check for damage. Endeavour, however, borrowed Discovery's boom for the previous mission and left it at the International Space Station. After arriving at the space station, Discovery will pick up the boom and inspect the thermal tiles. Discovery's mission, STS-124, is the 126th shuttle mission and the 26th mission to the space station. [“Discovery launch set,” Florida Today, April 1, 2008, p 6A.]

April 3: Europe's new cargo freighter safely docks to space station

Europe's Jules Verne spaceship glided into port at the international space station Thursday, delivering more than 10,000 pounds of supplies to the complex and completing nearly a month of testing to prove the craft's revolutionary navigation system worked. Moving at a snail's pace, the Jules Verne Automated Transfer Vehicle docked to the station's Zvezda service module at 1445 GMT (10:45 a.m. EDT) after a highly choreographed approach lasting more than four hours. Hooks and latches began engaging about a few minutes later to permanently bring the station and space

transporter together. Web posted. (2008). [Atlantis crew arrives at Kennedy Space Center [Online]. Available WWW: <http://www.spaceflightnow.com/> [2008, April 3].]

NASA goes low-tech to fix high-tech problem

To fix a potentially fatal shaking problem on its snazzy new moon rocket, NASA is considering something that works for mud-stained pickups: heavy-duty shock absorbers. For nearly half a year, NASA's No. 1 technical problem in designing its Ares I rocket, which will eventually propel astronauts back to the moon, has been a sound wave vibration problem from its solid rocket motors. If the vibrations hit the right frequency, they could shake the astronauts to death -- or at the least make it impossible for them to work. The astronauts would be in the Orion crew capsule launched on top of the Ares. The leading solution is to put weight on springs in parts of the bottom end of the rocket and underneath astronauts' seats to dampen the vibrations. Think MacPherson struts, said Garry Lyles, who heads a NASA team working on the problem. "These are actually absorbers that are used in vehicles today, especially 1-ton and 1½-ton pickup trucks," Lyles said Thursday. He said it's possible that further analysis and tests will reveal that the shaking problem that's turned up in computer models of the still unbuilt Ares may be a non-issue. But engineers are seeking solutions just in case. NASA is not ready to proclaim the case closed and still considers it the highest level of potential problem, Lyles said. Ares project manager Steve Cook called it "a very manageable issue." There are many such challenges that face NASA's return-to-the-moon program, according to a report issued Thursday by outside federal auditors. Web posted. (2008). [NASA goes low-tech to fix high-tech problem [Online]. Available WWW: <http://www.cnn.com/> [2008, April 3].]

April 4: Expendable Launch Vehicle Status Report

Status Report: ELV-040408. Mission: GLAST (Gamma-ray Large Area Space Telescope); Location: Astrotech payload processing facility; Launch Vehicle: Delta II 7920-H; Launch Pad: 17-B; Launch Date: May 16, 2008; Launch Window: 11:45 a.m. - 1:40 p.m. EDT. The GLAST spacecraft's solar array illumination test is occurring today. This weekend, the work to install the Ku-band communications transmitter will begin. A functional test will follow on Tuesday. Closeouts of the spacecraft's thermal blankets also will begin next week. Installation of the Ku-band communications antenna is planned for mid-April. At Pad 17-B on Cape Canaveral Air Force Station, work to attach the nine strap-on solid rocket boosters to the Delta II first stage was completed this week. Stacking of the second stage atop the first stage is planned for Saturday. Web posted. (2008). [Expendable Launch Vehicle Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/launchingrockets/status/2008> [2008, April 4].]

April 7: Back From the Brink

The first of a new wave of hybrid high-seed mobile service satellites is preparing for launch, although significant regulatory and funding hurdles remain. ICO G1 is scheduled to lift off from Cape Canaveral on Apr. 14 atop an Atlas V booster. Backers say the hybrid geostationary system will be the first to offer nationwide two-way high-speed cell phone and wireless broadband service, and the second of its kind in the industry -- after the Japanese-Korean MBSAT network. ["Back From the Brink," *Aviation Week & Space Technology*, April 7, 2008, p 38.]

Shuttle plan won't fly for safety group

Independent safety experts say it would be dangerous to fly NASA shuttles beyond 2010, and doing so could lengthen a five-year gap in the nation's ability to launch American astronauts, NASA warns. But some argue the 6,400 job cuts projected for Kennedy Space Center could be reduced by flying shuttles twice a year until replacement rockets and spaceships are ready. U.S. Reps. Dave Weldon and Tom Feeney say it could be done by giving NASA about \$2 billion more a year to pay for the added shuttle flights and speed up development of spacecraft for missions to the moon and Mars. What the Republican congressmen propose is possible. The plan could reduce or even eliminate an

anticipated five-year gap in NASA human space flight, potentially saving thousands of jobs. But people inside and outside NASA nonetheless raised financial, practical and safety concerns. NASA's shuttle program already is winding down. Production lines are shutting down. Suppliers no longer are making critical shuttle parts. Vendors are moving on to other businesses. Consequently, shuttle operations after the planned retirement date in 2010 might be dangerous and even NASA says it makes no financial sense. "We could restart things," said John Shannon, a veteran flight director who now oversees the multibillion-dollar program. "You can do anything for a certain amount of money and investment of time, but I think the nation and NASA need to decide if that is really in the best interest of continuing on with what we would like to do in space." Shannon, other senior agency managers and the White House say it's not. They say the shuttle program must be closed down so NASA can funnel money into the new moon-Mars program. "I don't mean to sound either cavalier about it or glib," NASA Administrator Mike Griffin said. "We are bringing the shuttle program to a close in 2010. And it will have a very difficult effect on the local work force. If we don't retire in 2010, then we will not have the money to bring a new system online by 2015." The shuttle is amazing, but old and expensive to fly, Shannon said. Once the station is complete, "the shuttle has accomplished its mission, and it's time to move on." Web posted. (2008). [Shuttle plan won't fly for safety group [Online]. Available WWW: <http://www.floridatoday.com/> [2008, April 7].]

Blue angels set for return to KSC

The Blue Angels will appear Nov. 8 and 9 at the second Space & Air Show at Kennedy Space Center. Some 30 years have passed since the group's first and only performance at KSC, where launch pads and the massive Vehicle Assembly Building will be in the background. "It's going to be an absolutely fantastic backdrop for an airship. It's inspiring," narrator and pilot Lt. Frank Weisser said. "We've got to make sure the pilots flying the demo aren't sightseeing," added events coordinator and pilot Lt. Dan McShane. Weisser and McShane scouted the space center on Monday, arriving in an F/A-18 Hornet, the Navy's high-performance carrier plane. The Navy precision flying team will headline a show that includes a simulated astronaut rescue by the 920th Rescue Wing, stationed at Patrick Air Force Base. Several other military and civilian groups will be invited to perform. The air show can be viewed only from the NASA Causeway within KSC. ["Blue Angels Set For Return to KSC," Florida Today, April 8, 2008, p 1A & 6A.]

April 8: Constellation Update

NASA and United Space Alliance engineers and technicians working at Kennedy have tested procedures they will rely on to handle and load the propellant tanks that will be used on the roll control system of the Ares I. The latest testing on the new Ares I rocket brought together components from an Air Force missile program with support equipment invented for handling space shuttle parts. The evaluation is the latest in a series of studies leading to the first test launch scheduled for April 2009. The flight will not carry any astronauts and is mainly a chance to evaluate the performance of the rocket during the first stage of flight. ["Constellation Update," **Countdown**, April 8, 2008.]

April 9: Senator pushes NASA on launch site

Sen. Mel Martinez is urging NASA to talk with the Air Force about using one of the military's unused launch facilities for the space agency's proposed new commercial launch complex. In a letter sent to NASA Administrator Mike Griffin and Air Force Secretary Michael Wynn, Martinez encouraged discussion of the possibility of using existing sites at Cape Canaveral Air Force Station as an alternative to controversial Kennedy Space Center sites. The first site being considered is on the Atlantic coast south of shuttle launch pad 39A and north of Atlas pad 41 at Cape Canaveral. The second is inland west of the Mosquito Lagoon, east of State Road 3, north of State Road 406 and south of Scrub Ridge Trail. The agency has said before the old Cape launch complexes were not

considered because NASA does not have jurisdiction over Air Force property. ["Senator pushes NASA on launch site," **Florida Today**, April 10, 2008, p 1B.]

NASA Scientist to Programs Office in Science Directorate

Michael R. Luther has been named deputy associate administrator for programs in NASA's Science Mission Directorate at NASA Headquarters in Washington. Ed Weiler, associate administrator for the directorate, made the announcement Wednesday. ["NASA Earth Scientist to Head Programs Office in Science Directorate," **Press Release #08-096**, April 10, 2008.]

April 10: USA jettisons shuttle from logo

United Space Alliance has retired the space shuttle from its logo, a couple of years early. One week after NASA announced some 6,400 jobs could be lost at Kennedy space Center by 2011, the prime shuttle contractor took the orbiter's image out of the "A" in its company icon. The move comes two years before President Bush's 2010 deadline for NASA to retire the aging spacecraft. The new icon borrows the images of a star and crescent moon from NASA's logo for Constellation, the program to replace the shuttle with rockets and spacecraft capable of carrying crew and cargo to the moon and possibly Mars. With 6,100 employees at KSC, the company has been the prime shuttle contractor since 1996. Under the company's present contract, more than 1,300 USA employees already have worked at least some of the time on Constellation. ["USA jettisons shuttle from logo," **Florida Today**, April 11, 2008, p 1A.]

22 years later, another message

A message in a bottle found on a Kennedy space Center beach could be a postscript to a message found in 1986. Both came from a class in a Catholic school in Bimini in the Bahamas. They were floated 22 years apart by the same teacher as part of a Columbia Day class project. During a beach cleanup on April 10, Jill Vogel, a United Space Alliance environmental engineer, found the message in a bottle among the tons of trash she and other volunteers cleared from the beach near KSC to make room for nesting turtles. The message, dated Oct. 8, 2007, was signed by a schoolgirl from Bimini. The 9-year-old's class in Holy Name Catholic School had floated 42 bottles out to sea for a yearly Columbia Day project. The child wrote that she hoped for a response. What she's getting might surprise her. NASA employees have gathered a box full of NASA literature and stuffed toys. They plan to mail the goodies to Bimini, where it will certainly delight the schoolgirl and her classmates. In 1986, a security officer Percy Spencer found a similar message in a bottle while patrolling near the beach. Teacher Mavis Ellis Saunders has for 27 years performed this ritual with her students. She said only 12 messages have been answered. ["22 years later, another message," **Florida Today**, April 25, 2008, p 3B.]

April 11: Expendable Launch Vehicle Status Report

Status Report: ELV-041108. Mission: GLAST (Gamma-ray Large Area Space Telescope); Location: Astrotech payload processing facility; Launch Vehicle: Delta II 7920-H; Launch Pad: 17-B; Launch Date: May 16, 2008; Launch Window: 11:45 a.m. - 1:40 p.m. EDT. At Pad 17-B on Cape Canaveral Air Force Station, the Delta II first stage and nine solid rocket boosters have been erected. During preparations to hoist the second stage atop the first stage, an incident occurred which caused an adapter beam associated with the lifting operation to fracture. As a result, the stacking operation was immediately stopped. A team has been appointed to investigate the incident. Once the team has concluded its investigation and is able to determine there was no damage to the second stage, a new date for stacking will be set, possibly as early as next week. Meanwhile, at the Astrotech payload processing facility, the GLAST spacecraft's solar array illumination test has been completed. The Ku-band communications transmitter was installed as scheduled. Closeouts of the spacecraft thermal blankets are under way. The Ku-band communications antenna will be installed early next week. At this time, preparations continue for delivery of GLAST to the launch pad on May 2. Web posted.

(2008). [Expendable Launch Vehicle Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/launchingrockets/status/2008> [2008, April 11].]

April 13: Atlas 5 set for blast-off

An Atlas 5 is set to blast off carrying its heaviest payload ever to ride the rocket. Liftoff is scheduled between 4:12 p.m. and 5:12 p.m. tomorrow (April 14) from pad 41. The weather forecast calls for a 60 percent change of acceptable conditions. At 14,700 pounds, the 27-foot ICO G1 communications satellite will have solar arrays that span nearly 100 feet. The Atlas 5 rocket, with two strap-on solid rocket boosters will put the satellite in a highly elliptical orbit – about 19,000 nautical miles by 100 nautical miles. The Atlas has had 84 consecutive successes for the Atlas family of rocket; 13 consecutive Atlas 5 launches; 595 launches in the Atlas history. [“Atlas 5 set for blast off,” **Florida Today**, April 13, 2008, p 1B & 5B.]

April 14: Moon Dust

NASA plans to send a low-cost spacecraft to the Moon in 2011 to study dust in the lunar “atmosphere” and help scientists get a better handle on how it could affect future lunar explorers. The \$80 million Lunar Atmosphere and Dust Environment Explorer spacecraft is expected to gather detailed information about conditions near the surface and environmental influences on lunar dust, NASA says. [“Moon Dust,” **Aviation Week & Space Technology**, April 14, 2008, p 24.]

Beyond Crew Launch

It will be another year before the first flight of even a partial version of NASA’s Ares I crew launch vehicle, but the companies working on the next-generation human-rated rocket are pondering other uses for it. ATK is preparing for two fire-and-smoke first-stage tests in about a year. A static test of the Ares I first-stage motor – a five-segment version of the four-segment solid-fuel motor used in pairs on the shuttle – is scheduled to be done at the company’s Utah facility in April 2009. That same month, NASA will launch its Ares I-X testbed, essentially a dummy Ares I flying on a four-segment shuttle booster, from Kennedy Space Center. A potentially dangerous linkage between the thrust oscillation generated by all solid-fuel rocket motors and the rest of the Ares I stack has led NASA, after extensive analysis, to propose mounting the first-stage parachute-recovery system on springs to absorb the vibrations in the stack. As configured to launch NASA’s Orion crew exploration vehicle, the Ares I is being designed to lift 56,500 lb. to low Earth orbit. But ATK is also studying upgrades that could add another 9,910 lb to that capability. Boeing, too, has some ideas on other ways to use the Ares I, but so far it hasn’t discussed them with ATK. [“Beyond Crew Launch,” **Aviation Week & Space Technology**, April 14, 2008, p 34-35.]

Gap Filler

For “a couple of billion dollars” more, NASA might be able to cut the gap in its human spaceflight capability to almost two years – or eliminate it altogether in a long-shot scheme to keep one shuttle flying every six months or so. For many of the 7,500 registered participants at the 24th National Space Symposium here, there’s no time like the present to begin pushing for the extra money. Brewster Shaw, the former shuttle commander who heads Boeing’s human spaceflight business, says that for “a couple of billion dollars more,” NASA could keep flying a single space shuttle once or twice a year. Basically, the idea would be to keep enough infrastructure set up for operating a single shuttle – one bay of the Vehicle Assembly Building, one mobile crawler, one pad and so forth – to accommodate a lone shuttle. The other two orbiters could be used as hangar queens to supply parts no longer available from the dwindling shuttle-supplier base. Shaw and his bosses stress that their company supports the official NASA approach, and Shaw says any funding for a one-orbiter program must be “new money,” unrelated to NASA’s already overfilled plate of programs. “We can’t keep the option open; NASA has to keep the option open,” he says. But, under present circumstances, NASA isn’t about to do that, and some serious hurdles remain, chief among them the

end of the production line for the big external tanks that carry shuttle propellant during ascent. ["Gap Filler," **Aviation Week & Space Technology**, April 14, 2008, p 34-35.]

ICO G1 launches on Atlas V

A United Launch Alliance Atlas V with two solid rocket boosters placed the highly advanced ICO G1 mobile communications satellite into its geosynchronous transfer orbit after liftoff from Cape Canaveral at 4:12 p.m. EDT April 14. The 7-ton Space Systems/Loral satellite, with solar arrays spanning more than 100 feet, is one of the largest communications spacecraft ever launched. It carries a 40-foot Harris mesh antenna to initiate a new wave of hybrid high-speed mobile services. The launch was insured for \$344 million, and in-orbit operations are insured for nearly \$300 million. The 27-foot tall satellite will use its onboard propulsion system to complete its climb to geosynchronous orbit later this month. E-mail distribution. (2008). [Aviation Week's [Aerospace Daily & Defense Report](#) Re: "ICO G1 launches on Atlas V," [Electronic]. Vol. 226, No. 11, [April 15, 2008.]]

April 17: Fla. Senate launches space tourism bill

The Senate on Thursday unanimously and with no debate passed a bill that provides immunity from lawsuits for businesses that send people into space. Supporters say the law might help lure space tour operators who plan orbital or suborbital flights. "Each time legislation is passed that enhances the local business climate and makes the state of Florida more conducive for new business opportunities -- particularly for a targeted industry such as space -- it's a win-win for our recruitment efforts," said Lynda Weatherman, president and CEO of the Economic Development Commission of Florida's Space Coast. Sponsored by Rep. Bill Posey, R-Rockledge, the bill, SB 2438, says the business is not liable for injury or death as long as the passenger signs a consent form recognizing the inherent dangers in space travel. The protection does not apply in cases of gross negligence, Posey said. The House companion, HB 737 and sponsored by several members of the Space Coast delegation, has cleared its committees and is ready for a full vote in that chamber. Record industry and airline mogul Richard Branson of Virgin Atlantic said early this year that his company could offer suborbital flights as early as 2009. Web posted. (2008). [Fla. Senate launches space tourism bill [Online]. Available WWW: <http://www.floridatoday.com/> [2008, April 17].]

April 18: NASA Deputy Administrator and Florida Governor Discuss Benefits of Space Exploration at Miami Future Forum

NASA Deputy Administrator Shana Dale and Florida Gov. Charlie Crist discussed Friday how space exploration gives Floridians a more competitive economy and better quality of life during a NASA Future Forum at the University of Miami. As an example, Crist used the event to announce a partnership between state-funded Space Florida and SPACEHAB of Webster, Texas. They plan to use the International Space Station's national laboratory designation and the Space Life Sciences Lab at NASA's Kennedy Space Center, Fla. to carry out space-based biomedical and biotech research. The forum was part of a yearlong series of events across the country marking NASA's 50th anniversary. Other NASA participants included astronauts Carl Walz and Steve Frick. Walz, director of the Advanced Capabilities Division in NASA's Exploration Systems Mission Directorate in Washington, discussed the agency's plans to return to the moon and travel beyond. Frick commanded space shuttle Atlantis' STS-122 mission to the International Space Station in February. Panel discussions among NASA representatives and Florida academic and commercial groups highlighted the future of space exploration. ["NASA Deputy Administrator and Florida Governor Discuss Benefits of Space Exploration at Miami Future Forum," **Press Release #08-104**, April 18, 2008.]

Expendable Launch Vehicle Status Report

Status Report: ELV-041808. Mission: GLAST (Gamma-ray Large Area Space Telescope); Location: Astrotech payload processing facility; Launch Vehicle: Delta II 7920-H; Launch Pad: 17-B; Launch Date: TBD (under assessment); Launch Window: 11:45 a.m. - 1:40 p.m. EDT. At Pad 17-B on Cape Canaveral Air Force Station, the Delta II second stage is planned to be hoisted atop the first stage on Monday. This week, work to complete the manufacturing, testing and evaluation of the new H-beam associated with the lifting of the second stage was completed. Meanwhile, at the Astrotech payload processing facility, the GLAST Ku-band communications antenna was installed on Tuesday. Testing will begin on Sunday. End-to-end communications system testing is also scheduled for this weekend. Closeouts of the spacecraft thermal blankets continue. The star tracker sunshade installation is currently planned for next Wednesday. Web posted. (2008). [Expendable Launch Vehicle Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/launchingrockets/status/2008> [2008, April 18].]

April 19: Shuttle museum on track

To showcase the role of Palmdale and the Antelope Valley in America's manned space program, city officials want to establish a space shuttle museum. The space shuttle fleet is slated to be retired in 2010, and the city wants to provide a home to one of the orbiters near Air Force Plant 42, where all six shuttles were built. Rockwell North American, now part of Boeing, developed the winged spacecraft. Assembly took place in Palmdale, and the main engines were built by Rocketdyne, now also part of Boeing, in Canoga Park. Two of the shuttles were lost in accidents. As part of the effort, the City Council on Wednesday approved an application to acquire space shuttle artifacts warehoused at Plant 42. Items include shuttle insignia designs, flags flown in space signed by astronauts, and an escape module, Ledford said. The city also has discussed its plans with officials at the Smithsonian's National Air and Space Museum, which displays Enterprise, the first shuttle built for testing purposes, at a museum center in suburban Virginia. Roger Launius, a senior curator in the space history division of the museum, said the competition will be tough to get a shuttle. "Everyone wants one," Launius said. Smithsonian officials said Palmdale would need a climate-controlled facility to display a shuttle appropriately, Ledford said. National Aeronautics and Space Administration spokeswoman Katherine Trinidad said the focus right now is on the remaining 11 shuttle flights and that the disposition of the remaining spacecraft has not been determined yet. Web posted. (2008). [Shuttle museum on track [Online]. Available WWW: <http://www.dailynews.com/> [2008, April 19].]

Post-2010 station visits in peril

The second off-target, ballistic Soyuz landing in a row raises a troubling prospect for the future of Americans in space aboard the International Space Station. When the shuttle program shuts down in 2010, the U.S. will rely on the Russians to deliver crews to the space station. But if NASA deems the Soyuz spacecraft unreliable or dangerous, there is nothing to replace it for U.S. astronaut travel to the space station. On Saturday, a Soyuz capsule carrying NASA's Peggy Whitson, cosmonaut Yuri Malenchenko and South Korea spaceflight participant, So-Yeon Yi, had a technical problem and fell to Earth like a rock, landing some 260 miles off course. The landing came after a steeper-than normal re-entry caused the crew to endure dangerous forces up to 10 times that of gravity, twice the normal re-entry pressure. No cause is apparent, and teams from NASA and the Russian space agency have yet to begin investigating the cause of the apparent re-entry system failure. "It's going to take several days for them to get (the capsule) back to Moscow," said NASA spokesman Nicole Cloutier. "It does have a flight recorder." A Soyuz spacecraft automatically makes a ballistic re-entry if its guidance systems fails. Cosmonaut Yuri Malenchenko confirmed that the craft automatically made the switch to the emergency re-entry system, but he could not say why. "There was no action of the crew that led to this," Malenchenko said. Though tough on the crew, a ballistic re-entry is relatively safe, said U.S. space station program manager Mike Suffredini. A similar re-entry affected the last Soyuz return in October 2007, which carried two cosmonauts and a Malaysian space tourist. The cause could be

easily found after an examination of the capsule's flight recorder. Web posted. (2008). [Post-2010 station visits in peril [Online]. Available WWW: <http://www.flordiatoday.com/> [2008, April 22].]

April 21: Commercial Break

NASA will base U.S. resupply of the International Space Station on the untried vehicles of the Commercial Orbital Transportation System (COTS) program, and will not buy cargo services from Russia after the space shuttle fleet retires. U.S. space agency officials are set to begin discussions with Congress this week on continued use of Russia's Soyuz crew-launch vehicles following the final shuttle flight in 2010. But they won't ask for permission to keep using Russian Progress vehicle. Instead, NASA plans to pay a U.S. commercial provider for delivery of at least 20 metric tons of cargo to the ISS between 2010 and 2015. Under the COTS program, SpaceX and Orbital Sciences Corp. are splitting almost \$500 million in NASA seed money intended to spur development of a commercial route to the ISS. Several other entrepreneurial space companies also have unfunded Space Act agreements with NASA for the data they need to develop a commercial route to the space station. None of them, whether funded or not, is ready to demonstrate an ability to resupply the ISS, so NASA's decision could be a boon for their development efforts. William Gerstenmaier, associate administrator for spaceflight operations, says NASA believes one of the commercial vehicles in development under the COTS program eventually will be able to meet its ISS supply needs. Until a COTS vehicle is available, Gerstenmaier says, the U.S. agency plans to rely on prepositioned space parts to be sent up before the shuttle retires. Two "contingency flights" among the 10 remaining shuttle missions to the ISS are slated to deliver station spares too large to get to orbit otherwise, he said. With the shuttle retirement date looming, NASA is also seeking to address an ISS water-supply shortfall that will occur with the loss of the orbiters' water-producing capacity. As part of a recycling effort that ultimately could meet 85% of the space station's water needs with the six-person crew that will begin operating there in about a year, Hamilton Sundstrand will test Sabatier-reaction technology as a source of water for the ISS. ["Commercial Break," Aviation Week & Space Technology, April 21, 2008, p 28-30.]

Next Generation

A worldwide drive is underway to recruit astronauts for the post-shuttle world of long-duration missions to the International Space Station and, perhaps, the first flights to the Moon. The European Space Agency will start an astronaut-recruiting drive next month, and NASA already has one underway. The remaining ISS partners also are said to be planning or considering searches for new spacefarers. The new recruitment drive, to kick off on May 19, will be directed at preparing the ISS for a full six-member operation and initiating human exploration of the Moon and Mars, in which ESA intends to play a major role. The current plan is to fly an ESA astronaut every two years through 2015 and beyond. ["Next Generation," Aviation Week & Space Technology, April 21, 2008, p 31-32.]

April 23: Return to the moon

A robotic precursor of resuming human expeditions to the moon will likely be postponed by at least a few weeks from its October launch target, but NASA does not foresee any problems launching the lunar orbiter and high-speed impactor before the end of this year. NASA's Lunar Reconnaissance Orbiter, an observatory to map the lunar surface in search of potential landing sites for future human missions, is about two weeks behind schedule in meeting the craft's appointed launch date, said Craig Tooley, LRO project manager at the Goddard Space Flight Center. "We know that there are things that await us as we pass through (testing) that will certainly take some unplanned time," Tooley said. "That's what experience has taught us on spacecraft here at Goddard." Officials with the piggyback Lunar Crater Observation and Sensing Satellite mission, a secondary payload designed to take a suicidal plunge into one of the moon's impact crater, said their mission is about a month ahead of schedule. Both missions are currently on the books for liftoff aboard an Atlas 5 rocket at about 1055

GMT (6:55 a.m. EDT) Oct. 28, the first day of a series of launch opportunities stretching through the end of 2008. But LRO's ambitious schedule of integration and testing will likely push launch into at least the middle of November, according to Tooley. Web posted. (2008). [Return to the moon [Online]. Available WWW: <http://www.spaceflightnow.com/> [2008, April 23].]

Space Coast to Host New Satellite Program

NASA is getting rid of the space shuttle program in two years, but the other half of Central Florida's space industry will be growing. Space is taking a more important role in fighting terrorism and fighting wars. Four-star Gen. Robert Kehler is the new commander of Air Force Space Command, based in Colorado, and he's making his first official visit to Cape Canaveral. He said the Air Force is bringing on new kinds of satellites that communicate, that help us navigate, and that find the targets for war fighters to shoot at. He said the Cape's mission in launching those satellites is becoming more visible than ever, and the number of launches will increase. Web posted. (2008). [Space Coast to Host New Satellite Program [Online]. Available WWW: <http://www.wesh.com/> [2008, April 23].]

SpaceX wins NASA launch services contract

NASA has awarded launch services startup SpaceX an indefinite delivery/indefinite quantity contract potentially worth as much as \$1 billion for launches on its planned Falcon 1 and Falcon 9 vehicles. The contract period runs through June 30, 2010, for launches through December 2012. NASA said it makes such contracts available twice a year to "existing and emerging domestic launch service providers if their vehicles meet the minimum contract requirements." Those include the ability to launch payloads weighing at least 551 pounds into a circular orbit of 124 miles altitude, inclined at 28.5 degrees. The contract will support the U.S. space agency's science, space operations and exploration systems mission directorates with potential flights from Cape Canaveral Air Force Station, Fla. SpaceX also has a funded Space Act agreement under the agency's Commercial Orbital Transportation Services (COTS) effort to provide seed money for development of vehicles able to reach the International Space Station at 51.6 degrees inclination. The company plans to use its Falcon 9 vehicle for that service. SpaceX has attempted two launches of its Falcon 1 rocket from the Marshall Islands in the Pacific, but neither reached orbit. The company's next launch attempt is set for June. E-mail distribution. (2008). [Aviation Week's Aerospace Daily & Defense Report Re: "SpaceX wins NASA launch services contract," [Electronic]. Vol. 226, No. 17, [April 23, 2008].]

April 25: New runway confirmed for Discovery's CA landing option

The main runway 22 at Edwards Air Force Base (EDW) in California has been removed as a landing option for STS-124, through to STS-126. A refurbishment of the main strip means orbiters - should they require the alternative landing site at the end of their upcoming missions - will use the new temporary runway 22, which will also require new braking and rollout techniques. Edwards is home to the US Air Force's 412th Test Wing and is currently operated by the 95th Air Base Wing. The base is strategically situated next to Rogers Lake, an endorheic desert salt pan, and is the home to NASA's Dryden Flight Research Center (DFRC). The new 12,000 x 200 ft runway is shorter and narrower, and runs parallel to the main runway (15,000 X 300 ft). The temporary use of the new, smaller runway is required while the primary runway is under repair. Flight specific rules will take affect, beginning with STS-124, which will govern the use of the new runway. Though 3,000 feet shorter than the primary runway, an orbiter will still have lots of margins for her rollout. However, as a precaution, engineers have been looking into the design upper limits on the amount of heat reacted in the carbon-carbon brakes, should there be a problem with the brakes during rollout. The previous landing - with Endeavour at the Kennedy Space Center's Shuttle Landing Facility (SLF) at the end of STS-123 - only used brake loads of 17 MFT-lbs, though rollout was one of the longest in shuttle history. Such is the margin with a 15,000 ft runway, an orbiter could land and come to a stop even without the deployment of the drag chute. More braking would be required should that failure

occur on the new 12,000 ft runway, noted as causing the potential for 'melted fuse plugs, and damaged brake actuator, wheel and axle assemblies.' Should, in the unlikely event, the orbiter suffer brake damage, engineers back at KSC have spares in supply. Web posted. (2008). [New runway confirmed for Discovery's California landing option [Online]. Available WWW: <http://www.nasaspaceflight.com/> [2008, April 25].]

Expendable Launch Vehicle Status Report

Status Report: ELV-042508. Mission: GLAST (Gamma-ray Large Area Space Telescope); Location: Astrotech payload processing facility; Launch Vehicle: Delta II 7920-H; Launch Pad: 17-B; Launch Date: TBD (under assessment); Launch Window: 11:45 a.m. - 1:40 p.m. EDT. At Pad 17-B on Cape Canaveral Air Force Station, the Delta II second stage was hoisted into position on Tuesday. Upcoming milestones include a cryogenic test of the first stage using liquid oxygen, along with an associated countdown operation. A Simulated Flight Test follows that, encompassing the flight events that occur from liftoff through spacecraft separation to exercise the onboard vehicle systems of the Delta II. Both tests will occur approximately the second week of May. Meanwhile, at the Astrotech payload processing facility, end-to-end communications testing through the Tracking and Data Relay Satellite System has been completed. Three sunshades associated with the star tracker system were installed on Wednesday, and the sun trackers associated with the solar arrays were cleaned. The closeouts of the spacecraft thermal blankets continue. A final cleaning of the overall spacecraft and black light inspection are under way today, which are the last activities for spacecraft processing until the fueling of the spacecraft. Fueling will be scheduled once a launch date has been determined. Web posted. (2008). [Expendable Launch Vehicle Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/launchingrockets/status/2008> [2008, April 25].]

April 26: Discovery to roll out to VAB

The orbiter Discovery is slated to roll out of its Kennedy Space Center processing hangar today, an early move that will give NASA extra prep time for the planned May 31 launch of an International Space Station construction mission. Mounted atop a 76-wheel transporter, the spaceship will be hauled into KSC's 52-story Vehicle Assembly building, where it will be hoisted onto a mobile launcher platform and connected to an external tank with attached solid rocket boosters. Crane operators employed by United Space Alliance will perform the difficult and delicate lift – a key milestone in launch preparations. A weeklong effort to mate the orbiter to the 15-story tank and then test connections will follow. The fully assembled shuttle is scheduled to roll out to launch pad 39A on May 3 – two days earlier than planned. KSC spokeswoman Candrea Thomas said a smooth processing flow enabled the early move. "It'll give us a little bit of a cushion," she said. Discovery and a crew of seven astronauts are scheduled to blast off at 5:01 p.m. May 31 on a mission aimed at delivering the Japanese Kibo science laboratory module to the international outpost. ["Discovery to roll out to VAB," **Florida Today**, April 26, 2008, p 1B.]

April 27: There it goes

The implosion of the Air Force Complex 40 mobile service tower began Sunday morning at Cape Canaveral Air Force Station. The tower was toppled as part of the ongoing project to demolish the historic site. The steel from the tower will be recycled and used to pay for the demolition. ["There it goes," **Florida Today**, April 28, 2008, p 1B.]

April 28: NASA opposes KSC hearing

U.S. Sen. Bill Nelson wants the subcommittee overseeing NASA to have a hearing this summer in Brevard County about the future of Kennedy space Center, but NASA opposes the idea, Nelson said Monday. "I'm sad to tell you, NASA has asked me not to have a meeting, because they don't want to stir up the people," Nelson said during a Brevard County Commission workshop on space issues. His comments came during a meeting that also featured appearances by U.S. Reps. Dave Weldon and

Tom Feeney, and a brief video address from U.S. Sen. Mel Martinez. They said they were working against budget odds to narrow the projected five-year gap in manned space flight from KSC. ["NASA opposes KSC hearing," **Florida Today**, April 29, 2008, p 1B & 4B.]

Florida Space Link

Space Flight, an economic-development organization established by the state legislature to promote aerospace industry development, has teamed with Spacehab Inc. to establish a "space-based biotech corridor" linking laboratory space on the International Space Station with the state-owned Space Life Sciences Lab at NASA's Kennedy Space Center. Space Florida will provide Spacehab with financial backing and use of its research facility to develop commercial uses of U.S. experiment-rack space on the ISS. ["Florida Space Link," **Aviation Week & Space Technology**, April 28, 2008, p 18.]

Bullet Point

NASA argues that congressional permission for its astronauts to continue flying on Russian Soyuz vehicles after 2011 is "mandatory" if the international Space Station is to continue operating. The agency's human spaceflight chief, William Gerstenmaier, tells the House aeronautics and space subcommittee that Russia understands it can't operate the ISS without U.S. crewmates to run the U.S. power and cooling systems that keep the massive spacecraft functioning. But a congressional exemption to the Iran nonproliferation law permitting the U.S. to buy Soyuz rides expires in 2011, and NASA needs for it to be extended by mid-summer. Otherwise, there may not be time to negotiate with Russia to get additional vehicles built to cover the shortfall after the space shuttle stops flying in 2010. The U.S., space agency hawks proposed language to get the job done – and, Gerstenmaier says, to permit potential U.S. commercial space transportation providers to use Russian hardware in the vehicles. In an election year, few relevant laws are expected to pass Congress with or without the NASA language. ["Bullet Point," **Aviation Week & Space Technology**, April 28, 2008, p 23.]

April 29: 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, May 3, as preparations for the STS-124 mission move forward. Discovery is targeted to lift off May 31 on a 13-day mission to the International Space Station. The first motion of the shuttle out of Kennedy's Vehicle Assembly Building is scheduled for 12:01 a.m. EDT. The space shuttle vehicle, consisting of the orbiter, external tank and twin solid rocket boosters, was fully assembled on the mobile launcher platform and will be delivered to the pad atop a crawler transporter. The crawler slowly moves the shuttle out to the pad at less than 1 mph during its 3.4-mile journey. The process is expected to take approximately six hours. The mission will deliver the Kibo laboratory's large Japanese Pressurized Module, or JPM, and its remote manipulator system to the International Space Station. Three spacewalks will be conducted during the flight. Discovery will be commanded by Mark Kelly. Ken Ham will be the pilot. The mission specialists are Karen Nyberg, Ron Garan, Mike Fossum, Greg Chamitoff and Japan Aerospace Exploration Agency astronaut Akihiko Hoshide. Chamitoff will remain on the station as a resident crew member, replacing station Flight Engineer Garrett Reisman, who will return home on Discovery. ["NASA's Space Shuttle Discovery to Move to Launch Pad Saturday," **Media Advisory #M08-084**, April 29, 2008.]

April 30: Orion review board criticized

NASA's inspector general is questioning the independence of six people on the committee that was created to provide outside advice on the Orion spacecraft project. The inspector general, in a report issued this week, said six of the 19 members of the review board have conflicts of interest under federal law. In all six instances, the review board members work for companies holding contracts on Orion, which is the spaceship NASA is developing to replace the space shuttle and carry astronauts

to the moon. The inspector general recommended NASA suspend the six members whose employers work on the Orion project, and re-evaluate whether each member has a conflict of interest that would prevent them from providing independent advice. NASA declined to do so. The space agency said it is reviewing its rules for such review boards to make sure it properly deals with conflicts of interest but does not intend to suspend members at this time. "When you're building a spaceship, there are only so many people on the planet who know how to do that, and chances are those expert people are going to have some kind of history with NASA," said David Steitz, a spokesman at the agency's headquarters in Washington. ["Orion review board criticized," **Florida Today**, May 1, 2008, p 4A.]

NASA Awards External Tank Contract Modification

NASA has signed a \$39.5 million contract modification with Lockheed Martin Space Systems, New Orleans, to implement an external tank program employee retention plan. Incentives are being provided to eligible external tank personnel to ensure mission success and construction of the remaining external tanks to support Space Shuttle Program requirements through September 2010. Retention of the knowledgeable and skilled external tank workforce is necessary to produce the remaining shuttle hardware and safely execute all remaining contract requirements. This modification supports the agency's priorities of safely flying the space shuttle and completing construction of the International Space Station. The contract will end September 30, 2010. This modification brings the total value of the contract, awarded in October 2000, to \$2.967 billion. The contract calls for the delivery of 18 external tanks to NASA. Eleven tanks remain to be delivered. Work 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. ["NASA Awards External Tank Contract Modification," **Contract Release #C08-024**, April 30, 2008.]

MAY

May 1: ISS partners won't relocate Soyuz until re-entry resolved

The International Space Station (ISS) Expedition 17 crew will leave their Soyuz lifeboat docked where it is while a Russian State Commission investigates why the two previous Soyuz vehicles malfunctioned on re-entry, and other ISS operations could be affected as well. Original plans called for a May 7 relocation of the Soyuz TMA-12 vehicle that transported Expedition 17 commander Sergei Volkov, flight engineer Oleg Kononenko and South Korean spaceflight participant Yi So-yeon to the station. Mike Suffredini, NASA's ISS program manager, said May 1 that the decision to delay relocation protects the crew from the "small risk" that it won't be able to redock the Soyuz and be forced to return to Earth in a questionable vehicle. Soyuz TMA-10 and TMA-11 both slipped into uncommanded ballistic re-entries, apparently after their propulsion modules failed to separate properly, and dropped their three-person crews hundreds of miles short of their targeted touchdown areas in Kazakhstan. The State Commission that investigated the October 2007 TMA-10 re-entry laid blame for the mishap on a worn control-panel wire and said it was unrelated to the late separation. The new commission formed after the TMA-11 ballistic re-entry April 19 will reopen the earlier investigation as well. E-mail distribution. (2008). [Aviation Week's Aerospace Daily & Defense Report Re: "ISS partners won't relocate Soyuz until re-entry anomaly is resolved," [Electronic]. Vol. 226, No. 24, [May 2, 2008.].]

ET production problems solved

While station managers wrestle with the implications of the Soyuz problem, NASA Space Shuttle Program Manager John Shannon said May 1 the Michoud Assembly Facility in New Orleans appears to have worked out production kinks in the redesigned external tank produced there, and should show no more than a four- to five-week slip in the schedule for building the final 10 tanks before the shuttle is retired in 2010. That means the final servicing mission to the Hubble Space Telescope probably will go in late September or early October, rather than late in August, Shannon said. Remaining flights in the shuttle manifest will slip by roughly the same amount of time, which means there will be only five shuttle missions this year instead of the six originally planned. But there still remains enough margin in the schedule to fly out the manifest before the September 2010 retirement date for the shuttle fleet, Shannon said. E-mail distribution. (2008). [Aviation Week's Aerospace Daily & Defense Report Re: "ISS partners won't relocate Soyuz until re-entry anomaly is resolved," [Electronic]. Vol. 226, No. 24, [May 2, 2008.].]

Students' signatures will blast into space

The Challenger 7 Elementary School was selected to participate in Lockheed Martin's Student Signatures in Space program. On Thursday students and staff members signed a poster that will be digitally copied. That reproduction will be sent into space on an upcoming shuttle mission. Since the program began in 1997, more than 5 million student signatures have been sent into space, according to NASA. The program's goal is to boost interest in the space program. Challenger 7 plans a series of activities connected to space, including classroom lessons on the history and significance of the space program, speakers from NASA and a live, virtual presentation from a NASA teacher. ["Students' signatures will blast into space," Florida Today, May 2, 2008, p 1B & 4B.]

Tank problems delay Atlantis

The late August launch of NASA's fifth and final Hubble space Telescope servicing mission will be pushed back four to five weeks because of shuttle external tank production delays. NASA officials have said for several weeks that external tank production at a New Orleans factory would likely delay the mission. However, a NASA official Thursday confirmed the length of the postponement on as part of an overview of the shuttle program's status and schedule for the rest of this year. Atlantis

and seven astronauts were scheduled to blast off Aug. 28 from Kennedy Space Center's launch pad 39A on a mission to equip NASA's flagship observatory with powerful new science instruments and new batteries and gyroscopes that will enable the telescope to operate until at least 2013. Two external tanks were needed to provide a backup for a potential rescue mission. "We really cannot make that date with the external tank processing schedule," NASA shuttle program manager John Shannon said during preflight briefings for the scheduled May 31 launch of Discovery and seven astronauts on a mission to deliver the Japanese Kibo science laboratory module to the International Space Station. The preparations for the May 31 mission remain on track for an on-time liftoff. NASA now is aiming to launch the mission in late September or early October, Shannon said. The impact on future shuttle launch dates is to be determined. No launch dates have been finalized. ["Tank problems delay Atlantis," **Florida Today**, May 2, 2008, p 3B.]

May 2: Improved NASA Footage to NASA

Discovery Communications chairman John Hendricks will return a new and improved library -- more than 100 hours -- of archival NASA footage to NASA May 6 at a Capitol Hill ceremony and screening. Discovery digitized the footage for a new HD special, *When We Left Earth: The NASA Missions*, which chronicles the birth of the space program and the people who had the right collective stuff to get us there. Discovery also cataloged and restored what it described as "fragile" early audio recordings "nearly lost to degradation." The six-hour series premieres on Discovery Channel Sunday, June 8, from 9 p.m.-11 p.m. and continues for the next two Sundays at the same time. Also on hand will be Sen. Bill Nelson (D-Fla.), whose state played such an integral part in the space race. There was no word on whether they were also asking any legislators from Texas to be in attendance. Web posted. (2008). [Discovery Communications Brings New, Improved NASA Footage to NASA [Online]. Available WWW: <http://www.broadcastingcable.com/> [2008, May 2].]

Astronaut Hall of Fame adds shuttle-era items

The world watched when NASA astronaut Rick Hauck boarded Discovery for the nation's first post-challenger shuttle flight back in late 1988. He and his crewmates wore brand new, bright-orange partial pressure launch and entry suits and then donned survival packs equipment with parachutes, life preservers, emergency air supplies and collapsible life rafts -- in case they had to bail out over the Atlantic Ocean. What people couldn't see was Hauck's diplomatic passport. "It was already stamped with a visa just in case they had to land at one of the overseas abort sites," said Daniel Gruenbaum, curator at the U.S. Astronaut Hall of Fame. Hauck's passport is one of the many items in a collection to be unveiled today when a new shuttle wing is opened at the Hall of Fame, which is on SR 504 just outside Kennedy Space Center. The museum already houses the largest collection of personal memorabilia from American astronauts who flew during the Mercury, Gemini and Apollo programs. The new wing is filled with shuttle program artifacts and personal memorabilia from astronauts who have rocketed into orbit aboard the world's first reusable spaceships, which debuted in 1981 and have flown 122 missions. ["Astronaut Hall of Fame adds shuttle-era items," **Florida Today**, May 2, 2008, p 1A & 3A.]

Columbia Experiment Recovered and Was A Success.

Space.com reported, "Using data recovered from a damaged computer hard-drive that was aboard the ill-fated Space Shuttle Columbia in 2003, scientists have recently learned more about why the act of shaking a material can quickly transform it into something completely different." Understanding this process of shear thinning, which is commonly seen in a ketchup bottle, has many industrial applications. "NASA's recovery team found the hard drive among the debris that was scattered for hundreds of miles across Texas and Louisiana. The data on the disk were retrieved by a company that specializes in recovering information from the kind of disk crashes that happen every day here on Earth." The experiment, containing xenon atoms, was also found and "was a success...confirming a decades-long theory about the relation between shear thinning and stirring." E-mail distribution.

(2008). [NASA HQ stories Today's Stories Re: "Columbia Experiment Recovered and Was A Success," [Electronic]. [May 5, 2008.].]

Expendable Launch Vehicle Status Report

Status Report: ELV-050208. Mission: GLAST (Gamma-ray Large Area Space Telescope); Location: Astrotech payload processing facility; Launch Vehicle: Delta II 7920-H; Launch Pad: 17-B; Launch Date: TBD (under assessment); Launch Window: 11:45 a.m. - 1:40 p.m. EDT. At Pad 17-B on Cape Canaveral Air Force Station, a cryogenic test of the Delta II first stage is scheduled for May 7. This test includes a countdown and the loading aboard of liquid oxygen as a leak check of the first stage. The following day a Simulated Flight Test will be performed exercising the onboard vehicle systems of the Delta II from liftoff through spacecraft separation. NASA managers are working to resolve an issue with flight ordnance that they consider could affect mission success. At Astrotech, a final cleaning of the GLAST spacecraft and the associated black light inspection have been completed. Preparations have begun to move the spacecraft to the hazardous processing facility on Sunday. Fueling operations are scheduled for next week. Mission: OSTM/Jason-2; Location: Astrotech payload processing facility, Vandenberg Air Force Base; Launch Vehicle: Delta II; Launch Pad: Space Launch Complex 2, Vandenberg Air Force Base; Launch Date: June 15, 2008; Launch Window: 1:47 - 1:56 a.m. PDT. An air cargo plane delivered the OSTM/Jason-2 spacecraft from Europe to Vandenberg Air Force Base in California on April 29. It was taken to the Astrotech payload processing facility on north Vandenberg to begin processing. The shipping container was then opened, and the spacecraft was transferred to a work stand. Spacecraft checkout begins on May 6. At Space Launch Complex 2, the Delta II first stage was placed into the pad launcher on April 25. The three solid rocket boosters were mated to the Delta II on May 1. The second stage is being hoisted atop the first stage Friday. Web posted. (2008). [Expendable Launch Vehicle Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/launchingrockets/status/2008> [2008, May 2].]

May 3: Astronaut Hall of Fame: Class of 2008

Four former space shuttle commanders -- John Blaha, Bob Cabana, Bryan O'Connor and Loren Shriver -- were inducted into the Astronaut Hall of Fame on Saturday. It was the seventh group of shuttle crewmembers named to the hall, which has enshrined 70 astronauts. Web posted. (2008). [Astronaut Hall of Fame: Class of 2008 [Online]. Available WWW: <http://www.spaceflightnow.com/> [2008, May 3].]

Discovery in place for May 31 launch date

Discovery reached Launch Complex 39A at KSC early May 3 after a late-night trip from the Vehicle Assembly Building on its mobile transporter. The mission remains on track for an on-time launch a little after 5 p.m. EDT on May 31. NASA is planning a 13-day mission, with room for possible extensions if necessary. Kibo, which was started under the old Space Station Freedom program, is the largest station module, filling so much of the orbiter cargo bay that there isn't room for the 50-foot-long orbital boom sensor system (OBSS) along the cargo bay sill. The crew of the shuttle Endeavour left the OBSS behind on the STS-123 mission in March, which means Discovery's crew will be able to conduct only limited inspections of the orbiter's thermal protection system with Discovery's robotic arm before arriving at the space station on Flight Day 3. The Flight Day 2 inspection will be limited to the upper portions of the leading edges of both wings, in part because the elbow camera used to ensure clearances during inspection will be strapped down during launch to keep it from hitting Kibo and the payload bay door. But the ISS crew will perform the post-Columbia high-resolution photography of the orbiter belly as Discovery flies through a back flip as it approaches the station on Flight Day 3, and a post-undocking inspection with the OBSS also is planned once Kibo is out of the way. The combined station and shuttle crews will attach Kibo to the station's Harmony node on Flight Day 4, after spacewalkers Mike Fossum and Ron Garan make the

necessary external preparations. In their second spacewalk on Flight Day 6 the pair will prepare the pressurized logistics module for Kibo for a Flight Day 7 robotic transfer from a temporary berth on Harmony to its final position atop Kibo. A final extravehicular activity on Flight Day 9 will see Fossum and Garan replacing a bad nitrogen tank on the station truss, and retrieving a failed camera system that will need to be replaced before Japan's H-II Transfer Vehicle (HTV) can rendezvous and berth next year. In addition to Fossum and Garan, the STS-124 crew consists of Mark Kelly, the mission commander; pilot Ken Ham, and mission specialists Karen Nyberg, Greg Chamitoff and Japan Aerospace Exploration Agency astronaut Akihiko Hoshide. Chamitoff is scheduled to join ISS Expedition 17, replacing NASA astronaut Garrett Reisman, who is set to return to Earth on Discovery. The STS-124/1J terminal countdown demonstration test will continue until May 9. E-mail distribution. (2008). [Aviation Week's [Aerospace Daily & Defense Report](#) Re: "Discovery in place for May 31 launch date," [Electronic]. Vol. 226, No. 26, [May 6, 2008.].]

May 4: Florida helps space industry

Before leaving Tallahassee, the state Legislature enacted three initiatives to try to help the space industry in Brevard County and across the state. Lawmakers approved protections from lawsuits for the nascent space tourism businesses, tax incentives aimed at helping space contractors to retain employees as the shuttle program winds down and a \$16.25 million package for investment in infrastructure, job retention, training and research. NASA contractors operate in 47 of the 67 Florida counties, so broad support materialized for the space industry, said Pedro Medelius, deputy program manager, ASRC Aerospace Corp. Budget proposals include \$14.5 million for infrastructure, \$1.25 million for retention and training, and \$500,000 for research at Florida Tech. The \$14.5 million is specifically targeted for refurbishment of a launch complex at Cape Canaveral Air Force Station to help lure a new commercial space venture. ["Florida helps space industry," [Florida Today](#), May 5, 2008, p 1A & 5A.]

May 6: Glenn wants shuttles' lives extended

For legendary astronaut and former U.S. Sen. John Glenn, the video clips brought back memories of old friends. For the rest of the nation, they provided a glimpse of NASA's glory days. The clips were among the 100 hours of historic space footage, newly restored in high-definition, released publicly Tuesday at a Capitol Hill ceremony to help mark the 50th anniversary of NASA. During the event, Glenn called for extending the work on the international Space Station and extending the life of the space shuttles beyond what NASA is planning. U.S. Sen. Bill Nelson and Glenn lamented the decreased funding for NASA programs – and for science and technology projects in general – during the past few years. Glenn called for continued work on the international Space Station beyond 2015, when the nation plans to pull the plug on its commitment. Glenn said he also would like to see the life of the space shuttles extended. "The shuttles may be old, but they're still the most complex vehicle ever put together by people, and they're still working very well," Glenn said. He said the few billion dollars it would cost to extend the shuttle's life by a year or two would be worth it to make Americans less dependent on the Russians during the gap between the shuttles' retirement and the first Orion flight. ["Glenn wants shuttles' lives extended," [Florida Today](#), May 7, 2008, p 1A.]

Discovery crew flies to KSC for countdown test

Arriving in four T-38 training jets, Discovery's astronauts flew around the orbiter on launch pad 39A as they arrived at Kennedy Space Center, shortly after 4 p.m. Tuesday. "We went over the launch pad to take a quick look," said Commander Mark Kelly, who will lead the six other members of his crew through a four-day Terminal Countdown Demonstration Test that ends Friday. During the next four days, the astronauts and KSC workers will practice countdown and emergency procedures. Mark Kelly and pilot Ken Ham will practice landing in the Shuttle Training Aircraft, a jet modified to fly like the shuttle. With no technical issues to slow launch preparations, STS-124 is on schedule to launch May 31 on a 13-day mission to deliver the 37-foot Kibo laboratory to the International Space

Station. Three spacewalks are scheduled. In addition to Kelly and Ham, mission specialists are Mike Fossum, Greg Chamitoff, Ron Garan and Karen Nyberg, and Japanese astronaut Akihiko Hoshide. STS-124 is the 123rd shuttle flight, the 35th flight for Discovery and the 26th flight to the station. ["Discovery crew flies to KSC for countdown test," **Florida Today**, May 7, 2008, p 4B.]

Orion preliminary design review slips about two months

Top-level engineers overseeing development of the Orion crew exploration vehicle have decided to slip preliminary design review (PDR) on the six-seat capsule — probably by about two months — to give some contractors more time to work design changes adopted last fall in a major weight-saving exercise. Meeting on May 6, the Constellation Program Control Board tentatively authorized a PDR slip from Sept. 16-26 to Nov. 10-21. "NASA is assessing moving Orion's Preliminary Design Review (PDR) from September 2008 to November 2008," the agency stated May 9 after the NASA Watch web site first reported a possible delay. "The Orion Project has been performing analysis and trade studies based on the Point of Departure architecture established in November 2007. "NASA believes it may be of value to give the design team additional time to further mature this analysis and prepare the required products for Orion's preliminary design review," the statement concluded. An agency spokesman said the slip "is not anticipated to affect first flight" of the Orion vehicle. However, a September 2013 date for that mission was already under review after the PDR was delayed from May to September of this year to align Orion development with its Ares I crew launch vehicle. The control board recommended the latest delay after evaluating progress on meeting design changes adopted in November 2007 to scrub weight from the Orion capsule and its service module. Among specific changes that need more time are an updated parachute architecture and various electrical power system and battery technology changes. Also needing more time is a change in the docking system from probe-and-drogue hardware used in the Apollo program, which encroached on the already-cramped Orion crew volume, to a customized version of the Low Impact Docking System under development at Johnson Space Center as a universal interface between exploration vehicles. Mark Geyer, the Orion project manager, recommended the slip to November after it began to appear that designs on those and other components wouldn't be high enough in fidelity to make a September PDR meaningful. Under the September PDR schedule, contractors are required to begin delivering material for the review on May 12. Constellation program managers are scheduled to discuss progress in the Orion and Ares I vehicle development efforts with reporters May 15. E-mail distribution. (2008). [Aviation Week's [Aerospace Daily & Defense Report](#) Re: "Orion preliminary design review slips about two months," [Electronic]. Vol. 226, No. 30, [May 12, 2008.].]

KSC Security Division wins golf tournament at La Cita

Kennedy Space Center's Security Division had no problem protecting its lead on the golf course this spring, capturing one of the biggest fundraising tournament titles of the year. Bob Ruscitti, Steve Ellenbrook, Doug Swift and Kirby Lanoue teamed for a score of 60 to win the Public Service Division title of the 15th annual Carl T. Newland Memorial Golf Tournament at the La Cita Golf and Country Club. Placing second (61) was the Satellite Beach/Cocoa Police Department team. The KSC and Satellite Beach/Cocoa Police Department teams were two of many quartets to compete in the annual event, which benefited the Titusville Police Athletic League (PAL). This year's tournament raised more than \$15,000 for Titusville PAL, a 501(c) 3 non-profit organizations with activities such as basketball, 3v3 soccer, track and field, after-school enrichment, tutoring services, youth leadership programs and much more for local students. Web posted. (2008). [KSC Security Division wins golf tournament at La Cita [Online]. Available WWW: <http://www.floridatoday.com/> [2008, May 6].]

May 7:

Delta II to launch twin GRAIL lunar probes

A single Delta II Heavy rocket will send the twin spacecraft of NASA's planned Gravity Recovery and Interior Laboratory (GRAIL) mission to the moon in the third quarter of 2011 under a new

contract award to United Launch Alliance. The \$375 million Discovery-class mission will put the two probes in tandem orbits around the moon, where they will use extremely precise laser ranging to measure the change in distance between them as the lunar-gravity field below them changes. Scientists can use that data to calculate the moon's subsurface structure all the way to the core. Lockheed Martin Space Systems is building the two spacecraft for the Jet Propulsion Laboratory, which is managing the program. A similar mission -- the Gravity Recovery and Climate Experiment (GRACE) -- has been orbiting Earth since March 2002. E-mail distribution. (2008). [Aviation Week's Aerospace Daily & Defense Report Re: "Delta II to launch twin GRAIL lunar probes," [Electronic]. Vol. 226, No. 27, [May 7, 2008].]

\$2B sought for NASA

Sen. Bill Nelson brought together a group of prominent space experts Wednesday to push for more funding for NASA. "NASA is in trouble," Nelson said. "This little agency has been asked to do too much with too little." Nelson and other legislators from states with NASA facilities failed in attempts to snag an additional \$1 billion in agency funding in this year's federal budget. Now, Nelson is hoping to get an additional \$1 billion in each of the next two fiscal years. Nelson, chairman of the Senate Commerce, Science and Transportation subcommittee on space, invited representatives of companies that contract with NASA and universities that do research through the agency to testify about the future of the exploration agency. Frederick Tarantino, CEO and president of Universities Space Research Association, representing 102 universities, said NASA needs more money to provide research opportunities to students. Gene Kranz, former NASA flight director, said funding would help close the five-year gap in manned space flight from the end of the shuttles to the Constellation program. And Joan Johnson-Freese of the U.S. Naval War College said, "America needs to be seen as a leader into the future, and no venture, no journey, no undertaking represents the future more than human spaceflight." ["\$2B sought for NASA," **Florida Today**, May 8, 2008, p 1A.]

Weiler Assumes Official Role as NASA Science Chief

Administrator Michael Griffin announced Wednesday that Ed Weiler will remain as NASA's associate administrator for the agency's Science Mission Directorate. Weiler was named interim chief of the directorate March 26. ["Weiler Assumes Official Role as NASA Science Chief," **Press Release #08-114**, May 7, 2008.]

NASA Rolls Out New Artifact Loan Program with Shuttle Tires

With the help of the space shuttle program, NASA kicks off a new artifact loan program for museums, planetariums, and other organizations. NASA's new Artifact Loan Opportunities Program will help organizations borrow NASA artifacts for education and outreach purposes. The first artifacts available are main landing gear tires from space shuttles. The space shuttle tires, including some flown on missions, are available to proposing organizations that NASA determines best meet the agency's education and public outreach goals. This new program gives organizations that are not traditionally associated with the agency the chance to have access to NASA artifacts. The shuttle tires and future available artifacts represent NASA's many decades of exploration and discovery. Organizations interested in proposing uses for loaned shuttle tires should be external to NASA. Organizations may include, but are not limited to, museums, schools, and civic groups. The long-term loan of these tires may be used to educate, inspire or inform the public about NASA's scientific and technological achievements through art, sculpture, furniture, building structures, exhibits or other innovative uses of the artifacts. ["NASA Rolls Out New Artifact Loan Program with Space Shuttle," **Press Release #08-113**, May 7, 2008.]

May 8: NASA Awards Contract for Ares I Mobile Launcher

NASA's Kennedy Space Center has awarded a contract to Hensel Phelps of Orlando, Fla., for the construction of the Ares I mobile launcher for the Constellation Program. Ares I is the rocket that will transport the Orion crew exploration vehicle, its crew and cargo to low Earth orbit. The contract includes an option for an additional Ares I mobile launcher. It is a firm fixed-price contract with a value of \$263,735,000, if all options are exercised. The mobile launcher will support the Ares I and the vehicle's associated ground support equipment. It will be used in the assembly, testing and servicing of the Ares I at existing Kennedy facilities. The mobile launcher will transport the Ares I rocket to the launch pad and provide ground support for launches. The mobile launcher consists of the main support structure that comprises the base, tower and facility ground support systems, which include power, communications, conditioned air, water for cooling, wash-down, and ignition over-pressure protection. Hensel Phelps will supply all labor, materials and equipment necessary for construction of the Ares I mobile launcher. Ground support equipment, such as umbilicals, propellant and gases, instrumentation, controls and communications, necessary to support the Ares I rocket will be provided and installed under a separate contract or contracts. The tower of the mobile launcher will have multiple platforms for personnel access and will be approximately 390 feet tall. Construction will take place at the mobile launcher park site area located north of Kennedy's Vehicle Assembly Building at the space center in Florida. ["NASA Awards Contract for Ares I Mobile Launcher," **Contract Release #C08-025**, May 8, 2008.]

May 9: Launch practice ends; crew flies back to Houston

Discovery's crew returned to Houston Friday after four days of practicing the steps they will make before their May 31 launch. "It went great," NASA spokesman Allard Beutel said. Concluding the Terminal Countdown Demonstration Test, astronauts and launch managers practiced emergency procedures and a countdown dress rehearsal at 11 a.m. today. By 2:15 p.m., the astronauts were winging their way homeward in T-38 training jets, said Beutel. In three weeks, Discovery will launch at 5:02 p.m. EDT on a trip to deliver the 32,500-pound Kibo laboratory module to the International Space Station. Three spacewalks are scheduled during the 14-day mission, which helps expand the station so it can double its crew to six next year. Mechanical engineer Karen Nyberg will become the 50th woman in space and the first person to operate three robot arms during a mission. Japanese astronaut Akihiko Hoshide will open the module built by his countrymen. Discovery will be flown by Commander Mark Kelly and pilot Ken Ham, a pair of naval aviators. Spacewalkers are Mike Fossum and Ron Garan. Flight engineer Greg Chamitoff will remain at the station and Garrett Reisman will return to Earth on the shuttle. Discovery has had few mechanical issues as it moves toward launch. Only 40 interim problem reports have been issued, an historic low. Technicians have added seven days of padding to the schedule, which will allow most workers to have Memorial Day off. Web posted. (2008). [Launch practice ends; crew flies back to Houston [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, May 9].]

GLAST launch date set; not firm

NASA's GLAST (Gamma-ray Large Area Space Telescope) will launch from pad 17-B at Cape Canaveral Air Force Station no sooner than June 3, with the launch window extending from 11:45 a.m. to 1:40 p.m. EDT. A delay in the May 31 launch of Discovery is the factor most likely to delay the GLAST mission. The launch initially was delayed from May 16 to make repairs to equipment damaged when trying to mount the second stage. A cryogenic test of the Delta II first stage was conducted May 7. Thursday a simulated flight test was performed. At Astrotech in Titusville, fueling the spacecraft is scheduled for this weekend. Web posted. (2008). [GLAST launch date set; not firm [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, May 9].]

Contractor to build launch pad for NASA

Hensel Phelps Construction Co.'s Orlando operation has won a major NASA contract potentially worth nearly \$264 million to produce and build the mobile launch systems for the space agency's

Constellation Program – the successor to the space shuttle, company officials said Friday. Terms of the deal call for Hensel Phelps to erect the base, tower and ground support equipment for the next-generation launch system, officials said. The mobile launcher will send the Ares I rocket into space bearing the Orion vehicle and Constellation astronauts. Kennedy Space Center awarded the lucrative deal to the veteran aerospace construction firm, which is well known for its government and commercial work. It has performed major launch pad construction programs at Cape Canaveral and Vandenberg Air Force Base in California. [“Contractor to build launch pad for NASA,” **Orlando Sentinel**, May 10, 2008, p C5.]

Expendable Launch Vehicle Status Report

Status Report: ELV-050908. Mission: GLAST (Gamma-ray Large Area Space Telescope); Location: Astrotech payload processing facility; Launch Vehicle: Delta II 7920-H (United Launch Alliance); Launch Pad: 17-B; Launch Date: No Earlier Than June 3, 2008; Launch Window: 11:45 a.m. - 1:40 p.m. EDT. NASA management currently is targeting no earlier than June 3 for the liftoff of GLAST atop a Delta II rocket. At Pad 17-B on Cape Canaveral Air Force Station, a cryogenic test of the Delta II first stage was conducted May 7. This test included a countdown and the loading aboard of liquid oxygen as a leak check of the first stage. Yesterday a Simulated Flight Test was performed exercising the onboard vehicle systems of the Delta II from liftoff through spacecraft separation. At Astrotech, the spacecraft is in the hazardous processing facility and fueling is scheduled for this weekend. Mission: OSTM/Jason-2; Location: Astrotech payload processing facility, Vandenberg Air Force Base, Calif.; Launch Vehicle: Delta II 7320 (United Launch Alliance); Launch Pad: Space Launch Complex 2, Vandenberg Air Force Base, Calif.; Launch Date: June 15, 2008; Launch Window: 1:47 - 1:56 a.m. PDT. At the Astrotech payload processing facility on north Vandenberg, testing of OSTM/ Jason-2 is under way and will continue during the next week. Closeouts of the thermal blankets are beginning. Fueling of the satellite with its hydrazine control propellant is planned for May 17. The spacecraft is currently scheduled to go to the launch pad on June 2. At Space Launch Complex 2, the Delta II is powered on for electrical testing. Cryogenic testing is scheduled for May 19. Web posted. (2008). [Expendable Launch Vehicle Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/launchingrockets/status/2008> [2008, May 9].]

May 10: Space Florida to endure cuts

The state's primary aerospace economic development agency will lose almost 43 percent of its budget this year. But officials with Space Florida don't expect layoffs or pay cuts. Gov. Charlie Crist requested \$8.5 million for Space Florida in his 2008-09 spending plan, which would have been a \$1.5 million increase over the agency's \$7 million budget in 2007-08. But the budget passed by the Florida Legislature last week will funnel only \$4 million to Space Florida, an organization created to promote and develop the state's aerospace industry. Deb Spicer, director of communications with Space Florida, said the organization does not expect a reduction in the size of its staff, which includes about 24 people, according to a contact list on the agency's Web site. Spicer also said the organization does not anticipate having to ask staff members to take pay cuts. Web posted. (2008). [Space Florida to endure cuts [Online]. Available WWW: <http://www.floridatoday.com/> [2008, May 10].]

May 12: Senators seek wiggle room on shuttle retirement

Senators drafting a new NASA authorization bill are considering giving the agency a little more time to finish the International Space Station. Instead of a hard September 2010 deadline for grounding the space shuttle fleet, per President Bush's plan, some lawmakers want to allow the shuttles to keep flying until the 10 remaining flights to the station are completed. Sen. David Vitter (La.), the top Republican on the Senate space subcommittee, says the idea is still in the “discussion” stage. But he argues that a NASA authorization bill with the flexible deadline should be adopted. Shuttle program manager John Shannon says there is still enough time to make all of the remaining station-assembly

flights before the deadline. E-mail distribution. (2008). [Aviation Week's Aerospace Daily & Defense Report Re: "Senators seek wiggle room on shuttle retirement," [Electronic]. Vol. 226, No. 30, [May 12, 2008.].]

May 13: Two days of schedule padding lost

Two days of schedule padding likely will be lost replacing a failed multiplexer-demultiplexer in Discovery's aft section. The May 31 launch date will not change, NASA spokesman Allard Beutel said. "That's why you get ahead when you can," said Beutel, noting that efficient technicians have added seven contingency days to Discovery's schedule in the past month. Fueling the shuttle's steering jets, scheduled for completion today, must stop while crews replace the electronic relay. Each shuttle has 23 such relays. The replacement will be made by Monday when the Executive Flight Readiness Review will meet to officially set May 31 as the launch date, said Beutel. Launch time is 5:02 p.m. EDT. Today a program level Flight Readiness Review met and discussed several minor technical issues. Discovery has a historic low number of technical problems. Web posted. (2008). [Two days of schedule padding lost [Online]. Available WWW: [http://www.floridatoday.com/the flame trench blog](http://www.floridatoday.com/the_flame_trench_blog) [2008, May 13].]

Job situation at KSC difficult to predict

The November election likely will determine how many Kennedy Space Center workers keep their jobs after the end of the shuttle program in 2010, United Space Alliance's former CEO said Tuesday. Michael McCulley, a former astronaut, said he cannot predict how many jobs will be retained during the five-year gap between the end of the shuttle program and the beginning of the next manned spaceflight program, Constellation. Some 6,400 space center jobs are expected to be lost as the shuttle program ends. "It's too dependent on the next president, the election. There are too many things out there," McCulley said during a speech before the National Space Club at the Doubletree Hotel Cocoa Beach Oceanfront. The next president won't be able to continue the shuttle with huge budget increases, and he or she could decide to cut back on President Bush's vision for returning to the moon. USA is the prime contractor for the shuttle and employs 6,200 at KSC, more than 40 percent of the center's work force of about 14,000. USA might be able to land a good portion of the shuttle decommissioning work. McCulley said the coming five years of dependence on Russian Soyuz capsules won't be as bad as many in the space industry fear. Despite two recent emergency Soyuz landings, the Russians have provided dependable transportation to the International Space Station, he said. "You've got to think of the Russians in a positive way," he said. "They have been, and will continue to be, a wonderful partner. "However, the U.S. is giving up leadership in human spaceflight, a move he hates to see. "It's bad enough to not be the leader," he said, quoting a friend. "It's worse if you've been the leader and give it up." Web posted. (2008). [Job situation at KSC difficult to predict [Online]. Available WWW: <http://www.floridatoday.com/> [2008, May 14].]

May 14: On tap in space: Urine will not go to waste

Astronauts living on the International Space Station soon will take recycling to new extremes: They'll get some of their drinking water from the toilet. NASA has spent decades perfecting a system to transform urine into water that can be used in space for drinking, food preparation and washing. Agency officials say the water from the system will be cleaner than U.S. tap water. The new \$250 million machine was being unpacked Wednesday at the space shuttle's Florida launch site. Shuttle Endeavour is scheduled to take it to the station this fall. If all goes well, the so-called toilet-to-tap system will be fully operational in six months. Russia developed a similar system in the 1980s but it never flew in space because of concerns over crew squeamishness, says former station astronaut Leroy Chiao, now a space consultant. He says station crews expect hardships and aren't likely to object. Some of the crew's drinking water already comes from an unconventional source: evaporated laundry water and sweat, which are captured by a Russian machine. NASA developed the new system because water is so heavy to carry to orbit. Once the number of station residents grows from

three to six next year, it would be impossible to ship enough water to the station, says Marybeth Edeen of NASA's Johnson Space Center. A toilet to arrive on the station this fall will funnel liquid waste to the new system through pipes, but the wastewater from the station's older toilet will have to be carried in tanks to the processing machine. There, water will be distilled from the waste and undergo six steps to cleanse it, including the addition of iodine to kill microbes. The machine will also suck in humidity from the astronauts' sweat and breath and clean it. The end product will fill the bowls of the new toilet and will also dribble from taps in a galley and a "hygiene center," where astronauts will bathe and brush their teeth. The new machine will provide roughly half of the crew's water intake, says Bob Bagdigian of NASA's Marshall Space Flight Center, including 1¾ gallons per person per day for drinking and food. Recycling wastewater also is gaining in popularity on Earth. A dozen or so U.S. communities have plants that cleanse sewage so it can be added to aquifers that supply drinking water. The biggest plant, which can serve 500,000 people, opened this year in Orange County, Calif. Public disgust has squelched such systems in San Diego and Los Angeles. "I very much understand (public) squeamishness," Bagdigian says. But, he adds, he doesn't have to contend with it, because "you're talking about people who've already come to grips with putting themselves on a rocket." Web posted. (2008). [On tap in space: Urine will not go to waste [Online]. Available WWW: <http://www.usatoday.com/> [2008, May 14].]

Next shuttle mission extended one day for airlock work

Human spaceflight managers at NASA have extended the upcoming STS-124 International Space Station (ISS) assembly mission by one day to give the crew of the shuttle Discovery time to change out a spacesuit-battery recharger in the U.S. Quest airlock. Veteran astronauts Mark Kelly, the STS-124 commander, and Mike Fossum, lead extravehicular activity (EVA) crew member for the flight, will remove the airlock's battery charger module and replace it with a fresh module that Discovery will carry to orbit. A Johnson Space Center (JSC) spokesman said the work had been planned for the increment after the orbiter departs, but was advanced because the d-cell memory-keeper batteries in the charger module were displaying slightly higher than normal toxic outgassing during charging. While the condition didn't pose a threat to the crew, the spokesman said, managers decided to use the extra hands available during the docked mission to accomplish the "fairly labor-intensive" task. The crew will have to empty some of the equipment in the airlock's lockers to make the changeout, he said. The work will wait until after the three EVAs already planned for the mission, much of which will be used to get Japan's big Kibo laboratory module in place on the station and hooked up. The extra day was inserted into the mission timeline following flight day 9, when the final spacewalk will occur. On the new flight day 11, after the inserted flight day, the crew will get some time off originally scheduled a day earlier, and then make the necessary preparations for undocking and close the hatch before going to sleep. Undocking is scheduled for flight day 12, followed by a late inspection of the shuttle thermal protection system with the Orbiter Boom Sensing System that Discovery will retrieve from temporary stowage on the space station truss. The crew of the shuttle Endeavour left it there because there wouldn't be room for it and the Kibo laboratory module in Discovery's cargo bay. The rest of the STS-124 mission moves back one day as a result of the extension, setting up a landing at Kennedy Space Center on June 14 under the present schedule. Shuttle managers are beginning the first of two flight readiness reviews May 13, with the launch date going in to the review set for a little after 4 p.m. EDT May 31. E-mail distribution. (2008). [Aviation Week's [Aerospace Daily & Defense Report](#) Re: "Next shuttle mission extended one day for airlock work," [Electronic]. Vol. 226, No. 32, [May 14, 2008.].]

May 15: Art at KSC focuses on sun

SunWorks will be on display until June 13 at the east gallery of the IMAX Theater at the Kennedy Space Center Visitor complex. The 24 works were selected from more than 500 submissions to the Solar and Heliospheric Observatory's art contest in 2006. Each work of art has a link to the sun. After June 13, it will travel to Tampa's Museum of science & Industry. The exhibit was inspired and

sponsored by the Solar and Heliospheric Observatory. The satellite was launched from Cape Canaveral 12 years ago and is still operating. The satellite has produced images of leaping solar flares and ominous sunspots. Those images have inspired some of the artists. The satellite has recorded almost a complete 11-year solar cycle – from quiet to stormy and back again, according to NASA. [“Art at KSC focuses on sun,” Florida Today, May 16, 2008, p 3B.]

Hubble delays Ares 1X

A five week slip in NASA’s final Hubble Space Telescope servicing call will trigger a mirror-image delay in the first test-flight of a new Ares 1 moon rocket, officials said Thursday. The \$320 million Ares 1X test flight had been slated to blast off from Kennedy Space Center next April 15. But launch of Atlantis and a Hubble repair crew faces a delay to Oct. 3 from Aug. 28, which will push the test flight to late next May. “Right now, the first-blush impact assessment suggests a day for day slip,” NASA Project Constellation program manager Jeff Hanley said. [“Hubble delays Ares 1X,” Florida Today, May 16, 2008, p 1A & 3A.]

NASA may get extra \$200 million

A key Senate funding panel has slipped NASA an extra \$200 million for its science programs. The Senate Appropriations Committee approved a bill Thursday that includes the additional funds to help NASA restore cuts made to its science, aeronautics and exploration programs. The agency made the cuts after the Columbia disaster. The extra \$200 million was added to a massive war supplemental bill that would help pay for U.S. forces in Iraq and Afghanistan. The full Senate is scheduled to take up the bill next week. The House took up its version of the measure Thursday. The effort was sponsored by Sens. Barbara Mikulski, D-Md., and Kay Bailey Hutchison, R-Texas. [“NASA may get extra \$200 million,” Florida Today, May 16, 2008, p 3A.]

May 16: Expendable Launch Vehicle Status Report

Status Report: ELV-051608. Mission: GLAST (Gamma-ray Large Area Space Telescope); Location: Astrotech payload processing facility; Launch Vehicle: Delta II 7920-H (United Launch Alliance); Launch Pad: 17-B; Launch Date: No Earlier Than June 3, 2008; Launch Window: 11:45 a.m. - 1:40 p.m. EDT. At Astrotech this week, the GLAST spacecraft underwent final closeouts in preparation for being transported to the launch pad. It was mated to the launch vehicle's payload attach fitting on Wednesday. GLAST is being installed Friday into the payload transportation canister in preparation for transfer to the launch pad. The rollout from Astrotech to Pad 17-B will be done during the overnight hours of Saturday morning, and mating of the spacecraft to the second stage of the Delta II is planned between 5 and 7 a.m. EDT. Mission: OSTM/Jason-2; Location: Astrotech payload processing facility, Vandenberg Air Force Base; Launch Vehicle: Delta II 7320 (United Launch Alliance); Launch Pad: Space Launch Complex 2, Vandenberg Air Force Base; Launch Date: June 15, 2008; Launch Window: 1:47 - 1:56 a.m. PDT. At the Astrotech payload processing facility on north Vandenberg, testing of OSTM/Jason-2 was successfully completed. Fueling of the satellite with its hydrazine control propellant is planned for this weekend. The spacecraft is currently scheduled to be moved to the launch pad on June 2. At Space Launch Complex 2, second stage propulsion system testing of the Delta II is complete. First stage propulsion system testing continues. Liquid oxygen will be loaded aboard to check the cryogenic systems of the first stage for leaks on May 19 during a countdown dress rehearsal for the Delta II launch team. The following day, a simulated flight test, an electrical and mechanical test of the Delta II, will exercise all of the launch vehicle systems as they will work after liftoff during the rocket's ascent to orbit. Web posted. (2008). [Expendable Launch Vehicle Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/launchingrockets/status/2008> [2008, May 16].]

May 17: Get ready to rumble at KSC

The operators of Kennedy Space Center Visitor Complex hope people who step off the new Shuttle

Launch Experience will be shaken and stirred. They'll definitely be shaken. The Visitor Complex is testing the bone-rattling attraction in preparation for a May 25 opening. Some tourists who paid park admission are already getting a chance to climb aboard if they catch it at the right time as the staff works out last-minute bugs. The ascent into the \$60 million ride is impressive. After reading warning signs -- you have to be 4 feet tall to ride -- visitors walk up zig-zagging ramps in a gantry structure, like those seen on the launch pads. On TV screens, astronauts tell their launch tales. Next, visitors get a briefing in a large room with moody lighting and big video screens, enhanced by rumbling sound and a brief infusion of smoke as on-screen astronaut Charlie Bolden describes the mechanics of a shuttle launch. Visitors then pass through double doors into a waiting area, the ride's version of the "white room" where astronauts get ready. People who want to avoid the ride at this point can go to a small observation room, where they can watch the riders on a monitor. Once the ride doors open, visitors get into a passenger module in the "shuttle's" payload bay. Seat belts are fastened, and a quick countdown begins. The ride will eventually run four of these crew cabins, each seating 44 people. As the ride begins, the seats are tilted back to simulate the feeling of pointing straight up, something astronauts have to do for hours before launch. Visitors only have to wait for a few seconds before the rumbling starts. To get the tilt and shaking, ride designers had to sacrifice the real shuttle's rolling maneuver. Still, there's a significant rumble. Everything trembles, including your face. Lift your head a little and there's less impact. On the screens at the front of the cabin, visitors get a view of the sky looking up, with occasional pop-ins by Bolden. The narration deflates the realism a little; some may wish for a Charlie-free version so they can enjoy the noise and motion and let their imaginations soar with the mock shuttle. The actual launch simulation takes about five minutes, a few minutes less than a real ride to orbit. The exit ramp is at least as cool as the ride. It spirals downward, with scenes of Earth floating by in a pool-sized porthole below and hundreds of points of light creating a star field above. Along the railing are plaques noting the details of every shuttle mission. The Shuttle Launch Experience is educational and fun. While not a thrill ride, exactly, it immerses visitors in a simulation of what may be the biggest thrill of all, a flight to space. Web posted. (2008). [Get ready to rumble at KSC [Online]. Available WWW: <http://www.floridatoday.com/> [2008, May 17].]

May 16: Work on pad, in OPF preps space shuttles for next 3 missions

On Launch Pad 39A, fuel loading began as planned on space shuttle Discovery Friday and progressed without incident. Based on this, the pad was opened for some hydraulic test activities and preps for aft closure. On Atlantis, replacement of the side hatch thermal barrier is in progress, along with other thermal protection system and electrical work in OPF bay 1. On Endeavour, in OPF bay 2, window No. 6 was replaced. ["Work on pad, in OPF preps space shuttles for next 3 missions," **Countdown**, May 20, 2008.]

GLAST canned and moved to CCAFS pad 17-B

On Friday, the payload transportation canister was installed around NASA's Gamma-ray Large Area Space Telescope for transfer to pad 17-B at CCAFS, which occurred Saturday. GLAST was then mated to the second stage of the Delta II. Launch is still targeted no earlier than June 3. On Vandenberg Air Force Base in California last week, testing of OSTM/ Jason-2 was successfully completed at the Astrotech payload processing facility. Fueling of the satellite with its hydrazine control propellant occurred Monday. The spacecraft is currently scheduled to be moved to the launch pad on June 2. Liquid oxygen was loaded aboard to check the cryogenic systems of the first stage for leaks on Monday during a countdown dress rehearsal for the Delta II launch team. Today, a simulated flight test, an electrical and mechanical test of the Delta II, will exercise all the launch vehicle systems as they will work after liftoff during the rocket's ascent to orbit. ["GLAST canned and moved to CCAFS pad 17B," **Countdown**, May 20, 2008.]

May 18: Explosives connected for Discovery launch

A series of explosive bolts and self-destruction devices was connected last night, as Discovery is prepared for a May 31 launch. At the Executive Flight Readiness Review on Monday, top NASA managers approved a 5:02 p.m. launch on a schedule that gives workers four days off for Memorial Day, a first since the Return to Flight after the Columbia accident in 2003. Explosive ordnance includes solid rocket booster ignition, launch release and separation bolts, jettison devices and safety destruct devices. Today at pad 39A, aft closeouts are in work and the external tank is being purged. Engineers will continue testing of a replaced multiplexer-demultiplexer in the shuttle's aft. STS-124 will deliver the 37-foot Kibo module to the International Space Station. Three spacewalks will be performed during the 14-day mission. STS-124 is the 10th shuttle flight since the Columbia accident, and 10 flights are scheduled until the shuttle stops flying in 2010. Web posted. (2008). [Explosives connected for Discovery launch [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, May 19.]

May 19: NASA's Phoenix in final preparation for May 25 descent

The NASA Phoenix Mars lander, carrying the most complex laboratory hardware ever sent to the surface of another planet, is receiving final commands prior to its May 25 powered descent to the Martian surface. Two final maneuvers are possible to tweak the trajectory toward a 60-mile long landing ellipse on a north polar plane just south of the planet's permanent polar ice cap. Celestial mechanics long ago dictated that the landing -- or a crash -- will occur at 4:53 p.m. PST following a harrowing descent that project manager Barry Goldstein calls "seven minutes of terror." The latter stages of the landing will differ from the 1997 Mars Pathfinder and 1994 Spirit and Opportunity rovers, which landed using large airbags. Because it is heavier, Phoenix will land using rocket propulsion. Only NASA's Viking landers have done that, 32 years ago. E-mail distribution. (2008). [Aviation Week's [Aerospace Daily & Defense Report](#) Re: "NASA's Phoenix in final preparation for May 25 descent," [Electronic]. Vol. 226, No. 35, [May 19, 2008.].]

NASA sets May 31 launch to ISS for Discovery, Kibo

Senior NASA managers have set a May 31 launch date for the space shuttle Discovery, following a review of preparations for the STS-124/1J mission to deliver Japan's Kibo laboratory module to the International Space Station (ISS). Liftoff will come at 5:02 p.m. EDT on that day, weather permitting, for a nominal 14-day mission that will return to Kennedy Space Center, Fla., on June 14. William Gerstenmaier, associate administrator for space operations, said the flight readiness review concluded that there is no reason to change current plans for the mission because of problems with the past two re-entries with Russia's Soyuz vehicle ([Aerospace DAILY](#), May 2). Although those both entered uncommanded ballistic re-entries, and a Russian State Commission hasn't finished its investigation into the cause of the anomalies, the review considered the Russian spacecraft adequate for an emergency return. As a result, there are no plans at the moment to pull U.S. astronauts from the station until the Soyuz issue is resolved, even though the Soyuz serves as the station lifeboat when there is no shuttle docked to it. E-mail distribution. (2008). [Aviation Week's [Aerospace Daily & Defense Report](#) Re: "NASA sets May 31 launch to ISS for Discovery, Kibo," [Electronic]. Vol. 226, No. 36, [May 20, 2008.].]

May 20: Bill adds shuttle mission

NASA would have the authority to add an extra shuttle mission to its flight schedule, along with two other shuttle trips now deemed optional, under a bill a House panel approved Tuesday. NASA currently has 10 more flights planned to the international space Station before it retires its fleet in 2010. The space agency has labeled two of those flights "contingency" missions, even though they would deliver critical space parts to the station before the fleet is retired. Under the House bill, those two flights would become certainties. A third new mission would be added to deliver the Alpha Magnetic Spectrometer, which NASA dropped from its schedule after Columbia disaster in 2003. The legislation would eliminate the need for the three flights to be completed by 2010. The

legislation, approved by the panel on a voice vote, now goes before the full committee. That could happen with the next few weeks. The bill also would approve a \$20.2 billion budget for NASA next year, a \$2.6 billion increase over the president's current recommendation. About \$1 billion of that extra money would be used to accelerate work on the Constellation program, which will replace the shuttle. ["Bill adds shuttle mission," **Florida Today**, May 21, 2008, p 1A & 3A.]

NASA Honors Apollo 13 Astronaut John Swigert

NASA will honor the late astronaut John "Jack" L. Swigert, Jr., with the presentation of an Ambassador of Exploration Award for his involvement in the U.S. space program. During a ceremony with Apollo 13 spacecraft commander James Lovell on Friday, May 23, Swigert's sister Virginia will accept the award and present it for display to the Wings Over the Rockies Air & Space Museum in Denver, Colo. The award presentation will highlight the opening of the museum's new exhibit on Colorado's Astronauts. 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 goal of going to the moon. The award is a moon rock encased in Lucite and mounted for public display. The rock is part of the 842 pounds of lunar samples collected during the six Apollo expeditions from 1969 to 1972. ["NASA Honors Apollo 13 Astronaut John Swigert," **Media Advisory #M08-101**, May 20, 2008.]

May 21:

Help! Column: Insurance does cover launch disasters

That got us to wondering, is there insurance to cover these types of incidents? How much does it cost? Michael Bollerman, Rockledge. Asked about launch insurance was George Diller, a communications professional at Kennedy Space Center since the early 1980s. Diller's familiar voice is heard on NASA Television, where he serves as launch commentator for the shuttle and expendable launch vehicles. The insurance rule of thumb he offered could not have been any more straightforward: "If it's a commercial launch, yes; if it's a government launch, no, because the government self-insures." Diller said a consortium of industry agents underwrites insurance coverage for launches of the commercial variety. "Premium rates are based on a certain percentage, generally a low percentage, of mission costs," he said. A review of the literature about the satellite launch market led to an April 14 article in Business Insurance magazine that shed more definitive light on the prevailing cost structure. Written by Stacy Shapiro, the story told of the recent failure of a Russian Proton Breeze-M rocket to launch a communications satellite into proper orbit. The AMC-14 satellite was owned by SES Americom of Princeton, N.J., and was insured for \$192 million, the article pointed out. The Business Insurance story went on to say: "Experts agree that rates were between 10 percent and 11 percent of a satellite's value last year. They will be between 13 percent and 16 percent this year, with the average being between 14 percent and 15 percent, brokers and underwriters now predict." Web posted. (2008). [Help! Column: Insurance does cover launch disasters [Online]. Available WWW: <http://www.floridatoday.com/> [2008, May 21.]

Booster recovery ship rescues anglers

The Liberty Star, one of NASA's two solid rocket booster recovery ships, came to the aid of a sinking fishing boat Thursday, saving four fishermen from a deep water swim. It was the second rescue this spring. Several months ago, the Liberty Star assisted fishermen off Sebastian Inlet. "I hope we're in the habit of being in the right place at the right time," said Joe Chaput, manager of marine operations for United Space Alliance, which runs the vessels for NASA. The 176-foot ship was training for the upcoming May 31 launch of Discovery when it received a distress call from a 28-foot sportfisher, the Sunchaser. The ship had radioed for help from 24 miles southeast of Port Canaveral about 11 a.m. The Liberty Star headed for Sunchaser, which was just three miles away, said a USA spokesman. The fishing boat was taking on water and sitting low. "We were able to launch a small boat with a pump and pump the water out," Chaput said. Several of the 10 USA divers aboard went under water to search for holes in the fishing boat. Apparently, the water was

coming from scuppers, or exhaust inlets in the stern. Once the water was pumped out, the fishing boat was able to start its twin, 170-horsepower diesel engines. On the return to port, the Coast Guard relieved the Liberty Star and escorted the fishing boat home. [“Booster recovery ship rescues anglers,” Florida Today, May 22, 2008, p 1B.]

NASA Awards Agency-Wide Protective Services Contract

NASA has awarded its consolidated protective services contract to Coastal International Security, Inc. of Lorton, Va. The contract has a maximum value of \$1.56 billion, if all options are exercised. Work under the contract will provide fire services, security services, emergency management, export control, protective services information assurance/ technology security, and protective services training throughout the agency. The contract is a performance-based indefinite delivery, indefinite quantity contract enabling all protective services to be provided under a single contract. It will promote synergistic and efficient operations throughout NASA. Fourteen firm-fixed priced task orders will be issued under the contract to authorize work at 14 NASA locations throughout the United States immediately following the contract award. The value of these task orders will be \$1.186 billion. The basic ordering period of the contract is five years, with a not-to-exceed value of \$650 million. Five one-year ordering options are available under the contract, each with a not-to-exceed value of \$130 million. The contract contains an option to increase the maximum value by 20 percent. Major subcontractors for the contract include Intergraph - IT of Madison, Ala., Arctic Slope Airfield & Range Services of Greenbelt, Md., RONCO Consulting of Washington, Trident Group of Baltimore, Ameriguard Security Services, Inc. of Fresno, Calif., Sallyport Support Services of New Orleans, La., Excalibur Associates, Inc. of Alexandria, Va., SAGE Systems Technology of Manassas, Va., and American Eagle Security, Inc. of Austin, Texas. [“NASA Awards Agency-Wide Protective Services Contract,” **Contract Release #C08-028**, May 21, 2008.]

May 22: Mission to fix Hubble is delayed till Oct. 8

An Aug. 28 mission to repair the Hubble space Telescope has been moved to Oct. 8 because of delays in building fuel tanks needed for the mission, NASA officials announced Thursday. The shuttle’s external tank was redesigned for safer launches after the 2008 Columbia accident. Falling foam from the tank punched a hole in the shuttle’s wing, later exposing it to dangerous gases and heat on re-entry. Shuttle Atlantis is scheduled to make the Hubble trip, with her sister ship Endeavour ready for a rescue mission in case something goes wrong. If Endeavour isn’t tapped for a rescue mission, the shuttle will launch its own mission to the space station Nov. 10, a delay from its previous target of Oct. 16. [“Mission to fix Hubble is delayed till Oct. 8,” Orlando Sentinel, May 23, 2008, p A10.]

NASA’s GLAST Space Telescope to Launch Aboard Delta II

Launch of NASA’s Gamma-ray Large Area Space Telescope, or GLAST, is targeted for Tuesday, June 3, from Pad 17-B at Cape Canaveral Air Force Station, Fla. The launch window extends from 11:45 a.m. to 1:40 p.m. EDT and remains unchanged through Aug. 7. The June 3 launch date is dependent on space shuttle Discovery’s May 31 liftoff, and will move if the shuttle launch is delayed. NASA’s new gamma-ray observatory will open a wide window on the universe through the study of Gamma rays, the highest-energy form of light. GLAST data will enable scientists to answer persistent questions across a broad range of topics, including supermassive black-hole systems, pulsars, the origin of cosmic rays, and searches for signals of new physics. [“NASA’s GLAST Space Telescope to Launch Aboard Delta II on June 3,” **Media Advisory #M08-106**, May 22, 2008.]

May 23: Expendable Launch Vehicle Status Report

Status Report: ELV-052308. Mission: GLAST (Gamma-ray Large Area Space Telescope); Location: Astrotech payload processing facility; Launch Vehicle: Delta II 7920-H (United Launch Alliance); Launch Pad: 17-B; Launch Date: No Earlier Than June 3, 2008; Launch Window: 11:45 a.m. - 1:40

p.m. EDT. The rollout of the GLAST spacecraft from Astrotech to Pad 17-B began shortly after midnight on May 17, arriving at Pad 17-B on Cape Canaveral Air Force Station at 5 a.m. The spacecraft was then hoisted atop the Delta II at 7:30 a.m. Spacecraft state of health checks are successfully complete. Thursday the Flight Program Verification was conducted. This is an electrical and mechanical test of the Delta II and GLAST working together as a single integrated system during countdown and launch milestones. Once this test is complete, spacecraft closeouts will begin. GLAST will be encapsulated into the Delta II fairing on May 27. Mission: OSTM/Jason-2; Location: Astrotech payload processing facility, Vandenberg Air Force Base; Launch Vehicle: Delta II 7320 (United Launch Alliance); Launch Pad: Space Launch Complex 2, Vandenberg Air Force Base; Launch Date: June 15, 2008; Launch Window: 1:47 - 1:56 a.m. PDT. At the Astrotech payload processing facility on north Vandenberg, fueling of the OSTM/Jason-2 spacecraft was successfully completed on May 19, and the tanks were pressurized the following day. Spacecraft closeouts are now under way. Next week, the spacecraft will be weighed and mated to the Delta II payload attach fitting. On June 1, OSTM/Jason-2 will be installed into the payload transportation canister and then moved to the launch pad the following day. At Space Launch Complex 2, also on May 19, liquid oxygen was loaded aboard the first stage to check the cryogenic systems of the first stage for leaks. This test also served as a countdown dress rehearsal for the Delta II launch team. The following day, a simulated flight test was conducted. This was an electrical and mechanical test of the Delta II that exercised all of the launch vehicle systems as they will work after liftoff during the rocket's ascent to orbit. Web posted. (2008). [Expendable Launch Vehicle Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/launchingrockets/status/2008> [2008, May 23].]

May 25: Mars landing 'almost dead-on'

A NASA spacecraft survived a harrowing descent through the Martian atmosphere Sunday, clearing its first hurdle in a quest to determine whether Mars can support life. The landing -- the northernmost ever on Mars -- was greeted by loud cheers at the Jet Propulsion Laboratory in California, where the success follows several previous attempts to reach Mars that ended in fiery failure. NASA received confirmation its Phoenix spacecraft survived at 7:53 p.m. As of late Sunday, though NASA was still running tests, the Phoenix seemed undamaged. ["Mars landing 'almost dead-on'", **Orlando Sentinel**, May 26, 2008, p A1 & A24.]

May 27: House Panel Wants Regular Reports on Astronaut Health

In the wake of last year's turmoil in NASA's astronaut corps stemming from the arrest of astronaut Lisa Nowak, lawmakers may require NASA to conduct biennial anonymous health care surveys of its astronauts and flight surgeons "to evaluate communication, relationships, and the effectiveness of policies," and to report the results to Congress. The draft NASA reauthorization bill working its way through the legislative process would require the surveys to be evaluated "by experts independent of NASA." An outside panel investigating astronaut health care following the Nowak arrest cited a pair of incidents in which "intoxicated" astronauts reported for flight, and said NASA's astronaut-health program needed revamping. NASA conducted its own anonymous survey and found no evidence to support the accounts of misconduct, while lawmakers heard conflicting testimony on the issue. E-mail distribution. (2008). [Aviation Week's **Aerospace Daily & Defense Report** Re: "House Panel Wants Regular Reports on Astronaut Health," [Electronic]. Vol. 226, No. 40, [May 27, 2008].]

Watchdog: Tourists, not VIPs, get free passes to KSC

Congressional aides nationwide are hooking up tourists from their hometowns with free tickets to the Kennedy Space Center Visitor Complex, Watchdog reporter Jeff Schweers found. And from the discussion threads on one Web site forum for Disney lovers, they're passing them out like candy. Disboards.com, which bills itself as the "largest and friendliest Disney community," features at least two threads discussing how to get tickets from U.S. representatives and senators. One Missouri resident credits his congressman, Republican Rep. Roy Blunt, with getting a whole family tickets.

Another thanks Sen. Gordon Smith of Oregon. An aide for Blunt told Schweers that the congressman's staff simply calls the government affairs liaison at Kennedy Space Center whenever a constituent asks for free tickets, which cost \$38 for adults and \$28 for children younger than 12. Entry includes IMAX space movies, all exhibits and shows for two days. The same online forums include various reactions from kudos to "How could you?" -- as in: How could you waste your congressman's time and take money away from NASA? But another poster pointed out that Americans pay taxes to finance NASA, so why shouldn't they get a freebie? Under the terms of its contract with Delaware North Park Services, the private contractor that runs the visitor complex, NASA gets 2,500 complimentary tickets a year to hand out at its discretion. Once NASA gives the tickets away, the space agency has no control over how they're used, Allard Beutel, a spokesman for NASA, told Schweers. Regardless, they're not supposed to be passed out to any old tourist who wants them, he said. They're meant for members of Congress, visiting dignitaries, aides and other VIPs for whom NASA would like to provide a better working knowledge of what goes on at Cape Canaveral. "To be perfectly blunt, you are trying to make sure that whoever is getting that info is someone who's voting on your programs," he said. Web posted. (2008). [Watchdog: Tourists, not VIPs, get free passes to KSC [Online]. Available WWW: http://www.floridatoday.com/brevard_watchlist_blog [2008, May 27.]

Brevard will launch shuttle art project

The Astronaut Scholarship Foundation is joining forces with the Kennedy Space Center Visitor Complex, Brevard's Tourism Development Council and Communication Concepts to create a countywide art project called "Shuttles Orbiting the Space Coast." The project pairs artists with 100 fiberglass shuttle statues measuring 8 by 5 feet and weighing 550 pounds. Once painted and or decorated by the artist, the statues will be "adopted" by corporate sponsors, which will display them throughout Brevard County for eight months. The project helps celebrate NASA's 50th anniversary and its longest-running manned vehicle, the space shuttle, said Beth Higdon, the foundation's communications director. Organizers are opening the process to artists around the country but hope to find local artists, because the statues will be painted in Brevard. The unveiling of the painted shuttle statues will take place Nov. 7 at the KSC Visitor Complex. The statues will remain there for one month before heading to their temporary eight-month location, as decided by the corporate sponsors. Based at KSC Visitor Complex, the Astronaut Scholarship Foundation is a nonprofit organization providing scholarships for college students studying science or engineering. Web posted. (2008). [Brevard will launch shuttle art project [Online]. Available WWW: <http://www.floridatoday.com/> [2008, May 27.]

NASA, Brevard board to sign accord

NASA and the Brevard Workforce Development Board will sign an agreement today to help Kennedy Space Center workers find new jobs after the space shuttle program ends in 2010. The goal of the Space Act Agreement will be to prepare both federal and contract shuttle employees to work on NASA's next-generation space vehicles or find new employment outside the space program. "We're interested in what kind of skills they'll need to upgrade and be competitive," said Brevard Workforce Development Board President Lisa Rice. Rice will join KSC Director Bill Parsons and others at NASA headquarters at KSC for a 1 p.m. ceremony today to mark the signing of the agreement. The number of people working on the shuttles and new rockets and spaceships at KSC could fall from about 8,000 today to as few as 1,600 by 2011, the year after the last shuttle mission, according to a recent NASA preliminary job forecast. The projections do not include several thousand potential hires for moon mission work that will be assigned to KSC. As part of the agreement, the workforce board plans to bring its Job Link Express to KSC. The vehicle is equipped with 12 computer stations to search job listings and facilities for on-site job training for shuttle workers, Rice said. In addition, the board plans to receive state Aerospace Workforce Transition funds to provide additional job training for shuttle workers. One of the program's goals is to keep

skilled workers on the Space Coast, even if they are not retained by NASA, Rice said. "This agreement will be the foundation document used by both organizations to partner with state and local community leaders in our joint goal of maintaining and enhancing Brevard County's highly skilled manned space flight workforce in support of the KSC role as the nation's preeminent gateway for space," the agreement states. Web posted. (2008). [NASA, Brevard board to sign accord [Online]. Available WWW: <http://www.floridatoday.com/> [2008, May 27.]

May 28: Space station's sole toilet out of order

The international space station's lone toilet is broken, leaving the crew with almost nowhere to go. So NASA may order an in-orbit plumbing service call when space shuttle Discovery visits next week. Until then, the three-man crew will have to make do with a jury-rigged system when they need to urinate. While one of the crew was using the Russian-made toilet last week, the toilet motor fan stopped working, according to NASA. Since then, the liquid waste gathering part of the toilet has been working on-and-off. Fortunately, the solid waste collecting part is functioning normally. Russian officials don't know the cause of the problem, and the crew has been unable to fix it. The crew has used the toilet on the Soyuz return capsule, but it has a limited capacity. They now are using a backup bag-like collection system that can be connected to the broken toilet, according to NASA public affairs officials. The 7-year-old toilet has broken once before but not for as long a time, said Johnson Space Center spokeswoman Nicole Cloutier in Houston. Discovery is already set for launch Saturday, with a planned docking with the space station Monday. Cloutier said NASA officials are considering having some parts flown to Cape Canaveral, Florida, and placed in the shuttle during its countdown, an unusual and delicate situation. Because the shuttle's payload weight is limited and balance carefully calculated, it will be tricky to try to figure out where the parts can go, said Kennedy Space Center spokesman Bill Johnson. Discovery's main payload, a 32,000-pound Japanese laboratory addition, is so big that the shuttle's boom sensor system had to be removed to make room for the lab. Web posted. (2008). [Space station's sole toilet out of order [Online]. Available WWW: <http://www.cnn.com/> [2008, May 27.]

May 29: Toilet part stowed aboard Discovery

A spare part for the toilet on the International Space Station arrived from Russia and was stowed on Discovery overnight. About 35 pounds of non-critical cargo was removed to make room for the gas/liquid separator. Discovery's crew of seven arrived at KSC and the launch countdown began Wednesday. Today at 9 a.m., the Mission Management Team meets to give final approval for the 5:02 p.m. EDT launch Saturday. Discovery will be on a mission to deliver a massive Japanese laboratory to the International Space Station. Three spacewalks will be performed during the 14-day mission. At 11 a.m. today, technicians will begin loading liquid hydrogen and liquid oxygen into Discovery's power producing fuel cells. Web posted. (2008). [Toilet part stowed aboard Discovery [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, May 29.]

KSC layoffs could devastate Brevard economy, officials say

The news about what Brevard County -- and Central Florida -- would lose if NASA orders mass layoffs at Kennedy Space Center just gets worse. The space agency says it could eliminate 6,400 positions at KSC after it retires the space shuttle in 2010. Now, a new NASA economic study puts a dollar sign on what those layoffs -- and related job losses -- would cost. The total: \$879 million a year. NASA and local economic-development officials say this is a "worst case" scenario that might not come to pass. But, they acknowledge, it could happen, with devastating effects on the local economy. "It's just a confirmation of how critical this industry is to the state and the county and how much we must work to retain and attract businesses to this industry," said Lynda Weatherman, president of the Economic Development Commission of Florida's Space Coast. The numbers: 6,400 -- KSC contract workers assigned to the space shuttle who would lose their jobs by 2011. They make an average of \$77,600 a year; 9,600 -- The number of additional local jobs generated by those

6,400 workers, using NASA's multiple of 1.5. The average salary for a Brevard County worker is \$39,788; 16,000 – Total possible job losses, virtually all in Central Florida. What can be done? *Fly more shuttle missions: As long as the shuttle flies, workers at KSC have jobs. The shuttle is costly and dangerous. Still, Congress this year is asking for one more flight. *Close the gap: KSC's primary function is launching manned spacecraft into orbit. There are no such launches planned from the shuttle's retirement in 2010 to Constellation's first mission in 2015. Closing that gap requires more money, which Congress has failed to provide. *Encourage commercial launches: Local economic groups are encouraging space tourism and commercial operations such as SpaceX, which won a NASA contract to design a rocket that would resupply the international space station. State lawmakers this year approved about \$15 million to upgrade launchpads at Cape Canaveral and agreed to tax breaks for space and aerospace companies. Web posted. (2008). [Kennedy Space Center layoffs could devastate Brevard economy, officials say [Online]. Available WWW: <http://www.orlandosentinel.com/> [2008, May 29.]

NASA To Launch Disney's Buzz Lightyear On Space Shuttle

NASA will launch the Disney character Buzz Lightyear aboard space shuttle Discovery on May 31 in a mission to excite students about science, math and space travel. During the STS-124 mission, the 12-inch-tall action figure will partner with astronauts to deliver daily blog journals from space and launch a series of educational games and online sessions related to the mission. "NASA is excited to help students understand the science and engineering currently under way on the International Space Station," NASA's Dr. Joyce Winterton said. While in space, the character will fly in zero gravity as part of an experiment tied to the NASA's "Toys in Space" educational program. "Toys in Space" is scheduled to run through 2008 and feature unique materials for teachers to use in their classrooms. The Space Ranger Education Series, which is part of the "Toys In Space" program, will also encourage students to pursue studies in science, technology and math. "The Space Ranger Education Series will give teachers the opportunity to incorporate a fun and engaging moment into the classroom with a character that children really love," chairman of Walt Disney Parks Jay Rasulo said. The mission coincides with the official launch of the Toy Story Mania attraction at Walt Disney World in Florida. After the mission, Buzz Lightyear will transfer from the space shuttle to the International Space Station for the summer. The character then joins the crew of the space station to help open the Toy Story mania attraction at Disneyland on June 17. Buzz Lightyear is scheduled to return to earth in the fall. Disney plans to host a "ticker tape" parade at Walt Disney World. Discovery is scheduled to launch from Kennedy Space Center on May 31 at 5:02 p.m. Web posted. (2008). [NASA to Launch Disney's Buzz Lightyear On Space Shuttle [Online]. Available WWW: <http://www.cnn.com/> [2008, May 29.]

Shuttle Discovery, Florida weather looking good for launch

NASA is pushing toward an on-time launch of the space shuttle Discovery May 31, with no constraints in sight. Liftoff of Discovery on the STS-124 mission to deliver the main pressurized section of Japan's Kibo laboratory to the International Space Station (ISS) is set for 5:02 p.m. EDT. Officials said May 29 that no serious technical issues were being tracked, and the weather at Kennedy Space Center (KSC) posed only a 20 percent chance of halting the countdown before liftoff. "The crew and vehicle and weather are all looking good," said Leroy Cain, chairman of the mission management team. A last-minute addition to Discovery's cargo manifest was loaded into the middeck at 3:30 a.m. May 29, after an official from NASA's liaison office in Moscow hand-carried it to KSC. Kirk Shireman, deputy ISS program manager, said the hardware -- a water separator pump, hoses and spare urine collector bags -- should get the station's Russian-built toilet operating properly again, eliminating a major inconvenience. The main goal of the mission will be delivery of the big Kibo laboratory module, which will give Japan a major presence on the international orbiting outpost. The largest station element, Kibo will grow even larger next year with the planned addition of its porchlike exposed facility. A robot arm to be launched on Discovery will be able to handle

experiments mounted on the facility, and retrieve them through an airlock on the outboard end of the new module. Discovery's crew also plans to test some lubrication and cleaning techniques on the starboard solar alpha rotary joint, which spins the solar array wing at that end of the station truss like a windmill to collect maximum sunlight. The 10-foot-diameter joint is fouled with metallic flakes that broke off one of its moving surfaces, and station managers hope it can be cleaned to restore some of its lost mobility. E-mail distribution. (2008). [Aviation Week's Aerospace Daily & Defense Report Re: "Shuttle Discovery, Florida weather looking good for on-time launch," [Electronic]. Vol. 226, No. 43, [May 30, 2008].]

Corps won't let wind blow secrets

The 45th Space Wing broke ground Thursday on a steel-reinforced building to protect multimillion-dollar satellites during hurricanes. The \$4.8 million spacecraft Alert Facility at Cape Canaveral Air Force Station will serve as a safe haven for up to three satellites at a time, including any that are sitting on a launch pad when a potentially destructive storm approaches. ["Corps won't let wind blow secrets," Florida Today, May 30, 2008, p 12A.]

NASA Targets GLAST Launch for June 5

The launch of NASA's GLAST spacecraft aboard a United Launch Alliance Delta II rocket is scheduled for Thursday, June 5. The launch window extends from 11:45 a.m. to 1:40 p.m. EDT and remains unchanged through Aug. 7. The June 5 date already is reserved for the launch of GLAST on the Eastern Range. The date was chosen at the conclusion of Thursday's Flight Readiness Review to give the launch team sufficient time to make sure remaining open engineering issues are resolved. ["NASA Targets GLAST Launch for June 5," **Media Advisory #M08-110**, May 30, 2008.]

Expendable Launch Vehicle Status Report

Status Report: ELV-053008. Mission: GLAST (Gamma-ray Large Area Space Telescope); Launch Vehicle: Delta II 7920-H (United Launch Alliance); Launch Pad: 17-B; Launch Date: June 5, 2008; Launch Window: 11:45 a.m. - 1:40 p.m. EDT. The launch of NASA's GLAST spacecraft aboard a United Launch Alliance Delta II rocket is being scheduled for Thursday, June 5, instead of no earlier than June 3. The launch window extends from 11:45 a.m. to 1:40 p.m. EDT and remains unchanged through Aug. 7. The June 5 date is already reserved for the launch of GLAST on the Eastern Range. The decision was made at the conclusion of Thursday's Flight Readiness Review to give the launch team sufficient time to determine that remaining open engineering issues are resolved. Loading of the hypergolic propellants into the Delta II second stage is scheduled for Monday, June 2. On launch day, June 5, the mobile service tower will be retracted from around the rocket at 2 a.m. Loading of the liquid oxygen to begin the final phase of the launch countdown will begin at 10 a.m. which will lead to a liftoff targeted for 11:45 a.m. EDT. Mission: OSTM/Jason-2; Location: Astrotech payload processing facility, Vandenberg Air Force Base; Launch Vehicle: Delta II 7320 (United Launch Alliance); Launch Pad: Space Launch Complex 2, Vandenberg Air Force Base; Launch Date: June 15, 2008; Launch Window: 1:47 - 1:56 a.m. PDT. At the Astrotech payload processing facility on north Vandenberg, the spacecraft has been mated to the Delta II payload attach fitting, and spacecraft closeouts have been completed. On Sunday, June 1, OSTM/Jason-2 will be installed into the payload transportation canister. The following day, June 2, it will be moved to Space Launch Complex 2 to be mated with the Delta II rocket. The Flight Program Verification, an integrated test of both the Delta II and the OSTM/Jason-2 spacecraft, will be conducted on June 5. This is the last major test before launch. The payload fairing will be installed around the spacecraft on June 9. The Delta II second stage hypergolic propellants will be loaded into the vehicle on June 12. Web posted. (2008). [Expendable Launch Vehicle Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/launchrockets/status/2008> [2008, May 30].]

May 31:

Shuttle Discovery Launches with Japanese Laboratory

Space shuttle Discovery and its seven-member crew lifted off from NASA's Kennedy Space Center at 5:02 p.m. EDT Saturday to deliver and install a Japanese laboratory on the International Space Station. The mission, designated STS-124, is the second of three flights to launch components to complete the Japan Aerospace Exploration Agency's Kibo laboratory. Discovery is carrying Kibo's tour bus-sized Japanese Pressurized Module, or JPM, which will be the station's largest module. The shuttle astronauts will work with the three-member station crew and ground teams around the world to install the JPM and Kibo's robotic arm system. Shortly before launch, Commander Mark Kelly thanked the teams that helped make the launch possible. "We're going to deliver Kibo, or hope, to the space station," Kelly said. "And while we tend to live for today, the discoveries from Kibo will certainly offer hope for tomorrow." Joining Kelly on Discovery's 14-day flight are Pilot Ken Ham and Mission Specialists Karen Nyberg, Ron Garan, Mike Fossum, Greg Chamitoff and Japan Aerospace Exploration Agency astronaut Akihiko Hoshide. Garan and Fossum will conduct three spacewalks during the mission. Chamitoff will replace current station crew member Garrett Reisman, who has lived on the outpost since mid-March. Chamitoff will return to Earth on Endeavour's STS-126 mission, targeted for Nov. 10. ["NASA's Shuttle Discovery Launches with Japanese Laboratory," **Press Release #08-136**, May 31, 2008.]

During May: Run From Risks

Gene Kranz, the NASA flight director who led the heroic effort to bring the crew of Apollo 13 home alive, says the loss of the space shuttle Challenger in 1986 continues to afflict the U.S. space program. "The challenger accident set us back where we no longer could support the Defense Department, we no longer could deploy the satellites, we became our own customer," he tells the Senate space subcommittee. "We started to run from the risks of our business and we started to cede the high ground." That effect continues to be felt, to the detriment of U.S. economic growth, Kranz says: "We're in great danger of losing our ability to keep this economic engine going at full throttle." As to whether NASA should continue the present "Moon, Mars and beyond" human exploration strategy, Kranz says, "This is the best game plan that I have seen since the days of President Kennedy." ["Run From Risks," **Aviation Week & Space Technology**, May 12, 2008, p 23.]

JUNE

June 1: Discovery crew checks shuttle wings for damage

Space shuttle Discovery's seven-member crew completed an inspection of the spacecraft's wings Sunday afternoon, looking for any signs of damage after launching a day earlier. Discovery, making its way to the international space station, is carrying the orbiting outpost's biggest room by far -- Japan's \$1 billion lab. The shuttle is also delivering a spare pump for the space station's malfunctioning toilet. But the inspection of the shuttle was not as thorough as it normally is because the school-bus-size lab, named Kibo -- Japanese for hope -- takes up almost the entire payload bay. That left no room for a 50-foot laser-tipped boom that is attached to the shuttle's 50-foot robotic arm. The inspection began early Sunday afternoon and lasted less than two hours. Engineers on the ground were set to review the data. A more thorough inspection was planned at the halfway point as well as near the end of the 14-day mission after Discovery's crew retrieves a laser-tipped boom left behind at the space station by Endeavour's astronauts when they visited the orbiting outpost in March. Web posted. (2008). [Discovery crew checks shuttle wings for damage [Online]. Available WWW: <http://www.cnn.com/> [2008, June 1].]

Shuttle launch pad damaged during Discovery's liftoff

Launch pad 39A at the Kennedy Space Center suffered unusual damage during the shuttle Discovery's blastoff Saturday, NASA officials said Sunday. A photograph of the side of the pad directly behind the "flame trench" used to divert exhaust from the shuttle's solid-fuel boosters shows unidentified debris splashing into water behind the pad as Discovery climbed away. Pictures from a NASA source show buckled concrete and numerous concrete blocks or bricks, presumably from the flame trench, littering a road behind the pad. NASA spokesman Bill Johnson said Sunday "they sustained some serious damage on the north side of the (flame trench) wall. They'll get a full report tomorrow." A NASA manager said later part of the pad's base was repaired after a previous launching but possibly, something was either missed or not repaired correctly. The Apollo-era launch complexes, modified for the space shuttle, must endure enormous pressures and extreme heating when shuttles take off but its not yet clear what caused the damage, what might be required to fix it or whether the debris could have posed a risk for Discovery. Based on photos from cameras around the pad perimeter, the damage appeared to occur after Discovery was well off the pad. The next launch from pad 39A is scheduled for Oct. 8, presumably enough time to correct whatever went wrong. Web posted. (2008). [Shuttle launch pad damaged during Discovery's liftoff [Online]. Available WWW: <http://www.spaceflightnow.com/> [2008, June 1].]

Initial tank pictures show no major foam loss

Close-up photos of the shuttle Discovery's external tank, shot as it drifted away from the orbiter Saturday, show a few relatively minor areas of foam loss but no major damage, NASA officials said Sunday. About five pieces of debris were seen falling away during launch from a camera mounted on the tank, but Mission Management Team Chairman LeRoy Cain said Sunday it's not clear where the presumed foam might have originated. Web posted. (2008). [Shuttle launch pad damaged during Discovery's liftoff [Online]. Available WWW: <http://www.spaceflightnow.com/> [2008, June 1].]

June 2: NASA Targets GLAST Launch for June 7

NASA has set June 7 as the new target launch date for the Gamma-ray Large Area Space Telescope, or GLAST, from Cape Canaveral Air Force Station in Florida. The launch window extends from 11:45 a.m. to 1:40 p.m. EDT and remains unchanged through Aug. 7. NASA had targeted June 5 for the GLAST launch aboard a Delta II rocket. Additional time was necessary for the Delta II launch team to assure that open engineering issues, which have been under review, are satisfactorily resolved. ["NASA Targets GLAST Launch for June 7," **Media Advisory #M-08-111**, June 2, 2008.]

June 3: Damaged pad will be fixed before Oct. launch

Discovery's 6.5 million pounds of blazing thrust ripped a 75-by-20-foot gash in the firebrick and concrete flame trench below the launch pad at Kennedy Space Center. NASA managers fear the damage might have been caused by unseen erosion that could plague later future launches with the threat of loosening debris that could bounce back to hit the shuttle. "I think in this case we're looking at something we would not see on the surface," said LeRoy Cain, chairman of the Mission Management Team. "We may have some erosion of some subsurface areas." After Discovery's Saturday liftoff, inspectors found the damage in the east wall of the north flame trench, which is filled with water to dampen sound during launch. The blast from Discovery's engines and solid rocket boosters scattered tons of bricks and rubble beyond the chainlink perimeter fence, 1,800 feet away. "It spewed firebrick and concrete to the perimeter fence and through it, like cannonballs," NASA spokesman Bill Johnson said. The flame trench cuts through the launch pad mound and focuses the energy of the shuttle's exhaust into a retention pond. It is 490 feet long, 58 feet wide and 40 feet high. It is carefully inspected and repaired after each launch. Johnson said the launch pad has previously been repaired for damage that was caused by erosion action similar to a sinkhole. An investigation team has been formed to find the cause of this damage, which seemed to have undermined a portion of the foundation around the launch pad. Cain said he believes the damage could be analyzed and repaired before the next launch in October. "I have no reason to believe it will delay the next mission," he said. However, if serious damage is found, NASA could not simply shift the next launch to neighboring pad 39B. During the next mission, to repair the Hubble Space Telescope, a rescue shuttle will be parked on pad 39B when Atlantis launches from pad 39A. "We need both launch pads," Cain said. Additionally, pad 39B has undergone some modifications to make it ready for an April test of the first Constellation vehicle, which will be used for a return to the moon. The launch pads have been used for 30 years or more and have endured hundreds of punishing launches. "We have certainly seen this kind of damage," Cain said. "We haven't seen it in this magnitude." Web posted. (2008). [Damaged pad will be fixed before Oct. launch [Online]. Available WWW: <http://www.floridatoday.com/> [2008, June 3].]

OSTM spacecraft moves to launch pad for integration test

On Monday, the Ocean Topography Mission, or OSTM/ Jason-2, was moved to Space Launch Complex 2 to be mated with the Delta II rocket. The Flight Program Verification, an integrated test of both the Delta II and the OSTM/ Jason-2 spacecraft, will be conducted Thursday. This is the last major test before launch. The payload fairing will be installed around the space-craft on June 9. The Delta II second-stage hypergolic propellants will be loaded into the vehicle on June 12. ["OSTM spacecraft moves to launch pad for integration test," **Countdown**, June 3, 2008.]

June 4: Space potty back in business

The prime potty is back up and operating on the International Space Station after some fix-it work Wednesday by a Russian cosmonaut. Two spare pumps onboard the station each failed to work more than a day. All three were from the same manufacturing lot. A spare pump from a different lot was rushed from Moscow to Kennedy Space Center and then launched last Saturday aboard shuttle Discovery. Seven astronauts aboard Discovery delivered it to the outpost along with the Japanese Kibo science laboratory. The pump replaced Wednesday was wrapped in a towel, bagged and stored on Discovery. Russian engineers will examine it after the shuttle crew returns to Earth. Landing is scheduled at 11:13 a.m. June 14 at KSC. ["Space potty back in business," **Florida Today**, June 5, 2008, p 3A.]

June 5: Delta launch delayed until next week

The planned launch Saturday of a Delta 2 rocket with a NASA astronomical telescope is being pushed back to the middle of next week so engineers can swap out a faulty battery on a system that would be used to destroy the vehicle if it veered off course. The 13-story rocket and its payload --

NASA's Gamma-ray Large Area Space Telescope -- had been slated to blast off from complex 17 at Cape Canaveral Air Force Station between 11:45 a.m. EDT and 1:40 p.m. EDT Saturday. But the rocket's Flight Termination System battery failed during routine prelaunch testing Wednesday. NASA spokesman George Diller said the launch now is being targeted for next Wednesday. A firm date is expected later today. The launch window through early August will remain the same: 11:45 a.m. EDT to 1:40 p.m. EDT. A traditional prelaunch news briefing scheduled for 1 p.m. today is being delayed until Monday. Web posted. (2008). [Delta launch delayed until next week [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, June 5].]

Kosmos, Feeney spar over NASA funding

Thousands of workers at Kennedy Space Center are expected to lose their jobs when NASA retires the space shuttle in 2010, a local economic disaster that Democrat Suzanne Kosmas puts at the feet of her rival, U.S. Rep. Tom Feeney, R-Oviedo. She blames the third-term congressman for a lean NASA budget that will force the agency to lay off as many as 6,400 KSC workers during the next three years. In response, Feeney said Kosmas' comments showed "amazing naivete" and that he has spent his entire career pressuring Congress and the White House to give NASA more money. Which candidate wins the space debate could be a major factor in a potentially close November election. Each candidate has more than \$500,000 in campaign funds, and the Capitol Hill publication Roll Call recently ranked the race as a "tossup." "It doesn't take a lot of voters," said Roger Handberg, a University of Central Florida professor who specializes in space and politics. A small "group of informed voters tied to the space program" could influence the outcome if either candidate emerges as a better choice for NASA. The candidates differ little in their plans. Each wants to give NASA more money and generate more jobs for the Space Coast. With more funding, NASA can shrink the gap between the last shuttle flight in 2010 and the planned launch of its replacement in 2015. Closing this gap is critical for KSC because its primary function is to launch NASA's rockets. In the longer term, the size of the KSC work force depends on support for Constellation, a new system of rockets and capsules that aims to return astronauts to the moon by 2020 and perhaps, eventually, carry them to Mars. But NASA's allies in Congress have not been able to win more money. Twice in the past two years, a bipartisan group of lawmakers -- including Feeney -- has failed to get an extra \$1 billion for the agency. And NASA has continually gotten less than what the space community feels it deserves. It's difficult to fault Feeney for not helping KSC when Democratic Sen. Bill Nelson of Florida also has been ineffective in getting more money for NASA. The two lawmakers recently appeared together in Brevard County to discuss KSC job losses and possible remedies. Web posted. (2008). [Kosmas, Feeney spar over NASA funding [Online]. Available WWW: <http://www.orlandosentinel.com/> [2008, June 5].]

June 5: Congressional panel will focus on loss of space jobs

Sen. Bill Nelson plans to hold a congressional hearing at Kennedy Space Center later this month to discuss the fate of thousands of Brevard County workers who will lose their jobs after the space shuttles are retired. "The community has asked me to do this," said Nelson, the Orlando Democrat who chairs the Senate panel that oversees NASA. KSC could shed more than 6,400 jobs once the shuttle fleet is retired in 2010, according to preliminary estimates released earlier this year by NASA. The Senate hearing is tentatively scheduled for June 23. An exact location and a witness list haven't been determined. Mike Cabbage, a spokesman for NASA, said the agency has informally agreed to participate, although it has not received an official invitation from the committee. ["Congressional panel will focus on loss of space jobs," *Florida Today*, June 6, 2008, p 7A.]

June 6: Asbestos Slows Shuttle-Pad Inspection

Crews inspecting post-launch damage to Launch Complex 39A at Kennedy Space Center were forced to don hazmat gear after asbestos padding was found behind masonry in the Apollo-vintage flame trench under the pad, but space shuttle managers don't expect a delay in their launch schedule

as a result of the incident. The shuttle Discovery's May 31 launch blasted hundreds of fire bricks out of the flame trench, most likely with the supersonic force of the shuttle's solid rocket booster exhaust. The launch blew two huge holes in the side of the trench, exposing the reinforcing steel beneath. The perimeter fence 1,500 feet away - ironically marked with large signs cautioning against FOD (foreign object debris) - was severely damaged by the flying masonry, and launch photography showed debris splashing down into a retaining pond outside the fence several seconds after Discovery had roared aloft. Early indications show no evidence any of the flying brick and mortar hit Discovery, but NASA managers say the possibility it could have will be studied carefully. Two expert teams will investigate the cause of the pad failure, which has been designated a NASA mishap, according to shuttle program manager John Shannon. The formal mishap investigation team has until the end of June to determine "what happened, why and what mitigation and repair will consist of," Shannon told Aviation Week. The other team will try to identify the root cause of the failure. Experts wearing protective hazmat suits have since found corrosion in the metal anchors that hold the trench walls in place. Built in the mid-1960s, the pad - and its flame trench - has launched 12 Saturn Vs and 70 space shuttles. The root-cause team also will probe for voids in the pad structure that may have contributed to buckling in the concrete apron next to the trench during the launch, which was otherwise near-perfect. Shannon said he was "very comfortable" the mishap will not further delay the planned Oct. 8 launch of Atlantis to service the Hubble Space Telescope. If a problem arises on the current STS-124/1J mission that forces Discovery's crew to take shelter on the International Space Station, he said, there are some "preliminary ideas to get the pad in shape to do launch-on-need" to bring the crew home. Web posted. (2008). [Asbestos Slows Shuttle-Pad Inspection [Online]. Available WWW: <http://www.aviationweek.com/> [2008, June 6].]

NASA Awards Ground Equipment Contract for KSC

NASA has selected contractors for a multiple award contract to provide fabrication of ground support equipment for Constellation and other space programs at NASA's Kennedy Space Center in Florida. The multiple award, indefinite-delivery, indefinite-quantity contract has a maximum value of \$400 million during a five-year ordering period, with potential for a one-year extension. NASA awarded the electrical ground support equipment contract to Engravers Metal Fabricators of Cocoa, Fla., Jackson & Tull of Seabrook, Md., Spectrum Laser & Technologies Inc. of Colorado Springs, Colo., and TJ Inc. of Christmas, Fla. The fluids ground support equipment contract was awarded to Hydraulics International, Inc. of Chatsworth, Calif., Precision Fabricating & Cleaning Co., Inc. of Cocoa, Fla., Sierra Lobo, Inc. of Milan, Ohio, and United Paradyne Corp. of Santa Maria, Calif. The mechanical ground support equipment contract was awarded to Coastal Steel, Inc. of Cocoa, Fla., Engravers Metal Fabricators of Cocoa, Fla., Met-Con, Inc. of Cocoa, Fla., Oregon Iron Works of Clackamas, Ore., Precision Fabricating & Cleaning Co. Inc. of Cocoa, Fla., Rogers Associates Machine and Tool Corp. of Rochester, N.Y., Samson Metal & Machine of Lakeland, Fla., and Specialty Maintenance and Construction of Lakeland, Fla. The contract covers all required management, labor, facilities, materials and equipment to fabricate, mark, package, deliver, clean, assemble, precision clean, and test equipment, ground systems and other hardware for Kennedy as firm fixed price delivery orders. ["NASA Awards Ground Equipment Contract for Kennedy Space Center," **Contract Release #C08-033**, June 6, 2008.]

Expendable Launch Vehicle Status Report

Status Report: ELV-060608. Mission: GLAST (Gamma-ray Large Area Space Telescope); Launch Vehicle: Delta II 7920-H (United Launch Alliance); Launch Pad: 17-B; Launch Date: No earlier than June 11, 2008; Launch Window: 11:45 a.m. - 1:40 p.m. EDT. NASA is targeting no earlier than June 11 for the launch of the GLAST spacecraft aboard a United Launch Alliance Delta II rocket. The launch window extends from 11:45 a.m. to 1:40 p.m. EDT and remains unchanged through Aug. 7. The additional time is necessary to allow for replacement of the rocket's Flight Termination System battery which displayed indications of a problem Wednesday. Loading of the hypergolic propellants

into the Delta II second stage is planned for this weekend. On launch day, June 11, the mobile service tower will be retracted from around the rocket at 2 a.m. The terminal countdown sequence will begin at 9:15 a.m. by loading the first stage with RP-1 fuel, a highly refined kerosene. This will be followed at 10:15 a.m. by cryogenic fueling, loading the first stage with liquid oxygen. This will lead to a liftoff targeted for 11:45 a.m. EDT. Mission: OSTM/Jason-2; Location: Astrotech payload processing facility, Vandenberg Air Force Base; Launch Vehicle: Delta II 7320 (United Launch Alliance); Launch Pad: Space Launch Complex 2, Vandenberg Air Force Base; Launch Date: No earlier than June 19, 2008; Launch Window: 12:59 a.m. - 1:08 a.m. PDT. At the Astrotech payload processing facility on north Vandenberg, the OSTM/Jason 2 spacecraft is ready for transportation to Space Launch Complex 2 for mating with the Delta II rocket. An initial attempt was planned for Monday, June 2, but was postponed due to high wind. These windy conditions have continued throughout the week and have precluded shipping of the encapsulated spacecraft to the launch pad and hoisting of the spacecraft into the mobile service tower. Technicians hope the wind will begin to diminish sometime over the weekend. Launch has been retargeted for no earlier than June 19. Web posted. (2008). [Expendable Launch Vehicle Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/launchingrockets/status/2008> [2008, June 6].]

June 7: Shuttle ride draws fans

In the year or so since the Shuttle Launch Experience opened at the Kennedy Space Center Visitor Complex, attendance has been up 15 percent. The \$60 million simulation ride designed to rival those at Orlando's theme parks has proven popular so far, according to park operator Delaware North Park Services of Spaceport, although it does not disclose specific attendance figures. "It has been a wonderful improvement of our product," said Dan LeBlanc, the park's chief operating officer. But its draw — and that of the entire complex — faces its sternest test yet heading into this summer. LeBlanc said he is "cautiously optimistic" that attendance levels at the park will stay up through the summer. "It's hard to gauge what's going to happen," he added. These are indeed uncertain times for Florida tourism across the state, including at the Visitor Complex, one of Brevard County's top attractions. With the economy teetering on recession, a severe housing slump, record gasoline prices and rising airfares, the odds are stacked against the state's largest industry. "I'm concerned about the summer," LeBlanc admitted. "Gas prices and (rising) airfares at Orlando are the No. 1 problem." Local tourist attractions are looking at the summer as a key to showing how much current economic conditions will affect the industry, said Denver Severt, a professor of tourism at the Rosen College of Hospitality Management at the University of Central Florida in Orlando. The admission prices — \$38 for adults and children 12 and older and \$28 for children ages 3 to 11 — have not changed since December 2006. The prices are still the same, but visitors then could get \$7 taken off their ticket price if they opted not to visit the nearby Astronaut Hall of Fame, which Delaware North acquired in 2002. Now, the Astronaut Hall of Fame is included in the admission prices, regardless of whether visitors go there. Since taking over the park for NASA in 1995, Delaware North has spent about \$240 million on new attractions and other upgrades. The company uses revenue collected from the Visitor Complex to help pay for park improvements. In addition, NASA allows it to keep a portion of the profits. In addition to Shuttle Launch Experience, Delaware North last year completed \$15 million in renovations to the center of the park, called NASA Central. Looking ahead, the company is planning to make \$7 million in improvements to the "Exploration in the New Millennium" attraction, slated for a late 2009 opening; move the Astronaut Hall of Fame into the Visitor Complex; and build a facility to house one of the retired space shuttles after the program ends in 2010. "Our mission here is to tell the NASA story and inspire people to support the exploration of space," LeBlanc said. "We're telling the story better than before." Web posted. (2008). [Shuttle ride draws fans [Online]. Available WWW: <http://www.floridatoday.com/> [2008, June 7].]

June 9: 'Moon missiles' survive high-impact tests

A UK plan to drive four 'missiles' into the Moon to study its internal structure recently got a boost when tests suggested the missiles' instruments would survive the violent impact. The probes, part of a proposed UK-NASA collaboration called MoonLITE, could launch as early as 2013. Each would carry a seismometer on board. Together, the network of sensors could use the energy of lunar quakes to map the Moon's interior and help reveal whether the Moon has an iron core, which could shed light on how it formed. A drill and instruments to test for water and other chemicals will also be on board. Each 'penetrator' may hit the Moon's surface at a speed of more than 1100 kilometers per hour, rapidly coming to a halt as much as 3 meters into lunar dust. Web posted. (2008). ['Moon missiles' survive high-impact tests [Online]. Available WWW: <http://space.newscientist.com/> [2008, June 9].]

At KSC: Erosion gaps possible at launch pad

Possible erosion behind the flame trench has been found by "tap testing" the concrete wall near the damage at Pad 39A, which was ripped open during the last shuttle launch. "There are additional weakened areas that were found (on the east wall) through tap testing," NASA spokesman Candrea Thomas said. "They're calling them void areas. "They're going to test the west wall next." An investigation team is expected to present a plan for repairs at a meeting on June 19. NASA plans a methodical and complete approach to repairs that will not delay the next shuttle launch in October, four months away. "We should not be rushing," NASA spokesman Allard Beutel said. During Discovery's May 31 launch, a 20-foot by 75-foot gash was blasted in the concrete trench that channels fire from the rocket toward a retention pond. Some 300,000 gallons of water is dumped in the 40-foot-deep by 60-foot-wide flame trench just before launch to reduce noise and vibration. The shuttle's 6 million pounds of thrust blasted fire bricks and rubble beyond and through a perimeter fence at 1,800 feet. The cleanup has been slowed by the presence of rope-like asbestos bits that were used as filler between bricks. Additionally, erosion damage has been repaired at the Apollo-era launch pad during the past several months. Web posted. (2008). [At KSC: Erosion gaps possible at launch pad [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, June 9].]

Orbital picks Wallops for Taurus 2 launches

Orbital Sciences Corporation announced Monday that it has selected Wallops Island in Virginia as the launch site for its planned Taurus 2 launch vehicle, picking it over Cape Canaveral. The Taurus 2, a medium-lift vehicle under development to support Orbital's efforts to provide cargo resupply services to the ISS, among other applications, will begin launching in late 2010 from the Mid-Atlantic Regional Spaceport (MARS) at Wallops. Orbital will spend \$45 million to develop the launch facilities needed at MARS for the Taurus 2; the effort will create 125 new jobs in the area. Virginia and Florida had been competing for the Taurus 2 since February, when Orbital announced that it planned to carry out initial test flights of the Taurus 2 from MARS but had not chosen a site for future missions. The decision is a blow to Florida, which has sought to attract new vehicles to Cape Canaveral and soften the economic blow of the impending retirement of the space shuttle. Web posted. (2008). [Orbital picks Wallops for Taurus 2 launches [Online]. Available WWW: <http://www.spacetoday.net/> [2008, June 10].]

June 10: NASA to Host Daytona 500 Media Day at KSC

In honor of NASA's 50th anniversary and the 50th running of NASCAR's Daytona 500 in February, NASA's Kennedy Space Center will host a media day Tuesday, June 17, starting at 11:30 a.m. EDT. The event will include the winner of this year's race, Ryan Newman. During the event, NASA will present NASCAR with two green racing flags that were flown last February aboard space shuttle Atlantis' STS-122 mission to the International Space Station. One flag will be given to Newman, the second will be presented to Daytona International Speedway President Robin Braig. A third flag that was flown will be kept by NASA for public display. At the event, Newman will drive the crawler-

transporter, the huge tracked vehicle that carries space shuttles to the launch pad. The flag presentation ceremony will be at Launch Pad 39A. Following the ceremony, a news media question-and-answer session will be held at the pad. Afterward, there will be a separate interview opportunity for print media in Kennedy's news center auditorium. ["NASA to Host Daytona 500 Media Day at KSC," **Media Advisory #M08-116**, June 10, 2008.]

June 11: STM/Jason 2 Satellite Ready for June 20 Launch from CA

The launch of the Ocean Surface Topography Mission, or OSTM/Jason 2, aboard a Delta II rocket is scheduled for Friday, June 20, from Vandenberg Air Force Base in California. The launch window extends from 12:46 a.m. to 12:55 a.m. PDT. The satellite will be placed in an 830-mile-high orbit at an inclination of 66 degrees after separating from the Delta II 55 minutes after liftoff. The five primary science instruments of the Ocean Surface Topography Mission aboard the Jason 2 spacecraft are dedicated to measuring ocean surface height. These measurements will be used to evaluate and forecast climate changes and improve weather forecasting. The results also are expected to help forecasters better predict hurricane intensity. The mission is an international collaboration between NASA, the National Oceanic and Atmospheric Administration (NOAA), the French space agency Centre National d'Etudes Spatiales (CNES), and the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT). NASA's Jet Propulsion Laboratory in Pasadena, Calif., manages the mission for NASA. NASA's Kennedy Space Center's Launch Services Program is responsible for the agency's launch management of the Delta II rocket. ["STM/Jason 2 Satellite Ready for June 20 Launch from California," **Media Advisory #M08-117**, June 11, 2008.]

GLAST reaches orbit after launch on Delta II Heavy

NASA's Gamma-ray Large Area Space Telescope (GLAST) is in orbit following a successful launch from Launch Complex 17B at Cape Canaveral, Fla., aboard a United Launch Alliance Delta II 7920 Heavy rocket at about 12:05 p.m. EDT June 11. The latest in NASA's Great Observatory series that began in 1990 with the launch of the Hubble Space Telescope, the \$690 million GLAST will spend an estimated 5-10 years studying gamma-ray bursts, dark matter, black holes, neutron stars, supernova remnants and other high-energy phenomena. The spacecraft will undergo a 60-day on-orbit checkout before observations begin. Weather at the Cape was cooperative and the launch went off without a hitch, save for a brief extension of a launch hold at T-minus four minutes prompted by a temporary radar outage at the Antigua tracking station. Following two burns of the rocket's second-stage engine, the observatory separated at about 1:20 p.m. EDT. The spacecraft began deploying its solar arrays at 1:29 p.m. and deployment was confirmed 10 minutes later. NASA initially targeted June 7 for GLAST's launch, but more time was needed to replace the rocket's flight termination system battery, which indicated a problem on June 4. GLAST is the first imaging gamma-ray observatory to survey the entire sky every day, according to NASA. It is expected to detect thousands of gamma-ray sources, most of which will be supermassive black holes in the cores of galaxies. NASA developed GLAST together with the U.S. Energy Department, with contributions from partners in France, Germany, Italy, Japan and Sweden. E-mail distribution. (2008). [Aviation Week's [Aerospace Daily & Defense Report](#) Re: "GLAST observatory reaches orbit after launch on Delta II Heavy," [Electronic]. Vol. 226, No. 52, [June 12, 2008].]

June 12: NASA verifying safety of re-entry

NASA engineers today will complete analysis of images from Wednesday's heat-shield inspection to verify that Discovery is safe for re-entry Saturday. Discovery appears to have sustained very little damage during its launch and its time in orbit. "I certainly was very pleased with what I saw," lead shuttle flight director Matt Abbott said. Engineers will spend 30 hours examining digital images taken by a camera on the shuttle's remote sensing boom. Discovery's crew today will stow the sensing boom and the shuttle remote arm. Tetsuro Yokoyama, deputy manager of the project for the Japanese space agency, said he was moved by the sight of video of the Kibo science module with

the Earth below it in the background. "There is no more beautiful sight," he said. Discovery undocked from the space station about 7:45 a.m. Wednesday, ending a nine-day stay and headed for a Saturday morning landing at Kennedy Space Center. Web posted. (2008). [NASA verifying safety of re-entry [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, June 12].]

NASA Awards Shuttle Main Engine Contract Modification

NASA has signed a \$16.8 million contract modification to space shuttle main engine manufacturer Pratt & Whitney Rocketdyne Inc. of Canoga Park, Calif., to incorporate an employee retention plan implemented by the company. Incentives are being provided to eligible personnel to ensure mission success and construction of the remaining engines to support space shuttle requirements through September 2010. Retention of the knowledgeable and skilled space shuttle main engine workforce is necessary to produce the remaining shuttle hardware. This contract modification supports the agency's priorities of safely flying and retiring the space shuttles. The contract will end Sept. 30, 2010. This modification brings the total value of the contract, awarded in January 2002, to \$2.181 billion. The three main engines are 14 feet long and seven and a half feet in diameter at the nozzle exit. They are liquid propellant rocket engines that have a combined thrust of more than 1.2 million pounds. Along with the solid rocket boosters, they provide the thrust to launch the shuttle. ["NASA Awards Space Shuttle Main Engine Contract Modification," **Contract Release #C08-035**, June 12, 2008.]

June 13: NASA identifies shiny object trailing shuttle

The debris spotted floating away from space shuttle Discovery has been preliminarily identified as a thermal clip from the shuttle's brake system, NASA said Friday. Also, lighting conditions tricked astronauts into thinking there was a "bump" along the edge of the shuttle's rudder, agency officials added. It is not immediately clear why the thermal clip fell off the shuttle. The clip -- one of three on the rudder speed brake -- protects the brake during launch and ascent. The problem will not affect Saturday's planned landing, NASA spokesman Rob Navias said. Discovery is expected to land at 11:15 a.m. Saturday at the Kennedy Space Center in Florida. Web posted. (2008). [NASA identifies shiny object trailing shuttle [Online]. Available WWW: <http://www.cnn.com/> [2008, June 13].]

Late thermal protection inspection clears Discovery to land

The space shuttle Discovery has been cleared to land at Kennedy Space Center in Florida June 14, wrapping up a 14-day mission to deliver a big new laboratory module to the International Space Station (ISS) for the Japanese Aerospace Exploration Agency (JAXA). Preliminary data from a final inspection of the delicate reinforced carbon-carbon panels that protect the orbiter's wing leading edges and nose cap suggest there is no damage of the sort that doomed the shuttle Columbia on its fatal February 2003 re-entry. LeRoy Cain, deputy shuttle program manager and chairman of the STS-124/1J mission management team (MMT), said analysis will continue into the evening. The inspection with the 50-foot-long orbiter boom sensor system (OBSS) confirmed photographic data collected as Discovery lifted off May 31 and as it did a backflip "rendezvous pitch maneuver" while approaching the ISS on June 2. The crew also used a telephoto lens to photograph a section of the right wing out the aft windows of Discovery's flight deck after an impact sensor in the wing registered a hit that couldn't be correlated to thruster firings or other known events. That, too, turned up no evidence of damage. "The team is still reviewing all of the data, but preliminarily they don't see anything," Cain said. Discovery's seven-member crew got an extra day off June 12 while experts here analyzed the OBSS data. Discovery is scheduled to land at 11:15 a.m. EDT June 14. The early weather forecast is good for a landing that day and on June 15 if there is a weather wave-off on the first landing day. E-mail distribution. (2008). [Aviation Week's [Aerospace Daily & Defense Report](#) Re: "Late thermal protection inspection clears Discovery to land June 14," [Electronic]. Vol. 226, No. 53, [June 13, 2008].]

Flame trench

The next shuttle mission -- STS-125 -- is scheduled to service the Hubble Space Telescope, launching no earlier than Oct. 8. LeRoy Cain, deputy shuttle program manager and chairman of the STS-124/1J mission management team (MMT), said inspection of damage to the flame trench on KSC's Launch Complex 39A from Discovery's liftoff is almost complete, and so far there is no reason to believe the mishap will delay that flight. Cain said some 5,300 fire bricks were blown off the flame trench wall. The team analyzing the root cause believes that the original construction -- managed by the U.S. Army Corps of Engineers in the 1960s -- may have been faulty and did not make a solid epoxy bond between the bricks and the three-foot-thick concrete wall behind them. A separate team has concluded there is no way debris from a similar mishap can fly up to hit a departing shuttle on future flights, Cain said. One possible repair option would use spray-on flame retardant material to fill the empty space left by the bricks, which were blasted into the air and through the perimeter fence some 1,500 feet from the trench. Final decisions on the recovery plan will be made by senior shuttle program managers on June 26, Cain said. E-mail distribution. (2008). [Aviation Week's [Aerospace Daily & Defense Report](#) Re: "Late thermal protection inspection clears Discovery to land June 14, Flame Trench" [Electronic]. Vol. 226, No. 53, [June 13, 2008].]

June 14: Shuttle back from mission with 'beautiful landing'

Shuttle Discovery and its crew of seven returned to Earth on Saturday and capped a successful expansion job at the international space station, more spacious and robust thanks to a new billion-dollar science lab. The shuttle descended through a slightly cloudy sky and landed at 11:15 a.m., under the control of Commander Mark Kelly. "Beautiful landing, Mark, and congratulations on a great mission," Mission Control radioed when Discovery came to a safe stop. "Great to be back," Kelly replied. Discovery's mission spanned 14 days, 217 orbits and 5.7 million miles, and was described by NASA as being about as smooth as it gets. Kelly and his crew accomplished everything they set out to do in orbit. They delivered and installed Japan's Kibo lab, now the space station's biggest room and most sophisticated science workshop, and dropped off a new pump that the two Russians on board used to fix their toilet. The space station also got a new American resident who took the place of astronaut Garrett Reisman, returning home after 95 days in space. Reisman's wife, Simone Francis, was waiting at the Kennedy Space Center. Over the past week, Reisman described in quite romantic terms how much he missed her, calling her "my favorite Earthling" and "doll face." Although the mission itself unfolded almost flawlessly, Discovery left behind a battered launch pad on May 31. Some 5,300 bricks flew off the flame trench when Discovery blasted away, most likely because they were not attached properly to the underlying concrete wall when the pad was built in the 1960s for the Apollo moon shots. NASA managers are confident the launch pad can be fixed in time for the next shuttle flight in October, by Atlantis to the Hubble Space Telescope. The next time a shuttle flies to the space station, now three-quarters complete, isn't until November. That's because NASA needs to have a shuttle ready to rush to Atlantis' aid in case of serious damage to its thermal shielding. Atlantis' astronauts will not be able to get from Hubble to the space station for shelter. NASA had no such rescue plan in place when Columbia took off in 2003 on a solo-flying research mission. In any event, mission managers had no idea Columbia's left wing was severely damaged at liftoff, and the shuttle shattered during re-entry. All seven on board were killed. The three space station residents watched Discovery's smooth landing on live TV transmitted from Mission Control. Astronaut Gregory B. Burchett, who's just starting a six-month mission, called it "an awesome sight." Web posted. (2008). [Shuttle back from mission with 'beautiful landing' [Online]. Available WWW: <http://www.cnn.com/> [2008, June 14].]

June 16: NASA Extends Expendable Launch Vehicles Support Contract

NASA has awarded Analex Corporation of Fairfax, Va., an option for the Expendable Launch Vehicles Integrated Support, or ELVIS, contract. This second option period award is a hybrid performance-based, cost-plus-award-fee, fixed-price-award-fee, and fixed-price indefinite-delivery,

indefinite-quantity contract. It extends ELVIS through Sept. 30, 2011. The award has a potential value of approximately \$90 million. Analex Corporation currently is performing work under the contract's first option period, a three-year option that ends Sept. 30, 2008. The potential contract period, if all options are exercised, is nine years, three months, with a total approximate value of \$258 million. The contract provides integrated support services in the areas of business and administration, safety and mission assurance, engineering, and technical, facility, and launch operations. Launch vehicles include the Atlas, Delta, Pegasus, Taurus, and Falcon rockets. The contract specifically provides engineering services and analyses, communications, telemetry, special studies, and technical services for ground and flight expendable launch vehicle systems and payloads. Services will be provided at NASA's Kennedy Space Center and Cape Canaveral Air Force Station in Florida, Vandenberg Air Force Base in California, and other launch sites and NASA resident offices. ["NASA Extends Expendable Launch Vehicles Support Contract," **Contract Release #C08-038**, June 16, 2008.]

NASA and Disney Invite Kids to Explore Space with WALL-E

An animated robot and his spacefaring companion are leading a campaign by NASA and Walt Disney Studios Motion Pictures to promote interest among schoolchildren in science and technology. NASA and Disney have signed a Space Act Agreement for a series of educational and public outreach activities related to Disney-Pixar's new movie, WALL-E, opening in theaters nationwide on June 27, 2008. This collaboration highlights the similarities between the movie's storyline and NASA's real-life work in robot technology, propulsion systems and astrophysics. Disney-Pixar's WALL-E is set 700 years in the future. The film's main character is the only rover-robot left on Earth. He meets a new robot named Eve, and together they take a journey through the universe. Disney has designed a 30-second public service announcement featuring WALL-E for NASA's television channels and Web site. The video is designed to draw students to NASA's Web site to explore the agency's missions. The WALL-E character also will be featured on NASA's Kids' Club page. In addition, Disney has designed a "movie surfer vignette" about WALL-E that touches on science and technology that drives NASA's programs, which began airing on the Disney Channel in June. ["NASA and Disney Invite Kids to Explore Space with WALL-E," **Press Release #08-142**, June 18, 2008.]

June 18: Newman Drives NASA's "Astro Van"

Ryan Newman joined an elite group of drivers who have won the Daytona 500 earlier this year, and Tuesday, he joined another elite group of drivers. Newman got a chance to drive NASA's Astro van, which transports astronauts to the launch pad at the Kennedy Space Center in Florida. Newman is the first non-NASA employee to drive the van since it has been in use. "It's pretty neat for me to do it," said Newman, who was making an appearance at KSC as part of Daytona's Coke Zero 400 media day. "I understand now, because it's never been done before, what an honor it is. Since 1981, nobody else has driven it [but technicians]. It's nice to be the first guy. "Obviously there's a lot of history here. It's a neat place. I've been here before and seen a lot of the things I saw today. But just to be here for this reason and to receive the flag and things like that, it's special and a great honor." Newman also received a green flag that flew aboard the space shuttle Atlantis earlier this year. "The flag is neat, almost the neatest thing," Newman said. "I've been here before. I've seen the crawler and a lot of things around here but the flag, something that has been in space, not everybody has a piece like that." Web posted. (2008). [Newman Drives NASA's "Astro Van" [Online]. Available WWW: <http://www.racingmilestones.com/> [2008, June 25].]

Delta rocket to fly from California early Friday

A joint American and European oceanography satellite designed to continue a growing legacy of monitoring changes in sea levels and the impacts on the global climate awaits an overnight blastoff Friday morning from California. Liftoff of the United Launch Alliance Delta 2 rocket carrying the

Jason 2 spacecraft is scheduled for 12:46 a.m. local time (3:46 a.m. EDT; 0746 GMT) from Vandenberg Air Force Base. The days launch opportunity extends 9 minutes. Once placed in its orbit high above the planet, the craft will replace the aging Jason 1 satellite for the long-term tracking of the planet's oceans. The data record began with the TOPEX/Poseidon spacecraft in 1992 and continued with Jason 1's launch in 2001. Partners in the Jason 2 mission include NASA, NOAA, the French space agency and Europe's weather satellite agency. NASA refers to its portion of the Jason 2 project as the Ocean Surface Topography Mission. The final launch readiness review was held Wednesday and gave approval to begin the countdown on Thursday afternoon. Web posted. (2008). [Delta rocket to fly from California early Friday [Online]. Available WWW: <http://www.spaceflightnow.com/> [2008, June 18].]

Shuttle fleet processing in full flow

With Discovery back home, all three Orbiter Processing Facilities (OPFs) at the Kennedy Space Center are busy processing their respective birds. Endeavour and Atlantis are both at the business end of their parallel flows for their roles associated with STS-125, with Space Shuttle Main Engine (SSME) installation already completed on OV-104. Endeavour's engines are ready for installation into the orbiter - starting June 30th, while Discovery's SSMEs will be removed on June 25. Discovery is currently jacked and leveled in her OPF for the offloading of her cryogenics and a closer look at the condition of her Thermal Protection System (TPS). Those TPS inspections will continue all week, though the initial reports compiled on the runway noted 102 lower surface hits, of which only 11 were greater than an inch. Interestingly, data on Discovery's landing showed she touched down almost exactly on the same skid marks that were created by her younger sister Endeavour, when she touched down at the end of STS-123. 'Two skips and two stamps after initial skid. First was a skip of 12 feet in length followed by a stamp 19 feet long, then second skip was 73 feet long, followed by 544 foot long stamp which was only about two inches wide,' noted the engineering landing report. 'One interesting observation was that the initial skids were nearly on top of the STS-123 skid-marks.' Web posted. (2008). [Shuttle fleet processing in full flow, highlighted by SSME work [Online]. Available WWW: <http://www.nasaspaceflight.com/> [2008, June 18].]

Blue Angels Headline Fall Air Show at Kennedy Space Center

NASA's Kennedy Space Center will feature the precision and power of the world famous U.S. Navy Blue Angels at the second annual Space & Air Show at Kennedy Space Center on November 8 and 9, 2008. Aerospace, aviation and astronauts will come together at Kennedy Space Center as the dark blue and yellow-striped F/A-18 Hornet jets blaze across the skies over NASA's Space Shuttle launch and landing headquarters. This is only the second time the Blue Angels have performed at Kennedy Space Center. Over 30 years have passed since they last visited America's gateway to space. "This year's Space & Air Show at Kennedy Space Center will bring together the best in military aircraft, coupled with precision pilots and veteran astronauts to celebrate space flight and military aviation," said Daniel LeBlanc, Chief Operating Officer of Kennedy Space Center Visitor Complex. The Blue Angels precision flight team will perform high-speed passes, fast rolls, mirror formations, tight turns and their signature Delta formation showcasing the capabilities of their powerful aircraft. The weekend line-up includes the Astronaut Scholarship Foundation's inaugural Astronaut Autograph & Memorabilia Show, gathering American legends from the Mercury, Gemini, Apollo, Skylab and Space Shuttle programs. More than twenty astronauts and special guests will be on hand to personally meet guests, pose for photos and sign memorabilia. Returning to the show is the 920th Rescue Wing, an Air Force Reserve Command combat search and rescue unit based at Patrick Air Force Base, Fla. The 920th will stage an astronaut rescue simulation and demonstration, showcasing their skills and training in support of the U.S. space program. The 2008 show will include aircraft displays and space-related exhibits on the ground and plenty of action in the skies over Kennedy Space Center. Other military and civilian flight demonstrations and performances are being added to the schedule and will be announced at a later date. Web posted. (2008). [Blue Angels Headline Fall

Air Show at Kennedy Space Center [Online]. Available WWW: <http://hospitality-1st.com/> [2008, June 18].]

Buzz Lightyear Joins Space Program

Toy Story action figure Buzz Lightyear made his first appearance in zero gravity aboard the International Space Station to officially open the Toy Story Mania! attraction at Disney's California Adventure. Buzz and real-life Astronaut Greg Chamitoff, flight engineer for the Expedition 18 mission, addressed Earth-bound fans at Disneyland via downlink from orbit. See the video below. Buzz also helped Disney Parks and NASA launch their Space Ranger Education Series, part of NASA's Toys in Space educational program for teachers and students (www.nasa.gov/kidsclub). The program builds on NASA's efforts to encourage students to pursue studies in science, technology and mathematics by providing materials for educators to download and integrate into classroom. Online features such as educational games are also linked to each key component of the mission at www.nasa.gov/kidsclub. Tentative plans for Buzz's return from space include a back-to-school initiative and possibly a hero's welcome at Walt Disney World in Florida later this year. Web posted. (2008). [Buzz Lightyear Joins Space Program [Online]. Available WWW: <http://www.animationmagazinenet/> [2008, June 18].]

25th anniversary of first American woman in space

Sally Ride became the first American woman in space on June 18, 1983 when she flew aboard space shuttle Challenger on mission STS-7. Web posted. (2008). [25th anniversary of the first American woman in space [Online]. Available WWW: <http://www.spaceflightnow.com/> [2008, June 18].]

Smithsonian's Folklife Festival Celebrates NASA's 50 Years

Moon buggies, stardust and space food are a few of the things visitors will learn about at the "NASA: 50 Years and Beyond" program during this summer's Smithsonian Folklife Festival. The program will showcase the role men and women of NASA have played in broadening the horizons of American science and culture, and the role they will continue to play in shaping the future through exploration and stirring the public imagination. Since NASA's inception, the agency's employees have conducted cutting-edge research in traditional aeronautical disciplines and new, emerging fields to support future air and space vehicles. At the festival, aeronautics engineers and technicians will share with visitors the work they are doing on wind tunnel testing and improving air traffic control. ["Smithsonian's Folklife Festival Celebrates NASA's 50 Years," **Press Release #08-152**, June 18, 2008.]

KSC contract will transfer in October

The second largest contract at Kennedy Space Center will be changing hands this fall, and the futures of 3,000 workers hang in the balance. EG&G Technical Services Inc., of Gaithersburg, Md., won a contract Wednesday [June 18] worth up to \$1.5 billion to provide institutional services at the nation's primary spaceport. KSC spokesman Allard Beutel said the company will perform "most of the functions currently performed" by Space Gateway Support, the company that acts as "the city manager" at NASA's shuttle homeport. Beutel said the EG&G Technical Services will determine the future of the current SGS work force when the new five-year contract takes effect on Oct. 1. The deal also includes five one-year options that could extend its length to 10 years. The maximum potential value of the pact is about \$1.5 billion over that period of time. The total makes the contract the second largest at KSC behind the Space Flight Operations Contract held by United Space Alliance, the prime day-to-day operator of NASA's three-orbiter shuttle fleet. That company won a six-year deal in 1996 and contract options picked up in 2004 and 2006 have raised the total value of the United Space Alliance pact to about \$16.8 billion. The new institutional services contract replaces the so-called Joint Base Operations Contract, which was established in the late 1990s to provide fire protection, security services, ground maintenance and transportation support at KSC and

Cape Canaveral Air Force Station and Patrick Air Force Base. The J-BOSC contract aimed to save \$150 million or more by combining base operations services at the NASA and Air Force launch bases. Space Gateway Support is a joint venture of Northrop Grumman Technical Services of Herndon, Va., Shaw Environmental & Infrastructure Inc. of Baton Rouge, La., and Wackenhut Services Inc. of West Palm Beach. ["KSC contract will transfer in October," **Florida Today**, June 19, 2008, p 1B.]

June 19: MAF effort sees External Tanks back on track for STS-125

Shuttle managers have been informed that the refined delivery dates for External Tanks ET-127 and ET-129 will support the October launch target of STS-125. Another delay was feared last month when the shipping dates were still not within the timelines for STS-125 and the supporting Launch On Need (STS-400), but a superb effort at the Michoud Assembly Facility (MAF) has successfully moved the delivery dates back into line. Four tanks are deep in production at MAF, namely ET-127 (STS-125), ET-129 (LON/STS-400/STS-126), ET-130 (STS-119) and ET-131 (STS-127). It was delays to ET-127 and ET-129 that originally pushed STS-125 out to October 8 back in April. Both tanks are required at the Kennedy Space Center (KSC) to support the dual processing flows that centers around Atlantis launching from Pad 39A, at the same time Endeavour is sat on Pad 39B - ready to launch within days on a rescue mission, in the unlikely event Atlantis was seriously damaged during ascent. A massive effort was carried out by MAF - not for the first time since Return To Flight - to find get-wells in the production schedules of the two tanks, no easy task due to restraints with the amount of workers at their disposal, and the fact the two tanks are only the second and third tanks to be built with new modifications that debuted with STS-124's ET-128. A TIM (Technical Interchange Meeting) resulted in an opening plan to improve the construction schedule, along with seven days a week production plan that utilized 'prudent' overtime payments for the workforce. Web posted. (2008). [MAF effort sees External Tanks back on track to support STS-125 [Online]. Available WWW: <http://www.nasaspaceflight.com> [2008, June 19].]

Delta 2 rocket cleared for Friday morning launch from base

A Delta 2 rocket and its joint NASA-French satellite that will continue a series of missions monitoring sea levels and climate around the world got the green light to proceed with countdown toward an early Friday morning blastoff. The United Launch Alliance Delta 2 rocket will carry the Ocean Surface Topography Mission or Jason 2. Liftoff is set for between 12:46 and 12:55 a.m. Friday from Space Launch Complex-2 [Vandenberg Air Force Base, California]. The U.S. government and France are sharing costs for the \$432 million mission. During Wednesday morning's launch readiness review, mission managers determined the team didn't have to resolve any problems and could proceed with the countdown. "We are set to fly," Omar Baez, NASA launch manager, said Wednesday afternoon. Weather appears set to accommodate the blastoff, with only a 20 percent chance conditions - specifically high winds possible at liftoff - will cause officials to call off Friday's attempt, according to launch weather officer Capt. Andrew Frey. Jason-2 follows two other satellites that launched in 1992 and 2001 to collect data about global sea levels, which scientists say are rising on average around the world due to both natural and human causes. Web posted. (2008). [Delta 2 rocket cleared for Friday morning launch from base [Online]. Available WWW: <http://www.santamariatimes.com/> [2008, June 19].]

House passes NASA authorization bill

The House of Representatives overwhelmingly approved a NASA authorization bill on Wednesday that would require NASA to add an additional shuttle mission to the manifest. The House passed the NASA Authorization Act of 2008 on a 409-15 vote late Wednesday after debating the bill late last week. The bill authorizes \$20.2 billion for NASA in 2008, significantly above the \$17.6 billion requested by the administration; however, appropriations bills currently being considered by both the House and Senate would fund NASA well below that authorized figure, at about \$17.8 billion. A

provision in the authorization bill would require NASA to fly two "contingency" shuttle missions to the ISS currently on the manifest as well as add a mission that would carry the Alpha Magnetic Spectrometer experiment to the station. That particular provision generated strong opposition from the administration in a statement last week because of the potential impact that additional mission would have on the retirement of the shuttle fleet and development of Constellation. The legislation will now be taken up by the Senate. Web posted. (2008). [House passes NASA authorization bill [Online]. Available WWW: <http://www.spacetoday.net/> [2008, June 19].]

June 20: Constellation Program ready for Phase A to begin

NASA engineers and scientists completed a milestone review June 20 that will help determine the systems needed to return humans to the moon and establish a lunar outpost. The nine-month study looked at possible lunar mission scenarios and compared them to the capabilities of the emerging Ares V heavy lift launch vehicle and the Altair lunar lander design concepts. This review of those findings, led by the Constellation Program Office at NASA's Johnson Space Center in Houston, established all the technical parameters that will be needed to begin Phase A, the first phase in preparing vehicle requirements. During this phase, the Ares V and Altair Project teams will take what was learned from the Lunar Capability Concept Review and baseline the needs for lunar missions, establish the design needs and determine plans for advancing the technologies needed to be successful. Phase A will culminate in a Systems Requirements Review for NASA's lunar transportation architecture, tentatively planned for 2010. The review refined early configurations of the Ares V rocket to ensure its capability to deliver the Altair lunar lander, four astronauts and cargo anywhere on the moon and return the crew to Earth at any time. To accomplish those objectives, the current configuration of the Ares V will use six RS-68B liquid oxygen and liquid hydrogen engines on a core stage along with two five-and-one half segment solid propellant rocket boosters, which are a direct evolution from the first stage of the Ares I rocket. The Ares V upper stage will propel the Orion crew capsule and Altair to the moon using the same J-2X engine as the Ares I crew launch vehicle. The Ares V will stand about 381 feet tall and be able to send more than 156,600 pounds of cargo and components into orbit to the moon, and later to Mars or other destinations. Altair will be capable of landing four astronauts anywhere on the moon, providing life support and a base for the first week-long surface exploration missions, and returning the crew to the Orion spacecraft for the ride home to Earth. A variant of the lunar lander will serve as an autonomous cargo carrier, taking modular outpost components, lunar rovers, and scientific equipment to the moon's surface. ["Constellation Program ready for Phase A to begin," **Countdown**, June 26, 2008.]

Spying expert takes over Space Wing

The first woman to command the nation's prime East coast rocket range soon will be replaced by the first black person to serve in that capacity. Brig. Gen. Edward Bolton, who works at the super-secret National reconnaissance Office, was tapped Thursday to command the Air Force's 45th Space Wing, which oversees operations at Cape Canaveral Air Force Station, Patrick Air Force Base and the Eastern Range. Bolton will replace Big. Gen. Susan Helms, a former NASA astronaut who flew five shuttle missions and was the first woman to serve a tour of duty on the International Space Station. Helms will move to Offutt Air Force Base in Nebraska, where she will serve as director of plans and policy at U.S. Strategic Command. An official change of command is expected in the next few weeks. ["Spying expert takes over Space Wing," **Florida Today**, June 20, 2008, p 1A.]

Delta 2 launches Earth sciences satellite

A Delta 2 rocket placed a US-French Earth sciences satellite into orbit early Friday. The Delta 2 7320-10 lifted off from Vandenberg Air Force Base in California at 3:46 am EDT (0746 GMT) and placed the Jason-2 satellite in a Sun-synchronous low Earth orbit 55 minutes later. The spacecraft, also known as the Ocean Surface Topography Mission (OSTM), is a joint mission between NASA and the French space agency CNES to measure sea level conditions around the world. The mission is

a continuation of Jason-1, launched in 2001, and TOPEX/Poseidon, launched in 1992; Jason-1 and Jason-2 will operate in tandem. Web posted. (2008). [Delta 2 launches Earth sciences satellite [Online]. Available WWW: <http://www.spacetoday.net/> [2008, June 21].]

