



John. C. Stennis Space Center



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Stennis Space Center: Fulfilling the Vision for Space Exploration



Inside:

- SSC grows ice in Return to Flight testing
- NASA/NRL study cruise
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From the

D

Director's Desk

STENNIS SPACE CENTER DIRECTOR

Adm. Thomas
Q. Donaldson V
USN (Ret.)



As we begin an exciting new year for NASA's Stennis Space Center (SSC), I would like to take this opportunity to pause and reflect on the many wonderful events of 2004. The outstanding accomplishments for NASA SSC are featured on pages 6-9 in this issue of OASIS, so I'll focus on some of the highlights from an Agency level.

The year began a transformation for NASA when President George W. Bush announced the Vision for Space Exploration, a journey that will take humans back to the Moon, and eventually to Mars and beyond. This journey begins with safely returning the Space Shuttle to flight and completing construction of the International Space Station.

NASA missions got off to a quick and successful start in 2004 with the Stardust spacecraft flying through the tail of a comet and the Spirit and Opportunity rovers landing on the surface of Mars. The rovers successfully completed their primary three-month mission and have now been operating for a full year and are still going strong.

Other mission highlights for NASA include:

- Cassini-Huygens became the first spacecraft to go into orbit around Saturn.
- The Genesis solar-sample return mission made a hard landing in the Utah desert, but a significant portion of its precious cargo was preserved.
- The Swift satellite was launched to help solve the mystery of the origin of gamma-ray bursts.
- The Aura satellite was launched to study the Earth's atmosphere.
- And, the X-43A scramjet-powered research

vehicle successfully broke its own speed record, flying nearly Mach 10 (7,000 mph).

No other company in the world can submit such a list of accomplishments, and Stennis is a vital participant in many of these efforts.

From a federal city viewpoint, there's even more to list:

- The Major Shared Resource Center's super-computer was upgraded to 30-teraflop capacity and remains among the top 10 supercomputers in the world.
- Ionatron, a new laser energy company picked Stennis for its relocation site.
- The NOAA Data Buoy Center was involved in international discussions regarding the tsunami warning buoy network in the aftermath of the Sumatra earthquake and tsunami tragedy.
- NAVOCEANO personnel deployed to support the tsunami recovery efforts.
- And, 22 personnel deployed in support of operations in Iraq and Afghanistan.

No other federal city in the country can offer such a list of national and international accomplishments.

As we celebrate our successes, we continue to prepare for the challenges and opportunities this New Year is certain to bring. Remember, none of us is as smart as all of us, and I look forward to working with each and every one of you who call Stennis "home."

On the cover

At the bottom, one of Space Shuttle Discovery's main engines passes its flight acceptance test on the A-2 Test Stand on July 16, for use on STS-114, the Return to Flight mission. All three of Discovery's main engines were tested and proven flight-worthy at SSC in 2004. Returning the Space Shuttle safely to flight is the first goal of NASA's Vision for Space Exploration. The graphic depicts that Vision: to take humans back to the Moon, and eventually to Mars and beyond.

'Cool' testing at SSC helps return Space Shuttle to flight

NASA is preparing to begin Phase II of simulating conditions typical of Space Shuttle launch days to see what kinds of ice and frost form on the foam insulation of the super-cooled External Tank. Engineers are trying to understand better how much ice can safely accumulate on the tank without becoming a debris hazard. Phase I of the tests was completed in November at the E-2 Test Stand.

Because debris from the Space Shuttle Columbia's External Tank led to the loss of the orbiter, NASA initiated an effort to determine sources of debris that could impact the Shuttle orbiters and cause critical damage. Data from all the tests at Stennis will be used in that analysis and, in turn, will also be used in making launch day decisions, beginning with this year's Return to Flight mission, STS-114.

During preparations for Space Shuttle launches, which occur at NASA's Kennedy Space Center, Fla., ice and frost can form depending on weather conditions on the External Tank during pre-launch cryogenic loading. That's when the Shuttle's super-cold liquid hydrogen fuel flows from the External Tank through the three Space Shuttle Main Engines. To simulate those conditions during Phase I of testing, engineers at Stennis mounted four 2-foot-by-2-foot panels on a metal frame, then froze them with liquid helium or liquid nitrogen over an 8-hour period.

The experiment was being conducted in a facility that was specially constructed for the tests. Just three weeks before foam tests panels were delivered Oct. 27, the facility was an empty parking lot. An 8-foot-by-40-foot moveable building was relocated to the site and then modified to accommodate equipment to control the temperature and humidity and to monitor the tests.

Lockheed Martin Space Systems Co. (LMSSC)-Michoud Operations provided the panels and monitored the tests to determine whether ice and frost formations created during the test are visually similar to those seen on the External Tank before a launch.



NASA engineer Bob Speece points out characteristics of ice formed in simulated weather conditions typical of Space Shuttle launch days while Scott Otto makes notations. Speece and Otto, an engineer with Lockheed Martin Space Services Co. - Michoud Operations, were at SSC, where four foam-covered panels were frozen in an experiment to determine what kind of ice and frost form on the Space Shuttle's external tank. Speece and Otto traveled from Kennedy Space Center, where they are members of a team that performs a final inspection of the External Tank prior to launch.

