



MARSHALL STAR

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July 19, 2007

STS-118: build the station, build the future

From combined reports

Space shuttle Endeavour is targeted to launch Aug. 7 from the Kennedy Space Center, Fla. The mission will be Endeavour's first flight in more than four years.

The shuttle has undergone extensive modifications, including the addition of safety upgrades already added to orbiters Discovery and Atlantis. Endeavour also features new hardware, such as the Station-to-Shuttle Power Transfer System that will allow the docked shuttle to draw electrical power from the station and extend its visits to the orbiting lab.

Like all shuttle missions, STS-118 is about the future: putting the International Space Station a step closer to completion and gathering experience that will help people return to the moon and go on to Mars.

But this mission also will see a dream realized and a vision of inspiration completed. Barbara R. Morgan, selected 22 years ago for the Teacher in Space Project, will strap into space shuttle Endeavour as a fully trained astronaut. She is one of five mission specialists in the seven-member crew.

"The mission has lots of angles," Matt Abbott, lead shuttle flight director, said. "There's a little bit of assembly; there's some resupply; there's some repair. And there are some high-visibility



Crew members of STS-118, from left are mission specialists Rick Mastracchio, Barbara R. Morgan, pilot Charlie Hobaugh, Commander Scott Kelly and mission specialists Tracy Caldwell, Canadian Space Agency's Dave Williams and Alvin Drew.

education and public affairs events. It's a little bit of everything."

The little bit of assembly — as in assembly of the International

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NASA to roll out 'Human Capital Information Environment' services portal Aug. 13

On Aug. 13, NASA will unveil its new "Human Capital Information Environment" workforce services Internet portal — designed to provide comprehensive human resource information to civil service employees. It will permit easy access to authorized users, via a single point of entry and log-in, to human capital systems,

financial, security and employee information from a variety of sources.

Once employees have set up their password manager, they will be able to access the following sites and services:

- USAJobs, the official online resource for federal employment opportunities
- NASA's Automated Staffing and Recruitment System, or STARS, an online service that helps employees apply for vacant positions and helps human resources personnel assess resumes and place qualified candidates

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NASA's Spitzer finds water vapor on hot, alien planet

NASA Headquarters

A scorching-hot gas planet beyond our solar system is steaming up with water vapor, according to new observations from NASA's Spitzer Space Telescope.

The planet, called HD 189733b, swelters as it zips closely around its star every two days or so. Astronomers had predicted that planets of this class, termed "hot Jupiters," would contain water vapor in their atmospheres. Yet finding solid evidence for this has been slippery. These latest data are the most convincing yet that hot Jupiters are "wet."

"We're thrilled to have identified clear signs of water on a planet that is trillions of miles away," said Giovanna Tinetti, a European Space Agency fellow at the Institute d'Astrophysique de Paris in France. Tinetti is lead author of a paper on HD 189733b appearing in the July 11 *Nature*.

Although water is an essential ingredient to life as we know it, wet, hot Jupiters are not likely to harbor any creatures. Previous measurements from Spitzer indicate that HD 189733b is a fiery 1,340 degrees Fahrenheit on average. Ultimately, astronomers hope to use instruments like those on Spitzer to find water on rocky, habitable planets like Earth.

"Finding water on this planet implies that other planets in the universe, possibly even rocky ones, could also have water," said co-author Sean Carey of NASA's Spitzer Science Center at the California Institute of Technology in Pasadena. "I'm excited to tell my nephews and niece about the discovery."

The new findings are part of a brand new field of science investigating the climate on exoplanets, or planets outside our solar system. Such faraway planets cannot be seen directly; however, in the past few years, astronomers have begun to glean information about their atmospheres by observing a subset of hot Jupiters that transit, or pass in front of, their stars as seen from Earth.

Using the Spitzer telescope

Earlier this year, Spitzer became the first telescope to analyze, or break apart, the light from two transiting hot Jupiters, HD 189733b and HD 209458b. One of its instruments, called a spectrometer, observed the planets as they dipped behind their stars in what is called the secondary eclipse. This led to the first-ever "fingerprint," or spectrum, of an exoplanet's light. Yet, the results came up "dry," probably because the structure of these planets' atmospheres makes finding water with this method difficult.

Later, a team of astronomers found hints of water in HD 209458b by analyzing visible-light data taken by NASA's Hubble Space Telescope. The Hubble data were captured as the planet crossed in front of the star, an event called the primary eclipse.

Now, Tinetti and her team have captured the best evidence yet for wet, hot Jupiters by watching HD 189733b's primary eclipse in infrared light with Spitzer. In this method, changes in infrared light from the star are measured as the planet slips by, filtering starlight through its outer atmosphere. The astronomers observed the eclipse

with Spitzer's infrared array camera at three different infrared wavelengths and noticed that for each wavelength a different amount of light was absorbed by the planet. The pattern by which this absorption varies with wavelength matches that created by water.

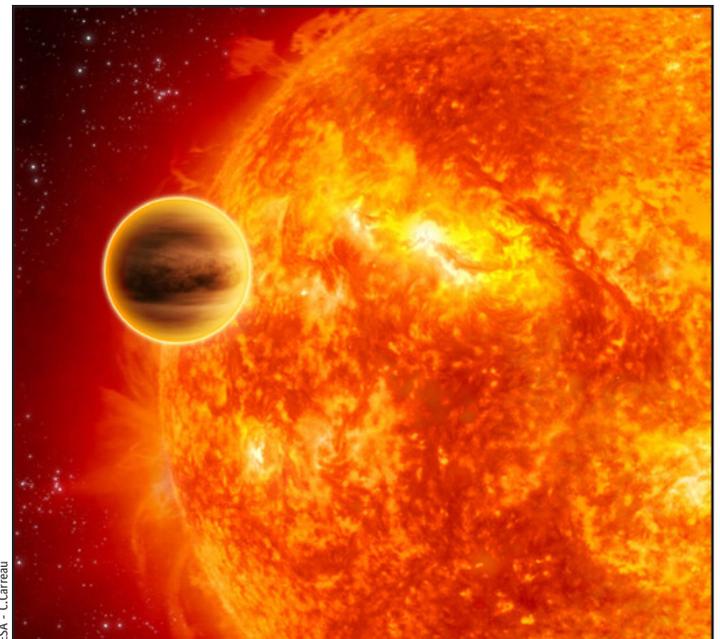
"Water is the only molecule that can explain that behavior," said Tinetti. "Observing primary eclipses in infrared light is the best way to search for this molecule in exoplanets."

The water on HD 189733b is too hot to condense into clouds; however, previous observations of the planet from Spitzer and other ground and space-based telescopes suggest that it might have dry clouds, along with high winds and a hot, sun-facing side that is warmer than its dark side. HD 189733b is located 63 light-years away in the constellation Vulpecula.

Authors of the Nature paper

Other authors of the *Nature* paper include Alfred Vidal-Madjar, Jean-Phillippe Beaulieu, David Sing and Nicole Allard of the Institute d'Astrophysique de Paris; Mao-Chang Liang of Caltech in California and the Academia Sinica, Taiwan; Yuk Yung of Caltech; Robert J. Barber and Jonathan Tennyson of University College London in England; Ignasi Ribas of the Institut de Ciències de l'Espai, Spain; Gilda E. Ballester of the University of Arizona, Tucson; and Franck Selsis of the Ecole Normale Supérieure, France.

JPL manages the Spitzer Space Telescope mission for NASA's Science Mission Directorate, Washington. Science operations are conducted at the Spitzer Science Center at the California Institute of Technology, Pasadena. JPL is a division of Caltech. Spitzer's infrared array camera was built by NASA's Goddard Space Flight Center, Greenbelt, Md. The instrument's principal investigator is Giovanni Fazio of the Harvard-Smithsonian Center for Astrophysics in Cambridge, Mass.



ESA - C.Carreau
This artist's impression shows a gas-giant exoplanet transiting the face of its star.



Former first lady, Lady Bird Johnson, visited Marshall Center in 1964

Former first lady Lady Bird Johnson, who died last week at 94, visited the Marshall Center on March 24, 1964. Dr. Wernher von Braun, Marshall's first center director, presents Johnson with an inscribed hard hat during her visit. While at Marshall, Johnson addressed center employees, toured facilities and witnessed test firings of a Saturn I first stage and an F-1 engine. Von Braun is wearing a Texas hat presented to him months earlier by President Lyndon Johnson during a visit to the Johnson ranch in Texas.

Exploration Experience exhibit to visit Space & Rocket Center

NASA's "Vision for Space Exploration Experience" exhibit will be open to the public at the U.S. Space & Rocket Center in Huntsville on July 23-27.

Housed in a 53-foot-long mobile trailer, the exhibit provides visitors with a vivid glimpse into the nation's ambitious future in space, and demonstrates how NASA exploration fosters inspiration, innovation and discovery, creating a better future for all of us.

Its appearance at the Space & Rocket Center marks its first public display in Huntsville since launching a nationwide tour in fall 2005.

The Vision for Space Exploration Experience will be open to the public in the Space & Rocket Center's east parking lot Monday

through Thursday, July 23-26, from 9 a.m. to 5 p.m. each day; and Friday, July 27, from 8 a.m. to 3 p.m. The exhibit also will be open July 26 from 5-8 p.m. for attendees of the weekly "Thursday Night at the Museum" event, part of the Space & Rocket Center's 25th anniversary celebration.

At 5 p.m., retired astronaut Story Musgrave will speak at the exhibit about NASA's vision for the future. A reception will follow in the museum. Free tickets for the event, sponsored by Lockheed Martin, are available at the rocket center ticket desk.

There is no charge to tour the exhibit. The trailer is wheelchair accessible.

Marshall employees invited to 'In the Shadow of the Moon' documentary screening

Marshall employees are invited to attend a free screening of the documentary, "In the Shadow of the Moon," at 10 a.m. and 2 p.m. Friday, July 20, in Morris Auditorium in Building 4200. The film is 100 minutes in duration.

The documentary chronicles the Apollo era of space flight and will be released in theaters Sept. 7. NASA provided a significant amount of footage for the film, which features unforgettable moments in space and interviews with some of the explorers. The screening coincides with the July 20 commemoration of the 38th anniversary of the first moon landing.

To view the "In the Shadow of the Moon" trailer, go to <http://www.apple.com/trailers/thinkfilm/intheshadowofthemoon/trailer/>.

For more information, contact Daniel Kanigan at 544-6849 or daniel.n.kanigan@nasa.gov

STS-118

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Space Station — refers to the next segment that will be attached to the right side of the station's backbone, or truss. The new segment, known as the S5, is relatively small and weighs about 5,000 pounds. The piece provides clearance between sets of solar arrays on the truss structure.

That doesn't mean, however, that installing it will be easy. Every crew member will play a part. Pilot Charlie Hobaugh and space station Flight Engineer Clay Anderson will operate the station robotic arm that moves the segment into place, while spacewalkers Dave Williams and Rick Mastracchio provide guidance from the outside and finish the installation. Commander Scott Kelly and mission specialists Tracy Caldwell and Alvin Drew will help out inside. Morgan will operate the shuttle robotic arm to provide television views of the operation.

"It's less than 2 inches from some critical electronic components that we want to make sure we don't come in contact with," Kelly said. "So that's a very tight clearance."

I think right now the manifest has us bringing up about 5,000 pounds and then bringing down about 5,000 pounds," Kelly said. "So it's a lot of spare parts, food, clothing, scientific experiments. We'll unload that and then reload it with stuff that needs to come home — garbage, spare parts that are no longer needed on the station."

Then there's the repair work, which Lead Station Flight Director Joel Montalbano expects to be one of the most difficult parts of the mission. One of the station's control moment gyroscopes — a spinning wheel used to control the space station's orientation — experienced problems and was shut down in October. Program managers determined that it needed to be replaced during STS-118. Kelly's crew had less than a year to train for the task.

"The other stuff is a challenge, but we've known it was coming," Montalbano said. "We've developed procedures, we've trained the crew — it's all known. The gyroscope, it's a little bit new to us. We're putting a major task in when we're well into training."

All together, it's a lot to get done in one mission — but thanks to an electrical boost from the space station, the STS-118 crew could have a little more time than most missions to get it all done.

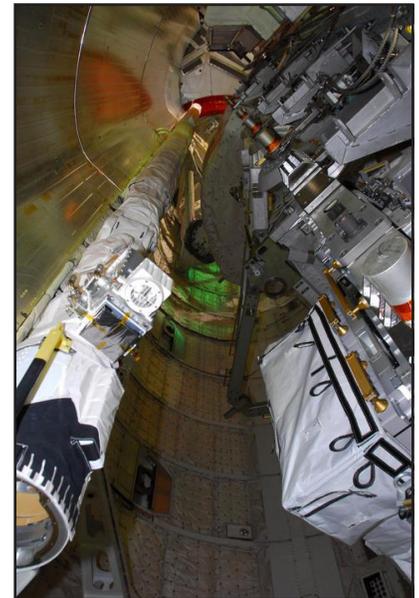
Endeavour will be the first to try out a new system designed to let the shuttle use electrical power from the station.

The extra juice will allow Endeavour to stay in space for an extended period of time while docked to the station. STS-118 currently is an 11-day mission with three spacewalks planned. Mission managers could add three more days and an additional spacewalk after the Station-Shuttle Power Transfer System is activated and checked out.

Future missions could gain as many as six extra days once all the station's solar arrays are installed and providing power. This will become more important as the construction of the station continues.

"I'm really excited about going up and doing our jobs and doing them well," Morgan said. "I'm excited about experiencing the whole spaceflight, seeing Earth from space for the very first time and experiencing weightlessness and what that's all about. I am excited about seeing what it's like living and working on board the International Space Station."

In 2002, Morgan was chosen as the first educator to become a mission specialist astronaut. The Educator Astronaut Project evolved from the Teacher in Space Project. Both aimed to engage and attract students to explore the excitement and wonder of spaceflight and to inspire and support educators. Morgan's primary duty is the same as it is for the entire crew — accomplish the planned objectives of the station assembly mission. But she also will take part in several education-related activities.



The payload for mission STS-118 is being installed in the payload bay on space shuttle Endeavour from the payload changeout room on Launch Pad 39A.

HCIE

Continued from page 1

- The System for Administration, Training and Educational Resources, or SATERN, NASA's learning management system offering Web-based access to training and career development resources
- The Competency Management System, a NASA-wide application used to measure and monitor the agency's knowledge base
- Employee Express, a round-the-clock online service that allows NASA employees to make changes to their benefits and payroll information

- The Thrift Savings Plan, the retirement savings plan for federal workers
- WebTADS, the agency's Web-based time and attendance system

Employees also will be able to view their personnel information using the NASA Employee Profile System.

Prior to rollout of the new portal, Marshall Center employees will receive specific portal log-in instructions and the process required to obtain a user ID and password.

For more information about the rollout of the Human Capital Information Environment portal, call Thom Holden at 544-7526 or Brian Rogers at 544-2851.

NASA updated systems engineering processes and requirements being implemented at Marshall

By Lori Meggs

Whether building a house, a car or even a launch vehicle, virtually everyone agrees that the integration process runs smoother when everyone follows common practices.

That's why NASA has updated its requirements for systems engineering — the coordination of all engineering efforts on a project — to ensure that each NASA center uses the same processes for building space hardware and products.

On July 17, the Marshall Center began learning about the new requirements with an awareness briefing — the first of three levels in implementing the processes.

