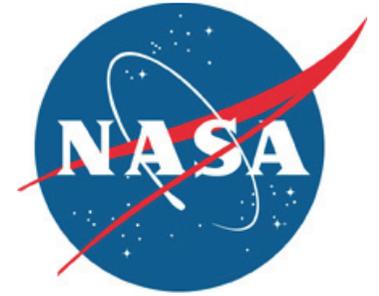


Spaceport News

John F. Kennedy Space Center - America's gateway to the universe

www.nasa.gov/centers/kennedy/news/snews/spnews_toc.html



STS-122 shuttles Columbus to space station

By Linda Herridge
Staff Writer

A vibrant blue sky provided a picture-perfect backdrop for the spectacular liftoff of space shuttle Atlantis on its STS-122 mission at 2:45 p.m. Feb. 7. With Atlantis carrying an international crew of seven astronauts, the European Space Agency's Columbus research module and several experiments, the mission featured three spacewalks and an Expedition crew member exchange.

The mission, originally scheduled for launch in December, was delayed so that engineers and technicians could design and test a new connector for one of the shuttle's fuel sensor systems on the external tank.

The crew members were Commander Steve Frick, Pilot Alan Poindexter and Mission Specialists Leland Melvin, Rex Walheim and Stanley Love. European Space Agency astronauts Hans Schlegel and Leopold Eyharts also are serving as

"Columbus has started its trip to the New World."

Expedition 16 Flight Engineer Dan Tani

mission specialists.

During the mission, Atlantis docked with the station and crew members performed spacewalks to prepare and install the Columbus module on the station's Harmony module.

They also installed the SOLAR experiment and the European Technology Exposure Facility, or EuTEF, on Columbus' exterior.

Columbus will expand the station's research capabilities and provide scientists around the world with the ability to conduct a variety of life, physical and materials science experiments.

"Columbus will bring a truly international capability to the station," said NASA Administrator Michael Griffin. "It shows that this is a real partnership among nations and societies."

An ecstatic European Space Agency Director General Jean-Jacques Dordain said Europe now has a permanent presence in space.

"This is a new chapter," Dordain said. "Columbus discovered a new world and, with this module, we will discover a new world."

Eyharts transferred to the station to replace Expedition 16 Flight Engineer Daniel Tani on flight day three. Tani joined the crew on Atlantis after nearly four months on the station.

After Columbus was activated, Eyharts entered the research module for the first time during flight day six.

At press time, the shuttle landing is scheduled to take place at 9:07 a.m. on Feb. 20 at the Kennedy Shuttle Landing Facility.



NASA/Scott Haun, Richard Prickett



NASA/Kenny Allen

Tim Terry, with Kennedy Space Center Integrated Communications Services, sits at the controls of a long-range tracking camera during the launch of space shuttle Atlantis on Feb. 7.

Space shuttle Atlantis launches from Pad 39A on Feb. 7. During the mission, the STS-122 crew attached the Columbus laboratory to the Harmony module.

Kennedy's biodiesel use earns national recognition

By Linda Herridge
Staff Writer

Bruce Chesson, a traffic management specialist in Center Operations, received the "Pioneer" award for heading up Kennedy Space Center's increased use of biodiesel fuels at the 2008 National Biodiesel Board's Conference and Expo in Orlando.

"It's an honor to receive this award on behalf of Kennedy and all of the workers," Chesson said. "Although we're doing well, we still need to do better."

The center began using B20 biodiesel fuel, a blend of regular fuel and vegetable-derived fuel, in 2003. The Kennedy fleet consists of 1,300 General Services Administration-leased vehicles, including 809 that run on alternative fuel. The center uses 144 diesel vehicles which operate on biodiesel B20

fuel, 545 flex-fuel E-85 (ethanol) vehicles and 120 vehicles which run on compressed natural gas, or CNG, or a combination of unleaded fuel and CNG.

Chesson encouraged workers to make sure to use the designated alternative fuel for each vehicle all the time.

"It is vital that we continue supporting the alternative fuel program and push for our energy security," Chesson said. "I expect that all of these fuels will play a valuable part in our goals to reduce the use of petroleum."

Chesson said NASA has reached the top spot among all other government agencies in fulfilling the U.S. Department of Energy's requirements for alternate fuel vehicle use. Alternative vehicles used at Kennedy include two Miles Automotive OR70 off-road electric vehicles.