Rally aims to show candidates impact of space job losses

Hoping to present "one unified gesture" in support of Brevard County's space industry, a public rally is being organized around Monday's U.S. Senate subcommittee hearing on projected job losses at Kennedy Space Center after the shuttle stops flying in 2010. The organizers' goal is to have 6,400 rally participants to visually demonstrate the impact of 6,400 job losses. The rally is intended to make a point to elected leaders in Washington and, particularly, to the next president. "We want a visual representation that will have an impact on the campaigns of Sens. McCain and Obama," said organizer Dale Ketcham, director of the Spaceport Research & Technology Institute at KSC. "Space matters to Florida. And Florida matters to them." Led by Sen. Bill Nelson, D-Orlando, the Space, Aeronautics and Related Sciences Subcommittee will meet at 9 a.m. at the Canaveral Port Authority. Witnesses include NASA Administrator Michael Griffin, several high-ranking NASA managers and private space industry officials. Nelson's office said he supports the Space Coast rally and that he plans to speak with the throng of people gathered Monday morning. NASA projects 6,400 jobs could be lost starting around 2011, the year after the final space shuttle flight. Some might be recovered during the development of new rockets, spaceships and ground equipment for the Constellation moon-shot program. But the KSC workforce is expected to be smaller permanently. The organizers say people who want to participate should be in place by 8:30 a.m., and they should factor in extra time to navigate traffic and parking at the port. There are several parking lots near the rally site, which is on George King Boulevard. The lots are in the general area of the port's restaurants, charters and casino ships. The organizers have posted details about the rally plan at a linktolaunch.org Web site. NASA's prime contractor, United Space Alliance, supports the rally and will not discourage its employees from attending Monday. "USA supports any effort that publicizes the value of the space program to the country, and we applaud the efforts of our community leaders to elevate the dialogue on this important subject," USA spokeswoman Tracy Yates said. "We are working as best we can to accommodate all employees who want support this event on their own time." United Launch Alliance will also allow its employees to attend the rally on their own time, said spokesman Michael Rein. The rally has been promoted by hundreds of e-mails, and most Brevard lawmakers and county commissioners are planning to attend, said Lynda Weatherman, president and chief executive of the Economic Development Commission of Florida's Space Coast. "Organizers hope that by pulling a large group together, we can make a supportive and positive statement to the Senate committee and all current and future policymakers," Weatherman said. Web posted. (2008). [Rally aims to show candidates impact of space job losses [Online]. Available WWW: <http://www.floridatoday.com/> [2008, June 20].]

Artists to turn 'shuttles' into art

The "Shuttles Orbiting the Space Coast" public art project and several white shuttle statues were introduced at Kennedy Space Center's Visitor Complex by a handful of astronauts, including first shuttle pilot Bob Crippen of the Astronaut Scholarship Foundation. If he had to design a space shuttle, he said before the unveiling, it would probably be patriotic. He got his wish with the first painted shuttle unveiled Thursday. Quiet Flight surfboard artist Gina Razzano used an airbrush to touch up her flag, eagle and moon design at the end of a ceremony that launched the project. The fiberglass shuttles are part of a project created by the Astronaut Scholarship Foundation and supported by a number of sponsors, including space contractors Boeing Co. and Lockheed Martin Corp., along with Courtyard by Marriott Cocoa Beach, Communications Concepts, ITT Corp., Florida Space Coast Office of Tourism, KSC Visitor Complex, Sunward Tours and Florida Today. Representatives of each sponsor, along with shuttle veterans Jon McBride and Robert Springer, unveiled the blank shuttles. They appear to "fly" on pedestals and are tilted at an angle. Artists have

until June 30 to submit their proposals for shuttle designs, said foundation Executive Director Linn LeBlanc. They get a \$1,000 honorarium per statue and can design up to two shuttles. After the shuttles have been on display at KSC Visitor Complex in November, sponsors will have the opportunity to exhibit "their" shuttle at a place of their choosing. Eventually, some shuttles will be auctioned, while others may go to schools and public venues for permanent display. The foundation is seeking more sponsors, for \$2,800 to \$20,000. Foundation chairman and Apollo 15 astronaut Al Worden credited LeBlanc with coming up with the idea, which should financially benefit the foundation that provides scholarships to students in science and technology. "However, it's a community project, and we're just hoping that everybody in the community gets behind it," he said. Web posted. (2008). [Artists to turn 'shuttles' into art [Online]. Available WWW: <http://www.floridatoday.com/> [2008, June 20].]

June 23: Launch Pad Repairs 'On Time'

NASA Kennedy Space Center managers are confident that extensively damaged brickwork in the flame trench of Launch Complex 39A can be repaired without disrupting the planned Oct. 8 launch of Atlantis to service the Hubble Space Telescope. The damage was assessed last week and specific repair options will be presented to the Shuttle Program Manager John Shannon by late June. That will leave several weeks available for the repairs. If damage to Complex 39B is found as well, managers also believe there will be ample time to replace large areas of brickwork there before Pad B is needed for the first Ares test flight by about mid 2009. During the STS-124 liftoff of Discovery, its solid rocket booster thrust blew out about 5,300 bricks, tearing into underlying rebar across an area of about 25 x 75 feet. Kennedy engineers are planning to use a concrete-like refractory material called Fondu Fyre that is already used to cover other areas in the Pad A and B flame trenches. The material has already stood up to many launches where it is currently applied, including some portions of the flame trench floors. A new steel mesh will be first secured in the areas blasted open by the Discovery launch before the Fondu Fyre is applied heavily over the mesh. E-mail distribution. (2008). [Aviation Week's Aerospace Daily & Defense Report Re: "Launch Pad Repairs 'On Time'" [Electronic]. Vol. 226, No. 56, [June 23, 2008].]

Extra Mission Would Cost \$300-\$400M

NASA does not yet have the \$300 million to \$400 million it would need to fly the one extra shuttle mission approved last week by the House of Representatives, NASA's chief administrator said at a subcommittee hearing at Port Canaveral today. But NASA still has time to prepare for such a mission, NASA Administrator Michael Griffin said. "We could execute the mission in the late summer of 2010," he said. The House last week approved a NASA budget that calls for NASA to fly one additional shuttle mission to carry the Alpha Magnetic Spectrometer and other scientific gear to the International Space Station. Griffin said NASA would need a go-ahead by next February. A second panel now is testifying. It includes Lynda Weatherman of the Economic Development Commission of Florida's Space Coast, Steve Kohler of Space Florida and Lisa Rice of Brevard Work Force Development Inc. Web posted. (2008). [Extra Mission Would Cost \$300-\$400M [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, June 23].]

3,000 Cape workers face uncertain future

NASA and the Air Force are splitting a single launch base operations contract into 15 separate pacts at Kennedy Space Center and Cape Canaveral Air Force Station, a dramatic reversal raising uncertainty for about 3,000 workers. Ten years after consolidating "city manager" functions at the two spaceports, the job now is being divided into eight separate contracts at KSC and seven at the Air Force's 45th Space Wing, which oversees operations at the Cape Canaveral launch base, Patrick Air Force Base and downrange tracking stations. The unbundling will result in a complicated transition between now and Sept. 30, when the current joint base operations contract expires. The switchover will set the stage for the next decade of civil, commercial and military launch operations

on the Space Coast. "We're making an investment in our next 10 years," said Nancy Bray, NASA's associate director for institutional services at KSC. "So it's one of the most important things the center does, and we want to make sure we do it right because we have to live with it for the next 10 years." NASA and the Air Force in 1998 launched an unprecedented effort to consolidate base operations contracts at KSC and the 45th Space Wing, a move expected to save taxpayers an estimated \$150 million. The idea was to combine resources and cut expenses. The objective was to remain competitive in a global commercial launch services market that was expected to boom at the turn of the century. Space Gateway Support of Herndon, Va., won the five-year contract and then was granted a five-year extension in 2003, raising the value of the pact to \$2 billion over 10 years. The company, which employs about 3,000 people under the contract, is performing work that had been done by EG&G Florida at KSC and Johnson Controls at the space wing. Space Gateway Support provides fire protection and security services, medical and environmental services, public works including engineering services and facilities maintenance, logistics, information technology and administrative services. With the end of the five-year contract extension approaching, NASA and the Air Force decided to decouple base operations. The anticipated boom in the commercial launch market never materialized. Budget cuts at NASA and the Air Force drove contract changes that made payment for services seem lopsided at times. The joint management in certain cases became difficult because of the differing missions and contract requirements of NASA and the Air Force. "The contractor often was answering to two different chiefs, if you will," Bray said. "So you started losing synergy, and it was almost like we were managing two different sets of requirements." The new arrangement is expected to trim costs by breaking out work that can be managed under fixed-price contracts, which typically are less costly to the government than cost-plus award fee contracts. Small and disadvantaged businesses also will have better chances to compete, Bray said. The change on the NASA side began May 21 when an agency-wide protective services contract was awarded to Coastal International Services Inc. of Lorton, Va. The contract, worth up to \$1.6 billion over 10 years, is for fire protection, security services, emergency management and export control, among other things, at KSC and 13 other NASA locations in the U.S. Then last Wednesday, EG&G Technical Services Inc. of Gaithersburg, Md., won a new Institutional Services Contract at KSC. That deal could be worth up to \$1.5 billion over 10 years. Six more KSC contracts and a like number Air Force pacts will be awarded in the coming months. A purposely lengthy 90-day transition period is to begin a week from Tuesday. "The transition is certainly complicated by the de-bundling," NASA Contracting Officer Attila Csoma said. The fate of the 3,000 Space Gateway Support employees remains to be seen. New contractors are expected to hire many of them. But a total workforce number will be unclear until all 15 contracts are in place. Space Gateway Support officials, meanwhile, will be debriefed on the Institutional Services Contract award this week and declined to comment on the EG&G win. Company spokesman Sam Gutierrez said Space Gateway Support "is committed to a smooth transition." Web posted. (2008). [3,000 Cape workers face uncertain future [Online]. Available WWW: <http://www.floridatoday.com/> [2008, June 23].]

InDyne wins Cape contract

InDyne Inc., a Reston, Va.-based Company, was awarded a seven-year Infrastructure Operations and Maintenance Services contract for work at Cape Canaveral Air Force Station. The deal is one of several to be made as part of a broader effort to break up the combined base support contract for Kennedy Space Center and the Cape into 15 separate contracts. If all options are exercised, the total value of InDyne's deal is estimated at \$188.7 million. "We are honored and excited to be selected as the Cape Canaveral Air Force Station infrastructure (operations and maintenance) contractor and look forward to maintaining a successful long-term relationship with the 45th Space Wing, and the men and women of Cape Canaveral Air Force Stations," Donald Bishop, InDyne's president and chief executive officer, said in a statement. InDyne, which also has a communications support contract at KSC with about 400 employees, is providing operations and maintenance and other support services for the Air Force Station's launch and test activities. The firm's sub-contractors

include Aleut Global Solutions of Colorado Springs, Colo., and Siemens Building Technologies of Cape Canaveral. InDyne will work with the current contractor, Space Gateway Support, beginning July 1 and will then take over Oct. 1. ["InDyne wins Cape contract," **Florida Today**, June 23, 2008, p 7A.]

NASA managers slip all launch dates in 2009 and 2010

The SSP (Space Shuttle Program) have officially refined the launch dates for all their missions in 2009 and 2010 - based mainly around the fallout to the previous delay of STS-125 and the long-term External Tank delivery schedule. Some of the new dates take advantage of a release to the constraint of allowing the orbiter to be docked during the arrival of the Russian Soyuz - which is still being evaluated. STS-125's move to October 8 - and the subsequent slip of STS-126 to November 10 - immediately moved STS-119 to February 12, 2009. STS-119 flight will carry the final truss element (S6) to the International Space Station (ISS). 'The Shuttle Program has released a manifest CR (Change Request) to update launch dates for STS-119/15A, STS-127/2JA, and STS-128/17A and have an updated manifest to reflect planning dates for the rest of the program,' noted documentation acquired by L2. 'External Tank delivery dates are still the long pole but they are hopeful they will be able to meet the schedule.' Endeavour's STS-127 mission will complete assembly of the Kibo Laboratory complex, and has now been moved from April 23, 2009 to May 21. STS-128 now flying with Atlantis following her release from a 2008 retirement is a logistics run to the ISS that has a new launch date of July 30, which is only a slip of a couple of weeks. Atlantis' primary payload will be the Multi-Purpose Logistics Module (MPLM) 'Donatello' - which will boost the ISS' capability to deal with the increased crew of six astronauts. Realigning with the new manifest are the remaining five missions in the latter half of 2009 and the 2010 finale. STS-129 slips to October 15, 09. The mission will see Discovery carrying the EXPRESS Logistics Carriers ELC1 and ELC2, and will involve a crew rotation of Expedition 20's Robert Thirsk with his replacement, Jeff Williams. STS-130 slips six weeks to December 10, 2009. Endeavour is carrying the final major element of the ISS in Node 3, along with the ESA-built observatory module Cupola. Three missions are currently scheduled for 2010, opening with Atlantis' second mission to be added since her stay of execution - STS-131 - which is a logistics run to the ISS. Atlantis' mission - which has moved to February 11, 2010, involves the final flight of a Multi-Purpose Logistics Module, namely Raffaello. No mention of its potential stay on the ISS has been made at this time. The two remaining missions - at present - for the shuttle program are the CLF (Contingency Logistic Flight) missions, tasked to Discovery and Endeavour. Changes to these two missions see STS-132 move to April 8, 2010, while the finale to the program has been moved to the right by one month, as Endeavour flies to the ISS on May 31, 2010. Web posted. (2008). [NASA managers slip all launch dates in 2009 and 2010 [Online]. Available WWW: <http://www.nasaspaceflight.com/> [2008, June 23].]

June 24: KSC worker rally draws hopeful few

U.S. Sen. Bill Nelson stood in front of a crowd of 1,500 worried space workers and gave them what they wanted -- a rallying cry that echoed their concerns about their uncertain future. He told them it was unacceptable that NASA didn't plan better for the five-year gap that will occur at the end of the shuttle program in 2010, possibly leaving 3,000 jobless. "How do we mitigate those losses?" he said. "How do we get NASA to get jobs here to pick up the slack?" Nelson spoke at a rally before the Senate hearing on those very questions Monday morning at Port Canaveral. Link to Launch, a movement formed to bring the space program front and center in the nation's consciousness, organized the rally with the hope that a large crowd would demonstrate the space program's importance to the area. The crowd fell considerably short of the 6,000 people that organizers expected, but they blamed that on workers being unable to get the day off. Many who did manage to gather in front of the Port Canaveral Authority building wore T-shirts declaring their union affiliation and carried signs with sentiments like "I support our space program and I vote." They loudly vocalized their disappointment with boos but cheered Nelson's positive statements about the space

program. "Everybody here is really committed to Florida's future and understands that space is part of it," said Gwendolyn Anello of Merritt Island, who worked on the committee that organized the event. Yolanda Jackson with the American Federation of State, County and Municipal Employees said attendees came from as far away as the Panhandle and Miami. "This is labor," she said. "We are family." That family included Marguerite Maloney of Cocoa Beach, who works in orbiter operations at Kennedy Space Center. She and her co-worker Denise Mullon of Cocoa Beach both carried signs that read "America: the Place for Space." "We're out here to support KSC and all the jobs that could be lost," said Maloney, who wore a United Space Alliance T-shirt and carried a U.S. flag-inspired umbrella to block out the sun. Perhaps the youngest attendee: Riley Pearson, 2, who clutched a small American flag and wore a T-shirt that said "When I grow up, I want to be an astronaut." His grandmother, Melanie Bailey of Merritt Island, worked at KSC for 26 years. "I think it's awesome," she said of the event. "I hope it's not a little on the late side." There's still a little time to mitigate workers' concerns, but not much, officials said. U.S. Sen. Mel Martinez, who joined Nelson at the microphone, said potential NASA job losses would compound already tough economic times. "We have a crisis on our hands when it comes to the space program," he said. "We've got to do whatever we can to reverse that." ["KSC worker rally draws hopeful few," **Florida Today**, June 24, 2008, p 3A.]

Extra shuttle flight bill clears hurdle, moves on

Legislation that would add an extra shuttle mission to NASA's schedule and an extra \$1 billion to its budget was approved Tuesday by a Senate panel. The bill now heads to the full Senate, where it is expected to pass as easily as a similar bill approved by the House, 409-15, last week. The Senate Commerce, Science and Transportation Committee passed it on a voice vote. The legislation would authorize \$20.35 billion for NASA, or about \$2.7 billion more than what President Bush proposed. About \$1 billion would be set aside to accelerate work on constellation, the program that will replace the aging space shuttles. The bill would restrict NASA from retiring the shuttles in 2010 until all scheduled missions fly. A new flight would be added to deliver the Alpha Magnetic Spectrometer to the International Space Station. ["Extra shuttle flight bill clears hurdle, moves on," **Florida Today**, June 25, 2008, p 1A.]

June 25: FPL plans solar plant at KSC

Rows of solar panels will rise to replace tracts of citrus trees at Kennedy Space Center as part of a statewide effort to harness the sun for clean energy. Florida Power & Light Co. affirmed plans Wednesday to build a \$70 million, 10-megawatt solar power plant about one mile south of the space center's Visitor Complex by early 2010. The plant will generate enough energy to power about 3,000 homes. Construction will begin early next year. FPL's \$688 million plan also calls for a 75-megawatt solar thermal plant in Martin County and a 25-megawatt photovoltaic plant, the largest in the world, in DeSoto County. To cover the cost of the three plans, FPL wants customers to pay another 83 cents on their monthly energy bills the first year the plants are running and 31 cents a month more after that, through 2033. FPL announced the latest plans for the three plants during Gov. Charlie Crist's second "Serve to Preserve Florida Summit on Global Climate Change," in Miami. ["FPL plans solar plant at KSC," **Florida Today**, June 26, 2008, p 1A & 3A.]

NASA beefs up power of Ares 5 moon rocket

NASA unveiled a beefed-up redesign of a proposed moon rocket Wednesday, saying the Ares 5 spacecraft that is to carry astronauts to the lunar surface in 12 years will be about 38 stories tall and carry a heftier load than planned. The rocket will be about 20 feet longer and have six main engines at its base, instead of five. Engineers said they also decided to enlarge the twin solid rocket boosters that will be bolted to its side so it can hold more fuel and carry more supplies and equipment than first envisioned. Steve Cook, manager of the Ares project office at the Marshall Space Flight Center, said the new design would make Ares 5 capable of carrying about 15,600 pounds more. The Ares 5

was first planned to be 361 feet long, or about the size of the original Saturn 5 moon rocket. But Cook said the redesigned Ares 5 will be 381 feet long. The changes were announced after a nine-month study to determine if NASA could meet its goal of returning to the moon. In a statement, Constellation program manager Jeff Hanley said the review showed astronauts can be back on the moon by 2020. ["NASA beefs up power of Ares 5 moon rocket," **Florida Today**, June 26, 2008, p 4A.]

Griffin: Will he stay or will he go?

A fan of NASA Administrator Michael Griffin, U.S. Sen. Bill Nelson would like to see the space agency chief stay on after the presidential election in November and continue leading the nation's effort to complete the International Space Station, retire the shuttle fleet and then return American astronauts to the moon. During a field hearing in Port Canaveral this week, Nelson bemoaned inevitable job losses at Kennedy Space Center after the last shuttle mission in 2010, but he also went out of his way to note that he thinks Griffin is doing a good job in trying times. "I think whoever the next president is, we're going to request to him that he keep you as administrator of NASA," Nelson told Griffin at a KSC workforce transition hearing held by the Senate subcommittee on space, aeronautics and related sciences. Quipped Griffin: "Drop me a note and let me know how that works out." Griffin was nominated for the NASA post by President George Bush in March 2005 and was confirmed by the Senate a month later. He replaced Sean O'Keefe, a bean-counter who came to NASA from the White House Office of Management and Budget. Web posted. (2008). [Griffin: Will he stay or will he go? [Online] Available WWW: http://www.floridatoday.com/the_flame_trench_blog [2008, June 25].]

Deadline Approaching to Apply for New Astronaut Class

NASA's deadline for accepting applications for the 2009 Astronaut Candidate Class is July 1. Those selected could fly to space for long-duration stays on the International Space Station and missions to the moon. ["Deadline Approaching to Apply for New Astronaut Class," **Press Release #08-158**, June 25, 2008.]

June 26: Lunar spacecraft passes tests before delivery to Kennedy

Engineering teams are conducting final checkouts of the Lunar Crater Observation and Sensing Satellite, known as LCROSS that will take a significant step forward in the search for water on the moon. The mission's main objective is to confirm the presence or absence of water ice in a permanently shadowed crater near a lunar polar region. A major milestone, thermal vacuum testing of the LCROSS spacecraft, was completed June 5 at the Northrop Grumman facility in Redondo Beach, Calif. To simulate the harsh conditions of space, technicians subjected the spacecraft to 13.5 days of heating and cooling cycles during which temperatures reached as high as 230 degrees Fahrenheit and as low as minus 40 degrees. Previous testing for the LCROSS spacecraft included acoustic vibration tests. Those tests simulated launch conditions and checked mating of connection points to the Atlas V rocket's Centaur upper stage and the adapter ring for the Lunar Reconnaissance Orbiter, known as LRO. The satellite currently is undergoing final checkout tests. After all tests are complete, the LCROSS spacecraft will be prepared for delivery to Kennedy for launch processing and integration onto the Atlas V as a secondary payload to LRO. Both spacecraft are scheduled to launch from Kennedy in late 2008. ["Lunar spacecraft passes tests before delivery to Kennedy," **Countdown**, June 26, 2008.]

NASA hires Md. firm for info work

NASA doled out a nearly \$1 billion contract Thursday as part of the ongoing break-up of an expiring, decade-old pact in which a single company provided base operations at Kennedy Space Center and Cape Canaveral Air Force Station. Starting Oct. 1, Abacus Technology Corp. of Chevy Chase, Md., will provide information management and communications support at NASA's shuttle

homeport. The five-year contract and four one-year options could be worth up to \$898 million. NASA and the Air Force are unbundling a joint base operations contract that has been held by Space Gateway Support of Herndon, Va., since 1998. Some 3,400 people are employed under the contract, which is being split into 15 separate deals. Abacus Technology will provide voice communications, visual imaging and timing, which involves operating the countdown clocks at the spaceport. It also covers transmission and cable systems, administrative phones, institutional computer networks, network IT security, and publications such as Spaceport News and library services. ["NASA hires Md. Firm for info work," **Florida Today**, June 27, 2008, p 1C.]

NASA flies to fix up launch pad

NASA will start repairing serious damage at Kennedy Space Center's launch pad 39A today, but the work isn't expected to delay the planned Oct. 8 launch of a Hubble Space Telescope servicing mission. Technicians will work two 10-hour shifts a day for the next two weeks to clear debris and damaged bricks from the pad's flame trench, which was torn up during the May 31 launch of shuttle Discovery. Then NASA will patch two large areas with steel grid and refractory concrete. The "fondue fire" will be applied in much the same manner that contractors spray gunite to build backyard swimming pools. The \$2.7 million job should be done by the third week of August, clearing the way for Atlantis to roll out to the pad as scheduled on Aug. 29. "We're confident we have a good go-forward plan, and we're ready to proceed," said Perry Becker, who led the engineering investigation team that came up with the repair scheme. An estimated 3,540 flame-retardant bricks were torn out of the launch pad's flame trench when Discovery's blastoff sent a billowing cloud of smoke and steam through the specially designed deflector. Built with concrete and refractory bricks, the 490-foot trough -- which is 42 feet deep and 58 feet wide -- deflects flame from the shuttle's two towering solid rocket boosters and three main engines. Discovery was not damaged by the flying debris, some of which hurtled through the air at supersonic speeds. Subsequent analyses showed it would be highly unlikely for a shuttle to be hit with flame trench debris. Becker said the damage was done when flame that reached 3,600 degrees blasted through previous patchwork -- an intrusion that weakened an undetected fracture and blew out the bricks. "We believe that led to a cascading failure on down the wall," Becker said. Technicians will repair an area on the east wall of the northern end of the trench that is 25 feet tall and stretches 100 feet in length. On the west wall, a 25-foot-tall area that is 80 feet long also will be repaired. NASA shuttle processing manager Rita Willcoxon said the repair work is expected to hold up through the end of the shuttle program in September 2010. NASA engineers also examined the flame trench at nearby pad 39B, where Endeavour will be poised for launch on a rescue mission should Atlantis suffer damage that would endanger its crew during atmospheric re-entry. Willcoxon said some damage was discovered there, but studies show debris would not kick up and strike Endeavour if the ship had to be launched on a rescue flight. The relatively minor damage might have to be repaired prior to the planned launch next year of NASA's first Ares 1 test flight. More significant work likely will have to be done before Ares 1 rockets and Orion spacecraft start flying operational missions in the middle of the next decade. Web posted. (2008). [NASA flies to fix up launch pad [Online] Available WWW: <http://www.floridatoday.com/> [2008, June 26].]

June 28: Barbara Morgan Goes Back To Teaching

The Idaho school teacher who backed up Christa McAuliffe and waited 21 years to fly on the shuttle is leaving NASA. Barbara Morgan, who finally flew aboard Endeavour -- the orbiter built to replace Challenger -- last August, is heading back to Idaho to teach at Boise State University. "It is really tough to leave NASA," Morgan said in a NASA news release. Morgan, 56, was an elementary school teacher from McCall, Idaho, when she was selected in 1985 to serve as back-up to Teacher-In-Space Christa McAuliffe, who was killed along with six astronauts in the January 1986 Challenger accident. She went back to Idaho to teach but then was selected as a mission specialist in 1998. She flew on STS-118, a mission primarily aimed as hauling a central truss segment up to the International

Space Station. "Barbara has served NASA and the Astronaut Office with distinction over the course of her career," NASA Chief Astronaut Steve Lindsey said in the news release. "From the Teacher-In-Space program to her current position as a fully qualified astronaut, she has set a superb and has been a consistent role model for both teachers and students. She will be missed." Morgan will leave NASA in August -- one year after her long-awaited shuttle flight. She logged 305 hours in space, operated the shuttle and station robotic arms and served as the loadmaster in charge of hauling supplies to the station from Endeavour. Her new job: Distinguished Educator in Residence at Boise State. In that capacity, she will provide vision and leadership to the state of Idaho on science, technology, engineering and math education. Web posted. (2008). [Barbara Morgan Goes Back To Teaching [Online] Available WWW: http://www.floridatoday.com/the_flame_trench_blog [2008, June 28].]

June 30: KSC Job Loss Projections Drop

NASA Administrator Mike Griffin believes that contractor job cuts at the Kennedy Space Center (KSC) following the planned end of the space shuttle program in 2010 will total 3,000-4,000, only about half of the worst-case scenario of cuts in the 6,000-7,000 range. The total Kennedy work force of both government and civil service personnel is currently about 14,000. Griffin bases the lower figure on the much greater level of vehicle assembly and manufacturing that will take place at KSC as compared to the shuttle era, as well as Apollo, when only launch operations were centered at KSC. He cited the lower number last week before a hearing of the Senate subcommittee that oversees NASA headed by Bill Nelson (D-Fla.), who flew onboard the shuttle as a congressman in 1986. Sen. Mel Martinez (R-Fla.) also attended the hearing that was held at cruise ship terminal facilities at Port Canaveral between KSC and Cape Canaveral Air Force Station. About 500 space workers demonstrated in support of the program outside of the improvised hearing room. "The last thing we need to do is to lose this tremendous work force, to put people out of work, give them a pink slip, while at the same time we're generating jobs in Russia to accomplish the same mission [of transport to the station]," Martinez said. "It's shortsighted. It makes no sense. We need to reverse it." Griffin said he finds it "unseemly in the extreme" to have to rely on Russia. "However, I can't find a way to avoid it," he said. Managers at the meeting said they were also disappointed to see Orbital Sciences and the U.S. Air Force select the new commercial Mid Atlantic Spaceport over the Cape for most future Minotaur rocket launches (Aerospace DAILY, June 10). The 63-foot tall Minotaur has already launched two military space payloads from the original NASA Wallops site about 60 miles east of Washington. Web posted. (2008). [KSC Job Loss Projections Drop [Online] Available WWW: <http://www.aviationweek.com/> [2008, June 30].]

Mission Status Center: Delta 2 performance

Initial concerns about the performance of the Delta 2 rocket that launched the Jason 2 oceanography satellite from California earlier this month have proven unfounded, officials say. Immediately after the joint U.S. and European spacecraft was deployed into orbit from the booster on June 20, NASA said the first stage appeared to have fired short of expectations and forced the second stage to make up the difference. Further analysis, however, shows the rocket performed well within specification and that a lag in data caused early confusion about the second stage firing noticeably longer than planned. It was the 82nd consecutive successful Delta 2 rocket launch dating back to May 1997. The Delta 2's overall history since debuting in 1989 has achieved 135 successes in 137 flights. The venerable rocket has five more missions planned this year, including a pair of commercial launches from California's Vandenberg Air Force Base carrying the GeoEye 1 Earth-imaging satellite on August 22 and the third Italian COSMO-SkyMed radar spacecraft on October 23. Three military flights from Florida's Cape Canaveral to loft the final two Global Positioning System Block 2R satellites and a demonstration for the Space Tracking and Surveillance System are expected in the Fourth Quarter. Web posted. (2008). [Mission Status Center [Online] Available WWW: <http://www.spaceflightnow.com/> [2008, June 30].]

If These Walls Could Talk, They'd Say 'Save Me!'

If the brick walls beneath Kennedy Space Center's Launch Pad 39A could talk, they might recount the stories of some of NASA's most historic missions over the past 50 years. But part of them may soon be lost forever. Thirty-nine years ago this July, a Saturn V rocket blasted off from Pad 39A, sending a crew of three men on their way toward the first manned lunar landing. The powerful exhaust from the 363-foot booster had to be tamed or else risk destroying the pad. So in 1965, when NASA engineers designed 39A, they built the aptly titled "flame trench" -- a 500-foot-long-by-60-foot-wide-by-four-story-deep tunnel to safely deflect the searing flames and smoke away from launch vehicle and the pad. By July 16, 1969, four Saturn V rockets had preceded Apollo 11 off Pad 39A, and seven more followed. The first and last manned missions to the moon used the same launch pad, as did the launch of Skylab -- the United States' first space station. Instead of building new pads after Apollo, NASA modified 39A and its sister 39B to support the space shuttle. The original walls of the flame trench, however, were left intact. Following space shuttle Columbia's leap from the same pad in April 1981, an additional 69 missions followed, directing their exhaust down the same tunnel blazed by the moon missions. Yet on May 31, 2008, as space shuttle Discovery rumbled toward orbit, the intense thrust from the shuttle's two solid rocket boosters tore into a fracture along the trench's east wall. The result: 3,500 interlocking bricks that previously lined the flame trench careened as far as 1,500 feet from the launch pad. NASA announced a repair plan for 39A on Thursday, citing corroded support brackets and chemical erosion as the cause for the damage. Although the bricks weren't in any danger of hitting the spacecraft, NASA needs to repair the site to support the remaining shuttle launches through the fleet's retirement in 2010. That plan involves removing even more of the original 40-year-old bricks and covering where they were with grid iron bars and spray-on, heat-resistant concrete. As for the bricks? Because a trace amount of toxic asbestos can be found in each one, they'll be treated and tested so they can be disposed in a landfill. According to NASA's space shuttle processing manager Rita Willcoxon, the agency will hire a contractor that specializes in abating asbestos to help them remove the bricks from Pad 39A. She expects the work to be completed by the third week in July. Given NASA's precedent, I think the agency should take that additional step to find a company to embed the historic bricks safely in acrylic and make them available to museums, educational institutions, NASA employees and perhaps even the public. It couldn't be a more well-timed tribute to the anniversary of the first moon landing and the agency's celebration of its 50th anniversary. Web posted. (2008). [If These Walls Could Talk, They'd Say 'Save Me!'] [Online] Available WWW: <http://www.discoverychannel.com/> [2008, June 30].]

NASA Administrator Statement on the Death of Robert Seamans

The following is a statement from NASA Administrator Michael Griffin regarding the death Dr. Robert C. Seamans, Jr., NASA deputy administrator from 1965 to 1968: "Robert Seamans was one of the early leaders in launching NASA's efforts to explore the new frontier of space. As NASA's associate administrator and then deputy administrator, Bob, as a top manager and consummate engineer, was instrumental in the decision making, planning and program execution that enabled the United States to meet President Kennedy's goal of landing men on the moon. He will be remembered as one of the great pioneers and leaders of America's space program." ["NASA Administrator Statement on the Death of Robert Seamans," **Press Release #08-163**, June 30, 2008.]

During June: Piggyback Payloads

NASA will fund two science proposals as the agency's next Explorer Program Mission of Opportunity investigations. The first, proposed by Goddard Space Flight Center, will provide a U.S. soft X-ray spectrometer at a cost of \$44 million for the Japan Aerospace Exploration Agency's New exploration X-Ray Telescope (NeXT) that will study black holes and other extreme environments in the universe. The other, by the University of Central Florida, will fly an atmospheric remote-sensing

instrument package on a yet-to-be-determined future commercial satellite. The investigation initially will be funded at about \$250,000 for a concept study. ["Piggyback Payloads," **Aviation Week & Space Technology**, June 23, 2008, p 19.]

JULY

July 1: Apollo relic makes road trip up Space Coast

A piece of moon-shot history will be in public view for a brief road trip up the Space Coast this morning. A boilerplate Apollo module that was used for rescue drills during the 1960s and 1970s will move from Patrick Air Force Base to a refurbishment facility in Port Canaveral. The piece is on loan to the 920th Rescue Wing from the Smithsonian National Air and Space Museum. The boilerplate was used by the U.S. Air Force in England for rescue practices for Apollo and Skylab missions. Web posted. (2008). [Apollo relic makes road trip up Space Coast [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, July 1].]

Shuttle flight to test Orion navigation systems

The Constellation program's Orion project office is defining a formal Relative Navigation Sensor's Development Test (RNSDT) to operate Orion navigation sensors and software on a shuttle flight in 2009 or 2010 before the planned end of the shuttle program in September 2010. The test would be used to document the performance of Orion radar, software and laser ranging performance as the shuttle is engaged in proximity operations around the International Space Station (ISS). The exercise would help retire the risk on Orion flying this specialized avionics, laser and software before it flies its first missions to the ISS in about 2015. It is yet to be determined whether any tests other than those already involved in the normal shuttle rendezvous, pitch maneuver, docking, undocking, flyaround and departure would be added for the exercise, because the shuttle is always near its attitude control propellant margins. E-mail distribution. (2008). [Aviation Week's Aerospace Daily & Defense Report Re: "Shuttle flight to test Orion navigation systems," [Electronic]. Vol. 226, No. 64, [July 1, 2008.].]

Solar Power at Kennedy

NASA and FPL signed an agreement Tuesday as part of a new initiative that will cut reliance on fossil fuels and improve the environment by reducing greenhouse gas emissions. The agreement will permit FPL to lease 60 acres of Kennedy's approximately 140,000 acres for a solar photovoltaic power generation system. The major facility will produce an estimated 10 megawatts of electrical power, which can serve roughly 3,000 homes. A separate one-megawatt solar power facility will support the electrical needs of the center. FPL refers to the large solar plant at Kennedy as the space coast facility. The company estimates the plant will prevent more than 227,000 tons of greenhouse gas emissions from entering the atmosphere during the life of the project. According to the Environmental Protection Agency, that is the equivalent of eliminating the emissions from more than 1,800 cars every year. ["Solar Power at Kennedy," **Countdown**, July 1, 2008.]

July 2: Virginia Company wins slice of KSC work

QinetiQ North America announced today that its Mission Solutions Group has been awarded a contract by Abacus Technology Corp., which last week won a NASA-KSC Information Management and Communications Support contract that could be worth almost \$900 million over nine years. Based in Fairfax, Va., QinetiQ North America will provide systems engineering, sustaining engineering and imaging and timing services as a subcontractor to Abacus. The majority of the work will be done at KSC; the subcontract could run up to nine years with a potential total value of \$225 million. Web posted. (2008). [Virginia Company wins slice of KSC work [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, July 2].]

NASA Debuts Web Site for First Ares Test Flight

NASA is developing new spacecraft, the Ares rockets and Orion crew capsule, to deliver astronauts to the International Space Station and send them on their way to the moon. The first test flight of the spacecraft, known as Ares I-X, is scheduled to launch in spring 2009. The latest information about

this launch is now available at: http://www.nasa.gov/mission_pages/constellation/ares/flighttests/aresIx/index.html The Web site was created to offer key information about the details and objectives of the Ares I-X test flight. The site features articles, images and videos that outline the objectives of the Ares I-X test flight and explain how these objectives will influence the design and flight of the Ares I rocket and Orion crew capsule. ["NASA Debuts Web Site for first Ares Test Flight," **Media Advisory #M08-131**, July 2, 2008.]

July 4: Solar sail gets another chance for launch

IT'S an idea that has been plagued by misfortune. Now, proponents of technology that seeks to propel spacecraft using the pressure exerted by photons from the sun on thin "solar sails" look set for another chance to get their idea off the ground. Missions by the US non-profit Planetary Society to test solar sail technology failed in 2001 and 2005, because the rockets needed to get them into space malfunctioned. Now they look set for a comeback as early as 29 July, when a tiny NASA spacecraft called NanoSail-D is scheduled to go into Earth orbit. The aim is to demonstrate the feasibility of deploying sails in orbit. The spacecraft will unfurl four 3-metre-wide sails made of plastic film coated with aluminum. In addition to feeling pressure from sunlight, it is hoped that the sails will experience a slight drag from Earth's outer atmosphere. Similar sails could one day be used to bring normal satellites back to Earth after their missions, reducing orbital clutter. Worryingly, the launcher for the spacecraft, Falcon 1, has suffered similar bad fortune. On its two launch attempts so far, it failed to reach orbit. Web posted. (2008). [Solar sail gets another chance for launch [Online]. Available WWW: <http://www.NewScientist.com/> [2008, July 4].]

July 7: One Last Trip to Open Hubble's Eyes Even Wider

NASA scientists, engineers and astronauts are finalizing plans to fly the space shuttle this fall on a mission to the Hubble Space Telescope to repair and upgrade the orbiting observatory that revolutionized astronomy. The long-delayed servicing mission will be the last for the Hubble, NASA says, but it will allow the telescope to perform at its highest level ever for the remaining five or six years of its operating life. "This will be the first time ever that instrument box is full," said Hubble senior scientist David Leckrone last week. "We will have the most powerful imaging capability on Hubble ever, and possibly anywhere." In a briefing at the Goddard Space Flight Center, scientists said that observations by the telescope have resulted in an average of 12 published discoveries a week for years, and that almost 4,400 principal and co-investigators have produced articles based on its data. "This is surely the most productive telescope in history," said Charles Mattias "Matt" Mountain, director of the Space Telescope Science Institute on the Johns Hopkins University campus in Baltimore. Web posted. (2008). [One last trip to open Hubble's eyes even wider [Online]. Available WWW: <http://www.floridatoday.com/> [2008, July 7].]

NASA rolls out new shuttle launch schedule

NASA unveiled a new launch schedule today that calls for eight shuttle missions in 2009 and 2010 and 10 overall before the nation's three-orbiter fleet is retired. The last of the missions now is slated to launch May 31, 2010 -- which would leave enough time to launch an extra mission if Congress calls on NASA to fly a particle physics experiment to the International Space Station before the end of fiscal 2010. As it stands, the schedule calls for seven flights to complete construction of the International Space Station, two contingency flights to outfit the outpost with large spare parts and the upcoming Hubble Space Telescope servicing mission.

Oct. 8, 2008: Atlantis on the Hubble Space Telescope repair flight.

Nov. 10, 2008: Endeavour on a space station supply run.

Feb. 12, 2009: Discovery with a fourth and final set of American solar wings for the station.

May 15, 2009: Endeavour with final segment of the Japanese Kibo science research facility.

July 30, 2009: Atlantis on a mission to deliver science and storage racks to the station.

Oct. 15, 2009: Discovery on a mission to deliver gyroscopes and other large parts to the ISS.

Dec. 10, 2009: Endeavour with the Node 3 connecting module and a cupola.

Feb. 11, 2010: Atlantis on a mission to haul storage racks and spare parts up to the station.

April 8, 2010: Discovery on a mission to delivery assembly and maintenance hardware as well as a small Russian pressurized module that will be part of a larger research facility.

May 31, 2010: Endeavour on a final flight to deliver large spare parts to the station. Web posted.

(2008). [NASA rolls out new shuttle launch schedule [Online]. Available WWW:

<http://www.floridatoday.com/> *the flame trench blog* [2008, July 7].]

July 9: KSC water safer; still below EPA standard

The Kennedy Space Center water supply improved to meet Environmental Protection Agency standards during the most recent testing. However, since drinking water standards for total trihalomethanes have not met EPA standards on average for the year, a warning is still required. Exposure to trihalomethanes over long periods can cause problems with the liver, kidneys or central nervous system, and might cause an increased risk of getting cancer. Recent research also shows a possible connection between high levels of these pollutants and pregnancy problems, so NASA advises that women of childbearing age might seek an alternative water source. KSC will provide bottled water in areas where the trihalomethanes exceed the limit. The highest levels were measured at the Shuttle Landing Facility and Launch Complex 39B. Trihalomethanes are formed when water disinfection products contact compounds present in the water. KSC has begun an aggressive program of flushing the water system, which has resulted in the contaminant level falling from 148.9 micrograms/liter in the fourth quarter of 2007 to 41.5 micrograms/liter in the most recent tests. The average for the year, however, exceeds the EPA standard of 80 micrograms/liter. The danger is slight, according to KSC officials. The EPA estimates harm would accrue only if the contaminated water was consumed over a period of 70 years. Web posted. (2008). [KSC water safer; still below EPA standard [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, July 9].]

Dollars may not close gap between space programs

Jeff Hanley, manager of the NASA moon-shot program, said he is encouraged by Congress' move to increase the agency's funding. However, he doubts increased funding can accelerate the rockets and spaceships envisioned to replace the retiring shuttles. Even with extra money, a gap would remain between the end of the shuttle program in 2010 and the first crewed flight of the Orion spacecraft, which is targeted for 2014 at the earliest. During the gap, the U.S. will have to rely on other countries to carry its astronauts to space. "There's only a limit to which I can accelerate things once I've slowed them down," Hanley said. A tight budget has slowed development of the Ares rockets and Orion spacecraft. "It's a very constrained couple of years we're going to be going through," he added. Hanley, a former chief of the flight director's office, was the guest speaker Tuesday at the National Space Club luncheon in Cocoa Beach. Hanley said he did not know details of a ground services contract at Kennedy Space Center, nor how many jobs it would bring to Brevard County. NASA administrator Mike Griffin said last month that the Constellation program could add several thousand jobs at KSC when the shuttle stops flying, possibly reducing the previous estimate that 6,400 people might end up without jobs. The Constellation program aims to launch its first test flight next year. The goal of the test flights: determine if a modified space shuttle solid rocket motor can safely propel the 300-foot rocket and spaceship to orbit. Constellation is spending around \$400 million dollars a month so far. Web posted. (2008). [Dollars may not close gap between space programs [Online]. Available WWW: <http://www.floridatoday.com/> [2008, July 9].]

Pad 39A repairs on schedule

The 25-foot by 70-foot gash in the flame trench has been expanded to make repair easier. The gash in the aging protective wall at Pad 39A was caused by the six million pounds of thrust that came from the shuttle during the last launch. Some 5,200 bricks were blown loose and scattered up to and

beyond the 1,800-foot perimeter fence. A complete segment of the protective wall below the launch pad has been cleared of fire brick. Girders with wire mesh will be attached and a flame retardant material will be sprayed on the wall. NASA officials say the work will be complete well in advance of the launch of Atlantis on a mission to refurbish the Hubble Space Telescope in early October. Web posted. (2008). [Pad 39A repairs on schedule [Online]. Available WWW: http://www.floridatoday.com/the_flame_trench_blog [2008, July 9].]

Old moon rocks yield watery secret, scientist team says

One of the biggest lunar discoveries of the decade – proof that the moon might have had water since its formation – was announced Wednesday by a team of researchers whose background is more in Earth science than moon rocks. In an article published in the journal *Nature*, a team of six geologists and geochemists showed that water from the moon's interior gushed to the surface more than 3 billion years ago in geyserlike jets of molten magma, disproving a long-standing belief that the moon is almost bone-dry. The source of their discovery: two one-gram samples of moon rocks brought back to Earth more than 35 years ago by the Apollo 15 and Apollo 17 lunar missions. "It's a real step forward, and it shows we're still getting things out of the Apollo samples," said NASA's David Lindstrom, a lunar scientist since Apollo 11. ["Old moon rocks yield watery secret, scientist team says," ["Old moon rocks yield watery secret, scientist team says," Orlando Sentinel, July 10, 2008, A3.]

July 12: Atlantis' crew visited KSC for training

Atlantis' crew returned to Houston Saturday afternoon, after two days of training at Kennedy Space Center, where they became familiar with the craft they will fly to refurbish the Hubble Space Telescope. In a traditional training drill called the Crew Equipment Integration Test, the seven astronauts attended several briefings and actually entered Atlantis to check out the shuttle they will ride to orbit in early October. During 12 days and five spacewalks, the Atlantis crew will repair and upgrade the telescope, leaving it better than ever and ready for at least five years of research. Equipment for the mission begins arriving this week at KSC. Web posted. (2008). [Atlantis' crew visited KSC for training [Online]. Available WWW: http://www.floridatoday.com/the_flame_trench_blog [2008, July 12].]

July 14: At Pad 39A: 2nd phase of repair begins

The second phase of repairs to the flame trench at pad 39A will begin this week. During Discovery's launch on May 31, fire bricks were blown off a 20-foot by 75-foot section of the wall that directs flame away from the launch pad. A larger area of loose brick has been removed. Crews hydroblasted the walls to remove epoxy. Girders and wire mesh will be attached to the wall, and a fire-proof, spray-on material will be applied. The estimated \$2.7-million repair will be finished before the next shuttle launch in early October. Web posted. (2008). [At Pad 39A: 2nd phase of repair begins [Online]. Available WWW: http://www.floridatoday.com/the_flame_trench_blog [2008, July 14].]

UCF Project Selected for NASA Explorer Mission

NASA last week selected a University of Central Florida project that will measure the temperature and make-up of the Earth's outer atmosphere as one of two missions of opportunity under its Explorer science space program. The Global-Scale Observations of the Limb and Disk (GOLD) project led by UCF Physicist Richard Eastes will build and fly a special camera known as an imaging spectrograph to record images of ultraviolet light emitted by the atmosphere approximately 62 miles above the Earth's surface. The data are important because they help predict space weather. Space weather impacts electrical systems on the ground and disrupts satellites orbiting the earth. Businesses and consumers have come to rely more and more on satellites, which are essential for cell phone, television and GPS navigation systems. GOLD will be able to measure from a satellite orbiting in sync with the earth, meaning the data can be collected across an entire hemisphere throughout the

day. Eastes, who conducts his research at UCF's Florida Space Institute at Kennedy Space Center, has focused on GOLD for the last three years. While he serves as the scientific lead on the project, researchers from UCF's Center for Research and Education in Optics and Lasers (CREOL) and the School of Electrical Engineering and Computer Science have developed the hardware and optics required for the mission and will process the data from the spectrograph. A University of Colorado team will build the camera, which is expected to be the size of a breadbox, and collect the data. Web posted. (2008). [UCF Project Selected for NASA Explorer Mission [Online]. Available WWW: <http://news.ucf.edu/> [2008, July 14].]

Investigation confirms debris events during STS-124 launch

An expansive investigation has been carried out on imagery footage that showed numerous debris events near shuttle Discovery during her launch on STS-124. Thousands of bricks were blown out of the flame trench, with some of the debris confirmed as rising above the zero level of the Mobile Launch Platform - which has resulted in a major investigation to ensure the vehicle remains safe from potential impacts. The event occurred as Discovery's Solid Rocket Boosters (SRBs) ignited, with the exhaust hitting what is now known to have been a weakened flame trench wall. A large section of the Apollo-era bricks were sent flying out of the trench in several directions. No debris hit the vehicle during this early phase of ascent. "The post launch inspection of the Mobile Launch Platform (MLP-3), Pad A FSS (Fixed Service Structure), and Pad A apron was conducted on May 31, from Launch +2.23H to 5.23 H (1925 to 2225 EDT). An investigation into what caused the flame trench wall to shed its bricks is non-specific, classed instead as a wall system deterioration over time, along with weaknesses in previously repaired areas of the trench, and a natural bowing of the wall. Web posted. (2008). [Investigation confirms vertical debris events during STS-124 launch [Online]. Available WWW: <http://www.nasaspaceflight.com/> [2008, July 14].]

July 15: Air station in play for launch complex

Due to citizens' complaints about the environmental impact of a proposed new commercial launch complex at Kennedy Space Center, NASA is now considering putting the facility at one of several abandoned Air Force launch pads instead. Hoping to lure a commercial launch company to Florida's spaceport, NASA proposed two pristine sites at KSC for the commercial launch pad. Citizen comment was sought in February. More than 85 percent of those who commented suggested using alternative sites to preserve the natural environment on the KSC property and save taxpayers' money. Nearly half suggested that KSC ask the Air Force to allow a commercial complex at Cape Canaveral Air Force Station. KSC's proposal drew more than 2,000 responses, but included about 1,000 bulk e-mail responses. Negotiations between KSC and the Air Force have just begun. "They just gave us a list of (launch) sites they considered unencumbered," said Mario Busacca, in charge of planning and special projects in KSC's Environmental Program Office. "We looked to see if they were technically feasible." Busacca declined to identify the sites, which are launch pads once used by the Air Force, NASA and their contractors. Including Cape Canaveral sites in the report has delayed the date the environmental analysis will be complete. A draft of the environmental assessment initially was to be completed this month. However, adding the new locations will delay the assessment until October, after which another comment period will be held. The state has allocated \$14.5 million to help construct the site. However, no commercial company is publicly urging KSC to build a launch site for commercial rockets. One potential customer, Orbital Sciences Corporation, decided in June to launch its Taurus 2 rockets from Virginia. Web posted. (2008). [Air station in play for launch complex [Online]. Available WWW: <http://www.floridatoday.com/> [2008, July 15].]

Space station heads of agency meeting on status, future

Heads of the partner agencies that jointly operate the International Space Station are scheduled to meet in Paris July 17 for status reports and discussions on the future of the orbiting facility. Attending the session at European Space Agency (ESA) headquarters will be the top officials and

senior managers of the Canadian Space Agency (CSA), ESA, the Japan Aerospace Exploration Agency (JAXA), NASA and the Russian space agency Roscosmos. It's been a year and a half since the heads of agency last met. During that time NASA's space shuttle fleet has delivered ESA's Columbus laboratory, two thirds of Japan's Kibo lab and Canada's big Dextre robot. The station also has suffered a serious malfunction in one of the two solar alpha rotary joints (SARJs) that keep the big solar arrays at the ends of the main station truss aligned with the sun for maximum power production. The root cause of that anomaly remains elusive, as does the reason for potentially dangerous ballistic reentries on the past two Soyuz crew vehicles coming back from the ISS. "We'll talk to what we've done over the last year and a half, since they've been together," said Mike Suffredini, NASA's ISS program manager, in a July 8 preview of the meeting. Also on the agenda will be updates on the latest changes to the station configuration and the launch manifest for station-bound spacecraft. The final shuttle flight is scheduled for May 31, 2010; the station is set to go to a six-person crew early next summer, and Japan's H-II Transfer Vehicle (HTV) should make its first flight in September 2009. . E-mail distribution. (2008). [Aviation Week's Aerospace Daily & Defense Report Re: "Space station heads of agency meeting on status, future," [Electronic]. Vol. 227, No. 10, [July 15, 2008].]

July 16: Moon Capsule Likely Won't Be Ready by 2013

Money problems will likely force NASA to abandon its ambitious internal goal of having a new moon spaceship ready by 2013, a top space agency official told The Associated Press Wednesday. The agency should still be able to meet its public commitment to test launch astronauts in the first Orion capsule by March 2015, the official said, unless national budget stalemates continue. But the agency's own hurry-up plan to get the job done even earlier — with a first crew launch by 2013 — will "very likely" be changed during meetings this week in Houston, said Doug Cooke, NASA's deputy associate administrator for exploration. "We're probably going to have to move our target date," Cooke said in a phone interview. An actual astronaut moon landing is still set for 2020. Orion initially will just orbit Earth before attempting a more complicated moon launch that also will involve unmanned rockets. Cooke acknowledged the slipped launch target date during an interview about an internal NASA report leaked to the Web site, NASA Watch. The document shows that the space agency's overall moon plan has encountered financial and technical problems, which NASA says it can overcome. The leaked report reflects typical problems of a program this early in the running, Cooke said. The 117-page report, posted Wednesday at nasawatch.com, shows an \$80 million cost overrun this year for just one motor and a dozen different technical problems that the space agency put in the top risk zone, meaning the problems are considered severe. The report put the program's financial performance in that category. Technical problems included software that may not be developed on time, the heat shield, a dangerous level of shaking during launch, and a hard-to-open hatch door. The report also said NASA's plans would shortchange astronauts' daily water needs, giving them only two liters a day when medical experts say they need at least 2.5 liters. The report showed technical problems in operations for Orion nearly doubling from May to July, with 24 items now on the most worrisome list. Outside experts say it's too early to be too worried, but they have some. Web posted. (2008). [Moon Capsule Likely Won't Be Ready by 2013 [Online]. Available WWW: <http://www.msnbc.com/> [2008, July 16].]

At KSC: ET-127 arrived early, moved to VAB

External Tank-127, which left NASA's Michoud Assembly Facility last week, arrived at Kennedy Space Center Tuesday, a day early. It was moved to the Vehicle Assembly Building about 10 p.m., when weather permitted. The tank was expected today or Thursday. The tank has all the post-Columbia design changes as the tank that carried Discovery on a successful mission on May 31. ET-127 will propel Atlantis on the fifth trip by astronauts to visit the Hubble Space Telescope. The mission is scheduled to launch in early October, having been delayed from August by difficulties in building external tanks. Lockheed Martin expects to finish and deliver ET-129 to NASA in early August. ET-

129 will be readied to carry Endeavour on a rescue mission for Atlantis but will launch in early November if no rescue is necessary. The external tanks are 154 feet tall and about 28 feet in diameter. Web posted. (2008). [At KSC: ET-127 arrived early, moved to VAB [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, July 16].]

NASA: All loose bricks removed

NASA officials say all loose bricks in the flame trench at Pad 39A have been removed for replacement, as a newly released video shows that debris flew upward from the launch pad during the launch of shuttle Discovery on May 31. The loose bricks will be replaced with a fireproof, spray-on material. The remaining bricks have been tap-tested and pull-tested to confirm they are solidly attached. "They removed any areas that were deemed to be problematic," United Space Alliance spokesman David Waters said. NASA officials, who are continuing to investigate, believe the high-flying objects are Tyvek covers from reaction control jets or the remains of water baggies that surround the SRBs before launch. "It's not brick," NASA spokesman Allard Beutel said. The \$2.7 million repair project will be complete before Atlantis' Oct. 8 launch on a mission to refurbish the Hubble Space Telescope. Web posted. (2008). [NASA: All loose bricks removed [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, July 16].]

NASA not ruling out wildlife-site launches

NASA is considering abandoned launch pads at Cape Canaveral Air Force Station for commercial space flights but has not given up the possibility of using environmentally sensitive sites in a world-renowned wildlife refuge for the private ventures, officials said Wednesday. "We are in discussions with the Air Force to determine if there are any viable sites there," NASA's Mario Busacca said. "The public asked us to please go talk to the Air Force, and that's what we're doing." Hundreds of people, from boaters and birders to former NASA engineers, protested the space agency's proposal to use about 200 acres inside the popular Merritt Island Wildlife Refuge for the Commercial Vertical Launch Complex. Another possible site borders the Atlantic coast inside the restricted area of Kennedy Space Center. Endangered wildlife and wetlands exist in both those sites. With the shuttle program winding down, NASA began considering offering some its 140,000 acres inside KSC and the sanctuary for commercial launches. Rockets launched from the private pads could be used to transport cargo, astronauts, satellites and even tourists into space. Although Busacca said NASA has not ruled out the refuge, Charles Lee, director of advocacy for Audubon of Florida, said Wednesday he is convinced that the wildlife refuge is no longer being considered. An analysis of the viable locations and potential effect on the environment is due in October, according to NASA.. Web posted. (2008). [NASA not ruling out wildlife-site launches [Online]. Available WWW: <http://www.floridatoday.com/> [2008, July 16].]

NASA picks crew for STS-128 mission to space station

NASA has assigned the crew for space shuttle mission STS-128. The flight will carry science and storage racks to the International Space Station. Marine Corps Col. Frederick W. "Rick" Sturckow will command space shuttle Atlantis on the STS-128 mission, targeted for launch July 30, 2009. Retired Air Force Col. Kevin A. Ford will serve as the pilot. Mission specialists are NASA astronauts John D. "Danny" Olivas, retired Army Col. Patrick G. Forrester, Jose M. Hernandez and European Space Agency (ESA) astronaut Christer Fuglesang. The mission will deliver a new station crew member, Nicole Stott, to the complex and return Tim Kopra to Earth. Ford, Hernandez and Stott will be making their first trips to space. Stott and Kopra were previously assigned in February to station missions. Atlantis will carry a Multi-Purpose Logistics Module filled with science and storage racks to the station. The mission will include three spacewalks to remove and replace a materials processing experiment outside ESA's Columbus module and return an empty ammonia tank assembly. Web posted. (2008). [NASA picks crew for STS-128 mission to space station [Online]. Available WWW: <http://www.spaceflightnow.com/> [2008, July 17].]

July 18: NASA asks employees to boldly go

Saying "I gave at the office" has new meaning for some NASA contractors at Johnson Space Center in Houston. The company building NASA's new space toilet sent out a memo this week asking employees to donate urine, which will be used to test the toilet of the new Orion space capsule. Hamilton Sundstrand, one of the contractors working on the spacecraft that might eventually take astronauts back to the moon, needs almost 8 gallons daily, including weekends. About 30 employees are needed to help. NASA traditionally has collected urine samples from its workers to help design better on-orbit toilets. "You can't make fake urine," said John Lewis, NASA's head of life support systems for Orion. The Orion capsule will park in space unoccupied for up to six months while astronauts work on the moon. The waste collection device will be similar to the space shuttle's system. ["NASA asks employees to boldly go," **Florida Today**, July 18, 2008, p 1A.]

July 20: NASA looks to Japan for shuttle successor

NASA has begun unofficial talks with the Japan Aerospace Exploration Agency on buying the H-2 Transfer Vehicle (HTV), an unmanned cargo-transfer spacecraft developed in Japan, as the successor to its space shuttles, which are to retire in 2010, a Japanese newspaper, *The Yomiuri Shimbun*, has learned. Behind the move is NASA's concern that the retirement of its space shuttles will make it difficult for the United States to fulfill its responsibilities to deliver water, food and materials for scientific experiments to the international space station. Japan's HTV will be introduced in autumn next year, and the spacecraft will be launched at the rate of one per year. The Japanese space agency said it has been unofficially discussing the matter with NASA since February. ["NASA looks to Japan for shuttle successor," **Orlando Sentinel**, July 21, 2008, p A4.]

July 21: Chamber officials learn about space industry

About 140 Chamber of Commerce officials from across Florida learned about Brevard's space industry during a forum at the Kennedy Space Center Visitor Complex. Some 70 percent of them had never visited KSC. Mike Wetmore, KSC associate director for Engineering and Technical Operations told the group that KSC employs about 13,000 contractors and 2,000 NASA workers. He said, the space center, which occupies 10,000 acres of the 130,000-acre wildlife preserve, injects \$4 billion into the state's economy. Getting a shuttle ready for a mission to the International Space Station requires about 300,000 man hours. The station, which shuttle crews will finish by 2010, will weigh more than 1 million pounds. He also explained that the U.S. will rely on the Russians, the Europeans and the Japanese for transport of cargo and astronauts to the space station between 2010 and 2015, when the shuttle is no longer flying and the new Constellation craft is not yet ready. David Bethay, Boeing's Florida director of Constellation Transition, told the audience that his company was working to find new business in the face of the end of the shuttle program. Up to 6,400 jobs could be lost when the shuttle stops flying in 2010. "This is a time of great challenge," said Bethay. "It is also a time of exciting new beginnings for us. We know that for Constellation to be successful, we're going to have to find a new way of thinking." He told the chamber officials of a poll that showed that 75 percent of Americans support NASA, and he urged them to campaign for the space program in their counties. Web posted. (2008). [NASA not ruling out wildlife-site launches [Online]. Available WWW: http://www.floridatoday.com/the_flame_trench_blog [2008, July 21].]

Hubble mission: assembly required

The delicate equipment to refurbish the 18-year-old Hubble Space Telescope has begun arriving at Kennedy Space Center, presenting payload managers with one of their greatest challenges. The gear includes spare parts for failing components, two new instruments, six gyroscopes and six, 125-pound batteries. The nearly 2,500 pounds of electronics will fill four pallets, each of which must be provided electrical power and climate control. "On this particular mission we are carrying more flight hardware to orbit than any other of the previous (Hubble) missions," said Hubble Observatory

Manager Thomas Griffin, whose team is responsible for installing the instruments onto the carriers. Astronauts have visited Hubble four times to make repairs since it was launched in 1990. This payload is light compared with the 32,000-pound Kibo module that shuttle Discovery took to the International Space Station in May. However, Atlantis must climb to an orbit of nearly 360 miles, much higher than the station at approximately 220 miles. Each piece of equipment for the Hubble must be tested at Goddard Space Flight Center in Maryland, shipped to KSC, attached to its pallet and loaded into the shuttle payload canister. Pallets began arriving, the first of 16 shipments to KSC. The shipments end Sept. 4, only one month before the launch. "Every week we bring another flight element here, process it and get it ready," Griffin said. "Everything's not coming at the same time, so we can focus the individual hardware team on a particular element. "The schedule is well thought out and paced," Griffin said. "A good analogy is building a vehicle at an auto assembly plant." As the observatory manager, Griffin is eager to see what the Hubble Space Telescope will produce with new cameras that improve resolution by 15 to 35 times. Hubble's spectacular views of faraway galaxies will be even more detailed. "It's great to see it all come together," he said. "The (new) cameras are going to provide orders of magnitude improvement. "Who knows the science we'll get from the upgraded Hubble. We've always been surprised." Though loading the instruments into the payload canister without damage is crucial, the intense care continues all the way to the launch pad. "The complexities of the interfaces and the criticality are much greater with the Hubble than with the space station payloads," NASA payload manager Deborah Hahn said. Hahn's team will care for the Hubble equipment once it's loaded into the shuttle payload canister, where its temperature and condition will be monitored. At the pad, the four pallets will be loaded into the shuttle at once, with four sets of power and data cables to hook up in the shuttle payload bay. "The closeouts are a little more involved," Hahn said. Ground support equipment, such as air conditioners and generators, won't be removed from the launch pad until just before launch. Atlantis will be rolled out to Pad 39A on Aug. 29, and Endeavour will be moved to Pad 39B to be ready to act as a rescue craft. Hubble orbits about 150 miles above the space station, too far for Atlantis to seek safe harbor there in an emergency. Web posted. (2008). [Hubble Mission: Assembly Required [Online]. Available WWW: <http://www.floridatoday.com/> [2008, July 21].]

NASA Statement About Japanese Cargo Services

Contrary to news reports, NASA has not officially or unofficially been discussing the purchase of H-II Transfer Vehicles (HTV) -- uninhabited resupply cargo ships for the space station -- from the Japanese Space Agency, or JAXA. NASA is committed to domestic commercial cargo resupply to the space station and does not plan to procure cargo delivery services from Japan. As part of our original agreements as compensation for common system operating costs NASA has limited cargo capability on the Japanese and European cargo vehicles. NASA has recently issued a request for proposal for the cargo needs of International Space Station beyond those supplied by our current international agreements. NASA has chosen to depend on commercial resupply of cargo delivery to the station. ["Statement on Inaccurate reports About Japanese Cargo Services," **Press Release #08-181**, July 21, 2008.]

July 22: Pad 39A repairs move to spray mode

Engineers repairing damage to the flame trench at Pad 39A have started to spray Fondue Fyre into the damaged areas of the concrete wall - and remain on track to have the pad ready to accept Atlantis in time for the October launch of STS-125. Engineering work at the pad has been proceeding extremely well. A multi-phase approach has been undertaken by various contractors, who have completed the removal of unstable bricks that remained in the wall. This was followed by hydroblasting the walls in order to remove residual epoxy. To firm up the structure ahead of the coating of Fondue Fyre, the installation of additional anchors and plates took place to secure voids found during tap tests. Heavy rain in the KSC area, along with stubborn epoxy residue, has failed to delay operations that are now moving into Phase II of the repair, with the follow-on contractor

(Metcon) - who have started around the clock repair activities. "The contractor started to locate rebar on the East wall to allow drilling of holes for the wall anchors. Rebar location of the East wall was completed on Wednesday and West wall should be completed on Thursday of last week. Fondu Fyre materials, wall anchor bolts, and steel grid sheets arrived mid-week. "The existing vertical "dovetail" steel channels require additional corrosion removal before the Fondu Fyre is applied. The Fondu Fyre contractor arrived Monday (Yesterday) morning and prepared for spraying applications. "Severe Weather initially delayed the start of the Fondu Fyre application yesterday (Monday), but the contractor picked up spraying both East and West walls shortly after the weather passed." Fondu Fyre - a concrete material - has remained the only refractory material qualified for use at KSC, and that performance during the program has been satisfactory, with increased maintenance and process modifications. The material's performance has managed an average of five launches between major maintenance/refurbishment, along with modifications to the material over the history of the program. It was chosen as the preferred repair option not long after the pad damage was evaluated by shuttle managers. Another note of interest is the pad will be kitted out with new sensors, embedded into the flame trench. It is not known if all the sensors will be installed in time for STS-125's launch, but the long-term plan is set. The application (spraying) of the Fondu Frye is expected to be completed by the end of the month, which places the completion of the pad's repair on August 11. Web posted. (2008). [Pad 39A repairs move to spray mode [Online]. Available WWW: <http://www.nasaspaceflight.com/> [2008, July 22].]

NASA aims to move up shuttle launch dates

NASA is looking to move up the launch dates for its next two shuttle missions by almost a week each to increase the chances that the second flight -- an International Space Station supply run -- can be sent up before a window of opportunity closes in late November, officials said today. But it's unlikely NASA will be able to advance the planned Oct. 8 launch of a Hubble Space Telescope servicing mission more than a couple of days, and a proposed six-day move in the planned Nov. 10 launch of the station logistics mission would put liftoff of that flight on the same day as the 2008 presidential election. The sun angle on the station between Nov. 25 and Dec. 17 will be such that the outpost would not be able to generate enough power, or dispel enough heat, to support a docked shuttle mission. Shuttle missions to the station cannot be launched during the period -- a so-called "beta angle cutout." NASA also would opt not to launch during the Christmas or New Year's holidays. That effectively means Nov. 24 would be the last day NASA could launch a mission to the international outpost in 2008. A delay past then would prompt NASA to push launch of the station logistics mission to January or February. NASA shuttle program manager John Shannon recently issued a "change order" that would call for the launch of Atlantis on NASA's fifth and final Hubble servicing mission to Oct. 2; the launch of Endeavour on the station supply run would move up to Nov. 4. All involved parties -- those preparing Atlantis and Endeavour, the shuttle's external tanks, its payloads, etc. -- now are reviewing schedules to determine whether all prelaunch work could be safely finished in time to meet those target dates. The orbiters Atlantis and Endeavour appear as if they could be ready for earlier launch dates. The external tank for the Hubble mission already is at Kennedy Space Center and the tank for Endeavour's flight is expected to be delivered in early to mid-August. However, the payload for the Hubble servicing mission -- which includes two new state-of-the-art science instruments as well as new batteries and gyroscopes -- would have to be moved to the launch pad by Sept. 11 to support an Oct. 2 launch date, and it appears that Sept. 14 is the earliest delivery date. Expect launch date decisions on Aug. 14. Shannon and shuttle program managers will meet that day to review work schedules and decide whether to assign new target launch dates. Both launches likely will move up at least a couple of days. In any case, the prelaunch work for the upcoming Hubble mission is proceeding without significant problems. Said KSC spokesperson Candrea Thomas: "We're on track for Oct. 8."

Web posted. (2008). [Pad 39A repairs move to spray mode [Online]. Available WWW: http://www.floridatoday.com/the_flame_trench_blog [2008, July 22].]

New NASA 'Fire & Smoke' Web Page Shows Latest Fire Views

NASA satellites, aircraft, and research know-how have created a wealth of cutting-edge tools to help firefighters battle wildfires. These tools also have helped scientists understand the impact of fires and smoke on Earth's climate and ecosystems. Now, a new NASA Web site brings to the public and journalists the latest information about this ongoing effort. The NASA "Fire and Smoke" Web site debuting Tuesday includes regular updates of NASA images of fires and their associated smoke plumes in the United States and around the world. The site also features articles on the latest research results and multimedia resources from across NASA. The site is updated regularly with new images from NASA's suite of Earth-observing satellites and airborne observatories, including the unmanned Ikhana aircraft that recently pinpointed wildfire hotspots across California. NASA's investment in these observational resources, and the research and development to transform them into practical tools for operational agencies, supports ongoing nationwide efforts to fight wildfires. ["New NASA 'Fire & Smoke' Web Page Shows Latest Fire Views, Research," **Media Advisory #M08-134**, July 22, 2008.]

July 24: Ex-NASA Scientist Says Aliens Exist

Astronaut Edgar Mitchell stunned British radio listeners by claiming aliens exist in outer space - and that they've made contact with Earth several times. The ex-NASA scientist - whose 9hr 17min walk on the Moon during the 1971 Apollo 14 mission is still the longest - said UFO visits to us had been covered up for 60 years. Dr Mitchell, 77, told Kerrang! Radio that sources at the space agency, who had contact with aliens, described them as little people with large heads and eyes. But they were not hostile, he told host Nick Margerrison. "If they were, we'd be gone by now," Dr Mitchell said. "Our technology is not nearly as sophisticated". He added: "I've been in military and intelligence circles who know we have been visited." And material famously recovered at Roswell, New Mexico, in 1947 was from a UFO, he claimed. Margerrison said yesterday: "It was a shock to hear this coming from a respected scientist." But a NASA spokesman said: "We do not share Dr Mitchell's opinions on this." Web posted. (2008). [Ex-NASA Scientist Says Aliens Exist [Online]. Available WWW: <http://www.mirror.co.uk/> [2008, July 24].]

Jules Verne propels station to higher orbit

The International Space Station is circling higher above Earth today after getting a boost from a robotic European cargo carrier docked to the aft end of the Russian segment of the outpost. Powerful engines onboard the Jules Verne Automated Transfer Vehicle, or ATV, were ignited for 20 minutes and 37 seconds Wednesday, propelling the station into an orbit that is 221 statute miles above the planet. The reboost raised the 300-ton station by about four miles, putting the outpost at the proper altitude for two upcoming Russian missions: the Sept. 10 launch of an unmanned Progress space freighter and the Oct. 12 launch of the Expedition 18 crew aboard a Soyuz spacecraft. Web posted. (2008). [Jules Verne propels station to higher orbit [Online]. Available WWW: http://www.floridatoday.com/the_flame_trench_blog [2008, July 24].]

July 25: Lunar Reconnaissance Orbiter launch pushed back to next year

Launch of NASA's Lunar Reconnaissance Orbiter (LRO), the first robotic precursor mission under President Bush's plan for moving human space exploration beyond Earth orbit, will be delayed until after Bush leaves office. Also delayed until late February or early March 2009 is the Lunar Crater Observation and Sensing Satellite (LCROSS), a piggyback payload added by Ames Research Center when LRO was upgraded to an Atlas V-class mission. Launching in place of the NASA missions on an Atlas V from Cape Canaveral Air Force Station, Fla., will be a classified DOD spacecraft, sources say. That mission will go in the November time frame originally targeted for LRO/LCROSS. Project

officials at Ames and at Goddard Space Flight Center, where LRO is on schedule in the final stage of integration and testing, have been notified of the change, but NASA declines to confirm the shift. E-mail distribution. (2008). [Aviation Week's Aerospace Daily & Defense Report Re: "Lunar Reconnaissance Orbiter launch pushed back to next year," [Electronic]. Vol. 227, No. 18, [July 25, 2008.].]

NASA returns to metal nozzle for Ares upper stage

Cost and weight issues have forced NASA back to a metal nozzle for the Pratt & Whitney Rocketdyne J-2X rocket engine that will power the upper stage of the Ares I crew launch vehicle and Earth Departure Stage of the heavy-lift Ares V. In its original configuration, the 8 ft.-long, 10 ft.-diameter nozzle extension was metal -- an alloy known as Haynes 230 -- but weight and thermal issues led to a change to a composite nozzle extension that was lighter and had more thermal margin. The composite configuration chosen was similar to that for the European Vinci engine, and a contract to manufacture the nozzle was awarded to Snecma, says Tom Byrd, NASA's J-2X deputy manager. The return to metal has brought with it an emissivity issue, Byrd says, as the nozzle is radiatively cooled. "We will have to develop a new coating," he says. The remaining issues are planned to be resolved before the Ares I critical design review in November. . E-mail distribution. (2008). [Aviation Week's Aerospace Daily & Defense Report Re: "NASA returns to metal nozzle for Ares upper stage," [Electronic]. Vol. 227, No. 18, [July 25, 2008.].]

Federal jobs pay the most

A Florida Today analysis of government payroll data for most federal employees in Brevard County found that they made more than twice as much as private sector workers here. The presence of Kennedy Space Center and its cadre of uniquely skilled specialty workers who command above-average pay drives the difference. No other federal entity spends more money on the Space Coast or pays as many people as much in salary as the nation's space agency. The big investment in people highlights why the looming retirement of the space shuttle and the transition to a new moon program is getting so much attention from government and economic development leaders. Among the highlights of the federal salary data: * Federal workers in Brevard on average earned \$85,984 in 2007. Overall, Brevard workers earned an average of \$39,230 last year, according to the Bureau of Labor Statistics. *The highest paid federal workers here were 31 medical doctors -- employed mostly by the Department of Veterans Affairs and NASA. They earned on average \$162,541 last year vs. \$177,848 for doctors overall. * Not surprisingly, engineering is the biggest career field among federal employees here. About half of all federal workers in Brevard were engineers of some sort. * NASA was the largest federal employer locally with 2,199 workers. They earned on average \$91,383 in 2007. NASA's highest-paid employee here was Kennedy Space Center director Bill Parsons, who earned \$168,000, the same salary as NASA administrator Michael Griffin. Due to quirks in the federal pay system, three NASA employees elsewhere actually earned more than Griffin -- including associate administrator for space operations Bill Gerstenmaier and two others at \$215,700 (highest in the agency) -- while 27 other workers earned as much as Griffin. The payroll information came from the Office of Personnel management and covered 2,741 federal workers in Brevard, as well NASA's 18,461 employees worldwide. Records for employees of the Defense Department, the FBI, CIA and others vital to national security are exempt from disclosure and is not included. Salary information from independent agencies such as the U.S. Postal Service also is not included in the data. NASA's high concentration of engineers and other highly paid workers skewed the federal average higher. Average pay for the 542 non-NASA federal employees here was \$64,082. Also, the federal government directly employs few of the service-sector workers who make up a large portion of the workforce locally. Instead, most of those jobs -- such as security guards, food-service workers and general maintenance -- have been farmed out to private contractors. The bulk of federal jobs here require at least a bachelor's degree, driving up the pay scale. ["Federal jobs pay the most," Florida Today, July 25, 2008, p 1A & 3A.]

NASA's new goal -- earlier launches for Atlantis, Endeavour

NASA's campaign to loft shuttle Atlantis on a Hubble Space Telescope servicing mission will reach a milestone today as managers meet with an eye toward moving up an Oct. 8 launch date. Gathering at Kennedy Space Center, the people in charge of prepping the shuttle for launch will examine progress made to date as well as the work that must be completed to safely finish the job. NASA aims to advance the Atlantis flight and the planned Nov. 10 launch of Endeavour on an International Space Station outfitting mission. The intent is to increase the chances of launching the second flight before a 2008 window of opportunity effectively closes in late November. The prep work on the orbiter Atlantis is running ahead of schedule, and managers will consider setting new dates for key launch processing milestones. An operation aimed at mating the external tank for the Atlantis mission with twin solid rocket boosters is expected to move up to Aug. 2 or 3 from an Aug. 7 target. Atlantis likely will be slated to move to the Vehicle Assembly Building from its processing hangar several days ahead of an Aug. 22 target. That would enable NASA to aim for a shuttle rollout to launch pad 39A well in advance of a planned Aug. 29 move. The ultimate aim is to have Atlantis ready to launch as many as six days earlier than planned -- or around Oct. 2. Whether that can be done remains to be seen. A launch date between Oct. 4 and 6 is more likely. Decisions on the launch dates will be made Aug. 14. Web posted. (2008). [NASA's new goal -- earlier launches for Atlantis, Endeavour [Online]. Available WWW: <http://www.floridatoday.com/> [2008, July 25].]

July 26: Pad repairs highlight busy week at KSC

At launch pad 39A this week, workers packed a heat-resistant concrete called Fondue Fyre into steel grid structures, welded to the wall of the flame trench. Fondue Fyre was developed during NASA's Apollo lunar program. The flame trench was damaged during the May 31 launch of Discovery. Repairs are scheduled to be complete before the Oct. 8 launch of Atlantis, according to a NASA Web site. In the Orbiter Processing Facility, closure of Atlantis' payload bay doors is targeted for today. Also, cleaning and processing of equipment bound for the Hubble Space Telescope continues. Web posted. (2008). [Pad repairs highlight busy week at KSC [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, July 26].]

July 28: Moon mission makes way for DoD spaceplane

A high-profile NASA moon mapping mission is being pushed back to next February, opening up an opportunity for the Pentagon to the launch of a robotic military spaceplane on a technology demonstration flight. Now scheduled for launch Feb. 27 aboard a United Launch Alliance Atlas 5 rocket, NASA's Lunar Reconnaissance Orbiter represents a first step toward paving the way to return U.S. astronauts to the moon by 2020 -- a goal set by President Bush in January 2004. The spacecraft will circle the moon for a year, making a comprehensive atlas of the surface of Earth's sole natural satellite. A suite of sophisticated science instruments aboard the orbiter will gauge the amount of cosmic radiation in the lunar environment and search for evidence of water at its poles. A piggyback payload includes two small spacecraft, one of which will purposely crash into a crater near the lunar south pole in an attempt to kick up a plume of dust and regolith. The second craft will fly through the plume and scan it for evidence of water ice. George Diller, a spokesman for NASA's Kennedy Space Center, said the delay from a planned launch in late November will provide program managers will more flexibility to complete testing of the spacecraft prior to its delivery to the launch site. The spacecraft will be lofted into orbit from Launch Complex 41 at Cape Canaveral Air Force Station. "It gives us more launch opportunities and more time to make sure the spacecraft is ready to ship," Diller said. The spacecraft must be launched on dates when the Earth and the moon are aligned for the four-day trip to lunar orbit. NASA would have had only eight opportunities to launch in late November or December. The Earth and the moon will be aligned properly during 18 days in late February and March, Diller said. The move to Feb. 27 opens an opportunity for the Pentagon to

launch its unmanned X-37B spaceplane -- also known as the Orbital Test Vehicle, or OTV -- aboard another United Launch Alliance Atlas 5 rocket in mid-December. Web posted. (2008). [Moon mission makes way for DoD spaceplane [Online]. Available WWW: http://www.floridatoday.com/the_flame_trench_blog [2008, July 28].]

NASA successfully tests parachute for Ares rocket

NASA and industry engineers have successfully completed the first drop test of a drogue parachute for the Ares I rocket. The drogue parachute is designed to slow the rapid descent of the spent first-stage motor, cast off by the Ares I rocket during its climb to space. The successful test is a key early milestone in development and production of the Ares I rocket, the first launch vehicle for NASA's Constellation Program that will send explorers to the International Space Station, the moon and beyond in coming decades. The drogue parachute is a vital element of the Ares I deceleration system and will permit recovery of the reusable first-stage motor for use on future Ares I flights. Engineers from NASA's Marshall Space Flight Center in Huntsville, Ala., managed the team that conducted the first Ares I drogue chute test on July 24 at the U.S. Army's Yuma Proving Ground near Yuma, Ariz. This is the sixth in an ongoing series of tests supporting development of the Ares I parachute recovery system, which includes a pilot chute, drogue and three main parachutes. The next drogue parachute test is scheduled for October, and testing will continue through 2010. The drogue parachute also will be used during NASA's first test flight for the Ares rocket, the Ares I-X, scheduled to take place in 2009. Web posted. (2008). [NASA successfully tests parachute for Ares rocket [Online]. Available WWW: <http://www.spaceflightnow.com/> [2008, July 28].]

July 29: Spray-on concrete to be complete by Friday

Applying a spray-on, fire-resistant concrete in the flame trench at Pad 39A is expected to be complete by the end of the week, said a spokesman for a NASA contractor. The concrete, called Fondu Fyre, was completed to the third row on both walls of the flame trench Monday. A fourth row, the top row, was to be completed by tonight. Several small areas will need to be redone on Thursday and Friday. Some wires for instruments in the flame trench must also be rerouted. About 3,200 fire bricks were blown off the wall of the flame trench during the launch of Discovery on May 31. The \$2.7 million repair job will be complete before the Oct. 8 launch of Atlantis on a mission to refurbish the Hubble Space Telescope, according to NASA officials. Web posted. (2008). [Spray-on concrete to be completed by Friday [Online]. Available WWW: http://www.floridatoday.com/the_flame_trench_blog [2008, July 29].]

NASA to study old sites for launches

Within a month, NASA will announce how it will study some of the 30 or more vacant launch sites at Cape Canaveral Air Force Station that could be considered for a commercial launch pad. NASA looked to launch sites at Cape Canaveral Air Force Station after hearings in February when citizens protested against development of two proposed commercial launch sites at Kennedy Space Center that would disturb pristine areas. The direction of the study will be refined next month, but NASA won't decide which unused launch sites at Cape Canaveral are acceptable for development. "Our next public announcement (will be) to what degree we are going to be considering additional sites," Kennedy Space Center spaceport development manager Jim Ball said. "We won't rule out any of the sites that are under analysis until the whole study is complete." In the search for a commercial launch site, NASA is working with state agency Space Florida, which holds \$14.5 million in state-appropriated money for building the complex, and which has bonding authority to help private enterprise borrow money for the site. No launch company, however, is publicly urging NASA to build a site to launch commercial rockets. Citizen comment was sought in February on a plan to put a \$500 million commercial launch site on one of two KSC sites. About 87.90 percent of the citizens who commented on the proposal suggested using alternative sites at Cape Canaveral. Web posted.

(2008). [NASA to study old sites for launches [Online]. Available WWW: <http://www.floridatoday.com/> [2008, July 29.]

Endeavour's heavy STS-126 flight may get heavier - SARJ latest

Shuttle and Station managers are looking into the possibility of adding an extra 1,750 lbs of stowage inside Endeavour's "Leonardo" Multi-Purpose Logistics Module (MPLM). November's STS-126 was already set to be the heaviest logistics flight to the International Space Station (ISS), with Endeavour carrying key equipment for what will be a six man outpost next year - while the mission's EVAs will involve major repair work to problematic starboard SARJ (Solar Alpha Rotary Joint). Endeavour's currently being processed on a timeline that will support rollout to Pad 39B ahead of Atlantis' launch from Pad 39A. This unique LON (Launch On Need) STS-400 roll will be stood down when Atlantis is cleared for re-entry at the end of her STS-125 mission. Rolling back off Pad 39B, Endeavour will then roll to Pad 39A to be prepared for her primary STS-126 mission. There she will receive her payload - the MPLM - packed with equipment that even includes a new canteen for the ever-expanding ISS. 'First flight with all 16 MPLM racks; heaviest MPLM to date,' noted one of the expansive STS-126 baseline presentations on L2, before listing its contents, making up a staggering 27,585 lbs of payload. 'Regenerative ECLSS, 6-crew habitability racks/up. two crew quarters (previously three, one moved to STS-128), Treadmill-2 (T2) and T2 Outfitting (now STS-128), Galley h/w (packed in the EXPRESS Rack-6), Water Recovery System (WRS)1, WRS2, WRS 1 and 2 Outfitting, Waste and Hygiene Compartment (WHC),' listed some of the MPLM's manifest. Adding yet more capacity - known as up-mass - to the MPLM, will require a large amount of discussion, with a recent memo outlining both the requirements and the timeline for the potential changes. 'ISSP (International Space Station Program) trying to put as much up-mass as they can in pressurized volumes,' noted the information, before noting Endeavour herself has the performance ability to carry an increased load. 'SSP (Space Shuttle Program) has a healthy APM on STS-126 flight.' APM (Ascent Performance Margin) is the amount of reserve propellant the External Tank (ET) carries. The additional 1,750 lbs of payload would be 'squeezed' in to the MPLM end cone - which would be a first, and thus required a level of assessment. Results are expected next month, which will allow for a decision in September. Web posted. (2008). [Endeavour's heavy STS-126 flight may get heavier - SARJ latest [Online]. Available WWW: <http://www.nasaspaceflight.com/> [2008, July 29].]

NASA sets new dates as launch targets

NASA is moving up target launch dates for its next two shuttle missions by three days each in a bid to get both off the ground before a window of opportunity closes in late November. The launch of Atlantis on a Hubble Space Telescope servicing mission now is targeted for Oct. 5. Endeavour is scheduled to launch Nov. 7 on an International Space Station outfitting mission. Senior managers are expected to firm up the dates Aug. 14. NASA faces a Nov. 24 deadline to launch 2008 station missions. The station would not be able to generate enough power, or dispel enough heat, due to the sun angle on its solar wings between Nov. 25 and Dec. 17. NASA also aims not to launch during the Christmas and New Year's holidays. Web posted. (2008). [NASA to study old sites for launches [Online]. Available WWW: <http://www.floridatoday.com/> [2008, July 29.]

Google mark a NASA anniversary

Today is the 50th anniversary of the date President Dwight Eisenhower signed legislation that created the agency that became NASA and opened its doors on Oct. 1, 1958, the agency's formal birthday. The search engine Google acknowledged the date by creating a special logo for its Web page. Web posted. (2008). [Obama and Google mark a NASA anniversary [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, July 29.]

July 30: LRO launch delayed for spaceplane mission

The launch of NASA's Lunar Reconnaissance Orbiter (LRO) has been delayed until early next year, clearing room on the launch manifest for the launch of an experimental military spaceplane. LRO had been scheduled for a November launch on an Atlas 5, but has been delayed until February of 2009 to allow more time to complete testing of the spacecraft. The postponement clears a spot in the launch manifest for the first flight of the X-37B, an experimental subscale spaceplane prototype that will also be launched on an Atlas 5. The X-37, which has been under development for years, albeit at a low level of activity, will land back at Edwards Air Force Base in California after its test flight. Web posted. (2008). [LRO launch delayed for spaceplane mission [Online]. Available WWW: <http://www.floridatoday.com/> [2008, July 30.]

July 31: Phoenix confirms water as mission gets extended

Laboratory tests aboard NASA's Phoenix Mars Lander have identified water in a soil sample. The lander's robotic arm delivered the sample Wednesday to an instrument that identifies vapors produced by the heating of samples. Web posted. (2008). [Phoenix confirms water as mission gets extended [Online]. Available WWW: <http://www.spaceflightnow.com/> [2008, July 31.]

AUGUST

August 1: Shuttle External Tank Workers Put on Notice

The 2,445 people who build shuttle external tanks were put on notice today as Lockheed Martin told workers that several hundred will be laid off by the end of the year and a series of job reductions will continue through NASA's last shuttle flight in 2010. The vast majority of the people work at NASA's Michoud Assembly Facility in New Orleans, a factory that was hit hard in 2005 by Hurricane Katrina. The work force there was lauded for their heroic efforts to keep the factory from flooding -- action that saved NASA's shuttle program as the agency still was struggling through a lengthy and difficult recovery from the 2003 Columbia accident. The news today was not a complete surprise to the work force. Job reductions at the tank factory have been a certainty since President Bush directed NASA in 2004 to complete the International Space Station and retire its shuttle fleet by September 2010. But a new inevitability started sinking in when managers circled Oct. 1 on company calendars. Shuttle external tank work at the factory began in 1973, and 124 of the 15-story fuel reservoirs have been delivered since then. The final 10 tanks are now in various stages of production. Two of those are to be shipped to Kennedy Space Center by the end of the year. The 2,445 people work in three locations: the New Orleans factory, NASA's Marshall Space Flight Center in Huntsville, Ala., and KSC. The work force at KSC numbers less than 20. Web posted. (2008). [Shuttle External Tank Workers Put On Notice [Online]. Available WWW: http://www.floridatoday.com/the_flame_trench_blog [2008, August 1].]

Kennedy Space Center's Annual Report Fiscal Year 2007

Kennedy Space Center's Annual Report for Fiscal Year 2007 is now available online. The report highlights the many successes made at Kennedy throughout the year that could not have been achieved without your hard work and dedication. I invite you to review the accomplishments of the Center at: http://www.nasa.gov/centers/kennedy/about/annual_rpt/annual_rpt-index.html I'm proud to lead such an exceptional workforce here at Kennedy Space Center. Thank you, W. W. Parsons. E-mail distribution. (2008). [Parsons, W. W. Re: "Kennedy Space Center's Annual Report Fiscal Year 2007" [Electronic]. KSC-Center-Director [August 1, 2008].]

Expendable Launch Vehicle Status Report

Status Report: ELV-080108. Mission: IBEX (Interstellar Boundary Explorer); Launch Vehicle: Pegasus XL (Orbital Sciences); Launch Pad: Reagan Test Site, Kwajalein Pacific Atoll; Launch Date: Oct. 5, 2008; Launch Window: 12:41:54 p.m. EDT (4:41:54 a.m. local time). The IBEX spacecraft arrived at Vandenberg Air Force Base in California on Monday, July 28. It was taken to the Astrotech Space Operations facility for processing. The following day the spacecraft was removed from its shipping container and placed on a test stand in the clean room high bay. IBEX was powered on July 31 to begin the state-of-health checks of the spacecraft's operating systems. Next week, testing of the spacecraft science instruments is scheduled. At the Orbital Sciences launch vehicle hangar, prelaunch processing of the Pegasus XL rocket is under way. Work to attach the second and third stages is scheduled to begin Aug. 6. Integration of the first and second stages is planned to start Aug. 8. Fairing preparations also are scheduled to begin next week. The L-1011 carrying the Pegasus XL rocket with IBEX is currently planned to depart from Vandenberg on Sept. 26. After a stop in Hawaii, the flight will continue and arrive at the Reagan Test Site at Kwajalein Atoll in the south Pacific on Sept. 28. Web posted. (2008). [Expendable Launch Vehicle Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/launchingrockets/status/2008> [2008, August 1].]

August 2: Obama vows NASA support during visit to Florida

Sen. Barack Obama held a town hall meeting near the Kennedy Space Center Saturday and vowed strong support for NASA, saying he favors at least one shuttle flight beyond the 10 missions left on

the agency's manifest. Obama also said he would work to close the gap between the end of shuttle operations and the debut of the Orion spacecraft that will replace it and said earlier reports that he would divert money from NASA's next manned spacecraft to education were unfounded. Web posted. (2008). [Obama vows NASA support during visit to Florida [Online]. Available WWW: <http://www.spaceflightnow.com/> [2008, August 2].]

White Sands Space Harbor could close

The fate of a back-up space shuttle landing site north of Las Cruces is up in the air in advance of a NASA plan to retire its space shuttle program in two years. The site — called White Sands Space Harbor — is an alternative for shuttle landings in the case of bad weather at two other, preferred locations. On most weekdays, shuttle pilots use the site for flight training exercises. But NASA is in the midst of phasing out its shuttle program and is developing more modern space vehicles. The last shuttle launch is scheduled for 2010. It's not yet known what will happen to the harbor, said Robert M. Cort, associate manager of technical operations for the Lyndon B. Johnson Space Center White Sands Test Facility in Las Cruces. Options include turning over the harbor to White Sands Missile Range — overseen by the U.S. Department of Defense — or demolishing the buildings and possibly the runways. "The decision at this point is really in the hands of WSMR as to whether they need those facilities," he said. The site had its beginnings before the shuttle program. The first runway, called Northrup Strip, was constructed by the Army in 1948 as a landing site for drone aircraft, according to Cort. In 1976, it was selected as a training site for shuttle pilots, and a second runway was constructed. Each runway was eventually extended to 35,000 feet — about 6.6 miles. The runways aren't paved. Rather, they're composed of packed, leveled gypsum — the same mineral seen at White Sands National Monument. Despite being a back-up landing site, a shuttle has only touched down once there — Space Shuttle Columbia on March 30, 1982. It was after the landing that the site was renamed White Sands Space Harbor, according to Cort. A third, 12,800-foot runway was constructed in 1989. In addition to runways, Cort said, about 10 buildings exist at the site, including a mix of prefabricated and permanent structures. The largest are a roughly 4,000-square-foot equipment shop and a 2,600-square-foot operations center. White Sands Space Harbor: 1948: Runway 17/35 is built. Called Northrup Strip, it's 10,000 feet long; 1976: Selected as a training site for space shuttle pilots. Also, a second runway, Runway 23/05 is built; 1982: Space Shuttle Columbia lands at the site. Site is renamed White Sands Space Harbor; 1989: A third runway, Runway 20/02, is built. Web posted. (2008). [White Sands Space Harbor could close [Online]. Available WWW: <http://www.lcsun-news.com/> [2008, August 2].]

August 3: Third SpaceX rocket fails to orbit

SpaceX's third Falcon I rocket launched Saturday and failed to reach orbit after liftoff in the central Pacific. The company is working at Cape Canaveral's Launch Complex 40 to build a larger rocket that could carry cargo to the International Space Station. "A problem occurred with stage separation, causing the stages to hold together," according to the Kwajalein Atoll and Rockets_blog. "On the plus side, the new Merlin 1C engine in the first stage performed flawlessly. This engine will be used on Falcon 9, the SpaceX rocket that will take cargo to the International Space Station." Here's a statement from company owner Elon Musk: "It was obviously a big disappointment not to reach orbit on this flight [Falcon 1, Flight 3]. On the plus side, the flight of our first stage, with the new Merlin 1C engine that will be used in Falcon 9, was picture perfect. Unfortunately, a problem occurred with stage separation, causing the stages to be held together. This is under investigation and I will send out a note as soon as we understand exactly what happened. Web posted. (2008). [Third SpaceX rocket fails to orbit [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, August 3].]

Ashes lost in rocket mishap

The ashes of two American space icons were scattered over the Pacific instead of in orbit during the loss of a third SpaceX Falcon 1 rocket this weekend. The orbit-bound, cremated remains of Mercury astronaut Gordon Cooper and actor James Doohan, who portrayed "Scotty" on the famed television and movie series "Star Trek" -- as well as the ashes of 206 other people -- returned to Earth when the first and second stages failed to separate properly and the rocket was destroyed. "The ashes rode with the rocket for over two minutes and then scattered over the ocean," SpaceX spokesman Diane Murphy said. The lost rocket also carried two small NASA satellites and a Department of Defense payload that the government had paid \$4 million to fly to space. None of the rocket's cargo will be retrieved. "Both stages are sleeping with the fishes," Elon Musk, SpaceX chief executive, said. "It's most definitely lost." Web posted. (2008). [Ashes lost in rocket mishap [Online]. Available WWW: <http://www.floridatoday.com/> [2008, August 6].]

USAF To Launch First Spaceplane Demonstrator

The Air Force is preparing for the Atlas V launch in December of the first U.S. robotic military spaceplane mission into orbit. The X-37B Orbital Test Vehicle flight will mark a fundamental technology milestone for the Air Force. It will carry on winged hypersonic space vehicle technology as the space shuttle is canceled. This work is designed to propel the Air Force mission more rapidly - to where the blue sky turns to black - using a reusable hypersonic craft serviced on the ground just like an airplane. In the future, this could lead to military spaceplane capability for the same kind of rapid access to the blackness of space that the Air Force already has to the blue sky - for the same offensive and defensive missions, including intelligence, strike and communications services to the military as a whole. The 11,000-lb. Boeing Phantom Works vehicle is about 29 ft. long with a roughly 15-ft. wingspan; the vehicle height is 9.6 ft. Its 205-ft.-tall Atlas V 501 booster will lift off from Launch Complex 41 here on 1 million lb. thrust. The 501 version with no solid rocket motors can carry up to 10.6 tons to low Earth orbit. The orbital test vehicle will be carried under a shroud on the United Launch Alliance booster. Once in orbit, the spacecraft will open a small payload bay and deploy a gallium arsenide solar array to power its flight. The exact mission duration is classified. The X-37B is designed for multiple missions, moving X-plane flight testing into space from the ground. Web posted. (2008). [USAF To Launch First Spaceplane Demonstrator [Online]. Available WWW: <http://www.aviationnow.com/> [2008, August 3].]

August 4: NASA Awards Medical and Environmental Support Contract

NASA has selected Innovative Health Applications, LLC, or IHA, of Cape Canaveral, Florida, to provide medical and environmental services at NASA's Kennedy Space Center, Fla. The contract begins on Oct. 1, with a five-year base period, followed by two one-year options. It is a cost plus award fee contract. The maximum potential value of this contract is approximately \$163.5 million. Innovative Health Applications will provide medical services, environmental health services, environmental services, and agency occupational health program support at Kennedy. Selected services also will be provided to the U.S. Air Force at Cape Canaveral Air Force Station. The company will furnish resources, including management, personnel, equipment and supplies to support Kennedy's work at the station. ["NASA Awards Medical and Environmental Support Contract," **NASA Contract Release #08-042**, August 4, 2008.]

Atlantis tank hooked up to twin boosters

The external tank for shuttle Atlantis' upcoming flight was mated to twin solid rocket boosters at Kennedy Space Center over the weekend, keeping NASA on track for the planned Oct. 5 launch of seven astronauts on the agency's fifth and final Hubble Space Telescope servicing mission. Crane operators with United Space Alliance lifted the 15-story tank Sunday and then lowered it onto a mobile launcher platform inside the Vehicle Assembly Building. The tank was hard-mated with two boosters last night, and close-out work is under way today. NASA and its prime shuttle fleet operator are trying to move up the Atlantis launch from Oct. 8, and the mating operation was carried

out four days ahead of schedule. The orbiter Atlantis is tentatively scheduled to be rolled out of its processing hangar and into the assembly building on Aug. 18, and the fully assembled shuttle is targeted to roll out to launch pad 39A on Aug. 25. "We're actually still very much on track," said KSC spokesman Allard Beutel. "We're still in very good shape." NASA aims to move up the launches of its next two missions in hopes of getting the second one off the ground before a window of opportunity closes in late November. Endeavour is scheduled to fly an International Space Station outfitting mission and it must be under way by Nov. 24 or it will be postponed until early 2009. The sun angle on the station between Nov. 25 and Dec. 17 will be such that the outpost would be unable to generate enough power, or dispel enough heat, to support a docked shuttle mission, and NASA would not launch the flight over the Christmas and New Years holidays. Endeavour is scheduled to launch Nov. 10, but NASA plans to move the flight up to Nov. 7. Senior NASA managers will meet Aug. 14 to decide whether the Atlantis and Endeavour launches can be targeted for Oct. 5 and Nov. 7. Web posted. (2008). [Atlantis tank hooked up to twin boosters [Online]. Available WWW: http://www.floridatoday.com/the_flame_trench_blog [2008, August 4].]

Flame trench repairs finished this week

NASA contractors expect the \$2.7 million repair job in the flame trench at Pad 39A to be complete by mid-week. "They finished the Fondu Fyre application last week, which obviously is a little ahead of what we were hoping for," NASA spokesman Allard Beutel said. A large section of fire bricks in the flame trench wall was blown off the concrete backing by rocket exhaust during the launch of Discovery on May 31. Contractors removed more than 10,000 fire bricks, attached a metal grid and applied a spray-on, fire resistant concrete called Fondu Fyre. The job will be completed well in advance of the Oct. 8 launch of Atlantis for a mission to refurbish the Hubble Space Telescope. Web posted. (2008). [Flame trench repairs finished this week [Online]. Available WWW: http://www.floridatoday.com/the_flame_trench_blog [2008, August 4].]

August 5: IBEX testing at Vandenberg scheduled this week

The Interstellar Boundary Explorer, or IBEX, spacecraft arrived at Vandenberg Air Force Base in California on July 28. It was taken to the Astrotech Space Operations facility for processing. The following day the spacecraft was removed from its shipping container and placed on a test stand in the clean room high bay. IBEX was powered on July 31 to begin the state-of-health checks of the spacecraft's operating systems. This week, testing of the spacecraft science instruments is scheduled. At the Orbital Sciences launch vehicle hangar, prelaunch processing of the Pegasus XL rocket is under way. Work to attach the second and third stages is scheduled to begin Aug. 6. Integration of the first and second stages is planned to start Aug. 8. Fairing preparations also are scheduled to begin this week. ["IBEX testing at Vandenberg scheduled this week," **KSC Countdown**, August 5, 2008.]

JSC closes as Edouard approaches

NASA's Johnson Space Center will remain closed today as a result of Tropical Storm Edouard, which churned toward the Gulf Coast Monday and threatened to reach near-hurricane strength. The Mission Control Center will remain staffed to provide flight control support for the International Space Station and crew aboard the outpost. Some 3,000 civil service and 12,000 contractors were released Monday as Edouard made its way toward the expected landfall between western Louisiana and east Texas. NASA plans to reopen the center on Wednesday. ["JSC closes as Edouard approaches," **Florida Today**, August 5, 2008, p 5A.]

NASA to Broadcast Historical Highlights in High Definition

NASA Television will broadcast a special high definition (HDTV) feed of two hours of highlights from America's human spaceflight history as the agency celebrates its 50th anniversary. ["NASA to Broadcast Historical Highlights in High Definition," **Media Advisory #M08-148**, August 5, 2008.]

August 6: Plasma Rocket May Be Tested at Space Station

NASA is considering flying a prototype plasma rocket engine designed by a former astronaut to the International Space Station for testing, officials said Wednesday. The engine is called a Variable Specific Impulse Magnetoplasma Rocket, or VASIMR. Rather than heating chemicals and directing the resulting gases through high-temperature metal nozzles, VASIMR uses radio waves to create and speed up free-flying, electrically charged particles known as plasma. The concoction is then herded through nozzles made of magnetic fields, not metals like traditional rocket engines. Seven-time shuttle flier Franklin Chang Diaz worked on the rocket at NASA until 2005 when he left to start the Ad Astra Rocket Co. of Webster, Tex., to continue its development. The privately financed venture has invested about \$25 million so far in VASIMR. NASA has continued to support the project by lending equipment, lab space and personnel. Now Ad Astra is in negotiations with the U.S. government to mount its rocket engine to the space station for testing. The engine is designed to work only in the vacuum of space. With the space shuttles due to retire in 2010, Glover said launch options include Japan's cargo hauler, the HTV, which is due for its debut flight next year. The firm also is in informal talks with potential commercial launch service providers in the United States. NASA is hoping to turn over station cargo delivery services to the commercial sector after the shuttle's retirement but currently none have demonstrated the capability to undertake the work. NASA is backing efforts by two potential providers, Space Exploration Technologies and Orbital Sciences Corp. Web posted. (2008). [Plasma Rocket May Be Tested at Space Station [Online]. Available WWW: <http://dsc.discovery.com/> [2008, August 7].]

Thrust transient cause of Falcon 1 failure

A thrust transient after the first stage main engine shut down is being blamed for the failure of the latest Falcon 1 launch, SpaceX announced Wednesday. The transient, created by fuel used to cool the engine and residual oxygen, pushed the stage forward and into the second stage after the two stages separated. The vehicle's design had already taken a thrust transient into account and put a brief pause between engine shutdown and stage separation, but the transient was longer than expected, and traced to the use of a regeneratively-cooled engine rather than an ablatively-cooled engine used in the previous two Falcon 1 launches. SpaceX said no design changes other than increasing the timing between engine cutoff and stage separation is needed to deal with the problem, and another launch, carrying no satellites, could take place as soon as late September. Web posted. (2008). [Thrust transient cause of Falcon 1 failure [Online]. Available WWW: <http://www.spacetoday.net/> [2008, August 7].]

August 7: Space Flight lands Launch Complex 36

A historic launch complex at Cape Canaveral Air Force Station is being licensed to the state of Florida as part of a plan to develop a commercial launch zone within the military rocket range that has served NASA and the Pentagon since the dawn of the Space Age. Subject to the completion of an environmental impact analysis, Launch Complex 36 will be rebuilt as an embarkation point for multiple small to medium-sized rockets capable of carrying commercial satellites and science payloads into low Earth orbit and beyond. A \$14.5 million appropriation from the state Legislature earlier this year will enable the state to forge ahead with the design of the complex as well as site preparation. The complex would be the heart of a commercial trade zone that would provide companies with tariff and tax relief, advantages that should make the state more competitive in a crowded global commercial launch services market. The state secured a five-year license similar to the deal struck between the Air Force and Space X for the use of Launch Complex 40 at Cape Canaveral. The license can be extended at the end of the period. The Air Force said Space Florida will be responsible for "developing, managing and paying for operations and maintenance of the facility, being the broker for the facility, complying with all required real property, environmental, safety, security, and all other tenant requirements, and reimbursing the Air Force for the services

Space Florida uses." Web posted. (2008). [Space Florida Lands Launch Complex 36 [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, August 7].]

August 8: Aerospace vets earn honor

Three aerospace veterans who led illustrious careers will be honored next week with the 2008 Lifetime Achievement Awards from the National Space Club Florida Committee. The highly coveted awards, which are bestowed on Floridians who have made important contributions to the U.S. space program, this year will go to William "Bill" Heink, Albert "Al" Koller and Harold Zweigbaum. Those honored must be long time contributors to the nation's space program, either at NASA's Kennedy space Center or Cape Canaveral Air Force Station, which is operated by the Air force 45th Space Wing. ["Aerospace vets earn honor," **Florida Today**, August 8, 2008, p 3B.]

Expendable Launch Vehicle Status Report

Status Report: ELV-080808. Mission: IBEX (Interstellar Boundary Explorer); Launch Vehicle: Pegasus XL (Orbital Sciences); Launch Facility: Reagan Test Site, Kwajalein Pacific Atoll; Launch Date: Oct. 5, 2008; Launch Window: 12:42 p.m. - 12:45 p.m. EDT (04:42 a.m. - 04:45 a.m. local Kwajalein time). At Vandenberg Air Force Base in California this week, the IBEX spacecraft is undergoing testing of its science instruments. On Monday, Aug. 11, the spacecraft will be fueled. Meanwhile, the upper stage motor was spin-balanced on Aug. 7. This will be followed by spacecraft spin balancing on Aug. 14. On Aug. 15, IBEX will be mated to the upper stage, and the integrated stack spin-balanced the following day. At the Orbital Sciences launch vehicle hangar, prelaunch processing of the Pegasus XL rocket continues on schedule. Mating of the second and third stages is under way. Mating of the first and second stages is scheduled for next week. The L-1011 carrying the Pegasus XL rocket with IBEX is currently planned to depart from Vandenberg on Sept. 25. After a stop in Hawaii, the flight will continue and arrive at the Reagan Test Site at Kwajalein Atoll in the south Pacific on Sept. 26. Web posted. (2008). [Expendable Launch Vehicle Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/launchingrockets/status/2008> [2008, August 8].]

August 10: KSC jobs meeting goes interactive

The future of the space industry, which is sure to include job losses, will be the topic of an interactive town hall meeting at 5 p.m. Wednesday. The public will be able attend the meeting at Titusville City Hall or ask questions online, while watching the meeting on Titusville Government TV, available on BrightHouse channel 199. "It's a first," said Jim Thomas, head of community relations for Titusville. "With the economy falling, I suppose it will get a lot of interest." Panelists include U.S. Rep. Tom Feeney; Marsh Heard, chairman of the Florida Aviation Aerospace Alliance; Frank DiBello, Economic Development Commission consultant; and Steve Kohler, president of Space Florida. Kennedy Space Center director Bill Parsons is scheduled to attend. With the shuttle program ending in 2010, KSC faces the loss of up to a third of its 15,000 workers. Both presidential candidates have pledged to support NASA. However, details of their support are unclear and could still mean huge job losses at KSC. Web posted. (2008). [KSC jobs meeting goes interactive [Online]. Available WWW: <http://www.floridatoday.com/> [2008, August 10].]

August 11: Adviser: Obama may boost NASA budget

Sen. Barack Obama is open to increasing NASA's budget and finds it unacceptable to lose 6,400 jobs at Kennedy Space center as the shuttle stops flying, one of his policy advisers told a group of space industry officials Tuesday. "The job concern is obviously big," said Iian Bassin, Obama's Florida policy director. About two dozen space industry officials met with Bassin on Tuesday. Bassin said Obama is committee to the U.S. space program. ["Adviser: Obama may boost NASA budget," **Florida Today**, August 13, 2008, p 1A & 3A.]

Crist lauds plan for commercial launches

Gov. Charlie Crist called a plan to beef up an abandoned launch pad for commercial use “historic” and said Monday that he was as confident as ever about the future of Florida’s Space Coast. A deal between state officials and the Air Force means that Launch Complex 36 at Cape Canaveral Air Force Station, which hasn’t been used since 2004, will be made into a modern liftoff site for private companies. The launch pad is currently a small cinder-block building and a concrete pad amid a 138-acre field. Refurbishing will add a tower to hold the rockets and flame trenches to absorb the launch, among other improvements. The pad, first used by NASA in 1961, will be able to accommodate various types of rockets and therefore launch more frequently. [“Crist lauds plan for commercial launches,” **Orlando Sentinel**, August 12, 2008, p B1 & B2.]

NASA: Space shuttle replacement won't fly until 2014

NASA has put off the planned launch of its next-generation Orion spacecraft for a year, a setback to efforts to fly a successor to its aging space shuttles, the space agency announced Monday. "September 2014 is when we are saying we will launch the first crew on the Orion," program manager Jeff Hanley told reporters in a conference call Monday. NASA officials plan to wrap up assembly of the International Space Station and retire the space shuttle fleet in 2010, freeing up money to build and fly the new spacecraft. Cost concerns are at the root of the delay, but NASA is also giving itself wiggle room to deal with the unforeseen technical problems that will inevitably crop up, Hanley said. "It's the unknown unknowns that we have to hedge against," he said. "Having some number of months of schedule flexibility to meet our commitment, in addition to having some number of months of cost -- dollars -- flexibility, is key to keeping ourselves in a healthy posture." Orion is designed to ferry astronauts to and from the space station and eventually back to the moon. Orion is a capsule that will parachute to a landing at Edwards Air Force Base in California. The new goal of September 2014 is a year later than NASA had planned to launch the first Orion, but still six months short of the March 2015 commitment date set by Congress. Program managers were hoping to fly the new vehicle much sooner than that to keep the gap between the last shuttle flight and the first Orion flight to a minimum. "As we looked at the plan we had for September 2013 against the available dollars, it became clear to us that we needed to adjust our schedules," said Hanley. Web posted. (2008). [NASA Space Shuttle replacement won't fly until 2014 [Online]. Available WWW: <http://www.cnn.com/> [2008, August 11].]

Aerospace safety Advisory Panel Releases Annual Report

The Aerospace Safety Advisory Panel, or ASAP, has released its 2007 Annual Report. The report examines NASA's safety performance and advises the agency on ways to better that performance. In addition to safety culture, NASA Administrator Michael Griffin has specifically requested advice from the ASAP on technical authority, workforce and risk management. [“Aerospace Safety Advisory Panel Releases Annual Report,” **Media Advisory #M08-152**, August 11, 2008.]

NASA vessel's safety questioned

NASA is not properly emphasizing safety in its design of a new spaceship, and its return-to-the-moon program faces money, morale and leadership problems, an agency safety panel found Monday. The Aerospace Safety Advisory Panel cited “surprising anxiety among NASA employees” about the Constellation moon program and said the project “lacks clear direction.” Its 143-page annual report specifically faulted the agency’s design of the Orion crew capsule for not putting safety features first. Officials in charge of the program, defending the design safety at a news conference, wouldn’t say whether astronauts are among the worried employees. Astronauts would have to fly in the Orion crew capsule, with a first launch planned by 2015. Past NASA spaceships were built with enough backup safety systems “to ensure safety and reliability,” from the start, the report said. But it said because of weight problems with the Orion design, NASA has used a different approach, one “without all safeguards included” from the beginning. NASA’s Constellation program officials

defended the safety of the still-evolving spaceship design but acknowledged that some NASA employees are unhappy with it. Because it is so difficult and expensive to send a rocket to the moon and back, designers start with the minimum necessary and then improve it in areas that give the greatest return for the money and added weight, Constellation program manager Jeff Hanley said. "That has made some folks uncomfortable, but guess what? We're not done yet," Hanley said Monday. ["NASA vessel's safety questioned," **Orlando Sentinel**, August 12, 2008, p A2.]

August 13: Chess in Space: Houston, we have a checkmate

For more than a thousand years, the game of chess and its predecessors have been played on park tables, in homes, at schools and, in modern times, even on television and in arenas as a spectator sport. But chess has now taken the next giant leap in a match that pits space against Earth. NASA astronaut and chess aficionado Greg Chamitoff, speeding around the Earth at five miles a second aboard the International Space Station, is in the midst of a chess game with mission control centers. Unfortunately for the ground, failure may be an option in this case: As the game enters its final stages, Chamitoff appears to be winning. Chamitoff brought a chessboard with him to the orbital complex on the space shuttle in June. Aboard the station, he is supported by control centers at sites around the world – including Houston, Moscow, Japan and Germany. The centers take turns making moves against Chamitoff. Each center maintains a chess board showing the game's status. Chamitoff introduced the Earth vs. space chess match in a daily tag-up held with control centers to address questions regarding the day's work. "Greg really has achieved his goal by getting us to realize that we can't beat him as a team unless we work together," said Heather Rarick, the lead flight director for Expedition 17. "This competition with the crew has been well received. The competition is definitely good for the team since we work together using skills we otherwise wouldn't get to share, we learn more about each other as well as the crew." Web posted. (2008). [From the NASA ISS report of August 13, 2008 [Online]. Available WWW: <http://www.chessbase.com/> [2008, August 13].]

August 14: Moon mission delayed until 2009

NASA has delayed the launch of an unmanned spacecraft to the moon to scout for potential landing sites for astronauts. The moon craft is the first step in NASA's program to send astronauts back to the moon and beyond. The Lunar Reconnaissance Orbiter was supposed to blast off from Cape Canaveral, Florida, in early December aboard an Atlas V rocket. But the launch was pushed back after NASA agreed to swap with the Air Force, which will fly a prototype space drone. NASA spokesman Grey Hautaluoma said the new launch window, which opens February 27, 2009, relieves schedule pressure and provides more launch opportunities. "When we looked at the trade-offs ... it seemed like a wise thing to do," he said this week. NASA officials insist they could have met the original target. The delay will cost the space agency up to \$7 million a month. Hautaluoma said the extra costs were built into the program's reserves. The swap means NASA will miss the Bush administration's stated goal of exploring the moon with a robotic spacecraft by 2008. NASA plans to land astronauts on the moon by 2020. According to NASA, the rocket's maker, United Launch Alliance, approached the space agency about switching launch dates with the Air Force, which was prepared to fly its X-37B reusable unmanned satellite. Web posted. (2008). [Moon mission delayed until 2009 [Online]. Available WWW: <http://www.cnn.com/> [2008, August 14].]

Feeney: Jobs won't magically reappear

The Space Coast's launch industry can diversify to keep employment high when the shuttle stops flying in 2010, but the task will be slow and arduous. "We're not going to wave a wand and get 6,500 jobs," said U.S. Rep. Tom Feeney, R-Oviedo. "We can do it bit by bit." Feeney, who represents the 24th Congressional District, appeared Wednesday at an interactive town hall meeting in Titusville. Some questions were submitted by e-mail during the broadcast forum. NASA's most recent analysis estimates that 3,000 to 4,000 jobs will be lost at Kennedy Space Center after the 2010 retirement of the shuttle fleet. The panelists agreed that those losses cannot be reversed but that other high-paying

jobs could be attracted. In his opening remarks, Kennedy Space Center Director Bill Parsons said KSC must focus on the remaining 10 shuttle missions. "Without flying those missions safely, there may not be the next program," Parsons said. Parsons and Feeney were joined by Space Florida President Steve Kohler, Economic Development Commission consultant Frank Dibello and Marshall Heard, chairman of the Florida Aviation Aerospace Alliance. Concern focused on the five-year gap in U.S. manned space flight between the shuttle's retirement and the development of the Constellation program, which has been under funded. Constellation, which is running a year behind schedule, will launch a test rocket next year. Many people at KSC already are working on Constellation, the next generation of U.S. rockets. "I don't want us to concentrate on retiring the shuttle because we're really transitioning to the next vehicle," Parsons said. During the gap, the United States will depend on the Russian Soyuz capsule for transport to the \$100 billion International Space Station. Web posted. (2008). [Feeney: Jobs won't magically reappear [Online]. Available WWW: <http://www.floridatoday.com/> [2008, August 14].]

Experts: Reliance on Russia makes NASA weak

Experts are growing increasingly concerned that the United States will have to rely entirely upon Russia to take astronauts to and from the international space station for at least five years. Observers say the situation is all the more worrying as after NASA announced a delay in the launch of its next-generation Orion spacecraft. NASA's dependency upon the Russian Soyuz space capsules and rockets to carry astronauts to the station is the result of a five-year gap between the scheduled retirement of the shuttle in 2010 and the debut of its replacement in 2015. The agency had hoped it could narrow this gap by accelerating the initial launch of the craft to 2013 but announced Monday that because of inadequate funding and technical issues, the Constellation space program would not be ready for testing until September 2014. Although the new date is still within the March 2015 absolute deadline, many experts say NASA's reliance upon Russia to take astronauts into space has placed the agency in an unnecessary position. "It is a vulnerability," said John Logsdon, director of the space policy institute at George Washington University. "Any time you are relying on a single system to do a critical task, you are vulnerable if that system has problems. According to Howard McCurdy, a space expert at American University in Washington, Russia will be the only country capable of providing human access to space not only for the Americans but for the rest of the world in the near future. "It is like a monopoly position where you are at the mercy of that supplier," McCurdy said. "You don't want to be dependent on a single provider, no matter who it is." McCurdy warned that because the United States has positioned itself to be completely dependent on Russia to get humans into space until 2015, it may be harder for the American government to take diplomatic action against the country, especially in light of recent tensions between Russia and Georgia. "That is a real concern," McCurdy said. "You are much more reluctant to be nasty with somebody who is a sole provider of an essential service. "We have other international arrangements with them that could be jeopardized by our reliance on them," McCurdy continued. "Everything from their foreign relations with ex-Soviet states to their role in economic summits." Does NASA's dependence on Russia bode badly for U.S. space program? For its part, NASA says it remains confident that diplomatic affairs between the two countries will not adversely impact the space agency's relationship with Russia. "While it is possible that government to government issues could potentially have an impact on other aspects of a relationship between nations including cooperative space exploration activities, NASA has no reason to believe that it will be unable to rely upon Roscosmos-provided Soyuz vehicles for future ISS activities," spokesman Michael Curie wrote in an e-mail statement to CNN. "If our relationship with Russia is strained, who knows if Russia will give us rides in the future?" Nelson asked. "Or if they give us rides, will they charge such an exorbitant price that it becomes blackmail?" Questions about the safety and reliability of the Soyuz have also been raised in recent months after two consecutive troublesome landings by space capsules, including in April with American astronaut Peggy Whitson on board. NASA has been working with Russian engineers to try to determine the cause of the dangerous descents but has failed come up with any

concrete answers. But NASA officials say the space agency still believes that the Soyuz is a reliable transport system for its astronauts. "We do not have concerns," NASA spokesman Rob Navias said. "The Soyuz, which has been flying for decades now, is extremely reliable and is extremely capable." "We have been partnering with the Russians for decades now for space flights." The Russian Federal Space Agency, Roscosmos, could not be reached for comment on the matter. Web posted. (2008). [Experts: Reliance on Russia makes NASA weak [Online]. Available WWW: <http://www.floridatoday.com/> [2008, August 14].]

August 15: United Space Alliance Files Lawsuit Against ATK

United Space Alliance (USA), NASA's prime Space Shuttle contractor, filed a lawsuit in Brevard County Circuit Court in Florida today against Alliant Techsystems, Inc., and ATK Launch Systems, Inc., seeking damages for fraud and breach of contract, and seeking an injunction against further piracy of USA employees with skills essential to flying out the Space Shuttle manifest. USA has been operating under a letter contract with ATK since 2006 for services supporting the design and development of NASA's Ares I first stage project. The Ares rocket is part of NASA's next phase of human exploration, known as Constellation, and is based on the use of Space Shuttle solid rocket boosters. The lawsuit is in response to ATK's failure to negotiate a long-term contract in good faith during the past two years. More importantly, ATK concurrently undertook an aggressive campaign to hire critically skilled USA employees, who have been performing specialized work in support of both the Ares and Space Shuttle programs in order to solely perform work on Ares. "USA's number one priority is to continue to fly the Space Shuttle safely and successfully until it is retired. At the same time, we are fully committed to helping our customers bring the new Constellation elements online. It is essential to preserve and protect the skilled and experienced workforce that will be needed to accomplish both of these objectives, and to ensure that the transition of those critical skills to the new programs does not in any way jeopardize the current program," said Richard O. Covey, USA's Chief Executive Officer. Web posted. (2008). [United Space Alliance Files Lawsuit against ATK [Online]. Available WWW: <http://www.spaceref.com/> [2008, August 15].]

NASA leaves shuttle launch dates unchanged

NASA shuttle managers on Thursday decided against moving up the launch dates of the next two shuttle missions by a few days each. Shuttle managers had considered moving up the launch of the shuttle Discovery on mission STS-125 from October 8 to as early as October 2, while moving up Endeavour's launch on mission STS-126 from November 10 to as early as November 4. Moving up the launch dates would have extended the launch window for STS-126, which closes on November 25. However, payload delivery delays for STS-125, the Hubble repair mission, made an earlier launch infeasible, and lost training time earlier this month when the Johnson Space Center was closed for a tropical storm kept NASA from moving up the launch of STS-126, an ISS assembly mission. Web posted. (2008). [NASA leaves shuttle launch date unchanged [Online]. Available WWW: <http://www.spacetoday.net/> [2008, August 15].]

NASA KSC Awards Custodial Services Contract

NASA has selected Brevard Achievement Center Inc., of Rockledge, Fla., to provide custodial services at NASA's Kennedy Space Center, Fla. The new firm-fixed price contract begins on Oct. 1, 2008. It has a one-year base period and four, one-year option periods. The maximum value of the contract is approximately \$41 million. Brevard Achievement Center will provide custodial services for approximately 2.6 million square feet of general office, shop, warehouse and support areas at the space center. ["NASA Kennedy Space Center Awards Custodial Services Contract," **Contract Release #C08-052**, August 15, 2008.]

Expendable Launch Vehicle Status Report

Status Report: ELV-081508. Mission: IBEX (Interstellar Boundary Explorer); Launch Vehicle: Pegasus XL (Orbital Sciences); Launch Facility: Reagan Test Site, Kwajalein Pacific Atoll; Launch Date: Oct. 5, 2008; Launch Window: 12:42 p.m. - 12:45 p.m. EDT (04:42 a.m. - 04:45 a.m. local Kwajalein time). At Vandenberg Air Force Base, Calif., the IBEX spacecraft was fueled with hydrazine control propellant on Aug. 12. This was followed by spacecraft spin balancing on Aug. 14. Friday, IBEX is scheduled to be attached to the upper stage booster. Technicians will then perform a final spin-balance test of the entire flight stack on Aug. 16. After de-integration, the upper stage will be transported to the Pegasus launch vehicle hangar on Aug. 19. The IBEX spacecraft will be moved there on Aug. 20. At the Orbital Sciences launch vehicle hangar, prelaunch processing of the Pegasus XL rocket continues to occur on schedule. Mating of the first and second stages was completed yesterday. Attachment of the second and third stages was done on Aug. 12. The L-1011 aircraft carrying the Pegasus XL rocket with IBEX currently is planned to depart from Vandenberg on Sept. 25. After a stop in Hawaii, the flight will continue and arrive at the Reagan Test Site at Kwajalein Atoll in the south Pacific on Sept. 26. Web posted. (2008). [Expendable Launch Vehicle Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/launchingrockets/status/2008> [2008, August 15].]

August 19: Tropical storm closes KSC, delays Atlantis move to VAB

Tropical Storm Fay forced the closure of the Kennedy Space Center in Florida Aug. 19, delaying a key milestone in the preparation of the orbiter Atlantis for launch on its Hubble Space Telescope servicing mission planned for Oct. 8. Atlantis was to have been rolled on Aug. 19 over to the Vehicle Assembly Building (VAB) from the nearby Orbiter Processing Facility (OPF) where it has been undergoing preparation for the launch. Once in the VAB, Atlantis will be stacked on its external tank and solid rocket boosters then rolled to Launch Complex 39A. The rollover delay also will affect the timing of Atlantis' stacking in the VAB and its rollout to the pad. Whether it will affect the launch date, however, is yet to be determined by shuttle program officials. Normally there is enough slack in a shuttle pad flow to allow for some weather delays without necessarily affecting the launch date. In addition to potential delays caused by Fay, the Atlantis launch timing will also be tied to the ability to complete OPF processing, VAB stacking and rollout to Launch Complex 39B of the orbiter Endeavour, which will be a pad-ready rescue vehicle for the Atlantis crew. Kennedy managers waited until the pre-dawn hours of Aug. 19 before deciding whether to tell Kennedy's nearly 15,000 government and contractor workforce to stay home. Management was evaluating whether the storm track might veer away from Kennedy, allowing a safe commute and work environment, but in the end Fay turned more east and is forecast to pass directly over the launch site with flooding rains and winds gusting to 40 mph. The storm will arrive later than expected, however, possibly delaying the start of the Kennedy work day on Aug. 20. Personnel at nearby Cape Canaveral Air Force Station and its expendable vehicle launch pads and the workforce at Patrick Air Force Base were also given the day off except for essential personnel. E-mail distribution. (2008). [Aviation Week's [Aerospace Daily & Defense Report](#) Re: "Tropical storm closes KSC, delays Atlantis move to VAB," [Electronic]. Vol. 227, No. 36, [August 20, 2008].]

Shuttle flight to gather data on crew vibration effects

When shuttle Discovery blasts off on STS-119 next year, three of the astronauts' chairs will have instruments installed to gather data for the Ares/Orion programs on the intensity of vibrations during ascent. Slated for no earlier than Feb. 12, 2009, STS-119 will install the final truss element and final set of solar arrays on the International Space Station. The mission will lift off with three mission specialist seats equipped with triaxial accelerometers that will be removed and stowed after the shuttle reaches orbit. During launch, the crew also will be asked to carry out an eyesight test to see how well they can read Orion-like displays while experiencing ascent vibrations. The eye chart will be placed in front of the astronauts on the wall of the middeck. The purpose of these tests is to help the Constellation program understand the possible effects of vibration on future Orion crews as

they ride their shuttle-derived Ares I solid booster to orbit for missions to the space station or the lunar surface. Constellation is aiming to get the vibration loads in the Orion capsule down to 0.25 Gs or lower during launch. At that level, there are no concerns about the astronauts' health, but NASA is still concerned about possible after-effects on performance, according to Garry Lyles, associate director for technical management at Marshall Space Flight Center. "We want them to feel good after separation, and in times when they might have to respond," Lyles said during a news conference Aug. 19. Oscillations of 11-12 Hz or higher can effect eyesight or even speech, Lyles said. "Your body, especially your eyes, are sensitive to these frequency bands." Concerns about thrust oscillation have led Constellation engineers to pursue a two-pronged approach to dampening vibration that includes installing active tuned mass absorbers on the aft skirt of the first stage and a shock-absorbing ring between the first and upper stage. E-mail distribution. (2008). [Aviation Week's Aerospace Daily & Defense Report Re: "Shuttle flight to gather data on crew vibration effects," [Electronic]. Vol. 227, No. 36, [August 20, 2008.].]

NASA Kennedy Space Center Partly Reopens

NASA's Kennedy Space Center, Fla., will reopen Thursday at 10 a.m. EDT for "mission essential" personnel. Kennedy has been closed since Tuesday because of Tropical Storm Fay, which is continuing to bring heavy rain and wind to the region. Individual center supervisors will define which workers are considered "mission essential." These will include employees who are needed to ensure center infrastructure is safe and working, and personnel who process spaceflight hardware, such as space shuttles and Hubble Space Telescope equipment. A liberal leave policy for employees will be in effect Thursday. Kennedy Space Center Visitor Complex will remain closed Thursday, but reopen on Friday. Based on initial assessments, there are no injuries, damage to flight hardware or flooding associated with Fay at the center. Only minor damage has been seen on a few facilities, including the Vehicle Assembly Building, which lost one exterior panel from its east side. About 200 emergency personnel, known as a "ride-out crew," will remain on-site overnight into Thursday morning to provide real-time storm assessments. ["NASA Kennedy Space Center Partly Reopens," **Press Release #08-210**, August 20, 2008.]

August 21: NASA Kennedy to Reopen for Normal Operations Friday

Managers at NASA's Kennedy Space Center, Fla., plan to reopen the center for normal operations Friday morning for workers' first shift. A slow-moving Tropical Storm Fay has kept Kennedy closed since Tuesday. The Kennedy Space Center Visitor Complex also will reopen Friday. The center was set to open Thursday morning for limited operations, but Fay stalled off the coast from Kennedy overnight and continued to bring heavy rain and tropical storm force wind to the area through mid-day. Based on initial assessments, there is no damage to space flight hardware, such as the space shuttles and Hubble Space Telescope equipment. Some facilities did sustain minor damage. Most reports are of water intrusion that will require mopping up. A group of emergency personnel, known as a "ride-out crew," has been on-site since Tuesday and will remain on-duty until Friday morning to provide real-time assessments. ["NASA Kennedy to Reopen for Normal Operations Friday," **Press Release #08-212**, August 21, 2008.]

Wallops suborbital launch will carry re-entry probes

An Alliant Techsystems ALV-X1 launcher is set to carry two hypersonic and re-entry experiments on a suborbital mission from NASA's Wallops Flight Facility in Virginia on Aug. 22. The 55-foot tall, two-stage ALV-X1 will carry the Hypersonic Boundary Layer Transition (HyBolt) experiment for NASA's Langley Research Center and the Sub-Orbital Aerodynamic Re-entry Experiment (SOAREX) for Ames Research Center on a 1,000-mile flight downrange. Part of NASA's Fundamental Aeronautics Program, HyBolt will study boundary layer heating. SOAREX will obtain basic aerophysics data for advanced planetary probes, specifically for developing simplified entry, descent and landing payloads for Mars missions. Langley is interested in a self-stabilizing design that's

shaped like a badminton shuttlecock with the weighted payload at the front and a flared stabilizing ring at the rear. Also aboard is a University of Idaho student probe that will collect real-time atmospheric density data during descent. The one-hour launch window begins at 5:10 a.m. and the launch is expected to be visible in the mid-Atlantic region. Backup days are Aug. 22-25 with the launch window expanding to 3-6:10 a.m. E-mail distribution. (2008). [Aviation Week's Aerospace Daily & Defense Report Re: "Wallops suborbital launch will carry re-entry probes," [Electronic]. Vol. 227, No. 37, [August 21, 2008.].]

Lack of cash hurts NASA's tech plans

Tight budgets and uncertainty are hurting NASA's ability to develop cutting-edge technologies that are critical if the space agency is to send astronauts to the moon and Mars, according to a new oversight report. In 20 of 22 projects – ranging from heat shields to fission power – some form of "corrective action" is needed to meet President Bush's goal of returning astronauts to the moon by 2020, according to a panel of space experts for The National Academies, the country's top scientific-advisory group. It said the money to develop these technologies – NASA estimates it is spending \$400 million for the Exploration Technology Development Program – is inadequate, in an overall budget of about \$17.3 billion. The program is "operating within significant constraints which limit its ability to successfully accomplish [its] goals," the panel wrote. ["Lack of cash hurts NASA's tech plans," Orlando Sentinel, August 22, 2008, p A18.]

August 22: KSC reopens with minor damage

NASA's Kennedy Space Center reopened for the first shift Aug. 22 after being closed since Aug. 20 while Tropical Storm Fay stalled over Florida's Space Coast. Workers at nearby Cape Canaveral Air Force Station were advised to continue to "shelter in place" while supervisors met at the site to assess conditions for a return to normal operations. A so-called ride-out crew that remained on site at KSC throughout the storm reported "minor damage" to some facilities and some "water intrusion that will require mopping up," NASA reported. "Based on initial assessments, there is no damage to space flight hardware, such as the space shuttles and Hubble Space Telescope equipment," the agency reported. E-mail distribution. (2008). [Aviation Week's Aerospace Daily & Defense Report Re: "KSC reopens with minor damage," [Electronic]. Vol. 227, No. 39, [August 25, 2008.].]

Suborbital rocket explodes after liftoff

An ATK-developed suborbital rocket carrying two NASA experiments exploded shortly after liftoff from Virginia Friday morning. The ATK Launch Vehicle (ALV) X-1 lifted off from the Mid-Atlantic Regional Spaceport (MARS) at Wallops Island, Virginia, at 5:10 am EDT (0910 GMT) Friday but exploded 27 seconds after liftoff, according to a NASA statement. The cause for the explosion is not known. According to the statement most of the rocket debris fell into the Atlantic Ocean, although there were conflicting reports about whether any debris fell on land; that debris is considered hazardous and should not be approached by the public. The ALV was carrying two experiments, one to study the hypersonic boundary layer around the vehicle and the other to test a new design for reentry capsules, provided by NASA. The launch was the first for the two-stage solid-propellant vehicle, which was designed to lead to the development of a larger version for orbital launches of small satellites. Web posted. (2008). [Suborbital rocket explodes after liftoff [Online]. Available WWW: <http://www.spacetoday.net/> [2008, August 22].]

Atlantis rolls to assembly building

NASA rolled Atlantis from its processing hangar into the Kennedy Space Center Vehicle Assembly Building Friday, finally getting enough of a break from Tropical Storm Fay to move the spaceship from one building to another. The quarter-mile move set the stage for a huge milestone in just about seven days. Mated with an external tank and attached solid rocket boosters, the fully assembled shuttle will creep out to launch pad 39A for launch on NASA's fifth and final Hubble Space

Telescope service mission. Tropical Storm Fay lingered over central Florida and soaked KSC during the week, forcing NASA to close the nation's shuttle homeport just as Atlantis was ready to rollover Tuesday. More than a foot of rain poured down on parts of KSC -- much less than the 23 inches recorded on the south end of neighboring Cape Canaveral Air Force Station. A damage assessment and recovery team found no major damage when it surveyed the center after the storm passed Thursday. "There are some broken windows and there are some roof leaks," KSC spokesman Allard Beutel said. "But nothing major was reported." Web posted. (2008). [Atlantis rolls to assembly building [Online]. Available WWW: http://www.floridatoday.com/the_flame_trench_blog [2008, August 22].]

August 25: Atlantis attached to tank, boosters inside VAB

Atlantis is mounted to her external tank atop the mobile launcher platform and crews this morning are working on hooking up cables and other connectors. The work inside the Vehicle Assembly Building is expected to continue until late this week, when the shuttle processing team at the Kennedy Space Center hopes to roll the fully-assembled shuttle stack out to the pad. After losing most of last week to Tropical Storm Fay's lingering winds and rains, the shuttle team scurried back to work Friday and was able to roll the orbiter from its hangar to the VAB late Friday night. Work then began to mount the orbiter. The "soft mate" of the winged spaceship to the external tank took place Saturday and work is continuing to finish up all the connections necessary before the move out to the oceanfront pad. Launch still remains set for Oct. 8 officially, despite the loss of processing time. However, the preparation of the payload for the servicing mission to the Hubble Space Telescope as well as processing of a second shuttle for a possible rescue mission also must remain on track for the early October launch to get off on time. Web posted. (2008). [Atlantis attached to tank, boosters inside VAB [Online]. Available WWW: http://www.floridatoday.com/the_flame_trench_blog [2008, August 25].]

August 26: Astronaut health a blind spot for NASA exploration

A National Research Council (NRC) panel is faulting NASA for not systematically taking astronaut health and human factors into account in the early stages of its Exploration Technology Development Program (ETDP). "The committee did not find a high degree of awareness of the interdependencies between the ETDP technology projects and associated human health risks and human factor design considerations," the panel says in its report. The ETDP is developing enabling technologies to allow NASA to return astronauts to the moon and eventually send them to Mars. But NASA's own Bioastronautics Roadmap, as well as other documents related to astronaut health, "were not clearly identified as guiding requirements in the material presented to the committee," the report says. Since human health and human factor risks are intertwined with spacecraft and life support systems, design changes can have unanticipated results, according to the panel. The report cites as a "classic example" an effort by NASA to reduce the risk of water contamination onboard the space shuttle by adding iodine as a purifier. This resulted in a daily iodine intake that far exceeded recommended daily amounts and created chemical evidence of thyroid problems among astronauts. "ETDP project managers should clearly identify the interrelationships between human health and human factor risks and requirements on the one hand and technology development on the other and should ensure that those risks and requirements are addressed in their project plans," the report says. E-mail distribution. (2008). [Aviation Week's Aerospace Daily & Defense Report Re: "Astronaut health a blind spot for NASA exploration, panel says" [Electronic]. Vol. 227, No. 40, [August 26, 2008].]

McCain to Bush: Don't shut down shuttle

Presumptive Republican presidential nominee John McCain is asking the Bush Administration to leave open the option of flying the shuttle past 2010. In a letter dated Monday, McCain and U.S. Sens. Kay Bailey Hutchison and David Vitter raised concerns about an impending five-year gap in

U.S. human space flight -- a time when the nation will be solely reliant on Russia to taxi American astronauts to and from the \$100 billion International Space Station. "We believe that it is imperative, as NASA continues the transition from the Space Shuttle to successor vehicles, that the means for producing additional flight hardware and obtaining additional flight engineering and support services, not be completely and irretrievably lost through the destruction or deterioration, at least until a clear path to alternative launch capabilities is in hand," the letter says. The letter was dated one week after McCain made a campaign stop in Florida and met privately with Space Coast business leaders. The leaders recommended McCain take the same course of action outlined in the letter. Web posted. (2008). [McCain to Bush: Don't shut down shuttle [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, August 26].]

NASA Halts Shuttle Stacking Operation

An operation aimed at connecting Atlantis and an external tank was put on hold this morning after engineers ran into trouble hooking up a liquid hydrogen feedline that routes fuel to the shuttle's three main engines. The mating operation inside the Vehicle Assembly Building came to a halt when problems cropped up with an umbilical guidepin used to link the tank's 17-inch liquid hydrogen feedline with the orbiter's main propulsion system. The feedline is on the left aft side of the tank and connects with the system through a tile-covered door on the belly of the shuttle orbiter. Click to enlarge the NASA photo above and you can see the umbilical that connects the pipe with the orbiter main propulsion system on the lower right side of the tank. A guidepin within the umbilical is used to mate the feedline with the main propulsion system; then it is pulled out of an external tank side hole. Some metallic debris on the pin caused it to hang-up, and it could not be removed after the mating operation. Engineers demated the umbilical and are meeting with managers to determine a go-forward plan. It's unclear how long the mating operation might be stalled and whether plans to roll the shuttle out to pad 39A early Saturday might be affected. Web posted. (2008). [NASA Halts Shuttle Stacking Operation [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, August 26].]

Kennedy: Apollo program still an inspiration

Aspiring speechwriters take note: it's almost impossible to go wrong when equating the Apollo program to all good things American. On Monday, U. S. Sen. Ted Kennedy referenced Apollo in a speech that saluted presidential nominee Barack Obama, a candidate that some in the Democratic faithful have compared to President John Kennedy. It remains to be seen whether Obama would devote as much energy (and money) to return astronauts to the moon. Here's a cut from the transcript: "We are told that Barack Obama believes too much in an America of high principle and bold endeavor, but when John Kennedy called of going to the moon, he didn't say it's too far to get there. We shouldn't even try. Our people answered his call and rose to the challenge, and today an American flag still marks the surface of the moon. Yes, we are all Americans. This is what we do. We reach the moon. We scale the heights. I know it. I've seen it. I've lived it. And we can do it again." Web posted. (2008). [Kennedy: Apollo program still an inspiration [Online]. Available WWW: <http://www.orlandosentinel.com/> [2008, August 26].]

NASA Renames Observatory for Fermi

NASA announced today that GLAST [Gamma-Ray Large Area Space Telescope] has been renamed the Fermi Gamma-ray Space Telescope. The new name honors Prof. Enrico Fermi (1901 - 1954), a pioneer in high-energy physics. Scientists expect Fermi will discover many new pulsars in our own galaxy, reveal powerful processes near supermassive black holes at the cores of thousands of active galaxies and enable a search for signs of new physical laws. ["NASA Renames Observatory for Fermi, Reveals Entire Gamma-Ray Sky," **Press Release #08-214**, August 26, 2008.]

August 27: LBJ instrumental in NASA's creation

The 50th anniversary of NASA falls on what would have been President Lyndon Johnson's 100th birthday. Johnson was a champion of space exploration, co-sponsoring legislation that created NASA. Johnson considered that to be one of the highlights of his senatorial career, and now an exhibit at the LBJ Library, which opened Wednesday, marks that accomplishment. "President Kennedy made that famous saying, 'to the moon in 10 years' -- then he turned to Johnson and said you do it!" said Betty Sue Flowers, director of the LBJ Library. On what would have been Johnson's 100th birthday, the LBJ Library opened "To the Moon," an exhibit celebrating America's space program in the 1960s. LBJ's daughter, Lynda Johnson Robb, was one of the first to see it. She says her father turned his eye to the sky when the Russians launched Sputnik in 1957. "It's something that was so important to Daddy and I remember as president that Jim Webb, who was the head of NASA, brought lots and lots of photographs that had been taken from space and brought them down to the ranch and we all looked at everything -- it was amazing," said Robb. Johnson's younger daughter, Luci Baines Johnson, says putting a man on the moon was a dream of her father's, which started with the creation of NASA in 1958. Web posted. (2008). [LBJ instrumental in NASA's creation [Online]. Available WWW: <http://www.txcn.com> [2008, August 27].]

Shuttle Atlantis Rollout Off Until Tuesday

Shuttle Atlantis' rollout to Kennedy Space Center's launch pad 39A is being delayed until at least Tuesday to give engineers time to sort out problems that cropped up this week when they tried to join the spaceship and an external tank. The three-day delay is not expected to push back the planned Oct. 8 launch of Atlantis and seven astronauts on a Hubble Space Telescope servicing mission. NASA still will have three days of padding in its launch processing schedule to deal with any other problems that might come up. An attempt to mate Atlantis and an external tank inside the KSC Vehicle Assembly Building was halted this week when one of three guide-pins used to join the orbiter and its tank jammed into an umbilical connector. Engineers were able to free the pin but a small gouge was dug in the orbiter's liquid hydrogen umbilical plate in the process. The umbilical and another on the tank join sections of a 17-inch feedline that route explosive liquid hydrogen to the orbiter's main engines. Engineers aim to smooth the gouge and also will inspect the damaged plate for any cracks or defects. A repair-and-recovery plan will be presented to senior managers Thursday. A go-ahead would enable engineers to do the work over the weekend and have Atlantis ready to roll out of the 52-story assembly building at 12:01 a.m. Tuesday. Web posted. (2008). [Shuttle Atlantis Rollout Off Until Tuesday [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, August 27].]

NASA Security Badge Poses Safety Risk

NASA's government-mandated identity badges may improve security, but they are also a threat to safety. On August 15th, a NASA Safety Notice issued at Kennedy Space Center warned that NASA's new Identity Stronghold badge holder has the "potential to introduce dangerous Foreign Object Damage (FOD) to flight hardware areas and can cause personnel injury if the metal clips are installed improperly." The badge holder's metal clasps, if installed backwards, "will become a projectile when the badge is opened creating a potential eye injury hazard," the Safety Notice says. "When removing your badge, do not point end with metal clips towards your face or another person." Florida-based Identity Stronghold distributes the Secure Badgeholder through the U.S. General Services Administration. It is part of the EDS team that was recently awarded the \$66 Million HSPD 12 ID Management Services contract. The Secure Badgeholder has an electromagnetically opaque sleeve to prevent the card from being read at a distance and to give the user some control over when and where the card is exposed for reading. On its Web site, Identity Stronghold notes that its Secure Badgeholder "has been awarded the 2008 GOOD DESIGN award for product design." Web posted. (2008). [NASA Security Badge Poses Safety Risk [Online]. Available WWW: <http://www.informationweek.com> [2008, August 27].]

August 28: Testing underway on IBEX before flight simulation

At Vandenberg Air Force Base in California, NASA's Interstellar Boundary Explorer, or IBEX, spacecraft has undergone spin-balance testing. Other testing continues this week. A flight simulation is scheduled for Sept. 4. Mating to its Pegasus XL rocket is scheduled for Sept. 8-9. The IBEX satellite will make the first map of the boundary between the solar system and interstellar space. IBEX is the first mission designed to detect the edge of the solar system. IBEX is targeted for launch Oct. 5. ["Testing underway on IBEX before flight simulation," **KSC Countdown**, August 28, 2008.]

Difficulty attaching fuel line to Atlantis under review

Engineers are discussing possible solutions after technicians encountered difficulty attaching the liquid hydrogen umbilical line from the external fuel tank to space shuttle Atlantis. A guide pin became stuck as workers were turning a bolt to connect the main liquid hydrogen line from the tank to the shuttle. Managers are looking to move space shuttle Atlantis to its launch pad no earlier than Tuesday morning. Liftoff on its STS-125 mission is targeted for Oct. 8. ["Difficulty attaching fuel line to Atlantis under review," **KSC Countdown**, August 28, 2008.]

NASA still calculating cost of Orion slip

Managers on NASA's Constellation Program expect to know by early next year what the budget hit will be from their decision to slip by one year their target initial operational capability (IOC) for the Orion crew exploration vehicle. Tight funding and a better understanding of technical issues drove the change in Orion IOC from September 2013 to September 2014. The last time NASA changed its Orion IOC -- from 2011 to the 2013 date, it wound up adding \$384.8 million to its Orion development contract with Lockheed Martin, according to the Constellation program office at Johnson Space Center. Other major changes since the Orion contract was awarded on Sept. 8, 2006, are a \$59.2 million plus-up to add an International Space Station (ISS) docking adapter to the vehicle, and \$62.9 million to add the ISS Common Communication Adapter. Overall NASA has made 38 modifications to the Orion contract, most of them "small low cost modifications ranging from funding updates to below-threshold contract documentation updates." E-mail distribution. (2008). [Aviation Week's [Aerospace Daily & Defense Report](#) Re: "NASA still calculating cost of Orion slip" [Electronic]. Vol. 227, No. 42, [August 28, 2008].]

NASA eyes Gustav, Hanna

NASA got the go-ahead Thursday to resume stacking shuttle Atlantis, and the agency is aiming to move the vehicle out to its Kennedy Space Center launch pad early Tuesday if the weather cooperates. The agency also is keeping close tabs on two storms that could threaten NASA's shuttle homeport or an external tank factory and an engine test center that are located along the Gulf Coast. The treat to Kennedy Space Center could come from Tropical Storm Hanna, which is gaining strength over the Atlantic Ocean about 305 miles northwest of the northern Leeward islands. Top wind speed now are 40 mph, but the storm is expected to pick up and turn toward the Bahamas during the weekend. Unclear now is where the storm will be early Tuesday as NASA prepares to roll Atlantis from the KSC Vehicle Assembly Building to launch pad 39A atop an Apollo-era crawler-transporter. The chief concerns will be any potential for rain or high winds during the slow moving crawl to the launch pad. Safety rules call for a shuttle to be moved back into the assembly building if winds could exceed a sustained speed of 69 mph. The shuttle must be moved before sustained winds reach 46 mph with wind gusts up to 69 mph. Rollout is scheduled to begin at 12:01 a.m. Tuesday and, if all goes as planned, the shuttle and its mobile launcher platform would reach the pad sometime shortly after sunrise. ["NASA eyes Gustav, Hanna," **Florida Today**, August 29, 2008, p 3B.]

August 29: Atlantis launch date may move back

NASA is considering bumping back launch of shuttle Atlantis a few days as a result of time lost when Tropical Storm Fay deluged central Florida, officials said today. The official for launch date for Atlantis and NASA's fifth and final Hubble Space Telescope servicing mission remains Oct. 8. But senior managers say it likely will have to be pushed back to Oct. 10 or Oct. 11 -- a move that would absorb time lost preparing the mission's payload for transportation to launch pad 39A. "They're looking at it," said John Yembrick, a spokesman for the space operations and mission directorate at NASA Headquarters in Washington, D.C. "They're definitely looking at what (the lost time) will mean." A decision probably will not be made until after Atlantis and its payload reach the launch pad. Web posted. (2008). [Atlantis launch date may move back [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, August 29].]

NASA and AARP Celebrate 50 Years

NASA will join AARP in their Life at 50+ National Event and Expo as the two organizations each celebrate a half of century of remarkable achievements. On Sept. 4, during the opening ceremony of the show at 9:30 a.m. EDT, NASA will present AARP with a photo montage honoring the organization's 50 years of service to the senior community. The montage will include items flown earlier this year on space shuttle Discovery. AARP will present NASA with an oversized AARP membership card to mark the agency turning 50. The event will be held at the Washington Convention Center, Washington. Former astronauts Michael Coats, director of NASA's Johnson Space Center in Houston, and Carl Walz, director of advanced capabilities in the Exploration Systems Mission Directorate at NASA Headquarters in Washington, will represent NASA during the event. ["NASA and AARP Celebrate 50 Years of Inspiration, Innovation and Discovery," **Media Advisory #M08-162**, August 29, 2008.]

Shuttles until 2015? NASA asks "What-If"

NASA is weighing what it would take to keep the shuttle flying until 2015, but not because the agency actually intends to do so, officials said today. But in advance of a presidential election that will yield a new administration next January, NASA is developing answers to questions the agency expects to field from Congress and the next president on the matter. "We're doing it for internal prudent planning for our transition teams. It's like a what-if analysis," said John Yembrick, a spokesman for NASA Headquarters in Washington, D.C. "There are no serious discussions about actually flying the shuttle. A headline that says NASA is looking at flying the shuttle until 2015 wouldn't actually be accurate." In the wake of the 2003 Columbia accident, President Bush the following year directed NASA to complete the International Space Station and retire the aging shuttle fleet by Sept. 30, 2010. The agency also was given a go-ahead to develop new rockets and spacecraft to return American astronauts to the moon no later than 2020. That's still the plan. However, both Democratic presidential candidate Barack Obama and the presumptive Republican nominee, John McCain, in recent weeks have raised questions about the possibility of adding at least one shuttle mission to the current schedule. And earlier this week, McCain urged Bush to direct NASA to halt for at least one year any action that would preclude shuttle missions beyond the current 2010 retirement date. Two U.S. Senate colleagues from states with key NASA facilities joined McCain in the request, which was sent Monday to the White House. So NASA this week asked shuttle program officials to gather information on what it would take to keep the fleet flying until 2015 -- the projected date for the first flight of the Ares 1 rocket and Orion spacecraft. As it stands, the U.S. between September 2010 and March 2015 would have no way to fly its own American astronauts to the \$100 billion International Space Station. NASA would have to spend million per year to buy crew transport services from Russia instead. Web posted. (2008). [Shuttles until 2015? NASA asks "What-If" [Online]. Available WWW: http://www.floridatoday.com *the flame trench blog* [2008, August 29].]

NASA's Michoud Facility Closes for Hurricane Gustav

NASA's Michoud Assembly Facility in New Orleans will close at midnight Saturday, Aug. 30, to all but essential support personnel because of the approach and expected landfall of tropical storm Gustav, which is expected to strengthen into a hurricane. ["NASA's Michoud Assembly Facility Closes for Hurricane Gustav," **Media Advisory #M08-163**, August 29, 2008.]

Stennis Space Center to Close for Hurricane Gustav

NASA's John C. Stennis Space Center will close Friday, Aug. 29, at 4:30 p.m. CDT, due to the approach of tropical storm Gustav, which is expected to strengthen into a hurricane. ["Stennis Space Center to Close for Hurricane Gustav," **Media Advisory #M08-164**, August 29, 2008.]

Expendable Launch Vehicle Status Report

Status Report: ELV-082908. Mission: IBEX (Interstellar Boundary Explorer); Launch Vehicle: Pegasus XL (Orbital Sciences); Launch Facility: Reagan Test Site, Kwajalein Pacific Atoll; Launch Date: Oct. 5, 2008; Launch Window: 12:42 p.m. - 12:45 p.m. EDT (04:42 a.m. - 04:45 a.m. local Kwajalein time). At Vandenberg Air Force Base in California, final spin-balance testing of the integrated IBEX spacecraft and upper stage booster flight stack was successfully completed on Aug. 16. The upper stage motor and the IBEX spacecraft were then moved to the Pegasus launch vehicle hangar Aug. 19-20. They will be attached to the Pegasus rocket Sept. 8-9. Meanwhile, at the Orbital Sciences launch vehicle hangar, prelaunch processing of the Pegasus XL rocket continues to occur on schedule. Mating of all of the three stages now is complete, and the interface verification test is planned for Tuesday, Sept. 2. The L-1011 carrying the Pegasus XL rocket with IBEX currently is planned to depart from Vandenberg on Sept. 25. After a stop in Hawaii, the flight will continue and arrive at the Reagan Test Site at Kwajalein Atoll in the south Pacific on Sept. 26. Web posted. (2008). [Expendable Launch Vehicle Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/launchingrockets/status/2008> [2008, August 29].]

August 31: Space workers edgy over job status

Nearly half of government shuttle workers worry about their future after the planned 2010 retirement of the fleet, internal agency documents show. Two-thirds say they aim to stay on through the last mission. At the same time, however, three out of four say they might jump ship if the right opportunity presents itself. A growing number of them are not happy with the amount and quality of information they are getting from NASA about the future of their jobs. The findings -- outlined in NASA employee surveys obtained by Florida Today through the Freedom of Information Act -- point out a major problem. The retention of critically skilled workers is a top risk for the \$3 billion-a-year shuttle program -- a risk that ranks higher than the potential for solid rocket booster or main engine failures in flight. Less than 50 percent of supervisors believe they will have enough people with the right critical skills to successfully fly out the shuttle program. An exodus of talent would increase the probability of a catastrophic accident as NASA strives to finish the International Space Station by a presidential deadline in 2010. "What makes the space shuttle fly is people," said Joel Kearns, transition manager for NASA's space operations. "The types of jobs these people are doing take a lot of focus and diligence and concentration," he said. "We have to keep them focused for these next 10 missions coming up over the next two years." NASA plans to launch nine more flights to the space station and another, in October, to service Hubble Space Telescope. The shuttle program employs about 15,000 contractors and 1,700 civil servants in eight states and the District of Columbia. Most work at KSC, Johnson Space Center in Houston, Marshall Space Flight Center in Huntsville, Ala., Stennis Space Center in Bay St. Louis, Miss., and Michoud Assembly Facility in New Orleans. The gap between NASA's last shuttle mission and the first piloted flight of proposed Orion spacecraft is expected to be at least five years. Significant cuts in the shuttle work force are projected. KSC will bear the brunt of the job losses. Web posted. (2008). [Space workers edgy over job status [Online]. Available WWW: <http://www.floridatoday.com> [2008, August 31].]

SEPTEMBER

September 1: Hurricane Hanna delays shuttle's move to pad

Already running four days late because of Tropical Storm Fay and another three because of a technical snag, the shuttle Atlantis' move to launch pad 39A was held up another 24 hours today, from Tuesday to at least Wednesday, because of uncertainty about the possible impact of Hurricane Hanna. The National Hurricane Center predicts Hanna will pass relatively close to the Kennedy Space Center as it moves along a track 100 miles or so to the east overnight Thursday and Friday before slamming into the mainland near Savannah, Ga. The decision to delay rollout by 24 hours will give NASA managers another day to assess Hanna's track and its potential impact on the space center. Web posted. (2008). [Hurricane Hanna delays shuttle's move to pad [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, September 1].]

September 3: Navy, NASA jobs go to Craig

Since moving to Cape Canaveral last year, small software engineering firm Craig Technologies is helping the Navy evaluate its fighter pilot training and helping NASA prepare for the launch of the Constellation manned space flight program. Tuesday, the company announced it will support Raytheon Technical Services Co. as a subcontractor, providing training and education products and services to the Naval Education and Training Professional Development and Technology Center. The work will be done in Pensacola and Cape Canaveral, and is slated to be completed in September 2009, the company said. Web posted. (2008). [Navy, NASA jobs go to Craig [Online]. Available WWW: <http://www.floridatoday.com/> [2008, September 3].]

Shuttle rollout on hold

Tropical Storm Hanna's anticipated sweep along the east coast of Florida is likely to delay the rollout of shuttle Atlantis to its launch pad until Saturday (September 6th), tightening the schedule for a planned Oct. 8 launch. But officials say the shuttle is ready to move as early as Thursday morning if the storm veers away from Cape Canaveral. The Oct. 8 date allows no unforeseen delays in processing of the shuttle's payload, which includes two new science instruments and gear that will enable the Hubble Space Telescope to operate through 2013. Hanna is the second storm to delay the shuttle's exit from the assembly building. The rollout was planned for Aug. 25 before Tropical Storm Fay drenched the area. ["Shuttle rollout on hold," **Florida Today**, September 3, 2008, p 3A.]

Delta 4 Heavy launch delayed

A classified spy satellite launch set for late September is moving back a few weeks at the request of the National Reconnaissance Office. United Launch Alliance says the target liftoff date for the NROL-26 spacecraft is now Oct. 17. The spacecraft, which is classified, will ride atop a heavy model of the Delta 4 rocket, the biggest in the United States' fleet. The launch window is not publicly released this far in advance of an NRO mission. The move would put the mission's launch after NASA's launch of the space shuttle Atlantis to the Hubble Space Telescope. It creates a jam-packed fall launch calendar for Kennedy Space Center and Cape Canaveral Air Force Station in the last quarter. Web posted. (2008). [Delta 4 Heavy launch delayed [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, September 3].]

NASA's Michoud Facility to Resume Operations Thursday

NASA's Michoud Assembly Facility in New Orleans is fully operational and will reopen Thursday, Sept. 4. The workforce will conduct safety inspections of the facility with the goal of resuming normal production operations of the space shuttle external tank's assembly line on Monday, Sept. 8. ["NASA's Michoud Assembly Facility to Resume Operations Thursday," **Media Advisory #M08-170**, September 3, 2008.]

September 4: NASA chief: Odds grow for shuttle catastrophe

NASA Administrator Michael Griffin said Thursday that he's examining what it would take to keep the space shuttle flying for five years past its 2010 retirement date. In an interview with the *Orlando Sentinel*, Griffin said the Russian invasion of Georgia will likely cut off access to Russian Soyuz rockets, leaving NASA with no way to get to the international space station except for the aging orbiter. Griffin also said NASA is looking at 1-in-8 odds of losing a shuttle and crew if it adds 10 flights after 2010, recalculated from 1-in-12 odds announced in April. Still, the NASA chief said he ordered his agency to look into the possibility of twice-a-year shuttle flights after 2010 in case the next administration decides flying the shuttle on a limited basis is better than being cut off from the \$100 billion space station. At issue is a law called the Iran, North Korea, Syria Non-Proliferation Act, or INKSNA, which requires NASA to get an exemption from Congress to buy Russian Soyuz spacecraft because of Russia's sales of high-tech equipment to Iran. If the shuttle is retired, NASA would need the Soyuz to take astronauts to the station for at least five years until its successor Ares rocket is ready in 2015. But NASA's contract to buy Soyuz runs out in 2011, and the Russian invasion of Georgia means Congress is unlikely to grant NASA the waiver it needs to buy more. ["NASA chief: Odds grow for shuttle catastrophe," *Orlando Sentinel*, September 5, 2008, p A1 & A18.]

Hanna or not, NASA happy to roll Atlantis to launch pad

With an eye on storms strengthening over the Atlantic Ocean, shuttle managers Thursday rolled Atlantis to its launch pad at Kennedy Space Center, completing a key milestone leading up to the fifth and final Hubble Space Telescope servicing mission. A comfortable breeze blew as the shuttle inched 3 ½ miles from the Vehicle Assembly Building to launch pad 39A at less than 1 mph, inspiring optimism that an Oct. 8 launch date could be met. The shuttle's nearly five-hour ride on the crawler-transporter came 10 days after the previously scheduled rollout date, which was changed when Tropical Storm Fay hit Brevard County. Officials had expected Tropical Storm Hanna to delay the move until this weekend. Thursday's rollout was thought to be the first time a shuttle has been moved into launch position while the space center was still in a hurricane alert mode. Atlantis would return to the 52-story assembly building if hurricane-force winds were forecast to reach Cape Canaveral within 40 hours. Atlantis began its journey at 9:19 a.m., 40 minutes ahead of schedule. Following Atlantis, shuttle Endeavour is scheduled to roll out to launch pad 39B in two weeks. Endeavour will fly a rescue mission if Atlantis suffers damage that endangers the seven-member crew. ["Hanna or not, NASA happy to roll Atlantis to launch pad," *Florida Today*, September 4, 2008, p 1B & 5B.]

Pegasus XL rocket ready for mating with IBEX

At Vandenberg Air Force Base in California, final spin-balance testing of the integrated IBEX spacecraft and upper stage booster flight stack was successfully completed Aug. 16. The upper stage motor and the IBEX spacecraft were then moved to the Pegasus launch vehicle hangar Aug. 19-20. They will be attached to the Pegasus rocket Monday and Tuesday (September 9th). Meanwhile, at the Orbital Sciences launch vehicle hangar, prelaunch processing of the Pegasus XL rocket continues on schedule. Mating of all of the three stages now is complete, and the interface verification will take place this weekend. ["Pegasus XL rocket ready for mating with IBEX," *KSC Countdown*, September 4, 2008.]

Storm-delayed California launch reset

With Tropical Storm Hanna's threat to the Space Coast subsided, the Brevard-based launch team is headed west to get ready for a Delta 2 rocket launch from Vandenberg Air Force Base. The California launch will put in orbit the highest-resolution commercial imagery satellite ever, GeoEye-1. The mission is set to blast off Sunday at 2:51 p.m. Eastern time. The original plan was to launch

today. Then-Hurricane Hanna's approach to the east coast of Florida had prompted the Florida-based launch team to stay in place here rather than travel to California. With the storm approaching, the Florida spaceport facilities were in hurricane preparations and the launch team opted to stay home until after the storm threat has passed. Web posted. (2008). [Storm-delayed California launch reset [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, September 4].]

September 6: In private, NASA chief vents about agency's fate

In congressional testimony and speeches across the country, NASA Administrator Mike Griffin has presented the Bush administration's space policy as under pressure but on track to returning humans to the moon by 2020. His public face has been steadfast. But privately, the agency chief is far less certain. In a remarkably candid internal e-mail to top advisers obtained by the *Orlando Sentinel*, Griffin lashed out last month at the White House for what he called a 'jihad' to shut down the space shuttle, expressed frustration at the lack of funding for a new moon rocket – and despaired about the future of America's human-spaceflight program. NASA on Friday confirmed the authenticity of the e-mail. Griffin wrote his e-mail in response to messages from advisers encouraging him to call off the retirement of the shuttle. In the e-mail, Griffin says he fully expects the next president to order NASA to continue flying the shuttle, even though he considers the aging orbiter unsafe and consuming money needed to design and build his Ares moon rocket and Orion crew capsule. ["In private, NASA chief vents about agency's fate," *The Orlando Sentinel*, September 7, 2008, p A1 & A10.]

September 7: Nelson, Griffin to discuss added flights

U.S. Sen. Bill Nelson will meet Tuesday with NASA Administrator Mike Griffin to discuss the feasibility of continuing shuttle flights beyond the scheduled end of the program in 2010 and the future of the space station. The Bush administration had proposed a five-year gap during which the U.S. would rely on Russian Soyuz spacecraft for access the \$100 billion International Space Station. However, the Russian invasion of the country of Georgia soured many lawmakers on paying hundreds of millions of dollars to the former Cold War adversary. "We finally got a dose of reality," said Nelson, D-Orlando, speaking about Griffin's comments earlier this week that NASA would examine all options, including shuttle life extension. "We're going to suffer for it because we may not have access to our own space station." Web posted. (2008). [Nelson, Griffin to discuss added flights [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, September 7].]

Noon Launch Schedule Update

A NASA press release today confirms Oct. 10 and Nov. 12 as the new targeted launch dates for shuttles Atlantis and Endeavour, respectively. Both dates are two days later than previously planned. Atlantis is now scheduled to lift off from Kennedy Space Center on a 11-day Hubble Space Telescope servicing mission at approximately 12:33 a.m. Oct. 10. Landing is expected Oct. 20 at approximately 10:21 p.m. Endeavour's targeted liftoff is 8:43 p.m. Nov. 12 on a 15-day mission to deliver supplies and cargo to the space station. Landing is expected at approximately 2:45 p.m. on Thanksgiving Day. Firm launch dates will be set during flight readiness reviews held about two weeks before each launch. Web posted. (2008). [Noon Launch Schedule Update [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, September 7].]

Get in KSC Visitor Complex free

The KSC tourist attraction's annual free Brevard weekend is coming up at the end of September. It's a one-time opportunity for local space workers and residents to take their families to see everything from a full-size Saturn V rocket to the astronauts' memorabilia from almost five decades of human space exploration. Web posted. (2008). [Get in KSC Visitor Complex free [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, September 7].]

Statement of NASA Administrator Michael Griffin on Email

The following is the complete statement of NASA Administrator Michael Griffin regarding the Aug. 18 email published by the Orlando Sentinel: The leaked internal email fails to provide the contextual framework for my remarks, and my support for the administration's policies. Administration policy is to retire the shuttle in 2010 and purchase crew transport from Russia until Ares and Orion are available. The administration continues to support our request for an INKSNA exemption. Administration policy continues to be that we will take no action to preclude continued operation of the International Space Station past 2016. I strongly support these administration policies, as do OSTP and OMB. ["Statement of NASA Administrator Michael Griffin on Aug. 18 Email," **Press Release #08-220**, September 7, 2008.] {see September 6th chronology entry }

September 8: China plans third manned launch this month

China will launch its third human spaceflight mission, Shenzhou 7, by the end of this month, Chinese media reported this weekend. According to a report by the official news agency Xinhua, the launch of Shenzhou 7 is planned for the September 25-30 period. A crew of three is expected to fly on the mission, with one of them performing the first Chinese spacewalk. Other details about the mission, including the identities of the crew and the mission's duration, have not been disclosed. Shenzhou 7 would come nearly three years after the previous Chinese manned mission, Shenzhou 6, in October 2005; that mission flew two years after the first mission, Shenzhou 5. Web posted. (2008). [China plans third manned launch this month [Online]. Available WWW: <http://www.spacetoday.net> [2008, September 8].]