In the coming months, two more levels will be taught through the Web-based Academy of Program/Project and Engineering Leadership system at Marshall. Level two in the fall will be a more detailed, two-day session to help program managers, systems engineers and lead engineers learn how the requirements will affect their particular projects. Level three will be a one-week application class, highlighting the best systems engineering practices and how they can be applied to specific work areas.

"We have formed a Marshall systems engineering working group with representatives from across the center to identify who will be trained," said Phil Hall, the working group's lead in Marshall's Engineering Programs and Systems Office in the Engineering Directorate. "When these systems engineering practices are put in place, they are not only going to help reduce costs and schedules, but also build better teams, building better space hardware."

For more information on the NPR 7123 NASA systems engineering processes and requirements, call Phil Hall at 544-2525.

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

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

8 ft. aluminum step ladder, \$125; king-size wicker headboard from Bragg's, \$150. 883-2237
Antique china cabinet, server, lamp tables. 852-1726
Toshiba notebook computer, A105-S2712, 1.73 GHz, 1MB RAM, 60G HD. 683-7683
Two ball-and-claw end tables, bevel glass, \$40; two crystal lamps, \$15. 682-5418
S&W revolver, 629-4, 44 mag., SS, 4" bbl, \$450. 698-5537
Kasoon pool table, black, green felt, must pick up. 468-6889
Sofa and chair, tan, microfiber, www.myspace.com/ego6, \$250 pick up, \$300 delivery. 684-4883
Paddle boat, log cabin, large portable building to be relocated. 509-7907
Nakamichi BX-100 dual cassette deck, \$95; JVC XL-V450BK CD player with remote, \$50. 882-2654
Red oak Hoosier cabinet bottom, restored, enamel top, \$200. (931) 438-2625
Queen-size, light brown wicker headboard, wicker chest, \$150. 348-7146
Fisher Slim 1500 CD player/radio with remote, \$40 obo. (610) 996-6348
Wedding dress with veil, creme, size 8-10, \$125. 880-9025
GE Spacesaver stacked washer/dryer, hoses, power cord, dryer stand, 4 years old, \$100. 679-1232
Seasoned horse manure, U-haul, Heart's Desire Evening Farm, Taft, TN. (931) 425-0163
Little Tikes Adjust-n-Jam basketball set, \$15; Power Rangers bike, 12-inch wheels, \$15. (859) 338-2649

Crate GFX120 guitar amplifier, 120 watts, effects, foot pedal, \$175. 508-8540
Beagle puppies, 7 weeks old, four males, three females, parents on premises, \$50. 293-8774
Dog kennel, chain link panels for 10X20 enclosure, hardware included, \$40. 244-4296
Yamaha YAS-23 alto saxophone, hard case, used, good starter instrument, \$200. 337-4321
GE dishwasher, may need motor, you pick up, make offer. 651-8507
U-Haul packing boxes and wardrobes, assorted sizes. 348-1878
Baseball World, Tom Emanski, complete set of Little League training videos. 650-0456
New wedding ring set, appraisal available, platinum, .75 carats, six baggets, \$6,000 obo. 382-7270
7-week-old kittens, black, white markings. 684-2736
Utility trailer, 6x6 truck bed, includes spare tire, jack, two-wheel tow, \$90. 881-5642
Fiberglass cover, fits any standard short-bed pickup truck, very good condition, reduced price. 880-6364
Johnston 12/24-volt trolling motor, \$50; Schumacker battery charger, 10/2 amp, \$25. 883-1003
Couch, loveseat, two end tables, coffee table, two lamps, \$150. 682-7165
Antique fainting couch, chaise, \$150; antique Duncan Phyfe dining table, \$150. 682-2550 (after 5 p.m.)
RYOBI 9-inch bandsaw, stand, \$50. 503-6773
Kenmore Series 90 washer/dryer, \$400. 895-6916
Girl's bedroom furniture, triple dresser, mirror, night table, double bed, \$200. 535-9537
Dining table, pedestal base, semi-square glass top, no chairs, \$200. 536-5132
Britax Roundabout child seats, three to sell, \$45 each. 881-1763
L-shaped corner desk, glass top, brushed metal, reversible, \$100. 233-5033 or 468-5375
2002 Longaberger Generations basket, retired, 7-inch, Botanical Fields liner and protector, \$45. 828-3887
Oval dining table, one leaf, \$30; queen-size sleeper sofa, gold, pick up, \$40. (931) 227-7138
Above-ground mausoleum, Valhalla Memorial Gardens, Bldg. A, crypt E, faces Winchester Road, \$5,000. 216-9973
Nike golf bag, \$55. 883-6496