The dimensions, hardness, quality (consistency and uniformity) and density were recorded. Nine sensors attached to the back of each panel sent data to a control center that LMSSC personnel monitored.

"This was one series of many tests performed throughout the country to ready the External Tank for a safe Return to Flight. Facilities at NASA centers like Stennis, as well as many Defense Department and university facilities, are being utilized to obtain timely and cost-effective results," said Sandy Coleman, External Tank project manager at NASA's Marshall Space Flight Center, Huntsville, Ala.

Ice and frost samples of sufficient size (2 inches by 2 inches by 4 inches) were shipped to Dr. Erland Schulson at Dartmouth College's Thayer School of Engineering in Hanover, N.H., for testing and analysis. Schulson directs the Ice Research Laboratory, which performs research on the physics and mechanics of ice.

"These are data-gathering exercises," External Tank Foam Test Project Manager Gary Benton said. "We're trying to replicate launch pad conditions."

For more information about NASA's efforts to return Space Shuttles to safe flight, visit: <http://www.nasa.gov/returntoflight>.

NASA tugboat crew critical to engine testing



The crew of the NASA tugboat Clermont II navigates a barge of super-cool liquid oxygen through the 7½-mile canal system at SSC prior to a Space Shuttle Main Engine (SSME) test. Each time an SSME is test-fired for the 8½ minutes it takes to propel the Space Shuttle to low-Earth orbit, it consumes 132,000 gallons of liquid hydrogen and 49,000 gallons of liquid oxygen.

Most people probably don't think about tugboats and barges when they experience the shake, rattle and roar of a Space Shuttle Main Engine (SSME) test at NASA's Stennis Space Center (SSC). But behind the scenes, Capt. Rodrick "Rocky" Pullman and the crew of the NASA tugboat Clermont II play a critical role. Without them, there's no engine test – because without them, there's no fuel.

Before each test, Pullman, Tugboat Pilot Grover "Shu-Shu" Bennett, Marine Maintenance Technician Dwight Strahan and a general helper are responsible for navigating the barges of super-cool liquid hydrogen and liquid oxygen through the 7½-mile, 16-foot-deep canal system at SSC. Connected to the Pearl River, the canals are kept at a constant level by a lock system, spillway and replenishment pumps.

The barges are moored to docks at the test stands, then the fuel is pumped from the barges into run tanks mounted on the stands. And we're talking about a lot of fuel. Each time an SSME is test-fired for the 8½ minutes it takes to propel the Space

Shuttle from liftoff to low-Earth orbit, it consumes 132,000 gallons of liquid hydrogen and 49,000 gallons of liquid oxygen.

In addition, the tugboat and its crew provide fuel for the certification of the RS-68 engines that power the Delta IV rockets to space.

SSC tests and proves flight-worthy every SSME as part of NASA's plan to safely return the Space Shuttle to flight following the loss of Space Shuttle Columbia in 2003. That plan plays a key role in

Since 1979, Capt. Rodrick 'Rocky' Pullman (right) and the crew of the Clermont II have made more than 7,000 fuel-barge moves, more than 1,000 work-barge moves and nearly 200 weather-buoy moves – a total of almost 8,500 barge moves – without a major accident or lost barge.



NASA's Vision for Space Exploration, which includes completing the International Space Station and then returning to the Moon, and forging on to Mars and worlds beyond.

Since Pullman was hired as captain in February 1979, he and the crew of the Clermont II have made more than 7,000 fuel-barge moves, about 900 of those offsite – usually to New Orleans, almost five hours one way. They've also made more than 1,000 work-barge moves and nearly 200 weather-buoy moves. That's a total of almost 8,500 barge moves – without a major accident or loss of a barge.

"For more than 25 years, the efforts of Rocky Pullman and the crew of the Clermont II have played a significant role in the successful engine testing at NASA's Stennis Space Center," said Miguel Rodriguez, director of the SSC Propulsion Test Directorate. "Without those barges, we can't test. The crew's outstanding safety record is a tribute to their high degree of professionalism and expertise."

About the only thing that prevents the Clermont II from pushing a barge when it's supposed to is a matter of safety: When the wind blows in excess of 30 mph, it doesn't move. If the tug is under way and the wind picks up, Pullman immediately steers for safe harbor. "When the wind's blowing and the tank on the barge is full, you have to be at the top of your game to safely maneuver the vessel," Pullman said.

See [TUGBOAT](#), Page 13

NASA, Navy share workload on study cruise

Two NASA scientists recently hitched a ride with the Naval Research Laboratory (NRL) aboard the Research Vessel Seward Johnson II to cooperate in data collection in the Gulf of Mexico.

