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John C. Stennis Space Center

# LAGNIAPPE

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# New test stand, new era

NASA officials and government leaders participated in a ground-breaking event Aug. 23 for the A-3 Test Stand at Stennis Space Center. Pictured (left to right) are Deputy Associate Administrator for Exploration Systems Doug Cooke, Pratt & Whitney Rocketdyne President Jim Maser, SSC Director Richard Gilbrech, NASA Associate Administrator for Exploration Systems Scott Horowitz, NASA Deputy Administrator Shana Dale, Mississippi Gov. Haley Barbour, Sen. Thad Cochran, Sen. Trent Lott, Rep. Gene Taylor, SSC Deputy Director Gene Goldman, and A-3 Project Manager Lonnie Dutreix.

## *A-3 groundbreaking begins new age of exploration*

NASA's Stennis Space Center broke ground Aug. 23 for a new rocket engine test stand that will provide altitude testing for the J-2X engine. The engine will power the upper stages of NASA's Ares I and Ares V rockets.

NASA Deputy Administrator Shana Dale was joined by Mississippi Gov. Haley Barbour, U.S. Sen. Thad Cochran, U.S. Sen. Trent Lott and U.S. Rep. Gene Taylor for the landmark occasion. Also participating were NASA Associate Administrator for Exploration Systems Scott Horowitz and Stennis Center Director Richard Gilbrech, recently named to succeed Horowitz, who plans to leave NASA in October. Pratt & Whitney Rocketdyne President Jim Maser took part as well.

"Groundbreakings are about new beginnings," said Dale. "The first stand was erected at Stennis to test

***SEE MORE on A-3 Groundbreaking, Pages 4-5***

# Gilbrech named AA ESMD; Cabana SSC director

## *Scheuermann is new associate director*

Gilbrech

Cabana

On Aug. 10, NASA Administrator Michael Griffin named Richard J. Gilbrech as associate administrator for the Exploration Systems Mission Directorate, the NASA division designing the next generation of spacecraft to return astronauts to the moon and eventually journey to Mars. Gilbrech currently serves as the director of NASA's Stennis Space Center in Mississippi. Griffin also named Robert D. Cabana,

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From the desk of

## Dr. Richard Gilbrech

**Director,**
**Stennis Space Center**

This month, there are many reasons for celebration at Stennis Space Center. On Aug. 23, Mississippi and Louisiana elected officials, as well as members of NASA's senior leadership, gathered at SSC's A Test Complex to officially break ground on the most significant construction project the center has undertaken since its inception: the A-3 Test Stand.

A-3 is the first large-scale test stand to be built here since the A and B stands were constructed in the 1960s. The coming years in the history of our nation's space program promise to be as exciting as those of Apollo. It's certainly an exciting time at SSC.

A-3 will be used to conduct altitude testing and potentially sea-level testing of NASA's evolved J-2X engine. The aggressive construction schedule calls for the stand's activation in 2010, with first tests being conducted in December of that year. It will be challenging and undoubtedly there will be issues and setbacks as with any major project, but I'm confident our talented Stennis team is up to the task. Meanwhile, the modifications on A-1 are moving along, and we are on track to begin J-2X component testing on A-1 starting this fall.

We have some major commitments to fulfill for NASA, including engine and stage development for Constellation as well as continuing to support the remaining space shuttle flights. I am proud NASA and the nation have entrusted us with these awesome responsibilities.

Of course, along with all this excitement comes the serious realization that there are a number of other things happening on site that threaten to distract us from our goals. August marks the second anniversary of Hurricane Katrina's devastating landfall in our area. The entire region continues to deal with her aftereffects – many of you are still trying to restore your homes and your lives.

SSC has focused on repairing the damage, improving emergency processes, and incorporating lessons learned from Katrina through risk mitigation efforts – like the construction of a new Emergency Operations Center. As a result, 20 major Hurricane Katrina repair projects at SSC have been completed out of 33 identified. Centerwide, 30 roofs have been replaced and six are under construction. Resurfacing of Trent Lott Boulevard is nearly complete, and the concrete foundation at the EOC has been poured.

