



## Seventh annual Safety Day considered 'grand slam' for entire center

Stennis Space Center observed an unprecedented stand-down in support of the center's seventh annual Safety Day Thursday, June 28. NASA and its three primary contractors — Mississippi Space Services (MSS), The Boeing Company and Lockheed Martin Space Operations, Stennis Programs (LMSO) — suspended all normal work activity during the four-hour stand-down, designed to focus the center's attention on the importance of safety.

"The Safety Day activity for 2001 was a 'grand slam' in that it communicated to everyone the importance of safety, and it inspired each individual to commit to the actions we will take to be safe," NASA's

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As part of the seventh annual Safety Day observation at Stennis, Boeing's Diane Johnson, left, an instrumentation engineer, guides NASA astronaut Daniel Burbank through a tour of the A-2 test stand. Burbank, along with astronaut Joe Tanner, visited June 28. Burbank and Tanner presented 10 Silver Snoopy Awards to Stennis employees. Johnson and Burbank are both from Connecticut. While touring with Burbank, Johnson discovered that Burbank's father was assistant principal at Cheney Tech High School when she attended.

## Stennis completes first test of aerospike technology for SLI

Stennis Space Center has successfully completed a critical initial test in a three-part series for a Space Launch Initiative (SLI) test program of the Electro-Mechanical Actuator (EMA) technology used on the former X-33 program's Linear Aerospike XRS-2200 flight engine set. The July 12 test was a "start-sequence" test and went the full scheduled duration of 5.32 seconds.

The test was a unique opportunity for NASA to effectively gain valuable experience and data from existing commercial technology.

EMAs electronically regulate the amount of propellant (fuel and oxidizer) flow in the engine. The technology is a potential alternative and improvement to the older hydraulic-fluid systems currently

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Stennis Space Center successfully completed a critical initial test in a three-test series of the Electro-Mechanical Actuator technology used on the former X-33 program's Linear Aerospike XRS-2200 flight engines for the Space Launch Initiative Propulsion Program Office at NASA's Marshall Space Flight Center, Huntsville, Ala. The test series is a unique opportunity for NASA to effectively gain valuable experience and data from existing commercial technology. The July 12 hot-fire test was a "start-sequence" test and went the full scheduled duration of 5.32 seconds.

## Propulsion test board creates cost-savings environment with leadership, cooperation

Since its creation in 1996, the five-member Rocket Propulsion Test Management Board (RPTMB), headquartered at NASA's Stennis Space Center, has been responsible for day-to-day implementation of NASA's lead center role for rocket propulsion testing. During this time, more than \$58 million in savings and cost avoidances have been realized and 76 propulsion test program assignments have been made.

The RPTMB is NASA's decision-making body for rocket propulsion testing. The board is composed of NASA members from Stennis Space Center, White Sands Test Facility, Marshall Space Flight Center and Glenn Research Center-Plum Brook Station. The board reviews, approves and provides direction on all aspects of propulsion test projects. This includes test assign-

ments, capital investment recommendations for test facilities and equipment, facility modifications or refurbishments affecting the Agency's test capability, establishment and approval of the annual budget and liaison activity with the Department of Defense (DoD).

"In May 1996, Stennis Space Center was designated the Lead Center and Center of Excellence for Rocket Propulsion Testing to provide NASA, DoD, other government agencies, academia and industry world-class rocket test service," NASA's Mike Dawson, Propulsion Test Program manager at Stennis and chairman of the RPTMB, said. "It was a period of time when all aspects of the propulsion

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## RS-68 flight engine successfully completes acceptance hot-fire test series at Stennis

The first Rocketdyne RS-68 flight engine has completed its flight acceptance hot-fire test series at NASA's Stennis Space Center. The engine was developed by the Rocketdyne Propulsion & Power business of The Boeing Company for the first-stage booster of the Boeing Delta IV family of launch vehicles.

The Boeing Delta IV is part of the U.S. Air Force's Evolved Expendable Launch

Vehicle (EELV) program. This test success paves the way toward its use on the first Delta IV EELV flight in early 2002.

