

# STEREO IMPACT

PROBLEM REPORT

PR-1013

STE-U FM2 Door

2004-07-27

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

<b>Assembly :</b> STE-U	<b>SubAssembly :</b> Door
<b>Component/Part Number:</b>	<b>Serial Number:</b> FM-2
<b>Originator:</b> David Curtis	<b>Organization:</b> U.C. Berkeley
<b>Phone :</b> 510-642-5998	<b>Email :</b> dwc@ssl.berkeley.edu

## 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 the 4<sup>th</sup> cold soak of the STE-U FM2 thermal vac test (with the detector at -95C) the STE-U door status sense switch failed. The door status changed spontaneously from OPEN to ILLEGAL (indicating both open and closed status switches were closed). In that state you cannot change the door position with normal commands since the switch state is illegal, but backup commands that ignore the switch state were used to re-close the door, and the sense switches returned to a legal state (CLOSED). Subsequent door tests mostly worked, but occasionally showed spurious values for the CLOSED door sense switch.

## Analyses Performed to Determine Cause

The instrument was warmed and removed from the chamber. The door sense switch was examined and it was clear that the switch was too close to the cam so that it could make intermittent contact with it, causing intermittent door status. This was overlooked in the original assembly, and it passed the original testing, but failed in thermal vac, probably due to differential expansion of the door elements. See attached pictures.

## Corrective Action/ Resolution

Rework      Repair      Use As Is      Scrap

The door switch contact was shortened to provide adequate clearance to the cam. See attached pictures. The door was then cycled 100 times to verify consistent behavior before being returned to the thermal vac chamber.

Further testing (including door cycling cold) will take place in thermal vac. Another different anomaly was experienced and all retest and repair was performed to PFR1014

**Date Action Taken:** 2004-07-27      **Retest Results:** Began T/V and repeated the 4<sup>th</sup> cycle and completed tests through the 7 cycles. Completed a 100 cycle door test in addition to the CPT while in cold soak.

**Corrective Action Required/Performed on other Units**      Serial Number(s): n/a The other units were inspected and qualification tests were successful. \_\_\_\_\_

## Closure Approvals

Subsystem Lead: \_\_\_\_\_ Date: \_\_\_\_\_  
IMPACT Project Manager: \_\_\_\_\_ Date: \_\_\_\_\_  
IMPACT QA: \_\_\_\_\_ Date: \_\_\_\_\_  
NASA IMPACT Instrument Manager: \_\_\_\_\_ Date: \_\_\_\_\_

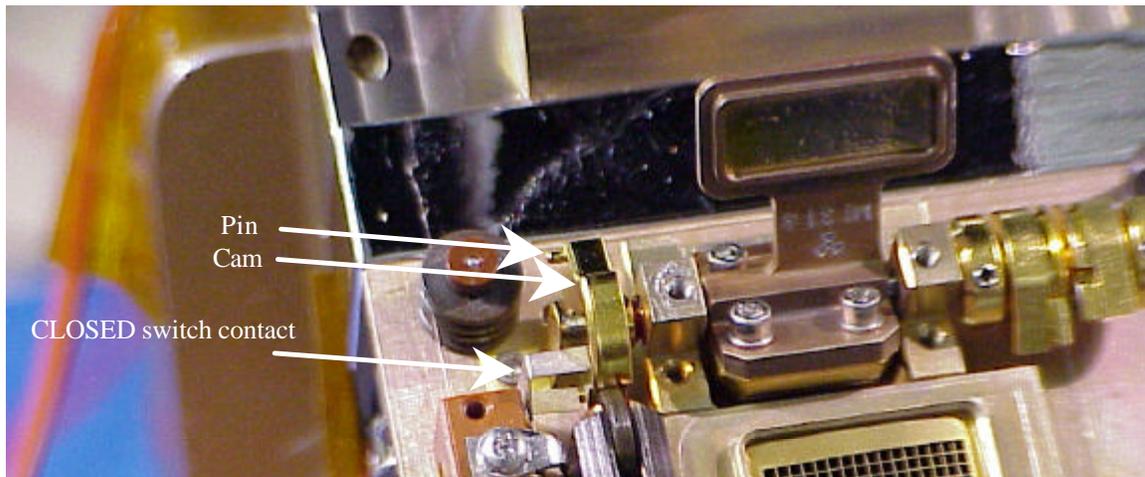
# ***STEREO IMPACT***

PROBLEM REPORT

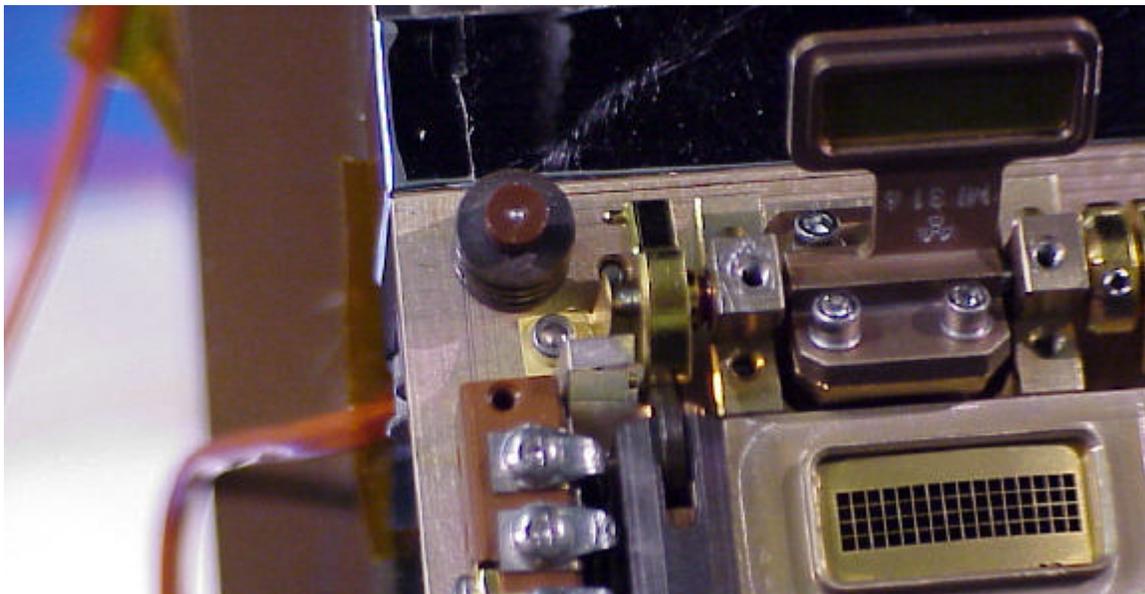
PR-1013

STE-U FM2 Door

2004-07-27



STE-U Door mechanism before fix



STE-U Door mechanism after fix