



June 18, 2015

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The Marshall Star

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Director's Corner: NASA on the Square

The excitement is building in more ways than one. Marshall's second NASA on the Square open house is almost here, and every day we are getting closer to the Space Launch System being ready for launch -- SLS is the first exploration class vehicle to reach Critical Design Review since 1977.



Six-year-old Owen Dean proudly displays his homemade jetpack during last year's "NASA on the Square" in downtown Huntsville with, from left, Marshall Director Patrick Scheuermann, Space Launch System Program Manager Todd May and Michoud Assembly Facility Deputy Director Mike Kynard.

Credits: NASA/MSFC/Emmett Given

I mention these together because public enthusiasm for NASA has always been essential for our success, and you are essential in our ability to reach out and touch our community.

Madison County's Courthouse Square is the location for both legend and legacy. On July 24, 1969, Dr. Wernher von Braun addressed an enthralled audience there, celebrating Apollo 11's first ever human lunar landing. Von Braun's genius went beyond science and engineering. He was a public relations maestro and knew how to take NASA's achievements to the public.

Now is our time to do the same. We want everyone to join us on the journey to Mars. This is a day to show our supporters we will soon launch a rocket more powerful than the Saturn V and capable of carrying greater capacities immensely farther than the shuttle.

We have benefited from lively support of the local community since our birth 55 years ago, yet we should never take this for granted. On the Square, we have an exceptional opportunity to remind citizens across the Tennessee Valley of the exciting work we do every day and to renew their enthusiasm. I say renew, but we may be starting some youngsters on a lifetime of intrigue with space exploration -- and maybe even prime a few of them for STEM careers.

You could call this our big birthday party because we will also be celebrating Marshall Space Flight Center's 55th anniversary. The party starts at 10 a.m. and goes until 2 p.m., June 20.

Before visitors are even in sight of NASA on the Square, music by Marshall musicians and festive cheer will reach their ears. Half a block from reaching the first corner as they approach, they will spy children, engineers, young professionals and retirees engaged in hands-on exhibits and bustling along the busy walkways. Once at the Square, they will find themselves immersed in a content-rich celebration filling the heart of the city.

Why? Because you, the Marshall family, are going out of your way to make this happen. Thank you for volunteering to bring our event to life. It is only possible because of your giving above and beyond. Please know the value you bring to the success of a generation by participating and by encouraging those you know to join us for NASA on the Square.

We couldn't do this without Chad Emerson and his team at Downtown Huntsville, Inc., either. We deeply appreciate their support.

When our friends and neighbors leave, I like to think they will harbor feelings of wonder, surprise, fascination and, well, just plain cool! Then in the days following, I hope they will also be telling others it was a day to remember.

Patrick

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We have Ignition: NASA SLS RS-25 Engine Fires Up for Third Test in Series

By Megan Davidson

Ladies and gentlemen, we've started our engine. An RS-25 engine successfully fired up for 500 seconds June 11 at NASA's Stennis Space Center.



The RS-25 engine fires up at the beginning of a 500-second test June 11 at NASA's Stennis Space Center near Bay St. Louis, Mississippi. Four RS-25 engines will power the core stage of NASA's new rocket, the Space Launch System.

Credits: NASA/Stennis

Four RS-25 engines will power NASA's new rocket, the Space Launch System, at speeds of 17,500 mph -- 73 times faster than the top speeds of an Indianapolis 500 race car -- to send astronauts on future missions beyond Earth's orbit, including to an asteroid and ultimately to Mars.

This is the third firing of an RS-25 development engine on the A-1 test stand at Stennis. The first RS-25 test in this series was conducted Jan. 9, and the second was May 28. Four more tests are planned for the current development engine.

"While we are using proven space shuttle hardware with these engines, SLS will have different performance requirements," said Steve Wofford, manager of the SLS Liquid Engines Office at NASA's Marshall Space Flight Center, where the SLS Program is managed for the agency. "That's why we are testing them again. This is a whole new ballgame -- we need way more power for these engines to be able to go farther than ever before when it comes to human exploration. And we believe the modifications we've made to these engines can do just that."

The first flight test of the SLS -- designated as Exploration Mission 1 -- will feature a configuration for a 70-metric-ton (77-ton) lift capacity and carry an uncrewed Orion spacecraft beyond low-Earth orbit to test the performance of the integrated system.

"We have several objectives that will be accomplished during this test series, which will provide critical data on the new engine controller unit, materials and engine propellant inlet pressure conditions," Wofford said.

