



# Ares

## WEEKLY SUMMARY



Test Stand A-3 construction is continuing with the delivery and installation of major altitude system components.



*Delivery of A-3 Test Cell Floor and Wall Sections*



*Test Cell Components Being Unloaded*



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*Diffuser Sections Staged at A-3*

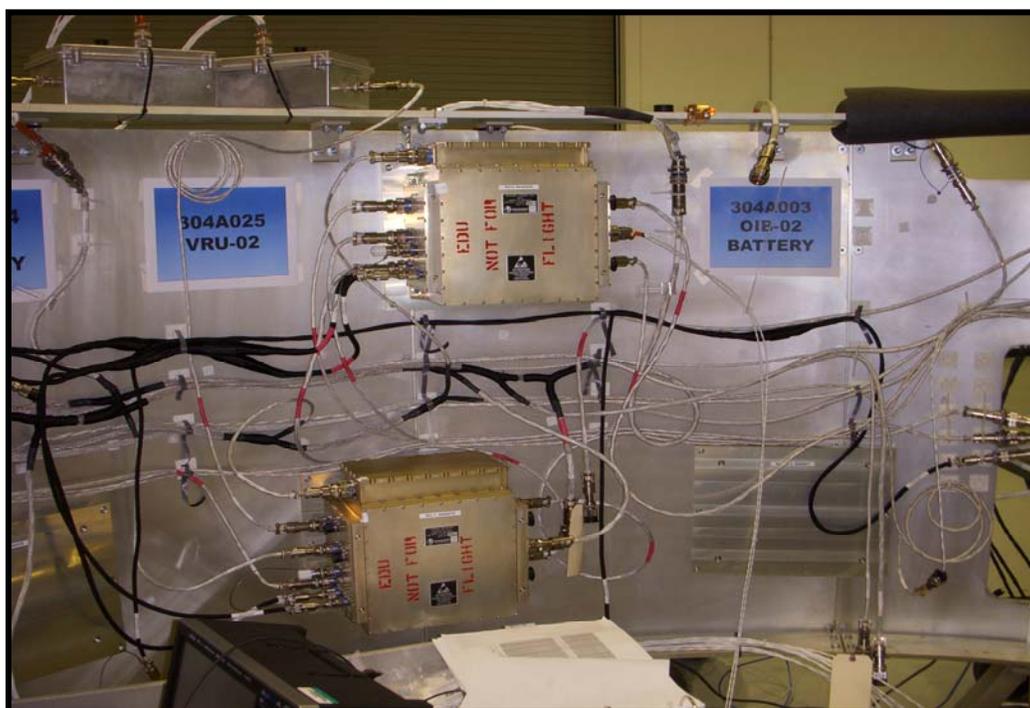
*Installation of the Diffuser First Stage Ejector Ring (View from Test Stand A-1)*



*Installation of the Diffuser First Stage Ejector Ring (Views from Test Stand A-3)*

## First Stage (FS)

***FS Avionics/Vehicle System Integration Lab (SIL) Integration Testing:*** A single string of the FS Avionics engineering hardware was successfully integrated into the Ares I integrated vehicle model utilizing the Ares Real Time Environment for Modeling, Integration, and Simulation (ARTEMIS) system the week of July 13–15 in the Alliant Techsystems, Inc. (ATK) Clearfield facility. Personnel from the SIL, FS, and ATK successfully integrated SIL development software/models with FS avionics hardware simulating an Ares I launch profile from prelaunch through orbit insertion. The SIL-developed ARTEMIS is a real time simulation supporting Ares I hardware-in-the-loop (HWIL) testing. ARTEMIS accurately models all Ares/Orion/Ground subsystems which interact with Ares avionics components from prelaunch through orbit insertion. ARTEMIS operates in a HWIL environment such that a user can select between models of avionics component (such as the booster control power distribution unit and ignition and separation controller) or interface to avionics hardware. The FS project developed software models of the avionics hardware that were delivered to the SIL and integrated into the ARTEMIS system over this past year. The Ares I launch simulation performed at the ATK Clearfield facility substituted the FS avionics models with hardware in the ARTEMIS system. ARTEMIS successfully commanded the FS avionics hardware and utilized telemetry from the hardware to dynamically control the Ares I simulation from prelaunch through FS separation and recovery. A single string of FS avionics hardware along with the ARTEMIS system will be shipped from ATK to Marshall Space Flight Center (MSFC) in mid-August to support the Ares Control System Demonstration (CSD).



*Avionics Engineering Hardware in Mounting Structure*



### Upper Stage (US)

**Stage Definition, Thrust Vector Control (TVC) Subsystem:** The US TVC 2-axis rig at NASA Glenn Research Center (GRC) has successfully completed checkout testing and begun executing the planned test matrix. This rig is a full-size simulation of the US thrust cone with a full TVC Engineering Model system installed. The rig includes a gimbal joint and J-2X mass simulator and can replicate all of the forces acting on the TVC system during an actual flight. This test will be used to assess the nominal and off-nominal performance of the TVC system, evaluate sensitivity to multiple parameters, and begin to validate models.



*TVC 2-Axis Rig at NASA's GRC*



*One of the two TVC hydraulic strings and both actuators mounted on the 2-Axis Rig Thrust Cone.*



*TVC 2-Axis Rig Control Room*

***The Ares Projects look forward to the test firing of DM-2 on September 2, and the launch of STS-133, Space Shuttle Discovery, in the fall.***