Marshall Star, March 13, 2013 Edition

# MARSHALL STAR

In This Week's Star ⊟



## Payload Operation Integration Center: Heartbeat for ISS Research Operations Celebrates 12th Anniversary with Students Via Webcast

*By Jessica Eagan*

NASA's Payload Operations Integration Center (POIC) is celebrating 12 years of science support for the International Space Station, and students from several schools joined in on the festivities.

***Image right: Payload Operations Integration Center team member Stephanie Dudley talks to students about her day-to-day duties as a payload operations director. Contact Katie Presson at 544-7583 or katie.j.presson@nasa.gov, or Susan Currie at 544-3629 or susan.currie@nasa.gov if you'd like someone from the POIC to speak to your child's class about the cool science research going on aboard the station and how it benefits our lives here on Earth. (NASA/MSFC/Emmett Given)***

The POIC at NASA's Marshall Space Flight Center marked its anniversary on March 8 with the future generation -- students from Alabama, Tennessee, North Carolina, Iowa, Colorado, New Mexico, California and even Australia. They virtually

"stepped inside" the science command post for the station -- located at Marshall -- right from their own classrooms through an hour-long webcast via NASA's Digital Learning Network.

With its theme "Celebrating 12 Years of Science from the ISS," the webcast was loaded with reviews of science research. NASA astronaut TJ Creamer, Marshall's first astronaut to become a payload operations director, talked to the students about his career that eventually led him to the center, where he leads a team of flight controllers that coordinate all research activities aboard the orbiting laboratory.

"With five-and-a-half months or so on station, you are able to come away with a good impression of what the station environment looks like and how the operations work from day to day," said Creamer, who was an Expedition 22/23 crew member from December 2009 to June 2010. "And as a result of that impression -- that mental awareness -- now we're in the era of utilization when we are completing even more research. So we're here managing payloads and science experiments 24/7, 365 days of the year, and I thought it was a great marriage. After the handful of months on station, you can come away with a very healthy operational awareness. You come away with a crew sensitivity. Now, the marriage I spoke of is trying to integrate all of those components for the payload developers and investigators to make science and utilization successful."

POIC team members also talked with the students about their job responsibilities -- working with researchers from around the world and crews aboard the station to perform the more than 1,500 investigations since 2001.

"Our main goal in hosting this webcast event was to capture students' interest in science, technology, engineering and math, known as STEM," said Sam Digesu, manager of the Payload Operations Directors Office at Marshall. "We rely on our future generation to carry out NASA's missions, and we were very happy to share with them all the fascinating work that goes on in our control center and on station. And there's a lot!

"Special thanks to the POIC team who planned this successful opportunity," he added. "They are passionate about their duties and it was obvious. I'm sure that many parents listened to their excited children talk about the cool things going on 200-plus miles above us."

**Students Can Talk Directly with Station Astronauts and Here's How**

The International Space Station crew is just as eager to speak with students, whenever possible, as are team members at the Payload Operations Integration Center who operate the station's science command post at NASA's Marshall Space Flight Center.

How? Through the ISS Ham Radio. This technology brings the students and the station astronauts "voice to voice" for a question-and-answer session.

In preparation for the "space chats," students research the space station and learn about radio waves, amateur radio and related topics. Before their scheduled contact with the station, they prepare a list of questions, many about possible career choices and science activities. As the laboratory passes over a school or another location that receives a signal from the station, there is typically a 5- to 8-minute window to make contact with the crew. Depending on the amount of time, 10 to 20 of the students' questions are asked during a session.

To arrange for contact with the space station, or for more information, visit here.

The educational event was just one example of outreach by the POIC team. They take any opportunity to visit schools to spread the word about the work done right here in Huntsville.

"Anytime we have the opportunity to go out to schools, we really enjoy it," said Katie Presson, a payload operations director at Marshall. "Talking to kids about astronauts and how they work in space is just as exciting for us as it is for them. And they always have the best questions!"

If you'd like a POIC team member to speak to your child's class, contact Presson at 544-7583 or katie.j.presson@nasa.gov, or Susan Currie, education program specialist, at 544-3629 or susan.currie@nasa.gov.

***Image left: Participating in the Payload Operations Integration Center's 12th anniversary educational event are, from left, Kevin Barnes, payload rack officer; Rick Rodriguez, Stephanie Dudley and Katie Presson, all payload operations directors; Penny Pettigrew, payload communications manager; Carol Jacobs, payload operations director; and Ola Myszka, operations controller. The team members spoke to students via a webcast from the POIC about its unique capabilities that allow science experts and researchers around the world to perform cutting-edge science in a space environment. Dedicated professionals at the center manage all NASA science activities on the International Space Station. Before and during a mission, the POIC team trains astronauts and ground personnel about payloads, and coordinates the plans for payload activities with scientists and station control centers around the world. (NASA/MSFC/Emmett Given)***

The webcast event was organized and hosted by the POIC and Marshall's Academic Affairs Office in the Office of Human Capital.

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

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**ISS Science Features To Be Broadcast from Marshall**

*International Space Station commentator Lori Meggs, center, along with Marshall TV videographer Tyson Eason, left, interview Katie Presson, a payload operations director in the Payload Operations Integration Center, or POIC, at NASA's Marshall Space Flight Center. Starting March 13, the Marshall Center begins airing live segments once a week from the POIC as part of ISS Update on NASA TV. ISS Update offers viewers a live look daily at the latest news and happenings on the space station. The Marshall segments will include interviews with POIC flight controllers, as well as scientists from around the world, to highlight the exciting research happening on station. ISS Update airs daily from 10 to 11 a.m. CDT on NASA TV. Live and recorded broadcasts of ISS Update can be viewed at http://www.nasa.gov/multimedia/nasatv/index.html. The Marshall segments can be viewed on YouTube at http://www.youtube.com/reelnasa (NASA/MSFC/Emmett Given)*

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**A Big CFC Thanks**


*NASA Marshall Space Flight Center Deputy Director Teresa Vanhooser, left, presents an award to 2012 Combined Federal Campaign chairman Patrick Rasco for leading Marshall's successful goodwill drive. At the CFC workers' appreciation event March 6, Vanhooser also thanked more than 20 Marshall team members who helped with the campaign and awarded certificates to Marshall organizations that donated money to the cause. The center raised $720,180 for the campaign -- surpassing its $700,000 goal. More than 350 team members took part in CFC Community Service Days, volunteering their time to support CFC-funded organizations and special events. Some 177 team members also took Marshall-sponsored bus tours to visit charitable organizations and get a first-hand look at how CFC dollars help those organizations in the community. (NASA/MSFC/Emmett Given)*

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**Giving Back to the Local Community, Marshall Donates Furniture to Local Schools**
*By Jena Rowe*

Many buildings are undergoing renovation at NASA's Marshall Space Flight Center, but what is happening to the furniture inside?


***Image right: Flintville Elementary School maintenance workers Robert Ellis, inside the trailer, and Jason Moorehead, guiding the lift, load a desk donated by the Marshall Center. Teachers, administrators and parents of students worked to load, transport and unload the donated furniture from Marshall Building 4666. (NASA/MSFC/Fred Deaton)***

This month, Marshall is donating furniture from buildings scheduled for refurbishing or for demolition to schools in counties in Alabama and Tennessee.

According to federal management regulations, in lieu of abandonment or destruction of property, excess property may be donated to a public body.

"It is not cost effective for the government to move, store or destroy the furniture housed in Marshall buildings that will be refurbished or demolished," said Philisha Stephens, property disposal officer at Marshall. "Since any donations must go to a federal or state entity, we decided to contact area schools to see if they might need any furniture. The responding schools provided all the resources necessary to remove the furniture. We're excited about the opportunity to help our local schools."

Alabama county schools in the northern third of the state -- 262 total -- received a personal email inviting them to Marshall to remove furniture from the various buildings that have been closed over the last 18 months. Tennessee schools within driving distance to the center -- 37 total -- were notified as well.

On Feb. 28, teachers, administrators and parents of students of Flintville Elementary School in Lincoln County, Tenn., came to load trailers with furniture from Building 4666 -- a computer operations building undergoing renovation on Dodd Road.


"Christmas came early at Flintville Elementary School," said Lisa Creson, family and pupil services coordinator at Flintville Elementary. "We unloaded the first trailer and everything is already in rooms being used! We still have one trailer to go."

***Image left: Flintville Elementary School principal David Golden, working inside the trailer, organizes furniture being loaded by physical education teachers Lance Stephens, in white, and Jason Berrtram. Flintville is one of seven schools that have received furniture donations from Building 4666. (NASA/MSFC/Fred Deaton)***

Flintville Elementary -- one of seven schools that have already received the Marshall furniture -- received a donation that equates to $209,000 in acquisition value, according to Stephens. To date, more than 550 pieces of furniture have been removed from the building, ranging from desks, file cabinets, bookcases, tables and chairs. Five more schools are scheduled to receive furniture from Building 4666 throughout March.

While building renovations may cause some inconveniences in day-to-day activities around the center, there is more happening than what meets the eye.

To employees, building renovations sometimes mean temporary inconveniences to reach a permanently improved working environment. To a local elementary school student, working at a desk once used at Marshall just may inspire a lifelong interest in space exploration.

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

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**New 'Marshall Room' Unveiled at the Chamber of Commerce of Huntsville/Madison County**

*NASA's Marshall Space Flight Center Director Patrick Scheuermann, center, joined Ron Poteat, right, chairman the Chamber of Commerce of Huntsville/Madison County, and Madison Mayor Troy Trulock, left, for a ribbon cutting ceremony on March 11 for the chamber's newly named Marshall Room. Located at the chamber, the Marshall Room celebrates the rich history of Marshall and its importance to the Huntsville community. (NASA/MSFC/Emmett Given)*

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**SLS Engine Tests in Full Swing**

*The J-2X engine extended its own duration record for a test firing on Feb. 28 when test conductors at NASA's Stennis Space Center ran the engine for 560 seconds, breaking the old record by 10 seconds. The J-2X test program also passed another milestone with this test: accumulating more than 10,000 seconds of hot fire time overall. The engine will be an integral part of the agency's Space Launch System, a new rocket managed at NASA's Marshall Space Flight Center that will enable missions farther into space than ever before. The J-2X is being designed and built for NASA by Pratt & Whitney Rocketdyne of Canoga Park, Calif. (NASA/SSC)*

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**Globular Cluster 47 Tucanae**

Neutron stars, the ultra-dense cores left behind after massive stars collapse, contain the densest matter known in the universe outside of a black hole. New results from the Chandra X-ray Observatory and other X-ray telescopes have provided one of the most reliable determinations yet of the relation between the radius of a neutron star and its mass. These results constrain how nuclear matter -- protons, neutrons and their constituent quarks -- interact under the extreme conditions found in neutron stars.

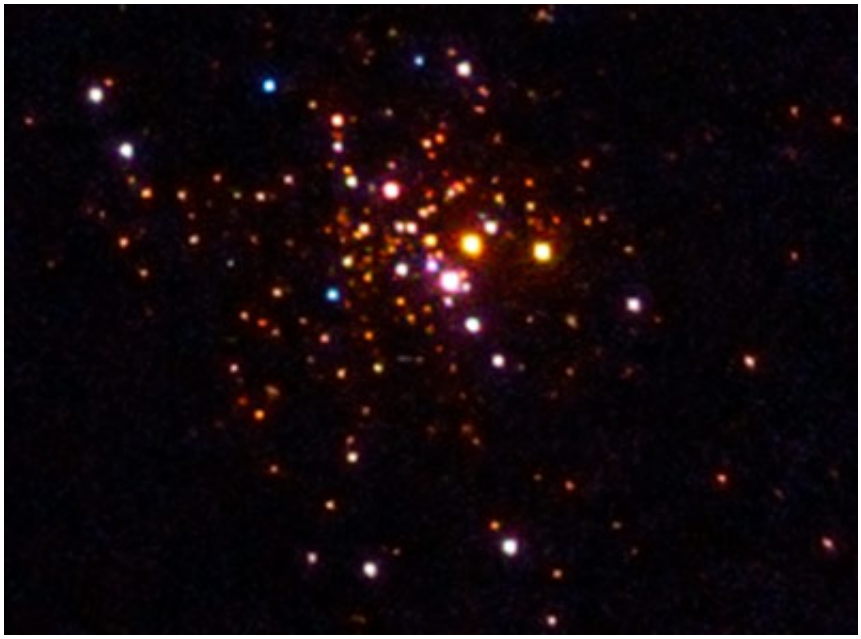

***Image right: 47 Tucanae, a globular cluster about 15,000 light years away in the outskirts of the Milky Way. (NASA/CXC/Michigan State/A.Steiner et al)***

Three telescopes -- Chandra, the European Space Agency's XMM-Newton, and NASA's Rossi X-ray Timing Explorer, or RXTE -- were used to observe eight different neutron stars, including one in 47 Tucanae, a globular cluster about 15,000 light years away in the outskirts of the Milky Way. This image was constructed from a long Chandra observation of 47 Tucanae. Lower-energy X-rays are red, X-rays with intermediate energies are green, and the highest-energy X-rays are blue.

The double, or binary, star system labeled X7 contains a neutron star slowly pulling gas away from a companion star with a mass much lower than the sun. In 2006, researchers used observations of the amount of X-rays from X7 at different energies together with theoretical models to determine a relationship between the mass and the radius of the neutron star.

Four other neutron stars were observed with RXTE to undergo bursts of X-rays that cause the atmosphere of the neutron star to expand. By following the cooling of the star, its surface area can be calculated. Then, by folding in independent estimates of the distance to the neutron star, scientists were able to gather more information on the relationships between the masses and radii of these neutron stars.

Because the mass and radius of a neutron star is directly related to interactions between the particles in the interior of the star, the latest results give scientists new information about the inner workings of neutron stars.

Researchers used a wide range of different models for the structure of these collapsed objects and determined that the radius of a neutron star with a mass that is 1.4 times the mass of the sun is between 10.4 and 12.9 km -- 6.5 to 8.0 miles. They also estimated the density at the center of a neutron star was about eight times that of nuclear matter found in Earth-like conditions. This translates into a pressure that is over 10 trillion times the pressure required for diamonds to form inside the Earth.

The new values for the neutron star's structure should hold true even if matter composed of free quarks exists in the core of the star. Quarks are fundamental particles that combine to form protons and neutrons and are not usually found in isolation. It has been postulated that free quarks may exist inside the centers of neutron stars, but no firm evidence for this has ever been found.

The researchers also made an estimate of the distances between neutrons and protons in atomic nuclei on Earth. A larger neutron star radius naturally implies that, on average, neutrons and protons in a heavy nucleus are farther apart. Their estimate is being compared with values from terrestrial experiments.

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**

**Thomas Merrell Wade**, 89, of Arab died Feb. 28. He retired from the Marshall Center in 1981 as an aerospace engineer.

**William R. "Bob" Adams**, 80, of Huntsville died March 3. He retired from the Marshall Center in 1988 as an aerospace engineer. He is survived by his wife, Nancy L. Adams.

**James "Jim" Bruce Peck**, 82, of Decatur died March 11. He retired from the Marshall Center in 1993 as an aerospace engineer.

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