GRAVITY PROBE B

PROCEDURE FOR

PAYLOAD VERIFICATION

P0671

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

April 10, 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

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A **Scope**

This procedure is for pressurizing 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

K References and Applicable Documents

L OPERATIONS

Start Date: _____

Start Time: _____

L1 Pressurize Set-Up

L.1.0 Record Probe Orientation _____

L.1.1 Connect Barratron gauge cable to Barratron on the derby and turn on Barratron controller.

L.1.2 Record Barratron Pressure:_____

L.1.3 Record Analog pressure gauge on derby:_____

L.1.4 ***Open*** Pump-out valve on Lockheed's derby.

L.1.5 Connect a 1/4" teflon tube connected to the vent valve assembly on the derby to an ultra clean nitrogen source with a regulated output for a maximum pressure of 2 psid.

L2 Pre-Pressurize Checklist

L.2.1 Verify the Barratron gauge pressure on the derby. _____

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

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

L3 Pressurize Probe C

L.3.1 The target pressurization rate is approximately 2 Torr per minute and shall not to exceed 5 Torr per minute.

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

L.3.3 Supply gas to Probe C until a pressure of at least 1 psid is achieved. The maximum Probe pressure is 2psid.

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

Time	Barratron	Analog Gauge	Comments

Table 1

L.5 Post–Pressurization

L.5.1 Record final Barratron pressure:_____

L.5.2 Record final analog gauge pressure:_____

L.5.3 Close the Nupro valve on the Derby's vent manifold.

L.5.4 Procedure completed.

Operation performed by:_____

Stanford University QA:_____

Responsible RE: _____

Stanford QA Manager: _____