



# MARSHALL STAR

Serving the Marshall Space Flight Center Community

Jan. 17, 2008

## Marshall engineers test space shuttle Atlantis hardware



Terry Leibold/MSCF

Chad Bryant, left, External Tank Project engineer, and Greg Vinyard of Lockheed Martin, prepare to install External Tank ET-125's feed through connector in a pressure vessel at the Marshall Center's Test Stand 300.

By Sanda Martel

Tests conducted by engineers at the Marshall Center on space shuttle hardware are helping move space shuttle Atlantis closer to launch. Shuttle managers are targeting Feb. 7 as the next launch date.

Open circuits in a feed through connector 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.

The connector was removed from the external tank on the launch pad at the Kennedy Space Center, Fla., and shipped to Marshall. The hardware arrived Dec. 31. Engineers in the Engineering Directorate's Materials and Processes Laboratory have been inspecting, testing and evaluating test results.

*See Atlantis on page 5*

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## Counting down to America's 50 years in space

By Megan Norris

America is counting down to its golden anniversary of space exploration, and Huntsville and Madison County are ready to celebrate.

Beginning Jan. 23, a series of community events will commemorate the United States' 50 years of innovation and discovery, as well as the area's heritage and role in the space program. Throughout this year, NASA also will celebrate 50 years of technological excellence and its continuing efforts to accelerate scientific exploration.

Discovery Communications, a broadcasting and film production company founded and chaired by John S. Hendricks, and his family's charitable organization, the John and Maureen Hendricks Foundation, are sponsoring the "America in Space" 50th anniversary

seminar Jan. 31. The event is open to the public from 9 a.m.-3 p.m. at the Von Braun Center Concert Hall.

Astronauts, authors and scientists will discuss such topics as Explorer 1, the first successful U.S. satellite, launched to space Jan. 31, 1958, on board the Jupiter-C vehicle; the Marshall-developed Saturn V rocket that lifted the Apollo 11 crew to the first moon landing July 20, 1969; and the future of space discovery in the next 50 years.

On Feb. 1-2, the American Institute of Aeronautics and Astronautics (AIAA), the Marshall Retirees Association and the National Space Club will host the "America in Space Technical Symposium" featuring the history of the first 50 years of U.S. space exploration. It will be held at the U.S. Space & Rocket Center's

*See 50 years on page 6*

# Marshall scientists aim to improve drought forecasts

By Dauna Coulter

From the deserts of the American southwest to the pine forests of the deep south, drought-weary residents have one thing on their minds: "I wish it would rain!"

But the technical term for what they should be wishing for is "more streamflow," according to Dr. Ashutosh Limaye, a NASA hydrologist at the National Space Science and Technology Center.

Streamflow is a term used by water management specialists to describe the amount of water in a stream. Areas of drought have reduced streamflow, and experts believe they can better forecast dry conditions by studying this key indicator.

"Streamflow is always changing, from day to day and even minute to minute, because of evaporation from the soil and from bodies of water, runoff from rainfall and snowmelt, transpiration by plants and trees, and other natural and human influences," Limaye explained.

National Weather Service River Forecast Centers have to consider all of these factors when they forecast streamflow.

"If we can help forecasters estimate any of these elements more accurately, they can better predict drought conditions a few months in advance," Limaye said. "These predictions are critical because they influence important decisions about measures like withholding water in reservoirs and restricting water use."

Dr. William Lapenta, deputy of the Marshall Center's Science and Exploration Research Office, pointed out that NSSTC researchers like Limaye often step up to help forecasters. "The NSSTC earth science community has a unique ability to conduct fundamental research using NASA satellite instruments and apply the results to improve tools used by National Oceanic and Atmospheric Administration decision makers and others."

When Limaye's team asked NOAA officials, including Dr. Mike Smith of the Office of Hydrologic Development, specifically how NASA could help them improve streamflow forecasts, the officials pinpointed one thing — clouds.

"Since most of the water that falls on the ground goes up in evaporation, evaporation is a huge component of the total surface water," explained Limaye. "So it's important to get those numbers right. Clouds affect radiation, which has a big influence on evaporation."

National Weather Service cloud cover estimates from the 1960s

to the 1990s were performed like this: A trained technician literally walked outside, tilted his or her head back, eyeballed the sky like an old farmer, and rated the cloud cover on a 1-8 scale, with 1 representing the least cloud cover and 8 representing the most cloud cover.

In the '90s, these manual observations were replaced by a ceilometer that is part of the Automated Surface Observing System. The ceilometer has a laser beam that aims at the sky, and returns from this beam are used to detect clouds.

"Believe it or not, this newer method is not nearly as accurate as people just looking up," Limaye said. "The ceilometer can only detect clouds up to 12,000 feet. If there are no low clouds to block the view, you and I can see more than 20,000 feet, up to where the wispy cirrus clouds are floating. And cirrus clouds way up high, even patchy ones, can influence the radiation that drives evaporation."

This is where Limaye's team can help.

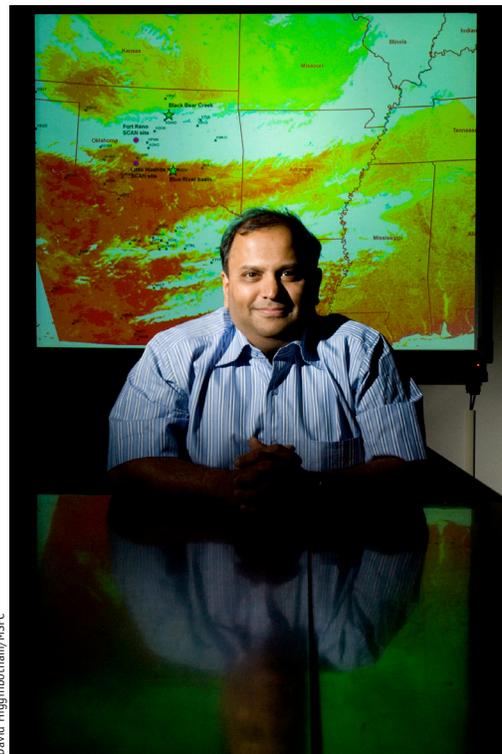
NASA scientists use satellite instruments to scan the Earth's surface for things like vegetation cover, ground temperature and other variables. Normally, these researchers would view clouds as noise contaminating the signal they are trying to view. In short, clouds get in the way.

"But one person's noise is another person's signal," Limaye said. "We can use it on the flip side. We can use the cloud cover data. In fact, it's exactly what NOAA wants to see."

One NASA satellite instrument called MODIS, short for Moderate Resolution Imaging Spectroradiometer, allows scientists to produce a cloud mask product that helps in detecting clouds.

"Satellites send back data streams," Limaye explained. "Each satellite is backed by a science team that develops ways to convert the data streams into 'products,' or datasets, other scientists and perhaps weather forecasters can understand and use. MODIS's cloud mask is such a product — it's a dataset which tells us about the presence of clouds at all the 'pixels.'"

"Think of it this way. You took your digital camera and snapped a picture from the top of a beautiful hill overlooking a lake. All you see are lush green trees, a dark blue lake and a light blue sky. You downloaded the picture, and with the help of some computer software, marked as pink the part of the picture where you see dark blue water. Then you saved the image. Now the new picture has a



Dr. Ashutosh Limaye, NASA hydrologist at the National Space Science and Technology Center.

David Higginbotham/NSSTC

*See Drought on page 3*

# Families joyful over holiday season thanks to Marshall team

By Megan Norris

Local families have warm clothes and enough toys to enjoy long after the holiday season, thanks to the generosity of several Marshall Center organizations.

The Office of Human Capital and the Science and Mission Systems Office were among the many Marshall organizations that kicked off separate drives to collect toys, coats and other necessities for those who were struggling to put presents under their trees.

Tonya Steelman, an administrative officer in the Science and Mission Systems Office and one of the drive coordinators, said it was hard to find places to store all the items people brought in for the three families they adopted from Christmas Charities. "It was humbling to see the generosity of our group," she said. "We had an entire conference room full of clothes and toys. It took three vehicles to deliver everything that was donated."

The organization used additional donations of more than \$2,500 to buy everything on the 10 children's "wish lists," plus electronic toys, games for each family and clothes to help keep them warm through the winter months.

