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# LAGNIAPPE

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John C. Stennis Space Center

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Representatives of Mississippi's congressional delegation and Lockheed Martin's CEO, Dr. Vance Coffman, recently visited the A-1 test facility at Stennis Space Center. Taking a close look at the Linear Aerospike engine are, from left, Eric Womble, legislative assistant to Sen. Trent Lott; former U.S. Rep. G.V. "Sonny" Montgomery; Rick Hilscher, Boeing Rocketdyne Propulsion and Power's program manager for the Aerospike engine; NASA's Steve Nunez, former X-33 project manager at Stennis; Lockheed employee Bill Barsh; Cleon Lacefield, vice president of X-33/RLV at Lockheed Martin Skunk Works in Palmdale, Calif.; Sam Stephens of Lockheed; Coffman; and Mississippi's District 3 U.S. Rep. Chip Pickering.

## Stennis fund drive raises \$289,237 for United Way campaign

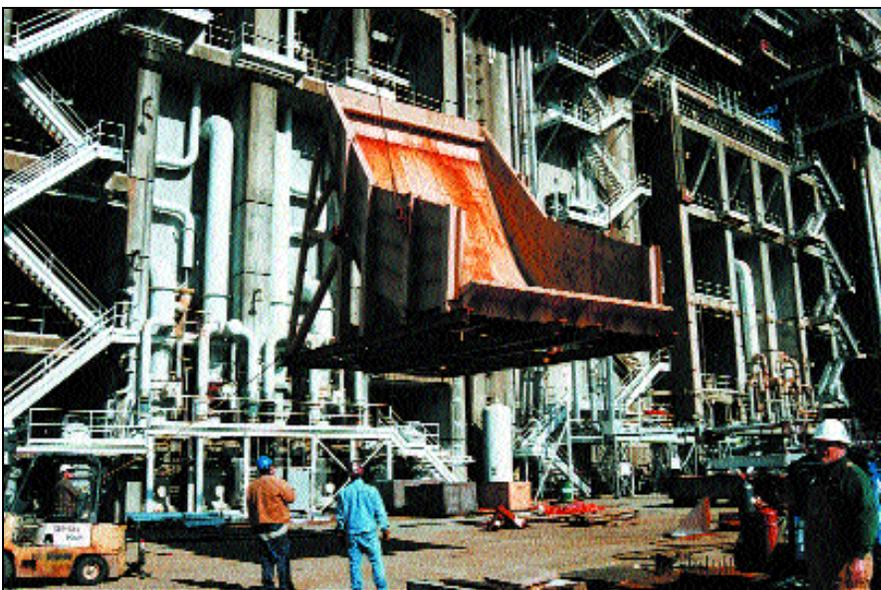
Employees, corporations and federal agencies at NASA's John C. Stennis Space Center again rallied to exceed goals set in support this year for the United Way.

The combined fund-raising effort raised \$289,237 for area programs and charitable organizations assisted or funded by the United Way.

Federal agencies at Stennis pledged \$186,790 in the Combined Federal Campaign for the United Way. That sum exceeded their \$175,000 goal for the fund-raising drive.

Chet Miller, outgoing chairman of the United Way Industrial Contractors Campaign at Stennis, said employees' giving was especially generous and made for another very successful year for the annual event.

According to final figures, employees pledged \$91,987, more than \$5,000 over what they pledged the year before. Meanwhile, corporations added another \$10,461 to bring the total Industrial Contractors Campaign pledge to \$102,448.



In late December, a flame deflector arrived at Stennis Space Center for use on the E-2 cell 2 test stand. This signaled one of the first visible signs of progress for construction of a new test cell. Above, workers lower the 28-ton deflector at the B test stand after it arrived by barge from Marshall Space Flight Center in Huntsville, Ala., where it had been used at an older Saturn test stand. The deflector was then loaded on a flatbed truck and taken to the E stand. Construction workers are now building the cell structure. When finished, the cell will serve as a new Fastrac 60,000-pound thrust vertical test position. The Fastrac engine, developed at Marshall Space Flight Center, will power the new, unpowered X-34 technology demonstrator.

## LAGNIAPPE Commentary

### *Gator gets a new toy . . .*

I wonder what happened to old Gator? Haven't seen him since before the holidays way back in the last century. Apparently there were real glitches with the Y2K scare, but the Gator was prepared for all types of catastrophes. Oh, there he is now, coming up the sidewalk to the history office. Oh, my gosh, he sure looks terrible. His eyes are all bloodshot, and he's walking like he's got a crick in his back.

"Well, Happy New Year and all that jazz, Mackeroo," Gator greeted me.

"What on Earth is wrong with you, Gator?" I asked. "You look like a survivor from the Titanic, or worse. Did somebody's New Year's ball fall on your head?"

"Nothing so dramatic, my hysterical friend," Gator replied in an indignant tone. "I lost a lot of sleep during the holidays, and my patience was tried to the very edge!"

"Come now, Gator," I said. "That's no way to start a new year, let alone a new century. What really did happen to you?"

"You historical folks who are still stuck back there in the 20th century wouldn't understand anyway," Gator retorted. "But if you really want to know the truth, I got me a brand new 2000 model Gatorway computer!"

"I don't believe it, Gator, but why would getting a computer make you look like you've been in a train wreck?" I queried my scaly old friend.

"It's a long story, but if you've got a minute I'll fill you in from the very moment I picked up the phone, dialed the 800 number and ordered that blasted piece of silicon chips!"

"If you must, Gator, tell me about your ordeal."

"First off, the gol-damed machine nearly got me a divorce. My wife left me three times during the holidays, saying I had lost my mind. I do admit I spent a little bit too much time on it. Why, it took me 18 straight hours just to get hooked up on the Internet! I burned out six different Gatorway 'help desk' folks from Oklahoma to South Dakota. Why, one even wanted me to take a Phillips screwdriver and open the thing up!

"Once I got on the 'net' I kind of, er, got involved, you might say. That's when my wife got upset and left. She came back after I promised not to get into any more trouble in the chat rooms. Did you know that you could . . . better save that for an 'offline' conversation later.

"Then I started writing e-mails back and forth to all my old Gator-buddies all over the country. We were having a high old time until my wife slipped back on the porch and started reading over my shoulder. It took all I could do to keep her from sticking a broom handle through the monitor screen.

"She calmed down again when I showed her some of the great sales on eBay. I was afraid I was going to have to bundle the whole kit and caboodle up in the cute boxes with colorful gator heads and send them back to Gatorway land."

"Gator, that is some story," I broke in. "But are you doing anything useful with your new computer?"

"You bet. I wrote this first-ever Y2K commentary for the Lagniappe on my new toy," Gator said as he left the room.

M.R.H



## NEWSCLIPS

**Star formation bubbles up in nearby galaxy**—Newly released images obtained with NASA's Hubble Space Telescope show clusters of newly forming stars in various stages of evolution. The images, taken in July 1997 with Hubble's Wide Field Planetary Camera 2, capture the "nearby" galaxy NGC 4214—only 13 million light years from Earth. As hot, young stars develop, they blow bubbles in the stellar gas. Hundreds of massive blue stars—each more than 10,000 times brighter than the Sun—inflated by stellar winds and radiation pressure, expand the bubble, as the most massive stars in the center reach the ends of their lives and explode as supernovae.

**NASA satellite sees haze over China**—On Jan. 2, the Sea Viewing Wide Field-of-View Sensor (SeaWiFS) observed a thick layer of haze over southern People's Republic of China, including the cities of Chengdu, Congqing, Wuhan, and the archaeologically important city of Xi'an. Researchers are not sure what caused the haze, but it was thick enough to obscure most of the natural colors reflected from the ground beneath. SeaWiFS was originally designed to monitor the color of oceans around the world.

**Air-breathing rocket engines for 21st century space travel**—Rocket engines that breathe oxygen from the air could dramatically reduce the cost of getting to space and make it more accessible. Engineers at NASA's Marshall Space Flight Center in Huntsville, Ala., and NASA's Glenn Research Center in Cleveland, Ohio, are developing new technologies for such an air-breathing rocket and are working toward in-flight demonstrations by 2005. This technology could make space travel more like today's air travel. The new spacecraft would take off and land on runways with a turnaround time for the next flight expected to be a matter of a few days.

