W. W. Hansen Experimental Physics Laboratory

STANFORD UNIVERSITY
STANFORD, CALIFORNIA 94305 - 4085

Gravity Probe B Relativity Mission

PROCEDURE FOR STAKING DETECTOR PACKAGE

ASSEMBLY COMPONENTS

GP-B P0458 Rev.-A
ECO 924

February 2, 1999

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Prepared by Howard Demroff Date

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Approved by: Paul Ehrensberger/B. Muhlfelder

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Approved by: B. Taller Date
Quality Assurance

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Hardware Manager

AUTHORITY TO REDLINE PROCEDURE

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CERTIFIED TEST PERSONNEL

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THIS ASSEMBLY IS ESD/EOS SENSITIVE. THIS PROCEDURE MUST COMPLY WITH P0357.

ENVIRONMENTAL CLEANLINESS

Precautions must be taken to ensure cleanliness requirements of Stanford Procedure P0059 are satisfied. Minimum protective garments for personnel working in the clean rooms shall be the standard Tyvek clean room apparel for clean room classes 10,000 to 1,000.

SAFETY

Material Safety Data Sheet (MSDS)

Material Safety Data Sheets for TRA-BOND 2143D Resin and TRA-BOND 2143D Hardener shall be made available whenever this procedure is executed. All personnel performing any operation in this procedure shall familiarize themselves with these MSDSs. They shall be familiar with the emergency procedures outlined in the MSDS, in the event of overexposure.

Disposal

At the conclusion of this procedure dispose of any residual uncured epoxy as hazardous waste according to local, state, and federal regulations. Keep residual epoxy to verify adequate hardening.

SCOPE

The purpose of this procedure is two fold. The first part will verify the proper alignment of the A and B channel DPAs. Once this is confirmed, the screws holding this alignment in the packages will be staked with epoxy. Next, the two slots on the bases will be staked with epoxy and the GRTs will be epoxied in place. This procedure covers the epoxying operations implied by

drawings 25712 and 25713. This procedure is referenced by P0151 (and is not called out directly by either 25712 or 25713). This procedure can be summarized as follows;

I) Mount DPAs on Telescope per procedure P0266.
II) Scan each axis to verify proper alignment of the DPAs.
III) De-mount DPAs per procedure P0266.
IV) Stake and cure each DPA mounting screw and slot. Epoxy GRTs in place.

I) MOUNT DPAs ON TELESCOPE PER PROCEDURE PO 266.

Channel A DPA Serial Number_____, Assy Number_____ Rev_____
Channel B DPA Serial Number_____, Assy Number_____ Rev_____

_____ _____
Operator date

II) PERFORM SCANNING OPERATION:

Perform this scan as specified in P0454 except as noted here. The resolution of the scan and the witnessing requirements shall be determined by Ken Bower. Take the necessary data to verify the alignment of each DPA.

DPA #_____ passes this scan_____ _____ date_____
Ken Bower QA

DPA #_____ passes this scan_____ _____ date_____
Ken Bower QA

III) DE - MOUNT THE DPAS FROM THE TELESCOPE PER PROCEDURE 266

_____ _____

OPERATOR DATE

IV) EPOXY BOND THE DPA SCREWS, SLOTS AND GRTS:

TRA-BOND 2143D Epoxy BIPAX Lot Date Code _____ Expiration Date ____
Syringe or swab-tips for applying epoxy
Disposable plastic mixing cup
Notify ONR prior to this operation of applying epoxy.

OPERATIONS

Epoxy Applier:_____ _____
Operator Date

Initial Preparation

Remove the clamp on the packet and thoroughly mix the TRA-BOND 2143D epoxy adhesive system components in the BIPAX mixing package, until the color is uniform throughout.

CAUTION: The pot life is 1 hr for 25 grams, 30 minutes for 100 grams. Ensure that the epoxy will be used within the pot life after mixing. Do not mix more than one package at a time.

Transfer the epoxy into a clean, disposable plastic mixing cup. After mixing epoxy, degas for 5 minutes.

WARNING: Skin Contact with adhesive must be avoided. Always wear protective gloves when working with adhesive.

Apply the Epoxy. The surfaces to be bonded must be held horizontal during curing. Using a swab tip, make a ring of glue at least 1/2 way around the screw. Apply a small drop in each slot. Glue to be applied to each of 4 screws on each of 2 DMAs and to the corresponding slots, to 8 screws on the lens assembly, and to the GRT. These steps apply to channel A.

WARNING: Skin Contact with adhesive must be avoided. Always wear protective gloves when working with adhesive.

Channel B is the same as channel A minus the GRT (i.e. Channel B does not get a GRT).

Epoxy Setting

The setting schedule is as follows:
2 hr. at room temperature
Verify setting by observing the remaining adhesive in the cup. The epoxy must not flow when set.

Repeat application of epoxy (using new epoxy packet) for each of 3 additional DPA orientations. Epoxy the GRT in place. (The epoxy should fill the gap between the GRT and housing). When finished with the final epoxy operation, the epoxy on each DPA must cure for no less than two (2) hours. Place the test unit in a clean, marked storage container.

Note: If epoxy is adequately thick at time of application, all epoxy operations may be performed in a single step. No set-up time is required (in this case) between orientation changes.

V PROCEDURE COMPLETE

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Operator Date

_____

QA Date