

06-24-2011
APPROVED

OMI S0007.400 A23
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SHUTTLE COUNTDOWN - (LPS)

Element/End Item: **OV-103/104/105**
Flow/Usage: **ALL**
Facility: **PAD A/B**
Design Center Concurrence: **JSC/MSFC/KSC**
Category: **A**
OPR: **TCO**
TTL ORG: **OC**

**This document contains
HAZARDOUS operations.**

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1.0 INFORMATION

NOTE

Calibration Data Is Detected

A keyword search performed on this WAD indicates it may contain calibration data recordings. This keyword search is limited and variations other than the USA Writer's Handbook (USA008777) approved format for calibration data recording may not be detected. Calibration data recordings in deviations, attachments, or Pen & Inks will not be detected.

1.1 Objective

See S0007.100 for objective of all S0007 dot books.

1.2 Special Instructions All Operations

Refer to OMI S0007.100 for Special Instructions All Operations.

S0007 is an integrated activity. All constraints for S0007 activities will be controlled by S0007.200. S0007.100, S0007.300, S0007.400, S0007.500 and S0007.600 are part of the S0007 family series and therefore they do not require a Task Team Readiness and will be controlled by S0007.200.

1.3 Operations List

Operation		Shop/ Cntl Rm Console	OPR	Haz (Y/N)	Duration (Hrs)	Page No.
No.	Title					
37	NAVAIDS Activation	N/A/ C2	COM	Y	2.0	1
38	Instrumentation	INS/ C9	INS	N	3.0	135
39	Caution & Warning and LCC EMON Activation	ECL, MPS, OMS/ C4, C5, C7, C8	ECL, MPS, OMS	N	1.0	201
40	OMS/RCS System	OMS/ C7, C8	OMS	N	1.0	207
41	ET Liquid Level Point Sensor/Bus Redundancy Checks	MPS/ C4	MPS	N	1.0	217
42	APU Systems	APU/ C8	APU	N	2.0	225
43	GN & C System Operations	GNC/ C11	GNC	Y	4.0	251
44	MPS Helium Tank Load GSE Set Point Verification	MLP/ C4	MPS	N	4.0	289
45	ECLSS System	FWD/ C5	ECL	Y	6.0	307
46	Hydraulic System	HYD/ C8	HYD	N	2.0	377
47	Fuel Cell Purge	FCP/ C6	FCP	N	1.0	401
48	SRB PIC Resistance Test (Go)	SBE/ C10	SBE	Y	0.5	407
49	DPS Systems	DPS/ C12	DPS	N	10.0	411
50	MET Initialization and Switch/Circuit Breakers Configuration	FWD/ C10	EPD	N	1.0	535
51	OMS Propellant Tank Repress	OMS/ C7	ORP	Y	1.0	553
52	Orbiter/GSE PIC Resistance Test	EPD/ C10	EPD	Y	0.5	577

53	Middeck Payload Interface Verification Test	PTC/ C1	PTC	N	1.0	591
54	Potable/Supply Water Tank A Drain Options	FWD/ C6	FCP	N	1.0	657
55	EPDC/Fuel Cell Ground Power Connection and FC Load Share Adjustment	EPD/ C10	EPD	N	0.5	673
56	Post Abort Water Intrusion Inspection	AFT/ C6	PVD	N	2.0	681
57	Final Inspection	*FIT/ NA	*FIT	Y	2.0	689
58	P/L SSP/PRLA Switch Configuration	PLE/ C1	PLE	N	0.5	699
59	EPDC Post-Launch Securing	EPD/ C10	EPD	N	0.5	707
60	Reserved	NA/ NA	NA	NA	NA	715
61	SRB Ignition S&A Device Verification (Contingency)	NA/ C10	SBE	Y	0.5	717
62	GLS Functional Initialization and LCC Activation	TCO/ INTG	TCO	N	1.0	723
63	Reserved	NA/ NA	NA	NA	NA	767
64	SRB HPU N2H4 Manifold Refill and Bearing Seal Soak	HPU/ C8	HPU	N	2.0	769
65	GLS Recycle to T-20 Minutes	GLS/ INTG	GLS	N	0.5	775
66	ECLSS Safing Scrub/Turnaround Ops Contingency	ECL/ C5	ECL	N	0.5	827
67	FC/PRSD System Safing (Contingency)	FCP/ C6	FCP	N	0.5	835
68	Reserved	NA/ NA	NA	NA	NA	839
69	Fuel Cell Performance Calibration and PRSD System Integrity Check	FCP/ C6	FCP	N	2.0	841
70	FEP RF Source Verification	LPS/ MASTE R	LPS	N	0.5	857
71	ET LO2 Feedline Bellows Heater Functional Test	GSE/ C10	EEP	N	0.5	861
72	ET Bipod Heater Verification	GSE/ C10	EEP	N	0.5	865

73	WWMS Preparations for Switch List	FCP/ C6	FCP	N	1.0	871
74	Orbiter Potable (L-3) Water Samples and Tank A Quantity Adjustment	FWD/ C6	FCP	N	2.0	887
75	Waste Tank Quantity Adjustment	FWD/ C5	FCP	N	1.0	911
76	Shuttle Ascent Switch List	TCO/ NA	TCO	N	2.0	923
77	Reserved	NA/ NA	NA	N	NA	1107
78	Reserved	NA/ NA	NA	N	NA	1109
79	Pre-Ascent Switch Lists	NA/ NA	TCO	N	0.5	1111
80	Switchguard Installation/Verification	FWD/ NA	TCO	N	1.0	1117
81	ET/Orbiter Plate Gap Transducer Evaluation	MPS/ C4, C6	MPS	N	1.0	1133
82	ET Camera RF Open Loop Functional Test	EFP/ C10	EFP	N	0.5	1143
83	Reserved	NA/ NA	NA	NA	NA	1149
84	Reserved	NA/ NA	NA	NA	NA	1151
85	Reserved	NA/ NA	NA	NA	NA	1153
86	Reserved	NA/ NA	NA	NA	NA	1155
87	Reserved	NA/ NA	NA	NA	NA	1157
88	Reserved	NA/ NA	NA	NA	NA	1159
89	Reserved	NA/ NA	NA	NA	NA	1161
90	Thermal Protection System Inspection	TPS/ NA	TPS	N	8.0	1163
91	Engineering Inspection/Additional Micro-Inspection	TPS/ NA	TPS	N	2.0	1179
92	Pole CES Assembly Lowering from 195-ft Level	STM/ NA	STM	Y	1.0	1183

93	Vehicle Fire Damage Inspection Post Abort	PAD LEADER/ NA	PAD LEADER	N	2.0	1191
94	Equipment Return	FWD/ NA	FWD	N	0.5	1193
95	Reserved - ET	NA/ NA	NA	NA	NA	1195
96	Reserved - SRB	NA/ NA	NA	NA	NA	1197
97	FCP Pump Motor Event Configuration	NA/ NA	NA	NA	NA	1199
899	Walkdown Discrepancy List	NA/ NA	PAD LEADER	N	24.0	1203

2.0 SAFETY INFORMATION

2.2 Safety Requirements

	Operation
Safety requirements pertinent to this TOP are contained in the Operations Instructions.	All

2.4 Reference Safety Documentation

Number	Rev	Title
KNPR 8715.3	LI	KSC Safety Practices Procedural Requirements
FSOP 6100	LI	USA Florida Safety Operating Plan

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3.0 STAGING REQUIREMENTS

3.1 Required Engineering Documentation

3.1.1 Drawings

OPERATION 45

Document No.	Rev	Title
V070-332502 EO	(B19)	Hatch Assy-FUS, LH Egress, Complete, X0510.62 Z0 368.00

3.2 Parts, Materials, Equipment, and Special Tools

3.2.1 Flight Parts

OPERATION 45

Part No./Find No.	Nomenclature	Qty
5277-0028- 002 5277-0028-002 	inconel lockwire	1

3.2.3 Non-Flight Parts

OPERATION 45

Part No./Find No.	Nomenclature	Qty
KC150K4	cap, tube	1
G070-582492-002	gage, adapt. probe	1

3.2.4 Non-Flight Materials

OPERATION 56

Part No./Find No.	Nomenclature	Qty	Unit
6850014005976	cleaning compound, l.o.c.	1	CO

3.2.7 Tools and Test Equipment

OPERATION 45

Part No./Find No.	Nomenclature	Qty
Torque to	135-160 in-lbs.	1

3.2.8 Personal Protective Equipment

OPERATION 45	Nomenclature ear cups
OPERATION 56	Nomenclature nitrile (Sol-Vex) gloves industrial goggles face shield
OPERATION 74	Nomenclature nitrile (N-Dex) gloves industrial goggles
OPERATION 92	Nomenclature hard hats safety shoes/boots

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4.0 PLANNING REQUIREMENTS

OIR Required Yes [], No [X]

The Constraints Review for S0007.400 will be conducted as part of S0007.200.

Predecessors: None

Successors: None

Configuration Required: None

4.1 Critical Skill Requirements

Number	Course Title	Operation
028	ELECTRICAL CONNECTOR MATE/DEMATE	37
242	TORQUE AND SAFETY WIRING	45
342	LIMITED SPECIAL OR HEAVY EQUIPMENT OPERATOR (8719.9)	92
343	SPECIAL OR HEAVY EQUIPMENT OPERATOR (8719.9)	92

4.4 Support Services, Commodities, and Equipment

4.4.8 Support

GSS Organization

	Operation/Step
PNSA	45-116
PNSA	45-117
PNSA	45-122
HESA	92-1
HESA	92-2
HESA	92-3
HESA	92-4
HESA	92-5
HESA	92-7
HESA	92-9
HESA	92-10
HESA	92-12
HESA	92-13
HESA	92-14
HESA	92-15
HESA	92-16
HESA	92-17
HESA	92-20
HESA	92-21

COMM Organization

	Operation/Step
OTV	57-3
OTV	57-24
OTV	57-30
TCD	65-22
TCD	65-23
TCD	65-24
TCD	65-25
TCD	65-26

4.5 Supporting Subtasks

Subtask Number	Haz Ind	Subtask Title / Function to be Performed	Calling Op / Step
V1123.010		ORBITER RGA POWER UP/TORQUE TEST	43-33
V1123.090		RCS LOGIC POWER UP/NORMAL JET SCT	43-41
V1123.140		GNC SYSTEM POWER DOWN	43-52
V1123.120		GNC SYSTEM POWER UP	43-53
V1123.130		SYSTEM SELF TEST	43-72
V1123.260		IMU POWER UP	43-73
V1123.320		STAR TRACKER POWER UP	43-74 43-74
V1123.330		STAR TRACKER POWER DOWN	43-74
S9001.105		SHUTTLE POWER UP/DOWN - VAB/PAD - ECL OPTIONS	45-10
V1184		ORBITER S/W GPC AND MASS MEMORY READ/WRITE PROCEDURES (LPS)	49-140
S5009.102	HAZ	FINAL ORDNANCE INSTALLATION/CONNECTION (LPS)	50-24 50-25 50-26
V1314.001		ROUTINE VENT DOOR OPERATIONS USING LPS	56-2 56-8
S6444.002	HAZ	SSV ICE AND DEBRIS ASSESSMENT	57-2
S9001.105		SHUTTLE POWER UP/DOWN - VAB/PAD - ECL OPTIONS	66-5
V3540		HGDS 2000 (U72-1136) HUMS (C72-1502-01) AND RLDS (S70-1502) S0007 OPER	69-6
S3006		LOCKOUT/TAGOUT FOR GSE AND FLIGHT HARDWARE PLACARD (PLACARD)	72-1 72-2
S9001.104		SHUTTLE POWER UP/POWER DOWN - VAB/PAD - EPD OPTIONS	72-4
V1122.004		PAD ECS FR CONSOLE MONITORING AND ROUTINE ADJUSTMENTS	81-5 81-5 81-13 81-13

5.0 CONFIGURATION ACCOUNTING AND VERIFICATION

5.1 Specific OMRS Requirements Satisfied by this TOP

OMRS NO.	NOMENCLATURE/ EFFECTIVITY	SEQ-STEP (CAP)
C00CB0.010008B L01	SAFETY & ARMING DEVICE ASSY, ROCKET MTR BAF;C	61-012
P1396BA.100-C L01	SWAB SAMPLING - ORBITER WATER TANK A PISS-1E	74-017
P1558EB.100 L01	GLACIER DC POWER I/F VERIFICATION PISS-ULF7	53-014 53-035
P1558EB.200 L01	STL DC POWER I/F VERIFICATION PISS-ULF7	53-133
P1558EB.300 L01	NLP-VACCINE/CGBA DC POWER I/F VERIF. PISS-ULF7	53-063
P1558EB.400 L01	MICRO-4/CGBA DC POWER I/F VERIFICATION PISS-ULF7	53-080
P1558EB.500 L01	CBTM/AEM 1 DC POWER I/F VERIFICATION PISS-ULF7	53-106
P1558EB.600 L01	CBTM/AEM 2 DC POWER I/F VERIFICATION PISS-ULF7	53-110
P1558EB.700 L01	CBTM/AEM 3 DC POWER I/F VERIFICATION PISS-ULF7	53-114
S00E00.033-A (1) L01	VERTICAL TAIL RSI VAF;C	90-015
S00E00.033-B (1) L01	RUDDER RSI VAF;C	90-015
S00E00.033-C (1) L01	OMS PODS RSI VAF;C	90-015
S00E00.033-D (1) L01	AFT RCS MODULE RSI VAF;C	90-015

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S00E00.033-E (1)	AFT HEAT SHIELD RSI L01 VAF;C	90-015
S00E00.033-F (1)	AFT FUSELAGE RSI L01 VAF;C	90-015
S00E00.033-G (1)	BODY FLAP RSI L01 VAF;C	90-015
S00E00.033-H (1)	OUTBOARD AND INBOARD ELEVON RSI L01 VAF;C	90-015
S00E00.033-I (1)	WING RSI L01 VAF;C	90-015
S00E00.034-A (1)	TILES - ADJACENT TO PENETRATION L01 VAF;C	90-015
S00E00.034-B (1)	OMS POD FUEL AND OXIDIZER RELIEFS L01 VAF;C	90-015
S00E00.034-C (1)	APU EXHAUSTS L01 VAF;C	90-015
S00E00.034-D (1)	FLASH EVAP HI-LOAD VENT DUCT L01 VAF;C	90-015
S00E00.034-E (1)	MPS LO2 RELIEF VENT L01 VAF;C	90-015
S00E00.034-F (1)	FLASH EVAP TOPPING VENT DUCT L01 VAF;C	90-015
S00E00.035-A (1)	RUDDER SPEED BRAKE (R-2) : L01 VAF;C	90-015
S00E00.035-B (1)	THERMAL BARRIER LOCATIONS L01 VAF;C	90-015
S00E00.035-C (1)	ARCS THRUSTERS L01 VAF;C	90-015
S00E00.583 L01	ORB/ET UMB PLATE GAP PRES TRANSDUCER TST L01 VAF;C	81-016
S00E00.660 L01	SECURE OMS L01 VAF;C	40-019
S00E00.680 (1R)	FUEL CELLS LOAD SHARE L01 VAF;C	55-006
S00E00.721-B (1)	FUEL ISOLATION VALVE CYCLE (E) L01 BAF;C	64-015
S00E00.811	ORB MADS DEACTIVATION	38-154

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	L01	VAF;C	
S00E00.976		SOLID STATE RECORDER TERMINATION	38-151
	L01	VAF;C	
S00E00.995-A		AFT AND PLB AREAS - POST WTR DELUGE INSP	56-004
	L01	VAF;C	
S00E00.995-C		VENT DOOR WATER REMOVAL POST ABORT	56-005
	L01	VAF;C	
S00E00.995-D		AFT COMPART WATER REMOVAL POST ABORT	56-005
	L01	VAF;C	
S00E00.996		POST SSME ABORT - FIRE DAMAGE INSP	93-003
	L01	VAF;C	
S00E00.A00		RECONNECT GSE PWR	55-003
	L01	VAF;C	
S00FA0.110		ET CAMERA PRELAUNCH CHECKOUT	82-010
	L01	T117-120,122-999	
S00FA0.140-A		ET LO2 ULLAGE PRESS VERIF	38-119
(1)	L02	T67-999	
S00FA0.140-B		ET LH2 ULLAGE PRESS VERIF	38-118
(1)	L02	T67-999	
S00FA0.150		BIPOD HEATER SYSTEM FUNCTIONAL TEST	72-011
	L01	T117-999	
S00FA0.155		FEEDLINE BELLOWS HTR FUNCTIONAL TEST	71-008
	L01	T117-999	
S00FA0.160-A		CLOSEOUT ET POINT SENSOR,BUS RED AND C/O	41-009
(1)	L03	V03F34-90 V04F28-90 V05F20-90	
S00FA0.160-B		CRYO LOADING ET POINT SENSOR CHECK OUT	41-005
(1)	L03	V03F34-90 V04F28-90 V05F20-90	
S00FA0.301		LOAD/VFY FINAL PCM AND PDI FORMATS	49-222
(1R)	L01	VAF1-90	
S00FA0.650		VERIFY ET/ORB SEP CAMERAS-HTR/PWR ON	38-128
	L01	VAF;C	
S00FB0.230		VERIFY ORB/LPS LDB REDUNDANCY	49-341
(1R)	L03	V02F22-90 V03F23-90 V04F19-90	

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		V05F12-90	
S00FC0.070 (1R)	L04	PFM HYD SYS CONFIG FOR CRYO LOAD V02F17-90 V03F19-90 V04F13-90 V05F7-90	46-053
S00FC0.071 (1R)	L02	VFY HYD SYS THERM PARAM DUR CRYO LOAD V02F12-90 V03F15-90 V04F13-90 V05F2-90	46-023
S00FC0.072 (1R)	L03	PFM LDG GR SYS FINAL FILL V02F12-90 V03F15-90 V04F13-90 V05F2-90	46-029
S00FF0.161 (1R)	L01	RSRM CHAMBER PRESS XDUCER CALIB SAF1-999	38-135 (VSQ11)
S00FF0.180 (1R)	L01	RSRM CHAMBER PRESS BIAS AND CAL CHECK SAF1-999	38-135 (VSQ11)
S00FG0.085	L01	GPC - MTU CHAN 1 GMT/MET UPDATE VAF1-90	49-388
S00FM0.110 (1R)	L01	SPBK & RUDDER GRAVITY POS VAF1-90	43-077 (SWB02)
S00FM0.175 (1R)	L01	PERFORM HYD SYS APU-POST START VAF1-90	46-060
V43CF0.110-A	L01	LEFT POD TANKS V03F22-90 V04F17-90 V05F12-90	51-018
V43CF0.110-B	L01	RIGHT POD TANKS V03F22-90 V04F17-90 V05F12-90	51-034

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V45CH0.020 (1R)	L03	PERFORM FUEL CELL CALIBRATION V03F28-90 V04F22-90 V05F15-90	69-027
V45CH0.030 (1)	L01	PERFORM PRSD SYSTEM INTEGRITY CHECK V03F31-90 V04F27-90 V05F20-90	69-027
V45CH0.040	L01	PERFORM PURGE OF FCP 1, 2 AND 3 V03F22-90 V04F18-90 V05F12-90	47-015
V46AL0.610 (1)	L02	APU 1 AUTO BIT CHECK V03F22-90;C V04F17-90;C V05F11-90;C	42-020
V46AL0.620 (1)	L02	APU 2 AUTO BIT CHECK V03F22-90;C V04F17-90;C V05F11-90;C	42-020
V46AL0.630 (1)	L02	APU 3 AUTO BIT CHECK V03F22-90;C V04F17-90;C V05F11-90;C	42-020
V46AL0.900 (1R)	L01	CONFIGURE APU SYS HTRS FOR PRE-LNCH CTDN V03F22-90 V04F17-90 V05F11-90	42-031
V46AL0.910-A (1R)	L01	PERFORM APU SYSTEM PRESTART VERIF V03F22-90 V04F17-90 V05F11-90	42-037
V46AL0.910-B (1R)	L01	PERFORM HYD SYS APU-PRESTART V03F22-90 V04F17-90 V05F11-90	46-055
V46AL0.920 (1R)	L01	ACTIVATE ORBITER APU 1, 2 AND 3 V03F22-90 V04F17-90 V05F11-90	42-038

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V51AF0.245 (1R)	L01	WEIGHT-ON-WHEELS PROXIMITY SWITCHES V02F22-90 V03F23-90 V04F19-90 V05F12-90	43-057
V51AF0.250	L01	REDUNDANT WEIGHT ON WHEELS DETECTOR V02F22-90 V03F23-90 V04F19-90 V05F12-90	43-057
V61AQ0.010 (1R)	L02	2 PSID CABIN INTEGRITY TEST V03F22-90 V04F18-90 V05F12-90	45-172
V61AT0.094-A (1R)	L02	LEH SYS 1 O2 SUPPLY VERIF FOR LAUNCH V03F37-90R37;C V05F24-90R24;C V04F31-90R31;C	45-145
V61AT0.094-B (1R)	L02	LEH SYS 2 O2 SUPPLY VERIF FOR LAUNCH V03F37-90R37;C V05F24-90R24;C V04F31-90R31;C	45-145
V62AE0.010-C (1R)	L07	TANK A T-3 DAYS SAMPLE V02F21-90 V03F22-90 V04F18-90 V05F12-90	74-016
V62AM0.020-B (1R)	L03	WASTE WATER TANK LIFTOFF QUANTITY V03F28 V04F21-22	75-023
	L04	WASTE WATER TANK LIFTOFF QUANTITY V02F27-90 V03F29-90 V04F23-90 V05F15-90	
V63AD0.071	L02	RAD FLOW CHECK V02F21-90;C V03F22-90;C V04F18-90;C V05F12-90;C	45-103 (VAG59)
V70CA0.010-A (1)	L01	PWR U/L CRIT FORMAT IN IDP1 VAF1-90;C	49-091
V70CA0.010-B (1)	L01	PWR U/L CRIT FORMAT IN IDP2 VAF1-90;C	49-093

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V70CA0.010-C (1)	L01	PWR U/L CRIT FORMAT IN IDP3 VAF1-90;C	49-120
V70CA0.010-D (1)	L01	PWR U/L CRIT FORMAT IN IDP4 VAF1-90;C	49-100
V72CA0.020 (1R)	L01	PRELAUNCH BFC/ENGAGE VERIFICATION V03F23-90 V04F19-90 V05F12-90	49-057
V72CA0.030 (1R)	L01	PRELAUNCH BFC/CRT VERIFICATION V03F23-90;C V04F19-90;C V05F12-90;C	49-044
V72CA0.051-A	L01	REDUNDANT SET ACTIVATION VAF1-90	49-316
V72CA0.051-B	L01	BFS ACTIVATION VAF1-90	49-131
V72CA0.051-C	L01	BFS DUMP & COMPARE VAF1-90	49-154
V74AB0.102 (1R)	L01	BLANKING AT PAD V03F22-90;C V04F17-90;C V05F11-90;C	37-109
V74AB0.190 (1R)	L01	TACAN GROUND STATION INTERFACE VAF1-90;C	37-115
V74AC0.011 (1R)	L01	RADAR ALT. POWER ON VERIFICATION VAF1-90;C	37-063 37-183
V74AC0.020 (1R)	L01	RADAR ALTIMETER SELF TEST VAF1-90;C	37-089 37-209
V74P00.055	L02	GPS ALMANAC COLLECTION V03FR25;C V04F;C	37-037
V74P00.090	L03	GPS ENCRYPTION KEY LOAD V03FR27;C V04F;C	37-263
V74PP0.060-A (1R)	L01	GPS1 ALMANAC COLLECTION VAF;C	37-161
V74PP0.060-B (1R)	L01	GPS2 ALMANAC COLLECTION VAF;C	37-161

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V74PP0.060-C (1R)	L01	GPS3 ALMANAC COLLECTION VAF;C	37-161
V74PP0.120-A (1R)	L01	GPS1 ENCRYPTION KEY LOAD VAF;C	37-335
V74PP0.120-B (1R)	L01	GPS2 ENCRYPTION KEY LOAD VAF;C	37-335
V74PP0.120-C (1R)	L01	GPS3 ENCRYPTION KEY LOAD VAF;C	37-335
V75AP0.010 (1R)	L01	CONFIGURE OI PCMMU FOR LCD (GND CNTR) V02F22-90 V03F23-90 V04F19-90 V05F12-90	38-048
V75AP0.030 (1R)	L01	MTU OSC FREQ VERIFY V02F22-90 V03F23-90 V04F19-90 V05F12-90	38-010
V75AR0.120	L01	SSR 1 AND 2 CONFIG FOR TERMINAL COUNT V03F31-90 V05F20-90 V04F25-90	38-069
V78GA0.010	L01	VERIFY MTU MADS TIMING SIGNALS V03F23-90 V04F19-90 V05F12-90	38-033
V78GA0.020	L01	CONFIGURE MADS FOR TERMINAL COUNT V03F23-90 V04F19-90 V05F12-90	38-096
V78GA0.030	L01	MADS PCM AND WB DATA STAT CK V03F23-90 V04F19-90 V05F12-90	38-035
V79AZ0.080	L01	LAUNCH COUNTDOWN OMS GIMBAL PROFILE V03F22-90 V04F18-90 V05F12-90	43-016 (VSB48)

5.1.1 OMRS References

OMRS No.	Nomenclature	Ops/Step
V62AG0.018	SUPPLY H2O TARGETED LIFTOFF QNTY VERIF	54-34

5.2 General OMRS Requirements Applicable to this TOP

OMRS NO.	NOMENCLATURE/ EFFECTIVITY	SEQ-STEP (CAP)
V58GEN.042	HYD CIRC PUMP PRESTART CRITERIA	-
	L01 V03FR15;G V04FR12;G V05FR2;G	
V62GEN.045	GALLEY ISOLATION VALVE CONFIGURATION	-
	L01 VAF;G	
V62GEN.080	QD AND TEST PORT CAP INSTAL. INSPECT.	-
	L01 VAF;G	
V62GEN.100 (1R)	QD/TP COUPLING & CAP LEAKAGE	-
	L01 VAF;G	
V70GEN.030	IDP POWER	-
	L01 VAF;G	
V73GEN.030-C	CARE OF GLASS SURFACES	-
	L01 VAF;G	
V73GEN.030-D	BRIGHTNESS	-
	L01 VAF;G	

5.3 Configuration Verification Recording

Doc No.	Rev/EO	Manifest	Type	Remarks	Step
SJD3211159-303	C	CCCD		GLACIER Cable Mate	53-31
SJD32107497-307	H	CCCD		NLP- VACCINE/CGBA Cable Mate	53-59
SJD32111175-301	NC	CCCD		Micro 4/CGBA Cable Mate	53-76
SJD32111173-301	NC	CCCD		AEM #1, #2 and #3 Cable Mate	53-98 53-99 53-100
SJD32111174-301	NC	CCCD		STL Cable Mate	53-129

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OPERATION 37 NAVAIDS Activation

Shop: N/A

Cntrl Rm Console: C2

OPR: COM

Zone: 120

Hazard (Y/N): Y

Duration (Hrs): 2.0

NOTE

Steps involving Crit 1, 1R and/or 1S items are contained in the following operation.

