



MARSHALL STAR

Serving the Marshall Space Flight Center Community

Oct. 14, 2010

NASA thruster test aids future robotic lander's ability to land safely

By Kim Newton

The Marshall Space Flight Center collaborated with NASA's White Sands Test Facility in Las Cruces, N.M., and Pratt & Whitney Rocketdyne in Canoga Park, Calif., to successfully complete a series of thruster tests at the White Sands test facility. The tests will aid in maneuvering and landing the next generation of robotic lunar landers that could be used to explore the moon's surface and other airless celestial bodies.

The Robotic Lunar Lander Development Project at the

Marshall Center performed a series of hot-fire tests on two high thrust-to-weight thrusters – a 100-pound class for lunar descent and a 5-pound class for attitude control. The team used a lunar mission profile during the test of the miniaturized thrusters to assess the capability of these thruster technologies for possible use on future NASA spacecraft.

The test program fully accomplished its objectives, including evaluation of combustion stability, engine efficiency, and the ability of the thruster to perform the mission profile and a long-duration, steady-state burn at full power. The test results will allow the Robotic Lander Project to move forward with robotic lander designs using advanced propulsion technology.

The test articles are part of the Divert Attitude Control System, or DACS, developed by the U.S. Missile Defense

See *Lander* on page 3

'Many are needed' – two- and four-legged alike



"Many are needed to plant, and water what is planted," wrote Thomas Becket, the 12th century archbishop and humanitarian. Today, his canine namesake Becket, left, continues that tradition of service. Becket and Jenny, right, are trained workers at Therapy Partners of Huntsville, a Combined Federal Campaign charitable organization that hosted a Marshall Space Flight Center bus tour Oct. 5. They're among two-dozen therapy animals that regularly visit Huntsville-area schools, hospitals, senior centers and other institutions, boosting morale and aiding in healing and education initiatives. Learn more about the organization at <http://www.therapypartners.org>. Marshall CFC bus tours continue through November. Read more about Marshall's upcoming CFC rally on page 2, and get the latest CFC news at http://inside.msfc.nasa.gov/announcements/cfc_info.html.

Doug Steffen/MSFC

Rally for the cause!

Marshall's CFC season begins in earnest with Oct. 21 event

By Rick Smith

When Tory Green takes the stage Oct. 21 as the guest speaker at the Marshall Space Flight Center's annual Combined Federal Campaign rally – set for 1-3 p.m. in Activities Building 4316 – he's sure to make quite an impact.

Green, a 2009 graduate of Lee High School in Huntsville, is a freshman at Jacksonville State University in Jacksonville, Ala., where he is pursuing a political science degree. In 2008, he became the first Eagle Scout – the highest rank in scouting – among youths in Troop 400, which primarily serves young men who live in Huntsville public housing.

In early 2009, he was selected out of more than three-million scouts nationwide to present the annual National State of Scouting address to President Barack Obama and Congress. That honor led Huntsville Mayor Tommy Battle to proclaim "Tory Green Day" on Feb. 23, 2009.

A vocal advocate for the Combined Federal Campaign, Green has spoken

publicly about the impact made on his family and his life by the United Way, the Boy Scouts of America, Big Brothers Big Sisters of America and other participating CFC charitable organizations.

"This is a remarkable young man," said Marshall facilities project manager Ken Dunn, the CFC

executive chairperson for the 2010 campaign. "Our goal with the 2010 campaign is to really drive home to our team the benefits and positive impact of the CFC effort – and Tory Green is an exemplary spokesperson and champion for the values of community, personal initiative and goodwill."

More than a dozen local charitable organizations will take part in a mini-expo during the rally – providing an opportunity for Marshall team members to ask questions and learn more about each organization's mission to serve the community and the nation.

The event also will include performances by Boy Scout Troop



CFC guest speaker Tory Green.

70, the Grissom High School Band, the cheerleading squad at Alabama A&M University and pre-schoolers at Marshall's Child Development Center.

Team members will enjoy free popcorn, M&Ms and soft drinks, courtesy of the Marshall Exchange. A variety of door prizes will

be given away. Winners must be present at the time of the drawing to qualify.

Watch Inside Marshall for further details and for a complete bus schedule for the event.

The Marshall Center's goal is to raise \$675,000 by the campaign's end Dec. 10. Marshall, the Army's Aviation and Missile Command and other federal agencies at Redstone Arsenal and in surrounding Alabama and Tennessee counties are part of the Tennessee Valley Combined Federal Campaign.