"One of our families had children who were being clothed out of the lost-and-found bin at their school, and another was a single mother trying to make ends meet for her five children," Steelman said. "We wanted to make sure, first and foremost, that all their clothing needs were taken care of."

Steeleman said she and the other Science and Mission Systems administrative officers got a gift out of giving — seeing the faces of one family when they delivered presents to their home. They even brought along Santa, played by Steve Chapman, a business manager



Courtesy photo

Employees from Marshall's Science & Mission Systems Office wrap gifts for the three families they adopted from Christmas Charities.

in the Office of the Chief Information Officer.

"It was amazing to see the kids so happy to see Santa, and the family was so thankful for the gifts. That is what the holiday season is all about," Steelman said.

Like many organizations across the center, the Office of Human Capital embraced that same spirit by starting its drive in November to collect presents for the 10 boys and girls employees adopted through the Salvation Army. Anne Needham, an administrative support assistant and a committee member on the project, said they collected everything from bicycles and dolls to DVD players and diapers.

"It was really overwhelming to see how many gifts our organization contributed for these children," Needham said. "They received everything they asked for, plus a lot more. It took a pickup truck and three SUVs to deliver all the items to the Salvation Army Toy Shop.

"That is just a true testament of what extraordinary people we have working at Marshall," she said.

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

## Drought

*Continued from page 2*

'mask' of lake in pink, or a 'lake mask.' All the pixels marked as pink are lake. You just made a 'lake mask product.'"

With its cloud mask, MODIS can detect clouds all the way up to the top of the atmosphere. NOAA's Automated Surface Observing System can only see clouds up to 12,000 feet and lacks MODIS's precision. ASOS, though, records cloud data continuously, providing a picture of what happened throughout the day, while MODIS passes overhead only twice per day. It made perfect sense to Limaye's team to let the two tools work in concert and complement one another, each filling in what the other lacked.

"Together these tools produce much better radiation estimates than either can do alone," Limaye said. "We'll be able to reestablish

what the National Weather Service lost when they stopped using manual observations for cloud cover. We'll restore cloud cover assessment and make it more accurate.

"That's why they're so excited," Limaye explained. "Their system is already geared up to take our data — data that represents the missing piece of their puzzle."

Preliminary analyses showed that MODIS cloud data made evaporation estimates 25 percent more accurate. Now the researchers are analyzing how adding the NASA data improves the actual streamflow estimates that rely on those evaporation estimates. Those numbers will be available soon.

After that, maybe they could do something to make it rain.

*The writer, a Schafer Corporation employee, supports the Office of Strategic Analysis and Communications.*

## Go for launch!

### ***Marshall taps 11 teams for 2nd annual university rocketeering challenge***

The Marshall Center has named 11 college and university teams in eight states to tackle the practical and technical challenges of building working rockets — the goal of the 2007-2008 University Student Launch Initiative.

Founded in 2006 by the Marshall Center's Academic Affairs Office, as a sister program to NASA's Student Launch Initiative for middle- and high schoolers, the university-level challenge is designed to inspire collegians nationwide to pursue careers in science, engineering, math and technology — fields vital to NASA's ongoing mission in space and to the continued economic prosperity of the nation.

The challenge gives students hands-on, practical experience in managing aerospace and engineering projects similar to those found in a professional environment. Guided by Marshall engineers and their own professors, the teams will design, build, test and launch reusable rockets with built-in, working science payloads and a goal of flying to an altitude of one mile.

The activity is hosted by the Marshall Center and by the Space Grant Consortium in each participating university's home state, with primary corporate sponsorship by ATK Launch Systems of Brigham City, Utah.

Each state's Space Grant Consortium is a coalition of state

colleges, universities and other institutions, funded by NASA to promote interest in technical careers through innovative space-related courses, real-world hands-on science and engineering programs and interactive outreach opportunities.

Participants this year include teams from Auburn University in Auburn, Ala.; Alabama A&M University in Huntsville; the University of Alabama in Huntsville; Harding University in Searcy, Ark.; Mississippi State University in Starkville; Missouri University of Science & Technology in Rolla; the University of North Dakota in Grand Forks; Fisk University in Nashville, Tenn.; Vanderbilt University in Nashville; Utah State University in Logan; and the College of Menominee Nation in Green Bay, Wis.