Option List and Description

NOTE

Multiple options are contained within this operation. Different options account for the different nav aids vehicle configurations, therefore not every option will be performed during a launch countdown.

Option 1 - OV-103/104 Nav aids Activation

Activation and Self Test for the following:

TACANs

MSBLS

Radar Altimeters

GPS Activation and Almanac Collection

Option 2 - OV-105 Nav aids Activation

Activation and Self Test for the following:

MSBLS

Radar Altimeter

GPS Activation and Almanac Collection

Option 3 - OV-103/104 GPS Encryption Key Load

Power Up GPS and load GPS Encryption Key.

Option 4 - OV-105 GPS Encryption Key Load

Power Up GPS and load GPS Encryption Key.

***** End of Option List and Description *****

Option 1 - OV-103/104 Nav aids Activation

NOTE
Perform Option 1 for OV-103 or OV-104.

Option 1 Not Performed: _____

NOTE
NAVAIDS Activation and Self Test and GPS Activation and Almanac
Collection may be performed in parallel or out of written order per engineering.

37-1

CNSE

CONSOLE KYBD (C2)
HOME CMD KEY - PRESS
VAA40
PERF PGM KEY - PRESS

37-2

CNSE

PFP (C2)
VAA40 - PRESS
WARM START - PRESS

PFP (VAA40)
VWN42 - PRESS
(SELECT APPL PG B)

GPS Activation and Almanac Collection

37-3 CNSE

CONSOLE KYBD (C2)
HOME CMD KEY - PRESS
VSN59
PERF PGM KEY - PRESS
(SELECT APPL PG B)

NOTE

IDP RSYS is required for the GPS Activation.

37-4 **CNSE OTC 132**
 OTC CDPS

Change responsible console for IDP to Console C2. Expect IO errors during GPS power up.

37-5 CDPS

CONSOLE KYBD
HOME CMD KEY - PRESS
C CO _DEUXG LDBA C2 (X = IDP NO.)
XMIT CMD KEY - PRESS

ISSU N72IV10YD #B002 (Y = IDP NO. MINUS 1)
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

37-6 **CDPS OTC 132**
 OTC CNSE

Responsible console for CRT No. _____ now assigned to C2.

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37-7

CNSE

PFP (VAA41)
VWN42 - PRESS
VWN58 - PRESS
(SELECT APPL PG-B)

37-8

CNSE

CURSOR CNTL (VSN59 PG-B)
GPS POWER UP - 2
XMIT CURSOR KEY - PRESS
START TEST
XMIT CURSOR KEY - PRESS

NOTE

In the next step, the VSN59 program will prompt the operator to perform the following:

A Site Select on SPEC 104. The Site Select need be performed only on the initial GPS Powerup. If the IMUs are powered on, bypass the Site Select.

The IMU 1 Operate command will be issued by SPEC 104, ITEM 13. After 5 minutes, the flight software will allow Site Select using SPEC 104. Once the Site Select is completed, the IMU 1 Standby command should be issued. Contact CGNC or CTPE for IMU status. If the IMUs are powered on, the Operate command should not be issued without CGNC concurrence. If the IMUs are already in Operate, the Site Select is not required prior to activating SPEC 055.

Power up the preamplifiers. Select both upper and lower and perform only the switch called out below. Once the switch settings are complete, the operator will acknowledge by selecting PFK1.

37-9

CNSE

IF IMUs are powered off and CGNC has not completed the Site Select,

Verify

THEN:

CRT (VSN59 PG-B)

FOLLOW PROGRAM PROMPTS :

TO **PERFORM** SITE SELECT

TO SET IMU OPERATE COMMAND, THEN RETURN
BACK TO STANDBY WHEN SITE SELECT IS
COMPLETE

ELSE CGNC has completed Site Select:

CRT (VSN59)

FOLLOW PROGRAM PROMPTS :

TO **BYPASS** SITE SELECT

OV-103 Switch/CB Configuration

NOTE

If testing is on OV-103, perform OV-103 Switch/CB Configuration.

OV-103 Switch/CB Configuration Not Performed: _____

37-10 CNSE CDR

PANEL O14
 ROW D
 MN A
 GPS
 PRE AMPL
 UC CB - OPEN
 LC CB - OPEN

37-11 CNSE CDR 173

PANEL O16
 ROW D
 MN C
 GPS
 PREAMPL
 UC CB - CLOSE
 LC CB - CLOSE

37-12 CNSE

CONSOLE KYBD (VSN59 PG-B)
PFK1 - PRESS (CB NOW CLOSED - CONTINUE)

37-13 CNSE CDR 173

PANEL A13
 GPS
 PRE-AMPL
 UC SW - MN C
 LC SW - MN C

*****End of OV-103 Switch/CB Configuration*****

OV-104 Switch/CB Configuration

NOTE

If testing is on OV-104 perform OV-104 Switch/CB Configuration.

OV-104 Switch/CB Configuration Not Performed: _____

37-14 CNSE CDR 173

PANEL O15
 ROW C
 MN B
 GPS 2 PREAMPL UPPER CB - CLOSE

 ROW D
 MN B
 GPS 2 PREAMPL LOWER CB - CLOSE

37-15 CNSE

CONSOLE KYBD (VSN59 PG-B)
PFK1 - PRESS (CB NOW CLOSED - CONTINUE)

37-16 CNSE CDR 173

PANEL A13
 GPS
 PRE-AMPL
 UC SW - ON
 LC SW - ON

*****End of OV-104 Switch/CB Configuration*****

37-17 CNSE

CONSOLE KYBD
PFK1 - PRESS (SW SETTINGS COMPLETE - CONTINUE)

37-18 CNSE

CRT (VSN59 PG-B)
FOLLOW PROGRAM PROMPTS:

TO **PERFORM** I/O START.

TO **CALL** UP SPEC 55.

NOTE

GPS software allows 2 minutes for GPS receiver power-up to occur. A failure will be annunciated should the time be exceeded. Retest may be selected should this event occur.

NOTE

GPS receiver mode will transition from INIT to NAV upon power-up.

37-19 CNSE CDR 173

PANEL A13
GPS
POWER SW - ON

37-20 CNSE

CRT (VWN58 PG-B)

VERIFY

RCVR MODE - NAV
HDR WD - FFFF
RPU FAIL - OFF
BAT LOW - OFF

37-21 CNSE

CURSOR CNTL (VSN59)
PFK7 KEY - PRESS (TERMINATE NAV MONITOR)

NOTE

GPS will automatically mode to INIT when the ITEM 10+2 is executed.

NOTE

During transition to “INIT” mode, the VSN59 program may issue a message “Difference between GPS weeks and almanac weeks is greater than 1.” User can follow the program prompts to issue an “Acknowledge/ Continue” using the appropriate PFK key when this occurs. A new almanac begins to download upon power up and satellite acquisition, but can take up to 20 minutes or greater to complete.

37-22

CNSE

CURSOR CNTL (VSN59 PG-B)
I/O ITEM 10+2
XMIT CURSOR KEY - PRESS
START TEST
XMIT CURSOR KEY - PRESS

37-23

CNSE

CRT (VSN59 PG-B)
VERIFY
RCVR MODE - INIT
HDR WD EEEE

37-24

CNSE

CURSOR CNTL (VSN59 PG-B)
NAV GPS 2 - ITEM 18
XMIT CURSOR KEY - PRESS
START TEST
XMIT CURSOR KEY - PRESS

37-25

CNSE

CRT (VWN58 PG-B)

VERIFY

GPS is in NAV MODE

RECEIVER STATUS

HEADER WD FFFF

GPS 2 PWR

STAT - ON (NAV BIT - 4 SV TRACKING IN

STATE 5 (CAR_TK))

Spec 55 Resume and Call Up

NOTE

IF only one DEU is available for C2 and Nav aids Self Test (Spec 101) will be performed while the GPS Almanac is downloading, perform Spec 55 Resume and Call Up.

Spec 55 Resume and Call Up Not Performed: _____

37-26

CNSE

CURSOR CNTL (VSN59 PG-B)

PFK7 - PRESS (TERMINATE NAV MONITOR

37-27

CNSE

CURSOR CNTL (VSN59 PG-B)

SPEC RESUME

XMIT CURSOR KEY - PRESS

START TEST

XMIT CURSOR KEY - PRESS

CRT

VERIFY GPC MEMORY (9011) ON CRT IN USE.

NOTE

Perform the call up after NAVAIDS Self Test is complete and GPS testing will resume.

37-28

CNSE

CURSOR CNTL (VSN59 PG-B)
SPEC 55 CALLUP
XMIT CURSOR KEY - PRESS
START TEST
XMIT CURSOR KEY - PRESS
IF PROMPTED PFKX KEY - PRESS (WHERE X IS CRT
ASSIGNED TO C2)

CRT

VERIFY SPEC 55 (550) on CRT in use.

*****End of Spec 55 Resume and Call Up*****

NOTE

The almanac is considered current when the GPS WEEK and ALMANAC WEEK agree to within one week. Downloading a full almanac will take at least 12.5 minutes. During certain satellite/receiver conditions, the Almanac Bit may not toggle from Off to On. This indication may occur if the receiver's stored almanac contains information from a satellite that has been decommissioned. In this case, mode the receiver to INIT, back to NAV, and then back to INIT to update the Almanac Week status.

NAVAIDS Activation may be performed while the GPS Almanac is being downloaded if the Safety Clears are in Place.

37-29

CNSE

Allow the receiver to remain in NAV Mode until the Almanac Bit toggles from Off to On or for at least 30 minutes.

CRT (VWN58)

RECORD

RECEIVER STATUS

ALMANAC _____ (OFF/ON)

37-30

CNSE

IF Nav Monitor active,
THEN
CURSOR CNTL (VSN59 PG-B)
PFK7 - PRESS (TERMINATE NAV MONITOR)

Not Performed: _____

37-31

CNSE

CURSOR CNTL (VSN59)
INIT GPS 2 - ITEM 15
XMIT CURSOR KEY - PRESS
START TEST
XMIT CURSOR KEY - PRESS

37-32

CNSE

CRT (VSN59 PG-B)
VERIFY RECEIVER IN INIT
HEADER WD EEEE

Continue Almanac Download

NOTE

Perform Continue Almanac Download if, after the Receiver was commanded to INIT, the Almanac Week is not equal to GPS Week or GPS Week + 1 (This indicates a full Almanac was not downloaded). The steps within this option may be repeated as necessary to obtain a current almanac week.

Continue Almanac Download Not Performed: _____

37-33

CNSE

CURSOR CNTL (VSN59)
NAV GPS 2 - ITEM 18
XMIT CURSOR KEY - PRESS
START TEST
XMIT CURSOR KEY - PRESS

CRT (VWN58)
VERIFY
RECEIVER STATUS
RCVR MODE NAV

GPS 2 PWR
STAT ON

37-34

CNSE

CURSOR CNTL (VSN59)
INIT GPS 2 - ITEM 15
XMIT CURSOR KEY - PRESS
START TEST
XMIT CURSOR KEY - PRESS

CRT (VWN58)
VERIFY
RECEIVER STATUS
RCVR MODE INIT

37-35

CNSE

IF Receiver was commanded to INIT and the Almanac Week is still not equal to GPS Week or GPS Week + 1,

THEN Re-perform the GPS Almanac Collection sequence beginning with step 37-29.

Not Performed:_____

*****End of Continue Almanac Download*****

37-36

CNSE

CURSOR CNTL (VSN59 PG-B)
NAV GPS 2 - ITEM 18
XMIT CURSOR KEY - PRESS
START TEST
XMIT CURSOR KEY - PRESS

37-37

CNSE

CRT (VWN58 PG-B)
RECEIVER STATUS
HEADER WD FFFF
GPS 2 PWR
STAT ON
NAV DATA
ALM WK = WEEKS OR WEEKS + 1

OMRSD [V74P00.055](#)

37-38

CNSE

CONSOLE KYBD (VSN59 PG-B)
PFK7 KEY - PRESS (TERMINATE NAV MONITOR)

37-39

CNSE

CURSOR CNTL (VSN59 PG-B)
GPS POWER DN - 2
XMIT CURSOR KEY - PRESS
START TEST
XMIT CURSOR KEY - PRESS

37-40

CNSE

CRT (VSN59 PG-B)
FOLLOW PROGRAM PROMPTS:

TO TERMINATE IO

NOTE

Due to the configuration of the Receiver Status measurement, a message indicating GPS Power Off was successful may appear on VSN59 prior to powering off the GPS receiver. This is expected and the following step can be performed as written.

37-41 CNSE CDR 173

PANEL A13
GPS
POWER SW - OFF

37-42 CNSE

CONSOLE KYBD (VSN59 PG-B)
PFK1 KEY - PRESS TO TURN OFF PREAMP SWITCHES

NOTE

OV-104 preamp switches are 3 position switches. Center and Down are Off. Place switches in the Off (Down) position.

37-43 CNSE MS1 173

PANEL A13
GPS
PRE-AMP
UC SW - OFF
LC SW - OFF

37-44 CNSE

CRT (VSN59 PG-B)
FOLLOW PROGRAM PROMPTS:
PFK1 - PRESS TO VERIFY PREAMP PWR SW IS OFF
PFK2 - PRESS TO BYPASS CBs

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37-45

CNSE

CRT (VSN59 PG-B)
FOLLOW PROGRAM PROMPTS

TO ISSUE RESUME TO ACTIVE CRT

VERIFY RESUME COMPLETE.

*****End of GPS Activation and Almanac Collection*****

CRT Return to C12

NOTE

Perform "CRT Return to C12" if there is no further need for CRT. If C2 has only one CRT and NAVAIDS Activation will commence, then do not perform this option.

CRT Return to C12 Not Performed: _____

37-46

CNSE

CURSOR CNTL (VSN59)
CRT RETURN TO DPS
XMIT CURSOR KEY - PRESS

PLACE CURSOR AT THE END OF:

C CO _DEUXG LDBA C12 (X = CRT NO.)
XMIT CMD KEY - PRESS

HOME CMD KEY - PRESS
ISSU N72IV10YD 0 (Y = CRT No. Minus 1)
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

37-47

CNSE OTC 132
OTC CDPS

C2 CRT returned to C12. GPS activities are complete.

***** End of CRT Return to C12 *****

37-48

CNSE

CURSOR CNTL (VSN59)
TERMINATE
XMIT CURSOR KEY - PRESS

NAVAIDS Activation

NOTE

Do not perform NAVAIDS Activation if NAVAIDS Self Test was already performed during the present flow unless Engineering evaluation determines that repeating the test will add significant confidence in flight readiness.

NAVAIDS Activation Not Performed: _____

NOTE

Steps involving Crit 1, 1R and/or 1S items are contained in the following operation.

37-49

CNSE

CONSOLE KYBD (C2)
HOME CMD KEY - PRESS
VAA40
PERF PGM KEY - PRESS

PFP (VAA40)
VAA40 - PRESS
WARM START - PRESS
VWN99 (NAV OV) - PRESS
(SELECT APPL PAGE-B)

NAVAIDS Circuit Breaker Closing

37-50 CNSE CDR 173

PANEL O14
ROW C
 MN A
 TACAN 1 CB - CLOSE (GUARDED)

ROW E
 MN A
 RDR ALTM 1 CB - CLOSE (GUARDED)
 MLS 1 CB - CLOSE (GUARDED)

37-51 CNSE CDR

IF IN SUPPORT OF OV-103,

THEN

PANEL O15
ROW C
 MN B
 TACAN 2 CB - CLOSE (GUARDED)

Not Performed:_____

37-52 CNSE CDR

IF IN SUPPORT OF OV-104,

THEN

PANEL O15

ROW E

MN B

TACAN 2 CB - CLOSE (GUARDED)

Not Performed: _____

37-53 CNSE CDR

PANEL O15

ROW E

MN B

RDR ALTM 2 CB - CLOSE (GUARDED)

MLS 2 CB - CLOSE (GUARDED)

37-54 CNSE CDR

PANEL O16

ROW C

MN C

TACAN 3 CB - CLOSE (GUARDED)

ROW E

MN C

MLS 3 CB - CLOSE (GUARDED)

*****End of NAVAIDS Circuit Breaker Closing*****

TACAN Activation

37-55 CNSE PLT 173

PANEL O7
 TACAN 1
 ANT SEL SW - AUTO
 CHANNEL TW'S - 59Y
 MODE SW - T/R

37-56 CNSE PLT 173

PANEL O7
 TACAN 2
 ANT SEL SW - AUTO
 CHANNEL TW'S - 59Y
 MODE SW - T/R

37-57 CNSE PLT 173

PANEL O7
 TACAN 3
 ANT SEL SW - AUTO
 CHANNEL TW'S - 59Y
 MODE SW - T/R

37-58 CNSE PLT 173

PANEL O7
 TACAN 1
 MODE SW - GPC
 TACAN 2
 MODE SW - GPC
 TACAN 3
 MODE SW - GPC

GMT _____

37-59

CNSE

CRT (VWN99)
VERIFY
TACAN
1 SW/PWR STAT ON/ON
2 SW/PWR STAT ON/ON
3 SW/PWR STAT ON/ON

37-60

CNSE

IF any of the TACANS remain in receive when switched from T/R to GPC,

THEN

CURSOR CNTL (VWN99)
CTRL WORD ISU
XMIT CURSOR - PRESS

CONSOLE KYBD/CRT (VWN99)
FOLLOW COMMAND PROMPTS
TO COMMAND TACAN _____ (1, 2, 3)
TO T/R, 59Y, S/T - OFF

Not Performed: _____

***** End of TACAN Activation *****

Radar Altimeter Activation

37-61 CNSE PLT 173

PANEL O8
RADAR ALTIMETER
1 SW - ON
2 SW - ON

GMT _____

37-62 CNSE

CRT (VWN99)
VERIFY
RADAR ALTIMETER
1
SW STAT ON
PWR STAT ON
2
SW STAT ON
PWR STAT ON

37-63

IF the Radar Alt Power On Requirement was not satisfied during the OPF flow,

THEN:

CRT (VWN60)
VERIFY
RADAR ALTIMETER

1
RALT SW STATUS ON
RALT READY ON
RALT ALT DATA FT _____

2
RALT SW STATUS ON
RALT READY ON
RALT ALT DATA FT _____

OMRSD [V74AC0.011-1R](#)

Not Performed: _____

***** End of Radar Altimeter Activation *****

MSBLS Activation

37-64 CNSE CDR 173

PANEL O8

MLS

1 CHANNEL TW - 6

2 CHANNEL TW - 6

3 CHANNEL TW - 6

37-65 CNSE PLT 173

PANEL O8

MLS

1 SW - ON

2 SW - ON

3 SW - ON

GMT _____

37-66 CNSE

CRT (VWN99)

VERIFY

MSBLS

1

SW STAT ON

PWR STAT ON

2

SW STAT ON

PWR STAT ON

3

SW STAT ON

PWR STAT ON

37-67 CDPS CDR 173

_____ KYBD
I/O RESET
EXEC

FAULT SUMM

37-68 CDPS CDR

CRT _____
VERIFY NO UNEXPECTED MLS, TACAN OR ALT FAULT
SUMMARY MESSAGES.

37-69 CDPS CDR 173

_____ KYBD
SPEC 99
PRO
RESUME

***** End of MSBLS Activation *****

NAVAIDS Self Test

37-70 CNSE

HOME CMD KEY - PRESS
CONSOLE KYBD (VAN12)
VAN12
PERF PGM KEY - PRESS

Transfer 2nd CRT to C2

NOTE

Do not perform Transfer 2nd CRT to C2 if the same CRT that was used for GPS Activation will be used for NAVAIDS Self Test.

Transfer 2nd CRT to C2 Not Performed: _____

37-71 CNSE OTC 132
 CDPS

Change the responsible console for a CRT to Console C2.

37-72 CDPS

CONSOLE KYBD
HOME CMD KEY - PRESS

C CO _DEUXG LDBA C2 (X = CRT#)
XMIT CMD KEY - PRESS

HOME CMD KEY - PRESS
ISSU N72IV10YD #B002 (Y = CRT# -1)
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

37-73 CDPS OTC 132
 OTC CNSE

Responsible console for CRT ____ is now assigned to C2.

End of Transfer 2nd CRT to C2

37-74

CNSE

CURSOR CNTL (VAN12 PG-B)
EQUIVALENT DEU
XMIT CURSOR KEY - PRESS

CRT (VAN12)

VERIFY

SELECT MAJOR MODE

37-75

CNSE

CURSOR CNTL (VAN12 PG-B)
GNC
XMIT CURSOR KEY - PRESS

37-76

CNSE

CURSOR CNTL (VAN12 PG-B)

DEU _____ (ASSIGNED CRT)
XMIT CURSOR KEY - PRESS

37-77

CNSE

CRT (VAN12 PG-B)

VERIFY

SPEC 101 - CRT X (X = CRT No. ASSIGNED)
SELECT LRU'S (BLINKING)

NOTE

Azimuth - data valid on for first 1.6 sec max, data 3 deg sign bit alternating +/- every 3.2 sec

Elevation - data valid on for first 1.6 sec max, data 6 deg

Range - data valid on for first 0.2 sec max, data 15.2 nm

Due to a known/documented flight software problem, the MLS Self Test may fail in Azimuth. If the MLS Self Test fails on board in Azimuth, then the MLS Self Test may be repeated.

37-78

CNSE

CURSOR CNTL (VAN12 PG-B)
MLS 1 - ITEM 1
XMIT CURSOR KEY - PRESS
MLS 2 - ITEM 2
XMIT CURSOR KEY - PRESS
MLS 3 - ITEM 3
XMIT CURSOR KEY - PRESS

37-79

CNSE

CURSOR CNTL (VAN12 PG-B)
13 TO START
XMIT CURSOR KEY - PRESS

37-80

CNSE

CRT (VAN12 PG-B)
VERIFY (WHEN SELF TEST IS COMPLETE)
MLS 1 2 3 PASSED (IN GREEN)

37-81

CNSE

REVIEW the data on the CRT, Console Printer output or SPA Printer job VAN12, upon termination of VAN12. **Verify** MLS Self Test passed.

Limits are:

Azimuth: (+/-) 3.0 +/- 0.1 deg

Elevation: 6.0 +/- 0.1 deg

Range: 15.2 +/- 0.2 NM

37-82

CNSE

CDR

CRT _____ (SPEC 101)

Verify:

(No Down Arrows)

MLS 1 STAT column - blank

MLS 2 STAT column - blank

MLS 3 STAT column - blank

37-83

CNSE

CURSOR CNTL (VAN12)

ITEM 15 (TERMINATE)

XMIT CURSOR KEY - PRESS

ITEM 16 (INHIBIT)

XMIT CURSOR KEY - PRESS

37-84

CNSE

CRT (VWN99 PG-B)

MSBLS

1

AZ	S/T	STAT	OFF
EL	S/T	STAT	OFF
RG	S/T	STAT	OFF

2

AZ	S/T	STAT	OFF
EL	S/T	STAT	OFF
RG	S/T	STAT	OFF

3

AZ	S/T	STAT	OFF
EL	S/T	STAT	OFF
RG	S/T	STAT	OFF

37-85

CNSE

CURSOR CNTL (VAN12 PG-B)

EQUIVALENT DEU

XMIT CURSOR KEY - PRESS

37-86

CNSE

CURSOR CNTL (VAN12 PG-B)

RA 1 - ITEM 7

XMIT CURSOR KEY - PRESS

RA 2 - ITEM 8

XMIT CURSOR KEY - PRESS

37-87

CNSE

CURSOR CNTL (VAN12 PG-B)

13 TO START

XMIT CURSOR KEY - PRESS

37-88

CNSE

CRT (VAN12 PG-B)

VERIFY

RA

1

S/T CMD ON

DATA VALIDITY GO

ALTITUDE

DATA _____ (1000 +/- 100)

2

S/T CMD ON

DATA VALIDITY GO

ALTITUDE

DATA _____ (1000 +/- 100)

Ra 1 2 PASSED

37-89

CNSE

IF the Radar Altimeter Self Test was not performed in the OPF,

THEN:

CRT (VWN99 PG-B)

VERIFY

RADAR ALTIMETER

1

LOCK ON GO

S/T CMD ON

DATA VALID GO

ALT DATA FT 1000 +/- 100

2

LOCK ON GO

S/T CMD ON

DATA VALID GO

ALT DATA FD 1000 +/- 100

OMRSD [V74AC0.020-1R](#)

Not Performed: _____

37-90

CNSE

CURSOR CNTL (VAN12 PG-B)

ITEM 15 (TERMINATE)

XMIT CURSOR KEY - PRESS

ITEM 16 (INHIBIT)

XMIT CURSOR KEY - PRESS

37-91

CNSE

CRT (VWN99)

RADAR ALTIMETER

1 S/T CMD OFF

2 S/T CMD OFF

37-92

CNSE

CURSOR CNTL (VAN12 PG-B)
EQUIVALENT DEU
XMIT CURSOR KEY - PRESS

NOTE

When the Self Test is initiated, V74X0070X, V74X0080X, and V74X0090X (TEST STAT MON) will go off and come back on 10 seconds later (max). Monitor VAN12 TEST STAT MON column for TEST AND Then go.