Stennis Space Center's Bruce Spiering, Electronic Instrumentation Systems aerospace technologist with Program Integration in NASA's Technology Development and Transfer Office; and Callie Hall, oceanographer with NASA's Applied Sciences Directorate (ASD), participated in the NRL's Slope-to-Shelf Energetics and Exchange Dynamics (SEED) cruise in mid-November. While aboard, Spiering and Hall used ASD's optical instrument profiling package to take measurements and water samples at several locations in the Gulf – approximately 60 miles south of Mobile Bay.

The study area lies just east of the mouth of the Mississippi River, on the same latitude as the river's mouth. The scientists will be able to use optical measurements and samples in their ongoing evaluation of the bio-optic properties to determine the river plume's influence on the Gulf of Mexico's waters.

The research is part of NASA's larger scientific exploration of the Earth under the Vision for Space Exploration – to advance understanding of the Earth-Sun system, to bring the lessons of the study of Earth to the exploration of our solar system and to understand how our planet and star are changing.

Hall's and Spiering's work focuses on analyzing and verifying satellite imagery from the MODIS (Moderate Resolution Imaging Spectrometer) sensor on NASA's Aqua and Terra Earth Observing satellites.

"We're trying to make sense of how light interacts with mineral and organic particles in the water," Spiering said.

Ocean color satellites were designed to work over clear, open ocean waters, he said. The closer to the coast an image is taken, the more clouded the water is. By collecting water samples alongside measurements of water optical properties,

Callie Hall, oceanographer with NASA's Applied Sciences Directorate at SSC, takes optical measurements from the deck of the R/V Seward Johnson II.



Bruce Spiering, with the Technology Development and Transfer Office in NASA's Program Development Directorate at Stennis Space Center (SSC), stands beside an optical instrument profiling package on the deck of the R/V Seward Johnson II. Spiering and his Applied Sciences Directorate colleague Callie Hall participated in the Naval Research Laboratory's Slope-to-Shelf Energetics and Exchange Dynamics research project in the Gulf of Mexico. The two scientists collected water samples and data about the optical qualities of the water in and around the Mississippi River plume.

researchers can correlate particle characteristics with their influence on the underwater light field.

Spiering and Hall also will use the recently gathered water samples to analyze properties such as concentrations of phytoplankton (microscopic plant) pigment, nutrients and total suspended matter.

"We hope to participate in more cooperative projects with NRL," Hall said. "NASA must use ships of opportunity to validate its ocean color algorithms. The data collected during this cruise help NASA and NRL meet their science goals."

The NRL's SEED project aims to understand the physical processes that control water properties along the Continental Shelf break, where the ocean floor plummets from depths of 200 feet to more than a mile. In May, NRL's Oceanography Division deployed mooring-mounted sensors in the study area. In November, NRL serviced the sensors and retrieved data that will help them create ocean models. The NASA scientists hope to work with NRL on future cruises.

"We want to share data," Spiering said, "and we share the

SSC has year of triumphs, new beginnings



SSC kicked off the past year with the appointment of Center Director Adm. Thomas Q. Donaldson V, USN (Ret.), who took office Jan. 5, 2004.

NASA's Stennis Space Center (SSC) experienced an eventful year in 2004, working to return the Space Shuttle to flight and celebrating major milestone anniversaries.

The year began with new leadership. SSC Center Director Adm. Thomas Q. Donaldson V, USN (Ret.), took the helm of the space center on Jan. 5, 2004. Adm. Donaldson was previously the Commander, Naval Meteorology and Oceanography Command, one of the more than 30 agencies on site as part of the "federal city" at SSC.

President unveils the Vision for Space Exploration at NASA Headquarters

Applause rang out in the StennisSphere auditorium Jan. 14 as employees watched President George W. Bush unveil the Vision for Space Exploration from NASA Headquarters in Washington. These goals include safely returning the Space Shuttle to flight and completing the International Space Station by 2010, then developing a new spacecraft to replace the Space Shuttle. The new craft will be used to return to

the Moon by 2020, and forge on to Mars and worlds beyond.

Returning the Space Shuttle to flight

Throughout the year, the Propulsion Test Directorate at SSC worked toward NASA's first goal in completing the Vision for Space Exploration: returning the Space Shuttle to flight. The Shuttle Discovery's three engines were tested and proven flight-worthy in 2004, passing final acceptance tests on



With a rumble and a rush of water vapor, the Space Shuttle a successful flight acceptance test was conducted at NASA tested was the first complete engine to be tested and shipped on Space Shuttle Discovery for STS-114, NASA's Return to

March 26, July 16 and Aug. 19.

On Oct. 5, SSC shipped the last of the three Space Shuttle Main Engines (SSMEs) to NASA's Kennedy Space Center for installation on Space Shuttle Discovery for its STS-114 mission. This mission, scheduled for late spring, is NASA's return to flight after the loss of Space Shuttle Columbia in 2003.

"For almost 30 years, the safety and reliability of the Space Shuttle Main Engine has been demonstrated through testing at Stennis," said Adm. Donaldson. "We can all watch Discovery



Tony Mendez of Picayune works on a Space Shuttle Main Engine (SSME) installed on the A-2 Test Stand at NASA's Stennis Space Center. Mendez is an SSME technical associate with Boeing Rocketdyne at SSC, one of about 130 engineers and technicians who work with SSMEs on a daily basis.



