



Stennis ready to launch visits from I-10 Welcome Center

A unique agreement among officials at NASA's John C. Stennis Space Center, the Mississippi Transportation Commission and the Mississippi Department of Economic and Community Development (MDECD), was celebrated Monday, May 15 with the dedication of a Lunar Lander exhibit at the Hancock County I-10 Mississippi Welcome Center, located just west of Bay St. Louis.

In January, MDECD announced approval of an agreement allowing the Mississippi I-10 Welcome Center site to serve as the point of origin for all tours of Stennis Space Center beginning on Memorial Day weekend to coincide with the reopening of the newly redesigned visitor center, StenniSphere. Visitors had previously been allowed to drive directly onto space center grounds to tour the visitor center and rocket propulsion testing complex.

Apollo 13 astronaut Fred Haise, a Biloxi native, was on hand for the dedication. Also participating in the ceremony were Mississippi's Southern District Highway Commissioner Wayne Brown; Stennis Space Center Deputy Director Mark Craig; representatives from the Mississippi Department of Economic and Community Development's Tourism Division; and other community and state leaders.

The exhibit features a replica of the 30-foot-tall Lunar Lander used by the Apollo 13 astronauts. Narratives and photographs of astronauts Neil Armstrong and Buzz Aldrin are also on display along with the story depicting the role of the Lunar Lander.



Attending the Lunar Lander dedication were, from left, Rosie Herron-Williams, manager of the Welcome Center Bureau for the Mississippi Department of Economic and Community Development's Tourism Division; Apollo 13 astronaut Fred Haise; and Wayne Brown, Mississippi's Southern District Highway Commissioner.



The May 15 dedication of NASA's new Lunar Lander exhibit at the Hancock County I-10 Mississippi Welcome Center drew a crowd of dignitaries and visitors.



Haise, a Biloxi native, leaves a lasting impression at the base of NASA's new Lunar Lander exhibit, above.

New turbopump for shuttle main engine passes test at Stennis

Testing of a new high-pressure fuel turbopump for the Space Shuttle's Main Engines (SSME) was recently completed at NASA's John C. Stennis Space Center.

The Pratt & Whitney high-pressure fuel turbopump achieved every objective in the 22nd and final test of a series of certification tests on May 11. The test lasted for 520 seconds and ran at 106 percent full power for the majority of the firing. The successful test raises the turbopump's cumulative testing to 12,335 seconds.

NASA's SSME project manager at Stennis, Pat Mooney, said reaching the end of the test certification phase was a major milestone in the overall turbopump certification process. He also emphasized that clearing such a significant hurdle in just two and a half months is a remarkable accomplishment.

"From a Stennis standpoint, I really think the test crew has to be the pride and joy of the center for accomplishing 22 tests in a 10-week period," he said.

The test series just completed is the second successful fuel turbopump test series in recent months. Stennis test crews accomplished an accelerated schedule for another Pratt & Whitney fuel turbopump in late 1999.

The turbopump will now be shipped to Pratt & Whitney's West Palm Beach, Fla., facility for intense inspection before final certification.

LAGNIAPPE Commentary

Spring Fever XXXVII . . .

Did I ever tell you all that spring is the Gator's favorite time of year? There's a long history of Gator's love affair with south Mississippi springtimes, going all the way back to 1963. We've gone looking for the old boy out here at Stennis Space Center in many of his favorite haunts when the blossoms come out, the sap starts running and a young man's fancy turns to — and you may be surprised at some of the places where we've found him hanging out during the wistful days of spring. Or, you may not be surprised!

Of course an obvious favorite spot is his fishing hole along the banks of the Pearl River, with his cane pole stuck in the bank while he snoozes during the lazy afternoons. There's a bream bed just down river from the Cypress house that the Gator knows about. Why, he's been hanging out there for 30 some odd years now.

Most recently, with things so busy around here, Gator could be found over at StenniSphere helping get the new visitor center ready for the employees, special visitors and the public. Just a tip: Look for him in the "Swamp To Space" exhibit or drinking coffee in the RockeTeria. He has been seen a lot lately out in the test complex, his most favorite place to hang out with a lot of his new, and a few old, buddies. He has been especially interested in the new engines our people are testing out there like the Hybrid Sounding Rocket. I've even had reports that he was up at the dedication of the new RS-68 Engine Assembly Facility, and he was spotted down at 3202 checking out a new Space Shuttle Main Engine fuel pump.

And this year, I hear the Gator's found another legitimate hangout to enjoy the spring weather and its associated cool breezes: a little east of us on the beautiful Wolf River. Since Stennis has entered into an agreement with the Wolf River Conservation Society Inc., it gives our Gator a license to visit and laze around on the white sandbars of the river and watch the rafters float by. Gator has been known to spend some of his spring days out in the community, like over at the Blessing of the Fleet in Biloxi, or at any one of the crawfish or shrimp festivals along the coast. Why, during recent years, we have caught up with the old boy in New Orleans at the Jazz Fest.

Where might he be on this first spring of the new century? While I was pondering the question, I heard his familiar voice call out, "Hey, Mr. History, what you doing indoors with such a beautiful day going on outside?"

Sure enough, it was Gator making his way into the history office wearing his favorite NASA T-shirt and his beloved Atlanta Braves ball cap.

"Gator, I was just wondering where you were recuperating from spring fever this year, and I wanted to ask you an important question for the record."

"Shoot, I'm in a hurry to show some of my new buddies one of my old fishing holes."

"Folks been asking, what was your favorite spring in all of your 37 years down here?"

"A lot of good ones," Gator answered. "But looks like we may have a winner this year! Yep, Spring 2000. And it doesn't get any better!"

M.R.H.



NEWSCLIPS

Images of early, smaller universe revealed — An international team of cosmologists has released the first detailed images of the universe in its infancy. The images reveal the structure that existed in the universe when it was a tiny fraction of its current age and 1,000 times smaller and hotter than it is today. The National Science Foundation project, dubbed BOOMERANG (Balloon Observations of Millimetric Extragalactic Radiation and Geophysics), obtained the images using an extremely sensitive telescope suspended from a balloon that circumnavigated the Antarctic in late 1998. NASA and the National Science Foundation are part of an international team supporting the project.

Terra Spacecraft now open for business — Terra, NASA's premier Earth Observing System Satellite, has completed on-orbit checkout and verification and is "open for business." Terra is an international mission and part of NASA's Earth Sciences Enterprise at Goddard Space Flight Center in Greenbelt, Md. Terra is the first satellite to monitor daily — and on a global scale — how the Earth's atmosphere, lands, oceans, solar radiation and life influence each other. The satellite's measurements will give a comprehensive evaluation of the Earth as a system and will establish a new basis for long-term monitoring of climate changes.

NASA investigates how fungi affects forest re-growth — Clear-cutting tree stands significantly affects tiny fungi that make forests possible and perhaps alters re-growth of forests and plant types, according to a recent paper in the Canadian Journal of Botany. The paper reports on ecological fungi research by NASA at Yellowstone National Park in Wyoming. "If the fungi in ecosystems change in large areas of the world, then the kind of plant life could also change," said Dr. Ken Cullings, a scientist at NASA's Ames Research Center in Moffett Field, Calif., and co-author of the paper.



Shuttle blasts off on repair mission for space station

With dawn's first light glimmering above, six American astronauts and one Russian cosmonaut blasted off early May 19 from the Kennedy Space Center to pay a "home improvement" house call on the fledgling International Space Station (ISS).

Riding aboard the upgraded and refurbished Space Shuttle Atlantis, Commander and Louisiana native Jim Halsell, Pilot Scott Horowitz and Mission Specialists Mary Ellen Weber, Jeff Williams, Jim Voss, Susan Helms and Yury Usachev rocketed away from their Florida launch site at 5:11 a.m. Central time, a pre-dawn launch by shuttle standards.

The launch was Atlantis' first since September 1997. Atlantis recently underwent major modifications, including the introduction of a state-of-the-art, high-tech glass cockpit filled with computer displays to replace the old cockpit dials and switches.

Atlantis launched on time after high winds at the launch site and at overseas emergency landing strips caused three delays last month. Atlantis linked up to the space station May 20.

Once on orbit, Atlantis' crew began setting up shuttle systems for the planned 10-day mission. Among the crew's activities was activation of the double Spacehab module housed in the rear of the cargo bay, containing more than a ton of supplies the crew will transfer to the station.