37-93

CNSE

CURSOR CNTL (VAN12 PG-B)
ITEM 4 (ENABLES TACAN 1)
XMIT CURSOR KEY - PRESS

ITEM 5 (ENABLES TACAN 2)
XMIT CURSOR KEY - PRESS

ITEM 6 (ENABLES TACAN 3)
XMIT CURSOR KEY - PRESS

ITEM 13 (INITIATES SELF TEST)
XMIT CURSOR KEY - PRESS

37-94

CNSE

CRT (VAN12 PG-B)

TACAN

1	S/T STAT	ON
2	S/T STAT	ON
3	S/T STAT	ON

RANGE

1	DATA STATUS	BLANK
2	DATA STATUS	BLANK
3	DATA STATUS	BLANK

BEARING

1	DATA STATUS	BLANK
2	DATA STATUS	BLANK
3	DATA STATUS	BLANK

1	TEST STAT MON	TEST/GO
2	TEST STAT MON	TEST/GO
3	TEST STAT MON	TEST/GO

TAC 1 2 3 PASSED

Review the data on the CRT, Console Printer output or SPA Printer job VAN12, upon termination of VAN12. **Verify** TACAN Self Test passed.

Limits are:

Range 0.0 NM

Bearing 180.0 +/- 0.1 Deg

37-95

CNSE

CURSOR CNTL (VAN12 PG-B)

ITEM 15 (TERMINATE)

XMIT CURSOR KEY - PRESS

ITEM 16 (INHIBIT)

XMIT CURSOR KEY - PRESS

37-96

CNSE

CRT (VWN99)
TACAN
1
S/T STAT - OFF
2
S/T STAT - OFF
3
S/T STAT - OFF

37-97

CNSE

PFP
VAN12 - PRESS
TERM VAN12 - PRESS

CRT Return to DPS

NOTE

Perform this option if CRT is not required for GPS de-activation.

CRT Return to DPS Not Performed: _____

37-98

CNSE

CONSOLE KYBD (C2)
HOME CMD KEY - PRESS
C CO _DEUXG LDBA C12 (X = CRT#)
XMIT CMD KEY - PRESS

HOME CMD KEY - PRESS
ISSU N72IV10YD 0 (Y = CRT# -1)
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

37-99 CNSE OTC 132
 OTC CDPS

Responsible console for CRT _____ returned to DPS.

***** End of CRT Return to DPS *****

***** End of NAVAIDS Self Test *****

37-100 CNSE

CRT (VWN99)
RADAR ALTIMETER
1
 ALT DATA FT _____ (BD)

2
 ALT DATA FT _____ (BD)

37-101 CNSE PLT 173

PANEL O8
RADAR ALTIMETER
1 SW - OFF
2 SW - OFF

MLS
1 SW - OFF
2 SW - OFF
3 SW - OFF

37-102

CNSE

CRT (VWN99 PG-B)
RADAR ALTIMETER

1
SW STATUS OFF
PWR STATUS OFF

2
SW STATUS OFF
PWR STATUS OFF

MSBLS

1
SW STATUS OFF
PWR STATUS OFF

2
SW STATUS OFF
PWR STATUS OFF

3
SW STATUS OFF
PWR STATUS OFF

37-103

CDPS CDR 173

____ KYBD
MSG RESET

TACAN Blanking Test

NOTE

The steps contained within the floating header, TACAN Blanking Test, satisfy the noted requirements.

OMRS V74AB0.102-1R

37-104

CNSE

CURSOR CNTL (VWN99)
TACAN 1 ANT SEL UPPER
XMIT CURSOR KEY - PRESS
EXEC CMD KEY - PRESS

TACAN 2 ANT SEL UPPER
XMIT CURSOR KEY - PRESS
EXEC CMD KEY - PRESS

TACAN 3 ANT SEL UPPER
XMIT CURSOR KEY - PRESS
EXEC CMD KEY - PRESS

NOTE

The Blanking Test is performed with the TACANs commanded to an unused channel. 111X is normally used but any unused channel will work.

37-105

CNSE

CURSOR CNTL (VWN99)
COMMAND
TACAN 2 - _____ X, RCV, S/T OFF
TACAN 3 - _____ X, RCV, S/T OFF

CRT (VWN99)
VERIFY

TACAN 1
MODE RCV/TR T/R V74K1513B1
TACAN 2
MODE RCV/TR RCV V74K1613B1
TACAN 3
MODE RCV/TR RCV V74K1713B1

ALL TACANS HAVE SUPPRESSION BIT ON

37-106

CNSE

CURSOR CNTL (VWN99)
COMMAND
TACAN 1 - _____ X, RCV, S/T OFF
TACAN 2 - _____ X, T/R, S/T OFF

CRT (VWN99)
VERIFY

TACAN 1
MODE RCV/TR RCV V74K1513B1
TACAN 2
MODE RCV/TR T/R V74K1613B1
TACAN 3
MODE RCV/TR RCV V74K1713B1

ALL TACANS HAVE SUPPRESSION BIT ON

37-107

CNSE

CURSOR CNTL (VWN99)
COMMAND
TACAN 2 - _____ X, RCV, S/T OFF

TACAN 3 - _____ X, T/R, S/T OFF

CRT (VWN99)
VERIFY

TACAN 1
MODE RCV/TR RCV V74K1513B1
TACAN 2
MODE RCV/TR RCV V74K1613B1
TACAN 3
MODE RCV/TR T/R V74K1713B1

ALL TACANS HAVE SUPPRESSION BIT ON

37-108

CNSE

CURSOR CNTL (VWN99)
COMMAND

TACAN 3 - _____ X, RCV, S/T OFF

CRT
VERIFY

TACAN 1
MODE RCV/TR RCV V74K1513B1
TACAN 2
MODE RCV/TR RCV V74K1613B1
TACAN 3
MODE RCV/TR RCV V74K1713B1

ALL TACANS HAVE SUPPRESSION BIT OFF

37-109 Completion of the steps contained within the floating header, TACAN Blanking Test, complete the noted requirement.

OMRSD [V74AB0.102-1R](#)

*****End of TACAN Blanking Test*****

37-110

CNSE

CURSOR CNTL (VWN42)
TACAN 1 ANT SEL LOWER
XMIT CURSOR KEY - PRESS
EXEC CMD KEY - PRESS

TACAN 2 ANT SEL LOWER
XMIT CURSOR KEY - PRESS
EXEC CMD KEY - PRESS

TACAN 3 ANT SEL LOWER
XMIT CURSOR KEY - PRESS
EXEC CMD KEY - PRESS

TACAN Ground Interface Test

NOTE

The steps contained within the floating header, TACAN Ground Interface Test, satisfy the noted requirement.

OMRS V74AB0.190-1R

37-111 CNSE PLT 173

PANEL O7
TACAN 1
MODE SW - T/R
TACAN 2
MODE SW - T/R
TACAN 3
MODE SW - T/R

GMT _____

37-112

CNSE

IF TACAN 1, 2 or 3 does not maintain a good lock on the Lower Antenna,

THEN:

Command TACAN(s) that are not maintaining lock to antenna that maintains the best lock.

CURSOR CNTL (VWN42)
TACAN 1 ANT SEL _____ (UPPER/LOWER)
XMIT CURSOR KEY - PRESS
EXEC CMD KEY - PRESS

TACAN 2 ANT SEL _____ (UPPER/LOWER)
XMIT CURSOR KEY - PRESS
EXEC CMD KEY PRESS

TACAN 3 ANT SEL _____ (UPPER/LOWER)
XMIT CURSOR KEY - PRESS
EXEC CMD KEY - PRESS

Not Performed: _____

NOTE

Use the following data for the next step:

	<u>Pad A</u>	<u>Pad B</u>
Range (nm)	4.96	3.96
Bearing (deg)	282.39	269.08

37-113

CNSE

CRT (VWN99)

VERIFY

FROM CRT TACAN 1, 2 & 3 RANGE AND BEARING ARE
WITHIN SPEC FOR THE PAD UNDER TEST.

PAD A

RANGE - 4.96 NM +/-0.2

BEARING - 282.39 DEG +/-2.0

PAD B

RANGE - 3.96 NM +/-0.2

BEARING - 269.08 DEG +/-2.0

HARDCOPY KEY - PRESS

37-114

CNSE

CRT (VWN99 PG-B)

TACAN

1

RNG VALID	GO	
RNG DATA	_____	NM +/- 0.2
BRG VALID	GO	
BRG DATA	_____	DEG +/- 2.0
AGC	_____	V (BD)

2

RNG VALID	GO	
RNG DATA	_____	NM +/- 0.2
BRG VALID	GO	
BRG DATA	_____	DEG +/- 2.0
AGC	_____	V (BD)

3

RNG VALID	GO	
RNG DATA	_____	NM +/- 0.2
BRG VALID	GO	
BRG DATA	_____	DEG +/- 2.0
AGC	_____	V (BD)

37-115

IF the requirement has not already been satisfied during the OPF flow,

THEN completion of the steps contained within the floating header,
TACAN Ground Interface Test, complete the noted requirement.

OMRSD [V74AB0.190-1R](#)

Not Performed: _____

*****End of TACAN Ground Interface Test*****

37-116 CNSE PLT 173

PANEL O7
TACAN 1
MODE SW - OFF
TACAN 2
MODE SW - OFF
TACAN 3
MODE SW - OFF

37-117 CNSE

CRT (VWN 99 PG-B)
VERIFY
TACAN 1 SW/PWR OFF/OFF
 2 SW/PWR OFF/OFF
 3 SW/PWR OFF/OFF

37-118 CNSE FTAC 173

NAVAIDS Activation is complete and TACANs powered down at this time.

Ku-Band Position Verification

37-119 CNSE MS1 173

IF the following Mid Logic Switches are not on,

THEN :

PANEL MA73C
 ROW A
 MCA LOGIC
 MN C
 MID 2 SW - ON

 ROW B
 MCA LOGIC
 MN B
 MID 4 SW - ON

Not Performed: _____

37-120 CNSE

CRT (VWN80)
VERIFY
KU-BAND
 SWITCH SCAN
 STW/DPLY STOW 1&2
 BOOM STOW 2 ON

37-121 CNSE MS1 173

IF the logic switches were originally off,

THEN:

PANEL MA73C
 ROW A
 MCA LOGIC
 MN C
 MID 2 SW - OFF

 ROW B
 MCA LOGIC
 MN B
 MID 4 SW - OFF

Not Performed: _____

***** End of Ku-Band Position Verification*****

37-122 CNSE

PFK15 - PRESS

PFP
VAA40 - PRESS
SET TERM - PRESS
EXEC TERM - PRESS
KEY 7 - PRESS

CRT (VSN59 PG-B)
TERMINATE - PRESS

37-123 CNSE OTC 132

NAVAIDS Activation and Self Test is complete.

***** End of NAV AIDS Activation *****

***** End of Option 1 - OV-103/104 Nav aids Activation *****

Option 2 - OV-105 Nav aids Activation

NOTE

Perform Option 2 if in support of OV-105.

Option 2 Not Performed: _____

NOTE

Steps involving Crit 1, 1R and/or 1S items are contained in the following operation.

NOTE

NAVAIDS Activation and Self Test and GPS Activation and Almanac Collection may be performed in parallel or out of written order per engineering.

37-124

CNSE

CONSOLE KYBD (C2)
HOME CMD KEY - PRESS
VAA40
PERF PGM KEY - PRESS

37-125

CNSE

PFP (C2)
VAA40 - PRESS
WARM START - PRESS

PFP (VAA40)
VWN43 - PRESS
(SELECT APPL PG B)

GPS Activation and Almanac Collection

37-126 **CNSE**

CONSOLE KYBD (C2)
HOME CMD KEY - PRESS
VSN59
PERF PGM KEY - PRESS
(SELECT APPL PG B)

NOTE

IDP RSYS is required for the GPS Activation.

37-127 **CNSE** **OTC** **132**
 OTC **CDPS**

Change responsible console for IDP to Console C2. Expect IO errors during GPS power up.

37-128 **CDPS**

CONSOLE KYBD
HOME CMD KEY - PRESS
C CO _DEUXG LDBA C2 (X = IDP NO.)
XMIT CMD KEY - PRESS

ISSU N72IV10YD #B002 (Y = IDP NO. MINUS 1)
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

37-129 **CDPS** **OTC** **132**
 OTC **CNSE**

Responsible console for CRT No. _____ now assigned to C2.

37-130

CNSE

CURSOR CNTL (VSN59 PG-B)
GPS POWER UP - ALL
XMIT CURSOR KEY - PRESS
START TEST
XMIT CURSOR KEY - PRESS

NOTE

In the next step, the VSN59 program will prompt the operator to perform the following:

A Site Select on SPEC 104. The Site Select need be performed only on the initial GPS Powerup. If the IMUs are powered on, bypass the Site Select.

The IMU 1 Operate command will be issued by SPEC 104, ITEM 13. After 5 minutes, the flight software will allow Site Select using SPEC 104. Once the Site Select is completed, the IMU 1 Standby command should be issued. Contact CGNC or CTPE for IMU status. If the IMUs are powered on, the Operate command should not be issued without CGNC concurrence. If the IMUs are already in Operate, the Site Select is not required prior to activating SPEC 055.

Power up the preamplifiers. Select both upper and lower and perform only the switch called out below. Once the switch settings are complete, the operator will acknowledge by selecting PFK1.

37-131

CNSE

IF IMUs are powered off and CGNC has not completed the site select,

Verify

THEN

CRT (VSN59 PG-B)

FOLLOW PROGRAM PROMPTS

TO **PERFORM** SITE SELECT

TO SET IMU OPERATE COMMAND, THEN RETURN
BACK TO STANDBY WHEN SITE SELECT IS
COMPLETE

ELSE

CRT (VSN59 PG-B)

FOLLOW PROGRAM PROMPTS

TO **BYPASS** SITE SELECT

NOTE

All GPS Pre-amplifiers will be powered on. GPS pre-amplifier circuit breakers are not downlisted and power switch indications are switch scan only.

37-132 CNSE CDR

PANEL O14
ROW D
MN A
GPS 1
PRE AMPL
UPPER CB - CLOSED
LOWER CB - CLOSED

37-133 CNSE CDR

PANEL O15
ROW C
MN B
GPS 2
PRE AMPL
UPPER CB - CLOSED
ROW D
MN B
GPS 2
PRE AMPL
LOWER CB - CLOSED

37-134 CNSE CDR

PANEL O16
ROW D
MN C
GPS 3
PRE AMPL
UPPER CB - CLOSED
LOWER CB - CLOSED

37-135

CNSE

CRT/CONSOLE KYBD (VSN59 PG-B)
PFK 1B KEY - PRESS (CBS NOW CLOSED - CONTINUE)

37-136

CNSE CDR

PANEL 07
GPS 1
PRE AMPL
UPPER SW - ON
LOWER SW - ON
GPS 2
PRE AMPL
UPPER SW - ON
LOWER SW - ON
GPS 3
PRE AMPL
UPPER SW - ON
LOWER SW - ON

37-137

CNSE

CRT/CONSOLE KYBD (VSN59 PG-B)
PFK 1B KEY - PRESS (SWITCH SETTINGS COMPLETE -
CONTINUE)

37-138

CNSE

CONSOLE KYBD (VSN59 PG-B)
PFK 1B KEY - PRESS (PERFORM I/O START - CONTINUE)
PFK XB KEY - PRESS (X = CRT ASSIGNED TO C2)

NOTE

GPS software allows 2 minutes for GPS receiver power-up to occur. A failure will be annunciated should the time be exceeded. Retest may be selected should this event occur.

NOTE

GPS receiver will transition from SELF-TEST/INIT mode to NAV mode upon power-up.

NOTE

For receiver status, the transition time from a STAT indication "OFF" indicating receiver is powered on to a STAT indication "ON" indicating receiver is tracking satellites in State 5 is not exact. During power-up, it may be necessary to perform a data retrieval on the STAT indication, if STAT indication is "ON" before it can be verified on display.

NOTE

A receiver STAT indication "ON" and the receiver is not tracking GPS satellites after the power-up procedure has been performed may indicate the receiver is not powered on or a failure of the GPS receiver may have occurred.

NOTE

For the GPS Receiver Status indication (STAT), approximately one second after power is applied, the STAT indication will transition from "ON" to "OFF." The STAT indication will then transition to "ON" indicating receiver has entered a power-up self-test mode (~ 30 seconds) and transition back to "OFF" once self-test is complete.

Once the GPS receiver is on and self-test complete, STAT indication will identify the following:

- 1) STAT Indication "OFF" - Receiver is powered on, but is not tracking four satellites in state 5.
- 2) STAT Indication "ON" - Receiver is powered on and is tracking four satellites in state 5. This indication could also mean that GPS power was lost.

NOTE

Verification of GPS receiver status can be performed after GPS switch configuration is performed.

37-139 **CNSE** **CDR**

PANEL O7
GPS 1
POWER SW - ON

37-140 **CNSE**

CRT (VWN43 PG-B)
VERIFY
GPS 1
STAT - OFF
RPC A - ON
MDE - NAV
RPU - OFF
BAT - OFF

37-141 **CNSE** **CDR**

PANEL O7
GPS 2
POWER SW - ON

37-142 **CNSE**

CRT (VWN43 PG-B)
VERIFY
GPS 2
STAT - OFF
RPC B - ON
MDE - NAV
RPU - OFF
BAT - OFF

37-143 CNSE CDR

PANEL 07
GPS 3
POWER SW - ON

37-144 CNSE

CRT (VWN43 PG-B)
VERIFY
GPS 3
STAT - OFF
RPC C - ON
MDE - NAV
RPU - OFF
BAT - OFF

37-145 CNSE

CRT (VSN59 PG-B)
PFK 7 KEY - PRESS (TERM NAV MONITOR)

NOTE

During transition to "INIT" mode, the VSN59 program may issue a message "Difference between GPS weeks and almanac weeks is greater than 1." User can follow the program prompts to issue an "Acknowledge/ Continue" using the appropriate PFK key when this occurs. A new almanac begins to download upon power up and satellite acquisition, but can take up to 20 minutes or greater to complete.

37-146

CNSE

CURSOR CNTL (VSN59 PG-B)
I/O ITEM 10+2
XMIT CURSOR KEY - PRESS
START TEST
XMIT CURSOR KEY - PRESS

37-147

CNSE

CRT (VSN59 PG-B)
VERIFY
GPS X (X = 1, 2 & 3)
RCVR MODE - INIT
HDR WD - EEEE

37-148

CNSE

CURSOR CNTL (VSN59 PG-B)
NAV - ALL
XMIT CURSOR KEY - PRESS
START TEST
XMIT CURSOR KEY - PRESS

37-149

CNSE

CRT (VWN43 PG-B)

VERIFY

GPS X (X = 1, 2 & 3)

STAT - ON (NAV BIT - 4 SV TRACKING IN
STATE 5 (CAR_TK))

HDR - FFFF

MDE - NAV

Spec 55 Resume and Call Up

NOTE

IF only one DEU is available for C2 and Nav aids Self Test (Spec 101) will be performed while the GPS Almanac is downloading, perform Spec 55 Resume and Call Up.

Spec 55 Resume and Call Up Not Performed:_____

37-150

CNSE

CRT (VSN59 PG-B)

PFK 7 KEY - PRESS (TERM NAV MONITORING)

37-151

CNSE

CURTOR CNTL (VSN59 PG-B)

SPEC RESUME

XMIT CURSOR KEY - PRESS

START TEST

XMIT CURSOR KEY - PRESS

CRT

VERIFY GPC MEMORY (9011) ON CRT IN USE.

NOTE

Perform the call up after NAVAIDS Self Test is complete and GPS testing will resume.

37-152

CNSE

CURSOR CNTL (VSN59 PG-B)
SPEC 55 CALLUP
XMIT CURSOR KEY - PRESS
START TEST
XMIT CURSOR KEY - PRESS

CRT

VERIFY SPEC 55 (550) on CRT in use.

*****End of Spec 55 Resume and Call Up*****

NOTE

The almanac is considered current when the GPS WEEK and ALMANAC WEEK agree to within one week. Downloading a full almanac will take at least 12.5 minutes. During certain satellite/receiver conditions, the Almanac Bit may not toggle from Off to On. This indication may occur if the receiver's stored almanac contains information from a satellite that has been decommissioned. In this case, mode the receiver to INIT, back to NAV, and then back to INIT to update the Almanac Week status.

NAVAIDS Activation may be performed while the GPS Almanac is being downloaded if the Safety Clears are in place.

37-153

CNSE

Allow the receivers to remain in NAV Mode until the Almanac Bit toggles from Off to On or for at least 30 minutes.

CRT (VWN43 PG-B)

RECORD

RECEIVER STATUS

GPS 1

ALMC _____ (OFF/ON)

GPS 2

ALMC _____ (OFF/ON)

GPS 3

ALMC _____ (OFF/ON)

37-154

CNSE

CRT (VSN59 PG-B)

PFK 7 KEY - PRESS (TERM NAV MONITORING)

37-155

CNSE

CURSOR CNTL (VSN59 PG-B)
INIT - ALL
XMIT CURSOR KEY - PRESS
START TEST
XMIT CURSOR KEY - PRESS

37-156

CNSE

CRT (VSN59 PG-B)
VERIFY
GPS X (X = 1, 2, & 3)
RCVR MODE - INIT
HDR WD - EEEE

Continue Almanac Download

NOTE

Perform Continue Almanac Download if, after the Receiver was commanded to INIT, the Almanac Week is not equal to GPS Week or GPS Week + 1 (This indicates a full Almanac was not downloaded). The steps within this option may be repeated as necessary to obtain a current almanac week.

Continue Almanac Download Not Performed: _____

37-157

CNSE

CURSOR CNTL (VSN59)
NAV - ALL
XMIT CURSOR KEY - PRESS
START TEST
XMIT CURSOR KEY - PRESS

CRT (VWN58)
VERIFY
RECEIVER STATUS
GPS 1, 2, 3
MODE NAV
STAT ON

37-158

CNSE

CURSOR CNTL (VSN59)
INIT - ALL
XMIT CURSOR KEY - PRESS
START TEST
XMIT CURSOR KEY - PRESS

CRT (VWN58)
VERIFY
RECEIVER STATUS
GPS 1, 2, 3
MODE INIT

37-159

CNSE

IF Receiver was commanded to INIT and the Almanac Week is still not equal to GPS Week or GPS Week + 1,

THEN Re-perform the GPS Almanac Collection sequence beginning with step 37-153.

*****End of Continue Almanac Download*****

37-160

CNSE

CURSOR CNTL (VSN59 PG-B)
NAV - ALL
XMIT CURSOR KEY - PRESS
START TEST
XMIT CURSOR KEY - PRESS

37-161

CNSE

CRT (VWN43 PG-B)

VERIFY

GPS X (X = 1, 2, & 3)

STAT - ON (NAV BIT - 4 SV TRACKING IN
STATE 5 (CAR_TK))

HDR WD - FFFF

MDE - NAV

ALM WK = WEEKS OR WEEKS + 1

OMRSD [V74PP0.060-A-1R](#)

OMRSD [V74PP0.060-B-1R](#)

OMRSD [V74PP0.060-C-1R](#)

37-162

CNSE

CRT (VSN59 PG-B)

PFK 7 KEY - PRESS (TERM NAV MONITORING)

37-163

CNSE

CURSOR CNTL (VSN59 PG-B)

GPS POWER DOWN - ALL

XMIT CURSOR KEY - PRESS

START TEST

XMIT CURSOR KEY - PRESS

37-164

CNSE

CURSOR CNTL (VSN59 PG-B)

PFK 1B KEY - PRESS (TERMINATE I/O)

NOTE

Due to the configuration of the receiver STAT bit on the GPS receiver and GOAL software, it is possible that the "GPS X Verified Powered OFF" message will appear prior to physically powering off the GPS receiver. This will happen if the STAT indication is ON, which means the GPS receiver is tracking four satellites. This is an expected condition and steps can be performed as written.

37-165 **CNSE** **CDR**

PANEL O7
GPS 1
POWER SW - OFF

37-166 **CNSE** **CDR**

PANEL O7
GPS 2
POWER SW - OFF

37-167 **CNSE** **CDR**

PANEL O7
GPS 3
POWER SW - OFF

37-168 **CNSE**

CURSOR CNTL (VSN59 PG-B)
PFK 1B KEY - PRESS (PROCEED WITH PREAMP POWER OFF)

37-169 CNSE CDR

PANEL 07
GPS 1
PRE AMPL
UPPER SW - OFF
LOWER SW - OFF
GPS 2
PRE AMPL
UPPER SW - OFF
LOWER SW - OFF
GPS 3
PRE AMPL
UPPER SW - OFF
LOWER SW - OFF

37-170 CNSE

CURSOR CNTL (VSN59)
PFK 1B KEY - PRESS (PREAMP POWER SWITCH IS NOW OFF
- CONTINUE)

37-171 CNSE

CURSOR CNTL (VSN59)
PFK 2B KEY - PRESS (BYPASS- S0007/S0017)

37-172 CNSE

CURSOR CNTL (VSN59)
PFK 1B KEY - PRESS (ISSUE RESUME TO CRT)

***** End of 3-String GPS Verification *****

CRT Return to C12

NOTE

Perform "CRT Return to C12" if there is no further need for CRT. If C2 has only one CRT and NAVAIDS Activation will commence, then do not perform this option.

CRT Return to C12 Not Performed: _____

37-173

CNSE

CURSOR CNTL (VSN59)
CRT RETURN TO DPS
XMIT CURSOR KEY - PRESS

PLACE CURSOR AT THE END OF:

C CO _DEUXG LDBA C12 (X = CRT NO.)
XMIT CMD KEY - PRESS

HOME CMD KEY - PRESS
ISSU N72IV10YD 0 (Y = CRT No. Minus 1)
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

37-174

CNSE OTC 132
OTC CDPS

C2 CRT returned to C12. GPS activities are complete.

***** End of CRT Return to C12 *****

37-175

CNSE

CURSOR CNTL (VSN59)
TERMINATE
XMIT CURSOR KEY - PRESS

06-24-2011
APPROVED

OMI S0007.400 A23
APPROVED

37-176

CNSE

CURSOR CNTL (VWN43 PG-B)
TERMINATE
XMIT CURSOR KEY - PRESS

***** End of GPS Activation and Almanac Collection *****

NAVAIDS Activation

NOTE

Do not perform NAVAIDS Activation if NAVAIDS Self Test was already performed during the present flow unless Engineering evaluation determines that repeating the test will add significant confidence in flight readiness.

NAVAIDS Activation Not Performed: _____

NOTE

Steps involving Crit 1, 1R and/or 1S items are contained in the following operation.

37-177

CNSE

CONSOLE KYBD (C2)
HOME CMD KEY - PRESS
VAA40
PERF PGM KEY - PRESS

PFP (VAA40)
VAA40 - PRESS
WARM START - PRESS
VWN99 (NAV OV) - PRESS
(SELECT APPL PAGE-B)

NAVAIDS Circuit Breaker Closing

37-178

CNSE

PANEL O14
ROW E
MN A
RDR ALTM 1 CB - CLOSE (GUARDED)
MLS 1 CB - CLOSE (GUARDED)

37-179

CNSE

PANEL O15
ROW E
MN B
RDR ALTM 2 CB - CLOSE (GUARDED)
MLS 2 CB - CLOSE (GUARDED)

37-180

CNSE

PANEL O16
ROW E
MN C
MLS 3 CB - CLOSE (GUARDED)

*****End of NAVAIDS Circuit Breaker Closing*****

Radar Altimeter Activation

37-181 CNSE PLT 173

PANEL O8
RADAR ALTIMETER
1 SW - ON
2 SW - ON

GMT _____

37-182 CNSE

CRT (VWN99)
VERIFY
RADAR ALTIMETER
1
SW STAT ON
PWR STAT ON
2
SW STAT ON
PWR STAT ON

37-183 **IF** the Radar Alt Power On Requirement was not satisfied during the OPF flow,

THEN:
CRT (VWN60)
VERIFY
RADAR ALTIMETER

1
RALT SW STATUS ON
RALT READY ON
RALT ALT DATA FT _____

2
RALT SW STATUS ON
RALT READY ON
RALT ALT DATA FT _____

OMRSD [V74AC0.011-1R](#)

Not Performed: _____

*** End of Radar Altimeter Activation ***

MSBLS Activation

37-184 CNSE CDR 173

PANEL O8

MLS

1 CHANNEL TW - 6

2 CHANNEL TW - 6

3 CHANNEL TW - 6

37-185 CNSE PLT 173

PANEL O8

MLS

1 SW - ON

2 SW - ON

3 SW - ON

GMT _____

37-186 CNSE

CRT (VWN99)

VERIFY

MSBLS

1

SW STAT ON

PWR STAT ON

2

SW STAT ON

PWR STAT ON

3

SW STAT ON

PWR STAT ON

37-187 CDPS CDR 173

____ KYBD
I/O RESET
EXEC

37-188 CDPS CDR

CRT ____
VERIFY NO UNEXPECTED MLS OR ALT FAULT SUMMARY
MESSAGES.

37-189 CDPS CDR 173

____ KYBD
SPEC 99
PRO
RESUME

***** End of MSBLS Activation *****

NAVAIDS Self Test

37-190 CNSE

HOME CMD KEY - PRESS
CONSOLE KYBD (VAN12)
VAN12
PERF PGM KEY - PRESS

Transfer 2nd CRT to C2

<p style="text-align: center;">NOTE</p> <p>Do not perform Transfer 2nd CRT to C2 if a second CRT is not available and the same CRT that was used for GPS Activation will be used for NAVAIDS Self Test.</p>
--

Transfer 2nd CRT to C2 Not Performed: _____

37-191 CNSE OTC 132
 CDPS

Change the responsible console for a CRT to Console C2.

37-192 CDPS

CONSOLE KYBD
HOME CMD KEY - PRESS
C CO DEUXG LDBA C2 (X = CRT#)
XMIT CMD KEY - PRESS

HOME CMD KEY - PRESS
ISSU N72IV10YD #B002 (Y = CRT# -1)
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

37-193 CDPS OTC 132
 OTC CNSE

Responsible console for CRT is now assigned to C2.

*****End of Transfer 2nd CRT to C2*****

37-194

CNSE

CURSOR CNTL (VAN12 PG-B)
EQUIVALENT DEU
XMIT CURSOR KEY - PRESS

CRT (VAN12)
VERIFY
SELECT MAJOR MODE

37-195

CNSE

CURSOR CNTL (VAN12 PG-B)
GNC
XMIT CURSOR KEY - PRESS

37-196

CNSE

CURSOR CNTL (VAN12 PG-B)

DEU _____ (ASSIGNED CRT)
XMIT CURSOR KEY - PRESS

37-197

CNSE

CRT (VAN12 PG-B)
VERIFY
SPEC 101 - CRT X (X = CRT No. ASSIGNED)
SELECT LRU'S (BLINKING)

NOTE

Azimuth - data valid on for first 1.6 sec max, data 3 deg sign bit alternating +/- every 3.2 sec

Elevation - data valid on for first 1.6 sec max, data 6 deg

Range - data valid on for first 0.2 sec max, data 15.2 nm

Due to a known/documented flight software problem, the MLS Self Test may fail in Azimuth. If the MLS Self Test fails on board in Azimuth, then the MLS Self Test may be repeated.

37-198

CNSE

CURSOR CNTL (VAN12 PG-B)
MLS 1 - ITEM 1
XMIT CURSOR KEY - PRESS
MLS 2 - ITEM 2
XMIT CURSOR KEY - PRESS
MLS 3 - ITEM 3
XMIT CURSOR KEY - PRESS

37-199

CNSE

CURSOR CNTL (VAN12 PG-B)
13 TO START
XMIT CURSOR KEY - PRESS

37-200

CNSE

CRT (VAN12 PG-B)
VERIFY (WHEN SELF TEST IS COMPLETE)
MLS 1 2 3 PASSED (IN GREEN)

37-201

CNSE

REVIEW the data on the CRT, Console Printer output or SPA Printer job VAN12, upon termination of VAN12. **Verify** MLS Self Test passed.

Limits are:

Azimuth: (+/-) 3.0 +/- 0.1 deg

Elevation: 6.0 +/- 0.1 deg

Range: 15.2 +/- 0.2 NM

37-202

CNSE

CDR

CRT _____ (SPEC 101)

Verify:

(No Down Arrows)

MLS 1 STAT column - blank

MLS 2 STAT column - blank

MLS 3 STAT column - blank

37-203

CNSE

CURSOR CNTL (VAN12)

ITEM 15 (TERMINATE)

XMIT CURSOR KEY - PRESS

ITEM 16 (INHIBIT)

XMIT CURSOR KEY - PRESS

37-204

CNSE

CRT (VWN99 PG-B)
MSBLS
1
AZ S/T STAT OFF
EL S/T STAT OFF
RG S/T STAT OFF

2
AZ S/T STAT OFF
EL S/T STAT OFF
RG S/T STAT OFF

3
AZ S/T STAT OFF
EL S/T STAT OFF
RG S/T STAT OFF

37-205

CNSE

CURSOR CNTL (VAN12 PG-B)
EQUIVALENT DEU
XMIT CURSOR KEY - PRESS

37-206

CNSE

CURSOR CNTL (VAN12 PG-B)
RA 1 - ITEM 7
XMIT CURSOR KEY - PRESS
RA 2 - ITEM 8
XMIT CURSOR KEY - PRESS

37-207

CNSE

CURSOR CNTL (VAN12 PG-B)
13 TO START
XMIT CURSOR KEY - PRESS

37-208

CNSE

CRT (VAN12 PG-B)

VERIFY

RA

1

S/T CMD ON

DATA VALIDITY GO

ALTITUDE

DATA _____ (1000 +/- 100)

2

S/T CMD ON

DATA VALIDITY GO

ALTITUDE

DATA _____ (1000 +/- 100)

Ra 1 2 PASSED

37-209

CNSE

IF the Radar Altimeter Self Test was not performed in the OPF,

THEN:

CRT (VWN99 PG-B)

VERIFY

RADAR ALTIMETER

1

LOCK ON GO
S/T CMD ON
DATA VALID GO
ALT DATA FT 1000 +/- 100

2

LOCK ON GO
S/T CMD ON
DATA VALID GO
ALT DATA FD 1000 +/- 100

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Not Performed: _____

37-210

CNSE

CURSOR CNTL (VAN12 PG-B)

ITEM 15 (TERMINATE)

XMIT CURSOR KEY - PRESS

ITEM 16 (INHIBIT)

XMIT CURSOR KEY - PRESS

37-211

CNSE

CRT (VWN99)

RADAR ALTIMETER

1 S/T CMD OFF

2 S/T CMD OFF

37-212

CNSE

PFP
VAN12 - PRESS
TERM VAN12 - PRESS

CRT Return to DPS

NOTE

Perform this option if CRT is not required for GPS de-activation.

CRT Return to DPS Not Performed: _____

37-213

CNSE

CONSOLE KYBD (C2)
HOME CMD KEY - PRESS
C CO _DEUXG LDBA C12 (X = CRT#)
XMIT CMD KEY - PRESS

ISSU N72IV10YD 0 (Y = CRT# -1)
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

37-214

CNSE OTC 132
OTC CDPS

Responsible console for CRT _____ returned to DPS.

***** End of CRT Return to DPS *****

***** End of NAVAIDS Self Test *****

37-215

CNSE

CRT (VWN99)
RADAR ALTIMETER
1
ALT DATA FT _____ (BD)

2
ALT DATA FT _____ (BD)

37-216

CNSE

PLT

173

PANEL O8
RADAR ALTIMETER
1 SW - OFF
2 SW - OFF

MLS
1 SW - OFF
2 SW - OFF
3 SW - OFF

37-217

CNSE

CRT (VWN99 PG-B)
RADAR ALTIMETER

1
SW STAT OFF
PWR STAT OFF

2
SW STAT OFF
PWR STAT OFF

MSBLS

1
SW STAT OFF
PWR STAT OFF

2
SW STAT OFF
PWR STAT OFF

3
SW STAT OFF
PWR STAT OFF

Ku-Band Position Verification

37-218 CNSE MS1 173

IF the following Mid Logic Switches are not on,

THEN :

PANEL MA73C
 ROW A
 MCA LOGIC
 MN C
 MID 2 SW - ON

 ROW B
 MCA LOGIC
 MN B
 MID 4 SW - ON

Not Performed: _____

37-219 CNSE

CRT (VWN80)
VERIFY
KU-BAND
 SWITCH SCAN
 STW/DPLY STOW 1&2
 BOOM STOW 2 ON

37-220 CNSE MS1 173

IF the logic switches were originally off,

THEN:

PANEL MA73C
ROW A
MCA LOGIC
MN C
MID 2 SW - OFF

ROW B
MCA LOGIC
MN B
MID 4 SW - OFF

Not Performed: _____

37-221 CNSE

PFK15 - PRESS

PFP
VAA40 - PRESS
SET TERM - PRESS
EXEC TERM - PRESS
KEY 7 - PRESS

End of Ku-Band Position Verification

37-222 CNSE OTC 132

NAVAIDS Activation and Self Test is complete.

*** End of NAVAIDS Activation ***

*** End of Option 2 - OV-105 Nav aids Activation ***

Option 3 - OV-103/104 GPS Encryption Key Load

NOTE

Completion of steps contained in the floating header section "Option 3 - OV-103/104 GPS Encryption Key Load" satisfies the following requirement.

OMRS V74P00.090

NOTE

Perform Option 3 if encryption key load is required (not current) and vehicle is OV-103 or OV-104.

Option 3 Not Performed: _____

37-223

CNSE

CONSOLE KYBD (C2)
HOME CMD KEY - PRESS
VAA40
PERF PGM KEY - PRESS

37-224

CNSE

PFP (C2)
VAA40 - PRESS
WARM START - PRESS

PFP (VAA40)
VWN42 - PRESS
(SELECT APPL PG B)

GPS Activation

37-225 **CNSE**

CONSOLE KYBD (C2)
HOME CMD KEY - PRESS
VSN59
PERF PGM KEY - PRESS
(SELECT APPL PG B)

NOTE

IDP RSYS is required for the GPS Activation.

37-226 **CNSE** **OTC** **132**
 OTC **CDPS**

Change responsible console for IDP to Console C2. Expect IO errors during GPS power up.

37-227 **CDPS**

CONSOLE KYBD
HOME CMD KEY - PRESS
C CO _DEUXG LDBA C2 (X = IDP NO.)
XMIT CMD KEY - PRESS

ISSU N72IV10YD #B002 (Y = IDP NO. MINUS 1)
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

37-228 **CDPS** **OTC** **132**
 OTC **CNSE**

Responsible console for CRT No. _____ now assigned to C2.

**06-24-2011
APPROVED**

**OMI S0007.400 A23
APPROVED**

37-229

CNSE

PFP (VAA41)
VWN42 - PRESS
VWN58 - PRESS
(SELECT APPL PG-B)

37-230

CNSE

CURSOR CNTL (VSN59 PG-B)
GPS POWER UP - 2
XMIT CURSOR KEY - PRESS
START TEST
XMIT CURSOR KEY - PRESS

NOTE

In the next step, the VSN59 program will prompt the operator to perform the following:

A Site Select on SPEC 104. The Site Select need be performed only on the initial GPS Powerup. If the IMUs are powered on, bypass the Site Select.

The IMU 1 Operate command will be issued by SPEC 104, ITEM 13. After 5 minutes, the flight software will allow Site Select using SPEC 104. Once the Site Select is completed, the IMU 1 Standby command should be issued. Contact CGNC or CTPE for IMU status. If the IMUs are powered on, the Operate command should not be issued without CGNC concurrence. If the IMUs are already in Operate, the Site Select is not required prior to activating SPEC 055.

Power up the preamplifiers. Select both upper and lower and perform only the switch called out below. Once the switch settings are complete, the operator will acknowledge by selecting PFK1.

37-231

CNSE

IF IMUs are powered off and CGNC has not completed the Site Select,

Verify

THEN:

CRT (VSN59 PG-B)

FOLLOW PROGRAM PROMPTS :

TO **PERFORM** SITE SELECT

TO SET IMU OPERATE COMMAND, THEN RETURN
BACK TO STANDBY WHEN SITE SELECT IS
COMPLETE

ELSE CGNC has completed Site Select:

CRT (VSN59)

FOLLOW PROGRAM PROMPTS :

TO **BYPASS** SITE SELECT

OV-103 Switch/CB Configuration

NOTE
If testing is on OV-103, perform OV-103 Switch/CB Configuration.

OV-103 Switch/CB Configuration Not Performed: _____

37-232 CNSE CDR

PANEL O14
 ROW D
 MN A
 GPS
 PRE AMPL
 UC CB - OPEN
 LC CB - OPEN

37-233 CNSE CDR 173

PANEL O16
 ROW D
 MN C
 GPS
 PREAMPL
 UC CB - CLOSE
 LC CB - CLOSE

37-234 CNSE

CONSOLE KYBD (VSN59 PG-B)
PFK1 - PRESS (CB NOW CLOSED - CONTINUE)

37-235 CNSE CDR 173

PANEL A13
 GPS
 PRE-AMPL
 UC SW - MN C
 LC SW - MN C

*****End of OV-103 Switch/CB Configuration*****

OV-104 Switch/CB Configuration

NOTE

If testing is on OV-104 perform OV-104 Switch/CB Configuration.

OV-104 Switch/CB Configuration Not Performed: _____

37-236 CNSE CDR 173

PANEL O15
 ROW C
 MN B
 GPS 2 PREAMPL UPPER CB - CLOSE

 ROW D
 MN B
 GPS 2 PREAMPL LOWER CB - CLOSE

37-237 CNSE

CONSOLE KYBD (VSN59 PG-B)
PFK1 - PRESS (CB NOW CLOSED - CONTINUE)

37-238 CNSE CDR 173

PANEL A13
 GPS
 PRE-AMPL
 UC SW - ON
 LC SW - ON

*****End of OV-104 Switch/CB Configuration*****

37-239 CNSE

CONSOLE KYBD
PFK1 - PRESS (SW SETTINGS COMPLETE - CONTINUE)

37-240

CNSE

CRT (VSN59 PG-B)
FOLLOW PROGRAM PROMPTS:

TO **PERFORM** I/O START.

TO **CALL** UP SPEC 55.

NOTE

GPS software allows 2 minutes for GPS receiver power-up to occur. A failure will be annunciated should the time be exceeded. Retest may be selected should this event occur.

NOTE

GPS receiver mode will transition from INIT to NAV upon power-up.

37-241

CNSE

CDR

173

PANEL A13
GPS
POWER SW - ON

37-242

CNSE

CRT (VWN58 PG-B)

VERIFY

RCVR MODE - NAV
HDR WD - FFFF
RPU FAIL - OFF
BAT LOW - OFF

37-243

CNSE

CURSOR CNTL (VSN59)
PFK7 KEY - PRESS (TERMINATE NAV MONITOR)

NOTE

GPS will automatically mode to INIT when the ITEM 10+2 is executed.

NOTE

During transition to “INIT” mode, the VSN59 program may issue a message “Difference between GPS weeks and almanac weeks is greater than 1.” User can follow the program prompts to issue an “Acknowledge/ Continue” using the appropriate PFK key when this occurs. A new almanac begins to download upon power up and satellite acquisition, but can take up to 20 minutes or greater to complete.

37-244

CNSE

CURSOR CNTL (VSN59 PG-B)
I/O ITEM 10+2
XMIT CURSOR KEY - PRESS
START TEST
XMIT CURSOR KEY - PRESS

37-245

CNSE

CRT (VSN59 PG-B)
VERIFY
RCVR MODE - INIT
HDR WD EEEE

37-246

CNSE

CURSOR CNTL (VSN59 PG-B)
NAV GPS 2 - ITEM 18
XMIT CURSOR KEY - PRESS
START TEST
XMIT CURSOR KEY - PRESS

37-247

CNSE

CRT (VWN58 PG-B)

VERIFY

GPS is in NAV MODE

RECEIVER STATUS

HEADER WD FFFF

GPS 2 PWR

STAT - ON (NAV BIT - 4 SV TRACKING IN
STATE 5 (CAR_TK))

***** End of GPS Activation *****

37-248

CNSE

CURSOR CNTL (VSN59 PG-B)

PFK7 - PRESS (TERMINATE NAV MONITOR)

37-249

CNSE CDR

PANEL A13

GPS

ENCRYPT SW - NORMAL

37-250

CNSE

CURSOR CNTL (VSN59)

INIT - GPS 2 - ITEM 15

XMIT CURSOR KEY - PRESS

START TEST

XMIT CURSOR KEY - PRESS

37-251

CSKU

CRT (VSN59 PG-B)

VERIFY

HDR WD -EEEE

RCVR MODE - INIT

37-252 CNSE CDR

PANEL A13

GPS

ENCRYPT SW - ZEROIZE (FOR 3 SECONDS)

ENCRYPT SW - NORMAL

37-253 CNSE

CRT (VWN58 PG-B)

VERIFY

PPS KEYS

GUV USER - OFF

37-254 CNSE JYVJ

CSR-028

Avionics Bay 3B - Panel MA75J (GPS Encryption Panel)

IF loading "Encryption Key" on OV-103,

THEN Connect KYK-13 device to "ENCRP1 MAGR" port and load "GPS Encryption Key."

Not Performed: _____

37-255 CNSE JYVJ

CSR-028

Avionics Bay 3B - Panel MA75J (GPS Encryption Panel)

IF loading "Encryption Key" on OV-104,

THEN Connect KYK-13 device to "ENCRP 2" port and load "GPS Encryption Key."

Not Performed: _____

37-256 JYVJ CNSE

Avionics Bay 3B - Panel MA75J (GPS Encryption Panel)

“GPS Encryption Key” load is complete.

NOTE

The following step may be repeated to achieve a verified Key Load. (GUV
USER ON, RCVR KEY ON, PARITY FAIL OFF)

37-257 CNSE CDR
JYVJ

IF Key Load can not be verified,

THEN:

PANEL A13

GPS

ENCRYPT SW - ZEROIZE (FOR 3 SECONDS)

ENCRYPT SW - NORMAL

Avionics Bay 3B - Panel MA75J (GPS Encryption Panel)

Reload “GPS Encryption Key” and report complete.

Not Performed: _____

37-258 CNSE

CRT (VWN58 PG-B)

VERIFY

PPS KEYS

GUV USER - ON

RCVR KEY - ON

37-259

CNSE

CURSOR CNTL (VSN59 PG-B)
NAV - GPS 2 ITEM 18
XMIT CURSOR KEY - PRESS
START TEST
XMIT CURSOR KEY - PRESS

NOTE

GPS transition to Precise Positioning Service (PPS) can take up to ten minutes to verify. No set time is established for GPS transition from SPS to PPS.

37-260

CNSE

CRT (VWN58 PG-B)
VERIFY
RECEIVER STATUS
HEADER WD - FFFF
RCVR MDE - NAV

GPS 2 PWR
STAT - ON (NAV BIT - 4 SV TRACKING IN
STATE 5 (CAR_TK)

NAV DATA
SRVC - PPS

37-261

CNSE

CONSOLE KYBD (VSN59 PG-B)
PFK 7 KEY - PRESS (TERMINATE NAV MONITOR)

37-262

CNSE JYVJ

Encryption Key load complete and successful. Support no longer required.

37-263

CNSE

Completion of steps contained in the floating header section " Option 3 - OV-103/104 GPS Encryption Key Load" satisfies the following requirement.

OMRSD [V74P00.090](#)

*****End of Option 3 - OV-103/104 GPS Encryption Key Load*****

GPS Power Down

37-264

CNSE

CURSOR CNTL (VSN59 PG-B)
GPS POWER DN - 2
XMIT CURSOR KEY - PRESS
START TEST
XMIT CURSOR KEY - PRESS

37-265

CNSE

CRT (VSN59 PG-B)
FOLLOW PROGRAM PROMPTS:

TO TERMINATE IO

NOTE

Due to the configuration of the Receiver Status measurement, a message indicating GPS Power Off was successful may appear on VSN59 prior to powering off the GPS receiver. This is expected and the following step can be performed as written.

37-266 CNSE CDR 173

PANEL A13
GPS
POWER SW - OFF

37-267 CNSE

CONSOLE KYBD (VSN59 PG-B)
PFK1 - PRESS TO TURN OFF PREAMP SWITCHES

NOTE

OV-104 preamp switches are 3 position switches. Center and Down are Off. Place switches in the Off (Down) position.

37-268 CNSE MS1 173

PANEL A13
GPS
PRE-AMP
UC SW - OFF
LC SW - OFF

37-269 CNSE

CRT (VSN59 PG-B)
FOLLOW PROGRAM PROMPTS:
PFK1 - PRESS TO VERIFY PREAMP PWR SW IS OFF

37-270

CNSE

CRT (VSN59 PG-B)
PFK 1 - PRESS TO OPEN CBs

37-271

CNSE CDR

IF vehicle is OV-103

THEN

PANEL O16
ROW D
MN C
GPS
PRE AMPL
UC CB - OPEN
LC CB - OPEN

Not Performed: _____

37-272

CNSE CDR

IF vehicle is OV-104

THEN

PANEL O15
ROW C
MN B
GPS 2 PREAMPL UPPER CB - OPEN

ROW D
MN B
GPS 2 PREAMPL LOWER CB - OPEN

Not Performed: _____

37-273

CNSE

CRT (VSN59 PG-B)
PFK1 - PRESS CBs OPENED

37-274

CNSE

CRT (VSN59 PG-B)
FOLLOW PROGRAM PROMPTS

TO ISSUE RESUME TO ACTIVE CRT

VERIFY RESUME COMPLETE.

37-275

CNSE

CURSOR CNTL (VSN59)
CRT RETURN TO DPS
XMIT CURSOR KEY - PRESS

PLACE CURSOR AT THE END OF:
C CO _DEUXG LDBA C12 (X = CRT NO.)
XMIT CMD KEY - PRESS

HOME CMD KEY - PRESS
ISSU N72IV10YD 0 (Y = CRT No. Minus 1)
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

37-276

CNSE OTC 132
OTC CDPS

C2 CRT returned to C12. GPS activities are complete.

06-24-2011
APPROVED

OMI S0007.400 A23
APPROVED

37-277

CNSE

CURSOR CNTL (VSN59)
TERMINATE
XMIT CURSOR KEY - PRESS

37-278

CNSE

CRT (VWN43 PG-B)

PFK 15 KEY - PRESS

PFP
VAA40 - PRESS
SET TERM - PRESS
EXEC SET TERM - PRESS

***** End of GPS Powerdown *****

***** End of Option 3 - OV-103/104 GPS Encryption Key Load *****

Option 4 - OV-105 GPS Encryption Key Load

NOTE

Perform Option 4 section if there is no “current” encryption key loaded in one or more GPS Receivers and vehicle is OV-105. Steps contained within this section may be performed out of sequence to optimize performance.

Option 4 Not Performed: _____

37-279

CNSE

CONSOLE KYBD (C2)
HOME CMD KEY - PRESS
VAA40
PERF PGM KEY - PRESS

37-280

CNSE

PFP (C2)
VAA40 - PRESS
WARM START - PRESS

PFP (VAA40)
VWN43 - PRESS
(SELECT APPL PG B)

GPS Activation

37-281 **CNSE**

CONSOLE KYBD (C2)
HOME CMD KEY - PRESS
VSN59
PERF PGM KEY - PRESS
(SELECT APPL PG B)

NOTE
IDP RSYS is required for the GPS Activation.

37-282 **CNSE** **OTC** **132**
 OTC **CDPS**

Change responsible console for IDP to Console C2. Expect IO errors during GPS power up.

37-283 **CDPS**

CONSOLE KYBD
HOME CMD KEY - PRESS
C CO _DEUXG LDBA C2 (X = IDP NO.)
XMIT CMD KEY - PRESS

ISSU N72IV10YD #B002 (Y = IDP NO. MINUS 1)
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

37-284 **CDPS** **OTC** **132**
 OTC **CNSE**

Responsible console for CRT No. _____ now assigned to C2.

37-285

CNSE

CURSOR CNTL (VSN59 PG-B)
GPS POWER UP - ALL
XMIT CURSOR KEY - PRESS
START TEST
XMIT CURSOR KEY - PRESS

NOTE

In the next step, the VSN59 program will prompt the operator to perform the following:

A Site Select on SPEC 104. The Site Select need be performed only on the initial GPS Powerup. If the IMUs are powered on, bypass the Site Select.

The IMU 1 Operate command will be issued by SPEC 104, ITEM 13. After 5 minutes, the flight software will allow Site Select using SPEC 104. Once the Site Select is completed, the IMU 1 Standby command should be issued. Contact CGNC or CTPE for IMU status. If the IMUs are powered on, the Operate command should not be issued without CGNC concurrence. If the IMUs are already in Operate, the Site Select is not required prior to activating SPEC 055.

