



W. W. Hansen Experimental Physics Laboratory

**STANFORD UNIVERSITY
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Gravity Probe B Relativity Mission

Proton Monitor Synchronization Test Procedure

GP-B P0642

19 November, 1999

Prepared by: Peter Rusznyak **Date**
STI

Approved by: Awele Ndili **Date**
Proton Monitor Product Team Leader

Approved by: S. Buchman **Date**
Hardware Manager

Approved by: Dorrene Ross **Date**
Quality Assurance

Notes:

1. This procedure was originally written by STI as document No.: GPB-GI-435.
- 2: All redlines must be approved by QA
Level of QA required during performance of this procedure:
 Stanford QA Representative
 Government QA Representative

1 Scope

This Document provides information of the Synchronization testing to be performed on the Proton Detectors (FM and FS) specified in contract PR 9071.

2 Personnel Requirements

This test to be conducted only by certified personnel: Peter Rusznyak and Awele Ndili. Notify ONR 24 hours prior to beginning testing.

Person Contacted: _____ Date and Time: _____

Notify QA 24 hours prior to beginning testing.

Person Contacted: _____ Date and Time: _____

3 Quality Assurance

Operations 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.

4 Safety Requirements

- 4.1 Electrical mating and demating of flight hardware connectors
 - 4.1.1 Place cable connector A only into socket A, etc.
 - 4.1.2 Strain relieve all cables
 - 4.1.3 Connection and disconnection shall be performed only when the equipment involved is in a powered-down state.
 - 4.1.4 Connectors shall be inspected for contamination and for bent, damaged, or recessed pins prior to mating.
 - 4.1.5 Connector savers are to be used on the Proton Monitor connectors.

Note: The mating and demating of all flight connectors must be recorded in a log. This procedure does not require removal or replacement of connector savers onto the flight connectors--they should already be in place.

4.2 Electro Static Discharge (ESD)

4.2.1 No special precautions for ESD are required for this device.

5 General Instructions

This section should include general instructions that apply throughout the procedure and are not covered elsewhere.

5.1 Red-line Authority

5.1.1 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 judgement of the PTD or QA Representative, experiment functionality may be affected.

5.1.2 Any nonconformance or test anomaly should be reported by a Discrepancy Report. Refer to the Quality Plan, P0108, for guidance. Do not alter or break test configuration if a test failure occurs; notify quality assurance.

5.1.3 Only the following persons have the authority to exit/terminate this test or perform a retest: Peter Ruzsnyak and Awele Ndili

6 Cleanliness requirements

The Proton Detector FM and FS should always be kept in a Class 10,000 or better environment. The units must be handled using gloves. Cleaning of the units is possible using ethanol only. Special precaution has to be made to avoid ethanol getting under the titanium shields.

7 Hardware Required:

Flight Proton Monitor, PN _____

Ground Support Equipment: _____

STIL Variable Resistor Box

8 Applicable Documents

PR 9071 Stanford contract to design, fabricate and deliver the High Energy Proton Monitor

GPB-GI-250 STIL Installing the Proton Monitor

9 Installing the Proton Detector

RECORD TEST LOCATION:

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The PD under test shall be connected to the GSE via the power and interface cables. Refer to STIL document GPB-GI-250.

Set Up Complete: Test Operator Initial: _____, Date: _____, Time: _____

QA Witness: _____ Date: _____

10 Power Consumption testing

Test Entry: Test Operator Initial: _____, Date: _____, Time: _____

<u>Step</u>	<u>Action</u>	√ complete
1	Power up the PD at nominal voltage (28V).	
2	Note the reading of the GSE current meter after the PD starts sending science frames. At room temperature (22 °C) the reading shall be between 110 mA and 120 mA. Reading: _____	
3	Turn off the PSU signal using the corresponding button on the GSE screen.	
4	Note the reading of the GSE current meter. The new reading shall be between 95 mA and 105 mA. This is the result of the increase of the internal PSU efficiency when operating at its free-running frequency. Reading: _____	

11 Procedure Completed

Test Complete with acceptable results.

Performed by: _____ Date: _____

QA Witness: _____ Date: _____

Discrepancies if any:

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

Test Director/ PTD: _____ Date: _____

QA Manager: _____ Date: _____