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Stennis test fires new AJ26 rocket engine

Stennis Space Center conducted a successful test firing Nov. 10 of the liquid-fuel AJ26 engine that will power the first stage of Orbital Sciences Corporation's Taurus II space launch vehicle. Orbital and its engine supplier, Aerojet, test fired the engine on Stennis' E-1 Test Stand. The test directly supports NASA's partnerships to enable commercial cargo flights to the International Space Station.

The initial test lasted 10 seconds and served as a short-duration readiness firing to verify AJ26 engine start and shutdown sequences, E-1 Test Stand operations, and ground-test engine controls. A 56-second verification test was scheduled for mid-December.



Fire and steam signal a successful test firing of Orbital Sciences Corporation's Aerojet AJ26 rocket engine Nov. 10. AJ26 engines will be used to power Orbital's Taurus II space vehicle on commercial cargo flights to the International Space Station. The 10-second test fire on Nov. 10 was the first of a series of scheduled verification tests.

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Stennis' 2010 Combined Federal Campaign

Goal – \$210,000

To-date – \$130,553 (62.2% of goal)

Happy Holidays!

From the desk of
**Patrick
 Scheuermann**
 Director
 Stennis Space Center



What a year we have had! Progress continues on all fronts at Stennis Space Center. Foremost, we continue to safely support the remaining flights of the space shuttle. This year, three missions accomplished incredible milestones as the International Space Station moves toward completion and into a period of maximizing scientific research. Many say the ISS is the greatest engineering project in history. It also serves as a prime example of international collaboration. As we move forward with space exploration and other scientific experiments, lessons learned in collaboration will be of vital importance.

We are proud of the commercial rocket engine partnerships that have existed at Stennis for a while, and they continue to meet critical milestones in support of the commercial space launch markets. Recently, we supported the Pratt & Whitney Rocketdyne RS-68A engine test series on the B-1 stand. These engines will be delivered to the Delta IV Program and afford it additional payload capacity. Our partnership with Orbital Sciences Corporation and Aerojet on the AJ26 engine program in the E Test Complex reached a major milestone when engineers successfully conducted its first test Nov. 10. A photo of the test was featured on the big screen in Times Square in New York City!

The Stennis Space Center community continues to

flourish in collaborative opportunities. During the Gulf of Mexico oil spill, federal agencies and our partners responded with numerous assets. Our NASA administrator recognized the uniqueness of the talent pool and skill base at Stennis and encouraged our involvement. We are proud of our contributions to monitoring and mitigation efforts, and we look forward to working with partners longterm to ensure we maximize resources and help restore the Gulf system.

We exist because we work together for common causes and common missions. I want to recognize the contributions of our partners: the Jacobs Facility Operating Services Contract Group, Jacobs NASA Test Operations Group, Pratt & Whitney Rocketdyne, Patriot Technologies (administrative services), Paragon Systems (security), the Lockheed Martin Outsourcing Desktop Initiative for NASA, A2Research (lab services) and ASRC Research and Technology Solutions. Without your dedication and focus, we would not succeed. I am especially proud of the entire team working with NASA to embrace the Voluntary Protection Programs initiative and to be recommended for site Star status. Congratulations to all!

On behalf of the NASA administrator and the entire NASA family, I wish all of you and your families a very happy and blessed holiday season and best wishes for a happy new year. I hope you take the time to be thankful, relax and enjoy time with family. We have a few more milestones to accomplish in 2010 and many more major ones ahead of us in the coming year. I can't wait to see you around the campus next year!

INFINITY 'tops out'

Apollo 13 astronaut and Biloxi native Fred Haise leads visitors on a tour of INFINITY at NASA Stennis Space Center under construction just west of the Mississippi Welcome Center at exit 2 on Interstate 10. Stennis and community leaders celebrated the "topping out" of the new science center Nov. 17. The ceremony marked a construction milestone for the center. Roy Anderson Corp. of Gulfport is building the 72,000-square-foot science and education center, which will feature space and Earth galleries to showcase the science that underpins missions of the agencies at Stennis Space Center. Primary goals are to inspire students to take a greater interest in science, technology, engineering and math and to enhance science literacy among the public. The construction project is being spearheaded by INFINITY Science Center Inc., a nonprofit corporation led by Haise and Gulfport Mayor George Schloegel, in partnership with NASA, the state of Mississippi and private donors. When completed, the facility will serve as the official Stennis visitor center and will be home to the NASA Educator Resource Center. The center is targeted to open in 2012.



FULFILLING NASA'S EXPLORATION MISSION



Members of the E-1 Test Stand team gather on the modified structure prior to the installation and first test firing of Aerojet's AJ26 engine. Team members worked more than two years to prepare the E-1 stand for AJ26 testing for Orbital Sciences Corporation. Work included construction of a 27-foot-deep flame deflector trench, major structural modifications and new fluid and gas delivery systems.

AJ26 TEST

Continued from page 1

The early tests on the AJ26 engine are being conducted by a joint operations team comprised of Orbital, Aerojet and Stennis engineers, with Stennis employees serving as test conductors. Following the Nov. 10 test, the joint operations team and other NASA engineers conducted an in-depth data review of all subsystems in preparation for the 55-second hot-fire acceptance test. A third hot-fire test at Stennis also is planned to verify tuning of engine control valves.

"Congratulations to Orbital and Aerojet for successfully completing another major milestone," said Doug Cooke, associate administrator for the Exploration Systems Mission Directorate at NASA Headquarters in Washington. "This brings us one step closer to realizing NASA's goals for

accessing low-Earth orbit via commercial spacecraft."

The AJ26 engine is designed to power the Taurus II space vehicle on flights to low-Earth orbit. NASA's partnership with Orbital Sciences was formed under the agency's Commercial Orbital Transportation Services joint research and development project. The company is under contract with NASA to provide eight cargo missions to the International Space Station through 2015.

"With this first test, Stennis not only demonstrates its versatility and status as the nation's premier rocket engine test facility, it also opens an exciting new chapter in the nation's space program," Stennis Space Center Director Patrick Scheuermann said following the Nov. 10 test fire. "We're proud to be partnering with Orbital Sciences to enable the wave of the future – commercial flights to space and eventual resupply of cargo to the

International Space Station."

In addition to the partnership with Orbital Sciences Corporation, Stennis tests Pratt & Whitney Rocketdyne's RS-68 rocket engines on the B-1 Test Stand. Engineers at the south Mississippi facility also are preparing three other stands for testing the J-2X rocket engine and its engine components in development. The J-2X is being developed as a next-generation engine designed to carry humans beyond low-Earth orbit into deep space once more.

The AJ26 is the first new engine in years to be tested at Stennis Space Center. Operators there spent more than two years modifying the E-1 Test Stand in preparation for the test project. Work on the E-1 stand included construction of a 27-foot-deep flame deflector trench, major structural modifications and installation of new fluid and gas delivery systems.

Stennis 2010 – a year of change a

For NASA, 2010 was a year of change as the agency began to refocus its work and mission. For John C. Stennis Space Center, the year included change as well as reaffirmation of its core mission.

The south Mississippi facility saw its share of changes with the introduction of new leaders and other milestone events. However, Stennis also continued to move ahead with its primary work – testing rocket engines for the nation’s space program.

“We will remember 2010 as a pivotal point for Stennis,” said Director Patrick Scheuermann, who assumed his leadership role early in the year. “It was a time of preparation for the next focus of America’s space program and a time of embarking on a new direction for NASA.”

A new engine. In 2010, Stennis led the way in working with commercial companies to develop space travel capabilities, partnering with Orbital Sciences Corporation to test Aerojet AJ26 engines to power commercial cargo flights to the International Space Station.



Stennis employees install a chemical steam generator at the E-2 Test Stand. After testing the unit, it will be installed on the A-3 Test Stand under construction onsite.

The partnership involved large-scale modifications to Stennis’ E-1 Test Stand that lasted much of the year. On Nov. 10, modifications complete, a joint operations team that included Stennis, Orbital and Aerojet personnel conducted a 10-second hotfire of an AJ26 engine, the first in a series of three verification tests, before beginning full duration firings.

A-3 Test Stand. The A-3 Test Stand

being built to provide simulated high-altitude testing of next-generation rocket engines marked several construction milestones in 2010. Installation of the stand’s test cell and diffuser began. Large liquid oxygen and liquid hydrogen tanks were delivered. Work also progressed on support facilities, installation of gaseous nitrogen bottles, and the water delivery system needed to service the stand. The new stand is set for activation in 2012. When complete, it will allow engine testing at simulated altitudes up to 100,000 feet, a critical need for engines that will carry humans into deep space once more.

Test stand modifications. Engineers on Stennis’ A-1 and A-2 test stands engaged in major maintenance and modification work to prepare the structures for testing the next-generation J-2X rocket engine in development. A host of mechanical and technical aspects of each stand must be modified from space shuttle main engine parameters to test the new engine. Both stands are scheduled to begin testing J-2X components and engines in 2011.



Stennis Space Center Director Patrick Scheuermann (right) welcomes three former leaders to the first of several presentations scheduled in the Legends Lecture Series – (l to r) George Hopson, Jerry Hlass and J.R. Thompson. The series is part of a yearlong celebration of Stennis’ 50th anniversary.

E Test Complex. The E Test Complex proved its versatility again in 2010. Engineers in the complex

and reaffirmation of core mission

used the E-1 stand for testing AJ26 engines. They also prepared the E-2 stand for early testing of the chemical steam generator units that will be used on the A-3 Test Stand for simulated high-altitude testing. At the E-3 stand, engineers continued sub-scale diffuser testing in support of the A-3 project and also conducted launch acoustics testing that provided important data for construction of future space vehicles.

Applied Science. Stennis' Applied Science and Technology Project Office continued to provide important research and technology support to Gulf Coast protection and restoration work. The value of the office was highlighted in the past year during the Gulf of Mexico oil spill, when Stennis helped formulate NASA's response to the crisis, monitored coastal ecosystems for damage and assisted a range of other agencies as

they addressed the issue. The office continues to support more than a dozen ongoing research projects in the Gulf region, with more in the works.

Leadership for the future. The past year saw a new leadership team take shape at Stennis. Former Deputy Director Scheuermann was named director in February. Former Associate Director Rick Gilbrech was named deputy director in April. The following month, former Stennis employee Ken Human returned to the facility as associate director.

Celebrating the past. In April, NASA – and the Stennis community – celebrated one of the greatest sagas of the American space program, the Apollo 13 lunar mission that has been characterized as one of NASA's finest hours. Astronaut Fred Haise, a Biloxi native, visited Stennis to mark

the 40th anniversary of the mission and recount his experiences on the flight, which was crippled by an explosion in space and forced to make a perilous trip around the moon and back to Earth.

Legends Lecture Series. In November, the Stennis community kicked off a yearlong celebration of the facility's 50th anniversary by welcoming back three former leaders. The trio dialogued with various groups onsite and recounted their experiences with the space shuttle main engine test project during a lecture session for employees. Additional lecture sessions are planned, with the celebration culminating in October 2011. NASA publicly announced plans to build a rocket engine testing facility at the south Mississippi site Oct. 25, 1961.

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When complete, the new A-3 Test Stand at Stennis will allow testing of rocket engines at simulated altitudes up to 100,000 feet.

2010 REVIEW

Continued from page 5

Upgrading infrastructure. In 2010, Stennis dedicated a new Records Retention Facility to consolidate and protect facility records. It installed new liquid oxygen pumps on propellant barges, replacing older, less efficient pumps from the 1960s. It completed total rebuilds of security gates to enhance center appearance and increase the safety of Stennis employees. It also awarded a contract to expand state Route 607 onsite from two lanes to four, providing a valuable future hurricane evacuation route for Gulf Coast residents.

Milestones. The Stennis community marked numerous milestones in 2010. Construction on the new INFINITY science center moved ahead, with a “topping out” ceremony held in mid-November. The Public Affairs Office continued a range of outreach efforts across the region, while the Education Office continued longstanding outreach efforts like Astro Camp and annual FIRST (For Inspiration and Recognition of Science and Technology) LEGO and robotics competitions. The office also opened a new Educator Resource Center onsite and produced its first-ever curricula, a Mass vs. Weight study and a Spaced Out Sports package that included a challenge for students to design games that could be played on the International Space Station.



(Top photo) Apollo 13 astronaut Fred Haise recounts his experiences on that mission during a visit to Stennis Space Center on April 20 to mark the 40th anniversary of the historic flight.

(Bottom photo) In 2010, Stennis completed total rebuilds of the north and south (as shown) security gates to enhance appearance and increase safety.



PWR achieves major safety milestone

Pratt & Whitney Rocketdyne employees at Stennis Space Center reached a major safety milestone Nov. 4, marking seven years without any lost-time incidents.

“This is a tremendous accomplishment that all should be very proud of,” said Jeff Wright, site director for PWR Stennis. “To do what we do day after day and still reach seven years without a lost-time injury, is even more impressive. Still, we must

make sure we remain vigilant when it comes to safety, and to always report an incident no matter how large or small.”

PWR has a stellar safety record as a Stennis contractor. In April 2009, it became the first resident agency to receive recommendation for Voluntary Protection Programs Star Demonstration status from the Occupational Safety and Health Administration.

Stennis Director Patrick Scheuermann praised the PWR record. “The protection of our work force and visitors remains our highest priority,” he said. “Safety is both an individual and organizational responsibility for all who work at NASA Stennis Space Center.”

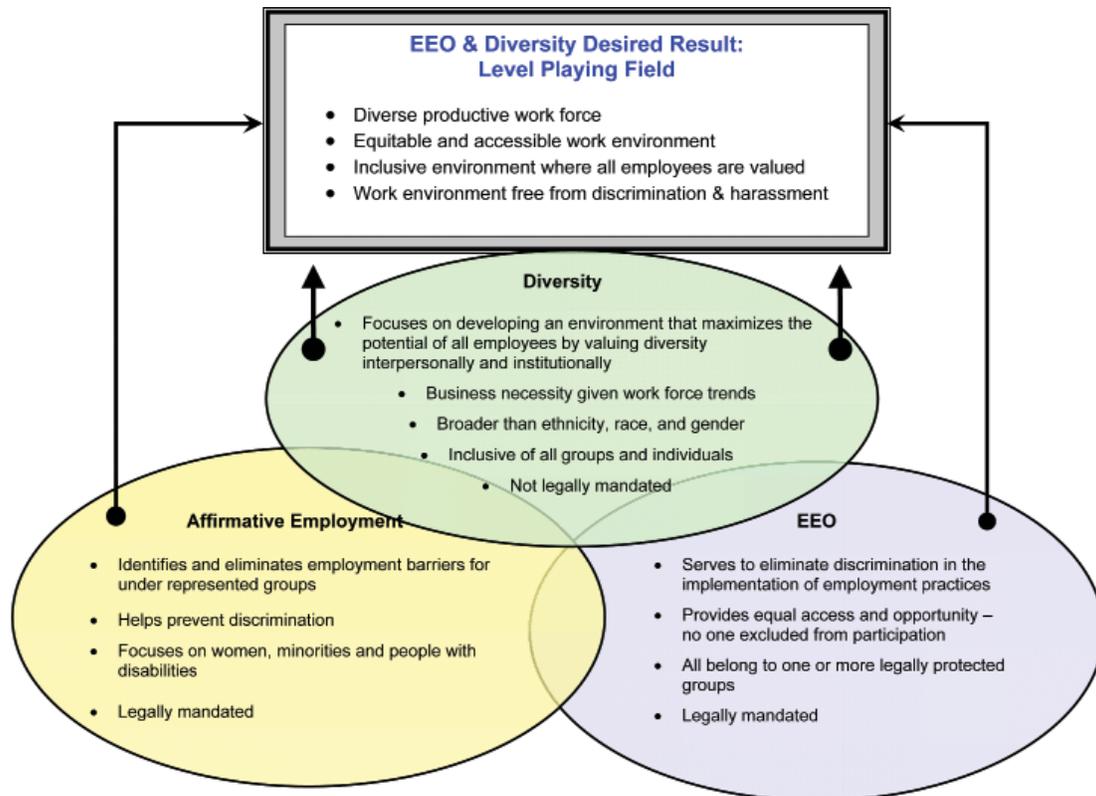
In January 2011, PWR also has a chance to reach 3 million hours without a lost-time injury. A special recognition event is being scheduled.