Also, the center acquired 10 new Honda

Civic GX vehicles that run on CNG and get 200 to 240 miles per tank. Chesson said CNG is the least expensive and one of the cleanest fuels used at Kennedy.

Last year, the center was able to test drive the BMW Hydrogen 7 vehicles for several weeks. The dual-fuel vehicles use liquid hydrogen and unleaded fuel.

During 2007, the center's two E-85 ethanol pumps dispensed more than 150,000 gallons; that's equivalent to 283,000 gallons of regular gasoline. From 2004 to 2007, more than 276,000 gallons of B20 biodiesel fuel was dispensed.

"That's quite an accomplishment," Chesson said. "More people need to become aware of the alternative fuels we have here on center and make sure they are filling up with that fuel."

He encouraged work-



Courtesy of the Biodiesel Board for NASA

ers to check for an E-85 sticker inside the gas door to confirm the vehicle is compatible with the fuel. Likewise, when driving a dual-fuel CNG and unleaded fuel vehicle, make sure to fill up with CNG.

Chesson said the E-85 ethanol pumps are on the east side of the Kennedy Service Station in the Industrial Area behind the Headquarters Building and in the Launch Complex 39

area on Contractor Road.

The biodiesel fuel pumps are at the service station, as well. The CNG station is at M6-695, one block west of the service station.

Chesson said it's important to start using more alternative fuels because it's ultimately better for the environment, gives vehicles better mileage and helps them run cleaner.

Badging Office construction forces drivers to slow down

The Kennedy Space Center Badging Office, between the Kennedy Visitor Complex and Gate 3 on State Road 405, is under construction.

Designed and constructed by local companies (Jones Edmunds and Associates and Rush Construction, respectively), this new building will offer the same services the former Pass and ID station 3 located near U.S. 1 provided for many years, but will be closer to Kennedy with higher security. In addition, it will house the Visitor Records Center currently operating out of the Headquarters Building's first floor.

Performing both functions from the same facility will provide more efficient processing. The building will provide faster service with the latest equipment for



NASA/Jack Pfaller

The new Badging Office between the Kennedy Visitor Center and Gate 3 on State Road 405 is expected to be completed this summer.

permanent or temporary badging, fingerprinting and other security services. This streamlined operation is expected to cut down customer wait time. "This is an exciting time for our security personnel. Along with all of the new security clearance equipment, they will have a new facility to welcome employees and visitors to Kennedy Space Center," said Ismael H.

Otero of NASA Facilities.

Through March, drivers must observe the reduced speed limit due to road work and maintain caution throughout construction for people entering and exiting the site. Employees can look forward to the facility opening this summer.

Please be aware of heightened safety hazards, and traffic and pedestrian restrictions on all of

Kennedy's construction sites.

Current projects that may affect workers include modifications to the third-floor west wing of the Operations and Checkout Building, construction of the new Life Support Facility on 2nd Street east of the Maintenance and Operations Building, and the addition of Lightning Protection at Launch Pad 39B to support the Constellation Program. Access to these project sites is restricted to construction personnel.

Also, please be aware of construction at the Operations and Checkout Building's north entrance and the north/west entrance to the Headquarters Building, as well as the re-stripping of the front parking, rear service and handicap parking. These items will affect traffic and pedestrian access.



NASA/Kim Shiflett

A developmental heat shield for the Orion spacecraft sits in Hangar N at Cape Canaveral Air Force Station.

Testers to turn up temperature on Orion heat shield prototype

By Tanya Nguyen
Staff Writer

NASA is teaming up technology developed for the space shuttle and designs used for the Apollo Program to produce elements of the next spacecraft that will deliver astronauts to the moon.

An early sign of that combination has made its way to Kennedy Space Center in the form of a prototype heat shield. The prototype is the same size and dimensions of the heat shield that will protect the Orion spacecraft as it enters Earth's atmosphere on the way back from the International Space Station or the moon.

"When (the heat shield) got here at the end of November, it was very exciting because it is the first piece of hardware," said Joy Huff, a NASA shuttle orbiter thermal protection system engineer who is spearheading Kennedy's work on the Orion heat shield. "It's not flight hardware, but it is flight-type material. And just to see the full size, it really gives you a scale of

For more on the heat shield and more photos, go to www.nasa.gov/mission_pages/constellation/orion/heatshield.html

the size of it."

At five meters in diameter, the heat shield is the largest one of its kind ever built. The prototype was built largely just to prove it could be done, Huff said.

