GRAVITY PROBE B

PROCEDURE FOR

PAYLOAD VERIFICATION

P0661 Rev.-

VENTING PROBE C WITH LOCKHEED'S DERBY ATTACHED TO TOP HAT

February 14, 2000

Prepared by: C. Gray

Program Responsibility	Signature	Date
C. Gray Gyro Verification		
R. Brumley Gyroscope RE		
B. Muhlfelder Payload Technical Manager		
D. Ross GP-B Quality Assurance		

NOTES:

Level of QA required during performance of this procedure:

Stanford QA Representative
Government QA Representative

All redlines must be approved by Q

Table of Contents

A **Scope**

This procedure is for venting Probe C with the Lockheed "Derby" attached to the top hat where the Cross Flange attaches.

B **Requirements Verification**

B.1 Requirements Cross Reference

B.2 Expected Data for verification per requirement

C **Configuration Requirements**

Probe C is mounted on the precision manipulator in the Class 10 cleanroom and is under high vacuum.

D **Hardware Required**

D.1 **Flight Hardware Required**

Description	No. Req'd
Probe C	1

D.2 Commercial test equipment

Manufacturer	Model	Serial Number	Calibr. Exp. Date
N/A			

D.3 Mechanical/Electrical Special test equipment

Description	Part No.	Rev. no.	Serial No.	Certification Date
Precision manipulator				
Lockheed Derby				

D.4 Tools

Description	No. Req'd
N/A	

D.5 Expendables

Description	Quantity
N/A	

E **Software Required**

N/A

F **Procedures Required**

N/A

G Equipment Pretest Requirements

N/A

H Personnel Requirements

The following personnel have received extensive training in the testing of GP-B gyroscopes and are qualified to perform this procedure.

- Chuck Warren
- Bruce Clarke
- Chris Gray
- Robert Brumley

I Safety Requirements

General

It is important to be cognizant at all times of the position of the probe. Be extremely careful not to accidentally bump into the probe. If any connector does not connect smoothly and securely, do not try to force it. Instead, remove the connector and inspect it to find the reason for the difficulty. Great care must be taken at all times during the performance of this procedure.

Electrostatic Discharge

Grounded wrist straps shall be worn at all times when mating or demating to an electrical connector on Probe C.

Personnel Safety

All operations shall take place according to Stanford University safety guidelines. Any person observing a situation which they deem unsafe shall report the fact immediately to the test director. The Quality Assurance representative shall be responsible for monitoring that all activities are performed in a safe manner.

Electrical mating and demating of flight hardware connectors

I.1.1 Connection and disconnection shall be performed only when the equipment involved is in a powered-down state.

I.1.2 Connector savers are to be used unless otherwise specified.

I.1.3 Connectors shall be inspected for contamination and for bent, damaged, or recessed pins prior to mating.

I.1.4 Grounded wrist straps are to be worn prior to removal of connector caps or covers and during mating / demating operations.

I.1.5 ESD-protective caps or covers are to be immediately installed after demating of connectors.

J General Instructions

J.1 Redlines can be initiated by C. Gray or R. Brumley and must be approved by QA.

J.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.

J.3 Only the following persons have the authority to exit / terminate this test or perform a retest:

Rob Brumley, Chris Gray, Barry Muhlfelder, Bruce Clarke, Sasha Buchman, and QA personnel

J.4 Notify ONR and Stanford University QA 24 hours prior to start of procerdure

ONR: Time_____ Date_____Operator_____
SU QA: Time_____ Date_____Operator_____

K References and Applicable Documents

L OPERATIONS

Start Date: _____

Start Time: _____

L1 Vent Set-Up

L.1.0 Record Probe Orientation _____

L.1.1 Connect Convectron gauge cable to P9 on Probe C and turn on CG controller.

L.1.2 Record P9 Pressure:_____

L.1.3 Close Pump-out valve on Lockheed's derby.

L.1.4 Turn off ion gauge on Pumping Cart GSE.

L.1.5 Turn off ion gauge on pump-out manifold on Lockheed's derby.

L.1.6 Connect metering valve manifold to vent port on Lockheed's derby.

L.1.7 Connect the 1/4" teflon tube connected to the metering valve assembly to an ultra clean nitrogen source.

L2 Pre-Vent Checklist

L.2.1 Verify the TC gauge pressure at P9 on the Probe. _____

L.2.2 Verify that the pump-out valve on the derby is CLOSED. _____

L.2.3 Verify that there is ample supply of nitrogen for the venting process. (House nitrogen is acceptable for venting) _____

L.2.4 Verify that the needle valve on the Vent manifold is CLOSED. _____

L3 Vent Probe C

L.3.1 The target vent rate is approximately 5 Torr per minute and shall not to exceed 10 Torr per minute.

L.3.2 Open the supply valve (Nitrogen source) and the Nupro valve on the derby vent manifold.

L.3.3 Very slowly open the Metering Valve on the vent manifold until a vent rate no greater than 10 Torr per minute is achieved. Fine tune the metering valve to the ideal target rate of 5 Torr per minute is achieved.

L.3.4 Record the vent rate approximately every 15 minutes in Table 1.

Time	P9	Comments

Table 1

L.5 Post–Vent

L.5.1 Record final P9 Pressure:_____

L.5.2 Close the Nupro valve on the Derby's vent manifold.

L.5.3 Close the metering valve on the vent manifold.

L.5.4 Close nitrogen supply valve.

L.5.5 Remove metering valve assembly from vent manifold on derby.

L.5.6 Ensure the Pumping Cart GSE has been vented and remove pumping manifold from Pumping GSE to Derby Pump-out manifold.

L.5.7 Procedure completed.

Operation performed by:_____

Stanford University QA:_____

Responsible RE: _____

Stanford QA Manager: _____