GP-B SCIENCE MISSION DEWAR OPERATIONS ORDER

TRE BOX REMOVAL

P0629 Rev. A

4 October 2000

PREPARED
H. Yengoyan / Bob Farley

APPROVED

APPROVED
M. Taber, Test Director

APPROVED
J. Janicki, Safety Engineer

APPROVED
D. Ross, Quality Assurance

APPROVED
S. Buchman, Hardware Manager
Revision Record:

<table>
<thead>
<tr>
<th>Rev</th>
<th>Rev Date</th>
<th>ECO #</th>
<th>Summary Description</th>
</tr>
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<tr>
<td>-</td>
<td>9 Nov 99</td>
<td></td>
<td>Original procedure</td>
</tr>
<tr>
<td>A</td>
<td>3 Oct 2000</td>
<td>1209</td>
<td>Incorporated reference to connector savers</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>Changed destination to bonded stores</td>
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1. SCOPE
This procedure provides authority to remove both Flight Telescope Readout Electronics (TRE) Assemblies 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
8A00631 – FWD Payload Electronics Install Drawing (GP-B), Rev. N/C
5856126 – Bracket, Front, FWD Elec Mounting (GP-B), Rev. A
5856127 – Bracket, Rear, FWD Elec Mounting (GP-B), Rev. A

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
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
- Bob Farley

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
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:

<table>
<thead>
<tr>
<th>Qt.</th>
<th>Description</th>
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<tbody>
<tr>
<td>2</td>
<td>8A00918-101 Rev. D TRE Assembly</td>
</tr>
<tr>
<td>16</td>
<td>NAS1351N3-12 or equivalent, 10-32 SHCS, CRES, 3/4” long</td>
</tr>
<tr>
<td>16</td>
<td>NAS620C10 or equivalent, #10 Flat Washer, CRES</td>
</tr>
<tr>
<td>16</td>
<td>NAS1149V0363, #10 Titanium Washer</td>
</tr>
<tr>
<td>1</td>
<td>8A01287-101 Rev. B, TRE B J1 to Top Hat I8 (Non-Flight Cable)</td>
</tr>
<tr>
<td>1</td>
<td>8A01288-101 Rev. B, TRE A J1 to Top Hat I9 (Non-Flight Cable)</td>
</tr>
<tr>
<td>2</td>
<td>8A01948GSE-101 Rev. A, TRE GSE Test Cable</td>
</tr>
<tr>
<td>1</td>
<td>Torque wrench 10-120 in-lbs. (If Needed)</td>
</tr>
<tr>
<td>1</td>
<td>Mili Ohm meter (If Needed)</td>
</tr>
<tr>
<td>1</td>
<td>Shorting Plug, TRE-SP-I8-GSE</td>
</tr>
<tr>
<td>1</td>
<td>Shorting Plug, TRE-SP-I9-GSE</td>
</tr>
<tr>
<td>AR</td>
<td>Hand tools (Allen wrenches, screwdrivers, etc.)</td>
</tr>
</tbody>
</table>
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 TRE BOXES AND CABLES

7.1 Removing the TRE Cables

**CAUTION**
The TRE Units and associated cables are ESD Sensitive. Use appropriate ESD protection when handling these items.

7.1.1 Remove NON-FLIGHT CABLE 8A01287-101 by disconnecting P1 on cable from the connector saver on J1 of TRE B. Disconnect P18 on cable from the connector saver on I8 on TOP HAT. Install shorting plug, TRE-SP-I8-GSE on the connector saver on Tophat I8.

7.1.2 Remove NON-FLIGHT CABLE 8A01288-101 by disconnecting P1 on cable from the connector saver on J1 of TRE A. Disconnect P19 on cable from the connector saver on I9 on TOP HAT. Install shorting plug, TRE-SP-I9-GSE on the connector saver on Tophat I9.

7.1.3 Do not remove 1 ea. TEST CABLES 8A01948GSE from Connector Panel A.

7.1.3.1 Remove cable TRE-P2 from the connector saver on TRE A-J2.

7.1.3.2 Remove cable TRE-P3 from the connector saver on TRE A-J3.

7.1.3.3 Remove cable TRE-P4 from the connector saver on TRE A-J4.

7.1.3.4 Remove cable TRE-P5 from the connector saver on TRE A-J5.

7.1.3.5 Remove cable P15 from Connector Panel A-J15.

7.1.3.6 Remove cable P17 from Connector Panel A-J17.

7.1.4 Do not remove 1 ea. TEST CABLES 8A01948GSE from Connector Panel B.

7.1.4.1 Remove cable TRE-P2 from the connector saver on TRE B-J2.

7.1.4.2 Remove cable TRE-P3 from the connector saver on TRE B-J3.

7.1.4.3 Remove cable TRE-P4 from the connector saver on TRE B-J4.

7.1.4.4 Remove cable TRE-P5 from the connector saver on TRE B-J5.
7.1.4.5  Remove cable P15 from Connector Panel B-J15.

7.1.4.6  Remove cable P17 from Connector Panel B-J17.

7.1.4.7  Wrap the two cable bundles around the GSE test rack in several large loops supported on the back of the monitor cabinet.

7.1.5  After all the cables have been removed, cover the exposed TRE connector savers with capplugs as needed.

Approval of Section 7.1

Approved: ___________________________  Date: ____________
Integration Engineer

Discrepancies if any:

Approved: ___________________________  Date: ____________
QA Representative

Approved: ___________________________  Date: ____________
Integration Manager
7.2 Removing the TRE’s from the Dewar

**CAUTION**
The TRE Units are ESD Sensitive. Use appropriate ESD protection when handling the units.

7.2.1 Two people who are properly ESD grounded are required for this operation. While one person firmly holds the F/N 2 TRE A Assy Serial # 001, a second person is to remove the eight each F/N 9 bolts and F/N 15 & 16 washers. Place the washers and screws into a labeled bag and store for future use.

7.2.2 Repeat for TRE B Serial # 002 Assy.

7.2.3 After the TRE’s are removed, place each unit in protective ESD bags, and label the them as Flight so that they will not be moved or tampered with. Return the Bagged TREs and the Tophat cables to Bonded Stores adjacent to FIST Ops for storage.

**Approval of Section 7.2**

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:

Integration 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 ____________