In addition, we have begun transitioning into the new facilities operating contract at SSC. I'm certain there will be many changes associated with this activity, so we must remain focused on performing the quality work the agency expects of us while being mindful of the health and wellbeing of our workforce.

I urge you to continue to keep safety at the forefront of everything you do. SSC has a critical role in NASA and America's space program, and we need each of you to accomplish our mission.

Richard J. Gilbrech

# Community leaders witness RS-68 test

Former Stennis Space Center Director Jerry Hlass (left) joins SSC Deputy Director Gene Goldman and Hancock Bank Chairman Leo Seal Jr. to view the testing of an RS-68 engine on SSC's B Stand on July 18. Pratt & Whitney Rocketdyne's RS-68, the most powerful liquid oxygen/liquid hydrogen rocket engine in existence, will power the core stage of NASA's developing Ares V cargo launch vehicle. Pratt & Whitney leases SSC's B-1 Stand to test the RS-68 for its commercial applications, and already uses the engine to power its Delta IV heavy-lift vehicle. All RS-68 engines are assembled and test-fired at SSC.

# A-3 Groundbreaking


NASA officials, government and community leaders and employees were among nearly 300 people gathered for an Aug. 23 historic groundbreaking event at Stennis Space Center. The groundbreaking for the new A-3 rocket engine test stand officially marked the beginning of a new era at Stennis. The A-3 Test Stand will provide altitude testing for NASA's developing J-2X engine for its new Ares I and Ares V spacecraft.

**SSC Director Richard Gilbrech** (top left photo) joined guest speakers NASA Deputy Administrator Shana Dale, seated, Mississippi's Gov. Haley Barbour, Sen. Thad Cochran and Sen. Trent Lott. Guest speakers not pictured included Rep. Gene Taylor, Pratt & Whitney Rocketdyne President Jim Maser and NASA Associate Administrator of Exploration Systems Mission Directorate Scott Horowitz.

**Former SSC directors** Jerry Hlass (top) and Roy Estess were among numerous special guests.

**Marshall Flight Space Center** Exploration Launch Projects Office Director Steve Cook (far left photo) and Johnson Space Center Constellation Program Manager Jeff Hanley, participate in the event.


**Other special guests** are (front, from left, in photo above) NASA Deputy Associate Administrator of Exploration Systems Mission Directorate Doug Cooke, SSC Deputy Director Gene Goldman, newly named SSC Director Robert Cabana, SSC Associate Director Patrick Scheuermann, Chief Beasley Denson, NASA Asst. Associate Administrator Christyl Johnson and Steve Cook.

**Taylor** (at left) joins Gilbrech, Dale, Barbour, Cochran and Lott in addressing the guests.

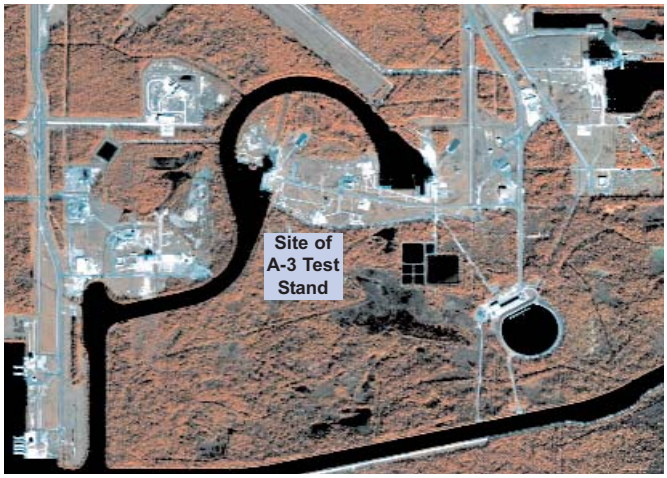
**Lott** (bottom left photo) greets Dale and Gilbrech following the official groundbreaking ceremony.

**Barbour** (bottom center photo) delivers remarks during the event.

**Cochran** (bottom right photo) talks with Denson and Taylor.

Following the groundbreaking event, approximately 125 guests attended a luncheon sponsored by PWR, which opened with welcoming remarks by Maser.


# Test stand groundbreaking b




**BIRD'S EYE VIEW –** This satellite image taken before clearing began helped engineers point out the proposed location of the A-3 Test Stand within Stennis Space Center's A Test Complex.

