



LAGNIAPPE

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Grand opening

NASA Shared Services Center dedicates new facilities at Stennis

Mississippi leaders joined NASA officials Aug. 28 for grand opening ceremonies of the new NASA Shared Services Center at John C. Stennis Space Center. NASA Shared Services Center was created to consolidate procurement, human resources, information technology and finance activities from across the agency. Stennis was chosen in 2005 as the site for the 125,000-square foot facility.

Leaders on hand to celebrate the grand opening of the building included (l to r): Stennis Space Center Director Bob Cabana; Miss.

Gov. Haley Barbour; Computer Sciences Corporation President Jim Sheaffer; NASA Associate Deputy Administrator Charles Scales; Sen. Roger Wicker, R-Miss.; NASA Shared Services Center Executive Director Richard Arbuthnot; and Rep. Gene Taylor, D-Miss.



Atlantis targeted for Oct. 10 launch

The American flag flies on the NASA News Center grounds at NASA's Kennedy Space Center, giving witness to the passage of space shuttle Atlantis as it rolls out to Launch Pad 39A on Sept. 4. The shuttle stack, with solid rocket boosters and external tank attached to Atlantis, rests on the mobile launcher platform, as the crawler-transporter journeys to the pad. Atlantis is scheduled for the STS-125 mission to service the Hubble Space Telescope. Launch of Atlantis is targeted for Oct. 10 at 12:43 EDT.

From the desk of
Robert Cabana
 Director,
 Stennis Space Center



it. Change is inevitable; accept it. The best way to minimize the impact of change is to focus on doing your job to the best of your ability, and then, we all come out ahead. Too much is riding on what we do here to allow distractions to have a negative impact on our performance.

Now, more than ever, we need to meet our commitment to the Shuttle Program to deliver safe and reliable hardware. We need to meet our commitment to the Constellation Program and to our future, to deliver an A-3 test stand that will support the J-2X engine program that's in the critical path to a new human launch capability for the United States. We play a key role in the success of human space flight for the agency, and we cannot afford to let distractions get in our way.

So, keep your eye on the ball. Don't become a safety statistic. Don't allow distractions to result in injuries, damage to hardware, schedule delays or cost overruns. Too much is at stake.

Keep your eye on the ball.

Hurricanes in the Gulf of Mexico, schools back in session, concerns over rising costs, worries about the changes that are coming, you name it. There are a lot of distractions out there right now, and it's easy to lose sight of the task at hand and what needs to be done. When we're distracted and not paying attention to what we're doing, the chance of having a safety incident and damaging hardware or, even worse, causing injury to yourself or someone else is greatly increased.

“Keep your eye on the ball. ... Too much is riding on what we do here to allow distractions to have a negative impact on our performance.”

Most of these things we have no control over, so worrying about them doesn't help and only increases our stress and anxiety. Hurricanes are a fact of life on the Gulf Coast; the key is not to wait until the last minute but to have a plan and be prepared to execute

Be safe, and keep charging.

Louisiana congressman visits Stennis Space Center

NASA's John C. Stennis Space Center Director Bob Cabana presents a framed memento to U.S. Rep. Steve Scalise, R-Louisiana District 1, during the congressman's visit to the rocket engine testing facility last month. In addition to a photo collage, the memento included a small American flag flown in space on STS-88, which Cabana led as commander, and a small Louisiana flag flown during the STS-124 mission to the International Space Station. During his visit to Stennis, Scalise visited the A-3 Test Stand construction site, where workers are erecting a 300-foot stand to test the new J-2X engine that will help power NASA's Constellation Program vehicles to go back to the moon and possibly beyond. The Louisiana congressman also toured the Pratt & Whitney Rocketdyne engine processing facility at Stennis.



FULFILLING NASA'S EXPLORATION MISSION

Stennis focuses on helium conservation

Helium is widely abundant in the universe – second only to hydrogen – but on planet Earth, the supply is tight, a cause for concern to space engineers.

