



Marshall Star, December 12, 2012 Edition

MARSHALL STAR

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It's Crunch Time -- Only Three Days Left to Donate to CFC!

The Marshall Space Flight Center's 2012 Combined Federal Campaign runs through Dec. 15. So far, Marshall's workforce has contributed \$576,821 toward the center's \$700,000 goal. CFC Chairman Patrick Rasco said some employees have experienced a 48-hour delay when trying to donate due to their Employee Express passwords being expired. He encourages everyone who plans to contribute to do so as soon as possible to avoid any last-minute issues with passwords. To donate, or to browse a comprehensive list of qualified charitable organizations, visit [here](#). Contractor team members also may make a one-time donation through their CFC organization leads or assigned monitors. For a complete list of organization leads, visit the [CFC ExplorNet page](#).



Marshall's Office of Diversity & Equal Opportunity First to Reach 100 percent CFC-Giving Goal



Marshall Space Flight Center Deputy Director Teresa Vanhooser, seated at left, congratulates Susan Cloud, seated at right, acting director of Marshall's Office of Diversity & Equal Opportunity, and members of her team for being the first organization to reach 100 percent on donation participation for the Combined Federal Campaign. Among those looking on are CFC committee members Shirley Chandler, standing at left, and Gloria Ayers, standing second from right. Marshall's Office of the Chief Counsel also has reached the 100 percent goal. The CFC campaign runs through Dec. 15. To donate, click [here](#). (NASA/MSFC/Emmett Given)

Marshall Center's Saturn V and Lunar Rover Were Vital for Apollo 17 Mission Success

By Michael Wright

Forty years ago, NASA launched Apollo 17 -- the last human mission to the moon and the final Apollo lunar mission. That mission's success depended on two complex space systems provided by the Marshall Space Flight Center: the Saturn V launch vehicle and the Lunar Roving Vehicle.

Image right: The last launch of a Saturn V on a lunar mission took place at 11:33 p.m. CST on Dec. 7, 1972, at the Kennedy Space Center. The Saturn carried the Apollo 17 crew Eugene Cernan, Ronald Evans and Harrison Schmitt on the last Apollo mission to the moon. The Saturn V launch vehicle was developed by the Marshall Space Flight Center and its contractors. (NASA)

The mammoth Saturn V, generating more than 7.5 million pounds of thrust, launched Apollo 17 at 11:33 p.m. CST, Dec. 7, 1972, from NASA's Kennedy Space Center. On the Saturn V's first and only night launch, the largest rocket ever built carried the last three men to travel to the moon: Commander Eugene A. "Gene" Cernan, Command Module Pilot Ronald E. "Ron" Evans and Lunar Module Pilot Harrison H. "Jack" Schmitt, the only scientist-astronaut to explore the moon.



On their way to the moon, the Apollo 17 crew captured one of the most famous and most reproduced NASA photos, called The Blue Marble, an Earth image that became part of the Earth Day flag. On Dec. 11, 1972, as Evans continued to orbit the moon, the lunar module carried Cernan and Smith to the Taurus-Littrow landing site, a combination of mountainous highlands and lowland valleys. The next day, they left the lunar module, unpacked and deployed the lunar rover, and began exploring the lunar surface.

As part of three extravehicular activities, Cernan and Schmitt loaded the lunar rover with automated experiments that they set up at nine geology research stations. Before their first lunar excursion, Cernan accidentally hit the roving vehicle's right rear fender with a hammer and knocked off the fender extension. This allowed lunar dust to be thrown on the astronauts and cargo during their first outing. Cernan and Schmitt later improvised a fender extension using leftover plastic-covered maps and lamp clamps. The repair took only nine minutes. Cernan took the rover for its first ride across the lunar landscape.

"This is quite a machine, I tell you," Cernan reported to Mission Control in Houston.

The rover developed by the Marshall Center performed safely and reliably on each excursion, and enhanced the astronauts' work efficiency as they explored the moon's geologic features. Cernan and Schmitt drove the Apollo 17 lunar roving vehicle 21.7 miles -- more than it had been driven on either of the two previous missions. Cernan also holds the speed record of about 18 kilometers per hour. The entire mission lasted 504 hours, and the astronauts spent 75 hours on the moon. On the return trip, the vehicle carried more than 257 pounds of lunar rock and soil samples, including a unique orange soil sample that had not been found during the previous five lunar missions. The astronauts took more than 2,100 photographs on the lunar surface during their excursions, which totaled 22 hours and four minutes, also a record.



Cernan later said, "The Rover performed admirably ... that vehicle that sits out there at Taurus Littrow. We talked an awful lot about having two good spacecraft, but we told ourselves that we had three good spacecraft. That thing couldn't perform better -- and we pushed it in many cases to the limit. But let me tell you that vehicle for a long time was just a little bit better than we were because it's a super performing vehicle. If you take a couple more batteries up there, that thing would just keep going."

