GRAVITY PROBE B

PROCEDURE FOR

PAYLOAD VERIFICATION

(PTP) Procedure for TRE Detector Stimulus Test

P0753 Rev. B

per ECO 1251

March 12, 2001

Prepared by: *Bob Farley*

Approvals:

Program Responsibility	Signature	Date
Bob Farley TRE REE		
M. Taber Payload Test Director		
Richard Whelan GP-B System Engineering		
D. Ross GP-B Quality Assurance		
Barry Muhlfelder GP-B Payload Technical Manager		

NOTES:
Level of QA required during performance of this procedure:
__4__Stanford QA Representative

All redlines must be approved by QA

Revision Record:

Rev	Rev Date	ECO #	Summary Description
-	September 19, 2000	na	Original issue
A	November 1, 2000	1223	Increased allowed signal range to 9.9 v. Added more data recording for long dwell times. Removed duct tape.
B	March 12, 2001	1251	Added thermal and stability test data collection, sections 12.9 and 12.10.

Acronyms and Abbreviations:

Acronym / Abbreviation	**Meaning**
GSE	Ground Support Equipment
TRE	Telescope Readout Electronics
AS3	Artificial Star #3
na	not applicable

Notify ONR 24 hours prior to beginning testing.

Person Contacted: _____ Date and Time: _____

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1. Scope

This procedure verifies that the TRE has been installed and connected properly. It exercises the TRE using a light stimulus placed in the near field of the telescope aperture. It is both an optical and electrical verification of the telescope readout, executed without requiring precise alignments. It does not provide any pointing or photometric information, although it demonstrates the full functionality of the eight detector channels.

2. Configuration Requirements

2.1 Probe is installed in the dewar. Probe pressure <1E-5 torr. TRE mounted on dewar, with cables connected to tophat and GSE test support rack.

2.2 A transparent cover for Window #4 to allow illumination of detectors.

3. Hardware Required

3.1 Commercial test equipment

Manufacturer	Model	Serial Number	Calibr. Exp. Date

3.2 Mechanical/Electrical Special test equipment

Description	Part No.	Rev. no.	Serial No.	Certification Date
TRE Ground Support Equipment Rack	na		Unit #1	5/26/99
Octolite--Telescope Near Field Stimulator	8A02659GSE			na
Clear Plexiglas cover for probe aperture.				na

3.3 Tools and Supplies

Description	No. Req'd
Flashlight	1 working
Aluminum foil	
Plastic tape	

4. Software Required

Test Support Software

Test Software Name	Version No.	QA Verification
SQD362.exe, (supports two TREs.)	V3.62	

5. Procedures Required

Procedure Name	Procedure No.

6. Equipment Pretest Requirements

None.

7. Personnel Requirements

This test to be conducted only by certified personnel. Among those are Bob Farley, John Goebel, Howard Demroff, and Paul Ehrensberger.

8. Quality Assurance

Testing 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 and shall review any discrepancies noted and approve their disposition. Upon completion of this procedure, the QA Program Engineer, D. Ross or her designate, will certify his 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.

9. Red-line Authority

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

10. Safety Requirements

10.1 Connection and disconnection shall be performed only when the equipment involved is in a powered-down state.

10.2 Connector savers are to be used on the TRE and tophat connectors.

Note: The mating and demating of all flight connectors must be recorded in a log. This procedure does not require removal or replacement of connector savers onto the flight connectors--they should already be in place.

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

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

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

11. References and Applicable Documents

na

12. Operations

12.1 TRE Installation Verification

12.1.1 Verify that LMMS 8A01948GSE-101 cables are installed between the TRE units and the TRE GSE Test Rack. Note which TRE serial number is connected to side A or side B of the Test Rack and enter the information in the table below.

12.1.2 Verify that Cable 8A01288-101 connects TRE-A to Tophat connector I9.

12.1.3 Verify that Cable 8A01287-101 connects TRE-B to Tophat connector I8.

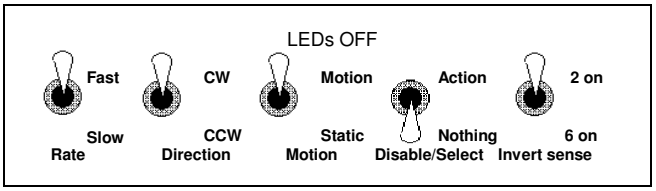
12.1.4 If any of these connections are missing, install the cables as indicated above to satisfy the connectivity.

