



W. W. Hansen Experimental Physics Laboratory
STANFORD UNIVERSITY
STANFORD, CALIFORNIA 94305 - 4085

Gravity Probe B Relativity Mission

PROTON MONITOR: FINAL CHECKOUT

**P0739 Rev –
September 22, 2000**

Verifies the following VRCM paragraphs:
3.1.2.2, 3.2.7, 3.3.1, 3.3.2, 3.4.2.1, 3.4.2.2, 3.4.2.4, 3.4.2.6, 3.4.2.7

Prepared by: Paul Shestople
RE, Proton Monitor

Date

Approved by: William J. Bencze
RE, Gyroscope Suspension System (GSS) Group

Date

Approved by: Dorrene Ross
GP-B Quality Assurance

Date

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1.0 Revision History

Rev Level	Comments/notes	Date	Revised By
-	First release of this test procedure	22-Sep-00	P Shestople

2.0 Scope

This procedure details all remaining tests required for the Proton Monitor final ADR.

2.1	Secondary Star Ground Point	(VRCM 3.1.2.2)
2.2	Static Magnetic Field	(VRCM 3.2.7)
2.3	Envelope Measurement	(VRCM 3.3.1)
2.4	Weight Measurement	(VRCM 3.3.2)
2.5	Telescope Orientation	(VRCM 3.4.2.1)
2.6	Spherical Viewing Angle	(VRCM 3.4.2.2)
2.7	Integral Channels	(VRCM 2.4.2.4)
2.8	Event Counter	(VRCM 3.4.2.6)
2.9	Energy Discrimination	(VRCM 3.4.2.7)

3.0 Reference Documents

3.1 GP-B PDOC P0636, PM Functional Test

4.0 Test Facilities

Location:

5.0 QA Provisions:

- 5.1 This procedure shall be conducted on a formal basis to its latest approved and released version. The QA Program Engineer (D. Ross) or their designated representative and ONR shall be notified 24 hours prior to the start of this procedure. QA may monitor the execution of all or part of this procedure should they elect to do so.
- 5.2 Upon completion of this procedure, the PM REE and the GP-B QA manager shall certify her/his concurrence that the procedure was performed and accomplished in accordance with the prescribed instructions by signing and dating their approval at the end of this procedure.

6.0 Test Personnel

This test procedure is to be conducted only by Paul Shestople or his designated representatives:

7.0 General Instructions

- 7.1 Redlines can be initiated by the certified test personnel listed in Section 6.0 and must be approved by QA.
- 7.2 Test operators shall read this procedure in its entirety and resolve any apparent ambiguities prior to beginning this test.
- 7.3 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.
- 7.4 Only the following persons have the authority to exit/terminate this test or perform a retest: Certified test operators listed in Section 6.0 and GP-B QA.

8.0 Test Equipment

The following support hardware, test equipment, or software will be used and the applicable information for the instruments shall be recorded below. Hand-written additions to this list may be made in the spaces provided.

Equipment Description	Make	Model	SN	Calibration
Proton Monitor Flight Main (FM)	STIL	N/A		N/A
Proton Monitor Flight Spare (FS)	STIL	N/A		N/A
Ground Support Equipment	STIL	N/A		N/A
Cables	STIL	N/A		N/A

9.0 Testing

9.1 Secondary Star Ground Point

Verify that the analogue and digital grounds are connected at an unique point which is isolated from the housing and routed outside of the box.

Flight Main Verification:
Flight Spare Verification:

Document steps of verification:

9.2 Magnetic Field Measurement.

Verify that the magnetic field generated by the proton monitor does not exceed 1 gauss at the envelope of the device.

Magnetometer Make and Model: _____

Magnetometer Calibration Date: _____

Unit	Maximum magnetic field measured at envelope (gauss)
Flight Main	
Flight Spare	

Document steps of verification:

9.3 Envelope Measurement

Verify that the envelope does not exceed 17 cm x 15 cm x 10 cm.

Caliper Make and Model: _____

Calibration Date: _____

Unit	Width (cm)	Height (cm)	Depth (cm)
Flight Main			
Flight Spare			

9.4 Weight Measurement

Verify that the weight does not exceed 3.5 Kg.

Scale Make and Model: _____

Calibration Date: _____

Unit	Weight (g)
Flight Main	
Flight Spare	

9.5 Telescope Orientation

Using a protractor or a right angle square, verify that the telescopes are oriented 90 degree from each other.

Flight Main Verification: _____

Flight Spare Verification:

9.6 Spherical Viewing Angle

Verify that each detector has a 45 degree spherical viewing angle.

Flight Main Verification:

Flight Spare Verification:

Document steps of verification:

9.7 Integral Channels

Verify that the PM shall have integral event channels for protons with energies above 500 MeV.

Flight Main Verification:

Flight Spare Verification:

Document steps of verification:

- 9.8 Event Counter
Verify that each detector has an integral event counter

Flight Main Verification:
Flight Spare Verification:

Document steps of verification:

- 9.9 Energy Discrimination
Verify that each detector can discriminate 256 energy channels.

Flight Main Verification:
Flight Spare Verification:

Document steps of verification:

10.0 Completion of Procedure:

The completed procedure should be composed of this PDOC.

I certify that the this procedure was performed in whole and that the data recorded above, and included, is complete and accurate.

Test Engineer Date

This is to certify that the information obtained under this test procedure is as represented and the documentation is completed and correct.

Proton Monitor Date
REE

Quality Date
Assurance

Notes: