



Marshall Star, May 22, 2013 Edition

MARSHALL STAR

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NASA's Marshall Center Celebrates Accomplishments, Capabilities With Partners; Cites Contractor Excellence

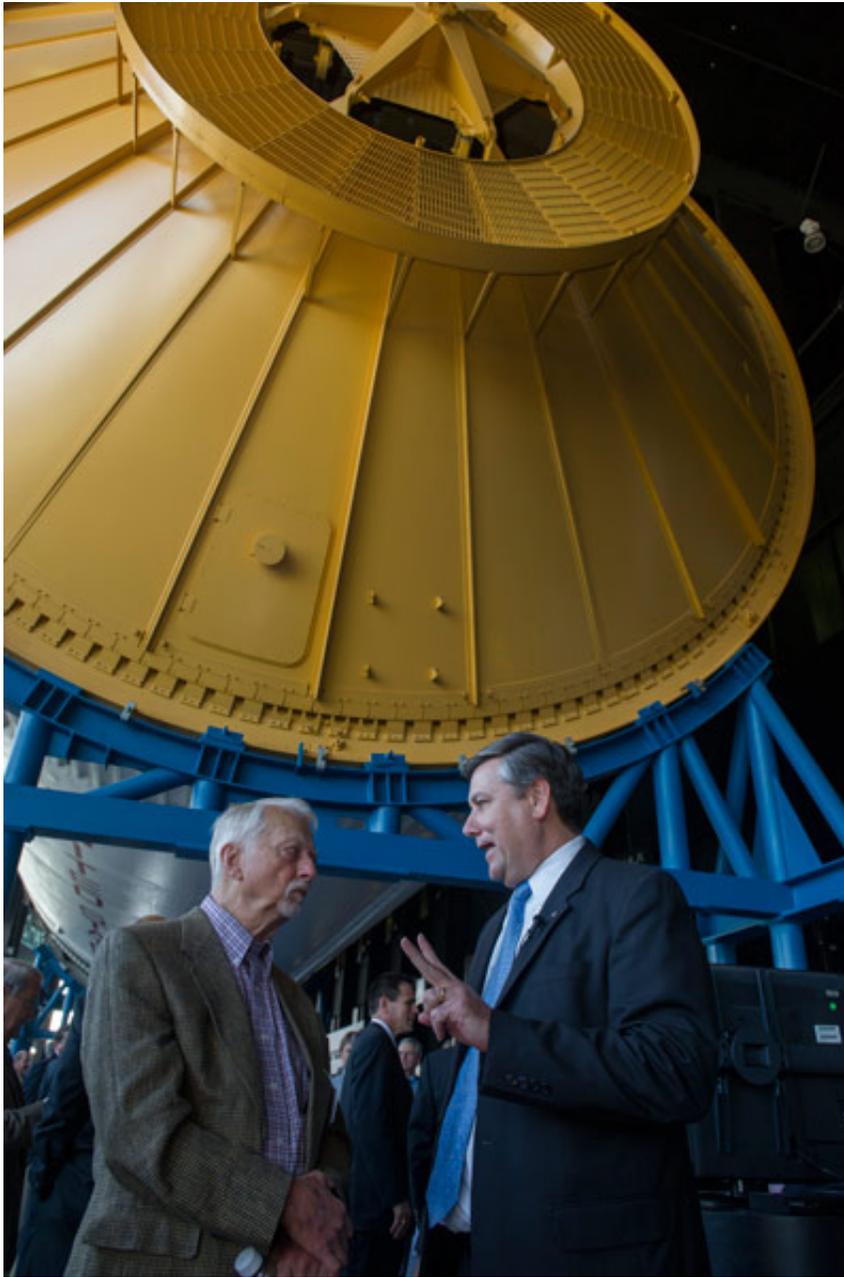
By Kenneth Kesner

Elected officials and business and community leaders heard an overview of NASA Marshall Space Flight Center's activities, budget and outlook from Center Director Patrick Scheuermann and other key Marshall leaders during an event May 15 that celebrated the vital importance of the center's partnerships with industry, government and academia.

Image right: Elected officials and business and community leaders had the opportunity to network as well as hear an overview of Marshall Space Flight Center's activities, budget and outlook from Director Patrick Scheuermann during the May 15 event in the Davidson Center for Space Exploration at the U.S. Space & Rocket Center. (NASA/MSFC/Emmett Given)



Scheuermann, who became the Marshall Center director in September 2012, said the theme of the event, "We Do the Hard Stuff Together," is particularly appropriate for the "Marshall Team."



"Thanks to the management team in place, the people of Marshall and this community, we're ready for the challenges of the future by focusing on partnerships and affordable solutions," he said.

Image left: Marshall Center Director Patrick Scheuermann, right, talks with former astronaut Owen Garriott beneath the Saturn V rocket suspended in the Davidson Center for Space Exploration at the U.S. Space & Rocket Center. (NASA/MSFC/Emmett Given)

The Marshall Team is unified behind NASA's exploration goals, Scheuermann said, which include development of the Space Launch System and Orion spacecraft, and the first-ever mission to identify, capture and relocate an asteroid. Support for Marshall was evident, he said, during the recent Huntsville/Madison County Chamber of Commerce trip to Washington to meet with key members of Congress, and at meetings with state leaders and lawmakers during Marshall's NASA Day in Montgomery and NASA Day in Baton Rouge, La.

He said the proposed fiscal year 2014 NASA budget request is basically the same as the administration's fiscal 2013 request. It includes \$2.18 billion for the Marshall Center to continue its essential role in NASA's exploration and other programs, including International Space Station operations and proceeding with testing

of the James Webb Space Telescope.

"The agency has shown its commitment to Marshall and our technical capabilities by giving us a stable budget and the workforce needed to deliver on critical NASA missions," Scheuermann said.

The 2012 Marshall Contractor Excellence Awards also were presented during the breakfast meeting on May 15 at the Davidson Center for Space Exploration at the U.S. Space & Rocket Center. For the awards, eligible contractor companies are evaluated on a number of criteria, including contract technical performance, cost and schedule performance, leadership and quality improvement, customer satisfaction, innovation, safety, diversity and outreach.



Image right: SAIC was honored with the 2012 Marshall Contractor Excellence Award in the "Large Business" category for its work for Marshall under three separate contracts. Accepting the award from Center Director Patrick Scheuermann, left, and Deputy Director Teresa Vanhooser, right, are SAIC program managers Chuck Lewis, second from left, and Mike Mink. (NASA/MSFC/Emmett Given)

Dynetics Technical Services was honored in the "Small Business" category for providing Information Technology services to Marshall. The company was praised for taking on additional work despite the fixed-fee nature of its contract, for being on time, significantly under budget and for helping Marshall to do more while reducing costs.



Image left: Dynetics Technical Services was presented the 2012 Marshall Contractor Excellence Award in the "Small Business" category for providing Information Technology services. DTS President and Program Manager Dr. Ron Nyberg, center, accepted the award from Center Director Patrick Scheuermann and Deputy Director Teresa Vanhooser. (NASA/MSFC/Emmett Given)

SAIC was honored in the "Large Business" category for its work for Marshall under three separate contracts. The company's approach to software development and support for the small business community were noted, as was its performance during the April 2011 tornadoes, when SAIC implemented mission-essential and emergency coverage in support of NASA computer and data center systems.

Image left: Dynetics Technical Services was presented the 2012 Marshall Contractor Excellence Award in the "Small Business" category for providing Information Technology services. DTS President and Program Manager Dr. Ron Nyberg, center,

The new [Marshall Center video](#), "We Do the Hard Stuff, Start to Finish," was also featured at the gathering.

Kesner, an Analytical Services Inc. employee, supports the Office of Strategic Analysis & Communications.

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NASA Associate Administrator Robert Lightfoot Holds All-Hands Meeting with Marshall Team Members on May 21

NASA Associate Administrator Robert Lightfoot held an all-hands meeting with NASA's Marshall Space Flight Center team members May 21. Lightfoot discussed the fiscal year 2014 budget and its impacts on NASA and Marshall Center missions.
(NASA/MSFC/Emmett Given)



NASA Associate Administrator Robert Lightfoot, left, answers questions from Marshall Center team members at an all-hands meeting May 21 as Marshall Center Director Patrick Scheuermann looks on. Lightfoot discussed the fiscal year 2014 budget and how NASA is managing the budget to continue the work being done within the agency to advance the United States' leadership in space, improve life on Earth and to strengthen the economy.
(NASA/MSFC/Emmett Given)

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A-1 Test Stand Houses First Full Engine in Nearly a Decade

Engineers install J-2X engine E10002 in the A-1 test stand at NASA's Stennis Space Center. The installation is in preparation for a new series of tests, where the engine will be gimbaled, or pivoted, during test firings.

Gimbal tests are an important part of the design process. When this upper stage engine is used in space, it will need to be able to move freely to steer NASA's Space Launch System, or SLS -- an advanced heavy-lift launch vehicle that will provide an entirely new national capability for human exploration beyond Earth's orbit. This is the first full engine to be installed in the A-1 test stand in almost a decade and the first time gimbal tests will be performed since testing on the space shuttle main engines.



A series of tests was completed on the E10002 engine in the A-2 test stand prior to its installation on the A-1 test stand at Stennis. Once this series of tests is complete, the engine will be removed, and preparations will be made to begin testing the RS-25 engine on the A-1 stand in 2014. RS-25 engines from the space shuttle inventory will power the core stage of SLS, while the J-2X engine will power the upper stage of the evolved launch vehicle. The SLS Program is managed at NASA's Marshall Space Flight Center. The J-2X engine is being built by Pratt & Whitney Rocketdyne of Canoga Park, Calif. (NASA/SSC)

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Vanderbilt University wins NASA Student Launch Projects Challenge

By Bill Hubscher



(NASA/MSFC/Fred Deaton)

After placing third the past two years, the Aerospace Club from Vanderbilt University in Nashville, Tenn., won first place in the 2012-13 edition of NASA's Student Launch Projects challenge. The educational project tasks student teams to design, build and test-fly sophisticated, reusable rockets capable of carrying working science payloads to an altitude of 1 mile and returning them safely to Earth.

Image left: Members of the Aerospace Club from Vanderbilt University in Nashville, Tenn., prepare their rocket for launch at NASA's 2012-13 Student Launch Projects "launchfest" event in Toney, Ala.

This year's event -- designed to inspire the next generation of engineers, scientists and explorers -- culminated with a "launchfest" April 21 at Bragg Farms in Toney, Ala., just north of Huntsville. Each team was given the opportunity to launch their rockets and payloads. To determine a winner, NASA judges evaluated each team's rockets based on a series of

technical design reviews, the results from the rocket's flight including altitude, educational engagement activities in their home community, a team-built website and a final written report from the students.

Vanderbilt beat out 35 other colleges and universities to win the \$5,000 top prize, provided by ATK Aerospace Group of Promontory, Utah. The University of Louisville in Kentucky and Tarleton State University in Stephenville, Texas, won second and third place, respectively.

Tarleton State also won this year's Rookie Award, and Alabama A&M University in Huntsville won the Altitude Award based on the scoring rules for launching the rocket reaching the altitude closest to 1 mile, or 5,280 feet above ground level without going over. The Bulldogs Rocket Team came 11 feet shy of the mark.

Besides designing and building the rocket, NASA Student Launch Projects teams also must design and operate the science payloads, maintain websites to document the experience and devise local educational engagement campaigns to share their enthusiasm for rocketry. The challenge seeks to inspire younger students to pursue technical learning fields, including science, technology, engineering and mathematics (STEM).

"This program is a valuable tool for students and their teachers as they use all the knowledge gained in a classroom setting to tackle a real-world challenge," said Tammy Rowan, manager of the Marshall Center's Academic Affairs Office, which manages the rocketry challenge. "They stretch those STEM skills to create a complex machine, which could lead them to a future in the aerospace industry. Plus, their enthusiasm when they finally see their creations fly is inspirational to those who already work in the many different aspects of space exploration."

A series of preliminary awards were given at the annual banquet the night before the launch event. Besides the top prize, the Vanderbilt team also took home the Best Payload Design for the most creative and innovative payload experiment. The University of Louisville team won three awards: Best Vehicle Design for the most creative, innovative and safety-conscious rocket; Best Web Design for the best rocketry [website](#); and the Education Engagement Award for educational engagement efforts. The Space Cowboys team from Mississippi State University in Starkville won the Project Review Award for their reviews and formal presentations.

Tarleton State University also earned the Science Mission Directorate Payload Award for most creative and innovative payload design while maximizing safety and science value.

Image right: The launch of the rocket built by a team from Alabama A&M University of Huntsville was the grand finale of the 2012-13 Student Launch Projects "Launchfest." Not only was it the last rocket to fly on April 21, but it also earned the Altitude Award for flying closest to 1 mile without going over. (NASA/MSFC/Tony Triolo)

Tarleton State also was honored with a peer award voted on by all the rocket teams: the Best Team Spirit prize. All the student teams also voted the University of Nebraska in Lincoln as winner of this year's Best-Looking Rocket.



Hundreds of flight enthusiasts flocked to the launch site to cheer the student rocketeers. More than 8,000 individual viewers also watched live commentary via the [Marshall Center's channel](#) on the streaming video service UStream. Archived launch-

day coverage is available at:

<http://www.ustream.tv/channel/nasa-msfc>

For complete lists of participating students, visit:

<http://education.msfc.nasa.gov/slp>

Visit NASA Student Launch Projects on [Facebook](#) and [Twitter](#).

Hubscher, an Analytical Services Inc. employee, supports the Office of Strategic Analysis & Communications.

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The Marshall Star Gets a New Look on May 29

By Jena Rowe

On May 29, the Marshall Star will come to life with the unveiling a new interactive PDF and a fresh look for the website. With the capability to view content as a webpage or in an interactive PDF, readers will be able to stay informed and enjoy the content of the Marshall Star in the way that best suits their needs.

The new interactive PDF will have various features making it easy to navigate as you read. For example, no more flipping through the pages to find where a story is continued, simply click the "continued on page" link and be taken directly to the rest of the story. If you prefer to hold it in your hands as you read, the new PDF will also lend itself to a printer-friendly format, which will read like a newspaper. Perhaps you saw a Star photo that really caught your eye? Using upcoming new features of the Marshall Star, photos may be downloaded directly to your computer from the PDF.

Another great feature of the new Marshall Star is that the webpage and PDF versions will work together. For example, when viewing the PDF version on a computer or in print, simply scan the QR code with your smart phone or tablet to be directed to the Web version for easy reading on a mobile device.

On May 29, the Marshall Star will continue to tell the great story of NASA's Marshall Space Flight Center and its team members in a new and improved way.

Rowe, an Analytical Services Inc. employee and the Marshall Star editor, supports the Office of Strategic Analysis & Communications.

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Marshall Center Engaged in Seeking Ideas for Technologies Needed to Bring Home an Asteroid

By Janet Anderson

NASA has been tasked by the Obama administration with developing the first-ever mission to identify, capture and relocate an asteroid. This mission represents an unprecedented technological feat, which raises the bar for human exploration and discovery while helping to protect our home planet and bringing us closer to a human mission to one of these mysterious objects.

In light of the developing mission, the Science and Technology Office at NASA's Marshall Space Flight Center is looking for your ideas on transportation to an asteroid, capturing an asteroid, transporting an asteroid or mining an asteroid -- or just anything related to an asteroid!

Make plans to attend a think tank on asteroid retrieval technologies on May 23 from noon to 4 p.m. in Building 4201, Conference Room 201.

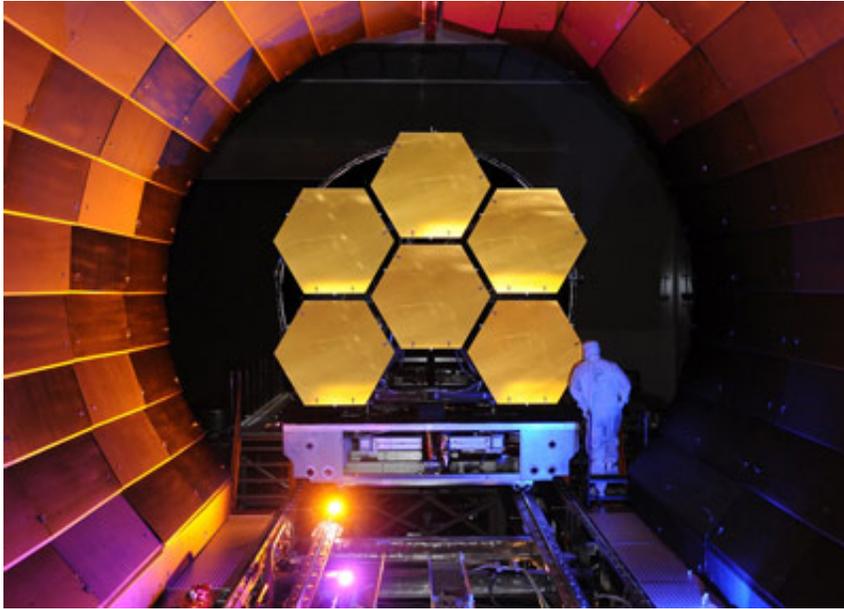
Bonus: Pizza and soft drinks will be served.

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

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James Webb Telescope Work Strengthens Relationship Between Marshall Center and Ball Aerospace

By Shannon Ridinger



Building a telescope with parts the size of a tennis court is not an easy task, but it would be much harder without strong relationships between all of the partners working on it. Ball Aerospace, part of the Northrop Grumman program team building the James Webb Space Telescope's primary mirror, has worked closely with NASA's Marshall Space Flight Center and its X-ray & Cryogenic Facility (XRCF), and the University of Alabama in Huntsville (UAH) to successfully work through challenges surrounding the Webb telescope's primary mirror tests.

Image left: Ball engineer examines six of the 18 JWST mirror segments after a test in MSFC's XRCF facility. (Ball Aerospace &

Technologies Corp.)

The teams came together during the early stages of the program for cryogenic testing of a demonstration mirror. This collaboration continued during the Webb's primary mirror tests that began in April 2011. Eighteen mirror segments will form the telescope's primary mirror, and the cryogenic testing performed in the XRCF at the Marshall Center exposed the segments to the extreme temperatures found in a space environment.

"The James Webb Space Telescope is a perfect example of what great partnerships can produce," said Stacy Counts, manager of the Marshall Center's Partnerships Office. "These teams have faced some big challenges, and through it all continued their strong relationships and were able to achieve their goals."

The biggest challenge came April 27, 2011, when a spring storm cell spawned 39 tornadoes in the Huntsville area. The teams were in the middle of the cryogenic mirror testing, and were faced with power outages and related challenges that were only matched or exceeded by similar hardship for all Huntsville metropolitan residents.

Despite the adversity, the Marshall team worked 24/7 to ensure that the tests continued without disruption. Many XRCF test personnel stayed at their posts, even while their own homes and families were without electrical power.

It's that determination and dedication that allowed the Webb's Ball-Marshall primary mirror test program to achieve all its objectives and be successful.

Dave Chaney, Ball's primary optical lead, applauded how the joint team worked together to assure a successful outcome. "We never used the phrase 'you don't need to know that,' as the Ball, Marshall and the UAH team members were allowed full access to all aspects of the hardware and facilities," said Chaney. "The successful completion of this program shows how incredible technical accomplishments can be achieved through trusting and dynamic government-industry partnerships, even in the most challenging circumstances."

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

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Marshall Team Tests Hatch Mechanisms for Launch Abort System

By Shannon Ridinger

NASA's Marshall Space Flight Center's Orion Launch Abort System team recently completed a series of tests to evaluate different mechanisms to secure the spacecraft's Launch Abort System (LAS) Ogive hatch. The LAS is designed to provide a safe, reliable method to propel the Orion crew module containing astronauts away from the Space Launch System vehicle in potential emergency situations during pre-launch checkouts and the early stages of flight.

Image right: Rocky Stephens, test engineer in the Test Laboratory Structural Dynamics Test Branch, fastens a candidate actuator to an electromagnetic shaker for random vibration testing during the Launch Abort System Ogive hatch actuator testing that recently occurred at Marshall. (NASA/MSFC).

The LAS tower is mounted above the crew module and features an Ogive, or bullet-shaped shell, that protects the crew module during ascent. The Ogive hatch is essentially a door on the Ogive that is the last element closed before the crew module is secured and the Crew Access Arm is pulled away. In an on-pad emergency, the crew would need to be able to open the Ogive hatch quickly, safely and reliably to exit through the Crew Access Arm. The latching mechanism that closes the Ogive hatch also has to remain secure through flight, and must withstand the rigors of launching to space.





LAS team members at Marshall, in conjunction with those at NASA's Langley Research Center, completed testing of pneumatic actuators, or small air-driven motors, in the quest to develop the most reliable, lightest and simplest way to get the hatch to unlatch quickly and swing open. Vibration testing will continue to ensure the entire latching mechanism assembly design that is selected can withstand the rigors of flight. Final testing will involve integration of the latching mechanism with a flight design hatch structure.

