

Orion Weekly Summary



Week ending July 5, 2008

Countdown to Pad Abort-1: 159 Days



(Above) Pad Abort-1 Sep Ring on Workmanship Test



The Pad Abort-1 (PA-1) Crew Module Developmental Flight Instrumentation team installed pressure pipettes and tubing for 4 pressure transducers and 4 thermocouples on the Forward Bay Floor. The fitting and installation procedure verifications for 4 pressures transducers and 2 thermocouples on the Crew Tunnel Lip were completed.



The PA-1 Crew Module simulator wall acoustic blankets were received and a fit-check was performed on the blankets for Bay 12 on the wall and Bay E on the bulkhead.

The Ascent Abort -1 Crew Module Heat Shield Assembly “Spider” has completed temporary assembly and laser tracker scanning in early manufacturing activities at Langley.



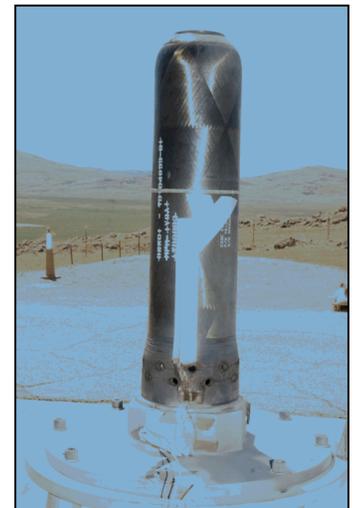
(Above) Ascent Abort-1 Heat Shield Assembly

Alliant Tech Systems (ATK) has completed **nondestructive evaluation (NDE)** of the loaded **LAS-1 Abort Motor propellant** (to be used for PA-1). NDE inspection did not yield any propellant voids and/or insulation-propellant de-bonds that would result in a Material Review Board. Mechanical/ballistic properties are almost identical to the previous full-scale mix that was used to cast the “ST-1” full-scale static test motor, which indicates a well controlled mix/cast process.



The Jettison Motor (JM) DM-2 motor build is complete including shroud and igniter installation. Cold (20 degrees F to 40 degrees F) X-ray imaging showed no defects. The motor is being installed in the test stand. *The DM-2 test is scheduled for July 17.*

Evaluation of the hot fired LAS Abort Motor igniter, IG-1, fired on June 13 showed the effects of composite case swelling on the radial ports (Photo right), along with some slight erosion of the large axial port – both nominal conditions (Photos below). An internal inspection showed excellent seal performance as the O-ring had no sooting, erosion or heat effects. Evaluation of the potential impact of these results is underway to determine if design changes are warranted.



The Launch Abort System-1 Jettison Motor propellant core was removed successfully. The JM LAS-1 shroud has been successfully split and the structural stiffeners have been installed; LAS-1 shroud delivery is expected July 17. *The Jettison Motor Launch Abort System-1 ship date to WSMR for PA-1 is August 22.*

Crew Module Thermal Protection System (TPS) Heatshield material Thermal-structural testing continues at Langley Research Center. Preliminary weak-direction Avcoat bending positive flexure testing has been performed. The resulting stiffness was similar to that found in the strong-direction testing; although, more pronounced cracking was observed and is being studied for system impacts. A PICA-on-edge specimen structural testing to 50% strain was completed.

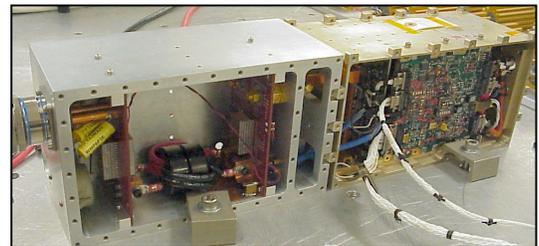
The CEV Parachute Assembly System (CPAS) team continues preparations towards the Cluster Development Test 2 (CDT-2) test which is planned for the week of July 28 at Yuma Proving Grounds. CDT-2 will be the first test of a full-up Generation 1 CPAS system. The test will include a modified full scale capsule shaped parachute test vehicle (PTV).

White Sands Missile Range Test Facilities

The Ascent Abort Facilities construction schedule (primarily the Gantry construction schedule) was integrated into the Ascent Abort-1 schedule. Work continued installing the brackets in the East apron concrete for the Abort test Booster SR-118 break-over fixture. Electrical panels are being installed at the central portion of the Launch Pad near the Launch Mount, including blast shields to protect the electrical panels from the Pad Abort and Ascent Abort rocket motor exhaust environments.

Construction continues in the KSC Operations and Checkout Facility (O&C) to be used for Orion Assembly Integration and Checkout operations and is tracking to the Integrated Master Schedule. Previously reported roof leaks experienced during the recent rain storms were repaired. Final inspection of portions of the new ceiling exposed to water as a result of roof leaks was completed this week with the ceiling sheetrock vendor. Damage to ceiling is limited to tape joints and sheetrock will not require replacement. Potential for low bay roof leakage remains a watch item until roof replacement by KSC center operations is completed in August.

The Orion Station Power Transfer Unit (SPTU) preliminary design review was successfully conducted on June 18 by Lockheed Martin/Hamilton Sundstrand. This device provides critical electrical power transfer function in the Orion to International Space Station interface enabling quiescent Orion operation while docked to ISS. The SPTU has strong commonality with the Shuttle program heritage unit. The breadboard SPTU is shown in photo right.



Orion employees supported the 42nd Annual Smithsonian Folklife Festival on the National Mall in Washington DC. "NASA: Fifty Years and Beyond" June 25-29 and July 2-6. NASA was one of three featured programs that showcased the role that the men and women of NASA have played in broadening the horizons of American science and culture, and the role that we will continue to play in helping to shape the future. Shown below are photos from the festival. *To see more go to http://www.nasa.gov/50th/Folklife_Images/index.html*



(Photo left) Stu McClung discusses the Docking Mechanism that allows the Space Shuttle to dock with the International Space Station. (Photo above middle) Visitors to the Future Missions tent learn about the Thermal Protection System (TPS) for the Orion Crew Exploration Vehicle. (Photo above right) The inflatable Crew Exploration Vehicle Orion with the inflatable F-18 and Smithsonian Castle in the background.