The Space Shuttle Main Engine (SSME) reached a historic milestone when it was moved in its entirety to Kennedy Space Center for installation on Space Shuttle Discovery for STS-114, the Return to Flight mission, scheduled for launch in 2005.

On Oct. 5, SSC shipped the last of the three Space Shuttle Main Engines to NASA's Kennedy Space Center for installation on Space Shuttle Discovery for STS-114, the Return to Flight mission.

lift off with the pride of a job well-done, and the confidence that those engines will perform as flawlessly as ever."

In further Return to Flight preparations, SSC simulated conditions typical of Space Shuttle launch days to see what kinds of ice and frost

form on the foam insulation of the super-cooled External Tank. Because debris from the Space Shuttle Columbia's External Tank led to the loss of the orbiter, NASA initiated an effort to determine sources of debris that could impact the Shuttle orbiters and cause critical damage.

The experiment was conducted in a specially con-



structed facility. Just three weeks before foam test panels were delivered Oct. 27, the facility was an empty parking lot. A portable building was relocated to the site and then modified to accommodate equipment to control the temperature and humidity, and to monitor the tests. To simulate launch conditions, engineers at SSC mounted four 2-foot-by-2-foot panels on a metal frame, and then froze them with liquid helium or liquid nitrogen.

1 million seconds of SSME testing

A landmark in the Space Shuttle program was achieved Jan. 21 at SSC: the 1 millionth second of successful testing and flight operations of the Space Shuttle Main Engine. The roar of the engine and its signature plume of water vapor began around 3:30 p.m. and ran for 8½ minutes, the length of time it takes three SSMEs to propel the Space Shuttle from liftoff to orbit.

Those in attendance included NASA Associate Administrator for the Office of Space Flight William Readdy, Space Shuttle Program Manager Bill Parsons, Astronauts Jerry Ross and Chris Ferguson, Marshall Space Flight Center Director Dave King, Johnson Space Center Director Gen. Jefferson Howell, Kennedy Space Center Director Jim Kennedy, civic leaders and school children.

Following the successful test, the astronauts presented SSC's Test Control Center crew with commemorative plaques that included U.S. flags flown aboard Space Shuttle Columbia.

"This 1 millionth-second test is a testimony to the NASA and contractor team that developed, tested and con-



On Jan. 21, 2004, the 1 millionth second of Space Shuttle Main Engine (SSME) testing and flight operations occurred at NASA Stennis Space Center (SSC). All SSMEs are tested and proven flight-worthy at SSC.



Mercury mission Astronauts Scott Carpenter (left), and the late Gordon Cooper (right), with Mercury and Apollo Astronaut Wally Schirra (center) visited StenniSphere, the visitor center at SSC. SSC was built in the 1960s to test the engines of the Apollo program's Saturn V Moon rockets.

tinues to improve the SSME to safely take humans to low Earth orbit," said Miguel Rodriguez, director of the Propulsion Test Directorate at SSC.

Remembering Apollo

While NASA plans a return to the Moon, SSC relived the excitement of the United States' first Moon missions in the 1960s. July marked the 35th anniversary of Apollo 11, the



In honor of the 35th anniversary of Apollo 11, the first lunar landing, StenniSphere, the visitor center at SSC, planted a 'Moon Tree' with the help of summer Astro Campers.

first landing of humans on the Moon on July 20, 1969.

Celebrations at StenniSphere, the visitor center at SSC, included an Apollo exhibit and the planting of a "Moon Tree" descended from seeds taken to the Moon and back by Apollo 14 astronaut and longtime Mississippi Gulf Coast resident Stuart Roosa.

Space legends

In August, SSC hosted legends of the space program with visits from Mercury Astronauts Scott Carpenter, Wally Schirra and the late Gordon Cooper, three of NASA's seven original astronauts, the group known for having "The Right Stuff."

Accompanying the Mercury astronauts was Apollo Astronaut Al Worden, command module pilot for Apollo 15, the fourth lunar landing mission.

The astronauts spoke about their missions and their role in the Astronaut Scholarship Foundation, which raises funds to annually award a total of \$170,000 to 17 college students who exhibit exceptional performance in science and engineering.

