



MARSHALL STAR

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Jan. 24, 2008

Marshall flight qualification tests helping shuttle fly safely



Jeremy Kelley of Lockheed Martin prepares the qualification article of the engine cut off sensor feed through connector for an ambient helium leak check at the Marshall Center Engineering Directorate's Test Area 300.

By Sanda Martel

Tests by Marshall engineers on space shuttle engine cut off sensor hardware is helping move Atlantis closer to a February launch. An agency-level flight readiness review will be held Jan. 30 to thoroughly assess preparations for the mission and set a firm date. The planning date for launch remains Feb. 7.

Qualification and flight rationale testing began Jan. 19 at Marshall's Test Area 300 and will continue through Jan. 24 at the East Vibration Facility, Building 4619, said Chad Bryant, External Tank Project engineer, who is leading the Marshall testing. The test article is a redesigned electrical plug that engineers think will solve the problem experienced during two Atlantis launch attempts and a tanking test in December at the Kennedy Space Center, Fla.

Marshall engineers completed the first round of tests on the engine cut off sensor feed through connector last week. All of the circuit anomalies experienced during the tests are representative of

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Back to the moon!

Students gear up for NASA's Great Moonbuggy Race on April 4-5

By Rick Smith

NASA's 15th annual Great Moonbuggy Race will be held April 4-5 at the U.S. Space & Rocket Center in Huntsville. Dozens of high school and college teams will careen around an obstacle-strewn track, piloting rovers of their own design — and perhaps launching their careers as future space explorers.

To date, 48 student teams from 20 states, the District of Columbia, Puerto Rico, Canada and India have signed up to design, build and race their very own lightweight, two-person lunar vehicles. The moonbuggies are modeled after the historic rovers that allowed Americans to explore the moon's surface during the Apollo 15 mission in 1971.

Teams build their original moonbuggy designs from scratch, exhaustively testing to ensure the sometimes delicate vehicles can successfully negotiate the punishing terrain of the half-mile course. They race in timed trials — not side-by-side, but against the clock.

The three fastest-finishing moonbuggies in the high school and college categories win prizes from race sponsors. Additional awards are presented for the most unique moonbuggy design, best overall design, most improved team, best rookie team and most spirited team.

The experience is more than just fun, said Tammy Rowan, manager of the Marshall Center's Academic Affairs Office, which organizes and hosts the race with the Space & Rocket Center.

"Participation in the Great Moonbuggy Race offers valuable real-world experience in practical engineering, teamwork and problem-solving," Rowan said. "Participants learn lessons they'll take back with them to the classroom — and hopefully onward through their careers and their lives. It's our hope the race whets their appetites to be among those who will someday live and work in space."

The first Great Moonbuggy Race was run by just eight college

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Marshall employees, retiree honored with National Women of Color Technology Awards

By Megan Norris

Four Marshall Center employees and one retired employee recently were honored with National Women of Color Technology awards for their exemplary contributions in technology-driven fields.

Tawnya Laughinghouse, materials engineer in the Nonmetals Engineering Branch of the Materials and Processes Laboratory, received the Rising Star Award, recognizing young minority women who have excelled quickly in technology-driven professions.

Three other Engineering Directorate team members — Karen Oliver, Lorna Jackson and Marceia Clark-Ingram — were honored with Technology All-Stars awards. Dr. Barbara Anthony, a retired education resource specialist at NASA's Educator Resource Center, was honored with a Technology All-Stars Award and a Special Recognition Award. The All-Stars and Special Recognition awards are given to accomplished women of color who are advanced in their careers and have demonstrated excellence as leaders at work and in their communities.

Oliver is deputy branch chief of the Dynamics, Loads and Strength Branch in the Structural Design and Analysis Division of the Spacecraft and Vehicle Systems Department; and Jackson is branch chief of the Avionics Systems Integration Branch in the Systems Engineering and Integration Division of the Space Systems Department. Clark-Ingram is a senior materials and processes engineer and advanced materials science specialist in the Laboratory Lead Engineers Office of the Materials and Processes Laboratory.

Career Communication Group's Women of Color magazine and the IBM Corporation sponsored and presented the awards at the 12th annual National Women of Color Science, Technology, Engineering and Math Conference in Atlanta. The conference is for minority



Tawnya Laughinghouse

women in information technology, computer science, information science and digital arts. Issues discussed include U.S. job growth diversity, the critical shortage of women in technological careers, technological innovation and women-owned information technology ventures.

While Laughinghouse was a student at Sparkman High School, she participated in NASA's Summer High

School Apprenticeship Research Program, working in Marshall's Space Science Laboratory. She joined NASA full-time in 2004 as a materials engineer. Today, she provides ceramic and ablative material expertise in support of NASA projects, such as the Shuttle Reusable Solid Rocket Booster, Ares I Upper Stage and the Orion Launch Abort System motors.



Karen Oliver

Oliver joined NASA in 1985 as an aerospace engineer in the Environmental Effects Branch of the System Dynamics Laboratory, part of the Engineering Directorate. She delegates work assignments to the structural strength and dynamics engineers and provides technical expertise for program and project support.

Jackson came to Marshall in 1986 as a lead engineer for in-house electrical power systems test beds for the Hubble Space Telescope mission. She now directs and leads a multi-discipline branch that includes Avionics Lead Systems engineers that integrate various launch vehicle avionics hardware and software systems.



Lorna Jackson

Clark-Ingram started at Marshall in 1987 as a chemical engineer in the Corrosion Branch of the Materials and



Marceia Clark-Ingram

Processes Laboratory. She is the primary Materials and Processes Laboratory technical lead for interfacing with Marshall's Propulsion Systems Engineering and Integration Office and is an integral part of developing effective materials and processes replacement technology solutions.

Anthony began her career at NASA as an ASRI contractor at the Educator Resource Center in 1998. She worked on team planning, the coordinating and conducting of presentations given by minority scientists and engineers, and teacher workshops. She also piloted an engineering design challenge that gave students hands-on experience with understanding how thermal protection systems work on rockets. She retired in March 2007.

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



Barbara Anthony

Werner K. Dahm continued work to help 'younger people'



Werner Dahm

"It was more like yesterday," Marshall Center charter member Werner Dahm once said recalling 1947, the year he first came to America from Germany to join Dr. Werhner von Braun and other members of his World War II rocket team at Fort Bliss, Texas.

Dahm, who retired from Marshall at age 89 in 2007, died Jan. 17 in Huntsville. He was the last German-born Marshall employee directly associated with the von Braun team to retire from Marshall. Dahm served as the center's chief of aerodynamics.

Dahm, who many viewed as a library of technical information, was respected as a mentor for generations of engineers in fluid dynamics and said he continued to work at the center "so I can help the younger people get a better start."

In 1946, an American officer in Europe offered Dahm a contract to join other members of the von Braun team already working at

Fort Bliss. He accepted and later moved with the team to Huntsville in 1950 to work for the U.S. Army and joined Marshall in 1960.

At Marshall, he made major contributions to the Saturn V launch vehicle. These included work on aerothermodynamics and on liquid hydrogen propellant systems. He subsequently was involved in numerous projects contributing to the nation's unmanned and manned space flight programs, especially Skylab and the space shuttle.

In the shuttle development effort, he led a team working on vehicle aerodynamics and the main engines, which included developing full-scale component tests and scaling methodologies, and applying computational fluid dynamics to a wide range of technical problems.

Over the years, Dahm earned patents for several inventions including a Wind Measurement System, Focused Laser Doppler Velocimeter and Clean Air Turbulence Detector.

Dahm is survived by four sons, Stephan Dahm of Huntsville; Werner J.A. Dahm of Ann Arbor, Mich.; Martin Dahm of Huntsville; and Thomas Dahm of Plano, Texas.

STS-122

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anomalies seen during the launch attempts, Bryant said.

Open circuits in the part that connects wires from the interior to the exterior of the liquid hydrogen tank, and on to computers on orbiter Atlantis, were identified as the culprit that caused false readings, preventing Atlantis from launching Dec. 6 and Dec. 9.

The connector is part of the sensor system that monitors the liquid hydrogen section of the external tank. The system, one of several, protects the shuttle's main engines by triggering their shut down if fuel runs unexpectedly low.

Space shuttle hardware tests conducted at Marshall to support the STS-122 shuttle mission include nondestructive evaluation, X-ray, visual inspection, cryogenic testing and physical destructive analysis, which subjects hardware to the same conditions it experiences during launch.

The Marshall Center, with its unique test facilities, is helping to improve the safety of the Space Shuttle Program by performing tests

that verify that changes to shuttle hardware are safe to fly.

Teams of technicians at the Kennedy Center continue applying foam insulation to small sections of Atlantis' external fuel tank after some foam was removed from around an external wiring connector on the tank. New hardware with soldered pins and sockets has been installed on ET-125. Other standard launch preparations also continue at Kennedy.

Atlantis' main objective during its STS-122 mission to the space station is to deliver, install and activate the European Space Agency's Columbus laboratory, which will provide scientists around the world the ability to conduct a variety of biological, physical and materials science experiments.

For more information about the STS-122 mission, visit http://www.nasa.gov/mission_pages/shuttle/main/index.html. For more information about the unique test facilities at the Marshall Center, visit <http://ed.msfc.nasa.gov/>.

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

This month in history ...

Fifty years ago this month, President Dwight D. Eisenhower proposed to the Union of Soviet Socialist Republics, now known as Russia, that the Soviet Union and the United States "agree that outer space should be used only for peaceful purposes." President Eisenhower was responding to a letter from the Soviet Premier Nikolai A. Bulganin regarding a summit conference

on disarmament. The United States had also offered to cease production of nuclear weapons and dedicate atomic energy to peaceful uses in 1946. Of course, neither sides came to the agreement and the Cold War rhetoric continued. Ultimately the United States elected to form NASA in October 1958 with a charter to conduct a peaceful exploration of outer space.

Testing new materials for a return to the moon: A world-class effort in world-class facilities

By Lori Meggs

Whether the requirement calls for materials for an Ares I upper stage barrel panel or a liquid oxygen tank, the Materials and Processes Laboratory in the Marshall Center's Engineering Directorate has the facilities and capabilities to build it and evaluate it.

Living and working on the moon will require the development and testing of a variety of new technologies and techniques. Work underway at Marshall is contributing to the successful adaptation of these new capabilities.

With nearly 200 civil service and as many contractor employees, Ralph Carruth leads the Materials and Processes Laboratory in developing materials and building full-scale hardware for Ares — the launch vehicles that will transport the Orion crew exploration vehicle and cargo to space — while continuing to support the Space Shuttle Program.

The laboratory provides science, technology and engineering support in materials, processes and products to be used in space vehicle applications, including related ground facilities, test articles and support equipment. It leads a number of research and development efforts in its world-class facilities.

Among the capabilities of this lab are a new, large robotic friction stir welding tool — the world's first machine of its size, featuring a turntable as big as a three-story Ferris wheel — that uses forging pressure and frictional heating to produce high-strength bonds virtually free of defects; a rapid prototyping laboratory that consists of seven state-of-the-art machines, each of which can build — without benefit of a mold — intricate, detailed pieces of hardware; and nondestructive evaluation labs that can examine and locate problems without taking the hardware apart.

"A really good analogy," said Carruth, is to compare the laboratory to baking a cake — determining which "ingredients," or materials, work best so the cake has a smooth consistency and great taste and following the recipe, or process, to ensure a perfect cake is the result.

"We want our 'cake' to win the blue ribbon, and for us that means building a vehicle that can return us to the moon as efficiently and safely as possible," Carruth added. "As we go forward with NASA's Constellation Program to return to the moon and travel beyond, there's a lot we know and a lot we don't know. We are using a lot of materials and processes that weren't used on Apollo missions in the late 1960s and early 1970s, and it's our job to ensure we have the best of these to carry out our new mission."

