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MARSHALL STAR

Serving the Marshall Space Flight Center Community

July 20, 2006

Discovery lands in Florida after 5-million-mile journey

By Sanda Martel from Combined Reports

The Space Shuttle Discovery and its crew are home after a 13-day, five-million-mile journey in space. The mission, STS-121, succeeded in testing shuttle safety improvements, including materials developed at Marshall to repair the leading edge of the Space Shuttle's wings, repairing a rail car on the International Space Station and producing never-before-seen, high-resolution images of the shuttle during and after its July 4 launch.

Discovery's commander Steve Lindsey, pilot Mark Kelly and mission specialists Mike Fossum, Piers Sellers, Lisa Nowak and Stephanie Wilson landed Monday at Kennedy Space Center, Fla., at 8:14 a.m. CDT.

Following landing, Lindsey and his crew did the traditional walk around, post-landing inspection of the shuttle. "I have been on four flights, and this is the cleanest vehicle I've ever seen," said Lindsey. "We had two major objectives and we accomplished both of those, and we're ready to assemble the space station."

NASA/KSC

STS-121 astronauts, home after a 13-day, five-million-mile journey in space, speak to a crowd of well-wishers at the Kennedy Space Center July 17. From left, mission specialists Piers Sellers and Stephanie Wilson, pilot Mark Kelly, commander Steve Lindsey, and mission specialists Lisa Nowak and Michael Fossum.

NASA's Space Shuttle Program managers also were pleased with Discovery's performance. The flight verified the safety of the biggest aerodynamic change to the external fuel tank in shuttle history, the removal of the protuberance air load ramps. The ramps are manually sprayed wedge-shaped layers of foam along the pressurization lines and cable tray on the side of the tank.

"Watching Discovery land was a phenomenally exciting moment for all the external tank team," said John Chapman, External Tank Project Manager at the Marshall Center. "Our hardware performed as expected during this mission, and we're now fully focused on continuous improvement of our design and completion of tanks for the remaining shuttle flights."

STS-121 is the most photographed shuttle mission ever, with more than 100 high-definition, digital, video and film cameras documenting the launch and climb to orbit. Data from these images helped assess whether the orbiter sustained any damage and whether that damage posed any risk to Discovery's return to Earth.

Fossum and Sellers, with the help of crewmates, completed three spacewalks. The third spacewalk was confirmed after mission managers determined there was enough electrical power to add another day to the flight.

The astronauts tested the shuttle's 50-foot robotic arm boom extension as a work platform. They removed and replaced a cable that provides power, command and data, and video connections to the station's mobile transporter rail car. The transporter is used to move a platform containing the station's robotic arm along the truss of the complex.

During the third spacewalk, the astronauts tested techniques for inspecting and repairing the reinforced carbon-carbon segments that protect the shuttle's nose cone and the leading edges of the wings. On-orbit repair techniques used a specialized material that engineers at the Marshall Center's Materials and Processes Laboratory helped develop. The material, dubbed "NOAX" for non-oxide adhesive experimental, is made of a pre-ceramic polymer resin that contains silicon carbide and other ceramic powders. The material will be used in the future to repair cracks on an orbiter wing leading edge should it be necessary.Discovery delivered more than 28,000 pounds of equipment

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NSSTC facility aids weather forecasters, improves prediction capabilities

By Rick Smith

Weather researchers at the National Space Science and Technology Center in Huntsville held a three-day training workshop last week to help forecasters across the Southern United States make use of advanced NASA meteorological data — potentially saving lives and reducing property losses associated with killer storms.

The event, held July 11-13 at the NSSTC, was jointly sponsored by NASA's Short-term Prediction Research and Transition Center and the National Weather Service's Southern Region Headquarters. It was the latest training venture between NASA, the University of Alabama in Huntsville and the National Weather Service.

Since 2001, the SPoRT team has partnered with seven regional weather service offices to develop advanced weather system models and forecasting tools for use by the National Weather Service.

"We're translating our research into practical operational applications," said Dr. Gary Jedlovec, a Marshall Center atmospheric scientist and a principal researcher for the SPoRT Center. "In turn, our work with these front-line weather offices helps us refine our tools and products, and better prepare the weather community as a whole to use these new and improved technologies in the near future."

The workshop, intended to make these tools and products available across the National Weather Service's Southern Region and eventually the nation, brought together more than 50 professional forecasters. They included Bill Proenza, director of the Southern Region in Ft. Worth, Texas, and representatives from 32 National Weather Service forecast offices across 10 states and the Commonwealth of Puerto Rico.