The new engine controller unit, the "brain" of the engine, allows communication between the vehicle and the RS-25, relaying commands to the engine and transmitting data back to the vehicle. The controller also provides closed-loop management of the engine by regulating the thrust and fuel mixture ratio while

monitoring the engine's health and status. The controller will use updated hardware and software configured to operate with the new SLS vehicle avionics architecture.

The test series will show how the RS-25 engines will perform with colder liquid oxygen temperatures; greater inlet pressure due to the taller SLS core stage liquid oxygen tank and higher vehicle acceleration; and more nozzle heating due to the four-engine configuration and its position in-plane with the SLS booster exhaust nozzles. New ablative insulation and heaters also will be tested during the series. Aerojet Rocketdyne of Sacramento, California, is the prime contractor for the RS-25 engine work.

As the SLS evolves, it will provide an unprecedented lift capability of 130 metric tons (143 tons) to enable missions even farther into our solar system to places like Mars.

Watch the RS-25 test [here](#).

[動画 URL] <https://youtu.be/sWoKfqEXfdk>

An RS-25 engine fired up for 500 seconds June 11 at NASA's Stennis Space Center near Bay St. Louis, Mississippi. Four RS-25 engines will power NASA's new rocket, the Space Launch System, to send astronauts on future missions beyond Earth's orbit, including to an asteroid and ultimately to Mars. This is the third firing of an RS-25 development engine on the A-1 test stand at Stennis, with four more tests planned for the current development engine.

Credits: NASA/SSC

Davidson, an ASRC Federal/Analytical Services employee, supports the Office of Strategic Analysis & Communications.

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NASA's Head of Space Technology Mission Directorate, Steve Jurczyk, Visits Marshall



NASA's Associate Administrator for the Space Technology Mission Directorate, Steve Jurczyk, left, visited NASA's Marshall Space Flight Center June 16. Dan Dankanich, center, and Kurt Polzin show Jurczyk the iSAT spacecraft being developed for STMD. Scheduled to launch in 2017, the iSAT spacecraft will be launched into a sun-synchronous orbit, where it will begin a one-year mission to demonstrate the ability of the iodine Hall Thruster propulsion system to shift its orbit. Marshall is developing the flight systems to support the iSAT mission objectives. Jurczyk also visited the Advanced Manufacturing, Propulsion Development and Systems Integration Labs, met with employees and gave an update on the directorate's goals. STMD is responsible for innovating, developing, testing and flying hardware for use on future NASA missions. (NASA/MSFC/Emmett Given)

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Marshall's 'Take Our Children to Work Day'

Schedule Packed for June 18 Event

By Rick Smith



The theme of this year's "Take Our Children to Work Day" at Marshall is "#MPOWR -- Knowledge + Choice = Strength." The event will be held June 18 and all Marshall civil service employees and contactors are invited to participate.

Credits: NASA/MSFC

When NASA's Marshall Space Flight Center holds its annual "Take Our Children to Work Day" activities June 18, participating children in grades 3-12 will find a variety of hands-on, educational activities awaiting them.

Marshall Center Deputy Director Teresa Vanhooser will kick off the event at 8:15 a.m. in Building 4200, Morris Auditorium, welcoming participating children and their family members. Children then will be free to choose from a roster of activities, demonstrations and participatory events around the Marshall campus.

"Our underlying goal is for these young people to acquire a greater awareness of NASA's mission and career opportunities in science, technology, engineering and math -- the critical STEM fields that underpin so much of the work we do at Marshall every day," said Loucious Hires, director of Marshall's [Office of Diversity and Equal Opportunity](#), which organizes the yearly event.

Among this year's activities are the following highlights:

- Kids will learn all about the [Space Launch System](#) -- the nation's heavy-lift launch vehicle, now in development at NASA and partner facilities nationwide and managed by Marshall -- from 10 a.m. to noon in the lobby of Building 4220. They can see scale models, talk to SLS team members and pick up activity sheets.
- Children can tour Marshall's [Payload Operations Integration Center](#) in Building 4663, where they'll see how NASA works around the clock with crews on the [International Space Station](#), operating science experiments on the orbiting lab. A series of 40-minute tours will run between 8:30 a.m. and 12:10 p.m.
- Kids can enjoy the sensation of floating on air and pushing a 3,000-pound object with one hand in the unique [flat-floor facility](#) in the Flight Dynamics Laboratory in Building 4619. Half-hour tours begin at 9 a.m.
- Visitors can tour the new Exploration Gallery on the first floor of Building 4200, showcasing Marshall's role in accomplishing NASA's space exploration and science goals. Fifteen-minute tours will run from 10-11 a.m.