Power up the preamplifiers. Select both upper and lower and perform only the switch called out below. Once the switch settings are complete, the operator will acknowledge by selecting PFK1.

37-286

CNSE

IF IMUs are powered off and CGNC has not completed the site select,

Verify

THEN

CRT (VSN59 PG-B)

FOLLOW PROGRAM PROMPTS

TO **PERFORM** SITE SELECT

TO SET IMU OPERATE COMMAND, THEN RETURN
BACK TO STANDBY WHEN SITE SELECT IS
COMPLETE

ELSE

CRT (VSN59 PG-B)

FOLLOW PROGRAM PROMPTS

TO **BYPASS** SITE SELECT

NOTE

All GPS Pre-amplifiers will be powered on. GPS pre-amplifier circuit breakers are not downlisted and power switch indications are switch scan only.

37-287 CNSE CDR

PANEL O14
ROW D
MN A
GPS 1
PRE AMPL
UPPER CB - CLOSED
LOWER CB - CLOSED

37-288 CNSE CDR

PANEL O15
ROW C
MN B
GPS 2
PRE AMPL
UPPER CB - CLOSED
ROW D
MN B
GPS 2
PRE AMPL
LOWER CB - CLOSED

37-289 CNSE CDR

PANEL O16
ROW D
MN C
GPS 3
PRE AMPL
UPPER CB - CLOSED
LOWER CB - CLOSED

37-290

CNSE

CRT/CONSOLE KYBD (VSN59 PG-B)
PFK 1B KEY - PRESS (CBS NOW CLOSED - CONTINUE)

37-291

CNSE CDR

PANEL 07
GPS 1
PRE AMPL
UPPER SW - ON
LOWER SW - ON
GPS 2
PRE AMPL
UPPER SW - ON
LOWER SW - ON
GPS 3
PRE AMPL
UPPER SW - ON
LOWER SW - ON

37-292

CNSE

CRT/CONSOLE KYBD (VSN59 PG-B)
PFK 1B KEY - PRESS (SWITCH SETTINGS COMPLETE -
CONTINUE)

37-293

CNSE

CONSOLE KYBD (VSN59 PG-B)
PFK 1B KEY - PRESS (PERFORM I/O START - CONTINUE)
PFK XB KEY - PRESS (X = CRT ASSIGNED TO C2)

NOTE

GPS software allows 2 minutes for GPS receiver power-up to occur. A failure will be annunciated should the time be exceeded. Retest may be selected should this event occur.

NOTE

GPS receiver will transition from SELF-TEST/INIT mode to NAV mode upon power-up.

NOTE

For receiver status, the transition time from a STAT indication "OFF" indicating receiver is powered on to a STAT indication "ON" indicating receiver is tracking satellites in State 5 is not exact. During power-up, it may be necessary to perform a data retrieval on the STAT indication, if STAT indication is "ON" before it can be verified on display.

NOTE

A receiver STAT indication "ON" and the receiver is not tracking GPS satellites after the power-up procedure has been performed may indicate the receiver is not powered on or a failure of the GPS receiver may have occurred.

NOTE

For the GPS Receiver Status indication (STAT), approximately one second after power is applied, the STAT indication will transition from "ON" to "OFF." The STAT indication will then transition to "ON" indicating receiver has entered a power-up self-test mode (~ 30 seconds) and transition back to "OFF" once self-test is complete.

Once the GPS receiver is on and self-test complete, STAT indication will identify the following:

- 1) STAT Indication "OFF" - Receiver is powered on, but is not tracking four satellites in state 5.
- 2) STAT Indication "ON" - Receiver is powered on and is tracking four satellites in state 5. This indication could also mean that GPS power was lost.

NOTE

Verification of GPS receiver status can be performed after GPS switch configuration is performed.

37-294 CNSE CDR

PANEL O7
GPS 1
POWER SW - ON

37-295 CNSE

CRT (VWN43 PG-B)
VERIFY
GPS 1
STAT - OFF
RPC A - ON
MDE - NAV
RPU - OFF
BAT - OFF

37-296 CNSE CDR

PANEL O7
GPS 2
POWER SW - ON

37-297 CNSE

CRT (VWN43 PG-B)
VERIFY
GPS 2
STAT - OFF
RPC B - ON
MDE - NAV
RPU - OFF
BAT - OFF

37-298 **CNSE** **CDR**

PANEL 07
GPS 3
POWER SW - ON

37-299 **CNSE**

CRT (VWN43 PG-B)
VERIFY
GPS 3
STAT - OFF
RPC C - ON
MDE - NAV
RPU - OFF
BAT - OFF

37-300 **CNSE**

CRT (VSN59 PG-B)
PFK 7 KEY - PRESS (TERM NAV MONITOR)

NOTE

During transition to "INIT" mode, the VSN59 program may issue a message "Difference between GPS weeks and almanac weeks is greater than 1." User can follow the program prompts to issue an "Acknowledge/ Continue" using the appropriate PFK key when this occurs. A new almanac begins to download upon power up and satellite acquisition, but can take up to 20 minutes or greater to complete.

37-301

CNSE

CURSOR CNTL (VSN59 PG-B)
I/O ITEM 10+2
XMIT CURSOR KEY - PRESS
START TEST
XMIT CURSOR KEY - PRESS

37-302

CNSE

CRT (VSN59 PG-B)
VERIFY
GPS X (X = 1, 2 & 3)
RCVR MODE - INIT
HDR WD - EEEE

37-303

CNSE CDR

CURSOR CNTL (VSN59 PG-B)
NAV - ALL
XMIT CURSOR KEY - PRESS
START TEST
XMIT CURSOR KEY - PRESS

37-304

CNSE

CRT (VWN43 PG-B)

VERIFY

GPS X (X = 1, 2 & 3)

STAT - ON (NAV BIT - 4 SV TRACKING IN
STATE 5 (CAR_TK))

HDR - FFFF

MDE - NAV

***** End of GPS Activation *****

3-String GPS Encryption Key Load

NOTE

The steps contained within the floating header, 3-String GPS Encryption Key Load, satisfy the noted requirements.

OMRS V74PP0.120-A-1R

OMRS V74PP0.120-B-1R

OMRS V74PP0.120-C-1R

37-305

CNSE

CDR

PANEL O7

GPS 1

ENCRYPT SW - NORMAL

GPS 2

ENCRYPT SW - NORMAL

GPS 3

ENCRYPT SW - NORMAL

37-306

CNSE

CRT (VSN59)

PFK 7 KEY - PRESS (TERM NAV MONITORING)

37-307

CNSE

CURSOR CNTL (VSN59)

INIT - ALL

XMIT CURSOR KEY - PRESS

START TEST

XMIT CURSOR KEY - PRESS

GPS 1 Encryption Key Load

NOTE

Perform GPS 1 Encryption Key Load if a key load is required for GPS 1.

GPS 1 Encryption Key Load Not Performed: _____

37-308

CNSE

CURSOR CNTL (VWN43 PG-B)
GPS 1 DETAIL
XMIT CURSOR KEY - PRESS

37-309

CNSE CDR

PANEL O7
GPS 1
ENCRYPT SW - ZEROIZE (3 SECONDS)
ENCRYPT SW - NORMAL

37-310

CNSE

CRT (VWN56 PG-B)
VERIFY
RECEIVER STATUS
RCVR MODE - INIT
HEADER WD - EEEE
PPS KEYS
GUV USER - OFF

37-311

CNSE JYVJ

CSR-028

LOAD GPS 1 ENCRYPTION KEY USING THE FOLLOWING
INTERFACES.

PANEL MA75J (AV BAY 3B)
GPS ENCRYPT PANEL
"ENCRP 1" PORT

37-312 JYVJ CNSE

Avionics Bay 3B - Panel MA75J (GPS Encryption Panel)

“GPS 1 Encryption Key” load is complete.

NOTE

The following step may be repeated to achieve a verified Key Load. (GUV
USER ON, RCVR KEY ON, PARITY FAIL OFF)

37-313 CNSE CDR
JYVJ

IF Key Load can not be verified,

THEN:

PANEL A13

GPS

ENCRYPT SW - ZEROIZE (FOR 3 SECONDS)

ENCRYPT SW - NORMAL

Avionics Bay 3B - Panel MA75J (GPS Encryption Panel)

Reload “GPS1 Encryption Key” and report complete.

Not Performed: _____

06-24-2011
APPROVED

OMI S0007.400 A23
APPROVED

37-314

CNSE

CURSOR CNTL (VWN56 PG-B)

VERIFY

PPS KEYS

GUV USER - ON

RCVR KEY - ON

37-315

CNSE

CURSOR CNTL (VWN56)

OVERVIEW

XMIT CURSOR KEY - PRESS

***** End of GPS 1 Encryption Key Load *****

GPS 2 Encryption Key Load

NOTE

Perform GPS 2 Encryption Key Load if a key load is required for GPS 2.

GPS 2 Encryption Key Load Not Performed: _____

37-316

CNSE

CURSOR CNTL (VWN43)
GPS 2 DETAIL
XMIT CURSOR KEY - PRESS

37-317

CNSE CDR

PANEL O7
GPS 2
ENCRYPT SW - ZEROIZE (3 SECONDS)
ENCRYPT SW - NORMAL

37-318

CNSE

CRT (VWN58 PG-B)
VERIFY
RECEIVER STATUS
RCVR MODE - INIT
HEADER WD - EEEE
PPS KEYS
GUV USER - OFF

37-319 CNSE JYVJ

CSR-028

LOAD GPS 2 ENCRYPTION KEY USING THE FOLLOWING INTERFACES.

PANEL MA75J (AV BAY 3B)
GPS ENCRYPT PANEL
"ENCRP 2" PORT

37-320 JYVJ CNSE

Avionics Bay 3B - Panel MA75J (GPS Encryption Panel)

"GPS 2 Encryption Key" load is complete.

NOTE

The following step may be repeated to achieve a verified Key Load. (GUV USER ON, RCVR KEY ON, PARITY FAIL OFF)

37-321 CNSE CDR
JYVJ

IF Key Load can not be verified,

THEN:

PANEL A13
GPS
ENCRYPT SW - ZEROIZE (FOR 3 SECONDS)
ENCRYPT SW - NORMAL

Avionics Bay 3B - Panel MA75J (GPS Encryption Panel)

Reload "GPS2 Encryption Key" and report complete.

Not Performed: _____

06-24-2011
APPROVED

OMI S0007.400 A23
APPROVED

37-322

CNSE

CURSOR CNTL (VWN58 PG-B)

VERIFY

PPS KEYS

GUV USER - ON

RCVR KEY - ON

37-323

CNSE

CURSOR CNTL (VWN58)

OVERVIEW

XMIT CURSOR KEY - PRESS

***** End of GPS 2 Encryption Key Load *****

GPS 3 Encryption Key Load

NOTE

Perform GPS 3 Encryption Key Load if a key load is required for GPS 3.

GPS 3 Encryption Key Load Not Performed: _____

37-324

CNSE

CURSOR CNTL (VWN43)
GPS 3 DETAIL
XMIT CURSOR KEY - PRESS

37-325

CNSE CDR

PANEL O7
GPS 3
ENCRYPT SW - ZEROIZE (3 SECONDS)
ENCRYPT SW - NORMAL

37-326

CNSE

CRT (VWN61 PG-B)
VERIFY
RECEIVER STATUS
RCVR MODE - INIT
HEADER WD - EEEE
PPS KEYS
GUV USER - OFF

37-327 CNSE JYVJ

CSR-028

LOAD GPS 3 ENCRYPTION KEY USING THE FOLLOWING INTERFACES.

PANEL MA75J (AV BAY 3B)
GPS ENCRYPT PANEL
"ENCRP 3" PORT

37-328 JYVJ CNSE

Avionics Bay 3B - Panel MA75J (GPS Encryption Panel)

"GPS 3 Encryption Key" load is complete.

NOTE

The following step may be repeated to achieve a verified Key Load. (GUV USER ON, RCVR KEY ON, PARITY FAIL OFF)

37-329 CNSE CDR
JYVJ

IF Key Load can not be verified,

THEN:

PANEL A13
GPS
ENCRYPT SW - ZEROIZE (FOR 3 SECONDS)
ENCRYPT SW - NORMAL

Avionics Bay 3B - Panel MA75J (GPS Encryption Panel)

Reload "GPS3 Encryption Key" and report complete.

Not Performed: _____

06-24-2011
APPROVED

OMI S0007.400 A23
APPROVED

37-330

CNSE

CURSOR CNTL (VWN61 PG-B)

VERIFY

PPS KEYS

GUV USER - ON

RCVR KEY - ON

37-331

CNSE

CURSOR CNTL (VWN61)

OVERVIEW

XMIT CURSOR KEY - PRESS

***** End of GPS 3 Encryption Key Load *****

37-332

CNSE

CURSOR CNTL (VSN59 PG-B)
NAV - ALL
XMIT CURSOR KEY - PRESS
START TEST
XMIT CURSOR KEY - PRESS

37-333

CNSE

CRT (VWN43 PG-B)
VERIFY
GPS X (X = 1, 2 & 3)
STAT - ON (NAV BIT - 4 SV TRACKING IN
STATE 5 (CAR_TK))
HDR - FFFF
MDE - NAV
MODE - PPS
KEY V - ON

37-334

CNSE JYVJ

Avionics Bay 3B - Panel MA75J (GPS Encryption Panel)

Encryption Key load complete and successful. Support no longer required.

37-335

CNSE

Completion of steps contained within the floating header section "3-String GPS Encryption Key Load" satisfies the following requirements.

OMRSD [V74PP0.120-A-1R](#)
OMRSD [V74PP0.120-B-1R](#)
OMRSD [V74PP0.120-C-1R](#)

***** End of 3-String GPS Encryption Key Load *****

GPS Powerdown

37-336

CNSE

CURSOR CNTL (VSN59 PG-B)
PFK7 - PRESS (TERMINATE NAV MONITOR)

37-337

CNSE

CURSOR CNTL (VSN59 PG-B)
GPS POWER DOWN - ALL
XMIT CURSOR KEY - PRESS
START TEST
XMIT CURSOR KEY - PRESS

37-338

CNSE

CURSOR CNTL (VSN59 PG-B)
PFK 1B KEY - PRESS (TERMINATE I/O)

NOTE

Due to the configuration of the receiver STAT bit on the GPS receiver and GOAL software, it is possible that the "GPS X Verified Powered OFF" message will appear prior to physically powering off the GPS receiver. This will happen if the STAT indication is ON, which means the GPS receiver is tracking four satellites. This is an expected condition and steps can be performed as written.

37-339

CNSE

CDR

PANEL O7
GPS 1
POWER SW - OFF

37-340 CNSE CDR

PANEL 07
GPS 2
POWER SW - OFF

37-341 CNSE CDR

PANEL 07
GPS 3
POWER SW - OFF

37-342 CNSE

CURSOR CNTL (VSN59 PG-B)
PFK 1B KEY - PRESS (PROCEED WITH PREAMP POWER OFF)

37-343 CNSE CDR

PANEL 07
GPS 1
PRE AMPL
UPPER SW - OFF
LOWER SW - OFF
GPS 2
PRE AMPL
UPPER SW - OFF
LOWER SW - OFF
GPS 3
PRE AMPL
UPPER SW - OFF
LOWER SW - OFF

37-344 CNSE

CURSOR CNTL (VSN59)
PFK 1B KEY - PRESS (PREAMP POWER SWITCH IS NOW OFF
- CONTINUE)

37-345

CNSE

CURSOR CNTL (VSN59)
PFK 1B KEY - PRESS (OPEN CBs)

37-346

CNSE CDR

PANEL O14
ROW D
MN A
GPS 1
PRE AMPL
UPPER CB - OPEN
LOWER CB - OPEN

37-347

CNSE CDR

PANEL O15
ROW C
MN B
GPS 2
PRE AMPL
UPPER CB - OPEN

ROW D
MN B
GPS 2
PRE AMPL
LOWER CB - OPEN

37-348

CNSE CDR

PANEL O16
ROW D
MN C
GPS 3
PRE AMPL
UPPER CB - OPEN
LOWER CB - OPEN

37-349

CNSE

CRT (VSN59 PG-B)
PFK 1 KEY - PRESS (CBs OPENED)

37-350

CNSE

CURSOR CNTL (VSN59)
PFK 1B KEY - PRESS (ISSUE RESUME TO CRT)

37-351

CNSE

CURSOR CNTL (VSN59)
CRT RETURN TO DPS
XMIT CURSOR KEY - PRESS

PLACE CURSOR AT THE END OF:

C CO _DEUXG LDBA C12 (X = CRT NO.)
XMIT CMD KEY - PRESS

HOME CMD KEY - PRESS
ISSU N72IV10YD 0 (Y = CRT No. Minus 1)
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

37-352

CNSE OTC 132
OTC CDPS

C2 CRT returned to C12. GPS activities are complete.

***** End of CRT Return to C12 *****

37-353

CNSE

CURSOR CNTL (VSN59)
TERMINATE
XMIT CURSOR KEY - PRESS

06-24-2011
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APPROVED

37-354

CNSE

CURSOR CNTL (VWN43 PG-B)
TERMINATE
XMIT CURSOR KEY - PRESS

37-355

CNSE

PFP
VAA40 - PRESS
SET TERM - PRESS
EXEC SET TERM - PRESS

***** End of GPS Powerdown *****

***** End of Option 4 - OV-105 GPS Encryption Key Load *****

***** End of Operation 37 *****

06-24-2011
APPROVED

OMI S0007.400 A23
APPROVED

OPERATION 38 Instrumentation

Shop: **INS**

Cntrl Rm Console: **C9**

OPR: **INS**

Zone: **100**

Hazard (Y/N): **N**

Duration (Hrs): **3.0**

MTU Frequency Read (T-34 Hours 30 Minutes)

NOTE

Do not perform this option if MTU frequency reads were performed per a previous run and the Orbiter has remained powered.

MTU Frequency Read (T-34 Hours 30 Minutes) Not Performed: _____

NOTE

The MTU must be powered for 12 continuous hours prior to performing MTU frequency reads.

NOTE

Noted requirements are satisfied by the following series of steps.

OMRS V75AP0.030-1R

38-1 CISL JRPS 145

Configure the MTU test set as follows:

- OSC 1 selected
- Samples = 100
- Interval = 0
- Locked on Orbiter under test (OV-_____).

Record changes in the “MTU Test Set Change Log.”

38-2 CISL CDR 145

IF MTU OSCILLATOR 1 IS NOT SELECTED,

THEN PERFORM:
PANEL O6

MASTER TIMING UNIT SW - OSC 1

Not Performed: _____

38-3 CISL

CRT (SAQ04/VWQ11)
VERIFY

MASTER TIMING UNIT
SEL SW SCAN - 1

NOTE

The MTU program starts at 100 samples and counts down. Allow a complete calculation of 100 samples before reading deltas.

38-4 CISL JISE 145

Perform MTU OSC 1 Frequency Delta Read.

Record:

OSC 1 Freq Delta _____
(Less than 8 x 10 to the minus 8)

GMT _____

38-5 CISL CDR 145

PANEL O6

MASTER TIMING UNIT SW - OSC 2

38-6 CISL

CRT (SAQ04/VWQ11)
VERIFY

MASTER TIMING UNIT
SEL SW SCAN - 2

38-7 CISL JRPS 145

Change the MTU Test Set to monitor OSC 2 for Orbiter under test (OV-_____).

Record changes in the "MTU Test Set Change Log."

38-8 CISL JISE 145

Perform MTU OSC 2 Freq Delta Read.

Record:

OSC 2 Freq Delta $\frac{\quad}{\text{(Less than } 8 \times 10 \text{ to the minus } 8)}$

GMT _____

38-9 CISL JISE 145

Compute the difference between OSC 1 and OSC 2:

$$\frac{\quad}{\text{(OSC 1)}} - \frac{\quad}{\text{(OSC 2)}} = \frac{\quad}{\text{(Delta Freq)}}$$

Verify that the absolute value of the delta frequency is less than 7 x 10 to the minus 9.

38-10 Noted requirements are complete.

OMRSD [V75AP0.030-1R](#)

38-11 CISL CDR 145

IF MTU OSCILLATOR NO. 1 IS DESIRED FOR LAUNCH PER
INS ENGINEERING (NOMINAL CONFIGURATION IS
OSCILLATOR NO. 2) ,

THEN PERFORM:
PANEL O6

MASTER TIMING UNIT SW - OSC 1

Not Performed: _____

38-12 CISL JRPS 145

IF MTU Oscillator No. 1 was selected in previous step,

THEN change the MTU Test Set to monitor OSC 1 for Orbiter under test (OV-_____).

Record changes in the "MTU Test Set Change Log."

Not Performed: _____

38-13 CISL CDR 145

PANEL O6

MASTER TIMING UNIT SW - AUTO

38-14 CISL

CRT (SAQ04/VWQ11)

VERIFY

MASTER TIMING UNIT

SEL SW SCAN - AUTO

BITE

OSC - _____ (1 OR 2)

38-15 CISL JRPS 145

If MTU test set required to support other Orbiters,

THEN change the MTU Test Set to SCAN mode.

Not Performed: _____

38-16 CISL

MTU Frequency Read is complete (callback step in OMI S0007.200).

***** End of MTU Frequency Read (T-34 Hours 30 Minutes) *****

MADS FDM/PCM Test (T-33 Hours 30 Minutes)

NOTE

Do not perform this option if performed per a previous run and Orbiter has remained powered.

MADS FDM/PCM Test (T-33 Hours 30 Minutes) Not Performed: _____

38-17 CISL JRPS 145

Perform OMI S0007.100, Operation 263 - RPS Setup for MADS FDM/PCM Test.

Report completion.

T: _____

38-18 CISL JRPS 145

Start ground recorders to record MADS realtime data.

38-19 CISL CDR 145

PANEL A6L

MADS

RECORDER

POWER SW - OFF

PB FWD SW - OFF

POWER MN B CB - CLOSE

WIDEBAND/ACIP PCM SW - ON

STRAIN GAGE SW - ON

PCM

CMD/ON SW - ON

RCDR MODE SW - CONTINUOUS

38-20 CISL CDR 145

PANEL C3

MADS MASTER POWER SW - ON

38-21 CISL

CRT (SAQ04/VWQ14)
VERIFY

STATUS

PCM BITE - GOOD
FDM 1 MUX 1 BITE - GOOD
FDM 1 MUX 2 BITE - GOOD
FDM 1 MUX 3 BITE - GOOD
FDM 1 MUX 4 BITE - GOOD
FDM 2 MUX 1 BITE - GOOD
FDM 2 MUX 2 BITE - GOOD
FDM 2 MUX 3 BITE - GOOD
FDM 2 MUX 4 BITE - GOOD
FDM 1 MODE - DATA
FDM 2 MODE - DATA

38-22 CISL JRPS 145

Start the MADS FDM and PCM display recorder(s).

**38-23 CISL JRPS 145
JISE**

Verify the following:

- Reception of all FDM Muxes.
- Reception and decom lock of MADS 64KB PCM.

NOTE

During the next four steps, monitor VWQ14 display closely to verify FDM mode changes.

38-24 CISL CDR 145

PANEL A6L

MADS

FDM

CONTROL SW - AUTO CALBR
(HOLD FOR 2 SEC - RELEASE)

38-25

CISL

CRT (SAQ04/VWQ14)

VERIFY

STATUS

FDM 1 MODE - DATA / CAL / DATA

FDM 2 MODE - DATA / CAL / DATA

(WAIT TEN SECONDS, THEN PROCEED)

38-26

CISL

CDR

145

PANEL A6L

MADS

FDM

CONTROL SW - AUTO CALBR

(HOLD FOR 2 SEC - RELEASE)

38-27

CISL

CRT (SAQ04/VWQ14)

VERIFY

STATUS

FDM 1 MODE - DATA / CAL / DATA

FDM 2 MODE - DATA / CAL / DATA

(WAIT TEN SECONDS, THEN PROCEED)

38-28

CISL

JISE

145

Verify that two auto cals were received on all FDM display recorder channels.

NOTE

Noted requirements are satisfied by the following series of steps.

OMRS V78GA0.010

- | | | | |
|--------------|--|----------------------------|-----------------|
| 38-29 | CISL | JISE | 145 |
| | Verify MADS PCM 1 time display for the presence of current GMT and updating. | | |
| 38-30 | CISL | JISE | 145 |
| | Verify FDM 1 MUX 1 (M1A) Channel 1 time display for the presence of current GMT and updating. | | |
| 38-31 | CISL | JRPS | 145 |
| | Patch FDM 2 MUX 1 (M2A) Channel 1 to time display. | | |
| | | | T: _____ |
| 38-32 | CISL | JISE | 145 |
| | Verify FDM 2 MUX 1 (M2A) Channel 1 time display for the presence of current GMT and updating. | | |
| 38-33 | Noted requirements are complete. | | |
| | OMRSD V78GA0.010 | | |
| 38-34 | CISL | JRPS
JISE | 145 |
| | Display each FDM MUX (8 total) on the FFT Display Recorder and annotate for each MUX. | | |
| | Report completion. | | |
| | | | T: _____ |

38-40

CISL

CRT (SAQ04/VWQ14)

VERIFY

STATUS

PCM BITE - FAIL

FDM 1 MUX 1 BITE - FAIL

FDM 1 MUX 2 BITE - FAIL

FDM 1 MUX 3 BITE - FAIL

FDM 1 MUX 4 BITE - FAIL

FDM 2 MUX 1 BITE - FAIL

FDM 2 MUX 2 BITE - FAIL

FDM 2 MUX 3 BITE - FAIL

FDM 2 MUX 4 BITE - FAIL

RECORDER

BITE - FAIL

MOTION - OFF

38-41

CISL

JRPS

145

Recording of MADS realtime data is no longer required.

Stop the MADS display recorder.

Record:

RPS Tape No. _____

38-42

CISL

MADS FDM/PCM Test is complete (callback step in OMI S0007.200).

***** End of MADS FDM/PCM Test (T-33 Hours 30 Minutes) *****

PCM to GSE Control

NOTE

Do not perform this option if PCMMU is already configured to GSE control.

PCM to GSE Control Not Performed: _____

NOTE

Steps involving Crit 1, 1R and/or 1S items are contained in the following operation.

