GRAVITY PROBE B

PROCEDURE FOR

PAYLOAD VERIFICATION

(PTP) UV CABLE CONTINUITY CHECK

14 December, 2001

Prepared by: *B. Clarke*

Approvals:

Program Responsibility	Signature	Date
B. Clarke Charge Control REE		
R. Brumley Payload Technical Manager		
B. Bencze Payload Electronics Manager		
D. Ross GP-B Quality Assurance		

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**

Table of Contents

A Scope

This procedure is **an engineering test** to verify the optical continuity of the installed flight UV cable from the AFT ECU to the top hat optical LEMO connectors. The optical cables will have already been connected to the AFT ECU but not yet connected at the top hat. The UV lamps and switches (in the AFT ECU) will be operated and the resulting UV flux through the cable will be measured.

B Requirements Verification

This is and engineering test only. No requirements are verified using this procedure.

C Configuration Requirements

C.1 The UV cables must be connected to the AFT ECU (SMA end of cable).
C.2 The optical SMA connectors must be torqued but not staked.
C.3 The UV cables must not be connected at the top hat (LEMO end).
C.4 The LEMO end of the cables must be accessible.
C.5 The spacecraft must be configured such that the UV lamps and switches may be operated using CSTOL commands.

D Hardware Required

D.1 Flight hardware required

Description	No. Req'd
GP-B spacecraft and payload	1
Fiber optic cables, P/N 8A00649-103, Rev A	3

D.2 Commercial test equipment

Manufacturer	Model	Serial Number	Calibr. Exp. Date
Keithly Autoranging Picoammeter	485		
HP 0-25 V Dual Channel DC Power Supply	E3620A		
Resonance Ltd. Cs-Te photodiode	Cs-Te M-D-L		

D.3 Mechanical/Electrical Special test equipment

Description	Part No.	Rev. no.	Serial No.	Certification Date
SMA to LEMO fiber optic jumper	N/A	N/A	N/A	N/A

D.4 Tools

Description	No. Req'd
5X optical visor	1
Fiber optic inspection microscope	1

D.5 Expendables

Description	Quantity
Reagent grade isopropyl alcohol	N/A, on hand.
Filtered compressed air	N/A, on hand.
Lint free wipes and swabs	N/A, on hand.
Filtered dry nitrogen gas (cylinder) to be used for purging the UV section of the ECU during lamp operation.	N/A, on hand

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.
GP-B Maintenance and Testing at All Facilities	P0875
The following procedures and drawings are for reference only. They are not absolutely required in the performance of this procedure.	
Pre-Integration UV Fiber Optics checkout	P0429AB
Hook-up and Check-out of All Gyro Cables with Probe Connectors	P0431AB
UV Current Measurements in Probe C (RT)	P0435AB
(PTP) ECU Temporary Installation Including Cables GP-B Payload Verification Test II Operations Order	P0835 Rev NC
PROBE C CABLE CONNECTOR INTERFACE	LMMS drawing 1C34103, Rev D

G Equipment Pretest Requirements

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

H Personnel Requirements

H.1 Test Leader

The Test Leader shall be Bruce Clarke. He has overall responsibility for the implementation of this procedure.

H.2 Other Personnel

All personnel participating in this procedure shall work under the direction of the Test Leader who shall determine whether the person is qualified. Different people will likely be designated at different times. For this procedure, participating engineers are expected to be (at various times) Bill Bencze, Robert Brumley, Tom Welsh and Ned Calder.

The spacecraft POD shall be operated by a qualified POD operator assigned by Norm Bennet. Presently the approved POD operator is Thomas Wai.

The QA program office shall be notified prior to the start of this procedure. A Quality Assurance Representative designated by Dorrene Ross shall review any discrepancy noted during this procedure, and approve its disposition. The presently designated QA Representative is Russ Leese.

ONR shall be notified at least 24 hours prior to the start of this procedure.

I Safety Requirements

I.1 General

Extreme care must be taken to avoid accidentally bumping the Probe or damaging the connectors. Connector savers or equivalent adapters shall be used to protect the connector pins from damage during the measurements. A properly grounded ESD wrist strap must be worn while mating to or de-mating from Probe connectors.

All mate/demates involving flight connectors shall be logged.

I.2 Fiber Optics

The fiber optic cables are very fragile. Use care when mating and demating fiber optic connectors as not to break the optical fiber or scratch the polished optical surface at the end of the connectors. All fiber optic connectors must be rinsed with ethanol, dried with filtered air and inspected using a 5X optical visor and/or a fiber optic inspection microscope prior to mating to ensure there is no contamination on the optical surfaces.

I.3 UV Lamps

Ozone is produced when running the UV lamps in an oxygen environment. The amount of ozone that can be produced by these UV lamps is potentially a mild hazard to both hardware and personnel. In order to mitigate ozone production, the UV section of the ECU should be purged with dry filtered nitrogen gas while the UV lamps are powered on.

J General Instructions

J.1 Redline Authority

Authority to redline this procedure is given solely to the Test Lead with mandatory concurrence form the QA representative. Approval by the Hardware Manager shall be required if experiment functionality may be affected. QA Program Engineering concurrence is required before final review/buyoff (on last page) of the completion of the activity described in this procedure.

J.2 Test Anomaly or Discrepancy

Any nonconformance or test anomaly will be recorded in a D-log or as a Discrepancy Report per Quality Plan P0108. Do not alter or break test configuration if a test failure occurs; notify quality assurance.

Upon completion of this procedure, the QA Program Engineer, D. Ross or R. Leese will certify his/her 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.

J.3 Test Exit and Re-test Authority

Only the following persons have the authority to exit/terminate this test or perform a retest:

Test Lead Bruce Clarke or his designated representative

QA	Russ Leese, Dorrene Ross or other designated representative of Stanford Quality Assurance.

K References and Applicable Documents

None.

Test started. Date:

Time:

L OPERATIONS

L.1 ECU UV BASELINE OUTPUT MEASUREMENT

SECTION STARTED _____ AT _____
DATE TIME

SIGNED: _____ PRINT NAME: _____
TEST LEAD

SIGNED:_____ PRINT NAME: _____
QA REPRESENTATIVE

L.1.1 Insure the optical surfaces of the SMA-LEMO fiber optic jumper are clean by wiping them with isopropyl alcohol on a lint free wipe and drying with compressed filtered air. Do not replace any plastic caps after cleaning the fiber ends.

L.1.2 All fiber optic connectors mating to the probe as well as the probe connectors themselves must be inspected for particulate contamination prior to mating. Log all mate/de-mates from the probe flight connectors in the appropriate log sheet (provided with probe).

L.1.3 Do not remove the vent covers from the UV section of the ECU. One of the ECU-UV section vent caps has a mounting screw with a through hole drilled in it to allow for nitrogen purging of this section. Begin a light flow of dry nitrogen gas (1-2 sccm) through the purge line and push the end of the line over the appropriate screw on the ECU-UV section vent cap. The purge should be running for at least 10 minutes before starting the UV lamps. Record the time the purge was started below:

Started purge @ _____

L.1.4 The following set of monitors must be recorded in a bridge file at a rate of at least 0.1 Hz. These monitors must also be available real time on the POD screen. Start a bridge file and record the bridge filename below.

Item	Mnemonic
UV LAMP A UV output (intensity monitor)	DE_UVLampA_OUT
UV LAMP A current	CE_UVLampA_I
UV LAMP A Bulb temperature	TE_UVLampA_T2
UV A base temperature	TE_UV_BASE_SDTa
UV LAMP B UV output (intensity monitor)	DE_UVLampB_OUT
UV LAMP B current	CE_UVLampB_I
UV LAMP B Bulb temperature	TE_UVLampB_T2
UV B base temperature	TE_UV_BASE_SDTb

Bridge filename:_____

L.1.5 Power up the telemetry on both UV lamps.

Action	CSTOL Command
UV Lamp-A +/- 15 V ON	Set ECU UvLamp15V with Ecu_Side 1,Switch_Mode on
UV Lamp-B +/- 15 V ON	Set ECU UvLamp15V with Ecu_Side 2,Switch_Mode on

Time: _____

L.1.6 Once 10 minutes has passed since the start of the purge in step L.1.3, turn on the thermoelectric heater/cooler and the RF exciter on UV lamp A by commanding:

Action	CSTOL Command
UV Lamp-A + 5V ON	Set ECU UvLamp5V with Ecu_Side 1,Switch_Mode on
UV Lamp-A + 30V ON	Set ECU UvLamp30V with Ecu_Side 1,Switch_Mode on

Time: _____

L.1.7 Record the lamp telemetry in Table L.1.1 below.

L.1.8 Allow the lamp to warm for 20 minutes or until the Test Lead has determined the lamp output is stable enough to perform a measurement. Record the lamp telemetry in Table L.1.1 below.

TABLE L.1.1 – Lamp Telemetry w/Lamp A On, Lamp B Off

Item	Mnemonic	initial value (step L.1.7) (counts)	warm value (step L.1.8) (counts)	final value (step L..1.12) (counts)
UV LAMP A UV output (intensity monitor)	DE_UVLampA_OUT			
UV LAMP A current	CE_UVLampA_I			
UV LAMP A Bulb temperature	TE_UVLampA_T2			
UV A base temperature	TE_UV_BASE_SDTa			
UV LAMP B UV output (intensity monitor)	DE_UVLampB_OUT			
UV LAMP B current	CE_UVLampB_I			
UV LAMP B Bulb temperature	TE_UVLampB_T2			
UV B base temperature	TE_UV_BASE_SDTb			
time	N/A			

L.1.9 Using BNC cables, connect the Cs-Te photodiode "R" or "readout" BNC to the picoammeter and the "G" or "bias" BNC to –25 VDC on the HP DC power supply. Record the S/N of the Cs-Te photodiode and its sensitivity in Table L.1.2 below.

L.1.10 Command all optical switches to lamp A.

Action	CSTOL Command
Switch 1a to lamp A (pulse switch)	Set ECU OptSw1Mode with Ecu_Side 1, Lamp_Side Lamp_a Set ECU PulsOptSw with Optical_Switch_P switch_1a_pulse
Switch 1b to lamp A (pulse switch)	Set ECU OptSw1Mode with Ecu_Side 2, Lamp_Side Lamp_a Set ECU PulsOptSw with Optical_Switch_P switch_1b_pulse
Switch 2a to lamp A (pulse switch)	Set ECU OptSw2Mode with Ecu_Side 1, Lamp_Side Lamp_a Set ECU PulsOptSw with Optical_Switch_P switch_2a_pulse
Switch 2b to lamp A (pulse switch)	Set ECU OptSw2Mode with Ecu_Side 2, Lamp_Side Lamp_a Set ECU PulsOptSw with Optical_Switch_P switch_2b_pulse
Switch 3a to lamp A (pulse switch)	Set ECU OptSw3Mode with Ecu_Side 1, Lamp_Side Lamp_a Set ECU PulsOptSw with Optical_Switch_P switch_3a_pulse
Switch 3b to lamp A (pulse switch)	Set ECU OptSw3Mode with Ecu_Side 2, Lamp_Side Lamp_a Set ECU PulsOptSw with Optical_Switch_P switch_3b_pulse
Switch 4a to lamp A (pulse switch)	Set ECU OptSw4Mode with Ecu_Side 1, Lamp_Side Lamp_a Set ECU PulsOptSw with Optical_Switch_P switch_4a_pulse
Switch 4b to lamp A (pulse switch)	Set ECU OptSw4Mode with Ecu_Side 2, Lamp_Side Lamp_a Set ECU PulsOptSw with Optical_Switch_P switch_4b_pulse

L.1.11 Using the Cs-Te photodiode and a SMA-LEMO fiber optic jumper, measure the UV flux at each of the fiberoptic cable LEMO connectors listed in Table L.1.2 below. Also record the intensity monitor (DE_UVLampA_OUT) at the time of each measurement. The measured UV power for each fiber should be > 0.4 uW. An increase of as much as 15% may be obtained by loosening the SMA connector at the ECU interface, rotating the connector body 180 degrees and then re-tightening the connector to its torque specification (nominally 4 – 6 in-lbs.). Perform this operation on any of the connectors whose output measures below 0.4 uW and check the appropriate box in table L.1.2 below. Record the final measured values in Table L.1.2 using the same boxes as the initial measurements with a slash ('/') dividing the before / after SMA rotation value.

TABLE L.1.2 – ECU UV OUTPUT – LAMP A

Command	CABLE / FIBER (ECU SMA)	picoammeter (-nA)	UV power @ 254 nm (uW)	DE_UVLampA_OUT (counts)	UV>0.4 uW (Y/N)	Re-torqued (Y/N)
Optical Switch 1A to Lamp-A	W300/L4 (ECU F4)					
Optical Switch 1B to Lamp-A	W302/L2 (ECU F10)					
Optical Switch 2A to Lamp-A	W302/L4 (ECU F12)					
Optical Switch 2B to Lamp-A	W302/L3 (ECU F11)					
Optical Switch 3A to Lamp-A	W301/L1 (ECU F5)					
Optical Switch 3B to Lamp-A	W301/L2 (ECU F6)					
Optical Switch 4A to Lamp-A	W301/L3 (ECU F7)					
Optical Switch 4B to Lamp-A	W301/L4 (ECU F8)					
Cs-Te photodiode S/N _____ Model Cs-Te M-D-L			Sensitivity _____(nA/uW)			

L.1.12 Record the final value of the lamp telemetry in Table L.1.1 above.