Also known as a manufacturing demonstration unit, the prototype was created to meet the need to develop heat shield evaluation, inspection and handling procedures, said Jim Reuther, project manager of the crew exploration vehicle thermal protection system at NASA's Ames Research Center in Moffett Field, Calif.

Orion's thermal protection system serves as a barrier against the heat of re-entry to Earth through the atmosphere. Although parts of the heat shield will use shuttle tile materials, the base of it endures the most heat and will burn away, or ablate, as it descends through the

atmosphere at more than 25,000 mph.

The use of ablative materials mirrors that of the Apollo Program's approach, in which the entire entry capsule was covered with an ablator, Reuther said. The Orion heat shield also uses techniques perfected for the shuttle's thermal protection system, particularly the bonding method used to attach the segments of ablative material to the base heat shield. Orion's design is simpler in respect to the number of parts and reusability because the area to be protected is much smaller than that of the shuttle and the base of Orion's heat shield will not be reused.

The prototype heat shield rests in Hangar N at Cape Canaveral Air Force Station, where it will undergo several months of nondestructive evaluation testing that mainly includes laser scans and X-rays. The tests will be used to reveal flaws purposely built into the heat shield.

But before any testing can be performed, the team at Kennedy will learn the best way to move and

KEA adds several items to spaceflight toolbox

By Jennifer Wolfinger
Staff Writer

Kennedy Space Center's Applied Physics Lab has become known for projects that have benefited the Space Shuttle Program.

At a Kennedy Engineering Academy presentation Jan. 23, Applied Physics Lab Lead Robert Youngquist showed workers that many of the innovative tools created there have impacted spaceflight and technology.

"(The lab) has a long history of providing save-the-day, save-the-launch kind of tools," said Jack Fox, the academy's dean.

According to Dr. Youngquist, the lab team relied on its skills and built a network of helpful contacts in 1990 when tasked to work on space shuttle hydrogen leak problems. They created an ultrasonic leak detector, which led to the creation of a unit still used today. It has since been commercialized.

When Space Shuttle Program workers needed a system that could be used to center the aft end of the external tank between the solid rocket

boosters, the group met the challenge by developing a tool that displayed degrees of misalignment. The program previously used an unreliable method of suspending workers in harnesses, so they could provide guidance while trying not to damage tank foam.

"This success, more than others, led to more requests, mostly for positioning and alignment tools. This area became our core business for several years," he said.

The group also focused on space shuttle window defects that can cause internal stress if the defect is too deep. To support the tedious but essential inspections, they developed what eventually became the Surface Light Optimizer Tool. The tool makes light go into the windows at an angle so defects stand out.

Also addressing defects, they created a device that uses laser beams to remotely size external tank defects from causes such as bird scratches and hail damage. The hardware was commercialized and is used by crime scene investigators to photograph crime scenes without obscuring evidence.

For more information, including presentation replays, visit <http://kea.ksc.nasa.gov/index.htm>.



Dr. Robert Youngquist holds a scaling device and a SLOT (Surface Light Optimizer Tool), a couple of the new tools Kennedy's Applied Physics Lab has invented.

NASA/George Shelton

Scene around Kenn



NASA/Kim Shiflett

Space shuttle Discovery's STS-124 crew members get hands-on experience with some of the equipment that will be used on the mission. Discovery will transport the Pressurized Module of the Kibo Japanese Experiment Module and the Japanese Remote Manipulator System to the International Space Station.



NASA/Jim Grossman

Space shuttle Endeavour rolls out of the Orbiter Processing Facility on its way to the Vehicle Assembly Building on its transporter Feb. 11. While in high bay 1, Endeavour was attached to its external tank and solid rocket boosters in preparation for its upcoming mission, STS-123, to the International Space Station targeted for March 11. The mission will deliver the first section of the Japan Aerospace Exploration Agency's Kibo laboratory and the Canadian Space Agency's two-armed robotic system, Dextre.



NASA/Kim Shiflett

NASA-4 took its final flight from Kennedy on Feb. 12. It is headed to Johnson Space Center to NASA hangars where it will reside. NASA-4 has served nine center directors.

Spaceport News seeks your input

How many generations have your family worked at KSC? *Spaceport News* wants to know. If you would like to share your family's history at Kennedy, send an e-mail to KSC-Spaceport-News@mail.nasa.gov. Your family may be featured in a future issue.

Also, send photos of workers in action for possible publication. Photos should include a short caption describing what's going on, with names and job titles, from left to right.