"It's a pleasure and a privilege to invite these teams to participate in this year's challenge," said Tammy Rowan, manager of the Marshall Center's Academic Affairs Office. "The University Student Launch Initiative is a vital part of NASA's and Marshall's education mission — helping foster new generations of scientists, engineers and explorers."

The 2007-2008 challenge will conclude with a final launch activity in Huntsville on April 19, 2008. For more information, visit <http://education.msfc.nasa.gov/usli>.

## ***Obituaries***

**Charles A. Swanson**, 84, of Huntsville died Oct. 23. He retired from the Marshall Center in 1980 as an engineer. He is survived by his wife, Mary Frances Swanson.

**Burnie Kite**, 75, of Huntsville died Oct. 24. He retired from the Marshall Center in 1984 as an engineer. He is survived by his wife, Barbara Kite.

**Leonard A. Smith**, 86, of Humboldt, Tenn., died Nov. 6. He retired from the Marshall Center in 1976 as a physical science technician.

**Samuel L. Walls**, 69, of Boaz died Nov. 20. He retired from the Marshall Center in 1999 as an aerospace engineer.

**Zack T. Batey**, 76, of Huntsville died Nov. 23. He retired from the Marshall Center in 1990 as a visual information specialist. He is survived by his wife, Suzanne Batey.

**Hugh S. McCullough**, 87, of Huntsville died Dec. 7. He retired from the Marshall Center in 1974 as an engineer. He is survived by his wife, LaRue McCullough.

**Tommy Harris**, 66, of Huntsville died Dec. 4. He retired from the Marshall Center in 2005 as an engineer. He is survived by his wife, Lynn Harris.

**Rece Yell**, 76, of Huntsville died Dec. 14. She retired from the Marshall Center in 1994 as a general supply specialist.

**Kathryn Richter**, 88, of Guntersville died Dec. 19. She retired from the Marshall Center in 1981 as an equal opportunity specialist.

**Alvin Avery**, 82, of Gurley died Dec. 23. He retired from the Marshall Center in 1981 as an aerospace engineering technician. He is survived by his wife, Juanita Howton Avery.

**Billie Faye "Rusty Hayes" Sweeney**, 76, of Huntsville died Dec. 23. She retired from the Marshall Center in 1995 as a management analyst. She is survived by her husband, Donald Sweeney.

## Reisz Engineers receives Certificate of Appreciation from NASA



The NASA Contract Assurance Services (NCAS) office at NASA Headquarters in Washington recently recognized employees of Reisz Engineers in Huntsville for their work on an experimental in-space electromagnetic thrust concept. From left are Al Reisz, president of Reisz Engineers; Chuck Holloway of NCAS; and Jerry Brainerd and Jim Hollingshead of Reisz Engineers. The team received a certificate from NCAS for dedication and diligence in providing a high quality research product, which through further investigation, may have potential application to interplanetary space missions. This project is a Small Business Technology Transfer venture with the University of Michigan in Ann Arbor.

Emmett Given/MSFC

## 'Focus on Marshall' looks to the future of Marshall and how NASA inspires future explorers

By Lori Meggs

Ever wondered what the Marshall Center will look like in 20 years? Marshall's Master Facilities Planner Ralph Allen knows. He's responsible for planning how the landscape of the center will look over the course of time.

In this month's "Focus on Marshall," we'll talk to Allen and get an inside look at the center's 20-year facilities plan. Viewers will see the new state-of-the-art Building 4601 under construction and learn more about plans for the new complex in that area. Viewers also will

learn why when one building goes up another must come down, as "Focus on Marshall" is on-site for the demolition of Building 4566.

Another segment also looks ahead — not at facilities — but at future engineers, scientists and explorers to see how NASA continues to inspire them.

The "Focus on Marshall" team goes on location to Church Point, La., where Marshall Academic Affairs leaders kickoff a partnership with one of the newest NASA Explorer Schools. School leaders will let you know why they applied to be a NASA Explorer School and the process involved. Viewers also will see Marshall engineers demonstrate their skills at the kick off and learn why these presentations to students are so important.

