



Oct. 8, 2015

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The Marshall Star

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Booster Hardware Readied for First Flight of NASA's Space Launch System



Technicians at Orbital ATK in Promontory, Utah, offload the aft stiffener that will be used on one of the two, five-segment solid rocket boosters for the first flight of NASA's new rocket, the Space Launch System. The boosters operate in parallel with the rocket's main engines for the first two minutes of flight to provide the thrust needed for the launch vehicle to escape the gravitational pull of Earth. The aft stiffener is a component of the aft segment of the booster, which is located at the bottom of the booster during flight. The flight

hardware is being processed at Orbital ATK's facility. Later, the motor segments will be transported by rail to NASA's Kennedy Space Center, where they will join the forward and aft skirt assemblies. Once the boosters are assembled and checked out, they will be joined with the SLS core stage in the Vehicle Assembly Building at Kennedy. (Orbital ATK)



Technicians at Orbital ATK offload the aft dome that will be used on one of the two, five-segment [solid rocket boosters](#) for the first flight of SLS. Like the aft stiffener, the aft dome is a component of the aft segment of the booster. NASA's Marshall Space Flight Center manages the SLS Program for the agency. (Orbital ATK)

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NASA Associate Administrator Lightfoot to Hold All Hands Oct. 13 at Marshall



NASA Associate Administrator Robert Lightfoot

Credits: NASA

NASA Marshall Space Flight Center team members are invited to a center all hands Oct. 13 with NASA Associate Administrator [Robert Lightfoot](#) and Deputy Associate Administrator for Mission Support [Dan Tenney](#) to discuss NASA's progress toward a more efficient operating model and the Business Services Assessment. The all hands will be from 2-3 p.m. in Activities Building 4316.

The Mission Support Directorate provides institutional support to NASA mission objectives by providing stewardship of major institutional operations; integrating resources, infrastructure and processes; and optimizing mission support services through strategic analysis and Business Services Assessments to enable more efficient operations.

The Business Services Assessment was designed to leverage the experience gained from the Technical Capabilities Assessment Team methodology and to improve agency business services. Like TCAT, the Business Services Assessment is committed to transparency and stakeholder input to inform decisions throughout all phases of the process.

For more information about the Mission Support Directorate or Business Services Assessments, [click here](#).

NASA Associate Administrator for Science John Grunsfeld Speaks in Huntsville



John Grunsfeld, NASA's associate administrator for the [Science Mission Directorate](#), addresses a public audience during his "Pass the Torch" presentation Oct. 1 at the [U.S. Space & Rocket Center](#). The "Pass the Torch" lecture series, which is free to the public, features academic, industry and government professionals speaking about their work in space, science, engineering and related fields. During his two-day visit to the city, Grunsfeld also met with representatives of leading aerospace industry firms and administrators and science teams at NASA's Marshall Space Flight Center. (NASA/MSFC/Emmett Given)



Grunsfeld speaks before a student assembly Oct. 2 at Ronald E. McNair Junior High School in Huntsville, where he met with educators and visited classrooms to encourage students to pursue courses related to the STEM fields -- science, technology, engineering and mathematics, all crucial to careers in space exploration. As a former NASA astronaut and veteran of five space shuttle flights, Grunsfeld pointed to his own career as an example of where STEM studies can lead. (NASA/MSFC/Emmett Given)

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New Marshall Robot Will Build Largest Composite Rocket Parts Ever Made

By Bill Hubscher



Majid Babai, left, chief of the Nonmetallic Manufacturing Branch at Marshall, and Stephen Richardson, lead for the Structural Development Team, take a closer look at one of the first test builds made by the new robotic fiber placement machine behind them. The two teams will use the machine to collaborate on designing lightweight and strong composite parts for space vehicles.

Credits: NASA/MSFC/Emmett Given



Larry Pelham, a materials engineer in Marshall's Composites Technology Center, checks the spacing between carbon fiber layers during a test-build by the new robot. Behind him is the head of the device that spools out the fibers to create parts for new space vehicles.

Credits: NASA/MSFC/Emmett Given

When completed, the Space Launch System -- designed and managed at NASA's Marshall Space Flight Center -- will be one of the largest rockets ever built and will carry astronauts deeper into our solar system than ever before. To build the most powerful rocket ever made, Marshall has invested in a robot that can make large composite rocket parts.