Rocket fuel experiment by NASA engineer blows up

A retired NASA engineer looking to develop an inexpensive way for people to travel to space might have to go back to the drawing board after one of his experiments exploded Saturday. Jim Akkerman was working on a spacecraft his firm is developing when his rocket fuel exploded. No one was injured and no property was damaged at the accident in Hitchcock, Texas, located about 40 miles southeast of Houston. Web posted. (2008). [Rocket fuel experiment by NASA engineer blows up [Online]. Available WWW: <http://www.usatoday.com/> [2008, September 8].]

New NASA Space Experiment Rack To Undergo Flight Tests

A new space experiment rack under development by NASA's Kennedy Space Center, Fla., and Space Florida will undergo initial tests this week. The rack will fly aboard NASA's first commercially-provided research flights on Zero Gravity Corporation's reduced gravity aircraft. Flight testing of the FASTRACK Space Experiment Platform will be performed on four consecutive days between September 9-12 from Ellington Field near NASA's Johnson Space Center, Houston. The experiment rack is designed to support two standard lockers that fit inside the space shuttle's crew middeck. It is being developed jointly by Kennedy and Space Florida to facilitate NASA and commercial use of reusable U.S. suborbital flight vehicles currently under development. The rack also will accommodate experiments aboard reduced gravity aircraft such as Zero Gravity's modified Boeing 727 jet, and may also be adapted in the future for orbiting vehicles and facilities. FASTRACK will enable investigators to test experiments, apparatus and analytical techniques in hardware compatible with the International Space Station, and to perform science that can be carried out during the reduced gravity available for brief periods during aircraft parabolas. FASTRACK is designed to accommodate two single middeck lockers or one double locker, and other compatible experiment accommodations developed for use on the space shuttle and International Space Station. Kennedy's FASTRACK project team will use NASA's commercial flight services contract with Zero Gravity Corporation to install and test a prototype rack along with three science investigations to verify interfaces, procedures and performance characteristics prior to fabrication of the FASTRACK flight units. Web

posted. (2008). [New NASA Space Experiment Rack To Undergo Flight Tests [Online]. Available WWW: <http://www.spaceref.com/> [2008, September 8].]

Space Debris is Top Risk For Atlantis

Damage from micrometeoroids or orbiting debris, known as MMOD, is the top risk facing Atlantis on its mission to upgrade the Hubble Space Telescope, shuttle program managers said during briefings today. The risk of catastrophic damage to Atlantis may be high enough - greater than a 1 in 200 probability - that it would require a waiver from senior NASA officials to fly. But officials still consider it highly unlikely that Atlantis, scheduled to launch Oct. 10 from Kennedy Space Center, would sustain damage severe enough to require Endeavour to fly a rescue mission. Endeavour will be on standby on launch pad 39B in the event that a rescue flight is ordered. "We don't expect to use it, but we feel very comfortable we could," said John Shannon, shuttle program manager, at Johnson Space Center in Houston. Shannon said the agency's decision to launch Atlantis would likely be based on a thorough review of efforts to mitigate risk, not a somewhat arbitrary risk level number. Web posted. (2008). [Space Debris Is Top Risk For Atlantis [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, September 8].]

September 9: Atlantis crew confident rescue would succeed

The Atlantis astronauts said they are confident NASA could pull off an unprecedented rescue flight should they run into trouble on their upcoming Hubble Space Telescope servicing mission. The also said the chances one will be necessary are slim. But "the folks who have been working on this have really taken it seriously and have planned it as if the mission is going to take place," Atlantis mission specialist Megan McArthur said Tuesday. "If it did have to take place, we have a high probability of success." McArthur and six other Atlantis crewmates are scheduled to blast off from Kennedy space Center Oct. 10 on NASA's final Hubble servicing call. Endeavour and four astronauts will be on standby, ready to fly a rescue mission if Atlantis sustains serious damage and can't be flown home. The rescue shuttle would launch about seven days after Atlantis; its 50-foot robot arm would like it with its crippled sistership. Three spacewalks would take place over two days. Spacewalking astronauts would crawl hand-over-hand, using the crane-like arm to cross from Atlantis to Endeavour. Atlantis, flying on auto pilot, then would be guided into the Pacific Ocean, likely north of Hawaii. ["Atlantis crew confident rescue would succeed," **Florida Today**, September 10, 2008, p 1A.]

SpaceX Receives License for Cape Canaveral Launch Site

Space Exploration Technologies Corp. (SpaceX) has been granted an Operational License by the US Air Force for the use of Space Launch Complex 40 (SLC-40) at Cape Canaveral Air Force Station on the Florida coast. Receipt of the license, in conjunction with the approved Site Plan, paves the way for SpaceX to initiate Falcon 9 launch operations later this year. "We are developing Falcon 9 to be a valuable asset to the American space launch fleet," said Elon Musk, CEO and CTO of SpaceX. "The support we received from General Helms and the US Air Force has been immensely helpful in developing the pathfinder processes necessary for SpaceX to realize commercial space flights from the Cape." "Our developments at Complex 40 continue with great speed," added Brian Mosdell, Director of Florida Launch Operations for SpaceX. "We have moved our massive oxygen storage tank into place, and expect to complete construction of our hangar later this year." Mosdell cited other supporters instrumental to SpaceX's efforts including the members of the Florida congressional delegation, the USAF Space Command, Col. Scott Henderson, Commander, 45th Launch Group, Col. (ret.) Mark Bontrager, formerly Commander of the 45th Mission Support Group, the public-private partnership Space Florida, and the Space Coast Economic Development Commission. In operation since 1965, and located south of NASA's launch sites for the Apollo moon missions and Space Shuttle flights, SLC-40 has hosted numerous historic launches, including the departure of two interplanetary missions: the Mars Observer satellite, and the Cassini spacecraft now exploring the rings and moons of the planet Saturn. . Web posted. (2008). [SpaceX Receives

USAF Operational License for Cape Canaveral Launch Site [Online]. Available WWW: <http://www.businesswire.com/> [2008, September 9].]

Shuttle Can Fly After 2010

NASA's space shuttle program can continue to fly beyond its current scheduled retirement date at the end of 2010, probably with only a minimal effect on development of the first of its follow-on U.S. human spaceflight vehicles, if Congress appropriates enough money for both activities, NASA's shuttle manager says. "What I would tell you is we haven't reached the point yet of no return," John Shannon, NASA's space shuttle program manager, said Sept. 8. Shannon's remarks contradict those of his predecessor, Wayne Hale, who said in an earlier open letter to NASA managers that the "horse has left the barn" because the agency has been shutting down long-lead shuttle-component production lines for the past four years. Ultimately the question will be resolved in a detailed white paper the shuttle program is preparing in conjunction with NASA's International Space Station and Constellation programs, Shannon said. "The study is really to prepare for what we anticipate would be potential questions from an incoming administration or incoming new members of Congress," he said during a preflight briefing on the upcoming STS-125 shuttle mission to service the Hubble Space Telescope. As an example of how the shuttle could continue to fly, Shannon mentioned the Michoud Assembly Facility near New Orleans, where Lockheed Martin builds the big aluminum-lithium external tanks that carry the shuttle's cryogenic propellants during ascent. Welding on the final tank that will be needed under the current schedule is due to start in December, but once that is done there will be no need to remove the welding equipment immediately to free floor space for anticipated work there on the Ares I crew launch vehicle upper stage and the Orion crew exploration vehicle. Nor should it be necessary to change plans for handing over ground facilities at Kennedy Space Center (KSC) to Constellation. Shannon said NASA can still begin modifying Launch Complex 39B at KSC for the Ares I-X flight-test next year, once the Hubble servicing mission is launched. And the agency can continue to operate the shuttle fleet after handing over a high bay in KSC's Vehicle Assembly Building and other ground hardware to the Constellation program for Ares I/Orion operations. However, if the future U.S. political leadership directs a continuation of shuttle operations in parallel with Ares/Orion development, the heavy-lift Ares V could be delayed. Web posted. (2008). [Shuttle Can Fly After 2010 [Online]. Available WWW: <http://www.aviationweek.com/> [2008, September 9].]

Atlantis Crew "Ready To Go"

The seven astronauts assigned to the final the Hubble Space Telescope servicing mission are confident they can complete a complex series of repairs and upgrades, and that a rescue mission by another shuttle crew won't be needed. "We are ready to go," said Scott "Scooter" Altman, commander of the Atlantis crew scheduled to launch Oct. 10 from Kennedy Space Center. "I definitely feel that the crew has come together. Everybody knows their jobs." The mission will include five spacewalks to work on the sensitive Hubble observatory. At times, spacewalkers will have less than an inch of room between the instruments they are working on and the telescope's exterior casing. Equipped with more than 60 new tools that have never been used in space before, the astronauts will have to remove dozens of untethered screws and fasteners that weren't designed for repair in orbit. They won't be able to see some of the gear. The astronauts have trained for a potential rescue attempt by shuttle Endeavour in the event that Atlantis suffers severe damage. They have pondered the frightening scenario, but are confident that it is very unlikely. Web posted. (2008). [Atlantis Crew "Ready To Go" [Online]. Available WWW: http://www.floridatoday.com/the_flame_trench_blog [2008, September 9].]

Family Day at KSC confirmed for Oct. 18

Badged KSC, CCAFS and contractor employees, along with their friends and family, are invited to attend 2008 Family Day open house event, a celebration of NASA's 50th anniversary, on Oct. 18.

After 3 p.m. the event will move to the KSC Visitor Complex for a celebration featuring concerts, food and entertainment. ["Family Day at KSC confirmed for Oct. 18," **KSC Countdown**, September 9, 2008.]

September 10: Hubble Payload Work Still On Schedule

Work continues at Kennedy Space Center to prepare cargo that astronauts will use to upgrade the Hubble Space Telescope, and hopefully extend its life at least another five years. The tight payload schedule was the reason NASA recently pushed back the launch of Atlantis from Oct. 8 to Oct. 10, and Hubble officials today said they expect to make that date even though they have no room left for delays. "I believe we're OK, but we can't miss a step," said Hubble Program Manager Frank Cepollina of NASA's Goddard Space Flight Center in Maryland. "It's an every day, make your milestone type of deal." The cargo includes a state-of-the-art new camera and spectrograph that will help scientists explore the origins of the universe and its components, such as "dark matter." Atlantis will also carry new batteries, gyroscopes, guidance sensors and thermal blankets, plus equipment for what may be the most complex repairs ever done in space, of two broken science instruments. "It is clearly a giant leap for us to be able to work in space, in a vacuum, and do this kind of delicate work," said Cepollina. He likened planned repairs to the observatory's Advanced Camera for Surveys to heart and brain transplants for the instrument, completed within seven hours. Web posted. (2008). [Hubble Payload Work Still On Schedule [Online]. Available WWW: http://www.floridatoday.com/the_flame_trench_blog [2008, September 10].]

Team Vandenberg helps launch a successful Delta II

Vandenberg AFB successfully launched a Delta II rocket from Space Launch Complex-2 at 11:51 a.m. today. The rocket carried the GeoEye-1 Satellite into a circular Sun-synchronous orbit where the satellite will begin its mission of collecting multispectral or color images of the Earth for both government and commercial organizations. Col. David Buck, 30th Space Wing commander, was the spacelift commander for this mission. "This launch is a testament to the tremendous team effort between the Team Vandenberg and our industry partners," Colonel Buck said. "We have one opportunity to be successful with each launch, 100 percent mission success and perfection is our standard." The Delta II is an expendable launch, medium-lift vehicle. It carries civil and commercial payloads into low-earth, polar, geosynchronous transfer and stationary orbits. Vandenberg is commemorating 50 years of Space Power. For half a century, Vandenberg has proudly worked with its industry partners to grant America assured access to space. Web posted. (2008). [Team Vandenberg helps launch a successful Delta II [Online]. Available WWW: <http://www.afspc.af.mil/> [2008, September 10].]

NASA named one of the best places to work

According to Business Week magazine, NASA is one of the best companies to work for in all of America. The space agency came in at No. 16 on the list. The magazine described NASA as a "sexy" place to work, but noted there is a downside. As a government job, the average pay at NASA is between \$40,000– \$45, 000 a year. The Ernst & Young accounting firm was No. 1 on the list. Web posted. (2008). [NASA named one of the best places to work [Online]. Available WWW: <http://www.txcn.com/> [2008, September 10].]

Ares I rocket passes review to reach critical milestone

NASA has taken a major step toward building the nation's next generation launch vehicle with Wednesday's successful completion of the Ares I rocket preliminary design review. Starting in 2015, the Ares I rocket will launch the Orion crew exploration vehicle, its crew of four to six astronauts, and small cargo payloads to the International Space Station. The rocket also will be used for missions to explore the moon and beyond in the coming decades. The preliminary design review is the first such milestone in more than 35 years for a U.S. rocket that will carry astronauts into space. The

review was conducted at NASA's Marshall Space Flight Center in Huntsville, Ala. It examined the current design for the Ares I launch vehicle to assess that the planned technical approach will meet NASA's requirements for the fully integrated vehicle. That ensures all components of the vehicle and supporting systems are designed to work together. The preliminary design review included more than 1,100 reviewers from seven NASA field centers and multiple industry partners. The review is the final step of this design process. Teams representing each major part of the Ares I rocket -- the upper stage engine, first stage and upper stage -- all have conducted similar reviews during the past year. With the completion of this review, each element of the Ares I rocket will move to the detailed design phase. A critical design review will mark the completion of the detailed design phase and allows for a more thorough review of each system element to ensure the vehicle design can achieve requirements of the Ares program. This week, the J-2X engine will be the first Ares I element to kick off the critical design review process. The engine will power the Ares I upper stage to orbit after separation from the first stage. Web posted. (2008). [Ares I rocket passes review to reach critical milestone [Online]. Available WWW: <http://www.spaceflightnow.com/> [2008, September 10].]

NASA forms temporary Mission Control near Austin

NASA's Johnson Space Center took precautions on Wednesday as Hurricane Ike aimed for the Texas coast, establishing but not activating a temporary Mission Control near Austin (Texas) and flying nearly two dozen of its aircraft based at Ellington Field out of the storm's path. Johnson, including Mission Control, remained open late Wednesday afternoon, but the emergency operations center was closely watching Ike's forecast path. The agency dispatched more than 30 people to a hotel in the Austin area, where they can monitor activities aboard the international space station and communicate with the three-man American and Russian crew if electrical power is interrupted in Houston. NASA followed the same procedure during Hurricane Rita three years ago. Another team was sent to the Marshall Space Flight Center in Huntsville, Ala., where members would assume control of the orbital outpost if Johnson was severely damaged by the storm. Marshall already hosts a control center used by the station astronauts for scientific activities. At Ellington, NASA houses T-38 jets and other aircraft used by the astronauts to train for shuttle missions. The space agency flew 22 training and a high altitude research aircraft out of Ellington on Wednesday to El Paso. NASA has a permanent aircraft facility at the West Texas site. Web posted. (2008). [NASA forms temporary Mission Control near Austin [Online]. Available WWW: <http://www.chron.com/> [2008, September 10].]

Shuttle art lacks sponsors

When they launched Brevard County's first major public art program in June, organizers envisioned 100 or more space shuttle statues dotting the space coast. So far, 86 designs have been accepted into the Shuttles Orbiting the Space Coast program. Only 32 have corporate sponsors, and organizers are pushing to get more designs sponsored before a Friday deadline. The goal is for artists to create stunning designs on 8-foot fiberglass model orbiters. The work will be placed around the county, in the same way Chicago's famous cow statues or Orlando's lizard statues became public art. The statues will debut Nov. 7 during the 2008 Space & Air Show weekend at the Kennedy Space Center Visitor complex and remain there for one month. The program benefits the Astronaut Scholarship Foundation. Sponsorships cost \$2,800 to \$20,000. ["Shuttle art lacks sponsors," **Florida Today**, September 11, 2008, p A1.]

September 11: Workforce Gala

On September 27, KSC will host a Workforce Gala to celebrate all employees at the center because "Great Employees = Mission Success" (GEMS)! The event will be held at the Radisson at the Port Pavilion. There will be entertainment, plated dinner and dancing. ["Workforce Gala," **KSC Countdown**, September 11, 2008.]

NASA Warns Of Possible Ares 1-X Test Slip

NASA says potential delays to the launch of the final space shuttle flight from Pad 39B at Kennedy Space Center (KSC) could force it to push back the key demonstration flight of its Ares successor to mid-2009. The Ares 1-X demonstrator is still officially targeted for an April 2009 launch, but officials say the large number of modifications required to adapt the pad for Ares could make the schedule too tight if the shuttle is delayed. Modifications include an additional 100-foot tall lightning tower to protect the Ares 1-X which, at 327 feet high, is almost double that of the shuttle assembly. This tower addition cannot be assembled until the final shuttle flight has taken place. The first major hardware for Ares 1-X is expected to arrive at Kennedy in late September when the simulated upper stage is expected to be shipped by NASA Glenn Research Center. The production version for the first Ares 1 is being assembled by Boeing. The first stage, based on the existing shuttle solid rocket motor/booster, is in development by ATK. The test flight, which will be suborbital and last for just under four minutes, is aimed at demonstrating five key elements, plus collecting data on any potential thrust oscillation issues in the stack. The main objectives include verifying ascent control algorithms, in-flight separation between the first stage and representative upper stage, successful recovery of the reusable Ares 1 first stage, first stage separation sequencing and first stage atmospheric entry dynamics and parachute performance. It also aims to show the magnitude of the integrated vehicle roll torque throughout the first stage. A roll control system derived from the Peacekeeper ballistic missile is being adapted for use in Ares but has never been tested at the extremely low altitudes that the new vehicle will perform its initial roll. "Roll control is a big deal for us on this because we don't have it like the shuttle where we could deflect the widely spaced nozzles," Reuter adds. Separation is anticipated at 124 seconds and 130,000 feet with vehicle weight at ignition around 1.8 million pounds. Max speed will be Mach 4.7, slower than the Mach 5.84 of the production version. However, planners say Ares 1-X will be launched along a slightly different trajectory to simulate the same maximum dynamic pressure conditions that will be experienced by the later version. E-mail distribution. (2008). [Aviation Week's [Aerospace Daily & Defense Report](#) Re: "NASA Warns Of Possible Ares 1-X Test Slip," [Electronic]. Vol. 227, No. 51, [September 11, 2008.].]

NASA Slipping Orion Review By Year To Handle Issues

NASA plans to defer the preliminary design review of its Orion Crew Exploration Vehicle (CEV) until around mid-2009 as it contends with key decisions such as the final choice of material for the thermal protection system. NASA Jet Propulsion Laboratory Program Systems Engineer Brian Muirhead, now attached to the Constellation Program that is developing Orion and other new exploration spacecraft, says the CEV "faces a different set of challenges. We will have a systems baseline review this week and then we will take a decision on when we do the Orion PDR." Speaking Sept. 9 at the American Institute of Aeronautics and Astronautics Space 2008 conference here, Muirhead said, "we are going to move it downstream -- we need a bit more runway space to get that design right." NASA originally planned the Orion PDR for November, but will instead hold an earlier meeting to target outstanding technical issues required for the completion of the PDR. That same meeting also is expected to be used to announce the choice of material for the Orion thermal protection system (TPS). Although originally expected to be made up of a NASA-developed phenolic impregnated carbon ablative (PICA) material, Muirhead said this now faces more than serious competition from Avcoat -- an advanced derivative of a TPS used on Apollo. "It looks at this point that Avcoat is winning," he said. Other design issues that remain to be tackled include the launch abort system and its attitude-control motors. "We're seeing very high aero-acoustic loadings there, so we've made a number of changes to mitigate that, and we're doing testing to validate that," Muirhead said. Critical design review is under way for the J-2X upper-stage rocket engine in development by NASA and Pratt and Whitney Rocketdyne for the Ares I crew launch vehicle and Ares V cargo launch vehicle. PDR for Ares I is going ahead "as we speak," Muirhead added. The final PDR for Orion is expected to be completed sometime in mid-2009. E-mail distribution. (2008). [Aviation

Week's [Aerospace Daily & Defense Report](#) Re: "NASA Slipping Orion Review By Year To Handle Issues," [Electronic]. Vol. 227, No. 51, [September 11, 2008.]

Endeavour in VAB

Shuttle Endeavour is a step closer to ready for a possible emergency launch to rescue the crew of Atlantis, if that shuttle sustains unrepairable damage during its upcoming mission to service the Hubble Space Telescope. Endeavour backed out of its processing hangar at Kennedy Space Center just before 7 a.m. today, riding on a 76-wheeled transport vehicle. About an hour later, it was positioned inside the 52-story Vehicle Assembly Building a short distance away. The assembled shuttle is scheduled to be rolled to launch pad 39B at 12:01 a.m. next Thursday, where it will rest about a mile north of Atlantis on pad 39A. It will be the first time since July 2001 that shuttles are positioned on both launch pads simultaneously. Endeavour will be on standby for an Atlantis rescue mission, since that crew won't be able to reach the International Space Station as a safe haven. But Endeavour is also preparing for its own mission to service the space station, which is now set to launch Nov. 12 and land on Thanksgiving. Atlantis is targeted for liftoff Oct. 10, landing Oct. 20. Web posted. (2008). [Endeavour in VAB [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, September 11].]

Ares 1 passes PDR

Ares 1, the rocket that will be used to launch the Orion spacecraft starting next decade, passed its preliminary design review (PDR) on Wednesday, a key milestone in its development. The PDR, which involved over 1,000 people at seven NASA centers and in industry, approved the planned technical approach for the vehicle. While Ares 1 components will now proceed into detailed design work that will lead up to a critical design review, one follow-up "delta" review is planned for next summer to confirm the planned approach for dealing with the thrust oscillation issue previously identified with the vehicle. The Ares 1 is scheduled to enter service in 2015. Web posted. (2008). [Ares 1 passes PDR[Online]. Available WWW: <http://www.spacetoday.net/> [2008, September 11].]

Could SpaceShipTwo someday carry NASA astronauts?

NASA is eyeing ways to use privately operated suborbital vehicles to help carry out its space agenda. The U.S. agency appears keen on exploring what benefits can be gleaned from commercial piloted suborbital vehicles over traditional means of hurling payloads on suborbital trajectories to the edge of space. The capability, if realized, could offer NASA a new mode of scientific research: human-tended suborbital investigations for studies in which having a live person in-the-loop would increase the scientific return of flight experiments. If it's a go from the space agency, a pilot research program of suborbital flight operations could be implemented in 2010-2011. The idea was appraised during a 15th anniversary reunion of DC-X/XA experimental pioneers, who tested a vertical takeoff and landing rocket project run by the Pentagon, the Air Force and NASA at periods of time during 1991-1997. During the mid-August reunion here at the New Mexico Museum of Space History, meeting participants also dove into future space transportation needs. The cadre of private groups working on suborbital vehicles is both impressive and growing, such as: Scaled Composites and its White KnightTwo/SpaceShipTwo system, as well as the Lynx suborbital rocket plane by XCOR Aerospace. Efforts are also underway at Masten Space Systems, Armadillo Aerospace, Rocketplane Global, and by that oh-so-secretive Blue Origin group that's bankrolled by Jeff Bezos of Amazon. com fame and fortune. During last month's gathering, NASA chief Mike Griffin underscored the fact that private groups can now accomplish suborbital human space sprees on their own dime. Up to a few years ago, he added, that ability could only happen using government dollars. When asked about how much NASA is doing to encourage commercial suborbital flight, Griffin said: "The brief answer is ... as much as I can." The space agency is in the process of consolidating money from its sounding rocket program, he added, as well as drawing dollars from NASA's Exploration Systems Mission Directorate. That cash amounts to no more than a few million bucks — a symbolic as well as real

gesture, Griffin said. Those consolidated dollars will be placed into a funding line for the purchase of commercial human suborbital flights, he observed. Web posted. (2008). [Could SpaceShipTwo someday carry NASA astronauts? [Online]. Available WWW: <http://www.floridatoday.com/> [2008, September 11].]

NASA's Johnson Space Center Closes for Ike

NASA's Johnson Space Center will close at noon CDT Thursday and remain closed until the threat of Hurricane Ike has passed. Ike, a category 2 hurricane in the western Gulf of Mexico, is expected to cross the Texas coast early Saturday as a category 3 storm. The International Space Station Flight Control Room at Mission Control in Houston was shut down Thursday morning. Station flight control continued through backup teams located near Austin, Texas and Huntsville, Ala. ["NASA's Johnson Space Center Closes for Ike," **Press Release #08-230**, September 11, 2008.]

September 12: Ares I Moves Into Detailed Design

After a review by some 1,100 experts from seven NASA field centers, the agency's planned Ares I crew launch vehicle is moving into detailed design with only a few open issues, and is on track to meet the latest revised schedule for its first flight with a crew onboard. So far, project managers say, it looks like Ares I can support the agency's internal September 2014 target to launch an occupied Orion Crew Exploration Vehicle to the International Space Station (ISS) for the first time. And that may be true even if Congress and the White House decide to keep flying the space shuttle fleet after the end of 2010 to reduce the gap in U.S. human access to space between the two vehicles. Essentially, it will come down to money, said Jeff Hanley, manager of the Constellation Program that is developing Ares, Orion and the other vehicles that will be needed for a return to the moon. Just how much that is will be covered in the white paper that the shuttle, ISS and Constellation programs hope to complete by the end of the month. Shuttle and Constellation experts are studying the schedule for modifying a mobile launch platform and other ground infrastructure at Kennedy Space Center to accommodate Ares I. That work already has been delayed by production problems with the new shuttle external tank design, which has pushed the Ares I-X flight-test back from April 15, 2009, into June 2009, Hanley said. E-mail distribution. (2008). [[Aviation Week's Aerospace Daily & Defense Report](#) Re: "Ares I Moves Into Detailed Design As Shuttle Study Juggles Assets," [Electronic]. Vol. 227, No. 52, [September 12, 2008].]

Bill Nelson pushes for space waiver

U.S. Sen. Bill Nelson pledged Thursday to fast-track efforts to get congressional approval for a waiver NASA needs to get astronauts to the International Space Station after the space shuttles are retired in 2010. "We are going to make a full, true-blue push to get (the waiver) passed," the Orlando Democrat said after emerging from a meeting with NASA Administrator Michael Griffin. NASA needs the exemption to send crews aboard the Russian Soyuz vehicle beyond 2011. Otherwise, the United States has no way of reaching the \$100 billion space station until the shuttle's replacement becomes available in 2015 or later. Nelson said he hopes the Senate will approve the waiver by unanimous consent. However, opposition by even one member would doom that effort. In that case, Nelson said he would send the waiver to the Senate Foreign Relations Committee for its approval, which would then send the measure back to the full Senate for a vote. "We don't like the position that we're in, but we don't have any choice if we want to have access to our own space station during a four- or five-year gap," Nelson said. NASA is seeking an exemption from a nonproliferation law that forbids the United States buying space-related goods and services from Russia while that nation exports nuclear technology to Iran and other nations considered hostile by the U.S. government. NASA currently holds a waiver from the ban that expires in 2011, but the agency needs an extension as soon as possible to give Russia enough time to build Soyuz. Nelson said Griffin has learned the State Department supports extending the waiver. National Security Adviser Steve Hadley also would like to see it passed, Nelson said. Rep. Howard Berman, the

California Democrat who chairs the House Foreign Affairs Committee, also supports the effort, according to his spokeswoman. ["Bill Nelson pushes for space waiver," **Florida Today**, September 12, 2008, p 1A & 3A.]

Weldon's goal: Block Soyuz waiver

U.S. Rep. Dave Weldon, the Indialantic Republican, said Friday that he would undercut NASA's last minute push to get permission to buy the Russian spacecraft. NASA Administrator Michael Griffin has warned that losing access to the Russian Soyuz spacecraft could mean no longer having NASA astronauts on the international space station. However, Weldon said the risk of dealing with Russia is so great that he plans to lobby presidential candidate John McCain to help kill the congressional waiver that NASA needs. McCain also opposes dealing with the Russians. NASA needs a waiver from an arms-control law in order to buy Soyuz spacecraft after the planned 2010 retirement of the space shuttle. With neither the exemption nor the shuttle, NASA has no other proven means of sending astronauts to the station. But in the weeks since Russia invaded Georgia, anti-Russia sentiment has grown in Congress, and the chances of getting that waiver have dimmed so much that Griffin went to congress this week to press lawmakers to grant the exemption. Weldon said he opposes the waiver for two reasons: It would mean job losses at Kennedy Space Center, which launches the soon-to-retire shuttle; and it puts Washington in a weaker position with Moscow. ["Weldon's goal: Block Soyuz waiver," **Orlando Sentinel**, September 13, 2008, p A15.]

Tour guide to the stars retires

Most of the staff was awed when movie star Clint Eastwood strolled into NASA's press office at Kennedy Space Center some years ago, while he was directing the film "Space Cowboys." Not Manny Virata. "He just walked up to him and said, 'Hey Clint, how's it going?'" remembered Bill Johnson, chief of the Media Services Division. "Manny is no stranger to anybody." Virata, who retires today after a 34-year career at the spaceport, has introduced a "who's who" list of celebrities, dignitaries, astronaut family members and media representatives to KSC in his role as a VIP escort and media projects coordinator. In addition to Eastwood, the list of Hollywood icons includes Tom Hanks, Robert Redford and Jodie Foster. Among the well-known journalists with whom he's worked are Walter Cronkite, Matt Lauer and Jay Barbree. Virata even appeared in a scene with musician Jimmy Buffett in "From the Earth to the Moon," one that ended up on the cutting-room floor. "He was pretty cool," Virata said of Buffett. In some ways, mingling with stars was a natural fit for the Merritt Island resident, now 64, who is a passionate moviegoer. Virata fell into a successful NASA career almost by accident. He joined KSC as an intern at age 30, after his parents retired to Brevard County. An Army veteran, he previously had worked as a teacher, postal worker and department store manager. Just a year later, Virata earned the coveted "Silver Snoopy" award, which astronauts present to center employees in thanks for their mission contributions. He had prepared a system of basic Russian-English language instruction tapes for engineers working on the Apollo-Soyuz Test Project. "It's a pretty prestigious honor to get it," he said. A short time later Virata, then working as a recruiter, participated in the space center's first trip to the University of Puerto Rico, helping to hire seven engineering students. "If it hadn't been for Manny and others, I wouldn't ever have been here," said Charlie Gambero, a senior project manager with the Constellation Program who was one of the seven, four of whom are still at Kennedy. "He helped bring minorities to KSC at a time when there weren't many minorities at all." All along, Virata volunteered on "Tiger Teams" that handle VIP guests during launches. During his career, he's known every KSC director and seen all but one shuttle launch. Virata doesn't boast about his work with celebrities or friendships he's maintained with them and astronaut families over the years. He's regarded as an "institution" by colleagues, as Bill Johnson said, largely because he treats regular center workers no differently than the stars. At each stop on a tour touching all corners of the spaceport, he gives NASA memorabilia -- including pictures and bumper stickers, or mission pins, patches and coins -- to guards, technicians, custodians and others. "I found out people had worked here for years

and never got anything," he said. Virata plans to travel the world in retirement. But he'll also return regularly to KSC as a volunteer. "I'll probably be back here next week," he said. ["Tour guide to the stars retires," **Florida Today**, September 12, 2008, 3B.]

Griffin and NASA worried about Hurricane Ike

NASA Administrator Mike Griffin told agency staff around the country on Friday that he was deeply worried about Hurricane Ike which was heaving towards Texas and the Johnson Space Center in Houston. Already the 300 mile-wide storm, now packing 105 mph winds, sent the Gulf of Mexico surging into Galveston, 40 miles south of Houston, 18 hours before its core was even due to make landfall. Water is churning across roads and through residential areas with alarming force. Beachfront homes, hotels and restaurants are already swamped and docks swept away. "This is very large, very unusual hurricane in terms of its structure, with a lot on energy spread out over a very wide region, and we just don't know what the affects are going to be at JSC," Griffin told his staff at an unusual town hall-style meeting to discuss various issues facing the agency. "But the complete flooding of the center to a depth of several feet is not out of the realm of possibility," he added. The center of Ike, which has already killed hundreds in the Caribbean, is expected to come ashore at around 2am local time on Saturday with winds of at least 113mph, and is currently swirling over the Gulf of Mexico with greater force than Hurricane Katrina before that devastating weather system made landfall. JSC, which is the operational nerve center for NASA's human space flight program, has already been evacuated and back-up flight control centers for the international space station were activated near Austin and at Marshall Space Flight Center in Huntsville, Ala. But command-and-control capabilities at either are limited. Web posted. (2008). [Griffin and NASA worried about Hurricane Ike [Online]. Available WWW: <http://www.orlandosentinel.com/> [2008, September 12].]

Hurricane Ike delays docking at station

A supply-laden Russian cargo carrier will loiter in orbit near the International Space Station until NASA's Mission Control Center in Houston can reopen in the wake of Hurricane Ike, which packs the potential for producing some serious flooding at Johnson Space Center. The Progress M30 blasted off from Baikonur Cosmodrome in Kazakhstan on Wednesday and had been scheduled to dock at the outpost later today. The orbital link-up now is tentatively scheduled for next Wednesday. NASA and its Russian partners agreed to delay the docking after the approach of Ike prompted NASA on Thursday to close Johnson Space Center in Houston and the Mission Control Center there. Web posted. (2008). [Hurricane Ike delays docking at station [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, September 12].]

September 13: 300 SGS workers likely to lose jobs

It appears more than 10 percent of the 2,800 workers currently employed by Space Gateway Support at Kennedy Space Center and Cape Canaveral Air Force Station will lose their jobs as contracts shift to new employers. SGS handed out formal layoff notices Thursday in advance of the Oct. 1 switchover as 15 companies take over contracts to provide support services to KSC and the Cape. An estimated 300 or more employees will not be picked up in the new hiring, but the final total of lost jobs won't be known until Oct. 1, when the new contractors take over, SGS spokesman Sam Gutierrez said. "We absolutely do not know how many people have actually been picked up," Gutierrez said. He pointed out that the loss of 300 jobs, with average salaries of \$50,000 per year, could mean a \$15 million blow to the Space Coast economy. "Will those contractors realize that they need more people? We hope so," Gutierrez said. NASA spokesmen would not provide totals on the number of workers to be laid off or, even, if the new arrangement would be more cost effective. Security guards apparently are one group of workers that will weather the contract change. "It appears that when the music stops, we'll probably have enough chairs," said Jerry Heyman, president of the Security Police and Fire Professionals of America local 127. He believes that the two companies taking over security contracts will hire virtually all of the 300 security officers at the Cape

and at KSC. That's due in no small part to the voluntary departure of about 30 security force employees, he added. The unbundling reverses an action taken in 1998 that brought services at the Cape and at KSC under Space Gateway Services. Some SGS employees already have been notified that a new contractor will hire them, and some contractors are still hiring. "We're continuing our interview process. We don't really have a firm idea of people that would come across," said Kurt Bush, program manager for EG&G Technical Services, which won a \$1.5 billion, 10-year contract to perform facilities operations, maintenance and engineering at KSC. Bush said almost all of the hiring would be complete by the middle of next week as the company fills 1,100 positions, but it could continue beyond the start of the contract. "I am sure there will be hiring after the first of October," he added. ["300 SGS workers likely to lose jobs," **Florida Today**, September 13, 2008, p 1A & 7A.]

Houston space center readies for Ike's fury

Preparations to launch Atlantis and Endeavour continued Friday at Kennedy Space Center, while the Houston base for astronauts and senior shuttle managers braced for a possible direct hit from Hurricane Ike. Backup flight control centers for the International Space Station were activated near Austin and at Marshall Space Flight Center in Huntsville, Ala. The Mission Control Center's closure forced NASA to delay a Russian cargo carrier's planned Friday docking with the space station. Griffin praised the agency's recent preparations for Hurricane Gustav, but said it would be unclear until after Ike passed how operations – including the targeted Oct. 10 launch of Atlantis – might be affected. "It could be a lot more serious this time, and we just have to see what it is and cope with it afterward," he said. KSC officials echoed that sentiment. ["Houston space center readies for Ike's fury," **Florida Today**, September 13, 2008, p 3A.]

September 14: Recovery from Ike Likely to Stall Launches

NASA is starting what will be a slow recovery from Hurricane Ike at the Houston home of the Mission Control Center and the agency's next two shuttle flights face delays as a result. The expectation is that Johnson Space Center will remain closed for a week while a relatively small NASA recovery team restores power, phone service and other utilities around the center and surrounding communities struggle to recover from a monster storm that left the city of Houston without power. "There are a lot of things around the center that need to be shored up before we can welcome back the work force," said NASA spokesman Mike Curie. JSC employs about 15,000: 12,000 contractors and 3,000 civil servants. Web posted. (2008). [Recovery from Ike Likely to Stall Launches [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, September 14].]

September 15: NASA: Target Dates Doable Despite Ike

NASA still aims to move Endeavour out to Kennedy Space Center's launch pad 39B this week and it appears that an ongoing recovery from Hurricane Ike in Houston will not delay the agency's next two shuttle missions, officials said Monday. In a widely distributed e-mail, NASA shuttle program manager John Shannon said employees who lives have been disrupted by should take care of their families first. Many who evacuated in advance of the monster storm have not been able to return to their homes in communities that surround Johnson Space Center, which escaped major damage but will remain closed to all but recovery crews this week. The weeklong closure will stall astronaut and flight controller training for the Oct. 10 launch of Atlantis on a Hubble Space Telescope servicing mission and the Nov. 12 launch of Endeavour on an International Space Station outfitting flight. But NASA says the dates nonetheless remain achievable. "We don't have any data that says we should have to delay the launches," said NASA spokesman Mike Curie. Web posted. (2008). [NASA: Target Dates Doable Despite Ike [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, September 15].]

Hubble, ISS Servicing Lessons Won't Be Forgotten

Large-scale space science missions are likely to benefit from the experience NASA has gained sending humans to service the Hubble Space Telescope, and that it expects to gain servicing the International Space Station (ISS) with its new Canadian robot. NASA foresees additional human servicing missions to large space observatories after 2025, provided the planned Orion spacecraft is sufficiently capable. At the ISS, testing will soon begin on Canada's Special Purpose Dexterous Manipulator, or Dextre, which will be used to install replacement parts without sending the crew outside. "I think we'll gain some real experience on the space station of how effective that robotic servicing is, how well it works, how much it can be used," says Bill Gerstenmaier, associate administrator for space operations. E-mail distribution. (2008). [Aviation Week's Aerospace Daily & Defense Report Re: "Hubble, ISS Servicing Lessons Won't Be Forgotten," [Electronic]. Vol. 227, No. 53, [September 15, 2008].]

September 16: Booster sensor suspect on Atlantis

NASA engineers are determining whether a pressure sensor on the righthand solid rocket booster of shuttle Atlantis will have to be replaced, but officials say a change-out could be done without impacting an Oct. 10 target launch date. The chamber pressure sensor produced electrical readings outside the expected range during a test earlier this month. The readings were within allowable ranges, but engineers nonetheless have been troubleshooting the problem. The pressure sensor was retested Monday night, and engineers were unable to duplicate the problem. NASA's Engineering Review Board will decide whether the sensor should be removed and replaced. Plans are being made to swap out the transducer if necessary. The sensor detects chamber pressure within the booster as it is firing during the first two minutes of flight. A drop or spike in pressure readings can be a sign that the booster is not operating properly. Web posted. (2008). [Booster sensor suspect on Atlantis [Online]. Available WWW: http://www.floridatoday.com/the_flame_trench_blog [2008, September 16].]

NASA-JSC Largely Spared By Ike

NASA's Johnson Space Center (JSC) in Houston came through Hurricane Ike in fairly good order, but power, water and other issues are likely to keep it closed to normal operations until next week, with the effect on upcoming shuttle missions remaining to be seen. The space shuttle program, which is based at JSC, continues to assess its ability to support the planned Oct. 10 launch of the shuttle Atlantis to service the Hubble Space Telescope. The flight readiness review for that STS-125 mission remains scheduled for Sept. 22-23, and the shuttle Endeavour will be rolled out to Launch Complex 39B on Sept. 18 in preparation for a possible rescue mission in case Atlantis is damaged on launch. E-mail distribution. (2008). [Aviation Week's Aerospace Daily & Defense Report Re: "NASA-JSC Largely Spared by Ike, But Unlikely To Open This Week," [Electronic]. Vol. 227, No. 53, [September 15, 2008].]

Minotaur 4 pathfinder completed at Vandenberg

Orbital Sciences Corporation today announced that it has completed the full-scale "pathfinder" ground operations of the Minotaur 4 space launch vehicle in preparation for its inaugural flight that is currently scheduled to take place in early 2009. The ground testing activities included the assembly of a full-scale Minotaur 4 rocket, using inert rocket motors and flight-qualified structures to fully validate all interfaces with the booster, ground support equipment and facility structures. The pathfinder operations were overseen by representatives from the U.S. Air Force organizations that will play critical roles in the Minotaur 4 launch operations. The Spaceport Systems International launch pad at VAFB will be the launch site for all three Minotaur 4 missions planned in 2009. Web posted. (2008). [Minotaur 4 pathfinder completed at Vandenberg [Online]. Available WWW: <http://www.spaceflightnow.com/> [2008, September 16].]

September 17: Despite Ike, Astronauts Aim To Train

The Atlantis astronauts aim to fly to Kennedy Space Center next week and take part in a critical practice countdown -- a sign that preps for a planned Oct. 10 launch remain on schedule despite damage done by Hurricane Ike last weekend at Johnson Space Center and surrounding communities. Final details are being worked out, but veteran astronaut Scott Altman and his Hubble Space Telescope repair crew intend to fly to NASA's prime launch operations center for their Terminal Countdown Demonstration Test. The status of the important crew training exercise has been in doubt since Ike made landfall in coastal Texas last Saturday and then battered JSC -- the home of NASA's Mission Control and its Astronaut Corps -- as well as surrounding communities. JSC is expected to be closed the entire week to all but recovery crews, and the NASA T-38s that astronauts fly between Texas and Florida's Space Coast were scrambled to Abilene in advance of the storm. If the astronauts are able to stick to the existing schedule, then they'll arrive at the KSC Shuttle Landing Facility at 7 p.m. Sunday. Joining Altman on the trip would be Atlantis pilot Gregory "Ray J" Johnson and mission specialists John Grunsfeld, Mike Massimino, Mike Good, Andrew Feustal and Megan McArthur. On Tuesday, the astronauts would head out to pad 39A -- the site where Atlantis is being readied for launch -- and take part in emergency training there. Web posted. (2008). [Despite Ike, Astronauts Aim to Train [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, September 17].]

NASA's dream scenario of a 13 flight extension for shuttle

From a hardware standpoint, the space shuttle fleet could technically fly until 2015, involving up to 13 extra flights - that's the result of the opening findings from the on-going extension assessment. Several options - all based around flying two orbiters past 2010, with the support of an ISS "lifeboat" - have been created, although the forward plan of extending the Iran/North Korea/Syria Agreement (INKSA) waiver to utilize the Russian Soyuz remains the favored approach. A gap of at least five years between shuttle and Ares/Orion -- six years based on Orion crew rotations on the International Space Station (ISS) -- is just around the corner, though the focus on extending shuttle has always been in relation to removing the need for reliance on a foreign launch system during that period. The current deal to purchase Soyuz flights to transport US astronauts to the ISS expires in 2011. However, given the three year lead time required for the additional production of Soyuz vehicles after 2011, D-Day is fast approaching. A decision needs to be reached on the forward plan relating to the INKSA waiver by next month, otherwise NASA will be racing head first into the possibility that the US presence on the ISS will come to an end shortly after the shuttle's retirement. The change to the waiver itself would simply strike out the current January 1, 2012 end date, replacing it with July 1, 2016. The decision to approve such a change rests with US lawmakers in Congress. 'If Congress does not extend NASA's legislative exemption to allow the purchase of Russian Soyuz crew services, the result will be to damage the United States' collaboration with our international partners on the ISS, effectively ceding control of this \$50 Billion investment (cost through 2010) to Russia. 'Denying extension of this legislative authority only hurts the United States space program and our partnership with Canada, Europe, and Japan - not the Russians.' The document also praises the Russians for their reliance when the US has needed their ISS-related support during the aftermath of the Columbia disaster. 'While there is significant concern regarding US reliance upon and relationship with Russia because of its incursion into Georgia, Russia has been a good and valuable partner on the ISS, especially in the aftermath of the Columbia accident in February 2003, during which they provided services to continue US operations onboard the Station.' However, the Russia of 2008 and beyond is becoming increasingly detached, politically, from the Russia of 2003 - pro shuttle extension sources insist. Web posted. (2008). [NASA's dream scenario of a 13 flight extension for shuttle [Online]. Available WWW: <http://www.nasaspaceflight.com/> [2008, September 17].]

List of space shuttles occupying both launch pads

Over the history of NASA's space shuttle program, it has been a rarity for both launch pads at Complex 39 to be occupied at the same time. When space shuttle Endeavour is moved to pad 39B

on Sept. 18 to begin its role as a rescue vehicle for Atlantis' mission to the service the Hubble Space Telescope, it will mark just the 18th time that two flight-ready orbiters will be standing on the dual seaside pads. An even more seldom event is two orbiters being fully visible on the launch pads simultaneously. A famous photo illustrating the view to behold when both rotating service gantries are opened to expose the orbiters can be seen above.

Here is a list of the previous times space shuttles have occupied both launch pads:

- 1. STS-61C (Columbia) and STS-51L (Challenger) - Dec. 22, 1985 (rollout of 51L to Pad B) until -Jan. 12, 1986 (launch of 61C from Pad A)
- 2. STS-31 (Discovery) and STS-35 (Columbia) - April 22, 1990 (rollout of STS-35 to Pad A) until -April 24, 1990 (launch of STS-31 from Pad B)
- 3. STS-35 (Columbia) and STS-41 (Discovery) - Sept. 4, 1990 (rollout of STS-41 to Pad B) until -Oct. 6, 1990 (launch of STS-41 from Pad B)
- 4. STS-38 (Atlantis) and STS-35 (Columbia) - Oct. 14, 1990 (rollout of STS-35 to Pad B) until -Nov. 15, 1990 (launch of STS-38 from Pad A)
- 5. STS-37 (Atlantis) and STS-39 (Discovery) - April 1, 1991 (rollout of STS-39 to Pad A) until -April 5, 1991 (launch of STS-37 from Pad B)
- 6. STS-45 (Atlantis) and STS-49 (Endeavour) - March 13, 1992 (rollout of STS-49 to Pad B) until -March 24, 1992 (launch of STS-45 from Pad A)
- 7. STS-50 (Columbia) and STS-46 (Atlantis) - June 11, 1992 (rollout of STS-46 to Pad B) until -June 25, 1992 (launch of STS-50 from Pad A)
- 8. STS-56 (Discovery) and STS-55 (Columbia) - Feb. 7, 1993 (rollout of STS-55 to Pad A) until -April 8, 1993 (launch of STS-56 from Pad B)
- 9. STS-64 (Discovery) and STS-68 (Endeavour) - Aug. 19, 1994 (rollout of STS-64 to Pad B) until -Aug. 24, 1994 (rollback to VAB of STS-68 from Pad A)
- 10. STS-71 (Atlantis) and STS-70 (Discovery) - May 11, 1995 (rollout of STS-70 to Pad B) until -June 8, 1995 (rollback to VAB of STS-70 from Pad B)
- 11. STS-71 (Atlantis) and STS-70 (Discovery) - June 15, 1995 (rollout of STS-70 to Pad B) until - June 27, 1995 (launch of STS-71 from Pad A)
- 12. STS-70 (Discovery) and STS-69 (Endeavour) - July 6, 1995 (rollout of STS-69 to Pad A) until -July 13, 1995 (launch of STS-70 from Pad B)
- 13. STS-69 (Endeavour) and STS-73 (Columbia) - Aug. 28, 1995 (rollout of STS-73 to Pad B) until -Sept. 7, 1995 (launch of STS-69 from Pad A)
- 14. STS-73 (Columbia) and STS-74 (Atlantis) - Oct. 12, 1995 (rollout of STS-74 to Pad A) until -Oct. 20, 1995 (launch of STS-73 from Pad B)
- 15. STS-95 (Discovery) and STS-88 (Endeavour) - Oct. 21, 1998 (rollout of STS-88 to Pad A) until -Oct. 29, 1998 (launch of STS-95 from Pad B)
- 16. STS-103 (Discovery) and STS-99 (Endeavour) - Dec. 13, 1999 (rollout of STS-99 to Pad A) until -Dec. 19, 1999 (launch of STS-103 from Pad B)
- 17. STS-104 (Atlantis) and STS-105 (Discovery) - July 2, 2001 (rollout of STS-105 to Pad A) until -July 12, 2001 (launch of STS-104 from Pad B)

Web posted. (2008). [List of space shuttles occupying both launch pads [Online]. Available WWW: <http://www.spaceflightnow.com/> [2008, September 17].]

Contamination issue may delay shuttle launch

Loose insulation that contaminated a cargo carrier will delay its installation into the shuttle Atlantis, potentially delaying its mission to repair the Hubble Space Telescope. Particles of insulation got inside protective bagging around a cargo carrier that was being readied to be installed in the cargo bay of Atlantis on pad 39A. Cleaning up the insulation will delay that move by at least 24 hours. Shuttle managers said that they were still aiming for an October 10 launch of the shuttle but that could be delayed. Also uncertain is the impact the extended closure of NASA's Johnson Space Center, caused by Hurricane Ike, will have on launch preparations: the center, closed for a week, will

reopen no earlier than Monday. Meanwhile, the rollout of the shuttle Endeavour, which would serve as a rescue shuttle for Atlantis in the event of an emergency, was delayed 24 hours to early Friday because of stormy weather. Web posted. (2008). [Contamination issue may delay shuttle launch [Online]. Available WWW: <http://www.spacetoday.net/> [2008, September 18].]

September 18: ATK plans to hire 70

Agreements that Alliant Techsystems recently signed will create 70 jobs in Brevard County during the next few months. ATK is the prime contractor for the first-stage of NASA's Ares I launch vehicle. In addition to its offices at Kennedy Space Center, ATK will expand into space at Port Canaveral and in Titusville, the company said in a statement today. ATK was recently sued by prime shuttle contractor United Space Alliance for luring its employees away. The work to be performed in Titusville was previously scheduled to be performed in Utah at ATK's Promontory facility. The first Ares I-X test vehicle is scheduled to launch in 2009. ATK has more than 17,000 employees in 21 states and approximately \$4.6 billion in revenue. Web posted. (2008). [ATK plans to hire 70 [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, September 18].]

NASA Recognizes Boeing as Large Business Contractor

NASA has recognized Boeing as the Kennedy Space Center's 2008 Large Business Contractor of the Year for providing quality service and support on the Checkout, Assembly and Payload Processing Services (CAPPS) program. Boeing is the prime contractor for the CAPPS contract, providing payload processing services for the International Space Station, space shuttle and expendable launch vehicles. E-mail distribution. (2008). [Aviation Week's [Aerospace Daily & Defense Report](#) Re: "NASA Recognizes Boeing as Large Business Contractor of the Year," [Electronic]. Vol. 227, No. 57, [September 19, 2008.].]

NASA chief says Congress must act to get Russian craft

There will be no U.S. astronauts living on the International Space Station in three years unless Congress gives NASA permission in the next month to buy Russian spaceships, NASA's chief said Thursday. The United States is the chief operator of the station and has provided more than \$100 billion to build and run it. At least one American astronaut has lived on the orbiting laboratory since October 2000, when it was first inhabited. In an interview with USA TODAY, NASA Administrator Michael Griffin said it is unclear whether Congress will act in time to prevent U.S. crews from abandoning the station in 2011. Griffin said NASA needs lawmakers' approval to buy the Russian ships by roughly the end of October if it's to send a new crew of astronauts to the station in October 2011. The space shuttle isn't an option because NASA plans to retire it in mid-2010. NASA is building a spacecraft to replace the shuttle, but it isn't scheduled to carry a new crew to the space station until March 2016. The development of the shuttle's successor could be delayed if Congress, as expected, passes stopgap funding legislation for part of 2009 rather than a formal budget, Griffin said. The members of Congress he has spoken to understand the need, he said, but "I cannot predict an outcome." Congress will be in session for less than two weeks before adjourning in advance of the fall elections. Federal law forbids U.S. agencies from making payments to Russia unless Russia proves it's not selling arms to Iran. NASA has a waiver to the law permitting the space agency to buy rides on Russia's Soyuz, a small three-seat space pod. The waiver expires in late 2011, and it takes Russia three years to build a Soyuz. So Russia must start construction in the next few months to have a Soyuz ready to carry Americans in October 2011, Griffin said. Web posted. (2008). [NASA chief says Congress must act to get Russian craft [Online]. Available WWW: <http://www.usatoday.com/> [2008, September 20].]

September 19: Two birds perched on twin pads

NASA space shuttles are simultaneously perched on the twin launch pads at Kennedy Space Center today -- a first since 2001 and perhaps the last time before the nation's shuttle fleet is retired in 2010.

Endeavour rolled up on to Launch Complex 39B and was hard down on the pad at 6:59 a.m. today after an overnight move from the KSC Vehicle Assembly Building. First motion in the VAB was at 11:15 p.m. Thursday. The shuttle is being readied to fly a rescue mission should Atlantis -- which is 1.6 miles away on Launch Complex 39A -- sustain serious damage during its upcoming mission to service the Hubble Space Telescope. Atlantis and seven astronauts are scheduled to launch from pad 39A on Oct. 10. If no rescue mission is required, Endeavour will roll around to pad 39A on Oct. 25 and then be readied for a planned Nov. 12 launch on an International Space Station outfitting mission. This is the 17th time shuttles have been on 39A and 39B simultaneously. At least two of those instances produced opportunities to view shuttles on both pads with the Rotating Services Structures retracted. One was September 1990 when Columbia was on pad B and Discovery was on pad A. Web posted. (2008). [Two birds perched on twin pads [Online]. Available WWW: http://www.floridatoday.com/the_flame_trench_blog [2008, September 19].]

Expendable Launch Vehicle Status Report

Status Report: ELV-091908. Mission: IBEX (Interstellar Boundary Explorer); Launch Vehicle: Pegasus XL (Orbital Sciences); Launch Facility: Reagan Test Site, Kwajalein Pacific Atoll; Launch Date: Oct. 19, 2008; Launch Time: 2:58 p.m. - 3:06 p.m. EDT (06:58 a.m. - 07:06 a.m. local Kwajalein time). The IBEX spacecraft, its upper stage booster and the Pegasus XL rocket are in the Orbital Sciences launch vehicle hangar at Vandenberg Air Force Base in California. Integrated verification testing of the IBEX spacecraft and the Pegasus XL rocket, originally scheduled for Sept. 13 and 14, was delayed due to some problems found in the IBEX flight stack electrical harnesses. The issues were resolved and the initial integrated testing on IBEX/Pegasus was completed on Sept. 17 with no major complications. The complete IBEX flight system tentatively is planned to be attached to the Pegasus launch vehicle Sept. 22-24. Departure of the L-1011 carrying the Pegasus XL rocket with IBEX from Vandenberg currently is planned for Oct. 10. After a stop in Hawaii, the flight will continue and arrive at the Reagan Test Site at Kwajalein Atoll in the south Pacific on Oct. 11. Web posted. (2008). [Expendable Launch Vehicle Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/launchingrockets/status/2008> [2008, September 19].]

September 21: Dawn readied for Wed. launch

Inside the mobile service tower on Launch Pad 17-B at Cape Canaveral Air Force Station, technicians guided the fairing for installation around the Dawn spacecraft Thursday. The fairing is a molded structure that fits flush with the outside surface of the Delta II upper stage booster and forms an aerodynamic nose cone, protecting the spacecraft during launch and ascent. On a science mission the asteroid belt, Dawn is scheduled to launch between 7:25 and 7:54 a.m. on Sept. 26 aboard a Delta II rocket. Web posted. (2008). [Dawn readied for Wed. launch [Online]. Available WWW: http://www.floridatoday.com/the_flame_trench_blog [2008, September 21].]

Astronauts arrive for practice countdown

The Atlantis astronauts aim to complete a critical training exercise at Kennedy Space Center this week while managers sort out the effects of Hurricane Ike and minor technical problems on an Oct. 10 target launch date. Mission commander Scott Altman and his crew jetted to KSC for standard emergency training and a two-day practice countdown that will culminate Wednesday with a launch-day dress rehearsal. The Terminal Countdown Demonstration Test -- or TCDT -- is carried out before every shuttle launch and is the last major training exercise at the launch site before astronauts embark on a mission. In this case, the test almost serves as a way for the crew to refocus on the mission after Ike hammered the communities where they live near the Johnson Space Center. "Some worse than others" is how Altman described how the astronauts fared during the hurricane. "But we're all still standing and looking forward to a nice distraction." Altman and pilot Gregory "Ray J" Johnson aim to practice landings later tonight at the Shuttle Landing Facility. They'll fly a Gulfstream 2 aircraft modified to mimic the shuttle's brick-like descent to an airstrip -- one seven times steeper

than a commercial airliner. The crew will go through emergency training out at launch pad 39A, where Atlantis is being readied for flight. They'll get familiar with the launch tower escape system -- a 1,200-foot-long metal "slidewire" that would whisk the astronauts in baskets down to an emergency evacuation bunker on the western perimeter of the pad. The crew also includes five mission specialists: John Grunsfeld, Drew Feustal, Mike Massimino, Mike Good and Megan McArthur. All seven will don partial-pressure launch-and-entry suits on Wednesday and then board Atlantis for the last few hours of the practice countdown. The target launch date will be reviewed this week during a shuttle program-level flight readiness review that will be held Wednesday and Thursday. The date is expected to slip back as a result of the weeklong shutdown of the Johnson Space Center (which reopens Monday) and minor technical problems that have cropped up with the payload for the mission. A firm launch date will be set at an executive-level flight readiness review on Oct. 3 and Oct. 4. Web posted. (2008). [Astronauts arrive for practice countdown [Online]. Available WWW: http://www.floridatoday.com/the_flame_trench_blog [2008, September 21].]

September 22: NASA contractors call truce, try to settle dispute over Ares

NASA contractors Alliant Techsystems and United Space Alliance declared a weeklong truce in their contract battle that threatens plans for the Constellation moon-rocket program. The truce means that USA workers will continue working on NASA's next-generation Ares rocket and its Ares I-X test model for seven more days while the companies try to resolve their dispute. "We are going to keep on doing what we have been doing," said USA spokeswoman Tracy Yeats. Last month USA -- NASA's largest contractor at Kennedy Space Center -- filed a lawsuit in a Brevard County court over what it said was a failure by Alliant, or ATK, to award USA a long-term contract to work on NASA's Constellation moon-rocket program. USA is seeking damages for fraud and breach of contract, and an injunction against ATK poaching USA employees. ATK has rejected USA claims. On Thursday, USA sent a letter to employees saying they would no longer be working on the Ares rockets. "On Sunday, Sept. 21, United Space Alliance's letter contract with ATK for design and development work on Ares I and Ares I-X will expire," it said. "USA has informed ATK that we do not intend to sign another letter contract extension, and, effective Monday, Sept. 22, USA will no longer have a contractual relationship with ATK for this work." But on Friday afternoon, USA called off the work stoppage after Minneapolis-based ATK offered an olive branch to work out their differences. "ATK has proposed, and USA has accepted, a one-week extension to the letter contract to allow for further discussions that could lead to a mutually beneficial solution to this situation," USA said in a statement. USA has about 600 employees working part time on the Constellation program's Ares rockets. Yates said the work was the equivalent of 180 full-time positions. Most of the work involves helping ATK, which won the main contract for the first stage of the Ares I rocket and the Ares I-X test flight, with design development and engineering. The work includes developing parachutes for the rocket's reusable first stage, as well as building and processing parts of the test rocket. The Ares I-X test flight, scheduled for next year, is considered by NASA an important milestone in the development of the rocket that is supposed to replace the space shuttle after it retires in 2010. NASA wants to hurry the Constellation project, and there are concerns that a work stoppage at KSC could delay the development schedule. Spokesman George Torres said ATK has been increasing its work force in Florida and has contingency plans to transfer some employees to work on the projects should a deal with USA fall through. He also said that since USA told its workers that they would no longer be working on Ares, ATK has had a rush of job applications. As many as 6,400 contractor employees could lose their jobs when the shuttle retires in 2010. Many had been hoping to transition to the Constellation program, either on the Ares I rocket or Orion capsule. Web posted. (2008). [NASA contractors call truce, try to settle dispute over Ares rockets [Online]. Available WWW: <http://www.orlandosentinel.com/> [2008, September 22].]

September 23: Shuttle rescue mission risky business

Shuttle Endeavour is being readied for a daring mission to save a Hubble Space Telescope repair crew, but NASA records show conditions aboard the rescue ship could be deadly and 11 astronauts might not survive an emergency bailout. Bound to captivate a worldwide audience if launched, the unprecedented mission would blast off only if shuttle Atlantis is critically damaged next month during NASA's fifth and final Hubble servicing flight. Seven astronauts would shut down all but essential shuttle systems to save life-sustaining electrical power. Operating in survival mode, the six-man, one-woman crew would ride it out in a cold, dark spaceship, awaiting four rescuers flying aboard Endeavour. The race would be against this clock: All electrical power and oxygen supplies on the crippled craft would be exhausted within 20 to 25 days. There would be practically no time to figure out what doomed Atlantis to a remote-control dive into a watery grave in the Pacific Ocean. Endeavour would fly within a week even though its astronauts might face a similar fate. "Rather than leave a crew to die in orbit, we would take the risk," NASA Administrator Mike Griffin said. Web posted. (2008). [Shuttle rescue mission risky business [Online]. Available WWW: <http://www.floridatoday.com/> [2008, September 23].]

Senate panel passes Soyuz measure

The Senate Foreign Relations Committee today approved a NASA bill crucial to granting Americans access to the International Space Center after the space shuttles are retired in two years. The committee passed the bill on a voice vote, with no opposition. The measure now goes before the full Senate. Its prospects there, however, are cloudy. Lawmakers must hammer out details of a massive financial rescue plan, a stop-gap budget proposal and numerous other weighty issues before they adjourn by the end of this week. The bill passed today by the Senate panel would let NASA astronauts catch a ride to the \$100 billion station on the Russian Soyuz capsule. The measure would grant NASA a waiver from a nonproliferation law that forbids the United States from buying Russian services until that nation stops exporting nuclear arms to Iran and other nations considered hostile by the U.S. government. The bill must pass by unanimous consent. That means opposition by even one member could kill the measure. Sen. Bill Nelson, the Orlando Democrat pushing the bill, said "we've got a couple in the Senate that we have to worry about so we'll just see." NASA currently is exempted from the law, but its waiver expires in 2011. The agency needs to pass an extension this year to give Russia enough time to build a Russian Soyuz vehicle. Rep. Dave Weldon, an Indialantic Republican, has strongly opposed renewal of the exemption, expressing concern over icy U.S.-Russian relations. So far, however, he acknowledged he hasn't been able to convince others to join his opposition. However, on Tuesday, Weldon said he learned that House members "are getting pushback" on the issue. "There's some discussion of doing a two-year waiver of the extension and extending shuttle operations," he said, but he acknowledged: "This is in the discussion phase, so stay tuned." Web posted. (2008). [Senate panel passes Soyuz measure [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, September 23].]

House passes extension of NASA INKSNA waiver

The House of Representatives passed a spending bill on Tuesday that includes a provision allowing NASA to continue to purchase Soyuz and Progress spacecraft from Russia, a move NASA deems to be critical to the future of the station. The bill is a continuing appropriation that funds a number of government agencies, including NASA, at their fiscal 2008 levels until early March 2009 or until a final fiscal year 2009 budget is passed. One provision in the bill, though, extends NASA's waiver to the Iran, North Korea, and Syria Nonproliferation Act (INKSNA), allowing the space agency to purchase Soyuz and Progress spacecraft. The current waiver expires at the end of 2011, and NASA officials warned that it needed to be extended this year because there is a three-year lead time in procuring the spacecraft. The House bill would extend the waiver until July 2016. The Senate Foreign Relations Committee approved earlier this week a separate standalone bill that would extend NASA's INKSNA waiver only for Soyuz purchases, and until either Orion or a commercial alternative enters service. Worsening relations with Russia in the wake of that country's incursion into Georgia last

month had put any INKSNA waiver in jeopardy. Web posted. (2008). [House passes extension of NASA INKSNA waiver [Online]. Available WWW: <http://www.spacetoday.net/> [2008, September 26].]

NASA considers later launch

Hurricane Ike interrupted the practice of intricate repairs planned for the Hubble Space Telescope next month, and Atlantis astronauts said Tuesday they hope to make up the lost time before flying. As a result, senior shuttle managers meeting today and Thursday are likely to recommend pushing back an Oct. 10 launch date to accommodate at least some of the training, and cargo installation that is two days behind. "We did miss seven days of training," Commander Scott Altman said during a morning briefing next to Atlantis at launch pad 39A. "It's hard to slice that out and still stay on track. In the end, I think we're going to try to do most of our training, and that of course may mean a bit of a slip," Altman added. The training time lost when Johnson Space Center closed for more than a week earlier this month included four spacewalk simulations in a giant swimming pool. Two of them practiced repairs to a camera and spectrograph that are considered the mission's most challenging work. Also missed were two simulations involving Hubble staff who will be manipulating the telescope from the ground during its final servicing mission, and another covering emergency launch procedures. Joining Altman on the launch pad in blue flight suits and sunglasses were Pilot Greg Johnson and mission specialists Andrew Feustel, Michael Good, John Grunsfeld, Massimino and Megan McArthur. Since arriving Sunday evening at Kennedy Space Center, the astronauts have practiced landing the shuttle in modified Gulfstream jets and emergency escapes from the launch pad. The local training culminates this morning with a complete dress rehearsal of a launch countdown, from the time the astronauts wake up to a simulated liftoff time of 11 a.m. The crew will then return to Houston. Web posted. (2008). [NASA considers later launch [Online]. Available WWW: <http://www.floridatoday.com/> [2008, September 24].]

September 24: Scientist accused of selling rocket data to China

A scientist who heads a U.S. high-tech company has been charged with illegally selling rocket technology to China and offering bribes to Chinese officials, federal prosecutors said Wednesday. Shu Quan-Shen, 68, made an initial appearance in U.S. District Court in Norfolk and is being held in jail until a bond hearing Monday. ["Scientist accused of selling rocket data to China," **Florida Today**, September 25, 2008, p 4A.]

Shuttle chiefs propose delayed launch dates

Citing disruptions that Hurricane Ike caused in Houston, shuttle program managers Wednesday recommended delaying the year's last two missions. If top executives approve the new dates next week, Atlantis would lift off for the Hubble Space Telescope on Oct. 14 instead of Oct. 10. Endeavour would begin its International Space Station supply trip Nov. 16 instead of Nov. 12. "This gives the teams a chance to make sure they're ready to carry out this rather complex mission," Kennedy Space Center spokesman Allard Beutel said of the Hubble flight. During their training at KSC this week, Atlantis crew members said they hope to make up as many as possible of seven training days lost when the hurricane closed Johnson Space Center for more than a week. Those days included valuable practice for two telescope repairs they will attempt during the 11-day mission. While managers discussed schedules, the astronauts Wednesday finished local training with a countdown rehearsal. ["Shuttle chiefs propose delayed launch dates," **Florida Today**, September 25, 2008, p 1A.]

September 25: Atlantis Accepts Hubble Cargo

Cargo for the fifth and final mission to service the Hubble Space Telescope today is being installed in shuttle Atlantis' cargo bay at Kennedy Space Center's launch pad 39A. United Space Alliance workers began loading operations at 8 a.m., and expect to complete the job by 8 p.m., when latches

securing the payload will be closed. Around an hour later, workers will begin establishing electrical connections between the shuttle and the payload. The sensitive cargo includes a powerful new camera and ultraviolet spectrograph, plus new guidance sensors, batteries and gyroscopes. Tools needed for complex repairs of two more science instruments - the Advanced Camera for Surveys and Space Telescope Imaging Spectrograph - are also packed. Web posted. (2008). [Atlantis Accepts Hubble Cargo [Online]. Available WWW: http://www.floridatoday.com/the_flame_trench_blog [2008, September 25].]

1 extra shuttle flight moves forward in Congress

In the midst of its wrangling over a financial bailout, the United States Senate did adopt a NASA measure last night to add one more shuttle flight to the manifest. There are several steps left in the process and President Bush's budget chiefs have said in the past they would veto any bill increasing NASA's budget or extending the shuttle beyond 2010. The measure, the NASA Authorization Act of 2008, would also authorize a \$2.6 billion budget increase over what President Bush has proposed for the agency next year. That figure includes \$1 billion to help accelerate the development of the shuttle's replacement. The bill would authorize NASA to conduct an extra shuttle mission to deliver the Alpha Magnetic Spectrometer to the International Space Station. Web posted. (2008). [1 extra shuttle flight moves forward in Congress [Online]. Available WWW: http://www.floridatoday.com/the_flame_trench_blog [2008, September 26].]

September 26: Expendable Launch Vehicle Status Report

Status Report: ELV-092608. Mission: IBEX (Interstellar Boundary Explorer); Launch Vehicle: Pegasus XL (Orbital Sciences); Launch Facility: Reagan Test Site, Kwajalein Pacific Atoll; Launch Date: Oct. 19, 2008; Launch Time: 2:58 p.m. - 3:06 p.m. EDT (06:58 a.m. - 07:06 a.m. local Kwajalein time). The IBEX spacecraft, its upper stage booster and the Pegasus XL rocket are in the Orbital Sciences launch vehicle hangar at Vandenberg Air Force Base in California. IBEX was attached to the Pegasus XL rocket on Tuesday, Sept. 23. A check of the critical systems of the spacecraft was performed on the spacecraft Thursday following mating with the launch vehicle. The payload fairing will be installed around IBEX on Sept. 29. Arrival of the L-1011 is scheduled for Oct. 2, with the mate of the Pegasus rocket to the L-1011 scheduled for Oct. 6. Departure of the L-1011 carrying the Pegasus XL rocket with IBEX from Vandenberg currently is planned for Oct. 10. After a stop in Hawaii, the flight will continue and arrive at the Reagan Test Site at Kwajalein Atoll in the South Pacific on Oct. 11. Web posted. (2008). [Expendable Launch Vehicle Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/launchingrockets/status/2008> [2008, September 26].]

September 28: SpaceX to focus on Cape launch

After finally succeeding with a fourth launch in the central Pacific, SpaceX can turn its attention to the launch of a larger rocket planned for the middle of next year from the Space Coast. "Our attention goes to Cape Canaveral," Diane Murphy, SpaceX spokeswoman, said. "By the end of the year, we should begin our vehicle processing operations." Sunday evening SpaceX's Falcon 1 became the first privately developed liquid fuel rocket to orbit the Earth. Three previous attempts either caught fire, wobbled out of control or were damaged after second stage separation. With the success of the Falcon 1, key engineers can begin working on the Falcon 9, which will be launched from the Cape by the middle of 2009. The first stage is scheduled to arrive on the Cape by the end of the year. The successful launch validates the command and control structure, and launch operation processing and procedure, among other launch techniques, said Murphy. The Falcon I lifted off at 7:15 p.m. (EDT) Sunday from Omelek Island at the U.S. Army Kwajalein Atoll, about 2,500 miles southwest of Hawaii. After the third failure, paying customers decided to withhold their payloads until a rocket reached orbit. However, the rocket launched Sunday carried a 364-pound payload mass simulator,

which remains in orbit. Web posted. (2008). [SpaceX to focus on Cape launch [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, September 29].]

Anomalies Plague U.S. Launch Vehicles

Errant testing of parts used for government launch vehicles is slowing a handful of future launches. Officials learned this summer that a vendor used by United Launch Alliance (ULA), which markets Boeing's Delta IV and Lockheed Martin's Atlas V, conducted vibration testing for parts with improperly calibrated equipment. ULA did not identify the vendor. The U.S. Air Force is now conducting a "pedigree study" to retest parts that "we thought had been tested to adequate levels but may not be," says Gary Payton, Air Force deputy undersecretary for space. Investigators also are trying to solve an "uncommanded actuator anomaly" discovered with the Russian-designed RD-180, the main engine for the Atlas V. It didn't destroy the launcher, Payton says, but engineers must identify the root cause before future launches. Finally, the Delta II, three-stage variant has a problem with a timer for the third stage. "We've got two GPS satellites sitting down at the Cape waiting for a launch," Payton says. Other missions that could be affected include a Delta IV heavy rocket carrying an intelligence payload this October and a Wideband Global Satcom spacecraft set to boost on an Atlas V in November. E-mail distribution. (2008). [Aviation Week's [Aerospace Daily & Defense Report](#) Re: "Anomalies Plague U.S. Launch Vehicles," [Electronic]. Vol. 227, No. 63, [September 29, 2008].]

Hubble telescope fails; NASA to delay shuttle

NASA said Monday that it is delaying its mission to the Hubble Space Telescope until next year because of a serious breakdown of the observatory in orbit. Space shuttle Atlantis had been scheduled to blast off in just two weeks, but an unexpected problem with the Hubble appeared Saturday night, when the telescope stopped sending science data. That potentially means a new repair issue for the astronauts to confront, one they haven't trained for and never anticipated. The failure of the command and data-handling system for Hubble's science instruments means the telescope is unable to capture and beam down the data needed to produce its stunning deep space images. Early Monday afternoon, NASA announced that the October 14 launch had been postponed until at least early next year, possibly February. When Atlantis does fly, NASA may send up a replacement part for the failed component. The mission by Atlantis and a seven-person crew will be the fifth and final servicing mission to Hubble. Now, Endeavour will be the next shuttle up, on a trip to the international space station in November. Endeavour is at the launch pad; it was supposed to serve as a rescue ship for Atlantis in case of trouble. . Web posted. (2008). [Hubble telescope fails; NASA to delay shuttle [Online]. Available WWW: <http://www.cnn.com/> [2008, September 29].]

September 30: Cabana to succeed Parsons as Kennedy Space Center Director

NASA announced Tuesday that William Parsons, director of the John F. Kennedy Space Center in Florida, is leaving the agency in mid-October to pursue opportunities in the private sector. Parsons will be succeeded by former astronaut Robert Cabana, currently director of NASA's John C. Stennis Space Center in Mississippi. Gene Goldman, Stennis' deputy director, will become the acting center director. Parsons, who joined NASA in 1990, also has served as director of Stennis. His other NASA assignments have included launch site support manager, manager of the Space Station Hardware Integration Office, chief of operations of the Propulsion Test Directorate, Space Shuttle Program manager and deputy director of the Johnson Space Center in Houston. "It has been my distinct privilege to have gotten to know and work with Bill Parsons since joining NASA as the administrator," NASA Administrator Michael Griffin said. "In managing both centers and programs for NASA, Bill has demonstrated unswerving dedication to the mission and unshakable loyalty to his teammates. I have learned to expect that from marines, and Bill's early training is always in evidence. While wishing him well in his new endeavors, I will miss him greatly." His successor, Cabana, is a

native of Minnesota. He graduated from the U.S. Naval Academy in 1971 with a Bachelor of Science degree in mathematics and was commissioned as an officer in the U.S. Marine Corps. Cabana is a distinguished graduate of the U.S. Naval Test Pilot School and has logged over 7,000 hours in 36 different aircraft. After his selection as an astronaut candidate in June of 1985, Cabana completed his training in 1986. He has flown four space shuttle missions, serving as the pilot of Discovery missions STS-41 in October 1990 and STS-53 in December 1992, commander of Columbia on STS-65 in July 1994, and commander of Endeavour on STS-88 - the first International Space Station assembly mission - in December 1998. Before being named the director at Stennis in October 2007, Cabana served as deputy director of Johnson. In addition, Cabana has worked as chief of NASA's Astronaut Office; manager of international operations of the International Space Station Program; director of NASA's Human Space Flight Program in Russia; deputy director of the International Space Station Program; and director of Flight Crew Operations. "Bob Cabana is long-time colleague, and another whose marine training has redounded to NASA's benefit," Griffin said. "Bob has seen it all and done it all in human spaceflight, and done it with an open, collaborative style. There is just no better teammate. He will be a terrific successor to Bill Parsons as Director of KSC." Web posted. (2008). [Hubble telescope fails; NASA to delay shuttle [Online]. Available WWW: <http://www.spaceflightnow.com/> [2008, September 30].]

NASA plan for retiring shuttles called lacking

Even as Houston's Johnson Space Center and rival sites wage a behind-the-scenes lobbying battle to obtain a space-flown shuttle orbiter for eventual museum display, a government report released Tuesday took NASA to task for failing to plan adequately for the shuttle fleet's post-flight future. A report by Congress' watchdog Government Accountability Office concluded that NASA has yet to develop reliable cost estimates for retiring the shuttle fleet in 2010 and cleaning the coveted space orbiters for display at sites competing for the assignment. The 18-page report, released on the eve of NASA's 50th anniversary of operations, urged the space agency to detail expected costs for lawmakers in coming months. GAO analysts also urged NASA to provide Congress "a more transparent assessment of funding needs for the space shuttle program's property transition and retirement activities." NASA Deputy Administrator Shana Dale quickly endorsed the GAO's recommendation. NASA's fleet includes the shuttles Atlantis, Discovery and Endeavour. The shuttle Enterprise is displayed at the Smithsonian Institution's Air and Space Museum's site in Chantilly, Va. The shuttle Enterprise never went into space, but did fly runway approach and glide-landing tests in 1977. Johnson Space Center is considered a top contender for one of the shuttles still in service because of its long role in America's manned space program and the loyalty of past and present NASA personnel. Other contenders include the Kennedy Space Center; the Smithsonian; NASA's Marshall Space Flight Center in Huntsville, Ala., the National Museum of the United States Air Force at Wright-Patterson Air Force Base, Ohio; and the Museum of Flight in Seattle, which includes a former manufacturing facility of The Boeing Co. Congressional delegations from each state, including Texas, already have been privately lobbying NASA for one of the spacecraft. "The decision is certainly going to be a hot potato," said Michael Neufeld, chairman of space history at the Smithsonian's Air and Space Museum. "There are a lot of people out there who want one, and there won't be enough to go around. NASA is going to have to decide." Neufeld said only NASA itself can handle the costs and challenges of detoxifying space-flown shuttle orbiters. With 10 more missions scheduled to the international space station before the end of 2010, NASA spokesman Mike Curie said the retirement of the fleet and the eventual destination of each orbiter for public display "is not at the forefront of our thoughts right now." Web posted. (2008). [NASA plan for retiring shuttles called lacking [Online]. Available WWW: <http://www.chron.com/> [2008, September 30].]

Senate would require NASA to upgrade IT

NASA would be required to develop technology to allow the public to experience missions to the moon and Mars under a \$20.2 billion reauthorization bill passed by the Senate. The bill passed Sept.

25 would require NASA officials to deliver a multimedia experience to the public, including high-definition video, 3-D images, and scientific data delivered over a high-bandwidth network. The bill also calls for a review of the security systems that protect NASA's information technology systems and data. The review would look at the ability of NASA's network to limit, detect and monitor access to resources and information. It would also examine physical access to network resources. Also, NASA would have to consult with other federal agencies to develop a framework for promoting worldwide safe access to space. The bill aims to ensure that entering, returning from and working in space is free from physical or radio frequency interference. NASA must also develop a program to help promote the competitiveness of small, minority-owned and women-owned businesses. The space agency would join partnerships with industry, academia, government agencies and national laboratories. Web posted. (2008). [Senate would require NASA to upgrade IT [Online]. Available WWW: <http://www.fcw.com/> [2008, September 30].]

U.S. Trying To Seal Leaks To China's Space Program

As China ramps up its space program in a bid to catch the United States, Washington is taking pains to make sure that it is not helping China along in that quest. In the same week as China prepared to conduct its first spacewalk, a Chinese-American scientist found himself under scrutiny by the U.S. government. The case is the latest in a series of heightened efforts by the Justice Department to clamp down on the leakage of technology and sensitive information to China. Last Wednesday, the FBI arrested Shu Quansheng, a Shanghai-born, naturalized U.S. citizen, for allegedly exporting rocket technology to China and trying to bribe Chinese officials. The head of a high-tech firm in Virginia, Shu is an expert in cryogenics, the science of very low temperatures and their effect on materials; in particular, he has studied liquid oxygen and liquid hydrogen, which are used to power space launches. The arms charges carry sentences up to 10 years, and the bribery charge can warrant up to five years. The government has attempted to crack down on what it says is an escalation of espionage activities on behalf of China. The Justice Department last fall unveiled a "counter-proliferation initiative" to combat the export of sensitive and dual-use technology to countries such as China and Iran. Since 2006, the government has prosecuted at least 20 cases involving the sharing of sensitive information or technology, from aircraft parts to warship design, with China, according to Justice Department data. Web posted. (2008). [U.S. Trying To Seal Leaks To China's Space Program [Online]. Available WWW: <http://www.forbes.com/> [2008, September 30].]

Space reps celebrate funding

Space and government representatives gathered Monday to celebrate securing more than \$15 million for space priorities this year, despite billions in state budget cuts. It's a feat they hope to repeat. "Last year, this event played a key role in shaping legislation," said George Hauer, vice president and director of Kennedy Space Center operations for Wyle Laboratories. "With the budgetary problems of the state, it's even more important." At the Florida Solar Energy Center, roughly 150 forum participants agreed to collaborate again to help the state weather the shuttle fleet's retirement in 2010 and a possible five-year gap in manned spaceflight. NASA estimates 3,000 to 4,000 space center jobs will be lost during the transition, which local economic development officials have said could drain more than \$1 billion from Brevard County's economy. The legislative forum, attended by Lt. Gov. Jeff Kottkamp and KSC Director Bill Parsons, encouraged state leaders to continue this year's funding for work-force training programs and infrastructure improvements to support commercial launches. More emphasis was placed on the need to improve science and math education, and to ensure Florida universities are better positioned to win NASA research grants. Web posted. (2008). [Space reps celebrate funding [Online]. Available WWW: <http://www.floridatoday.com/> [2008, September 30].]

NASA Assigns Crew for Shuttle Discovery's STS-129 Mission

NASA has assigned the crew for space shuttle Discovery's STS-129 mission. The flight will deliver two experiment racks to the International Space Station. Marine Col. Charlie Hobaugh will command the mission, which is targeted to launch in October 2009. Navy Capt. Barry Wilmore will serve as the pilot. Mission Specialists are Robert Satcher, Navy Capt. Michael Foreman, Marine Lt. Col. Randy Bresnik and Leland Melvin. Wilmore, Satcher and Bresnik will be making their first trips to space. The mission will return Canadian Space Agency astronaut and station crew member Robert Thirsk to Earth. This is slated to be the final space shuttle crew rotation flight to or from the space station. Discovery will deliver parts to the space station, including two spare gyroscopes. The mission will feature four spacewalks. [“NASA Assigns Crew for Space Shuttle Discovery’s STS-129 Mission,” **Press Release #08-250**, September 30, 2008.]

