W. W. Hansen Experimental Physics Laboratory

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Gravity Probe B Relativity Mission

PROCEDURE FOR

Integration of Telescope Test Probe and Test Dewar with Artificial Star #2

GP-B P0221 Rev -

January 14, 1998

Prepared by: Suwen Wang Engineer	Date
Approved by: John Lipa Manager, Telescope Development	Date
Approved by: B. Taller Quality Assurance	Date
Approved by: J. Turneaure Hardware Manager	Date

GP-B Procedure Document 221

Integration of Telescope Test Probe and Test Dewar with Artificial Star #2

R. E.: Suwen Wang
ESTIMATED DURATION: 1 day

Objective:

Set up Science Telescope into test configuration.

Requirements:

- Test director (John Lipa) approval required prior to the start of the procedure.
- Procedure to be performed by certified personnel only.
- Certified personnel include:
  Suwen Wang
- Additional operation personnel:
  Kris Cumbermack

Precautions:

- Science Telescope is made of fused quartz, a fragile material. Extra precaution is to be taken during all handling to prevent damaging the Telescope.
- No special electrostatic handling precaution required.

Initial Configuration:

- Telescope under test:
  Dwg No: 25091-201 Rev - _____.
  Telescope Serial No. _____.

- Procedure Start Date: _____.
- Procedures described in P0220 complete.

Ground Support Equipment required:

- Artificial Star #2
- Dewar.
- Telescope Lab. hoist.
- Assorted tools.
- Telescope room temperature readout electronics.
- Flashlight.

Expendable Materials required:

- Masking tape.
- Compressed nitrogen gas.

1. Procedures for transportation:

1.1. Slowly wheel the telescope probe cart from Clean Room to the Artificial Star #2 Lab along the tiled HEPL corridor to ensure smooth transportation.

1.2. Procedure 1 complete.

Signed: _____ Date: _____

2. Procedures for telescope probe/test dewar integration:

2.1. Lift the probe up by 1/2" with the hoist and move away the probe cart.

2.2. Assemble the copper tube to the outside of the vacuum can.

2.3. Attach heater and thermometer wires.

2.4. Use masking tape to protect the heater and thermometer wire pin connectors.

2.5. Lower the probe down into the dewar carefully to ensure the centration of the probe o.d. with respect to the dewar i.d. Notice the clocking between the probe and dewar during the insertion process.

2.6. Tie down ten bolts which holds the probe onto the dewar with 3 in-lb torque.

2.7. Remove the lifting plate from top of the probe by unscrew ten screws.

2.8. Procedure 2 complete.

Signed: _____ Date: _____

3. Procedures for attaching the probe/dewar assembly to the artificial star:

3.1.Connect the cables for the readout electronics.

3.2. Use a flash light to direct light into the telescope and look for signal changes in the detector readout to verify the functionality of the detectors. If all the detectors are not working, indicating major wiring errors, proceed to deintegrate the telescope per P0244.

____ Detectors working.

____ Detectors not working. Failing detectors are: _____

3.3.Pump the suspension tires to about 50 psi.

3.4.Manipulate the dewar/probe assembly to beneath the star.

3.5.Align the screw holes on top of the probe to those on the star.

3.6.Deflate the suspension till the gap of the star and telescope is about 1/4".

3.7.Place 10 1/4-20 screws from below top of the probe.

3.8.Further deflate the suspension till the gap is almost zero.

3.9.Tighten all the screws.

3.10. Pump the suspension back to 55 psi. Now the dewar and telescope probe assembly should be suspended from the floor.

3.11.Integration complete with no damage.

Signed: _____ Date: _____

4. Completion status:

Success: _____

Fail: _____