



***Upper Stage (US) Spins Aluminum Alloy 2014 Plate:*** The first aluminum alloy 2014 plate has been hot spun-formed into an 18-in. diameter dome at the Spincraft Company in Billerica, MA. Spincraft has been contracted to produce four pairs of 2014 domes to be used in the Marshall Space Flight Center (MSFC) Common Bulkhead manufacturing demonstration article and other test articles, including the Main Propulsion Test Article (MPTA). This first dome will become the process/vendor qualification article, which will be cut up and tested for uniformity and consistency in properties.



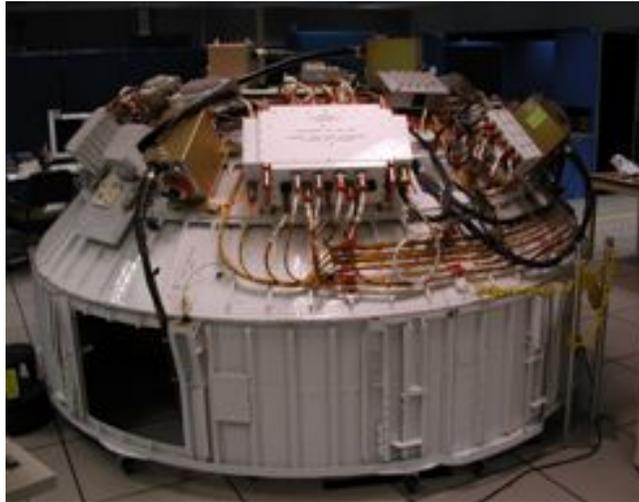
*Alloy plate being hot spun-formed at Spincraft in Billerica, MA*

*Recent activities specific to the Elements include:*

- **Flight and Integration Test Office (FITO)**
  - **Integrated Vehicle Ground Vibration Test (IVGVT) Operational Readiness Inspection (ORI) Planning Kick-off:** The IVGVT team met with Engineering to kick-off planning for the IVGVT ORI. ORI board membership was discussed, as well as the requirements for the ORI. Members of the Space Shuttle ORI team also supported the meeting. Engineering (ET01) will draft a letter to potential IVGVT ORI board members to explain the requirements and the expected level of support. The IVGVT ORI kick-off is tentatively planned for October 2008.



- **Ares I-X Avionics Integrated Product Team (IPT):** The Ground Communication, Command, and Control (GC3) rack assemblies for the System Integration Lab (SIL) located at the Lockheed Martin Space Systems (LMSS) facility in Denver, CO, have been completed. GC3 system standalone tests have begun and are estimated to run for 1 to 2 weeks. After these tests are completed, integrated testing with other SIL assets will begin.



*Atlas V SIL at LMSS in Denver, CO*

- **Ares I-X Roll Control System (RoCS) Element:** Teledyne Brown Engineering (TBE) and Glenn Research Center (GRC) continue to work to resolve the clearance dimensions on the interface fastener holes in order to facilitate both the appropriate loads transfer from interstage and ease of installation without having to match drill holes in the field. The generation of Verification Requirements Definition Sheets (VRDSs) continued, with some recommended format changes to the VRDS template. The RoCS-specific Verification Requirements Document is in RoCS internal review. The first RoCS Material Review Board (MRB) was convened for some anomalies on the engine cradles. A RoCS Systems Engineering Management Plan (SEMP) is being revised from the original TBE submittal in September 2006.
- **Upper Stage (US)**
  - **US Small Solids Subsystem Heavy Weight Motor (HWM) Test:** The US Small Solids team is preparing for the first HWM test to be held at the end of May. The purpose of the test is to validate that current Ullage Settling Motor (USM) components meet current requirements. To date, the HWM insulated case and nozzle are complete; data review and acceptance of the design will occur this week. Fabrication and checkout of special NASA HWM tooling for the Aviation and Missile Research, Development, and Engineering Center (AMRDEC) is projected to be complete by May 8, followed by an Operations Readiness Safety Inspection on May 9. The liner will be applied to the insulated case on May 13, and final cast, cure, and



finish propellant grain will occur the week of May 14. The motor will be installed in the test stand on May 29, with the static test fire scheduled for May 30.

- **US Small Solids Subsystem First USM Hot-Fire:** The first hot-fire test of the USM igniter was conducted on April 18 in MSFC Test Stand Area 116. Results showed that the igniter trace was right on target and the igniter is extremely overbuilt; due to the life cycle phase of the project, this was good news for the team. Future testing will involve an additional 22 igniters being made at Sierra-Lobo, with delivery to MSFC planned for early May.



*First hot-fire USM igniter test*

- **US Thrust Vector Control (TVC) Subsystem Software Requirements Review (SWRR):** A TVC SWRR was successfully completed on April 17, with the convening of the SWRR Board. This review addressed the firmware in the TVC Data and Control Unit (DCU) which receives commands from the Upper Stage Flight Computers for engine steering and also collects TVC health and status data for transmission to the flight computers. This SWRR reviewed the requirements as well as the planning documents. The DCU is being developed by Moog with support from Zin Technologies. The review team stated that the overall quality of the documentation is at or beyond the maturity level needed for SWRR and recommended the team proceed to the Software Preliminary Design Review (PDR).
- **First Stage (FS)**
  - **FS Deceleration Subsystem (DSS) U.S. Navy Meeting:** The U.S. Navy has an aircraft-mounted photo-optical system called Cast Glance. The Cast Glance program manager presented a capabilities overview of their system last week at MSFC to the DSS Integrated



Product Team (IPT) and the Ares I–X project team. In return, the DSS team provided an overview of the Ares I–X mission profile. DSS will utilize this capability on Ares I–X to provide high-quality air-to-air video of nose cap separation, forward skirt extension separation, and the entire parachute deployment sequence. This is especially critical since the drogue parachute will not be recoverable for post-flight inspection. Cast Glance was also used on the early shuttle launches to capture similar events for the Solid Rocket Booster reentry and return.

- **Project Integration (PI)**

- **University Student Launch Initiative (USLI):** The Ares Projects integration team supported an Ares presentation on April 18 to college students participating in the USLI competition, which was held on April 19. The Education and Public Outreach Lead for Ares gave a presentation on NASA’s exploration plans to approximately 50 college students participating in the event. Participating universities were: Auburn University, Fisk University, Harding University, Alabama A&M University, Missouri University of Science and Technology, University of Alabama in Huntsville, University of North Dakota, Utah State University, and Vanderbilt University. USLI challenges university students to design, build, and fly a reusable rocket with a scientific payload to 1 mile in altitude. The competition engages students in a combination of scientific research and real-world engineering processes. NASA engineers and scientists participate in the project review process leading to launch.



*Ares Education and Public Outreach Lead speaking to college rocketeers*

The Ares Project looks forward to the gas generator workhorse testing (ignition with Liquid Oxygen (LOX) and fuel) on April 29, and the J–2X Powerpack Assembly 1A (PPA–1A) Test #9 in early May.

***...and as of this Ares Project Weekly Summary, there are only 355 days until the first Ares I test flight, Ares I–X!!!***