

STEREO IMPACT

PROBLEM REPORT

PR-7009

SEPT-NS Bracket

2005-7-27

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 SEP	SubAssembly : SEPT-NS
Component/Part Number:	Serial Number: FM1 (SN002), FM2(SN004)
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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 mounting bolts that mount the SEPT-NS instrument to the bracket have only 0.12" of thread engagement into the tapped bracket. Typically, 1.5D of thread engagement (approximately 0.246") is used.

Analyses Performed to Determine Cause

The flight units were visually examined. The inspection found that less than 1D of thread engagement and slightly fewer than four threads were in the tapped bracket section. At the torque values used, the internal aluminum threads may have been damaged (yielded).

Corrective Action/ Resolution

- Rework Repair Use As Is Scrap

Examined the design to determine whether a #8-32 bolt and lock nut thru a clearance hole could be used in place of the M4 screw and tapped hole. There was room for the holes to be opened up and for nuts on the underside of the bracket.

At APL:

1. Removed the instrument from the bracket.
2. Opened up the mounting holes in the bracket for a #8 clearance hole (0.18"). Spot iridite finish was applied to the newly drilled-out holes.
3. Replaced the M4 mounting bolt with a #8-32 socket head cap screw (titanium, 1.44" long) and locking nut to mount the instrument.
4. Applied a torque of 16 in-lb to each bolt. The torque applied was ~16 in-lb (plus running torque). This torque applies roughly 700 lb per bolt, well within the capability of the Ultem and high enough to prevent gapping. After blanketing the bolt torques were adjusted for creep due to the Ultem.

Date Action Taken: 2 Aug 2005 **Retest Results:** Not applicable

Corrective Action Required/Performed on other Units Serial Number(s): 002, 004

Closure Approvals

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

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