Office of Diversity and Equal Opportunity

Ensuring workplace fairness and equality

This month’s article entails a broad overview of the Office of Diversity and Equal Opportunity (ODEO) areas that ensure equal employment and fair treatment for all employees. The image below provides a brief explanation of the areas ODEO covers to bring fairness and equality throughout the workforce. The area labeled “Affirmative

Employment” should not be confused with “Affirmative Action.” Affirmative Employment does not mandate a number being attached to any protected class or ethnicity. It simply looks at all qualified applicants and employees and seeks fair treatment for all. If there are questions, please contact Brian Hey at 228-688-1249.



Stennis celebrates Native American Heritage Month

Stennis sponsored a Nov. 17 program celebrating Native American Heritage Month. Participants included ASRC Research and Technology Solutions employees Clayton Morad (l to r), Scott Altman, Kate Burk and Gregg Einfalt. ASRC is a Stennis contractor and an Alaska Native Corporation.

Hail & Farewell

NASA bids farewell to the following:

Charlie Fallo AST, Quality Assurance
Office of Safety & Mission Assurance

And welcomes the following:

Lorrie Easterling Management Support Assistant
Project Directorate

Megan Martinez AST, Facility Systems Safety
Office of Safety & Mission Assurance

Joseph Schuyler Deputy Chief
Systems Engineering & Integration
Engineering & Test Directorate

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Students compete in LEGO tourney

Matthew Myles (left) and Agrippa Kellum from Armstrong Middle School in Starkville, watch as their LEGO robot competes during a Dec. 4 tournament.

Elementary and middle school students from across Mississippi gathered in Hattiesburg to participate in the Mississippi Championship FIRST (For Inspiration and Recognition of Science and Technology) LEGO League Tournament. Each year, students use the LEGO MIND-STORMS system to build robots designed to complete particular tasks. The Roseland Park Baptist Church Academy team from Picayune won the most prestigious award of the event, the Champion's Award. Armstrong students won the Core Values Award for Teamwork.

Stennis supports FIRST LEGO League each year by providing mentors, training and tournament volunteers.



NASA partners with schools on space projects

NASA recently announced plans to team with students at 17 high schools in four states to design and develop hardware and software models and products for use in America's space program.

Students at selected schools will work with NASA engineers on projects identified by the High Schools United with NASA to Create Hardware (HUNCH) initiative. Engineers at NASA's Marshall Space Flight Center in Huntsville, Ala., and Stennis Space Center are involved in the program.

"HUNCH is hands-on and involves work on real products with engineers who are leaders in their fields," said Cheryl Guilbeau, elementary and secondary projects coordinator for the

Stennis Education Office. "It is an invaluable experience for students."

Selected teams will work with NASA engineers through March on assigned projects, which include work on such items as hardware mockups of equipment used in the International Space Station and a portable rocket engine test stand

The project was launched at Marshall in 2003 and expanded to include Stennis last year. The goal of the HUNCH initiative is to inspire high school students to pursue careers in science, technology or engineering.

HUNCH teams include faculty leads and 10-15 students. The teams also have support from local school

systems, industry partners, media representatives and nonprofit organizations. Louisiana and Mississippi schools participating in this year's HUNCH program are (first-time teams are shown with an asterisk):

Louisiana: *Beau Chene High School in Arnaudville; *Captain Shreve High School in Shreveport; *Lusher Charter High School in New Orleans; *Parkway High School in Bossier City; and *Northside Engineering Academy in Lafayette.

Mississippi: *Hancock County Vocational Technical School in Kiln; East Central High School in Hurley; Gulfport High School in Gulfport; New Albany High School in New Albany; and Petal High School in Petal.