The centerpiece of Marshall's Composites Technology Center is one of the [largest robotic fiber placement machines for composites manufacturing in the country](#). Located in Building 4707, the machine will help

construct the largest lightweight composite parts ever made for space vehicles. Fabricating large composite pieces is not something new for Marshall.

"We installed one of the very first commercially available composite fiber placement systems about 22 years ago," said Majid Babai, chief of the Nonmetallic Manufacturing Branch at Marshall. "To add to this capability, NASA invested in this machine to develop lightweight, high-performance parts that will enable rockets to carry more crew, payload, science investigations, and habitat modules to space."

The plan for a Composites Technology Center did not come about overnight. It was part of a four-year plan to remove obsolete systems one at a time and make space for the new versatile robotic system, which was funded over several years. The facility and its associated infrastructure are unique within the agency. The new machine offers another collaboration opportunity between Babai and his counterparts in Marshall's Spacecraft and Vehicle Systems Department.

"The Engineering Directorate here understands the need to develop this technology to enhance the vehicles that support NASA missions," said Stephen Richardson, lead for the Structural Development Team in Engineering Directorate's Spacecraft and Vehicle Systems Department. "The new machine returns Marshall to a role where we can use a state-of-the-art method to fabricate launch vehicle structures. This machine not only yields the cost-savings of automated production, but also provides improved quality with precise control of the location and the fiber orientation of each of the layers built up to form the structure, which is key to the performance of a composite part."

The first project that the robot will tackle is making large composite structures for a [Technology Demonstration Mission](#) program managed by Marshall for the [Space Technology Mission Directorate](#). For the project, engineers will design, build, test and address flight certification of large composite structures similar to those that might be infused into upgrades for an evolved SLS.

Lightweight composites have the potential to increase the amount of payload that can be carried by a rocket, along with lowering its total production cost. NASA is conducting composites manufacturing technology development and demonstration projects to determine whether composites can be part of the evolved SLS and other exploration spacecraft, such as landers, rovers and habitats.

"The robot will build structures larger than 8 meters, or 26 feet, in diameter -- some of the largest composite structures ever constructed for space vehicles," said Justin Jackson, the Marshall materials engineer who installed and checked out the robot and helped to build and test one of the largest composite rocket fuel tanks ever made. "Composite manufacturing has advanced tremendously in the last few years, and NASA is using this industrial, automated fiber placement tool in new ways to advance space exploration."

To make large composite structures, the robot travels on a track, and a head at the end of its 21-foot robot arm articulates in multiple directions. The head can hold up to 16 spools of carbon fibers that look like pieces of tape and are as thin as human hairs. The robot places the fibers onto a tooling surface in precise patterns to form different large structures of varying shapes and sizes. In what looks like [an elaborate dance](#), the tooling surface holds the piece on a rotisserie-like system on a parallel track next to the robot. The robot head can be changed for different projects, which makes the system flexible and usable for various types of manufacturing.

The large structures built by the robot will be tested in nearby Marshall structural test stands where spaceflight conditions can be simulated.

"These new robotic fiber placement tools are game changers because they can drastically reduce the cost and improve the quality of large space structures," said John Vickers, manager of NASA's National Center for Advanced Manufacturing, and manager for the TDM composites project. "The automated digital capability aids in the design and development process and makes it more precise and efficient. This helps NASA meet the high reliability standards required to develop a process for building space vehicles that transport humans on deep space missions."

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

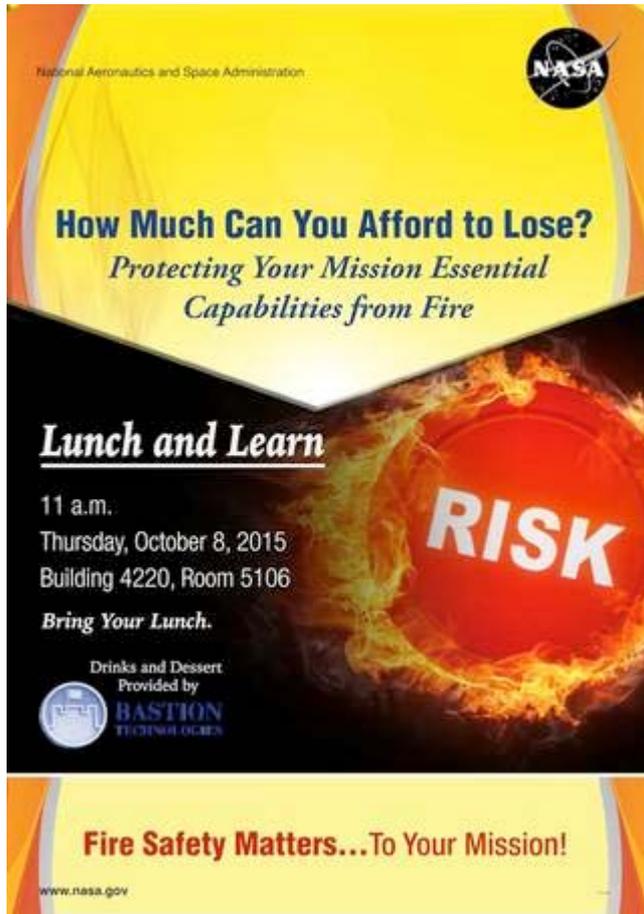
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A new composite robot performs an elaborate "dance" as it moves up and down a 40-foot track releasing carbon fibers from 16 spools and placing them in intricate patterns to make composite parts for space vehicles. The robotic fiber placement system resides in the Composites Technology Center that is part of NASA's National Center for Advanced Manufacturing at the Marshall Space Flight Center in Huntsville, Alabama.

Credits: NASA/MSFC

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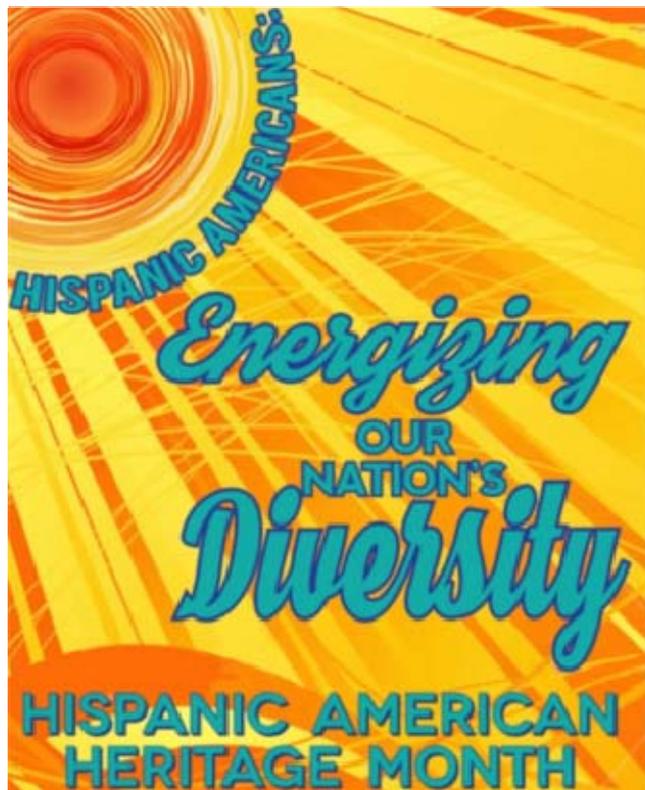
Marshall Safety & Mission Assurance Directorate to Host Fire Prevention Week Lunch & Learn



NASA Marshall Space Flight Center team members are invited to attend a lunch and learn hosted by Marshall's Safety & Mission Assurance Directorate and Bastion Technology of Houston, Texas, Oct. 8 at 11 a.m. Jason Scott, a fire protection engineer with Safety & Mission Assurance, will discuss preventive measures for protecting Marshall's mission essential capabilities from fire. The event will be held in Building 4220, room 5106, and drinks and dessert will be provided. (NASA/MSFC)

Marshall to Celebrate Hispanic Heritage Month With ‘Dispelling Misconceptions’ Event, Food Contest Oct. 14

By Brian C. Massey



The Oct. 14 events are part of Marshall's celebration of National Hispanic Heritage month. This year's theme, "Hispanic Americans: Energizing Our Nation's Diversity," invites participants to reflect on Hispanic Americans' vitality and meaningful legacy in our nation's cultural framework.

