Gravity Probe B Relativity Mission

PROCEDURE FOR

Artificial Star #2 Servo Alignment

GP-B P0223    Rev -

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Artificial Star #2 Servo Alignment

R. E.: Suwen Wang
ESTIMATED DURATION: 2 hours or 1 day (see step 1.8)*.

Objective:

Align the telescope with the star such that the servo can lock the star to the beam returning from the telescope reticle mirror.

Success Criteria:

Science Telescope being servo locked onto Artificial Star #2.

Requirements:

• 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 alignment process does not have any impact in the telescope verification data. Therefore, no calibration is required for the procedure.

Ground Support Equipment required:

• Telescope room temperature readout electronics.

Expendable Materials required:

• None.

Initial Configuration:

• Telescope under test:
  Dwg No: 25091-201 Rev - ________.
  Telescope Serial No. ________________.
• Telescope probe being attached to Artificial Star #2 and aligned per P0222.
• Procedure Start Date: ________________________.

1. Procedures for artificial star servo alignment:
   1.1. Roll the reference mirror into the reference position.
   1.2. Follow the steps described in the Artificial Star #2 Digital Servo manual for alignment.
   1.3. Check the servo operation with the reference mirror.
   1.4. Turn the servo system to standby.
   1.5. Move the reference mirror out of the reference position.
   1.6. Adjust the laser diode current for the reference beam such that the output on the quad would be comparable with that with the reference mirror.
   1.7. Adjust the dewar tilt stepper motors to center the return image on the quad.
   1.8. If no signal can be observed on the quad in the preceding step, a raster scan should be performed. In such case, the duration of the test would increase by 24 hours.*
   1.9. Repeat procedure 1.2.
   1.10. Turn the servo to lock.
   1.11. The alignment process is complete.
       Signed: ________________________  Date: ________________________

2. Completion status:
   Success: ________________________
   Fail: ________________________
   Symptom if fail: _____________