



Print

Close

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MARSHALL STAR

In This Week's Star [\(Click to Expand\)](#)

- › [NASA's J-2X Engine Kicks Off 2012 With Powerpack Testing](#)
- › [NASA Marshall Researcher Dr. Chryssa Kouveliotou Receives 2012 Dannie Heineman Prize in Astrophysics](#)
- › [Shuttle-Ares Transition Office Completes External Tank Hardware Transfer](#)
- › [Day of Remembrance](#)
- › [Joint 911 Dispatch Center Provides More Effective Communication, Quicker Response Times to Incidents on the Arsenal](#)
- › [Johns Hopkins Professor and World-Renowned X-ray Astronomer, Instrument Builder Stephen Murray to Speak at NSSTC Feb. 8](#)
- › [Redstone Arsenal Widening Rideout Road, Closing Goss Road Intersection](#)
- › [Obituaries](#)

NASA's J-2X Engine Kicks Off 2012 With Powerpack Testing

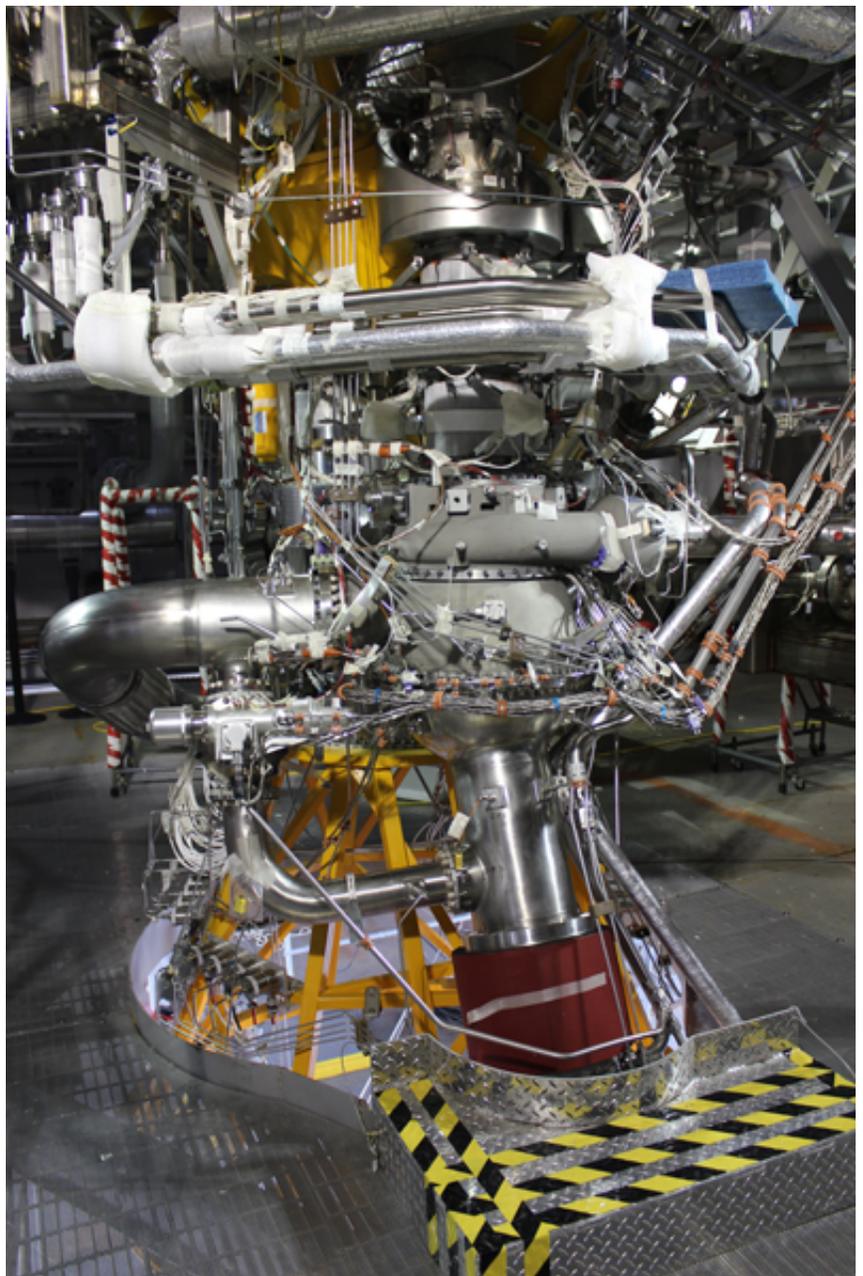
By Amie Cotton

A new series of tests on the engine that will help carry humans to deep space will begin this week at NASA's Stennis Space Center. The tests on the J-2X engine bring NASA one step closer to the first human-rated liquid oxygen and liquid hydrogen rocket engine to be developed in 40 years.

