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Spaceport News

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Landing facility lights shine way for shuttle

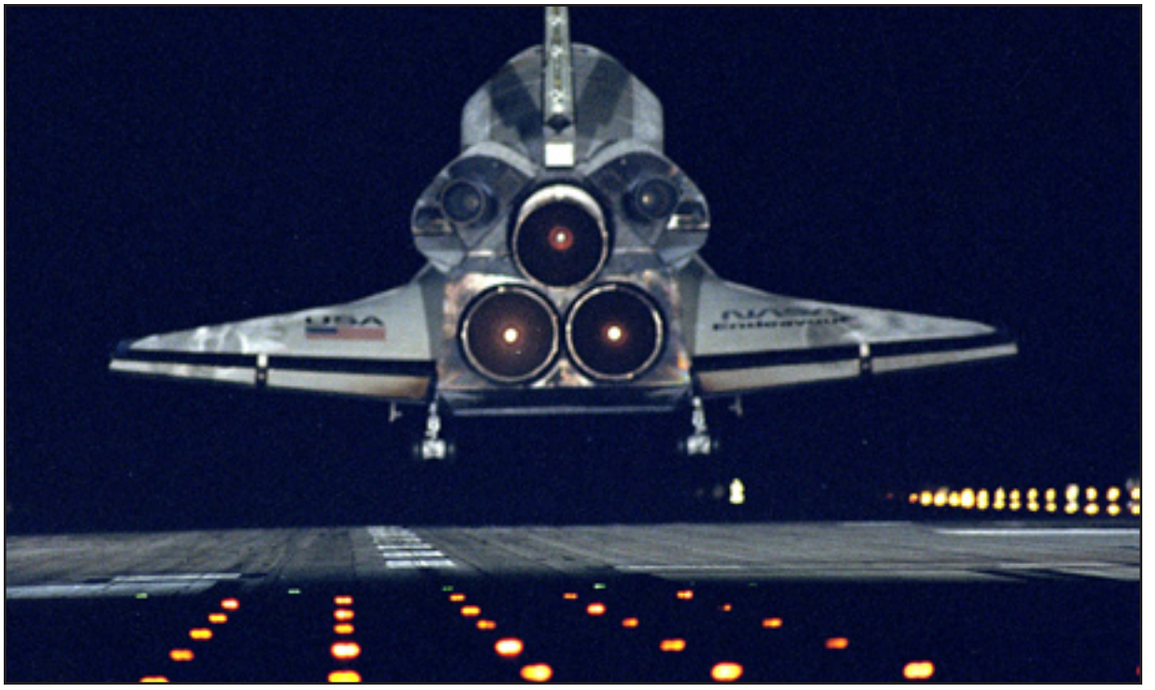
By Linda Herridge
Spaceport News

While space shuttle Endeavour's six-member crew prepares for a night landing at Kennedy, the Shuttle Landing Facility, or SLF, will be ready to light the way home.

Gregory Bordeaux, the electrical power production supervisor with InDyne Inc., at Cape Canaveral Air Force Station, is looking forward to witnessing his first night landing from a unique vantage point. Bordeaux and three co-workers will be stationed at the powerful Xenon lights at both ends of the runway about three hours before the shuttle is scheduled to land. The Shuttle Training Aircraft, or STA, is used to preview the readiness of the weather, the runway and the lighting at that time.

"We calibrate the lights so that they are shining evenly and at the proper height," Bordeaux said. "This will be my first night landing and I'm looking forward to seeing Endeavour land."

When the shuttle landing direction is determined, URS Corp. air traffic controllers in the runway control tower will communicate with Bordeaux and his team on the ground. Then two of the operators will light up eight Xenon lights, four on each side of one end of the runway, to illuminate the touchdown and rollout area from behind the shuttle.



NASA file/1996

Several types of lighting on and around Runway 15 at Kennedy Space Center's Shuttle Landing Facility help Endeavour and its crew of six glide to a night landing Jan. 20, 1996. Powerful Xenon lights illuminate the touchdown and rollout area from behind the shuttle.

According to Ron Feile, a URS air traffic controller, each Xenon light emits 1 billion candlepower, or 20 kilowatts.

"They light up the entire runway and the area surrounding it," Feile said. "The Xenon lights date back to the Apollo Program and were upgraded for the Space Shuttle Program."

Bordeaux said Xenons light up the launch pads for night launches and when needed, for shuttle night landings at Edwards Air Force Base and all three transatlantic abort sites.

There are several other types of lights on the SLF, each with its own purpose. Ball-Bar lights on 15-foot-high poles are positioned on the left-hand side, or commander's side, of the runway, and Precision Approach Path Indicator, or PAPI, lights help guide the shuttle on a

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Inside this issue . . .

NASA, international partners test rovers in Hawaii

High above the tropical forests, inviting Pacific waters and sandy beaches, there's a unique site that has many of the same chemical and physical characteristics as extraterrestrial soil.

Called Mauna Kea, it's a remote and cold dormant volcano on the "Big Island" of Hawaii. On the lower slope of Mauna Kea, at a site that resembles a lunar crater, NASA and its international partners are advancing future space exploration.

NASA

A rover used to create landing sites runs through testing on Mauna Kea, a remote and cold dormant volcano on the "Big Island" of Hawaii. NASA and its international partners are using the site to advance future space exploration.

On Jan. 22, a joint team from Kennedy and Johnson helped kick off a field test project called in-situ resource utilization, or ISRU for short, on Mauna Kea with support from Hawaii's Pacific International Space Center for Exploration Systems, or PISCES.

"NASA runs tests at sites around the world to simulate the moonscape and other space environments," said Bill Larson, head of NASA's ISRU program at Kennedy. "These 'analog' activities help us evaluate the interactions of multiple systems relating to mobility, infrastructure and effectiveness in harsh climates."

Working with the Canadian Space Agency, or CSA, the German Space Agency, known as DLR, and the University of Hawaii at Hilo, as well as the state of Hawaii, the NASA team is operating 17 resource utilization instruments and systems. Each one aims to better understand potential space resources, limit the amount of resources humans would have to carry with them beyond low Earth orbit and also protect hardware once is gets there.

"Besides testing the hardware on its own, the field test has allowed NASA to integrate and test hardware with our international partners. The field test would not have been possible without each others' support and equipment. We are each providing critical products and services to the other, just as we would do in an actual mission," said Jerry Sanders, ISRU element lead for the Lunar Surface Systems Office.

Imagine the number of people and the nearly 250,000 cubic yards of concrete it took to construct Kennedy's Shuttle Landing Facility. Now, consider how much it costs to process and launch something off the Earth's surface. Given those variables, the most cost-effective solution wouldn't be to send those resources to Mars to construct a landing site.

Researchers testing hardware on Mauna Kea understand that, so they are using TriDAR images and ground-penetrating radar technologies to create 3-D subsurface models for the selection and construction of a landing pad and access roadways. Meanwhile, a rover with a drill will test subsurface features and three rovers with blades will plow and then level a simulated landing pad.

"These demonstrations in Hawaii will provide valuable information for subsequent hardware and mission concept development," Larson said.

Even taking along basic necessities would be a challenge because of space limitations in launch vehicles. So, a robotic system called RESOLVE will determine how best to drill and test soil samples for oxygen and water, while another called NORCAT looks for minerals.

One thing researchers know for certain about the moon, is that its soil is made primarily of oxygen. To utilize that natural resource, Canadian engineers developed a Regolith Excavator. On Mauna Kea, the excavator digs and then delivers volcanic material, called tephra, to an Oxygen Extraction Plant that melts and processes the material with methane to produce water. The water is then electrolyzed, or split, into hydrogen and oxygen. The oxygen is liquefied and stored for later use, and the hydrogen is used to regenerate the methane reactant or stored and used to power other experiments with a Canadian fuel cell. It would be the same principal on the moon,

Larson says the use of this simulated space environment in Hawaii didn't come without a few logistical challenges, though.

First, the team had to enlist the help of the U.S. Air Force Reserve to move the hardware from across the country, over the Pacific Ocean and up to the simulated crater site, about a 5,000-mile trip.

Then, the team had to address some native cultural beliefs. Mauna Kea is considered "sacred" by native Hawaiians. So, the team worked with locals to obtain official access and a blessing of the site by a Hawaiian priest.

In January, Larson's team traveled to Hawaiian schools and the Civil Air Patrol to talk to future explorers about the ongoing work taking place in their home state. They also participated in a Web-based teacher workshop hosted by PISCES on Feb. 8.

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gradual, safe descent to the runway. They are operated by United Space Alliance from the Launch Control Center or SLF Landing Aids Control Building. Feile said these lights are only used for shuttle landings and STA training.

Mike Fessner, a USA special power manager, said the shuttle makes a final approach at a 20-degree angle, which is much steeper than commercial aircraft.

"It's important to position the Ball-Bar and PAPI lights at the correct angle."

Approach lights are located 3,000 feet before the runway surface begins. Runway edge lighting is positioned every 200 feet, and runway threshold lighting helps to illuminate the ends of the runway. Lighted distance-to-go markers help the shuttle commander and pilot after they touch down. Centerline lighting is located in the middle 10,000 feet of the runway for rollout guidance. Runway directional signs are lit as well. All of these lights are operated by URS and can be controlled from the runway tower or SLF Landing Aids Control Building.

As of presstime, STS-130 Commander George Zamka, Pilot Terry Virts, and Mission Specialists Robert Behnken, Nicholas Patrick, Kathryn Hire and Stephen Robinson were scheduled to glide home Feb. 21 at 10:20 p.m.

During the mission, Behnken and Patrick completed three spacewalks to help install the Tranquility node to the International Space Station. Tranquility will provide additional room for many of the space station's life support and environmental control systems already on board.

They also repositioned the cupola on Tranquility so that it faces Earth, giving crews aboard the station a spectacular view of their home planet.

Kennedy's landing crew says they're ready to provide the STS-130 crew with another spectacular view… a brightly lit runway.

National Engineers Week sheds light on discovery

By Steven Siceloff
Spaceport News

Peter Johnson's road to electrical engineering began with running sound equipment for a band around 1980. Now, he's an operational instrumentation engineer for the space shuttle.

He also worked on developmental flight instrumentation for the Ares I-X flight test and has been working on operational instrumentation for the Orion spacecraft. That means all the telemetry and other data about the spacecraft appearing on controllers' screens goes through equipment he is responsible for or helped develop.

"When I went to school, it was a natural appeal to go to that," Johnson said. "There was a natural connection to electrical engineering."

His lightbulb moment came in 1982 after he took an electronics class and learned enough to repair TVs and stereos.

"I decided it would be better to design electronics instead of repair electronics," he said.

His move to NASA came when he was walking to class at Southern Illinois University and saw a scrap cardboard box with "NASA interviews tomorrow" written on it. He went to the interview and Kennedy hired him and 19 of his classmates for the return to flight effort following the Challenger accident.

The National Engineers Week Foundation sought to give students across the country similar moments of discovery as they highlighted the profession during this year's National Engineers Week during Feb. 14-20.

The foundation is a coalition of more than 100 professional societies, major corporations and government agencies. The group promotes engineering and technology-related careers among young students.

The week also is meant to increase engineering understanding among the general public.

Clara Wright, a materials engineer at Kennedy, emphasizes the impact engineers have on everyone's lives.

"From their iPod and iPhones to the cars they drive, the computers they use, the social media Web sites they enjoy, the packaged food they consume, the utilities they need … pretty much every aspect of their lives has been influenced by an engineer," Wright said.