> *"[Partnership with the NSSTC] creates a wonderful synergy that will provide substantial lifesaving benefits for the emergency management community and the public."*
>
> *— Bill Proenza, director of the National Weather Service Southern Region*

Most of the workshop's participants were National Weather Service science and operations officers, Jedlovec said. They participate in training opportunities to become familiar with the latest forecasting technologies for their weather offices. At the NSSTC, they learned to better interpret and use NASA weather data and forecast models gleaned from a variety of ground-based and satellite instruments.

That's the specialty of Jedlovec and the SPoRT team: integrating real-time science data from a variety of unique NASA resources into state-of-the-art, high-resolution forecast models, and tailoring the products to the needs of individual weather offices.

Their lightning and precipitation data may help regional forecasters track intense, potentially tornado-producing thunderstorms or provide detailed sea-surface temperature observations in coastal regions. This information can be vital to help track and predict the behavior of hurricanes, tropical storms and storm-related flooding.

Information is especially important during tornado and hurricane seasons, which create very real threats across the Southern United States — where the current SPoRT training effort is focused — and throughout much of the nation.

"In the past, weather forecasters have had to settle for averaged weather information across tens or even hundreds of miles," Jedlovec said. "It's our intent to help them scrutinize their forecast areas much more closely, identifying weather events in areas as precise as a mile or less."

That capability will help forecasters better

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STS-121

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and supplies to the station, as well as a third crew member. European Space Agency astronaut Thomas Reiter joined Russian Pavel Vinogradov and American Jeff Williams. This marks the first time since May 2003 that the station crew has three members.

On Sunday, July 16, the astronauts on board Space Shuttle Discovery and the station successfully transferred the 1,800-pound, refrigerator-size oxygen generator system, developed by Marshall, from the Multipurpose Logistic Module to the Destiny Laboratory Module. The newly arrived oxygen generation system will sustain additional crew members on board and allow more scientific research. It also will give astronauts experience operating and sustaining a "closed-loop" life support system similar to what will be required for future human spaceflight missions farther from Earth. The system also will help replace oxygen lost during experiments and airlock depressurization. Once activated, the oxygen generation system may provide up to 20 pounds of oxygen daily. During normal operations, it will provide 12 pounds daily; enough to support six crew members. The system will tap into the station's water supply and split the liquid into hydrogen and oxygen molecules. The hydrogen will be pushed into space, leaving the oxygen for the crew. The system is designed to operate with little monitoring.

President George W. Bush called the astronauts to congratulate them on a successful mission and to thank them for their work to further America's Vision for Space Exploration. The vision calls for NASA to return humans to the moon and then on to Mars and beyond.

With Discovery and its crew safely home, the stage is set for the resumption of l space station assembly. Preparations continue for Space Shuttle Atlantis' launch, targeted for late August or early September for the STS-115 mission to deliver additional truss segments to the station. Atlantis is expected to be moved to the launch pad early next month, and NASA managers plan to meet shortly thereafter to clear Atlantis for its first mission since October 2002.

The writer, an ASRI employee, supports the Office of Strategic Analysis and Communications

More than 1,000 years of combined experience in testing

Marshall's Test Laboratory uses key pieces of history to unlock the doors to future exploration

By Lori Meggs

On the surface, a lot has changed in its 40-plus years. But a closer look at the Marshall Center's Test Laboratory finds capabilities that once helped NASA get to the moon will help us return.

Some tests that once took months to conduct and complete in Marshall's Test Laboratory now take only weeks. That significant time savings is the result of a combination of new technology and Marshall's proven capabilities and facilities. Marshall's unique experience base extends from pre-NASA days through Saturn and Apollo and on to the space shuttle's two return-to-flight missions.

The Test Laboratory, led by Pete Rodriguez, has nearly 350 civil service and contractor employees in 40 facilities capable of supporting all types of rocket and space transportation technology testing — from small structural components to full-up engine systems and even launch vehicles. NASA uses these facilities daily in support of critical operational programs, such as shuttle return-to-flight, and new development initiatives such as Ares 1, the crew launch vehicle. Capabilities include structural strength, vibration and thermal vacuum testing of hardware; experimental fluids testing; and hot-fire propulsion testing where live propellants are actually fed to the test article.

"This Test Lab team has tremendous engineering expertise, testing many of the vehicles, flight systems and flight hardware that began our journey into space and providing our partners and customers the data needed to further evaluate aerospace technologies," said Rodriguez.

