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INSTALLATION OF ELECTRICAL COMPONENTS TO THE GMA PALLET

P0678 REV A

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GPB SCIENCE MISSION PROCEDURE

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APPROVED _____
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APPROVED _____
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1 SCOPE

This procedure installs the GMA wiring harness onto the GMA pallet, installs the heaters, temperature sensors, and thermostats on the pallet and connects them to the wiring harness.

1.1 Acronyms

The following acronyms may be used in this document

QA Quality Assurance

2. REFERENCES

2.1 Plans and Procedures

Engineering Memo No. TCS 334
5835028A GP-B General Procedure for Epoxy Bonding

2.2 Drawings

GMA Harness 26202 Rev A
Gas Management Assembly 25110 Rev C
Thermal cutoff assembly 25754 Rev-
Temperature sensor kit, silicone diode 25498 Rev A
Temperature sensor, silicon diode 23534

2.3 Specifications

LAC 3200
NHB5300.4 (2A-3)

3 GENERAL REQUIREMENTS

<p>ONR representative, and QA to be notified 24 hours prior to beginning this procedure QA Notified: _____ ONR Notified: _____</p>
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3.1 Environmental Requirements

3.1.1 Cleanliness

A normal lab environment is appropriate for this assembly

3.1.2 Magnetic Contamination

N/A

3.1.3 Electrostatic Discharge Control

N/A

3.2 Personnel

3.2.1 The Integration and Test Director (ITD)

The IDT shall be R. Stephenson or an alternate that he shall designate. The ITD has overall responsibility for the implementation of this procedure and shall sign off the completed procedure and relevant sections within it. The GMA Manager shall also sign off the completed *As-Built* procedure.

3.2.2 Integration Engineers and other personnel

All engineers and technicians participating in this procedure shall work under the direction of the ITD who shall determine personnel that are qualified to participate in this procedure. Participants in this procedure are to be R. Stephenson and Lockheed technician.

3.3 Safety

N/A

3.3 Quality Assurance

The test shall be conducted on a formal basis to approved and released procedures. The QA program office shall be notified of the start of this procedure. A Quality Assurance Representative, designated by D. Ross shall be present during the procedure (if deemed necessary) and shall review any discrepancies noted and approve their disposition. Upon completion of this procedure, the QA Manager, D. Ross or her designate, shall certify their concurrence that the effort was performed and accomplished in accordance with the prescribed instructions by signing and dating in the designated place(s) in this document. Discrepancies will be recorded in a D-log or as a DR per Quality Plan P0108. If a re-test of any or all of the hardware is necessary, the Payload Technical Manager will determine the appropriate changes in the procedure, with the QA Manager's approval.

3.5 Red-line Authority

Authority to red-line (make minor changes during execution) this procedure is given solely to the ITD or his designate, or the GMA Manager, and shall be approved by QA. Additionally, approval by the Payload Technical Manager shall be required, if in the judgment of the ITD or QA Representative, experiment functionality may be affected.

4 REQUIRED EQUIPMENT

4.1 Tools and Materials

The following tools and Materials will be available:

Qty.	Description	Part Number
	Digital Multimeter	Fluke 75 or similar
1	GMA Pallet Harness	26202A
3	Heater	133-7314
8	Thermostat	1617538-042
1	Thermostat Bracket	25753-101
8	Screw SHCS	NAS1351N3LB8S
6	Silicon Diode	23534
6	Connector / splice 22awg	CTS-S-22/22
4	Connector / splice 20awg	CTS-S-20/20
A/R	Epoxy, TRA-BOND	2115
4	Mount, silicon diode	25724-102
4	Screw lock kit	205817-8
1	Bracket, Electronic connector	25120-102
12	washer	NAS620C10
A/R	Adhesive	LAC 24-4693
A/R	Aluminum foil	LAC 24-4451
A/R	Epoxy	EPIBOND 9515-A

5 INSTALLATION OF ELECTRICAL COMPONENTS TO THE GMA PALLET

5.1 Install the harness

Install harness to the GMA pallet per engineering instruction

5.1.1 Install bracket 25120-102

Install connector bracket 25120-102 the GMA pallet using 4 ea. NAS1351N3LB8S screws, and 8 ea. NAS620C10 washers per 25110 sheet2.

Torque bolts to 18 in lb. per LAC 3600

5.1.2 Install connectors to the connector bracket

Install J1 thru J4 into bracket 25120-102 using 205817-8 screw lock kit.

5.1.3 Mate connectors to valves and pressure transducers.

Install 14 ea. Connectors to the pressure transducers and 32 ea. To the solenoid valves, tighten jackscrews per best shop practice.