TRE Assembly **8A00918-101**	GSE Rack Connection A or B	Tophat Connector	Initial and Date	QA Verification
TRE S/N001	Side _____	I ____		
TRE S/N002	Side _____	I ____		

12.2 Illumination Setup

The Octolite Telescope Near Field Stimulator includes an optical assembly with 8 LEDs mounted in a plastic container, a control unit with five toggle switches, an interconnecting cable, and an external power supply. The light weight LED box is to be located approximately in the line of sight of the telescope. Its placement is not critical, and needs to be approximately centered, to within 1/4 inch.

12.2.1 Connect the power supply to the Octolite control box and apply power to the supply. Set all the switches up to verify that the array is working properly, and then move the Disable/Select switch down. All of the LEDs should turn off.



12.2.2 Connect the cable between the Octolite control box and the Octolite optical array.

12.2.3 Verify that there is a clear Plexiglas cover on the top of the probe, and that the telescope reticle can be seen using a flashlight.

12.2.4 Mount the Octolite optical array in front of the telescope aperture, resting on the Plexiglas window. Position the array to within 1/4 inch of center on the circular cover, and secure it in position using suitable plastic tape. Note: No precision alignment is required.

12.2.5 Secure the cable for strain relief using tape as necessary.

12.2.6 Cover the Octolite and the top of the probe with a sheet of aluminum foil to exclude background light. This might be deferred until after the initial detector balancing as you begin paragraph 12.6.

12.3 TRE Power-on

12.3.1 Power the GSE Test Rack and boot the computer. Change to directory **SQD3** and run program named SQD362.exe. Select MON A in the main menu, and step through the four selections in the Global menu to enable both A and B commands.

12.3.2 Power on the A Side TRE using the switch on the A side power supply.

12.3.3 Check the A-Side housekeeping display for both X and Y axes. Power supply voltages and Reference voltages should be within 5% of nominal values.

QA Witness_____ Date:_____

12.3.4 Navigate to the Main Menu and select MON B.

12.3.5 Power on the B Side TRE using the switch on the B side power supply.

12.3.6 Check the B-Side housekeeping display for both X and Y axes. Power supply voltages and Reference voltages should be within 5% of nominal values.

QA Witness_____ Date:_____

12.4 TRE Detector warm-up

12.4.1 Heat the detector platforms to approximately 80 K using local closed loop mode. Execute the following for the X- and Y-Axes on both A-Side and B-Side.

12.4.1.1 In the Main Menu, select MON A or MON B as appropriate.

12.4.1.2 Select Commands, and the appropriate Axis menu.

12.4.1.3 Heat platform to 80 K using the following commands.

12.4.1.3.1 Set DTEMP to 0832h.

12.4.1.3.2 Set HEAT to 0007h.

12.4.1.3.3 Set CONTROL to 0080h.

12.4.2 When all four axes have been setup, monitor the temperature displayed and verify that it approaches 80K. Record the time

All platforms heating at _____

12.4.3 After five minutes, the Servo Error should be within one quarter volt of zero. If it is not, request a reading of probe pressure and record the result.

Pressure_____ torr.

12.4.4 When the servo error is within the above range, proceed with the balancing. Record the Servo Error for each axis.

	A-side, X-Axis	**A-side, Y-Axis**	**B-side, X-Axis**	**B-side, Y-Axis**
Servo Error (volts)				
Initials & Date				

QA Witness_____ Date:_____

12.5 TRE Detector Balancing

Use the following procedure to balance each of the eight detector circuits, and record the resulting hexadecimal OFFSET command for each in the table.

12.5.1 Select an Axis to balance, Side A or B, and X or Y. Navigate the menu using Esc, Commands, and TRE X or Y Axis.

12.5.2 In the Main Menu, select MON A or MON B as appropriate.

12.5.3 Select Commands, and the appropriate Axis menu.

12.5.3.1 Set HEAT to 0003h.

12.5.3.2 Wait a few minutes if necessary until the servo error voltage is within one-quarter volt of zero volts.

12.5.4 Set the CONTROL word to 1580h.

12.5.5 Set the BIAS word to 0000h.

12.5.6 Set the CLAMP word to 0000h.

12.5.7 Set the OFFSET to FFFFh.

12.5.8 Observe the value of XPSIG, YPSIG, XNSIG, or YNSIG as appropriate to monitor the progress. It is desired to find the smallest value of the OFFSET bytes that allow the xxSIG voltage to remain greater than zero.