## International Space Station Status Report

The International Space Station (ISS) continues to operate with no problems entering its 16th month in orbit.

Managers continue to manage electrical power through four of six batteries inside the Zarya module, with battery No. 1 currently in full restoration mode. After its restoration, which is conducted on all batteries every six months to maximize charging capacity, battery No. 1 will be available for use periodically, if necessary.

Plans are in the works to eventually rerun the Kurs automatic docking system test that was run late last year. The test showed discrepancies in the relative velocity readings, which were most likely caused by electromagnetic interference (EMI). Though EMI is the leading candidate for the problem, flight controllers in Moscow and Houston are not ruling out a hardware problem. The test will confirm EMI as the culprit and work-arounds are possible to reduce or eliminate it during actual flight operations when the Kurs is used to dock the ISS with the Zvezda service module two weeks after it is launched later this year.

No other issues face the flight control teams as they continue to work closely together in the U.S. and Russia.

ISS and shuttle program managers continue to evaluate a shuttle mission this spring to the station to perform maintenance on Zarya to preserve its health in advance of Zvezda's arrival. That launch is on hold pending resolution and recovery plans for the Proton booster, which will be used to lift Zvezda into orbit.

The International Space Station continues to operate in excellent shape as it orbits the Earth at an altitude of 247 by 231 statute miles. Since the launch of Zarya in November 1998, the ISS has completed more than 7,550 orbits. Space Station viewing opportunities worldwide are available on the Internet at <http://spaceflight.nasa.gov/realdata/sightings/>.

## Goldin praises NASA team for year-end work, paving way for smooth transition to 2000

Now that you have settled into the new year and recovered from the flurry of holiday activity, I want to thank you for making the transition into the new millennium look easy. But we all know it was anything but easy. Hundreds of NASA employees and contractors — led by the Agency's Y2K team — have been working since 1996 to make sure the agency was ready. Many of you did this in addition to other duties, and also gave up your New Year's Eve holiday to make sure everything went right.

As of this week, we had a few minor anomalies that were easily fixed, but no significant problems. Only two of those anomalies—involving two pieces of planning software for the Deep Space Network and the Upper Atmosphere Research Satellite—appear to be Y2K related. Neither affected real-time, mission-critical systems. That we were able to make the transition without any significant problems is a tribute to your commitment and hard work. For all your efforts, thank you and congratulations.

I also want to thank the NASA team for

extraordinary efforts in the final days of 1999. In less than 72 hours, we saw the launch of three spacecraft with spectacular missions: Terra on Dec. 18, the Space Shuttle Discovery on Dec. 19 and ACRIMSAT on Dec. 20.

To the Space Shuttle team, you are proving time and time again that you are dedicated to excellence and safety. You don't just talk the talk. You walk the walk. You put mission success ahead of personal priorities. The meticulous attention to detail that was apparent during your launch readiness process is a testament to your professionalism. The nation appreciates the personal sacrifices that you and your families made during the holiday season to ensure the safety of our astronauts and the success of the flight. The STS-103 Hubble Space Telescope servicing mission has restored the world's "eyes" on the universe. Thanks to your efforts, the telescope will continue to astonish astronomers, inspire the public, and give us new insights into our galaxy.

See ACCOMPLISHMENTS, Page 8

## Linear Aerospike engine passes its first full-power test at Stennis Space Center

A new type of rocket engine that will propel the X-33 experimental launch vehicle was tested to full power for the first time on Dec. 18.

The 18-second test of the XRS-2200 Linear Aerospike Engine was conducted on the A-1 test facility at NASA's John C. Stennis Space Center.

Initial test data indicates satisfactory engine performance throughout the test. After the test, visual inspection showed some minor pinhole-sized erosion isolated to the interior wall of one of the engine's 20 thrust cells. The erosion was within the normal range for development testing and will not preclude further testing.

The XRS-2200 Linear Aerospike Engine was developed and assembled by Boeing Rocketdyne Propulsion & Power in Canoga Park, Calif.

The Aerospike engine will power the X-33, a half-scale, sub-orbital technology demonstrator of a proposed, commercially

developed, reusable launch vehicle called VentureStar™.

The X-33 is being developed under a cooperative agreement between NASA and Lockheed Martin Skunk Works in Palmdale, Calif. Marshall Space Flight Center in Huntsville, Ala., manages the X-33 program for NASA.

"The Stennis and Boeing/Rocketdyne test team has done an outstanding job, and I'm extremely pleased in achieving this critical milestone of the first full-power test," NASA's Pat Mooney said. Mooney is serving as the X-33 project manager at Stennis Space Center.

Once testing of the first engine has been successfully completed, two flight engines will be tested.

After the successful flight acceptance test of the engines, the two flight engines will be shipped to Lockheed Martin Skunk Works in Palmdale to be mounted on the X-33 vehicle.



## 3-D Earth imaging top priority for next Endeavour mission

Processing at the launch pad at Kennedy Space Flight Center in Florida continues on schedule for the upcoming flight of STS-99 Endeavour. Meanwhile, flight crew members proceed with orbiter and payload familiarization activities.

Crew members are Commander Kevin Kregel, Pilot Dom Gorie and Mission Specialists, Gerhard P.J. Thiele, Janet Kavandi, Janice Voss and Mamoru Mohri.

The mission — the Shuttle Radar Topography Mission (SRTM) — is an international project spearheaded by the National Imagery and Mapping Agency and NASA, with participation by the German Aerospace Center DLR. Its objective is to produce unrivaled three-dimensional images of the world.

Orbiting at 145 miles above the Earth, with two radar antennae mounted in the shuttle payload bay and two extended on a 200-foot-long mast, this new imaging system will be able to measure the undulations of landscapes that have been sculpted through the millennia.

The radar will image mountains and deep valleys carved by glaciers and rivers like those in the Andes, the Rocky Mountains and the Himalayas of Asia; vast expanses of deserts and coastal plains around the world; as well as cold regions and forests of the northern latitudes.

The mission also will map vestiges of ancient human settlements, such as the eighth-century Khmer civilization of Angkor, Cambodia.

The technology used in the mission is also being tested for use on the International Space Station.

## Director's Dialogue

from Center Director  
Roy Estess



### Y2K THNX 2U — and Housekeeping, too

New Year's 2000 posed a unique challenge to the computer community around the world, and a real threat to the rest of us who depend on the computers that populate so many devices in our lives and that enable so many things that we take for granted. When computers were invented several decades ago, two digits were used to denote years (i.e. '89) because storage space was very limited and because everyone assumed that four digits would be used as soon as computer capability allowed. Turns out, "not." Experts realized several years ago that the two digit practice had become so entrenched that it wasn't changed in software even after computer capability allowed the use of four digits; hence the Y2K problem.

An SSC team has been working for over a year to make sure that we didn't have any Y2K two digit year problems — in our technical systems, in our business systems, in any computer system. Thanks to their efforts, we experienced absolutely no Y2K problems here at Stennis. A toilet did overflow on 1/1/00, but an extensive analysis has found no computer involvement.

To assure that we could deal with unexpected problems in our systems, and to assure that we could deal with unexpected "outside" problems (power, security, etc.), a dedicated team spent New Years on-site. While the rest of us celebrated, these folks watched over the Center. We owe them a hearty "well done" and "thank you!"

Y2K was a special and highly visible situation, but it should remind us how much we depend on the folks who run our "city" day in and day out — IT, fire, security, housekeeping, food service, etc. These people make all that we do possible. We thank you all for getting us through Y2K; we thank you all for making our work home functional and safe — in the last century and the next.

Happy New Year to the entire Stennis team!

## Mulville takes NASA post as Goldin assistant

NASA Administrator Daniel S. Goldin selected NASA's Chief Engineer, Dr. Daniel R. Mulville, as the space agency's Associate Deputy Administrator, effective Jan. 1.

Mulville succeeds Gen. John R. Dailey, who stepped down to head the National Air & Space Museum.

Mulville will plan, direct and manage the Agency's daily operations and reinvention activities.