Image left: Marshall Launch Abort System and Structural Dynamic Test Lab team members, from left, Michael Haynes, Nancy

Bennett, Jack Phelps, Rocky Stephens, Ron Burwell and Rumaasha Maasha prepare for vibration testing. (NASA/MSFC)

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

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NASA Honors 19 Marshall Team Members with Silver Snoopy Award

By Jena Rowe

On May 16, 19 team members of NASA's Marshall Space Flight Center were honored with the NASA Silver Snoopy award for their outstanding achievements related to human flight safety or mission success. The award is presented personally by NASA astronauts, as it represents the astronauts' own recognition of excellence. Marshall Deputy Center Director Teresa Vanhooser also took part in each of the presentations. For more information on the award, visit [here](#).

Astronauts T.J. Creamer, far left, and Lee Morin, far right, along with Marshall Deputy Director Teresa Vanhooser, honored 19 team members with Silver Snoopy awards on May 16. The honorees are, from left, Stephen E. Skelley, Propulsion Systems Department; Hugh S. Cowart, Mission Operations Laboratory; S. Darlene Hall, ISS Office; Iris R. Walter, Science & Space Systems Support Office; and Geoff Beech, Spacecraft & Vehicle Systems Department. (NASA/MSFC/Emmett Given)





Astronauts T.J. Creamer, far left, and Lee Morin, far right, along with Marshall Deputy Director Teresa Vanhooser, honored 19 team members with Silver Snoopy awards on May 16. The honorees are, from left, Richard T. Weaver, ISS Office; Timothy R. Jett, Materials & Processes Laboratory; Brenda B. Wade, Mission Operations Laboratory; W. Steve Spearman, ISS Office; and Robert J. Hoffman, Space Systems Department. (NASA/MSFC/Emmett Given)

Astronauts T.J. Creamer, far left, and Lee Morin, far right, along with Marshall Deputy Director Teresa Vanhooser, honored 19 team members with Silver Snoopy awards on May 16. The honorees are, from left, Brett M. Eckley, Budget Integration & Analysis Office; Michelle J. Donatelli, Quality Assurance & Controls Office; Ralph D. Heusinger, Space Systems Department; Sharal B Huegele, Policy, Processes, & Systems Office; and Allan K. Layne, Mission Systems Assurance & Technical Support Department. (NASA/MSFC/Emmett Given)



Astronauts T.J. Creamer, far left, and Lee Morin, far right, along with Marshall Deputy Director Teresa Vanhooser, honored 19 team members with Silver Snoopy awards on May 16. The honorees are, from left, Craig A. Cruzen, Mission Operations Laboratory; James E. Stott, Vehicle Systems Department; Ayana Angela Reese, Space Systems Department; and James T. Garner, Program Integration Office. (NASA/MSFC/Emmett Given)

Rowe, an Analytical Services Inc. employee and the Marshall Star editor, supports the Office of Strategic Analysis & Communications.

'NASA 360: Robots, Rocks and Rovers' Wins Telly Awards

From NASA News Release

"NASA 360: Robots, Rocks and Rovers" has won two 34th Annual Telly Awards. The 30-minute television episode gives audiences an up-close look at NASA's 2012 Sample Return Robot Centennial Challenge, held last summer at Worcester Polytechnic Institute (WPI) in Worcester, Mass.

Image right: Independent robot builder Mark Curry, right, answers questions from 8th-graders from Sullivan Middle School in Lowell, Mass., about his robot named "MXR - Mark's Exploration Robot" during the NASA-WPI Sample Return Robot Centennial Challenge, held June 15, 2012, at the Worcester Polytechnic Institute in Worcester, Mass. Curry and other builders competed for the \$1.5 million NASA prize, building and operating autonomous robots that can identify, collect and return samples. (NASA/Bill Ingalls)



During the 2012 competition, teams were challenged to build autonomous robots that could identify, collect and return samples and compete for a potential \$1.5 million prize purse. The episode highlights how NASA's Centennial Challenges program promotes technical innovation and taps the nation's ingenuity to make revolutionary advances in technology of value to NASA and the nation.

Guests on the program include Mason Peck, NASA chief technologist; Chris Ferguson, astronaut and commander of the final space shuttle mission; leading robotics experts from WPI; and the talented teams that traveled to WPI to compete in the Sample Return Robot Challenge.

"The Telly Awards has a mission to honor the very best in film and video," said Linda Day, executive director of the Telly Awards. "To be selected from a field of nearly 11,000 entries from all 50 states and numerous countries illustrates the NASA 360 team's creativity, skill and dedication to their craft and serves as a testament to great film and video production." The episode was honored with awards in the "Government" and "Informational" categories.