12.5.9 Optionally, monitor the corresponding signal outputs (+ and -) with the oscilloscope, Sensitivity 5V per division.

12.5.10 Hold the SHIFT key down and depress F1 repeatedly until one of the ?PSIG values or waveforms becomes negative. Release the SHIFT key.

12.5.11 Hold the left Ctrl key and depress F1 once, or until the ?PSIG value or waveform is greater than zero volts. Release the Ctrl key.

12.5.12 Hold the SHIFT key down and depress F2 repeatedly until the ?PSIG value or waveform becomes negative. Release the SHIFT key.

12.5.13 Hold the left Ctrl key and depress F2 once, or until the ?PSIG value or waveform is greater than zero volts. Release the Ctrl key.

12.5.14 Hold the SHIFT key down and depress F3 repeatedly until the ?NSIG value or the other waveform becomes negative. Release the SHIFT key.

12.5.15 Hold the left Ctrl key and depress F3 once, or until the ?NSIG value or the waveform is greater than zero volts. Release the Ctrl key.

12.5.16 Hold the SHIFT key down and depress F4 repeatedly until the ?NSIG value or the waveform becomes negative. Release the SHIFT key.

12.5.17 Hold the left Ctrl key and depress F4 once, or until the ?NSIG value or the waveform is greater than zero volts. Release the Ctrl key.

12.5.18 Record the OFFSET hex command value.

	A-side, X-Axis	**A-side, Y-Axis**	**B-side, X-Axis**	**B-side, Y-Axis**
OFFSET (hex)				
CLAMP (hex)				
Initials & Date				

12.5.19 Repeat procedure from paragraph 12.5.1 for the other axes.

QA Witness_____ Date:_____

12.6 TRE Initial gain and Clamp Setup

Set the Gain and CLAMP voltages according to the following procedure for each axis. Select the MON A or B from the main menu depending upon which circuit is being adjusted. The adjustment criteria is to achieve a value of X high+, X high-, Y high+, or Y high- that is not railed at +9.99 volts. The desired setting for these monitors is between zero and eight volts positive.

12.6.1 Set the CONTROL word to 1080h.

12.6.2 Choose a gain setting based on expected signal, where a higher gain code value gives greater gain. For now, choose a gain code of 8 and set the BIAS command to 8800h.

12.6.3 Select the CLAMP command. Hold the left Shift key and depress the F1 key repeatedly until the ? high+ monitor or one of the waveforms becomes negative. Release the Shift key.

12.6.4 Hold the Ctrl key and depress the F2 key once or until the ? high+ monitor or the level at the start of the waveform is within the desired range. Release the Ctrl key.

12.6.5 Hold the left Shift key and depress F2 until the ? high+ monitor is within the desired range or the start of the waveform is between zero and four volts on the oscilloscope display. Back up by using the Ctrl and F2 combination.

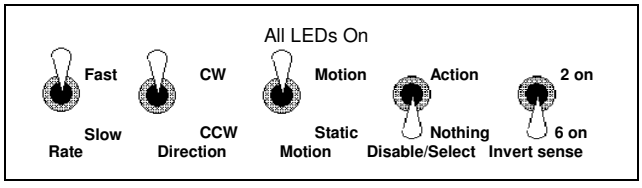
12.6.6 Repeat for the other signal output, using F3 and F4 in combination with the left Shift or Ctrl keys and observing the ?SIG - value.

12.6.7 Record the CLAMP command value in the table above.

12.6.8 Repeat the procedure beginning at 12.6 for the remaining axes.

12.7 TRE Maximum Illumination Test

12.7.1 Turn on the Octolite LEDs by setting the Invert Sense switch down. All of the LEDs should light. Check the TRE outputs using the rack mounted oscilloscope and verify that the signals are between -5 and +5 volts (single-ended) If they exceed this range, lower the gain



setting, and repeat the clamp adjustments above. If the ramps are small, less than 1 volt peak to peak, increase the gain so that the total excursion is greater than 4 volts peak to peak, adjusting the clamps as required. All of the 8 TRE channels should end up with the same gain setting.