Helium is used in various fields, from the party balloon industry to the manufacturing of microchips, from arc welding to nuclear science and from laser surgery to deep-sea diving. It is particularly important to the American space industry.

“Most U.S. rocket engines are powered by liquid hydrogen and liquid oxygen,” explained Kerry Klein, operations division chief in the Engineering and Test Directorate at NASA’s John C. Stennis Space Center. “Helium is important in that process because it is a noble – or inert – gas that does not react with any other element. It also is the only gas that does not freeze in the presence of liquid hydrogen. So, it’s used to purge systems to make sure there are no flammable materials or gases present before introducing liquid hydrogen into them.”

Those properties make helium a critical part of the rocket engine testing process at Stennis. It is perfect for pressurizing the more volatile and reactive liquid hydrogen used in tests, and for the high-level purging that keeps rocket engine test systems at Stennis free from contamination.

Each year, Stennis uses more than 22 million scf (standard cubic feet) of helium, a total second only to NASA’s Kennedy Space Center in Florida, where helium is used in shuttle launches.

Helium is a valuable commodity at Stennis – and growing more so as the

worldwide availability of the element decreases with the rising industrial demand. Indeed, although plans are for Stennis to complete testing of space shuttle main engines for the remaining missions next summer, engineers at the facility already are



Robert Helveston, a Jacobs NTOG Group mechanical technician III, monitors a helium delivery to the high-pressure gas facility at Stennis. As the nation’s helium supply tightens, Stennis engineers are focusing on conservation.

gearing up to test the next generation of NASA rocket engines – the J-2X and RS68. That engine will help power the Ares I and Ares V rockets, which are the centerpiece of the Constellation Program, NASA’s initiative to go back to the moon and possibly beyond.

This means Stennis’ need for helium surely will continue – and the looming shortage is a concern because there is no way to generate helium or a biosynthetic alternative to the element. The helium that exists on Earth has built up for billions of years from the decay of natural uranium and thorium. The decaying process is very slow, enough so that more than one scientist has described helium as “non-renewable and irreplaceable.”

In the meantime, demand for helium grows – as does the price users must pay. Experts agree an end is coming and perhaps sooner than many

expect. So, with substitution of another element impossible at this time, users of helium are left with two major options – recapture the element for reuse and learn to conserve.

Recapturing helium may be possible in the test complex at Stennis, but it is not yet known if it can be done effectively. “We also would have to determine if there would be an adequate return on the investment to outfit the test facilities for the process, assuming readily adaptable, industry-proven solutions exist to begin with,” noted Shamim Rahman, deputy director of the Engineering and Test Directorate at Stennis.

Short-term, then, the focus at Stennis is on conservation. The current

emphasis is on evaluating processes to make sure there is no overuse.

Helium conservation at Stennis is most basically accomplished through minimizing leaks in test systems. Engineers at the rocket engine test facility also are working to minimize the use of helium through more efficient valving procedures. Even as those steps are taken, a special team of NASA engineers and contractors recently engaged in structured brainstorming of potential options, Rahman said. In addition to several technical mitigation possibilities, team members also have suggested what Rahman considers a parallel necessary step – raising general awareness of the issue.

As Klein explained, the equation is simple. “We need to conserve helium because the largest supply in the world is being depleted faster than we are generating it,” he emphasized.

Post-Apollo, Stennis assu

Note: NASA celebrates its 50th anniversary this year, marking five decades of space exploration and excellence. This article presents part of Stennis Space Center's role in that history.

As the Apollo Program that carried humans to the moon and back began to wind down in the early 1970s, the fate of what now is known as NASA's John C. Stennis Space Center hung in the balance.

At the time, the site was called the Mississippi Test Facility. It was not an independent NASA center but operated under the guidance of the George C. Marshall Space Flight Center in Huntsville, Ala.