"The successful conclusion of this phase of the RS-68 development is a significant event for us," Boyce Mix, director, Propulsion Test Directorate at Stennis, said. "This series of testing is an indicator

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Dr. Robert Ballard, credited with the discovery of the Titanic in 1985, visited Stennis Space Center June 18. Ballard has been named to the President's Commission on Ocean Policy. Meeting with Ballard were, from left, NASA's Dr. Greg Carter, Earth Sciences Remote Sensing, Geospace Applications and Development Directorate (GADD); NASA's Dr. Richard Miller, chief scientist, GADD; Ballard; Dr. Don Durham, technical/deputy director, Commander, Naval Meteorology and Oceanography Command; Jeff Jenner, oceanographer, National Coastal Data Development Center; and Dr. Yuan Jinchun, post-doctoral student.

### NEWSCLIPS

#### NASA tests new airborne tracking system designed to bridge the Gulf.

Keeping up with aircraft flying over the Gulf of Mexico is difficult if not impossible in some instances. That may change with the help of NASA and the Department of Transportation. Researchers at Ames Research Center, Moffett Field, Calif., are testing a new in-flight tracking system that is smaller, less costly and more flexible than anything seen to date.

The system uses multiple small ground stations to triangulate on an aircraft's transponder signal, accurately determining its position. The system addresses many of the drawbacks of beacon radar systems currently used and makes the system particularly suitable for tracking low-flying aircraft that cannot be monitored adequately by standard radar systems.

#### New satellite images of the Pacific Ocean hint that El Niño will not return this winter.

Instead, La Niña-like weather patterns will persist thanks to a Pacific Decadal Oscillation (PDO) that might also repel strong El Niños, according to Bill Patzert, an oceanographer at NASA's Jet Propulsion Laboratory, Pasadena, Calif. PDO is a widespread pattern of sea-surface temperatures in the Pacific Ocean that cycles back and forth between two opposite phases. Recent measurements by NASA reveal a negative PDO pattern in the Pacific. If history is a reliable guide, the ongoing negative PDO could increase the wait for a new El Niño.

**A new NASA-developed technique to improve numerical weather prediction** — one that looks to the ground as well as the clouds — may one day help forecasters increase the accuracy of spring and summer weather predictions.

"Understanding weather is more than understanding what's happening high in the clouds," atmospheric scientist Bill Lapenta of Marshall Space Flight Center, Huntsville, Ala., said.

In addition to improving the accuracy of short-range predictions this new method may be implemented within other forecasting models.

## **Milestone Mission**

# **Atlantis delivers new doorway to International Space Station**

Space Shuttle Atlantis, launched July 12 at 4:04 a.m. CDT, carried a new airlock to the International Space Station (ISS). The mission brought the orbiting outpost an unprecedented degree of self-reliance, providing it with a new doorway to space for maintenance and construction.

After the airlock was attached to the station early July 15 and the first part of its checkout was completed, the shuttle and station crews held a ribbon cutting for the new addition. Station Commander Yury Usachev and Atlantis Commander Steve Lindsey cut a white ribbon that had been strung across the entrance of Quest's crew lock. Lindsey and Usachev made two cuts to the ribbon, each on either side of the word Quest to christen the new compartment.

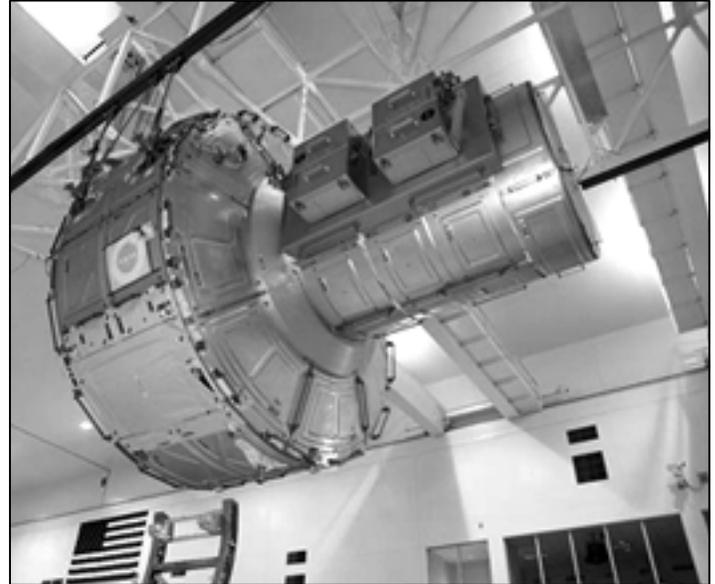
Atlantis' mission, designated STS-104, is the fourth shuttle flight this year and the 10th shuttle mission dedicated to assembly of the ISS.