12.7.2 Record the final values for BIAS, Offset and CLAMP commands in the table below

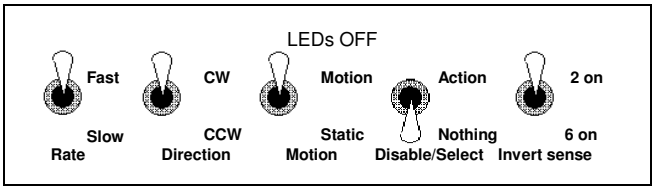
	A-side, X-Axis	A-side, Y-Axis	B-side, X-Axis	B-side, Y-Axis
OFFSET (hex)				
BIAS (hex)				
CLAMP (hex)				
Initials & Date				

12.8 Data Collection

12.8.1 A-Side Dark

12.8.1.1 Turn off the Octolite LEDs by switching the Invert Sense Switch up.

12.8.1.2 Navigate to the main menu and select MON A.



12.8.1.3 In the Disk menu, set the program to record 20 second files CONTINUOUSLY.

12.8.1.4 Check the signal levels for each of the A-side X-and Y-Axes detector outputs by monitoring X high+, X low+, X high -, X low-, Y high+, Y low+ Y high-, and Y low- on the screen. Each signal should be within 9.9 volts of zero. If a signal is not in the desired range, adjust the CLAMP of the appropriate axis until it is.

12.8.1.5 Navigate to the Disk menu and ENABLE recording. Record the filename as shown on the screen in dull red characters:

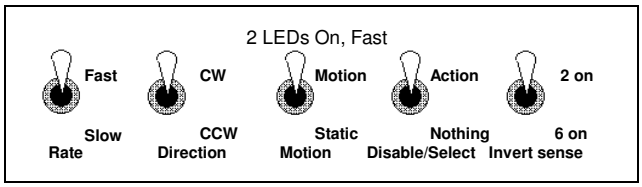
Filename: _____. Start time: _____.

QA Witness _____ Date:_____

12.8.1.6 Wait at least two minutes, then DISABLE the recording.

12.8.2 A-Side with 2 0n and 6 Off, fast

12.8.2.1 Set the Octolite to rotate a pattern with two LEDs lit at a time. All of the switches should be up.



12.8.2.2 Navigate to the Disk menu and ENABLE recording. Record the filename as shown on the screen in dull red characters:

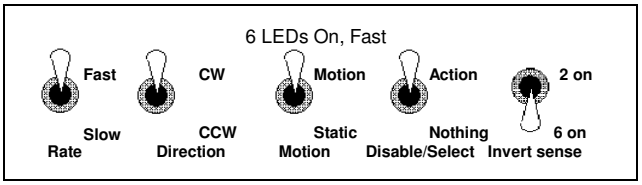
Filename:_____. Start time: _____.

QA Witness _____ Date:_____

12.8.2.3 Wait at least three minutes, then DISABLE the recording.

12.8.3 A-side with 6 On and 2 Off, fast

12.8.3.1 Set the Octolite to rotate a pattern with six LEDs lit at a time. All of the switches should be up except Invert Sense.



12.8.3.2 Navigate to the Disk menu and ENABLE recording. Record the filename as shown on the screen in dull red characters:

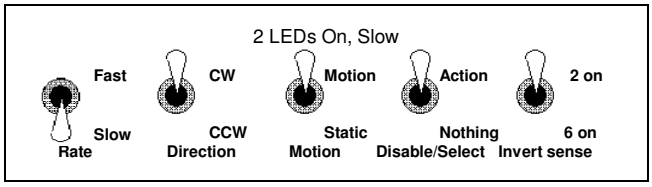
Filename: _____. Start time: _____.

QA Witness _____ Date:_____

12.8.3.3 Wait at least three minutes, then DISABLE the recording.

12.8.4 A-Side with 2 0n and 6 Off, slow

12.8.4.1 Set the Octolite to rotate a slow pattern with two LEDs lit at a time. All of the switches should be up except the Rate switch.



12.8.4.2 Navigate to the Disk menu and ENABLE recording. Record the filename as shown on the screen in dull red characters:

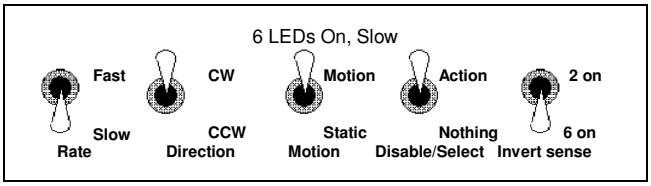
Filename: _____. Start time: _____.

QA Witness _____ Date:_____

12.8.4.3 Wait at least three minutes, then DISABLE the recording.

12.8.5 A-side with 6 On and 2 Off, slow

12.8.5.1 Set the Octolite to rotate a pattern with six LEDs lit at a time. All of the switches should be up except Rate and Invert Sense.



12.8.5.2 Navigate to the Disk menu and ENABLE recording. Record the filename as shown on the screen in dull red characters:

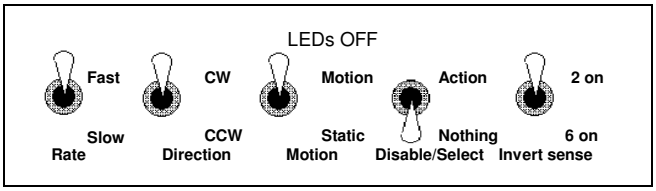
Filename: _____. Start time: _____.

QA Witness _____ Date:_____

12.8.5.3 Wait at least three minutes, then DISABLE the recording.

12.8.6 B-side Dark

12.8.6.1 Turn off the Octolite LEDs by switching the Disable/Select switch down and the Invert Sense Switch up.



12.8.6.2 Navigate to the main menu and select MON B

12.8.6.3 Check the signal levels for each of the B-side X- and Y-Axes detector outputs by monitoring X high+, X low+, X high -, X low-, Y high+, Y low+ Y high-, and Y low- on the screen. Each signal should be within 9.9 volts of zero. If a signal is not in the desired range, adjust the CLAMP of the appropriate axis until it is.

12.8.6.4 Navigate to the Disk menu and ENABLE recording. Record the filename as shown on the screen in dull red characters:

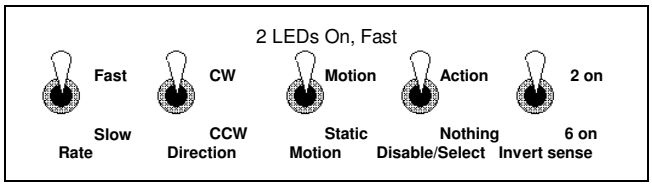
Filename: _____. Start time: _____

QA Witness _____ Date:_____

12.8.6.5 Wait at least two minutes, then DISABLE the recording.

12.8.7 B-side with 2 0n and 6 Off, fast

12.8.7.1 Set the Octolite to rotate a pattern with two LEDs lit at a time. All of the switches should be up.



12.8.7.2 Navigate to the Disk menu and ENABLE recording. Record the filename as shown on the screen in dull red characters:

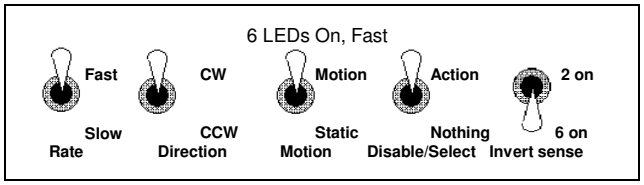
Filename:_____. Start time: _____.

QA Witness _____ Date:_____

12.8.7.3 Wait at least three minutes, then DISABLE the recording.

12.8.8 B-side with 6 On and 2 Off, fast

12.8.8.1 Set the Octolite to rotate a pattern with six LEDs lit at a time. All of the switches should be up except Invert sense.



12.8.8.2 Navigate to the Disk menu and ENABLE recording. Record the filename as shown on the screen in dull red characters:

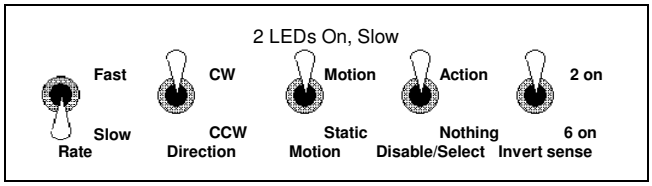
Filename:_____. Start time: _____.