Credits: NASA/MSFC

NASA's Marshall Space Flight Center will celebrate Hispanic Heritage month Oct. 14 with a program titled "Dispelling Misconceptions" and a contest and sampling celebrating Hispanic cuisine. National Hispanic Heritage Month, Sept. 15-Oct. 15, celebrates the histories, cultures and contributions of Americans whose ancestors originated from Spain, Mexico, the Caribbean and Central and South America.

During the Oct. 14 event, moderators Jose Matienzo of the Marshall Exchange, and Chance Garcia of the Liquid Propulsions Department, will offer videos and presentations designed to dispel misconceptions about Hispanic culture. The event will begin at 10:30 a.m. in Morris Auditorium, Building 4200. Attendees are encouraged to bring their tablets and smartphones to participate in the interactive program.

In conjunction with the event, there will also be a Hispanic food contest where all Marshall team members are welcome to enter their favorite Hispanic dish.

"The food contest is open to everybody," said Matienzo. "We invite anybody interested to put on their 'Hispanic Chef' hat and bring a dessert or appetizer to be sampled by attendees and compete for the 'Best Entry' people's choice award. Seven-layer-dips, flan, cakes, cookies -- anything you think may fit the theme is welcome."

Following the food contest and program, there will be a Hispanic food sampling in Building 4200's lobby.

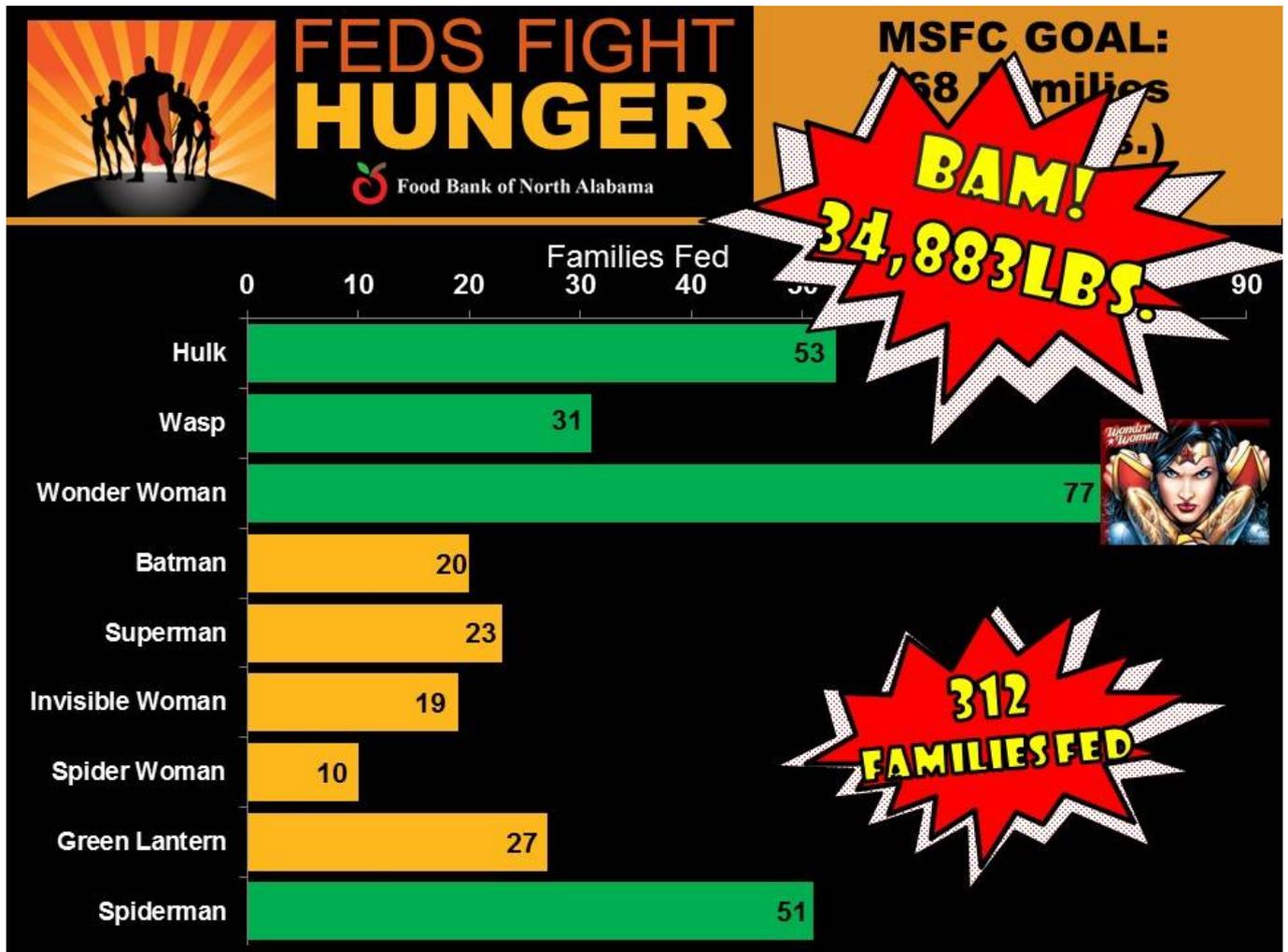
For more information about the event or contest, [click here](#), or contact Priscilla Williams at 256-544-0181 or priscilla.w.williams@nasa.gov. To sign up for the food contest, [click here](#).

