

ORION

CREW EXPLORATION VEHICLE

WEEKLY ACCOMPLISHMENTS



9.25.09



 **The Crew Module (CM) post ship functional tests were completed at White Sands Missile Range (WSMR) which included the Combined Systems Test #1 and the RF Open Loop Test with Range (shown above).** The CM S-Band downlink to WSMR ground stations and all Communication and Telemetry interfaces tested successfully end-to-end. In addition, the primary paint radar and C-band tracking beacons were verified, Day-of-Launch timelines (Count Down, Launch, and Flight to Touchdown) were conducted and Mission Operations protocols were exercised with a staffed Cox Range Control Center (CRCC) and Mobile Operations Facility (MOF).

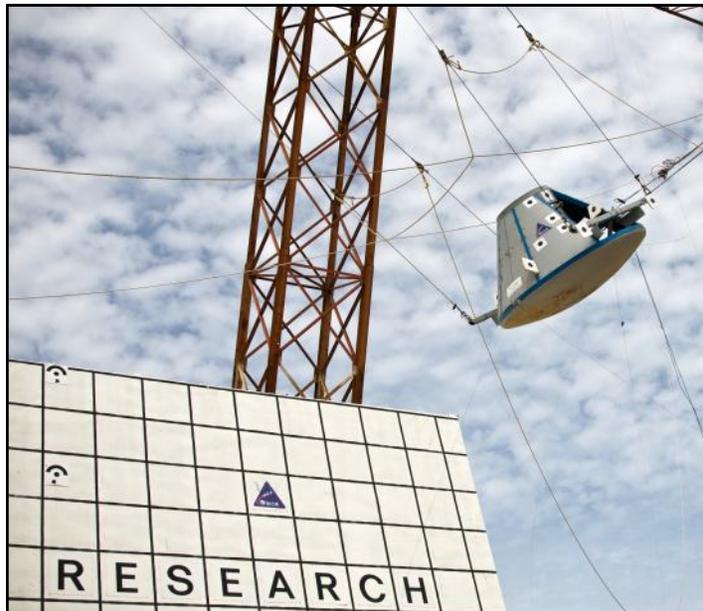


 **The Thermal Protection System (TPS) Composite Heatshield Layup Mold (shown left) for the Orion Ground Test Article was recently completed at the Lockheed Martin Composite Development Shop in Denver, CO.** The mold will first be utilized for the Ground Test Article (GTA) Heatshield fabrication. This will be the world's largest Heatshield when complete, as it will overtake the Mars Science Laboratory (MSL) Heatshield which was also fabricated by Lockheed Martin in Denver, CO. Fabrication will begin in late October 2009 and continue through April 2010 when the Heatshield is delivered to the Michoud Assembly.



 **Factory acceptance testing of the TEAM acoustic modulators at TEAM Corporation's Headquarters in Burlington, WA was completed.**

TEAM Corporation will supply the 23 low frequency acoustic modulators (noise generators) for the Reverberant Acoustic Test Facility (RATF) at the Space Environment Test (SET) Facility located at GRC/Plumbrook Station. All 23 TEAM modulators purchased for RATF use have successfully been pressure tested, and 16 of the 23 modulators (shown left) have already been dynamically characterized with the sine sweep testing as well as paired and tuned with their individual controller unit. They are being prepared for delivery to SET in 2010.



 **The third (and likely final) swing test of the half-scale boilerplate onto the surrogate sand bed at the Langley Research Center's (LaRC) Langley Dynamic Impact Research (LandIR) gantry facility was completed.**

Nominal test conditions were 25 fps vertical velocity, 40 fps horizontal velocity and 28 degrees pitch (see photo left). Preliminary 2D photogrammetry results show the actual impact to be at a 24.6 ft/s vertical and a 38.5 ft/s horizontal velocity. For the test, the sand was compacted to a 100 pcf dry density and soaker hoses were used to maintain a moisture content of 4%.

 **A Sensor Test for Orion Relative Navigation Risk Mitigation (STORRM) Development Test Objective (DTO) avionics and sensor enclosure fit check was performed at Kennedy Space Center.**

The avionics enclosure was checked using a flight Adaptive Payload Carrier (APC) plate. The sensor enclosure was checked against the Trajectory Control Sensor (TCS) mounting plate back. Both fit checks were successful. This marks the first integration test of final flight hardware for the DTO. The mounting plates will be put in bonded storage at the appropriate organizations. The STORRM DTO is scheduled to fly on STS-132 and STS-134 next year, and will demonstrate the performance of key Vision Navigation System technology items required for the Orion Automated Rendezvous and Docking capability.

These conditions (determined using a nuclear densitometer measurement device) were targeted to match the state of the surrogate sand used in the construction of one of four LsDyna sand models. One of the primary goals of the test program is to evaluate the sand modeling methodology. The Landing Systems team is now focusing on test and analysis results.