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

Volunteers still needed for Special Olympics

Organizers have requested additional volunteers to support the annual Special Olympics Track & Field Day event, set for Oct. 19 at Milton Frank Stadium in Huntsville. Forty-five additional volunteers are needed to escort participating athletes and help with other activities at the event, which will run from 8 a.m. to 1 p.m.

Visit <http://cfc.msfc.nasa.gov/CFM/csd.cfm> for details



about this and other Community Service Days activities, and to sign up to lend a hand. Civil service employees are granted up to four hours of excused absence to participate in these CFC functions, and should consult with their supervisors prior to their absence.

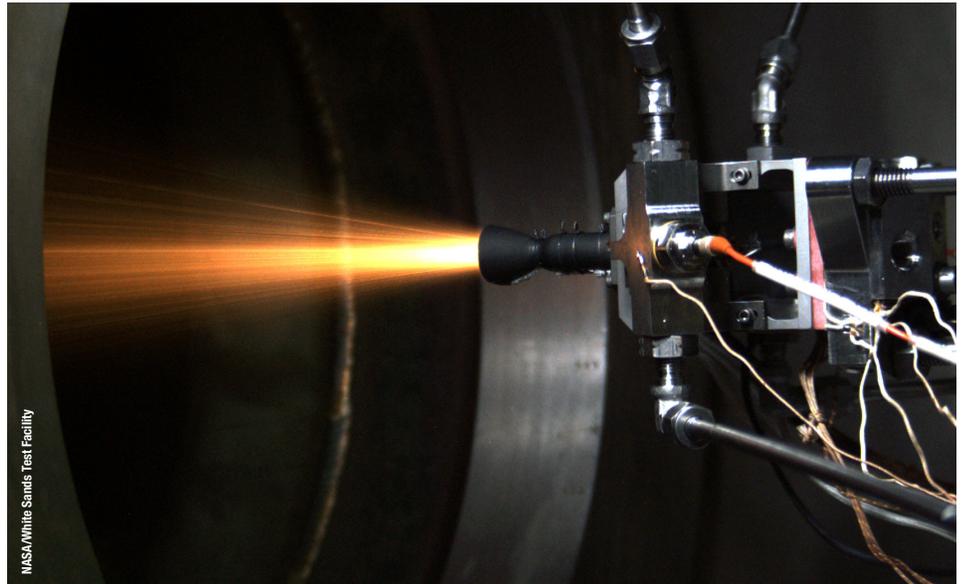
Marshall contractors should talk to their supervisors about their company leave policy.

Lander *Continued from page 1*

Agency of the Department of Defense. The control system provides two kinds of propulsion – one for control and the other for maneuvering. The Attitude Control System thrusters provide roll, pitch and yaw control. These small thruster types were chosen to meet the golf-cart-size lander's requirement for light-weight, compact propulsion components to aid in reducing overall spacecraft mass and mission cost by leveraging an existing government resource.

"The Missile Defense Agency heritage thrusters were originally used for short-duration flights and had not been qualified for space missions, so our engineers tested them to assess their capability for long-duration burns and to evaluate their performance and combustion behavior," said Monica Hammond, lander propulsion task manager for the Robotic Lunar Lander Development Project at the Marshall Center. "The thrusters are a first step in reducing propulsion technology risks for a lander mission. The results will be instrumental in developing future plans associated with the lander's propulsion system design."

During tests of the 100-pound thruster, the DACS thruster fired under vacuum conditions to simulate operation in a space environment. The tests mimicked the lander mission profile and operation scenarios. The test included several trajectory correction maneuvers during the cruise phase; nutation control burns to maintain spacecraft orientation; thruster vector correction during the solid motor



Testing is conducted on the Divert Attitude Control System thruster at NASA's White Sands Test Facility in Las Cruces, N.M.

braking burn; and a terminal descent burn on approach to the lunar surface.

The objective for the 5-pound-class thruster test was similar to the 100-pound thruster test with an additional emphasis on the thruster heating assessment due to the long-duration mission profile and operation with MMH/MON-25 – monomethylhydrazine (MMH) fuel and a nitrogen tetroxide (75 percent)/ nitrogen oxide (25 percent) (MON-25) oxidizer.

A standard propellant system for spacecraft is the MMH/MON-3 propellant system – containing 3 percent nitric oxide. The alternate MMH/MON-25 propellant system contains 25 percent nitric oxide. With its chemical composition, it has a much lower freezing point than MON-3, making it an attractive alternative for spacecraft with its thermal benefits and resulting savings in heater

power. Because the MMH/MON-25 propellant system has never been used in space, these tests allowed engineers to benchmark the test against the MMH/MON-3 propellant system.