For more information about National Hispanic Heritage Month, [click here](#).

Massey, an ASRC Federal/Analytical Services employee and the Marshall Star editor, supports the Office of Strategic Analysis & Communications.

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Marshall Heroes Banish Hunger for 312 Families in North Alabama



The recently completed Feds Fight Hunger campaign at NASA's Marshall Space Flight Center surpassed the center's goal and collected enough food to feed 312 North Alabama families. Marshall's goal was 30,000 pounds of food, or enough to feed 268 families. Thanks to a record-setting final week with donations of more than 14,000 pounds of food, Feds Fight Hunger collected enough to feed an additional 44 families. Marshall organizations were divided into nine superhero-themed teams that competed for center-wide bragging rights. Team Wonder Woman -- which consisted of the Office of Strategic Analysis & Communications, Office of Human Capital, Office of Chief Counsel, Office of Diversity & Equal Opportunity, and Office of the Chief Financial Officer -- finished atop the leaderboard with 42 families fed. Feds Fight Hunger, which was coordinated by the Office of Human Capital, is part of the federal [Feds Feed Families](#) campaign. (NASA/MSFC)

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Former Navy SEAL Brett Jones Speaks at 2015 Marshall LGBT Awareness Activity

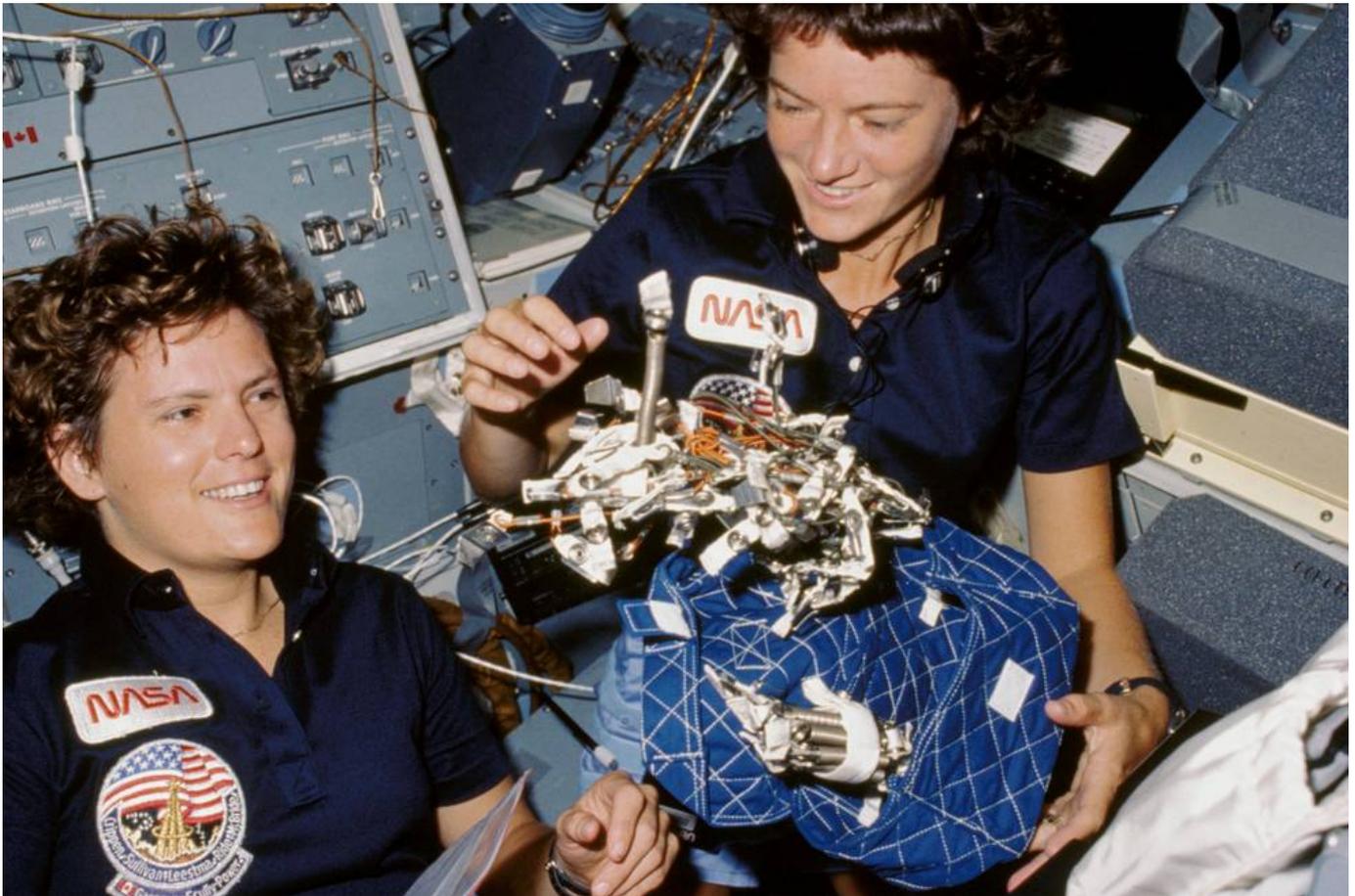


Brett Jones, the first openly gay Navy SEAL, addressed NASA Marshall Space Flight Center's 2015 Lesbian, Gay, Bisexual, Transgender and Allies Awareness Activity Sept. 29. Jones served two tours with the elite SEAL Team 8, before becoming an original member of SEAL Team 10. He currently owns and operates Riley Security, a private security company in Huntsville. The event was sponsored by the [Office of Diversity and Equal Opportunity](#), which strives to promote diversity, equality and inclusion for all individuals, while providing a workplace that is free from discrimination, including harassment and retaliation. (NASA/MSFC/Emmett Given)