"Focus on Marshall" will air on Marshall TV on Jan. 22 and Jan. 24 at 11 a.m., noon and 1 p.m. It also is available on NASA TV, Inside Marshall and on the NASA Portal.

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

## Atlantis

*Continued from page 1*

The test area and laboratories of Marshall's Engineering Directorate possess many unique capabilities to test and evaluate spacecraft materials and components, including a wide variety of vacuum chambers and test stands.

Chad Bryant, lead engineer for propulsion and electrical in the External Tank Project Office led the series of Marshall tests for External Tank and Jeff Ratley and Jimmy Sisco of the Engineering Directorate coordinated test area support.

Nondestructive evaluation tests via X-ray and visual inspection were conducted to ensure no broken, bent or dislocated pins

existed. Cryogenic testing, which subjects hardware to the same conditions it experiences when the external tank is filled on launch day, also was conducted.

The Marshall test results and the modifications to replacement pins and sockets technicians are making to ET-125's fuel sensor system connector on the launch pad will help achieve the Feb. 7 launch date.

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 life, physical and materials science experiments.

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# 50 years

## Continued from page 1

Davidson Center for Space Exploration. Scheduled to open to the public in February, the Davidson Center will become the new front door of the Space & Rocket Center complex, housing the visitor ticketing area and a 350-seat auditorium, along with the Saturn V rocket, built with a combination of test and flight hardware. Completion of this 68,200-square-foot building is the first stage in a plan to better showcase NASA and Marshall contributions to historical, current and future space exploration.

The symposium will include technical panels with members of the original Wernher von Braun rocket team, former space shuttle astronauts, and engineers from the Jupiter, Redstone, Apollo, Shuttle and Ares I programs — the Marshall Center's legacy of rocket and propulsion systems development. Marshall Deputy Director Robert Lightfoot will be one of the guest speakers. Details of the event can be found at <http://www.uspace50.com/>.

Among other countdown community events are:

### Jan. 23:

- The Huntsville Burritt Museum will host a gallery lecture from 10 a.m.-3 p.m. called "Germans to the Mountains." Stephanie Timberlake, museum curator, will discuss the impact the new settlers had on Monte Sano and Huntsville.

### Jan. 24:

- The Valley Planet, a Huntsville newspaper covering local events and entertainment, will publish a special feature on the 50th anniversary of Huntsville's involvement in space, the Davidson Center opening and anniversary countdown events.

### Jan. 25:

- NASA and WHNT-TV, Channel 19, will broadcast a live, commercial-free discussion with Steve Cook, Marshall's Ares Projects Office manager, from 9-10 a.m. on E-TV and Channel 19. Students in select middle schools in Huntsville and Madison County will be able to interact live with Cook through a Digital Learning Network, and all middle school students in the area will have the opportunity to e-mail him questions.
- Downtown Huntsville will host the "Rocket City Space Bash." Participating restaurants and bars will have space-themed drinks, a costume contest and much more. Additional details are pending and will be posted at [www.downtownhuntsville.com/](http://www.downtownhuntsville.com/).
- Alabama Public TV will broadcast a documentary at 7 p.m. that examines Alabama's role in American space exploration as it celebrates the 50th anniversary of the launch of Explorer 1.

### Jan. 26:

- EarlyWorks Children's History Museum will host an open house from 9 a.m.-4 p.m. Activities will

include a viewing of Disney's film, "Tomorrow, the Moon," which has a special appearance by Wernher von Braun, rocket model displays and hands-on space exhibits.

- At 7:30 p.m., the Von Braun Astronomical Society will sponsor a special planetarium program on the history behind Explorer 1 and how astronomical society members had major roles in putting man on the moon. For more information, visit <http://www.vbas.org/>.

### Jan. 27:

- The University of Alabama in Huntsville's Shelby Center for Science and Technology will host an open house from 2-5 p.m. to display UAH's long history in the space program, as well as current research projects.
- Huntsville Botanical Garden will plant a children's "Space Garden," with NASA photos being used for plant markers.

