Recent activities specific to the Elements include:

Upper Stage Engine (USE)

- ***Test Stand A-3:*** The most visible sign of new construction at Test Stand A-3 is the installation of a 66-inch water pipe (the yellow pipe in Figure 1). It will carry cooling water to the A-3 jacketed diffuser during J-2X hot fire testing. Figure 2 is a close-up of the pipe with a "welding tent."

  Numerous pipe supports, platforms, lines and ducts, and other components are also being installed in and around the tower, and fabrication of Chemical Steam Generator (CSG) System and Test Cell/Diffuser components is taking place at vendor sites.

Figure 1: A-3 Construction Site with Water Pipe

Figure 2: A-3 Site, Close-Up of Water Pipe

A modified CSG can was tested last week at the E-Complex. The intent of the modification was to provide better can propellant mixing and to improve combustion.

- ***Test Stand A-1:*** Large steel structures comprising the new Test Stand A-1 Thrust Takeout Structure (TTOS) are staged on the A-1 deck, shown in Figure 3. When installed, they will provide structural support for the new Thrust Measurement System that receives J-2X 300,000 pound thrust loads.

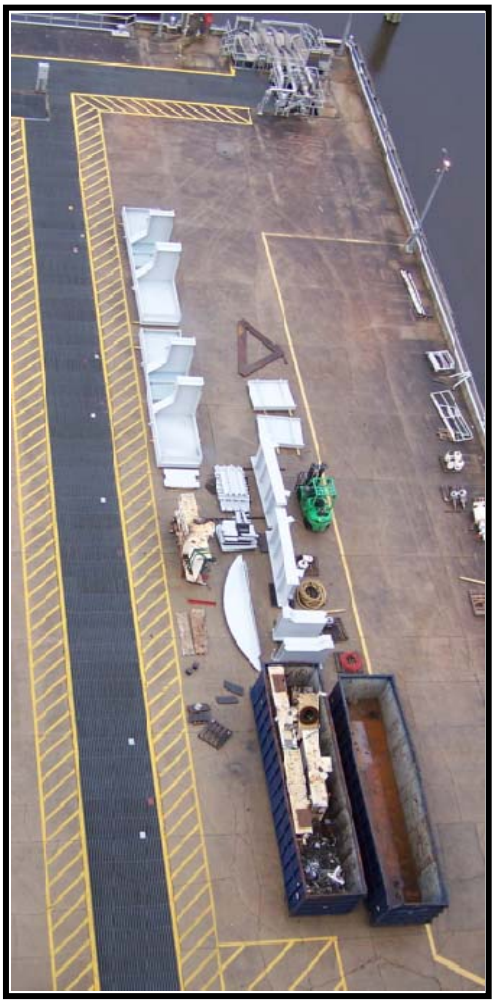


Figure 3: A-1 TTOS Components Staged on A-1 Deck

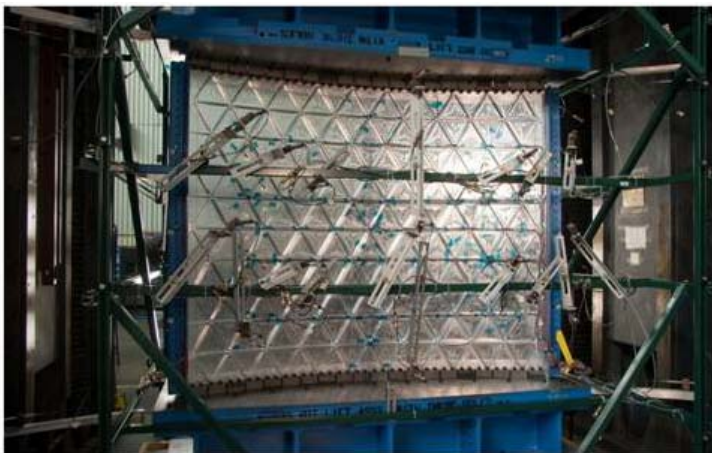
Project Integration (PI)

- ***Digital Learning Network (DLN) Career Highlight Presentation:*** The Ares Projects Outreach team supported a DLN presentation on December 9 in coordination with MSFC's Academic Affairs Office. A MSFC engineer shared information about his job with 250 students at the 6 connected schools taking part in the event.

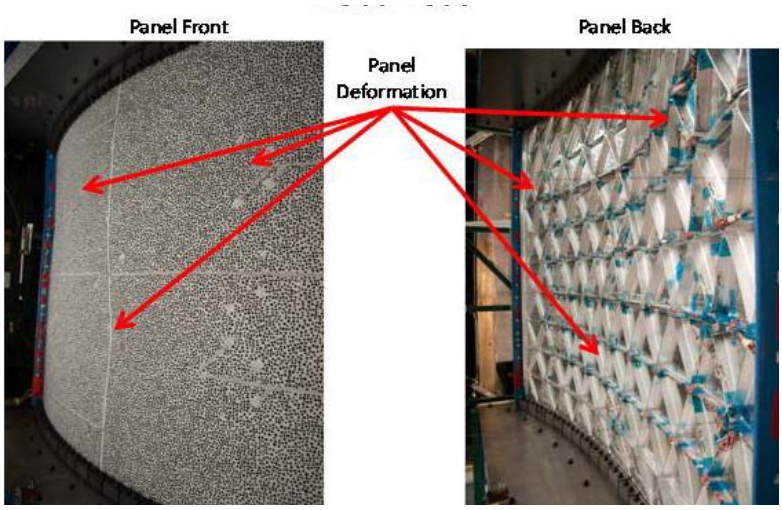
- ***Challenger Elementary School/ATK Event:*** At the invitation of Ares industry partner ATK, two Outreach team members attended a Project TREE (Technology Recycling for Excellence in Education) event on December 11 at Challenger Elementary School in Huntsville. ATK donated 19 computers to the school. ATK also provided Ares paper models to the students.

Upper Stage (US)

- ***US Test Subsystem:*** Ares I US Structural Development test activities have been initiated for the large panel aluminum-lithium buckling tests (designated SD02) in Marshall Space Flight Center (MSFC) Building 4619. SD02 consists of a series of structural buckling tests of Isogrid/ Orthogrid panels representing liquid hydrogen and liquid oxygen tank wall sections.



Pre-Test of the SD02 Test Article



Post-Test of the SD02 Test Article

The first test, an Isogrid liquid oxygen acreage test panel, was successfully completed on December 9, 2009. Buckling occurred at a load of 709,000 pounds, which was close to the predicted load of 700,000 pounds. Some of the ribs appeared deformed as expected, but there were no rib-from-panel separations noted. The next panel to be tested will be an Orthogrid liquid hydrogen panel. The remaining panels are scheduled to be tested during the first quarter of 2010.

Flight and Integrated Test Office (FITO)

- ***Dynamic Test Stand 4550 – Integrated Vehicle Ground Vibration Test:*** Once again, the MSFC Public Affairs office has tapped the IVGVT Team to erect a Christmas tree high atop the Dynamic Test Stand 4550.

***** Have a safe and happy holiday! *****