



PFR-053 Title: Friction increase in SCB hinge mechanism after vibe

Assembly : Mag Booms	SubAssembly : SCB	
Component : Base Hinge	Units Affected:	Units fixed:
Originator: T Tan	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Organization: Space Sciences Lab	Date: 4-29-05	
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Failure Occurred During (Check one √)

☐ Functional test ☒ Qualification test ☐ S/C Integration ☐ Launch operations ☐ Other (Flight Assy)

Environment when failure occurred:

☐ Ambient ☒ Vibration ☐ Shock ☐ Acoustic
☐ Thermal ☐ Vacuum ☐ Thermal-Vacuum ☐ EMI/EMC

Problem Description

(In this section it is important to document the specific symptoms which exhibited the problem. In the event we see it happen again, we would like to know as much as possible.)

The Search Coil magnetometer Boom (SCB) boom passed qualification level vibration successfully but did not deploy completely (10 degrees) during the post vibration 0rpm deployment test.

Analyses Performed to Determine Cause

(How do we know how the failure happened? Was it a bad part, bad handling, what?)

The deployment test fixture was determined to be functional and test error was ruled out. The SCB was carefully disassembled and it was noted that there were worn and galled surfaces. During a subsequent failed deployment test, removal of a harness shield revealed that there is interference from a set screw (fixes location of shaft) that may have backed out during vibration.

Corrective Action/ Resolution

(How do we fix the unit? And how do we make sure it doesn't happen again?)

All rubbing surfaces were lubricated with Braycote 601EF. Steel shims were installed to improve the contact surfaces on the alodine aluminum clevis. Set screws that fix the location of the shaft were machined slightly shorter (0.170") and staked with Arathane (Uralane) 5753 in its threads.

On 5/25/05, the SCB passed qualification level vibration and deployed successfully post-vibration.

Acceptance:

MAM: Ron Jackson _____; MSE: Ellen Taylor _____

PM: Peter Harvey _____; Cognizant Engineer _____

Date of Closure _____