QA Witness _____ Date:_____

12.8.8.3 Wait at least three minutes, then DISABLE the recording.

12.8.9 B-side with 2 0n and 6 Off, slow

12.8.9.1 Set the Octolite to rotate a pattern with two LEDs lit at a time. All of the switches should be up except Rate.



12.8.9.2 Navigate to the Disk menu and ENABLE recording. Record the filename as shown on the screen in dull red characters:

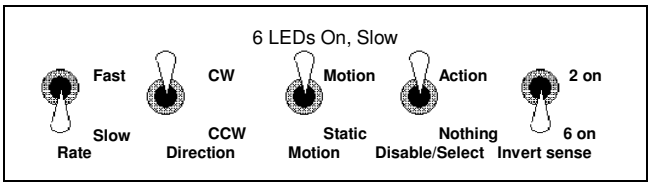
Filename:_____. Start time: _____.

QA Witness _____ Date:_____

12.8.9.3 Wait at least three minutes, then DISABLE the recording.

12.8.10 B-side with 6 On and 2 Off, slow

12.8.10.1 Set the Octolite to rotate a pattern with six LEDs lit at a time. All of the switches should be up except Rate and Invert sense.



12.8.10.2 Navigate to the Disk menu and ENABLE recording. Record the filename as shown on the screen in dull red characters:

Filename:_____. Start time: _____.

QA Witness _____ Date:_____

12.8.10.3 Wait at least three minutes, then DISABLE the recording.

12.9 A-Side Stability Characterization Tests

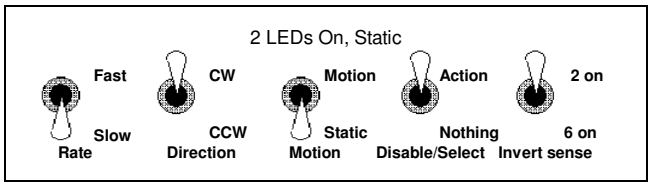
12.9.1 A-side Thermal Variation

12.9.2 Navigate to the Main Menu and select MON A.

12.9.2.1 Navigate to the A-side commands input.

12.9.2.2 Set the Octolite so that two LEDs are illuminated and stationary.

12.9.2.3 Navigate to the Disk menu and ENABLE recording. Record the filename as shown on the screen in dull red characters:



Filename:_____. Start time: _____.

QA Witness _____ Date:_____

12.9.2.4 Wait for three minutes.

12.9.2.5 Select the X-axis DTEMP command register on the A-side, and while depressing the CTRL key, tap the F4 key four times. This will lower the command value by four counts.

12.9.2.6 Select the Y-axis DTEMP command register on the A-side, and while depressing the CTRL key, tap the F4 key four times. This will lower the command value by four counts.

12.9.2.7 Wait for two minutes.

12.9.2.8 Select the X-axis DTEMP command register on the A-side, and while depressing the SHIFT key, tap the F4 key four times. This will raise the command value by four counts.

12.9.2.9 Select the Y-axis DTEMP command register on the A-side, and while depressing the SHIFT key, tap the F4 key four times. This will raise the command value by four counts.

12.9.2.10 Wait for two minutes.

12.9.2.11 Select the X-axis DTEMP command register on the A-side, and while depressing the SHIFT key, tap the F4 key four times. This will raise the command value by four more counts.

12.9.2.12 Select the Y-axis DTEMP command register on the A-side, and while depressing the SHIFT key, tap the F4 key four times. This will raise the command value by four more counts.

12.9.2.13 Wait for two minutes.

12.9.2.14 Select the X-axis DTEMP command register on the A-side, and while depressing the CTRL key, tap the F4 key four times. This will lower the command value by four counts to its original value.

12.9.2.15 Select the Y-axis DTEMP command register on the A-side, and while depressing the CTRL key, tap the F4 key four times. This will lower the command value by four counts to its original value.

12.9.2.16 Wait at least two minutes, then DISABLE the recording.

12.9.3 A-side Voltage Stability Data Collection

12.9.3.1 Keep the Octolite setup as in the previous test, with two LEDs active, and static.

12.9.3.2 Set both the A-side X-Axis and Y-axis BIAS commands to 0000h.

12.9.3.3 Using the procedure of 12.6, adjust the CLAMP command so the starting point of the ramps is as close to +8 volts as possible for all four of the A-side detectors.

12.9.3.4 Navigate to the Disk menu and ENABLE recording. Record the filename as shown on the screen in dull red characters:

Filename:_____. Start time: _____.