L.1.13 Power down the RF exciter and the thermoelectric heater/cooler on lamp A by commanding:

Action	CSTOL Command
UV Lamp-A + 5V OFF	Set ECU UvLamp5V with Ecu_Side 1,Switch_Mode off
UV Lamp-A + 30V OFF	Set ECU UvLamp30V with Ecu_Side 1,Switch_Mode off

Time: _____

L.1.14 Turn on the thermoelectric heater/cooler and the RF exciter on UV lamp B by commanding:

Action	CSTOL Command
UV Lamp-B + 5V ON	Set ECU UvLamp5V with Ecu_Side 2,Switch_Mode on
UV Lamp-B + 30V ON	Set ECU UvLamp30V with Ecu_Side 2,Switch_Mode on

Time: _____

L.1.15 Record the lamp telemetry in Table L.1.3 below.

L.1.16 Allow the lamp to warm for 20 minutes or until the Test Lead has determined the lamp output is stable enough to perform a measurement. Record the lamp telemetry in Table L.1.3 below.

TABLE L.1.3 – Lamp Telemetry w/Lamp A Off, Lamp B On

Item	Mnemonic	initial value (step L.1.15) (counts)	warm value (step L.1.16) (counts)	final value (step L..1.20) (counts)
UV LAMP A UV output (intensity monitor)	DE_UVLampA_OUT			
UV LAMP A current	CE_UVLampA_I			
UV LAMP A Bulb temperature	TE_UVLampA_T2			
UV A base temperature	TE_UV_BASE_SDTa			
UV LAMP B UV output (intensity monitor)	DE_UVLampB_OUT			
UV LAMP B current	CE_UVLampB_I			
UV LAMP B Bulb temperature	TE_UVLampB_T2			
UV B base temperature	TE_UV_BASE_SDTb			
time	N/A			

L.1.17 Connect the Cs-Te photodiode "R" or "readout" BNC to the picoammeter and the "G" or "bias" BNC to –25 VDC on the HP DC power supply. Record the S/N of the Cs-Te photodiode and its sensitivity in Table L.1.4 below.

L.1.18 Command all optical switches to lamp B.

Action	CSTOL Command
Switch 1a to lamp B (pulse switch)	Set ECU OptSw1Mode with Ecu_Side 1, Lamp_Side Lamp_b Set ECU PulsOptSw with Optical_Switch_P switch_1a_pulse
Switch 1b to lamp B (pulse switch)	Set ECU OptSw1Mode with Ecu_Side 2, Lamp_Side Lamp_b Set ECU PulsOptSw with Optical_Switch_P switch_1b_pulse
Switch 2a to lamp B (pulse switch)	Set ECU OptSw2Mode with Ecu_Side 1, Lamp_Side Lamp_b Set ECU PulsOptSw with Optical_Switch_P switch_2a_pulse
Switch 2b to lamp B (pulse switch)	Set ECU OptSw2Mode with Ecu_Side 2, Lamp_Side Lamp_b Set ECU PulsOptSw with Optical_Switch_P switch_2b_pulse
Switch 3a to lamp B (pulse switch)	Set ECU OptSw3Mode with Ecu_Side 1, Lamp_Side Lamp_b Set ECU PulsOptSw with Optical_Switch_P switch_3a_pulse
Switch 3b to lamp B (pulse switch)	Set ECU OptSw3Mode with Ecu_Side 2, Lamp_Side Lamp_b Set ECU PulsOptSw with Optical_Switch_P switch_3b_pulse
Switch 4a to lamp B (pulse switch)	Set ECU OptSw4Mode with Ecu_Side 1, Lamp_Side Lamp_b Set ECU PulsOptSw with Optical_Switch_P switch_4a_pulse
Switch 4b to lamp B (pulse switch)	Set ECU OptSw4Mode with Ecu_Side 2, Lamp_Side Lamp_b Set ECU PulsOptSw with Optical_Switch_P switch_4b_pulse

