



Upper Stage Thrust Vector Control (TVC) Subsystem: Most major components of the Upper Stage (US) TVC two-axis rig have been completed; integration of these components is underway at the manufacturing supplier. The hardware will be fully assembled and checked out prior to shipment to NASA Glenn Research Center (GRC) in mid-January. This test rig will simulate the US thrust cone, US engine, gimbal joint, and all flight forces on the TVC system and will be used to test a full Engineering Model (EM) system later next year. The first of several EM test articles, a turbine pump assembly, arrived at GRC on December 8.



2-Axis Rig



Gimbal Assembly



Engine Mass Simulator

Recent activities specific to the Elements include:

- **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:
 - The Peacekeeper transducer liveness test was successfully completed.
 - Fairing corner closure welding was completed, and ramp and box sections are ready for match drill and assembly.
 - The remaining required helium pressurant tube has been successfully welded, non-destructive evaluation tested, and dimensionally inspected.
 - Fuel flight orifice plates have been machined based on trim orifice calibration tests.





- The pre-ship review electronic data package was uploaded to Windchill, with the hardcopy data package set up in a reading room at Teledyne. The data will be available for review and comment on December 15–19. Pre-ship review is planned for January 7, and shipment to Kennedy Space Center (KSC) is scheduled to occur on January 13.
 - Agreement was reached with Ground Operations to ship additional ground support equipment (outer installation table, anti-tip trolley, mat frames, and transfer wheels) after the data review. Only the spreader beam will remain behind at Teledyne for handling modules.
 - A leaky engine reported last week was found to have a blemish on the bypass manifold. It has been touched up and is being re-cleaned. Leak checks will be repeated.
- **Project Integration (PI)**
 - **Ares 3-Year Recap Video:** The Ares Projects outreach team completed a 3-year recap video on the progress of the Ares Projects. The Ares Projects Manager presented this 19-minute video to the Marshall Center Management Council and the President-Elect Transition Team. In addition, 50 DVDs of the video were provided for distribution to legislators and other key stakeholders.
 - **Ares Exhibit Outreach:** The Ares Projects outreach team is pursuing several avenues of communication that meet current restrictions on travel. The Office of Strategic Analysis and Communications met with the Ares Projects about Ares involvement in populating the New Beginnings area of the U.S. Space & Rocket Center. Materials for an “Exhibit in a Box” are being developed that could be sent to museums, science centers, and other venues that would like to have an Ares presence. The team also drafted a proposal on performing more local public outreach events to interact with communities not typically tapped for such events.

The Ares Projects looks forward to the US Element friction stir weld of the actual US dome gores in MSFC’s Building 4755 in December. This will be a follow-up to the successful welding of two Shuttle External Tank dome gores in August.

...and as of this Ares Projects Weekly Summary, there are only 204 days until the first Ares I test flight, Ares I-X!!!

***** Have a safe and happy holiday! *****