"NASA's Associate Deputy Administrator is my most senior advisor on Agency opera-

tions, and I am very pleased that Dan Mulville has agreed to accept this position," Goldin said. "Dan has done an outstanding job over the past four years as NASA's Chief Engineer."

As the Agency's Chief Engineer since 1995, Mulville has been responsible for overall review of the technical readiness and execution of all NASA programs, ensuring that development efforts and mission operations of the agency are conducted on a sound engineering basis.

## Stennis mentor helps Hancock students program robotic arm

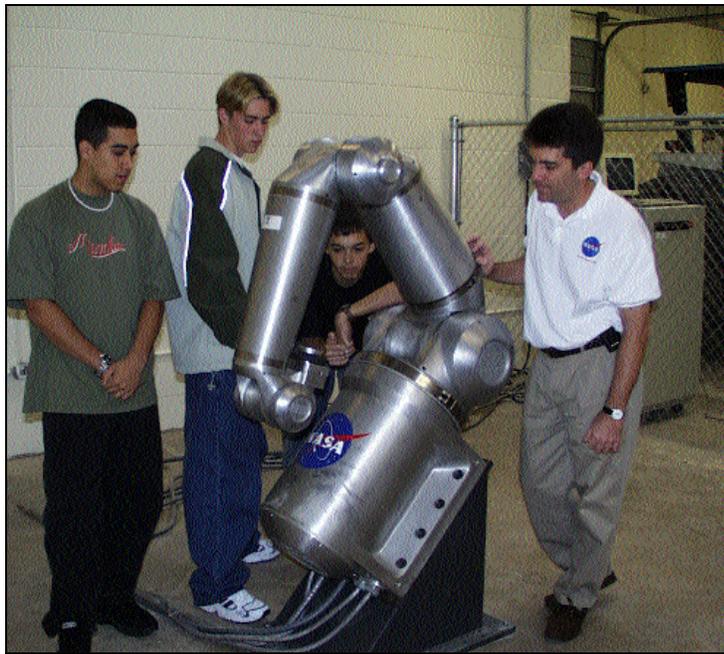
A NASA aerospace technologist at the John C. Stennis Space Center is working with students enrolled in Hancock High School's Technology Applications Program to begin programming a robotic arm for a new Stennis exhibit. The robotic arm will simulate mining operations on the surface of a Saturn moon at the Stennis Visitors Center when it reopens Memorial Day weekend.

The Visitors Center recently obtained the single-arm NASA robot, manufactured in 1988, from Johnson Space Center in Houston.

The silver cast aluminum robotic arm weighs 500 pounds, is 63 inches long and simulates the movement of a human shoulder, arm and wrist. A gripper attachment serves as the equivalent of a hand, according to NASA's Eric Ross, an aerospace technologist at Stennis.

Ross also serves as an advisor for the program at Hancock High School.

Hancock High School, through its Technology Application Program, has the capability to program the robotic arm. This was seen as a natural opportunity for NASA technology and community education to work hand in hand, according to Ross.



Eric Ross, right, a NASA aerospace technologist at John C. Stennis Space Center, demonstrates how to program a NASA robotic arm to Hancock High School students. Students looking on are, from left, junior Chris Ruddell, senior Jason Malone and junior Ryland Esparza.

"Hancock High School's Technology Application Program is designed to give students a background in high-tech fields, and its advanced curriculum far exceeds what people would expect to find in a Mississippi county high school," Ross said.

Students in this program work with robotics, lasers and computer-aided manufacturing, according to Michael Snodgrass, who teaches technology applications with the votech program at Hancock High School. Students also work on programmable logic

controllers that are used to regulate everything in the modern day world from air conditioning to bridges.

"The goal of these high-tech high school courses is to give students a background in and get them excited about these fields," Hancock County School District Superintendent Mike Ladner said. "Furthermore, it is designed to provide them with the capability to obtain certain high-tech jobs after high school, or go on to earn a related two- or four-year college degree."



NASA's Roy Estess, director of the John C. Stennis Space Center, left, visits with then-Gov. Kirk Fordice, center, and state Rep. Mark Formby of Picayune on Dec. 14. Gov. Fordice was on site to attend a meeting of the Board of Directors for the Mississippi Enterprise for Technology at Stennis Space Center, which is a business incubator supported by NASA and the State of Mississippi. Rep. Formby was on-site to speak to the Positive Influence Chapter of the National Management Association.

