PFR-195 Title: ESA SN3 Redundant Cover Firing Failure

Assembly : SN3 ESA	**SubAssembly : Firing Mechanism**	
Component : Redundant Side	**Units Affected:**	**Units fixed:**
Originator: Michael Ludlam	o o o o x o	o o o o x o
Organization: UCB	**Date: 16/JUN/06**	
Phone: 510 642 7732	**Email : mludlam@ssl.berkeley.edu**	

Failure Occurred During (Check one √)

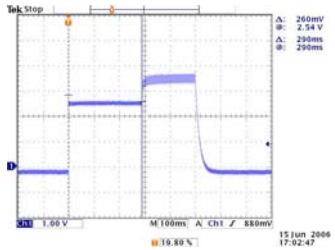
□ Functional test □ Qualification test x S/C Integration □ Launch operations □ Other (On Shelf)

Environment when failure occurred:

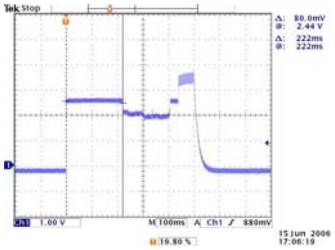
x Ambient	□ Vibration	□ Shock	□ Acoustic
□ Thermal	□ Vacuum	□ Thermal-Vacuum	□ EMI/EMC

Problem Description

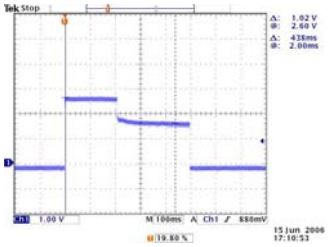
During the FM5 instrument side-by-side test prior to integration of the instruments onto the probe the ESA cover mechanism was fired. The primary side fired fine and the voltage profile using an oscilloscope looked normal, but the secondary side showed an abnormal profile even though the cover did open. The secondary side was fired again and the cover did not open.



SMA primary opening. Normal profile.



SMA secondary opening. Abnormal profile.



SMA Secondary firing. Cover does not open.

Analyses Performed to Determine Cause

The ESA was removed from the IDPU and disassembled. It was discovered that the SMA had been damaged. The SMA was replaced, wired identically as before and the ESA was reassembled, it was retested with the IDPU. The secondary SMA fired but the scope plot did not show nominal behavior. The ESA was again disassembled and the SMA checked again. It was then discovered that the SMA was wired incorrectly causing one of the sides of the SMA wires to be grounded during the actuation.

Corrective Action/ Resolution

The SMA wiring was reversed on the secondary side of the cover mechanism to correct the mistake. The release plate was test fired using the FM5 IDPU and scope plots taken. The ESA was reassembled and the covers were again test fired with the IDPU (with scope plots). A workmanship vibration was performed on the ESA and it was then assembled onto the IDPU and the covers were retested and scope plots taken showing good actuation of the cover mechanism. All other ESAs have been checked with an oscilloscope to show the firing mechanism is correctly wired and functioning properly. This PFR is closed.

Acceptance:
MAM: Ron Jackson_____; MSE: Ellen Taylor_____

PM: Peter Harvey_____; Cognizant Engineer_____

Date of Closure_____