



Ares I-X Avionics Integrated Product Team (IPT) Continued Production of the First Stage Avionics Module (FSAM): The FSAM will house most of the avionics for Ares I-X. Lockheed Martin is scheduled to deliver the FSAM to the First Stage IPT on December 15 for integration into the Fifth Segment Simulator (FSS) at the AeroTech facility in Titusville, FL. The FSAM structure was delivered to Zimmerman Metals, Inc., in Denver, CO, for drilling and tapping of over 600 holes needed to attach the structure to the FSS and mount the avionics and Environmental Control System (ECS) ducting. The structure was returned to the Lockheed Martin facility and is being prepared for a tap test scheduled for October 1.



Quality Control/final inspection checks by Zimmerman of Top-Section Assy before shipping back to Engineering Propulsion Lab (EPL)



Cutting insert threads in outer



Cutting insert threads in outer ring. Holes already matched-drilled with Top-Section Assy



Checking size/fit of cut threads for inserts to be subsequently installed at Lockheed Martin Space Systems Corp. (LMSSC) EPL

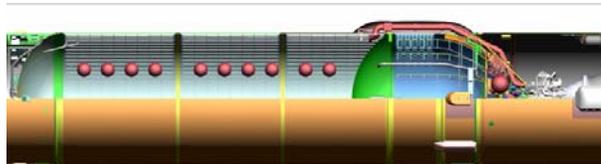
Pictures taken at Zimmerman Metals in Denver on September 3, 2008

Recent activities specific to the Elements include:

- **Upper Stage (US)**
 - **US Stage Definition (SD):** The first SD Quarterly Review was held on September 18 at a Boeing facility in Huntsville, AL. The primary objective of the review was to establish a



configuration baseline for Design Analysis Cycle 3 (DAC-3) entry. This was accomplished through introduction of the SD volume integrator/assembly lead teams, whose responsibility it is to lead the integrated design effort, review of configuration changes since PDR, and identification of horizontal integration issues still to be resolved. The next SD Quarterly Review will be held in mid-December.



Ares I US Computer-Aided Design (CAD) cutaway

- **First Stage (FS)**

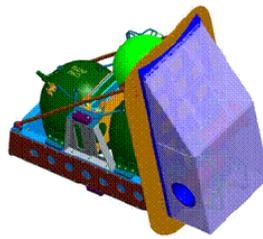
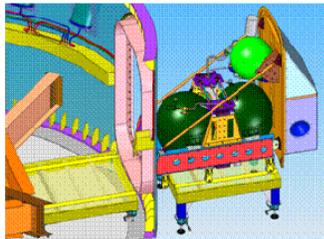
- **Ares I-X Reefing Line Cutters (RLCs) Qualification Tests:** All Ares I-X RLC Phase 3 Review Problem Reports have been addressed, allowing the qualification effort to proceed to testing. The RLC qualification tests are scheduled to begin at Wyle Laboratories in Huntsville, AL, next week. A Test Readiness Review is tentatively scheduled for September 29. In order to meet Ares I-X integration milestones, the RLC flight units were shipped to Kennedy Space Center (KSC) on July 25.
- **Ares I FS Hot Gas Testing:** The Ares I Thermal Protection System FS testing occurred from September 8–18. The average heat rate went from ~27 British Thermal Units (BTU) per foot per second (BFS) to ~40 BFS. Based on visual observations (no actual measurement data), Marshall Convergent Coating 1 (MCC-1) and United Space Alliance (USA) sheet cork continue to perform much better than predicted by the design curve. The recession performance of RT455 and EPDM (type of rubber) appears to be close to what is predicted by the design curve. Booster Trowelable Ablative (BTA) continues to perform worse than predicted by the design curve. The material erosion, as a function of heat rate for all materials to one degree or another, seemed to experience a general erosion rate loss decrease (a bending over of the erosion rate curve). This testing is tentatively scheduled to resume on October 6, with the testing at 35° and 40° angles of attack and the testing of the Froth-Pak test articles.

- **Flight and Integrated Test Office (FITO) and Ares I-X**

- **Ares I-X Roll Control System (RoCS) Element:** Activities specific to the RoCS Element include:



- Changes requested (and in work at Teledyne) by Marshall Space Flight Center (MSFC) Engineering to the Orifice Flow Bench has delayed the start of the flow line calibrations.
- The engine/bi-prop valve assembly was transferred to Wyle for start of vibration testing.
- The first flight fairing was received and uncrated at Teledyne.
- Tank fill valve close-out caps and certification samples have been machined and are ready for procedure finalization and operator certification later this week.
- Teledyne hosted an interstage installation exercise with Kennedy Space Center (KSC) personnel, using the RoCS mass simulator and installation tables.
- Material Review Board activities dispositioned cosmetic plating discrepancies on the intertank web supports and handling scratches on the RoCS panels from the match drilling operations.
- The Change Request (CR) to update/align the RoCS Element Requirements Document (ERD) with the latest System Requirements Document (SRD) (v4.13) was submitted.
- The RoCS team attended KSC 101 orientation and facility tours.



RoCS handling/installation simulation using mass simulator, installation tables, and interstage threshold simulator



Flight Fairing #1



- **Project Integration (PI)**
 - **Ares Outreach:** During September, the Ares Projects outreach team presented the Ares/Constellation story to hundreds of fourth and sixth grade students in schools in the Huntsville, AL, area. The team also completed a new Junior Ambassador Package for grades 6–8 and it has been added to the www.nasa.gov/ares education page. These events are part of an ongoing effort by the Ares team to inform students about the future of space exploration.



An elementary student calculates the nominal trajectory for his straw rocket launch

The Ares Project looks forward to the launch of STS-125, Space Shuttle Atlantis, on October 14, and Friction Stir Welding “confidence welds” on actual US dome gores in MSFC Building 4755 in late October.

...and as of this Ares Projects Weekly Summary, there are only 201 days until the first Ares I test flight, Ares I-X!!!