### Jan. 28:

- WLRH radio will broadcast a noon interview called "Distant Horizons — Alabama in Space" with Ed Buckbee, the first director of the Space & Rocket Center, and Steve Cook, Marshall's Ares Projects Office manager.

### Feb 1:

- The Huntsville Times will release a special keepsake edition celebrating 50 years in space. The edition will include a 52-page magazine and coverage of the dedication of the Davidson Center for Space Exploration.

For additional information on these and other community celebration events, visit: <http://www.us50thspace.com/50th-celebration/calendar.html>.

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



Marshall Center Director David King addresses the media during a press conference about the 50th anniversary of America in Space Jan. 14 at the Davidson Center for Space Exploration at the U.S. Space & Rocket Center.

# 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. 24, is 4:30 p.m. Thursday, Jan. 17.

## Miscellaneous

Hospital bed, wheelchair, lift-assist lounge chair; antique cast-iron double bed, box springs \$100; 895-9348  
Kasson-Auburn pool table, fruitwood, Queen Anne feet, leather pockets, all accessories, \$1,950. 880-6563  
LeBlanc Normandy wood clarinet, case, stand, \$600. 837-5380  
Craftsman 12-inch band saw, \$250; Craftsman 10-inch table saw, \$450; 50-caliber muzzleloader, scope, \$150. (931) 425-0205  
Toshiba HD monitor, 34 inches, diagonal widescreen, owner's manual, \$500 obo. 880-1544  
Maytag Neptune dryer, front load, large capacity, 1 year old, \$150. 602-4337  
Roper washing machine, dryer, 1 year old, \$150. 508-9552  
Sony Trinitron WEGA 36-inch TV, flat screen, silver cabinet, \$400. 772-6569  
Brunswick pool table, oak, less than 1 year old, \$3,000. 412-3406  
Veneer table, six chairs, oak, \$200. 728-5768  
Sony Xplod 1200W amplifier, two 12-inch Sony Xplod subwoofers, box, \$500 obo. 233-8505  
Women's Justin boots, size 6b, \$60; Stetson hat, \$40; leather vest, size 40, \$25. 828-1441  
Wii, new in box, games, controllers, \$450. 497-7837  
RC Traxxas T-Maxx, two bodies, roll cage, many extras, \$300. 227-4612  
Upright air compressor, 4 1/2 HP, 21 gallons, \$125; slide projector, 35 mm, \$30. 852-6952  
Hardwood/fiberglass Ram Air hood, for 1999-2002 Chevy Silverado, \$300. 612-7729  
KitchenAid mixer, \$160; MP3 player, 512Mb, \$20; DivX DVD player, \$30; 417-4828  
Samsung 42-inch plasma TV, 1080i, two million colors, \$900. 417-0945  
Dog kennel, 10 feet by 20 feet, gate, \$150. 881-5455  
Bosch 3331 premium oil filter, \$2. 325-0085  
44-inch Panasonic HD projection TV, \$575. 565-3534  
Three antique oak washstands, antique oak dining table, china hutch, brass queen size bed. 426-8059  
Panasonic 42-inch plasma 720p TV, \$940; wireless PCMCIA, \$14; HDTV 37-inch LCD, \$650. 417-4828  
Boss GT-8 guitar effects processor, \$350. 655-6293  
AT&T 8525 Smartphone, camera, \$125; AT&T Palm Treo 650, no camera, \$80. 520-4750  
Antique roll-top desk, \$1,500. 604-9828  
Firewood, \$80 per truckload. 755-0050  
Wood baby bed, 2 years old, \$85. 476-5837  
Nine-drawer wood dresser, mirror, \$125. 658-0638  
Large entertainment center, lots of storage, component area, \$500. 858-5552  
Folding utility trailer, 8x4 feet, 12-inch tire, plywood deck, 1175-pound capacity, \$225. 783-7842  
This End Up classic bunk bed, two mattresses, ladder, two drawers, \$600. 721-1925  
One-carat, round diamond solitaire engagement ring, \$2,400. 975-7446