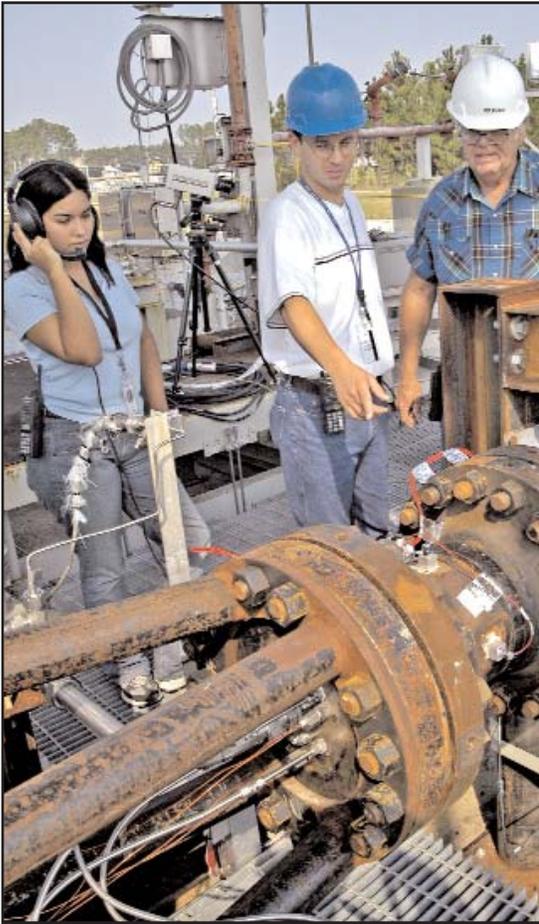
Shortly after the astronauts' visit, Astronaut Cooper died at his home in Ventura, Calif., from natural causes. He was 77.

The pioneer astronauts' trip was followed in October by a visit from NASA's newest crop of space explorers. Members of NASA's 2004 Astronaut Candidate Class were on hand to meet with employees and view a Space Shuttle Main Engine test firing at SSC.

The 16 candidates, on a tour of NASA's 10 centers, included three classroom teachers, as well as three astronauts from the Japan Aerospace Exploration Agency.

Exploring our Earth

Other projects at SSC are part of NASA's larger scientific exploration of the Earth – to advance understanding of the Earth-Sun system, to bring the lessons of the study of Earth to the exploration of our solar system and to understand how our planet and star are changing.



At left, Rosa Obregon (left), and Jared Grover, both NASA test engineers, and R.B. Shaw, an engineering technician with the NASA Test Operations Group, check over the preparations for test-firing a paraffin-fueled rocket motor. The paraffin motor test at SSC was the last of four tests conducted as part of the Hybrid Technology Test Project.



Above, students at South Delta Middle School in Anguilla, Miss., are treated to a visit with NASA Education Officer Dr. Adena Loston during a NASA Explorer School visit.

Year of Triumph

Continued from Page 7

NASA scientists in SSC's Applied Sciences Directorate (ASD) participated in the Naval Research Laboratory's Slope-to-Shelf Energetics and Exchange Dynamics (SEED) cruise in mid-November. While aboard, they used ASD's optical instrument profiling package to take measurements and water samples at several locations in the Gulf of Mexico. The scientists will be able to use the measurements and samples to determine the Mississippi River plume's influence on the Gulf's waters.

Looking ahead to the new year

With the new year, NASA employees at SSC look forward to the flight of Space Shuttle Discovery. Also upcoming is the appointment of a new head of NASA to replace Administrator Sean O'Keefe, who was recently named Chancellor of Louisiana State University. With the new goals of returning to the Moon and the development of a new spacecraft, 2005 promises to be an exciting year at SSC.



Adm. Craig E. Steidle, Associate Administrator for the Exploration Systems Mission Directorate, toured SSC on Sept. 1, 2004, to learn about the center's unique propulsion testing and applied science capabilities. Steidle was briefed on SSC activities by members of the Propulsion Test Directorate, including testing of the Integrated Powerhead Demonstrator (above).

AROUND



NAVOCEANO donates \$8,500 to Toys for Tots holiday drive



The Naval Oceanographic Office (NAVOCEANO) at Stennis Space Center (SSC) recently donated toys valued at more than \$8,500 to the annual Marine Corps Reserve's Toys for Tots program. The program benefits area communities by providing needy children with toys, games, books and other presents during the holiday season.

NAVOCEANO purchased the toys for the drive with money raised from the 6th Annual Maury Morale Golf Tournament held this fall at the Oaks Golf Club in Pass Christian, Miss. More than 200 golfers and volunteers from SSC and businesses around the country participated in the tournament that raised over \$7,500. Toy donations totaling over \$1,000 were also made by NAVOCEANO and the Naval Meteorology and Oceanography Command employees.

NAVOCEANO's Commanding Officer Capt. Jeffrey Best (pictured above) said, "To know that hundreds of children will benefit from our efforts is very heartwarming. We also applaud the continued efforts of the Marine Corps Reserve to make every child's dream come true."

NAVOCEANO employs more than 1,100 civilian, military and contractor personnel at SSC and is responsible for providing oceanographic products and services to all elements within the Department of Defense.

Gulf of Mexico program awards grant to CHL

The U.S. Environmental Protection Agency's (EPA) Gulf of Mexico Program recently awarded a grant for \$18,784 to the University of Southern Mississippi's Center of Higher Learning (CHL) to develop a Web-based environmental education site using Geographic Information System technologies. The site will focus on wetlands in Jackson, Harrison and Hancock counties.

"Through this project, the Gulf of Mexico Program hopes to help South Mississippi students better understand the functions and value of wetlands and to make more informed future decisions that will ultimately help sustain Mississippi's priceless coastal ecosystem," said Bryon O. Griffith, Gulf of Mexico Program Director.

