

PFR-228 Title:F4 FGM Harness shorted to Boom		
Assembly : Instruments	SubAssembly : FGM	
Component : FGM Harness	Units Affected: Units fixed:	
Originator: Michael Ludlam		
Organization: SSL	Date: 29 September 2006	
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<b>Failure Occurred During (Check one</b> $\sqrt{)}$		
x Functional test $\Box$ Qualification test $\Box$ S/C Integration $\Box$ Launch operations $\Box$ Other		
Environment when failure occurred:		
x Ambient	□ Shock □ Acoustic	
Thermal Vacuum	$\Box$ Thermal-Vacuum $\Box$ EMI/EMC	
Problem Description		

During the CPT performed on F4 FGM to verify rework required by PFR 204 a problem was noted with the X-axis suggesting the sense pin of that axis was grounded.

## **Analyses Performed to Determine Cause**

A check out of the harness was carried out which looked nominal, followed by a further CPT. The data still had a problem in the X-axis. A more thorough debugging of the harness wiring found the +x sense (pin 9) of the boom shoulder to sensor harness was connected to spacecraft structure ground. The harness was unplugged from the shoulder and the bend in the harness going into the boom was gently straightened, this caused the connection from pin 9 to structure to change from 2 Ohms to about 400 Ohms.

## **Corrective Action/ Resolution**

The boom was inspected by Paul Turin and Yvette Irwin and the cause traced back to the top of the boom shoulder. Indentations were seen in the sense twisted unshielded wire and the short was seen to be intermittent as the harness was moved around in the boom shoulder.





## Problem/Failure Report THM\_PFR\_228

The twisted pairs were individually wrapped in kapton tape and a Teflon tape wrap was put around the harness bundle to protect it from future wear. The other probes were inspected for similar damage but none was seen. However this re-work was carried out on all probes as a precaution. A FGM CPT was run on each probe with an similar problem appearing on F4 Z axis. The F4 boom harness was re-inspected and the Teflon tape was found not to be completely wrapped around the whole harness bundle. This rework was repeated as seen in the photos below and harness wire isolation was checked while the boom was deployed and re-stowed. A CPT was then run on the FGM successfully. This PFR is closed.





Acceptance:	
MAM: Ron Jackson	; MSE: Ellen Taylor

PM: Peter Harvey\_\_\_\_\_; Cognizant Engineer\_\_\_\_\_

Date of Closure\_\_\_\_\_