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GP-B Telescope "Transportation of Telescope Between Clean Room Facilities" P0397 Rev -

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Prepared: _____ Date _____
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TRANSPORTATION OF TELESCOPE BETWEEN CLEAN ROOM FACILITIES

- for use during any operation requiring the transportation of flight qualified telescopes out of the assembly area or between clean room sites (i.e. test locations).
- At least one qualified flight part handler (per P0282) must be present during all steps of this procedure.
- At least one QA representative must be present during steps 12-16.
- also use *GP-B Telescope Image Divider Assembly (IDA) General Alignment and Bonding Procedures* (SUGP-B P0282) for procedures concerning safety; personnel; work area requirements; fixture cleaning and acceptance; flight part inspection, handling, storage, and cleaning; redline authority; and sign-off and recording requirements.

CAUTION:

- The telescope is heavy, delicate, and somewhat irreplaceable with multiple critical surfaces that can be easily damaged or contaminated by normal handling. Compliance with the above defined safe handling practices is critical.

CAUTION:

- If at any time during this procedure flight hardware is not live monitored, verify that all flight hardware is seismically secured and protected against airborne contamination (including at the end of the procedure).

WARNING:

- Some of the solvents, detergents, and/or bonding agents used in this procedure may be flammable, toxic, or reactive. Consult P0282 for information about specific chemicals.
- Origin Facility: _____ env. ok? _____
- Destination Facility: _____ env. ok? _____
- Flight Part Handler/Procedure Director: _____
- QA present: _____
- Additional Personnel: _____
- Operation begun (time/date): _____
- Operation completed (time/date): _____

1) Begin with the telescope standing freely in a vertical position on a suitable surface (custom support or clean room compatible cushioning).
2) Cover the four metering tube vent holes and one IDA vent hole with Kapton Tape (3M #5413) and/or clean polyethylene sheeting (i.e. CRP LT106 12" tube).
3) Cover any loose parts (i.e. DPA connectors) which are made of hard materials that could abrade against quartz parts with a layer of Kapton tape.

4) Secure any loose parts or cabling with Kapton tape to any non-critical surfaces of the telescope.

5) Prepare a section of polyethylene sheeting (ibid.) into a tube section ~3' in length ('the bag'). Carefully lower the bag over the telescope until enough slack length is collected near the baseplate to fully cover and close over the baseplate. This operation will require one flight part handler to secure the telescope while another person manipulates the bag.
6) Seal the top of the bag with Kapton tape.
7) With great care, lift the telescope several inches by grasping the metering tube near the top with both hands. Pull the slack length of the bag down over the remaining portion of the telescope. Seal the bottom of the bag with Kapton tape, leaving a small vent for excess air to escape.
8) Place the telescope inside the custom carrier box ('the box' - a high impact polyethylene carrier box with custom formed polyurethane foam lining designed for road and air transportation of the telescope). As required to fit, squeeze any excess air out of the bag and seal. Use care to avoid drawing air into the bag at this time.
9) Depending upon the state of assembly of the telescope (especially whether DPA's are installed), some additional padding may be required. If so, place a folded stack (~10-20 sheets) of clean room wipes between the reticle plate and box lining to prevent load shifting during later manipulations.
10) If the telescope is to be transported under conditions that could require inspection of the box contents by other than telescope personnel (i.e. airport security), place a letter inside the box that explains the purpose of its contents and lists contact personnel. *The polyethylene bag can not be opened under non-cleanroom conditions*.
11) Carefully close the box, ensuring that no parts are subjected to excessive stress. The box should close fairly easily with a few (<10) pounds pressure. Lock the box.
12) It is preferred that the bottom of the box remain in the down direction at all times to prevent any possible load shifting. However, this is not a requirement. Avoid excessive shocks to the box as possible. If the box with the telescope is subjected to a shock of more than ~10g (i.e. dropped from more than 1' onto a hard surface), a visual inspection of the telescope after removal is required. If the box with the telescope is subjected to a shock of more than ~50g (i.e. dropped from more than 4' onto a hard surface), a review to consider further evaluation is required.
13) Carefully lift the box and place it on top of the designated cart (Lab Safety Supply model #12987LE). If it is necessary to pass clean room seals (open doors) to complete this step, a second person should assist.
14) Secure the box to the cart with straps.
15) Have two people roll the cart to the destination. If thresholds taller than 1" need to be crossed, the second person should assist in carefully lifting the cart.

16) Before entering the new clean facility, remove any large contaminants from the outside of the box by alcohol wiping. Remove the straps. Remove the box from the cart and handle as described in steps 12 and 13.
17) Inside the new clean facility, unlock and open the box. Remove any additional cushioning as required and dispose. Carefully lift the telescope out of the box and place it vertically on a stable surface with appropriate cushioning.
18) Remove any visible particulates from the outside of the bag by alcohol wiping and/or blowing. Carefully lift the telescope as required to access all parts of the bag.
19) Using a blade, carefully cut the bag open with a long vertical slit. Do not allow the blade to contact any flight parts. Peel the bag away from the telescope and lift the telescope out of the bag. Place the telescope as described in step 1. Dispose of the bag.

20) Remove any excess securing tape not required for the next telescope procedure to be conducted. If required at all, remove vent hole covers last. The telescope is now ready for the next procedure.

Attachments: SUGP-B dwg#25091.

Successful Transport Approved (name/date): _____

List any Discrepencies: