



MARSHALL STAR

Serving the Marshall Space Flight Center Community

June 25, 2009



LCROSS' first light image of the moon as seen June 23.

LRO in lunar orbit, LCROSS swings by moon

From a NASA Headquarters news release

After a four-and-a-half-day journey from the Earth, the Lunar Reconnaissance Orbiter, or LRO, has successfully entered orbit around the moon. Engineers at the Goddard Space Flight Center in Greenbelt, Md., confirmed the spacecraft's lunar orbit insertion at 5:27 a.m. CDT June 23.

The LRO Program Office at the Marshall Space Flight Center provides programmatic oversight and

See LRO/LCROSS on page 5

NASA teams investigating cause of hydrogen leak that delayed Endeavour

By Sanda Martel

NASA's Space Shuttle Program is investigating the cause of a hydrogen gas leak that delayed space shuttle Endeavour's launch attempts on June 13 and June 17.

Marshall Space Flight Center engineers have been assigned to teams investigating the vent line leak, including representatives from the External Tank Project Office, Propulsion System Engineering and Integration Office, Engineering Directorate and Safety & Mission Assurance Directorate.

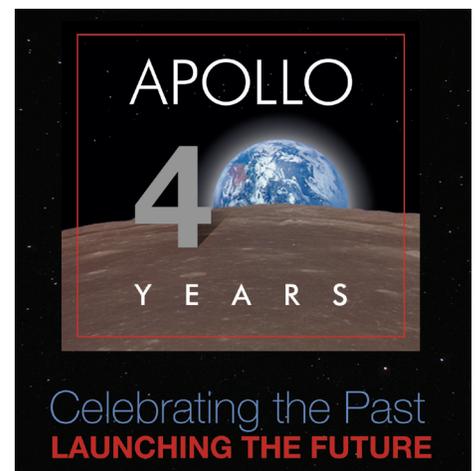
Troubleshooting teams are looking at ground and flight hardware that attaches the vent line to shuttle Endeavour's external tank. The vent line carries excess hydrogen safely away from the launch pad during launch operations.

Engineers and technicians at the Kennedy Space Center, Fla., are taking precise measurements of the attachment plate before workers disassemble it and install a new set of seals.

At Marshall Star press time, the program also was considering conducting a tanking test to verify the repair work before another launch attempt.

Teams throughout the agency are continuing work toward shuttle Endeavour's next launch attempt, targeted for July 11 at 6:39 p.m. CDT.

Martel, an AI Signal Research Inc. employee, supports the Office of Strategic Analysis & Communications.



**Save the date:
Marshall team
to celebrate Apollo 11
anniversary July 20**

The Marshall Space Flight Center team will gather at the U.S. Space & Rocket Center and Davidson Center for Space Exploration July 20 from 1-5 p.m.

See Apollo 11 on page 5

'Protective Services on wheels'

New vehicle provides security at Marshall events, serves as command post in emergencies

By Megan Norris Davidson

A new vehicle is protecting Marshall Space Flight Center team members at center events and will serve as a rolling command center in the wake of natural disasters and other emergencies.

The Mobile Command Center vehicle, owned and operated by Marshall's Protective Services Office, part of the Office of Center Operations, is an emergency response vehicle designed to respond to a wide range of security needs at Marshall, as well as other NASA centers or sites. Marshall management, firefighters, police, HEMSI and other workers will use the vehicle to manage the emergency or event, conduct interviews with witnesses, develop response plans or monitor weather conditions.

The vehicle's state-of-the-art security systems also provide enhanced protection for people attending events sponsored by the Marshall Center or by Team Redstone – which includes Marshall and U.S. Army organizations on Redstone Arsenal.

The vehicle was first used in May to provide security at the Sugarland concert hosted by Team Redstone, and again at the June 8 ribbon-cutting ceremony at Building 4601 in Marshall's engineering complex.

"Our new vehicle is basically Protective Services on wheels," said Michael Wilson, manager of the Protective Services Office. "It's an ideal place for police, firefighters and Marshall officials to come together and coordinate the appropriate plan of action in the event of an emergency."

Inside the vehicle

The 40-foot vehicle has eight independent high-definition monitors, numerous phone, satellite and Internet connections and two conference areas seating up to 14 people. The main conference area has a 42-inch, flat-screen television with DirecTV, which Protective Services team members can use to monitor six multiple-view cameras on the exterior of the vehicle. They also can pick up local network affiliates and national cable stations for weather and situational updates. The conference area includes a variety of office equipment – printer, fax machine and copier – and supplies for use by emergency and security personnel.



During Technology Awareness Day, Troy Mitchell, left, a Coastal International Security employee supporting Marshall's Protective Services Office, explains the capabilities of the Mobile Command vehicle to Barry Bottom, a Lockheed Martin employee supporting the Networks, Telecom & Desktop Services Office.