Two tickets, "Wicked," April 26, New York City. 361-4799  
Slide bracelet, \$1,500. 777-2374  
Clayton-Marcus couch, \$350; sofa chair, hassock, \$350, \$650 for set. 426-4903  
32-inch Polaroid LCD TV, \$600. 882-3326  
Queen-size Stearns & Foster mattress, box springs, \$800 obo. 426-4258  
Dining room set, 72-inch glass table, six upholstered chairs, two china cabinets, \$950. 603-1273  
Various Herend figurines. 885-2293  
Wood flooring, 2 1/4 x 3/4, 225 square feet, golden oak finish, \$250. 417-5754  
Chain-link dog kennel, 10 feet by 6 feet, \$150. 882-0461  
U-Haul packing blankets, \$2 each. (317) 294-2766  
Invacare Pronto M61 electric wheelchair, new batteries, \$1,900. 679-1232  
Pair of Aura bass shakers, 50 watts each, \$40. 520-1970  
Nunchuk remote control for Nintendo Wii, \$25. 828-1234  
Mounted tire/wheel, 4 5/8-inch bolt pattern, \$8; two full-size pickup truck tool boxes, \$20. 881-5642  
First-generation PlayStation2, controllers, DVD remote, all instructions, cables, \$50 obo. 880-1544  
Sectional sofa, contains bed, two recliners, \$250. 353-2646  
Miller Econo Tig equipment. 783-9718 or 859-1188  
Epson CX4600 copier/printer/scanner, needs service. 655-7444  
Nintendo Gamecube, one wireless controller, \$65. 468-3803  
Two 14- by 21-inch heavy-duty electronic foot-warmer mats, \$40 each. 655-6348  
Serta Perfect Sleeper queen mattress, \$200. 890-0799 or 337-4653  
Nintendo Wii LAN adapter. 227-0542  
27-inch TV, black, \$75 obo. 724-2270  
1/2 carat diamond anniversary band, \$300; sapphire/diamond ring, \$150, \$400 both. 426-7862  
Two cherry-finish, bar stools, counter height, upholstery. 503-7060  
Wicker seven-drawer dresser, white, \$100 obo. 379-3398 or 509-2536  
14-cubic-foot Frigidaire freezer. 351-6855  
Bowflex Sport, \$700; Reebok Elliptical, \$500. 683-5030  
Ashley Furniture roll-top desk, Glen Eagle, \$300. 337-4235  
JVC seven-disc DVD changer, remote, manual, \$75 obo. 348-1878  
Oak roll-top desk, \$300; two Victorian sofas, \$300 each; queen antique headboards, \$250 each. 539-5995  
US Divers two-piece wetsuit, extra small, ladies/girls, 24-inch waist, \$50. (931) 438-0476

## Vehicles

2007 Honda TRX450R Sport ATV/quad, electric start, plastics black/flames, red frame, \$4,950. 345-9555  
2007 Chrysler Aspen, loaded, leather, DVD, navigation system, towing package, \$30,000. 698-1583 or 217-0838  
2007 Jeep Wrangler Unlimited, auto, four door, Sahara package, all options, 5k miles, 28,500. 509-2828  
2006 C&W gooseneck flatbed trailer, 20- by 5-foot dovetail, red, new tires, \$2,700. 651-3064  
2005 Suzuki Aerio SX, 30 mpg, 29k miles, \$8,800. 230-4980  
2004 Lexus GX470, pearl white, gray leather, 63k miles, \$36,000. 479-5530  
2003 Ford Ranger Edge, super cab, four door, new tires, 75k miles, \$9,500. 931-0077  
2003 Dodge 1500 long-bed truck, V6, auto, 100k miles, \$5,950. 572-1867  
2003 Escalade, \$19,500; 2007 Chrysler 300, 23k miles, \$17,500; 1988 Mitsubishi pickup truck, \$950. 520-2802