## STENNIS EDUCATOR RESOURCE CENTER

### Spring 2000 Workshops

The Stennis Educator Resource Center recently announced its spring workshop schedule. Each of the series workshops will begin at 8:30 a.m. and will be conducted at one of three sites at Stennis: the TREND 2000 facility, the Little Red Schoolhouse or the e-SPACE Collaboratory. The workshops are free, but reservations are required because of limited seating. For more information, use one of the following numbers: In Mississippi, call (800) 237-1821 (select option 2); outside Mississippi, call (228) 688-3338.

**Introduction to  
Home Page Development**  
Jan. 27 and March 1  
Teachers of grades K-12

**Introduction  
to PowerPoint**  
Feb. 1 and Feb. 10  
Teachers of grades K-12

**I Can Sense That**  
Feb. 9, Teachers of grades K-3

**PowerPoint II**  
Feb. 15 and March 16  
Teachers of grades K-12

**Flying High**  
Feb. 23, Teachers of grades 2-6

**Introduction to the Internet**  
March 14, Teachers of grades K-6

**Lets Do Language Arts!**  
March 23, Teachers of grades K-5

**Remote Sensing — Not So Remote**  
April 11, Teachers of grades 6-12

**It's All in the Game**  
April 13, Teachers of grades K-6

**Introduction to Excel**  
March 22, Teachers of grades 3-12

## Goldin stresses need for health program vulnerability assessment at NASA sites

### Administrator's Message

Early this year, I outlined our Agency Safety Initiative to improve the risk management processes in use within NASA.

Today I want to emphasize another facet of our safety initiative that is equally important: assessing health improvement. By "health" I mean the prevention of harmful exposure to chemical, physical and biological hazards, and the proactive delivery of health care services to prevent disease.

To achieve this goal we must answer some fundamental questions: Are we conducting baseline assessments of all operations to identify all potentially hazardous exposures to chemicals and physical operations? Have we

all conducted a vulnerability assessment to gauge the worst scenarios for chemical release? How ready is each center to respond to those releases? Have we taken a closer look at our capability for providing life saving services? After downsizing, have we maintained the core capabilities we need to assure the health of our workforce? By focusing on these types of questions, managers can help assure and improve the health of our workforce.

I am proud of NASA's health and safety record. I am asking that we join together to improve NASA's workforce safety in the 21st century.

See GOLDIN, Page 8

## Deadline nearing for summer high school apprenticeship program at Stennis Center

The NASA Human Resources and Management Services Office at the John C. Stennis Space Center is currently taking student applications for this year's Summer High School Apprenticeship Research Program (SHARP).

SHARP is a NASA-sponsored, research-based mentoring program designed for students who excel in mathematics, engineering, science and technology.

During the program, selected area high school students serve as paid apprentices to scientists and engineers for eight weeks during the summer. This year the program will run from June 5 to July 28.

To be eligible, students must be a U.S.

citizen and at least 16 years old by the start of the program in June; be a permanent resident (in accordance with Mississippi and Louisiana state residency requirements) and attend a school within a 50-mile radius of the NASA field installation in their area; be available on a full-time basis for the duration of the program; must demonstrate an interest in and aptitude for careers in math, engineering, science or technology; and be willing to participate in a formal interview, if chosen as a finalist, as part of the placement process.

Applications have been mailed to area schools. Students interested should contact their school guidance counselors. Deadline for applications is Feb. 28.

## Lockheed Martin Space Operations earns award for excellence in industrial security

A coveted award for excellence in industrial security has been awarded to Lockheed Martin Space Operations (LMSO), Stennis Programs. LMSO, Stennis Programs earned the prestigious James S. Cogswell Award for its work in industrial security at Stennis in 1998.

The group was one of only 47 defense contractors in the country to receive a

Cogswell Award in 1999.

The Cogswell Award is based on very specific and rigorous evaluation criteria. Lockheed officials said earning the award requires a sustained level of excellence and a total team effort involving top management, the security staff and the whole facility work force.

