

Recent activities specific to the Elements include:

Upper Stage (US)

- ***US Reaction Control System (RCS) Subsystem:*** The 2009 NASA/Marshall Space Flight Center (MSFC) Propulsion Academy class, sponsored and funded by the US RCS subsystem, recently achieved a major milestone by completing a successful thruster development and test activity. Propulsion Academy is a 10-week, residential summer research and educational experience for high-achieving college sophomores, juniors, seniors, and graduate students interested in propulsion-related careers. The emphasis is on preparing young professionals for future employment in aerospace positions. Research Associates (interns) work in teams of four, guided by propulsion engineers at MSFC, local commercial entities, and local universities. The team lead is an advanced undergraduate or graduate student with a curriculum background in propulsion-relevant courses. In addition to their research activities, students participate in site visits, tours, and lectures by practicing experts in state-of-the-art propulsion development. The objective of the Academy this year was to test, verify, and document performance of a 100-pounds force (lbf) liquid oxygen-liquid methane RCS thruster designed by Orion Propulsion Inc. (OPI) via a NASA Small Business Innovative Research (SBIR) contract. The interns' task included performing a test readiness review of the thruster and test facilities, performing a hazards analysis and various calibrations, and creating a test matrix. Testing was conducted at OPI's test facilities in Huntsville. Test results will be documented by the team as part of this effort.



*Propulsion Academy Research Associates with MSFC
and Orion Propulsion Engineers*

First Stage (FS)

- Deceleration Subsystem (DSS) Jumbo Drop Test Vehicle (JDTV) Repair:*** The JDTV and the Cradle Extraction System (CES) sustained minor damage as a result of ground impact during the last drogue drop test (DDT-2). The CES landed upside down and was dragged on the drop zone by its recovery chutes due to high ground winds. As a result, the cradle liner has to be replaced, along with a few damaged control cables. The pack can on the rear end of the JDTV sustained cracked welds and minor out-of-roundness at the point of the secondary ground impact. Repairs are underway at a local machine shop in Yuma in preparation for their next use in the Main Parachute design load test (MDT-3) in early October.



Jumbo Drop Test Vehicle Repair



Cradle Extraction System Repair

Project Integration

- Education Outreach:*** The Ares outreach team presented/supported presentations on the Ares Projects and NASA's exploration story to diverse student groups in the past week, including:
 - Twenty-six teachers with the Teaching American History program in Savannah-Chatham County, GA Public Schools on July 27. This program brings teachers to the U.S. Space Camp at the U.S. Space & Rocket Center to raise their awareness of the history of the U.S. space program.
 - Eighty educators attending International Space Camp on July 30. This event attracts the Teachers of the Year from all 50 states and from 20–30 other countries. The educators learned about NASA's mission to return to the Moon and the benefits of space exploration. Each teacher attending the International Space Camp was accompanied by two students from their state or country to participate in Space Camp.



- ***Augustine Commission Exhibits:*** The Ares outreach team provided the mobile Ares I and the 1:25 Ares I cutaway for display July 29 during the Review of U.S. Human Space Flight Plans Committee hearing at the U.S. Space & Rocket Center's Davidson Center. Approximately 200 people attended this event. These exhibits reinforced technical details provided by the Ares presentations.

The Ares Projects look forward to the First Stage DM-1 static test at ATK in Promontory, Utah, in August.

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