The vehicle includes a bathroom, sink, microwave, ice maker and other amenities for the comfort of workers sometimes onsite at disaster areas or events for days at a time. The exterior of the vehicle includes a wind-resistant shade, built-in generator, data ports and power for incoming and outgoing communications, high-intensity lighting capabilities, tables and plenty of storage for equipment. The vehicle was custom built by Farber Specialty Vehicles of Columbus, Ohio.

Delivered to the Marshall Center in March 2009, the vehicle is one of three emergency response vehicles owned by the center. The Office of the Chief Information Officer operates two – the Communications Restoration and Recovery vehicle and the Data Restoration and Recovery vehicle – that restore information technology services at emergency sites, such as phones and computer networks. (See related story, page 3.)

"In the event of an emergency situation, our team can use the restoration and recovery vehicles with their enhanced Internet and radio capabilities, and additional conference room space to accommodate more people," Wilson said. "In turn, we can provide security to the teams working to restore critical information technology services to an affected site.

"When the capabilities of all three vehicles are combined, it helps our organizations provide the best possible service to those who need help," he added.

Davidson, an AI Signal Research Inc. employee, supports the Office of Strategic Analysis & Communications.

New emergency response vehicles equipped to restore communications at Michoud

By Megan Norris Davidson

If a natural disaster or any other crisis situation knocks out phones, computers and other communications and data systems at the Michoud Assembly Facility in New Orleans, the Marshall Space Flight Center now has two emergency response vehicles set up to restore critical information technology services and assist in getting employees back to work.

The Communications Restoration and Recovery vehicle and the Data Restoration and Recovery vehicle are owned and operated by Marshall's Office of the Chief Information Officer and primarily will support the Michoud facility, though they may be deployed to support other NASA sites if needed. Michoud, a NASA-owned facility managed by the Marshall Center, currently supports space shuttle external tank production as well as several major projects for the Constellation Program, which is developing NASA's next generation of crew exploration and launch vehicles.

Developed after Hurricane Katrina

The emergency support vehicles were funded by NASA in 2007 under Michoud's information technology "Build Out" plan – put in place after Hurricane Katrina to better protect the Michoud facility in the event of natural disasters. Several buildings at Michoud sustained minor damage due to the 2005 storm that halted regular communications at the facility for more than two weeks.

"Our experiences in providing communications at the Michoud facility after Hurricane Katrina allowed us to see ways to improve the services we provide to our customers going through these types of difficult situations," said Jonathan Pettus, director of Marshall's Office of the Chief Information Officer. "We wanted to make sure these vehicles had the best capabilities possible to restore communications quickly so our teammates at Michoud can continue the great work that they do for NASA."

As "first responder" in an emergency situation, the Communications Restoration and Recovery vehicle is a four-wheel-drive truck equipped with a removable communications shelter that can accommodate up to three personnel.

Inside the back of the truck, laptop computers can be set up to permit technicians to restore network connectivity, phone links and other services. In a crisis, a Ku-band antenna atop the vehicle – primarily used for satellite communications – will provide Internet connectivity and Webmail access. A portable satellite

dish will pick up Marshall's network and voice connectivity lines and uses them to temporarily restore critical site communications.

The vehicle also includes cameras with internal and external monitoring capabilities. Six built-in radios with different frequencies will enable those working in disaster areas to communicate with Marshall Center and Michoud facility management, emergency personnel and others involved in recovery efforts.

The Data Restoration and Recovery vehicle can provide the same services as its partner, but has a larger satellite dish and a working space that can accommodate at least six people. It has a conference area with a flat-screen television, DirecTV and phones with teleconferencing features. The vehicle is outfitted with server racks, which technicians can use to recover and restore desktop computer data, and a control panel that operates interior and exterior cameras. Both vehicles are capable of receiving power to operate from standard land lines, vehicle-generated power or a portable generator.

The interior of the Communications Restoration and Recovery vehicle was custom built by Shook Mobile Technology of Schertz, Texas. The Data Restoration and Recovery vehicle was custom built by Frontline Communications of Clearwater, Fla. Both vehicles were delivered to Marshall in May.

More than 20 team members from the Unified NASA Information Technology Services, or UNITEs, contract have volunteered to staff and operate the vehicles in an emergency. The contract, awarded in 2004 to Science Applications International Corporation of San Diego, provides NASA and Marshall with information technology services and supports Marshall's Integrated Enterprise Management Program, which combines agency financial resources and travel office information.

The Communications Restoration and Recovery vehicle underwent a test readiness review in late May at Michoud to make sure all equipment works properly. The Data Restoration and Recovery vehicle underwent a test readiness review June 16. Both vehicles will have an operational readiness review in late June. Marshall's Office of the Chief Information Officer will determine if each is ready for duty after the review.