## High pressure — no problem for NASA engineer Al Pulley

The pressure's on for NASA's Al Pulley, in a manner of speaking.

That's OK with the mechanical engineer, though. It's just part of the job for Pulley. As Stennis Space Center's Pressure Vessels and Systems Manager, Pulley helps design, analyze and maintain gas systems that are integral to the engine tests conducted on site.

Previously, Pulley was also the mechanical design lead for the Fastrac engine testing program. Now, he oversees pressure systems at all of the test stands and makes sure they meet NASA requirements.

"I'm part of the Propulsion Test Directorate team that performs engine and component testing. . . . Being a part of this cooperative atmosphere has been very rewarding," Pulley said.

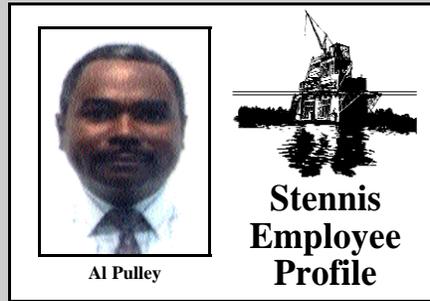
"Designing, operating and maintaining facilities that can perform at peak levels while meeting customer requirements is our priority," he said.

Although Pulley serves in a support role in the Stennis testing process, he says the pressure systems and gas systems are nonetheless essential.

"You have to have gas to perform an engine test," he said. "We need to be in the best position to provide the highest quality support when required."

Pulley's work has not gone unrewarded. In 1990, he was awarded a Silver Snoopy for providing test complex support work.

There's no lack of variety in Pulley's line of work. He deals with generation and pressurization of numerous gases, including helium, nitrogen, air and hydrogen. Pulley has worked on such projects



as the \$10 million high pressure gas restoration, propellant temperature conditioning, LOX pump bearing housing, paint-on cryogenic insulation and a prototype design and installation of rotary engine-driven pumps. Pulley also has a diverse background that includes process and mechanical engineering, pressure vessels, rotating equipment, refinery, petrochemical and oil/gas production.

A primary thrust of his work is to ensure the safety in engine testing to help the test facilities meet their operational goals.

Pulley said one of the most gratifying aspects of his job is to see tangible progress in the evolution of the test sites at Stennis. For instance, a major accomplishment of the Low Cost Technologies project was an upgrade of the B-2 Test Stand so it was operational again and the continued expansion of the E-Complex.

Pulley's interest in his vocation goes all the way back to junior high school, though. The New Orleans native recalls the moment of his engineering epiphany. His mother was a school teacher and consultant, and he tagged along once when she judged a science fair.

That's where he met and was impressed

by a NASA scientist. After a discussion, the scientist tossed out a brain-teaser: If astronauts in a spaceship released some garbage, would the garbage fall back to Earth, float about in outer space or follow the spacecraft? The young Pulley said it would follow the craft. Sure it was a guess, but it was on the money. A little exchange after the program between the NASA scientist and the youngster set the hook.

Pulley went on to receive degrees in mathematics at Xavier University in New Orleans in 1974 and chemical engineering from the University of Detroit in 1976.

Right out of college, he worked for the Michigan-Wisconsin pipeline and then moved back home to work for Shell Oil based out of New Orleans.

After doing consulting work for McDermott and Tenneco, he joined NASA in 1986.

Even though he has been here for 13 years, he says the work stays fresh.

His family and his main hobby — music — also keep him fresh. Pulley and his wife, Vanessa, have two boys, Nathaniel, 12, and Joshua, 8. They live in eastern New Orleans.

Pulley is also an accomplished musician. He is the minister of music for a New Orleans church and also organized a popular gospel choir, "Voices of Faith." The group performs frequently at New Orleans-area churches and at other functions.

So, if you don't find Al Pulley orchestrating high-pressure and gas systems for NASA at Stennis or conducting family business, you might just catch him making a joyful noise with his gospel band.

## Chandra Observatory peers into deep space, solves old mystery

While taking a giant leap toward solving one of the greatest mysteries of astronomy, NASA's Chandra X-ray Observatory also may have revealed the most distant objects ever seen in the Universe and discovered two puzzling new types of cosmic objects.

