

orion



Test demonstrates drogue deploy at maximum dynamic pressure

The Orion parachute team successfully completed another airdrop test on Aug. 28 at the Army Proving Grounds in Yuma, AZ. The Parachute Compartment Drop Test Vehicle, or PCDTV4, allows testing with a dart-shaped test vehicle that is the size and shape of the Orion Crew Module spacecraft parachute compartment. This particular drop test demonstrated drogue parachute deployment at maximum dynamic pressure. In addition, the main parachutes were also deployed at a high dynamic pressure that exceeds the predicted pressure for the EFT-1 mission. Each drop test in the series demonstrates a different condition or behavior of the parachutes. The next parachute test with another test vehicle is scheduled for November 2012.

Heatshield assembly in progress

Component installations are continuing on the Exploration Flight Test (EFT-1) heatshield skeleton assembly tool in Denver. One hundred seventeen of the one hundred seventy six titanium stringer parts have been delivered so far. The stringers form the interior structure of the flight heatshield. The heatshield skin has been positioned in the machining fixture and is being prepared for assembly with the skeleton structure. Non-destructive evaluations have also been completed on the heatshield skin.



High fidelity end to end test between MCC and CTIL



The Avionics team participated in a successful End to End test on Aug. 30 between Mission Control Center (MCC) Houston and the Communications and Tracking Integrated Lab (CTIL) in Denver that demonstrated Orion vehicle command and data handling. The team successfully transmitted on-board telemetry through a

simulated Radio Frequency (RF) link to MCC's White Flight Control Room, they sent encrypted commands from MCC to Orion which were properly decrypted and executed in the flight software, they demonstrated full end to end video link capability and successfully downlinked test video file in a file transfer.

Voice quality verified in EFT-1 voice loop test

An initial voice loop test was completed successfully on Aug. 7, verifying satisfactory voice quality between five participating control centers; JSC's Mission Control Center, KSC's Operations and Checkout building control room, Lockheed Martin's Integrated Test Lab in Denver, Morell Operations Center's Mission Control Room at

Cape Canaveral Air Force Station, and the Space Operations Center at Cape Canaveral. A total of 28 voice loops were extended from KSC's Communications Distribution and Switching Center to the other supporting facilities with each site receiving a subset of the 28. This verification test was conducted in preparation for the EFT-1 launch in 2014.

Parachute recovery operations at Neutral Buoyancy Lab in Houston

The Orion parachute team joined the EFT-1 recovery team and representatives of the U.S. Navy to test recovery procedures for the Orion parachutes at the Neutral Buoyancy Lab (NBL) at the Johnson Space Center in Houston. In addition to the parachute recovery test, the facility has been used by the Orion Program to test the Crew Module Uprighting System on a full-size Orion mock-up known as PORT.





Orion Water Impact Testing at Langley

The next series of water impact tests were completed this month at NASA Langley Research Center's Hydro Impact Basin Test Facility. The Phase 2 tests were conducted using the same structural configuration from the Phase 1 tests, but with the addition of two mass simulators intended to represent a battery and a propellant tank. The tests consisted of nine vertical

drops across three different impact conditions. By repeating the impact conditions, the SPLASH (Structural Passive Attenuation for Survivability of Human crew) team can determine the degree to which random measurement uncertainties influence the acquired test data which will help fine-tune the way NASA assesses Orion's landing loads.



Crew Module windows installed

All four windows for the EFT-1 Crew Module have been installed at Kennedy Space Center by specially trained personnel. Bench preparations were completed including installation of strain gages on the window frames. Vacuum testing has also been completed and the DFI sensor installations are in work.



EFT-1 Service Module Manufacturing

Significant progress has been made on the EFT-1 Service Module manufacturing at Kennedy Space Center. The aft outboard ring, six longerons, inboard ring segments and mid outboard ring have all been installed, shimmed and drilled in the tooling structure.



Birdcage tool arrives at KSC

The birdcage tool, which arrived at Kennedy Space Center's Operations and Checkout building this month, will be used to complete assembly of the Crew Module. The EFT-1 Crew Module was removed from the processing station and relocated to the dolly in preparation for loading into the birdcage tool. Following installation in the tool, the forward gussets will be installed on the Crew Module.



EFT-1 Abort Motor Progress

The GTA inert abort motor was offloaded and disassembled at ATK in Utah in preparation for reuse in the Orion EFT-1 flight test in 2014. After disassembly, the abort motor inert loaded case was transported to Clearfield, Utah for structural testing.



LAS Abort Motor Plume Testing

ATK Launch Systems technicians at Marshall Space Flight Center (MSFC) prepared specimens for plasma torch testing by bonding heat resisting Vamac® sheets to aluminum plates. Vamac®, as well as cork, will act as a thermal protection system on the Launch Abort System (LAS) Fairing Assembly which will have to survive about five seconds of Abort Motor plume impingement in the event of an abort.



Bolden tours O&C building

NASA Administrator Charles Bolden toured the Operations and Checkout (O&C) Building at the Kennedy Space Center in Florida on Aug. 23. In the O&C, the Orion EFT-1 spacecraft is being prepared for the Program's first flight in 2014. Bolden answered questions for news media and discussed the progress being made on the Orion EFT-1 vehicle.

Michoud Assembly Facility and the Lockheed Martin Propulsion Center at Stennis were shutdown Aug. 28-30 due to Hurricane Isaac. Only essential personnel reported to work on Aug. 31. Both centers reported no damage to Orion hardware.