GRAVITY PROBE B

PROCEDURE FOR

PAYLOAD VERIFICATION

Procedure for Post-Insertion Impedance Test of TRE Detectors

June 21, 1999

Prepared by: *Howard Demroff*

Program Responsibility	Signature	Date
H. Demroff TRE Test Leader		
P. Ehrensberger TRE REE		
M. Taber Payload Test Director		
B. Schultz GP-B System Engineering		
B. Taller GP-B Quality Assurance		
S. Buchman GP-B Hardware Manager		

NOTES:
Level of QA required during performance of this procedure:
___Stanford QA Representative
___Government QA Representative

All redlines must be approved by QA

Revision Record:

Rev	Rev Date	ECO #	Summary Description

Acronyms and Abbreviations:

Acronym / Abbreviation	**Meaning**
TRE	Telescope Readout Electronics
DPA	Detector Package Assembly

Table of Contents

A Scope

This procedure describes the process and sequence of events for performing an impedance test to verify continuity in a subset of the detector circuits.

B Requirements Verification

N/A

C Configuration Requirements

Probe must be in Dewar. Access to I8 and I9 connectors.

D Hardware Required

D.1 Flight hardware required

Description	No. Req'd
Access to I8 and I9 Tophat connectors	

D.2 Commercial test equipment

Manufacturer	Model	Serial Number	Calibr. Exp. Date
Fluke Multimeter	87	Record-	10-00

D.3 Mechanical/Electrical Special test equipment

Description	Part No.	Rev. no.	Serial No.	Certification Date
I8 and I9 Verification Test Box	as described in P0411	A	01	June 22, 1999

D.4 Tools

Description	No. Req'd
N/A	

D.5 Expendables

Description	Quantity
N/A	

E Software Required

E.1 Flight Software

Flight Software Name	Version No.
N/A	

E.2 CSTOL Scripts

CSTOL Script Name	Version No.
N/A	

E.3 SPC Scripts

SPC Script Name	Version No.
N/A	

E.4 Test Support Software

Test Software Name	Version No.
N/A	

F Procedures Required

Procedure Name	Procedure No.
N/A	

G Equipment Pretest Requirements

Equipment	Serial No.	Test Required	Proc. No.	Test Performed	
				Date	By
N/A					

H Personnel Requirements

This test to be conducted only by certified personnel. This test requires two of the following personnel: Howard Demroff, Bob Farley, Paul Ehrensberger, John Goebel

I Safety Requirements

There are no Saftey Hazards to personnel or flight hardware that are specific to the performance of this procedure. Extreme care must be taken to avoid accidentally bumping the Probe or damaging the connectors. Connector savers shall be used to protect the connector pins from damage.

WARNING!

Testing the DPA while preventing ESD damage to the detectors is the main focus of this procedure. This procedure requires a minimum of two personnel. All personnel shall wear approved wrist straps during all stages of this operation.

I.1 Electrical mating and demating of flight hardware connectors

I.1.1 Connector savers are to be used unless otherwise specified.

I.1.2 Connectors shall be inspected for contamination and for bent, damaged, or recessed pins prior to mating.

I.1.3 Grounded wrist straps are to be worn prior to removal of connector caps or covers and during mating/demating operations.

I.1.4 ESD-protective caps or covers are to be immediately installed after demating of connectors.

J General Instructions

J.1 Redlines can be initiated by Howard Demroff and Paul Ehrensberger and must be approved by QA.

J.2 Any nonconformance or test anomaly should be reported by a Discrepancy Report. Refer to the Quality Plan, P0108, for guidance. Do not alter or break test configuration if a test failure occurs; notify quality assurance.

J.3 Only the following persons have the authority to exit/terminate this test or perform a retest: Howard Demroff, Paul Ehrensberger

K References and Applicable Documents

Op. Order No._____

Date Initiated_____

Time Initiated_____

L **Operations**

Quality Assurance: Integration 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 review any discrepancy noted during this procedure, and approve of its disposition. Upon completion of this procedure, the QA Program Engineer, D. Ross, will certify 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.

ONR must be notified 24 hours before beginning this test.

Impedance Test

In this step the resistance of a subset of DPA circuits are measured to verify functionality. For example, the resistance between pin 35 and 43 should be approximately 15.4 kΩ as this series circuit consists of two probe wires and the 15 kΩ heater resistor in the DPA.

Check each step as it is completed [x]

Verify Fluke Multi-meter is as specified in D.2 QA _____

Step 1. Operator wears wrist strap. [ ]
Step 2. Remove the tophat shorting plug on I8 and connect the test verification box. [ ]
Step 3. Connect TRE verification box to I8. [ ]

Operators _____ time/date _____

Step 4 Complete the following table for the I8 tophat connector.

WARNING!

Warning: Pay close attention to the pin number and polarity. Failure to do so may damage the DPA. If the correct value for test #1 or #2 is not measured then stop and report to RE.

Resistance Check of Flight Probe Top Hat Connector I8

test	Red Lead +	Black com	Nominal Resistance range	Measured Value	Within range ?	Circuit
1	**35**	**43**	15 kΩ to 15.2kΩ			YHTRRVO - YHTRRTN
2	**1**	**6**	15 kΩ to 15.2kΩ			XHTRRVO - XHTRRTN
3	**45**	**42**	10Ω to 80 Ω			YSDKV - YSDKI
4	**52**	**46**	10Ω to 80 Ω			YSDAV - YSDAI
5	**22**	**5**	10Ω to 80 Ω			XSDKV - XSDKI
6	**30**	**23**	10Ω to 80 Ω			XSDAV - XSDAI

Step 5. Wearing wrist straps, remove test box and re-connect shorting plug to I8 connector. [ ]

Step 6. Remove shorting plug from I9 connector and connect test box. [ ]

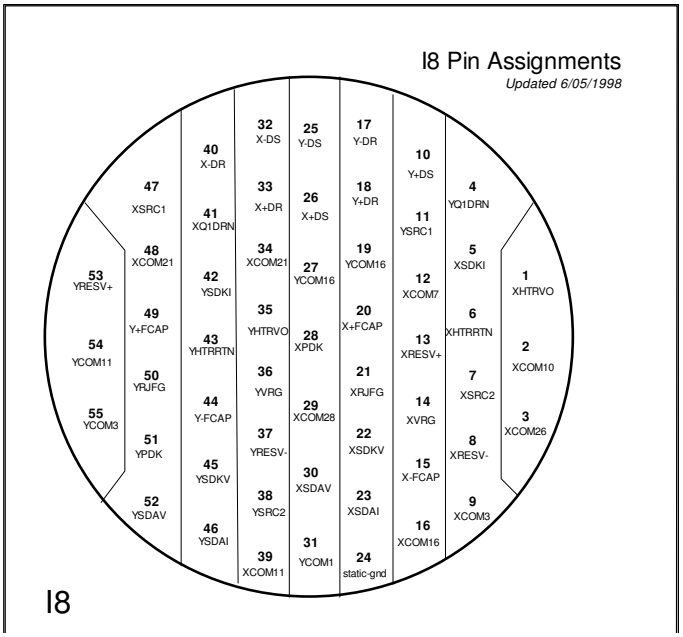
Step 7. Complete the following table for the I9 tophat connector.

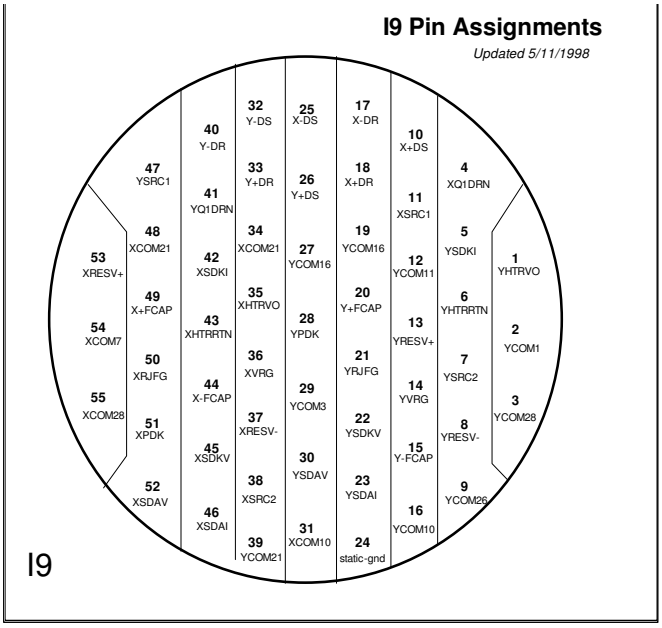
Resistance Check of Flight Probe Top Hat Connector I9

test	Red Lead +	Black com	Nominal Resistance	Measured Value	Within range?	Circuit
1	**35**	**43**	15 kΩ to 15.2kΩ			XHTRRVO - XHTRRTN
2	**1**	**6**	15 kΩ to 15.2kΩ			YHTRRVO - YHTRRTN
3	**45**	**42**	10Ω to 80 Ω			XSDKV - XSDKI
4	**52**	**46**	10Ω to 80 Ω			XSDAV - XSDAI
5	**22**	**5**	10Ω to 80 Ω			YSDKV - YSDKI
6	**30**	**23**	10Ω to 80 Ω			YSDAV - YSDAI

Step 7. Wearing wrist strap, remove the test box and re-connect shorting plug to I9 connector. [ ]

Connector Diagram - For Reference





Completion of Procedure

The results obtained in the performance of this test procedure are acceptable. Place an electronic copy of this procedure including measured data into Payload server and Record path and filename _____

Completed by: _____ Date/Time_____

Witnessed by: _____ Date/Time_____
QA: _____ Date/Time_____

This is to certify that the information obtained under this test procedure is as represented and the documentation is complete and correct.