She also said the profession offers great personal reward for successfully solving problems.

"Engineering challenges you to think analytically," she said. "When you find the right fit, the work is seldom mundane and your contributions to the team's mission makes the work gratifying."

As one of the top engineering destinations in the world, Kennedy and its contractors did their part to celebrate engineers.

The spaceport relies heavily on engineers for design, implementation and fundamental research in a number of aerospace and related fields.

Johnson has talked with students about engineering throughout his career and said there is substantial interest in the field.

"The biggest challenge is putting the right image to stimulate the imagination without getting into the (engineering) jargon," he said.

Col. Wilson takes reign of Eastern Range, 45th Space Wing

By Chris Calkins
45th Space Wing

Col. Ed Wilson officially assumed command of the 45th Space Wing from Brig. Gen. Edward L. Bolton Jr., during a change of command ceremony Feb. 12 in the Patrick Air Force Base Theater.

As commander of the 45th Space Wing, Col. Wilson will be director of the Eastern Range, responsible for the processing and launching of all U.S. government and commercial satellites from Cape Canaveral Air Force Station. That includes Atlas and Delta rockets for NASA's Launch Services Program. He also manages launch and range infrastructure to support NASA's space shuttle launches.

Col. Wilson previously was the commander of the Space Development and Test Wing at Kirtland Air Force Base, N.M., and joined the Air Force in 1985. He graduated from the U.S. Air Force Academy with a Bachelor of Science in electrical engineering.

In his previous assignment, Col. Wilson oversaw a combined team of 1,000-plus military, government civilians and contractors responsible for the development, acquisition, launch, demonstration, test and operations of Department of Defense and civil space systems.

Col. Wilson has served in various roles, including space operations, acquisition, policy, strategy, planning and combat support.

He previously commanded at the squadron and group levels, as well as served on the staffs of Air Force Space Command, U.S. Space Command, and the National Reconnaissance Office.

Col. Wilson also served as a Secretary of Defense corporate fellow at Cisco Systems, where he received senior service college credit by training with corporate America.

Gen. Bolton is assuming responsibilities as the director of cyber and space operations in the Pentagon. In his new assignment, he will help synchronize space and cyber capabilities.

He also will oversee the creation of both the Air Force cyber field and the management of space professionals.

Photo courtesy of Jennifer Macklin/U.S. Air Force

Col. Ed Wilson, center, receives the 45th Space Wing guidon from 14th Air Force Commander Lt. Gen. Larry James during a change of command ceremony in the Patrick Air Force Base theater Feb. 12. Col. Wilson replaces Brig. Gen. Edward L. Bolton Jr., who has been reassigned to the Pentagon.

Scenes Around Kennedy Space Center

NASA/Kim Shiflett

NASA Administrator Charlie Bolden answers questions about the fiscal year 2011 budget during an All-Hands briefing Feb. 5 in Kennedy's Training Auditorium. Center Director Bob Cabana also was on hand to answer questions.

NASA/Amanda Diller

Kennedy employees help Brevard, Fla., students build a robot Feb. 12 in the Prototype Development Laboratory for the FIRST Robotics competition in March at the University of Central Florida. The group calls themselves the Pink Team. FIRST, or For Inspiration and Recognition of Science and Technology, is a mentor-based program designed to motivate students to pursue education and career opportunities in science, technology, engineering and math. The Pink Team has helped build four homes for Habitat for Humanity, done beach clean-up, helped start four other FIRST robotics teams, started an after school tutoring program called Roccobotics, and created robots that allow physically challenged kids to create paintings, which are displayed each year at the Melbourne Very Special Arts Festival.

