

Marshall Star, May 2, 2012 Edition

MARSHALL STAR

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NASA Begins Second Round of Testing on J-2X Engine

NASA status report

NASA kicked off the next round of testing on the J-2X rocket engine April 26, gathering data on the performance of the newly installed engine nozzle extension and test stand "clamshell" as well as on the engine start and shutdown sequences.

Image right: A J-2X E10001 engine roars to life during the first test in its second test series at Stennis Space Center on April 26. (NASA/SSC)

The test on the A-2 Test Stand at the Stennis Space Center begins a second, more extensive round of testing for the next-generation engine

selected as part of NASA's Space Launch System that will carry humans deeper into space than ever before. It was the first test with the J-2X nozzle extension installed on the engine and the first with the new clamshell equipment built for the J-2X and installed on the A-2 stand. The changes allow operators to test the engine at simulated altitudes up to 50,000 feet.

The J-2X is being developed by Pratt & Whitney Rocketdyne for the Marshall Space Flight Center. It is the first liquid oxygen and liquid hydrogen rocket engine rated to carry humans into space to be developed in 40 years. The J-2X will provide upper-stage power for the Space Launch System, a new heavy-lift vehicle capable of missions beyond low-Earth orbit.



Watch the J-2X engine test at http://www.nasa.gov/multimedia/videogallery/index.html?media_id=141822251.

The space agency conducted an initial round of sea-level tests on the engine last year, then removed it from the Stennis test stand to prepare both stand and engine for the second round of simulated high-altitude testing. Such testing is critical; the J-2X with nozzle extension needs to prove it can perform at altitude in flight as needed for SLS.

For more information about NASA exploration, visit <http://www.nasa.gov/exploration>.

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Marshall Center to be Honored by Alabama Legislature; Acting Director Goldman to Speak to Joint Session

By Sanda Martel



Gene Goldman (NASA/MSFC)

The Marshall Space Flight Center will be honored by the Alabama Legislature May 3 with the reading of a resolution recognizing the center's achievements in space exploration.

Marshall's Acting Center Director Gene Goldman has been invited to address a joint session of the legislature immediately preceding the reading of the resolution, which commends the Marshall Center as an engine of economic development, the anchor of the aerospace industry in North Alabama, and for employing almost 6,000 government and contractor personnel in unique and specialized facilities and laboratories. Goldman will meet with legislators and Alabama Gov. Robert Bentley following the legislative session.

NASA exhibits -- representing the technical and scientific contributions of the Marshall Center -- will be on display for viewing by the public on the sixth floor of the State House.

NASA astronaut T.J. Creamer, who lived and worked aboard the International Space Station as a flight engineer and NASA science officer on Expedition 22/23 from December 2009 to June 2010, also will be available to the public to answer questions about his experiences. Creamer currently works at Marshall as a payload operations director.

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

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Space Shuttle Enterprise, Mounted Atop 747 Shuttle Carrier Aircraft, Lands in New York City April 27

By Sanda Martel

For the second time in a week, Americans got the rare opportunity of seeing a space shuttle orbiter mounted atop a 747 shuttle carrier aircraft fly over their city.

Image right: Space shuttle Enterprise, atop a 747 aircraft, flies near the Empire State Building and the Statue of Liberty in New York City. (NASA)

On April 27, space shuttle Enterprise flew into New York City atop the 747 Shuttle Aircraft Carrier. Before landing at Kennedy International Airport, it soared over the Hudson River and passed near the Statue of Liberty, while crowds gathered on roofs to witness and film the event. During the next several weeks, Enterprise will be demated from the 747 and placed on a barge that will move by tugboat up the Hudson River to the shuttle's final home, the Intrepid Sea, Air and Space Museum. The Enterprise was previously on display at the Smithsonian Institution in Washington.

On April 18, Washington residents were treated to a similar sight when space shuttle Discovery flew over the nation's capital enroute to its final home -- Udvar-Hazy Center near Dulles International Airport outside Washington.



All shuttle orbiters are being donated to museums now that the Space Shuttle Program has ended. Shuttle Endeavour is scheduled to go to the California Science Center in Los Angeles in September. Space shuttle Atlantis will remain at NASA's Florida launch site until it is moved to the Kennedy Space Center visitor's complex adjacent to the center later this year.

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Future Scientists Needed: FMA Live! Inspires Kids to Study Science During 'National Take Our Children to Work Day' at Marshall



Isaac Newton's three laws of motion were brought to life before the eyes of Marshall Space Flight Center team members' children by the educational show [FMA Live!](#) during the National Take Our Children to Work Day on April 26. Huntsville Middle School student Patrick Fair, in the red jumpsuit, demonstrates Newton's first law of motion: Objects in motion, or at rest, stay that way unless acted on by an outside force. Patrick jumps onto a velcro wall and remains there until he is pulled off. FMA Live! -- created by NASA and Honeywell International -- is an award-winning, traveling hip-hop science program designed to inspire elementary and middle school students to

pursue studies in science, technology, engineering and math by using interactive demonstrations to teach concepts such as Newton's three laws of motion. (NASA/MSFC/Emmett Given)

Mac DeLay, left, son of Shelley DeLay in the Office of Strategic Analysis & Communications and Tom DeLay in the Engineering Directorate, helps two FMA Live! actors demonstrate Newton's second law of motion: Force equals mass times acceleration. Mac kicks several soccer balls of various sizes and weights to prove how this law is true. When the big ball, shown in photo, rolls onto stage, Mac's kick barely moves it, showing that the force or weight is the product of an object's mass and the acceleration due to gravity. The event was hosted by Marshall's Office of Diversity & Equal Opportunity and co-hosted by the Academic Affairs Office, and it entertained approximately 1,500 kids in Activities Building 4316. (NASA/MSFC/Emmett Given)



Two children from Huntsville Middle School race dragster go-carts propelled by air pressure across the stage to illustrate Newton's third law: For every action, there is an equal and opposite reaction. An FMA Live! helper turns on the air, causing it to shoot out the back, allowing the cart to go forward. The Marshall Center will hold its own "Take Our Children to Work Day" on June 7. Activities will be planned throughout the day. Details will be announced in the near future in the Marshall Star and on ExplorNet. (NASA/MSFC/Emmett Given)



A New View of Tarantula Nebula

To celebrate its 22nd anniversary in orbit, the Hubble Space Telescope has released a dramatic new image of the star-forming region 30 Doradus, also known as the Tarantula Nebula because its glowing filaments resemble spider legs. From that image, a composite photo from all three of NASA's Great Observatories -- Chandra X-ray Observatory, Hubble, and Spitzer Space Telescope -- also was created to mark the event. 30 Doradus is located in the neighboring galaxy called the Large Magellanic Cloud, and is one of the largest star-forming regions located close to the Milky Way. At the center of 30 Doradus, thousands of massive stars are blowing off material and producing intense radiation along with powerful winds. Chandra, managed by the Marshall Space Flight Center, detects gas that



has been heated to millions of degrees by these stellar winds and also by supernova explosions. These X-rays, colored blue in this composite image, come from shock fronts -- similar to sonic booms -- formed by this high-energy stellar activity. The Hubble data, colored green, reveals the light from these massive stars along with different stages of star birth including embryonic stars a few thousand years old still wrapped in cocoons of dark gas. Infrared emission captured on the Spitzer telescope, seen in red, shows cooler gas and dust that have giant bubbles carved into them. These bubbles are sculpted by the same searing radiation and strong winds that come from the massive stars at the center of 30 Doradus. (X-ray: NASA/CXC/PSU/L.Townsley et al.; Optical: NASA/STScI; Infrared: NASA/JPL/PSU/L.Townsley et al.)

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Space Station Trio Lands Safely in Kazakhstan



Three members of the Expedition 30 crew undocked from the International Space Station and safely returned to Earth on April 27, wrapping up a five-and-a-half-month mission in space.

Image left: Expedition 30 Commander Dan Burbank, left, and Flight Engineers Anton Shkaplerov, center, and Anatoly Ivanishin, sit in chairs outside the Soyuz capsule just minutes after they landed in a remote area outside the town of Arkalyk, Kazakhstan, on April 27. (NASA/Carla Cioffi)

Commander Dan Burbank of NASA and Russian Flight Engineers Anatoly Ivanishin and

Anton Shkaplerov landed their Soyuz TMA-22 spacecraft in Kazakhstan at 6:45 a.m. CDT after undocking from the space station's Poisk module at 3:18 a.m. The trio, which arrived at the station Nov. 16, 2011, spent a total of 165 days in space,

163 of them conducting research.

Before leaving the station, Burbank handed over command of Expedition 31 to the Russian Federal Space Agency's Oleg Kononenko, who remains aboard the station with NASA astronaut Don Pettit and European Space Agency astronaut Andre Kuipers. They will be joined by NASA astronaut Joseph Acaba and Russian cosmonauts Gennady Padalka and Sergei Revin. Acaba, Padalka and Revin are scheduled to launch May 14 from the Baikonur Cosmodrome in Kazakhstan and will dock with the station on May 16.

To follow Twitter updates from NASA's Expedition 30 and 31 astronauts, visit <http://twitter.com/AstroCoastie>, https://twitter.com/astro_Pettit and <https://twitter.com/AstroAcaba>.

For more information about Expedition 31 and the space station, visit <http://www.nasa.gov/station>.

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