Kennedy Space Center



NASA/George Shelton, Troy Cryder

An overhead crane lifts the Experiment Logistics Module Pressurized Section, or ELM-PS, of the Japanese Experiment Module, called Kibo, from its work-stand in the Space Station Processing Facility at Kennedy.



Reader-submitted photo

InDyne communications technicians work through the recent wet weather to upgrade Kennedy's underground cable network.



NASA/Jack Pfaller

Freedom Star heads toward Port Canaveral as it tows one of the boosters retrieved after the launch of space shuttle Atlantis' STS-122 mission. The booster was returned to the Port and, after transfer to a position alongside the ship, to Hangar AF at Cape Canaveral Air Force Station.



NASA/Amanda Diller

After signing a framework agreement establishing the terms for future cooperation between NASA and the Indian Space Research Organization, Chairman G. Madhavan Nair (center) and other members were given a tour of the Space Station Processing Facility at Kennedy.

Heights test painters' senses, stomachs

By Corey Schubert
Staff Writer

If you have the stomach for it, Vinnie LaFiura has an amazing view to show you.

But to see it, you must be willing to go out on a 30-inch-wide painter's platform about 52 stories above the ground.

You'll have a clear look at the launch pads just three miles away at Kennedy Space Center and the Florida coastline beyond.

But when you glance past your safety harness and down at your shoes, the half-inch gaps between the planks show people that look like ants on the ground 525 feet below.

Even while you're tethered, don't expect to feel that secure.

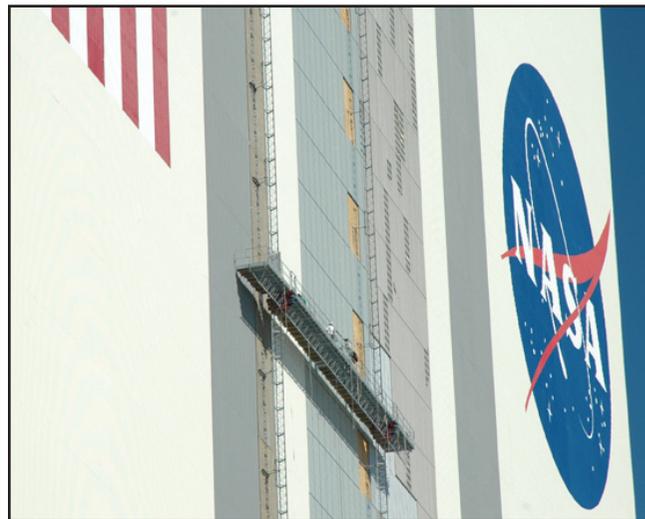
"Sometimes when the wind blows you back away from the building, it'll take your breath away if you're not used to it," he said.

For more on the refurbishing of the Vehicle Assembly Building and more photos, go to www.nasa.gov/mission_pages/shuttle/behind-scenes/vab_profiles.html

LaFiura and his crew are among two groups of contractors who are refurbishing nearly every inch on the outside of the Vehicle Assembly Building where NASA stacks space shuttles for each launch and soon will put together the Ares rockets of the burgeoning Constellation Program.

United Space Alliance workers are restoring the enormous doors at the openings of high bays 1 and 3, while Met-Con Inc. is focusing on high bays 2 and 4.

Met-Con also is painting the siding and replacing the fasteners that hold down the panels on the building's exterior and protect the



Crews are well on their way to rolling on about 10,000 gallons of paint to refurbish one of the world's biggest buildings. The work is scheduled to be completed by August 2009.

NASA/Jim Grossman

shuttle flight hardware and vital ground support equipment.

The crews stopped telling themselves "don't look down" a long time ago, but they still respect the extreme nature of their job.

"I don't think you can ever get used to being up there," said Danny Gray, a subcontractor for Met-Con Inc. He estimates that he's spent more than 500 hours on safety training in his career.

"When you get too comfortable, you start making mistakes," Gray said.

The NASA logo and the 209-foot-tall American flag that take up several stories on the south side have returned to their luster after fading under the intense Florida sun and losing many panels during the 2004 hurricane season.

The crews are well on their way to rolling on about 10,000 gallons of paint, as well as replacing about half a million fasteners to further ensure the siding panels can withstand heavy winds.

Once they're up there, LaFiura grinned, "You can't beat the view."

