PFR-102 Title: FGS Harness Length Too Short

Assembly : FGS magnetometer	**SubAssembly :** Harness	
Component : Harness	**Units Affected:**	**Units fixed:**
Originator: Paul Turin	X X X X X X	X X X X X X
Organization: UCB	**Date:** 09/16/05	
Phone: 510-642-5289	**Email :** pturin@ssl.berkeley.edu	

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

The FGB Boom was built to fit the FGS STM (Structural Test model) supplied by the FGM team. When the flight FGS units were installed on the FM2&3 FGBs, it was discovered that the flight harnesses were 1-3/4" shorter than the STM harness. The harnesses were installed despite not fitting correctly, possibly damaging conductors. This resulted in the harnesses being pulled sharply over the connector backshell edge and where the harness exits the magnetometer (see photo 1). This is an unacceptable condition for flight as it is likely to cause harness damage.

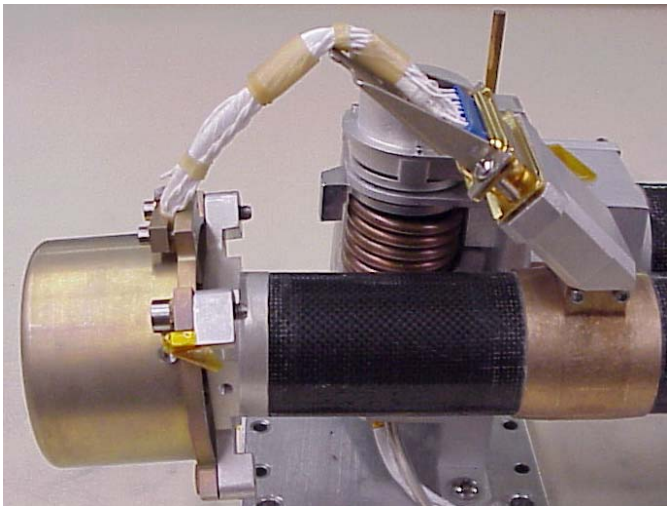

Photo 1

Analyses Performed to Determine Cause

This problem was caused by the flight harnesses being fabricated at a different length than the STM harness length.

Corrective Action/ Resolution

Rather than sending the sensors back to Germany for longer harnesses, which would entail significant rework and retesting, it was decided to modify the harness connector backshell to provide a shorter path and appropriate curvature for the harness. The backshell sides were cut, the tray was bent to a 30 degree angle, and reinforcing clips were bonded over the cuts to strengthen the backshell (see photo 2). This reshaped the harness into an acceptable path (see photo 3). The FM2&3 harnesses have been inspected at the completion of the FM2&3 suite thermal vac test for any damage caused by the excessively sharp bendsn and none was found. All of the flight harnesses have had modified backshells installed, and have been overwrapped with Teflon tape for protection.

Photo 2

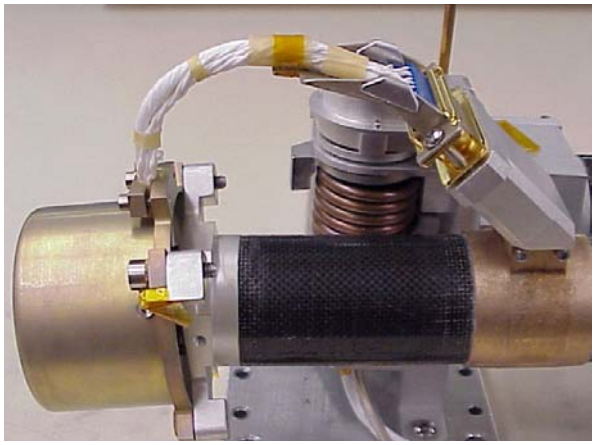

Photo 3

Acceptance:
MAM: Ron Jackson_____; MSE: Ellen Taylor_____

PM: Peter Harvey_____; Cognizant Engineer_____

Date of Closure_____