Materials Test Branch

Marshall's Hydrogen Test Facility — mothballed in the early

1970s, but brought back online for shuttle testing in 1988 — is doing plenty of testing these days. This unique facility — one of only two in the country — is the largest and most comprehensive of its kind. Managed by Tina Malone, it ensures materials used in cryogenic tanks, designed to endure super-cold temperatures, are strong enough to withstand stress and fracture issues — an important variable in the design of new space vehicles. Malone's team is testing materials to be used on the Ares upper stage engine, the upper stage hydrogen and liquid oxygen tanks, and the interstage which connects those two tanks.

"We are able to measure the permeation of hydrogen through composite materials to be used in the design of the Ares I interstage," she said. Composites, which are not solid like metals, can have tiny openings allowing liquid or gas to pass through. "We test the composite materials and make recommendations, so the project can design around this liquid or gas permeability."

It's a difficult, dangerous job involving high temperatures in a gaseous environment, which may explain why the facility is located in a secluded, wooded area at the Marshall Center. "Even so, we do have an excellent safety record," added Malone.

Damage Tolerance Assessment Branch

The Damage Tolerance Assessment Branch boasts one of the most versatile capabilities at Marshall, having tested everything from turbo machinery to dinosaur fossils. Dr. Ron Beshears is an engineer responsible for operating Marshall's Computed Tomography (CT) facilities, where his team works to understand and resolve hardware-specific problems.

Computed Tomography visually slices through a piece of hardware in cross sections using X-ray technology. This allows Beshears' team to "look inside" a part to find cracks or voids that many other inspection methods cannot detect.



David Higginbotham/MSC

Ron Beshears

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Materials

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It's the same technology used in medical CT scans, except this facility uses higher energy X-ray imagery. For the past 20 years, CT has been used to support the Shuttle Program's Reusable Solid Rocket Motor Project by dissecting new materials to determine how they perform compared to materials already used in flight.

"Pieces are usually brought to us in rough form so we can look at them before machining the part," said Beshears. "This procedure will prove effective as we develop motor segments for the upper stage, ensuring that engineers don't waste time testing a part that may have defects."

A new CT system has been ordered to replace one in use for 20 years whose parts have become obsolete. "The new machine will more thoroughly examine new materials and hardware for their effectiveness," added Beshears. "We can't wait to put it to use later this year."

Metals Engineering Branch

What looks great on a computer model is not always the way it comes out when manufactured. That's why a team from the Metals Engineering Branch is working to ensure pieces of the Ares I upper stage design are feasible and can be manufactured, long before anything is welded.

Richard Grugel, Mark Talton and Jennifer Gasky are members of a team studying new materials for structural development of the upper stage that will be built at the Marshall-managed Michoud Assembly Facility near New Orleans, and the Manufactured Demonstration Article (MDA) being built in-house at Marshall.

Gasky is working with vendors on the manufacturing processes for the gores — metal panels welded to form the upper stage dome. "We have to know the thickness and strength of the material, then prove the process," said Gasky.

Talton is responsible for ensuring barrel panels for the upper stage can support all of the loads encountered during launch. "These panels will be similar to those on the space shuttle external

tank, but with a different radius, rib heights and thicknesses, and panel thicknesses," said Talton.

Grugel is looking at a new application of the material — aluminum lithium alloy — to be used to develop rings that will connect the barrel panels to the dome of the upper stage. "It's a classic example of the microstructure, processing and properties relationship," said Grugel. "Given the importance of this component's role, we are subjecting processed ring sections to different heat treatments in order to learn about microstructural development so that mechanical properties such as strength and ductility can be optimized."

Nonmetals Engineering Branch

Before anything is manufactured, Steven Phillips' team in the Nonmetals Engineering Branch will create detailed computer simulations of the processes required to manufacture and assemble the hardware. There are many benefits derived from using manufacturing simulations. Some of these include the detection of collisions and interference zone violations, the optimization of robotic tooling paths and the generation of shop floor work instructions.

For the team's members, it's much like those dreaded instructions you must follow to assemble a child's toy: If you end up with extra pieces, you run the risk of failure. That's why they use manufacturing simulations to check the processes beforehand to make sure every piece fits before a part is manufactured.

The team is currently working on implementing model-based work instructions. "We want the technicians and operators on the floor to have three-dimensional simulations which show them step-by-step how to do their job," said Phillips. "By doing this, we will increase productivity and save time and money."

Environmental Effects Branch

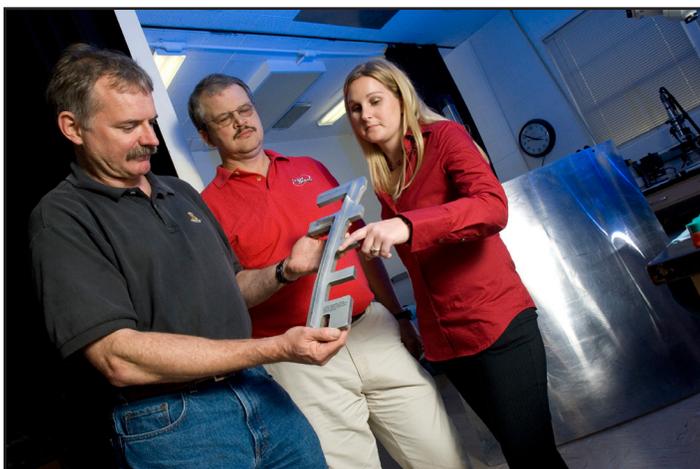
As some folks in the Materials and Processes Lab work on hardware for the Ares rocket, others are looking at the environment where the rocket will travel. Jason Vaughn, a physicist in the Environmental Effects Branch, leads development of the Lunar Environment Test System studying the electrical and mechanical properties of lunar dust.

Vaughn and his team work with vacuum chambers that can incorporate the lunar soil environment with the solar wind environment — an all-encompassing simulation of the lunar environment. The lunar test chamber has the capability to test different parts of spacecraft, such as motors, gears or even fabric for spacesuits, in this simulated lunar environment to see how long they'll last or how they'll degrade over time.

"It's important for us to understand the lunar environment because it is much more damaging than people once thought," said Vaughn. "It can degrade materials and that's why we have to find the right materials to build hardware and spacesuits that will last."

Scientists plan to use this lab to test probes and payloads for the moon. "We look forward to helping people understand how things are going to work on the lunar surface," added Vaughn.

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



David Higginbotham/MSFC

From left, Richard Grugel, Mark Talton and Jennifer Gasky.

NASA prepares to roll out Electronic Official Personnel Folder

NASA is preparing to roll out the Electronic Official Personnel Folder, or eOPF, system to all civil service employees agency-wide.

Marshall will open the system to employees March 7. The personnel folder is an online version of the paper OPF, documenting civil service employment history from new hire to separation in an accessible and searchable format. The personnel folder is one of 25 mandated Presidential e-Government Initiatives.

NASA's Office of Human Capital Management, in cooperation with the Office of Personnel Management, is responsible for implementing this initiative for the agency.

The Office of Personnel Management is the official owner of an employee's personnel folder, and NASA OHCM is the authorized folder custodian. With the deployment of eOPF, established record keeping standards will be followed government-wide, improving consistency and promoting efficient and effective maintenance and transfer of personnel records.

The Electronic Official Personnel Folder provides valuable capabilities and benefits to the agency and its employees not available with traditional paper folders.

- **Easy online access:** The Electronic Official Personnel Folder

is available digitally over the Internet. Employees no longer have to go to their center's human resources office to review their personnel folder.

- **Improved security:** The personnel folder is safer than a hard copy. The system has multiple security layers, encryption, and automatically feeds new actions into the eOPF. Document loss, misfiling or maintenance errors are less likely.
- **Automatic notification of personnel actions:** When a new personnel action is placed in the eOPF, an automatic e-mail is sent stating that an action has been added.
- **Transfer of eOPF to another center or agency:** Transfer of the eOPF from center to center or agency to agency is easier. What used to take days now happens in minutes electronically.

The personnel folder will be administered as part of the agency's Human Capital Information Environment, an application to transform and improve the reviewing of human resource benefits.

For questions about eOPF or the location of personnel documents, contact your organization's Office of Human Capital representative.

NASA, Louisiana officials break ground on Michoud building



Above left, sharing earth-turning duties at a December groundbreaking ceremony at NASA's Michoud Assembly Facility in New Orleans are, from left, Sheila Cloud, NASA's Michoud transition director; Louisiana Gov. Kathleen Blanco; Marshall Center Deputy Director Robert Lightfoot; and Michael Olivier, Louisiana state secretary of economic development. The event marked the start of work on a \$40 million, five-story Research and Development Administration Building at Michoud. The 120,000-square-foot facility, in the rendering above right, will include



350 offices, a conference center and research and development space for NASA and Michoud partner organizations. It will support manufacture and assembly of hardware for the Ares launch vehicles and Orion crew exploration vehicle — work managed at Michoud by the Marshall Center. The new building is funded by the state of Louisiana, through the University of New Orleans Research & Technical Foundation and the Louisiana Office of Economic Development, as part of a long-term NASA partnership agreement. Completion is expected in December 2010.

Moonbuggy

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teams in 1994 to commemorate the 25th anniversary of the Apollo 11 lunar landing. The race was expanded in 1996 to include high school teams.

The 2008 race is sponsored by the Northrop Grumman Corp., The Boeing Company and Teledyne Brown Engineering Inc., all of Huntsville. Additional Huntsville-area contributors include the American Institute of Aeronautics and Astronautics; ATK Launch Systems Inc.; CBS-TV affiliate WHNT (Channel 19); Stanley Associates; Jacobs Engineering Science Technical Service Group; Science Applications International Corp.; the Tennessee Valley chapter of the System Safety Society Inc.; and the United Space Alliance, LLC.

For more information about the race, visit <http://moonbuggy.msfc.nasa.gov>.

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

Moonbuggy race day volunteers sought

Volunteers are being sought for the 15th annual NASA Great Moonbuggy Race, to be held Friday and Saturday, April 4-5, at the U.S. Space & Rocket Center in Huntsville.

Marshall team members are needed in two shifts to help judge races, keep score, qualify entrants and support other race day activities. Volunteer shifts are 8 a.m. to 12:30 p.m. and noon-5 p.m. each day of the competition.

A meeting for race volunteers will be held at the Space & Rocket Center March 26 at 3 p.m.

Each volunteer will receive a complimentary lunch and moonbuggy race T-shirt.

To sign up, go to <https://moonbuggy-volunteer.msfc.nasa.gov/index.cfm>.

For more information, contact Karla Miller at 544-5885 or karla.i.miller@nasa.gov.

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, Jan. 31, is 4:30 p.m. Thursday, Jan. 24.

Miscellaneous

Sony PlayStation Portable, extra battery pack, case charger, \$150. 337-4359

Desk, bookcase, \$120; computer desk, \$50; wardrobe, \$75; library chairs; four leather office, desk chairs. 895-9348

Love seat, earth tones, \$120. 682-3502

Chain link fencing, about 200 feet, four gates, hardware, \$150. 348-9381

Stanley kids'/teens' bedroom furniture, white, dresser, chest, night stand, bookcase, \$1,000. 895-8294

Boys' twin bedroom set, dark brown, dresser, nightstand, mattress, box springs, \$100. 351-1754

Wood trim, crown, casing, chair-rail, over 2,000 feet, \$500 obo. 233-8505

Mitsubishi Diamond Pro 91TXM 21-inch CRT Monitor, \$60. 837-7732

Kittens, male, orange tabby, white, copper eyes, playful, \$10. 270-4151

French sofa, loveseat, chair, light brown, walnut carving, \$350. 885-1596

Brunswick 8-foot pool table, play accessories, cover, wall stand, \$3,200 obo. 412-3406

West Highland Terrier, 7 months old, CKC, not registered yet, \$350, \$400 with crate. 527-5595

Four factory 16-inch rims, lug nuts, chrome sport covers, for 2005 Toyota Tacoma, \$300. 355-6858

Dewalt 10-inch radial arm saw, \$250; 10x10x6 dog kennel, \$150. 882-0461

72- by 42-inch almond-colored whirlpool bathtub, six jets, working pump, \$150. 655-6701

King sleigh bed, dresser, mirror, chest of drawers, two nightstands, \$1,000 obo. 426-1822