2003 Toyota Camry LE, 40,500 miles, \$13,000. 776-3424  
2003 Tahoe, leather, third-row seats, rear air, XM, CD, 59k miles, \$17,000. 468-0854  
2003 Honda Accord, two-door coupe, five speed, red, 73k miles, \$10,300. 783-3333  
2002 Dodge Ram 1500 pickup truck, gray, standard cab, V8, auto, 87k miles, \$7,900. 505-3080  
2002 Ford Explorer Sport, two door, automatic, leather, sunroof, power windows/locks, 68k miles, \$7,900. 227-0423  
2001 Mazda Miata LX, tan leather, power windows, black, 61k miles, \$10,900. 883-6894 or 468-6894  
2001 Ford Taurus SES, four-door, 3.8L V6, new tires, battery, 84k miles, \$6,000 obo. 682-8795  
2000 Buick LaSabre, auto, white, red interior, cloth seats, 16k miles, \$9,500 obo. 895-9348  
1999 F-150 Lariat, 185k miles, \$6,500; 1999 Grand Am, 200k miles, \$1,800. (423) 309-8926  
1998 Mercury Mountaineer, V6, automatic, leather, \$3,800. 797-5494  
1998 Mazda 626, \$2,900 obo. 520-2802  
1997 Jeep Grand Cherokee Laredo, 167k miles, \$2,975. 783-5735  
1997 Ford Explorer Limited, leather, sunroof, 5.0L V8, five-disc CD changer, 155k miles, \$3,000 509-2725  
1996 Chevrolet Suburban LT, towing package, 141k miles, \$3,900. 233-5620  
1994 F-150, 4x4, extended cab, red, automatic, loaded, CD, \$6,700. 651-3315  
1985 Grand Prix, 305, V8, \$1,600; Winchester 1400 shotgun, 12 gauge, auto, \$290. 851-8085

## Wanted

Western saddle, good shape, ready to use. 486-4400  
Used kitchen countertops. 572-7396  
Talk with owner of 2.2L Isuzu/Daewoo engine, X22SE model, to compare engine performance. 828-1234  
In-ground basketball pole, backboard, will remove. (931) 433-1866  
Used percussion instruments, mostly wooden, old xylophone. 655-9267  
RV to rent, last weekend in July. 759-3009  
Cheap car for a young man in need of help. 534-5175  
Two tickets, Feb. 8, "Annie," prefer orchestra seating. (931) 425-0205  
20- to 21-foot bowrider or sundeck boat, 1997 or newer, good condition. 541-0627  
Four telephone poles, good condition, 25- to 30-foot long, will pick up. (931) 427-8048  
Fuser for HP Laser Jet 5 printer. 883-2757

## Lost

Eyeglasses, light blue soft case, in or near Building 4600. 541-5834

## Found

U.S. currency, Building 4200 basement, elevator lobby; silver ring, five inset stones, Building 4312 east parking lot; silver bracelet, Building 4200 area; men's square glasses, silver, metal frame, Building 4487 south main lobby; silver/gray wireless cell phone ear piece, Building 4600, Room 3006. 544-4680  
Netflix movie, out of the sleeve, north parking lot, Building 4200. 544-1493  
U.S. currency, vicinity of Competency Center. 544-6435

## Free

Fancy-tailed guppies, you pick up. 880-2001  
Yellow lab puppy, about 5 months old. 586-2994  
Beagle puppies, one male, two females; Beagle/Husky mixed puppies, two females, 6 weeks old. 784-5299

### STS-120 thanks Marshall for their work



Marshall Center Deputy Director Robert Lightfoot, center, presents crew members of the space shuttle Discovery STS-120 mission with mementos of their visit to Marshall on Jan. 9. The crew presented highlights from their Oct. 23-Nov. 7, 2007, mission to Marshall team members in Morris Auditorium and on centerwide TV. Commander Pam Melroy, on behalf of the crew, thanked Marshall employees for their work in making the mission a success. She said Discovery's external tank ET-120 was "clean and beautiful," a tribute to the Marshall team responsible for space shuttle propulsion. From left are mission specialists Scott Parazynski and Stephanie Wilson; Paolo Nespoli, a mission specialist from Italy representing the European Space Agency; Lightfoot; Melroy; Mission Specialist Doug Wheelock; and Pilot George Zamka.

Doug Stoffer/MSFC

## This month in history ...

Fifty years ago this month, the American Rocket Society issued a summary of its proposals for a National Space Establishment. Preferably independent of the Department of Defense, but in any event not under one of the military services, this establishment would be responsible for the broad cultural, scientific and commercial objectives of outer space development. This is part of the string of events that would lead to the creation of NASA.

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