W. W. Hansen Experimental Physics Laboratory

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Gravity Probe B Relativity Mission

Procedure for Cable Assembly, High Voltage

GP-B P0326 Rev. -

November 21, 1997

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Prepared by: Chris Gray Date
Engineer

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Approved by: Sasha Buchman Date
Manager, Gyroscope Development

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Approved by B. Taller Date
Quality Assurance

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Approved by J. Turneaure
Hardware Manager

P0326
Cable Assembly, Suspension

Materials, Supplies & Notes

1. Cable Sub-Assy, High Voltage Drawing # 23196-101
2. Grommet, High Voltage, Rail # 23192-103
3. Grommet, High Voltage # 23192-101
4. Connector Suspension wire # 22778-101
5. Indium solder, Indalloy # 9 solder.
6. Flux, Indalloy Rma #5
7. Hot weezers (model #M-10) #4 B cutter.
8. Non-magnetic cutter # M-17
9. Isopropyl Alcohol #2
10. Clean room wipes Durx #670
11. Baxter clean room glove #G7300-26
12. Texwipe small foam swab #TX751B
13. Ultrasonic cleaner (Branson B-220 H)
14. Bausch & Lomb Microscope #200M range 0.7 x-3.0x
15. Calibrated Fluke 77 Multimeter.
16. Calibrated BK-2706 Meter
17. Napco E series (model 5831) vacuum oven
18. Soldering to be performed by NASA qualified personnel.
19. Traveler for cable assemblies
20. Certified personnel to fabricate cable assemblies are Margaret Bogan and Chris Gray.
21. Chris Gray, Sasha Buchman, and Ben Taller have the authority to red line the procedure.
22. ESD precautions are not necessary for this assembly.

Procedure:

1. Preparation

1.1 Cable Assy, Suspension, is a continuation from Cable Sub-Assy, High-Voltage drawing #23196. Procedure P0.0087.

1.2 Cable Assy, suspension, is a two-part assembly.
1. Cable Assy, Suspension R/0 Half #23201-101
2. Cable Assy, Suspension S/U Half #23201-102

2. Wire Cutting

2.1 Cut 40 silver plated wire #178-8679, 8.5” long per. Drawing # 23201-101
Cut 40 silver plated wire #178-8679, 9.625” long per Drawing #23201-102

3. Wire Tinning

3.1 Use the Hot weezer #4B set the setting at 10 hi. Remove outer insulation 0.15”. Fit check the exposed wire end into the # 22778-101connector lug and trim wire as required.

Note: The wire is made up of 19 strands of 5 mil wire and will need to be trimmed in order to fit into the connector lug. Unravel the stranded wire and cut off strands as required to obtain clearance with the connector lug opening.

3.2 Remove one layer of wrap wire. verify that the end can be completely inserted into the Connector Lug to obtain flush interface between insulation and connector lug.

3.3 (Pre-tin per GPB Solder Specification 5835072.) Use alloy Ind. #9 solder to tin the end of the wire. Use a Q-tip swab and wipe away any flux residue.

3.4 Visually inspect the wire carefully, check for any breaks in the insulation.

4. Solder tinning of Connector Lug

4.1 (Pre-tin per GPB Solder Specification 5835072.) Pre-tin the inside of the # 22778-101 connector lug. Use a Q-tip and rub a small amount of flux #5 in the inside of the connector lug. Use the microscope, to solder the connector lug to the end of the wire.

4.2 Use #9 solder, and solder the connector lug to the end of the wire. Use a Q-tip wipe away any flux residue with alcohol

4.3 Ultrasonic the hold assembly in a large beaker for 20 minutes. Use Isopropyl Alcohol #2.

4.4 Bake-out the Assembly in the vacuum oven set temperature control #1.5 (temperature range between 130°F / 146°F) for 20 minutes. Remove the assembly from the oven and visually inspect the wires carefully.

4.5 Take continuity, Verify resistance from end to end of Suspension coax Plug connector #65113-1C34318-101 and the connector lug. Make sure resistance is within range (00.1Ω / 00.2Ω).

5. Inspect Point

5.1 A Product Assurance representative will inspect solder joints.

6. Cable Assy, Suspension is completed.

Completed By: _____ **Date:** _____

QA Buy Off: _____ **Date:** _____