CHL will be working with the Lynn Meadows Discovery Center, Mississippi State University's Coastal Research and Extension Center and the U.S. Naval Oceanographic Office to bring the web site online. Other contributing partners to this project are the Geospatial Applications Laboratory, the Long Beach Rotary Club and the Mississippi Automated Resource Information System.



The Web site supports EPA and Gulf of Mexico Program goals to have healthy communities and ecosystems using integrated and comprehensive approaches and partnerships.

Dr. Ruth Preller selected to head NRL's Oceanography division

Dr. Ruth Preller has been selected to head the Oceanography Division at the Naval Research Laboratory's (NRL) site, located at Stennis Space Center. She has worked at NRL as an oceanographer since arriving in 1983. In 1996, she was selected to head the Coastal and Semi-Enclosed Seas Section at NRL as a supervisory oceanographer.

Dr. Preller's research has focused on sea ice modeling and forecasting. She has been responsible for the development and design of the U.S. Navy's sea ice forecasting systems since the mid 1980's, including the Polar Ice Prediction System (PIPS). Her research has also focused on the various aspects of operational coastal ocean modeling, such as the applications of ocean models to the circulation of shallow coastal seas.

OUR WORLD



Dr. Ruth Preller

This research led to the development of PCTides, the first Navy relocatable ocean model that provides forecasts of tidal elevation and tidally driven barotropic ocean currents anywhere around the globe.

Dr. Preller received her bachelor's degree in physics and German from Dickinson College in Carlisle, Pa., and her master's and doctoral degrees in meteorology from Florida State University in Tallahassee. She is a

member of the American Geophysical Union, the American Meteorological Society, the Oceanography Society, the European Geophysical Union and Sigma Xi.

Dr. Preller received one of NRL's 75th Anniversary Awards for Innovation for the development of the PIPS suite of ice forecasting systems, and a 2003 Royalty Award for the development and transition of the PCTides forecast system.

SSC invited to Xtreme Weather Fair

The 2005 XTreme Weather Fair invites Stennis Space Center agencies to participate by exhibiting in the fair at Stennis International Airport, April 30, 2005. The fair will honor first responders from public safety, fire, emergency management and the military. The event is sponsored by community organizations, civic groups, trade associations, government agencies, academic institutions and local companies. The public is invited to attend. For more information, call Michael Crane, NOAA, at (228) 688-1579.

ODIN has new computer offerings

LMIT ODIN new offerings at SSC include duplex printing (automatic printing on both sides of the page) for all newly deployed ODIN Network printers. Newly deployed color printers will have laser technology, but not duplex printing. New Seats for Delivery Order 3 include Tablet PC, BlackBerry with voice option, Virtual Team Meeting Service, cell phone and various network printers.

Eligible customers will be able to participate in the SSC Take-Home Software Program. This program enables qualified customers to obtain a licensed copy of several desktop applications to install and use on a home computer. More information in the near future.

Also, catalog products and services will be delivered in 10 days or less. Volume discounts for select products are available. For more information, call ODIN Outreach at (228) 688-6346.

Picayune presents SSC Director with Key to the City

Adm. Thomas Q. Donaldson V, USN (Ret.), director of NASA's Stennis Space Center (SSC), received a Key to the City of Picayune and a Certificate of Appreciation from the Pearl River County Board of Supervisors during a seminar for the Partners for Pearl River County Leadership Class.



Picayune Mayor Greg Mitchell, an employee of Abacus Technology at SSC, gave Donaldson the Key to the City and thanked him for being a "community-friendly" leader. Mitchell said Donaldson has proven his support for Picayune. Larry Davis, president of the Pearl River County Board of Supervisors, gave Donaldson the Certificate of Appreciation. Davis recognized Donaldson for supporting the county as a friend and employer.

Donaldson then spoke to the class on the principles of effective leadership and gave an overview of SSC's organizational structure. He also talked about SSC's effect on the region's job growth, saying he would work to make SSC NASA's preferred center for new programs and projects. He called Pearl River County an important source of employees – now and in the future.

'Stennis News' debuts in February



The Stennis News, a newspaper for NASA's SSC community, began publication Feb.

3, and will publish the last Thursday of each subsequent month. The free publication, produced by The Sun Herald newspaper in Biloxi, Miss., will be distributed by mail to Partners for Stennis, advertisers, community leaders and those with other ties to SSC. It will also be available to SSC employees through sitewide mail distribution.

It will contain news and information submitted by SSC agencies and companies, and from free-lance writers secured by The Sun Herald. All agencies resident at SSC are encouraged to submit news items for The Stennis News. To do so, e-mail items and photographs to stennis-news@sunherald.com. Deadline for submission is the second Tuesday of each month.

For more information, or to be added to the mailing list, contact John McFarland at the Sun Herald: jmcfarla@sunherald.com.

