



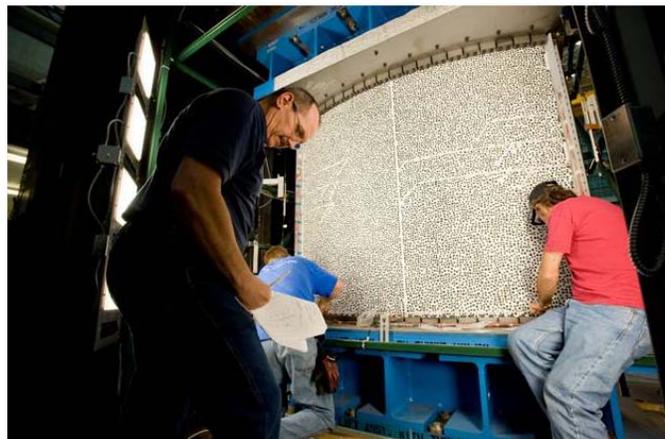
*Ares Forward Skirt Article Forging*

### First Stage (FS)

**Ares FS Forging:** The first article forging for the Ares first stage forward skirt has begun at Ladish Company in Cudahy, Wisconsin. The forging process started by taking a 24,000-pound aluminum 2219 ingot and making the metal workable by thermally equalizing it in a furnace to a temperature of 900 degrees Fahrenheit. After the desired temperature is reached, the ingot is placed in a 125,000-pound press and “upset” to a desired cylindrical shape. Once the desired shape is achieved the article is again placed into a pot where the press forces the article through an extrusion process. At this point the article resembles a cylindrical doughnut. The final shape will come from placing the article in a set of ring rollers which exhibit a tremendous amount of force and will form the forward skirt to a “rough” cylindrical shape approximately 7.5 feet high and 12 feet in diameter. The forward skirt forged article will be the largest ever produced in height and diameter. After this first article is produced its material properties will be analyzed and, if acceptable, the remaining test and flight articles will be produced.

### Upper Stage (US)

**Stage Operations:** Engineers in the Engineering Test Lab (ET) and Spacecraft & Vehicle Systems Department (EV) successfully tested an Isogrid-welded wide-panel test article on May 13 in Marshall Space Flight Center (MSFC) Building 4619. The curved, aluminum-lithium Structural Development (SD) 02 series test article was loaded until failure occurred. The failure load was approximately 659.4 thousand pounds-force. All systems performed normally. The test was conducted using the Gilmore Tensile Test Machine to provide compressive loading. The primary test objective was to characterize compression behavior of grid stiffened panel design candidates. These tests characterize panel stability and allow correlation of analytical models. All panels are tested to failure.



*Technicians prepare the SD02 wide-panel test article for compression testing.*

### Upper Stage Engine (USE)

*Upper Stage Engine, Assembly & Test:* The construction of Test Stand A-3 is continuing at Stennis Space Center (SSC). Figure 1 shows erection of the shop building that can be seen on the left side of the photo and build-up of the propellant barge docks to the right. Figure 2 shows off-site fabrication of the A-3 fuel run tank.



*Figure 1. A-3 Construction Site*



*Figure 2. Fabrication of A-3 Liquid Hydrogen Run Tank*



## **Project Integration**

***Oakwood Academy Visit:*** The Ares Projects outreach team gave a presentation about NASA and scheduled missions to Oakwood Academy students in second, third, and fifth grades on May 3 as part of the school's Space Week activities. The presentation included current work on the Space Shuttle, International Space Station, and Ares projects, a discussion of the ethnic diversity in the astronaut corps, and jobs in the space program.

***Technical Society Conferences:*** The Ares Projects outreach team assisted with drafting and coordinating technical papers for Ares management on progress to date for Ares I-X, Integrated Vehicle Ground Vibration Test, and the J-2X engine at the 57<sup>th</sup> Joint Army, Navy, NASA, Air Force (JANNAF) Propulsion Meeting held May 3–7 in Colorado Springs, Colorado. More than 100 engineers and industry officials attended the two sessions where the papers were presented. The team also assisted with drafting and coordinating technical papers on Ares V, J-2X, and the Ares I first stage at Space Propulsion 2010 held May 3–6 in San Sebastian, Spain. More than 100 international engineers and industry officials attended the two sessions where the papers were presented.

***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 mid-September.***