MONTHLY ACCOMPLISHMENTS
September 2014

orion

Orion in final preparations for launch

NASA and Lockheed Martin are making steady progress on the Orion spacecraft. The team completed several major milestones this month at NASA's Kennedy Space Center in Florida in preparation for the vehicle's first trip to space in December.

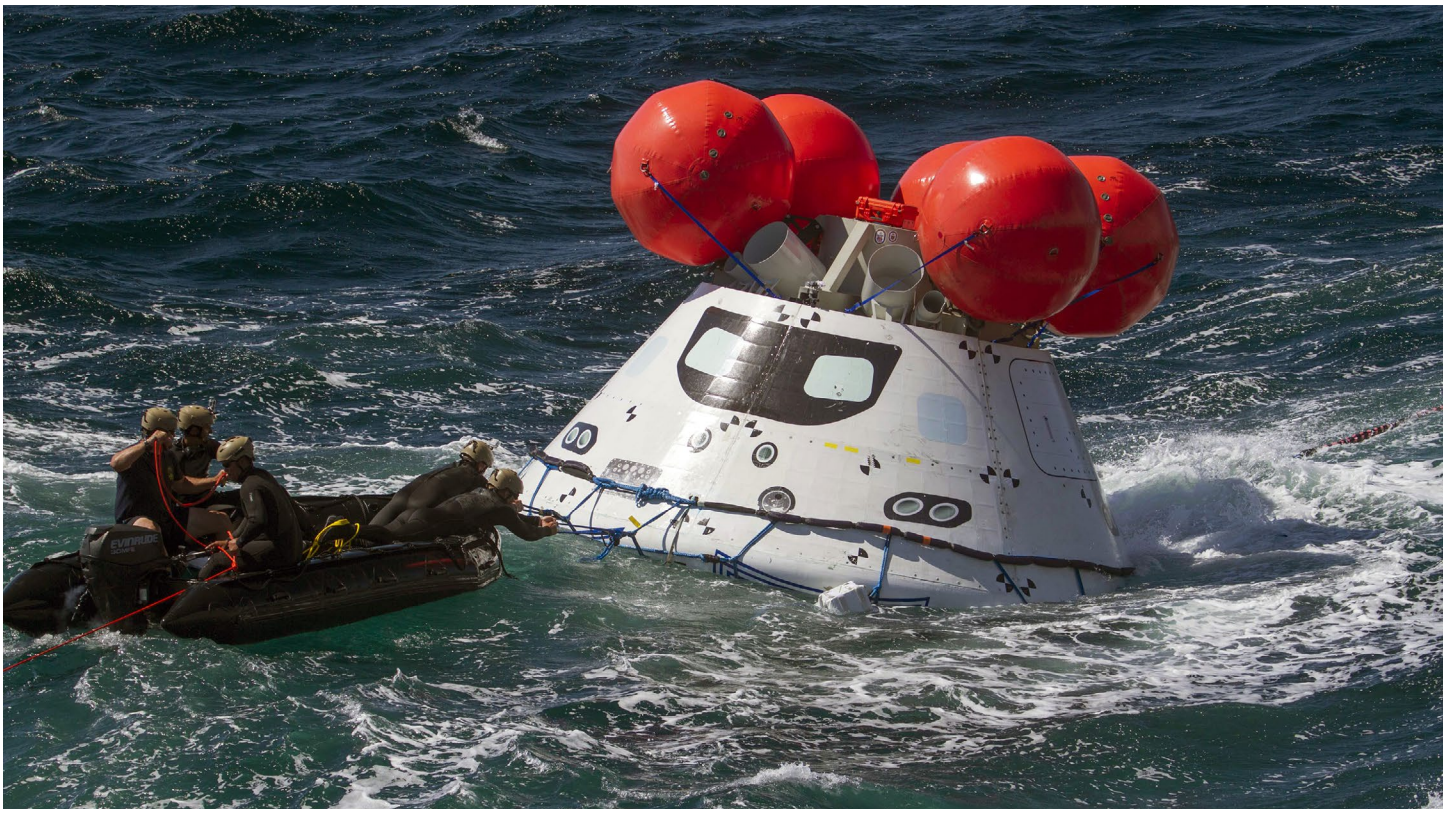
Engineers finished building the Orion crew module and attached it and the already-completed service module to the adapter that will join Orion to its rocket. Finishing the Orion crew module marked the completion of all major components of the spacecraft.

On Sept. 11, Orion was transferred to Kennedy's Payload Hazardous Servicing Facility where the spacecraft was fueled with ammonia, hydrazine and high pressure helium. The spacecraft was then moved again on Sept. 28 to the Launch Abort System Facility for the installation of the launch abort system prior to rollout to the launch pad.