The Test Laboratory comprises four branches: Propulsion Test, Experimental Fluids and Environmental Test, Structural Strength Test and Structural Dynamics Test.

NASA

As tall as a 36-story building, Marshall's Dynamic Test Stand was used for ground vibration tests during the development of the Saturn rockets and the space shuttle. Today, it is being refurbished in preparation for testing the Ares I crew launch vehicle.

Kathy Kappus is a team lead in the Structural Dynamics Test Branch, which measures structural vibrations of flight hardware to qualify the hardware for flight and to provide data to improve analytical models. Along with new technology, she and her team are preparing to use historic facilities to test the next generation of space vehicles.

In 1964, the Dynamic Test Stand in Marshall's East Test Area was built to conduct mechanical and vibration tests on the entire Saturn V vehicle. In the late 1970s, it was used to perform dynamic testing on the space shuttle. Today, the 360-foot-high tower, with a 64-foot overhead derrick, or loading crane, is getting a makeover, just in time to test Ares I and Ares V, the cargo launch vehicle. Ares I, the rocket that will carry a new generation of space explorers into orbit, is under design and development. Ares V, NASA's primary vessel for safe, reliable delivery of large-scale resources and supplies to space, is in the early design stages.

According to Kappus, dynamic testing of a launch vehicle is somewhat like determining the speed at which your car vibrates.

When a vehicle launches, it is subjected to many forces, including

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Test Lab

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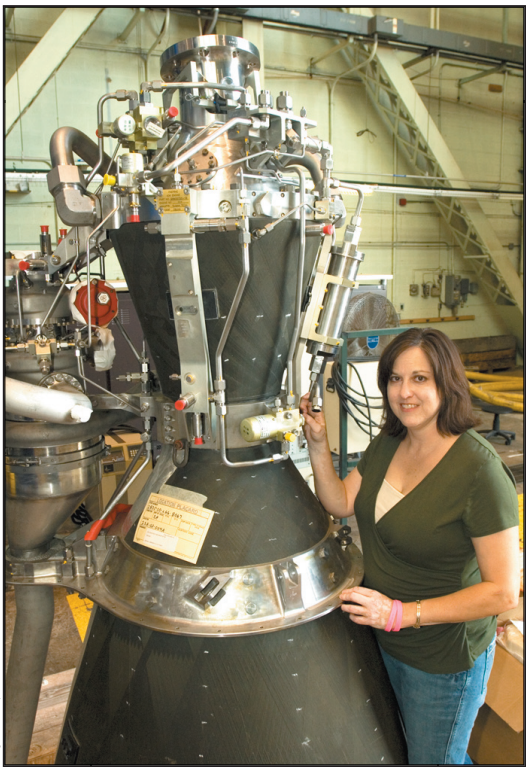
those from propulsion systems and from aerodynamic loads. These forces cause vibrations in the vehicle. Excessive vibration could result in structural issues with the launch vehicle or in difficulty controlling its flight trajectory. Studies conducted in the Dynamic Test Stand will help engineers build more accurate analytical models to better understand how the vehicle will react during all phases of flight.

"It's exciting to learn more about the testing conducted in the Dynamic Test Stand for the Saturn and Space Shuttle programs, and to start planning for large-scale dynamic testing of Ares I," said Kappus. "As our engineering director, Mike Rudolphi, said in a recent Marshall Star interview, 'It's our time. ' It is our time to build and test NASA's next launch vehicle, and we are fortunate to have this unique facility available to us."

Other facilities in this branch include vibration labs where shaker tables are used to qualify test articles for launch, acoustic testing chambers, a pyrotechnic shock lab and a modal testing facility. The modal facility uses portable electro-dynamic shakers, or impulse hammers, to apply dynamic forces to structures and uses accelerometers to measure the structure's dynamic response.

Marshall's Propulsion Test Branch also is using proven facilities to test scale-model combustion devices and small rocket engines for future spacecraft. Eleven test cells in Marshall's East Test Area are open, explosion-proof test positions separated from each other and equipped with basic propellants for testing.

One of the explosion-proof test compartments, test cell 103, has already been tapped for Ares I propulsion testing of the J-2X upper stage engine — an updated version of the powerful engine used to launch the Saturn V rocket upper stages during the Apollo moon program in the 1960s and 1970s.



Terry Leibold/MSFC

Kathy Kappus, team lead in the Structural Dynamics Test Branch, will use this Fastrac engine to conduct testing that will look at how to best analyze loads in the J-2X engine models.

The upper stage J-2X will sit atop the launch vehicle's first stage — a single, five-segment reusable solid rocket booster that is used to power the vehicle for the first two-and-a-half minutes of flight. The J-2X will then ignite to power the crew vehicle to an altitude of about 63 miles. Since the J-2X will be required to start at these high altitude conditions, engineers will use the vacuum chamber in test cell 103 to simulate the sub-atmospheric pressure conditions required to validate the igniter operation.

"These tests are going to provide the best design solution for the J-2X," said Ed Johnson, the test engineer in charge of the upper stage altitude ignition test in test cell 103. "When that engine ignites to take us back to the moon, it will be like watching

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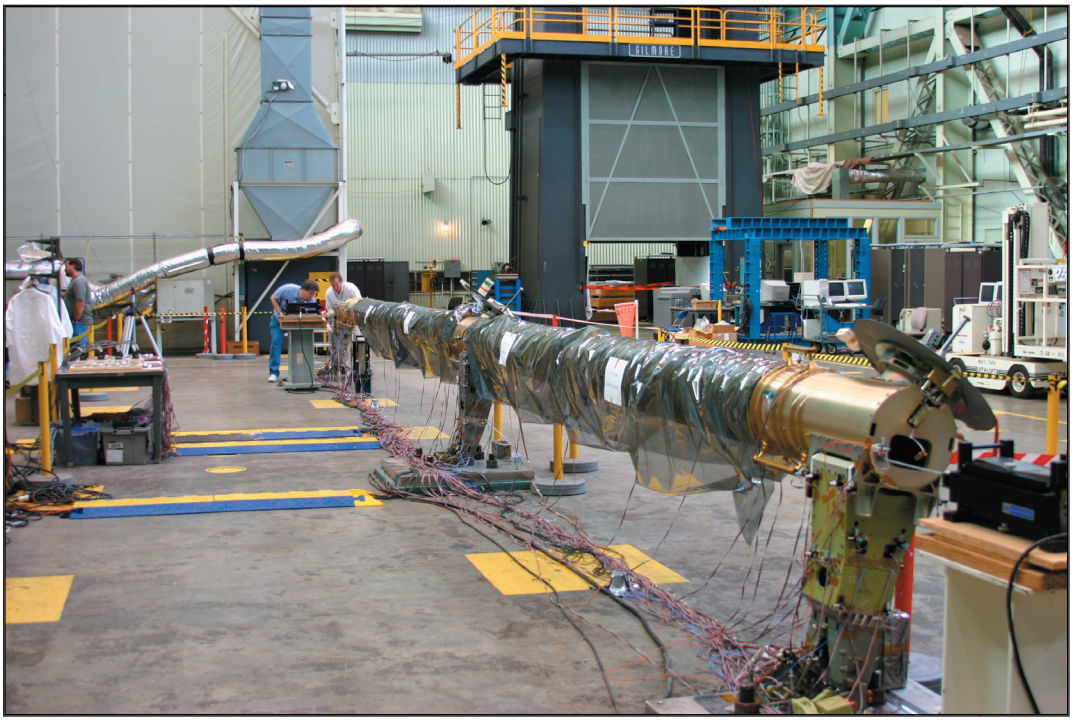


NASA/MSFC

Test Laboratory engineers adjust a dynamic shaker during a 2004 test of the space shuttle Orbiter Boom Sensor System in Building 4619. As the shaker vibrated the hardware, instrumentation on the boom measured the vibrational response of the structure.

Continued from page 4

history all over again. Except this time, I'll know I had a hand in it."

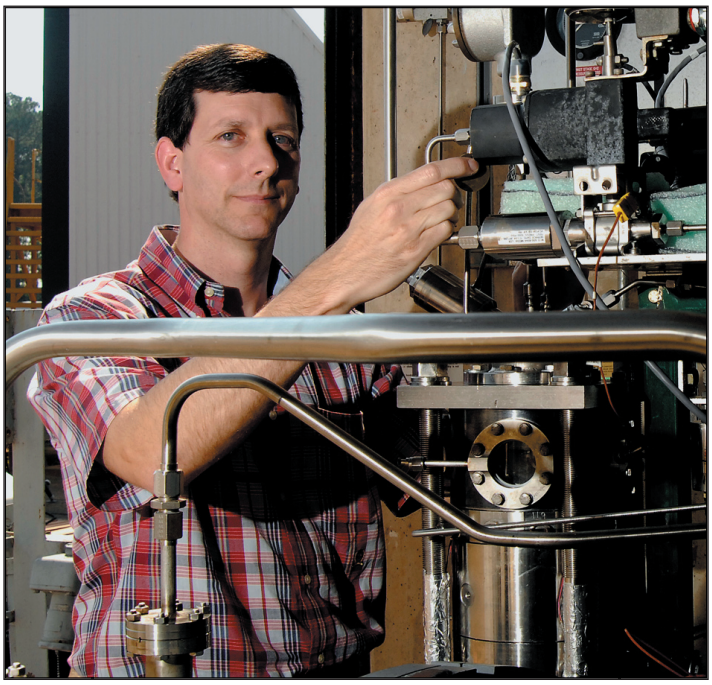
The Advanced Engine Test Facility in Marshall's West Test Area is another area in the Test Laboratory used to test rocket engines. In fact, this is one of only a few test stands in the world that can accommodate large, liquid-fuel rocket engines. It's used to assess and validate new propulsion technologies and prototype hardware for large rocket engines.

MSFC/NASA

A Liquid Oxygen/Methane Thruster test was conducted in February at Test Stand 115 in Marshall's East Test Area.

In the Structural Strength Test Branch, test engineers verify the structural integrity of the vehicle. Research and testing help determine the external shape of a vehicle and the effects of the flight structural loads on the vehicle. Testing in the unique structural test facilities at Marshall, combined with the knowledge of the experienced workforce, allows partners and customers to obtain data about their space and flight hardware that is very difficult to generate in other facilities.

The Experimental Fluids and Environmental Test Branch simulates the extreme environments that space hardware is expected to withstand during flight. Marshall engineers in the Aerodynamic Research Facility have already completed wind tunnel testing on a partial model of Ares I. The Environmental Test Facility simulates space environments using vacuum chambers to enable functional testing of space hardware. In-flight thermal conditions also can be simulated in these chambers by utilizing thermal shrouds, infrared lamp arrays, fluid plates and resistive heaters. The Environmental Test Facility consists of 27 test chambers configured to provide on-orbit normal and extreme environmental conditions.



Doug Stoffer/MSFC

Ed Johnson, an engineer in Marshall's Test Laboratory, prepares for a space shuttle main engine preburner igniter test, using a vacuum chamber at test cell 103 in the East Test Area.

The capabilities of Marshall's Test Laboratory are world-renowned. Other NASA field centers and international partners rely on the engineering work conducted in Marshall test facilities. For example, in 2004, Johnson Space Center in Houston asked Marshall's Dynamics Test Branch to conduct modal testing of the space shuttle Orbiter Boom Sensor System, which allows cameras to inspect the underside of the shuttle on orbit.

While testing NASA's space hardware is the primary mission of the Test Laboratory, the facilities also support programs for other federal offices and agencies, including the Department of Energy, the Environmental Protection Agency and the Department of Defense, as well as for many colleges and universities.

"Our teams work so hard day-in and day-out, and the effort they are putting in is immeasurable," added Rodriguez. "I'm very proud of their commitment to our future goals in exploration."

The writer, an ASRI employee, supports the Office of Strategic Analysis and Communications.

The face of mission success is:

Mary Hovater, physicist and impact testing range senior engineer in the Materials & Processes Laboratory

Not everyone comes to work and shoots a gun everyday. But these are no ordinary guns. Mary Hovater, Marshall's physicist and impact testing range senior engineer, performs tests with hypervelocity two-stage light gas guns in the Impact Testing Facility. Between working at NASA and raising her two sons, she is constantly on the run.

What are the key responsibilities of your job?

I test different materials, from aluminum sheets to ultra-thin polymers, in a simulated micrometeoroid and orbital debris environment with the facility's two hypervelocity — or excessive velocity — two-stage light gas guns. The guns use highly compressed hydrogen to accelerate projectiles at high velocities. These velocities are required to simulate particle impacts on spacecraft materials and components. The purpose of the guns is to evaluate material and subsystem performance with respect to particle impacts such as spacecraft pressure wall penetrations causing a catastrophic failure.

Emmett Given/MSFC

Mary Hovater

What is your education and professional background?

I have my bachelor's degree in physics from Athens State University in Athens, Ala., and a master's in physics from the University of Alabama in Huntsville. Before I began my career at NASA, I painted murals for the City of Cullman in their beautification project and local pool hall. I also performed drafting work such as a small piece of the Gravity Probe B for Stanford University in Stanford, Calif., and the Massachusetts Institute of Technology in Cambridge.