Image left: Apollo 16 and Apollo 17 astronauts helped test the Lunar Roving Vehicle deployment system at the Marshall Space Flight Center, the NASA center responsible for designing and testing the rover. (NASA)

On Dec. 14, Cernan and Schmitt left the trusty rover behind on the moon, stepped off the lunar soil for the last time and re-entered the lunar module. That same day, the lunar module ascent stage lifted off and docked with the command module in lunar orbit. Cernan, Schmitt and Evans journeyed back to Earth and splashed down Dec. 19, 1972, 350 nautical miles southeast of American Samoa. The astronauts were flown by recovery helicopter to the U.S.S. Ticonderoga slightly less than an hour after the completion of NASA's sixth and last manned lunar landing in the Apollo program.

During one of his many visits to Huntsville, Cernan told a Marshall audience that he used to think of himself, and his fellow Apollo-era moonwalkers, as "just a bunch of ordinary guys who had an extraordinary experience" until someone told him: "You may think you are ordinary, but you're one of only 12 human beings who have walked on another planet." Referring to the Apollo 17 mission, Cernan said, "... folks at Marshall ... and all across the country, were the ones that made it possible."

For detailed coverage of the Apollo 17 mission including videos, transcripts of air-to-ground and imagery, visit the Apollo Lunar Surface Journals on the NASA Headquarters history site [here](#).

Wright is the Marshall Center historian.

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Marshall Center Director to Give Commencement Speech at University of New Orleans



Patrick Scheuermann (NASA/MSFC)

Marshall Space Flight Center Director Patrick Scheuermann will give the fall 2012 commencement speech Dec. 15 at the University of New Orleans. The ceremony will be held at 3 p.m. at the university's Lakefront Arena.

A native of New Orleans, Scheuermann received a bachelor's degree in mechanical engineering in 1986 from the University of New Orleans.

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J-2X Powerpack Test Lights Up the Sky



A burst of flame from a J-2X Powerpack test-firing lights up the sky Dec. 5 at NASA's Stennis Space Center. For the first time, NASA's Space Launch System team invited Twitter followers behind the scenes for an all-day Tweet Chat, allowing the public to track test-day activities and ask questions during this 1,286-second test.

The J-2X engine, built by Pratt & Whitney Rocketdyne of Canoga Park, Calif., will power the upper stage of the Space Launch System, managed at the Marshall Space Flight Center. The new heavy-lift rocket system will launch the Orion spacecraft and enable humans to explore

new destinations beyond low Earth orbit. (NASA/SSC)

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Technology Transfer Office Encourages Reporting Innovations

You may not realize the number of NASA innovations and processes that have been patented and licensed, and have gone on to become part of our everyday lives. The Technology Transfer Office at the Marshall Space Flight Center ensures that technologies developed for missions in exploration and discovery are made available to the public. The Technology Transfer Office uses mechanisms such as new technology reporting, patent licensing, technology infusion efforts, software release and Small Business Innovation Research, or SBIR, to push technology out to the public.



Image right: Marshall Space Flight Center's Donald Frazier, second from right, deputy center chief technologist and chief scientist for physical chemistry, receives a royalty check for his contribution to a solar energy design. Presenting the check are, from left, Andrew Keys, Marshall's chief technologist; Daniel Schumacher, manager of the Science & Technology Office; and Dan Dorney, manager of the Technology Development & Transfer Office. This innovation -- shared with Nth Degree Technologies Worldwide Inc. and co-inventor Dr. Kirk Fuller -- improved the efficiency for powering homes, vehicles and industries while significantly reducing the size of the device. Frazier will continue to receive checks for several years for his technology spin off. (NASA/MSFC/Emmett Given)

New technology is any invention, discovery, improvement or innovation that has been conceived or first practiced in the performance of NASA work.

"Marshall's world-class scientists and engineers are continually developing new innovations to benefit the space program," said Carolyn McMillan, Marshall's new technology representative. "We work with inventors to report their technologies in order to ensure that they receive the credit and recognition which they deserve."

An effective new technology reporting, the New Technology Readiness process for NASA employees and parties working under funding agreements (contracts, grants and cooperative agreements) is essential to the achievement of NASA's missions. It ensures the accurate tracking and identification of valuable NASA technologies, intellectual property protection and compliance with export control regulations. Reporting a new technology is quick and easy: <https://ntr.ndc.nasa.gov>.

Reporting new technologies also can prove very beneficial to the responsible innovator. Only after an invention or enhancement has been properly disclosed can NASA then assess its marketability and its commercialization potential in the private sector.

"Our role in the Technology Transfer Office is to transfer NASA-owned inventions and technologies to U.S. industry to help them strengthen their competitive position in the global economy," said Sammy Nabors, licensing and commercialization lead at the Marshall Center.

When a NASA technology is licensed to industry for a commercial application, its inventor can share in the royalties that NASA receives. While royalty distributions are calculated per license and allocations are dependent on a number of factors, an inventor could receive as much as \$150,000 in a calendar year.