NOTE

Nominal Launch configuration for OI PCMMU is 1. The following steps will configure the OI PCMMU to GSE control assuming this nominal configuration.

NOTE

Noted requirements are satisfied by the following series of steps.

OMRS V75AP0.010-1R

38-43

CISL

CRT (SAQ04/VWQ11)

VERIFY

OI DATA VALID (UP ARROW)

PCMMU

PCM1 - ON (RPC'S ACTIVE)

SW SCAN - 1

COMMAND - OFF

38-44

CISL

CURSOR CNTL (SAQ04/VWQ11)

PCM CONTROL

PCMMU 1 - ON

XMIT CURSOR KEY - PRESS

EXEC CMD KEY - PRESS

38-45

CISL

CRT (SAQ04/VWQ11)

VERIFY

PCMMU

COMMAND - ON

38-46

CISL

CDR

145

PANEL C3

OI PCMMU

POWER SW - OFF

FORMAT SW - GPC

38-47

CISL

CRT (SAQ04/VWQ11)

VERIFY

OI DATA VALID (UP ARROW)

PCMMU

PCM1 ON (RPC'S ACTIVE)

SW SCAN - OFF

COMMAND - ON

FORMAT

SW SCAN - GPC

BITE

1 POWER - GOOD

2 MTU - GOOD

38-48

Noted requirements are complete.

OMRSD [V75AP0.010-1R](#)

38-49

CISL

PCM to GSE Control is complete (callback step in OMI S0007.200).

***** End of PCM to GSE Control *****

SSR 1 and SSR 2 Configure for LCD

NOTE

Perform this option if required for this run.

SSR 1 and SSR 2 Configure for LCD Not Performed:_____

38-50

CISL

IF VWQ30 IS NOT ALREADY ACTIVE,

THEN PERFORM:

CONSOLE KYBD
ON CMD LINE ENTER - VWQ30
PERF PGM KEY - PRESS

VERIFY VWQ30 (SOLID STATE RECORDER COMMAND
SELECT) DISPLAY IS ACTIVE

Not Performed:_____

38-51

CISL

CURSOR CNTL (VWQ30 SSR COMMAND SELECT)
SELECT SSR
SSR 1
XMIT CURSOR KEY - PRESS

VERIFY SSR 1 INVERT GREEN

SELECT PATH
LDB
XMIT CURSOR KEY - PRESS

VERIFY LDB INVERT GREEN

SSR 1 Erase and CST

NOTE

Noted requirements are satisfied by the following series of steps.

OMRS V75AR0.120

38-52

CISL

CRT (VWQ30 SSR COMMAND SELECT)

VERIFY

SSR 1

POWER - ON
MODE - STBY
CBF - GOOD
NCBF - GOOD
CMD REJ - GOOD

NOTE

SSR Erase mode takes less than 15 seconds to complete.

38-53

CISL

CURSOR CNTL (VWQ30 SSR COMMAND SELECT)

RECORDER (LWR RH CORNER)

ERASE

XMIT CURSOR KEY - PRESS

EXEC CMD KEY - PRESS

38-54

CISL

CRT (VWQ30 SSR COMMAND SELECT)

VERIFY

SSR 1

MODE - ERASE
CBF - GOOD
NCBF - GOOD
CMD REJ - GOOD

38-55

CISL

CRT (VWQ30 SSR COMMAND SELECT)

VERIFY

SSR 1

POWER - ON
MODE - STBY
CBF - GOOD
NCBF - GOOD
SLOT CNT - 0
CMD REJ - GOOD
AUTOSTOP - INHIBIT
PAR PROT - UNPROT
POSITION - 162

NOTE

To clearly identify the messages on Page-A during the next three steps, it is best to clear Page-A prior to the next step, and then hardcopy the "Self Test" messages.

38-56

CISL

CURSOR CNTL (VWQ30 SSR COMMAND SELECT)

RECORDER (LWR RH CORNER)

CST

XMIT CURSOR KEY - PRESS
EXEC CMD KEY - PRESS

NOTE

CST mode will take approximately 2 minutes 33 seconds (153 seconds) to complete.

38-57 **CISL**

CRT (VWQ30 SSR COMMAND SELECT)

VERIFY

SSR 1
 MODE - SLF TEST

38-58 **CISL**

Verify the following SSR 1 messages on VWQ30 Page-A:

Test Description	Indication
MEM - IMAGE EPROM CHECK-SUM	GOOD
MEM - EDAC LOGIC	GOOD
MEM - BLOCK TRANSFER D64BLT	GOOD
MEM - REMAP CIRCUIT	GOOD
MEM - REGISTERS	GOOD
SPARE	GOOD
SBC - EPROM CHECK-SUM	GOOD
SBC - ECC LOGIC-LONG (1 KBYTES)	GOOD
SBC - SYSTEM DRAM MEMORY DATA/ADDRESS	GOOD
SBC - USER TIMERS AND COMBINED TIMERS	GOOD
SBC - TUNDRA VME INTERFACES	GOOD
SSR I/O - INTERRUPT	GOOD
SSR I/O - SRAM_D64BLT AND I/O_D64BLT	GOOD
SSR I/O - VME_INTERFACE REGISTERS	GOOD
SSR I/O - ADDRESS REGISTERS	GOOD
SSR I/O - MDM COMMAND, CMD FIFO & OUTPUT	GOOD
SSR I/O - B CHANNEL LOOP AND AB_SRAM	GOOD
SSR I/O - A2 CHANNEL LOOP AND AB_SRAM	GOOD
SSR I/O - A1 CHANNEL LOOP AND AB_SRAM	GOOD
SSR I/O - E3 CHANNEL LOOP AND E3_SRAM	GOOD
SSR I/O - E2 CHANNEL LOOP AND E2_SRAM	GOOD
SSR I/O - E1 CHANNEL LOOP AND E1_SRAM	GOOD

38-59

CISL

CRT (VWQ30 SSR COMMAND SELECT)

VERIFY

SSR 1

POWER - ON

MODE - STBY

CBF - GOOD

NCBF - GOOD

SLOT CNT - 0

CMD REJ - GOOD

AUTOSTOP - INHIBIT

PAR PROT - UNPROT

POSITION - 162

***** End of SSR 1 Erase and CST *****

SSR 2 Erase and CST

38-60

CISL

CURSOR CNTL (VWQ30 SSR COMMAND SELECT)

SELECT SSR

SSR 2

XMIT CURSOR KEY - PRESS

VERIFY SSR 2 INVERT GREEN

SELECT PATH

LDB

XMIT CURSOR KEY - PRESS

VERIFY LDB INVERT GREEN

38-61

CISL

CRT (VWQ30 SSR COMMAND SELECT)

VERIFY

SSR 2

POWER - ON
MODE - STBY
CBF - GOOD
NCBF - GOOD
CMD REJ - GOOD

38-62

CISL

CURSOR CNTL (VWQ30 SSR COMMAND SELECT)

RECORDER (LWR RH CORNER)

ERASE

XMIT CURSOR KEY - PRESS

EXEC CMD KEY - PRESS

NOTE

SSR Erase mode takes less than 15 seconds to complete.

38-63

CISL

CRT (VWQ30 SSR COMMAND SELECT)

VERIFY

SSR 2

MODE - ERASE
CBF - GOOD
NCBF - GOOD
CMD REJ - GOOD

38-64

CISL

CRT (VWQ30 SSR COMMAND SELECT)

VERIFY

SSR 2

POWER - ON
MODE - STBY
CBF - GOOD
NCBF - GOOD
SLOT CNT - 0
CMD REJ - GOOD
AUTOSTOP - INHIBIT
PAR PROT - UNPROT
POSITION - 162

NOTE

To clearly identify the messages on Page-A during the next three steps, it is best to clear Page-A prior to the next step, and then hardcopy the "Self Test" messages.

38-65

CISL

CURSOR CNTL (VWQ30 SSR COMMAND SELECT)

RECORDER (LWR RH CORNER)

CST

XMIT CURSOR KEY - PRESS

EXEC CMD KEY - PRESS

NOTE

CST mode will take approximately 2 minutes 33 seconds (153 seconds) to complete.

38-66

CISL

CRT (VWQ30 SSR COMMAND SELECT)

VERIFY

SSR 2

MODE - SLF TEST

38-67

CISL

Verify the following SSR 2 messages on VWQ30 Page-A:

Test Description	Indication
MEM - IMAGE EPROM CHECK-SUM	GOOD
MEM - EDAC LOGIC	GOOD
MEM - BLOCK TRANSFER D64BLT	GOOD
MEM - REMAP CIRCUIT	GOOD
MEM - REGISTERS	GOOD
SPARE	GOOD
SBC - EPROM CHECK-SUM	GOOD
SBC - ECC LOGIC-LONG (1 KBYTES)	GOOD
SBC - SYSTEM DRAM MEMORY DATA/ADDRESS	GOOD
SBC - USER TIMERS AND COMBINED TIMERS	GOOD
SBC - TUNDRA VME INTERFACES	GOOD
SSR I/O - INTERRUPT	GOOD
SSR I/O - SRAM_D64BLT AND I/O_D64BLT	GOOD
SSR I/O - VME_INTERFACE REGISTERS	GOOD
SSR I/O - ADDRESS REGISTERS	GOOD
SSR I/O - MDM COMMAND, CMD FIFO & OUTPUT	GOOD
SSR I/O - B CHANNEL LOOP AND AB_SRAM	GOOD
SSR I/O - A2 CHANNEL LOOP AND AB_SRAM	GOOD
SSR I/O - A1 CHANNEL LOOP AND AB_SRAM	GOOD
SSR I/O - E3 CHANNEL LOOP AND E3_SRAM	GOOD
SSR I/O - E2 CHANNEL LOOP AND E2_SRAM	GOOD
SSR I/O - E1 CHANNEL LOOP AND E1_SRAM	GOOD

38-68

CISL

CRT (VWQ30 SSR COMMAND SELECT)

VERIFY

SSR 2

POWER - ON
MODE - STBY
CBF - GOOD
NCBF - GOOD
SLOT CNT - 0
CMD REJ - GOOD
AUTOSTOP - INHIBIT
PAR PROT - UNPROT
POSITION - 162

***** End of SSR 2 Erase and CST *****

38-69

Noted requirements are complete.

OMRSD [V75AR0.120](#)

38-70

CISL

SSR 1 and SSR 2 Configure for LCD is complete (callback step in OMI S0007.200).

***** End of SSR 1 and SSR 2 Configure for LCD *****

MADS Configure for LCD

NOTE
Perform this option if required for this run.

MADS Configure for LCD Not Performed:_____

NOTE
The next step will apply MEC 2 power on OV-103 in order to enable MADS Recorder tracks 5 (M1D), 9 (M1B), spare tracks 3, 11, and 13.

38-71 CISL CEPD 145

IF Orbiter is OV-103,

THEN PERFORM:

CURSOR CNTL (VWC14)

MEC ET CMDS

MEC 2 ET DFI PWR - ON

XMIT CURSOR KEY - PRESS

Not Performed:_____

38-72 CISL JRPS 145

Start ground recorder(s) for MADS realtime data.

38-73 CISL CDR 145

PANEL A6L

MADS

POWER MN B CB - CLOSE

RECORDER POWER SW - OFF

WIDEBAND/ACIP PCM SW - CMD

PCM

CMD/ON SW - CMD

RCD MODE SW - CONTINUOUS

38-74 CISL CDR 145

PANEL C3

MADS MASTER POWER SW - ON

38-75 CISL JRPS 145

Start MADS FDM display recorder (ref OMI S0007.100, Operation 263 - RPS Setup for MADS FDM/PCM Test).

38-76 CISL

IF SELECT PATH - LDB is not invert green on the VWQ14 display,

THEN Perform the following:

CURSOR CNTL (SAQ04/VWQ14)
SELECT PATH
LDB
XMIT CURSOR KEY - PRESS

Not Performed:_____

38-77 CISL

CURSOR CNTL (SAQ04/VWQ14)
MADS
WB/ACIP - ON
XMIT CURSOR KEY - PRESS
EXEC CMD KEY - PRESS

PCM PWR - ON
XMIT CURSOR KEY - PRESS
EXEC CMD KEY - PRESS

38-78

CISL

CRT (SAQ04/VWQ14)

VERIFY

STATUS

PCM BITE - GOOD

FDM 1 MUX 1 BITE - GOOD

FDM 1 MUX 2 BITE - GOOD

FDM 1 MUX 3 BITE - GOOD

FDM 1 MUX 4 BITE - GOOD

FDM 2 MUX 1 BITE - GOOD

FDM 2 MUX 2 BITE - GOOD

FDM 2 MUX 3 BITE - GOOD

FDM 2 MUX 4 BITE - GOOD

FDM 1 MODE - DATA

FDM 2 MODE - DATA

38-79

CISL

JRPS

145

JISE

Verify reception of FDM 1 and 2 Muxes A-D.

38-80

CISL

CURSOR CNTL (SAQ04/VWQ14)

MADS

PCM PWR - OFF

XMIT CURSOR KEY - PRESS

EXEC CMD KEY - PRESS

WB/ACIP - OFF

XMIT CURSOR KEY - PRESS

EXEC CMD KEY - PRESS

NOTE

The following steps are to be run without delay in order to minimize MADS recorder run time.

38-81 CISL CDR 145

PANEL A6L

MADS
RECORDER
POWER SW - ON

38-82 CISL

CURSOR CNTL (SAQ04/VWQ14)
MADS
WB/ACIP - ON
XMIT CURSOR KEY - PRESS
EXEC CMD KEY - PRESS

PCM PWR - ON
XMIT CURSOR KEY - PRESS
EXEC CMD KEY - PRESS

38-83

CISL

CRT (SAQ04/VWQ14)

VERIFY

STATUS

PCM BITE - GOOD
FDM 1 MUX 1 BITE - GOOD
FDM 1 MUX 2 BITE - GOOD
FDM 1 MUX 3 BITE - GOOD
FDM 1 MUX 4 BITE - GOOD
FDM 2 MUX 1 BITE - GOOD
FDM 2 MUX 2 BITE - GOOD
FDM 2 MUX 3 BITE - GOOD
FDM 2 MUX 4 BITE - GOOD
FDM 1 MODE - DATA
FDM 2 MODE - DATA

RECORDER

BITE - GOOD
MOTION - ON
MODE - RECD
PASS - 1

NOTE

Noted requirements are satisfied by the following series of steps.

OMRS V78GA0.020

38-84

CISL

CDR

145

PANEL A6L

MADS

FDM

CONTROL SW - MAN CALBR
MAN CALBR SW - 0

38-85

CISL

CRT (SAQ04/VWQ14)

VERIFY

STATUS

FDM 1 MODE - CAL
FDM 2 MODE - CAL
(WAIT 10 SECONDS THEN PROCEED)

38-86 CISL CDR 145

PANEL A6L

MADS
FDM
MAN CALBR SW - 25
(WAIT 5 SECONDS THEN PROCEED)

38-87 CISL CDR 145

PANEL A6L

MADS
FDM
MAN CALBR SW - 50
(WAIT 5 SECONDS THEN PROCEED)

38-88 CISL CDR 145

PANEL A6L

MADS
FDM
MAN CALBR SW - 75
(WAIT 5 SECONDS THEN PROCEED)

38-89 CISL CDR 145

PANEL A6L

MADS
FDM
MAN CALBR SW - 100
(WAIT 10 SECONDS THEN PROCEED)

38-90 CISL CDR 145

PANEL A6L

MADS
FDM
MAN CALBR SW - AC
(WAIT 10 SECONDS THEN PROCEED)

38-91 CISL MS1 145

PANEL A6L

MADS
 FDM
 CONTROL SW - DATA

38-92 **CISL**

CURSOR CNTL (SAQ04/VWQ14)
MADS
 PCM PWR - OFF
XMIT CURSOR KEY - PRESS
EXEC CMD KEY - PRESS

 WB/ACIP - OFF
XMIT CURSOR KEY - PRESS
EXEC CMD KEY - PRESS

38-93 **CISL**

CRT (SAQ04/VWQ14)
VERIFY

STATUS
 PCM BITE - FAIL
 FDM 1 MUX 1 BITE - FAIL
 FDM 1 MUX 2 BITE - FAIL
 FDM 1 MUX 3 BITE - FAIL
 FDM 1 MUX 4 BITE - FAIL
 FDM 2 MUX 1 BITE - FAIL
 FDM 2 MUX 2 BITE - FAIL
 FDM 2 MUX 3 BITE - FAIL
 FDM 2 MUX 4 BITE - FAIL

RECORDER
 BITE - GOOD
 % TAPE - _____
 MOTION - OFF

38-94 CISL JRPS 145

Stop the MADS FDM display recorder.

38-95 CISL JISE 145

Verify manual cals received on MADS FDM display recorder channels.

38-96 Noted requirements are complete.

OMRSD [V78GA0.020](#)

38-97 CISL CEPD 145

IF Orbiter is OV-103,

THEN PERFORM:

CURSOR CNTL (VWC14)

MEC ET CMDS

MEC 2 ET DFI PWR - OFF

XMIT CURSOR KEY - PRESS

Not Performed: _____

38-98 CISL CDR 145

PANEL A6L

MADS

STRAIN GAGE SW - PCM ENA
WIDEBAND/ACIP PCM SW - CMD

PCM

CMD/ON SW - CMD
RCD MODE SW - SAMPLE

FDM

CONTROL SW - DATA
MANUAL CAL SW - DC 0
ACIP HTR SW - OFF

RECORDER

POWER SW - OFF
PB FWD SW - CMD
POWER MN B CB - CLOSE

38-99 CISL CDR

PANEL C3

MASTER MADS POWER SW - ON

38-100

CISL

CRT (SAQ04/VWQ14)

VERIFY

STATUS

PCM BITE - FAIL

FDM 1 MUX 1 BITE - FAIL

FDM 1 MUX 2 BITE - FAIL

FDM 1 MUX 3 BITE - FAIL

FDM 1 MUX 4 BITE - FAIL

FDM 2 MUX 1 BITE - FAIL

FDM 2 MUX 2 BITE - FAIL

FDM 2 MUX 3 BITE - FAIL

FDM 2 MUX 4 BITE - FAIL

RECORDER

BITE - FAIL

MOTION - OFF

38-101

CISL

JRPS

145

Recording of MADS realtime data is no longer required.

Record:

RPS Tape No. _____

38-102

CISL

MADS Configure for LCD is complete (callback step in OMI S0007.200).

***** End of MADS Configure for LCD *****

LH₂ ET Ullage Transducer Checkout

38-105

CISL

PFP (SAQ04/TWO52)
ULLAGE PRESS AND TEMP - PRESS

CRT (SAQ04/TWO52)
VERIFY

MPS PWR (OI)
BUS B ON
BUS C ON

38-106

CMPS

IF SAE12 IS NOT ACTIVE,

THEN PERFORM:

CONSOLE KYBD
SAE12
PERF PGM KEY - PRESS

Not Performed: _____

38-107

CMPL

IF SAE02 IS NOT ACTIVE,

THEN PERFORM:

CONSOLE KYBD
SAE02
PERF PGM KEY - PRESS

Not Performed: _____

NOTE

Steps involving Crit 1, 1R and/or 1S items are contained in the following operation.

NOTE

Noted requirements are satisfied by the following series of steps.

OMRS S00FA0.140-B-1

38-108

CISL

CRT (SAQ04/TWO52)

RECORD INDICATIONS OF ALL THREE LH₂ ULLAGE PRESSURES:

LH₂ ULLAGE PRESS NO. 1 (T41P1700C) _____ PSIA

LH₂ ULLAGE PRESS NO. 2 (T41P1701C) _____ PSIA

LH₂ ULLAGE PRESS NO. 3 (T41P1702C) _____ PSIA

VERIFY ALL LH₂ ULLAGE PRESSURE INDICATIONS ARE BETWEEN 16.4 AND 24.4 PSIA AND DO NOT EXCEED A SPREAD OF 1.2 PSI.

38-109

CMPS

CURSOR CNTL (SAE12)

ULL PRESS XDUCER 1 - ON

CRT (SAE12)

VERIFY XDUCER 1 CHANGES TO RED 4

38-110

CISL

CRT (SAQ04/TWO52)

RECORD INDICATIONS OF ALL THREE LH₂ ULLAGE PRESSURES:

LH₂ ULLAGE PRESS NO. 1 (T41P1700C) _____ PSIA

LH₂ ULLAGE PRESS NO. 2 (T41P1701C) _____ PSIA

LH₂ ULLAGE PRESS NO. 3 (T41P1702C) _____ PSIA

VERIFY ALL LH₂ ULLAGE PRESSURE INDICATIONS ARE BETWEEN 16.4 AND 24.4 PSIA AND DO NOT EXCEED A SPREAD OF 1.2 PSI.

38-111

CMPS

CURSOR CNTL (SAE12)

ULL PRESS XDUCER 4 - ON

CRT (SAE12)

VERIFY RED 4 CHANGES TO 1

38-112

CMPS

CURSOR CNTL (SAE12)

ULL PRESS XDUCER 2 - ON

CRT

VERIFY XDUCER 2 CHANGES TO RED 4

38-113

CISL

RECORD CRT INDICATIONS OF ALL THREE LH₂ ULLAGE PRESSURES:

LH₂ ULLAGE PRESS NO. 1 (T41P1700C) _____ PSIA

LH₂ ULLAGE PRESS NO. 2 (T41P1701C) _____ PSIA

LH₂ ULLAGE PRESS NO. 3 (T41P1702C) _____ PSIA

VERIFY ALL LH₂ ULLAGE PRESSURE INDICATIONS ARE BETWEEN 16.4 AND 24.4 PSIA AND DO NOT EXCEED A SPREAD OF 1.2 PSI.

38-114

CMPS

CURSOR CNTL (SAE12)
ULL PRESS XDUCER 4 - ON

CRT (SAE12)
VERIFY RED 4 CHANGES TO 2

38-115

CMPS

CURSOR CNTL (SAE12)
ULL PRESS XDUCER 3 - ON

CRT
VERIFY XDUCER 3 CHANGES TO RED 4

38-116

CISL

CRT (SAQ04/TWO52)

RECORD INDICATIONS OF ALL THREE LH₂ ULLAGE PRESSURES:

LH₂ ULLAGE PRESS NO. 1 (T41P1700C) _____ PSIA

LH₂ ULLAGE PRESS NO. 2 (T41P1701C) _____ PSIA

LH₂ ULLAGE PRESS NO. 3 (T41P1702C) _____ PSIA

VERIFY ALL LH₂ ULLAGE PRESSURE INDICATIONS ARE BETWEEN 16.4 AND 24.4 PSIA AND DO NOT EXCEED A SPREAD OF 1.2 PSI.

38-117

CMPS

CURSOR CNTL (SAE12)

ULL PRESS XDUCER 4 - ON

CRT (SAE12)

VERIFY RED 4 CHANGES TO 3

38-118

Noted requirements are complete.

OMRSD [S00FA0.140-B-1](#)

***** End of LH₂ ET Ullage Transducer Checkout *****

LO₂ ET Ullage Transducer Checkout

38-119

CISL

CRT (SAQ04/TWO52)

RECORD INDICATIONS OF ALL THREE LO₂ ULLAGE PRESSURES:

LO₂ ULLAGE PRESS NO. 1 (T41P1750C) _____ PSIG

LO₂ ULLAGE PRESS NO. 2 (T41P1751C) _____ PSIG

LO₂ ULLAGE PRESS NO. 3 (T41P1752C) _____ PSIG

VERIFY ALL LO₂ ULLAGE PRESSURE INDICATIONS ARE BETWEEN 1.7 AND 9.7 PSIG AND DO NOT EXCEED A SPREAD OF 0.9 PSI.

OMRSD [S00FA0.140-A-1](#)

***** End of LO₂ ET Ullage Transducer Checkout *****

38-120

CISL

ET OI Instrumentation Checks are complete (callback step in OMI S0007.200).

***** End of ET OI Instrumentation Checks *****

SRM Case Temp EMON Activation

38-121

CISL

CRT (SAQ04/SAQ01A INST OVERVIEW DISPLAY)
RECORD

SRB EMON - _____ (ACTIVE OR BYPASS)

38-122

CISL

IF SRB EMON (SAQ01A) WAS NOT RECORDED AS ACTIVE
IN THE PREVIOUS STEP,

THEN PERFORM:

CURSOR CNTL (SWQ03 INST BYPASS MGMT)

EMON SRB

XMIT CURSOR KEY - PRESS

Not Performed: _____

38-123

CISL

CRT (SAQ04/SAQ01A INST OVERVIEW DISPLAY)
VERIFY

SRB EMON - ACTIVE

38-124

CISL

SRM Case Temp EMON Activation is complete (callback step in
OMI S0007.200).

***** End of SRM Case Temp EMON Activation *****

Sep Camera Heater Activation

NOTE

Noted requirements are satisfied by the following series of steps.

OMRS S00FA0.650

38-125

CISL

```
CONSOLE KYBD
  CBTU BT4 V56K0010XL 1
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS
```

RECORD HEX RETURN PATTERN

V56K0010XL = _____

RECORD HEX PATTERN CONVERTED TO BINARY
= XXXX XXX_ XXXX XXXX (X = DON'T CARE)
(0 = OFF / 1 = ON)

38-126

CISL

IF BINARY PATTERN IN THE PREVIOUS STEP INDICATES
SEP CAMERA HEATER IS OFF,

THEN PERFORM THE FOLLOWING COMMAND TO ACTIVATE
HEATER:

```
CONSOLE KYBD
  SET V56K0010XL ON
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS
```

Not Performed: _____

38-127

CISL

IF SEP CAMERA HEATER COMMAND WAS PERFORMED IN THE PREVIOUS STEP,

THEN PERFORM:

CONSOLE KYBD
 CBTU BT4 V56K0010XL 1
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

CRT

RECORD HEX RETURN PATTERN

V56K0010XL = _____

VERIFY HEX PATTERN COVERTED TO BINARY
= XXXX XXX1 XXXX XXXX (X = DON'T CARE)

Not Performed:_____

38-128

Noted requirements are complete.

OMRSD [S00FA0.650](#)

38-129

CISL

Sep Camera Heater Activation is complete (callback step in OMI S0007.200).

***** End of Sep Camera Heater Activation *****

SRM Chamber Pressure Verification

NOTE

Perform this option if required for this run.