Photo courtesy of Pat Corkery, United Launch Alliance

An Atlas V rocket rumbled the Space Coast as it lofted the Solar Dynamics Observatory, or SDO, into a geosynchronous orbit from Launch Complex-41 on Cape Canaveral Air Force Station at 10:23 a.m. Feb. 11. SDO is the first satellite of NASA's Living with a Star Program. Its purpose is to examine the sun, the source of all space weather.

NASA/Jack Pfaller

Emergency first responders at Kennedy learn how to rescue drivers and passengers from newer model vehicles in Fire Station No. 2 at Kennedy on Feb. 9. Here, Butch Lysholm describes different frames of vehicles. Newer vehicle frames are designed to keep drivers and passengers inside during a crash, eliminating the risk of ejection, but this makes getting them out more difficult for rescue crews and the "jaws of life" equipment. New tools also will help provide electrical current insulation to responders when dealing with hybrid vehicles that have electric and gas motors.

NASA/Jack Pfaller

Spacecraft technicians guide one side of the Delta IV payload fairing around NASA's GOES-P meteorological satellite at the Astrotech Space Operations facility in Titusville, Fla. GOES-P, the latest Geostationary Operational Environmental Satellite, was developed by NASA for the National Oceanic and Atmospheric Administration, or NOAA. GOES-P is designed to watch for storm development and observed current weather conditions on Earth, and is targeted to launch March 1 from Launch Complex-37.

Emergency Medical Services on call around the clock

By Linda Herridge
Spaceport News

Unexpected medical emergencies can happen at Kennedy and when they do, who are you going to call? Kennedy's Fire Rescue Services and Emergency Medical Services, managed by Space Gateway Support, or SGS, are on call 24/7 to assist in any emergency.

They took immediate action recently when a CL Coatings employee in the Vehicle Assembly Building experienced a serious medical emergency. Ken Prince, with the company's site safety, said EMS actions were immediate, efficient and accurate from incident to hospital emergency room, and may have prevented a catastrophic situation.

"On behalf of our entire company we extend our heartfelt gratitude and thanks to Kennedy's EMTs," Prince said. "They are to be commended for their excellence in action."

Under NASA Protective Services, about 98 SGS firefighters, fire inspectors and engineers, emergency medical technicians and paramedics, provide fire rescue and prevention, fire engineering and emergency medical services to Kennedy workers on a day-to-day basis. They are based at fire stations in the Industrial Area, Launch Complex 39 and the Shuttle Landing Facility. Two ambulances and a minimum of four paramedics are on duty each day.

"People don't usually call us when things are going well," Fire Chief Gerald Wimberly said. "It's our job to be ready for any emergency. It's the nature of the business."

The EMTs and paramedics operate under the Occupational Health Facility and Medical Director Dr. Skip Beeler. They also are certified fire fighters, and complete recurring fire fighter training, annual refresher medical training, monthly online medical courses and hands-on training throughout the year.

"The paramedics and first responders are really the first line of medicine for everyone at Kennedy, whether they're a worker or visitor," Beeler said. "Many times the immediate care they give can be lifesaving."

EMS, along with fire fighting and rescue crews, cover all space shuttle launches and landings by staging personnel and equipment in various locations around the center. The fire service training department reviews safety requirements and provides training to shuttle crews on the M113 armored personnel carrier, the bunkers around Launch Complex 39 and the 195-foot-level of the pads during Terminal Countdown Demonstration Tests.

EMS Assistant Chief Bruce Olseen said the team responds to all emergencies on the center and provides necessary emergency medical care to patients before they are transported to the center's occupational health facilities or local hospitals.

"We have visitors from around the world and many are not use to the heat and humidity of Florida and they can quickly become dehydrated and ill," Wimberly said.

Paramedic Ron Stake said one of the most challenging parts of the job is responding to medical emergencies at the Kennedy Space Center Visitor Complex.

"People sometimes don't know how to properly take care of themselves in this hot and humid climate," Stake said. "And there may be language barriers that have to be overcome to ensure proper patient care."

