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**GP-B Telescope Image Divider Assembly (IDA)**  
**“Position Channel B Reflectors**  
**on Channel B Plate”**  
**P0286 Rev -**

June 30, 1997

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## POSITION CHANNEL B REFLECTORS ON CHANNEL B PLATE

- for SUGP-B dwg# 25444
  - follows *Position Channel B Roof Splitter on Channel B Plate* (SUGP-B P0285)
  - also use *GP-B Telescope Image Divider Assembly (IDA) General Alignment and Bonding Procedures* (SUGP-B P0282).
- 1) Verify cleanliness of all fixturing.
  - 2) Assemble fixture #'s 527-0030A, 526-0046A, 506-0027A, and 572-0059A with provided assembly hardware per OID dwg# 103-0088A (Swing Microscope).
  - 3) Mount Swing Microscope (with holddown assy.) and short angle-rule reticle as shown in OID dwg# 800-0040L. Attach Camera and Monitors to microscope.
  - 4) Identify location of the Roof Splitter knife edge on angle rule by adjusting depth of microscope to focus along knife edge and on reticle pattern. Use limiting screws to stabilize swing microscope as required.
  - 5) Focus and secure microscope on reticle pattern.
  - 6) Read center value on reticle (should be near 10.00 [arbitrary units]).
  - 7) Adjust limiting screws such that the swing microscope can oscillate between two values  $4.77 \pm 0.02$  units from the center value (for  $4.338^\circ$  from center-line beam angle). Lock down limiting crews and verify settings.
  - 8) Remove angle rule reticle.
  - 9) Mount two #104-0083A assy.'s. (modified) per OID dwg# 800-0040L. Use care to protect all flight parts, especially the Roof Splitter edge.
  - 10) Verify cleanliness of all fixturing.
  - 11) Place a small piece (~3cmsq.) of 2mil 'orange' shim stock over each bonding region of Channel B plate (SUGP-B dwg# 25068) to protect surfaces during initial alignment.
  - 12) Place two Channel B Reflectors (SUGP-B dwg# 25069) over bonding regions as shown in OID dwg# 800-0040L.
  - 13) Focus Microscope (via relay mirror) on Roof Splitter edge. It may be helpful to provide some background illumination.
  - 14) Turn on laser and adjust power such that microscope viewing is comfortable (near minimum power range).
  - 15) Place aperture stop over microscope input.
  - 16) (For one Reflector) Adjust the four brass screws (using special tools as required) such that two conditions occur simultaneously: 1) the laser spot pattern is centered (unitless -- use best effort) on the crosshairs of the microscope (for correct direction of beam); 2) the laser spot pattern is centered (unitless -- use best effort) in the aperture stop in front of the microscope (for correct intersection position of the beam). This is a very complex adjustment and will require much iteration and very fine tuning due to the inherent directional coupling of the adjustment screws (the

screw perpendicular to the knife edge is the finest adjuster). Use care to prevent fatigue from becoming a hazard to flight parts.

- 17) The position of the Reflector is optically unconstrained in the plane of its own mirrored face. Verify that the acquired position is within tolerance of SUGP-B dwg# 25444. Correct and repeat step 16 if required.
- 18) Repeat steps 16 and 17 for second Reflector.

- 19) Remove one Reflector and shim. Bond Reflector to plate using *Bonding Procedures for Fused-Quartz Components* (SUGP-B P0218).
- 20) Continue to monitor laser spot after bonding and make alignment adjustments as required within a few minutes.
- 21) Repeat steps 19 and 20 for second Reflector.
- 21) After curing, remove both 104-0083A assy.'s. and swing microscope assy.

Attachments: SUGP-B dwg#'s 25444, 25069, 25068; OID dwg#'s 800-0039F, 506-0027A, 572-0059A, 103-0088A, 800-0040L.