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This Week in NASA History: STS-41G, First

Mission Including Two Women, Launches -- Oct. 5, 1984



This week in 1984, Space Shuttle Challenger, STS-41G, launched from NASA's Kennedy Space Center. The mission was the first flight to include two women -- astronauts Kathryn Sullivan, left, and Sally Ride. Here, Sullivan and Ride work with items from the sleep restraint system. The NASA History Program documents and preserves NASA's remarkable history through a variety of products -- photos, press kits, press releases, mission transcripts and administrators' speeches. For more pictures like this one and to connect to NASA's history, visit the History Program's [Web page](#).

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Total Lunar Eclipse Featured On 'This Week @NASA'

[動画 URL] <https://youtu.be/H4kmBX0J3K8>

The Sept. 27 total lunar eclipse is featured in the latest edition of "[This Week @NASA](#)," a weekly video program broadcast nationwide on NASA-TV and posted online.

The rare, double celestial treat of a total lunar eclipse occurring during a full moon in perigee wowed viewers across the Americas, Europe, Africa and parts of West Asia. Not seen since 1982, the eclipse was broadcast by NASA's Marshall Space Flight Center with NASA television picking up and airing the live coverage of Earth's shadow slowly dimming the "larger-than-life" face of the moon for more than one hour. Referred by many as a "Super Blood Moon" -- due to the reddish tint seen by the human eye of sunlight refracting through Earth's atmosphere and bouncing off the lunar surface -- the nickname is a simple descriptor of the color and size of the astronomical activity. The next similar event isn't scheduled to occur until 2033.

View this and previous episodes at "[This Week @NASA](#)" or at <https://www.youtube.com/user/NASATElevision>.

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Editor: Lee Mohon