5.2 Bonding heaters

5.2.1 Verifying adhesive expiration date

Verify that adhesive on heater tapes has not expired.

If adhesive is out of date, spray it with MEK. This will soften the adhesive. Then remove with plastic or teflon scraper. Finally, clean up any remaining adhesive with MEK on a wiper or clean cloth. This work will be performed by a Lockheed technician.

5.2.2 Heater bonding.

Test continuity of heater strip leads with digital multimeter and record here:

H1:			
H2:			

Bond heater per 25110 and LMMS engineering memo TCS 334 with existing adhesive or F/N 50 on Dwg. 25110 Rev C. Take care to place heaters in the correct orientation as shown on Dwg. 25110. Heater edge should be flush with top edge of mounting plate. This work will be performed by a Lockheed technician.

Record adhesive data

Lot# _____

Exp date _____

5.2.3 Inspection of bond.

Inspect the bonded heater. There should be no air bubbles larger than 5% of the total surface area of the heater and the total of all air bubbles should not exceed 10% of the total area of the heater.

Test continuity of heater strip leads with digital multimeter and record here:

H1:			
H2:			

Inspector's signature: _____

5.2.4 Bonding of Aluminum foil

Bond aluminum foil, F/N 51 on Dwg. 25110, to base plate over heater tapes per Lockheed engineering memo TCS 334. Take care to place the edge of the foil flush with the bottom edge of the mounting plate. The other edge of the foil should be folded over the top edge of the mounting plate between 1/8" and 3/16" and then trimmed so as to not interfere with screws, etc. This work will be performed by Lockheed technician.

Inspect the bonding of the foil.

Test continuity of heater strip leads with digital multimeter and record here:

H1:			
H2:			

Inspector's signature: _____

5.3 Installation of the thermostats to the bracket

5.3.1 Continuity checks

Test the electrical continuity between the two leads of the thermostats and record here:

Tester's signature: _____

5.3.2 Bond thermostats to the bracket

Bond thermostats per Dwg. 25754 and LMMS engineering memo TCS 334 using F/N 4, epoxy 1210-A/9615-10.

Record epoxy data

Lot# _____

Exp date _____

Shore hardness after 24 hour cure: _____

Test the electrical continuity between the two leads of the thermostat and record here:

Tester's signature: _____

5.3.3 Solder thermostat jumper wires

Solder interconnect wires using 20 awg wire per NHB5300.4 (2A-3) and figure 1 of this procedure. Wires used to interface to the harness and the heaters shall have sufficient length to interface to their respective components. A length of two feet will be sufficient.

5.3.4 Inspect solder

Inspect solder per NHB5300.4 (2A-3)

Inspector's signature: _____

5.3.5 Bolt bracket to pallet

Install thermostat assembly 25754 the GMA pallet per 25110 using 4x F/N 30 screws and 4x washers F/N 35. Torque screws to 16- 18 in lb. Per LAC3600

5.4 Wire routing and soldering

5.4.1 Solder heater interconnect wires

Rout heater interconnect wires per best shop practice to their respective heaters per figure 1 of this procedure. Solder per NHB5300.4 (3A-2) the 22-awg wire to the solder tabs located on the heaters, including the wires from the thermostat assembly.

5.4.2 Inspect solder

Inspect the solder joints per NHB 5300.4(3A-2)

Inspector's signature: _____

5.4.3 Crimp pins

Crimp pins to connectors P13, P14, P15, and P16 per LMMS specification LAC 3200

5.4.4 Inspect crimp

Inspect crimps per LAC 3200

Inspector's signature: _____

5.4.5 Insert pins and tie down

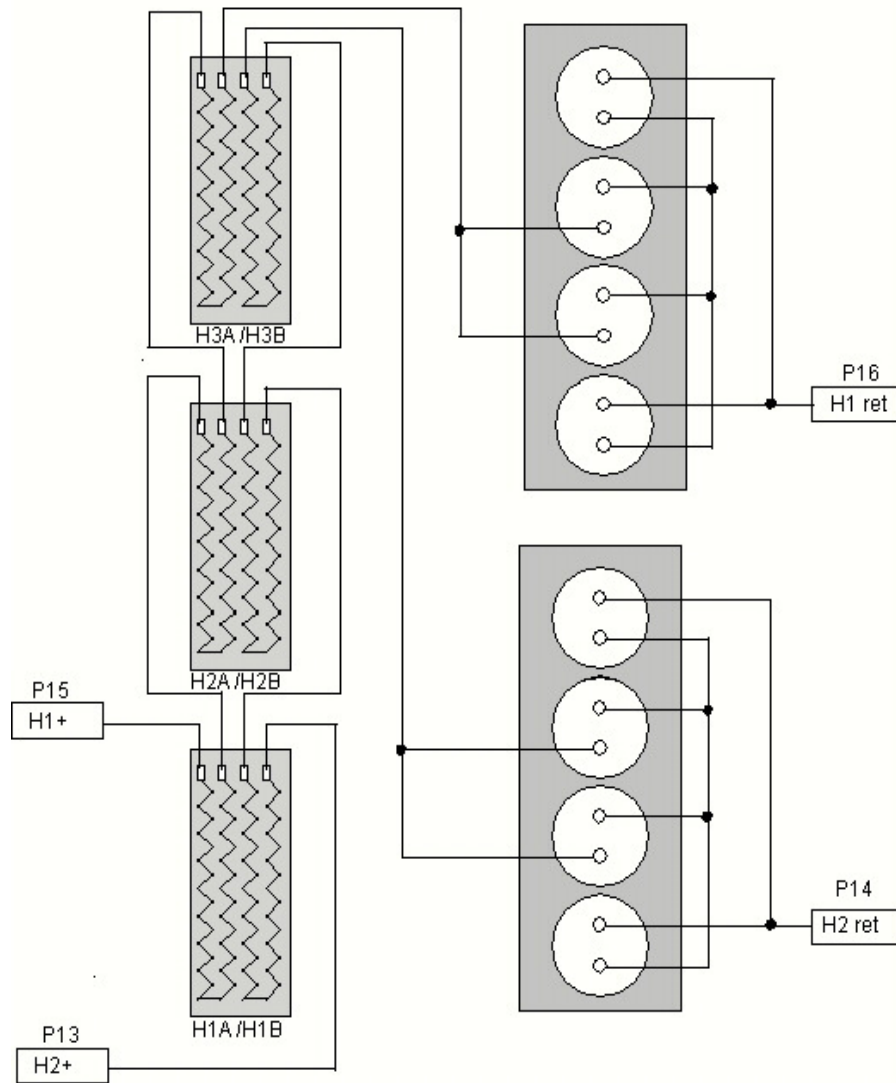
Insert pins into connectors J13, J14, J15, and J16.

Install wire tie downs per best shop practice.

5.4.6 Engineering verification.

Engineering to verify the placement of wire tie downs.

Inspector's signature: _____



5.5 Assemble temperature sensor kits and install on the GMA pallet.

5.5.1 Continuity check

Check the continuity of the silicon diodes from the positive to the negative leads and record here:

Tester's signature: _____

5.5.2 Bond sensors

Bond sensors to the sensor mount per LMMS procedure 5833028 and drawing 25498.

5.5.3 Mount temperature sensor kits

Mount the temperature sensor kit to the pallet in four locations per 25110.

Check the continuity of the silicon diodes from the positive to the negative leads and record here:

--	--	--	--

Tester's signature: _____

5.5.4 Bond sensors to cylinders

Bond one sensor to the each cylinder located on the reverse side of the pallet. The location is to be specified by engineering.

Check the continuity of the silicon diodes from the positive to the negative leads and record here:

--	--

Tester's signature: _____

5.5.5 Trim wires and crimp pins

Route the 36 awg wires from the temperature sensors to their respective connectors, wire routing for the sensors located on the opposite side of the pallet shall be through the plumbing hole in the pallet. Crimp the pins to the wire per LAC3200.

5.5.6 Inspect crimps

Inspect the 10 crimps per LAC 3200

Inspector's signature: _____

5.5.7 Insert wires to connectors and tie down

Install tie downs per best shop practice and insert the pins into the connectors.

5.5.8 Engineering verification

Engineering to verify the placement of the tie downs and routing of wires

5.6 Test wire harness

Test the completed wire harness per note 9, DWG 26202

Inspector's signature: _____

5.7 QA Final Inspection

QA INSPECT ASSEMBLY COMPLETE

6 PROCEDURE COMPLETION

The results obtained in the performance of this procedure are acceptable:

Integration Engineer _____ Date _____

The information obtained under this assembly and test procedure is as represented and the documentation is complete and correct:

QA Representative _____ Date _____

GMA REE _____ Date _____

QA Program Manager _____ Date _____

Copy discrepancies to D-Log and open Discrepancy Reports when required.

7 DATA BASE ENTRY

The following data shall be entered into the GP-B Data Base:

- a) Name, number and revision of this procedure
- b) An electronic copy of this document
- c) A copy of the "as-built" procedure with data and pictures, when completed.