

STEREO IMPACT

PROBLEM REPORT

PR-3008

Walpole

3/04/05

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

Assembly : SIT Instrument	SubAssembly : telescope
Component/Part Number: silicon detector SN 42-104A	Serial Number: 02
Originator: Walpole	Organization: UMd
Phone : 301-405-6217	Email : Walpole@sampex.umd.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

During the pre-test functional for thermal balance testing of the FM2 unit, we observed very high values (100s of thousands of counts/minute) on the solid state detector (SSD) singles count rate. At the time, the instrument was mounted in the thermal balance chamber, inside its thermal blanket with all the heaters and thermocouples installed for TB testing. The rate was somewhat variable and was sensitive to activities around the instrument – adjusting blanket, probing chassis grounds.

Analyses Performed to Determine Cause

We verified that the SSD bias was on. Removing bias increased count rate to the tens of millions of counts/minute.

We turned power off and on. No effect.

We checked the grounding on all sections of the instrument exterior. All low impedance to chamber ground.

Disconnected SSD Cable from Energy electronics. Count rate went to 0. Checked continuity of shield – ok. Reconnected. Count rate went back to high value.

Disconnected thermocouples from controllers but left them physically attached to SIT. Count dropped to intermediate value (~50,000/min) but was still unacceptably high.

Closed chamber. No effect.

Substituted FM1 in chamber. Count rate ~3/minute – as expected.

Pumped down chamber with FM2 overnight. Next morning count rate >1 million/minute with bias on.

We do not yet have a cause but our best candidate is a bad SSD.

Corrective Action/ Resolution

Rework Repair Use As Is Scrap

A replacement detector (S/N 44-120F) was installed in FM2. Post replacement alpha test were poor on this detector also. The detector was then changed back to the detector that was installed prior to thermal balance (S/N 42-104A) since this SSD was now showing signs of improvement. Close this PFR out to PFR 3010.

Date Action Taken: ___3/10/2005 _____ **Retest Results:** Detector installed is marginal.

Reference PFR 3010

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Corrective Action Required/Performed on other Units Serial Number(s): __N/A__

Closure Approvals

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