"The lower freezing point could save considerable heater power for the spacecraft and increase thermal margin for the entire propulsion system," said Huu Trinh, lead propulsion engineer for the Robotic Lunar Lander Development Project. "These tests showed stable combustion in all scenarios and favorable temperature results."

The Robotic Lunar Lander Development Project is a partnership between the Marshall Center and the Johns Hopkins University Applied Physics Laboratory located in Laurel, Md.

For more photos and video of the test, visit www.nasa.gov/roboticlander.

Newton is a public affairs officer in the Office of Strategic Analysis & Communications.

Domestic Violence Awareness Seminar to be held Oct. 19-20

October is National Domestic Violence Awareness Month. Marshall Space Flight Center's Protective Services Office will host a Domestic Violence Awareness Seminar on Oct. 19-20 from

9-11 a.m. in Building 4627, Room 104. Speakers from the Protective Services Office, Crisis Services of North Alabama and the Huntsville Police Department will discuss domestic violence issues. All team

members are encouraged to attend.

For more information, visit Inside Marshall at <http://inside.msfc.nasa.gov/announcements/domestic-violence-seminar.html> or call 544-6843.

NASA Exchange annual nut sale preorders under way

The NASA Exchange is offering Marshall Space Flight Center team members and retirees the opportunity to purchase nuts through preorders. Orders will be accepted through Oct. 26 to ensure delivery by Thanksgiving. The

expected delivery date is Nov. 19.

The order form below should be completed and mailed or delivered, along with payment, to the NASA Exchange Space Shop, Attn: Sherry, HS01XX, Bldg. 4203, Huntsville, AL 35812.



“NASA EXCHANGE ANNUAL NUT SALE”

Order Form

DEADLINE FOR ORDERING IS: October 26, 2010 to ensure delivery before Thanksgiving.

NAME: _____ Office Symbol: _____

Phone: _____ Email Address: _____

SPECIFY QUANTITY AND TOTAL PRICE

Product (16 oz. unless noted):	QUANTITY	TOTAL PRICE
Pecan Halves @ \$7.25.....	_____	\$ _____
Raw Peanuts @ \$2.00.....	_____	\$ _____
Chocolate Covered Pecans @ \$7.75.....	_____	\$ _____
White Chocolate Pecans @ \$7.75.....	_____	\$ _____
Roasted & Salted Pecans @ \$7.75.....	_____	\$ _____
Crunchy Praline Pecans @ \$7.75.....	_____	\$ _____
Natural Almonds (12 oz.) @ \$4.75.....	_____	\$ _____
Slivered Almonds (11 oz.) @ \$4.75.....	_____	\$ _____
Pistachios @ \$8.00.....	_____	\$ _____
Cashews @ \$7.50.....	_____	\$ _____
English Walnuts @ \$5.75.....	_____	\$ _____
Totals		\$ _____

****PAYMENT MUST ACCOMPANY ORDER****

Make Checks Payable to: NASA Exchange - MSFC

DEADLINE FOR ORDERING IS: October 26, 2010 to ensure delivery before Thanksgiving.

PLEASE MAIL CHECK & ORDER TO: NASA EXCHANGE SPACE SHOP, ATTN: SHERRY,
HS01XX Bldg. 4203, Huntsville, AL 35812.

Payment may be made by cash, VISA, MasterCard, Discover, or American Express by taking order form to the NASA Exchange Space Shop, Bldg 4203.

(Receipt # _____)

Received by: _____ Date _____

MSFC One-Time Form ()

Disability Awareness Month events set for Oct. 14, 19 at Marshall

Marshall Space Flight Center team members are encouraged to participate in programs commemorating National Disability Employment Awareness Month on Oct. 14 and 19.

During the Lunch & Learn event Oct. 14, Andrea Nunn, a visual information specialist in the Office of the Chief Information Officer, will speak about living and working with rheumatoid arthritis. Marshall team members are invited to bring their lunches to the session, at 11:30 a.m. in Building 4200, Room 504.

Marshall also will welcome motivational speaker Kevin Saunders on Oct. 19 for his presentation, "Talent Has No Boundaries: Work Force Diversity Includes People With Disabilities," at one of two sessions in Morris Auditorium in Building 4200 – at 10 a.m. or 1 p.m.