The ISS orbit was 221 by 207 statute miles. The average decay of the station's orbit was about 1 1/2 statute miles a week. While docked, Atlantis' reaction control system thrusters were to be used to raise the orbit of the station by about 20 miles.

Stennis lends hand in Global Positioning System to help reduce effects of flooding

In low-lying Bangladesh, researchers are using a constellation of satellites known as the Global Positioning System (GPS) to help residents mitigate the effects of flood damage during the monsoon season.

Using survey systems that incorporate GPS measurements, researchers developed models of riverbeds and the water discharged into the waterways. The models will be used to help alleviate flood damage in the Asian country.

From aiding the visually impaired in France to improving the efficiency and safety of taxicab service in Australia, the Global Positioning System has the ability to touch our everyday lives. Now, NASA at Stennis Space Center through its Commercial Remote Sensing Program and its partners

have developed a new Web site devoted to sharing the practical uses of GPS technology, called the GPS Application Exchange. The Web site can be found at <http://gpshome.ssc.nasa.gov>.

The Global Positioning System is a satellite navigation system developed and maintained by the U.S. government. GPS technology was designed for military applications, but civilian users have found numerous applications for it. A few include GPS-based in-car navigation systems that provide accurate location information, GPS-produced maps to help seismologists pinpoint physical ground movements that could induce earthquakes and GPS-aided search and rescue techniques and operations.

Goldin announces new health, safety office

Administrator Dan Goldin has announced the creation of a new office to increase NASA's emphasis on health and safety on the ground and in space.

Dr. Arnauld Nicogossian will lead the effort as Chief Health and Medical Officer, reporting directly to the NASA Administrator. Dr. Nicogossian will be responsible for developing the Agency's infrastructure in areas such as best medical practices, professional development and training, and improvement.

The Administrator has made health and safety NASA's No. 1 priority, expanding the Agency's efforts to create a healthy and diverse

work force focusing on cutting edge research, a permanent human presence in space, and developing new technologies to extend human reach into the far corners of the solar system.

Dr. Nicogossian will establish the NASA Health Council to address the Agency's needs and investments in health, including strengthening external interfaces with other health agencies. Similar infrastructure will be established as appropriate at NASA field centers.

Dr. Nicogossian will continue to serve in the capacity of Associate Administrator for Life and Microgravity Sciences and Applications pending the selection of his replacement.

NASA Administrator Dan Goldin spoke of sending humans to Mars in the next 20 years as he addressed about 400 Louisiana State University faculty, students and staff May 1 in Baton Rouge. As a speaker in the Chancellor's Distinguished Lecture series, Goldin laid out his vision of the future and talked about robots that feel fear, machines smaller than a human cell, high-energy physics done in space and an acceptance of occasional failure as an element of growth.





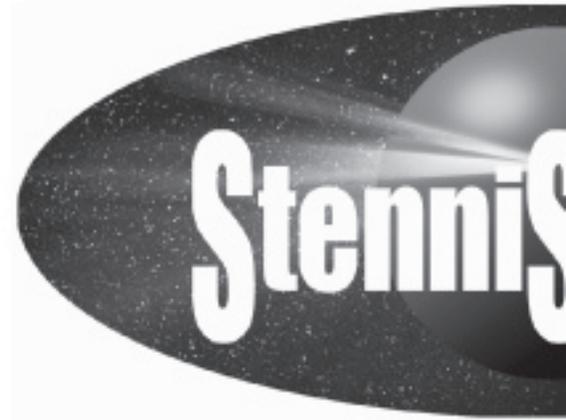
More than 500 Stennis employees took a sneak preview of StenniSphere on May 12.



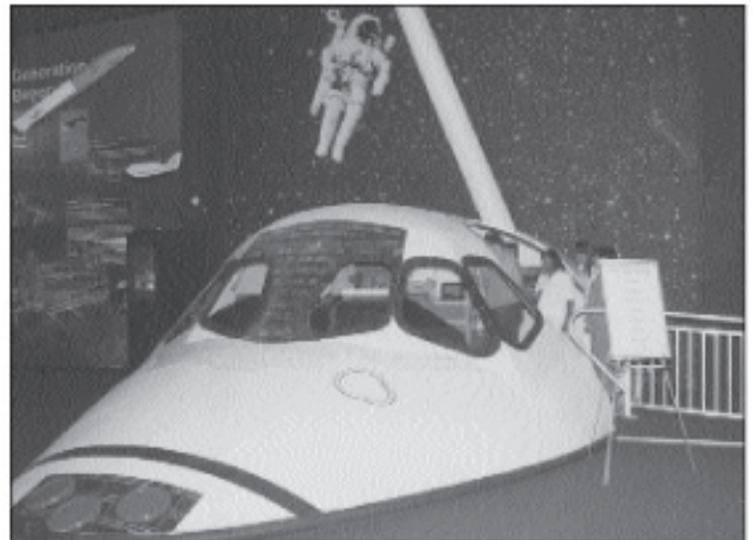
Mary's Drive Inn opened the doors to the RocKeTeria to serve employees.



So, why do satellites spin?



Employees take



Employees enter the Space Shuttle cockpit to try their hand at landing the orbiter.



Space Odyssey Gift Shop offered discounts for the employee day.



ke sneak peek



The science of space technology is underscored in StenniSphere exhibits.



Stennis' role in rocket engine testing is a dominant theme in the new StenniSphere.



Wendy Lesieur takes Jeannie Maxwell through a test at the Test Control Center.



Tory Acker, center, a visitor relations specialist, leads a tour through the International Space Station.



Learn about the ocean on Neptune's Web in the Naval Meteorology and Oceanography Command exhibit.

NASA puts new emphasis on ergonomics

By DAN GOLDIN
NASA Administrator

Ergonomics is the science of matching the physical requirements of the job and the physical capacity of the worker in order to achieve optimal safety and performance. When there is a mismatch between these two factors, illness or injury such as a work-related Musculo-Skeletal Disorder (MSD) can result. Carpal Tunnel Syndrome is one of the most familiar examples of a work-related MSD, but injuries can occur in the back and the upper and lower extremities as well. Workers who must repeat the same motion throughout their workday, who must do their work in an awkward position, who must use a great deal of force to perform their jobs, who must repeatedly lift heavy objects, or who face a combination of these risk factors are most likely to develop MSD.

While NASA has one of the lowest worker injury rates in the federal sector, back injuries and repetitive motion injuries are among the top five causes of disability in our work force. We are currently seeing ergonomic injuries at every NASA location. An ergonomically faulty workstation can cause fatigue, physical strain and poor concentration that can lead to reduced productivity and errors.

I would like to see every NASA site take

the approach being recommended by OSHA in its proposed ergonomics standard. There are six key program elements to help eliminate ergonomic injuries across the Agency. Those program elements are:

- 1) Management leadership and employee involvement;
- 2) Ergonomic hazard identification and information programs;
- 3) Job hazard analysis and control;
- 4) Training programs;
- 5) Medical management of emerging injuries, and;
- 6) Program evaluation.

I am asking all Center Directors to ensure that they have an ergonomics program in place at their centers that meets the intent of the proposed OSHA standard. Your assistance in ensuring that our work force does not suffer from ergonomically correctable work-related disorders is greatly appreciated.

Contact Dr. William Barry, NASA Occupational Health Manager, (321) 867-6351, at the Occupational Health Principal Center with questions or for more information.

■ Background and Proposed Next Steps for this topic can be found on the Administrator's Weekly Topics web site www.nasa.gov/bios/health_messages.html.

Aerospike records new duration time in abbreviated test

The linear aerospike engine that will power the X-33 technology demonstrator set a new duration record of 290 seconds in an abbreviated test at John C. Stennis Space Center on May 12. The longest previous test was 263 seconds in duration.

The May 12 test, which was planned to last 325 seconds, was terminated 35 seconds early when a flexible seal that prevents hot exhaust gas from circulating into the engine cavity began to erode. Post-test inspections have revealed no other damage to the engine or supporting hardware.

The high-stress condition under which the flex seal eroded — low power operation at sea level — is test-peculiar and would not be present during flight. Additionally, the seal was previously hot-fired and exposed to engine exhaust for 775 seconds, the equivalent of more than three flights. Engineers are assessing the erosion to determine what action is needed.