Sam Ortega, Centennial Challenges manager at NASA's Marshall Space Flight Center, noted, "'NASA 360: Robots Rocks & Rovers' was downloaded from NASA's website more than three quarters of a million times within the first six months of the program's release. We look forward to building on the vast interest of this award-winning episode and sharing the excitement of the next chapter in the story as NASA 360 and the Sample Robotic Return Challenge return to WPI's campus June 4-8, 2013."

NASA uses prize competitions to establish important technical challenges without having to specify the approach that is most likely to succeed, while only paying for successful results. These competitions increase the number and diversity of individuals, organizations and teams that are addressing a particular problem or challenge of national or international significance. These challenges stimulate private sector investment many times greater than the cash value of the prize.

NASA 360 is produced by the National Institute of Aerospace in Hampton, Va., in collaboration with NASA. The series enjoys a following of nearly 70,000 fans through Facebook and Twitter and is regularly broadcast on NASA Television and 400 public broadcasting, cable and commercial stations.

For additional information about the Sample Robot Return Challenge, visit: <http://www.nasa.gov/robot>

To learn more about "NASA 360: Robots, Rocks & Rovers" or download the episode, visit: <http://www.nasa.gov/nasa360>

More about the 34th Annual Telly awards can be found at: <http://www.tellyawards.com/awards>

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Black-Hole-Powered Jets Plow Into Galaxy



This composite image of a galaxy illustrates how the intense gravity of a supermassive black hole can be tapped to generate immense power. The image contains X-ray data from NASA's Chandra X-ray Observatory (blue), optical light obtained with the Hubble Space Telescope (gold) and radio waves from the National Science Foundation's Very Large Array (pink).

Image left: Composite image of 4C+29.30, a galaxy located some 850 million light years from Earth. (X-ray: NASA/CXC/SAO/A. Siemiginowska et al; Optical: NASA/STScI; Radio: NSF/NRAO/VLA)

This multi-wavelength view shows 4C+29.30, a galaxy located some 850 million light years from Earth. The radio emission comes from two jets of particles that are speeding at millions of miles per hour away from a supermassive black hole at the center of the galaxy. The estimated mass of the black hole is about 100 million times the mass of our sun. The ends of the jets show larger areas of radio emission located outside the galaxy.

The X-ray data show a different aspect of this galaxy, tracing the location of hot gas. The bright X-rays in the center of the image mark a pool of million-degree gas around the black hole. Some of this material may eventually be consumed by the black hole, and the magnetized, whirlpool of gas near the black hole could in turn, trigger more output to the radio jet.

Most of the low-energy X-rays from the vicinity of the black hole are absorbed by dust and gas, probably in the shape of a giant doughnut around the black hole. This doughnut, or torus, blocks all the optical light produced near the black hole, so astronomers refer to this type of source as a hidden or buried black hole. The optical light seen in the image is from the stars in the galaxy.

The bright spots in X-ray and radio emission on the outer edges of the galaxy, near the ends of the jets, are caused by extremely high-energy electrons following curved paths around magnetic field lines. They show where a jet generated by the

black hole has plowed into clumps of material in the galaxy (mouse over the image for the location of these bright spots). Much of the energy of the jet goes into heating the gas in these clumps and some of it goes into dragging cool gas along the direction of the jet. Both the heating and the dragging can limit the fuel supply for the supermassive black hole, leading to temporary starvation and stopping its growth. This feedback process is thought to cause the observed correlation between the mass of the supermassive black hole and the combined mass of the stars in the central region or bulge of a galaxy.

These results were reported in two different papers. The first, which concentrated on the effects of the jets on the galaxy, is available online and was published in the May 10, 2012, issue of [The Astrophysical Journal](#). The second, which concentrated on the supermassive black hole, is available online and was published in the October 20, 2012, issue of [The Astrophysical Journal](#).

NASA's Marshall Space Flight Center manages the [Chandra](#) program for NASA's Science Mission Directorate in Washington. The Smithsonian Astrophysical Observatory controls Chandra's science and flight operations from Cambridge, Mass.

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Obituaries

Bernice Posey Land, 89, of Huntsville died May 10. She retired from the Marshall Center in 1980 as an aerospace engineer.

Find this article at:

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