"This mission is a milestone for both the station and shuttle as we complete a major phase of the station's assembly," Space Shuttle Program Manager Ron Dittmore said. "A year ago, I said we would fly the most complex series of missions NASA has undertaken since landing on the Moon — now we're nearing completion of the first phase. The team has truly done an excellent job to get us here safely, successfully and on schedule."

Atlantis' mission included three spacewalks to install and outfit the station's new Joint Airlock, including the first-ever outside spacewalk to originate from the station. Air Force Lt. Col. Steve Lindsey commands Atlantis' crew. Marine Corps Maj. Charlie Hobaugh serves as pilot.

The crew also includes astronauts Mike Gernhardt, Janet Kavandi and Jim Reilly. Gernhardt and Reilly performed the spacewalks, while Kavandi operated the shuttle's robotic arm.

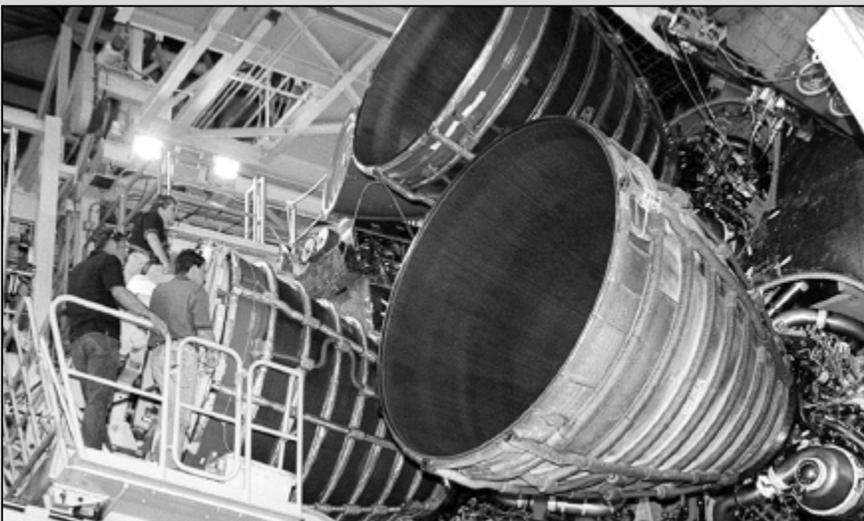
The mission is the second shuttle to visit the station during the stay of the second station crew — Commander Yuri Usachev and Flight Engineers Jim Voss and Susan Helms — now in their



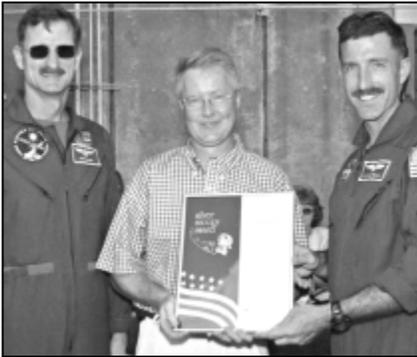
Shown is the Joint Airlock delivered to the International Space Station during the STS-104 mission launched July 12. The airlock gives station crew members the ability to conduct spacewalks using either U.S. or Russian spacesuits and also vents less precious air into space than the current airlock.



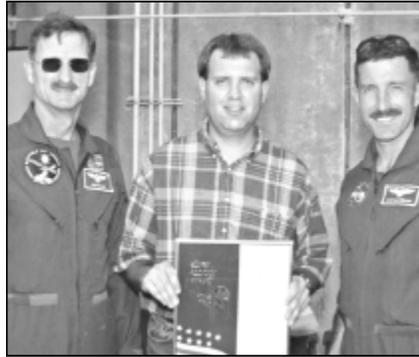
fourth month aboard the complex. Atlantis was scheduled, at press time, to land at the Kennedy Space Center at 1 a.m. CDT, July 24.



When Space Shuttle Atlantis blasted off July 12, it was the first Space Shuttle to go into orbit with a new Block II configuration engine. The innovative design gave the crew a safer ride due to a new high-pressure fuel turbopump. Atlantis' three-engine complement contained a Block II main engine and two Block IIA main engines. Above, workers install the Block II configuration on Space Shuttle Atlantis at NASA's Kennedy Space Center, Fla. All Space Shuttle Main Engines are tested and flight certified at Stennis. The Block II flown on this mission was certified at Stennis Feb. 12.



**Astronaut Joe Tanner, left, NASA's Keith Brock, and astronaut Daniel Burbank**



**Tanner, left, NASA's Reginald "Chip" Ellis and Burbank**



**NASA's Nancy Sullivan, left and Tanner**

**T**en Stennis Space Center employees were honored June 28 with the astronaut corps' own personal achievement award, the "Silver Snoopy." Among the recipients were NASA's Keith Brock, Reginald "Chip" Ellis and Nancy Sullivan. The Silver Snoopy Award recognizes individuals for professional dedication and outstanding support that greatly enhance flight safety and mission success in the Space Shuttle program.



Other Silver Snoopy recipients included Ralph Fowler, Estelle Torregano and Michael Nichols, all of The Boeing Company; Dr. Gopal Tejwani of Lockheed Martin Space Operations (LMSO), Stennis Programs; Randy Taylor of Mississippi

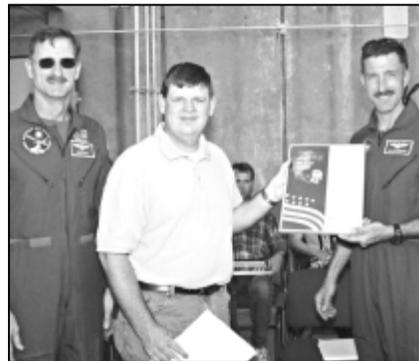
See **SNOOPY**, Page 7



**Burbank, left, The Boeing Company's Estelle Torregano and Tanner**



**Tanner left, The Boeing Company's Ralph Fowler and Burbank**



**Tanner, left, The Boeing Company's Michael Nichols and Burbank**



**Tanner, left, DCMA's George Paz with granddaughter, Gabriella, and Burbank**



**Tanner, left, and LMSO, Stennis Programs' Dr. Gopal Tejwani and Burbank**

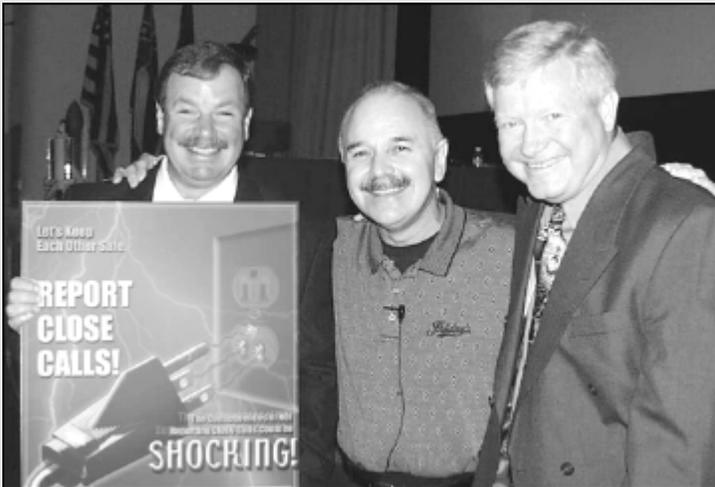


**Mississippi Space Services' Randy Taylor, left, and Tanner**



**Tanner, left, and Mississippi Space Services' Linda Stockstill**

## Safety Day stand-down activities



NASA's Safety and Mission Assurance Manager at Stennis, Mike Smiles, left, emphasized the importance of reporting close calls during the opening session of the seventh annual Safety Day June 28. Participating in the morning kickoff were keynote speaker Bruce Wilkinson, center, and NASA's Director of the Center Operations and Support Directorate, Larry Ellis.



Madison Services employees, from left, Pat Meeks and Hope McDougle listen to Kid Safe representative Cynthia DeLaRoss at the seventh annual Safety Day activities.



WLOX-TV's meteorologist, Mike Reader, seated, answers questions following one of his Hurricane Preparedness workshops. With Reader, from left, are Mary Ann Dalton, Mississippi Space Services (MSS), Dr. Richard Vidacovich, M.D., staff physician and MSS's Miranda Caudill.

