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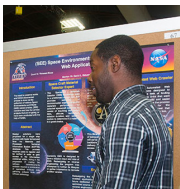
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## Marshall at Work: Danny Harris, Lunar Quest Program Mission Manager for LADEE

*By Shannon Ridinger*

If you ask Danny Harris how he wants to celebrate his 10th anniversary of being a NASA employee, he is quick to tell you “with a successful LADEE launch!”

Harris began his NASA career in September 2003 and is the Lunar Quest Program mission manager for the Lunar Atmosphere and Dust Environment Explorer (LADEE) mission at NASA's Marshall Space Flight Center. Scheduled to launch

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Danny Harris (NASA/MSFC)

## Avionics: The Central Nervous System of NASA's Space Launch System

*By Megan Davidson*

The nervous system in the human body controls everything a person does, including walking, thinking and feeling. Avionics is much like that complex collection of nerves and cells, only instead of a human body, it will guide the largest, most capable rocket ever built -- NASA's Space Launch System (SLS) -- to deep-space missions.

“The body couldn't function without

See [SLS Avionics](#) on [page 3](#)



From left, Wayne Arrington and Richard Gilbert, both Boeing employees supporting Marshall's Stages Office; and Lisa Coe, an engineer in the Stages Office, perform a demonstration of a SLS fly-out from the System Integration Test Facility control room. (NASA/MSFC)

## Danny Harris *Continued from page 1*

Sept. 6, 2013, from NASA's Wallops Flight Facility, LADEE is a robotic mission, led by NASA's Ames Research Center, that will orbit the moon to gather detailed information about its atmosphere.

Harris' varied career at the Marshall Center has included work on projects ranging from advanced exploration life support systems to serving as the program mission manager for the Lunar CRater Observation and Sensing Satellite (LCROSS) mission. He has served as the Lunar Quest Program mission manager for LADEE since 2010, and will be at Wallops in the Range Control Center for the launch.

"I'm really looking forward to seeing LADEE safely on its way to the moon," said Harris. "A launch like this is so rewarding because it's the result of years of hard work and finally getting to see that hard work come to fruition."

Harris is no stranger to hard work. He grew up on a dairy farm in middle Tennessee and spent his early years exposed to all kinds of mechanical equipment, fostering a "fix it or build it yourself" attitude which nurtured his interests in mechanics. He took that interest to Tennessee Tech University in Cookeville, where he earned a bachelor's degree in mechanical engineering.

"I was lucky to have a great engineering school close to where I grew up," said Harris. "Having that school so close really made the idea of going to college and becoming an engineer seem very possible."

As the program mission manager for LADEE, Harris is responsible for the continuous evaluation of the project for technical progress, schedule and cost. He manages program-level risks and ensures compliance with program requirements. He works closely with the project office at Ames to ensure they have everything they need to get the job done.

"In simple terms, my job is to do everything within my power to make LADEE successful," said Harris. "One of my favorite parts of this job is the multi-center collaboration, especially on a mission like LADEE where there are so many first-time

achievements."

LADEE is the first in-house, Ames-built spacecraft, the first flight of a U.S. Air Force Minotaur V rocket integrated by Orbital Sciences Corp., and the first deep space mission to launch out of Wallops. It will carry several different scientific instruments that will gather detailed information about the lunar atmosphere, and the role of lofted lunar dust. The information gathered will address long-standing unknowns about the moon and will help scientists understand other planetary bodies as well.

Not only will LADEE gather unprecedented information about the lunar atmosphere, it will also host the Lunar Laser Communication Demonstration (LLCD), managed by NASA's Goddard Space Flight Center. LLCD is NASA's first high-bandwidth, two-way, space laser communication demonstration. If successful, this technology will have profound implications for a vastly more efficient and cost-effective space communications system.

NASA's Science Mission Directorate funds LADEE, a cooperative effort led by Ames, which is responsible for managing the mission, building the spacecraft and performing mission operations. In addition to managing the LLCD payload, Goddard is responsible for managing the science instruments and the science operations center. Wallops has the responsibility for launch vehicle integration, launch services and launch range operations.

For more information about the LADEE mission, visit <http://www.nasa.gov/ladee>.

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



## SLS Avionics *Continued from page 1*

the nervous system, and similarly, SLS couldn't fly without avionics," said Lisa Blue, stages avionics system manager in the SLS Program Office at NASA's Marshall Space Flight Center. Avionics and flight software are being tested and developed at Marshall, which manages the SLS Program for the agency. "Avionics will 'tell' the rocket things like where it should go and end up, and how it should gimbal, or pivot, the engines to keep on the right trajectory."

Avionics and the flight computer will be housed in the SLS core stage. When completed, the core stage will be more than 200 feet tall and store cryogenic liquid hydrogen and liquid oxygen that will feed the vehicle's RS-25 engines.

### Preparing for Flight

The SLS avionics team at Marshall has received six of seven core stage flight computer development units from The Boeing Company -- the prime contractor for the SLS core stage, including avionics. The units are being used to develop the flight software for the SLS. The other development unit is scheduled to be delivered in December.

The SLS flight computer has the highest processing capability available in a flight avionics computer and is being developed by upgrading existing component and board designs that have been used in communication satellites.

"The flight software development and testing is underway at Marshall's Software Development



*Lisa Blue. (NASA/MSFC)*

Facility in an effort to rapidly mature and ensure implementation of a safe and highly reliable avionics and software system," Blue said.

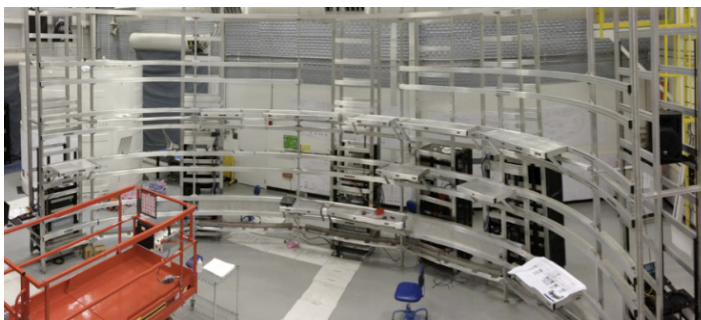
Once testing is complete at the Software Development Facility, the launch vehicle's software will be installed and tested in the System Integration Test Facility later this year at Marshall.

"This will be the first time we'll have all the hardware and software, and be able to test them as a cohesive system -- a big step for avionics being ready for the first flight of SLS," Blue said. "These units will be replicating what will actually fly the rocket, and we'll run simulations to see how SLS will perform in space."

All avionics components have completed their preliminary design review, and many have completed critical design review, two agency milestones that must be passed to show systems, cost and schedule requirements can be met. In 2015, the avionics will be shipped to NASA's Michoud Assembly Facility, where the core stage is being manufactured, and integrated onto the actual rocket.

The first flight test of the SLS, which 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, is scheduled for 2017. 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.

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



*The primary hardware infrastructure for the System Integration Test Facility is being constructed at the Marshall Center. The configuration of the structure is designed to functionally represent the forward skirt, intertank and engine section of the SLS core stage, where avionics components are located. The structure supports the mounting of flight-equivalent avionics boxes and flight-length cables, in addition to simulation and test system components. (NASA/MSFC)*

## Marshall Managers Thank Team for Success of SLS Preliminary Design Review



More than 250 people from across NASA's Marshall Space Flight Center participated in the Space Launch System (SLS) Post-Preliminary Design Review Report, held Aug. 5 in Activities Building 4316. On July 31, SLS -- the nation's next heavy-lift launch vehicle -- completed this milestone review, which concludes the initial design and technology development phase for the rocket. The next step in the continuing life-cycle process is Key Decision Point-C, in which NASA will grant the program authority to move from formulation to implementation. Discussing the review and thanking the Marshall team for a job well done, are from left, Garry Lyles, SLS chief engineer; Todd May, manager of the SLS Program; Steve Cash, director of Marshall's Safety & Mission Assurance Directorate; and Chris Singer, manager of Marshall's Engineering Directorate. For more information on the SLS preliminary design review, click [here](#). (NASA/MSFC/Emmett Given)

## Expedition 34 Station Commander Kevin Ford Thanks Marshall Team for Support

Astronaut Kevin Ford, right, Expedition 34 commander of the International Space Station, thanks Richard Payne, left, an operations controller, and Pat Patterson, payload operations manager, and the rest of the Marshall Space Flight Center team members at NASA's Payload Operations Integration Center for their support during his five-month stay in space. During his Aug. 8 visit to Marshall, Ford also shared highlights from his 144-day mission -- from Oct. 23, 2012, through March 15, 2013 -- as part of the Expedition 33 and 34 crews. While on the space station, Ford supported cargo operations of two SpaceX Dragon commercial vehicles and three Russian Progress resupply vehicles. Ford also participated in numerous scientific research investigations and performed regular maintenance and operational tasks aboard the orbiting complex. (NASA/MSFC/Emmett Given)



Expedition 34 Commander Kevin Ford, right, and Jenna Ruddock, an operations lead for several payloads in the Training and Crew Operations Branch of the Engineering Directorate at the Marshall Space Flight Center, prepare to hang the Expedition 34 mission plaque -- the first mission plaque to decorate NASA's Payload Operations Integration Control Center since it underwent renovations earlier this summer. It is a tradition for each mission plaque to be hung by a flight control team member who has made a significant contribution to the success of the expedition. Ruddock was selected for her outstanding support during Expedition 33/34. During the expedition, two SpaceX Dragon vehicles berthed to the space station, and Ruddock helped ensure the samples were properly constrained to protect them during delivery to the station and return to Earth. (NASA/MSFC/Emmett Given)



# Marshall Center Interns Take 'One Small Step' Toward Aerospace Careers

By Bill Hubscher

The traditional assignment many students receive at the start of a new school year is an essay titled "How I Spent My Summer Vacation." For 141 students returning to colleges across the country beginning this month, the answer will stand out among their classmates: working with NASA in the Rocket City.

Those 141 students -- plus an additional four high school students -- recently finished summer internships at NASA's Marshall Space Flight Center. They wrapped up their special taste of the workplace experience -- while being mentored by Marshall scientists and engineers -- with the Intern Poster Expo on Aug. 7.

"This event was the culmination of 10 weeks of hard work," said Mona Miller, the Intern Project lead with Universities Space Research Association supporting Marshall's Academic Affairs Office. "It provided them with the opportunity to showcase their results, highlight the work of their organization or department, and gain experience for future technical conference presentations."

The Marshall workforce was invited to mingle with the students, learning details about their work this summer and their experiences. Lockheed Martin of Huntsville, the corporate sponsor for the event, provided cash prizes.

This year's crop of interns represented 79 different colleges and universities from 34 states and Puerto Rico. Alabama A&M University in Huntsville led the way with seven students interning at the Marshall Center this summer.

Each year, thousands of students from universities across the country apply at a [special NASA website](#) created for internships, fellowships and scholarships. There, the students narrow their choices of which project or specific opportunity they would prefer, if selected. Through an agreement with the University of Alabama in Huntsville, students selected for Marshall internships could choose to be housed in dormitories there.



*Dawid Yhisreal-Rivas, right, a senior from the University of Texas in El Paso, explains his research as a NASA summer intern to Marshall Center Deputy Director Teresa Vanhooser, left, and Chris Singer, director of Marshall's Engineering Directorate. (MSFC/Emmett Given)*

Dawid Yhisreal-Rivas, one of six Marshall interns from the University of Texas in El Paso, was completing his second summer at the Marshall Center.

"This was awesome and I made a lot of new friends," Yhisreal-Rivas said. "I had two major tasks to accomplish, including the writing of new software to automate some tasks for the Engineering Directorate. I was given the freedom to explore and create with no restrictions. I am in awe of the exceptional people who mentored me here and I hope to become part of the story of NASA. I want to inspire others just as this experience has inspired me."

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

## NASA Shared Services Center Launches Customer Survey

On Aug. 12, 2013, the NASA Shared Services Center (NSSC) launched customer satisfaction surveys to solicit feedback from NSSC customers. These Broad-Based Surveys will be used to gain customer assessments of the NSSC's current service quality. Surveys will remain open for a three-week period -- until Aug. 31.

The Broad-Based Surveys are being used in addition to transactional surveys that are conducted throughout the year with the following objectives:

- To measure customer perceptions of the delivery of services at the NSSC;
- To understand customer perceptions of the importance and usage patterns of services;
- To continue ongoing measurement of customer satisfaction; and
- To compare current performance against the baseline performance that was measured prior to the transition of services from the centers and/or to compare against the previous broad-based customer

satisfaction surveys measured after transition.

The surveys will target specific services in the areas of Human Resources, Financial Management and Procurement, as well as services provided by the Customer Contact Center and the Enterprise Service Desk. As much as possible, nuisance policies will be in place to ensure that customers do not receive multiple surveys.

An independent third party will deploy the surveys to targeted customer groups. Pre-survey notifications were sent by email last week to those who will receive a survey explaining the intent of the surveys and requesting participation.

The NSSC will analyze these surveys to identify trends and actions needed to address systemic issues and identify areas to be used as roadmaps for process improvements and system changes. For surveys that have historically had a low participation, a sampling of customers will be invited to participate in a virtual focus group (by ViTS or telecon).

## Hardware Rollout of the Space Launch System on NASA-TV

The completion of the first barrel segment for the [Space Launch System's](#) core stage at the Michoud Assembly Facility is featured in the latest edition of "[This Week @NASA](#)," a weekly video segment broadcast on NASA-TV and posted online.

The 22-foot barrel segment will be part of the liquid hydrogen tank for the new rocket, which is managed at the Marshall Space Flight Center. You can watch this edition of This Week @NASA at the [NASA-TV YouTube channel: www.youtube.com/NASAtelevision](#).

## Dr. Michael Gazarik, Associate Administrator of NASA's Space Technology Mission Directorate, Visits Michoud Assembly Facility



*Dr. Michael Gazarik, center, associate administrator of NASA's Space Technology Mission Directorate, visits the NASA Michoud Assembly Facility in New Orleans on Aug. 6, for a first-hand look at progress being made on the Space Launch System. The advanced manufacturing equipment installed at Michoud is being used to assemble the SLS rocket's core stage as well as components of the Orion Multi Purpose Crew Vehicle. Michoud is managed by the Marshall Space Flight Center. (NASA/ Michoud Assembly Facility)*

## ExplorNet Executive Chat Set Aug. 15 with OSAC Director Bobby Watkins

Bobby Watkins, director of the Office of Strategic Analysis & Communications (OSAC) at NASA's Marshall Space Flight Center, will respond to questions from Marshall team members in the second ExplorNet Executive Chat on Aug. 15.

The Office of the Chief Information Officer has teamed with OSAC to facilitate the discussion on ExplorNet, Marshall's collaborative intranet, establishing a group on ExplorNet for this purpose at <https://explornet.msfc.nasa.gov/groups/executive-chat>.

All members of the Marshall team are invited to join the group, submit questions and view comments

provided by Watkins about himself, the OSAC team and other topics. Watkins' answers to all of the questions will be available on the ExplorNet site Aug. 15.

The goal of this Executive Chat is to help keep the Marshall workforce informed about what is happening across the center and to foster the exchange of information and ideas via ExplorNet, a powerful collaboration tool for the center. All Marshall team members are encouraged to share their ideas, opinions and/or questions in this chat.

Employees can submit questions for Watkins [here](#).

## Perseid Meteor



*This Perseid fireball meteor was observed in the skies over Chickamauga, Ga., on Aug. 11, at 2:14:49 a.m. EDT. It was also recorded by four other cameras in the NASA All Sky Fireball Network. The annual Perseid meteor shower peaked on Aug. 11 and 12, filling the sky with streaks of light. The big meteor showers like the Perseids, and later the Leonids in November, are caused when Earth and its atmosphere travel through a region of the sky filled with leftover debris lost by a particular comet. In the case of the Perseids, the small fragments were ripped off the tail of comet Swift-Tuttle, which orbits the sun once every 130 years. (NASA/MSFC/MEO)*

## Obituaries

**Edward D. Medal**, 66, of Owens Cross Roads, died Aug. 5. He retired from the Marshall Center in 2002 as a media relations specialist. He is survived by his wife, Janice Medal.

**George Demetri Cassimus**, 78, of Decatur died Aug. 6. He retired from the Marshall Center in 1994 as an aerospace engineer. He is survived by his wife, Patsy Byars Cassimus.