The Mississippi site was less than a decade old, having been built in a rush of activity to test the massive Saturn rocket stages used in the Apollo Program. Engineers had conducted the first test of a Saturn stage on April 23, 1966. About four years later – Oct. 30, 1970 – the last Saturn test was conducted at the site.

During those brief years, Mississippi

Test Facility leaders had assembled a tremendous team of engineers and workers. From the ground up, against the toughest of conditions and deadlines, the team built a test site in amazing fashion out of woodland and swamp.

It was a team that had shouldered a great responsibility in the nation's fledgling space program – testing and proving the rocket engines that would carry America's astronauts, as well as the country's hopes and dreams, to the moon. It was a team that had succeeded beyond all expectations, performing 43 test firings with only five aborts and accumulating a total of 2,475 man-years of rocket engine test experience. Along the way, there never was a test delayed due to lack of support services. In other words, the engineers and workers at the Mississippi Test Facility knew how to do their jobs, and they did them well.

With the last test firing in October 1970, the test stands at Stennis grew quiet. Many believed they never would be used again.

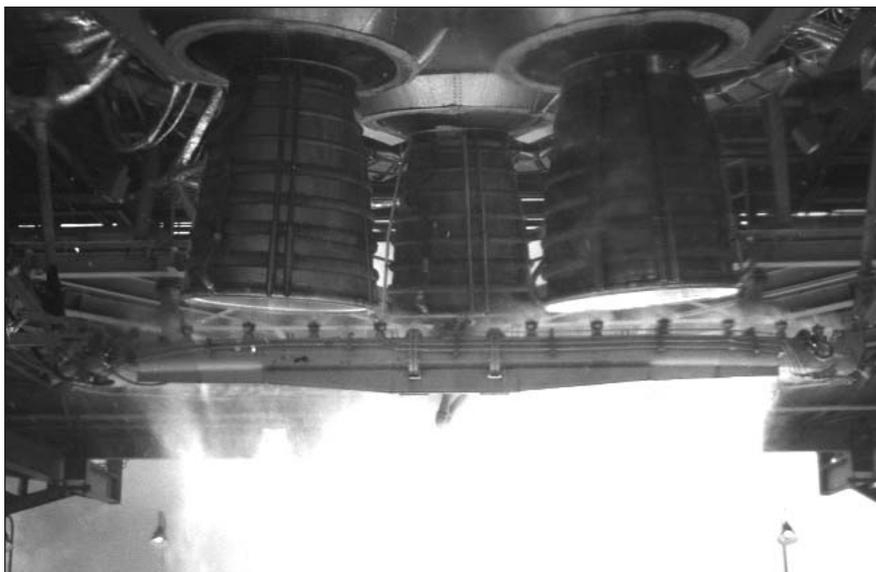
However, another American space program already was in the works – development of a reusable flight vehicle that would come to be known as the space shuttle. That meant additional testing would be needed on a new type of engine. But besides the Mississippi Test Facility, two other sites around the country also were vying to test the new engine.

Mississippi Test Facility leaders made a case for using their site for the testing, and others reinforced the idea. One outside study of the locales vying for the test assignment gave the Mississippi Test Facility nine "value points," twice as many as any other site.

On March 1, 1971, the announcement finally was made. The Mississippi Test Facility would be responsible for testing and proving the space shuttle engines. "Many believe the decision to bring the shuttle program to the Mississippi Test Facility ... was the most crucial single event in the center's entire history," one NASA historian wrote.

It is hard to dispute such a conclusion. By assuming responsibility for the space shuttle main engine testing, Mississippi Test Facility leaders took a major step toward realizing their vision – to build a facility that various federal and state agencies could share, thus turning a single-mission, space-dedicated, production-type facility into a multi-mission, space and environmental research-dedicated, production and development-type facility.

The cry was for "full utilization," a goal that would take time. The space shuttle assignment bought leaders the time they needed to attract other agencies to the facility and to nurture their multifaceted vision.



Engineers at NASA's John C. Stennis Space Center conducted cluster testing early in the Space Shuttle Program – as shown in this 1979 photo – to make sure a three-engine configuration would perform well enough to lift the shuttle into orbit. Successful testing of the engine cluster still is considered one of the finest achievements at Stennis.

mes shuttle responsibility

It also gave Mississippi Test Facility workers and engineers a chance to prove their excellence all over again. And prove it they did.

For the Mississippi workers, the space shuttle mission was very different from their Apollo assignment. The shuttle really was an amazing concept – a craft that could be launched into space, return to Earth and be used again. In addition, it would be powered by the most sophisticated and efficient rocket engine ever built.

In fact, it would use a unique engine design for launch, employing three liquid-fueled engines and two solid rocket boosters. The three main engines were critical. After the solid rocket boosters had provided the initial punch, those engines rocketed the craft on its remaining journey into orbit. The key question that Mississippi Test Facility workers had to answer was – could the engines do the job?

Engineers and other workers set about the task of proving they could. They completed necessary modifications to convert the Apollo-era test stands. Then, they began testing.

The first test of a single space shuttle main engine came in June 1975. By that time, the Mississippi facility had been renamed the National Space Technology Laboratories and made an independent NASA center.

In April 1978, the newest NASA center conducted its first three-engine test of the space shuttle propulsion system, an accomplishment many call the facility's "finest hour."

By February 1981, the Mississippi teams had conducted test after test after test, and the final result was



A steam plume billows from the test stand during a space shuttle main engine test at NASA's John C. Stennis Space Center. Stennis engineers performed the first space shuttle main engine test at the facility in June 1975. Since then, every main engine used in the Space Shuttle Program has been tested at Stennis. In the 27 years of space shuttle flights, no mission has been postponed or aborted due to engine malfunction or failure.

declared "a complete success." The space shuttle was ready to fly – and the nation was ready to watch.

Robert Crippen was one of two astronauts making that maiden voyage aboard the space shuttle Columbia on April 12, 1981. He remembers the force of the flight, being hurtled into space by a trio of engines generating more than 37 million horsepower and releasing as much energy as three Hoover Dams. "We (went) from sitting still on the launch pad at the Kennedy Space Center to traveling at 17,500 miles an hour in ... eight and a half minutes," he said later. "It is still mind-boggling to me."

The launch and mission were a success, and when they returned, Crippen and fellow astronaut John Young soon visited the engineers and workers at the Mississippi facility. "You ... made it possible for us to sit back and ride," Crippen told the engineers and workers. "We couldn't even make it look hard."

Of course, the story did not end there. Indeed, it continues. To date, more than 100 shuttle missions have followed that first Columbia flight. There have been two tragedies that continue to be mourned, but no mission has failed because of the engines tested and proven flight worthy at what is now known as NASA's John C. Stennis Space Center.

Indeed, with engine testing following the two shuttle tragedies, Stennis workers helped NASA regain its pride and return to space – surer, safer and stronger.

And now, with the nation planning to go back to the moon, with possible journeys beyond, NASA once again has turned to Stennis Space Center to test the rocket engines that will be needed.

This time, there is no need to make a case for the choice. Indeed, there is no question at all that NASA's premier rocket engine test facility in South Mississippi will do the job.



Rocket propulsion group visits Stennis

Members of the National Rocket Propulsion Test Alliance/Senior Steering Group experienced the shake, rattle and roar of a space shuttle main engine test during their meeting at Stennis Space Center on Aug. 19-21. The meeting was one of two annual business sessions for the rocket propulsion group, which was established in 1998 through an agreement between NASA and the U.S. Department of Defense. The group works to help the government's rocket propulsion test capability efficiently meet national test needs through intra-agency and interagency cooperation. Stennis is one of four NASA centers affiliated with the group.

