National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
2101 NASA Parkway
Houston, Texas 77058-3696

August 15, 2007

Reply to Attn of : NE141-07-215

TO: ES5/B. Robertson

FROM: NE/Executive Officer, Payload Safety Review Panel

SUBJECT: Alpha Magnetic Spectrometer (AMS)-02 Phase II Action Item (AI) 1 Closure

Refer to the attached closure rationale, agreed to via email on July 12, 2007, which transmitted the response to the subject AI. The response has been reviewed and accepted by the mandatory reviewers and the Payload Safety Review Panel Chair, Ms. M. B. Schwartz, on August 14, 2007. The subject AI is therefore closed.

AI	Action	Date Due
1 Assigned to: JSC/MSWG HR: AMS-02-F11	Confirm with JSC/Fracture Control the possibility of two breaks in one PAS anti-rotation device spring as a credible failure mode and review the AMS analysis. PO POC—C. Tutt	Date: 06/15/07 Mandatory Reviewer(s): PSRP

Please direct any questions to Mr. R. Rehm, telephone 281-335-2374 or Mr. P. Mensingh, telephone 281-335-2363, Mail Code NA2450.

Dean W. Moreland

cc:
See List

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The Rationale that follows is provided to initiate closure of the AMS-02 Action Item #1 that was opened at the Phase II Flight Safety Review .

The Action Item is posted to the DMS, but is attached below

AI #	AI Class	Phase/Meeting	Assignee	Due Date	Description
P2-01	OPEN	II Safety Review, 5/21/2007	JSC/MSWG	6/15/2007	HR: AMS-02-F11 Confirm with JSC/Fracture Control the possibility of two breaks in one PAS anti-rotation device spring as a credible failure mode and review the AMS analysis. PO POC—C. Tutt Mandatory Reviewer(s): PSRP

The position of Fracture Control (JSC/ES) is that the spring used in the AMS-02 PAS EVA Release Screw Locking Mechanism, is categorized as “Fail-Safe” making two independant spring fractures non-credible.

This position is based on the assumption that the information provided by the AMS-02 Payload Organization is correct.

The position of the Mechanical Systems Working Group (JSC-ES5) is that based on the non-credibility of two fractures in the same spring, failure of the Anti-Rotation Device in the AMS-02 PAS EVA Release Screw Locking Mechanism design is non-credible. For this reason, the 2 Fault Tolerance approach is not required for the Anti-Rotation Device.

This position is based on the “Fail-Safe” categorization of the spring within the mechanism.

Summarization:
The AMS-02 PAS EVA Release Screw Locking Mechanism meets the requirements for approval of the Hazard Report AMS-02-F11 at Phase II.

Forward work for the AMS-02 Payload Organization
Information provided to date indicates that with one fracture in the spring, there is a residual preload in the spring of 1.24lbs on the anti-rotation device. This is less than the applied force of 1.58lbs, which results in a negative holding force margin.
If the AMS-02 Pyaload Organization decides to proceed to Phase III without resolving this, they do so at their risk. The AMS-02 Payload Organization is responsible for coordinating the presentation of analysis and/or testing to the Mechanical Systems Working Group in order satisfy the requirements for approval at Phase III.