



J-2X Powerpack Assembly (PPA) 1A Test #9: The ninth test of the J-2X PPA-1A was successfully conducted on May 8 at Stennis Space Center (SSC). The test ran for 400.45 seconds and was terminated as planned when oxidizer turbopump cavitation reached the maximum acceptable level. The primary objective of the test was to obtain scissors duct bellows strain data at varying Liquid Oxygen (LOX) flow rates. Secondary objectives included the collection of additional turbomachinery performance data under various operating conditions, including helium ingestion. The preliminary assessment is that all Test #9 objectives were achieved. Pending further review, all PPA-1A objectives have been accomplished and this will be the final test of PPA-1A. The data generated during the test series will now be analyzed and used in the J-2X design process.



Powerpack Assembly firing at SSC

Recent activities specific to the Elements include:

- **Upper Stage (US)**
 - ***US Avionics and Software Subsystem Preliminary Design Review (PDR) Board:*** The Ares I Instrument Unit Avionics (IUA) PDR Board was conducted on April 30, 2008 at Marshall Space Flight Center (MSFC). The Board determined that the Upper Stage (US) Avionics Subsystem achieved the Phase 1 objectives for the scope stated in the IUA PDR Plan. Disposition of issues and actions resulting from this review have been documented and closure plans developed. Procedures and controls are instituted to ensure actions are followed. Pending distribution of documented Board minutes and actions, the Board recommended that the US Avionics Subsystem proceed to the next phase. The next major design milestone for the IUA will be as part of the Ares I US PDR.



- ***US Integrated Test Subsystem Technical Task Agreement (TTA):*** A revision was finalized this week to the TTA between the Glenn Research Center (GRC) and the Ares I US team at MSFC. The TTA assigns GRC responsibilities for analyzing and building Structural test simulators and Special Test Equipment (STE) as needed for the Structural test program. This revision increases some GRC manpower needed for the Structural test support activities, but also assigns new Thermal/Purge Development Test responsibilities to the Glenn Center. GRC will now be responsible for designing and building the two Thermal/Purge Development test articles that will represent the Instrument Unit (IU) and the Interstage cavities that exist on the US. The TTA presently covers GRC activities for the current fiscal year, but will be expanded to cover activities of later years as well.

- **Upper Stage Engine (USE)**
 - ***A-3 Subscale Diffuser Testing at SSC:*** The A-3 Subscale Diffuser was tested several times last week to verify performance of the redesigned first stage ejector. A required test cell pressure of 0.16 pounds per square inch absolute (psia) was achieved with significant margin. Now that diffuser and steam ejection performance has been demonstrated, the focus of Subscale Diffuser testing will be to optimize cost. Future objectives include demonstrating the need for the subsonic cone, the conical section at the end of the diffuser, verifying performance at the engine gimbal condition, and evaluating diffuser elbow cooling options. Testing with the subsonic cone removed is expected to take place next week.

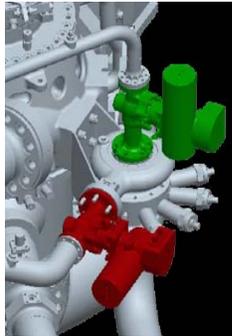
- ***USE Recent Reviews:*** On April 30th, a Critical Design Review (CDR) was conducted for the J-2X Gas Generator (GG) Fuel Valve (GGFV) and GG Oxidizer Valve (GGOV). The Gas Generator Valves (GGVs) allow the flow of the necessary propellants to the Gas Generator. On May 1st, a Preliminary Design Review (PDR) was conducted for the Pneumatic Purge Control Assembly (PPCA) and the Pneumatic Actuation Control Assembly (PACA). The PACA will use helium supplied by the vehicle for the pneumatic actuation system on the engine. The PPCA will use helium supplied by the vehicle and nitrogen supplied by the ground system to purge necessary parts of the engine. Also on May 1st, a PDR was conducted for the Helium Spin Start Check Valve (HSSCV). The check valve is located downstream of



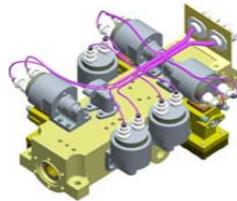
A-3 Subscale Diffuser Test at SSC



the helium spin start control valve to prevent reverse flow of hot gas from GG combustion into the helium spin line. It protects the helium spin start control valve from direct hot gas exposure during engine main stage operation.



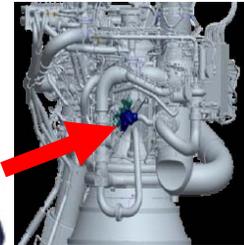
GGFV and GGOV



PPCA



PACA



HSSCV

- **Flight and Integrated Test Office (FITO) and Ares I-X**
 - **Integrated Vehicle Ground Vibration Test (IVGVT) – 30% Review Kick-Off:** The IVGVT team held its 30% Review kick-off on Friday, April 25. The review is being held to ensure the test is on plan to support the Ares PDR and that the IVGVT Plan (Test Plan) is ready for submittal to the Ares PDR document review process. The kick-off included presentations by IVGVT management, engineering, hardware elements, facilities, test operations, and Special Test Equipment (STE). Additional documentation to be submitted to the Ares PDR (for comment only) includes the IVGVT Implementation Plan and the IVGVT Task Plan. A table-top review of the documentation will be held leading to a presentation to the FITO Engineering Review Board (ERB). Ultimately, the documentation will be approved for submittal to the Ares PDR and the FITO Engineering Change Board (ECB) on June 5, in support of a June 13 data submittal to the Ares PDR.

The Ares Project looks forward to the STS-124 Shuttle Discovery launch in May.

...and as of this Ares Project Weekly Summary, there are only 341 days until the first Ares I test flight, Ares I-X!!!