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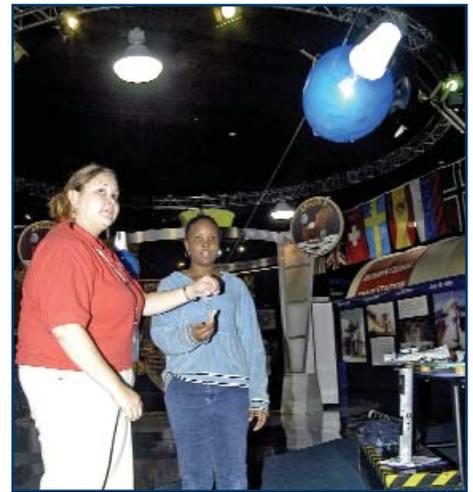


Astro Camp
Saturday sessions:

StenniSphere will host the following upcoming Astro Camp Saturday sessions: Feb. 12, "Trading Spaces: From Earth to the Moon;" and March 12, "Mission to Mars." Each camp costs \$50 and includes supplies. For more information, visit <http://www1.ssc.nasa.gov/public/visitors/>, or call (800) 237-1821.

Florida Girl Scouts earn
badges at StenniSphere

Kacey Brown (right), 12 and of Pensacola, Fla., learns about the principles of propulsion through an activity at StenniSphere, the visitor center at SSC. Kacey and fellow members of the Girl Scouts of Northwest Florida Council recently visited StenniSphere on a field trip, where they participated in activities to earn Space Exploration badges. Helping Kacey is Tammy Estapa, assistant director of StenniSphere's Astro Camp. SSC's Astro Camp program for children 7-12 years old teaches math and science principles and explores science- and space-related career possibilities in weeklong summer day camps and Saturdays throughout the year.



SSC scientist participates
in JASON project

NASA SSC's Dr. Marco Giardino speaks to students at Bay-Waveland Middle School, a NASA Explorer School, about remote sensing technology and preserving our nation's wetlands. The students are participants in the JASON Project – a multidisciplinary program that explores the Earth and exposes students to leading scientists who work with them to examine its biological and geological development. Giardino is one of the host researchers for this year's Disappearing Wetlands JASON Expedition.

Brandon gifted class has
a blast at StenniSphere

Dylan Rhodes (left), Chelsey Smith, Ashley Bynum and Gracie Jackson, all students at Brandon (Miss.) Elementary School, get ready to launch straw rockets they assembled during a recent trip to StenniSphere. The four members of Brandon Elementary's gifted class, along with their 4th- through 6th-grade classmates, visited StenniSphere to learn more about space, the theme for their curriculum this year.



Students learn propulsion
principles at Rocket Rulz event

Students from Florence Middle School (left) build rockets made from construction paper and film canisters during NASA Rocket Rulz... Real Science Real Loud! Mississippi students spent the day at Stennis Space Center learning the scientific principles that SSC engineers use to test NASA propulsion systems by participating in hands-on activities and demonstrations.

SSC agencies honored for fund-raising efforts

Ten of 14 participating resident agencies at NASA's Stennis Space Center (SSC) have been recognized by the Mississippi Coast Association of Federal Administrators (MCAFA) for their contributions to the 2004 Combined Federal Campaign (CFC).

The CFC is an annual fund-raising drive conducted by federal employees in their places of work. Through the CFC, federal employees across the nation raise millions of dollars benefiting thousands of nonprofit charities. SSC is a unique federal and commercial city home to more than 30 resident agencies. For 2004, SSC raised a total of \$229,637.76, exceeding its \$224,670 goal.

MCAFA is an organization of the heads of federal establishments in Mississippi's Hancock, Harrison and Jackson counties. It aims to improve coordination of governmental activities in the Mississippi Gulf Coast region through cooperative action among field establishments in management, intergovernmental relations, public affairs, community relations, equal employment opportunity, the CFC and other programs that cross department and agency lines.

In the Small Federal Agency/Military Installation (1-99 employees) category, MCAFA honored the following agencies with awards for per capita giving to the CFC:

- National Data Buoy Center - gold
- National Coastal Data Development Center (NCDDC)- silver
- Commander, Naval Meteorology and Oceanography

Command (CNMOC) - bronze

In the same category, the following agencies received awards

for participation:

- Defense Contract Management Agency, Naval Small Craft Instruction and Technical Training

School, National Marine Fisheries Service and NCDDC - gold

- CNMOC - bronze

In the category for Medium Federal Agency/Military Installation (100-499 employees), the following agencies received awards for per capita giving:

- NASA - gold
- Navy Human Resources Service Center Southeast (HRSCSE) - silver
- Naval Research Laboratory (NRL) - bronze

And for participation, in the same category:

- NASA - gold
- HRSCSE - silver
- NRL - bronze

In the category for Large Federal Agency/Military Installation (500+ employees), the Naval Oceanographic Office received honors for its per capita giving.



TUGBOAT

Continued from Page 4

Fog can be a challenge, too, but that's why there's radar on top of the upper pilot house, the tallest point of the boat. "We've left Air Products [a fuel supplier near NASA's Michoud Assembly Facility in New Orleans] and not seen the barge until we get back to Stennis," Pullman said.

