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

(PTP) AFT SRE TEMPORARY INSTALLATION

GP-B PAYLOAD VERIFICATION TEST II OPERATIONS ORDER

P0851 Rev -
31 May, 2001

PREPARED	W. Bencze	Date
APPROVED	K. Pearce, Systems Test Engr.	Date
APPROVED	W. Bencze, Test Director	Date
APPROVED	D. Ross, Quality Assurance	Date
APPROVED	R. Brumley, Payload Technical Mgr.	Date

REVISION RECORD

REVISION	ECO	PAGES	DATE

1. SCOPE

This procedure provides authority to temporarily install the Aft SRE A unit into the Fist-Ops lab to be used during Payload Verification II Phase B.

NOTE

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

2. REFERENCE DOCUMENTS

2.1. Procedures

P0843	SRE GSE checkout

2.2. Drawings

8A00920-101	SRE A Aft unit assembly drawing (GP-B)
8A02105	Payload Cable Interconnection Diagram

2.3. FIGURES

Not applicable

2.4. SUPPORTING DOCUMENTATION

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

SRE GSE Equipment Test Procedure P0843

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 Test Director or his designate and shall be approved by the QA Representative. Additionally, approval by the Payload Technical Manager shall be required, if in the judgment of the Test Director or QA Representative, experiment functionality may be affected.

3.3 Personnel

The following personnel are qualified to perform this procedure:

- William Benzce
- Lo Van Ho
- Scott Smader
- Rick Bevan
- Other:_____QA approval_____

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:

Stanford University **Call 9-911**

4. CONFIGURATION REQUIREMENTS:

4.1 SMD mounted in SMD test stand with the work platforms and scaffolding attached.

5. HARDWARE REQUIREMENTS

The Dewar, SRE 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 SRE and Science Mission Dewar or particulate onto its surfaces.

5.1 Hardware Required:

Qt. 1	8A00920-101 SRE A Aft Assembly
Qt. 5	NAS1351N3 or equivalent, 10-32 SHCS, A-286, 1/2" long
Qt. 5	NAS620C10 or equivalent, #10 Flat Washer, CRES
Qt. 1	26245-301 ground strap.
Qt. 1	Torque wrench 10-120 in-lbs.
Qt. 1	Mili Ohm meter
Qt. 1	Lab cart with ECU mounting plate attached.
Qt. AR	Hand tools (Alan wrenches, screw drivers, etc.)

6. OPERATIONS:

Operator _____.

Date Initiated_____.

Time Initiated_____.

7. NOTIFICATION

7.1 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: _____

7.2 Quality Assurance Notification

The Test Director is 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: _____

7.3 Government Notification

Quality Engineer to notify Government Representative 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: _____

8. INSTALLING THE SRE UNIT AND CABLES

8.1 Mounting the SRE Unit

CAUTION

The SRE Unit is ESD Sensitive. Use appropriate ESD protection when handling the unit or installing associated cables.

8.1.1 Locate cart with SRE mounting plate attached. Wipe off the plate and SRE mounting tabs with isopropyl alcohol.

8.1.2 Connect test card ground strap to Dewar or tophat ground point.

8.1.3 Lift the SRE unit onto on to plate; align with four mounting holes at the corners of the SRE box..

8.1.4 While one person is holding the SRE in place, the other person will attach the 4 each 10-32 x 0.5" long socket head cap screws and 4 each #10 flat washers. Make sure to place the rolled edge of the washer against the SRE so that the mounting tabs will not be marred. Tighten the screws hand tight.

8.1.5 Verify that there is one flat washer under each socket head cap screw.

8.1.6 After all the fasteners are installed on the SRE, torque the four 10-32 screws per 21 to 30 inch-pounds.

Torque Wrench Asset Number _____
Calibration Due Date _____
Final Torque Value _____

8.1.7 Quality Assurance to witness torque.

QA Witness _____

8.1.8 Verify that all screws were torqued and the SRE unit is correctly oriented.

8.1.9 After the SRE unit is installed, measure the electrical resistance between the SRE unit and the mounting plate. The resistance is to be less than 0.1 Ohms. Record the data below.

Ohm Meter Asset Number _____
Calibration Due Date _____
SRE unit to mounting bracket_____ Ω

8.1.10 Quality Assurance to witness measurement.

QA Witness _____

Approval of Section 8.1

Approved: _____ Date: _____
Integration Engineer

Discrepancies if any:

Approved: _____ Date: _____
PTD

Approved: _____ Date: _____
QA Representative

Approved: _____ Date: _____
Integration Manager

8.2 Installing Cables to the SRE Unit.

CAUTION

The SRE Unit is ESD Sensitive. Use appropriate ESD protection when handling the unit or installing associated cables.

8.2.1 Once the SRE is installed on the mounting plate, install the following cables per 8A02105 from the Aft SRE to the Forward SRE and other payload boxes. Prior to installing each cable, inspect the cable's connectors and mating connectors for bent or misaligned pins or sockets. If any contacts are discrepant, do not install the cable and notify Quality Assurance in order to document the discrepancy.

ONLY LMCO personnel are to connect flight cables to flight hardware.

W400	8A00557-101
W401	8A00558-101
W406	8A00563-101
W404	8A00561-101
W405	8A00562-101
W141	8A01484-101

8.2.2 Verify that P0843 has been run on the SRE Power/HLD GSE.

8.2.3 Prior to connection of GSE to SRE, confirm proper pinout and function of GSE with SRE RE or designee. (See P0843).

SRE RE: _____

QA witness:_____

8.2.4 Verify that SRE power is OFF in GSE.

8.2.5 Connect SRE GSE J1 to SRE Power J1.

8.2.6 Connect SRE GSE J2 to SRE HLDs J2.

8.2.7 Attach GSE SRE to ECU clock cable from SRE J9 to Aft ECU J23. (This step is omitted if ECU is not available.)

8.2.8 Connect GSE 1553 cable to SRE J3 (1553 A)

8.2.9 Connect GSE RS-232 cable from Sun workstation to SRE Payload Processor J5.

8.2.10 Verify that all the cables are installed in their proper locations and their fasteners are hand tight.

Approval of Section 8.2

Approved: _____ Date: _____
Integration Engineer

Discrepancies if any:

Approved: _____ Date: _____
QA Representative

Approved: _____ Date: _____
Integration Manager

9. 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 Manager _____ Date _____