

PFR-044 Title: Friction increase in FGB hinge mechanism after vibe				
Assembly : Mag Booms		SubAssembly : FGB		
Component : Base Hinge		Units Affected:	Units fixed:	
Originator: T Tan		x x x x x x	x x x x x x	
Organization: Space Sciences Lab		Date: 4-29-05		
Phone: 3-5007		Email: ttan@me.berkeley.edu		
Failure Occurred During (Check one $$) \Box Functional test \boxdot Qualification test \Box S/C Integration \Box Launch operations \Box Other (Flight Assy)				
Environment when failure occurred:				
Ambient	\blacksquare 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 Flux Gate magnetometer Boom (FGB) boom passed qualification level vibration successfully but did not deploy completely during the post vibration 0rpm deployment test. The outer boom deploys completely but the inner boom only deploys 30 degree.

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 FGB 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 FGB passed qualification level vibration and deployed successfully post-vibration.

Acceptance:	
MAM: Ron Jackson	_; MSE: Ellen Taylor
PM: Peter Harvey	_; Cognizant Engineer
Date of Closure	