How many years have you been at the Marshall Center?

I have worked at the center since 1993. I have been a part of the Environmental Effects Branch in the Engineering Directorate the duration of the time.

What services does your job provide in support of the center's mission?

From the time a launch vehicle is on the launch pad to the minute it comes back to Earth, there are many forms of debris that can impact it. The Impact Testing Facility's mission is to assist in analyzing any damage that may occur from a debris hit. The facility can simulate impacts from a few meters per second to hypervelocity to simulate micrometeoroid and orbital debris strikes. The impact facility has offered hypervelocity testing since the early 1960s and is proud today to be able to offer a whole range of test velocities. The capabilities will benefit the design of the Ares I crew launch vehicle, Crew Exploration Vehicle and any other vehicle or habitat that must be able to survive in space.

What are you looking to accomplish in your role this year?

Recently, I had the honor of being a part of the impact testing facility's team as we expanded by adding five guns, four of which were given to us from the Army and Navy. We are currently getting these new guns upgraded. All but two are completed and in use. They are being worked on diligently and should be completed in the next few months. My goal is to do everything in my power to make sure the impact testing facility is successful in the work and contributes as much as possible to Marshall's new exploration work.

What is the biggest challenge you may face?

The biggest challenge is almost the same as what I hope to accomplish in the next year. We have to get out there and do better work than has been done in the past to prove this facility. Beyond that, just getting the word out that Marshall has all these capabilities is a challenge. But our facility employees are working hard to make sure that the center's employees know we are here to help. We are also trying to make sure that other NASA centers are aware of us, and we are currently working to partner with several of them to work on new vehicles.

On a personal side, how do you like to spend your leisure time?

I love to spend time with my boys, James, 9, and Hayden, 6. They are very active in sports, music and school, so we are always running to a game, doing a project for school or going to violin lessons and concerts. Other than that, I sing, play piano, paint and draw. But I have to admit, some of my leisure time is spent thinking about ways to improve what I am working on here at Marshall. I have a real passion for my work and NASA. I don't think that there is any other place in the world I would rather work. Not many people can say they like what they do for a living. I love the work I do, and I hope that is reflected in my performance.

Jessica Wallace, the Marshall Star editor, contributed to this article.

Marshall Nuclear Thermal Propulsion presents one-year review

The Nuclear Thermal Propulsion team, sponsored by the Nuclear Systems Office at Marshall, recently presented its 2005-2006 accomplishments and future plans to members of the Prometheus Power and Propulsion Office, part of NASA's Exploration Systems Mission Directorate. The review included attendees from NASA's Glenn Research Center in Cleveland, the U.S. Department of Energy, industry and academia. Nuclear propulsion researchers at the Marshall Center — including, from left, Harold Gerrish, technical assistant for the Nuclear Systems Branch; Ron Porter, manager of the Nuclear Systems Office; Wayne Bordelon, manager of the Nuclear Thermal Propulsion project; and Rick Ballard, team leader for the Nuclear Systems Branch — gather beside the historic XE Double Prime experimental engine display at Marshall's Propulsion Research Laboratory.

Emmett Given/MSFC

Classified Ads

To submit a classified ad to the Marshall Star, go to Inside Marshall, to "Employee Resources," and click on "Employee Ads — Submit Ad." Ads are limited to 15 words, including contact numbers. No sales pitches. Deadline for the next issue is 4:30 p.m. Thursday.

Miscellaneous

Moving Sale: furniture, household items, art, jewelry, clothes (size 8). 837-1006

Six plots, side-by-side, Crestview Cemetery, Guntersville. $3,000. 256-505-3993

Barbie Hot Wheels Jeep, $75. 837-3562

Utility trailer, Snow Bear Model 8000, 54"x92", pre-wired, $500. 256-679-2429

Braggs sleeper sofa, cream tapestry w/flowers, $200; Cherry coffee and end table, $200. 519-9326

Four-shelf audio rack, Cherry stain and black, wire management pillar, open design, $60. 256-656-8054/ Jim

Golf clubs, Dunlop oversize clubs, full set with bag, $75. 864-8183

Harvard foosball table, 55", mahogany MDF laminate, 5/8" solid rods, 3-man goalie, $100. 468-6016