Successfully licensed technologies are also eligible for a number of prestigious awards and honors, including induction into the Space Technology Hall of Fame.

Both new technology reporting and patent licensing processes are functions of NASA's Technology Transfer Program. At

Marshall, tech transfer efforts are managed by Terry Taylor and are a vital part of the Science & Technology Office's Technology Development and Transfer Office.

To learn more about the Technology Transfer Office, visit <http://techtran.msfc.nasa.gov/about-us.php>.

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Randy Baggett Named Chandra X-Ray Observatory Program Manager



Randy Baggett (NASA/MSFC/Fred Deaton)

Randy Baggett has been appointed as the Chandra X-Ray Observatory program manager.

In his new role, Baggett will be responsible for overseeing all Chandra operations including planning, budgeting and serving as the key interface for Chandra-related matters within the Marshall Space Flight Center, the agency and the Smithsonian Astrophysical Observatory.

"I'm thrilled to work with Randy Baggett in his new position, and confident he'll uphold the Chandra X-ray Observatory's long history of success," said Daniel Schumacher, manager of Marshall's Science & Technology Office. "As a key member of the Chandra development team from the beginning of hardware development, he is immensely knowledgeable about this program and this amazing piece of NASA hardware. Chandra's in very good hands."

Baggett has spent much of his 27-year career at NASA serving in several key management roles, including lending a great deal of management support to the Chandra mission. In 1993, he began supporting the Chandra Program Office as part of a yearlong Management Development Program assignment at NASA Headquarters, where he supported the Chandra mission during its critical re-planning phase. Shortly thereafter, he served as the assistant to the Chandra spacecraft manager from 1994 to 1999.

After serving in various management roles that supported the center's programs and objectives from 1999-2009, Baggett served as the mission manager for the Gravity Recovery and Interior Laboratory mission from 2009 to 2011. In 2011, he was appointed the deputy manager of the Science and Space Technology Projects Office within the Science & Technology Office. In this role, Baggett has helped to oversee the management of development and operations for various science instruments and programs, including Chandra, serving as the deputy program manager.

Baggett earned a Bachelor of Science in electrical engineering from Auburn University. For his service to the space program, he has received numerous awards, including the Exceptional Service Medal, a Space Flight Awareness Award, the Silver Snoopy Award and several group achievement awards.

The Marshall Center manages the Chandra program for NASA's Science Mission Directorate. The Smithsonian Astrophysical Observatory controls Chandra's science and flight operations from Cambridge, Mass.

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Marshall Association Collects Toys and Coats for Needy; 2013 Association Officers Appointed

More than 100 toys and 110 coats have been collected so far for the Marshall Association and Marshall Next Toy and Coat Drive, which runs through Dec. 13.

Image right: At the recent Marshall Association meeting, Marines from the local chapter of Toys for Tots picked up more than 70 toys to give to needy children in the community. (NASA/MSFC/Emmett Given)



The Marshall Association presented 70 of those toys during its Nov. 27 meeting to members of the local chapter of the [Marine Toys for Tots Foundation](#) -- a Combined Federal Campaign-funded organization that provides toys to needy children in the community.

During the meeting, the Marshall Association appointed new officers for 2013:

- President: Bob Devlin
- Vice president of programs: Tia Ferguson
- Vice president of communications: Mallory Johnston
- Treasurer: Cynthia Guffey

Marshall team members can find more information about the Marshall Association and the Marshall Next Toy and Coat Drive -- including drop-off locations -- on [ExplorNet](#).

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Archaeologist, Inca Specialist Gary Ziegler to Present His Exploration and Investigation of Inca Sites Dec. 14

On Dec. 14, archeologist and Inca specialist Gary Ziegler will present on his 45-years of exploration and investigation of Inca sites in Peru.

The presentation, titled Extreme Archaeology: The Exploration and Investigation of Inca Ceremonial Site and Royal Estates in the Andes of Peru, is part of the Distinguished Lecturer Series co-sponsored by NASA, the University of Alabama in Huntsville, and the National Space Science and Technology Center.

It will be held at the National Space Science and Technology Center, 320 Sparkman Drive in Huntsville, from 1:30-2:30 p.m., in Room 2096. All Marshall Space Flight Center team members are invited to attend.

For more information about Ziegler and the event, team members can visit [ExplorNet](#).

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Marshall Star to Take Break for Holiday Season; Resumes Jan. 9 with Special 2012 Year in Review

Dec. 19 will be the last issue of the Marshall Star for 2012. The Star, published 50 times each year, will not publish for two weeks during the holiday season.

Publication will resume Jan. 9, 2013, with a special Year in Review, highlighting the Marshall Space Flight Center's 2012

accomplishments. Visit <http://www.nasa.gov/centers/marshall/about/star/> at 2 p.m. for the new edition.

Find this article at:

<http://www.nasa.gov/centers/marshall/about/star/index.html>