Vehicles

2006 Chevy Trailblazer EXT LT, V8, black, leather, six-disc changer, DVD, sunroof, On-Star, \$25,875. 565-9918

2006 Keystone Sprinter 29-foot RV, fifth-wheel, pay off or best offer. 655-8056
2004 R-Vision Motorhome, Class-A, workhorse chassis, slide-out, extended warranty, www.thewilletfamily.com/rv, \$59,995. 883-7021
2003 Mitsubishi Galant LS, four door, silver, leather seats, 23k miles, \$10,800. 880-9658
2002 Kia Sedona LX minivan, new tires, rear air, DVD, white, 112k miles, \$4,500. 233-6197
2001 BMW X5 SAV, black, AWD, auto, moonroof, 84k miles, \$18,500. 536-8995
2001 Chevy S10, Vortec V6 sports package, 136K miles, \$7,500. 777-1319
2001 Volkswagen Jetta, 1.8 turbo Wolfsburg edition 5-speed, CD, power, 80k miles, \$9,000 obo. 837-1095
2001 Windstar LX, dual sliding doors, quad chairs, power group, 125k miles, \$4,950. 880-9754
2000 GMC Sonoma truck, 4x4, 87k miles, off-road, fully loaded, green, beige interior, \$8,000. 931-967-7307
1997 Toyota Avalon XLS, 153k miles, \$6,000. 653-2732
1995 Chevy 1500, 350hp, auto, air, extended cab, power w/s/dl, 4x4, 160k miles. \$6,250. 586-7375
1995 Ford Contour, four door, teal, gray interior, \$2,200. 603-5807
1992 Toyota Corolla, \$700. 534-4458
1992 Honda Civic, four door, \$500 obo. 340-0653
1991 Ranger, 361 Evinrude 150xp flipping deck, trolling motor, electronics, \$4,500. 503-0964
1980 Aluma-Craft V-hull boat, two seats, 25HP, Johnson outboard motor, trailer, trolling motor, \$875. 325-2919

Wanted

Suspended-ceiling parts, 24-inch cross-tees, older style for 25- to 40-year-old grid system. 233-0705
Small dorm refrigerator. 381-5372

Shuttle Buddies to meet July 23

The Shuttle Buddies will meet at 9 a.m. Monday, July 23, at Mullins Restaurant on Andrew Jackson Way. For more information, call Deemer Self at 881-7757.

Saturn V is rolling to the new Davidson Saturn V Center

The Saturn V rocket at the U.S. Space & Rocket Center is on its way to the Davidson Saturn V Center, its new home on the rocket center grounds. The rollout began with a "Rocket Roll" ceremony July 10. All five stages of the Saturn V are expected to be in the new building by Aug. 1. The Marshall Facilities Office and EG&G developed the move plan and are working to move the rocket. The Davidson Center, scheduled to open in January 2008, is a 68,200-square-foot facility that will serve as the new front door to the Space & Rocket Center.



Above, the third stage of the Saturn V is transported on a large hauler. Left, Marshall Deputy Director Robert Lightfoot speaks at the ceremony.



Doug Staffer/MSFC

Dear MSFC family:

My family and I offer our sincere thanks for your care, concern and support at the tragic death of our 3-month-old son, Elijah Frederick Sorensen, on June 30. The food, flowers, phone calls, cards and visits sustained us. We were touched and comforted by the many people who attended the visitation and funeral for Elijah. Your friendship and kindness will never be forgotten. Please continue to remember us in your thoughts and prayers.

-Kirk Sorensen and family

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