Four tires, 225/40ZR18, MOMO rims, $350. 527-2352

AB Roller, $20. 233-1487

Monster truck: Associated Electronics Monster GT, Nitro powered, radio controlled, extra accessories, $350. 256-599-7381

Aquarium, 150-gallon, stand, filters and lights, $600. 256-931-6954

Two Carrie Underwood premium tickets. 651-9550

Nurses scrubs, small and medium, $8 for set, $5 tops, $3 bottoms. 722-9989

Great Books, 54-volume, collectible edition, $199. 883-7752

Custom-built solid Oak wall-unit entertainment center, 3 pieces, decorative molding, $1,000. 830-5285

Pair of Oak two-drawer file cabinets, $45 each; white wooden children's furniture; children's bikes. 881-5093

Five Goldwing Roadriders Association pins, $10 each or all for $40. 837-6776

Twin bed, box spring, Serta mattress, dresser, desk, and chair, $300 for all. 655 9416

Entertainment center, Pine, 4 pieces, 2 corner ones, $500; bedroom set, dark wood, $300. 837-1006

Teapot collection, eclectic assortment, $20 each. 355-6648

Kirby vacuum system, $400. 256-508-9552

Four-horse trailer w/brakes and pad, bumper pull, dual wheel. 498-5089

Golf clubs, men's left-handed, woods 1/3/5, irons 3-9, PW, SW, putter, no bag, $150. 882-3983

German shepherd, black & tan female, 3 years old, fence jumper, $100. 420-8101

Custom-made reflecting telescope, 6", on visual tracking table, 48" FL, 10mm/ 25mm eyepieces, $450. 883-9361

Two IBM ThinkPad laptops, 1.13 GHz, P3 30 GHd, 512 Meg ram. 810-9510

Acoustic guitar, Martin Model DM with hard case, $500. 604-8661

Maytag gas dryer, $75; riding lawn mower, powered vacuum attachment, $150. 509-7907

Two side-by-side eye level crypts, Valhalla Memory Gardens, $5,200 including all fees. 860-558-3063.

Set of twin captain's beds with drawers underneath, solid pine. 325-3696

Eclipse 4100HR/A Elliptical machine, less than 1 yr. old, $250. 509-9765

Kenwood Ham radio equipment: 440SAT HF and 2m HT, power supply, antennas, books, $550. 656-2951

Palomino AQHA gelding, 8-year-old, hunter/jumper/trail, $5,000. 508-7388

Four 16" GMC aluminum wheels w/tires from 2001 half-ton truck, $250. 852-2438

Two Queen Anne loveseats, $75 each. 256-603-3558

Tin-friction rocket. 15-inches w/automatic lift-action, drop-down stairway, litho astronaut. Boxed. $20. 256-303-3702

Vehicles

International (IH) 674 diesel tractor, 62HP, low hours, 2WD, $7,500. 656-0043

1961 Chevrolet Corvair load-side truck, lots of rust, needs restoration, $400. 256-527-8798

2003 Honda Accord EX coupe, gray w/black leather interior, $16,500. 721-1234/Nancy

2003 Lincoln LS, V6, black w/black leather, automatic, 4-door, 52K miles, $18,000. 256-694-1217

2005 Kawasaki Ninja, 4.9K miles, GTPP Kawasaki warranty until 2010, $2,700. 256-503-7327

2000 Mercury Marquis LS, all-power, 51K miles, silver metallic, leather interior, $8,500. 931-728-3397

1994 Ford Crown Victoria, white, runs well, $1,300. 684-5712

2006 Honda Pilot EX-Li, black, leather, moon-roof, $27,250. 653-7968

1999 Ford Mustang Cobra SVT convertible, green w/tan leather, loaded, about 65K miles, $14,950. 256-586-7181

2002 Toyota Tacoma, SR-5, V-6, 4x4 TRD, X-Cab, auto, all-power, 76K miles, $15,400. 256-683-4151

2001 Olds Silhouette Premier Mini-van, 110K miles, video, rear air, power door, $10,000. 256-603-0741

1981 Chevy C-10, S/W, 2nd owner, 305/V8, no rust, $3,800. 783-2637

2003 Nissan Pathfinder SE, Bose CD, power seats, leather, sunroof, running boards, 98K miles, $12,500. 931-937-7830

2004 Subaru Forester, silver, $14,500. 426-7237

2002 Chevy Tahoe LS, white, 4WD, V8 automatic, all-power, 45K miles, $20,000. 852-6548

2002 Chevrolet Trailblazer, dark green, tan interior, 89K miles, sunroof, On-star, CD/cassette, 80/tires, $13,000. 205-454-6390

