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Gravity Probe B Relativity Mission

PROCEDURE FOR

Science Telescope Wide Field Scans, 4 K

GP-B P0235 Rev -

January 16, 1998

Prepared by: Suwen Wang Engineer	Date
Approved by: John Lipa Manager, Telescope Development	Date
Approved by: B. Taller Quality Assurance	Date
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GP-B Procedure Document 235

Science Telescope Wide Field Scans, 4 K

R.E.: Suwen Wang
ESTIMATED DURATION: 2 days.

Objective:

To Raster scan the star beam on the telescope with a range of 260 arc sec and grid size of 5.2 arc sec at 2 K.

Requirements:

- Telescope probe being attached to Artificial Star #2.
- Procedure to be performed by certified personnel only.
- Certified personnel include:
  Suwen Wang

Authority to redline this procedure:

Suwen Wang

Precautions:

- Science Telescope is well protected in the test probe in this procedure. No direct or indirect mechanical contact will be made to the telescope. Therefore, no special caution is needed in handling in this procedure.
- No special electrostatic handling precaution required.

Calibration:

- The scan data related to verifying the telescope performance specifications is in a format of relative numbers. Therefore, no calibration is required for the procedure.

Ground Support Equipment required:

- Telescope room temperature readout electronics.
- Centris 650 computer with data acquisition system.

Expendable Materials required:

- Liquid helium.
- Compressed helium gas.

Initial Configuration:

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

- Procedure Start Date: _____.

1. Procedure for a scan:

1.1. Ensure that all the cables between the probe and the telescope readout electronics are in place.

1.2. Connect the output of the telescope readout detectors to channels 0 through 8 differential on the National Instrument A/D card and the trigger signal to the trigger input of the same A/D card.

1.3. Check the settings of various instruments per table below.

1.4. Check the helium level in the dewar. If the helium level is too low, perform a helium transfer per procedure P0242.

1.5. Perform wide field scan per P0224.

1.6. The scan takes about one day.

1.7. After the scan is complete, transfer the data from the Mac computer to a PC.

1.8. Use SigmaPlot software to plot the scan data in both 3D mesh plot and 2D contour plot.

1.9. Room temperature wide field scan complete.

Signed: _____ Date: _____

Table 1. Instrument Parameter Settings

(Tolerances are 10% unless otherwise noted)

Instrument/Parameter Name	Setting	Inspector Stamp
Star Suspension	55 psi front, 35 psi back	
Star Chamber Pressure	500 torr nominal	
Star Laser Diode Current	11.0 mA (+/- 0.1 mA)	
Star Focus Adjustment	At focal point (6 turns out)	
Telescope Probe Pressure	At vacuum (< 10^{-5} torr)	
Telescope Temperature	4 K	