Not bad for being on the job only five months.

Chandra has resolved most of the X-ray background, a pervasive glow of X-rays throughout the universe, which was first dis-

covered in the early days of space exploration. Before now, scientists have not been able to discern the origin of the hard, or high-energy, X-ray background because until Chandra, no telescope has had the technology to resolve it.

"This is a major discovery," Dr. Alan Bunner, director of NASA's Structure and Evolution of the Universe science theme, said.

"Since it was first observed 37 years ago,

understanding the source of the X-ray background has been a Holy Grail of X-ray astronomy. Now, it is within reach," he said.

The Chandra team looked at a small section of the sky, a circle about one-fifth the size of a full moon, and resolved about 80 percent of the X-ray glow in this region into specific light sources.

Stretched across the entire sky, this adds up to approximately 70 million sources, most of which are galaxies.

## Accomplishments . . .

(Continued from Page 3)

While the Hubble focuses its "eyes" outward, NASA/USAF/industry teams are taking us into a new era in Earth observation with the launch of Terra and ACRIMSAT. The Terra team rose to the unique challenges of the mission, a narrow window combined with the maiden launch of the Atlas Centaur vehicle on a new launch complex at Vandenberg Air Force Base. Throughout the launch readiness process, you remained focused on safety and mission success, accepting schedule impacts associated with ensuring the highest probability of mission success.

NASA's ACRIMSAT team joined forces with our corporate partners to guarantee a safe and successful ride to orbit.

Both Terra and ACRIMSAT will change and improve our understanding of Earth, and help us better manage the precious resources of our home planet.

Like the shuttle and Y2K teams, your personal sacrifices over the holiday period did not go unnoticed, and your dedication to NASA and to the nation is greatly appreciated.

Everyone involved with the Y2K, shuttle, Terra and ACRIMSAT teams should be very proud of their contributions to these end-of-the-year missions, giving NASA and America a tremendous end to a very dynamic year. Thank you from all of us!

Daniel S. Goldin  
NASA Administrator

## QUICK LOOK

■ **Remember: The Bright Ideas program** randomly selects two participants each month to receive a \$50 cash award for submitting an idea to the program. Danielle Frank and Roberto Van Peski, both with Lockheed, received awards for December. To participate in the program, an employee enters an idea or suggestion on an electronic form at <http://sscisl.ssc.nasa.gov/ideas>. The status of the idea or suggestion can also be tracked electronically.

■ **The American Institute of Aeronautics and Astronautics** will hold a dinner meeting at 5:30 p.m., Tuesday, Jan. 25. The meeting will be in the main cafeteria with featured speakers Kern Witcher and Mike Doss, both of NASA. Stennis personnel are invited to attend. For reservations, call Ext. 7207.

■ **Learn better speaking skills in a fun environment** by joining "Speakeasy" Toastmasters. The club is open to all Stennis employees and contractors. Meetings are the first and third Thursdays of each month in the NASA Conference Center. Visitors are welcome. For details, call Liz Flynt at Ext. 2410.

## Goldin . . .

(Continued from Page 6)

Every NASA center manages operations that utilize extremely hazardous materials that, if released, could pose significant health risk to our workforce, to adjacent communities, and possibly even to our national asset facilities.

NASA centers may feel they have a handle on the toxic gases in use, have outlined response procedures, obtained monitoring equipment, etc.

What is being missed, however, is the fact that daily there are different gases on sites that are not used by NASA. These gases are stored on delivery trucks destined for the gas supplier's next customer after leaving NASA.

Those gases include arsine, silane and other extremely hazardous materials. What gases or other toxic materials, which belong to other businesses, are on NASA sites each day? Preparations to deal with a mishap involving those materials must be prepared. Processes to prevent materials belonging to other customers from being on your site must be developed.

Weekly health topics will be available on the NASA Web site (<http://www.nasa.gov>) as well as the Occupational Health Web site (<http://ohp.ksc.nasa.gov>).

Any questions about the Health Initiative and content of the program should be directed to the Program Manager at the Lead Center (KSC), Dr. William Barry, (321) 867-6341.

## 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 officer, and Lane 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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