Tunnel workers are foundation of Launch Pads 39A, 39B

By Linda Herridge
Staff Writer

The rumbling of space shuttle engines and the view of a spectacular liftoff cause excitement as they capture the imagination of the world. Support systems in the tunnels beneath Launch Pads 39A and 39B are not so glamorous, but are extremely important to the success of those launches.

The past meets the present in a series of rooms and connecting tunnels called the Pad Terminal Connection Rooms that actually were built above ground in the 1960s, before construction of the launch pads on top. The largest of the rooms beneath the pads -- the Environmental Control System, or ECS -- contains electrical lines, uninterruptible power systems and air conditioning systems that travel up to the mobile launcher and space shuttle.

For Jerry Lovelace, a United Space Alliance ECS lead technician, it's the best place to work at Kennedy Space Center. Lovelace

has worked at the pads since 1979 and says the work never is routine in the ECS room.

"We may be working on a 350-horsepower turbo blower one day and troubleshooting a high-tech piece of electronic equipment the next," Lovelace said, "or even running ducts to support a foam repair on an external tank."

From the time a space shuttle arrives at the pad until launch day, the ECS room is the main hub of activity. Up to a dozen NASA and contractor personnel use four computer consoles to monitor and control the systems.

About 12 hours before launch, workers prepare for hazardous



NASA/George Shelton

Workers in the ECS Room underneath Launch Pad 39A.

gaseous nitrogen purges in the shuttle compartments. They crank hand valves and keep an eye on automatic valves that flood or purge the orbiter during liquid hydrogen/liquid oxygen loading to reduce the risk of fire during these hazardous operations. Once completed, ECS control is

transferred to the Firing Room and all workers are cleared to a location outside the blast danger area.

Lovelace said the ECS is the largest single system at Kennedy, reaching from two stories below the base of the fixed service structure to its highest levels. The primary function of the ECS is to provide a controlled atmosphere for the shuttle vehicle, payload change-out

room and various other areas at the launch pads.

According to NASA Pad Operations Manager Steve Bulloch, workers maintain the systems that deliver clean, dry air to the orbiter. Updated fiber-optic electrical systems run underground from the Launch Control Center. A duct bank carries lines and pipes throughout the underground system via narrow hallways and passages.

Another room contains the hydraulic pumps that provide power to the gaseous oxygen vent arm and orbiter access arm.

High above are the remains of pipes and support systems used during the Apollo Program. Scorch marks on brick walls in the flame trench room reveal the power and intensity of engines ignited for launch throughout the years.

Lovelace said visitors beneath the launch pads have included an opossum napping in a 480-volt electrical cabinet, raccoons, snakes, birds and even a bobcat.

Spacewalks hold record-setting history

By Kay Grinter
Reference Librarian

Expedition 16 Commander Peggy Whitson became the world's most experienced female spacewalker on Dec. 18, 2007, outside the International Space Station. She has logged 39 hours, 46 minutes of extravehicular activity, or EVA, to date.

Besides assembly and maintenance of the space station, astronauts have used EVAs to move between spacecraft, retrieve experiments and cameras, and fix balky solar arrays.

Astronaut Edward White took the first U.S. spacewalk on June 3, 1965, during Gemini 4.

NASA spacewalkers were tethered to their spacecraft until Feb. 7, 1984. On shuttle mission STS 41-B, Bruce McCandless and Robert Stewart first tested the jet-propelled manned maneuvering unit, or MMU.

NASA's Chuck Franca was a quality engineer with the Boeing Company at the time. He assisted with the certification and acceptance testing of the MMUs and with their installation into the orbiters for all of their flights. Franca recalled, "The MMUs were attached to the flight support station in the payload bay. The spacewalker donned his spacesuit, and then latched himself into the MMU."

The MMUs were used in the repair of the Solar Maximum Mission observatory and the retrieval of the malfunctioning PALAPA-B2 and WESTAR-VI satellites.

Although the MMUs have been retired, the suit, called the extravehicular mobility unit or EMU, is still in use today.

Later in 1984, astronaut Kathryn Sullivan became the first U.S. female spacewalker on Oct. 11 during STS 41-G.

Troy Mann, the flight crew systems technical lead for United Space Alliance, works with the team



NASA file

Astronaut Peggy Whitson, the world's most experienced female spacewalker, has now logged 39 hours and 46 minutes of spacewalk time during six excursions.

Remembering Our Heritage

responsible for stowing all flight crew equipment in the shuttle before each mission.

The "equipment" includes everything from food and computers, to cameras and spacesuits.

The components of the EVA suits are shipped to Kennedy from Johnson Space Center.