Davidson, an AI Signal Research Inc. employee, supports the Office of Strategic Analysis & Communications.



Vince Moyers, left, an SAIC employee supporting Marshall's Networks, Telecom & Desktop Services Office, discusses the features of the center's new crisis response vehicles with Kim Narmore, center, a management and program analyst for the Planning, Policy & Integration Office, and Judy Darwin, a Digital Fusion Solutions employee supporting the IT Security Office.

GLBT Awareness Activity

Friday, June 26, 2009
Building 4200 Room P110
11 a.m. - 12 p.m.

The Marshall workforce is invited

to a GLBT Awareness Activity which will focus on the contributions of James Pollack, Alan Turing and Todd Hawley to space exploration and the

aerospace community. Cake will be served.

For additional information contact Clara Welch, (256) 544-5035.

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, July 2, is 4:30 p.m. Thursday, June 25.

Miscellaneous

Converter, for digital to analog television, \$25. 880-6146

1894 Marlin lever action 44, \$450. 883-7695

Double-bowl kitchen sink, faucet, bisque, porcelain, pictures available, \$100. 655-6701

Troybilt Pony 42-inch lawnmower, \$600. 990-4242

Four-piece girl's antique white bedroom furniture, mattress, \$500. 426-5185

Bunk beds, full size on bottom, \$300; seven-drawer pine dresser, mirror, \$150. 679-4459

Metal frame futon, mattress, wooden arms, \$25. 682-6128

Oak German Schrank, \$1,200 obo. 348-1809

Shermag glider, ottoman, light blue fabric, natural wood stain, \$100. 417-1081

Pimento sweet pepper seeds, \$1 package; Intex ski rocket inflatable, ski rope, \$50. 776-7248

Two 2007 Peg Perego Primo Viaggio SIP infant car seats, \$100 each. 652-6004

Wood lateral file, lockable, two drawers, ball bearings, Tuscany brown, Westmount, Costco #354136, \$150. 233-0705

Wedding dress, veil, size 8-10, \$200. 880-9025

Boss BR900CD multi-track guitar recording studio, \$450. 655-6293

Sony 27-inch Trinitron TV, \$100. 337-6933

Vehicles

2007 Quad 4 ATV, burgundy and black, \$3,600. 457-9709

2006 Toyota Sienna LE, 15-inch DVD monitor, power sliding door, 41k miles, \$18,000. 797-1300

2006 Suzuki, 41k miles, \$9,500 obo. 652-1495

2006 Dodge Ram Quad Cab SLT, Hemi, Big Horn, tow packages, 61k miles, \$14,500. 527-6655

2004 Motorhome, R-Vision 33' Class-A, workhorse chassis, extended warranty, \$55,000. www.thewilletfamily.com/rv. 883-7021

2002 Fifth Wheel, queen bed, bunk beds, sleeps eight, \$12,900. 721-1260

2001 Honda Odyssey EX, silver, new

transmission, 165k miles, \$5,900. 880-2290

2001 Mustang GT convertible, five speed, white/tan, 82k miles, \$9,750. 828-9430

1998 Cadillac Deville, 130k miles, \$4,000 obo. 337-0717

1997 Avalon XLS, loaded, V6, \$3,400 obo. 652-9993

1996 Chevy Beretta Z26, needs transmission work, 101k miles, \$500. 457-4783 leave message

1996 Corvette, black on black, 300HP, 25MPG, 82k miles, \$10,000. 723-8877

1992 Lincoln Town Car, 93k miles, \$1,950 obo. 881-8970 or 503-2440

1982 Ford F-150 truck, automatic, 5.8L engine, A/C, AM/FM/CD, 113k original miles, \$2,500 obo. 468-9792

Wanted

Mac laptop for high school student. 325-6000

Twin-size futon frame, need frame only. 665-3422

Electrical work, wiring houses, detach garage, yard lights, adding/removing switches, plugs, lights, etc. 468-8906

Free

Jack Russell Terrier, two years old, female, spayed, house broken. 783-8497

Children's swing set, you take apart and take away. 880-2290

management for LRO and LCROSS missions.

During transit to the moon, engineers performed a mid-course correction to get the spacecraft in the proper position to reach its lunar destination. Since the moon is always moving, the spacecraft shot for a target point ahead of the moon. When close to the moon, LRO used its rocket motor to slow down until the gravity of the moon caught the spacecraft in lunar orbit.

Four engine burns will be conducted through June 27, putting the satellite into its commissioning phase orbit. During the commissioning phase, each of its seven instruments is checked out and brought online. The commissioning phase will end approximately 60 days after launch, when LRO will use its engines to transition to its primary mission orbit.

For its primary mission, LRO will orbit above the moon at about 31 miles for one year. The spacecraft's instruments will help scientists compile high-resolution, three-dimensional maps of the lunar surface and also survey it at many spectral wavelengths.