The barges – attached to the bow of the 65-foot-long tug with steel cables – are no lightweights. Each weighs 700-800 tons fully loaded, and are almost constantly being refilled, depending on the SSME testing schedule. That schedule can require more than 100 total truckloads of fuel a week and as many as seven barge moves in a day.

One liquid oxygen barge holds about 100,000 gallons, or 18-20 truckloads, and one liquid hydrogen barge holds about 270,000 gallons, or about 15 truckloads. The nine technicians and supervisor of the Cryogenic Propellant Storage Facility at SSC make sure the fuels are safely transferred to the barges, and from the barges to

the test stands. Liquid oxygen is transferred directly from the trucks to the barges, but the liquid hydrogen goes from the trucks to a 600,000-gallon storage sphere, then to the barges.

Pullman, Bennett and Strahan, who all work in the Marine Department of Mississippi Space Services' (MSS) test support group, usually "borrow" a general helper from another crew. On

any given barge-move day, the crew's fourth hand could be Michael Haralson from the test composite crew, Ike Stewart from the component shop or Ross Spence from the vehicle equipment maintenance shop, or heavy equipment operator Clifford Stockstill.

Their teamwork and get-the-job-done work ethic don't go unnoticed. "Rocky and crew make my job easy," said David Alston, MSS manager over Marine Operations. "They are highly responsive to SSC customers and are totally committed to customer satisfaction. They keep the tugboat in a high state of readiness and have an exem-

plary record of moving barges on schedule."

To be a member of the Clermont II crew it takes, among other things, enough mechanical aptitude to maintain a 620-

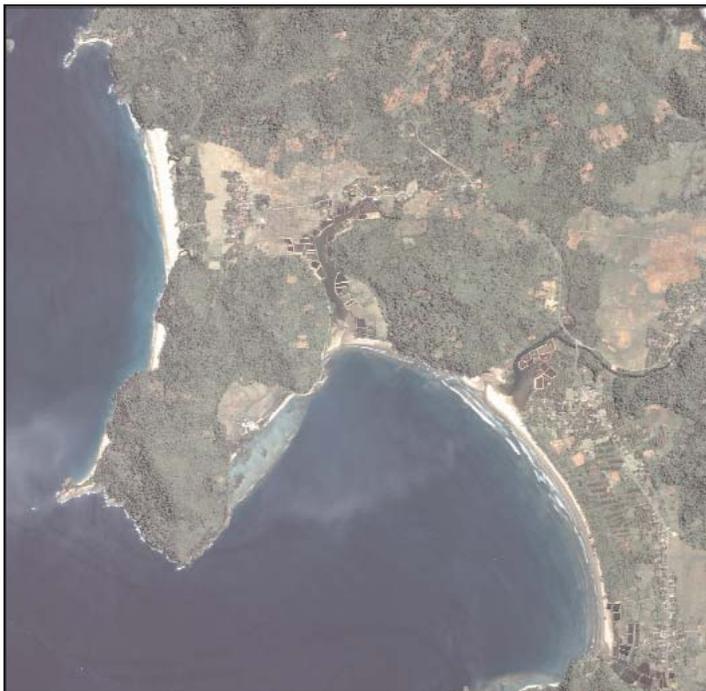
"We have to be ready at any moment. It revolves around knowledgeable people pulling their own part, with timing and teamwork."

horsepower diesel engine, constant safety awareness and the willingness to work in the worst kinds of weather. That work can include operating the canal locks and bridge, the lock gates and canal replenishment

pumps. The engine room needs constant maintenance, as does equipment like cables and winches.

The Clermont II, captain and crew must be prepared to fill the critical role of fuel supply for SSME test-firing as long as the Space Shuttle flies – which will be when construction of the International Space Station is complete, around the end of the decade. "The boat has to be maintained in a constantly ready state, and we have to be ready at any moment," Pullman said. "It revolves around knowledgeable people pulling their own part, with timing and teamwork."

SSC personnel aid in safety of navigation in tsunami-ravaged areas



Photos by Digital Globe

The two photos above compare views of Banda Aceh South, a region of Indonesia affected by the 9.0 earthquake and subsequent tsunami that took place in South Asia on Dec. 26, 2004. The left photo was taken on April 12, 2004, and the right was taken after the tsunami on Jan. 2, 2005.

At Stennis Space Center, Naval Oceanographic Office (NAVOCEANO) personnel are working around the clock in the Survey Operations Center receiving data from surveyors in South Asia. The information collected by NAVOCEANO will be provided to Navy assets engaged in the relief support as well as to host country officials.

Responsible for delivering oceanographic products and services to the U.S. Navy fleet, NAVOCEANO's expertise in mapping the harbors and channels of the affected areas was critical, since relief ships could not enter the ports until surveys confirmed the waterways were safe for navigation.

Using precise Global Positioning Systems, shallow-water multibeam sonar, side-scan sonar, current meters and tide gauges, NAVOCEANO personnel were deployed to the area to generate charts and identify aids and hazards to navigation. Once these areas were identified and charted, relief ships could navigate around potential obstacles left by the tsunami in the harbors and channels.



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