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the Saturn V rocket of the Apollo program. Testing of the space shuttle engines began here in the mid 1970s. And today, we're breaking ground for a new test stand, for the new spacecraft of a new era of exploration."

The Ares I and Ares V rockets are being developed as part of NASA's Constellation Program. Constellation spacecraft will be used to send astronauts to the International Space Station, return humans to the moon, and eventually journey to Mars.

"This is our generation's turn, our time to go to the moon," said Gilbrech. "One of the key steps is building the A-3 Test Stand. The J-2X engine has a unique set of test requirements. The best way to meet them is with the A-3."

The A-3 stand is the first large test stand to be built at Stennis since it opened in the 1960s. The new test stand will be a 300-foot-tall, open steel frame structure located south of the existing A-1 Test Stand. Its 19-acre site in Stennis' A Complex will include a test control center, propellant barge docks and access roadways. The test stand will allow engineers to simulate conditions at different altitudes by generating steam to reduce pressure in the test cell. Testing on the A-3 stand is scheduled to begin in late 2010.

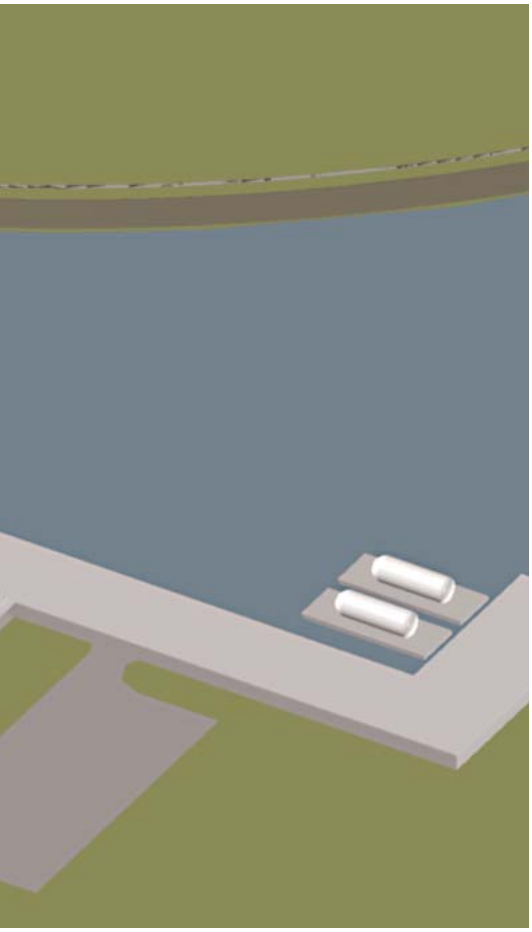
In November 2006, Stennis' existing A-1 stand was handed over to the Constellation Program for testing the J-2X engine. Tests on J-2X components are set to begin later in 2007.

"The engines will be assembled here at Stennis, then subjected to rigorous, expert testing," Dale said. "After that, those engines and the rockets they will power will travel to Cape Canaveral. Then the finished spacecraft will lift off, headed for a new destination and a new era of exploration."

**A LOOK AT THE FUTURE –** An engineer's concept drawing of the A-3 Test Stand illustrates and the canal just west of the structure

**FIRST WORK –** Tree clearing for the site of the new A-3 Test Stand at Stennis Space center begins June 13. The construction opened a historic era for America's largest rocket engine test complex.

# egins new era in exploration



s the stand's exhaust diffuser, propellant tanks and barges,

**Stennis Space Center's** A-3 Test Stand is being built to test NASA's developing J-2X engine (below), which will power the Earth departure stages of NASA's Ares I crew launch vehicle (above, left) and Ares V cargo lauc-nh vehicle (above, right). The Ares I will carry the Orion crew capsule (left) and her astronauts back to the moon, with eventual expeditions to Mars and worlds beyond. This incredible journey is already beginning at SSC in south Mississippi with the construction of the A-3 Test Stand to prove the J-2X's ability to operate in the extreme conditions high above Earth's surface.

**FIRM FOUNDATION –** By Aug. 10, 2007, the 19-acre site of the A-3 Test Stand is completely cleared. This photo, taken from atop the A-1 Test Stand, shows preparation for fill dirt and the test stand's pilings, which will form a solid foundation for the massive steel structure.

