STANFORD UNIVERSITY
W.W. HANSEN EXPERIMENTAL PHYSICS LABORATORY
GRAVITY PROBE B, RELATIVITY GYROSCOPE EXPERIMENT
STANFORD, CALIFORNIA 94305-4085

(PTP) SRE BOX REMOVAL

GP-B SCIENCE MISSION DEWAR OPERATIONS ORDER

11 November, 1999

PREPARED	H. Yengoyan	Date
APPROVED	M. R. Anderson, Systems Test Engr.	Date
APPROVED	M. Taber, Test Director	Date
APPROVED	J. Janicki, Safety Engineer	Date
APPROVED	D. Ross, Quality Assurance	Date
APPROVED	S. Buchman, Hardware Manager	Date

1. SCOPE

This procedure provides authority to remove the SRE Engineering Unit and its associated bracket from the neck of the Science Mission Dewar.

NOTE

Flight hardware, protect parts and assemblies to prevent magnetic contamination and physical damage.

2. REFERENCE DOCUMENTS

2.1. Procedures

Not applicable

2.2. Drawings

8A01961GSE - FWD Electronics Mounting GSE Bracket, Rev. NC

8A01861GSE – TRE Simulator Bracket

2.3. FIGURES

Not applicable

2.4. SUPPORTING DOCUMENTATION

GP-B Bolt Torque Specification, LMMS-5834972

GP-B Magnetic Control Plan, LMMS-5835031

GP-B (FIST) Preliminary Hazards Analysis, LMMS-F314446

GP-B (FIST) Safety Plan, LMMS- F314447

FIST Emergency Procedures SU/GP-B P0141

3. GENERAL REQUIREMENTS

3.1 Quality Assurance

Integration shall be conducted on a formal basis to approved and released procedures. The QA program office shall be notified of the start of this procedure. A Quality Assurance Representative, designated by D. Ross shall be present during the procedure and shall review any discrepancies noted and approve their disposition. Upon completion of this procedure, the QA Program Engineer, D. Ross or her designate, nominally R. Leese, will certify her concurrence that the effort was performed and accomplished in accordance with the prescribed instructions by signing and dating in the designated place(s) in this document. Discrepancies will be recorded in a D-log or as a DR per Quality Plan P0108.

3.2 Red-line Authority

Authority to red-line (make minor changes during execution) this procedure is given solely to the PTD or his designate and shall be approved by the QA Representative. Additionally, approval by the Hardware Manager shall be required, if in the judgment of the PTD or QA Representative, experiment functionality may be affected.

3.3 Personnel

The following personnel are qualified to perform this procedure:

- Haig Yengoyan
- Paul Ayres
- Tom Welsh
- Mike Taber
- Dave Murray
- Terry McGinnis

See section 3.1 for details on which Quality Assurance personnel are required to be notified and/or witness this procedure.

3.4 Safety

In case of any injuries obtain medical treatment: at:

LMMS **Call 117** Stanford University **Call 9-911**

3.4.1 The GP-B (FIST) Safety Plan, LMSC-F314447, discusses safety design, operating and maintenance requirements which the R&DD program office has adhered to. These requirements

should be reviewed for applicability at any facility outside of R&DD (e.g. Stanford University) where FIST hardware is operated.

3.5 Hazards Analysis

The GP-B (FIST) Preliminary Hazards Analysis, LMSC-F314446, discusses hazards inherent in R&DD-developed FIST hardware in greater detail.

4. HARDWARE REQUIREMENTS

The Dewar and accompanying build hardware are very delicate. Be sure to handle them with care so that they do not become damaged.

NOTE

Take all necessary precautions not to let anything physically damage the Science Mission Dewar or particulate onto its surfaces.

4.1 Hardware Required:

Qt. 1 SRE Engineering Unit
Qt. 1 8A01861GSE TRE Simulator Bracket
Qt. 6 Rectangular Washer to Mount the SRE EU
Qt. 1 Torque wrench 10-120 in-lbs.
Qt. AR Fasteners for attaching support the SRE and bracket
Qt. AR Hand tools (Alan wrenches, screw drivers, etc.)

5. OPERATIONS:

Operator _____.

Date Initiated_____.

Time Initiated_____.

6. NOTIFICATION

6.1 Safety Notification

Safety shall be notified 24 hours in advance prior to the start of any work performed. Record who was contacted, the date, and time below.

Contact: _____
Date and Time: _____

6.2 Quality Assurance Notification

PTD to notify the Quality Engineer 24 hours in advance prior to the start of any work performed. Record who was contacted, the date, and time below.

Contact: _____
Date and Time: _____

6.3 ONR Notification

Quality Engineer to notify ONR 24 hours in advance prior to the start of any work performed. Record who was contacted, the date, and time below.

Contact: _____
Date and Time: _____

7. REMOVING THE SRE ENGINEERING UNIT AND TRE BRACKET

7.1 Removing the SRE EU and TRE Bracket

7.1.1 Verify that all the SRE Engineering Unit test cables have been disconnected and the SRE is ready to be removed. If there are any cable(s) still attached, contact Jim Lockhart or his delegate to remove the cable(s) before proceeding.

CAUTION

The SRE Unit is ESD Sensitive. Use appropriate ESD protection when handling the unit.

7.1.2 Two people who are properly ESD grounded are required for this operation. While one person firmly holds the SRE Engineering Unit, a

second person is to remove the 6 each .75 long 10-32 screws and 6 each rectangular washers which hold the SRE to the 8A01861GSE TRE Simulator Bracket.

7.1.3 After the screws and washers are removed, carefully place the SRE EU into its shipping case for transportation back to Lockheed Martin.

7.1.4 Two people will be required to remove the 8A01861GSE TRE Simulator Bracket. While one person holds the 8A01861GSE bracket, the other person is to unscrew the 8 each .875 long 10-32 screws used to hold the 8A01961GSE bracket to the dewar.

7.1.5 After the 8A01861GSE TRE Simulator Bracket is removed, route it back to John Belong at Lockheed Martin for electronic box testing.

Approval of Section 7.1

Approved: _____ Date: _____
Integration Engineer

Discrepancies if any:

Approved: _____ Date: _____
QA Representative

Approved: _____ Date: _____
Integration Manager

8. PROCEDURE COMPLETED

The results obtained in the performance of this procedure are acceptable:

Test Engineer _____ Date _____

Discrepancies if any:

The information obtained under this assembly and test procedure is as represented and the documentation is complete and correct:

Integration Manager _____ Date _____

QA Representative _____ Date _____

Quality Assurance _____ Date _____