QA Witness _____ Date:_____

12.9.3.5 Toggle the CONTROL between 1480h and 1080h for both the X- and Y-axes on the A-side. Depending upon how long it takes for the detector outputs to saturate, this might be done one axis at a time, or alternating between the axes. Obtain at least three saturated levels for each axis.

12.9.3.6 Return both X and Y CONTROL commands to 1080h.

12.9.3.7 Disable the recording.

12.10 B-side Stability Characterization Tests

12.10.1 B-side Thermal Variation

12.10.1.1 Navigate to the B-side commands input.

12.10.1.2 Keep the Octolite setup as used in the previous test, with two LEDs illuminated and stationary.

12.10.1.3 Navigate to the Disk menu and ENABLE recording. Record the filename as shown on the screen in dull red characters:

Filename:_____. Start time: _____.

QA Witness _____ Date:_____

12.10.1.4 Wait for three minutes.

12.10.1.5 Select the X-axis DTEMP command register on the B-side, and while depressing

the CTRL key, tap the F4 key four times. This will lower the command value by four counts.

12.10.1.6 Select the Y-axis DTEMP command register on the B-side, and while depressing the CTRL key, tap the F4 key four times. This will lower the command value by four counts.

12.10.1.7 Wait for two minutes.

12.10.1.8 Select the X-axis DTEMP command register on the B-side, and while depressing the SHIFT key, tap the F4 key four times. This will raise the command value by four counts.

12.10.1.9 Select the Y-axis DTEMP command register on the B-side, and while depressing the SHIFT key, tap the F4 key four times. This will raise the command value by four counts.

12.10.1.10 Wait for two minutes.

12.10.1.11 Select the X-axis DTEMP command register on the B-side, and while depressing the SHIFT key, tap the F4 key four times. This will raise the command value by four more counts.

12.10.1.12 Select the Y-axis DTEMP command register on the B-side, and while depressing the SHIFT key, tap the F4 key four times. This will raise the command value by four more counts.

12.10.1.13 Wait for two minutes.

12.10.1.14 Select the X-axis DTEMP command register on the B-side, and while depressing the CTRL key, tap the F4 key four times. This will lower the command value by four counts to its original value.

12.10.1.15 Select the Y-axis DTEMP command register on the B-side, and while depressing the CTRL key, tap the F4 key four times. This will lower the command value by four counts to its original value.

12.10.1.16 Wait at least two minutes, then DISABLE the recording.

12.10.2 B-side Voltage Stability Data Collection

12.10.2.1 Keep the Octolite setup as in the previous test, with two LEDs active, and static.

12.10.2.2 Set both the B-side X-Axis and Y-axis BIAS commands to 0000h.

12.10.2.3 Using the procedure of 12.6, adjust the CLAMP command so the starting point of the ramps is as close to +8 volts as possible for all four of the B-side detectors.

12.10.2.4 Navigate to the Disk menu and ENABLE recording. Record the filename as shown on the screen in dull red characters:

Filename:_____. Start time: _____.

QA Witness _____ Date:_____

12.10.2.5 Toggle the CONTROL between 1480h and 1080h for both the X- and Y-axes on the B-side. Depending upon how long it takes for the detector outputs to saturate, this might be done one axis at a time, or alternating between the axes. Obtain at least three saturated levels for each axis.

12.10.2.6 Return both X and Y CONTROL commands to 1080h.

12.10.2.7 Disable the recording.

12.11 Completion of testing

12.11.1 Turn off the Octolite and remove it from atop the probe.

12.11.2 If no further testing of the TRE / DPA is needed, return the CONTROL registers to 0000h for all of the axes and verify completion in the table below.

Axis	A-side, X-Axis	A-side, Y-Axis	B-side, X-Axis	B-side, Y Axis
CONTROL	0000h	0000h	0000h	0000h
Initial & date				

Turn off the TRE power supplies in the test rack.

QA Witness_____ Date:_____

12.11.3 If other tests are to be performed using the TRE / DPA units, consider this as a good starting point and proceed with the requirements of that test procedure without turning the power off.

12.11.4 When testing is completed, transfer the data files to a Jaz cartridge, so they can be archived on the Payload Server.

13. Test completed.

Completed by: _____

QA Witnessed by: _____

Date: _____

Time: _____

PTD_____ Date _____

Quality Manager_____ Date _____