Image right: The J-2X powerpack assembly is successfully installed in the A-1 test stand and ready for testing of the turbomachinery components. (NASA/SSC)

Tests will focus on the powerpack for the J-2X. This highly efficient and versatile advanced rocket engine is being designed to power the upper stage of NASA's Space Launch System, a new heavy-lift launch vehicle capable of missions beyond low-Earth orbit. The powerpack comprises components on the top portion of the engine, including the gas generator, oxygen and fuel turbopumps, and related ducts and valves that bring the propellants together to create combustion and generate thrust.

"The J-2X upper stage engine is vital to achieving the full launch capability of the heavy-lift Space Launch System," said William Gerstenmaier, NASA's associate administrator for the Human Exploration and Operations Mission Directorate. "This testing will help ensure that a key propulsion element is ready to support exploration across the solar system."



About a dozen powerpack tests of varying lengths are slated now through summer at Stennis' A-1 Test Stand. By separating the engine components -- the thrust chamber assembly, including the main combustion chamber, main injector and nozzle -- engineers can more easily push the various components to operate over a wide range of conditions to ensure the parts' integrity, demonstrate the safety margin and better understand how the turbopumps operate.

"By varying the pressures, temperatures and flow rates, the powerpack test series will evaluate the full range of operating conditions of the engine components," said Tom Byrd, J-2X engine lead in the SLS Liquid Engines Office at the Marshall Space Flight Center. "This will enable us to verify the components' design and validate our analytical models against performance data, as well as ensure structural stability and verify the combustion stability of the gas generator."

This is the second powerpack test series for J-2X. The powerpack 1A was tested in 2008 with J-2S engine turbomachinery originally developed for the Apollo Program. Engineers tested these heritage components to obtain data to help them modify the design of the turbomachinery to meet the higher performance requirements of the J-2X engine.

"The test engineers on the A-1 test team are excited and ready to begin another phase of testing which will provide critical

data in support of the Space Launch System," said Gary Benton, J-2X engine testing project manager at Stennis.

J-2X is being developed for Marshall by Pratt & Whitney Rocketdyne of Canoga Park, Calif.

For more information on the J-2X engine, follow J-2X on Twitter at <http://twitter.com/J2XEngine> or visit <http://www.nasa.gov/j2x>.

For more information on the Space Launch System, follow SLS on Twitter at http://twitter.com/NASA_SLS or visit <http://www.nasa.gov/sls>.

Cotton, an AI Signal Research Inc. employee, supports the Office of Strategic Analysis & Communications.

[› Back to Top](#)

NASA Marshall Researcher Dr. Chryssa Kouveliotou Receives 2012 Dannie Heineman Prize in Astrophysics

By Janet Anderson



Dr. Chryssa Kouveliotou, an astrophysicist at the Marshall Space Flight Center, has been selected as the 2012 recipient of the Dannie Heineman prize in astrophysics, jointly awarded each year by the American Institute of Physics and the American Astronomical Society.

Image left: Dr. Chryssa Kouveliotou, an astrophysicist at the Marshall, Center has been selected as the 2012 recipient of the Dannie Heineman prize in astrophysics, jointly awarded each year by the American Institute of Physics and the American Astronomical Society. (NASA/MSFC)

The citation for the Heineman prize recognizes Kouveliotou "for her extensive accomplishments and discoveries in the areas of gamma-ray bursts and their afterglows, soft gamma-ray repeaters and magnetars. The citation particularly mentions her collaborative efforts and "her effectiveness and insights in using multi-wavelength observations."

The Heineman Prize is named after the late Dannie N. Heineman, a Belgian-American engineer, business executive and philanthropic sponsor of scientific endeavors. The prize was established in 1979 by the Heineman Foundation for Research, Education, Charitable and Scientific Purposes.

"I am very grateful and honored to be recognized by the community with this very important award," Kouveliotou said. "I am also very pleased to be recognized for building collaborations, which I consider to be an indispensable tool in scientific research today."

Kouveliotou, a NASA astrophysicist since 2004 and longtime collaborator with the agency's science mission, has been the principal investigator on numerous research projects in the United States and Europe. She is currently a co-investigator on the Gamma-ray Burst Monitor, an instrument flying aboard the Fermi Gamma-ray Space Telescope; a Swift associated scientist; and a member of a NuSTAR Science Topical Team. Over her career she has worked on multiple missions: the

International Sun Earth Explorer-3, the Solar Maximum Mission and the Burst And Transient Source Experiment, which flew on NASA's Compton Gamma-Ray Observatory.

Throughout her career, Kouveliotou has made numerous contributions to the fields of astronomy and astrophysics. Her research has expanded scientific understanding of fleeting, transient phenomena in the Milky Way galaxy and throughout the high-energy universe. Besides determining the unique properties of the highly energetic emissions from gamma-ray bursts -- the brightest and most powerful events in the universe -- she was part of the team which first revealed the extragalactic nature of these sources. She and her team made the first confirmed detection of ultra-dense neutron stars called magnetars -- the cinders of stars left over after a supernova -- which have incredibly powerful magnetic fields.

A native of Athens, Greece, Kouveliotou received her doctorate in 1981 from the Technical University of Munich, Germany. She earned her master's degree in science from the University of Sussex, England, in 1977, and her bachelor's degree in physics from the National University of Athens, Greece, in 1975.

Kouveliotou has received many awards for her work, including the Rossi Prize in 2003, the Descartes Prize in 2004 and the NASA Space Act Award in 2005. She has published 368 papers in refereed journals and has been among the top 10 most-cited space science researchers in published journals worldwide.

Kouveliotou is a member of multiple international advisory committees, boards and review panels. She was elected as the chair of the Division of Astrophysics of the American Physical Society, to the council of the American Astronomical Society and as the chair of the High Energy Astrophysics Division of the American Astronomical Society. She is a Fellow of the American Physical Society and of the American Association for the Advancement of Science.

For more information about gamma-ray astronomy and other space science research conducted at the Marshall Center, visit

http://www.nsstc.org/sp_science/index.html

http://www.nasa.gov/mission_pages/GLAST/main/index.html

and

<http://www.nasa.gov/centers/marshall/about/marshallfaces/kouveliotou.html>

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

[› Back to Top](#)

Shuttle-Ares Transition Office Completes External Tank Hardware Transfer

By Sanda Martel

During its heyday, NASA's Space Shuttle Program required tens of thousands of specialized parts and tooling to build external tanks at NASA's Michoud Assembly Facility.

Image right: The Shuttle-Ares Transition Office external tank team, from left, Stephen Brooks and Larry Caddy, both of DP Associates of Huntsville; Cody McPeters, Al Razaq Computing Services of Houston; and Len Bell and Beth Allison. (NASA/MSFC/Fred Deaton)



At the 832-acre site, Lockheed Martin workers built and delivered 135 flight tanks to NASA during the 30-year program, from 1981-2011. Taller than a 15-story building, 154 feet long and as wide as a silo with a diameter of 27.5 feet, the tank was the largest single piece of the space shuttle.

Even before completion of the last space shuttle mission -- STS-135, which launched and landed in July 2011 -- an effort was under way to disposition some of the hardware and large, complex and unique production tooling used in tank production.

"Decisions about some line items and production support equipment tooling were made before the program ended, but the remaining line item transfer has been ongoing," said Len Bell, who is leading the external tank equipment and hardware transfer for the Shuttle-Ares Transition Office at the Marshall Space Flight Center. That office is responsible for all activities associated with the Space Shuttle Program closeout.

Bell's team reached a milestone recently when it successfully completed the transfer of all hardware and tooling from Lockheed Martin, property manager for external tank related tooling and material during the shuttle era. The transfer was to Jacobs Technology Inc., Michoud's manufacturing support and facility operations Contractor and a subsidiary of Jacobs Engineering Inc., of Pasadena, Calif.

"The last group of the 120,000 total line items has been transferred and we're happy to have this task completed," Bell said.

The hardware, tooling and other items will now be designated for reuse by other NASA programs; donated to educational institutions, museums or other federal or state agencies; sold; or scrapped. The items represent more than \$300 million in government property.

"The transfer of these 120,000 line items, consisting of hundreds of pages of paperwork, represents more than just paper," said Bell, explaining that decisions are being made to ensure anything of future potential use is retained in order to save government funds.

His Marshall team has worked with representatives of the Space Launch System program and Office of Procurement at Marshall, Michoud, the Boeing Company of Chicago and Jacobs.

Martel, an AI Signal Research Inc. employee, supports the Office of Strategic Analysis and Communications.

[› Back to Top](#)



Each January, the NASA family comes together to remember and honor the Apollo 1, space shuttle Challenger and Columbia crews, and others who lost their lives pursuing the dream of space exploration for our nation. Marshall Space Flight Center Director Robert Lightfoot, right, and Associate Director Robin Henderson, center, pause for a moment of silence during the Jan. 26 Day of Remembrance Ceremony in the lobby of Building 4200. During the event, Lightfoot spoke about how we took the safety of those who sacrificed personally, and how learning from our mistakes brings great opportunity: opportunity for exploring the universe, opportunity to learn, opportunity to

advance our knowledge. A memorial wreath was placed in front of the framed photos of the fallen astronauts and candles were lit by Henderson. Read the Director's Corner in last week's Star as Lightfoot remembers those whose lives were lost and how safety is a priority as we continue NASA's mission. (NASA/MSFC/Emmett Given)

[› Back to Top](#)

Joint 911 Dispatch Center Provides More Effective Communication, Quicker Response Times to Incidents on the Arsenal

Submitted by the Protective Services Office

Marshall Space Flight Center Associate Director Robin Henderson and Redstone Garrison Commander Col. John Hamilton officially opened the Joint 911 Dispatch Center in Building 4312 with a ribbon cutting ceremony Jan. 26.

Image right: From front left, Marshall Associate Director Robin Henderson and Redstone Garrison Commander Col. John Hamilton cut the ribbon in front of the Joint 911 Dispatch Center in Building 4312. Back row from left are Department of Defense police officer Ronald Ewald, DOD guard officer Jeff Melbert III, HEMSI paramedic Tony Ceci, DOD firefighter Brian Bannister and Marshall Protective Securities Office officer Jason Shehan. (NASA/MSFC/Ray Downward)



On Jan. 1, Marshall's Protective Securities Office assumed responsibilities for dispatching emergency responders from Redstone Arsenal's Directorate of Emergency Service Police and fire departments, as well as Marshall's own protective services personnel. This collaborative effort between the U.S. Army and the Marshall Center provides more effective communication and quicker response times to incidents occurring on the arsenal.

The project took over a year to relocate alarms and other technical systems, upgrade communications, create software, sign agreements and develop new procedures.

"The combined center will save taxpayers money as well as creating a more efficient operation by enhancing communications between the agencies," said Michael Wilson, Marshall's chief of Protective Services. "Users who dial 911 for emergencies or call the Dispatch Center for non-emergencies may hear dispatchers answer differently than before, but users can expect the call services to be of the highest quality as the organization strives to protect the entire population through the timely response of both 911 operators and emergency responders."

Wilson lauded the support of the Office of the Chief Information Officer, especially the Dynetics Marshall Information Technology Services team led by Alan Cunningham. Wilson also thanked the diligence of Dennis Wooten of Excalibur Associates, who serves as the Dispatch Center manager, whose efforts were vital to the successful transition of the dispatcher workforce.

For more information, contact Wilson at 544-5205.

[› Back to Top](#)

Johns Hopkins Professor and World-Renowned X-ray Astronomer, Instrument Builder Stephen Murray to Speak at NSSTC Feb. 8

On Feb. 8, the National Space Science & Technology Center of Huntsville will welcome Johns Hopkins University Professor Stephen Murray, a world-renowned X-ray astronomer and instrument builder. Murray, the latest guest speaker in the NSSTC Distinguished Lecturer Series, will deliver a talk on "X-ray Surveys Past, Present and Future."

The event will be held in Room 4078 at the NSSTC. Refreshments will be served at 2:30 p.m., and Murray will speak at 3 p.m. All Marshall team members are invited to attend.

[› Back to Top](#)

Redstone Arsenal Widening Rideout Road, Closing Goss Road Intersection

The current intersection at Goss Road and Rideout Road will close permanently beginning Feb. 2.

Motorists driving north on Rideout will still be able to access Goss using the right exit lane. Also, motorists westbound on Goss needing to access I-565 will be able to continue this route. The closing of the Goss Road intersection means that motorists heading west will not be able to access the Visitor's Center at Gate 9 or turn southbound onto Rideout Road and enter Gate 9.

Redstone Arsenal is widening Rideout Road, starting with the outbound lanes, to expedite employees' departure from the post. It is necessary to close the intersection to facilitate the construction process for the additional outbound lane.

A new permanent intersection for Goss and Rideout will begin later this year, and will be located farther south on Rideout.

The road-widening construction is expected to be completed by this summer.

[› Back to Top](#)

Obituaries

Betty Aldridge, 71, of Decatur died Jan. 14. She retired from the Marshall Center in 1994 as an equal employment manager.

James R. Smith, 91, of Huntsville died Jan. 19. He retired from the Marshall Center in 1973 as a production controller.

Carroll T. Booker, 55, of Huntsville died Jan. 26. He was a quality assurance specialist in the Safety & Mission Assurance Directorate. He is survived by his wife, Jan Booker.

Fred Allison Baker, 92, of New Market died Jan. 27. He retired from the Marshall Center in 1980 as an aerospace engineering technician.

Find this article at:

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