"Despite the abbreviated test, almost all of our test objectives have been met," said Mike McKeon, program manager for the XRS-2200 aerospike engine at the Rocketdyne Propulsion & Power business of The Boeing Company. "We are now reviewing the program and will decide if we need to conduct an additional single-engine test, or pick up the last couple of objectives during the dual-engine phase of the program." This test was the last of 14 planned in the single-engine phase of the engine's flight certification program.

The XRS-2200 engine was developed and assembled by Rocketdyne at Canoga Park, Calif. and Stennis. The engine will power the X-33, a half-scale, sub-orbital technology demonstrator of Lockheed Martin's proposed, commercial reusable launch vehicle called VentureStar™.

The X-33 is being developed in partnership with NASA and Lockheed Martin Aeronautics Company in Palmdale, Calif. NASA's Marshall Space Flight Center in Huntsville, Ala., manages the X-33 program for NASA.



Lockheed Martin Space Operation at Stennis Space Center (LMSO) hosted Space Day 2000 at schools along the coast. LMSO's Jim Moretz, center, and Millissa Dunhurst, far right, speak to students at East Hancock Elementary School.

**Embrace
Space**

Bee hive of activity at Building 1200 keeps Cheryl Bennett busy

The interview with Cheryl Bennett was set for a Monday. Five days later, on Friday, still no interview.

No surprise, really. That's just Cheryl Bennett — always on the go.

Bennett, an employee with InDyne Inc. for Mississippi Space Services, is the chief of the visitor center. That's just her title, though. She's also Building 1200's jack of all trades, brush firefighter extraordinaire, talented juggler of many tasks.

On a slow day, Bennett's schedule is hectic. In the days leading up to the reopening of the renovated visitor center, StenniSphere, she has been a veritable blur.

Despite being swamped, the energetic Bennett remains positive. Focusing on the bright side of her busy routine, the word "opportunity" is a major part of her vocabulary.

"As chief of the visitor center, I have had the opportunity of being involved with a number of interesting programs," she said, "such as Early Education Monday for pre-kindergarten to first-graders, Lower Elementary Space Program for second- to fourth-graders and Intermediate Space Technologies Program for grades five through eight.

"While onboard with the visitor center, I have had the opportunity to be involved with a number of new programs, such as Space Believe and StennisFest, which offered us an opportunity to tell Stennis' story in an educa-



tional but exciting and interesting way," she said. "But, I am most excited about the new visitor center, StenniSphere, and our new partnership with the state's Department of Economic and Community Development's Tourism Division. The new tour stop at the I-10 Welcome Center and an opportunity to tell NASA's story to the some 750,000 people who visit the Welcome Center yearly is a dream come true for many of us here at Stennis."

Bennett began working at Stennis in 1988 in the Teacher Resource Center as an Information Services Specialist III with Pan Am World Services Inc. One of her first projects was to help organize ceremonies to rename the center Aug. 3, 1988. She also assisted with the NASA Community Involvement Program, Coast Encounters.

Later, Bennett became an information services specialist with Johnson Controls World Service Inc. She was responsible for the day-to-day operations of the Visitors

Center and then was promoted to chief of the facility. With the new title came the added responsibility of overseeing the day-to-day operations of the Conference Center programs and the History Office. Bennett also served as acting supervisor of Information Services for Johnson Controls and supervised the Media Services group for NASA Public Affairs.

"I have enjoyed watching NASA Public Affairs grow under the direction of Myron Webb and Lanee Cooksey and appreciate the opportunity to be a part of the new 'Millennium Team' at Stennis Space Center that will put our center and its programs on the map," Bennett said.

Bennett's background and commitment to excellence in education has reached beyond the Stennis Space Center site. She also has teaching experience in private and public school systems and has served on the Hancock County School District's Board of Education for the past eight years. Additionally, she is in her fifth year as board president. She is a past member of the Chamber of Commerce's Education Committee and now serves as co-chair with NASA's Ron Magee for the chamber's Community Development Committee.

Bennett is married to Gary Bennett, a Lead Tech II with Lockheed Martin Space Operations at Stennis Space Center. They have two daughters Jamie, 23, and Jackie, 20.