Wimberly said that Fire Services and EMS have mutual aid agreements, established by NASA Fire Protection, with Cape Canaveral Air Force Station, Brevard County, Patrick Air Force Base, and the cities of Cape Canaveral, Cocoa, Cocoa Beach and Titusville.

"We also monitor the county drought index and protect Kennedy facilities and other buildings from brush fires that may encroach from the Merritt Island National Wildlife Refuge," Wimberly said.

The fleet of ambulances is inspected by the state of Florida and the EMS abides by state and county protocols.

"The most rewarding part of the job is that everyone cares about each other at Kennedy," Stake said. "It's like a family out here."

NASA/Jack Pfaller

Inside Fire Station 2 at Kennedy's Shuttle Landing Facility, paramedics Lois Dominguez and Ron Stake, with Space Gateway Support, complete an inventory of medical supplies carried on one of their ambulances.

Remembering Our Heritage: African-American History Month

Scholarship spotlights legacy of equality leader

By Kay Grinter
Reference Librarian

"Remembering Our Heritage" celebrates African-American History Month with a look back at the career of Evelyn Johnson, deputy director of Kennedy's Equal Employment Opportunity Program Office.

Johnson worked for the federal government for 35 years, 28 of which she was employed by NASA.

A Florida native, Johnson was born in Gainesville and graduated from Stone High School in Melbourne, Fla., in 1962.

Johnson relied on her secretarial skills for entry into the federal work force, as many women of all races did in the 1960s. Eventually, her career path brought her to Kennedy where she became secretary to Jay Diggs, then director of the Equal Employment Opportunity Program Office, or EEO.

Embracing the philosophy held in the EEO office, Johnson continued her education while on the job, earning a degree from Saint Leo University. Her hard work led to a promotion to equal opportunity specialist, and in time, she was appointed deputy director of the office. Her success story also included a one-year stint as acting director of EEO at NASA's Stennis Space Center in Mississippi.

Johnson was a classic example of someone who "worked herself up through the ranks," according to Diggs, who retired in 1998 and lives in Titusville, Fla.

As the second-ranking official in the EEO office, she oversaw a wide variety of programs. The coordination of Kennedy's programs with historically black colleges and with initiatives to provide access for the disabled was among her specialties.

NASA file/1993

Employees try out Kennedy's new lift-equipped van in 1993. Standing, from left, are Jackie Loadholtz, NASA Transportation management specialist; Marc Geohagan and Jack Davis, with the Government Services Administration; and Evelyn Johnson, NASA program manager for Individuals with Disabilities. Sitting are Elizabeth Morris and Chris Hinds of NASA.

"Evelyn's passion was working with anyone with physical or mental disabilities," Diggs said. "She felt that our disabilities program, called Individuals with Disabilities, was not given the visibility it deserved."

"She was a very caring person," Kenny Aguilar, EEO Program Office director at the time of her death told the Spaceport News in 2000. "She obviously will be missed by the center for her fine work with the community."

The black employees' working group, formed during Diggs' tenure, evolved into the Black Employee Strategy Team, or BEST, an organization that is still vital on center today.

"I had the vision, but Evelyn took the lead in establishing the program," Diggs explained, "and in its incorporation into a KMI (Kennedy Management Instruction)."

Now, BEST presents a scholarship each year in memory of Johnson, the founding member so instrumental in its success. The recipient is chosen from among BEST dependents, BEST members attending a college or university, and Stay-In-School Program participants, because Johnson was especially supportive of the students enrolled in that program.

The Evelyn Johnson scholarship was first awarded in 2002. BEST has awarded more than $10,000 in scholarships to deserving students across the center.

Many of the students are working at Kennedy as co-op or full-time employees and are giving back to the center by working with BEST and other employee resource groups.

One scholarship recipient remarked, "Evelyn didn't realize how many lives she touched. I'm an example of that . . . and I never even met her."

