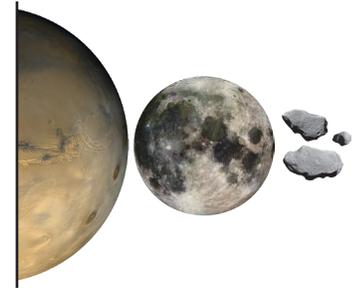
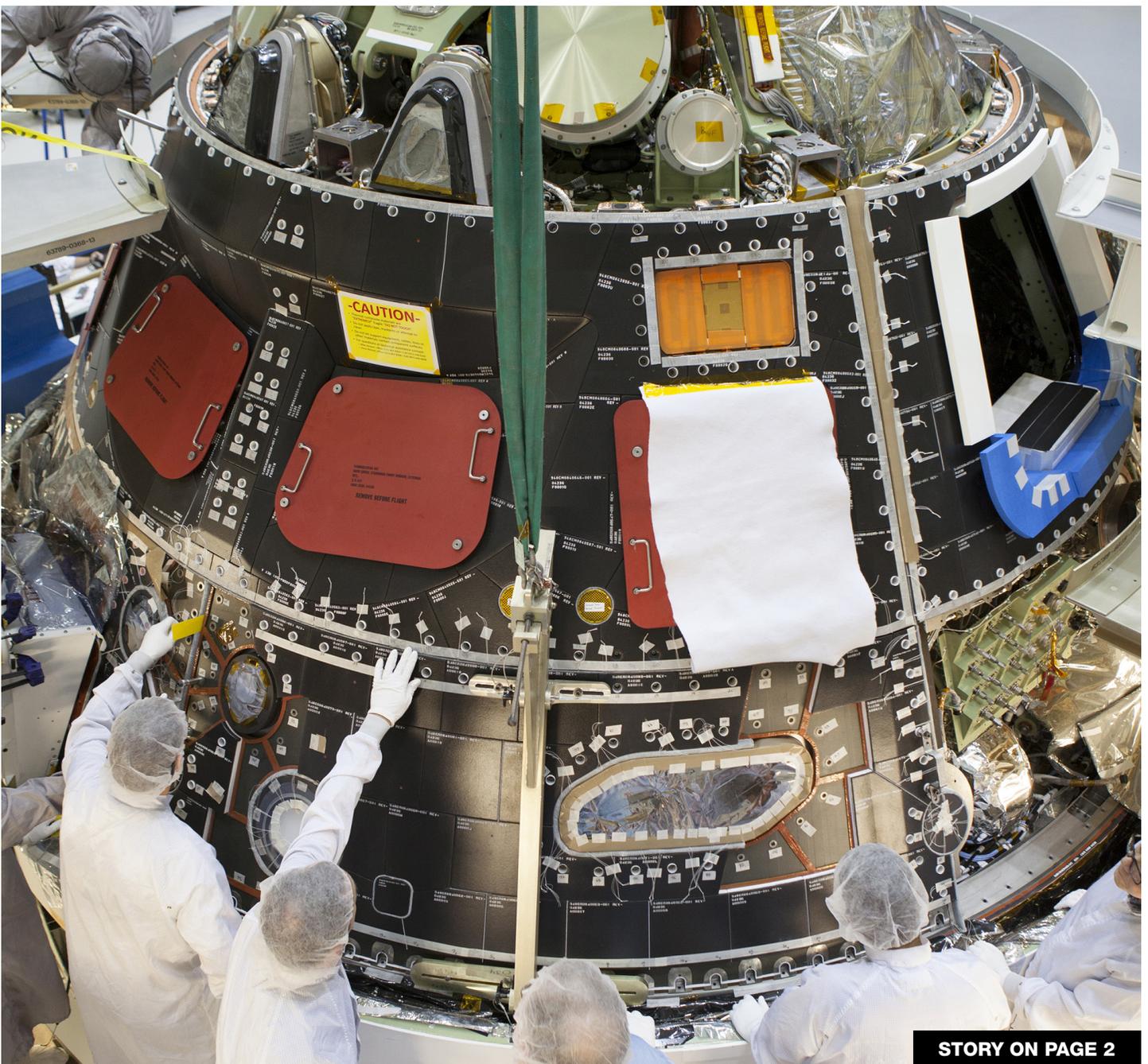


MONTHLY
ACCOMPLISHMENTS
August 2014

Orion



Engineers and technicians install protective shell on Orion spacecraft



STORY ON PAGE 2

Engineers and technicians install protective shell on Orion spacecraft

The heat shield on NASA's Orion spacecraft gets all the glory when it comes to protecting the spacecraft from the intense temperature of reentry. Although the blunt, ablative shield will see the highest temperatures – up to 4,000 degrees Fahrenheit on its first flight this December – the rest of the spacecraft is hardly left in the cold.

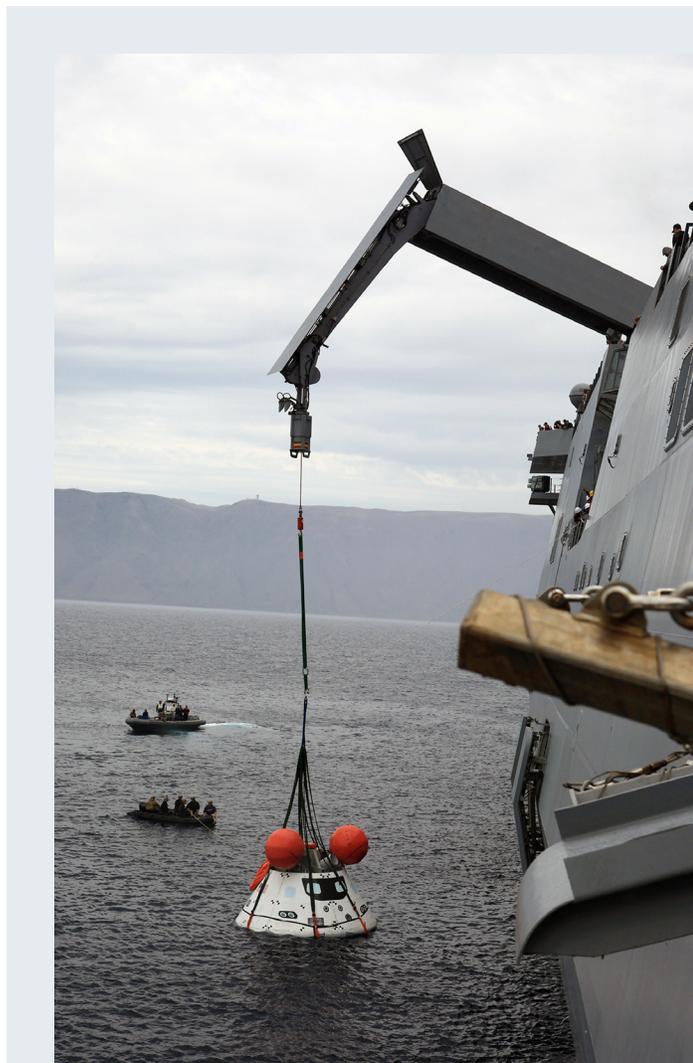
Engineers and technicians at NASA's Kennedy Space Center have finished installing the cone-shaped back shell of Orion's crew module – the protective cover on the sides that make up Orion's upside down cone shape. It's made up of 970 black tiles that should look very familiar – the same tiles protected the belly of the space shuttles as they returned from space.

But while the space shuttles traveled at 17,000 miles per hour, Orion will be coming in at 20,000 miles per hour on this first flight test in December.

And heat isn't the only concern. While in space, Orion will be vulnerable to the regular onslaught of micrometeoroid orbital debris. Although micrometeoroid orbital debris is too tiny to track, and therefore avoid, it can do immense damage to a spacecraft – for instance, it could punch through a back shell tile.

Before installing the back shell, engineers at Kennedy purposely drilled long, skinny holes into two tiles to mimic damage from a micrometeoroid hit. This will help the team better understand the heating environment on Orion and will inform future decisions about what kind of damage may require a repair in space.

Read the full story at: <http://1.usa.gov/1vo8kLg>



NASA, Navy prepare for Orion spacecraft to make a splash

A team of technicians, engineers, sailors and divers recently wrapped up a successful week of testing and preparing for various scenarios that could play out when NASA's new Orion spacecraft splashes into the Pacific Ocean following its first spaceflight test in December.

NASA and Orion prime contractor Lockheed Martin teamed up with the U.S. Navy and the Defense Department's Human Space Flight Support Detachment 3 to try different techniques for recovering the 20,500-pound spacecraft safely during a second "underway recovery test."

To address some of the lessons learned from the first recovery test in February, the team brought in new hardware and tested a secondary recovery method that employs an onboard crane to recover Orion, as an alternative to using the well deck recovery method, which involves the spacecraft being winched into a flooded portion of the naval vessel.

Read the full story at: <http://1.usa.gov/1vo8qIZ>



Reporters, public were invited to see Orion at Port Days

Following the underway recovery testing, the full-scale Orion test article used in the at-sea testing was on display at the Port of Los Angeles on Aug. 6-10. Media and the public were invited to see the craft and learn about NASA's deep-space exploration plans, which include sending astronauts to an asteroid and Mars.

NASA and Lockheed Martin representatives were available for interviews during a media briefing on Aug. 6 including NASA Orion Program Manager Mark Geyer, NASA Ground Systems Development and Operations Program Manager Mike Bolger, NASA Space Launch System Program Manager Todd May, Lockheed Martin Orion Deputy Program Manager Larry Price and NASA Astronaut Nicole Stott.

Media coverage included:

Sneak peek at NASA's new spacecraft
<http://yhoo.it/1lx1j7T>

Version Of Orion Spacecraft On Display During Navy Days At Port Of LA
<http://cbsloc.al/1rBhYtf>



Lockheed Martin's Larry Price talks to reporters in front of Orion at Navy Port Days

Flight test preparations draw on launch services program's expertise



The upcoming flight test of NASA's Orion spacecraft will be a mission of firsts. This new crew vehicle, making its debut on Exploration Flight Test-1, will become the first of its kind in four decades to venture beyond low-Earth orbit. The mission also marks the first time a spacecraft designed to carry humans will be lofted to orbit by a modern-day expendable launch vehicle.

NASA's Launch Services Program (LSP), based at Kennedy Space Center in Florida, specializes in the management of missions flying on expendable rockets, single-use vehicles that aren't reused. The program is providing its expertise in an advisory capacity for Orion's first flight.

LSP agreed to provide specific Kennedy facilities, ground support equipment, communications and video capabilities, and computer modeling of the vehicle's guidance, navigation and control (GNC) system.

While the Orion crew and service modules are being prepared for flight in Kennedy's Neil Armstrong Operations and Checkout Building, LSP has been working to prepare the center's Payload Hazardous Servicing Facility for Orion's arrival this fall.

Once Orion arrives in the servicing facility, LSP has a hands-on role in ensuring Lockheed Martin gets the right support during hazardous activities such as pressurizing tanks, ammonia servicing, and loading of hypergolic fuels.

LSP's Communications and Telemetry Group also is providing communications, telemetry, data, video and voice recording during key processing milestones and throughout the flight. During flight, LSP will separate the spacecraft telemetry data from that of the rocket, then provide both to Johnson's Mission Control Center.

Read the full story at: <http://1.usa.gov/1qiwZMP>

NASA / Lockheed Martin present Orion deep-space mission capability at Mars Society Conference



The International Mars Society Convention presented a unique opportunity on Aug. 7-10 at the South Shore Harbour Resort in League City, Texas, for those interested in exploring Mars and planning a humans-to-Mars mission. Attendees participated in discussions on the science, technology, social implications, philosophy, politics, public policy, economics and a multitude of other aspects of Mars exploration. Mark Geyer, Orion program manager and Todd May, SLS program manager were featured speakers at the conference.



Orion Program Manager Mark Geyer (left) and Center Director Ellen Ochoa provided Rep. Pete Olson a briefing on the current status of the Orion Program on Aug. 4 at Johnson Space Center's Space Vehicle Mockup Facility.



NASA and partners share vision for sending astronauts to Mars

NASA and SLS industry partners participated in a weeklong event on July 28 – Aug. 4 at the annual Experimental Aircraft Association AirVenture conference in Oshkosh, Wisconsin. The event attracted more than 500,000 enthusiasts, 700 journalists and 250 media outlets. NASA shared the vision for sending astronauts to Mars and industry reported on progress for the Mars-bound SLS rocket and Orion spacecraft. NASA/industry events included a press conference, panel discussions, presentations, exhibits and a documentary film screening of *I want to be an Astronaut*.



Johnson Space Center's "Bring Our Children to Work Day" took place on Aug. 14 at Space Center Houston. Guest speakers, breakout sessions, demonstration booths and hands-on activities were scheduled throughout the day to further enhance the children's experience. Lockheed Martin Orion Engineer Amber Gell spoke with the children about the Orion spacecraft scheduled to launch this December.

NASA / Lockheed Martin present at AIAA Space 2014



Rockets and roller coasters: NASA educates and entertains at Busch Gardens Williamsburg

Jose Ortiz, the lead system engineer for Orion's launch abort system at NASA's Langley Research Center in Hampton, Virginia, describes how it would propel the crew to safety in the event of an emergency aboard the Space Launch System. Ortiz was one of several volunteers from NASA Langley manning displays at NASA Days, a public outreach and education event held Aug. 9 and 10 at the Busch Gardens theme park in Williamsburg, Virginia. Visitors at the event also had an opportunity to sign the *I'm on Board* banner.



Leaders of NASA's Exploration Systems Development Division presented briefings on upcoming and future human spaceflight missions at the American Institute of Aeronautics and Astronautics' Space 2014 Conference held Aug. 4-7 in San Diego, California. Mark Geyer, Orion program manager, Todd May, SLS program manager and Mike Bolger, Ground Systems Development & Operations program manager, participated in a Human Spaceflight Report panel on Aug. 5. Charles Lundquist, Orion crew and service module manager, and Larry Price, Lockheed Martin Orion deputy program manager (pictured here), were on a panel titled Building Blocks to Mars.



Visitors to NASA's Kennedy Space Center Visitor Complex are encouraged to learn about the future of space exploration every Friday at 10 a.m. Lockheed Martin's Joe Mayer and Olivia Fuentes are bringing firsthand information about the Orion spacecraft and the upcoming Exploration Flight Test - 1 launch to the public during a special weekly program. Titled "Orion: America's Deep Space Human Exploration Spacecraft," the program will run through the month of November."

Information about the presentations can be found at:

<http://bit.ly/1wFdwMa>



Bernhard Rodewald, Oliver Juckenhoefel, and Mark Kinnersley from Airbus Defence & Space (DS) visited the Mission Control Center at the Johnson Space Center in Houston on Aug. 12. The Airbus DS team will build the European Space Agency (ESA) service module, which will power Orion on future exploration missions, beginning with Exploration Mission-1 in 2017. Pictured in the background is the ESA's Automated Transfer Vehicle ATV5, developed and built by Airbus DS, docking to the International Space Station.



Orion employee helps set a new world record

The GoFast 2014 rocket officially set a new world record on July 14 as the highest and fastest amateur rocket ever launched into space. Chuck Rogers, Orion engineer at Armstrong Flight Research Center, played a significant role on the team that pulled off this feat. Rogers helped design the motor core and motor nozzle for the project.

The GoFast II rocket was launched from the Black Rock Desert, north of Reno, Nevada, on July 14, close to the 10-year anniversary of the original GoFast flight back in 2004.

Onboard video of the flight is available at:

<http://bit.ly/1p9tqVi>



Lockheed Martin and NASA Orion program team members supported a science, technology, engineering and math (STEM) fair for middle school students at the Ron McNair D.R.E.M.E. Foundation at Houston Community College-Northeast on Aug. 7. Pictured are event founder Cheryl McNair (center) with her children Reginald and Joy, and Orion program engineers Andre Nevels (left) and Darrel Gaines (right).

Media attention on Orion

Bloomberg posted a “Digital Original” video on Orion’s heat shield on Aug. 13: <http://bloom.bg/1kAYceh>

Space Daily posted a feature story on Orion Flight Test Preparations: <http://bit.ly/1w0A8mr>

Online magazines have posted several feature stories on the Orion A to Z Spelldown series:

“NASA’s ABC Series Sends Kids to Space”

<http://bit.ly/1qixQNs>

“Learn the A to Zs of Space Travel”

<http://bit.ly/1tdBCLI>

“A Charming Alphabet Series Explores the ABCs of Rocket Science” <http://bit.ly/VRJHqF>

Orion supplier is recognized for their work on Exploration Flight Test-1: “Fiber Materials’ high end composites can keep you safe as far away as Mars”

<http://bit.ly/1nFXxUK>

Legendary Apollo 11 astronauts Jim Lovell, Michael Collins and Buzz Aldrin are on board with Orion!



Coming up in September:

- Exploration Flight Test-1 ground operations begin
- Orion vehicle transfer to Payload Hazardous Servicing Facility
- Additional underway recovery testing off coast of San Diego



Lockheed Martin's Betty Smith, an Orion thermal protection system technician at Kennedy Space Center, is helping to build Orion. <http://on.fb.me/1pjOQ83>



Honeywell's hardware is on board the Orion vehicle and ready to fly and now, Kurt Meister, Honeywell vice president of space, is on board.



Lockheed Martin team members provide the new Clear Creek Independent School District teachers with information on the Exploration Flight Test-1 mission at a welcome luncheon on Aug. 13 in Houston.