



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

(PTP) DEWAR WELL ORBIT VENT ASSEMBLY INSTALLATION PROCEDURE

GP-B SCIENCE MISSION DEWAR OPERATIONS ORDER

2 September 1999

PREPARED	_____	_____
	R.K. Ajitomi, Payload Engineer	Date
APPROVED	_____	_____
	D. Read, Dewar REE	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 install the Well Orbit Vent Assembly 5833903-101 onto the neck of the Science Mission Dewar to be used during payload integration testing.

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

5833500 – Science Mission Dewar Final Assembly, Rev. C

5833903 – Well Orbit Vent Assembly, Rev. E

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

Safety Wire Installation Procedure MS33540

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 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:

- Bob Ajitomi
- Paul Ayres
- Tom Welsh
- Mike Taber
- Dave Murray

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. CONFIGURATION REQUIREMENTS:

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

5. HARDWARE REQUIREMENTS

The Dewar and accompanying build hardware are very delicate. Be sure to handle them with care so 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.

5.1 Hardware Required:

Qt. 1	58933903-101 Well Orbit Vent Assy., Rev E
Qt. 1	FG0133C1 Copper Gasket
Qt. 1	MSPA8993A Male Adapter
Qt. 1	MSPA8993B Female Adapter
Qt. 1	CU-8-VCR-2-GR Gasket with Retainer
Qt. 3	5833957-101 Spacer (Non-Flight)
Qt. 6	NAS1352N08H8 Soc. Head Cap Screw #8-32
Qt. 1	Torque Wrench 10-120 in-lbs.
Qt. AR	Safety Wire, MS20995C20
Qt. AR	Hand tools (Allen wrenches, screw drivers, etc.)

6. OPERATIONS:

Operator _____.

Date Initiated _____.

Time Initiated _____.

6.1 Configuration Requirements:

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

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

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: _____

7.3 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: _____

8. DEWAR WELL FILL

8.1 INITIATE and COMPLETE WELL FILL PROCEDURE PER P0210D. Record start and finish date/times.

Start Date/Time: _____

Finish Date/Time: _____

8.1.1 After initiating Well Fill Procedure P0210D proceed with steps 8.2.1 thru 8.2.1.2

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 INSTALLATION OF WELL ORBIT VENT ASSEMBLY

8.2.1 Clean both sealing surfaces of Male Adapter FN 21 and Female Adapter FN 20 with IPA.

- 8.2.1.1 Inspect both sealing flanges with 5X magnifier for deep scratches and or contamination. Surface scratches will not impair the performance of the connection.
- 8.2.1.2 Inspect gaskets FN 8 and FN 25 for deep scratches or nicks. Surface scratches will not impair the performance of the connection. Clean gaskets with IPA.
- 8.2.2 Obtain approval from M. Taber or D. Murray to remove plug from Bellows Assembly P/N 321-8-X-6FRB. Reference drawing 5833500 Rev C, Sheet One.
- 8.2.2.1 Reference and record any operations order performed to assure positive vent flow: _____

CAUTION: The Bellows Assembly and Well Orbit Vent Assembly are delicate equipment. Handle with extreme care.

- 8.2.3 Carefully remove plug from Bellows Assembly.
 - 8.2.3.1 Verify positive gas flow out of well.
 - 8.2.3.2 Carefully press the Gasket Retainer Assembly (P/N CU-8-VCR-2-GR) clip over the turned down shoulder on the gland located on the Male Adapter FN 21 (P/N MSPA8993A).
 - 8.2.3.2.1 Carefully install the threaded side of the Male Adapter onto the Bellows Assembly. Tighten the nut finger-tight; then scribe both the female nut and the male nut hex.
 - 8.2.3.2.2 Carefully tighten the Bellows Assembly female nut 1/4 turn. **Always use a back up wrench on the male nut or body hex and do not over tighten.** Over tightening may excessively deform the gasket and could cause system leakage.
 - 8.2.3.3 Carefully position the Bellows Assembly and Well Orbit Vent Assembly in its flight configuration. See drawing 5833500 **Rev D** sheet 2 (release pending).
 - 8.2.3.4 Reference drawing 5833500 Rev C. Carefully mate and align the Male Adapter (FN 21) and Female Adapter (FN 20) using Conflat Gasket FN 25 (P/N FG0133C1) 6 ea. Belleville washers (FN 23) and 6 ea. 8-32 screws (FN 26).

- 8.2.3.5 Torque fasteners to 51 in. lbs. \pm 2 in. lbs.
- 8.2.3.6 Carefully re-position the connected Well Orbit Vent Assembly into the “non-flight” configuration as shown in drawing 5833500 Rev C, sheet 2 and View B sheet 5.
 - 8.2.3.6.1 Carefully attach the Well Orbit Vent Assembly onto three studs located on the Dewar as shown in sheet 2 of drawing 5833500 Rev C.
 - 8.2.3.6.2 Secure the assembly per Detail J, sheet 5, of drawing 5833500 Rev C .
- 8.2.4 Wire tie the 6 ea. fasteners (FN 26) per MS33540 using FN 19.

Approval of Section 8.2

Approved: _____ Date: _____
Integration Engineer

Discrepancies if any:

Approved: _____ Date: _____
PTD

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 _____

PTD _____ 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 _____