## EMA . . .

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used by the aerospace industry to drive and control critical rocket engine valves.

According to NASA's Garry Lyles, Space Launch Initiative Propulsion Program Office manager at Marshall Space Flight Center, Huntsville, Ala., the EMA technology is of interest to SLI because all engine concepts being considered for the program use EMAs.

"SLI's primary focus is on technology development for concepts that would be able to dramatically reduce cost and improve safety and reliability of launching payloads for NASA, commercial and military missions," Lyles said. "Since the engine was already in a test stand at Stennis, taking advantage of the dual aerospike flight engine set already in the A-1 test stand was too great of an opportunity to pass up."

According to NASA's Dr. Don Chenevert, EMA project manager at

Stennis, the initial test will be followed with a 25-second test at 80 percent power level. The third test is scheduled for 100 seconds and will demonstrate relevant engine operations and show how the EMA control system works under actual thermal, hydraulic and stress loads.

NASA announced in March it would not continue funding for the X-33 test vehicle — a half-scale prototype of a commercially developed and operated reusable launch vehicle designed to demonstrate new, reusable single-stage-to-orbit technologies. The X-33 project was being developed under a cooperative agreement between NASA and Lockheed Martin Space Systems Company (Lockheed Skunk Works), Denver.

Discontinuing the X-33 test vehicle program brought to a close a 21-month long testing program for the XRS-2200 engine.

## RS68. . .

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of how well Stennis provides test services for the private sector as well as for NASA."

The final test in a series of three was completed on June 23, with all test objectives met.

"This is a major milestone in the RS-68 program," said Rocketdyne Vice President and General Manager Byron Wood. "The successful completion of acceptance testing for the first RS-68 flight engine confirms that this new power plant has moved from the drawing board to the production line."

With the acceptance testing now concluded, the RS-68 flight engine will be moved to the Delta IV assembly facility in Decatur, Ala., where it will be mated with a Delta IV Common Booster Core. The RS-68 is the first new large, liquid-fueled rocket engine to enter production in the United States since Rocketdyne developed the Space Shuttle Main Engine in the late 70s.



Plans to test the propulsion system for the Excalibur Class Liquid Fueled Reusable Ballistic Missile Target at Stennis Space Center were announced in May. Excalibur is a proposed pressure-fed liquid-propellant rocket vehicle that achieves lower cost in a targeting application mainly through repeated recovery and reuse of the vehicle. On hand for the announcement, from left, were Patricia Easley of Kirtland Air Force Base, Albuquerque, N.M.; Bob Truax, president, Truax Engineering Inc., Vista, Calif.; and NASA's Boyce Mix, director, Stennis Propulsion Test Directorate. Stennis will begin testing the propulsion system this summer on the E-2 complex.

## Stennis scientist teams with manufacturer to develop sensor

NASA chief scientist and biological oceanographer, Dr. Richard Miller of the Geospace Applications Development Directorate at Stennis Space Center needed a more efficient method of analyzing water samples at sea. The development of Ultrath™ — an optical sample cell system with user-selectable path lengths — by World Precision Instruments Inc. (WPI) appears to suit his needs.

Miller conducts research aboard ships in ocean systems around the globe to support NASA's satellite programs. Water samples are obtained to verify observations from space, particularly "Chlorophyll A" concentration, a molecule that absorbs light and is found in all plants. Colored Dissolved Organic Matter (CDOM) that is generally associated with land runoff is an important

component that controls ocean color in coastal waters. The presence of CDOM complicates the use of color satellite sensors. Determining how CDOM absorbs light helps us evaluate the accuracy of products developed from satellite imagery, Miller explained.

"Until now, the standard procedure for processing seawater samples was to freeze them and then ship them to port for spectral analysis," Miller explained. "The procedure was time-consuming and costly."

NASA's Kirk Sharp, manager of the Stennis Office of Technology Transfer was called on for assistance. Sharp and his staff teamed Miller with WPI, a Florida-based, international manufacturer of laboratory equipment.

"The combination of significant com-

mercial potential and government need made the arrangement of a cost and risk sharing agreement a natural for this project. This dual-use approach for government investment in technology development ensures that commercialization happens," Sharp said.