L.1.19 Using the Cs-Te photodiode and a SMA-LEMO fiber optic jumper, measure the UV flux at each of the fiberoptic cable LEMO connectors listed in Table L.1.4 below. Also record the intensity monitor (DE_UVLampB_OUT) at the time of each measurement. The measured UV power for each fiber should be > 0.4 uW. An increase of as much as 15% may be obtained by loosening the SMA connector at the ECU interface, rotating the connector body 180 degrees and then re-tightening the connector to its torque specification (nominally 4 – 6 in-lbs.). Perform this operation on any of the connectors whose output measures below 0.4 uW and check the appropriate box in table L.1.2 below. Record the final measured values in Table L.1.4 using the same boxes as the initial measurements with a slash ('/') dividing the before / after SMA rotation value.

TABLE L.1.4 – ECU UV OUTPUT – LAMP B

Command	CABLE / FIBER (ECU SMA)	picoammeter (-nA)	UV power @ 254 nm (uW)	DE_UVLampB_OUT (counts)	UV>0.4 uW (Y/N)	Re-torqued (Y/N)
Optical Switch 1A to Lamp-B	W300/L4 (ECU F4)					
Optical Switch 1B to Lamp-B	W302/L2 (ECU F10)					
Optical Switch 2A to Lamp-B	W302/L4 (ECU F12)					
Optical Switch 2B to Lamp-B	W302/L3 (ECU F11)					
Optical Switch 3A to Lamp-B	W301/L1 (ECU F5)					
Optical Switch 3B to Lamp-B	W301/L2 (ECU F6)					
Optical Switch 4A to Lamp-B	W301/L3 (ECU F7)					
Optical Switch 4B to Lamp-B	W301/L4 (ECU F8)					

Cs-Te photodiode S/N _____ Model Cs-Te M-D-L	Sensitivity _____(nA/uW)

L.1.20 Record the final value of the lamp telemetry in Table L.1.3 above.

L.1.21 Power down the RF exciter and the thermoelectric heater/cooler on lamp B by commanding:

Action	CSTOL Command
UV Lamp-B + 5V OFF	Set ECU UvLamp5V with Ecu_Side 2,Switch_Mode off
UV Lamp-B + 30V OFF	Set ECU UvLamp30V with Ecu_Side 2,Switch_Mode off

Time: _____

L.1.22 ***Confirm that +5 V power to both lamp A and B is off.***

L.1.23 Power down the telemetry for both lamps A and B by commanding:

Action	CSTOL Command
UV Lamp-A +/- 15 V OFF	Set ECU UvLamp15V with Ecu_Side 1,Switch_Mode off
UV Lamp-B +/- 15 V OFF	Set ECU UvLamp15V with Ecu_Side 2,Switch_Mode off

Time: _____

L.1.24 Stop the nitrogen purge and remove the purge line from the ECU.

L.1.25 Table L.1.2 and L.1.4 give an estimate of the UV power that will be delivered to the top hat LEMO connector as a function of the lamp intensity monitor. This data along with the insertion loss estimates in P0429AB and P0431AB may be used to estimate UV power at the rotor as a function of the lamp intensity monitors.

SECTION COMPLETED _____ AT _____
DATE TIME

SIGNED: _____ PRINT NAME: _____
TEST LEAD

SIGNED:_____ PRINT NAME: _____
QA REPRESENTATIVE

L.2 **CONFIRM FLIGHT FIBER OPTIC CABLES CONNECTION AT ECU**

SECTION STARTED _____ AT _____
DATE TIME

SIGNED: _____ PRINT NAME: _____
TEST LEAD

SIGNED:_____ PRINT NAME: _____
QA REPRESENTATIVE

L.2.1 Based on the data collected in section L.1 and on visual inspection of the spare fiber connections (e.g. fibers not connected to a UV switch in the ECU), confirm the connections in Table L.2.1 below. Enter the measured UV power from tables L.1.2 and L.1.4 in the appropriate boxes.

TABLE L.2.1 – UV FIBER OPTIC CABLE ASSIGNMENTS

UV Switch	ECU	CABLE/FIBER	MEASURED UV POWER (uW)		Confirmed
			LAMP A	LAMP B	
	ECU F1	W300/L1	N/A	N/A	
	ECU F2	W300/L2	N/A	N/A	
	ECU F3	W300/L3	N/A	N/A	
1a	ECU F4	W300/L4			
3a	ECU F5	W301/L1			
3b	ECU F6	W301/L2			
4a	ECU F7	W301/L3			
4b	ECU F8	W301/L4			
	ECU F9	W302/L1	N/A	N/A	
1b	ECU F10	W302/L2			
2b	ECU F11	W302/L3			
2a	ECU F12	W302/L4			

SECTION COMPLETED _____ AT _____
DATE TIME

SIGNED: _____ PRINT NAME: _____
TEST LEAD

SIGNED:_____ PRINT NAME: _____
QA REPRESENTATIVE

L.3 **REDUCE AND ARCHIVE DATA**

SECTION STARTED _____ AT _____
DATE TIME

SIGNED: _____ PRINT NAME: _____
TEST LEAD

SIGNED:_____ PRINT NAME: _____
QA REPRESENTATIVE

L.3.1 Use the embedded Excel spreadsheet (Tables L.3.3) at the end of this procedure to estimate the UV power expected at the top hat connectors for each UV fiber / UV lamp combination.

L.3.2 Calculate the number minutes each of the power lines were on for each lamp, the number of power line on/off cycles and the number of ½ cycles for each optical switch and update Table L.3.1 below.

TABLE L.3.1 – Lamp and Switch Usage Log

	+/- 15V		**+ 5 V**		**+ 30 V**		
	time on (min)	**on/off cycles**	**time on (min)**	**on/off cycles**	**time on (min)**	**on/off cycles**	
Lamp A							
Lamp B							
Switch (1/2 cycles)							
1a	**1b**	**2a**	**2b**	**3a**	**3b**	**4a**	**4b**

L.7.3 At test completion, the following shall be archived on the Payload Server:
An electronic copy of the 'as built' of this procedure.
Any raw data files collected during the implementation of this procedure.

Server path: _____

L.7.4 The original 'As-Built' hard copy of this document shall be kept as part of:

_____

SECTION COMPLETED _____ AT _____
DATE TIME

SIGNED: _____ PRINT NAME: _____
TEST LEAD

SIGNED:_____ PRINT NAME: _____
QA REPRESENTATIVE

Test completed.

Completed by: _____
Witnessed by: _____
Date: _____
Time: _____

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

Test Engineer(s)

SIGNED: _____PRINT:_____ DATE:_____

SIGNED: _____PRINT:_____ DATE:_____

SIGNED: _____PRINT:_____ DATE:_____

Test Lead

SIGNED: _____PRINT:_____ DATE:_____

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

Payload Test Director

SIGNED: _____PRINT:_____ DATE:_____

QA Representative

SIGNED: _____PRINT:_____ DATE:_____

Program QA Engineer

SIGNED: _____PRINT:_____ DATE:_____

TABLE L.3.2 - PROBE C UV OPTICAL AND BIAS CONNECTIONS

[Bias and Ground Plane pin assignments and optical losses are per P0429AB and P0431AB]

GYRO	UV fixture	Top Hat LEMO	BIAS Connector Pin #	Ground Plane @ Top Hat	Optical losses w/ LEMOs (dB)	Optical losses w/o LEMOs (dB)
1	A	PM IIII	BGPM - 4	CG18	4.75	1.70
	B	UV12 II	BG34 -1		5.73	2.69
2	A	UV12 IIII	BG34 - 3	CG28	6.35	3.30
	B	UV12 III	BG34 - 4		6.43	3.38
3	A	UV34 I	BG12 -1	CG38	6.09	3.04
	B	UV34 II	BG12 -2		6.73	3.68
4	A	UV34 III	BG12 -3	CG48	5.88	2.83
	B	UV34 IIII	BG12 -4		5.58	2.53

TABLE L.3.3 - LAMP MONITOR CALIBRATION

ECU UV OUTPUT	measured UV	(uW)	intensity monitor	(counts)	estimated UV @ top hat	(uW)	normalized UV at top hat	(uW/count)
switch #	Lamp A	Lamp B	Lamp A	Lamp B	Lamp A	Lamp B	Lamp A	Lamp B
1a					0.000	0.000	#DIV/0!	#DIV/0!
1b					0.000	0.000	#DIV/0!	#DIV/0!
2a					0.000	0.000	#DIV/0!	#DIV/0!
2b					0.000	0.000	#DIV/0!	#DIV/0!
3a					0.000	0.000	#DIV/0!	#DIV/0!
3b					0.000	0.000	#DIV/0!	#DIV/0!
4a					0.000	0.000	#DIV/0!	#DIV/0!
4b					0.000	0.000	#DIV/0!	#DIV/0!

Assumed LEMO connector loss (dB) 2.5