SRM Chamber Pressure Verification Not Performed: _____

NOTE

Steps involving Crit 1, 1R and/or 1S items are contained in the following operation.

NOTE

SRB Buses A, B, and C must be powered up at least 30 minutes prior to performing SRM Chamber Pressure Verification.

NOTE

Noted requirements are satisfied by the following series of steps.

OMRS S00FF0.161-1R (VSQ11)

OMRS S00FF0.180-1R (VSQ11)

NOTE

The next two steps must be performed in a concurrency other than 1.

38-130

CISL

CURSOR CNTL (SWQ02/SDQ02 INST MENU)
SRB DATA DISPLAY (BWQ01)
XMIT CURSOR KEY - PRESS

38-131

CISL

CURSOR CNTL (BWQ01) SRB DATA DISPLAY
SRB CHAMBER CHECKOUT OPTIONS
VSQ11 (INTEGRATED CHECKOUT)
XMIT CURSOR KEY - PRESS

38-132

CISL

IF VSQ11 (INTEGRATED CHECKOUT) DISPLAYS
THE FOLLOWING MESSAGE:

Verify

"TEST REQUIREMENTS FOR THIS TEST HAVE
BEEN MET"

THEN PERFORM:

CURSOR CNTL (VSQ11 INTEGRATED CHECKOUT)
CONTINUE
XMIT CURSOR KEY - PRESS

ELSE:

1. **RECORD** THE NOTED EXCEPTION(S) AND
REASON FOR "OK TO CONTINUE":

2. PERFORM:

CURSOR CNTL (VSQ11 INTEGRATED CHECKOUT)
CONTINUE
XMIT CURSOR KEY - PRESS

38-133

CISL

Verify VSQ11 Integrated Checkout program performs the following:

1. VDQ11 SRB INTEGRATED CHECKOUT is displayed.
2. 75% CAL CHECK is activated with GMT, AMB PRESS, and AMB TEMP displayed
3. 75% CAL CHECK sequence displays the following for each measurement (B47P1300C through B47P2302C):
 - 75% Cal Pressure of 729 to 799 psi for ON indication.
 - Ambient Pressure of -7.0 psi to 33.0 psi for OFF indication.
4. SRB PRESS MDM READ completes and displays the following:
 - GMT, AMB PRESS, and AMB TEMP.
 - R1 through R10 values for each measurement (B47P1300C through B47P2302C).
 - AVG values for each measurement (B47P1300C through B47P2302C).
 - CAL BIAS ASSUMED values for each measurement (B47P1300C through B47P2302C).
5. GPC READ completes and displays the following:
 - BIAS values for each measurement (B47P1300C through B47P2302C).
 - SLOPE values for each measurement (B47P1300C through B47P2302C).

NOTE

During substep six, the message “VALUES NOT STANDARD” may appear at the bottom left corner of the VDQ11 display if VSQ11 did not require an update on this run and one of the GPC READ BIAS values are other than -10.000. This commonly occurs when a GPC UPDATE was performed during a previous run and when the bias values presently loaded in the GPC are the same that would be loaded by VSQ11. If the bias values are different and both “VALUES NOT STANDARD” and “GPC UPDATE REQUIRED” messages are displayed, another load will be necessary, see substep eight.

6. **IF** VSQ11 Integrated Checkout completes with no GPC BIAS UPDATE required,

THEN verify CHECKOUT COMPLETE - NO ERRORS.

Not Performed: _____
SS6

7. **IF** VSQ11 determines that a GPS BIAS UPDATE is required,

THEN verify GPC BIAS UPDATE proceeds and the second GPC READ displays the following:

- New GPC BIAS UPDATE values.
- CHECKOUT COMPLETE - TEST COMPLETED.

Record GPC BIAS UPDATE values:

B47P1300C _____ B47P2300C _____

B47P1301C _____ B47P2301C _____

B47P1302C _____ B47P2302C _____

Not Performed: _____
SS7

NOTE

Perform substep eight if the message "VALUES NOT STANDARD" appeared at the bottom left corner of the VDQ11 display and VDQ11 has determined that another "GPC UPDATE REQUIRED".

8. IF VSQ11 determines that a "GPC BIAS UPDATE" is required because "VALUES NOT STANDARD",

THEN:

CURSOR CNTL (VSQ11 SRB INTEGRATED CHECKOUT)
CONTINUE
XMIT CURSOR KEY - PRESS

Verify

- New GPC BIAS UPDATE values displayed.
- CHECKOUT COMPLETE - TEST COMPLETED

Record GPC BIAS UPADATE values:

B47P1300C _____	B47P2300C _____
B47P1301C _____	B47P2301C _____
B47P1302C _____	B47P2302C _____

Not Performed: _____
SS8

38-134

CISL

CURSOR CNTL (VSQ11 INTEGRATED CHECKOUT)
BWQ01
XMIT CURSOR KEY - PRESS

CURSOR CNTL (BWQ01 SRB DISPLAY)
MENU
XMIT CURSOR KEY - PRESS

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OMI S0007.400 A23
APPROVED

38-135 Noted requirements are complete.

OMRSD [S00FF0.161-1R \(VSQ11\)](#)

OMRSD [S00FF0.180-1R \(VSQ11\)](#)

38-136 CISL TBC 136

SRM Chamber Pressure Verification is complete (callback step in OMI S0007.200).

***** End of SRM Chamber Pressure Verification *****

L-15 Minutes Recorder Activation

NOTE

Do not perform this option if Scrub is declared prior to activation.

L-15 Minutes Recorder Activation Not Performed: _____

MADS Recorder Activation (L-15 Minutes)

NOTE

Do not perform this option if Scrub is declared prior to activation.

MADS Recorder Activation (L-15 Minutes) Not Performed: _____

38-137 CISL JRPS 145

Start ground recorder(s) for MADS realtime data.

Start MADS PCM and FDM display recorder(s).

38-138 JRPS CISL 145

Ground recorder activation for MADS realtime data complete.

MADS PCM and FDM display recorder activation complete.

38-139 CISL *FLT 145

Proceed with MADS Activation.

38-140

*FLT

Perform the following:

1. **Verify** MADS shelf temperature is less than 90 degrees prior to activation.
2. DSM 4618 (MADS RCDR PWR ON)
3. DSM 4601 (MADS WB/ACIP PCM ON)
4. DSM 4603 (MADS PCM ON (wait 10 seconds))
5. DSM 4607 (MADS CALB ON (wait 10 seconds))
6. DSM 4608 (MADS CALB OFF)

38-141

CISL

CRT (SAQ04/VWQ14)

VERIFY

STATUS

PCM BITE - GOOD

FDM 1 MUX 1 BITE - GOOD

FDM 1 MUX 2 BITE - GOOD

FDM 1 MUX 3 BITE - GOOD

FDM 1 MUX 4 BITE - GOOD

FDM 2 MUX 1 BITE - GOOD

FDM 2 MUX 2 BITE - GOOD

FDM 2 MUX 3 BITE - GOOD

FDM 2 MUX 4 BITE - GOOD

FDM 1 MODE - DATA / CAL / DATA

FDM 2 MODE - DATA / CAL / DATA

SHELF TEMP NMT 90 DEG F

RECORDER

BITE - GOOD

MODE - RECD

PASS - 1

PCT TAPE - INCREASING

MOTION - ON

***** End of MADS Recorder Activation (L-15 Minutes) *****

Solid State Recorder Activation (L-15 Minutes)

NOTE

During recorder activation, *FLT will call out all DSMs as they are performed.

38-142 CISL *FLT 145

Proceed with Solid State Recorder (SSR) Activation.

38-143 *FLT

DSM 9202 SSR 1 RCDP

38-144 CISL

CRT (SAQ01A/SDQ01A INST OVERVIEW DISPLAY)

VERIFY

SSR 1

MODE - RCDP

CBF - GOOD

NCBF - GOOD

SLOT CNT - 0

CMD REJ - GOOD

AUTO STOP - INHIBIT

PAR PROT - PROT

POSITION - 162 (INCREASING)

38-145 *FLT

DSM 9302 SSR 2 RCDP

38-146

CISL

CRT (SAQ01A/SDQ01A INST OVERVIEW DISPLAY)

VERIFY

SSR 2

MODE - RCDP

CBF - GOOD

NCBF - GOOD

SLOT CNT - 0

CMD REJ - GOOD

AUTO STOP - INHIBIT

PAR PROT - PROT

POSITION - 162 (INCREASING)

38-147

CISL

Solid State Recorder Activation is complete (callback "Record Activation Complete" step in OMI S0007.200).

***** End of Solid State Recorder Activation (L-15 Minutes) *****

NOTE

Notify NTD of any MADS recorder anomalies prior to T-5M only.

38-148

*FLT

CISL

145

Recorders are activated with no problems observed.

***** End of L-15 Minutes Recorder Activation *****

SSR and MADS Deactivation for Hold Option No. 1

NOTE

Do not perform this option if Scrub occurs prior to L-15M Recorder Activation or Countdown proceeds past T-5M Hold point.

SSR and MADS Deactivation for Hold Option No. 1 Not Performed: _____

SSR Deactivation

NOTE

Perform SSR Deactivation if Solid State Recorders were activated prior to hold option.

SSR Deactivation Not Performed: _____

NOTE

Noted requirements are satisfied by the following series of steps.

OMRS S00E00.976

38-149

*FLT

Perform the following:

XMIT DSM 9252 (SSR 1 HALT)

XMIT DSM 9352 (SSR 2 HALT)

38-150

CISL

CRT (SAQ01A/SDQ01A INST OVERVIEW DISPLAY)

VERIFY

SSR 1

MODE - STBY

CBF - GOOD

NCBF - GOOD

CMD REJ - GOOD

POSITION - _____

SSR 2

MODE - STBY

CBF - GOOD

NCBF - GOOD

CMD REJ - GOOD

POSITION - _____

38-151

Noted requirements are complete.

OMRSD [S00E00.976](#) SSR Termination

***** End of SSR Deactivation *****

MADS Deactivation

NOTE

Perform MADS Deactivation if MADS system was activated prior to hold option.

MADS Deactivation Not Performed: _____

NOTE

Noted requirements are satisfied by the following series of steps.

OMRS S00E00.811

38-152

***FLT**

Perform the following:

DSM 4618 (MADS RCDR PWR ON)

DSM 4600 (MADS SYSTEM OFF)

DSM 4619 (MADS RCDR PWR OFF)

38-153

CISL

CRT (SAQ04/VWQ14)

VERIFY

RECORDER

BITE - FAIL

STATUS

PCM BITE - FAIL

FDM 1 MUX 1 BITE - FAIL

FDM 1 MUX 2 BITE - FAIL

FDM 1 MUX 3 BITE - FAIL

FDM 1 MUX 4 BITE - FAIL

FDM 2 MUX 1 BITE - FAIL

FDM 2 MUX 2 BITE - FAIL

FDM 2 MUX 3 BITE - FAIL

FDM 2 MUX 4 BITE - FAIL

38-154 Noted requirements are complete.

OMRSD [S00E00.811](#) MADS Deactivation

***** End of MADS Deactivation *****

38-155

CISL

SSR and MADS Deactivation for Hold Option No. 1 is complete
(Callback step in OMI S0007.200).

***** End of SSR and MADS Deactivation for Hold Option No. 1 *****

SSR and MADS Activation for Hold Option No. 1

NOTE

Perform this option if “SSR and MADS Deactivation for Hold Option No. 1” was performed and the Countdown will proceed past T-5M Hold point.

SSR and MADS Activation for Hold Option No. 1 Not Performed: _____

38-156

***FLT**

Perform the following:

1. **Verify** MADS shelf temperature is less than 90 degrees prior to activation.
2. DSM 4618 (MADS RCDR PWR ON)
3. DSM 4601 (MADS WB/ACIP PCM ON)
4. DSM 4603 (MADS PCM ON (wait 10 seconds))
5. DSM 4607 (MADS CALB ON (wait 10 seconds))
6. DSM 4608 (MADS CALB OFF)

38-157

CISL

CRT (SAQ04/VWQ14)

VERIFY

STATUS

PCM BITE - GOOD

FDM 1 MUX 1 BITE - GOOD

FDM 1 MUX 2 BITE - GOOD

FDM 1 MUX 3 BITE - GOOD

FDM 1 MUX 4 BITE - GOOD

FDM 2 MUX 1 BITE - GOOD

FDM 2 MUX 2 BITE - GOOD

FDM 2 MUX 3 BITE - GOOD

FDM 2 MUX 4 BITE - GOOD

FDM 1 MODE - DATA / CAL / DATA

FDM 2 MODE - DATA / CAL / DATA

SHELF TEMP NMT 90 DEG F

RECORDER

BITE - GOOD

MODE - RECD

PASS - 1

PCT TAPE - INCREASING

MOTION - ON

38-158

*FLT

DSM 9202 SSR 1 RCDP

38-159

CISL

CRT (SAQ01A/SDQ01A INST OVERVIEW DISPLAY)

VERIFY

SSR 1

MODE - RCDP

CBF - GOOD

NCBF - GOOD

SLOT CNT - 0

CMD REJ - GOOD

AUTO STOP - INHIBIT

PAR PROT - PROT

POSITION - 162 (INCREASING)

38-160

*FLT

DSM 9302 SSR 2 RCDP

38-161

CISL

CRT (SAQ01A/SDQ01A INST OVERVIEW DISPLAY)

VERIFY

SSR 2

MODE - RCDP

CBF - GOOD

NCBF - GOOD

SLOT CNT - 0

CMD REJ - GOOD

AUTO STOP - INHIBIT

PAR PROT - PROT

POSITION - 162 (INCREASING)

38-162

CISL

OI and MADS Recorder Activation for Hold Option No. 1 is complete
(callback step in OMI S0007.200).

***** End of SSR and MADS Activation for Hold Option No. 1 *****

Sep Camera Heater Deactivation

NOTE

Perform this option if required for initial safing during a launch scrub or for INS System Securing.

Sep Camera Heater Deactivation Not Performed: _____

38-163

CISL

CONSOLE KEYBOARD
SET V56K0010XL OFF
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

CBTU BT4 V56K0010XL 1
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

RECORD HEX RETURN PATTERN V56K0010XL: _____
VERIFY HEX PATTERN CONVERTED TO
BINARY = XXXX XXX0 XXXX XXXX (X = DON'T CARE)

***** End of Sep Camera Heater Deactivation *****

Scrub Turnaround SSR 1 Data Playback

NOTE

Perform this option if SSR 1 data playback is required by JSC INCO or CISL (ref. OMI S0007.300).

Scrub Turnaround SSR 1 Data Playback Not Performed: _____

38-164

CISL

IF VWQ30 IS NOT ALREADY ACTIVE,

THEN PERFORM:

CONSOLE KYBD

ON CMD LINE ENTER - VWQ30

PERF PGM KEY - PRESS

VERIFY VWQ30 (SOLID STATE RECORDER COMMAND SELECT)
DISPLAY IS ACTIVE.

Not Performed: _____

38-165

CISL

JRPS

145

Verify the following is configured for SSR 1 Data Playback
(ref. OMI S0007.100, Operation 255 - RPS Instrumentation LCC
Workaround Setup - JRPS):

- SSR 1 T-0 H/L to ground recorder(s)
- SSR 1 T-0 H/L to decom setup for NSP192 at 1024KB
- Decom to lock status display recorder

38-166

CISL

IF SSR 1 IS CURRENTLY ACTIVATED,

THEN PERFORM:

CURSOR CNTL (SAQ04/VWQ30 SSR COMMAND SELECT)

RECORDER

HALT

XMIT CURSOR KEY - PRESS

EXECUTE CMD KEY - PRESS

CRT (SAQ04/VWQ30 SSR COMMAND SELECT)

VERIFY

SSR 1

MODE - STBY

RECORD SSR 1 POSITION _____

Not Performed:_____

38-167

CISL

JRPS

145

Start ground recorder(s) and lock status display recorder for SSR 1 data playback.

Report when complete.

NOTE

The next five steps may be re-performed as required to get an acceptable SSR 1 data playback.

38-168

CISL

CURSOR CNTL (SAQ04/VWQ30 SSR COMMAND SELECT)
PLAYBACK

POS ////
XMIT CURSOR KEY - PRESS

ENTER ON CMD LINE: **162**

XMIT RESP KEY - PRESS

POS 162
EXEC CMD KEY - PRESS

PB 1024
XMIT CURSOR KEY - PRESS
EXEC CMD KEY - PRESS

NOTE

NCBF may indicate fail when playing past position of valid data.

38-169

CISL

CRT (SAQ04/VWQ30 SSR COMMAND SELECT)
VERIFY

SSR 1
MODE - PB1024
CBF - GOOD
NCBF - GOOD
SLOT CNT - 0
CMD REJ - GOOD
AUTOSTOP - INHIBIT
POSITION - 162 AND INCREASING

38-173 CISL JRPS 145

Stop the ground recorder(s) and lock status display recorder for SSR 1 data playback.

Record:

RPS Tape No. _____

38-174 CISL JISE 145

Verify decom lock on the 192KBPS, SSR 1024KBPS playback data either by realtime verification or by ground recorder playback.

38-175 CISL

Scrub Turnaround SSR 1 Data Playback is complete
(ref. OMI S0007.300).

***** End of Scrub Turnaround SSR 1 Data Playback *****

***** End of Operation 38 *****

06-24-2011
APPROVED

OMI S0007.400 A23
APPROVED

OPERATION 39 Caution & Warning and LCC EMON Activation

Shop: ECL, MPS, OMS

Cntrl Rm Console: C4, C5, C7, C8

OPR: ECL, MPS, OMS

Zone: N/A

Hazard (Y/N): N

Duration (Hrs): 1.0

NOTE

Do not perform this operation if a 24-hr hold occurs at T-6H.

Operation Not Performed: _____

39-1 OTC CECL 132
 CMPS
 COOS
 CTPE

Perform EMON Activation of your system's caution and warning parameters.

Report completion.

ECLSS EMON for C&W

39-2 CECL

CONSOLE KYBD (VAG29 PG-A)
PFK4 - PRESS

CRT (PFK MENU PG-A)
VERIFY UPDATE "INHIBIT CAUTION & WARNING EMONS"

CONSOLE KYBD (VAG29 PG-A)
PFK5 - PRESS

CRT (PFK MENU PG-A)
VERIFY UPDATE "INHIBIT EMON DISCRETES"

39-3 CECL OTC 132

ECLSS Caution & Warning and EMON Activation complete.

***** End of ECLSS EMON for C&W *****

MPS EMON Activation for C&W and LCCs

39-4

CMPS

CONSOLE KYBD (C-4)
A_SX_V41P1153A1_730_788
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

A_SX_V41P1154A1_730_788
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

A_SX_V41P1253A1_730_788
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

A_SX_V41P1254A1_730_788
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

A_SX_V41P1353A1_730_788
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

A_SX_V41P1354A1_730_788
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

A_SX_V41P1433C1_LOW_60
XMIT CMD KEY - PRESS

39-5

CMPL

CONSOLE KYBD (C-3)
A_SX_V41P1533C1_LOW_249
XMIT CMD KEY - PRESS

39-6

CMPS OTC 132

MPS Caution & Warning EMON Activation complete.

***** End of MPS EMON Activation for C&W and LCCs *****

OMS RCS C&W EMON Activation

39-7 COOS

CONSOLE C8

VERIFY/TERMINATE ALL OMS/RCS PGMS ON C8

39-8 CTPE

INTEGRATION CONSOLE (RSYS XFER)

SAP10 INTG MENU DISPLAY
CURSOR CNTL
RSYS TRANSFER
XMIT CURSOR KEY - PRESS

CURSOR CNTL (SAP30 PAGE B)
GRP79 OMS/RCS OXID ORB FD'S
XMIT CURSOR KEY - PRESS

CURSOR CNTL (SAP30 PAGE B)
C-7
XMIT CURSOR KEY - PRESS
EXEC CMD KEY - PRESS

AFTER APPROX 2 MINUTES,
VERIFY GROUPS 79 AND 80 HAVE TRANSFERRED TO C7

PFP (SAP10 PAGE B)
PFK10 - PRESS (RETURN)

CURSOR CNTL (SAP10 PAGE B)
TERM CONC
XMIT CURSOR KEY - PRESS

39-9 COOS

CONSOLE C7

VADL7 PERF PGM

VERIFY VADL8 UPDATING.

39-10

COOS

CONSOLE KYBD
A SX V42P2116C1 200 312
XMIT CMD KEY - PRESS
(LRCS FU TK ULLGE)

A SX V42P3116C1 200 312
XMIT CMD KEY - PRESS
(RRCS FU TK ULLGE)

A SX V42P1116C1 200 312
XMIT CMD KEY - PRESS
(FRCS FU TK ULLGE)

A SX V43P4321C1 232 288
XMIT CMD KEY - PRESS
(LOMS FU TK ULLGE)

A SX V43P5321C1 232 288
XMIT CMD KEY - PRESS
(ROMS FU TK ULLGE)

39-11

COOS

CONSOLE KYBD C7
A SX V42P2115C1 200 312
XMIT CMD KEY - PRESS
(LRCS OX TK ULLGE)

A SX V42P3115C1 200 312
XMIT CMD KEY - PRESS
(RRCS OX TK ULLGE)

A SX V43P5221C1 232 288
XMIT CMD KEY - PRESS
(ROMS OX TK ULLGE)

A SX V42P1115C1 200 312
XMIT CMD KEY - PRESS
(FRCS OX TK ULLGE)

39-12

IF LP04 is installed on this Orbiter,

Verify

THEN Perform the following:

A SX V43P4221C1 232 296
XMIT CMD KEY - PRESS
(LOMS OX TK ULLGE FOR LP04)

ELSE Perform the following:

A SX V43P4221C1 232 288
XMIT CMD KEY - PRESS
(LOMS OX TK ULLGE FOR ALL OTHER PODS)

39-13

COOS OTC 132

OMS/RCS C&W EMON Activation is complete.

***** End of OMS RCS C&W EMON Activation *****

***** End of Operation 39 *****

06-24-2011
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APPROVED

OPERATION 40 OMS/RCS System

Shop: **OMS**

Cntrl Rm Console: **C7, C8**

OPR: **OMS**

Zone: **120**

Hazard (Y/N): **N**

Duration (Hrs): **1.0**

OMS/RCS Switch Configuration

NOTE

The following steps configure the cockpit switches in preparation for the Ascent Switch List.

40-1 OTC COOS 132

Perform OMS/RCS Switch Configuration.

40-2 COOS CDR 147

PANEL O7

AFT LEFT RCS

HE PRESS

A SW - OPEN (GUARDED)

B SW - OPEN (GUARDED)

A TB OP

B TB OP

AFT RIGHT RCS

HE PRESS

A SW - OPEN (GUARDED)

B SW - OPEN (GUARDED)

A TB OP

B TB OP

40-3 COOS CDR 147

PANEL O8

FWD RCS
HE PRESS
A SW - OPEN (GUARDED)
B SW - OPEN (GUARDED)
A TB OP
B TB OP

LEFT OMS
HE PRESS/VAPOR ISOL
A SW - GPC (GUARDED)
B SW - GPC (GUARDED)

RIGHT OMS
HE PRESS/VAPOR ISOL
A SW - GPC (GUARDED)
B SW - GPC (GUARDED)

OMS KIT
HE PRESS/VAPOR ISOL
A SW - CLOSE
B SW - CLOSE
TANK ISOLATION
A SW - CLOSE
B SW - CLOSE
A TB BP
B TB BP

40-4 COOS PLT 147

PANEL O16

ROW E
MN C
RCS/OMS PRPLT QTY
GAUGE CB - CLOSE

40-5 COOS PLT 147

PANEL O3

RCS/OMS PRESS SW - RCS HE X 10
RCS/OMS PRPLT QTY SW - OMS FUEL

40-6 COOS PS1 147

PANEL A14

RCS/OMS HEATERS
OMS
CRSFD LINES
A AUTO SW - A AUTO
B AUTO SW - B AUTO
FWD RCS JET
1 SW - AUTO
2 SW - AUTO
3 SW - AUTO
4 SW - AUTO
5 SW - AUTO
AFT RCS JET
1 SW - AUTO
2 SW - AUTO
3 SW - AUTO
4 SW - AUTO
5 SW - AUTO

40-7 COOS MS1 147

PANEL R14

ROW C
MN C
MANF ISOL L5 CB - CLOSE
MANF ISOL R5 CB - CLOSE
MANF ISOL F5 CB - CLOSE

40-8 COOS ASP 147

PANEL MA73C

ROW H

AC 1
FWD RCS VLV
PH A CB - CLOSE
PH B CB - CLOSE
PH C CB - CLOSE
AC 2
FWD RCS VLV
PH A CB - CLOSE
PH B CB - CLOSE
PH C CB - CLOSE
AC 3
FWD RCS VLV
PH A CB - CLOSE
PH B CB - CLOSE
PH C CB - CLOSE

ROW I

AC 1
AFT POD VLV GP1
PH A CB - CLOSE
PH B CB - CLOSE
PH C CB - CLOSE
AFT POD VLV LOGIC GP
1/3 SW - ON
AC 2
AFT POD VLV GP2
PH A CB - CLOSE
PH B CB - CLOSE
PH C CB - CLOSE
AFT POD VLV LOGIC GP
1/2 SW - ON
AC 3
AFT POD VLV GP3
PH A CB - CLOSE
PH B CB - CLOSE
PH C CB - CLOSE
AFT POD VLV LOGIC GP
2/3 SW - ON

40-9 COOS OTC 132

OMS/RCS Switch Configuration is complete.

*** End of OMS/RCS Switch Configuration ***

OMS/RCS System Securing

NOTE
Perform this option only if required for Scrub/Turnaround/Recycle.

OMS/RCS System Securing Not Performed: _____

40-10 OTC COOS 132

Perform OMS/RCS System Secure.

NOTE
Noted requirements are satisfied by the following steps annotated with OMRS code.