Dark brown suede couch, \$300. 508-0509

Wood flooring, 2 1/4 x 3/4, 225 square feet, golden oak finish, \$250. 417-5754

55-inch Sony Wega LCD rear-projection TV, stand, 3-year warranty, \$1,100 obo. 603-2039

Sears Craftsman Professional 17-inch drill press, laser sight, cast-iron floor table, \$350. 656-0077

Two parakeets, two cockatiels, male, female, cage, \$100. 651-2429

Clayton-Marcus couch, \$250; sofa chair, hassock, \$250; \$400 for set. 426-4903

Firewood, \$80 per truckload. 755-0050

Nintendo Wii Nunchuk remote control, \$25. 828-1234

Vehicles

2007 Chrysler 300, \$17,500 obo; 1996 Dodge Intrepid, \$1,800 obo; 1994 Cougar, \$1,400 obo. 520-2802

2007 Honda Accord EX, V6, all power, sunroof, white, tan leather, 8k miles, \$21,900. 232-4379

2005 Chrysler Pacifica, black, leather, fully loaded, 11,700 miles, \$19,000. 883-2079

2004 BMW 325CIC convertible, maintenance program, Harman Kardon CD, 48k miles, \$26,850. 468-9591

2003 Ford Ranger, four door, super cab, Edge package, new tires, 77k miles, \$9,500. 931-0077

2003 Four Winds Motorhome, 31 feet, slide, low miles. 566-3580

2001 Mazda Miata LX, tan leather, power windows, black, 61k miles, \$10,900. 883-6894 or 468-6894

1999 Chrysler 300M, gold, new tires, 89k miles, \$5,800. 652-5575

1998 Mercury Mountaineer, V6, automatic, leather, \$3,800 obo. 797-5494

1998 Pace enclosed trailer, 5x10, black, new aluminum wheels, tires, \$1,500. 777-8906

1997 White Honda Accord EX, four door, V6, leather, 192k miles, \$4,700. 830-5028

1997 Saturn SL2, motorhome towing, tow accessories, 30-plus MPG, 130k miles, \$3,250. 882-9407

1978 23-foot O'Day sailboat, outboard motor, \$2,500 or comparable value trade. 864-2818

1966 Thunderbird, two door, complete file, parts. 533-0005

Wanted

Sleeping room, Huntsville/Madison area, Monday, Tuesday and Wednesday nights, commuting from Murfreesboro, Tenn. (615) 828-2828

Other

LEGO Train/Town fans: new club forming, meets in Madison, Feb. 16, jbschwarz@gmail.com. 325-4253

Shuttle Buddies to meet Jan. 28

The Shuttle Buddies will meet at 9 a.m., Monday, Jan. 28, at Mullins Restaurant on Andrew Jackson Way. For more information, call Deemer Self at 881-7757.

Marshall's Steve Cook, 'Rocket Boy' Homer Hickam launch scale model Ares I



In left photo, Steve Cook, right, Ares project manager at the Marshall Center, and Homer Hickam, center, a former NASA engineer and the author of "Rocket Boys: A Memoir," successfully launch a 1:100 scale model of the Ares I crew launch vehicle Jan. 15. They're assisted by Vince Huegele, a Marshall test engineer in the Engineering Directorate. The Ares I model rocket was built by Estes-Cox Corp. in Penrose, Colo., makers of educational model rocket kits. In above photo, Cook, left, and Hickam watch the rocket climb approximately 800 feet into the afternoon sky. More than 100 Marshall team members who work on the Ares and Constellation projects were on hand for the launch. The Ares I crew launch vehicle, designed to loft the Orion crew exploration vehicle to orbit, is a key component of the Constellation Program, which will send humans to explore the moon by 2020 to set up a permanent lunar outpost. The Marshall Center manages the Ares Project for NASA's Constellation Program, based at NASA's Johnson Space Center in Houston.

Doug Stoffer/MSFC

Obituaries

Charlotte Marie Lane Gray, 72, of Decatur died Jan. 4. She retired from the Marshall Center in 1990 as a program analyst. She is survived by her husband, Willard Gray.

James Roe Turner, 80, of Huntsville died Jan. 6. He retired from the Marshall Center in 1994 as an aerospace engineer.

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