The short extravehicular mobility unit, or SEMU, covers the upper torso and is the heaviest piece, weighing about 200 pounds.

"The containers are unpacked in the pad's White Room," Mann explained. "Inside the orbiter, a pulley system lifts the suits, and we then position them by hand onto the airlock adapter plate.

"Typically, two EVA suits are flown on each mission, but four suits will fly on the Hubble Space Telescope servicing mission later this year. The two additional suits will be secured on the mid-deck ceiling."



NASA file

Mission Specialist Bruce McCandless II ventured further away from the confines and safety of his ship than any astronaut in history. This space first was made possible by the Manned Maneuvering Unit or MMU, a nitrogen jet-propelled backpack. McCandless went "free-flying" to a distance of 320 feet away from the orbiter.

Earlier spacewalking records were set in December 1993 on the first Hubble servicing mission by Kathryn Thornton and crewmate Thomas Akers. Akers broke the

20-year-old U.S. spacewalking record held by Eugene Cernan. Thornton led the U.S. female spacewalkers with a total of 21 hours, 10 minutes.

Did you know?

The number of EVAs for station assembly and maintenance is 104, totaling 653 hours and 43 minutes.

WORD ON THE STREET

What do you think about having six shuttle launches this year?



"I feel it's very aggressive but something we can achieve."

Kenyan Butler, account associate with Xerox



"I don't think there's anything like a shuttle launch. The more the better."

Terri Stabile, overhead crane system engineer with United Space Alliance



"I think we can do it. People who work here are up to the challenge."

Donna Hamilton, OMD planner with United Space Alliance



"We have the people and with proper government funding, we can do it."

Adam Wallace, LPS technician with United Space Alliance



"It's a lot to achieve, but I think we can do it."

Dianne Brown, engineer with Boeing

Make plans for 2008 All-American Picnic



The 2008 All-American Picnic will take place from 10 a.m. to 4 p.m. March 29. Tickets are \$6 and \$4 (ages 3-12). Kids ages 2 and younger will be admitted free. Tickets increase by \$2 after March 25. More than 5,000 Kennedy employees and their family members attended the 2007 picnic (left).

NASA/Kim Shifflett

Looking ahead

Tuesday, Feb. 26 6:17 to 6:18 a.m.	Space Station sighting	Approach: 10 degrees above SSE Departure: 15 degrees above SE
Thursday, Feb. 28 5:25 to 5:26 a.m.	Space Station sighting	Approach: 11 degrees above SSE Departure: 13 degrees above SE
Friday, Feb. 29 5:45 to 5:50 a.m.	Space Station sighting	Approach: 17 degrees above SSW Departure: 10 degrees above NE
Saturday, March 1 6:06 to 6:10 a.m.	Space Station sighting	Approach: 14 degrees above W Departure: 10 degrees above NNE
Target March 11	Launch/KSC: Endeavour, STS-123; at 2:28 a.m.	
Target March 13	Launch/CCAFS: Delta II; at 2:15 a.m.	
Target March 21	Launch/CCAFS: Atlas V, ICO G1; 5:46 to 6:26 p.m.	
March 29	KSC All-American Picnic	
Target April 24	Launch/KSC: Discovery, STS-124; at 8:24 a.m.	
Target May 9	Launch/CCAFS: Delta IV-H, NROL-26; TBD	
Target May 16	Launch/CCAFS: Delta II, GLAST; 11:45 a.m. to 12:45 p.m.	
Target July 16	Launch/CCAFS: Delta II, STSS Demo; TBD	
Target Aug. 8	Launch/CCAFS: Delta IV, GOES-0; TBD	
Target Aug. 28	Launch/KSC: Atlantis, STS-125; 9:38 p.m.	
Target Oct. 16	Launch/KSC: Endeavour, STS-126; TBD	
Target Oct. 28	Launch/CCAFS: Atlas V, LRO/LCROSS; TBD	
Target Dec. 1	Launch/CCAFS: Atlas V, SDO; TBD	
Target Dec. 4	Launch/KSC: Discovery, STS-119; TBD	
Target Feb. 16, 2009	Launch/CCAFS: Delta II, Kepler	



NASA/Amanda Diller

Parsons addresses Space Club

Kennedy Space Center Director Bill Parsons shared an overview of the past year during the February lunch meeting of the National Space Club on Feb. 12 in Cocoa Beach.



John F. Kennedy Space Center

Spaceport News

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