"Dr. Miller's design requirements over the last two years of development defined the need for a rugged instrument system to be used in the field that was capable of high sensitivity measurements across widely divergent sample types," Mathias Belz, senior scientist for WPI, said. "It was a challenge to configure the solution."

Miller said the flexibility of the system solves a critical problem for oceanographers and opens the doors to numerous other applications.



Groundbreaking ceremonies for the new annex to house the Navy Oceanographic Office Warfighting Support Center and the Survey Operations Center were held June 27. The annex will add 24,000 square feet to the Navy's footprint at Stennis. Participating in the ceremonies, from left, were Capt. Timothy McGee, commanding officer, Naval Oceanographic Office (NAVO); Tom Cuff, technical director, NAVO; Cmdr. Parker Lumpkin, chief of staff, Commander,

Naval Meteorology and Oceanography Command; Cmdr. Herschel Rector, director, Logistics and Management Service, NAVO; Mark McDaniel, senior project engineer, Roy Anderson Corporation; Cmdr. Bill Oster, resident officer in charge of construction; NASA's Jon Roth, special assistant to the director, Stennis; NASA's Director of the Center Operations and Support Directorate at Stennis, Larry Ellis, and Cmdr. Pete Furze, executive officer, NAVO.



**Stennis Space Center's "Astro Camp 2001: My Place in Space," continues through the end of July. Children are learning about space travel and living and working in space as they enjoy building rockets, replicas of the International Space Station and other space-related objects. Clockwise, from left, Brandon Guerra of Mandeville, La., discusses shuttle design with co-campers Cameron Travelstead of Hattiesburg and Roger Bowie, also of Mandeville, La.**

## BOARD . . .

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testing community were being scrutinized. Competition was being replaced with leadership and cooperation. We had to be more cost effective for our customers, streamline rocket testing, and provide the quality and responsive test services NASA, DoD, and industry needs."

Since 1996, the board's responsibility has grown significantly. The experiences and progress of the last six years provide more than consumer confidence in an emerging activity; it validates the decision to manage testing services on a national level. To that end, the board has developed a strong NASA/DoD partnership called the National Rocket Propulsion Test Alliance.

Today, the board deals with projects from more than a dozen major customers from NASA, DoD and the commercial sector. All the nation's potential customers for large-scale rocket propulsion testing are directly impacted by the board's daily decisions.

"The Rocket Propulsion Test Management Board has significantly improved our ability to provide top-notch testing for all our customers," Boyce Mix, director, Propulsion Test Directorate at Stennis, said. "The board is responsible for significant consolidation and resource sharing. They routinely move equipment and personnel to where they are needed, resulting in lower costs for our customers. The board is truly leading the way for NASA and the nation and really putting Stennis on the map."

Board members include Dawson as chairman; Dave Harris, Johnson Space Center, White Sands Test Facility, Las Cruces, N.M.; Robert Kozar, Glenn Research Center, Plum Brook Station, Sandusky, Ohio; Mike Allen, Marshall Space Flight Center, Huntsville, Ala.; and Dr. Shamim Rahman, Stennis.

## SNOOPY . . .

(Continued from Page 4)

Space Services and George Paz of the Defense Contract Management Agency (DCMA).

NASA astronauts Joe Tanner and Daniel Burbank were on hand to present the awards. The Silver Snoopy Awards program was initiated 32 years ago and represents the astronauts' recognition of excellence. Each honoree received a silver pin flown aboard STS-89, a letter of commendation and a certificate.

## Stennis' unique Pipeline Initiative places student programs, internships in one area

More than 60 educators and students from various high schools and colleges are participating in summer internships this year at Stennis Space Center. NASA's Office of Education sponsors the internships as part of the Pipeline Initiative. This initiative, unique to Stennis, places all student programs and internships under the Office of Education.

"The purpose of this initiative is to be able to put students in programs that are suited to their needs and continue to send them through this educational pipeline by following each student's progress," NASA's Dr. David Powe, manager of the Office of Education at Stennis, said. "Each program provides a unique opportunity for students or educators to enhance their future by working side by side with NASA personnel. The programs show Stennis' dedication to the future of the lives of the participants and to the future of America's space program."