Li'l Red Schoolhouse still focused on teaching



Editor's Note: NASA's John C. Stennis Space Center has played a pivotal role in the success of the nation's space program. Each month, Lagniappe looks back on important moments in the center's history.

Fifteen years ago, the sound of school bells could be heard for the first time in more than 40 years on the site of

what was once Gainesville, Miss.

On Sept. 14, 1993, NASA dedicated Building 2409, better known as the Li'l Red Schoolhouse, for use by the Teacher Resource Center, now known as the Educator Resource Center. More than 30 elementary schoolteachers attended the first workshop – a hands-on mathematics lesson.

In its heyday, Gainesville served as the Hancock County seat and boasted three newspapers, three hotels and more than 20 stores. However, when NASA chose the area for its test facility, the glory days of Gainesville had passed. Only about 50 families remained in the town, and most of its antebellum buildings were no longer standing.

One of the remaining structures was a small, one-room schoolhouse, adjacent to the site of the original Hancock County Courthouse. The schoolhouse closed its doors in 1962, with students transferring to nearby Bay St. Louis.

In June 1962, the building became the first headquarters for operations by the U.S. Army Corps of Engineers' Advanced Task Force, which monitored land acquisition and construction for NASA's newly-acquired land in south Mississippi. The building also served as the home of the NASA Source Evaluation Boards and various legal, contract and accounting offices.



A group of teachers enter the Li'l Red Schoolhouse at Stennis Space Center for a training session. Since 1993, the one-room schoolhouse has been used to offer hands-on workshops for area teachers.

Today, Building 2409 still hosts area teachers as part of the Educator Resource Center. During fiscal year 2008, 24 workshops were held in the schoolhouse.

“About 800 teachers a year attend ERC-sponsored workshops, both on- and off-site,” said Randall Hicks, education services manager for the Jacobs FOSC Group. “Several hundred teachers utilize this facility annually, where they receive training in NASA resources and programs.”

The ERC also uses the schoolhouse as a second site for its Astro Camp program.

“Our Educator Resource Center conducts science, technology, engineering and math (STEM) workshops in order to promote NASA education's goal of ‘engaging and retaining students in STEM education programs to encourage their pursuit of educational disciplines critical to NASA's future engineering, scientific and technical missions,’” Hicks said.

Remember heroic contributions of Hispanic Americans

During Hispanic Heritage Month, we reflect on the history of people who were part of this land long before birth of the United States. Soldiers, sailors and explorers of Spanish origin were among the first Europeans to set foot in the “New World.” The military heritage of Hispanics is a proud part of the European presence in the Americas. Much of the exploration and settlement of North and South America, which followed the period of discovery in the late 15th century, was conducted by Spanish military personnel – the conquistadores. Hispanic Americans have defended our nation with pride and courage. A shining example of this courage can be found in “The Borinqueneers,” the Hispanic American 65th Infantry Regiment that fought courageously during the Korean War.

From the **Office of Diversity and Equal Opportunity**

the coast. The first friendly troops they saw were “The Borinqueneers,” sent to hold the perimeter around the vital port of Hungnam and supervise the evacuation.

The 65th returned to Pusan and again fought their way northward. Late January 1951, “The Borinqueneers” were in the midst of a desperate battle for control of two hills near Seoul. After three days of fighting, the 65th fixed bayonets and charged directly at the opposing Chinese troops. The enemy fled, and the hills were captured. “The Borinqueneers” were credited with capturing 2,086 enemy soldiers and killing 5,905.

For their service in Korea, the men of the 65th Infantry won four Distinguished Service Crosses and 125 Silver Stars.

On Aug. 25, 1950, “The Borinqueneers” left Puerto Rico and sailed to Korea. The regiment was named after one of the original Indian tribes that inhabited Puerto Rico. The regiment came ashore in Pusan, where U.S. forces had been holding a perimeter against the communist North Koreans. Sent into action immediately, the 65th regiment took part in the U.S. breakout and successful drive to the north.