2010 scholarship winners

The 2010 recipients of the Evelyn Johnson scholarship will be announced at BEST's African-American History Month breakfast Feb. 26. For ticket information, visit the BEST Web site at **http://best.ksc.nasa.gov/AAHM.cfm**.

All-American Picnic tickets on sale through March 3

The 2010 Kennedy All-American Picnic is scheduled for March 6 from 10 a.m. to 4 p.m. All civil service, contractors, and Cape Canaveral Air Force Station personnel associated with a NASA program, and their families, are invited to attend.

This year marks the 31st anniversary of the picnic, "Celebrating more than three decades of family, food, and fun." Food will be provided by Slow & Low Bar-B-Que, and includes either a traditional barbeque or vegetarian meal.

Scheduled events include live entertainment, generation XYZ games, children's games, a car and motorcycle show, the popular chili cook-off, and much more.

Tickets went on sale Feb. 17 and will be sold until March 3. Prices are $8 for adults and $6 for children ages 3 to 12 (children ages 3 and younger get in free). Volunteers will receive a discounted ticket of $5 and a baseball cap.

To volunteer, call Sandy Walsh at 867-4255. For more information, call Picnic Chairman Sam Talluto at 867-3092.

Other upcoming events

African-American History Month breakfast is Feb. 26 from 8:30 to 10:30 a.m. in the Space Station Processing Facility Cafeteria. Tickets are $13 and must be purchased by Feb. 17.

Looking up and ahead . . .

March 1	Launch/CCAFS: Delta IV, GOES-P; Window 6:19 to 7:19 p.m. EST
No earlier than March 8	Launch/CCAFS: Falcon 9/Dragon; Window 11 a.m. to 3 p.m. EST
Targeted for March 18	Launch/KSC: Discovery, STS-131; 1:34 p.m. EDT
Targeted for April 19	Launch/CCAFS: Atlas V, OTV; 10 p.m. to 2 a.m.
Targeted for May 14	Launch/KSC: Atlantis, STS-132; 2:28 p.m. EDT
Targeted for May 17	Launch/CCAFS: Delta IV, GPS IIF-1; 3:19 to 3:37 a.m. EDT
No earlier than July 21	Launch/CCAFS: Falcon 9/Dragon, NASA COTS - Demo 1; TBD
Targeted for July 29	Launch/KSC: Endeavour, STS-134; 7:51 a.m. EDT
Targeted for Sept. 16	Launch/KSC: Discovery, STS-133; 11:57 a.m. EDT
No earlier than Nov. 22	Launch/VAFB: Taurus, Glory; TBD
Targeted for Dec. 2	Launch/CCAFS: Atlas V, GPS IIF-2; TBD
Aug. 5, 2011	Launch/CCAFS: Atlas V, Juno; TBD
Aug. 15, 2011	Launch/Reagan Test Site: Pegasus, NuSTAR; TBD
Sept. 8, 2011	Launch/CCAFS: Delta II Heavy, GRAIL; TBD
To Be Determined	Launch/VAFB: Delta II, Aquarius / SAC-D Satellite; TBD
To Be Determined	Launch/VAFS: Delta II, NPP; TBD
No Earlier Than October 2011	Launch/CCAFS: Atlas V, Mars Science Laboratory; TBD

WORD AT THE Launch Control Center

Kennedy workers have been asked to show their space shuttle pride by wearing old mission shirts on Fridays. What memories does your shirt bring back?

"I wore my STS-130 shirt because it's the current mission we're on. I have about six shuttle shirts."

Jennifer Stevens, with United Space Alliance

"I wore my STS-129 shirt because it was the first space shuttle launch that I sat at the console."

Nicole Barreto, with NASA

"I wore my STS-125 shirt because I got to sit with the launch countdown team in Firing Room 4."

Tim Marge, with United Space Alliance

"The first time I went to California, I helped support the STS-92 landing. It was really cold there."

Dave Watts, with United Space Alliance

John F. Kennedy Space Center

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