FULFILLING THE VISION FOR SPACE EXPLORATION

# Diffuser will help pave way for A-3

While work is under way at the site of Stennis Space Center's future A-3 Test Stand, a simultaneous project at SSC's E Complex may play a key role in meeting A-3's completion deadlines.

Two E Complex test cells are being prepared for activation and possible tests on a miniature version of the A-3's exhaust diffuser. The tests will be used to prove or validate the diffuser's design, and to work out any issues before the full-scale version is built.

Danny Guin (left) and R.B. Shaw check the installation of a 1,000-pound thruster to be used as a steam combustor in SSC's E Test Complex. The two Jacobs Technology employees work for NASA's Test Operations Group, and are helping prepare E-3 test cells 1 and 2 for possible testing on a model of the A-3 Test Stand's exhaust diffuser.

The first large test stand to be built at SSC since the 1960s, A-3 will test NASA's developing J-2X engine at altitude conditions. Engineers will generate nearly 4,600 pounds per second of steam to reduce pressure inside A-3's test cell to simulate altitude conditions. A-3's exhaust diffuser has to be able to withstand regulated pressure, temperatures and the safe discharge of the steam produced during those tests.

Called a subscale diffuser, the smaller version is an exact model of the diffuser for the A-3 Test Stand – but is 6 percent its size. Still a giant, the subscale L-shaped stainless steel tube will measure 9 feet tall and 13 feet long when fabricated.

"This is an intricate piece of hardware," said NASA's Barry Robinson of SSC's Test Projects Office. "We're working hard to prepare the test facility because we have to mimic as closely as possible the actual conditions on A-3. We have to make sure we do it right."

While awaiting the model diffuser's fabrication as designed by Jacobs Technology in Tullahoma, Tenn., workers at SSC's E-3 Test Facility are busy "marrying" test cells 1 and 2, preparing for the tests.

Cell 1 will hold a stand-in or simulator for a J-2X: a 1,000-pound thruster requiring liquid oxygen and gaseous hydrogen as propellants to produce a plume. Cell 2 will house a modified small rocket motor as a combustor that also will require propellants and water to produce heat and steam. The two cells' products will merge at the subscale diffuser, where the 500-degree steam will churn through the model for 150 seconds at a flow rate of 14 pound mass per second.

"The biggest obstacle is sustaining the steam at the needed flow," Robinson said. The setup calls for five pressure-controlled run tanks, which Robinson called a challenge.

Tests on the combustor's operation were scheduled for the last week in August. If successful, the team will have cleared its first hurdle. In November, the team intends to measure the steam's flow characteristics through the ejectors that will push it into the diffuser.

"A-3 is probably the most important project on the horizon right now," Robinson said, "so our efforts are focused on helping make it happen."

## Upper stage engine contract awarded

NASA has signed a $1.2 billion contract with Pratt and Whitney Rocketdyne Inc. of Canoga Park, Calif., for design, development, testing and evaluation of the J-2X engine that will power the upper stages of the Ares I and Ares V launch vehicles.

The contract includes ground and test flight engines. It continues work begun June 2, 2006, under a preliminary letter contract with PWR. NASA awarded the cost-plus-award fee contract to PWR on a sole-source basis.

NASA determined no other existing capability meets its architecture requirements and is able to be extended to future exploration missions. The J-2X engine is managed by NASA's Marshall Space Flight Center in Huntsville, Ala., for NASA's Constellation Program.

## STS-118 mission returns to Earth

Space Shuttle Endeavour rolled to a stop Aug. 21 at the Shuttle Landing Facility after a perfect landing at Kennedy Space Center, Fla. Commander Scott Kelly guided the spacecraft through its complicated glide back to Earth at 12:32 EDT, completing a mission that added a new piece to the International Space Station, delivered almost three tons of supplies to the laboratory and proved a new power transfer system works. While at the station, the astronauts conducted four spacewalks to continue on-orbit construction and perform repair work at the station. The major spacewalking tasks included the installation of the Starboard 5 truss, replacement of a faulty attitude control gyroscope and preparations for assembly work by future crews. The next shuttle mission, STS-120, is targeted to launch in late October.