2003 Dodge Ram 1500 Quad SLT, 6-Disc Changer, $15,000. 256-200-4034

Wanted

Older diesel car or SUV for alternative fuel experiment. 837-1792

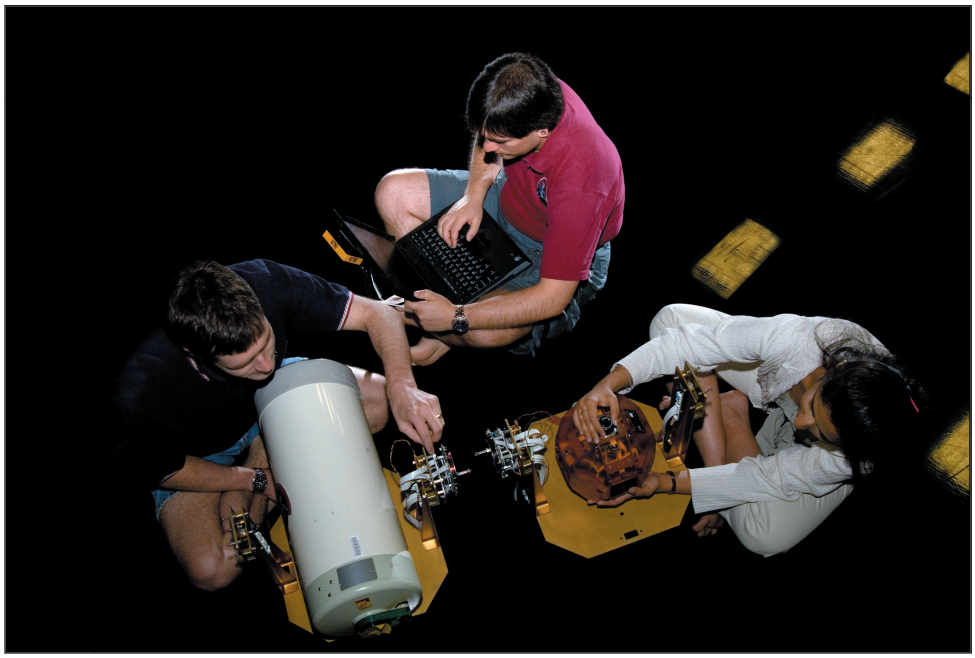
Used rototiller in good working condition. 256-682-3109

Found

Watch, windbreaker, and a pair of earrings. Call 544-3623 to claim/identify.

Pair of tan colored Fanfares women's shoes, size 10, found in Bldg. 4600 parking lot.

MIT students put Marshall's 'flat floor' to the test



Doug Stoffer/MSFC

Alvar Saerz-Oteo, center, a lead in the Space Systems Laboratory at the Massachusetts Institute of Technology in Cambridge, along with MIT graduate students Nicholas Hoff, left, and Swati Mohan, recently conducted tests with an experiment on Marshall's Flight Robotics Laboratory Flat Floor Facility. The team is looking at ways to assemble large-scale systems such as telescopes in space using autonomous modules. Marshall's flat floor is a precision air-bearing surface that helps engineers simulate the movement of spacecraft in Earth orbit. By allowing spacecraft to float on a thin layer of air, the one-of-a-kind facility helps engineers test techniques for spacecraft rendezvous and docking or controlling robotics remotely.

Weather

Continued from page 2

warn targeted communities — not just a general coverage region — of specific threats, from crashing winter temperatures and heavy fog to rampaging thunderstorms and even forest fires.

Proenza praised the joint commitment that makes such improvements possible.

"This unique partnership allows us to work closely with scientists from NASA and the University of Alabama in Huntsville on cutting-edge projects," he said. "It creates a wonderful synergy that will provide substantial lifesaving benefits for the partners, the emergency management community and the public."

The SPoRT team processes data from NASA Earth Observing System satellites including Terra and Aqua, and space-based instruments such as the Moderate-resolution Imaging Spectroradiometer and the Advanced Microwave Scanning Radiometer, which track characteristics of severe weather including precipitation, humidity, lightning and storm movement. The SPoRT team also provides detailed lightning maps to regional weather forecast offices from the ground-based North Alabama Lightning Mapping Array, a network of 10 VHF receivers deployed across North Alabama that feed data to the base station at the NSSTC.

The writer, an ASRI employee, supports the Office of Strategic Analysis and Communications.

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