Paralyzed from the chest down in an industrial accident in 1981, Saunders became a famed Paralympian and international wheelchair racing champion. He was twice appointed to the President's Council on Physical Fitness & Sports, and has pushed his wheelchair more than 2,500 miles across the nation, speaking to students and community leaders about the importance of physical fitness.

For more information on upcoming Disability Employment Awareness Month events – and to see a slideshow Q&A about noteworthy disabled celebrities in screen, sports and today's Marshall work force – visit Inside Marshall.

Classified Ads

To submit a classified ad to the Marshall Star, go to Inside Marshall, to "Employee Resources," and click on "Marshall Star Ad Form." Ads are limited to 15 words, including contact numbers. No sales pitches. Deadline for the next issue, Oct. 21, is 4:30 p.m. Thursday, Oct. 14.

Miscellaneous

Potting plant center, \$155; Patio pub table, two stools, \$60. 256-617-3686

Kenmore Elite Calypso washing machine, large capacity, heavy duty, many cycle settings, \$300. 256-461-6337

Refrigerator, 25 cubic feet, almond, side-by-side doors, ice/water through door, \$250. 256-883-5168

Blue recliner, \$200; Gravity Rider, \$50. 256-532-3195

Two infant car seats, \$40 and \$10. 256-714-0800

Toddler toys, \$5; swings, \$10; Pack-N-Play, \$35; bouncer, \$10; Jumperoo, \$10. 256-417-5334

Playstation 3 game, Little Big Planet, Game of the Year edition, rated E, \$25. 256-828-1234

Mountainsmith dog pack, red and black, \$35. 256-783-3428

Taurus Model 85, ultralight, black, \$250. 256-325-8160

Peg Perego John Deere tractor, loader, trailer, two 12V batteries, charger, \$75. 256-895-6640

Leaf net for 16x32 in-ground swimming pool, \$75. 256-883-2653

Sony VPL-HS20 1080i HD projector/remote, 86-inch pull-down screen, \$650. 256-468-2075

Verizon BlackBerry Tour, home charger, \$100. 931-309-9309

Appaloosa stallion, red roan with white blanket. 256-728-5768

Vehicles

2006 Nissan Altima SE 4D sedan, 3.5L V6, leather, moonroof, 97k miles, \$10,500. 256-679-2052

2004 Monte Carlo SS SC, Dale Jr. Edition, loaded, red, 56k miles, \$9,995 obo. 256-652-2978

99 Honda CRV (AWD), minor body damage, new tires, 196k miles. \$3,000 obo. 256-468-0225

1998 GMC pickup, 1/2 ton, auto, V-6, white, 187k miles, \$4,400. 256-468-9377

1998 Ford Windstar GL, tan, auto, AC, 3.8 V6 engine, 118k miles, \$3,000. 256-617-9614

1995 Toyota 4-Runner utility truck, \$2,500. 256-325-8102

Wanted

Houses/offices to clean, available evenings and weekends. 256-777-8595, leave message

Small indoor dog for my daughter. 256-288-6797

Students interested in obtaining beginner to advanced SCUBA diver certification. 256-651-9909

Hunting land for lease or to trade for tree/electrical/tile work. 256-468-8906

Shuttle Buddies to meet Oct. 25

The Shuttle Buddies will meet at 8:30 a.m. Oct. 25 at Mullins Restaurant on Andrew Jackson Way. For more information, call Deemer Self at 881-7757.

NASA's SERVIR-Himalaya opens in Nepal



Photo courtesy of ICIMOD

During the unveiling of SERVIR-Himalaya, the latest international success story for the NASA environmental imaging system, NASA Administrator Charles Bolden, left, is welcomed to Kathmandu, Nepal, by Basanta Shrestha, a division head at Nepal's International Centre for Integrated Mountain Development, or ICIMOD. SERVIR, from the Spanish word meaning "to serve," is NASA's state-of-the-art Earth monitoring system, integrating satellite and other geospatial data to address pressing environmental and climate change issues affecting the planet.

Dan Irwin, SERVIR project director at the Marshall Space Flight Center, speaks about the importance of Earth observation at the International Symposium in Nepal, founded to enhance international cooperation in the accessibility and use of Earth observation systems for improved scientific knowledge and understanding. Developed by researchers at Marshall, SERVIR is a leading resource in the field, with established systems supporting Mesoamerica and Africa. SERVIR gives scientists, environmental managers and decision-makers web-based access to satellite imagery, decision-support tools and interactive visualization capabilities.



Photo courtesy of ICIMOD

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