The satellite will explore the moon's deepest craters, examining permanently sunlit and shadowed regions, and provide understanding of the effects of lunar radiation on humans. LRO will return more data about the moon than

any previous mission.

The Lunar Reconnaissance Orbiter and Lunar Crater Observation and Sensing Spacecraft, or LCROSS, successfully completed its swingby of the moon at 8:09 a.m. June 23 and is being steered back into normal cruise mode. This swingby has provided a gravity assist into the LCROSS cruise orbit. During this cruise phase, the operations team will evaluate the spacecraft's health and status.

The LCROSS spacecraft won't be "up close and personal" with the moon again until the day of impact Oct. 9 at 6:30 a.m. CDT. LCROSS and its attached Centaur upper stage rocket separately will collide with the moon, creating a pair of debris plumes that will be analyzed for the presence of water ice or water vapor, hydrocarbons and hydrated materials. The spacecraft and Centaur are tentatively targeted to impact the moon's south pole near the Cabeus region. The exact target crater will be identified 30 days before impact, after considering information collected by LRO, other spacecraft orbiting the moon, and observatories on Earth.

The 1,290-pound LCROSS and 5,216-pound Centaur upper stage will perform a swing-by maneuver of the moon around 4 a.m. June 23 to calibrate the satellite's science instruments and enter a long,

looping polar orbit around Earth and the moon. Each orbit will be roughly perpendicular to the moon's orbit around Earth and take about 37 days to complete. Before impact, the spacecraft and Centaur will make approximately three orbits.

On the final approach, about 54,000 miles above the surface, LCROSS and the Centaur will separate. LCROSS will spin 180 degrees to turn its science payload toward the moon and fire thrusters to slow down. The spacecraft will observe the flash from the Centaur's impact and fly through the debris plume. Data will be collected and streamed to LCROSS mission operations for analysis. Four minutes later, LCROSS also will impact, creating a second debris plume.

The LCROSS science team will lead a coordinated observation campaign that includes LRO, the Hubble Space Telescope, observatories on Hawaii's Mauna Kea and amateur astronomers around the world.

LCROSS Project Office at Ames Research Center in Moffett Field, Calif., coordinates day-to-day support for the LCROSS mission including mission development and science and mission operations. The LRO office at Goddard manages and coordinates day-to-day support for LRO mission development and mission science operations.

Apollo 11 *Continued from page 1*

to celebrate the 40th anniversary of the Apollo 11 moon landing and Marshall's continuing role in sending explorers to space.

All Marshall civil service employees, Marshall badged contractors, their immediate families and retirees will receive free admission to the Space & Rocket Center during the event. Each guest will receive an anniversary themed souvenir cup and a NASA bag with a commemorative keepsake and other giveaways.

Visitors will enjoy full access to the entire Space & Rocket Center, including the Davidson Center for Space Exploration and the museum.

The Davidson Center, anchored by the iconic, full-size Saturn V rocket, will host additional exhibits and presentations showcasing Marshall's historic role in spaceflight, from the early days of the American rocket program to the Apollo moon landings, the space shuttle era and the next-generation rockets that will carry on NASA's mission of exploration in the years ahead. Guests can visit with NASA astronauts and receive a photo with their autograph. Children's activity tables in the main museum building will include hands-on experiments and physical activities including a "Martian" rock-climbing wall.

Marshall will sponsor a 40-by-60-foot

hospitality tent behind the Davidson Center, where visitors can enjoy live music and light refreshments and get their picture taken at the Moon-Mars Photo Kiosk.

Information will be available next week regarding employee and contractor leave for the event.

To enter the facility, all team members must show their NASA badges at the Marshall "Meet and Greet" tables near the entrance of the Davidson Center. Their families must accompany them to gain free admission.

Additional information about the event will appear on Inside Marshall, on the "NASA Marshall" Facebook page and in upcoming issues of The Marshall Star.



Entrepreneurship at Valley Corridor summit

Todd May, second from left, special assistant to the Marshall Space Flight Center director, participates in a panel discussion about entrepreneurship at the Tennessee Valley Corridor National Summit in Oak Ridge, Tenn., in late May. Marshall was a contributing sponsor of the event, which gathers business, government, education and economic development leaders from the corridor — stretching from North Alabama through Tennessee into Virginia, Kentucky and North Carolina.

Summit participants discuss ways to promote economic development and job creation. Joining May are, from left, Keith Buckner of Adaptive Methods of Centreville, Va.; Tom Rogers of Partnerships Directorate at Oak Ridge National Laboratory in Oak Ridge; Dr. Alex Miller of the University of Tennessee at Knoxville; Grady Vanderhoofven of Meritus Ventures in Oak Ridge; Mike Cuddy of Technology 2020 in Oak Ridge; and U.S. Rep. Zach Wamp of Tennessee.

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