# MANAGEMENT

*Continued from Page 1*

deputy director of NASA's Johnson Space Center in Houston, to replace Gilbrech as SSC center director.

Gilbrech will succeed Scott Horowitz, who will leave his position in early October to pursue interests outside NASA.

"We are incredibly fortunate to have as his replacement someone of Rick Gilbrech's training, talent and experience," Griffin continued. "Rick was our 'go-to guy' when we needed someone to head a tiger team to deal with the loss of the shuttle PAL ramp foam on STS-114. With experience in both institutional and project management, Rick's willingness to take on this challenge will ensure the Exploration Systems Mission Directorate remains in good hands."

Before being named SSC director in 2006, Gilbrech was deputy director of the agency's Langley Research Center in Hampton, Va., and deputy director of NASA's Engineering Safety Center located at Langley. Gilbrech began his career at SSC in Mississippi in 1991.

As SSC director, Cabana will oversee all operations of NASA's primary center for rocket propulsion testing and the Applied Research and Technology Project Office. SSC is a multiagency center with operations or offices for 30 government agencies.

"With the spacecraft engine development work planned during the next few years, Stennis is a key to our future beyond low Earth orbit, and replacing Rick as its director is a difficult task," Griffin said. "We are lucky to have in Bob Cabana a highly experienced center deputy, test pilot, astronaut and engineer to fill this position. Few people have given more to NASA and to spaceflight than Bob. While he can do anything and could fill nearly any job at NASA, I am personally thrilled that he has accepted this opportunity to step up to the next level of our agency's senior management."

Cabana was selected as an astronaut in 1985, flying twice as a space shuttle pilot and twice as commander, accumulating more than 1,000 hours in space. Cabana served in a number of management positions supporting the astronaut office and the International Space Station program, as well as serving as NASA liaison to the Russian space agency. He has served as the Johnson Space Center deputy director in Houston since 2004.

Scheuermann

In a separate action Aug. 6, NASA named Patrick Scheuermann SSC's new associate director effective Aug. 19. As associate director, Scheuermann will support the center director's office in managing SSC.

Scheuermann most recently served as chief operating officer of NASA's Michoud Assembly Facility in New Orleans, where he was responsible for day-to-day management and operation of the facility.

"Returning to Stennis is an honor," Scheuermann said. "I am looking forward to the exciting and challenging work at Stennis as we move forward in preparations for testing the rocket engines that will take America back to the moon."

# SSC activities at STS-118 launch

**Stennis Space Center** hosted 75 invited guests at activities surrounding the launch of the STS-118 mission. The activities included a tour of Kennedy Space Center the day before the launch and a stop at the launch site (left). The guests also were taken on a tour of KSC's facilities, including the International Space Station facility. On Launch Day, Aug. 8, the group received a briefing from NASA Deputy Administrator Shana Dale, and were welcomed by KSC Director Bill Parsons. Afterward, at KSC's Banana Creek VIP viewing site, they watched Endeavour ascend into orbit, powered by three main engines tested at SSC.

**Louisiana Gov. Kathleen Babineaux Blanco** (above left photo) talks with SSC's guest Astronaut Jim Reilly at SSC's prelaunch reception in Cocoa Beach, Fla. Reilly met with more than 150 guests from Louisiana and Mississippi, including educators, elected and community officials, and NASA management.

**While the STS-118 mission lifted off** from KSC, more than 200 visitors to StenniSphere's auditorium watched a high-definition live broadcast of the launch (above). Guests joined in the launch countdown, cheering as Space Shuttle Endeavour ascended into orbit.

**SSC Director Rick Gilbrech** (right) greets NASA Administrator Mike Griffin, left, and his wife Rebecca, who attended SSC's Mississippi-themed prelaunch reception, sponsored by Mississippi Space Services.

**Maria Lott,** director of Stennis Space Center's Astro Camp, helps a young guest launch a 'balloon rocket' at a special Astro Camp 'session' held in Cocoa Beach. For the first time ever, SSC provided Astro Camp activities to nearly 80 children of VIP guests who attended SSC's prelaunch reception. The guests came from NASA's Headquarters and its nine other field centers.

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