



Alpha Magnetic Spectrometer
NASA / DOE

Alpha Magnetic Spectrometer Weekly Reports

November 5, 2004



National Aeronautics and
Space Administration

Upcoming Events:

- STA Vacuum Case Delivery (on dock at STADCO) - Schedule under review
- AMS-02 Integration Meeting - December 7-9, 2004 - CERN (Geneva)
- Flight Vacuum Case Delivery (on dock at STADCO) - Schedule under review
- Thermal Control System (TCS) Delta Critical Design Review (Δ CDR) - December 13-14, 2004 - CERN (Geneva)
- AMS General TIM - January 10-14, 2005 – KSC
- Tracker Thermal Control System (TTCS) PDR - January 2005, CDR - April 2005
- AMS-02 Phase II Safety Review - March 2005 - JSC

Upcoming Tests:

- AMS-02 Avionics Functional Interface Test (FIT) - January 2005 – KSC
- O-Ring Test Fixture (OTF) Vacuum Test - Suspended - J13
- Interface Plate Static Test - Date TBD - Location TBD
- Lower Joint Static Test - Date TBD - Location TBD
- STA Acoustic Test - Date TBD - ESTEC - Noordwijk, Netherlands (Schedule under review)
- STA Sine Sweep Test - Date TBD - INFN - Terni, Italy (Schedule under review)
- Full Assembly Modal & Static Tests - Date TBD - IABG - Munich, Germany

Status:

- ***The LMSO Alpha Magnetic Spectrometer (AMS) Project Manager/Avionics Lead participated in the AMS Electronics Technical Interchange Meeting (TIM) and the Uninterruptible Power Supply (UPS) Critical Design review (CDR) in Taipei, Taiwan.
- ***The drawings for the Vacuum Case Test Fixture (VCTF) base fixture were submitted for formal check. Only the redlines that affect fit, form, or function are being incorporated. The drawings were scheduled to be released this week, however JSC implementation of JPG 8500, Revision H, which requires the use of a new border on all non-RTF drawings submitted for release after 11/01/04, have delayed drawing release. Approximately 70 AMS drawings were ready for submittal to the Electronic Drawing Review System (EDRS) when AMS learned that they would not be accepted in the old format. Because AMS engineers



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were not informed about this new requirement until after the implementation date, AMS is requesting an delay in implementation until 11/15 so that drawings ready for release in the old format can be entered into EDRS and released without changing drawing formats.

- ***The AMS Vacuum Case (VC) Lead prepared and submitted a trip report documenting his visit to STADCO for discussions on manufacturing status and schedule for the VC. The trip report documents four issues that have impacted the delivery schedule: Outer Cylinder Hole Configuration, Support Rings Out of Round & Flatness, Excessive Heat on Closeout Weld, and Processing (Metal Finish). STADCO is working these issues vigorously to minimize the schedule impact. STADCO also reported an accident with a shop tool used in the precision measuring of the Structural Test Article (STA) Support Rings. The tool was damaged when it fell off a truck during transport. A post-accident evaluation showed that the register diameter on the fixture is not holding the Support Ring round enough for an accurate inspection. STADCO is working to resolve this problem and assessing whether to repair or remanufacture the tool. This could further impact the delivery schedule.
- LMSO AMS structural engineers analyzed and signed the drawings for the Upper Trunnion Bridge extrusions. The drawings were uploaded to the Electronic Drawing Review System (EDRS), approved and released. The extrusions will be custom made by Alcoa Extruded Aerospace Products and have a 25 week lead time. AMS engineers are working with LM Procurement to place the order and with the NASA customer to obtain approval for delivery after the end of the SEAT Contract.
- An assessment of the AMS-02 support ring assembly issues was completed.
- The VC First Article Conical Flange was successfully anodized (metal finished) with only minor issues. These issues were reviewed with JSC Materials personnel and Materials agreed that there are no constraints to anodizing the remaining Conical Flanges.
- Information regarding the heat profile on the backside of the weld was sent to Space Cryomagnetism Ltd. (SCL) for review and analysis. LMSO and STADCO also provided a proposed solution to the problem that would reduce the heat exposure of the magnet super-insulation for SCL consideration. The weld schedule qualification test at STADCO is currently on hold pending the buy-in from SCL.
- A presentation on the AMS-02 Unique Support Structure (USS-02) build-up and assembly is being prepared for presentation to Rothe Joint Venture (RJV) manufacturing personnel on 11/10/04. The presentation is intended to familiarize RJV with the USS-02 and how LMSO engineers think it should be assembled. Following the presentation, the meeting will be open for comments and suggestions from the manufacturing personnel.
- A list of materials was prepared to identify procurements that will not be delivered prior to the end of the SEAT Contract on 12/31/04 (or the extension on 1/31/04). This list includes the USS-02 Extruded Beams and a number of special-order fasteners. The list was provided to the AMS-02 NASA Deputy Project Manager for coordination with, and subsequent approval by, the NASA Contracting Officer.



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- A debris shield concept was developed to protect the Transition Radiation Detector (TRD) Gas System. The shielding was based on shielding developed for the Plasma Contactor Unit (PCU). The TRD Gas System uses the same high-pressure tanks as the PCU.
- Vacuum Case Milestones

<u>Contract Deliverable</u>	<u>Due Date</u>	<u>Status</u>
Weld Fixture Complete	August 2004	
First Article Conical Flange Complete	October 2004	
STA Support Rings Complete	November 2004	(Machining complete, final inspection in work)
STA Conical Flanges Complete	November 2004	(Machining complete, metal finish in work)
Flight Support Rings Complete	November 2004	
Flight Conical Flanges Complete	November 2004	
STA Line Drill Operations Complete	November 2004	
Weld Development Complete	December 2004	(Qualification tests on hold)
Shipping Fixture Complete	December 2004	(CDR complete)
First Article Weld Complete	December 2004	
STA Match Drill Procedure Complete	December 2004	
STA Weld Complete (for proof test @ STADCO)	December 2004	
STA Vacuum Case Delivery (on dock at STADCO)	Schedule Under Review	
Flight Vacuum Case Delivery (on dock at STADCO)	Schedule Under Review	