



PFR-027 Title: Cracked Base Bracket in SCB

Assembly : Mag Booms	SubAssembly : SCB
Component : Base Bracket	
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Failure Occurred During (Check one ✓)

☐ Functional test ☒ Qualification test ☐ S/C Integration ☐ Launch operations

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.)

After X-axis (parallel to tube axis, parallel to deck) random vibration qualification on 3/2/05, we found a crack in the near foot of the SCB base bracket. The SCB with an improved base bracket was retested on 3/23/05 and it passed X-axis vibration qualification but did not pass Y-axis vibration qualification (parallel to tube axis, parallel to deck).

Analyses Performed to Determine Cause

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

Existing ULTEM 100 thermal isolators under feet of the base bracket and DAD tower were of insufficient size and led to undesired loading modes. The flexure feet of the base bracket and DAD tower were not stiff enough.

Corrective Action/ Resolution

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

Use steel washer and G10 isolators that support the complete feet of the base bracket and DAD tower. Use A286 bolts, steel washers and G10 isolators to put a higher preload on the mounting bolts. The SCB base bracket was improved by retrofitting a stiffer platform and wider feet. A new SCB DAD tower was fabricated with thicker feet and legs.

An SCB, with improved base bracket and DAD tower and mounted with steel washers and G10 thermal isolators was tested successfully in all three axes under qualification vibration levels on 3/25/05 (T Tan).

Acceptance:

MAM: Ron Jackson _____ ; MSE: Ellen Taylor _____

PM: Peter Harvey _____ ; Cognizant Engineer _____

Date of Closure _____