MONTHLY ACCOMPLISHMENTS
March 2013

orion

NASA's Super Guppy moves world's largest heat shield from Denver to Boston

The Super Guppy landed in Boston on March 27 after its cross-country flight from Lockheed Martin's Waterton Facility near Denver to deliver the world's largest heat shield to Textron Defense Systems in Wilmington, Mass. (Orion team members in Denver are pictured above.) The Avcoat thermal ablation material will be applied to the heat shield over the next few months.

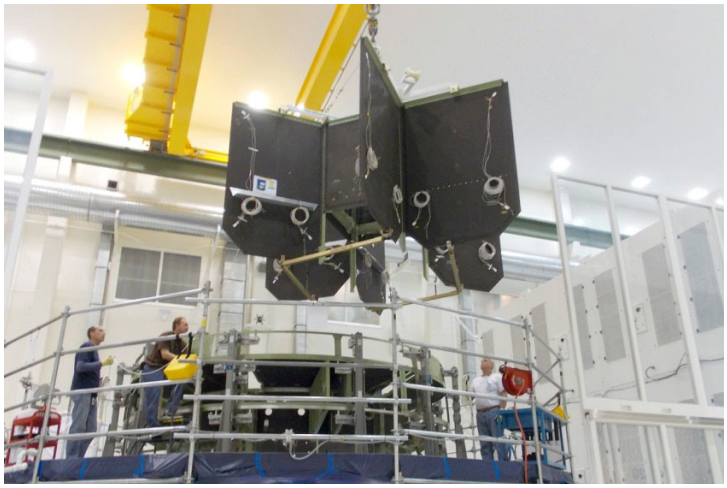
The heat shield is designed to protect the spacecraft and crew from the extreme temperatures during a high-speed, deep space re-entry and the impact of splashdown. After Textron completes the application processing, the shield will be shipped to Cape Canaveral, Fla., where it will be attached to the bottom of the Orion crew module for its first orbital flight test in 2014.

Ogive panel assembly in progress at Michoud

Members of the Orion Launch Abort System (LAS) team met at NASA's Michoud Assembly Facility in New Orleans to review progress of the incorporation of the LAS ogive assembly, which will be flown on the Exploration Flight Test-1 (EFT-1) Mission, launching in 2014. Precision integration of the ogive assembly, which plays a part in protecting the crew module and providing protection during its journey through the atmosphere, is performed using the ogive integration tool. The ogive panels were placed on the assembly tool and drilling on the panels is in progress.

Shear web assembly installed in EFT-1 service module

The EFT-1 Service Module shear web assembly and forward bulkhead was installed into the service module structure at the Kennedy Space Center's Operations and Checkout building. Laser alignment of the shear panels is complete and drilling of the panels and longerons are in work.

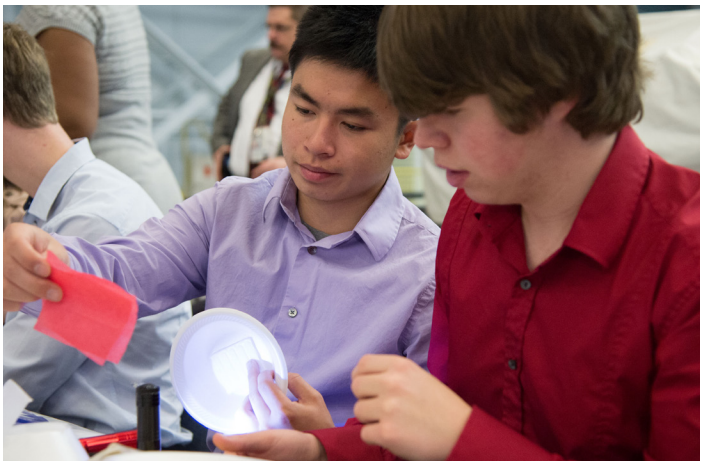


Installation of secondary structures helps prepare crew module for static loads test

The EFT-1 Crew Module was relocated from the birdcage tool onto the dolly at the Operations and Checkout building where backshell drill templates were installed to perform match drilling of the attachment assembly. Strain gauge installations and secondary structure installations continue on the vehicle in preparation for the static loads test. In addition, the custom replacement brackets and the aft bulkhead doublers have been installed on the crew module to repair the aft bulkhead rib cracking that occurred during proof pressure testing.

The second series of EFT-1 Crew Module/Service Module retention and release shock tests were completed with the separation bolts performing nominally. This series of tests was used as a qualification test for Environmental Control and Life Support System hardware, as well as the retention and release separation spring assemblies.

Lockheed Martin, NASA team up to launch STEM challenge for students



NASA Administrator Charles Bolden and NASA Associate Administrator for Education Leland Melvin, along with Lockheed Martin CEO and President Marillyn Hewson, officially launched NASA's Exploration Design Challenge on March 11 from NASA's Johnson Space Center in Houston.

NASA and Lockheed Martin entered into a five-year agreement for Strategic Alliance for Education and Public Outreach Activities. Under the agreement, NASA, in partnership with Lockheed Martin and the National Institute of Aerospace (NIA), developed the NASA Exploration Design Challenge and STEM engagement activities tied to the first orbital flight test of the Orion spacecraft - Exploration Flight Test-1 (EFT-1).

The challenge will enable students of all ages to chart their own journey into deep space by tackling one of the major challenges of long-duration exploration – the dangers associated with radiation and the need to protect our astronauts as they venture to places never before visited by human beings. The challenge will allow K-12 students to examine different materials that simulate space radiation shielding for Orion, participate in teacher-guided activities and recommend the best materials to protect astronauts from radiation. High school students can take the challenge farther by designing shielding to protect a sensor inside Orion from space radiation. The winning design will fly aboard the Orion crew module during EFT-1.

The five United States finalist teams from the grades 9-12 challenge will be invited to attend the EFT-1 launch, scheduled for September 2014. The names of all students, grades K-12, participating in the challenge will fly aboard the spacecraft as honorary virtual crewmembers for Orion's first flight. To date, more than 200 schools and groups from more than 37 states, as well as England, Australia and India have registered for the challenge.

Students have opportunity to shape America's next spacecraft

Students from schools across the state recently received recognition by NASA and the community as they were nominated for the Rotary National Award for Space Achievement (RNASA) Stellar Award. The award, given annually by the RNASA Foundation, recognizes space industry workers and teams that deserve special acknowledgement.

Students from the University of Texas at Tyler and Bishop T.K. Gorman Regional Catholic School, both in Tyler, Texas; The Brook Hill High School in Bullard, Texas; and Fruitvale High School in Fruitvale, Texas were honored for their achievements as part of the Students Shaping America's Next Spacecraft, or SSANS project.

The SSANS project allows teams of university and high school students to gain engineering experience from NASA professionals and apply STEM skills by designing systems for an Orion mockup located at NASA's Johnson Space Center. The mockups are used for testing, verification and astronaut training.

Other SSANS projects in work include Houston School of Automotive Machinists (HSAM) students who recently completed fit checking of a prototype shoulder bolster, which will be used to restrain the crew in their seats during Orion's landing phase. Their project was recently featured on Horsepower, a show on Spike TV.

Texas A&M University students also recently completed modifications and delivery of an LED light system for use in the Orion mockup, which will give the crew and engineers the capability to adjust the zoned lighting system in the mockup match the flight vehicle.

The Orion and the Space Launch System teams supported Johnson Space Center's outreach efforts at Space Week in Austin, Texas. In addition to Space Week participation, the team held information sessions with engineering students at the University of Texas in Austin and Texas State University in San Marcos, Texas.