

STEREO IMPACT

PROBLEM REPORT

PR-1020

FM2ActuatorHarness

13 September 2004

PR Numbers: 1xxx=UCB, 2xxx=Caltech/JPL, 3xxx=UMd, 4xxx=GSFC/SEP, 5xxx=GSFC/Mag,
6xxx=CESR, 7xxx=Keil, 8xxx=ESTEC, 9xxx=MPAe

Assembly : IMPACT Boom	SubAssembly : Boom Actuator Harness
Component/Part Number:	Serial Number: A361SN002
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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

The FM2 boom thermal vacuum hot deployment failed on the primary circuit before working on the secondary circuit. The cause is that the primary circuit actuator was wired backwards. This was verified with an ohm meter (the actuator wires as provided by TiNi are identified in pairs as primary and secondary, but there is no indication of which are the returns). Normally that would not matter since the actuator does not care which way current flows, but these actuators have their return legs tied together. Still that would not matter if we just applied 28V to one side or the other, but we have an actuator GSE which looks something like the spacecraft; given the way it is wired up the current pulse was shorted by connection of the return legs in the actuator. The current pulse is limited by the GSE in amplitude and duration, so no damage can occur.

Analyses Performed to Determine Cause

Resistance measurements of the various actuator pins verified the harnessing was incorrect.

Corrective Action/ Resolution

Rework

Repair

Use As Is

Scrap

The solution for FM2 is to swap the wires on the primary actuator internal to the boom. We will then measure with an ohm meter to verify it is wired correctly (primary circuit, secondary circuit, and grounds). Since we have broken chamber to re-stow the boom, and since the actuator is accessible during stowing, we can do this now without any unusual disassembly. We will then go back in the chamber as per plan and fire the boom cold with the (fixed) primary actuator.

Date Action Taken: 9 September 2004 **Retest Results:** FM2 Boom Deployed on fixed Primary circuit 13 September 2004

Corrective Action Required/Performed on other Units: FM1 does not have this problem. Not only did it deploy correctly on both primary and secondary actuators in thermal vacuum using the actuator GSE, we also measured it with an ohm meter.

Closure Approvals

Subsystem Lead:	_____	Date: _____
IMPACT Project Manager:	_____	Date: _____
IMPACT QA:	_____	Date: _____
NASA IMPACT Instrument Manager:	_____	Date: _____