- Kevin Delaney of the Arkansas Museum of Discovery in Little Rock will host the half-hour presentation "Awesome Science," demonstrating how giant clouds and fireballs form. Presentations will be held in Morris Auditorium between 8:30 a.m. and noon.
- Activities will conclude with a special viewing of the Disney film "Big Hero 6" at 1 p.m. in Building 4316. Free popcorn will be provided by Boeing and beverages by Jacobs Technology Inc., both of Huntsville. Throughout the day, Marshall's Activities Building 4316 will offer a variety of crafts and activities, including the Space Launch System photo kiosk, where children can obtain keepsake photos; science demonstrations by Marshall researchers and by Sci-Quest of Huntsville; insight into NASA TV production with Marshall's Mobile Production Unit; and lessons on smart spending from Redstone Federal Credit Union.

Two buses will run continuous loops to each location, starting at 8 a.m. at Building 4200. Passengers at Building 4202 can board the bus on the north side of Building 4203. Passengers at Building 4601 can board on the south side of Building 4600. Drop-off and pick-up for Building 4316 will be at the front sidewalk of Building 4315 on the south side. Both buses are accessible by persons with disabilities. For any other special accommodations, call Abbie Johnson at 256-544-0014.

Marshall organizations across the center are participating in "Take Our Children to Work Day" events. Team members are encouraged to visit ExplorNet to learn more about [the events](#) and to [register](#) their children.

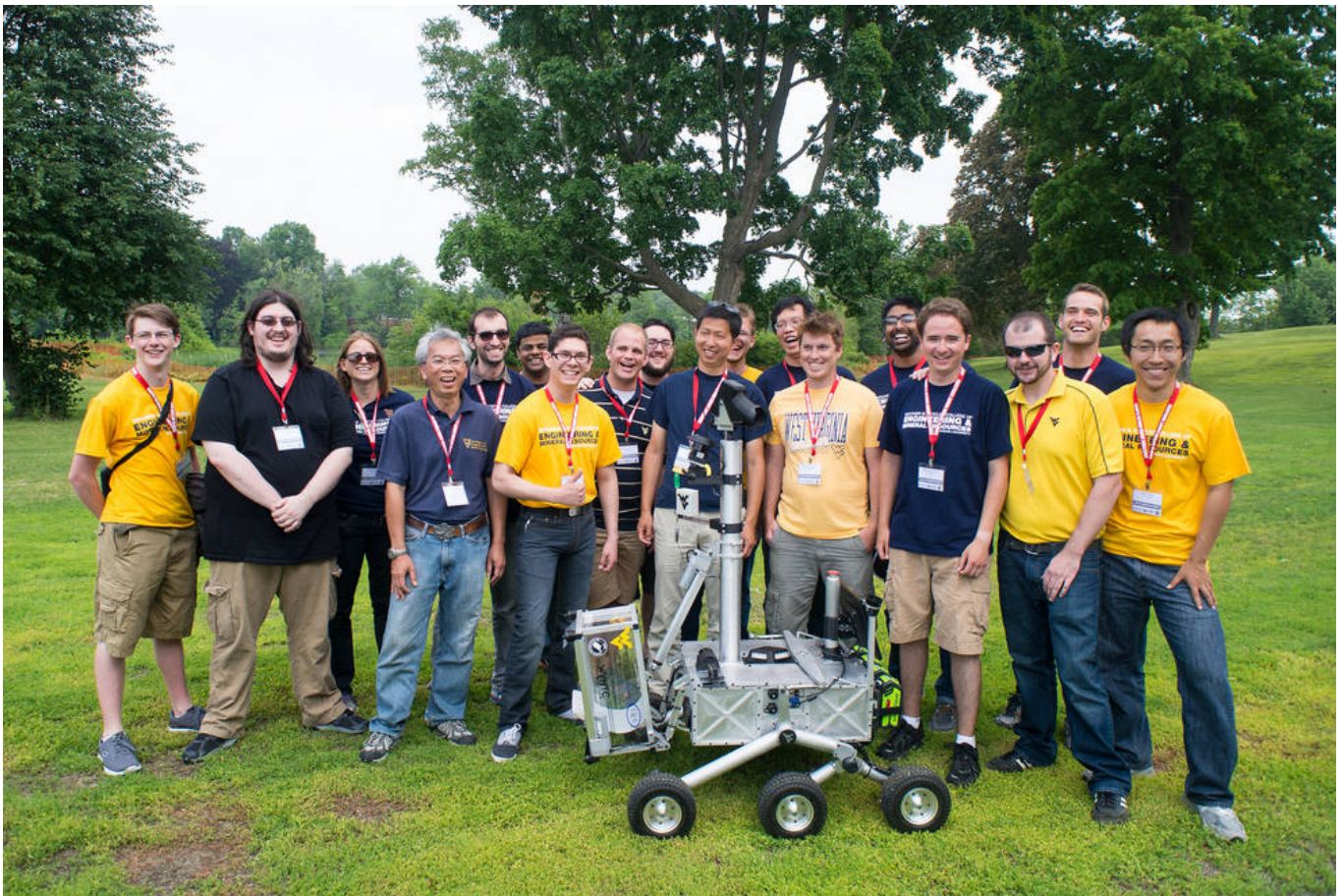
Smith, an ASRC Federal/Analytical Services employee, supports the Office of Strategic Analysis & Communications.

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NASA Awards \$100,000 to West Virginia University Mountaineers at Autonomous Robotics Competition

By Janet Sudnik

NASA has awarded a \$100,000 prize to West Virginia University Mountaineers of Morgantown for their performance at the Level 2 competition of the Sample Return Robot Challenge, a Centennial Challenges competition.



Members of the Mountaineers team from West Virginia University, with their robot, after successfully recovering two samples at Level 2 during the 2015 Sample Return Robot Challenge June 11 at the Worcester Polytechnic Institute in Worcester, Massachusetts.

Credits: NASA/Joel Kowsky

The event was held at Worcester Polytechnic Institute in Worcester, Massachusetts, June 10-12. This was the fourth year NASA and WPI have held the competition, and the first year prize money was awarded to a team for a Level 2 effort.

The Mountaineers' robot had two hours to return autonomously at least two undamaged samples, including a sample known previously to the team and one introduced the day of the competition. Samples collected in Level 2 are categorized as easy, intermediate and hard and are worth varying point values.

"I am very pleased with the team's performance," said West Virginia University team leader Yu Gu. "The Sample Return Robot Challenge is truly a tough one. The robot has to search a very large field for samples by itself within a short amount of time. Many subsystems have to work reliably and in harmony to make this happen.

"We learned a lot during this special journey. In addition to technical and management skills that we gained during the robot development, the most important thing to take home is that nothing is impossible. NASA's Centennial Challenges program provides a great platform for engineers like us to realize our dreams," he said.

Dennis Andrucyk, deputy associate administrator for NASA's Space Technology Mission Directorate, and NASA astronaut Cady Coleman presented awards to the Mountaineers team members June 13 at the opening of WPI's TouchTomorrow science and technology festival.

The Centennial Challenges program, managed at Marshall, is part of NASA's Space Technology Mission Directorate, which is innovating, developing, testing and flying hardware for use in NASA's future missions. For more information, visit www.nasa.gov/robot.

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Flight Test for LDSD, New Dawn Animation Featured On 'This Week @NASA'

The test of NASA's Low Density Supersonic Decelerator and new images from the Dawn spacecraft were featured in the latest edition of "This Week @NASA," a weekly video program broadcast nationwide on NASA-TV and posted online.

On June 8, NASA's LDSD completed its second flight test in Hawaii. The test vehicle was carried to 120,000 feet by a large scientific balloon then boosted to test altitude of 180,000 feet by a solid-rocket motor. During its supersonic return to Earth, the craft tested developmental entry and descent technologies that could help future spacecraft safely land larger payloads on the surface of Mars. The Technology Demonstration Missions Program Office is overseeing a portfolio of technology demonstration flight projects led by NASA centers and industry partners across the country. The TDM program is part of NASA's Space Technology Mission Directorate.

Also featured on TW@N was a new animation of the dwarf planet Ceres, created from images taken by NASA's Dawn spacecraft during its first orbital mapping mission. The animation uses about 80 overlapping images to provide the three-dimensional detail, which includes dramatic flyover views of the heavily cratered world. The vertical dimension has been exaggerated by a factor of two and a star field has been added in the background. The Dawn spacecraft first entered Ceres' orbit March 6, making it the first spacecraft to visit a dwarf planet. Dawn is managed by the Jet Propulsion Laboratory and is part of the Discovery Program managed by Marshall for NASA's Science Mission Directorate.

View this and previous episodes at "This Week @NASA" or at <https://www.youtube.com/user/NASAtlevision>.

[動画 URL] <https://youtu.be/xv4ON7nvFO8>

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Obituaries

Walter E. Fuqua Jr., 85, of Huntsville, died May 11. He retired from the Marshall Center in 1981 as an aerospace engineer. He is survived by his wife, Annie Mae Fuqua.

William R. Henry, 97, of Homewood, Alabama, died May 13. He retired from the Marshall Center in 1982 as an aerospace engineer.

Howard B. Hester, 73, of Huntsville, died May 17. He retired from the Marshall Center in 1998 as an aerospace engineer.

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