NASA offices were a little more crowded than usual back on April 27. That's because about 200 girls from south Mississippi and Louisiana joined their parents at work for the eighth annual Take Your Daughters to Work Day at Stennis Space Center. Here, E-2 test stand director Bartt Hebert demonstrates a control center computer to his daughter, Amanda, 14, left. The Heberts live in Walker, La., where Amanda, who is hearing impaired, is a ninth-grader at the Louisiana School for the Deaf. Amanda's sign language interpreter Peggy Bosma, of the de l'Epee Deaf Center, is looking on. Take Your Daughters to Work Day focused on careers and programs in the workplace for women. All Stennis agencies and contractors participated.

Safety Corner

Protect against eye injuries

Each year, thousands of people lose the sight in one or both eyes as a result of performing simple tasks without the use of appropriate protection. At home, day-to-day activities, such as gardening, power tool usage or lawn maintenance can lead to irreversible damage to the eyes if necessary safety precautions are not taken. On the job, despite readily available eye protection and safety training, many workers subject themselves to potentially life-altering eye injury.

An irony of the proliferation of eye injuries is that the majority can easily be avoided. By simply using safety glasses, goggles and face shields, permanent blinding injuries can be almost eliminated. Yet, year after year, thousands choose not to don the inexpensive eyewear that may very well save their sight.

As a general rule, when working in or around areas where flying debris is present, safety glasses should be worn. If handling chemicals, paints and other materials that produce minute air-borne particles, workers should use goggles. Lastly, if using a grinder, or working in the immediate vicinity of a grinder in use, one should don a face shield with safety glasses. When selecting the type of protection for a particular task, ensure that the eyewear is designed to be used for that task and that it meets the safety and quality standards set forth.

QUICK LOOK

■ **The Stennis Space Center Blood Drive** is scheduled for 9 a.m. to 3 p.m. on Wednesday, May 31 and Thursday, June 1 in the Conference Center, Bldg. 1100. The event will have a beach party theme and will feature a drawing for beach balls, towels, cameras and T-shirts. There will also be movies, music, popcorn and special canteen refreshments. Blood donors must be at least 17 years old, be in good health and weigh at least 110 pounds. For details, call Ext. 1468.

■ **Keesler Federal Credit Union** is now available by e-mail at Stennis@kfcu.org. Members may also apply for a loan online at the Keesler Web page. The address is www.kfcu.org. A new ultimate checking feature is also available. For more details, call Beth McGregor at Ext. 3478.

■ **Safety Day activities** at Stennis are scheduled for June 22. The day is aimed at encouraging safe working habits. Astronauts Dominic Gorie and Barbara Morgan will be in attendance. The event begins at 9 a.m. in the visitor center auditorium and includes events from 10 a.m. to 2 p.m. For details, call Brian Hey at Ext. 1249.

TURBOPUMP ...

(Continued from Page 1)

The Design Complete Review involves a dismantling of the turbopump and scrutiny of every part for cracks or other anomalies that may have developed during testing and could raise performance concerns.

If the turbopump passes the review, it will be certified and prepared for installation on a Space Shuttle Main Engine to be used on a future mission. Final certification is expected in July.

The high-performance Space Shuttle Main Engine uses a two-stage combustion process to generate about 1.2 million pounds of thrust to power the orbiter on its 8½-minute flight to space. The Pratt & Whitney fuel turbopump is an integral part of the first stage in generating power, known as preburn.

Stennis began testing SSMEs in 1975.

Session focuses on workplace violence

Stennis Space Center Security Office recently hosted a seminar training session on violence in the workplace.

More than 90 supervisors, managers and team leads from NASA, NASA contractors, Department of Defense and other federal agencies at Stennis participated in the session. The training session stressed the message of zero tolerance, retribution-free reporting systems and the availability of both pre- and post-incident counseling services.

LAGNIAPPE

Lagniappe is published monthly by the John C. Stennis Space Center, National Aeronautics and Space Administration. Roy Estess is the center director, Myron Webb is the public affairs chief, and Lance Cooksey is the news chief. Comments and suggestions should be forwarded to the Lagniappe Office, Building 1200, Room 208D, Stennis Space Center, MS 39529, or call (228) 688-3585.

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