OCTOBER

October 1: With no KSC, area not familiar

Ever wonder what Brevard County and Central Florida would look like without NASA and Kennedy Space Center? Imagine a county with half as many people, and a region without theme parks. "It would be radically different," suggests Nick Maddox, a management professor at Stetson University in DeLand and a "futurist" who helps businesses and people think creatively and develop strategic plans. Like Volusia County to the north, Brevard would be characterized by mom-and-pop beach businesses, more dependent on tourism and lacking a strong base of manufacturing and high-tech industry, Maddox imagines. No cruises would sail from Port Canaveral, and Patrick Air Force Base might have been closed by now. With fewer economic opportunities, Brevard's population might be half what it is today, with more people gravitating to Tampa and Jacksonville instead of the Orlando area. Without NASA, Walt Disney, who was captivated by space and futuristic themes, might never have made Central Florida the home of Disney World, Maddox said. Other theme parks wouldn't have followed. "And then who can imagine the implications population- and development-wise?" said Maddox. "That changes the ballgame for the entire Central Florida area." Without so many contractors, spin-off businesses and entrepreneurs drawn by the space program, an Interstate 4 technology corridor likely wouldn't have developed – in fact, the interstate itself might not exist. "I cannot think of a greater impact on the state," Maddox said of NASA's presence. "Brevard would be very different county, and much less dynamic than it is." Web posted. (2008). [With no KSC, area not familiar [Online]. Available WWW: <http://www.floridatoday.com/> [2008, October 1].]

Grand Opening: Hubble Exhibit at KSC

Two former NASA astronauts and a key program manager will be on hand at the Kennedy Space Center Visitor Complex on Friday for the grand opening of an exhibition of stunning images captured over the years by NASA's incomparable Hubble Space Telescope. *Eye On The Universe* points up discoveries that have changed the way humans view the universe while allowing people to see ancient stars, nebulas and galaxies as works of art. Launch in April 1990 aboard shuttle Discovery, the flagship observatory has enabled scientists to pin down the age of the universe -- 13.7 billion years -- confirm the existence of black holes and detect for the first time atmospheres around planets in other solar systems while providing the deepest views yet of the universe. But images from the 18-year-old telescope also can be seen as works of art -- aesthetic astronomy. Some of the most vibrant images collected by Hubble scientists and engineers will be on display in the exhibition. Web posted. (2008). [Grand Opening: Hubble Exhibit at KSC [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, October 1].]

Artist knows spacesuits -- inside and out

Ron Woods draws -- literally -- from his decades of experience at NASA. He paints from them, too. His subjects are the spacesuits, gloves and helmets of astronauts past. For more than 40 years, Woods has had an intimate relationship with "extravehicular mobility units" as the suits are called, perhaps greater than the men and women who donned them in space. He has sewed them, modeled them, escorted them on "classified" missions to be repaired, and zipped them on Neil Armstrong and Buzz Aldrin for the astronauts' historic journey to the moon. As NASA celebrates its 50th anniversary today, Woods' paintings and career offer a glimpse into the agency's greatest moments and are a celebration of one of the space program's achievements: the spacesuit, the most personal rocket ship of all. Now 62 and still working as an equipment specialist at NASA, Woods continues to look after spacesuits, but his real passion is immortalizing them in watercolors and oils. His paintings -- one depicts the glove worn by Eugene Cernan, the last man to have walked on the moon, another of a rack of limp old suits hanging forgotten in some warehouse -- adorn the walls of NASA buildings and offices across the country. Many artists who paint subjects from the history of space exploration focus on the rockets -- the steel, alloy and composite machines bolted together in a

marvel of engineering. Others concentrate on the astronauts themselves, portraying them hopping around the moon like Michelin men in fishbowl helmets. But Woods' paintings are a bridge between the hardware and people, painted in such a way that they bring out both the technical wonder and the humanity of the space program. "It's not just a piece of cold hardware when you think of all the people who worked on it and in it," he says. And Woods knows both the high-tech garments and the heroes who wore them. Soon after joining NASA, Woods decided to go to college and study art, thinking he would be an architect. But as he studied, he realized that he loved his job and found that drawing spacesuits and making sketches of the astronauts is what made him happy. He moved to Florida, where much of the Apollo training was done and he stayed through Skylab and Apollo-Soyuz. In the early 1970s, he was reassigned to Houston to work on the next generation of spacesuits. He returned to Florida after the shuttle began launching in 1981. Web posted. (2008). [With no KSC, area not familiar [Online]. Available WWW: <http://www.floridatoday.com/> [2008, October 1].]

STS-126 rolling to Pad 39A in two weeks – STS-125 back to VAB

While the status of STS-125's Hubble Servicing Mission remains fluid, managers at the Kennedy Space Center (KSC) are creating plans to move Endeavour and her stack to Pad 39A in two weeks time. This plan would result in Endeavour launching as STS-126 for the final mission of the year, around November 14. Endeavour's role as the STS-400 LON (Launch On Need) shuttle means she will need to be rolled off Pad 39B, for rare trip midway down the crawlerway, before being placed on Pad 39A for her primary STS-126 mission. This will be pre-empted by STS-125/Atlantis being rolled back to the Vehicle Assembly Building (VAB) for the interim period. There Atlantis would remain until the status of Hubble becomes clearer, with the potential to launch in STS-119's February launch window. This would result in Discovery taking up the STS-400 – which may be re-named – role on Pad 39B, ahead of her eventual move to Pad 39A for an April mission to the International Space Station (ISS). Web posted. (2008). [STS-126 rolling to Pad 39A in two weeks – STS-125 back to VAB [Online]. Available WWW: <http://www.nasaspaceflight.com/> [2008, October 1].]

Parsons to discuss space plan

The Melbourne-Palm Bay Area Chamber of Commerce will feature Kennedy Space Center Director Bill Parsons at its Business Breakfast of Champions meeting on Thursday (October 2), sponsored by Saturn Space Coast. The Business Breakfast of Champions, scheduled for 7:15 a.m. at the Hilton Melbourne Beach Oceanfront, is a monthly membership breakfast that serves as an opportunity to learn about issues and programs pertinent to area businesses. Parsons will be discussing "Constellation: The Next Major Step in Exploration." He will be reviewing NASA's plans for the next generation of space exploration. He also will highlight the new Ares launch vehicle and Orion spacecraft, as well as the groundwork NASA is putting into place to travel to the moon, Mars and beyond. Web posted. (2008). [Parsons to discuss space plan [Online]. Available WWW: <http://www.floridatoday.com/> [2008, October 1].]

NASA Extends International Space Station Contract

NASA has awarded a two-year, \$650 million contract extension to The Boeing Co. to continue engineering support of the International Space Station to Sept. 30, 2010. The action extends the U.S. On-Orbit Segment Acceptance and Vehicle Sustaining Engineering contract, awarded in January 1995. Work under the contract extension will include completion of delivery and on-orbit acceptance of the U.S. segment of the station, sustaining engineering of station hardware and software, support of U.S. hardware and software provided to international partners and participants in the station program, and end-to-end subsystem management for the majority of station systems. The work will be performed at NASA's Johnson Space Center in Houston, Kennedy Space Center in Florida, Marshall Space Flight Center in Huntsville, Ala., and at other domestic and international locations.

["NASA Extends International Space Station Contract," **Contract Release #C08-059**, October 1, 2008.]

October 2: State grants to benefit SpaceX

Nearly \$300,000 in state grant money designed to benefit Air Force-related projects in Brevard County will help fund a helium gas pipeline tied to an upcoming SpaceX launch and fend off future potential budget cuts at Patrick Air Force Base. The biggest chunk of the defense grants, about \$200,000, will be used to install a helium gas pipeline to pressurize the flight tank for the Falcon 9, a nine-engine rocket SpaceX hopes to launch in 2009 from Launch Complex 40 in Cape Canaveral. While the launch pad improvements immediately help the private SpaceX, the grant also benefits the Air Force. "It makes it more viable for either the Air Force to lease it for commercial applications or for them to use it themselves," said Paul Hanson, Space Coast Defense Alliance Committee chairman at the Economic Development Commission of Florida's Space Coast, which will administer the grants. A \$97,875 defense reinvestment grant will be used by the EDC partly for an awareness campaign to help ward off budget cuts that could reduce the size or mission of Patrick. The grants were part of \$2.25 million in state funds awarded to improve Florida's position as a host state for military installations and activities. After three unsuccessful launch attempts, SpaceX orbited a small rocket Sunday from an island in the Central Pacific. The company now plans to focus effort on its operation at Cape Canaveral. "That success is good for everyone," said Deb Spicer, Space Florida vice president for government and external affairs. "Now we can move to the next step." Web posted. (2008). [State grants to benefit SpaceX [Online]. Available WWW: <http://www.floridatoday.com/> [2008, October 2].]

Atlantis Roll Back Targeted Oct. 20

Atlantis is tentatively scheduled to return to the Vehicle Assembly Building on Oct. 20, allowing Endeavour to take over launch pad 39A five days later. This weekend, workers will begin undoing electrical connections between Atlantis and the highly sensitive cargo it will take to the Hubble Space Telescope early next year. A technical failure on the telescope last weekend forced postponement of the mission - previously set to launch Oct. 14 from Kennedy Space Center - until February at the earliest. The Hubble payload is expected to be transferred Tuesday from Atlantis' payload bay to the changeout room at pad 39A, where it will be readied for its trip back to the Payload Hazardous Servicing Facility a week later. The cargo, contained in four carriers, must be carefully bagged to prevent contamination while it is transported in a giant canister. "The Hubble payload is an order of magnitude more sensitive to contamination than a space station payload, so extra precautions are necessary," said George Diller, a space center spokesman. If payload processing goes according to schedule, Atlantis would be rolled back to the assembly building Oct. 20 on its mobile launch platform, reversing the 3.5-mile journey it made to the launch pad on Sept. 4. Then, on Oct. 25, Endeavour would be moved about a mile south from pad 39B to take Atlantis' place on 39A. Endeavour's launch on a space station outfitting mission is targeted for Nov. 16, though shuttle managers think they could be ready by Nov. 14. Officials will continue to review plans for the shuttle moves Friday and could make adjustments. Web posted. (2008). [Atlantis Roll Back Targeted Oct. 20 [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, October 2].]

Hubble Cargo Set For Removal

Workers this weekend will begin removing the Hubble Space Telescope cargo from shuttle Atlantis, setting the stage for the rollback of Atlantis to the Vehicle Assembly Building possibly as early as next week, Kennedy Space Center officials say. A telescope hardware failure discovered last weekend forced a postponement of the fifth and final Hubble servicing mission, which had been targeted for an Oct. 14 liftoff. NASA officials said Monday that February was likely the earliest the mission could launch. Work to remove the payload - which includes four carriers holding highly sensitive science

instruments, and new guidance sensors, batteries and gyroscopes - will begin Saturday and could take several days. The cargo will be inserted into a giant canister in the changeout room at launch pad 39A, then returned to a super-clean processing facility at the spaceport by Tuesday. Atlantis itself could be rolled back to the 52-story assembly building on its mobile launch platform soon after the payload work is complete. That would pave the way for Endeavour to take Atlantis' place on pad 39A. Web posted. (2008). [Hubble Cargo Set For Removal [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, October 2].]

Despite Waiver, NASA to Stop Using Russian Cargo Vehicle

NASA has no intention of paying Russia to help deliver supplies to the international space station (ISS) beyond 2011 despite winning congressional and presidential approval to do so. "NASA's policy has not changed," NASA spokesman David Steitz said Oct. 2. "NASA will rely on U.S. commercial cargo services to resupply ISS following retirement of the shuttle, and does not intend to purchase Progress cargo services after 2011." The U.S. space agency's recommitment to the guiding principal of its Commercial Orbital Transportation Services (COTS) program came on the heels of U.S. President George W. Bush signing into law a \$630 billion temporary spending measure to keep the federal government operating at current spending levels until early March. Among the many pieces of unfinished business Congress addressed in the so-called continuing resolution was extending NASA's existing waiver to a 2000 weapons proliferation law that bars the agency from buying space station-related goods and services from Russia as long as Russian aerospace firms continue to aid Iranian weapons programs. Had Congress not acted to extend the agency's waiver from having to comply with the Iran-North Korea-Syria Nonproliferation Act (INKSNA), NASA insists it would not have been able to conclude a new deal with Russia for the three-person Soyuz capsules needed to transport U.S., Canadian, European and Japanese astronauts to the international space station beyond 2011 when the existing waiver would have expired. Web posted. (2008). [Despite Waiver, NASA to Stop Using Russian Cargo Vehicle [Online]. Available WWW: <http://www.space.com/> [2008, October 7].]

October 3: Expendable Launch Vehicle Status Report

Status Report: ELV-100308. Mission: IBEX (Interstellar Boundary Explorer); Launch Vehicle: Pegasus XL (Orbital Sciences); Launch Facility: Reagan Test Site, Kwajalein Pacific Atoll; Launch Date: Oct. 19, 2008; Launch Time: 3:02 p.m. - 3:05 p.m. EDT (07:02 a.m. - 07:05 a.m. local Kwajalein time on Oct. 20). The IBEX spacecraft, its associated upper stage booster and the Pegasus XL rocket are in the Orbital Sciences Corporation launch vehicle hangar at Vandenberg Air Force Base in California. IBEX has been mated to Pegasus, installation of the fairing around the spacecraft was completed on Oct. 1, and the Pegasus has been installed on its transporter. Orbital Sciences' L-1011 carrier aircraft arrived at Vandenberg on Oct. 2. The Pegasus will be mated to the aircraft on Oct. 6. Departure of the L-1011 from Vandenberg, carrying the Pegasus XL rocket with IBEX, is currently planned for Oct. 10. After a stop in Hawaii, the flight will continue and arrive at the Reagan Test Site at Kwajalein Atoll in the South Pacific on Oct. 11. Web posted. (2008). [Expendable Launch Vehicle Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/launchingrockets/status/2008> [2008, October 3].]

October 4: SGS job loss to exceed 400

The ranks of the unemployed in Brevard County now include more than 400 Space Gateway Support workers and subcontractors who were not hired by the 15 companies that took over the support contracts for Kennedy Space Center and Cape Canaveral Air Force Station on Wednesday. Some 252 workers from a group of 1,800 SGS employees were not hired by the contractors who took over support contracts for KSC and CCAFS, SGS Human Resources Director Sam Gutierrez confirmed Friday. A similar percentage of the remaining 1,000 SGS subcontractor employees also lost their jobs, bringing the total over 400, he said. NASA figures show the number of unemployed could be as

high as 446, but that figure could not be confirmed, and the new contractors are still hiring a few SGS employees. The number of support jobs actually remained the same, but some SGS employees were not used. "We have identified as many job slots as there were before," NASA spokesman Bill Johnson said. "The new contractors didn't offer them jobs, and brought in their own people." The lost jobs paid an average of \$50,000 per year, Gutierrez said, which represents about a \$20 million blow to Brevard's economy. These job losses come shortly after the Brevard County unemployment rate edged up to 7.2 percent in August, the highest in more than 13 years and up from 4.7 percent a year ago. Brevard lost 2,300 jobs during the past year. Web posted. (2008). [Hubble Cargo Set For Removal [Online]. Available WWW: <http://www.floridatoday.com/> [2008, October 4].]

October 6: Endeavour Launch Moved Up

NASA has bumped up its target launch date for Endeavour by two days, to Nov. 14 - six weeks from today. The earlier timetable was made possible after this week's postponement of Atlantis' planned Oct. 14 launch, because of a computer failure on the Hubble Space Telescope. Endeavour was being prepared for a rescue flight if Atlantis sustained major damage on its Hubble servicing mission, but crews have now turned their attention to Endeavour's trip to the International Space Station. The launch from Kennedy Space Center is tentatively set for 7:55 p.m. Nov. 14, with landing expected at 2:15 p.m. Nov. 29. The date won't be official until senior NASA executives hold a flight readiness review Oct. 30 and 31. Endeavour's mission will increase the space station's resident crew capacity from three to six. Preparations have begun to move Endeavour from launch pad 39B to pad 39A, about 1.5 miles to the south. Electrical connections between Atlantis and the Hubble cargo will be unhooked this weekend, and the cargo will be transferred to the launch pad's changeout room Tuesday. On Oct. 13, the sensitive cargo will be placed in a giant canister for transportation back to the spaceport's super-clean Payload Hazardous Servicing Facility. A week later, on Oct. 20, Atlantis is scheduled to roll back to the Vehicle Assembly Building, where it will sit until next year. Mid-February is considered the earliest it could launch. Endeavour then would roll around to pad 39A on Oct. 25. The next day, Endeavour's crew will arrive at the space center to practice landings in modified jets and emergency escape procedures at the launch pad. They'll complete a countdown dress rehearsal Oct. 29. Web posted. (2008). [Endeavour Launch Moved Up [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, October 6].]

October 7: IBEX to Pioneer New Method Of Raising Orbit

Set to launch Oct. 19, NASA's Interstellar Boundary Explorer (IBEX) mission will use a new orbit-raising method that could enable a variety of future small science missions to get beyond low Earth orbit without upgrading to large launch vehicles. Weighing 1,016 pounds at launch, IBEX will be placed in an initial 130-mile orbit by an air-launched Pegasus XL originating from Kwajalein Atoll in the Pacific Ocean. To reach its final, highly elliptical orbit, the spacecraft will fire an ATK Star 27 solid rocket motor to boost it to its high altitude apogee, then use a hydrazine propulsion system to reach its final 200,000-mile by 4,400-mile orbit. "Part of our mission basically invented a completely new way to launch spacecraft into these distant orbits," said David McComas, IBEX principal investigator at the Southwest Research Institute (SWRI) in San Antonio, Texas. "It opens up the possibility for lots of new missions off of NASA's smallest launch vehicle, the Pegasus rocket." The \$169 million IBEX mission will paint the first comprehensive picture of the edge of the heliosphere, where the solar wind butts up against interstellar dust and gas. The heliosphere protects Earth from most dangerous galactic cosmic rays. E-mail distribution. (2008). [Aviation Week's [Aerospace Daily & Defense Report](#) Re: "IBEX to Pioneer New Method of Raising Orbit," [Electronic]. Vol. 228, No. 5, [October 7, 2008.].]

Hubble Payload Removal Under Way

The cargo that NASA hoped to launch to the Hubble Space Telescope next week instead is being removed from shuttle Atlantis today. A computer failure on the orbiting observatory last week

forced the Oct. 14 repair mission's postponement until February at the earliest, and the payload must now be returned to storage in a super-clean facility. It's the first time in about two years that a payload has been removed from a shuttle, Kennedy Space Center officials say. This morning, space center workers maneuvered a set of telescoping arms called the Payload Ground Handling Mechanism into the shuttle's payload bay. They are undoing latches fastening the Hubble cargo's four carriers into the orbiter, with a total of 16 connection points. By late tonight, the payload will have been pulled back into the "changeout" room in the launch pad's Rotating Service Structure, where it will be sealed in protective bags. With its payload removed, Atlantis will be prepared to return to the spaceport's 52-story Vehicle Assembly Building on Oct. 20. Web posted. (2008). [Hubble Payload Removal Under Way [Online]. Available WWW: http://www.floridatoday.com/the_flame_trench_blog [2008, October 7].]

Some Fixes Identified For Atlas V Launch Woes

Officials at U.S. Air Force Space and Missile Systems Center (SMC) in Los Angeles now believe the "most probable" root cause of an actuator anomaly during an Atlas V launch mission last spring was transient debris. During the April 14 mission, when an Atlas V boosted the ICO-G1 commercial mobile communications satellite into orbit, a "transient" event occurred, though it caused no impact to the mission, the officials say. Air Force Deputy Undersecretary for Space Gary Payton mentioned the problem with the Russian-designed RD-180 among a few complications with the Air Force's launch fleet during a breakfast last week with reporters in Washington. No hardware fix is needed to solve the problem, SMC officials say. Rather, they are drawing up a new preflight flushing process for the hydraulic system to remove residual debris from the manufacturing and assembly processes. "We expect to clear the RD-180 flight constraint before our next scheduled launch, currently Dec. 4 pending range confirmation," they say. Boeing's second Wideband Global Satcom satellite is supposed to go into orbit on that rocket. E-mail distribution. (2008). [Aviation Week's Aerospace Daily & Defense Report Re: "Some Fixes Identified For Atlas V Launch Woes," [Electronic]. Vol. 228, No. 5, [October 7, 2008].]

NASA expected to release rosier job forecast for post-shuttle era

NASA plans to tell Congress Wednesday that the retirement of the space shuttle in 2010 won't result in as many job losses as initially anticipated, according to congressional sources and documents obtained by the *Orlando Sentinel*. A rosier forecast would be a boon for Kennedy Space Center, which has been told to expect a worst-case estimate of 6,400 job losses. Some officials say that NASA is forecasting at least 1,000 fewer job losses, and that the worst case number of job losses now is likely to be less than 5,000. The reason for the newfound optimism in the report is that NASA's next manned space program, called Constellation, should employ more shuttle workers at NASA centers nationwide. But no specific numbers immediately were available. "The estimated workforce reductions at the Centers continue to become smaller, as anticipated. As more work gets turned on, the cumulative reductions at the Centers will continue to lessen," according to a document entitled: NASA Workforce Transition Strategy Summary Points. But not everyone at KSC should expect to avoid a pink slip. The document also noted that NASA is planning a "workforce summit this November near KSC to provide networking opportunities and enhance existing public and private partnerships to help with transition." Job losses at the Cape are emerging as a potent political issue in the presidential election. Space workers who recently lost their jobs the Cape will hold a news conference in Brevard County Wednesday to support Democratic candidate Barack Obama's promise to increase NASA funding and denounce what they claim are plans by Republican hopeful Sen. John McCain's plan to freeze the agency's budget. NASA officials would not comment on the figures until Wednesday when they are scheduled to be officially released. "We will be happy to comment on the report after members of Congress have had an opportunity to review its content," said NASA spokesman Michael Cabbage. The job cuts are a consequence of NASA retiring the shuttle to make room for the Constellation moon rocket program, which isn't scheduled

to begin flights until 2015 -- and that's only if NASA can overcome budget and technical problems dogging the program's Ares I rocket and Orion capsule. Web posted. (2008). [NASA expected to release rosier job forecast for post-shuttle era [Online]. Available WWW: <http://www.orlandosentinel.com/> [2008, October 7].]

October 8: NASA Halves KSC Job Cuts Forecast

Kennedy Space Center could lose about 3,500 jobs following the retirement of the spaces shuttles in two years, according to revised NASA estimates released today. The figure reflects about half the number of layoffs originally predicted earlier this year. The number of KSC employees could drop to as low as 4,500 in 2011, the year after the shuttles are grounded, according to the new NASA estimates. However, KSC would pick up an additional 500 jobs over each of the following two years because of work provided by the shuttle's replacement, the Constellation project, the agency said in a report released to Congress. NASA originally projected in an April report that KSC could shed as many as 6,400 jobs. However, during a Senate field hearing held two months later at Kennedy, NASA Administrator Michael Griffin altered his estimate to "three to four thousand," a prediction reflected in today's report. Griffin at the time said he expected to locate sustaining engineering work for the Constellation program at KSC. Web posted. (2008). [NASA Halves KSC Job Cuts Forecast [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, October 8].]

Spinoff 2008 Highlights NASA Innovations in Everyday Life

The 2008 edition of NASA's annual Spinoff publication celebrates the agency's 50th anniversary and highlights 50 new examples of how NASA technology is being put to use in everyday life. This anniversary edition features a 50-year timeline of NASA-derived technologies from historical programs and projects, and a summary of award-winning NASA technologies included in Spinoff over the years. Spinoff 2008 lists many of the latest NASA innovations now in the commercial marketplace. These innovations have resulted in healthcare advances, transportation breakthroughs, public safety benefits, new consumer goods, environmental protection, computer technology and industrial productivity. ["Spinoff 2008 Highlights NASA Innovations in Everyday Life," **Press Release #08-255**, October 8, 2008.]

New Operations Office to Open At KSC

NASA is planning to open a small office at Kennedy Space Center to start preparing to operate Ares 1 rockets and Orion spacecraft once they have been designed, built and delivered to the nation's primary spaceport. NASA's Space Operations Mission Directorate will stand up the office by the end of the year. It's unclear how many NASA managers and engineers will work in the organization, but it won't be a lot of people. "It's still real early in the planning stages," said KSC spokesman Allard Beutel. "But it's not going to be a large number. It's not going to be dozens." NASA's Project Constellation, which is based at Johnson Space Center in Houston, is developing the Ares 1 rocket and Apollo-style Orion space capsules for missions to return American astronauts to the moon by 2020. The first piloted flight is targeted for March 2015, and the new office at KSC will be setting the stage to prepare for ground processing, launch operations and sustaining engineering once the Ares and Orion are operational. The Ares 1 will be a two-stage rocket topped by an Orion capsule and its launch abort system -- a tractor motor system that would pull the Orion spacecraft off the Ares rocket in the event of an inflight explosion or other emergency. The first stage of the vehicle will be a five-segment solid rocket booster derived from the four-segment motors that help propel shuttles into orbit. The second stage will be powered by a J2X engine -- an upgraded version of the J2 engines that powered the second stages of Saturn 5 moon rockets. The new office will lay plans to stack the Ares 1 rockets in the KSC Vehicle Assembly Building and integrate the Orion spacecraft and its abort system with the launch vehicle. The final assembly and integration of the Orion spacecraft will be performed at the KSC Operations & Checkout Building, and the rocket and spacecraft will be joined in the VAB. The fully assembled vehicle and its launch gantry will be rolled

out atop a mobile launcher platform to KSC's pad 39A for launch. Web posted. (2008). [New Operations Office to Open at KSC [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, October 8].]

October 9: Pegasus rocket headed to Pacific isle for NASA launch

An Orbital Sciences Pegasus rocket with a NASA satellite nestled in its nose cone will fly away from California's Vandenberg Air Force Base on Saturday, but the winged booster won't be soaring into space. Slung beneath an L-1011 carrier aircraft, the fully assembled rocket will leave its home port destined for the Kwajalein Atoll in the central Pacific Ocean, part of the U.S. Army's vast missile range, where the launch will occur next weekend. The "Stargazer" jet should be wheels-up around mid-day local time, beginning the 4,700-mile trip that includes an overnight stop at Hickham Air Force Base in Hawaii. Arrival at Kwajalein will kick off several days of final tests, rehearsals and reviews before the October 19 launch to deliver NASA's Interstellar Boundary Explorer spacecraft into an extraordinarily high orbit. The IBEX satellite will observe the interaction between the million mile-per-hour solar wind emitted from the sun and the cold expanse of the galaxy's interstellar medium. Weighing just 250 pounds, the compact probe targets an orbit looping from 4,400 miles at its closest pass to 200,000 miles at its furthest point from Earth, about 50 times the planet's radius. It will take 8 days to complete just one revolution. Web posted. (2008). [Pegasus rocket headed to Pacific isle for NASA launch [Online]. Available WWW: <http://www.floridatoday.com/> [2008, October 9].]

New Cost Overrun Bedevils Planned Mission to Mars

NASA's next big mission is to send a robotic rover the size of a small S.U.V. to Mars. The rover, called the Mars Science Laboratory, would be powered by a nuclear battery and be able to roam far and wide, gathering information with a suite of powerful instruments, including a laser to vaporize rocks. But the Jet Propulsion Laboratory, which is in charge of building the spacecraft, now believes it needs perhaps an additional \$100 million, on top of previous budget increases, to meet the current schedule of launching in September or October next year. With its overall budget tight, NASA has no easy choices. It could keep the current timeline, making up the budget shortfall by delaying or canceling other planetary missions. Or it could delay the Mars Science Laboratory by one or two years, which would ease the short-term budget strain but, the agency says, ultimately add \$300 million or more to the price tag. Or NASA could decide that enough is enough and cancel the mission. That, however, would waste the \$1.5 billion already spent on it and deflate the agency's Mars exploration program. A decision could come as soon as Friday, when officials from NASA's science mission directorate meet with the agency's administrator, Michael D. Griffin. A news conference on the mission is planned for Friday afternoon. Web posted. (2008). [New Cost Overrun Bedevils Planned Mission to Mars [Online]. Available WWW: <http://www.nytimes.com/> [2008, October 9].]

Free admission, concerts at Visitor Complex Oct. 18

To commemorate NASA's 50th Anniversary, the Visitor Complex is hosting a day of free admission Oct. 18 for employees and guests, featuring concerts, entertainment and fireworks. KSC and 45th Space Wing employees and guests can enjoy free admission into the main complex during all hours of operation by showing their badges at the ticket booths. Admission includes exhibits, shows and attractions, including IMAX movies and the Shuttle Launch Experience. Access into the complex does not include the bus tours or admission into the Astronaut Hall of Fame. Concerts begin at 3 p.m. and feature Big Head Johnny and the Eskimos, Rockit, and popular rock band Survivor. Fireworks will burst over the Rocket Garden following the concerts. ["Free admission, concerts at Visitor Complex Oct 18," **Countdown**, October 9, 2008.]

October 10: NASA keeps 2009 launch date for MSL

NASA officials said Friday they're still planning to launch the most complex Mars rover ever a year from now despite problems with the spacecraft's development and budget. The Mars Science Laboratory (MSL) spacecraft had been threatened with a delay to 2011 or even cancellation because of growing costs and concerns that the spacecraft might not be ready for launch in the fall of 2009. NASA officials would not say how much the mission, most recently estimated to cost \$1.9 billion, would now cost. The development of the spacecraft has been hindered by delays manufacturing actuators used on the spacecraft, as well as software issues. Friday's announcement came after a meeting with the NASA administrator to review the mission's progress; another meeting with the administrator about MSL is scheduled for January. Web posted. (2008). [NASA keeps 2009 launch date for MSL [Online]. Available WWW: <http://www.spacetoday.net/> [2008, October 11].]

Parsons Makes Low-Key Exit Today

Bill Parsons today ends a nearly two-year tenure as Kennedy Space Center's director in low-key fashion. Parsons did not want a day of fanfare, speeches and ceremony, officials say. Instead, employees are invited to say goodbye this afternoon at an informal event at Kars Park, located off State Road 3 on space center property. Parsons, 51, announced Sept. 30 he had accepted a position with Lockheed Martin Mission Services, where he'll be vice president and program manager for strategic space initiatives. Since joining NASA in 1990, Parsons also served as director of Stennis Space Center in Mississippi, launch site support manager, manager of the Space Station Hardware Integration Office, chief of operations of the Propulsion Test Directorate, Space Shuttle Program manager and deputy director of the Johnson Space Center in Houston. He'll be replaced Monday by former astronaut Bob Cabana, 59, who leaves his post as Stennis director. Cabana, a veteran of four shuttle flights who this year was inducted into the U.S. Astronaut Hall of fame, recently described his management style as one emphasizing open communication and "taking care of the people that work for you." Cabana becomes Kennedy's 10th center director since 1961. Here's the center director's official job description from NASA's Web site: Kennedy Space Center's strategic core business is to provide space systems processes, test and launch techniques, and develop associated technologies that assist NASA in advancing space exploration and commerce. In leading KSC to success, the Center Director and executive staff set, communicate, and deploy Agency/Enterprise/KSC values and performance expectations; allocate resources and evaluate performance; and align KSC to meet Agency, Enterprise, and future customer expectations. Web posted. (2008). [Parsons Makes Low-Key Exit Today [Online]. Available WWW: <http://www.floridatoday.com/> [2008, October 10].]

Moon Spacecraft Being Designed At KSC

Central Floridians are getting a hands-on chance to help design a spacecraft that will go to the moon. Working on the cutting-edge project on Friday, United Space Alliance workers dressed in outlandish garb appear to step right into a computer screen. WESH 2 News Space Expert Dan Billow took a tour of the Human Motion Computer Lab (located in the RLV Hangar). Little dots represent the real people who, one day, will prepare a real spacecraft to go to the moon. But right now, the models look a bit strange -- wearing funny suits and bathed in the red lights of 16 cameras tied into the computer system. The models are mimicking the movements future United Space Alliance workers will make during Project Constellation, the effort to return to the moon. The information goes into the design of the spacecraft: a rare chance for Central Floridians to get in on work that's usually done out of state. The models are space shuttle workers, moving on -- at least part-time -- to help make the shuttle's replacement. Thousands of shuttle jobs will be eliminated beginning next year. It'll be a wrenching transition, but those moving on to the Constellation said they're very excited. The first launch of the new spacecraft is expected in 2015. Web posted. (2008). [Moon Spacecraft Being Designed at KSC [Online]. Available WWW: <http://www.wesh.com/> [2008, October 10].]

October 13: Winds Stall Move of Hubble Cargo

Gusty winds have delayed for at least a day efforts to move a sensitive shuttle cargo back into storage at Kennedy Space Center. Workers tonight had planned to begin transferring Hubble Space Telescope science instruments and repair equipment from launch pad 39A into the giant canister used to transport payloads. But the weather didn't cooperate, and the outlook for Tuesday is iffy. The schedule was pushed back 24 hours, pending a weather assessment Tuesday. Because the fifth and final Hubble shuttle servicing mission was postponed, its payload and shuttle Atlantis must be moved off pad 39A to make room for Endeavour, now the next shuttle in line to fly on Nov. 14. Endeavour will take supplies to the International Space Station, equipping it to support a six-person crew. Atlantis was scheduled to roll back to the Vehicle Assembly Building next Monday, and Endeavour was expected move from pad 39B to take Atlantis' place on 39A on Oct. 25. Web posted. (2008). [Winds Stall Move of Hubble Cargo [Online]. Available WWW: http://www.floridatoday.com/the_flame_trench_blog [2008, October 13].]

Replacement Hubble Hardware Needs Flight Qualification

NASA's spaceflight schedule for the next six months or so will remain fuzzy until a key piece of hardware for the Hubble Space Telescope can finish its long-deferred acceptance testing, and it has already had some problems. The replacement Science Instrument Command and Data Handling (SIC&DH) unit that will be sent to the Hubble as a last-minute addition to the STS-125 mission has been in storage at Goddard Space Flight Center since the early 1990s, and has never been fully flight qualified. In previous ground tests the backup unit has generated spurious commands and displayed other anomalies that must be run to ground before it can replace the unit that failed Sept. 27. Certifying the backup SIC&DH for flight won't start in the Vehicle Electrical System Test (VEST) facility at Goddard until controllers switch the failed unit on orbit to its backup B side next week, assuming top NASA managers give their approval. E-mail distribution. (2008). [Aviation Week's Aerospace Daily & Defense Report Re: "Replacement Hubble Hardware Needs Flight Qualification," [Electronic]. Vol. 228, No. 9, [October 13, 2008].]

KSC support contractor earns honor from NASA

NASA's Kennedy Space Center has named ASRC Aerospace Corp. its 2008 Small Business Contractor of the Year. ASRC Aerospace, with 480 employees at KSC, supports the shuttle and Constellation space programs and NASA's aeronautical missions at Glenn Research Center, Ames Research Center and Johnson Space Center. "Winning this prestigious award is a testament to the very successful partnership between NASA and ASRC Aerospace at Kennedy Space Center and to the genuine commitment that NASA has to small business," John Horan, president of ASRC Aerospace Corporation, said in a statement. ASRC Aerospace is a subsidiary of ASRC Federal Holding Co., a group in Alaska representing the business interests of Arctic Slope Regional Corp. In March, ASRC Aerospace received NASA's George M. Low Award, the space agency's highest award for quality and performance. ASRC Aerospace provides technical and engineering support for NASA's transition from its space shuttle program to the Constellation program, under which the agency is building the next generation of spacecraft for human exploration throughout the solar system. Web posted. (2008). [KSC support contractor earns honor from NASA [Online]. Available WWW: <http://www.floridatoday.com/> [2008, October 14].]

October 14: Thruster issue requires clean up on Endeavour's TPS

Engineers are working on a plan to clean up around 16 tiles on Endeavour's nose, following a 'leak' of a 'syrup type ooze' from a Vernier thruster. The small thruster (F5R) on the right side of Endeavour's FRCS (Forward Reaction Control System) came under evaluation during a desiccant inspection that resulted in a "liquid" leaking on to an engineer's hand. Due to the dangers of the hazardous substances that power the thrusters, the engineer was evacuated as a precaution. Checks at a medical center confirmed he had not been exposed to any danger. Orbiters have six Vernier engines or thrusters which are used to make fine adjustments to the attitude or velocity of the vehicle

on orbit. Each vernier RCS engine has one fuel and one oxidizer solenoid-operated poppet valve. The valves are energized open by an electrical thrust-on command. When the thrust-on command is terminated, the valves are de-energized and closed by spring and pressure loads. Ahead of launch, the openings to the thrusters are monitored by desiccant covers, which provide a visual indication of moisture contamination for the thrusters. Under strict safety restrictions, engineers carried out a visual inspection of the thruster and nearby TPS (Thermal Protection System). They found liquid to be present on the filler bar bonded to the internal structure shelf surrounding the 28-00 door cavity, and on a number of tiles. A drop of fluid was also observed to drip off the hardware during an inspection by engineers and safety officers, which once again called for workers to be moved away from the immediate area. This again was only a pre-caution, with no workers exposed to any dangerous substances. Web posted. (2008). [Thruster issue requires clean up operations on Endeavour's TPS [Online]. Available WWW: <http://www.nasaspaceflight.com/> [2008, October 14].]

NASA's Space Shuttle Atlantis Rolls Off Launch Pad Monday

Space shuttle Atlantis is scheduled to roll back from Launch Pad 39A to the Vehicle Assembly Building at NASA's Kennedy Space Center in Florida on Monday, Oct. 20, to await launch on its mission to repair the Hubble Space Telescope. First motion of the shuttle is scheduled for 12:01 a.m. EDT. Atlantis' targeted launch on Oct. 10 was delayed when a system that transfers science data from the orbiting observatory to Earth malfunctioned on Sept. 27. The new target launch date is under review. The fully assembled space shuttle Atlantis, consisting of the orbiter, external tank and twin solid rocket boosters, is mounted on a Mobile Launcher Platform and will be delivered to the Vehicle Assembly Building atop a crawler transporter. The crawler will travel slower than 1 mph during the 3.4-mile journey, which is expected to take approximately six hours. ["NASA's Space Shuttle Atlantis Rolls Off Launch Pad Monday," **Media Advisory #M08-203**, October 14, 2008.]

IBEX Spacecraft Launch on Pegasus Rocket Oct. 19

The first NASA spacecraft to image and map the dynamic interactions taking place where the hot solar wind slams into the cold expanse of space will be launched on Sunday, Oct. 19, at 1:48 p.m. EDT, during a launch window that extends from 1:44 p.m. to 1:52 p.m. The two-year mission will begin from the U.S. Army's Reagan test site at Kwajalein Atoll, a part of the Marshall Islands in the south Pacific Ocean. Called the Interstellar Boundary Explorer, or IBEX, the spacecraft will conduct extremely high-altitude orbits above Earth to investigate and capture images of processes taking place at the farthest reaches of the solar system. Known as the interstellar boundary, this region marks where the solar system meets interstellar space. Carrying the IBEX spacecraft into orbit will be a Pegasus XL rocket built by Orbital Sciences Corporation of Dulles, Va. The Pegasus will be deployed from the Orbital Sciences L-1011 aircraft over the Pacific Ocean about 125 miles north of Kwajalein. The spacecraft also was built by Orbital Sciences. ["NASA to Webcast IBEX Spacecraft Launch on Pegasus Rocket Oct. 19," **Media Advisory #M08-205**, October 14, 2008.]

October 15: Bush signs NASA authorization act

The space shuttle may get another mission under legislation signed today by President Bush. The NASA authorization act, which outlines Congress' broad goals for the agency and encourages additional funding, includes an added shuttle mission to fly the physics experiment (called the Alpha Magnetic Spectrometer) to the International Space Station. It also solidifies two previous "contingency" shuttle flights to ferry supplies to the space station that are intended to help keep the station running after the shuttle's retirement, now slated for 2010. Here's what the White House had to say: "On Wednesday, October 15, 2008, the President signed into law ... H.R. 6063, the 'National Aeronautics and Space Administration Authorization Act of 2008,' which authorizes appropriations to the National Aeronautics and Space Administration (NASA) for Fiscal Year 2009; requires NASA to add to its baseline flight manifest two Space Shuttle missions to the International Space Station and take all necessary steps to fly a third additional Shuttle mission; requires NASA to take steps to

ensure that the International Space Station remains viable through at least 2020; and affirms congressional support for U.S. space exploration policy." Web posted. (2008). [KSC support contractor earns honor from NASA [Online]. Available WWW: <http://www.orlandosentinel.com/> [2008, October 15].]

NASA successfully tests Orion solar array technology

NASA and Alliant Techsystems (ATK) have concluded initial testing and deployment of 5.5m (18ft)-diameter UltraFlex solar arrays for the US space agency's New Millennium Program Space Technology Eight Project. ATK's work will support Lockheed Martin's development of NASA's Orion crew exploration vehicle that will use radial arrays. ATK is also a subcontractor to Lockheed for Orion. The tests validate the UltraFlex array's acceleration capability, up to 2.7g, required for Orion's lunar missions. Smaller-scale arrays are powering NASA's Phoenix Lander that has been on Mars since 25 May. Web posted. (2008). [KSC support contractor earns honor from NASA [Online]. Available WWW: <http://www.flightglobal.com/> [2008, October 15].]

NASA's Party Over

NASA's long-standing practice of honoring retirees and contractors with lavish award ceremonies costing millions of dollars a year may be over. President Bush signed the NASA Reauthorization Act providing funding for the agency as well as tough new restrictions on conference spending. CBS News Investigative Correspondent Sharyl Attkisson first exposed the practice last Fall. In that report, hundreds of former NASA contractors and employees were seen in video and pictures attending one ceremony in Florida - airfare and lodging picked up by taxpayers. Taxpayers also picked up the tab for gourmet food and wine receptions for 750-people at just one ceremony alone. Bryan O'Connor, NASA's Chief of Safety, defended the practice at the time as a way to honor former employees and contractors. "It's the cost of dinner and putting someone up in a hotel for a couple of days," O'Connor said. CBS News, however, found the actual cost of the awards program conferences was as high as \$4-million a year. At one conference alone, NASA spent more than \$100-thousand on the reception, dinner and awards. It paid more than \$25-thousand so attendees could watch a shuttle launch. And it spent nearly \$200-thousand on hotel rooms and airfare for attendees from around the country. All of those costs were born by taxpayers. If that sounds pricey, it's even more so when you consider that NASA has held these ceremonies nearly every time there is a shuttle launch - for years. At the time the CBS News story exposed the practice, NASA had also been begging Congress for more funding. "I think it's kind of ironic that they're going to be extravagant with how they spend money," said Sen. Tom Coburn, an Oklahoma Republican and frequent critic of wasteful spending. "And they're coming to us saying they want more." Coburn spearheaded the new provisions in NASA's funding bill which place limits on any conference spending in excess of \$20-thousand. The bill signed into law by the President also establishes tough new reporting requirements so that conference organizers must better account for the money they spend. Web posted. (2008). [NASA's Party Over [Online]. Available WWW: <http://www.cbsnews.com/> [2008, October 15].]

October 16: ATK, USA work out an agreement

Alliant Techsystems announced today that it reached an agreement with United Space Alliance to perform subcontractor support to ATK for NASA's Ares I launch vehicle. The companies had been at loggerheads over the contract, with ATK planning to hire engineers to do the work formerly done by USA staff. A formal contract likely will follow in 30 to 60 days, said ATK spokesman George Torres. ATK will likely double its workforce of 30 at Kennedy Space Center. Some 550 USA employees will continue to work part time on projects under ATK's contract with NASA, the equivalent of 180 full time employees. The companies are working to settle a lawsuit in which USA accused ATK of recruiting its employees, said USA spokesman Jeffrey Carr. Web posted. (2008). [ATK, USA work out an agreement [Online]. Available WWW: <http://www.floridatoday.com/> [2008, October 16].]

NAC backs Constellation and warns against change

The NASA Advisory Council, which provides counsel to NASA administrator Mike Griffin and makes recommendations on policy issues, on Thursday endorsed the agency's divisive Constellation program, saying it offered a "solid baseline and foundation" for its plans to return astronauts to the moon. James A. Abrahamson, a retired Air Force lieutenant general and the chairman of the NAC's Exploration Committee, praised the Constellation program to the Council at its quarterly meeting in Cocoa Beach, calling it the best program for the agency given its tight budget and schedule. "The NAC is confident that the current plan is viable and represents a well-considered approach given the constraints on budget, schedule and achievable technology," he said. He said that NASA considered more than 1,000 different rocketship designs before settling on the Ares rockets and Orion capsule which are at the heart of the Constellation program. Any attempt to rethink the plan, he said, would be bad for America's space program. "There is always going to be other groups making other suggestions," Gen. Abrahamson warned. "But Ares has a solid baseline and foundation for Constellation ... If change is made, even well-meaning change, it is only going to hurt support [for the program]." The NAC's endorsement of Constellation comes at a time of growing criticism of NASA's next generation moon program amid growing technical problems, slipping schedules and soaring costs in the design of the Ares I rocket and Orion capsule. Web posted. (2008). [NAC backs Constellation and warns against change [Online]. Available WWW: <http://www.orlandosentinel.com/> [2008, October 16].]

Ken Ford takes reins of NASA council

On Thursday, NASA named Ken Ford, director and founder of the Florida Institute for Human and Machine Cognition, as chairman of the prestigious NASA Advisory Council. Ford, who will remain at the Pensacola-based IHMC, replaces Schmitt, an Apollo 17 astronaut who walked on the moon in 1972. "One does not 'replace' Jack Schmitt, but I am honored to succeed him," Ford wrote from the Kennedy Space Center in Central Florida, where he has been attending NASA functions this week. "Jack has been a tremendously effective chairman." And those who know Ford believe he'll be just as successful in his new post. The NASA Advisory Council provides the space agency with advice on programs and various issues of importance. Ford was appointed to the NASA Advisory Council in 2007. Ford founded the IHMC in 1990, and it has earned a reputation as one of the top research institutes in the nation. Ford and the IHMC have worked with NASA in recent years to help develop a lunar rover for future moon missions, a precursor to manned visits to Mars. Web posted. (2008). [Ken Ford takes reins of NASA council [Online]. Available WWW: <http://www.pnj.com/> [2008, October 17].]

October 17: Leak Corrected On Delta IV Heavy

A minor hydrogen leak on a U.S. Air Force/United Launch Alliance Delta IV Heavy rocket discovered during a countdown dress rehearsal with the vehicle on Launch Complex 37 at Cape Canaveral has been traced to a bleed line not involved with in-flight propulsion. Technicians tightened a B-nut clamp at the location of the leak, halting the problem. Another countdown test with the vehicle filled with oxygen and hydrogen propellant confirmed that the leak was stopped when the clamp was tightened. The Delta IV Heavy is slated to carry a large National Reconnaissance Office satellite to geosynchronous orbit around December. E-mail distribution. (2008). [Aviation Week's [Aerospace Daily & Defense Report](#) Re: "Leak Corrected On Delta IV Heavy," [Electronic]. Vol. 228, No. 13, [October 17, 2008].]

Mistaken on Delta 2s, advisers back alternate

NASA's chief advisory council urged the agency Thursday to buy Orbital Sciences Corp.'s Minotaur rockets for space science missions, a move that would divert vital launch business from Florida to Virginia. It also would be a blow to United Launch Alliance and its Delta 2 rockets, frequent fliers

from Launch Complex 17 at Cape Canaveral Air Force Station. The highly reliable Delta 2s -- which now are riding a world-record 82 consecutive launch successes -- long have been NASA space science workhorses, lofting missions to Mercury, Mars, asteroids and other destinations. The recommendation to buy rides on Minotaurs -- rockets built from decommissioned Minuteman and Peacekeeper missiles -- was made at a quarterly meeting of the NASA Advisory Council, a group of experts that provides advice to NASA Administrator Mike Griffin. It also was made on the glaring misconception that the Delta 2 fleet is being phased out. United Launch Alliance intends to launch no fewer than one to two Delta 2 missions a year after its last current booking -- a 2011 NASA space science mission -- is carried out. But Jack Burns, the chairman of the council's science committee, told members that the retirement of the Delta 2 fleet is creating a near-term shortage of medium-class rockets to launch NASA space science payloads. A highly regarded professor of astrophysical and planetary sciences at University of Colorado, Burns noted that NASA already arranged to launch a robotic moon mission in 2011 aboard a Minotaur rocket at the agency's Wallops Flight Facility in Virginia. "So two things are very exciting about this. One is that we have a gap filler, if you will, between the current generation of medium launch vehicles and the new generation of commercial vehicles that will be coming into operation in the future," Burns said. "And, secondly, we have a new (launch) site, as far as space science is concerned," he added. United Launch Alliance now has a backlog of about a dozen Delta 2 launches -- about half at Cape Canaveral and the remainder at Vandenberg Air Force Base in California. The firm already has built another six Delta 2 rockets that are available on the commercial launch services market. Production lines stand ready to be ramped up. Burns cited two other reasons for launching on Minotaur. He claimed it cost less, and said launch opportunities are limited in Florida. "We need options," he said. "It's not just the launch vehicle. It's launch opportunities." Web posted. (2008). [Mistaken on Delta 2s, advisers back alternate [Online]. Available WWW: <http://www.floridatoday.com/> [2008, October 17].]

NASA Updates Time for Atlantis' Roll from Launch Pad

NASA managers have adjusted the time for space shuttle Atlantis' rollback from Launch Pad 39A to the Vehicle Assembly Building at NASA's Kennedy Space Center in Florida on Monday, Oct. 20, to 7 a.m. EDT. Atlantis is expected to be in the Vehicle Assembly Building by about 2 p.m. The next space shuttle flight will be shuttle Endeavour's STS-126 mission to the International Space Station, targeted for launch Nov. 14. Endeavour is scheduled to move from Launch Pad 39B to pad 39A on Oct. 25. ["NASA Updates Time for Space Shuttle Atlantis' Roll from Launch Pad," **Media Advisory #08-211**, October 17, 2008.]

Expendable Launch Vehicle Status Report

Status Report: ELV-101708. Mission: IBEX (Interstellar Boundary Explorer); Launch Vehicle: Pegasus XL (Orbital Sciences); Launch Facility: Reagan Test Site, Kwajalein Pacific Atoll; Launch Date: Oct. 19, 2008; Launch Time: 1:44 p.m. - 1:52 p.m. EDT (05:44 a.m. - 05:52 a.m. local Kwajalein time on Oct. 20). After mating to the Orbital Sciences L-1011 carrier aircraft on Oct. 6, the aircraft carrying the Pegasus XL rocket with IBEX departed Vandenberg Air Force Base Oct. 11. After an overnight stop at Hickam Air Force Base in Hawaii, the ferry flight continued and arrived at the Reagan Test Site at Kwajalein Atoll in the South Pacific Oct. 12. The following day, an IBEX spacecraft state of health check was performed without problems. A Combined Systems Test to verify the status of the integrated Pegasus/IBEX with the L-1011 and data communications interfaces with the Reagan Test Site was done on Oct. 15. A launch countdown dress rehearsal was successfully conducted on Oct. 16. Wheels-up from Kwajalein for the launch is scheduled for 12:50 p.m. on Oct. 19. Pegasus deployment from the L-1011 carrier aircraft is targeted to occur within the eight-minute launch window at 1:48 p.m. Web posted. (2008). [Expendable Launch Vehicle Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/launchingrockets/status/2008> [2008, October 17].]

October 19: New satellite to study solar system's distant frontier

The Interstellar Boundary Explorer, or IBEX, rode into space Sunday aboard a Pegasus XL rocket dropped from the belly of an airplane above the Pacific Ocean. The L-1011 carrier aircraft, nicknamed Stargazer, deployed the 50,000-pound rocket at 1:47 p.m. EDT Sunday. The plane was flying about 100 miles north of Kwajalein Atoll in the Marshall Islands. The winged launcher boosted IBEX and a Star 27 kick motor into a temporary parking orbit in the first eight minutes of the mission. The solid-fueled Star 27 fired a few minutes later to boost IBEX to an arcing high-altitude orbit. The satellite was targeting an orbit with a high point of about 127,000 miles and an inclination of 11 degrees. But the 236-pound spacecraft was likely delivered to an even higher orbit than expected, according to David McComas, IBEX principal investigator from the Southwest Research Institute. IBEX will begin using its own hydrazine fuel to climb higher, eventually reaching an orbit with a low point of 4,400 miles and a high point of 200,000 miles, about 80 percent of the distance to the moon. Science activities are expected to begin in about five weeks, officials said. Web posted. (2008). [New satellite to study solar system's distant frontier [Online]. Available WWW: <http://www.spaceflightnow.com/> [2008, October 20].]

October 20: Congress takes first step to funding ISS to 2020

NASA has until July 2009 to produce a plan to extend the life of the International Space Station to 2020, according to new US legislation. The ISS was to be used until 2016 and then deorbited, but the NASA Authorization Act 2008, signed into law last week by President George Bush, updates the 2005 Authorisation Act requiring an ISS National Laboratory plan. The new report must include a budget plan, extension-related hardware and maintenance issues, and cargo requirements. A key issue NASA must resolve is access to the ISS following the 2010 retirement of the Space Shuttle fleet, but increasing reliance on Russian Soyuz launches is problematic given rising geopolitical tensions. NASA astronaut Michael Fincke, ISS Expedition 18 commander, is now aboard the station, which he reached by a Soyuz TMA-13 launched on 12 October from Baikonur Cosmodrome in Kazakhstan. The Act also requires NASA to produce an ISS resupply contingency plan by October 2009 that outlines how ISS partners' could replace NASA's commercial resupply providers if they fail to deliver. Web posted. (2008). [Congress takes first step to funding ISS to 2020 [Online]. Available WWW: <http://www.flightglobal.com/> [2008, October 15].]

First Apollo flight crew last to be honored

Forty years after flying NASA's first manned Apollo mission, the crew of Apollo 7 was honored on Friday with the space agency's highest award, the NASA Distinguished Service Medal. The presentation at long-last recognized the crew's contributions to the United States' first lunar landing program, granting Wally Schirra, Donn Eisele and Walt Cunningham the same award that all of their fellow flown Apollo astronauts received almost four decades earlier. "For exemplary performance in meeting all the Apollo 7 mission objectives and more on the first manned Apollo mission, paving the way for the first flight to the Moon on Apollo 8 and the first manned lunar landing on Apollo 11," NASA Administrator Michael Griffin read from the framed certificate that accompanied each of the medals. Apollo 7 launched on October 11, 1968. Web posted. (2008). [First Apollo flight crew last to be honored [Online]. Available WWW: <http://www.collectspace.com/> [2008, October 20].]

Launch of Second WGS Slips To 2009

Launch of the Defense Dept.'s second Boeing Wideband Global Satcom spacecraft is still officially listed as Dec. 4 on a United Launch Alliance Atlas V from Cape Canaveral, but it will not occur before Jan. 14. E-mail distribution. (2008). [Aviation Week's [Aerospace Daily & Defense Report](#) Re: "Launch of Second WGS Slips to 2009," [Electronic]. Vol. 228, No. 14, [October 20, 2008].]

Atlantis Vacates Pad for Endeavour

The space shuttle Atlantis was rolled from Launch Complex 39A back to the Vehicle Assembly Building at Kennedy Space Center Oct. 20, clearing the way for the rollover of Endeavour to 39A from Complex 39B for launch around Nov. 14 on mission STS-126 to the International Space Station (ISS). Atlantis was to have launched by now on a servicing mission to the Hubble Space Telescope, but malfunctions onboard the observatory have forced a servicing mission delay until at least February 2009. Endeavour was to roll to Pad 39A by Oct. 25, where its space station hardware will be loaded by the payload changeout room in the rotating service structure. STS-126 will deliver logistics supplies while its crew will perform several extravehicular activities to help repair an ISS alpha rotary joint critical for one set of solar arrays to track the sun. E-mail distribution. (2008). [Aviation Week's Aerospace Daily & Defense Report Re: "Atlantis Vacates Pad for Endeavour," [Electronic]. Vol. 228, No. 15, [October 21, 2008.].]

October 21: Nowak evidence disputed in court

Lawyers argued for 30 minutes Tuesday morning about whether statements to police made by former NASA astronaut Lisa Nowak, along with evidence found in her car, should be allowed in her trial. Donald Lykkebak, Nowak's attorney, along with Assistant Attorney General Kellie Nielan, appeared before the three-person 5th District Court of Appeal in which one of NASA's highest achievers is charged in an attack on a romantic rival. No action was taken Tuesday morning by the appeals court judges, and it's unclear how long it will take the panel to make a decision. The criminal case is on hold until that decision is made. Web posted. (2008). [Mistaken on Delta 2s, advisers back alternate [Online]. Available WWW: <http://www.floridatoday.com/> [2008, October 17].]

Cargo: sciences, appliances

NASA technicians have produced drinking water using a filtration system that shuttle Endeavour will take to the International Space Station next month. Astronauts will deliver supplies and furnishings essential for the station to accommodate a six-person crew next year – double to normal size so far – and boost the number of science experiments conducted in orbit. "It's kind of like outfitting your house," said Michael Kinslow, ground processing manager for The Boeing Co., which is the prime space station contractor and prepares payloads for flight at Kennedy space Center. KSC workers are scheduled to transport the payload from a hangar to launch pad 39A this morning, a few days before Endeavour arrives. The shuttle is targeted for a Nov. 14 launch on a 15-day mission that will unload all the cargo and feature four spacewalks to work on joints that rotate the station's power-generating solar arrays. ["Cargo: sciences, appliances," Florida Today, October 22, 2008, p 1A & 3A.]

Griffin: Criticism hurts NASA morale

Unfounded criticism of America's next-generation moon rocket is hurting NASA morale but hasn't stopped progress on the craft, the space agency's administrator Mike Griffin said Tuesday. Griffin said critics in the media and on anonymous Internet blogs can "chip away" at the agency by questioning the motives and ethics of engineers designing the new rockets. "Are we at a place where differences of engineering (opinion) are cited as evidence of lying or malfeasance? This is not how any of us were taught to conduct an engineering discussion," he said at a symposium of top NASA leaders and industry executives in Alabama. A NASA safety panel reported in August that the space agency and its moon program had problems related to employee morale, funding and leadership. NASA plans to fly a test version of the Ares rocket in late spring or early summer and retire the space shuttle in 2010. The first missions aboard Ares are scheduled for 2015. ["Griffin: Criticism hurts NASA morale," Florida Today, October 22, 2008, p 7A.]

October 22: Launch complex now available for civil, commercial launches

Officials with the Air Force and Space Florida made history during a dedication ceremony held here Oct. 22 when Space Launch Complex 36 officially was made available for operational use by the State of Florida, subject to completion of the environmental impact analysis. Attending the historic

ceremony were Florida Governor Charlie Crist; Florida Lt. Governor Jeff Kottkamp; Space Florida President Steve Kohler; Lt. Gen. William Shelton, 14th Air Force commander; and Brig. Gen. Susan Helms, 45th Space Wing commander. General Shelton said Air Force leaders supported the initiative because it will make it easier for commercial providers to launch from the U.S. Having domestic launch options provides the U.S. with solid foundation for national security. According to Space Florida officials, the reconfiguration of Launch Complex 36 will strengthen not only the state's aerospace industry but other growing economic sectors such as biotechnology and environmentally friendly energy technology vital to Florida's future. The launch complex will support light- to medium-lift vehicles that go into low-Earth orbit and beyond. NASA opened Launch Complex 36 in 1961, and most recently it was used as a military and commercial Atlas launch site. Missions to the moon, Mars, Jupiter and Saturn launched from the site, as well as weather satellites and commercial satellites. The Air Force shut down the complex in 2004. Web posted. (2008). [Mistaken on Delta 2s, advisers back alternate [Online]. Available WWW: <http://www.af.mil/> [2008, October 22].]

Pad 36 holds hope for jobs

Hours after being dedicated as a commercial launch site, Launch Complex 36 at Cape Canaveral Air Force Station got its first potential customer. PlanetSpace, a consortium of ATK, Lockheed Martin and Boeing, announced Wednesday a proposal to launch a 158-foot solid-fuel rocket by 2011 from the pad at Cape Canaveral, which the Air Force has agreed to lease to Space Florida. The rocket could carry about 2 metric tons of cargo to the International Space Station. NASA aims to announce on Dec. 23 whether PlanetSpace, or a competitor, has been chosen to provide the service. The company says its plan would create 350 jobs in Florida, with a potential economic impact of \$300 million. PlanetSpace said it has at least two competitors for the NASA award. Using state money, Space Florida now will start turning the abandoned launch complex into a serviceable launch pad, which it hopes will attract other commercial customers. "The door is now open to more innovation," said Gov. Charlie Crist, who spoke Wednesday at the groundbreaking of the launch complex upgrade. Complex 36 is now just a domed bunker beside a concrete slab at Cape Canaveral. The Air Force, which controls the property, intends to lease the site to Space Florida after an environmental impact analysis. Web posted. (2008). [Pad 36 holds hope for jobs [Online]. Available WWW: <http://www.floridatoday.com/> [2008, October 23].]

NASA's Shuttle Endeavour Moves to Launch Pad

Space shuttle Endeavour is scheduled to move from Launch Pad 39B to Pad 39A at NASA's Kennedy Space Center, Fla., as early as 8 a.m., Thursday, Oct. 23, as preparations for the STS-126 mission move forward. Endeavour is targeted to lift off Nov. 14 to the International Space Station. Early Thursday morning, NASA managers will decide when to move the shuttle based on the progress of removing the payload canister from the pad following installation into the pad's changeout room. The payload was delivered to Pad A early Wednesday morning. Endeavour had been scheduled to move Saturday, Oct. 25, but possibly severe weather now is forecast for the area. The move will take approximately seven hours. After reaching its launch pad, Endeavour will await its next major milestone. A launch dress rehearsal, known as the Terminal Countdown Demonstration Test, is scheduled to take place at Kennedy from Oct. 27 to 29. ["NASA's Shuttle Endeavour Moves to Launch Pad, Practice Liftoff Set," **Media Advisory #M08-213**, October 22, 2008.]

October 23: NASA adjusts pad for Ares

A shuttle switched launch pads at Kennedy Space Center on Thursday for the third time in the program's history and for the first time in 15 years. NASA moved Endeavour down the coast to Pad 39A from Pad 39B. The northern pad is the launching point for a flight test planned next summer of the Ares 1X rocket – the first flight test in NASA's push to return to the moon. To prepare for later Ares 1 flights, the launch pad must undergo millions of dollars in renovations, starting with next

month's scheduled arrival of a massive crane that will erect three skyscraping lightning towers. Most of the modifications can't begin until after Atlantis' mission to service the Hubble Space Telescope, which is delayed until at least February by computer problems on the observatory. Pad 39B must remain available to launch a rescue mission if Atlantis suffers severe damage on that flight. Managers say the pad modifications for the \$360 million Ares 1X test flight were designed to be done cheaply. "We're trying to keep the cost down and trying to utilize as much of the existing infrastructure that we had," said Carol Scott, KSC's Ares 1X project manager. ["NASA adjusts pad for Ares," **Florida Today**, October 24, 2008, p 1A & 3A.]

October 24: Delta 2 Launches From West Coast

An Italian radar reconnaissance satellite is circling Earth today after a successful launch tonight aboard a United Launch Alliance Delta 2 rocket at Vandenberg Air Force Base in central California. The 12-story rocket and its payload blasted off from Space Launch Complex 2 at 10:28 p.m. and then thundered over the Pacific Ocean on its way into low Earth orbit. The Cosmos 3 satellite -- the third of four in a series owned and operated by the Italian government -- was deployed from the rocket about 58 minutes into flight. Web posted. (2008). [Delta 2 Launches From West Coast [Online]. Available WWW: http://www.floridatoday.com/the_flame_trench_blog [2008, October 24].]

Ares 1X Hardware Arrives At KSC

The first Ares 1X hardware delivered from elsewhere in the nation is at Kennedy Space Center, where NASA is pressing ahead with plans for the first test flight of a next-generation moon rocket. The ballast assemblies for the Upper Stage Simulator of the Ares 1X test rocket arrived a week ago today and now sit in High Bay No. 4 in the Vehicle Assembly Building. "The ballasts are just weight," said KSC spokeswoman Amber Philman. "They will just mimic the mass of the fuel" in the Ares 1 second stage. The Ares 1X test rocket will be a mix of flight hardware and mock-ups: a four-segment shuttle solid rocket booster topped with a fifth spacer segment and mock-ups of the Ares 1 second stage, Orion crew capsule and a launch abort system. The mass simulators will sport outer mold lines that are aerodynamically exact copies of the Ares 1 rocket components and Orion spacecraft. The goal of the test flight is to determine whether the first-stage flight control system will keep the rocket on course -- and intact -- during the crucial first two minutes of flight. Web posted. (2008). [Ares 1X Hardware Arrives at KSC [Online]. Available WWW: http://www.floridatoday.com/the_flame_trench_blog [2008, October 24].]

October 26: Is NASA's Ares doomed?

Bit by bit, the new rocket ship that is supposed to blast America into the second Space Age and return astronauts to the moon appears to be coming undone. First was the discovery that it lacked sufficient power to lift astronauts in a state-of-the-art capsule into orbit. Then engineers found out that it might vibrate like a giant tuning fork, shaking its crew to death. Now, in the latest setback to the Ares I, computer models show the ship could crash into its launch tower during liftoff. The issue is known as "liftoff drift." Ignition of the rocket's solid-fuel motor makes it "jump" sideways on the pad, and a southeast breeze stronger than 12.7 mph would be enough to push the 309-foot-tall ship into its launch tower. Worst case, the impact would destroy the rocket. But even if that doesn't happen, flames from the rocket would scorch the tower, leading to huge repair costs. "We were told by a person directly involved [in looking at the problem] that as they incorporate more variables into the liftoff-drift-curve model, the worse the curve becomes," said one NASA contractor, who asked not to be named because he wasn't authorized to discuss Ares. "I get the impression that things are quickly going from bad to worse to unrecoverable." NASA says it can solve -- or limit -- the problem by repositioning and redesigning the launchpad. Engineers say that would take as much as a year and cost tens of millions of unbudgeted dollars. What happens with Ares I is crucial to the future of the U.S. manned space program -- and of Kennedy Space Center. KSC is looking at thousands of layoffs after the space shuttle is retired in 2010. Its work force won't grow again until a

new rocket launches. In addition, huge expenditures on the rocket could bankrupt the agency's moon plans and prompt a new president to halt the program, delaying America's return to space. NASA officials are now looking at ways to speed up the development of Ares and are reluctant to discuss specific problems. But they insist none is insurmountable. "There are always issues that crop up when you are developing a new rocket and many opinions about how to deal with them," said Jeff Hanley, manager of the Constellation program, which includes Ares, the first new U.S. rocket in 35 years. Web posted. (2008). [Sentinel Exclusive: Is NASA's Ares doomed? [Online]. Available WWW: <http://www.orlandosentinel.com/> [2008, October 26].]

Crew Ready for Rehearsal

Endeavour's seven-member crew landed this afternoon at Kennedy Space Center for three days of training, including a dress rehearsal of launch procedures they hope to execute for real in less than three weeks. "We're happy to be here," Commander Chris Ferguson said in a brief address to assembled media. "We hope for weather like this when we come out for the real thing." Ferguson introduced his fellow crew members, all dressed in blue flight suits: Pilot Eric Boe and mission specialists Steve Bowen, Shane Kimbrough, Sandra Magnus, Donald Pettit and Heidemarie Stefanyshyn-Piper. NASA is targeting a Nov. 14 liftoff for Endeavour's outfitting mission to the International Space Station, which will allow the station to double its resident crews from three to six people. The astronauts arrived from Houston in five T-38 training jets, two piloted by Ferguson and Boe, between 2:20 p.m. and 3:45 p.m. Two modified Gulfstream jets also brought support staff and luggage. Ferguson and Boe immediately got to work practicing landings in the Gulfstreams, whose controls are modified to simulate shuttle landings. They are officially called Shuttle Training Aircraft. Web posted. (2008). [Crew Ready for Rehearsal [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, October 26].]

October 27: Next president may drop shuttle successor Ares I

A former chairman of the House science committee told Brevard County leaders Monday that NASA's next rocket is "on the chopping block" and that a new administration may abandon the Ares I as successor to the space shuttle. The next president might look instead to use military rockets to launch NASA astronauts, said Robert Walker, a former Republican congressman from Pennsylvania who, as a Washington-based lobbyist, represents Brevard County. Walker told county commissioners; U.S. Reps. Tom Feeney, R-Oviedo, and Dave Weldon, R-Indianapolis; and representatives of the local aerospace community that the word in Washington and at recent space conferences was "that Ares I could be on the chopping block." Walker's assessment comes amid new reports of the rocket's technical woes. NASA officials met Monday at the Marshall Space Flight Center in Huntsville, Ala., to consider possible solutions. ["Next president may drop shuttle successor Ares I," **Orlando Sentinel**, October 28, 2008, p A8.]

KSC Ramps Up For Endeavour Launch

Preparations at Kennedy Space Center (KSC) are beginning to peak for the planned Nov. 14 launch of Endeavour on the STS-126 mission to the International Space Station (ISS). Endeavour arrived at Launch Complex 39A Oct. 24 carried atop a 2,700-ton crawler transporter, which moved it from Pad B where it had been positioned for on rescue standby for the Atlantis Hubble servicing mission now postponed until February. The 19,000-pound STS-126 logistics payload, including the Italian Leonardo logistics module, preceded Atlantis to the pad and was placed in the rotating service structure. It was to be moved into the Endeavour payload bay Oct. 26. Also on that day the seven member crew for the flight are to arrive at KSC from Johnson Space Center to participate with the Kennedy Launch Control Team in an Oct. 29 countdown demonstration test inside the orbiter on the launch pad. The vehicle is not fueled for the test, but goes through a full countdown ending in a simulated launch pad abort so the crew can practice rapid evacuation. The STS-126 crew comprises U.S. Navy Capt. Chris Ferguson, the mission commander, U.S. Air Force Col. Eric Boe, the mission

pilot, and mission specialist astronauts Navy Capt. Heidemarie Stefanyshyn-Piper, Donald Pettit, Navy Capt. Steve Bowen, and Sandra Magnus, who will remain on the ISS until February 2009. STS-126 will return with astronaut Greg Chamitoff, who has been on board the ISS since May. The countdown demonstration test is to be followed Oct. 30 by the mission's Flight Readiness Review, which is expected to approve launch on Nov. 14 at 7:55 p.m. EST. E-mail distribution. (2008). [Aviation Week's Aerospace Daily & Defense Report Re: "KSC Ramps Up For Endeavour Launch," [Electronic]. Vol. 228, No. 19, [October 27, 2008.].]

October 28: Nine mementos fly with NASA's first mission to Pluto

To understand how a fast food restaurant almost factored into NASA's first mission to the last planet, you need to know a bit of the history behind New Horizons, which just recently marked 1000 days on its nine year flight to Pluto. "New Horizons was a nuclear launch," explained Dr. Alan Stern, New Horizons' Principal Investigator, of his probe's plutonium-powered battery. "Those are rare. There are a lot of preparations for safety's sake but they also require all major stakeholders being briefed and in agreement we are ready to go. After the federal government had given its approval, the state of Florida had to give its approval, so then-Kennedy Space Center director, whose name is Jim Kennedy, and I drove up to Tallahassee one day to see Governor Bush, who was then-governor," recalled Stern of his road trip on November 22, 2005. Stern described what happened next in an interview with collectSPACE. "On the way to see the governor -- it was a long drive, I think it may have been three to four hundred miles -- we got to talking about what we might do to get him a little more personally interested in the mission, other than just invite him to the launch," said Stern. "We came upon the thought, why don't we fly a state quarter of Florida?" As Stern reasoned, they would launch from Florida, some of the parts of New Horizons had been built there and the state quarter just happened to have a space theme. They both liked the idea a lot but upon searching their pockets, came up empty for a quarter to illustrate their point to the governor. So, at a small town in the panhandle of Florida, they went to a Burger King. "We tried to find a state quarter in their cash registers. We had their entire staff looking," Stern shared. "It was a pretty surreal scene. The entire time I was thinking, 'Here are these 18- and 19-year-old, minimum wage folks rifling for a quarter that's going to fly to the Kuiper belt.'" Unfortunately, despite their best efforts, the Burger King didn't have a Florida state quarter to offer them and as they didn't have the time to stop at every other fast food joint along the way, Stern and Kennedy almost forewent flying the quarter. "Toward the end of the briefing, I mentioned to [Governor Bush] that we really wanted to fly a Florida state quarter but couldn't come up with one and it was due to our poor planning because we had only thought of it today," Stern recounted. "And he said, 'Well, I've got plenty!'" and with that ran out of the room and when he came back, he had a roll of the quarters. "He said, 'Fly these!'" Stern accepted the roll from the governor, but explained he could only fly one. The others would be distributed to team members as a souvenir of the mission. Less you think however, that the quarter flew simply as a gesture to the governor, it served a bonafide purpose on the spacecraft. "For spin balance, we need to add a number of kilograms to various places [on New Horizons]," explained Stern. "We knew this was the case because the moments of inertia of the spacecraft and the dynamical properties of it, we would have to trim it out down to literally the grams-level with balance weights. Of course, we had a whole variety of big ones and little ones; you start off with adding a kilogram here and a kilogram there and you end up getting smaller and smaller weights in various places until you're done. We used the coins to that purpose," he said. "Since we needed a counter balance to [the Florida state quarter], we decided to fly a second state quarter. We picked Maryland because that is where the spacecraft was built. And because we had so many people back in Maryland at the Applied Physics Lab and at Goddard, it was easy for someone to ship us a quarter really quick." After flying by Pluto and its moon Charon in 2015 and then encountering Kuiper belt objects between 2016 and 2020, New Horizons will become only the fifth probe to leave the solar system. Web posted. (2008). [To Pluto, with postage: Nine mementos fly with NASA's first mission to the last planet [Online]. Available WWW: <http://www.collectspace.com/> [2008, October 28].]

Command changes for Space Wing

Brig. Gen. Ed Bolton Jr., who last served at the National Reconnaissance Office, today will take the command of the 45th Space Wing. In a change-of-command ceremony steeped in military tradition, Bolton will assume command from Brig. Gen. Susan Helms before officers and enlisted personnel and local governmental officials at Patrick Air Force Base's Memorial Plaza. Helms will move to Offutt Air Force Base in Nebraska, where she will serve as director of plans and policy at U.S. Strategic Command. Web posted. (2008). [To Pluto, with postage: Nine mementos fly with NASA's first mission to the last planet [Online]. Available WWW: <http://www.floridatoday.com/> [2008, October 28].]

Third Cosmo SkyMed Sat In Checkout after Successful Launch

Italy's third Cosmo SkyMed military-civil Earth-observation radar satellite is entering a shakedown and commissioning phase, to be completed as early as December, after its successful injection into a sun-synchronous, down-dusk, polar circular orbit at an altitude of 630 km. (391 miles). Launch of the dual-use spacecraft on a Boeing Delta II 7420-10 from Space Launch Complex 2 here came at 10:28 p.m. EDT Oct. 24, hitting a demanding one-second launch window which was mandated by the need to position the satellite precisely on the same orbit and at the desired distance from the two previous Cosmos, launched respectively in June and December 2007. The next launch is tentatively scheduled for the end of 2009 or the first quarter of 2010, again from Vandenberg and on a Delta II. Commissioning of the complete Cosmo SkyMed constellation is drifting to the right, with full operational capability not to be achieved before the fall of 2010 - two years later than originally planned. E-mail distribution. (2008). [Aviation Week's Aerospace Daily & Defense Report Re: "Third Cosmo SkyMed Sat In Checkout after Successful Launch," [Electronic]. Vol. 228, No. 20, [October 28, 2008].]

October 29: Boeing Joins Commercial Athena III Rocket Program

Boeing is joining the new PlanetSpace venture with Lockheed Martin and Alliant Techsystems (ATK) to develop the 2.8-million-pound-thrust shuttle-derived Athena III space station resupply booster. With three of the largest aerospace companies, including NASA's prime contractor for space station in Boeing, the venture will go after the \$3 billion NASA resupply contract to sustain the outpost until at least 2016. The Athena III vehicle will be ready to fly in 2011. PlanetSpace says it would create about 350 jobs, mostly at Cape Canaveral and Kennedy Space Center. It would also generate about \$300 million in revenue annually for Florida. These are key reasons the state of Florida is helping to fund new infrastructure at Cape Canaveral that will enable the Athena III to launch from Complex 36, which the Air Force last week committed to lease to the Space Florida business development organization. From 1961-2005 Complex 36 launched about 145 Atlas-Centaurs. They were replaced by the Atlas V that launches off Complex 41. PlanetSpace, along with Orbital Sciences Corp. (OSC) and Space Exploration Technologies (SpaceX), must submit final bids to NASA Nov. 7 to compete in NASA's new station Commercial Resupply Services (CRS) competition. It will be worth as much as \$3.1 billion to one or two of the three competitors to be announced as winners Dec. 23. NASA expects to pay for delivery of at least 20 metric tons of cargo to the ISS after 2010. SpaceX would launch its Falcon 9 from Pad 40 here, while the OSC Taurus II would fly from the Mid-Atlantic Regional Spaceport at Wallops Island, Va. E-mail distribution. (2008). [Aviation Week's Aerospace Daily & Defense Report Re: "Boeing Joins Commercial Athena III Rocket Program," [Electronic]. Vol. 228, No. 21, [October 28, 2008].]

Ares 1-X test flight target now July 12

NASA's first test flight of a new moon rocket is being pushed back to July 12 as a result of the delay in the agency's fifth and final Hubble Space Telescope servicing mission, officials said today. And that date for the Ares 1-X test flight would be further delayed if launch of the Hubble servicing

mission moves from a tentatively targeted liftoff in February to the next flight opportunity in May. NASA Constellation Program Manager Jeff Hanley said the agency still aims to launch the first piloted flight of an Ares 1 rocket and an Orion spacecraft by March 2015 -- the date promised to Congress. But internally, agency engineers are shooting for a September 2014 target. NASA also is conducting a study to determine if the five-year gap between the last shuttle mission and the first Ares-Orion flight can be reduced. Former Kennedy Space Center manager Ralph Roe, now head of the NASA Engineering and Safety Center at Langley Research Center, is heading the review. Hanley said the Constellation Acceleration Study aims to determine whether the first flight could be moved up by 12 to 18 months. A 12-month advance might be possible; an 18-month advance would be very difficult to achieve, he said. Web posted. (2008). [Ares 1-X test flight target now July 12 [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, October 29].]

NASA may be able to trim year off moon rocket production

NASA officials said today it might be possible to try out its new moon rocketship a year earlier than its current target date of 2015. That would mean just a four-year gap between the last space shuttle flight and the next-generation spacecraft, instead of five years. Many in Congress, including the two presidential candidates, are troubled by the prospect of the United States having to rely on Russia for trips to the international space station during that time. NASA is midway through a study looking at ways to move up its March 2015 test launch of the new Ares rocketship with a crew, in case the next president wants that. The new rocket would ultimately return the United States to the moon, but the initial flights would be to the space station. It will be difficult to accelerate the mission by much more than a year, however, said Jeff Hanley, manager of NASA's back-to-the-moon program, called Constellation. NASA's Ares rocket would have an Apollo-style capsule on top, called Orion, to carry astronauts. A moon flight is targeted for 2020. Space shuttle commander Brent Jett, director of flight crew operations, said he's sought dissenting opinions from his fellow astronauts, but no one is willing to scrap the Ares rocket. Web posted. (2008). [NASA may be able to trim year off moon rocket production [Online]. Available WWW: <http://www.chron.com/> [2008, October 29].]

October 30: Shuttle set for Nov. 14 liftoff

NASA on Thursday confirmed Endeavour's launch for 7:55 p.m. Nov. 14 but it said the final mission to service the Hubble Space Telescope would be delayed until at least May. More time is needed to prepare spare parts that astronauts will take to the observatory. They will replace a Hubble computer system that crashed last month and forced the postponement of Atlantis' planned Oct. 14 liftoff. By finding out now that a February Hubble mission is impossible, "we were able to respond in a manner that we could really help constellation out, so this is a great thing for us," said Bill Gerstenmaier, NASA's associate administrator for space operations. Additional reconfiguring of Launch Complex 39B must still wait until after the Hubble mission because the pad must be available for a rescue shuttle. Gerstenmaier spoke Thursday after an executive-level flight readiness review at Kennedy space Center, which determined that Endeavour is in good shape to make the 124th shuttle flight. "The vehicle is ready," he said. ["Shuttle set for Nov. 14 liftoff," **Florida Today**, October 31, 2008, p 1A & 5A.]

Hubble Faces Delay

NASA officials are expected to announce an indefinite delay in the agency's fifth and final Hubble Space Telescope servicing mission today, and shuttle Atlantis likely will be destacked as a result. The mobile launcher platform Atlantis now is perched upon then could be handed over to NASA's Project Constellation so modifications for the Ares 1-X test flight could be made -- a move that could make a July 12 target launch date viable. And NASA would proceed with already-laid plans to launch Discovery on an International Space Station assembly mission during the February launch slot. Astronauts on the STS-119 mission would deliver and erect the fourth and final set of American solar wings at the station. Additional power generated by the massive arrays will set the stage for

staffing the station with crews of six rather than three -- a key milestone in a decade-long effort to raise the international laboratory. The Hubble telescope, meanwhile, is back in operation after a month-long shutdown of science observations. NASA today released a beautiful image (see above) of two galaxies that lie in the constellation Cetus. More than 400 million light-years away from Earth, the galaxies appear to form the numeral 10. The resumption of science operations will be discussed during a media teleconference with Hubble project officials, who have been struggling to prepare a spare Science Instrument Control and Data Handling Unit for a targeted launch slot in February. The critical spare must be fully certified for flight and shipped to the Kennedy Space Center in January to make the February target. The next opportunity would come in May, but it's unclear exactly when qualification testing to the unit will be complete. Web posted. (2008). [Hubble Faces Delay [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, October 30].]

An Award for Virginia Whitehead

This morning, at 7:30 am, before the STS-126 FRR began, a small ceremony was held whereby Virginia Whitehead received NASA's Lifetime Achievement Award from Mike Griffin. A special 10 minute video was played highlighting her career. Web posted. (2008). [An Award for Virginia Whitehead [Online]. Available WWW: <http://www.nasawatch.com/> [2008, October 30].]

NASA and Korea Sign Statement of Intent for Future

During a meeting Thursday at the Ministry of Education, Science and Technology (MEST) in Seoul, Korea, NASA's Assistant Administrator for External Relations, Michael F. O'Brien, and MEST's Director-General for Big Science, Munki Lee, signed a joint statement of intent identifying potential interest in cooperation in civil space and aeronautics activities. According to the statement, the two agencies agree to conduct discussions to identify new cooperative activities related to space exploration, Earth science, planetary science, human space flight and aeronautics research. ["NASA and Korea Sign Statement of Intent for Future Cooperation," **Press Release #08-277**, October 30, 2008.]

October 31: Honeycutt Wins Coveted Von Braun Award

Former Kennedy Space Center Director Jay Honeycutt now is standing shoulder-to-shoulder with some of the giants of 21st-century space flight. Honeycutt, who served as KSC director from 1995 through 1997, recently won the coveted Dr. Werner von Braun Space Flight Trophy from the National Space Club of Huntsville, Ala, the home of NASA's Marshall Space Flight Center. Honeycutt's wife, Peggy, said the award was bestowed during the gala Von Braun Memorial Dinner in Huntsville on Oct. 22. CNN's Miles O'Brien was the master of ceremonies and former astronaut Kevin Chilton, an Air Force General who now is commander of U.S. Strategic Command, was the keynote speaker. Established in 1988, the Dr. Werner von Braun Space Flight Trophy is given each year to "an individual or organization that has made great achievements in advancing spaceflight programs, contributing to United States leadership in the field of rocketry and aeronautics," club literature says. Honeycutt, a veteran of both U.S. civil and commercial space programs, won the award for his stellar track record in managing and operating large-scale engineering, technical and operational space activities. He was the director of Shuttle Management and Operations at KSC from 1989 through 1995, a period during which NASA launched the Hubble Space Telescope, the Galileo Jupiter probe, the Ulysses solar observatory, the Magellan Venus radar mapper, the Compton Gamma Ray Observatory and a string of NASA space science and classified Department of Defense flights. Web posted. (2008). [Honeycutt Wins Coveted Von Braun Award [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, October 31].]

KSC's Cabana says job cuts are coming no matter what

The new director of Kennedy Space Center, Bob Cabana, said thousands of job losses are coming to the center and Brevard County, whether the space shuttle is retired on schedule in 2010 or the next administration gives it a brief reprieve. But the former shuttle astronaut said he has an idea that might be able to take some of the sting out of the cuts. It involves turning KSC into a "Federal City" where other government agencies, university researchers and big aerospace firms can work side-by-side tapping into the facilities and skilled workforce at the landmark space site. "There are going to be cuts. There's no two ways about it," Cabana told reporters on Friday morning in his first press conference since starting the job earlier in the week. "The space shuttle program is going to end. Even if it gets extended for a little bit, eventually it's going to end. And when it ends there are going to be people out of work." NASA estimates 4,000 contractors will lose their job when the shuttle gets mothballed. Others say that figure is too low. Some jobs could come back as NASA ramps up its next generation moon rocket program, called Constellation, but there is at least a five year gap between the end of the shuttle and the first Constellation launch. And even then there won't be as many jobs at KSC because the moon rocket is designed to need fewer workers. But Cabana, 59, a four-time shuttle astronaut, said he believes there are ways to offset some of the losses. Cabana took over from Bill Parsons, who left earlier this month to take a job with Lockheed Martin. Before taking the helm at KSC, Cabana was the director of Stennis Space Center in Bay St. Louis, Mississippi. Stennis, he points out, is more than just a NASA center. There are university programs there as well as offices of the National Oceanic and Atmospheric Administration, the U.S. Navy, and the Department of Homeland Security. The Government Printing office makes passports there, and private companies, including Pratt and Whitney and Rolls Royce, use the facilities to test their aerospace engine designs. "I want to look at the model that Stennis had," Cabana said. "Hopefully we can use some of that at KSC on facilities that may not be fully utilized for NASA purposes to help bring in private industry and the right kind of jobs, technical jobs that support the aerospace industry, that can help us with the gap in the programs but also fully utilize the facilities we have here." Cabana said he looked forward to leading the center as its 10th director at a time of transition to a new space program. He said he also recognized that the next President was likely to make changes to the program, and that whatever happens, KSC will adapt. Web posted. (2008). [KSC's Cabana says job cuts are coming no matter what [Online]. Available WWW: <http://www.orlandosentinel.com/> [2008, October 31].]

Boeing Retaining Option To Continue Delta II Production

Boeing is assessing whether there is a possibility to extend production of its Delta II launcher beyond the current batch of 17. So far 10 of them have been sold to the U.S. Air Force, and an 11th has a commercial costumer. According to Ken Heinly, Boeing vice president of launch products and services, there also is a good chance the fourth Italian Cosmo SkyMed will ride on a Vandenberg-launched Delta II. Beyond that, there will be other Delta II launchers available, but they won't be assembled before a launch contract is secured. That means production could extend for a few more years. No decision has been made to terminate the program after these 17 launchers, but in order to start production of an additional batch Boeing will need another batch of orders and/or commitments. Delta II could be considered as an option to launch Europe's Galileo satellites, since the Soyuz flying from Kourou will be kept very busy by the launch schedule required to build up the European navsat constellation quickly. Beyond the Delta II, Boeing is marketing the Delta IV with the possibility of at least one commercial launch a year beyond the U.S. government launches. Delta IV also will be proposed to Italy and France as a candidate to launch the Sicral 2 military satcom. Since even the smallest Delta IV is overpowered for a 2-ton satellite, Boeing is not ruling out scaling down Delta IV further if there is a strong business case. In any event, Boeing says its commercial launches will continue from Vandenberg and Cape Canaveral, for Delta II as well as for Delta IV. E-mail distribution. (2008). [Aviation Week's [Aerospace Daily & Defense Report](#) Re: "Boeing Retaining Option to Continue Delta II Production," [Electronic]. Vol. 228, No. 23, [October 31, 2008].]

NOVEMBER

November 1: Armstrong donating personal papers to Purdue University

Former astronaut Neil Armstrong has agreed to donate personal papers dating from the start of his flight career to his alma mater, Purdue University. Armstrong's papers, boxes of which have already begun arriving at Purdue, will be an inspiration for students and invaluable for researchers, said Sammie Morris, assistant professor of library science and head of Purdue Libraries' Archives and Special Collections. "For researchers, it's going to be a boon. No one has been able to research these papers or study them," Morris said. James R. Hansen, author of the 2005 book "First Man: The Life of Neil A. Armstrong," is donating 55 hours of one-on-one recorded interviews with Armstrong, the first person to walk on the moon. Armstrong's papers and Hansen's interviews will serve as the starting point for Purdue Libraries' effort to build a comprehensive flight collection. Web posted. (2008). [Neil Armstrong, first person to walk on moon, donating personal papers to Purdue University [Online]. Available WWW: <http://www.orlandosentinel.com/> [2008, November 1].]

November 2: Space junk falls harmlessly in South Pacific

A refrigerator-sized piece of space junk fell harmlessly into the South Pacific on Sunday night, according to NASA. The junk was a tank full of ammonia coolant on the International Space Station that was no longer needed. Astronaut Clayton Anderson threw it overboard during a spacewalk in July 2007. Space station program manager Mike Suffredini said today that the debris splashed down somewhere between Australia and New Zealand on Sunday night. The tank had served as a reserve supply of spare coolant at the space station since 2001. Web posted. (2008). [Space junk falls harmlessly in South Pacific [Online]. Available WWW: <http://www.floridatoday.com/> [2008, November 3].]

November 3: Shuttle Extension Would Cost \$2B a Year

NASA would need an extra \$2 billion a year to keep the shuttle fleet flying between 2010 and 2015, but doing so would impact plans to begin launching Ares 5 moon rockets by 2018, officials said today. With presidential candidates John McCain and Barack Obama both signaling a desire to keep the shuttle fleet flying beyond 2010, NASA over the past two months has been studying what it would take to do just that. Both have said they would add \$2 billion to NASA's budget to minimize the gap between the last shuttle flight and the inaugural flights of Ares 1 rockets and Orion spacecraft. NASA shuttle program manager John Shannon told reporters today that the agency studied two different scenarios. One would simply extend the shuttle program through 2012 by flying out all external tanks and other hardware NASA already intends to build. The other would call for NASA to keep the shuttle fleet flying three shuttle missions per year -- presumably to the International Space Station. Shannon said the bottom line is that NASA would need \$2 billion a year -- "money that is not currently in the budget," he said. He added that shifting \$2 billion a year to the shuttle program from Project Constellation -- NASA's effort to return U.S. astronauts to the moon by 2020 -- would be "disastrous." Shannon made his comments during preflight briefings for the planned Nov. 14 launch of shuttle Endeavour on an International Space Station outfitting and repair mission. Web posted. (2008). [Shuttle Extension Would Cost \$2B a Year [Online]. Available WWW: <http://www.floridatoday.com/> [2008, November 3].]

November 4: NOAA-N Prime Satellite Arrives at Vandenberg for Launch

The latest polar-orbiting operational environmental weather satellite developed by NASA for the National Oceanic and Atmospheric Administration, or NOAA, called NOAA-N Prime, arrived Tuesday by C-5A military cargo aircraft at Vandenberg Air Force Base, Calif., in preparation for a Feb. 4, 2009, launch. NOAA-N Prime, built by Lockheed Martin, is similar to NOAA-N launched on May 20, 2005. The satellite will be launched from the Western Range at Vandenberg AFB by a United Launch Alliance two-stage Delta II rocket managed by NASA's Launch Service Program at

the Kennedy Space Center, Fla. Web posted. (2008). [Shuttle Extension Would Cost \$2B a Year [Online]. Available WWW: <http://www.spaceref.com/> [2008, November 4].]

Kennedy Space Center selects Harris Corp.'s OS/COMET(R)

Harris Corporation announced today that NASA Kennedy Space Center has selected its OS/COMET(R) telemetry, tracking, and command (TT&C) software for the Constellation Launch Control System. OS/COMET(R) is a commercial off-the-shelf software tool that provides superior TT&C capabilities for military, intelligence, and commercial satellite constellations. The OS/COMET(R) product will deliver critical command and telemetry processing services to meet the needs of the Launch Control System architecture. The KSC Launch Control System architecture leverages leading-edge industry standards, existing technologies, and commercially available products to provide significant core functionality in the command and control of constellation launch vehicles and ground support systems. Based on open software architecture concepts, the Launch Control System will deploy OS/COMET(R) to provide a service within the Service Oriented Architecture (SOA) pattern. Using OS/COMET(R) as a SOA service capitalizes on its ease of configuration and efficient API interface to the LCS architecture. "Launch control is the perfect space application for OS/COMET(R) and this procurement by KSC is an indication of NASA's new direction of using COTS for the Constellation program," said Frank Van Rensselaer, vice president and senior executive account manager, NASA Programs, Harris Corporation. Web posted. (2008). [NASA Kennedy Space Center selects Harris Corporation's OS/COMET(R) Product for the Constellation Launch Control Program [Online]. Available WWW: <http://www.prnewswire.com/> [2008, November 4].]

Budget Office report worsens grim forecast for Ares, Orion

In the latest blow to NASA's next-generation manned spacecraft, congressional investigators have concluded that the Constellation program is likely to cost \$7 billion more than budgeted if it is to fly by its target date of March 2015. Without extra money, it could be delayed by 18 months or more. The Congressional Budget Office cited an array of problems facing the Ares I rocket and the Orion capsule, which NASA hopes will return astronauts to the moon by 2020. Among them are difficulties in developing an engine for Ares and a heat shield for Orion -- as well as NASA's history of blowing its budgets. "NASA has identified several problems associated with the Ares I that could delay successful development of the vehicle," according to the 18-page report. The engine issues include intense shaking on liftoff -- a danger to astronauts -- and possibly insufficient power to put the Orion capsule into orbit. Other technical woes that NASA has identified include concerns that Ares' first stage could crash into its second stage during separation; dangerous levels of noise in the crew capsule during takeoff; and a potential that the rocket could "drift" into its launch tower moments after liftoff. NASA officials said they are reviewing the report. But the agency's top brass have insisted repeatedly that the program is on track. Web posted. (2008). [Congressional Budget Office report worsens grim forecast for NASA's Ares, Orion [Online]. Available WWW: <http://www.orlandosentinel.com/> [2008, November 4].]

Rocket Pans of NASA's New Launch System Arrive in Florida

The first major flight hardware of the Ares I-X rocket has arrived in Florida to begin preparation for the inaugural test flight of the agency's next-generation launch system. The test flight is targeted for July 12, 2009. The Ares I-X upper stage simulator traveled to Port Canaveral aboard the Delta Mariner, a ship that also transports the Delta IV rocket for United Launch Alliance. The journey began Oct. 22 on the Ohio River as the barge traveled toward the Mississippi River for its voyage to Port Canaveral. By Nov. 6, the flight hardware will have been moved off the barge into high bay 4 of the Vehicle Assembly Building at NASA's Kennedy Space Center. The upper stage simulator consists of 11 individual components that were designed and manufactured during a two-year period at NASA's Glenn Research Center in Cleveland. The components represent the size, outer shape and

weight of the second stage of the Ares I rocket, and will be integrated together in the Vehicle Assembly Building. The upper stage simulator eventually will be stacked atop the solid rocket booster segments of the Ares I-X rocket. The Ares I-X test flight will provide NASA an early opportunity to test and prove hardware, facilities and ground operations associated with the Ares I crew launch vehicle. It also will allow NASA to gather critical data during ascent of the integrated Orion crew exploration vehicle and the Ares I rocket. The data will ensure the entire vehicle system is safe and fully operational before astronauts begin traveling to orbit. ["First Rocket Parts of NASA's New Launch System Arrive in Florida," **Press Release #08-281**, November 4, 2008.]

November 5: Election Sends Three NASA Supporters Packing

The House Science Committee lost three strong NASA supporters Nov. 4 when U.S. voters elected a new Congress and chose Democrat Barack Obama as the next president. Reps. Nick Lampson (D-Texas) and Tom Feeney (R-Fla.) lost their re-election bids to well-funded challengers. Rep. Mark Udall (D-Colo.), the chairman of the House Science space and aeronautics subcommittee, won his bid to represent Colorado in the U.S. Senate. Voters in Boulder, Colo., chose Democrat Jared Polis, a technology entrepreneur and philanthropist, to replace Udall in the House. Republican Pete Olson defeated Lampson with 53 percent of the vote, according to the overnight tally. Texas voters re-elected three other prominent NASA supporters: Republican Reps. John Culberson and Ralph Hall and Democratic Rep. Sheila Jackson Lee. In Florida, Feeney lost his re-election bid to Democrat Suzanne Kosmas. Republicans held onto the seat being vacated by Rep. Dave Weldon, a dogged NASA supporter who is retiring from Congress after serving 14 years. Bill Posey, a Florida state senator, will join Kosmas in Washington to represent Brevard County and its thousands of Kennedy Space Center employees. Web posted. (2008). [Election Sends Three NASA Supporters Packing [Online]. Available WWW: <http://www.space.com/> [2008, November 5].]

Ares 1-X Upper Stage Arrives At the Cape

The Upper Stage Simulator for the first test flight of the Ares 1 rocket will be at Kennedy Space Center this week after a long journey from Glenn Research Center in Cleveland, Ohio. Tentatively set for launch July 12 from KSC's launch pad 39B, the \$360 million Ares 1-X mission will test first stage flight control systems of NASA's new moon rocket as well as the system that separates the first and second stages of the vehicle and the first-stage parachute recovery system. The 327-foot vehicle comprises a four-segment shuttle solid rocket boosters, an inert fifth segment and aerodynamically exact copies of the Ares 1 second stage, the Orion spacecraft and a launch abort system that tops the rocket. The replicas simulate the mass and outer mold lines of the rocket that will propel American astronauts on round trips to the moon no later than 2020. Components that make up the Upper Stage Simulator arrived at Port Canaveral on Tuesday aboard the Delta Mariner, a ship that also transports Delta 4 rocket components for United Launch Alliance. Web posted. (2008). [Ares 1-X Upper Stage Arrives At the Cape [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, November 5].]

SpaceX Unveils DragonLab Reusable Spacecraft

Space Exploration Technologies Corp. (SpaceX) announced Nov. 4 that it is developing a new reusable spacecraft called DragonLab, which will accommodate pressurized or unpressurized experiments and be launched on the company's upcoming Falcon 9 rocket. The spacecraft can provide a platform for on-orbit experiments, according to SpaceX, and will allow for payload recovery. The company plans to hold a DragonLab users workshop Nov. 6 to give potential customers the opportunity to learn more about the system and ask questions. E-mail distribution. (2008). [Aviation Week's [Aerospace Daily & Defense Report](#) Re: "SpaceX Unveils DragonLab Reusable Spacecraft," [Electronic]. Vol. 228, No. 26, [November 5, 2008].]

November 6: Shuttle future "urgent" issue for new president

The space shuttle's retirement is listed as one of 13 "urgent issues" that government auditors believe need immediate attention from President-elect Barack Obama. "The administration needs to move quickly to nominate and fill key leadership positions within NASA because the decision on whether to retire or continue operating the Space Shuttle will need to be made soon," the Government Accountability Office said in a summary of its decision. NASA currently plans to retire the shuttle fleet at the end of 2010 and its replacement isn't scheduled to take astronauts back into space for another five years after that. However, the agency has been studying the cost of adding more flights and extending the fleet's service and Obama promised during the campaign to increase the agency's budget by \$2 billion a year to cut the gap in human flights. The GAO identified the shuttle's retirement as an issue it wants the Obama administration to address within the next six months, which could bode well for thousands of space shuttle workers at Kennedy Space Center whose jobs are hanging on decisions made about whether to end the program in 2010 or not. The other dozen "urgent issues" are listed on a new Web site the GAO launched this morning. The other issues include defense spending and security, oversight of the financial institutions and markets and the 2010 census. Web posted. (2008). [Shuttle future "urgent" issue for new president [Online]. Available WWW: http://www.floridatoday.com/the_flame_trench_blog [2008, November 6].]

Retirement for oldest commercial communications satellite

After 32 years of serving ships at sea and scientists at the South Pole, an aging communications satellite owned by Intelsat Ltd. has been retired. The Marisat-F2 satellite, manufactured by Hughes Aircraft Inc. and launched in 1976, had only a five-year design life, yet until the end, the communications payload continued operating within its original specifications, Intelsat engineers said. Once dubbed "The Little Satellite That Could," Marisat-F2 is believed to have been the oldest commercial communications satellite still actively operating in space. Engineers at Intelsat General responsible for managing the orbit of the 700-pound satellite determined recently that its support sub-systems were finally near the end of operating life. To prevent Marisat-F2 from drifting into the path of other satellites, Intelsat decommissioned it on Oct. 29th and began using its remaining fuel to raise it about 125 miles to disposal altitude, out of the way of other geosynchronous communications satellites. The final assignment of Marisat-F2 had been to provide Internet service to research scientists stationed at the Amundsen-Scott South Pole Station. Of the three satellites dedicated to serving the National Science Foundation's research operations there, Marisat-F2 had the second greatest bandwidth capacity for Internet service and was available for use the most hours each day, officials said. "The performance of this satellite has been truly remarkable," said Kay Sears, President of Intelsat General, the government services subsidiary of Intelsat. Web posted. (2008). [Retirement for oldest commercial communications satellite [Online]. Available WWW: <http://www.spaceflightnow.com/> [2008, November 6].]

Technical issues, more tests delay TacSat-3's liftoff

The timeless saying every gray cloud has a silver lining aptly fits the Tactical Satellite-3 program during the past 60 days. Initially scheduled to launch from NASA's Wallops Flight Facility at Wallops Island, Va., in October, TacSat-3's liftoff is now scheduled for January 2009 after the project team discovered, and then fixed, problems with the spacecraft's Star Tracker apparatus. The team subsequently required additional time to evaluate the final version of flight software to ensure smooth operations during the one-year mission. Web posted. (2008). [Technical issues, more tests delay TacSat-3's liftoff [Online]. Available WWW: <http://www.spaceflightnow.com/> [2008, November 6].]

Rocket Raised For NASA Planet Hunt

A Delta 2 rocket that will launch a NASA planet-hunter is being raised at Cape Canaveral Air Force Station this week as the agency mounts a campaign to launch the spacecraft next spring. The 12-story United Launch Alliance rocket and its payload -- NASA's Kepler II spacecraft -- are tentatively

slated to blast off March 5 from Launch Complex 17B. The \$500 million Kepler mission is aimed at surveying part of the Milky Way galaxy in an effort to uncover evidence of Earth-like planets orbiting stars in habitable zones. Scientists hope to determine how many of the billions of stars in the galaxy host such planets. The Kepler spacecraft will be launched into an Earth-trailing solar orbit by the Delta 2 rocket, the first stage of which was erected earlier this week at Launch Complex 17B. Nine strap-on solid rocket boosters were attached to the stage, which is powered by an RS-27A LOX-Kerosene engine. The second stage of the rocket, with its Aerojet AJ-10 hypergolic engine, is scheduled to be erected in early December. The spacecraft passed thermal vacuum tests at Ball Aerospace chambers in September and is being prepared for shipment to Cape Canaveral. Web posted. (2008). [Rocket Raised For NASA Planet Hunt [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, November 6].]

SpaceX Anticipates DragonLab Starting In 2010

Space Exploration Technologies Corp. (SpaceX) expects to begin commercial flights of its newly announced reusable DragonLab spacecraft in 2010, and is in negotiations with potential customers for room on the vehicle. DragonLab is an unmanned spacecraft that is largely the same as the Dragon resupply craft the company is developing for NASA under the Commercial Orbital Transportation Services (COTS) program. The major difference will be that DragonLab won't feature the docking adapter for berthing with the International Space Station, but instead will be an orbital free flyer. Both spacecraft are designed to launch on SpaceX's upcoming Falcon 9 rocket, which is slated to have its first flight next spring from Cape Canaveral, Fla. The first Falcon 9 vehicle is slated to be delivered to the Cape by the end of the year. E-mail distribution. (2008). [Aviation Week's [Aerospace Daily & Defense Report](#) Re: "SpaceX Anticipates Operations Of DragonLab Starting In 2010," [Electronic]. Vol. 228, No. 27, [November 6, 2008.].]

Digital Learning Network Hosts Virtual Party for NASA

Schools all over the world will wish NASA a happy birthday as part of an all-day virtual birthday party through NASA's Digital Learning Network on Thursday, Nov. 13. The virtual party begins at 9 a.m. EST with live videoconferences occurring every hour on the hour until 6 p.m. Schools from Canada, Australia, the United Kingdom, Japan, Mexico City, India, Slovenia and New Zealand will participate in the live digital connection. During each webcast, international schools will connect with a U.S. school and one of NASA's 10 field centers. Each Digital Learning Network site will host a 45-minute videoconference featuring a unique program in NASA's 50 years of discovery and exploration in science, aeronautics and space. One of the Webcast topics for NASA's 50th birthday party included (all times EST) - Space shuttle, hosted at NASA's Kennedy Space Center in Florida at 9 a.m. ["Digital Learning Network Hosts Worldwide Virtual Party for NASA," **Press Release #08-283**, November 6, 2008.]

November 9: SpaceX could add 100 jobs

A new kind of untested rocket soon will appear on the Cape, ready for its first scheduled flight in the spring. A successful launch could mean more than 100 additional jobs in the space industry, which is threatened by the end of the shuttle program. Measuring 180 feet tall and 12 feet wide, SpaceX's Falcon 9 will have nine newly designed engines and a paying customer for its maiden voyage. The first Falcon 9 is scheduled to arrive late this year and lift off in the spring from Cape Canaveral Air Force Station's Launch Complex 40. The pad is being renovated in part with \$1 million in funding from Space Flight, the state agency formed to help the space industry. SpaceX has grown from 10 employees at the Cape to 35 since February. The company plans to have 150 employees in Florida if the Falcon 9 wins contracts with NASA to resupply the International Space Station. The company plans four Falcon 9 launches from Launch Complex 40 in 2009. Two launches have unidentified commercial customers and two are part of NASA's Commercial Orbital Transportation Service contract, which will give SpaceX \$278 million to help develop a commercial rocket to deliver cargo

to the space station. ["SpaceX could add 100 jobs," **Florida Today**, November 10, 2008, p 1C & 3C.]

November 10: Machinists approve contract with ULA

United Launch Alliance learned Sunday that a new contract, which includes workers at the company's three sites, has been accepted by the International Association of Machinists and Aerospace Workers. The union represents 850 workers at Cape Canaveral Air Force Station, Fla., Decatur, Ala., and Vandenberg AFB, Calif. Ratification of the 3.5-year contract came after IAMAW leadership recommended acceptance of the contract to its members. Some 340 workers at the Cape, out of about 800 ULA employees, are covered by the contract. Negotiations began Oct. 6 and ended Nov. 9, with the ratification vote. "We're pleased that the employees represented by the International Association of Machinists and Aerospace Workers have ratified a combined agreement covering multiple sites and multiple locals," said Michael Gass, ULA president and chief executive officer. "This is a major step forward in our progress toward becoming one company, and it will enable workers at our launch and production sites to work on all of our launch vehicles. The negotiating teams worked very hard to improve the pay and benefits for the represented employees and to maintain ULA's competitiveness and operational efficiency." Boeing and Lockheed Martin joined in December 2006 to form ULA, which offers the Atlas V, Delta II and Delta IV to the U.S. government. Web posted. (2008). [Machinists approve contract with ULA [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, November 10].]

NASA to Test Motor for Orion Crew Capsule's Launch Abort

NASA and ATK will conduct the first full-scale test fire of the motor for a new launch abort system at 1 p.m. MST, Nov. 20, at the ATK Launch Systems facility in Promontory, Utah. The launch abort system will increase crew safety for NASA's Constellation Program, which is building the next-generation spacecraft to carry astronauts to the International Space Station by 2015 and the moon by 2020. ["NASA to Test Motor for Orion Crew Capsule's Launch Abort System," **Media Advisory #M08-225**, November 10, 2008.]

Once-Dropped NOAA-N Prime Arrives At VAFB For Launch

The NOAA-N Prime weather satellite that tumbled off of a "turn over cart" during a routine repositioning in the factory five years ago has been shipped after undergoing repairs to Vandenberg Air Force Base, Calif., for a Feb. 4 launch. The fall of the 18-ft. tall satellite required Lockheed Martin Space Systems to rebuild it, but its main instrument package was not damaged. The mishap occurred in September 2003 (*Aerospace DAILY*, Sept. 10, 2003). After repairs it was put into storage awaiting launch, a routine practice. Launch will be on a Delta II. Part of the Advanced Tiros-N satellite series, N-Prime is one of two spacecraft that NOAA operates at the same time in polar orbits. Besides their atmospheric, sea and land-surface temperature and precipitation readings, they also are used for ozone, cloud cover and Earth radiance readings. Additionally, they carry search and rescue instruments for locating ships, aircraft and persons in distress. The last Tiros-N launch was in 2005. E-mail distribution. (2008). [*Aviation Week's Aerospace Daily & Defense Report* Re: "Once-Dropped NOAA-N Prime Arrives at Vandenberg for Launch," [Electronic]. Vol. 228, No. 29, [November 10, 2008.].]

Endeavour Launch Preps Continue

Launch pad 39A this morning is clear of all but essential personnel as workers begin pressurizing propellant tanks inside Endeavour, four days before the shuttle's scheduled launch at 7:55 p.m. Friday. The tanks hold pressurized helium and nitrogen that help push fuel through the shuttle's main propulsion system, twin maneuvering engines and 44 nose and tail steering thrusters. The risk of the tanks - called Composite Overwrap Pressure Vessels - rupturing places workers at risk of injury from shrapnel or a fire, so the pad is closed to tours or any unnecessary work. Managed from

the Launch Control Center next to the Vehicle Assembly Building, the pressurization is done in two stages, first to 80 percent and later 100 percent. NASA will hold its first countdown status briefing at 10 a.m. Tuesday, featuring NASA Test Director Jeff Spaulding, STS-126 Payload Manager Joe Delai and shuttle weather officer Kathy Winters. Web posted. (2008). [Endeavour Launch Preps Continue [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, November 10].]

NASA Taps Lockheed For Human Spaceflight Support Work

NASA has picked Lockheed Martin to support agency systems at Johnson Space Center and elsewhere that are used for training astronauts and conducting human spaceflight missions, awarding the company a contract with a potential total value close to \$1 billion. The new Facilities Development and Operations Contract (FDOC) replaces the Mission Support Operations Contract and incorporates portions of the work performed under the Space Program Operations Contract currently held by United Space Alliance. Lockheed Martin beat Boeing for the FDOC award. The performance period of the \$667.3 million base contract begins on Jan. 1, 2009 and ends on Oct. 1, 2012. The contract includes two one-year extension options valued that if exercised could bring the total contract value to \$977 million through 2014. "This award offers the opportunity to effectively transition experienced mission operations capabilities from the space shuttle program to the Constellation Program," Associate Administrator for Space Operations Bill Gerstenmaier said in a statement. The contract covers consolidated systems services development and operations support within the Mission Control Center at JSC in Houston, along with backup control centers for the space shuttle, International Space Station and Constellation programs. "The FDOC team will ensure the availability, integrity and reliability of space station avionics software, space shuttle and space station integrated planning systems, shuttle and station simulators for crews and flight controllers, and space shuttle flight software production," NASA said. The team also will support the development of a Constellation training facility, simulators and mission control systems. E-mail distribution. (2008). [Aviation Week's *Aerospace Daily & Defense Report* Re: "NASA Taps Lockheed For Human Spaceflight Support Work," [Electronic]. Vol. 228, No. 29, [November 10, 2008.].]

Phoenix mission ends as lander enters deep freeze

After five months investigating soil and ice of the Martian northern arctic plains, NASA's Phoenix lander has depleted its batteries and fallen silent. The shorter periods of sunlight during the onset of winter to recharge the solar-powered spacecraft, plus dustier skies and colder temperatures meant the lander could no longer collect enough energy to survive. The mission had exceeded its 90-day life span. Web posted. (2008). [Phoenix mission ends as lander enters deep freeze [Online]. Available WWW: <http://www.spaceflightnow.com/> [2008, November 10].]

November 11: NASA Taps ZIN Technologies

NASA has awarded a contract to ZIN Technologies Inc., of Middleburg Heights, Ohio, for work on space flight projects supporting the agency's Exploration Technology Development and Human Research Programs. The total value of the contract, including a three-year base period and two one-year options, is about \$94.5 million. The contract is scheduled to begin this month. ZIN Technologies Inc. will perform unique International Space Station flight investigations, as well as demonstrations in power, in-space propulsion, space communications and lunar applications. E-mail distribution. (2008). [Aviation Week's *Aerospace Daily & Defense Report* Re: "NASA Taps ZIN Technologies," [Electronic]. Vol. 228, No. 30, [November 11, 2008.].]

Cold front could thwart Friday's shuttle launch

An approaching cold front could thwart NASA's plans to launch space shuttle Endeavour on Friday on a flight to the international space station. The front was moving across the central part of the

nation Tuesday and was expected to bring rain and thick clouds to the launch site by week's end. Shuttle weather officer Kathy Winters said there was a 60 percent chance of acceptable conditions at the 7:55 p.m. Friday liftoff time and only a 40 percent chance on Saturday. "The timing of the front will be critical," she said. Otherwise, everything was proceeding well for the start of the countdown. Endeavour is loaded with equipment to expand the living quarters of the space station. NASA hopes to double the size of the crew, from three to six, by next June. During the 15-day mission, Endeavour's seven astronauts will deliver a new bathroom, kitchenette, two bedrooms and exercise machine, as well as a water recycling system — and a new resident for the space station. A new astronaut will replace one of the three space station residents. This will be NASA's first shuttle launch since the end of May. "We haven't had a launch for a while, so we're really excited to be back in the saddle again," said test director Jeff Spaulding. NASA has a shuttle launch window until Nov. 25. Web posted. (2008). [Cold front could thwart Friday's shuttle launch [Online]. Available WWW: <http://www.ap.google.com/> [2008, November 11].]

Astronaut's ambitions born in Brevard

Flying into Kennedy Space Center this afternoon, Endeavour astronaut Shane Kimbrough may catch a glimpse of the backyard citrus grove in Mims where his dreams of space travel began. It was there that Kimbrough made regular childhood summer and holiday visits to his grandfather, the late Lyle Duff, who over his 80 years spent in Mims became known as an unofficial mayor in the community and who remains a hero to Kimbrough. "Anything that launched, my grandfather would be dragging me out to see it, and that's kind of where my whole interest sparked," said Kimbrough, a soft-spoken, 41-year-old Army veteran. Now Kimbrough's mother, who grew up in Mims and graduated from Titusville High in 1962, and dozens of family members are eagerly returning to the Space Coast to watch his first launch at 7:55 p.m. Friday, on a mission in which he'll perform two spacewalks. Kimbrough will be joined on Endeavour by two more rookie astronauts and four spaceflight veterans, on a 15-day voyage that will outfit the International Space Station to support six-person crews. Pilot Eric Boe and Mission Specialist Steve Bowen are the crew's two other rookies. Chris Ferguson, a first-time commander, and Heidemarie Stefanyshyn-Piper, the lead spacewalker, worked together on Atlantis in 2006. Don Pettit, who will supervise the unloading of tons of cargo and operate the station's robotic arm, spent six months as a science officer on the station in 2002-03. Crew member Sandra Magnus is about to begin a four-month tour on the station, replacing Greg Chamitoff, who will return to Earth on Endeavour. Looking back, it seems natural for Kimbrough to have landed on a shuttle mission, starting with his family's roots in Brevard County. Family on his grandmother's side, the Dardens, sold several beachside homes to the federal government when NASA took over Cape Canaveral. He witnessed Apollo moon shots and rocket launches at his grandfather's side. Among the personal items Kimbrough will take into orbit, his mother said, is a photo of his grandparents with their three children taken at home in Mims in 1962. Web posted. (2008). [Astronaut's ambitions born in Brevard [Online]. Available WWW: <http://www.floridatoday.com/> [2008, November 11].]

Safeguard for seamless liftoff

Shuttle Endeavour and seven astronauts will blast off Friday with a new system designed to prevent a catastrophic cartwheel off a Kennedy Space Center launch pad. Eight 28-inch-long metal posts, each capped with pyrotechnic nuts, will hold Endeavour to its mobile launcher platform when the shuttle's three main engines ignite 6.6 seconds before a planned 7:55 p.m. liftoff. Restrained only by the bolts, Endeavour will sway back about 3 feet during what amounts to an engine test. Then, it will rock back into place before its twin solid rocket boosters ignite and small explosives fire simultaneously to break apart the nuts, freeing Endeavour from the posts that hold it down. The new system connects two standard NASA detonators on each of the 10 pound metal nuts, eliminating a serious hazard that has haunted engineers since the agency's second shuttle launch 27 years ago today. Documents obtained by *Florida Today* — some through the Freedom of Information

Act – show 25 documented instances when two pyrotechnic charges on the nuts did not fire simultaneously, causing a phenomenon NASA calls “stud hand-up.” The failure to cleanly separate from the mobile launcher platform could tear apart the aft skirt of a 149-foot-tall solid rocket booster, or send a shuttle toppling end over end on the launch pad. The shuttle is certified to withstand loads induced by up to three stud hang-ups. The new design debuting on the Endeavour flight features a cross strap that pyrotechnically links the two detonators, ensuring that they fire within 50 microseconds of each other. That circumvents any delay between firing signals. [“Safeguard for seamless liftoff,” **Florida Today**, November 12, 2008, p 1A & 3A.]

NASA’s Satellite Sleuth Arrives at Launch Site

NASA's first spacecraft dedicated to studying carbon dioxide, the leading human-produced greenhouse gas driving changes in Earth's climate, has arrived at Vandenberg Air Force Base, Calif., to begin final launch preparations. The Orbiting Carbon Observatory arrived Nov. 11 at its launch site on California's central coast after completing a cross-country trip by truck from its manufacturer, Orbital Sciences Corp. in Dulles, Va. The spacecraft left Orbital on Nov. 8. After final tests, the spacecraft will be integrated onto an Orbital Sciences Taurus rocket in preparation for its planned January 2009 launch. The observatory will launch into a 438-mile near-polar, sun-synchronous orbit inclined 98.2 degrees to Earth's equator, mapping the globe once every 16 days. The mission is designed to last two years. It will fly in formation with the five other NASA missions that are part of the "A-Train" or afternoon constellation of Earth Observing System satellites that cross the equator each day shortly after noon. This coordinated flight formation will enable researchers to correlate the observatory's data with data from the other NASA spacecraft, including nearly simultaneous carbon dioxide measurements from the Atmospheric Infrared Sounder instrument on NASA's Aqua satellite. The Orbiting Carbon Observatory is a NASA Earth System Science Pathfinder Program mission managed by NASA's Jet Propulsion Laboratory in Pasadena, Calif., for NASA's Science Mission Directorate in Washington. Orbital Sciences provides mission operations under JPL's leadership. Hamilton Sundstrand in Pomona, Calif., designed and built the observatory's science instrument. NASA's Launch Services Program at NASA's Kennedy Space Center in Florida is responsible for launch management. [“NASA’s Carbon-Sniffing Satellite Sleuth Arrives at Launch Site,” **Press Release #08-285**, November 12, 2008.]

November 12: Launch Danger Zone: Mariners steer clear

The U.S. Air Force is warning mariners to steer clear of a launch danger zone off the coast of Cape Canaveral during a four-hour period that brackets the time NASA plans to send up shuttle Endeavour on Friday night. Endeavour and seven astronauts are scheduled to blast off from launch pad 39A at Kennedy Space Center at 7:55 p.m. EST Friday. Liftoff is targeted for the middle of a 10-minute window. The weather forecast for launch remains the same. Air Force meteorologists say there is a 60 percent chance that conditions will be acceptable for launch. The prime concerns are the chance of rainshowers within 20 nautical miles of the pad and thick clouds that would obscure the view of the vehicle in flight. Mariners are being asked to remain clear of a Launch Hazard Area in the Atlantic Ocean between 5:15 p.m. and 9:15 p.m. Friday. The danger zone envelopes the area that the shuttle is expected to fly over as it makes its thundering climb toward orbit. Violators can be jailed for six years and fined \$250,000 under Title 33, United States Code, Section 1232. Web posted. (2008). [Launch Danger Zone: Mariners steer clear [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, November 12].]

Jamison named ULA VP

United Launch Alliance's Jerry Jamison has been appointed vice president, launch operations. Jamison has served as director, launch operations, since the formation of ULA on Dec. 1, 2006. Jamison will continue to lead the more than 1,200 employees at launch sites at Cape Canaveral Air Force Station in Florida and Vandenberg Air Force Base in California. He is responsible for

integrating the launch services for ULA's three launch vehicles: the Atlas V, Delta II and Delta IV and associated product lines. With more than 20 years of space related program experience, Jamison previously served as the Atlas Program launch operations director. Web posted. (2008). [Jamison named ULA VP [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, November 12].]

NASA Gives "Go" For Shuttle Launch

NASA gave a green light today to proceed with plans to launch shuttle Endeavour on Friday, and the agency is not working any technical showstoppers as countdown clocks tick toward what should be a relatively rare night launch. "Night launches are special -- they sure are," NASA Shuttle Launch Director Mike Leinbach told reporters during a traditional pre-launch news conference at here at Kennedy Space Center. "I don't care whether it's dark outside or the sun is bright and shiny, the feeling in the Firing Room is the same, and we treat them all the same. (But) It'll be fun to cap the year with a night launch. I like them, myself, personally." Endeavour and seven astronauts remain scheduled to blast off at 7:55 p.m. EST Friday -- right in the middle of a 10-minute launch window. The launch -- which will be only the 31st after-dark shuttle liftoff - is precisely timed to put the shuttle on course for a docking at the International Space Station on Sunday evening. Veteran shuttle pilot Chris Ferguson will be in command of the shuttle, and his crew includes pilot Eric Boe and mission specialists Heide Piper, Don Pettitt, Shane Kimbrough, Steve Bowen and Sandra Magnus. Mangus will be replacing Gregory Chamitoff as a flight engineer on the station. Chamitoff will return to Earth with the Endeavour crew. A three-day countdown picked up at 10 p.m. Tuesday. The big ticket item today will be loading liquid hydrogen and liquid oxygen into the shuttle's fuel cell system. The weather forecast for the launch remains the same. There is a 60 percent chance conditions will be acceptable for launch. The prime concerns are the chance of rainshowers within 20 nautical miles of launch pad 39A and a chance of thick clouds that would obscure the view of the shuttle during the critical early portions of flight. Web posted. (2008). [NASA gives "Go" For Shuttle Launch [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, November 12].]

NASA Contractor Indicted for Fraud

Richard J. Harmon, 60, has been indicted and charged with fraud involving space vehicle parts and with making a false statement in a matter within the jurisdiction of the National Aeronautics and Space Administration (NASA), acting United States Attorney Tim Johnson announced today. A two-count indictment charging Harmon with fraud involving space vehicle parts and making a false statement was returned by a Houston federal grand jury on Wednesday, Nov. 12, 2008. A summons is expected to issue directing Harmon to appear before a United States Magistrate Judge for arraignment in the near future. The indictment alleges that Harmon, owner of Cornerstone Machining, Inc. in Alvin, Texas, was hired by Spacehab, Inc., to build a part for the Space Shuttle Endeavour. The part was designed to secure cargo to the payload bay of the Endeavour during a flight to the International Space Station in March 2008. According to the indictment, the part, called a passive flight releasable attachment mechanism interface plate, was damaged during the manufacturing process. Harmon is alleged to have covered up the damage by causing it to be welded without informing Spacehab. Harmon is accused of delivering the part to Spacehab without disclosing the damage and falsely certifying the materials and processes used in machining the part complied with the requirements of applicable drawings. Web posted. (2008). [NASA Contractor Indicted For Fraud Involving Space Vehicle Parts [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, November 13].]

November 13: ULA to lay off 350 workers

United Launch Alliance announced today it will eliminate 350 jobs in February. The job losses will be spread across all locations. A second round of layoffs could occur in the fourth quarter of 2009. The

company employs 4,200 nationwide, with about 800 at Cape Canaveral Air Force Station. ULA will announce how the layoffs will be distributed before the end of the year, company spokeswoman Julie Andrews said. Web posted. (2008). [ULA to lay off 350 workers [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, November 13].]

Griffin: I'd like to stay but...

NASA Administrator Michael Griffin said Thursday that he would like to continue serving under President-elect Barack Obama – but doesn't expect to be asked. "If the next president asks me to continue I would be happy to do it," said Griffin, speaking to Kennedy Space Center workers. But, he said, "I doubt that will happen." He said he would stay on only "under the right circumstances," including being able to continue the Constellation program meant to replace the space shuttle. "If somebody wanted me to stay on but said, 'No, we need to go over here,' well," he said with a shrug, "do it with somebody else." Officials close to Obama's transition team have said the new president is likely to review Constellation -- a system of new rockets and capsules that suffers from technical and financial problems that could delay its first scheduled mission in 2015. Some have speculated the program could be killed and replaced by more space shuttle flights and a different rocket design. Griffin has at least one ally who wants him to stay: U.S. Sen. Bill Nelson, one of Obama's closest advisers on space. The Florida Democrat already has lobbied the Obama team to keep Griffin -- at least, for the time being. The NASA chief isn't always replaced when the White House changes presidents or parties, unlike most other agency or department heads. Former NASA Administrator Daniel Goldin, for instance, was appointed by the first President Bush in 1992, remained through President Clinton's two terms and was retained by the second President Bush for nearly a year before he was replaced. Griffin took the reins of NASA chief in April 2005. Web posted. (2008). [Griffin: I'd like to stay but... [Online]. Available WWW: <http://www.orlandosentinel.com/> [2008, November 13].]

Cooke Named NASA Exploration Chief

Doug Cooke, a longtime NASA engineer, will take over as the agency's associate administrator for exploration systems with the departure of Rick Gilbrech later this month. In that role, Cooke will be in charge of developing the plans and hardware necessary to fulfill NASA's goal of leaving Earth orbit to explore the moon, Mars and beyond with humans and robotic pathfinders. Gilbrech, who has headed the Exploration Systems Mission Directorate at NASA headquarters in Washington for the past year, said Nov. 12 he will leave government service for the private sector on Nov. 24. (2008). [Aviation Week's *Aerospace Daily & Defense Report* Re: "As Gilbrech Departs, Cooke Named NASA Exploration Chief," [Electronic]. Vol. 228, No. 32, [November 13, 2008].]

NASA Steps Up Launch Preps

NASA is finishing up a critical effort to service shuttle Endeavour's three power-producing fuel cells this morning as the agency enters the final full day of the countdown to a planned Friday night launch from Kennedy Space Center. A team of NASA and contractor engineers in Firing Room 4 of the Launch Control Center started loading liquid hydrogen and liquid oxygen into the shuttle's Power Reactant Storage Distribution system about 6 p.m. Wednesday. The so-called PRSD load is scheduled to wrap up early this morning and then launch pad 39A -- which remains closed to all but essential personnel during the hazardous operation -- will reopen for other launch preparations. The shuttle's fuel cells combine liquid hydrogen and liquid oxygen to produce the electricity used to run all spaceship systems. Potable water is a byproduct that typically is bagged and hauled over to the International Space Station during shuttle visits to the outpost. Liftoff remains scheduled for 7:55 p.m. EST Friday -- the middle of a 10-minute launch window. The launch is precisely timed to put the shuttle on course for a Sunday evening docking at the space station. Web posted. (2008). [NASA Steps Up Launch Preps [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, November 13].]

Software lets external tank detach faster

It's an emergency scenario that has troubled NASA for years: the chance that a crippled shuttle attempting a risky return to Kennedy Space Center might collide with its huge external tank after ditching it over the Atlantic Ocean. "That tank just doesn't fall down and keep going," said former NASA astronaut Loren Shriver, chief technology officer with shuttle fleet operator United Space Alliance. "It actually pitches back up, and if you can't get away from it soon enough, there is a danger in some scenarios that it will hit the bottom side of the orbiter, which would not be a very good day." So shuttle Endeavour and seven astronauts are set to blast off at 7:55 tonight with new flight software that greatly reduces the already remote chance of that scenario. The software debut will "take it from a low probability to almost zero," said Shriver, a veteran shuttle pilot and mission commander. The crew is trained to fly Endeavour back to NASA's three-mile KSC runway if an engine failure, severe loss of cabin pressure or other major problem cripples the ship during the first four-to-five minutes of flight. Rocketing along a path that parallels the east coast of Florida, the crew would first fly through the jettison of the twin solid rocket boosters and then continue to zoom along, burning off propellant in the shuttle's external tank. Endeavour would be put through a maneuver called "powered pitch-around" – essentially, a Mach 7 U-turn – and then sink a bit as its engines began propelling it back toward NASA's shuttle homeport. Excess propellant would be dumped. Endeavour's engines would be deliberately shut down. The then 15-story tank would be jettisoned, and steering thrusters would fire in an attempt to avoid a catastrophic collision. The new software would enable the shuttle to shove the tank away from Endeavour at three times the rate previously planned. Extra jet firings would be executed in a bid to control the roll of the shuttle right after the tank is jettisoned – a tricky transition to a long glide back toward KSC. ["Endeavour fit for flight," **Florida Today**, November 14, 2008, p 1A & 8A.]

NASA Restores Historic Lunar Orbiter Image

NASA released a newly restored 42-year-old image of Earth on Thursday. The Lunar Orbiter 1 spacecraft took the iconic photograph of Earth rising above the lunar surface in 1966. Using refurbished machinery and modern digital technology, NASA produced the image at a much higher resolution than was possible when it was originally taken. The data may help the next generation of explorers as NASA prepares to return to the moon. In the late 1960s, NASA sent five Lunar Orbiter missions to photograph the surface of the moon and gain a better understanding of the lunar environment in advance of the Apollo program. Data were recorded on large magnetic tapes and transferred to photographic film for scientific analysis. When these images were first retrieved from lunar orbit, only a portion of their true resolution was available because of the limited technology available. The Lunar Orbiter Image Recovery Project, located at NASA's Ames Research Center at Moffett Field, Calif., is taking analog data from original recorders used to store on tape and 1,500 of the original tapes, converting the data into digital form, and reconstructing the images. The restored image released Thursday confirms data from the original tapes can be retrieved from the newly-restored tape drives from the 1960s when combined with software from 2008. ["NASA Restores Historic Lunar Orbiter Image," **Press Release #08-291**, November 13, 2008.]

November 14: Manned Asteroid Missions Proposed As Springboard To Mars

A large group of former NASA managers and planetary scientists is proposing sweeping changes to the Bush administration's Vision for Space Exploration that would replace a human return to the moon with manned missions to asteroids and other locations much farther from Earth. Building on a February workshop at Stanford University, the group is urging the incoming presidential team to adopt the alternative goals as a new Obama Vision for Space Exploration. Some potential candidates to be President-elect Barack Obama's NASA administrator helped lead the definition of the alternative goals. "Unfortunately, NASA's implementation of the [Bush] Vision has been focused no farther than the moon, a destination the United States first reached nearly 40 years ago," says the new

proposal, compiled by the Planetary Society and a group of participants in the Stanford workshop. "Though not precluding a return to the moon in concert with international partners, the incoming administration should consider an alternative plan that makes demonstrable progress toward new destinations and new achievements in a flexible, affordable manner," the group stated in a report released Nov. 13. The revised vision would include more international participation up front, as well as much greater emphasis on Earth environmental monitoring coupled with deep space exploration. The primary objective of the new proposal is to use the new Ares-booster/Orion-spacecraft infrastructure to begin missions venturing farther from Earth earlier. The first mission to an asteroid could be flown in about 2025 under the proposed plan, which would take all manned lunar exploration out of the critical path toward an initial manned Mars capability. Under the proposal, lunar surface operations would eventually be flown -- but later than the current Bush target of about 2020. E-mail distribution. (2008). [Aviation Week's Aerospace Daily & Defense Report Re: "Manned Asteroid Missions Proposed As Faster Springboard To Mars," [Electronic]. Vol. 228, No. 33, [November 14, 2008.].]

NASA Shuttle Carries Camera to Help Farmers

Among the 32,000 pounds of cargo in NASA's space shuttle Endeavour, which is set to launch Friday, there is a camera that will help U.S. farmers and provide unique educational opportunities for students. Students and faculty at the University of North Dakota, Grand Forks, built the Agricultural Camera, known as AgCam, that will be delivered and installed on the International Space Station. The students will operate the camera from their campus and work closely with NASA engineers and station astronauts. AgCam will take images in visible and infrared light of growing crops, rangeland, grasslands, forests and wetlands in the northern Great Plains and Rocky Mountain regions. ["NASA Shuttle Carries Camera to Help Farmers," **Press Release #08-293**, November 14, 2008.]

Shuttle Endeavour Launches on Home Improvement Mission

Space shuttle Endeavour and its seven-member crew lifted off from NASA's Kennedy Space Center at 7:55 p.m. EST Friday to repair and remodel the International Space Station. Endeavour's STS-126 mission will carry to space about 32,000 pounds, which includes supplies and equipment necessary to double the crew size from three to six members in spring 2009. The new station cargo includes additional sleeping quarters, a second toilet, a water reclamation system and a resistance exercise device. The mission's four planned spacewalks primarily will focus on servicing the station's two Solar Alpha Rotary Joints, which allow the outpost's solar arrays to track the sun. The starboard SARJ has had limited use since September 2007. Shortly before launch, Commander Chris Ferguson thanked the teams that helped make the launch possible. "It's our turn to take home improvement to a new level after 10 years of International Space Station construction," he said. "Endeavour is good to go." Joining Ferguson on Endeavour's 15-day flight are Pilot Eric Boe and Mission Specialists Donald Pettit, Steve Bowen, Heidemarie Stefanyshyn-Piper, Shane Kimbrough and Sandra Magnus. Magnus will replace current station crew member Greg Chamitoff, who has lived on the outpost since June. She will return to Earth on Discovery's STS-119 mission, targeted for February 2009. ["NASA's Shuttle Endeavour Launches on Home Improvement Mission," **Press Release #08-294**, November 14, 2008.]

NASA pressured to keep shuttles flying beyond 2010

Endeavour sits on Launch Pad 39A ready to lift off for the international space station tonight, leaving only nine more scheduled flights before NASA mothballs the shuttle fleet to make way for a new generation of moon rockets. But there is growing pressure on the agency and its chief, Michael Griffin, to keep the shuttles flying beyond their scheduled retirement in 2010. Shuttle supporters on Capitol Hill, and now a group advising President-elect Barack Obama, are saying it should continue flying until a replacement rocket is capable of taking astronauts into space -- which won't happen before 2015. Although a draft NASA study says it is possible to keep flying the shuttle during that

five-year gap, Griffin has been outspokenly opposed -- and has been ratcheting up his warnings that the shuttle is too unsafe to fly after 2010. His critics in the space community say Griffin's real purpose is to protect the shuttle's troubled successor, the Ares I rocket. Without the money now being spent to fly the shuttle, Griffin says, Ares could be delayed past 2015 -- or killed by a new administration. "I get concerned when people moan over the retirement of the shuttle because they are not looking at [the future of] what we have ahead of us," Griffin told workers at Kennedy Space Center on Thursday. However, a copy of the NASA draft study to extend the shuttle obtained by the *Orlando Sentinel* shows that flying the shuttle three times a year through 2015 is feasible and would cost \$2.3 billion, less than the current annual budget of at least \$3.3 billion. The savings would be achieved by retiring one of the three orbiters and using it for parts, and by small cuts in the work force, the study said. And with Obama committed to providing an extra \$2 billion next year to speed development of Ares, the arguments to keep flying the shuttle have taken on new urgency. KSC is set to lose as many as 4,000 jobs when the shuttle era ends, a major economic issue on the Space Coast. In addition, grounding the shuttle would leave NASA reliant on Russian-made Soyuz spacecraft to get American astronauts into space. Griffin has been pushing back, insisting that safety concerns argue against any extension. In an interview in September, Griffin said that NASA had determined that flying the shuttle is more dangerous than previously estimated. He had told Congress in April that the risk of losing a crew during the shuttle's 10 remaining flights was 1-in-12. Five months later, he said a re-examination of the numbers indicated that the risks were actually higher: 1-in-8. "These are the odds. This is why the shuttle needs to be retired," he said. Web posted. (2008). [NASA pressured to keep shuttles flying beyond 2010 [Online]. Available WWW: <http://www.orlandosentinel.com/> [2008, November 14].]

November 17: Lunar Rocket Engine Passes CDR

NASA's Apollo-heritage J-2X cryogenic rocket engine is moving into the manufacturing and full-scale testing phase after completing a day-long critical design review at Marshall Flight Center Nov. 13. Based on the Rocketdyne J-2 engine that powered the upper stages of the Saturn V moon rocket, the J-2X is an upgrade that will be installed on both the Ares I crew launch vehicle and the Ares V heavy lifter NASA plans to develop to send humans back to the Moon. "The design of this propulsion system confirms that Ares I is proceeding on a solid foundation," stated Teresa Vanhooser, who chaired the J-2X Critical Design Review Board. The J-2X is the pacing item in developing the Ares I, which will carry the six-seat Orion crew exploration vehicle to the International Space Station in its first application. A single J-2X will be mounted in the Ares I upper stage, which will use liquid oxygen and liquid hydrogen as propellant. Later six of the engines will drive the core stage of the Ares V. NASA managers decided to upgrade the human-rated Saturn engine for Ares I to minimize the gap in U.S. human space access after the planned retirement of the space shuttle fleet in 2010 until the first Ares I flight, now targeted for the spring of 2015. While the original J-2 produced 230,000 pounds of thrust, the newer engine is being designed to generate 294,000 pounds. It will have a specific impulse of 448 seconds, weigh 5,450 pounds and stand 15 feet, five inches high. Pratt & Whitney Rocketdyne is developing the engine under a contract worth \$1.2 billion for the first eight engines. E-mail distribution. (2008). [*Aviation Week's Aerospace Daily & Defense Report* Re: "Lunar Rocket Engine Passes CDR," [Electronic]. Vol. 228, No. 34, [November 17, 2008.].]

First Ares I-X Hardware Arrives At Kennedy

Crews at Kennedy Space Center (KSC) are starting work on the first hardware for the first flight-test of a full-scale prototype of NASA's next human space launch vehicle. A barge has delivered boilerplate components crafted at Glenn Research Center for the Ares I-X test that will simulate a fully fueled Ares I upper stage in a flight-test next year. The test will use a four-segment space shuttle solid-fuel booster as its active element to gather data on flight dynamics and ground-system compatibility. The flying test bed will be assembled in high bay 4 of the Vehicle Assembly Building at

KSC, where the 11 components from Glenn were delivered. The actual date of the flight-test will be driven by launch of the STS-125 mission to service the Hubble Space Telescope. E-mail distribution. (2008). [Aviation Week's Aerospace Daily & Defense Report Re: "First Ares I-X Hardware Arrives At Kennedy," [Electronic]. Vol. 228, No. 34, [November 17, 2008.].]

Nations around the World Mark 10th Anniversary of ISS

Nations around the world will join together to mark a milestone in space exploration this week, celebrating the 10th birthday of a unique research laboratory, the International Space Station. Now the largest spacecraft ever built, the orbital assembly of the space station began with the launch from Kazakhstan of its first bus-sized component, Zarya, on Nov. 20, 1998. The launch began an international construction project of unprecedented complexity and sophistication. The station is a venture of international cooperation among NASA, the Russian Federal Space Agency, Canadian Space Agency, Japan Aerospace Exploration Agency, or JAXA, and 11 members of the European Space Agency, or ESA: Belgium, Denmark, France, Germany, Italy, the Netherlands, Norway, Spain, Sweden, Switzerland and the United Kingdom. More than 100,000 people in space agencies and contractor facilities in 37 U.S. states and throughout the world are involved in this endeavor. ["Nations Around the World Mark 10th Anniversary of International Space Station," **Press Release #08-296**, November 17, 2008.]

November 18: Expendable Launch Vehicle Status Report

Status Report: ELV-111808. Mission: Orbiting Carbon Observatory (OCO); Launch Vehicle: Taurus XL (Orbital Sciences); Launch Pad: Space Launch Complex 576-E, Vandenberg Air Force Base, Calif.; Launch Date: NET Jan. 15, 2009; Launch Window: TBD. The Orbiting Carbon Observatory arrived at Vandenberg Air Force Base on Nov. 11. It was shipped from spacecraft facilities in Dulles, Va., by Orbital Sciences, builder of the spacecraft. The following day it was removed from its shipping container and placed on a test stand at the Astrotech payload processing facility located on north Vandenberg. On Nov. 13, the protective coverings over the spacecraft were removed so that processing could begin. Processing of the Taurus launch vehicle is under way by Orbital Sciences in Hangar 1555 on north Vandenberg. Installation of the UHF communications antenna occurred this week. Telemetry testing is scheduled for next week. Thermal protection system insulation and electrical work is also under way on "Stage 0." Preparations are also under way at the launch pad to prepare it to receive Stage 0 next month. Some additional tests need to be performed on the electronics control unit (ECU) on the first stage. These additional tests are deemed necessary for the vehicle to be fully flight qualified. It is not clear yet how much time this will take, but it is expected to affect the planned launch date of mid-January. Coordination with the Western Range will also be necessary to determine the earliest launch date available. Mission: NOAA-N Prime; Launch Vehicle: Delta II 7320; Launch Pad: Space Launch Complex 2, Vandenberg AFB; Launch Date: February 4, 2009; Launch Window: 2:22:01 - 2:32:01 a.m. PST. The NOAA-N Prime spacecraft arrived at Vandenberg Air Force Base on Nov. 4 aboard a C-5 aircraft. It was taken to NASA payload processing facility 1610 located on north Vandenberg. The following day the spacecraft was removed from its shipping container. On Nov. 6, the spacecraft was rotated from horizontal to vertical and mated to the payload attach fitting associated with the Delta II. The spacecraft was powered on by Lockheed Martin for the first time on Nov. 13 to begin electrical testing. Spacecraft communications system tests are now under way. The Delta II arrived at Vandenberg Air Force Base on Nov. 13. Work by United Launch Alliance to erect the rocket at Space Launch Complex 2 is scheduled to begin Dec. 3. Web posted. (2008). [Expendable Launch Vehicle Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/launchingrockets/status/2008> [2008, November 18].]

November 19: Students to launch next year at NASA facility

Rockets powered by laughing gas are no joking matter to UCF students who are less than a year away from the first launch. Nitrous oxide, more commonly known as laughing gas, will help the Students for the Exploration and Development of Space at UCF propel two rockets into the upper atmosphere. The students expect the rockets, named Daedalus III and IV, to launch at NASA's Wallops Flight Facility in Virginia next year, with the first during the summer and the second in December. Project Daedalus is one of two remaining student initiatives in Florida to launch a sounding rocket. Sounding rockets are used in sub-orbital research to gather data from the upper atmosphere. Last year, Embry-Riddle Aeronautical University in Daytona Beach became the first undergraduate group to successfully launch a sounding rocket. Both the UCF and Embry-Riddle programs are named after Greek mythological characters. Embry-Riddle's sounding rocket program is called Icarus. When the Icarus launched last year, it lacked a recovery system, which the UCF team has planned into their designs. Web posted. (2008). [Students to launch next year at NASA facility [Online]. Available WWW: <http://media.www.centralfloridafuture.com/> [2008, November 19].]

NASA Tests First Nodes Of Interplanetary Internet

Engineers from NASA's Jet Propulsion Laboratory have transmitted dozens of space images to and from the Epoxi spacecraft, marking what the agency calls the first step in creating "an interplanetary Internet." The team used software called Disruption-Tolerant Networking (DTN), which sends information using a method that differs from the normal Internet's TCP/IP. Engineers began a series of DTN demonstrations in October. This month-long experiment is the first in a series of planned demonstrations to qualify the technology for use on a variety of upcoming space missions. Now more than 32 million kilometers (20 million miles) from Earth, Epoxi is on a mission to encounter Comet Hartley 2 in two years. E-mail distribution. (2008). [Aviation Week's Aerospace Daily & Defense Report Re: "NASA Tests First Nodes Of Interplanetary Internet," [Electronic]. Vol. 228, No. 36, [November 19, 2008].]

November 20: International Space Station: 10 years in the making

Ten years ago today the first module of the International Space Station arrived in orbit nearly 200 miles above Earth. Since that day it has been a global effort with the cooperation of Russian, European, Japanese and other space agencies in constructing the station. The station has been home to astronauts from those and other countries, making this truly an international space station. With the European and Japanese laboratories, crews can conduct experiments both inside and outside the station. Due to be completed in 2010, the station is expected to play a key role in research on the effects of long-term trips in space. In the decade since the Nov. 20, 1998, launch of the first module from Kazakhstan, the space station has grown to a length of 291 feet and a mass of 627,000 pounds — the largest spacecraft ever flown. With science labs from Europe, Japan and the United States, the internal volume rivals that of a five-bedroom, two-bath house. The station has hosted 167 visitors from 15 nations, while circling the Earth more than 57,300 times. Web posted. (2008). [International Space Station: 10 years in the making [Online]. Available WWW: <http://www.usatoday.com/> [2008, November 20].] Web posted. (2008). [Spacewalkers extra cautious in second day outside craft [Online]. Available WWW: <http://www.chron.com/> [2008, November 21].]

Orion Rocket Motor Test Spectacular

The primary motor for an escape system that would save astronauts flying aboard NASA's Orion spacecraft successfully passed a spectacular test-firing Thursday as the agency pressed ahead with work aimed at returning Americans to the moon by 2020. With dozens of spectators watching from a nearby ridge, the Orion Launch Abort System motor roared to life in Promontory, Utah, sending up four pillars of flame in a five-second burst that produced a half-million pounds of thrust. "It looked perfect. Very impressive. It was beautiful," said former NASA astronaut Charlie Precourt, now a vice president with Alliant Techsystems Inc., which builds both the escape system motor and

the first stage of the Ares 1 rockets that Orion spacecraft will fly upon. The 17-foot-tall motor is the propulsive heart of a system that would pull Apollo-style Orion crew capsules and astronauts away from Ares 1 launch vehicles in an emergency. The Orion Launch Abort System is similar to one that pulled Russian cosmonauts Vladimir Titov and Gennady Strekalov off the top of a rocket that caught fire on its Baikonur Cosmodrome launch pad back in 1983. Mounted on a mast that will top Ares 1 rockets and Orion spacecraft, the motor sports four nozzles that expel flame-filled plumes when fired. For the test-firing, it was fitted into a specially designed stand with its nozzles pointed skyward. The Orion Launch Abort System will decrease the chance of fatal accidents in flight to 1 in 2,000. The statistical probability of a shuttle accident is 1 in 80. "Hope we never have to use it," Torres said. "But it would do the job. It certainly did its job today." The test today was the first of its kind since the launch abort system for Apollo crew capsules were developed in the 1960s. Web posted. (2008). [Orion Rocket Motor Test Spectacular [Online]. Available WWW: <http://www.floridatoday.com/> the flame trench blog [2008, November 20].]

Network Security Breaches Plague NASA

America's military and scientific institutions—along with the defense industry that serves them—are being robbed of secret information on satellites, rocket engines, launch systems, and even the Space Shuttle. The thieves operate via the Internet from Asia and Europe, penetrating U.S. computer networks. Some of the intruders are suspected of having ties to the governments of China and Russia, interviews and documents show. Of all the arms of the U.S. government, few are more vulnerable than NASA, the civilian space agency, which also works closely with the Pentagon and American intelligence services. In April 2005, cyber-burglars slipped into the digital network of NASA's supposedly super-secure Kennedy Space Center east of Orlando, according to internal NASA documents reviewed by *BusinessWeek* and never before disclosed. While hundreds of government workers were preparing for a launch of the Space Shuttle Discovery that July, a malignant software program surreptitiously gathered data from computers in the vast Vehicle Assembly Building, where the Shuttle is maintained. The violated network is managed by a joint venture owned by NASA contractors Boeing and Lockheed Martin. Undetected by the space agency or the companies, the program, called *stame.exe*, sent a still-undetermined amount of information about the Shuttle to a computer system in Taiwan. That nation is often used by the Chinese government as a digital way station, according to U.S. security specialists. By December 2005, the rupture had spread to a NASA satellite control complex in suburban Maryland and to the Johnson Space Center in Houston, home of Mission Control. At least 20 gigabytes of compressed data—the equivalent of 30 million pages—were routed from the Johnson center to the system in Taiwan, NASA documents show. Much of the data came from a computer server connected to a network that tracks malfunctions that could threaten the International Space Station. Seven months after the initial April intrusion, NASA officials and employees at the Boeing-Lockheed venture finally discovered the flow of information to Taiwan. Investigators halted all work at the Vehicle Assembly Building for several days, combed hundreds of computer systems, and tallied the damage. NASA documents reviewed by *BusinessWeek* do not refer to any specific interference with operations of the Shuttle, which was aloft from July 26 to Aug. 9, or the Space Station, which orbits 250 miles above the earth. The startling episode in 2005 added to a pattern of significant electronic intrusions dating at least to the late 1990s. These invasions went far beyond the vandalism of hackers who periodically deface government Web sites or sneak into computer systems just to show they can do it. One reason NASA is so vulnerable is that many of its thousands of computers and Web sites are built to be accessible to outside researchers and contractors. Another reason is that the agency at times seems more concerned about minimizing public embarrassment over data theft than preventing breaches in the first place. In 1998 a U.S.-German satellite known as ROSAT, used for peering into deep space, was rendered useless after it turned suddenly toward the sun. NASA investigators later determined that the accident was linked to a cyber-intrusion at the Goddard Space Flight Center in the Maryland suburbs of Washington. The interloper sent information to computers in Moscow, NASA

documents show. U.S. investigators fear the data ended up in the hands of a Russian spy agency. Web posted. (2008). [Network Security Breaches Plague NASA [Online]. Available WWW: <http://www.businessweek.com/> [2008, November 20].]

November 21: NASA Narrows List of Next Mars Landing Sites

The NASA Mars Science Laboratory (MSL) rover team has selected four finalist landing sites, all with ties to Martian water, as it moves toward final site selection next summer to support an Atlas V launch in September 2009. The nuclear-powered MSL rover is the size of a small car and carries much more powerful instrumentation to assess whether life evolved at any of the watery sites. The four sites rated highest by scientists in the latest of three site-selection workshops were the same ones chosen by mission leaders after a round of safety evaluations and analysis of terrain for rover driving. One site, Gale Crater, was a favorite of scientists considering sites for landing NASA's Spirit and Opportunity rovers in 2004, but was ruled out as too hazardous for the capabilities of those spacecraft. Other candidates were Eberswalde Crater, a clay-bearing site in an ancient river delta where scientists hope to use oil-prospecting technology to look for carbon-chemistry concentrations crucial to life; Holden Crater, where running water carved gullies and dropped sediment; and Mawrth Valley, a clay-rich feature believed to be a flood channel draining the Martian highlands. E-mail distribution. (2008). [Aviation Week's Aerospace Daily & Defense Report Re: "NASA Narrows List Of Next Mars Landing Sites," [Electronic]. Vol. 228, No. 38, [November 21, 2008.].]

Expendable Launch Vehicle Status Report

Status Report: ELV-112108. Mission: Orbiting Carbon Observatory (OCO); Launch Vehicle: Taurus XL (Orbital Sciences); Launch Pad: Space Launch Complex 576-E, Vandenberg Air Force Base, Calif.; Launch Date: No Earlier Than Jan. 15, 2009; Launch Window: TBD. The Orbiting Carbon Observatory arrived at Vandenberg Air Force Base, Calif., on Nov. 11. It was shipped from spacecraft facilities in Dulles, Va., by Orbital Sciences, builder of the spacecraft. The following day it was removed from its shipping container and placed on a test stand at the Astrotech payload processing facility located on north Vandenberg. On Nov. 13, the protective coverings over the spacecraft were removed so that processing could begin. Blanket preparations and edge taping on the spacecraft were completed and final closeouts began Nov. 19. Mechanical preparations and work on the electronic ground support equipment were completed today. A protective covering was placed around the spacecraft. Processing of the Taurus launch vehicle is under way by Orbital Sciences in Hangar 1555 on north Vandenberg. Installation of the UHF communications antenna occurred this week. Telemetry testing is scheduled for next week. Thermal protection system insulation and electrical work is also under way on "Stage 0." Preparations are also under way at the launch pad to prepare it to receive Stage 0 next month. Some additional tests need to be performed on the electronics control unit, or ECU, on the first stage. These additional tests are deemed necessary for the vehicle to be fully flight qualified. It is not clear yet how much time this will take, but it is expected to affect the planned launch date of mid-January. Coordination with the Western Range will also be necessary to determine the earliest launch date available. Mission: NOAA-N Prime; Launch Vehicle: Delta II 7320; Launch Pad: Space Launch Complex 2, Vandenberg AFB; Launch Date: February 4, 2009; Launch Window: 2:22:01 - 2:32:01 a.m. PST. The NOAA-N Prime spacecraft arrived at Vandenberg Air Force Base on Nov. 4 aboard a C-5 aircraft. It was taken to NASA payload processing facility 1610 located on north Vandenberg. The following day the spacecraft was removed from its shipping container. On Nov. 6, the spacecraft was rotated from horizontal to vertical and mated to the payload attach fitting associated with the Delta II. The spacecraft was powered on by Lockheed Martin for the first time on Nov. 13. Electrical testing began Nov. 14 and continued this week. Spacecraft communications system tests are now under way. The Delta II arrived at Vandenberg Air Force Base on Nov. 13. Work by United Launch Alliance to stack the rocket at Space Launch Complex 2 is scheduled to begin Dec. 2. Web posted. (2008). [Expendable

Launch Vehicle Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/launchingrockets/status/2008> [2008, November 21].]

November 23: Shuttle debris strike studied

One of shuttle Endeavour's cockpit windows took a hit from a micrometeorite or a piece of space junk, but it doesn't appear to be a major problem. Shuttle astronauts reported a ding in one of the multipane windows that was about twice the depth of a pencil eraser and about one-32nd of an inch wide. NASA engineers are studying the issue, but it doesn't appear to be anything to be worried about. The Endeavour astronauts are continuing with the transfer of supplies and equipment between the shuttle and the station. Web posted. (2008). [Shuttle debris strike studied [Online]. Available WWW: <http://www.floridatoday.com/> [2008, November 23].]

SpaceX Fires Off First-Stage Falcon 9 Test

Space Exploration Technologies Corp. (SpaceX) successfully conducted a full mission-length firing of its Falcon 9 launch vehicle's first stage at its McGregor Test Facility in Texas, on November 22. For the static test firing, the first stage remains firmly secured to the massive vertical test stand, where it fired for 178 seconds or nearly three minutes simulating the climb of the giant rocket from the surface of the Earth towards orbit. At full power, the rocket generated 855,000 pounds of force at sea level. The test firing validated the design of SpaceX's use of nine engines on the first stage, as well as the ability to shut down engines without affecting the functioning of the remaining engines. Web posted. (2008). [SpaceX Fires Off First-Stage Falcon 9 Test[Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, November 23].]

November 24: Delta 4 launch delayed until Dec. 16

The launch of a United Launch Alliance Delta 4 Heavy rocket carrying a classified payload for the National Reconnaissance Office has been rescheduled until Dec. 16, according to Patrick Air Force Base's 45th Space Wing. The launch from Cape Canaveral Air Force Station, once planned in late-July, most recently had been targeted for Nov. 16. A National Reconnaissance Office spokesman said the launch was pushed back so the agency could address technical problems with the payload. The launch window has not been released, but is expected to be early in the morning, according to a Patrick spokesman. Web posted. (2008). [Delta 4 launch delayed until Dec. 16 [Online]. Available WWW: <http://www.floridaotday.com/> [2008, November 24].]

NASA Adds a Day to Endeavour Visit at ISS

NASA managers have agreed to keep the shuttle Endeavour docked to the International Space Station (ISS) for an extra day to give the combined crews more time to troubleshoot a persistent problem with the new urine recycler onboard. Instead of departing on Nov. 27, the crews will spend the U.S. Thanksgiving holiday together onboard and undock Nov. 28. That would set up a landing at Kennedy Space Center, Fla., no earlier than 1:18 p.m. EST Nov. 30. The Nov. 24 decision came as ISS Expedition 18 Commander Mike Fincke, departing flight engineer Greg Chamitoff and shuttle mission specialist Don Pettit got to work adding two more bolts to the urine processor's centrifuge in the hope that a firmer attachment to its Water Reclamation Rack will prevent it from shutting down prematurely. E-mail distribution. (2008). [Aviation Week's Aerospace Daily & Defense Report Re: "NASA Adds a Day to Endeavour Visit at ISS," [Electronic]. Vol. 228, No. 40, [November 25, 2008.].]

Obama Team Seeks Data on Possible Changes to Ares, Orion

U.S. President-elect Barack Obama's NASA transition team is asking U.S. space agency officials to quantify how much money could be saved by canceling the Ares 1 rocket and scaling back the Orion Crew Exploration Vehicle next year. Obama pledged during his campaign to inject an additional \$2 billion into NASA aimed in part at narrowing the gap between the space shuttle's retirement and the

introduction of a successor system. While NASA Administrator Mike Griffin and his senior managers are adamant that Ares and Orion are the right vehicles to fill that role, Obama did not endorse either system by name during his campaign. If that omission was enough to raise doubts about the incoming administration's commitment to a rocket some believe will prove much tougher to field than NASA is ready to admit, the five-page list of questions Obama's NASA transition team sent to the agency Nov. 24 probably will not make Ares supporters feel any better. The questionnaire, "NASA Presidential Transition Team Requests for Information," asks agency officials to provide the latest information on Ares 1, Orion and the planned Ares 5 heavy-lift cargo launcher, and to calculate the near-term close-out costs and longer-term savings associated with canceling those programs. The questionnaire also contemplates a scenario where Ares 1 would be canceled but development of the Ares 5 would continue. Obama's NASA transition team also asked agency officials to investigate how much it would cost and how long it would take to build a smaller version of Orion and human-rate an Atlas 5 or Delta 4 expendable rocket to serve as its launcher. Additionally, the questionnaire requests that NASA "estimate the feasibility of designing a resized Orion capsule that could be launched by international launch vehicles such as the [European] Ariane 5 or the [Japanese] H2A." The transition team also wants information from NASA about accelerating plans for using the agency's Commercial Orbital Transportation Services (COTS) program to fund demonstrations of vehicles capable of carrying crews to the international space station, a proposal Obama supported during his campaign. NASA is not asked what it could save by canceling COTS. Nor is NASA asked to contemplate canceling the space shuttle or space station programs, although the transition team does request the budget implications of flying the shuttle until 2015 and committing to U.S. utilization of the space station through 2020. John Logsdon, a space policy expert at the Smithsonian National Air and Space Museum, cautioned against reading too much into the transition team's questions. "After all, these are the questions that everyone is asking, and the transition team certainly must get NASA's best answers to them," Logsdon said, adding that the questionnaire "is unlikely to reflect the totality" of the transition team's investigation of current programs and alternatives. Logsdon also said he did not see any significance to the omission of cancellation questions about COTS, space shuttle, space station or other programs. Obama's NASA transition team also appears to be interested in a number of specific projects that have more or less languished in recent years. Among those projects are: the Deep Space Climate Observatory, a mothballed Earth-observing satellite formerly known as Triana; agency efforts to catalog asteroids and comets that could threaten Earth; and the harnessing of space-based solar power for use on Earth. Web posted. (2008). [Obama Team Seeks Data on Possible Changes to Ares, Orion [Online]. Available WWW: <http://www.spacenews.com/> [2008, November 28].]

NASA Prepares for New Juno Mission to Jupiter

NASA is officially moving forward on a mission to conduct an unprecedented, in-depth study of Jupiter. Called Juno, the mission will be the first in which a spacecraft is placed in a highly elliptical polar orbit around the giant planet to understand its formation, evolution and structure. Underneath its dense cloud cover, Jupiter safeguards secrets to the fundamental processes and conditions that governed our early solar system. The spacecraft is scheduled to launch aboard an Atlas rocket from Cape Canaveral, Fla., in August 2011, reaching Jupiter in 2016. ["NASA Prepares for New Juno Mission to Jupiter," **Press Release #08-309**, November 24, 2008.]

Project Management Support Contract for Kennedy Awarded

NASA has selected Science Applications International Corporation of Houston to provide project management support services at NASA's Kennedy Space Center in Florida. The contract begins on Feb. 1, 2009, with a two-year base period and three one-year options to extend performance. The contract has a maximum potential value of approximately \$69.3 million. The contract is a cost-plus-fixed-fee contract and has a total potential core value of \$59.3 million if all options are exercised. An additional indefinite delivery, indefinite quantity contract line item is included with a possible ceiling

of \$10 million. Science Applications International Corporation will provide engineering and technical services, project and business management and administrative support to Kennedy's Ground Operations Project Office in support of NASA's Constellation Program. ["NASA Awards Project Management Support Contract for Kennedy," **Contract Release #C08-066**, November 24, 2008.]

November 25: NASA Finding Ways to Close Spaceflight Gap

An additional flight-test of the Ares I crew launch vehicle, extra shifts at the new J-2X rocket engine factory and faster work on life-support systems for the Orion capsule are among steps NASA managers say could advance the first flight of the shuttle follow-on vehicle by as much as a year. The U.S. space agency is starting to zero in on just how it would spend any money the incoming Obama administration and the new Congress might allocate to narrowing the gap in U.S. human access to space after the shuttle retires and before the Ares I/Orion combo starts flying. Right now the gap stretches more than four years from the end of 2010 until early 2015. "We are ready to tackle head-on the task of narrowing the gap between shuttle retirement and Ares and Orion deployment if the newly elected nation's policymakers want us to do that," Administrator Michael Griffin says. Griffin says "one of the first things we'd likely do" would be to add an "Ares I-X-prime" flight-test to the development of the shuttle-derived launcher for the six-seat Orion. The flight from Kennedy Space Center would follow the Ares I-X test late next year, demonstrating a full-scale five-segment Ares I solid-fuel first stage with upper stage and Orion mockups, and then use the solid-fuel launch abort system in development to pull the Orion mockup off in a high-altitude test of that crew-safety enhancement. NASA also is looking for ways to continue shuttle operations after the planned 2010 retirement date for the fleet, all in the interest of closing the U.S. human spaceflight gap. The pacing item for the Ares I is the J-2X liquid hydrogen/liquid oxygen rocket engine that will power the vehicle's upper stage. An upgrade of the J-2 engine that powered the upper stages of NASA's Saturn V moon rocket in the 1960s, the engine completed critical design review (CDR) Nov. 13 and is on track to support March 2015 as the initial operational capability (IOC) for Ares I and Orion, according to Mike Kynard, J-2X engine manager at Marshall Space Flight Center. If the J-2X can be speeded up, it may be possible to put one on the Ares I-Y flight-test that is currently baselined without an upper stage engine for the high-altitude launch abort system test. "What we would be looking for is possibly putting an engine on that flight and turning it into an orbital flight of Orion, and that's what Ares I-X-prime is about," says Jeff Hanley, manager of the Constellation Program that is developing all of NASA's post-shuttle human spaceflight vehicles. If there is more money, the Ares I-X-prime test would probably fly in 2012. That could set up a first human flight with fairly high confidence early in 2014 instead of a year later, managers say, and a higher-risk internal target for that flight in September 2013. E-mail distribution. (2008). [Aviation Week's [Aerospace Daily & Defense Report](#) Re: "NASA Finding Ways to Close Spaceflight Gap," [Electronic]. Vol. 228, No. 40, [November 25, 2008.]]

November 26: NASA shares Ares rocket development updates on iTunes

NASA has started posting video updates about the development of its new space vehicles on Apple's iTunes site. The video updates show the progress made on NASA's newest family of exploration vehicles — the Ares I crew launch vehicle and Ares V heavy cargo launch vehicle. The quarterly progress reports offer a glimpse into the development work of the launch vehicles that are intended to take explorers to the moon and beyond in coming decades. Beginning in 2015, the Ares I rocket will launch the Orion crew capsule, carrying astronauts and other equipment to the International Space Station. The videos feature information about engine, hardware and system milestones. NASA officials began producing the updates in August 2006. The 10 programs last from five to 15 minutes. The latest report in the series includes video segments about wind-tunnel testing of scale models of the Ares I test vehicle, known as Ares I-X, and the Ares V rocket. Engineers use the testing to improve the design of aerodynamic vehicles. Another video shows a test of a parachute for the Ares

I rocket. The parachute will slow the descent of the rocket's reusable first-stage motor as it falls back to Earth after detaching from the rocket during its climb into space. Web posted. (2008). [NASA shares Ares rocket development updates on iTunes [Online]. Available WWW: <http://www.fcw.com/> [2008, November 26].]

November 29: Shuttle undocks; crew looks for dings

Shuttle Endeavour is headed home to Kennedy Space Center after undocking from the International Space Station on Friday [November 28]. "Thanks for the incredible makeover and leaving the station in fantastic shape," said Mike Fincke, the station's commander, after the vehicle departed 220 miles above Taiwan. "Even from 25 feet, you look better," Endeavour mission commander Chris Ferguson replied. After tests today of critical landing systems, the shuttle and its seven astronauts are scheduled to touch down at 1:19 p.m. Sunday. The crew left behind a space station spruced up with thousands of pounds of new furnishings and a set of repaired joints that are turning solar wings more smoothly. In all, the shuttle spent nearly 12 flight days docked with the station. ["Shuttle undocks; crew looks for dings," **Florida Today**, November 29, 2008, p 1A.]

November 30: Endeavour Lands Safely

Shuttle Endeavour's seven astronauts landed safely today at Edwards Air Force Base in California, completing a successful 16-day mission that furnished the International Space Station to house larger crews. "Welcome back," astronaut Alan Poindexter said from Mission Control in Houston after Endeavour rolled to a stop at 4:26 p.m. "It was a great way to finish a fantastic flight, Fergie." "Hey, we're happy to be here in California," replied Endeavour commander Chris Ferguson. NASA detoured the spaceship to its secondary landing site because of gusty winds and thunderstorms sweeping across Kennedy Space Center, conditions that were not expected to improve Monday. The mission began Nov. 14 with a moonlit launch from Cape Canaveral. During a nearly 12-day visit to the space station, Endeavour's crew and three station residents unloaded more than seven tons of appliances, supplies and science experiments from the shuttle's packed cargo container. The centerpiece: a system designed to recycle astronauts' urine and sweat into drinking water, an essential resource needed for station crews to double to six people next year. Web posted. (2008). [Endeavour Lands Safely [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, November 31].]

During November: Boeing Recognized by NASA for Service and Support

The Boeing Co. has been recognized by NASA as Kennedy Space Center's 2008 Large Business Contractor of the Year for providing quality service and support on the checkout, assembly and payload processing services program. NASA officials said Boeing, the program's prime contractor, was recognized for the company's effort to include small businesses in the program and for effective community outreach. ["Boeing Recognized by NASA for Service and Support," **Spacecoast Business**, November 2008, p 20.]

DECEMBER

December 1: Shuttle Prepped for Return to KSC

The orbiter Endeavour is being prepped in California for a return trip to Kennedy Space Center and the seven astronauts who landed in the shuttle on Sunday will return to Houston today. NASA contractor technicians today are taking part in a drill that includes offloading hazardous residual propellants from the tanks that supply the shuttle's twin orbital maneuvering engines, 44 nose-and-tail steering jets and the Auxiliary Power Units that are used to steer the shuttle's liquid-fueled main engines during ascent and operate its aerosurfaces, landing gear, brakes and nosewheel steering system during atmospheric reentry and landing. The orbiter ultimately will be towed to a Mate-Demate device -- a large gantry-like steel structure with hoists that raise the orbiter into the air so a 747 carrier aircraft can be positioned below it. The orbiter then will be bolted to the top of the aircraft for a piggyback ride back to KSC. A preliminary look at Endeavour shows that the orbiter came through the atmospheric reentry and landing on Runway 04 at Edwards in very good shape. Damage to tiles on the underside of the orbiter was minimal. NASA officials say it will take five to seven days to get the orbiter ready for the cross-country flight back to NASA's prime launch operations center. Weather permitting, the carrier aircraft and Endeavour should be back on the Space Coast early next week. Web posted. (2008). [Shuttle Prepped for Return to KSC [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, December 1].]

NASA Expects Altair Conceptual Design Award In 2009

NASA's Johnson Space Center in Houston plans to issue a draft request for proposals (RFP) for conceptual design work on the Altair lunar lander by mid-December, with a final RFP expected by late January 2009 and a contract award around Feb. 20. The contract "shall provide the necessary resources to conduct NASA-directed engineering tasks in support of evaluating vehicle conceptual designs, maturing the vehicle design, and developing the necessary products for System Requirements Review (SRR) and System Design Review (SDR)," NASA says in its announcement. "Tasks include the definition, analysis, assessment, engineering study and documentation of operations concepts, technical and programmatic requirements and processes, and system implementations in support of NASA-led activities." NASA plans a conference for potential bidders in Houston on Dec. 18. E-mail distribution. (2008). [Aviation Week's [Aerospace Daily & Defense Report](#) Re: "NASA Expects Altair Conceptual Design Award in February 2009," [Electronic]. Vol. 228, No. 42, [December 1, 2008].]

December 2: Next NASA administrator a political mystery

Trying to figure who will take the reins of NASA under the next White House is about like guessing what is on the surface of Pluto - the one place in the solar system never visited by a research probe. Predicting the next administrator of the space agency would just be a stab in the cold dark, said Keith Cowing, a former NASA employee and founder of the Web site NASAwatch.com. "To guess with all the names floating about would just be futile, and it would flame the rumor mill," Cowing said. "There have been so many names out there and each one says they are not interested. NASA Administrator Michael Griffin has said publicly that he would like to continue, but in a visit this month [November 13] to Kennedy Space Center in Florida, he told employees he doubts the Obama White House will ask him to stay on as NASA chief. The names of former associate administrators, as well as astronaut Sally Ride and President-elect Barack Obama space policy adviser Lori Garver, have been floated around the space community. None have confirmed they would be interested in taking over. The decision on how to steer NASA will probably have an effect on the choice of a new administrator. With transition reports due this week from more than 140 federal agencies, the decisions will probably start to be made, McDaniel said. In the next few days Obama transition teams expect to have some 80 answers to detailed questions put to space agency managers in the past few weeks. These will be used to formulate what NASA projects will be continued and which ones

will be scaled back or scuttled. The new NASA leader will most likely have different priorities than the agency has had for the past four years, and the change is expected to embrace a renewed focus on climate and Earth science and education, space experts say. Web posted. (2008). [Next NASA administrator a political mystery [Online]. Available WWW: <http://www.al.com/> [2008, December 2].]

Endeavour returns to Brevard next week

Space Coast residents might see a special sky show next week, when Endeavour flies piggyback atop a 747 carrier jet as it returns to Kennedy Space Center from a backup landing site in California. Weather and other conditions permitting, the Boeing aircraft -- with Endeavour bolted atop it -- would fly over Space Coast beaches between Patrick Air Force Base and KSC late next Tuesday morning. "That's part of the plan," KSC spokesman George Diller said Monday. The return will cap a planned two-day trip from Edwards Air Force Base, where Endeavour landed Sunday at the end of a mission to outfit the International Space Station for larger crews. Endeavour and seven astronauts were diverted to the Mojave Desert military base after high crosswinds and approaching storms forced NASA to forgo two landing opportunities at KSC. The weather at KSC on Monday would have been good enough to land here. But the forecast in hand when the decision was made to detour Endeavour called for stiff crosswinds and a chance of low-level clouds that could obscure the KSC runway. NASA prefers to land shuttles at KSC because it costs about \$1.8 million to transport an orbiter from California to Florida. The shuttle landing Sunday was the 52nd at Edwards, the first there since June 2007 and the third in 11 post-Columbia missions. Web posted. (2008). [Endeavour returns to Brevard next week [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, December 2].]

NASA Extends Contract with Russian Federal Space Agency

NASA has signed a \$141 million modification to the current International Space Station contract with the Russian Federal Space Agency for crew transportation services planned through the spring of 2012. The firm-fixed price extension covers comprehensive Soyuz support, including all necessary training and preparation for launch, crew rescue, and landing of a long-duration mission for three station crew members. The crew members will launch on two Soyuz vehicles in the fall of 2011. They will land in the spring of 2012. The flights may be used to meet NASA's obligations to its international partners for transportation to and from the station. The contract extension also provides for the two Soyuz flights to carry limited cargo to and from the station and dispose of trash. The cargo allowed per person is approximately 110 pounds (50 kilograms) launched to the station, approximately 37 pounds (17 kilograms) returned to Earth, and trash disposal of approximately 66 pounds (30 kilograms). ["NASA Extends Contract with Russian Federal Space Agency," **Contract Release #C08-068**, December 2, 2008.]

December 3: Program at KSC gives kids their space

Amanda Galt, an 11-year-old at Sherwood Elementary in Melbourne, cranked her head back to get a better look at the Saturn 5 rocket. "It's overwhelming," she said. "It feels like it's bigger than my school. It's like wow." More than 5,000 sixth-graders from Brevard Public Schools will get to see the rocket up close during Brevard Space Week, which runs through Dec. 12. The six-year-old program, presented at Kennedy Space Center Visitor Complex, teaches students about space exploration and the importance of math and science. "It's amazing how they put all this stuff together and get it up in the air," Shamon Williams, an 11-year-old from Saturn Elementary in Cocoa said. Nearby, her classmate Joshua Wheaton-Sanko's mouth dropped to the floor and his eye's opened wide as he got his first glimpse of Saturn 5. "This is amazing," he said while jumping in the air trying to get a better look at the massive rocket. "I've never seen anything like this." Students took part in a scavenger hunt where they answered space-related questions and watched the IMAX film "Magnificent Desolation: Walking on the Moon." They also got a chance to ask astronaut John Fabian questions.

"Did you like space?" one student asked. "Yeah, space was a lot of fun," Fabian answered. Space Week is sponsored by NASA Education, Brevard Schools Foundation, Delaware North Parks and Resorts and Florida Chapter of the National Space Club. The program is entirely funded by grants and donations and not the district budget. It costs about \$120,000, up from \$100,000 last year due to rising transportation costs, said Lynn Clifton, director of Brevard Schools Foundation. Participating students get a certificate that allows them to return to the Visitor Complex with four guests to show off what they learned. "This is an incredible experience for the kids to get hands-on experience and see the space program close-up," said Jill Whitacre, a teacher at Sherwood Elementary in Melbourne. "It excites them and makes them think about the possibilities." Web posted. (2008). [Program at KSC gives kids their space [Online]. Available WWW: <http://www.floridatoday.com/> [2008, December 3].]

O'Brien out at CNN as network ends space mission

CNN will close its dedicated unit that covered environmental, science and space stories. The cuts affect about five staffers, including longtime correspondent and space reporter Miles O'Brien, who will leave the network. O'Brien has worked at CNN for 17 years, during which time he covered Space Shuttle launches, anchored programming hours and co-anchored "American Morning." CNN executives said it didn't make sense to have the unit as well as a "Planet in Peril" division that covers many of the same topics. Web posted. (2008). [O'Brien out at CNN as network ends space mission [Online]. Available WWW: <http://www.reuters.com/> [2008, December 3].]

External Tank Arrives at KSC

A 15-story external tank expected to help launch a shuttle in May arrived this morning at the turn basin near Kennedy Space Center's Vehicle Assembly Building. The tank, which measures 28 feet in diameter and weighs about 60,000 pounds when empty, left NASA's Michoud Assembly Facility in New Orleans on Nov. 21 aboard the enclosed Pegasus barge shown above. The Liberty Star solid rocket booster retrieval ship picked up the barge in Gulfport, Miss., and towed it the rest of the roughly 900-mile journey from New Orleans. The barge arrived at Port Canaveral the day before Thanksgiving, and reached KSC at 11 a.m. today. Spaceport workers will start moving the external tank from the barge to a transport vehicle at 8 a.m. Thursday, then roll it a short distance into the 52-story assembly building. The tank will be lifted into High Bay 2 starting Friday morning. Web posted. (2008). [External Tank Arrives at KSC [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, December 3].]

Russians Charging NASA \$47 Million A Seat For Soyuz

NASA will pay \$47 million a seat to send three astronauts to the International Space Station (ISS) on Russian Soyuz vehicles under the first contract extension covering missions after the space shuttle fleet's scheduled retirement at the end of 2010. Under a \$141 million contract with the Russian Federal Space Agency, three U.S.-funded astronauts will fly to the ISS on two Soyuz vehicles in the fall of 2011, and return to Earth in the spring of 2012. In addition to its own astronauts, NASA is responsible for providing transportation to the station for Canadian, European and Japanese astronauts. The contract extension, which required the U.S. Congress to extend a NASA exemption to U.S. anti-proliferation laws, also provides for 110 pounds of cargo per astronaut to the station, and about 37 pounds of "down mass" cargo per person in returning Soyuz vehicles. In addition to transportation, the Soyuz vehicles serve as lifeboats should an emergency force station crew members to abandon the orbiting facility. In October, Richard Garriott, a Texas-based computer-game designer, paid a reported \$30 million to visit the station in a Soyuz as a space tourist. E-mail distribution. (2008). [Aviation Week's *Aerospace Daily & Defense Report* Re: "Russians Charging NASA \$47 Million a Seat for Soyuz," [Electronic]. Vol. 228, No. 44, [December 3, 2008].]

December 4: Space Florida Asks: What Do You Want In a Launch Site?

As build out preparations begin for Launch Complex 36 at Cape Canaveral Air Force Station, commercial launch and payload providers interested in launching from Florida are being asked to complete a quick survey on Space Florida's web site. The information gathered from potential customers will be used to develop the build out plan for the launch complex, which is expected to be ready for operation by fall 2010. In 2008, the Air Force stated their intent to license the complex to Space Florida for build out as a commercial pad. Launch Complex 36 will be able to accommodate a variety of vehicle sizes and may support commercial, civil and/or military launches. "As we develop Launch Complex 36, we want to ensure we're considering the unique needs of potential customers," said Mark Bontrager, Space Florida's Vice President of Spaceport Operations. "This pad will be customized to suit launch and payload providers to ensure they are able to achieve their goals as quickly and cost-effectively as possible." Space Florida was created to strengthen Florida's position as a global leader in aerospace research, investment, exploration and commerce. Web posted. (2008). [Space Florida Asks: What Do You Want In a Launch Site? [Online]. Available WWW: <http://www.aero-news.net/> [2008, December 4].]

Hubble Servicing Mission to Launch May 12

NASA aims to launch shuttle Atlantis May 12 on a fifth and final Hubble Space Telescope servicing mission, officials said today. A spare science instrument control and data handling unit will be ready for flight in time to meet that date. Officials said the unit will be put through extensive testing before it is shipped to Kennedy Space Center next spring. The mission had been slated for launch Oct. 14. But the flight was delayed after the telescope's prime instrument control and data handling unit -- which is critical to observatory operations -- failed Sept. 27. Like the unit on the observatory, the spare is equipped with a prime control and data formatting device. The primary one did not operate properly during initial testing, and NASA officials still are not certain why. Web posted. (2008). [Hubble Servicing Mission to Launch May 12 [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, December 4].]

Deputy Administrator Shana Dale Departing NASA

NASA Deputy Administrator Shana Dale will resign from NASA Jan. 17, prior to the U.S. presidential inauguration. Having served as NASA's second-in-command under Administrator Michael Griffin since November 2005, Dale was the agency's first female deputy administrator. "I will miss the cutting-edge missions, but most of all I will miss the incredibly talented people of NASA," she said in a statement. E-mail distribution. (2008). [Aviation Week's [Aerospace Daily & Defense Report](#) Re: "Deputy Administrator Shana Dale Departing NASA," [Electronic]. Vol. 228, No. 45, [December 4, 2008.].]

CenTex Technology Headed to Cape Canaveral Launch pad

The rocket whose late-night test on Nov. 22 rattled windows and startled residents throughout much of Waco and the surrounding area was being removed from a massive vertical stand Thursday in preparation for shipment to Cape Canaveral and the launch pad from which it will liftoff next year. Space Exploration Technologies Corp. or SpaceX had planned to remove the Falcon 9 launch vehicle's first stage from the test stand earlier this week, but high winds thwarted the effort. SpaceX fired the nine engines of the Falcon 9's first stage for nearly three minutes on Nov. 22, which simulated the liftoff of the rocket toward orbit. The rocket generated 855,000 pounds of force at full power, SpaceX said. "The full mission-length test firing clears the highest hurdle for the Falcon 9 first stage before launch," said Elon Musk, CEO and CTO of SpaceX. "In the next few months, we will have the first Falcon 9 flight vehicle on its launch pad at Cape Canaveral, preparing for lift-off in 2009," he said. Web posted. (2008). [CenTex Technology Headed to Cape Canaveral Launch Pad [Online]. Available WWW: <http://www.kwtx.com/> [2008, December 4].]

Shuttle Motor Test Gathers Ares I Data

A Dec. 4 hot-fire test of a 7.5-year-old reusable solid rocket motor (RSRM) for NASA's space shuttle program also produced acoustic data for the Ares I crew launch vehicle program, which is using a five-segment version of the four-segment RSRM as its first stage. ATK Launch Systems ran the two-minute test at its facility in the Utah desert, tracking 385 instrument channels to meet 55 test objectives. NASA will use the data as it modifies Launch Complex 39B at Kennedy Space Center to accommodate the new launch vehicle. The test was also intended to ensure RSRM performance doesn't change with time. E-mail distribution. (2008). [Aviation Week's Aerospace Daily & Defense Report Re: "Shuttle Motor Test Gathers Ares I Data," [Electronic]. Vol. 228, No. 46, [December 5, 2008.].]

10 Years Ago – STS-88 was launched to start ISS

Ten years ago tonight, I climbed into Endeavour to set off on the first International Space Station (ISS) assembly mission, STS-88/2A. Two weeks earlier, the Russian Functional Cargo Block, Zarya, was launched aboard a Proton rocket from the Baikonaur Cosmodrome in Kazakhstan. Zarya means "sun rise" in Russian, and it was definitely the dawn of a new era of international cooperation in space exploration. STS-88 delivered Node 1, Unity, to orbit and joined us together with our Russian partners as we laid the cornerstone for the ISS. It involved a rendezvous, three EVAs, power and data connections, powering up the computers, and going into the Space Station for the first time. At the time, it was the most complex mission we'd ever flown, but it pales in comparison to the complexity of the missions we fly to ISS today. Happy 10-year anniversary of the first assembly mission! E-mail distribution. (2008). [Cabana, Robert D. Re: "10 Years Ago" [Electronic]. **KSC-Center-Director**, [December 4, 2008.].]

NASA Slips Mars Science Lab Rover Launch To 2011

Mars Science Laboratory (MSL), a nuclear-powered rover the size of a small car, will be leaving for the Red Planet in 2011 instead of 2009, as persistent technical problems have pushed its development schedule to the breaking point. NASA, which has been struggling to keep MSL on track for months, formally postponed the launch date Dec. 3 and announced it Dec. 4. The change will likely force postponements in other science missions, as the U.S. space agency struggles to find the estimated \$400 million more the delay will cost in fiscal years 2010-2014. NASA already had promised the MSL program an extra \$200 million, and reworked launch software to slip the 2009 planetary launch window from Sept. 15-Oct. 4 back to Oct. 8-28. But when managers and outside reviewers agreed the later date couldn't be met, they didn't wait until a scheduled decision point in January to order the postponement. As a result, the \$200 million for a 2009 launch won't be spent, but the agency must find the \$400 million for the later launch. That will bring the total estimated life cycle cost for MSL to \$2.2 billion - \$2.3 billion, with NASA's Mars program taking the first hit for the extra funds and other science programs expected to ante up as well. E-mail distribution. (2008). [Aviation Week's Aerospace Daily & Defense Report Re: "NASA Slips Mars Science Lab Rover Launch to 2011," [Electronic]. Vol. 228, No. 46, [December 5, 2008.].]

Expendable Launch Vehicle Status Report

Status Report: ELV-120408. Mission: Orbiting Carbon Observatory (OCO); Launch Vehicle: Taurus XL (Orbital Sciences); Launch Pad: Space Launch Complex 576-E, Vandenberg Air Force Base, Calif.; Launch Date: No Earlier Than Jan. 30, 2009; Launch Window: TBD. The work to prepare the OCO spacecraft for launch continues to go well. Testing of the spacecraft systems and science instruments is complete. The next step is to fuel the spacecraft and perform flight battery reconditioning. Testing and prelaunch preparations continue on the Taurus launch vehicle by Orbital Sciences in Hangar 1555 on north Vandenberg. Launch vehicle flight simulations are scheduled to begin during the third week of December. Some additional testing is being performed on the electronics control unit (ECU) on the first stage deemed appropriate to assure the vehicle is fully flight qualified. Approximately two weeks of additional time in the schedule is necessary to

accommodate the testing. The launch is now targeted for no earlier than Jan. 30 and is subject to the availability of the Western Range. Mission: NOAA-N Prime; Launch Vehicle: Delta II 7320; Launch Pad: Space Launch Complex 2, Vandenberg AFB; Launch Date: Feb. 4, 2009; Launch Window: 2:22:01 - 2:32:01 a.m. PST. Stacking of the Delta II rocket at Space Launch Complex 2 began this week. The first stage was installed into the launcher on Dec. 2. The three solid rocket boosters were attached around the base of the first stage the following day. The second stage will be hoisted atop the first stage on Friday, Dec. 5. Also this week, the payload fairing that will encapsulate NOAA-N prime was installed into the clean room within the mobile service tower. NOAA-N Prime spacecraft testing and processing activities continue. Flight antenna installations are planned for Dec. 6. Instrument inspections and cleaning are scheduled for next week. Web posted. (2008). [Expendable Launch Vehicle Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/launchingrockets/status/2008> [2008, December 4].]

December 5: NASA Assigns STS-130, STS-131 Crews

Kathryn "Kay" Hire, the first Kennedy Space Center employee to be selected as an astronaut and the holder of a master's degree from Florida Tech, has been assigned to her second shuttle mission. Hire was among 13 astronauts that NASA today announced have been assigned to crews for the STS-130 and STS-131 shuttle missions planned in 2009 and 2010, respectively. Hire began working at KSC in 1989 as an Orbiter Processing Facility 3 Activation Engineer. She was selected for astronaut training in 1994 and four years later flew aboard Columbia as a mission specialist during STS-90. The STS-130 mission will deliver a third connecting module to the International Space Station and a seven-windowed cupola to be used as a control room for robotics. The STS-131 mission will deliver research and science experiment equipment, a new sleeping area and supplies to the station in a logistics module carried in the shuttle's payload bay. Web posted. (2008). [NASA assigns STS-130, STS-131 Crews [Online]. Available WWW: http://www.floridatoday.com/the_flame_trench_blog [2008, December 5].]

Nowak's Statements Not Allowed At Trial

Physical evidence found in the vehicle of a former astronaut accused of attempting to kidnap a romantic rival at Orlando International Airport in 2007 will be allowed at her trial, but her statements to police will not, a Florida appeals court ruled. The Fifth District Court of Appeal released a statement on Friday, saying: "The State of Florida appeals an order suppressing statements made by defendant Lisa Marie Nowak to police, along with evidence obtained from a search of Nowak's vehicle. We have jurisdiction pursuant to Florida Rule of Appellate Procedure 9.140(c)(1)(B). We affirm the suppression of Nowak's statements, but reverse suppression of the physical evidence." Nowak is charged with attempted kidnapping, battery and attempted burglary with assault. Authorities said Nowak drove from Houston to OIA the weekend of Feb. 5, 2007, to confront Air Force Capt. Colleen Shipman about their mutual love interest, former astronaut Bill Oefelein. Shipman was returning from a trip to visit Oefelein. Web posted. (2008). [Nowak's Statements Not Allowed at Trial [Online]. Available WWW: <http://www.local6news.com/> [2008, December 5].]

December 7: At 10 years old, station still growing

The first two building blocks of the international Space Station came to life in low-Earth orbit 10 years ago today, jumpstarting one of the most complex, difficult, dangerous and expensive engineering projects in human history. Working at a construction site 240 miles above the planet, spacewalking NASA astronauts Jerry Ross and Jim Newman routed 40 power and data cables between a Russian space tug and a U.S. connecting module, electronically linking an embryonic outpost. Latched together in the cargo bay of shuttle Endeavour, the spacecraft weighed a combined total of 35 tons and stretched upward some 76 feet – the height of a seven-story building. A decade later, the modules serve as the foundation for a 331-ton station with girder-like central truss that is nearly as long as an American football field. Its massive solar wings would cover six basketball

courts, and the outpost has the same amount of living space as a five-bedroom house. "Ten years – pretty darned amazing," said Kennedy Space Center Director Robert Cabana, a former astronaut who commanded that inaugural station assembly mission in December 1998. "It has grown phenomenally since that first mission when we went inside and powered up the computers and turned on the lights for the first time," he said. "And I look at it now and it just amazes me." The construction of the \$100 billion station is a joint venture of the United States, Russia, Canada, Japan and 11 members of the European Space Agency: Belgium, Denmark, France, Germany, Italy, the Netherlands, Norway, Spain, Sweden, Switzerland and the United Kingdom. NASA estimates that more than 100,000 people on four continents – and in 37 of 50 U.S. states – are actively involved in the project. ["At 10 years old, station still growing," **Florida Today**, December 7, 2008, p 1A & 3A.]

Rainy Weather Stalls Endeavour Departure

Rainy weather in the southwest United States prompted NASA to delay for at least a day the first leg of shuttle Endeavour's cross-country trip back to Kennedy Space Center. The earliest the orbiter and its 747 carrier aircraft might arrive back at the shuttle's homeport is late morning Wednesday, but that remains an iffy proposition. "They want to wait another day and see what cards we're dealt," KSC spokesman George Diller said. Endeavour and its carrier aircraft had been scheduled to take off from Edwards Air Force Base just after sunrise Monday. NASA flight rules prohibit flying the 747 and an orbiter through rain because the shuttle's fragile thermal tiles could be damaged. The 747-shuttle combination cannot fly in clouds either because Visual Flight Rules are in effect at all times. Diller said a light rain was falling most of the day at Edwards. A cold front also is developing over the Pacific Ocean and could bring bad weather into the area later in the week. Web posted. (2008). [Rainy Weather Stalls Endeavour Departure [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, December 7].]

December 8: Astronauts have ties to Space Coast

Two astronauts with strong ties to the Space Coast will fly on the last of next year's six planned shuttle missions, NASA announced. Kathryn "Kay" Hire and George Zamka, who both hold master's degrees from Florida Tech, will team up on a mission targeted to launch from Kennedy Space Center in December 2009. Shuttle Endeavour will deliver a third connecting node and a seven-windowed cupola to the International Space Station. Hire, a mission specialist, became the first Kennedy Space Center employee to be selected as an astronaut in 1994. She began working at KSC as an engineer in 1989, and in 1998 was a mission specialist aboard Columbia on a medical research flight. More recently, she has served on an astronaut support team known as the Cape Crusaders, which travels frequently between Houston and Cape Canaveral. Among other duties, they help strap astronauts into their shuttle seats before launch. Hire earned a master's degree in space technology from Florida Tech in 1991. Zamka, who earned his Florida Tech degree in 1997 in engineering management, is the mission commander. He piloted Discovery in 2007 on a flight that delivered the Harmony node to the space station and repaired a torn solar wing. After undocking, Zamka guided the shuttle in a lap around the station despite losing trajectory data that normally assists the maneuver. Hire and Zamka are among five astronauts Florida Tech counts as alumni, along with Joan Higginbotham, Rick Sturckow and Sunita Williams. Web posted. (2008). [Astronauts have ties to Space Coast [Online]. Available WWW: <http://www.floridatoday.com/> [2008, December 8].]

NASA Estimates Find Closing Spaceflight Gap Expensive

Flying the space shuttle three times a year through fiscal 2015 to "close the gap" in U.S. human access to space would cost \$13 billion above what NASA already plans for human spaceflight, the agency says. A "minimum-cost" option of three more shuttle flights after 2010 would run an extra \$4.5 billion, and still leave a gap of about three years before the planned shuttle follow-on is ready to

carry humans to orbit. Those are "draft predecisional" estimates distributed to industry for comment in October as part of the U.S. space agency's effort to give the incoming Obama administration some policy choices to consider. The \$4.5 billion three-flight option would use up all of the remaining external tanks and require careful monitoring of flight hardware rather than the recertification recommended by the Columbia Accident Investigation Board for flights after 2010. The \$13 billion plan would use the Atlantis orbiter as a hangar queen for spare parts, restart the external-tank line and continue buying other hardware to keep Discovery and Endeavour flying three times a year through FY '15. Both estimates were in real-year dollars, and include a 10 percent margin of error. Final estimates are expected this month. E-mail distribution. (2008). [Aviation Week's Aerospace Daily & Defense Report Re: "NASA Estimates Find Closing Spaceflight Gap Expensive," [Electronic]. Vol. 228, No. 47, [December 8, 2008].]

Shuttle Ferry Flight Delayed By Windy Weather

Windy weather on the West Coast prompted NASA today to delay by at least a day the first leg of the orbiter Endeavour's cross-country trip back to the Kennedy Space Center. The soonest the shuttle might be back on the Space Coast now is late in the morning on Thursday. But NASA officials think the spaceship and its carrier aircraft might encounter bad weather en route, so further delays are well within the realm of possibilities. Sustained winds of 20 knots with gusts up to 27 knots stalled NASA plans to mount the orbiter atop a modified 747 at Edwards Air Force Base in California, where the shuttle and seven astronauts landed Nov. 30. The 747-orbiter mating operation cannot be done in winds over 20 knots. The winds are expected to die down later today, and the plan now calls for a sunrise departure from the Mojave Desert military base on Wednesday. Web posted. (2008). [Shuttle Ferry Flight Delayed by Windy Weather [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, December 8].]

Ares 1X Preps Pick Up Around KSC

A key piece of the Ares 1X rocket arrived at Kennedy Space Center over the weekend as preparations for the first test-flight of NASA's next generation crew launch vehicle continue all around the agency's primary spaceport. Standing 327 feet tall, the Ares 1X test rocket is scheduled to blast off from launch pad 39B on July 11. The \$360 million mission will be the first of four test flights slated to be carried out under a \$1.8 billion contract to design, develop and test the rocket's first stage: a five-segment solid rocket booster derived from the space shuttle system. The inaugural test flight will employ a mix of flight hardware and mock-ups: A four-segment shuttle solid rocket booster topped with fifth spacer segment and mock-ups of the Ares 1 second stage, Orion spacecraft and Launch Abort System -- a tractor rocket system of small thrusters that would pull the Orion space capsule away from the Ares 1 in an explosion or other emergency. The mass simulators atop the four-segment solid rocket booster will sport outer mold lines that are aerodynamically exact copies of the rest of the Ares 1 rocket and Orion spacecraft. At the pad today, technicians are assembling a giant crane to raise three lightning masts that will tower 600 feet into the sky -- high enough to protect the rocket during stormy weather. Each of the 500-foot-tall towers will be topped by a 100-foot fiberglass mast that will support a web-like catenary wire system. The initial stages of tower erection already have been completed; the crane is required to finish the job. NASA expects to begin work to complete the towers in a week or so. In the Vehicle Assembly Building, technicians are building up "super stacks" that will come together to form the Upper Stage Simulator for the Ares 1X rocket. The Forward Skirt Extension Assembly arrived at the booster Assembly and Refurbishment Facility at KSC on Sunday after a trip from Major Tool & Machine in Indianapolis. The assembly extension will link the fifth-segment space with the rocket's frustrum, which in turn will connect the first and second stages of the Ares 1X. The Forward Skirt Assembly now is at Astrotech Space Operations in Titusville and will be delivered to KSC later this month. The four shuttle solid rocket motors that will power the rocket are ready on rail cars at Alliant Tech Systems (ATK) in Utah and will be shipped to KSC in late January or early February. The red-white-and-blue

parachute that will lower the first stage of the Ares 1X rocket into the Atlantic Ocean after two minutes of powered flight recently was packed up in the Parachute Refurbishment Facility. The goal of the test flight is to determine whether the first-stage flight control system will keep the slender "single-stick" on course -- and intact -- during the crucial first two minutes of flight. The system that separates the first and second stages also will be tested along with the parachute recovery system. The Ares 1X will be outfitted with 751 sensors that will take 969 measurements, collecting data on the rocket's vital flight control systems. The data gathered will inform the Ares 1 Critical Design Review now scheduled to take place in 2010. Web posted. (2008). [Ares 1X Preps Pick Up Around KSC [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, December 8].]

Secret satellite launch delayed

Next Tuesday's planned launch of a United Launch Alliance Delta 4 Heavy rocket carrying a classified National Reconnaissance Office payload has been delayed. Officials were meeting Monday to discuss whether liftoff from Cape Canaveral Air Force Station's Launch Complex 37 could be rescheduled before Christmas, or if it could slide into next year, NRO spokesman Rick Oborn said. A decision on that could come later this week. Rocket and payload technical issues requiring further checkout were responsible for the latest delay to a launch once planned in late-July, Oborn said. Managers were reviewing whether current technical issues could be resolved within the next couple of weeks, and also considering the impact on personnel of launching near the year-end holidays, Oborn said. Web posted. (2008). [Secret satellite launch delayed [Online]. Available WWW: <http://www.floridatoday.com/> [2008, December 9].]

December 9: Launch of Delta 4-Heavy rescheduled for January

Efforts to troubleshoot and resolve an issue with the top-secret national security satellite to be carried aloft by a Delta 4-Heavy rocket has slipped the launch into the New Year. The United Launch Alliance booster sits atop Cape Canaveral's pad 37B in preparation for the NROL-26 mission, which will deploy the clandestine payload into orbit for the U.S. National Reconnaissance Office. No public information is available about the satellite or the problem delaying the launch. Once targeted for flight in May, the highly complex launch involving the mammoth booster and a cargo undoubtedly sophisticated has been pushed back several times. This most recent snag caused officials to scrap a December 16 launch date. It was decided this week that the launch would be rescheduled to January, thereby giving engineers sufficient time to analyze the trouble and develop a solution. In addition, the new plan will avoid ground crews working through a launch campaign over the holidays. A new formal launch date has not been established, though officials are hoping for a mid-January opportunity. Web posted. (2008). [Launch of Delta 4 Heavy rescheduled for January [Online]. Available WWW: <http://www.spaceflightnow.com/> [2008, December 9].]

December 10: South Florida man sues NASA contractor

David Welch panicked when he started getting unsolicited e-mail and phone calls about car loans and credit cards from sources who said they got his information from an online loan application. Someone had gotten his personal information and posted it on a subscriber list for companies selling things such as cell phones and satellite dishes. It was as if Welch had dropped off a loan application at 150 stores simultaneously, and they all started checking his credit history. And with each check, his credit score dropped, tumbling from nearly 700 to the low 500s in a matter of months, he said. That raised red flags at banks where Welch had revolving credit lines and had applied for loans. Suddenly, Welch's thriving legal-staffing business in Broward County couldn't make payroll or pay taxes and utility bills. He had to put the opening of a long-planned court-reporting business on hold. With the help of his own information technology expert, Welch traced the source to a NASA computer at Kennedy Space Center and to his former landlord, with whom he had a dispute over \$200 in back rent. Three months later, Brevard County sheriff's agents and NASA investigators

confirmed that a computer in cubicle 2140S on the second floor of the Joint Base Operations Building was used to fill out an online loan application. That computer was assigned to Kevin Landivar, a 33-year-old software engineer with high-level security clearance who worked for a NASA contractor, a sheriff's report says. The state attorney has charged Landivar with one count of identity theft, a third-degree felony that carries a five-year maximum prison sentence and up to \$5,000 in fines. Landivar is free on \$2,000 bail and awaits a Feb. 3 hearing. Landivar, Space Gateway Support and its parent companies, Northrop Grumman and Wackenhut, also are named in a federal civil suit filed by Welch. Landivar told authorities that he only wanted to harass Welch, not ruin his credit rating. ["South Florida man sues NASA contractor," **Florida Today**, December 10, 2008, p 1B & 5B.]

NASA may extend layover for shuttle

Shuttle Endeavour is set to take off on a piggyback ride to Kennedy Space Center today, with a 747 carrier aircraft taking the spaceship from coast to coast. But it appears that a cold front traveling ahead of the aircraft might delay the final leg of the two-day return trip from Edwards Air Force Base in California. The earliest the 747 and Endeavour might arrive back on the Space Coast is Thursday afternoon. But "it doesn't look promising right now," said KSC spokesman George Diller. The same cold front that stalled ferry flight preparations at Edwards is moving east, and Diller said meteorologists expect it to be in the Southeast by Thursday. It could block the path for the 747 and the shuttle because NASA prohibits flying through rain or clouds. A Friday arrival would be more likely, Diller said. The 747 and Endeavour are scheduled to leave Edwards at 10 a.m. The weather is expected to be good. The forecast calls for mostly clear skies, light winds and a temperature of 27 degrees Fahrenheit. Endeavour and seven astronauts landed at Edwards on Nov. 30, capping a mission to equip the International Space Station for crews of six. It was the 52nd shuttle landing at Edwards in 124 missions and the first this year. Web posted. (2008). [NASA may extend layover for shuttle [Online]. Available WWW: <http://www.floridatoday.com/> [2008, December 10].]

December 11: Endeavour unlikely to return today

Squalls advancing ahead of a cold front were expected to keep shuttle Endeavour from returning to Kennedy Space Center today, but NASA will try if weather permits. "If we get a chance, we'll take advantage of it, but it doesn't appear to be in the cards," said George Diller, a NASA spokesman. "Maybe we'll get lucky." Piggybacked on a 747 carrier aircraft, Endeavour on Wednesday began its return voyage from Edwards Air Force Base in California with a Texas two-step. The ferry flight stopped first at Biggs Army Airfield at Fort Bliss, near El Paso, then continued on to the Fort Worth Naval Air Station. The flight is expected to resume at noon today en route to a refueling destination that was not disclosed for security reasons. Although the trip home can be completed in two days under good conditions, Diller said weather wasn't expected to cooperate today. "There appears to be no hope of getting to KSC" today, he said. "We'll look at it again in the morning." Endeavour landed in California on Nov. 30 because of stormy weather at KSC, ending a 16-day mission to the International Space Station. It was the 52nd time a shuttle landed there and required a ride back to Cape Canaveral. NASA estimates the trip costs about \$1.8 million. The same cold front forecasters are watching today caused high winds at Edwards earlier in the week, delaying Endeavour's departure by one day. Web posted. (2008). [Endeavour unlikely to return today [Online]. Available WWW: <http://www.floridatoday.com/> [2008, December 11].]

NASA considers June 2018 Altair Lunar Lander in-orbit trial

NASA's Altair Lunar Lander could have its first test flight with in-orbit propulsion firings in June 2018 after being launched by the US space agency's Ares V cargo launch vehicle. The Altair's launch would be on the Ares V's test flight, Ares V-Y, already targeted for June 2018. Once Altair is in its 242km (150 miles) low Earth orbit, to which the Ares V's Earth departure stage (EDS) is designed to push the lander, it would separate from the EDS. If that separation was successful Altair could fire

its descent stage's propulsion system. In a lunar mission Altair's descent stage will carry out lunar trajectory correction manoeuvres and the lunar orbit insertion burns. Revealed in the NASA Ares project office's Ares V's pre-phase study, its report says: "Further study will be conducted to determine the feasibility of including a production Altair as a flight-test article and adding test objectives [of separation and propulsion]." However, the assumption of NASA's Ares V mission concept review is that the Ares V-Y payload will be "a structural analogue" of Altair. NASA's schedule has the first operational Altair lunar mission in December 2019. The last, and only, time NASA conducted a LEO lunar lander test flight was for Apollo 9. Launched from Kennedy Space Center's pad 39A on a Saturn V on 3 March 1969 at 11:00 local time into a 190km orbit, the 10-day mission saw its crew of three dock the command module to the lunar module, which was still attached to the Saturn V's S-IVB third stage. Web posted. (2008). [NASA considers June 2018 Altair Lunar Lander in-orbit trial [Online]. Available WWW: <http://www.flightglobal.com/> [2008, December 11].]

December 12: Shuttle's ride was a trip for all

Riding on the back of a 747 jumbo jet, shuttle Endeavour wowed thousands of local viewers Friday with a low-flying cruise up the Space Coast that concluded a three-day cross-country voyage home. The aircraft skimmed about 1,500 feet over Patrick Air Force Base and the Cocoa Beach area, then roared by Kennedy Space Center and looped past the Titusville shoreline before touching down at the spaceport's Runway 33 at 2:44 p.m. The landing came nearly a month after Endeavour's Nov. 14 launch from KSC on a mission to outfit the International Space Station for six-person crews. NASA diverted the orbiter's Nov. 30 return to Edwards Air Force Base in California because of bad weather at Cape Canaveral. Endeavour left California on Wednesday for a 2,225-mile journey that followed a cold front east to Florida. On top of the 747, the spacecraft weighed more than 110 tons, with a heavy cargo container still tucked in its payload bay. The tandem stopped at bases near El Paso and Fort Worth, Texas, on Wednesday. The third leg to the Shreveport, La., area Thursday included a swing past Johnson Space Center in Houston as a tribute to employees at NASA's Mission Control Center. Once back at KSC, technicians were expected to work overnight to detach Endeavour from its carrier aircraft before the orbiter was to be towed to a hangar early today. Endeavour must be ready to fly again by springtime in case Discovery is damaged during its targeted Feb. 12 mission to the space station. Endeavour's next mission is targeted for mid-May, a date likely to slip a month if Atlantis launches as planned May 12 on a mission to service the Hubble Space Telescope. Endeavour also will serve as the rescue shuttle for the Hubble mission, in the unlikely event that one was needed. Web posted. (2008). [Shuttle's ride was a trip for all [Online]. Available WWW: <http://www.floridatoday.com/> [2008, December 13].]

NASA chief insists he's cooperating with Obama's team

NASA Administrator Mike Griffin said Thursday that he was fully cooperating with the incoming Barack Obama administration and was "appalled" by a report that he was obstructing efforts by the president-elect's transition team to get information about the agency. In a statement, Griffin called the report in Thursday's Orlando Sentinel "simply wrong." "I would like to reiterate what I have stated in a previous e-mail to all NASA officials: We must make every effort to 'lean forward,' to answer questions promptly, openly and accurately," he said. He added that the agency has provided 414 documents and 185 responses to 191 requests since mid-November. He said the six outstanding responses would be provided soon and on schedule: "We are fully cooperating with transition-team members." Griffin also said he was "appalled" that industry sources quoted by the Sentinel said he and top NASA administrators were telling contractors what they could and could not say to the Obama transition team. "We strongly urge full and free cooperation by companies performing work for NASA," he said. On Thursday [December 11], the Sentinel reported that Griffin, in an effort to shield his signature Constellation moon-rocket program from complaints it is underperforming and over budget, was obstructing efforts by the transition team to get information. The six-member team

is reviewing the agency's policies and scouring its budget. The article also quoted witnesses' accounts of a heated 40-minute conversation last week between Griffin and Lori Garver, a former NASA associate administrator who heads the transition team. At one point, they said, the NASA chief demanded to speak directly to Obama because he said Garver is "not qualified" to judge his rocket program. Garver would not comment on the report. Griffin made no reference to the argument, which took place in front of about 50 people. Sources close to the transition team said Thursday that Garver and her five colleagues have been getting cooperation from "most" NASA staff on most programs except for Constellation. According to one high-ranking official working for the office of the president-elect, "The front office on the ninth floor [Griffin's office] is definitely resisting, and telling others to resist." In a meeting Tuesday with the Coalition for Space Exploration, a space-advocacy group, Garver said that her team was "unhappy" with NASA's plan -- pushed by Griffin -- to retire the space shuttle in 2010 "no matter what." Griffin has said the shuttle must be grounded to free up money for Constellation if its Ares I rocket is to fly by 2015. She also said that under NASA's plans, the possibility for exploration beyond the Earth's orbit seems unattainable at present, according to a person in the audience. Garver didn't say what options her group might recommend, such as more money to keep flying the shuttle or changing the rocket systems NASA is currently developing to go to the moon. However, she promised that "there is going to be change." Web posted. (2008). [NASA chief insists he's cooperating with Obama's team [Online]. Available WWW: <http://www.orlandosentinel.com/> [2008, December 12].]

December 14: Obama reviews shuttle's finale

The Obama administration is taking a sweeping look at NASA that focuses on plans to retire the nation's aging shuttle fleet in 2010. Five space policy experts -- four of whom held key NASA posts during the Clinton administration -- are gathering data on options to close an anticipated five-year gap in U.S. human spaceflight. They aim to brief the incoming president before his Jan. 20 inauguration. "They advised us that the shuttle retirement was going to be their No. 1 priority," Brevard County Commissioner Mary Bolin said. "And that was just tremendous to hear because that is a concern for our citizens. That hits us straight in the heart." "I was very impressed with them," Commissioner Robin Fisher said. "It seems that President-elect Obama has everything in order, and he's moving at a fast pace." Bolin, Fisher and Lynda Weatherman, president and chief executive of the Economic Development Commission of Florida's Space Coast, met with the Obama's NASA Review Team last week in Washington. "They welcomed us with open arms and, basically, wanted to be briefed on some of the concerns that we have in Brevard County," Fisher said. "And the loss of jobs is one that is near and dear to my heart. That's something I don't want to see happen." An estimated 3,500 Kennedy Space Center jobs are expected to be lost during the gap between the shuttle retirement and the first piloted flights of the Ares 1 rocket and the Orion spacecraft in March 2015. Like the Obama teams evaluating 27 other federal agencies, the NASA group is chartered to provide the president-elect with information needed to make policy, budgetary and personnel decisions before the inauguration. The team does not make recommendations. Web posted. (2008). [Obama reviews shuttle's finale [Online]. Available WWW: <http://www.floridatoday.com/> [2008, December 14].]

Obama's NASA Review Team Members

President-elect Barack Obama's NASA Review Team is made up of five space policy experts, four of whom worked for NASA during the Clinton administration. They are: Lori Garver (team lead): The lead space policy analyst for the Obama, Hillary Rodham Clinton and John Kerry presidential campaigns, Garver served as NASA's associate administrator for policy and plans in the late 1990s. Roderic "Roddy" Olvera Young (team lead): The senior vice president of TMG Strategies, Young served as the press secretary for former NASA Administrator Dan Goldin during the 1990s. Edward Heffernan: He held key positions at NASA from 1994 to 2001, including chief of staff for Goldin, as well as NASA associate administrator for legislative affairs and White House liaison. Alan Ladwig: A

Clinton-Gore administration appointee from 1993 to 1999, Ladwig served as NASA associate administrator for plans and policy. He also served as the senior adviser to Goldin. George T. Whitesides: He is the executive director of the National Space Society, one of the world's largest grassroots space advocacy groups, with thousands of members and 50 chapters worldwide. Web posted. (2008). [On the team [Online]. Available WWW: <http://www.floridatoday.com/> [2008, December 14].]

December 15: SAIC Awarded NASA Contract to Support KSC

Science Applications International Corporation today announced it has been awarded a contract by the National Aeronautics and Space Administration (NASA) to provide engineering and technical services to the Kennedy Space Center (KSC) Ground Operations Project Office in support of NASA's Constellation Program. The maximum value of the contract is more than \$69 million if all options and line items are exercised. The core contract has a two year base period of performance, three one-year options, and total potential value of \$59.3 million. The contract also contains an indefinite delivery/indefinite quantity line-item option with a ceiling value of \$10 million. Work will be performed primarily at KSC in Cape Canaveral, Florida. "SAIC has supported NASA at KSC for the past 10 years," said Charles Zang, SAIC senior vice president and business unit general manager. "We look forward to continuing our support of the Constellation program, and helping NASA advance human exploration, use, and development of space." Web posted. (2008). [On the team [Online]. Available WWW: <http://www.marketwatch.com/> [2008, December 15].]

December 16: NASA Issues Top 10 List For 2008

NASA issued a list this week of the top news stories generated by the nation's space agency in 2008, and the progress made in the assembly of the International Space Station topped the chart. NASA landed on Mars, photographed distant worlds, took part in a lunar science mission with India and made major progress toward returning astronauts to the moon as the agency celebrated its 50th birthday in 2008. Here on Earth, NASA said, researchers recorded the continued decline of Arctic sea ice, won awards for aviation breakthroughs, discovered the cause of storms that brighten the Northern Lights and helped create state-of-the-art swimsuits worn by Olympic gold medalists. INTERNATIONAL SPACE STATION NEARS COMPLETION: NASA completed four space shuttle missions in 2008 to deliver modules and hardware to the International Space Station, allowing it to grow in size, volume and science capability. The flights also prepared the station to house six crew members for long-duration missions and to expand scientific exploration. PHOENIX WRAPS UP SUCCESSFUL MISSION TO MARS: NASA's Phoenix Mars Lander ceased communications Nov. 2 after successfully returning unprecedented science data to Earth. Launched Aug. 4, 2007, Phoenix safely touched down on Mars on May 25, 2008, at a site farther north than where any previous spacecraft had landed. Phoenix's soft landing on Mars was the first in 32 years and only the third in history. ARES I ROCKET PASSES IMPORTANT DESIGN MILESTONE: NASA successfully completed the preliminary design review for the new Ares I rocket in 2008. Starting in 2015, the rocket will launch the Orion crew exploration vehicle, its crew of four to six astronauts, and small payloads to the International Space Station. The rocket also will be used as part of missions to explore the moon and beyond in coming decades. ARCTIC SEA ICE DECLINE CONTINUES: In September, Arctic sea ice coverage reached the second-lowest level recorded since the dawn of the satellite era, according to observations from the NASA-supported National Snow and Ice Data Center at the University of Colorado. While slightly above the record-low set in September 2007, this season further reinforces the strong negative trend in summer sea ice coverage observed during the past 30 years. LIGHTING UP THE NIGHT: Researchers using a fleet of five NASA satellites discovered in 2008 that explosions of magnetic energy occurring a third of the way to the moon power substorms that cause sudden brightenings and rapid movements of the aurora borealis, or Northern Lights. The cause is magnetic reconnection, a common process that occurs throughout the universe when stressed magnetic field lines suddenly snap to a new shape, like a rubber band that has

been stretched too far. **HUBBLE FINDS PLANET CIRCLING A DISTANT STAR:** Astronomers announced in 2008 that NASA's Hubble Space Telescope has taken the first visible-light snapshot of a planet circling another star. Observations taken 21 months apart by the coronagraph on Hubble's Advanced Camera for Surveys showed the object orbiting around a star named Fomalhaut. The planet, called Fomalhaut b, is approximately 10 times the distance of Saturn from our sun. Estimated to be as much as three times Jupiter's mass, Fomalhaut b is located 25 light-years away in the constellation Piscis Australis, or the "Southern Fish." **NASA COMPLETES NEXT-GENERATION ROCKET ENGINE TESTS:** NASA engineers successfully completed in 2008 the first series of tests in the early development of the J-2X engine that will power the upper stages of the Ares I and Ares V rockets. Ares I will launch the Orion spacecraft that will take astronauts to the International Space Station and on to the moon by 2020. Ares V will carry cargo and components into orbit for trips to the moon and later to Mars. **NASA TEAM A RECIPIENT OF CELEBRATED COLLIER TROPHY:** NASA was part of a team that received one of the most prestigious awards in aviation in June. Judges for the Robert J. Collier Trophy, awarded by the National Aeronautic Association, chose the Automatic Dependent Surveillance-Broadcast, or ADS-B, team of public and private groups to receive the 2007 honor. **NASA RETURNS TO THE MOON WITH INSTRUMENTS ON INDIAN SPACECRAFT:** NASA has partnered with India to fly two science instruments aboard the country's first lunar explorer, Chandrayaan-1. The Indian Space Research Organization launched Chandrayaan-1 on Oct. 22 from Sriharikota, India. It entered lunar orbit on Nov. 8. **NASA TESTS HELP OLYMPIANS ROCKET THROUGH WATER:** NASA know-how helped swimsuit designers create a body suit worn by an assortment of gold medalists and world record holders at the 2008 Summer Olympics in Beijing. Among the medalists wearing Speedo's LZR Racer were Americans Michael Phelps -- winner of more Olympic gold medals than any athlete in the modern era -- and Natalie Coughlin. Web posted. (2008). [NASA issues top ten list for 2008 [Online]. Available WWW: <http://www.floridatoday.com/> [2008, December 16].]

December 17: KSC Chooses SRA for Constellation Launch Control Systems
SRA International, Inc., a leading provider of technology and strategic consulting services and solutions to government organizations and commercial clients, today announced that NASA Kennedy Space Center (KSC) has chosen SRA's Spacecraft Command Language (SCL) to support the Constellation Program, which will develop the new systems and vehicles that will replace the Space Shuttle and provide for the nation's next generation of space exploration. KSC is modernizing the launch control system, using commercial-off-the-shelf (COTS)-based solutions to control costs and introduce state-of-the-art technology. SRA's SCL software package will provide KSC engineers with the tools necessary to process the new launch vehicle and provide real-time monitoring and control of the launch control infrastructure. SRA's SCL will be used throughout the entire infrastructure of the Ares launch vehicle, the replacement for the Space Shuttle. At KSC, SCL will be used to monitor ground support equipment; control the re-fueling process; regulate countdown sequencing; and review and test the Ares vehicle prior to and during countdown. Web posted. (2008). [Kennedy Space Center Chooses SRA for Constellation Launch Control Systems [Online]. Available WWW: <http://www.prnewswire.com/> [2008, December 17].]

Want to buy a space shuttle? It'll cost you \$42 million

Museums around the country that have expressed interest in obtaining a genuine flown-in space shuttle are being told by NASA that it's really going to cost them. How much? \$42 million -- including \$6 million for shipping and handling. That's the pricetag NASA intends to set for cleaning up any of the three remaining shuttles -- which are scheduled to be retired in 2010 or shortly thereafter -- and delivering an orbiter to the airport closest to the museum. Never before has NASA charged institutions like the Smithsonian Institution's National Air and Space Museum for its artifacts. But later today the agency will issue a "Request for Information" to the Smithsonian

Institution and other museums around the country to fathom their interest in obtaining a shuttle -- as well as the depth of the pockets. According to a NASA document obtained by the Orlando Sentinel: "The NASA Administrator directed that a Request for Information (RFI) be issued to U.S. educational institutions, science museums and other organizations to gauge the level of interest in acquiring an Orbiter at the end of the program, and to notify potential recipients of NASA's intent to require potential recipients to assume all costs associated with transfer of these assets." The RFI, it adds, is an attempt at "identifying whether potential recipient organizations are capable of bearing the full cost of Space Shuttle Orbiter safing and final display preparation, SSME assembly and final display preparation, and transportation." "Safing" a shuttle means decontamination of the ships hypergolic fuel systems -- including toxic hydrazine -- and removal of other safety and environmental hazards from the vehicles. Again according to the NASA RFI document: "The cost of decontaminating each Orbiter, making it safe for public display, and transporting it to its final destination is estimated at approximately \$42 million. "This \$42 million estimate includes a \$6 million cost to air ferry the Orbiter by Shuttle Carrier Aircraft from the Kennedy Space Center to a U. S. destination airport. This early estimate is based on specific assumptions by NASA about the minimum tasks which must be performed for public display of a Space Shuttle Orbiter." Some staff from museums were contacted, and said they were aware of the fact that NASA wanted them to pay for the shuttles but would not comment until they received and reviewed the final document. Web posted. (2008). [Want to buy a space shuttle? It'll cost you \$42 million [Online]. Available WWW: <http://www.orlandosentinel.com/> [2008, December 17].]

Delta 4 Heavy Launch Targeting Jan. 13

The launch of a United Launch Alliance Delta 4 Heavy rocket from Cape Canaveral Air Force Station is now targeted for Jan. 13. "That will depend on all the factors that it normally depends on as far as the range is concerned, as well as continued good checkout of the booster and the payload itself," said Rick Oborn, a spokesman for the National Reconnaissance Office. The rocket will carry a classified NRO spacecraft from Launch Complex 37. Once targeted for last July, the mission slipped to November and then December. Oborn cited technical issues with the spacecraft for the most recent delays. Officials announced earlier this month that they would not attempt a Dec. 16 launch or one closer to the Christmas holiday. They decided to target mid-January, but had not identified a date. Web posted. (2008). [Delta 4 Heavy Launch Targeting Jan. 13 [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, December 17].]

NASA Inks Agreement to Test Advanced Engine On ISS

Ad Astra Rocket Company will work through a series of development "gates" to build an advanced plasma-propulsion engine for in-flight testing on the International Space Station (ISS) by 2012. William Gerstenmaier, associate NASA administrator for space operations, and Franklin Chang Diaz, Ad Astra president and CEO, signed a Space Act agreement Dec. 8 that will allow the Houston-based company to place a 200-kilowatt version of its Variable Specific Impulse Magnetoplasma Rocket (VASIMR) on the ISS to test its performance in space. The engine, which uses RF energy to heat a plasma to extreme temperatures for high fuel efficiency, shielding the engine structure from the superhot gas with magnetic fields, will draw power from the station solar arrays to charge batteries that in turn will drive the engine. In an interview Dec. 15 from the company's facility in Guanacaste, Costa Rica, Chang Diaz said the VF200 (VASIMR Flight 200 kw) should generate on the order of 4 Newtons of thrust (0.9 pounds), with a specific impulse of about 6,000 seconds. "That is quite sufficient to reboost the ISS," he said. Under the arrangement with NASA, drafted under legislation creating a National Laboratory on the orbiting facility, Ad Astra will build and test the engine and deliver it to the ISS via one of the commercial or government vehicles in development to resupply it once the space shuttle fleet is retired. Potential launch vehicles include the vehicles being developed by SpaceX and Orbital Sciences with federal seed money under the Commercial Orbital Transportation Services (COTS) program at NASA, the PlanetSpace entry in NASA's Commercial

Resupply Services competition for the ISS, and Japan's H-II Transfer Vehicle. The company will work through five "gates" to the station test under the Space Act agreement, starting early next year with a payload integration agreement and working toward critical design review by the end of 2009. E-mail distribution. (2008). [Aviation Week's Aerospace Daily & Defense Report Re: "NASA Inks Agreement To Test Advanced Engine On ISS," [Electronic]. Vol. 228, No. 54, [December 17, 2008.].]

United Space Alliance Selects CresaPartners to Address Post-Shuttle Era Real Estate Needs in Houston and Cape Canaveral

CresaPartners, North America's largest corporate real estate advisory firm that exclusively represents tenants, has been selected to develop and execute a strategic plan for United Space Alliance's (USA) facilities in the post-shuttle era. Currently, USA has 10,000 employees in 1.3 million SF of space, primarily in Houston and Cape Canaveral. USA also has facilities in Huntsville, Ala and Alexandria, Va. "We are pleased to have CresaPartners' team on board to help during this challenging time for USA, as we evaluate our long-term needs as the Shuttle Program completes its mission," said Bill Capel, chief financial officer, USA. "We look forward to a long and productive relationship with CresaPartners." The CresaPartners team from Houston and Denver will lead the development of the strategic plan in collaboration with the internal USA Facility team. CresaPartners' professionals in Orlando, Birmingham and Washington DC will assist during the execution phase, which will likely involve multiple moves and occupancies as some facilities are shut down and others are expanded. Web posted. (2008). [United Space Alliance Selects CresaPartners to Address Post-Shuttle Era Real Estate Needs in Houston and Cape Canaveral [Online]. Available WWW: <http://www.businesswire.com/> [2008, December 17].]

Presidential Inaugural Committee Invites NASA to March in Parade

The Inauguration Committee for President-elect Barack Obama officially extended an invitation Wednesday for NASA to be part of the 56th Inaugural Parade on Jan. 20. The crew of NASA's recent STS-126 space shuttle mission and other agency officials will join representatives from across the country and our armed forces in this historic parade down Pennsylvania Avenue in Washington following swearing-in ceremonies on the steps of the Capitol. Chris Ferguson commanded the STS-126 mission and was joined by Pilot Eric Boe and Mission Specialists Donald Pettit, Steve Bowen, Heidemarie Stefanyshyn-Piper, Shane Kimbrough and Sandra Magnus. Magnus remained aboard the station, replacing Expedition 18 Flight Engineer Greg Chamitoff, who returned to Earth on Endeavour after more than five months on the station. In addition to the Endeavour crew, the NASA contingent will include a small pressurized rover. That vehicle is a concept for a new generation of lunar rovers that astronauts will take with them when they return to the moon by 2020. The rovers are being tested at sites around the country that have terrain similar to the moon's. ["Presidential Inaugural Committee Invites NASA to March in Parade," **Media Advisory #M08-264**, December 17, 2008.]

Expendable Launch Vehicle Status Report

Status Report: ELV-121708. Mission: Orbiting Carbon Observatory (OCO); Launch Vehicle: Taurus XL (Orbital Sciences); Launch Pad: Space Launch Complex 576-E, Vandenberg Air Force Base, Calif.; Launch Date: Feb. 23, 2009; Launch Time: 1:53 a.m. PST (tentative). Due to the availability of the Western Range, the launch of OCO is being rescheduled to Feb. 23. A new schedule of spacecraft and launch vehicle processing is currently being developed to support that date. The work to prepare the OCO spacecraft for launch has gone well. Fueling the spacecraft is expected to occur during the week of Jan. 12. Testing and prelaunch preparations continue on the Taurus launch vehicle by Orbital Sciences in Hangar 1555 on north Vandenberg. Loading of software into the Taurus flight computer is under way this week. Mission: NOAA-N Prime; Launch Vehicle: Delta II 7320; Launch Pad: Space Launch Complex 2, Vandenberg AFB; Launch Date: Feb.

4, 2009; Launch Window: 2:22:01 - 2:32:01 a.m. PST. Stacking of the Delta II rocket at Space Launch Complex 2 is complete, and the mechanical checkout and electrical testing are under way. After the holidays, avionics system checkout is scheduled for Jan. 7, a liquid oxygen tanking test and countdown demonstration is planned for Jan. 8, and a simulated flight test will follow on Jan. 9. NOAA-N Prime spacecraft electrical testing continues this week. During one of the spacecraft tests performed previously, a Zener diode associated with solar array temperature telemetry data received a brief burst of high current causing it to short circuit. Potential sources of this anomaly are under evaluation to determine whether it was from the solar array, its associated electrical harness, or from the spacecraft bus. It is important to understand the root cause of this problem to assure full spacecraft mission success while in orbit. Engineers are working to understand the reason for this problem and determine a course of action later this week. Web posted. (2008). [Expendable Launch Vehicle Status Report [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/launchingrockets/status/2008> [2008, December 17].]

December 18: Final Set of Solar Wings Packed and Ready

The International Space Station's central truss is set for delivery by shuttle Discovery Feb. 12. The 31,127-pound, 45-foot long truss segment, called S6, contains a fourth and final set of American-made solar array wings that will be installed on the station's starboard side. Two solar wings that will each span 115 feet in length and 35 feet across are now folded in boxes to a thickness of about three inches. When unfurled in space like an accordion, they'll be capable of generating 66 kilowatts of electricity, enough to power 30 homes 2,800 square feet in size. The wings, which each hold 32,800 solar cells, will add power that will help the station support larger crews of six and conduct more science research. The \$300 million truss segment is the 11th piece of the station's backbone, which will measure the length of an American football field when complete. The truss segment is nearly identical in construction to its counterpart on the port side, or P6, but includes some modifications to hold spare parts and some sensors to measure wear and tear. Once Discovery is docked with the station, the station's robotic arm will lift the truss from the orbiter's payload bay, then hand it off to the shuttle's robotic arm. The station arm will then slide down the truss before taking hold of the truss again and positioning it for installation. Astronauts Richard Arnold and Steven Swanson will complete the assembly during the mission's first of four planned spacewalks. Discovery's crew also includes mission commander Lee Archambault, pilot Dominic Antonelli and mission specialists Joseph Acaba and John Phillips. The crew will also deliver Japanese astronaut Koichi Wakata, who will take Sandra Magnus' place as an Expedition 18 flight engineer. Magnus will return home with Discovery. The payload is expected to be placed in a transportation canister Jan. 7, rolled to Launch Pad 39A on Jan. 11, and installed in Discovery on Jan. 17. Web posted. (2008). [Final Set of Solar Wings Packed and Ready [Online]. Available WWW: http://www.floridatoday.com/the_flame_trench_blog [2008, December 18].]

Scheduling conflict may disrupt Ares

NASA will need to turn over one of its two shuttle launch pads to its moon project by late February to launch its first Ares 1 test flight in mid-July, agency officials said Wednesday. But to do that, NASA would have to launch a May 12 Hubble Space Telescope servicing mission and a follow-up rescue flight -- if required -- from a single pad. Otherwise, the critical Ares 1-X test flight would be delayed to October. An engineering study is ongoing, and a plan is expected early next year. "Within the first couple of months of the year, we will need to nail that down," said Jeff Hanley, manager of Project Constellation, which is developing the rockets and spacecraft to return American astronauts to the moon by 2020. "We'll be clear then on what our path forward is for 1-X, and we'll work with it," he said. NASA is scheduled to launch the Ares 1-X test flight from Kennedy Space Center's launch pad 39B on July 11. The 327-foot-tall rocket will be a mix of flight hardware and mock-ups: a four-segment shuttle solid rocket booster topped with a spacer segment and mock-ups of the Ares 1 second stage, Orion crew capsule and a launch abort system. The goal of the \$360 million test flight

is to determine whether the first-stage flight control system will keep the rocket on course during the crucial first two minutes of flight. The rocket's stage separation system and its parachute recovery system will be tested, too. NASA's moon project must modify pad 39B, a shuttle mobile launcher platform and a high bay in the Vehicle Assembly Building to proceed with the Ares 1-X flight. The mobile launcher for the test will be used for the planned Feb. 12 launch of Discovery on an International Space Station assembly mission. High Bay No. 3 of the assembly building soon will be turned over to the moon project. But the availability of pad 39B is in question. NASA had been planning to have a second shuttle poised for a rescue launch off that pad if Atlantis is damaged during its launch from pad 39A on the Hubble flight. Engineers are determining if the Hubble flight and a rescue mission could be launched from pad 39A in a timely enough manner to save the Hubble crew in an emergency. Then pad 39B, the mobile launcher and the high bay could be turned over to the moon project in time to launch Ares 1-X in July. Web posted. (2008). [Scheduling conflict may disrupt Ares [Online]. Available WWW: <http://www.floridatoday.com/> [2008, December 18].]

Endeavour Crew to March In Inaugural Parade

The Inauguration Committee for President-elect Barack Obama officially extended an invitation Wednesday for NASA to be part of the 56th Inaugural Parade on Jan. 20. The crew of NASA's recent STS-126 space shuttle mission and other agency officials will join representatives from across the country and our armed forces in this historic parade down Pennsylvania Avenue in Washington following swearing-in ceremonies on the steps of the Capitol. Chris Ferguson commanded the STS-126 mission and was joined by Pilot Eric Boe and Mission Specialists Donald Pettit, Steve Bowen, Heidemarie Stefanyshyn-Piper, Shane Kimbrough and Sandra Magnus. Magnus remained aboard the station, replacing Expedition 18 Flight Engineer Greg Chamitoff, who returned to Earth on Endeavour after more than five months on the station. In addition to the Endeavour crew, the NASA contingent will include a small pressurized rover. That vehicle is a concept for a new generation of lunar rovers that astronauts will take with them when they return to the moon by 2020. The rovers are being tested at sites around the country that have terrain similar to the moon's. Web posted. (2008). [Endeavour Crew To March In Inaugural Parade [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, December 18].]

December 20: Kepler Ready For Delivery to Space Coast

A NASA spacecraft designed to search for habitable planets is ready for delivery to the Space Coast in early January. The Kepler spacecraft is scheduled to launch March 5 from Cape Canaveral Air Force Station aboard a United Launch Alliance Delta II rocket. A convoy of trucks is expected to deliver Kepler and support equipment from Ball Aerospace & Technologies Corp. in Boulder, Colo., to Astrotech in Titusville on Jan. 5 or Jan. 6. Kepler will search habitable zones around more than 100,000 stars in our region of the Milky Way for the presence and frequency of planets close in size to Earth. Web posted. (2008). [Kepler Ready For Delivery to Space Coast [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, December 20].]

December 21: NASA marks 40th anniversary of Apollo 8 mission to the Moon

The Apollo 8 space vehicle launches from Pad A, Launch Complex 39, at the Kennedy Space Center in Florida at 7:51 a.m., December 21, 1968. Apollo 8 was the first manned mission to the moon and entered lunar orbit 40 years ago on Christmas Eve, December 24, 1968. Web posted. (2008). [NASA marks 40th anniversary of Apollo 8 mission to the Moon [Online]. Available WWW: <http://www.upi.com/> [2008, December 21].]

Bush Administration Nixed NASA's U.S.-China Cooperation

NASA tried and failed to obtain Bush administration approval of an overture to China for a cooperative U.S.-China space mission, NASA Administrator Michael Griffin tells Aviation Week & Space Technology. The White House believes that a higher level of cooperation is too great a reward

to China for its human rights and arms-trafficking violations of international law. But the new Obama administration may resurrect the idea. The transition team of President-elect Barack Obama asked the agency for a detailed breakdown of its contacts with China and overall Asia-Pacific-region cooperative concepts in general. The mission concept suggested by NASA was largely devoted to space science, but also involved flight operations on the space shuttle and International Space Station (ISS). It would not have involved the launch of a Chinese astronaut, however. Web posted. (2008). [Bush Administration Nixed NASA's U.S. – China Cooperation Idea [Online]. Available WWW: <http://www.aviationweek.com/> [2008, December 21].]

December 22: ULA reduces layoff projection

Fewer United Launch Alliance workers will lose their jobs in February, the company announced today. The projected reduction of 350 has been reduced to 172. Only 23 positions will be lost at Cape Canaveral, which has about 800 ULA workers. Nationwide, the company employs about 4,200. "It's certainly a lot more encouraging than it was," ULA spokesman Mike Rein said. This reduction was helped by cost-cutting actions, said a company announcement. Travel and research budgets were cut, and normal attrition helped the company reduce the layoff projection. "We said from the beginning that normal attrition would factor in," Rein said. Breakdown by location: Denver – 63; Decatur Production Operations – 65; San Diego Production Operations – 5; Cape Canaveral Launch Operations – 23; Vandenberg Launch Operations – 16. Rein said that normal attrition could reduce further the total number of layoffs before February. Web posted. (2008). [ULA reduces layoff projection [Online]. Available WWW: <http://www.floridatoday.com/> [2008, December 22].]

December 23: Station Commercial Resupply Services Contracts Awarded

NASA has awarded two contracts -- one to Orbital Sciences Corp. of Dulles, Va., and one to Space Exploration Technologies (SpaceX) of Hawthorne, Calif. -- for commercial cargo resupply services to the International Space Station. At the time of award, NASA has ordered eight flights valued at about \$1.9 billion from Orbital and 12 flights valued at about \$1.6 billion from SpaceX. These fixed-price indefinite delivery, indefinite quantity contracts will begin Jan. 1, 2009, and are effective through Dec. 31, 2016. The contracts each call for the delivery of a minimum of 20 metric tons of upmass cargo to the space station. The contracts also call for delivery of non-standard services in support of the cargo resupply, including analysis and special tasks as the government determines are necessary. NASA has set production milestones and reviews on the contracts to monitor progress toward providing services. The maximum potential value of each contract is about \$3.1 billion. Based on known requirements, the value of both contracts combined is projected at \$3.5 billion. These agreements will fulfill NASA's need to procure cargo delivery services to the space station using a U.S. commercial carrier after the retirement of the space shuttle. ["NASA Awards Space Station Commercial Resupply Services Contracts," **Contract Release #C08-069**, December 23, 2008.]

NASA Response to Aviation Week & Space Technology Article

NASA recently submitted the following response to Aviation Week: Unfortunately, Aviation Week's recent article of Dec. 21, 2008, entitled "Bush Administration Nixed NASA's U.S.-China Cooperation Idea," is inaccurate and misleading. As an initial matter, NASA has never asked the White House for a cooperative mission such as the one described in the article. The fact is that the White House has been very supportive of a deliberate and careful establishment of relations between NASA and the China National Space Administration (CNSA) over the past two years. As a result, NASA commenced working group discussions with CNSA representatives on Earth and space science earlier this year. The discussions of potential areas of future cooperation were based on the principles of mutual benefit, reciprocity, and transparency, with the understanding that any proposal for specific projects would undergo careful review within the United States Government. Approval would, of course, be affected by the overall status of the U.S.-China government-to-government relationship. The Alpha Magnetic Spectrometer (AMS), space shuttle flights, and International Space

Station were never intended by either NASA or CNSA to be considered by the NASA-CNSA working group. Regarding AMS, it is not an international project managed by NASA; the international aspects of AMS are managed by the Department of Energy (DOE). Currently, NASA is prepared to take necessary steps to fly one additional space shuttle flight to deliver AMS to the International Space Station before the scheduled retirement of the shuttle in 2010, provided that additional funding is provided to the agency for this additional flight. However, we anticipate this flight will be reviewed by the new administration. ["NASA Response to Aviation Week and Space Technology Article," **Press Release #08-336**, December 23, 2008.]

Explosion that hurt 7 spurs NASA probe

NASA investigators are studying a tank explosion that caused minor injuries at Kennedy Space Center during a contractor's independent equipment test just before Christmas. "They're looking at what happened and how to prevent it from happening again," KSC spokesman Allard Beutel said. Seven people were treated and released from KSC's medical clinic after the incident, which occurred around 9 a.m. Dec. 23 outside a cryogenic testing lab on space center property. Beutel said Lockheed Martin Corp. and ASRC Aerospace Corp. conducted the pressurization test on a composite tank, and that the work was not related to NASA programs. The vessel, enclosed by a metal cage with a plywood box around it, was intended to leak but not rupture, Beutel said. Marion LaNasa, a spokesman for Lockheed Martin at NASA's Michoud Assembly Facility in New Orleans, said the test involved an unlined, liquid oxygen compatible tank measuring 54 inches in diameter that is being designed to support future launch vehicles. "We had successfully completed some testing cycles and determined we were going to go forward and test the limits of the hardware," he said. "We were expecting a leak rather than the tank to burst, but certainly everyone understood that there was a potential for the tank to burst." He said the contractors and NASA agreed on the testing procedures in advance, and that it would be up to investigators to determine if the procedures were adequate. In addition to the minor injuries, the blast's force and impact from splintered plywood caused thousands of dollars of damage to the lab facility, Beutel said. The damaged area is taped off but the building remains open. A NASA "mishap investigation team" is expected to produce a report by late February. Web posted. (2008). [Explosion that hurt 7 spurs NASA probe [Online]. Available WWW: <http://www.floridatoday.com/> [2009, January 7].]

December 24: Rocket arriving in stages

The second stage of SpaceX's Falcon 9 rocket is scheduled to arrive at Cape Canaveral on Sunday, meaning the company could have a fully assembled launch vehicle by year's end. The first stage arrived Sunday by truck from California and was lowered onto the integration assembly. The engine assembly, with nine engines, arrived Monday from Texas. "It's just a matter of days before (Falcon 9) is vertical at the Cape," said SpaceX CEO Elon Musk. "With all of the hardware currently at or on its way to the Cape, we are on track for a fully integrated launch vehicle by year's end." The company has scheduled the first launch from the Cape in the spring from Launch Complex 40. The erector, which raises the rocket to vertical, is expected to be working by early January. The first stage tank measures 87 feet long and 12 feet in diameter. With a successful launch of the first Falcon 9, the company could begin to hire about 100 employees at the Cape to fill a busy launch manifest, including several NASA launches as part of the Commercial Orbital Transportation System program. The company successfully orbited its single engine Falcon 1 from the central Pacific on the fourth launch attempt in September. SpaceX officials believe lessons learned in the Falcon I program will help make the first Falcon 9 launch successful. Web posted. (2008). [Rocket arriving in stages [Online]. Available WWW: <http://www.floridatoday.com/> [2008, December 24].]

December 25: Companies use different ways to reach same goal

Two contrasting companies are sharing \$3.5 billion in NASA contracts to deliver cargo to the International Space Station after the shuttle stops flying in 2010. One is new and iconoclastic. The

other is established. One launches from Cape Canaveral. The other will launch from Wallops Island, Va. One has designed a totally new rocket. The other will borrow proven technologies to create its vehicle. NASA said it isn't hedging its bets by contracting with competing technologies and companies. Rather, the agency said it needs the cargo capability of both contracts, each of which calls for the delivery of 20 tons of cargo to the station by 2016. NASA officials, however, said they could shift the contract to the successful company if one effort fails. The newer company, Space Exploration Technologies Corp. of Hawthorne, Calif., would provide NASA with 12 flights for \$1.6 billion. Founded by Internet entrepreneur Elon Musk in 2002, the company -- known as SpaceX -- has designed two rockets from the ground up. The cargo rocket, the Falcon 9, has not flown. The company's Merlin 1C engine provides 125,000 pounds of thrust, and nine of them will power the Falcon 9. The company's Dragon capsule has configurations for cargo, experiments and crew. The state of Florida has given financial support and office space to SpaceX. The oldest company, Orbital Sciences Corp. of Dulles, Va., will carry eight cargo flights for \$1.9 billion. Founded in 1982, Orbital has specialized in satellite launch and manufacturing. It has conducted 50 major launches in the past decade. To launch cargo to the station, the company plans to use a liquid-fueled first stage powered by two Russian engines. The solid-fuel second stage will be built by ATK, which supplies solid rocket boosters for the shuttle. The Cygnus capsule cargo system will be created from existing, flight-proven spacecraft technologies. Any alterations at the Wallops Island launch complex will be paid for by Orbital. Since 2006, NASA has awarded both companies millions of dollars toward the development of their cargo operations through the Commercial Orbital Transportation System program. Web posted. (2008). [Companies use different ways to reach same goal [Online]. Available WWW: <http://www.floridatoday.com/> [2008, December 25].]

VAFB team wins Italian launch contract

The Delta 2 rocket team at Vandenberg Air Force Base got an early Christmas present when it was picked by Italy to launch that nation's fourth earth-observing satellite. The Boeing Company announced this week it had received the contract to launch Italy's fourth satellite for the series dubbed the Constellation of Small Satellites for Mediterranean basin Observation (COSMO). The contract price wasn't released. The earth-observing satellites were built by Thales Alenia Space, the prime contractor for the Italian Space Agency. The COSMO-SkyMed spacecraft is expected to be launched in 2010 on a Delta 2 rocket from Space Launch-Complex-2 at Vandenberg. Web posted. (2008). [VAFB team wins Italian launch contract [Online]. Available WWW: <http://www.lompocrecord.com/> [2008, December 25].]

December 26: Return to SSME – Ares V undergoes evaluation

Constellation engineers are carrying out an evaluation process into a potential option of going back to the SSME (Space Shuttle Main Engine) on the Ares V first stage, which in turn would allow a return to a five segment Solid Rocket Boosters on the giant vehicle. The program has initiated a study to look at the feasibility of maintaining the SSME after shuttle retirement, for potential use with Constellation, in turn allowing a move that would also hold benefits for spares support requirements in the event of a shuttle extension. Currently, the Ares V baseline is a 10m core stage with six RS-68B engines and 5.5 segment solid boosters derived from Ares I. The upper stage is 10m in diameter with a single J2-X engine. However, the program is looking for additional margin on lunar exploration missions, and to trim the budget at the same time. This effort resulted in numerous studies to refine the Ares V vehicle. Web posted. (2008). [Return to SSME – Ares V undergoes evaluation into potential switch [Online]. Available WWW: <http://www.nasaspaceflight.com/> [2008, December 26].]

December 27: NASA Kepler spacecraft ready to ship to Florida

Engineers are getting ready to pack NASA's Kepler spacecraft into a container and ship it off to its launch site at Cape Canaveral Air Force Station, Fla. The mission, scheduled to launch on March 5,

will seek to answer an age-old question -- are there other Earths in space? Kepler will monitor more than 100,000 stars for signatures of planets of various sizes and orbital distances. It has the ability to locate rocky planets like Earth, including those that lie in a star's "habitable zone," a region where liquid water, and perhaps life, could exist. If these Earth-size worlds do exist around stars like our sun, Kepler is expected to be the first to find them, and the first to measure their frequency. Kepler is a NASA Discovery mission. In addition to being the home organization of the science principal investigator, NASA Ames Research Center is responsible for the ground system development, mission operations and science data analysis. Kepler mission development is managed by JPL. Ball Aerospace & Technologies Corp. is responsible for developing the Kepler flight system and supporting mission operations. Web posted. (2008). [Return to SSME – Ares V undergoes evaluation into potential switch [Online]. Available WWW: <http://www.spaceflightnow.com/> [2008, December 27].]

December 29: 16 launch jobs may be lost at VAFB

United Launch Alliance expects to lay off at least 16 workers at Vandenberg Air Force Base in February, but company officials said cost-saving measures will mean issuing fewer pink slips than first estimated. The specific jobs that will be axed isn't known yet, but the pink slips are set to be issued in February, spokesman Mike Rein said. "They are basically launch team jobs," Rein said. "The next step is to figure out what 16 jobs can be cut." Along with 16 jobs at Vandenberg, the firm expects to cut 23 jobs at Cape Canaveral, Fla.; 63 in Denver; 65 at the Decatur, Ala., rocket manufacturing plant; and five in San Diego, according to this week's announcement. ULA formed in late 2006 from a merger of Lockheed Martin and Boeing's manufacturing and launch operations crews for the Atlas and Delta boosters. With 4,200 employees overall, the firm has about 400 workers at Vandenberg and 775 for the East Coast launch site at Cape Canaveral. ULA officials cited a market slowdown and program consolidations when announcing in November that they expected to slash some 350 jobs, but reduced that number this week. Instead, they expect to cut 172 positions. Web posted. (2008). [16 launch jobs may be lost at VAFB [Online]. Available WWW: <http://www.syvnews.com/> [2008, December 29].]

December 30: NASA reports more details on Columbia

The astronauts on the space shuttle Columbia knew for no more than a minute, if at all, that they were in grave danger before they blacked out, according to a report NASA released Tuesday nearly six years after Columbia broke apart above Texas. Before losing consciousness, at least one crewmember fought to restore control of the shuttle, which was tumbling toward Earth. Pilot Willie McCool tried to restart the crippled hydraulic system, showing "remarkable aplomb" and "excellent knowledge" of the shuttle's complex systems, the report said. The seven-member crew of Columbia died as the ship re-entered the Earth's atmosphere Feb. 1, 2003. Investigators later traced the shuttle's demise to a chunk of foam insulation that peeled off the shuttle's fuel tank. The foam smashed into Columbia's wing during launch, leading to a large hole. The damage to the wing was not detected during Columbia's stay in orbit, and NASA engineers told the crew the foam was no worry. The first hint that the return to Earth was not proceeding normally came less than two minutes before the air seeped out of the crew cabin, causing the crew to lose consciousness, the report says. NASA released the report to help spacecraft designers learn from the accident. The cabin depressurized so quickly that the astronauts blacked out before they could lower their helmet visors, which would have started the flow of oxygen inside the crew's pressure suits. The visors are kept up during a normal descent. The crewmembers died from either the depressurization or trauma without regaining consciousness, the report said. The findings, which NASA has been working on since 2004, are changing the agency's procedures and plans for sending humans into space. Jonathan Clark, the widower of Columbia astronaut Laurel Clark praised the report. "It's something NASA ought to be proud of," said Clark, a frequent critic of NASA who helped in the early stages of the investigation. "It's a historic contribution to the understanding of space flight." Web posted. (2008).

[NASA reports more details on Columbia [Online]. Available WWW: <http://www.usatoday.com/> [2008, December 30].]

December 31: Falcon 9 Assembled at Cape

SpaceX workers have completed assembling all sections of the Falcon 9 rocket, which is scheduled to fly early in 2009 from Launch Complex 40 at Cape Canaveral. On Tuesday, crews mated the 5.2-meter payload fairing to the Falcon 9 first stage. This final step came a day ahead of schedule, according to a SpaceX statement. Workers now will focus on the launch mount and erector. "All the pieces have been delivered, and the coming days will see a tremendous amount of welding to join them all together," said a SpaceX statement. The company expects to raise the rocket to vertical early in 2009. Web posted. (2008). [Falcon 9 Assembled at Cape [Online]. Available WWW: <http://www.floridatoday.com/> *the flame trench blog* [2008, December 31].]

Appendix A Space Shuttle Missions 2008

Mission	Vehicle	Launch	Landing
STS-122	Atlantis	February 7, 2008	February 20, 2008 KSC
STS-123	Endeavour	March 11, 2008	March 26, 2008 KSC
STS-124	Discovery	May 31, 2008	June 14, 2008 KSC
STS-126	Endeavour	November 14, 2008	November 30, 2008 EAFB

Web posted. (2008). [Launch Archives [Online]. Available WWW:
<http://www.nasa.gov/centers/kennedy/shuttleoperations/archives/2005.html>
[2009, January 9.]

Appendix B Expendable Launch Vehicle Missions 2008

Mission	Vehicle	Launch Site	Launch Date
GLAST	Delta II	Cape Canaveral Air Force Station	June 11, 2008
OSTM/Jason-2	Delta II	Vandenberg Air Force Base	June 20, 2008
IBEX	Pegasus	Ronald Reagan Test Site	October 19, 2008

Web posted. (2008). [2008 Expendable Launch Vehicle Missions [Online]. Available WWW: <http://www.nasa.gov/centers/kennedy/launchingrockets/archives/2008.html> [2009, January 18].]

Appendix C Other U.S. Launches 2008

Vehicle	Launch Site	Launch Date
Atlas 5	Vandenberg AFB	March 13, 2008
Delta 2	Cape Canaveral AFS	March 15, 2008
Atlas 5	Cape Canaveral AFS	April 14, 2008
ALX X-1	MARS Wallops Island	August 22, 2008
Delta 2	Vandenberg AFB	September 10, 2008
SpaceX	Omelek Island	September 28, 2008
Delta 2	Vandenberg AFB	October 24, 2008

Web posted. (2008). [2008 Expendable Launch Vehicle Missions [Online]. Available WWW:
<http://www.nasa.gov/centers/kennedy/launchingrockets/archives/2008.html> [2009, January 18].]

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