In September, as we celebrate Hispanic Heritage Month, remember the courageous efforts of “The Borinqueneers” and the contributions of all Hispanic Americans serving in our armed forces.

In late October 1950, a huge Chinese Army entered the war. The U.S. Eighth Army was overrun, and the 1st Marine Division was surrounded by four Chinese armies. In one of the greatest fighting retreats in history, the outnumbered Marines battled their way south to

Hail & Farewell

NASA bids farewell to the following:

Eddie Gobert	AST, Experimental Facilities Techniques Center Operations
Richard Miller	AST, Earth Science Remote Sensing Engineering and Test Directorate

@ Stennis

Where do you see the American space program in five years?

Editor’s Note: @ Stennis is a monthly feature highlighting the views and opinions of Stennis Space Center employees.



“We’ll be progressing with the plan we have in place. We’ll be executing the mission as designed. And we’ll be going full bore ahead with our role here at Stennis.”

Freddie Douglas, NASA

“Where we’ll be is very dependent on the funding received. Depending on developments, I think we’re going to have to make some quick decisions on the future.”

Frank Hartman, Jacobs FOSC Group



“I think we’ll be scrambling to figure out how to get somebody in space without depending on others to do it.”

John Lindsay, Jacobs FOSC Group

“In five years, I believe we’ll be well on our way back to the moon.”

Nikki Tubbs, NASA



DEVELOP team presents at workshop

The DEVELOP team from NASA's John C. Stennis Space Center recently traveled to Corpus Christi, Texas, to deliver what was characterized as one of the more "exciting" presentations at the Gulf of Mexico Alliance Implementation and Integration Workshop.

The Stennis team was one of six partnering organizations invited to present at the annual meeting. Team members reported on three of their past projects and offered a brief forecast of the coming fiscal year during the workshop's Aug. 21 plenary session.

Jason Jones and Aaron Brooks led the presentation. They said they were

thrilled to have the opportunity to inform policymakers, businesspersons and scientists about their ongoing work.

The two undergraduate students were praised for having enthusiasm about science and for helping in the efforts to use scientific data missions to enhance decision making and public awareness in coastal communities.

Jones and Brooks provided conference participants a preview of what NASA science has to offer local communities in the Gulf of Mexico region. Dr. Larry McKinney of the Harte Research Institute said later the DEVELOP presentation was a great

example of how scientific data should be presented to the non-scientific community.

He noted there is a great deal of complicated science and methods involved in technical research, which makes it key to be able to present the pertinent points clearly to nontechnical policymakers and businesspersons

DEVELOP is a student-led, student-run program that focuses on developing projects to help communities. Working with science advisers from NASA and its related agencies, high-school and college students spend internships developing and demonstrating possible responses to community-related problems.

Stennis, StenniSphere honored for excellence

NASA's John C. Stennis Space Center and its visitor center, StenniSphere, were recognized for outstanding service to the community at the 2008 Annual Hancock County Awards Gala on Aug. 26.

Almost 600 people attended a "Salute to Progress" awards ceremony that recognized NASA for 50 years of space exploration and honored Stennis Space Center with the Award of Excellence.

Also, StenniSphere was cited as Hancock County Tourism Business of the Year during the ceremony.

"These awards are a true honor for all of us at Stennis Space Center," center Director Bob Cabana said. "For 45 years, we have been pleased to call Hancock County home and have been proud to serve as a member of the community. We deeply appreciate the recognition, and everyone involved with NASA looks forward to a continued – and fruitful – partnership with the county and with all our fellow neighbors along the Mississippi Gulf Coast."

The awards come as NASA marks a history of space exploration that dates back to the agency's launch in 1958.



Stennis Space Center Deputy Director Gene Goldman (left) accepts an Award of Excellence from Jack Zink, executive director of the Hancock County Port and Harbor Commission, during the 2008 Annual Hancock County Awards Gala.

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