Programs in the Pipeline Initiative at Stennis include:

- Summer High School Apprenticeship Research Program (SHARP)
- Achieving Competency in Careers in Engineering and Space Science (ACCESS)

- Increase Minority Access to Graduate Engineering (IMAGE)
- National Action Council for Minority Engineers (NACME)
- Program to Increase the Pursuit of Education and Learning in Engineering and Science (PIPELINES)
- Ronald McNair Scholars /Project Strategic Preparedness in Advancing Careers in Engineering (SPACE)
- Society for Hispanic Professional Engineers' Opportunity as NASA's Outstanding Researchers in Engineering and Science (SHPE/HONORES)
- Women in Science and Engineering (WISE)
- Undergraduate Student Research Program (USRP)
- Summer Faculty Fellowship Program (SFFP)
- Graduate Student Research Program (GSRP)

For more information about these programs in the Pipeline Initiative, visit the Stennis Office of Education Web site at <http://www.edu.ssc.nasa.gov>, or contact NASA's Wanda Wright-Trollinger, administrative operations specialist, Office of Education at Stennis at (228) 688-2455.



# Report Close Calls

A close call or near miss is defined as an event that almost happened. It can be a slippery spot on a floor where someone almost falls or a missing guard that should cover a rotating blade on a machine. Reporting these occurrences and fixing them can avert serious injury.

Ignoring close calls can have serious results, including fatal accidents.

A close call should not be considered a negative, inconvenient event. Rather, it is an opportunity to discover a hazard and correct it without injury.

Reporting the close call is the only way safety practices and procedures will be reviewed. It's the only fail-safe way to ensure that a close call doesn't result in injury or death in the workplace. Posters with Close Call reporting forms are posted throughout the buildings at Stennis Space Center. Employees may use one of these forms to report any Close Call encounter.



## QUICK LOOK

■ **The Bayou Chapter of Federally Employed Women** is sponsoring a Lunch and Learn seminar Thursday, July 26, from 11:30 a.m. until 12:30 p.m., Bldg. 1100. Dr. Stanford Owen, founder and medical director of the Center for Health Management in Gulfport, will discuss weight and health management. Contact Leslie Sivak at Ext. 5847.

■ **View the Space Shuttle and the International Space Station over your city.** The Stennis home page, [www.ssc.nasa.gov](http://www.ssc.nasa.gov), now has a link for shuttle and station sighting information published by Johnson Space Center. The site provides date and time listings for locations across the world where the shuttle and station may be visible. Instructions to compute sighting data for locations not listed are also available on the link.

■ **Women's Equality Day activities**, sponsored annually by the Site-wide Federal Women's Program Committee at Stennis, will be celebrated Aug. 29. Watch for additional information and flyers.

■ **Take advantage of discounted tickets** to Walt Disney World and Universal Studios, Six Flags Over Georgia, AstroWorld or Jazzland from the NASA Exchange. Contact Alyce Moran at Ext. 7227.

## SAFETY...

(Continued from Page 1)

Director of the Center Operations and Support Directorate at Stennis, Larry Ellis, said.

Motivational humorist and corporate trainer Bruce Wilkinson of New Orleans, kicked off the day's activities in the StenniSphere auditorium. NASA astronauts Joe Tanner and Daniel Burbank were on hand to make Silver Snoopy Award presentations.

Workshops were conducted throughout the day for NASA and NASA contractors. Presenters included Mike Reader, WLOX-TV's meteorologist; Betsy Williams and Marilyn Davis, Operation Lifesaver; DUI Officer Lt. Ray Billeaud, Hancock County Sheriff's Department; Van Edmundson, Baton Rouge Safety Council; James McReynolds, Gary Erikson, and Dean Payne, Flotilla Command 37, U.S. Coast Guard Auxiliary; and Mississippi Space Services Safety Engineer Donna Pullman.

"All of us think we are working safely, but our numbers reflect a need for improvement," NASA's Safety and Mission Assurance Manager at Stennis, Mike Smiles, said. "Each of us is responsible to work safely and to protect ourselves and our co-workers from harm."

In addition to the more than 40 exhibits and displays sponsored by medical, health and safety-related firms in the Atrium of Bldg. 1100, technicians were on hand at the Stennis Child Development Center to check child restraint seats.

## LAGNIAPPE

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