Read the full articles at **NASA** and **Lockheed Martin**

View time lapse footage of the rollout

Orion recovery tests help teams prepare for December flight



NASA, Orion prime contractor Lockheed Martin and the U.S. Navy successfully completed the third round of tests to practice recovering Orion when it splashes down off the coast of San Diego at the end of its December flight test.

During recovery testing miles off the coast of California, teams performed a full dress rehearsal of the primary recovery method and practiced a backup recovery technique as well.

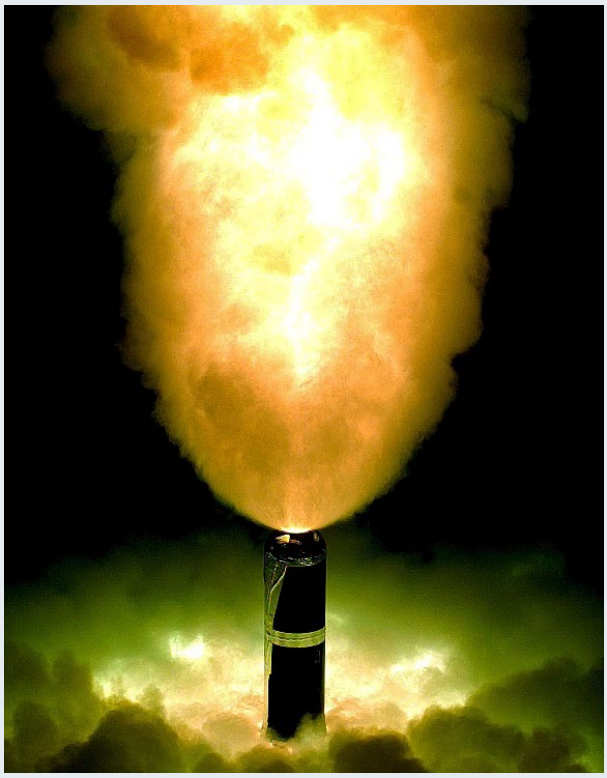
The USS Salvor (T-ARS 52), a safeguard-class rescue and salvage ship, headed out to sea Sept. 12 for four days to first test the backup recovery method, in which the recovery teams used a crane attached to the Navy ship to retrieve a test version of Orion from the ocean. The team started in calm seas and tested its way through more challenging waters to determine recommended weather and sea condition limits for crane recovery.

On Sept. 15, the Salvor rendezvoused with the USS Anchorage in the open sea to hand off the Orion test vehicle. During testing on the Anchorage, the team conducted a full dress rehearsal of the well deck recovery method. That option involves the spacecraft being winched into a flooded portion of the naval vessel. The end-to-end test included Mission Control Center support from NASA's Johnson Space Center in Houston, weather balloons, two Navy helicopters, four rigid-hull inflatable boats and two Zodiac boats.

At the conclusion of the test on Sept. 19, the Anchorage returned to Naval Base San Diego where the Orion test vehicle and support equipment was offloaded.

Read the full articles on NASA.gov:
NASA Ready for Next Round of Orion Recovery Tests
Third Round of Orion Underway Recovery Tests

Media representatives from Reuters, **Los Angeles Times** and **CBS This Morning** were invited on board the Anchorage for one day of the recovery operations.



ATK Successfully Tests Orion Launch Abort Motor Igniter

NASA and ATK successfully completed a static test of the launch abort motor igniter for the Orion crew capsule's Launch Abort System (LAS). Conducted at ATK's facility in Promontory, Utah, this test is the next step toward qualifying the igniter for production.

For this qualification test, technicians exposed the igniter to vibrations and extreme temperatures to simulate pre-operating and flight conditions and also fired the igniter under its hottest condition. Next year, the igniter will undergo a similar qualification test, but it will be fired at its coldest temperature. Previous tests include a development test that verified igniter performance analytical models prior to a static test of the launch abort motor, and Pad Abort-1, a ground launch test of the entire LAS.

This igniter design enables the abort motor to activate within milliseconds, lifting the crew module to safety with an acceleration over 10gs.

Read the full ATK article.

NASA's Orion Spacecraft, Rocket Move Closer to First Flight

The Delta IV Heavy rocket, built by United Launch Alliance, was moved into position at Space Launch Complex 37 at Cape Canaveral Air Force Station. It was raised Wednesday from the horizontal position into its vertical launch configuration.

The rocket's three Common Booster Cores were tested, processed and attached to each other to form the first stage that will connect to Orion's service module.

Read more on NASA.gov:

NASA's Orion Spacecraft, Rocket Move Closer to First Flight

Delta IV Booster Integration Another Step Toward First Orion Flight

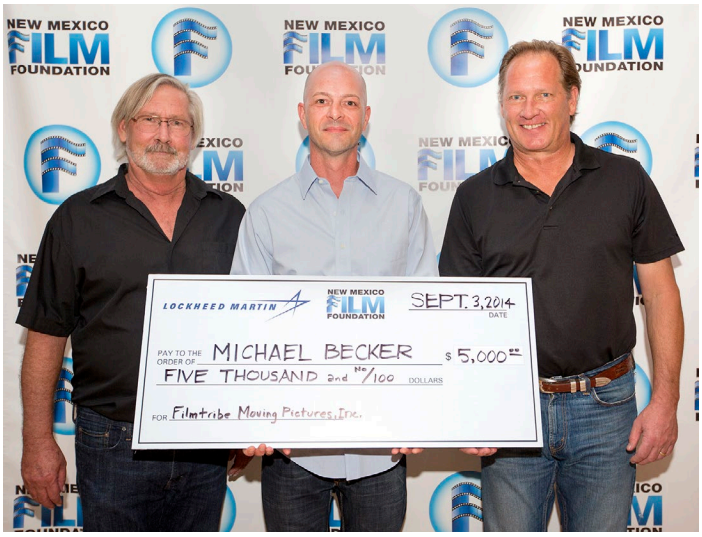
Front row L to R : Jeff Hampton, Mike Heckler, Anna Kallay, Carol Wong, Viet Truong-Cao. Back row: L to R: Steve King, Marc Sommers, Les Theard, Brent Hughes, Glynn Adams, Blaine Brown, Paul Boehm

Partnering with NASA's Space Flight Awareness program, Lockheed Martin hosted two Silver Snoopy ceremonies. The ceremonies took place on September 22 in Houston and September 23 in Denver where a total of 22 employees received their flown Silver Snoopy pin from an astronaut. Award winners include: Rosario Agno, George Anderson, Irwin Barber, Joe Cambiaso, David Clark, Roberto Entralgo, Aaron Frith, Matt Granger, Jeff Hampton, Michael Heckler, Thomas Holmes, Anna Kallay, Shawn Kidwell, Tim Larson, Hue Nguyen, Jonathan Paisley, Jeff Perkins, Orlando Soliz, Jon TenEyck, Janet Than, and LuAnn Yeaman. Another Lockheed Martin winner, Thomas Long, attended a Silver Snoopy ceremony at the Kennedy Space Center to receive his pin. Only 1% of the workforce from all of the NASA human space flight programs wins a Silver Snoopy each year. Congratulations to all of the outstanding winners!

Pictured here from left to right at the Denver ceremony: Mike Hawes, vice president and Orion program manager, Jon TenEyck, LuAnn Yeaman, Jonathan Paisley, Astronaut Dominic Antonelli, Tim Larson, Matt Granger, Irwin Barber, and Jeff Perkins.

NASA's inflatable models of Orion and the Space Launch System welcomed visitors to the Aerojet Rocketdyne Launch Pad at the Ninth Annual California Capital Airshow on Sept. 6 and 7 in Rancho Cordova, California. Launch Pad is Aerojet Rocketdyne's new exhibit, featuring hands-on activities that expose students to the world of science, technology, engineering and mathematics.

Charlie Lundquist presented the Orion Program Manager Team Commendation certificate to the integrated drop test team members Russ Hagan of Jacobs Engineering and Lora Lechago of Lockheed Martin on Sept. 10.



With Orion's first test flight just around the corner, Lockheed Martin sponsored the New Mexico Film Foundation's Orion-inspired video competition. The competition called on independent filmmakers to develop a storyboard for a short film related to human spaceflight. On August 29, the winner, Michael Becker, was announced. Dirk Norris, President of the New Mexico Film Foundation, presented Becker with a check for $5,000 to produce his two-to five-minute video. The video is scheduled to be completed in November, prior to Orion's first test flight.

Stuart Mcclung stopped for a quick photo-op with Alicia Baturoni and Maria Chambers from the Johnson Space Center Office of Education after his virtual Orion presentation to the fall 2014 National Community College Aerospace Scholars (NCAS) on Sept. 19. The 27 NCAS will travel from all over the United States to Johnson Space Center on Nov. 12-14, to present their class projects.

Coming up in October:

- Launch abort system to crew and service module mate
- Launch abort system ogive panel installation
- Joint integrated simulation with pre-launch management team