OMRS S00E00.660

40-11 COOS

IF RECYCLE OCCURS AT T-3H, OR AFTER,
AND CROSSFEED LINES ARE TO BE INTERCONNECTED TO
THE LEFT OMS PROPELLANT TANKS,

THEN PERFORM:
CURSOR CNTL (VWD42)
C4 - OPEN

OMRS S00E00.660

Not Performed: _____

40-12 COOS

IF RECYCLE OCCURS AT T-3H, OR AFTER,
AND CROSSFEED LINES ARE TO BE INTERCONNECTED TO
THE LEFT OMS PROPELLANT TANKS,

THEN PERFORM:
CURSOR CNTL (VWD41)
C4 - OPEN

OMRS S00E00.660

Not Performed: _____

OMS/RCS Securing at T-30 Minutes Recycle

NOTE

Perform this option if Recycle occurs at T-30M or after.

OMS/RCS Securing at T-30 Minutes Recycle Not Performed: _____

40-13 COOS CDR 147

**PANEL C3
VERIFY**

OMS ENG
LEFT SW - OFF
RIGHT SW - OFF

OMRS S00E00.660

40-14 COOS

**CRT (VWD73)
VERIFY**

LOMS
A/P 1 OFF
A/P 2 OFF
ARM 1 OFF
ARM 2 OFF

ROMS
A/P 1 OFF
A/P 2 OFF
ARM 1 OFF
ARM 2 OFF

OMRS S00E00.660

40-15 COOS MS1 147

IF RECYCLE OCCURS AT T-1H35M OR AFTER,

THEN PERFORM:
PANEL A14

RCS/OMS HEATERS

OMS

CRSFD LINES

A AUTO SW - OFF

B AUTO SW - OFF

FWD RCS JET

1 SW - OFF

2 SW - OFF

3 SW - OFF

4 SW - OFF

5 SW - OFF

AFT RCS JET

1 SW - OFF

2 SW - OFF

3 SW - OFF

4 SW - OFF

5 SW - OFF

Not Performed: _____

40-16 COOS CDR 147

IF RECYCLE OCCURS AT T-1H35M OR AFTER,

THEN PERFORM:
PANEL O14

ROW F

LEFT OMS ENG VLV SW - OFF

OMRS S00E00.660

Not Performed: _____

40-17 COOS PLT 147

IF RECYCLE OCCURS AT T-1H35M OR AFTER,

THEN PERFORM:
PANEL 016

ROW F

RIGHT OMS ENG VLV SW - OFF

OMRS S00E00.660

Not Performed: _____

40-18 COOS

CRT (VWD73)
VERIFY

OMS
ENG VLV OFF

ROMS
ENG VLV OFF

OMRS S00E00.660

40-19 Noted requirements are complete.

OMRSD [S00E00.660](#)

40-20 COOS OTC 132

OMS/RCS System Securing is complete.

*** End of OMS/RCS System Securing ***

*** End of Operation 40 ***

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OPERATION 41 ET Liquid Level Point Sensor/Bus Redundancy Checks

Shop: **MPS**

Cntrl Rm Console: **C4**

OPR: **MPS**

Zone: **N/A**

Hazard (Y/N): **N**

Duration (Hrs): **1.0**

NOTE

This operation is run to support initial Orbiter Launch Preps and may be run multiple times, as necessary, to support Scrub Turnaround operations. QC verification for this operation is accomplished in Table 41-1 - Quality Verification Sheet - ET Level Sensor Cal Checks.

41-1 TBC CMPS 136

Perform ET Level Sensor/Bus Redundancy Checks.

ET Liquid Level and Engine Cutoff Sensor Checkout

NOTE

Noted requirements are satisfied by the following of steps annotated with OMRS code.

OMRS S00FA0.160-A-1

OMRS S00FA0.160-B-1

41-2 CMPS TBC 136
 CLOX
 CLHY

Level sensor checkout will be performed at this time. Momentary fluctuation of Liquid Level and Engine Cutoff sensors between wet and dry states will be experienced.

41-3 CMPS

PFP SAE12
ET POINT SENSOR MENU - SELECT
PT SENS ELEC C/O - SELECT
EXEC - PRESS
PFK7 KEY - PRESS (TWICE)

OMRS S00FA0.160-A-1

OMRS S00FA0.160-B-1

NOTE

Successful completion or error messages are displayed on SAE12, page A.

41-4

CMPS

CRT (SAE12)

VERIFY SUCCESSFUL COMPLETION OF ET LIQUID LEVEL
AND ENGINE CUTOFF SENSOR CHECKOUT

OMRS S00FA0.160-A-1

OMRS S00FA0.160-B-1

41-5

IF for support of Scrub Turnaround Operations,

THEN noted requirements are complete.

OMRSD [S00FA0.160-B-1](#)

(Not Performed:)

***** End of ET Liquid Level and Engine Cutoff Sensor Checkout *****

ET Point Sensor Bus Redundancy Verification

NOTE

The ET Point Sensor Bus Verification is run in support of initial Orbiter Launch Preps and for closeout verification following contingency AFT ingress. ET Point Sensor Bus Verification is not performed for Scrub/Turnaround contingencies in order to avoid the possibility of ullage pressure drop outs during detanking/boiloff operations that could trigger unwanted LH₂ vent valve cycling.

ET Point Sensor Bus Redundancy Verification (Not Performed:)

CAUTION

The next step applies MPS signal conditioner power buses individually and verifies that only proper sensors indicate dry. Performing the ET Point Sensor Bus Verification during Scrub/Turnaround contingencies may result in unwanted LH₂ vent valve cycling.

41-6 **CMPS** **TBC** **136**
 CLOX
 CLHY

Level sensor checkout will be performed at this time. Momentary loss of power to the ET OI level sensors, ullage pressures and vent valve indicators will occur.

OMRS S00FA0.160-A-1

41-7 **CMPS**

PFP (SAE12)
ET PT SENS MENU - SELECT
PT SENS BUS VERF - SELECT
EXECUTE - PRESS
PFK5 KEY - PRESS (TWICE)

OMRS S00FA0.160-A-1

NOTE
Successful completion or error messages are displayed on SAE12, page A.

41-8 CMPS

CRT (SAE12)
VERIFY SUCCESSFUL COMPLETION of ET POINT SENSOR
BUS REDUNDANCY TEST.

OMRS S00FA0.160-A-1

41-9 IF for support of Initial Launch Preps/Contingency AFT Closeout
Verification,

THEN noted requirements are complete.

OMRSD [S00FA0.160-A-1](#)

(Not Performed:)

***** End of ET Point Sensor Bus Redundancy Verification *****

41-10 CMPS

CRT (SAE12 PG-B)
VERIFY ET OI PWR ON

41-11 CMPS TBC 136
TBC CLOX
CLHY

ET Level Sensor/Bus Redundancy Checks complete.

NOTE

Table 41-1 - Quality Verification Sheet - ET Level Sensor Cal Checks provides QC verification record for performance of ET Level Sensor Cal Checks per Operation 41. This operation will be run at T-8H10M for all Cryo Load operations. Record NP for steps not performed.

Table 41-1 - Quality Verification Sheet - ET Level Sensor Cal Checks						
Step	CMD	Resp	Run 1	Run 2	Run 3	Run 4
41-1	TBC	CMPS				
ET Liquid Level and Engine Cutoff Sensor Checkout						
41-2	CMPS	TBC CLOX CLHY				
41-3	--	CMPS				
41-4	--	CMPS				
41-5 Not Performed:	--	--				
End of ET Liquid Level and Engine Cutoff Sensor Checkout						

Table 41-1 - ET Point Sensor Bus Redundancy Verification (cont)						
Not Performed						
41-6	CMPS	TBC CLOX CLHY				
41-7	--	CMPS				
41-8	--	CMPS				
41-9 Not Performed:	--	--				
End of ET Point Sensor Bus Redundancy Verification						
41-10	--	CMPS				
41-11	CMPS TBC	TBC CLOX CLHY				

*** End of Operation 41 ***

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OPERATION 42 APU Systems

Shop: **APU**

Cntrl Rm Console: **C8**

OPR: **APU**

Zone: **N/A**

Hazard (Y/N): **N**

Duration (Hrs): **2.0**

NOTE

Steps involving Crit 1, 1R and/or 1S items are contained in the following operation.

APU 1, 2, and 3 Auto BITE Test

NOTE

Master alarms will occur during APU Auto BITE Tests if caution and warning parameters 068, 078, 088, 098, 108, or 118 are enabled. In addition, BFS Class 3 messages will appear on CRT 3 if BFS is in Standby or Run. All alarms and messages may be cleared.

NOTE

Noted requirements are satisfied by the following series of steps.

OMRS V46AL0.610-1
OMRS V46AL0.620-1
OMRS V46AL0.630-1

42-1 CAPU OTC 132

Master alarms and BFS messages may occur during the following operation.

42-2 OTC CISL 132
CTPE
CDR

Master alarms and BFS messages may occur. CDR to reset.

42-3 CAPU PLT 182

PANEL R2

APU/HYD
APU CNTLR PWR
1 SW - ON
2 SW - ON
3 SW - ON

APU 1 Auto BITE Test

42-4

CAPU

CRT (VWF49) APU 1

VERIFY

CONTROLLER POWER SW SC ON	V46S0124E1
CONTROLLER PWR J1 RPC ON	V76X4001E1
CONTROLLER PWR J2 RPC ON	V76X4002E1

42-5

CAPU

(VWF49) APU 1

1. CURSOR CNTL
AUTO BITE ON
XMIT CURSOR KEY - PRESS V46K0157NL
(INITIATES AUTO BITE TEST SEQUENCE)
2. **ALLOW** 20 SEC MINIMUM TO ELAPSE

CRT

(STATUS MESSAGE WILL APPEAR AT BOTTOM OF
CRT PRIOR TO INITIATING HIGH SPEED COMMANDS)
3. **RECORD** TURBINE SHAFT SPEED:

_____ PCT V46R0135A1
4. **VERIFY** TURBINE SHAFT SPEED 108 +/-1 PCT.
5. **ALLOW** AUTO BITE SEQUENCER 40 SEC MINIMUM
PRIOR TO PROCEEDING.

(INITIATES HIGH SPEED COMMANDS) V46K0129NL
V46K0149NL
6. **VERIFY** AUTO BITE COMPLETE ON V46X0158E1
7. **RECORD** TURBINE SHAFT SPEED:

_____ PCT V46R0135A1
8. **VERIFY** TURBINE SHAFT SPEED 108 +/-1 PCT.

42-6

CAPU

CURSOR CNTL (VWF49) APU 1
AUTO BITE OFF
XMIT CURSOR KEY - PRESS
(TERMINATES AUTO BITE TEST SEQUENCER)

CRT
VERIFY AUTO BITE COMPLETE OFF V46X0158E1

APU 2 Auto BITE Test

42-7

CAPU

CRT (VWF49) APU 2
VERIFY

CONTROLLER POWER SW SC ON V46S0224E1
CONTROLLER PWR J1 RPC ON V76X4004E1
CONTROLLER PWR J2 RPC ON V76X4005E1

42-8

CAPU

(VWF49) APU 2

1. CURSOR CNTL
AUTO BITE ON
XMIT CURSOR KEY - PRESS V46K0257NL
(INITIATES AUTO BITE TEST SEQUENCE)
2. **ALLOW** 20 SEC MINIMUM TO ELAPSE

CRT

(STATUS MESSAGE WILL APPEAR AT BOTTOM OF
CRT PRIOR TO INITIATING HIGH SPEED COMMANDS)
3. **RECORD** TURBINE SHAFT SPEED:

_____ PCT V46R0235A1
4. **VERIFY** TURBINE SHAFT SPEED 108 +/-1 PCT.
5. **ALLOW** AUTO BITE SEQUENCER 40 SEC MINIMUM
PRIOR TO PROCEEDING.

(INITIATES HIGH SPEED COMMANDS) V46K0229NL
V46K0249NL
6. **VERIFY** AUTO BITE COMPLETE ON V46X0258E1
7. **RECORD** TURBINE SHAFT SPEED:

_____ PCT V46R0235A1
8. **VERIFY** TURBINE SHAFT SPEED 108 +/-1 PCT.

42-9

CAPU

CURSOR CNTL (VWF49) APU 2

AUTO BITE OFF

XMIT CURSOR KEY - PRESS

(TERMINATES AUTO BITE TEST SEQUENCER)

CRT

VERIFY AUTO BITE COMPLETE OFF

V46X0258E1

APU 3 Auto BITE Test

42-10

CAPU

CRT (VWF49) APU 3

VERIFY

CONTROLLER POWER SW SC ON	V46S0324E1
CONTROLLER PWR J1 RPC ON	V76X4008E1
CONTROLLER PWR J2 RPC ON	V76X4007E1

42-11

CAPU

(VWF49) APU 3

1. CURSOR CNTL
AUTO BITE ON
XMIT CURSOR KEY - PRESS V46K0357NL
(INITIATES AUTO BITE TEST SEQUENCE)
2. **ALLOW** 20 SEC MINIMUM TO ELAPSE

CRT

(STATUS MESSAGE WILL APPEAR AT BOTTOM OF
CRT PRIOR TO INITIATING HIGH SPEED COMMANDS)
3. **RECORD** TURBINE SHAFT SPEED:

_____ PCT V46R0335A1
4. **VERIFY** TURBINE SHAFT SPEED 108 +/-1 PCT.
5. **ALLOW** AUTO BITE SEQUENCER 40 SEC MINIMUM
PRIOR TO PROCEEDING.

(INITIATES HIGH SPEED COMMANDS) V46K0329NL
V46K0349NL
6. **VERIFY** AUTO BITE COMPLETE ON V46X0358E1
7. **RECORD** TURBINE SHAFT SPEED:

_____ PCT V46R0335A1
8. **VERIFY** TURBINE SHAFT SPEED 108 +/-1 PCT.

42-12

CAPU

CURSOR CNTL (VWF49) APU 3
AUTO BITE OFF
XMIT CURSOR KEY - PRESS
(TERMINATES AUTO BITE TEST SEQUENCER)

CRT
VERIFY AUTO BITE COMPLETE OFF V46X0358E1

42-13

CAPU PLT 182

PANEL R2

APU/HYD
APU CNTLR PWR
1 SW - OFF
2 SW - OFF
3 SW - OFF

42-14

CAPU

CRT (VWF49) APU 1
VERIFY

CONTROLLER POWER SW SC OFF V46S0124E1
CONTROLLER PWR J1 RPC OFF V76X4001E1
CONTROLLER PWR J2 RPC OFF V76X4002E1

42-15

CAPU

CRT (VWF49) APU 2
VERIFY

CONTROLLER POWER SW SC OFF V46S0224E1
CONTROLLER PWR J1 RPC OFF V76X4004E1
CONTROLLER PWR J2 RPC OFF V76X4005E1

42-16

CAPU

CRT (VWF49) APU 3
VERIFY

CONTROLLER POWER SW SC OFF V46S0324E1
CONTROLLER PWR J1 RPC OFF V76X4008E1
CONTROLLER PWR J2 RPC OFF V76X4007E1

42-17 CAPU

APPL PG (VWF49) APU 1

PFK10 KEY - PRESS

(INITIATES 'COMMAND/BT4 MENU' AND PERFORMS BT4
TEST)

CRT (VWF49) APU 1

VERIFY

HIGH SPEED A OFF

V46K0129NL

HIGH SPEED B OFF

V46K0149NL

BITE INITIATE OFF

V46K0157NL

42-18 CAPU

CRT (VWF49) APU 2

VERIFY

HIGH SPEED A OFF

V46K0229NL

HIGH SPEED B OFF

V46K0249NL

BITE INITIATE OFF

V46K0257NL

42-19 CAPU

CRT (VWF49) APU 3

VERIFY

HIGH SPEED A OFF

V46K0329NL

HIGH SPEED B OFF

V46K0349NL

BITE INITIATE OFF

V46K0357NL

CONSOLE KYBD

PFK11 KEY - PRESS (RETURN TO MAIN DISPLAY)

42-20 Noted requirements are complete.

OMRSD [V46AL0.610-1](#)

OMRSD [V46AL0.620-1](#)

OMRSD [V46AL0.630-1](#)

42-21 CAPU OTC 132

APU 1, 2, and 3 Auto BITE Test complete.

***** End of APU 1, 2, and 3 Auto BITE Test *****

APU Heater Activation

NOTE

Noted requirements are satisfied by the following series of steps.

OMRS V46AL0.900-1R

42-22 OTC CAPU 132

Activate APU heaters.

42-23 CAPU

CONSOLE KYBD (VWF57)
PFK10 KEY - PRESS
(INITIATES 'COMMAND/BT4 MENU' AND PERFORMS BT4 TEST)

APU 1

CURSOR CNTL
TANK AND LINE HTRS B AUTO ON
XMIT CURSOR KEY - PRESS

LUBE OIL HTRS A AUTO ON
XMIT CURSOR KEY - PRESS

GG/FUEL PUMP/FUEL LINE HTRS A AUTO ON
XMIT CURSOR KEY - PRESS

APU 2

CURSOR CNTL
TANK AND LINE HTRS B AUTO ON
XMIT CURSOR KEY - PRESS

LUBE OIL HTRS A AUTO ON
XMIT CURSOR KEY - PRESS

GG/FUEL PUMP/FUEL LINE HTRS A AUTO ON
XMIT CURSOR KEY - PRESS

APU 3

CURSOR CNTL
TANK AND LINE HTRS B AUTO ON
XMIT CURSOR KEY - PRESS

LUBE OIL HTRS A AUTO ON
XMIT CURSOR KEY - PRESS

GG/FUEL PUMP/FUEL LINE HTRS A AUTO ON
XMIT CURSOR KEY - PRESS

42-24

CAPU

CRT (VWF57)
VERIFY

APU 1

TANK AND LINE HTRS B AUTO ON	V46K0109NL
LUBE OIL HTRS A AUTO ON	V46K0116NL
GG/FUEL PUMP/FUEL LINE HTRS A AUTO ON	V46K0118NL

APU 2

TANK AND LINE HTRS B AUTO ON	V46K0209NL
LUBE OIL HTRS A AUTO ON	V46K0216NL
GG/FUEL PUMP/FUEL LINE HTRS A AUTO ON	V46K0218NL

APU 3

TANK AND LINE HTRS B AUTO ON	V46K0309NL
LUBE OIL HTRS A AUTO ON	V46K0316NL
GG/FUEL PUMP/FUEL LINE HTRS A AUTO ON	V46K0318NL

Backup/Integration APU Heater Activation

NOTE

The following three steps are to be left open to activate APU heaters in the event of C8 console crash and scrub turn around contingency and may be not performed if a console crash does not occur.

Backup/Integration APU Heater Activation Not Performed: _____

NOTE

The following three steps may be performed as required to reactivate APU GG Bed Heaters in the event that C8 console crashes after APU heaters have been turned off.

42-25

CAPU

APU 1

TANK AND LINE HTRS B AUTO

1. CMD LINE
TYPE "SET V46K0109NL ON"
2. PRESS XMIT CMD
3. VERIFY MESSAGE "SET SUCCESSFUL - V46K0109NL"

LUBE OIL HTRS A AUTO

4. CMD LINE
TYPE "SET V46K0116NL ON"
5. PRESS XMIT CMD
6. VERIFY MESSAGE "SET SUCCESSFUL - V46K0116NL"

GG/FUEL PUMP/FUEL LINE HTRS A AUTO

7. CMD LINE
TYPE "SET V46K0118NL ON"
8. PRESS XMIT CMD
9. VERIFY MESSAGE "SET SUCCESSFUL - V46K0118NL"

42-26

CAPU

APU 2

TANK AND LINE HTRS B AUTO

1. CMD LINE
TYPE "SET V46K0209NL ON"
2. PRESS XMIT CMD
3. VERIFY MESSAGE "SET SUCCESSFUL - V46K0209NL"

LUBE OIL HTRS A AUTO

4. CMD LINE
TYPE "SET V46K0216NL ON"
5. PRESS XMIT CMD
6. VERIFY MESSAGE "SET SUCCESSFUL - V46K0216NL"

GG/FUEL PUMP/FUEL LINE HTRS A AUTO

7. CMD LINE
TYPE "SET V46K0218NL ON"
8. PRESS XMIT CMD
9. VERIFY MESSAGE "SET SUCCESSFUL - V46K0218NL"

42-27

CAPU

APU 3

TANK AND LINE HTRS B AUTO

1. CMD LINE
TYPE "SET V46K0309NL ON"
2. PRESS XMIT CMD
3. VERIFY MESSAGE "SET SUCCESSFUL - V46K0309NL"

LUBE OIL HTRS A AUTO

4. CMD LINE
TYPE "SET V46K0316NL ON"
5. PRESS XMIT CMD
6. VERIFY MESSAGE "SET SUCCESSFUL - V46K0316NL"

GG/FUEL PUMP/FUEL LINE HTRS A AUTO

7. CMD LINE
TYPE "SET V46K0318NL ON"
8. PRESS XMIT CMD
9. VERIFY MESSAGE "SET SUCCESSFUL - V46K0318NL"

End of Backup/Integration APU Heater Activation

42-28

CAPU

CRT (VWF57)
VERIFY

APU 1

TANK AND LINE HTRS A AUTO OFF	V46K0103NL
LUBE OIL HTRS B AUTO OFF	V46K0117NL
GG/FUEL PUMP/FUEL LINE HTRS B AUTO OFF	V46K0119NL

APU 2

TANK AND LINE HTRS A AUTO OFF	V46K0203NL
LUBE OIL HTRS B AUTO OFF	V46K0217NL
GG/FUEL PUMP/FUEL LINE HTRS B AUTO OFF	V46K0219NL

APU 3

TANK AND LINE HTRS A AUTO OFF	V46K0303NL
LUBE OIL HTRS B AUTO OFF	V46K0317NL
GG/FUEL PUMP/FUEL LINE HTRS B AUTO OFF	V46K0319NL

42-29

CAPU

CRT (VWF48)
RECORD

APU 1

GAS GEN BED TEMP _____	DEG F	V46T0122A1
------------------------	-------	------------

APU 2

GAS GEN BED TEMP _____	DEG F	V46T0222A1
------------------------	-------	------------

APU 3

GAS GEN BED TEMP _____	DEG F	V46T0322A1
------------------------	-------	------------

42-30 CAPU

CRT (VWF48)

VERIFY APU TEMPERATURES WITHIN LCC LIMITS.

CONTINUE TO MONITOR UNTIL APU START.

42-31 Noted requirements are complete.

OMRSD [V46AL0.900-1R](#)

42-32 CAPU OTC 132

APU Heater Activation is complete.

***** End of APU Heater Activation *****

APU System Switch Scan

42-33 OTC CAPU 132

Perform APU Switch Scan.

42-34 CAPU

CRT (VWF48)

VERIFY

GG/PMP/LN HTR A SW SC

APU 1 OFF V46S0118E1

APU 2 OFF V46S0218E1

APU 3 OFF V46S0318E1

GG/PMP/LN HTR B SW SC

APU 1 OFF V46S0119E1

APU 2 OFF V46S0219E1

APU 3 OFF V46S0319E1

LUBE OIL HTRS A SW SC

APU 1 OFF V46S0116E1

APU 2 OFF V46S0216E1

APU 3 OFF V46S0316E1

LUBE OIL HTRS B SW SC

APU 1 OFF V46S0117E1

APU 2 OFF V46S0217E1

APU 3 OFF V46S0317E1

TK/LN HTRS A SW SC

APU 1 OFF V46S0106E1

APU 2 OFF V46S0206E1

APU 3 OFF V46S0306E1

TK/LN HTRS B SW SC

APU 1 OFF V46S0109E1

APU 2 OFF V46S0209E1

APU 3 OFF V46S0309E1

42-35

CAPU

CRT (VWF57)

VERIFY

CNTRLR PWR

APU 1 OFF

V46S0124E1

APU 2 OFF

V46S0224E1

APU 3 OFF

V46S0324E1

FUEL VLVS

APU 1 OFF

V46S1114E1

APU 2 OFF

V46S1214E1

APU 3 OFF

V46S1314E1

OPERATE - RUN/COOL

APU 1 OFF

V46S0126E1

V46S1127E1

APU 2 OFF

V46S0226E1

V46S1227E1

APU 3 OFF

V46S0326E1

V46S1327E1

SPEED SEL

APU 1 NORM

V46S0129E1

APU 2 NORM

V46S0229E1

APU 3 NORM

V46S0329E1

SHUTDOWN

APU 1 OFF

V46S1199E1

APU 2 OFF

V46S1299E1

APU 3 OFF

V46S1399E1

42-36

CAPU

OTC

132

APU System Switch Scan is complete.

***** End of APU System Switch Scan *****

APU Pre-Start Checks

42-37

CAPU

IF A SCRUB IS NOT ISSUED PRIOR TO APU PRE-START,

THEN PERFORM:

CRT (VWF57)

VERIFY

APU READY

APU 1 ON	V46X0125E1
APU 2 ON	V46X0225E1
APU 3 ON	V46X0325E1

CNTRLR PWR

APU 1 ON	V46S0124E1
APU 2 ON	V46S0224E1
APU 3 ON	V46S0324E1

J1 RPC

APU 1 ON	V76X4001E1
APU 2 ON	V76X4004E1
APU 3 ON	V76X4008E1

J2 RPC

APU 1 ON	V76X4002E1
APU 2 ON	V76X4005E1
APU 3 ON	V76X4007E1

FUEL VLVS

APU 1 ON	V46S1114E1
APU 2 ON	V46S1214E1
APU 3 ON	V46S1314E1

ISO VLVS

1A OP CYAN	V46X0115E1
1B OP CYAN	V46X0134E1
2A OP CYAN	V46X0215E1
2B OP CYAN	V46X0234E1
3A OP CYAN	V46X0315E1
3B OP CYAN	V46X0334E1

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SPEED SEL	
APU 1 NORM	V46S0129E1
APU 2 NORM	V46S0229E1
APU 3 NORM	V46S0329E1
SHUTDOWN	
APU 1 OFF	V46S1199E1
APU 2 OFF	V46S1299E1
APU 3 OFF	V46S1399E1
GAS GEN BED TEMP	
APU 1 190 DEG F MIN	V46T0122A1
APU 2 190 DEG F MIN	V46T0222A1
APU 3 190 DEG F MIN	V46T0322A1
TURBINE SPEED	
APU 1 0 PCT	V46R0135A1
APU 2 0 PCT	V46R0235A1
APU 3 0 PCT	V46R0335A1
GG/FUEL PUMP/FUEL LINE HTR A AUTO (PFK10 KEY - PRESS; DISPLAYS COMMAND/BT4 MENU)	
APU 1 ON	V46K0118NL
APU 2 ON	V46K0218NL
APU 3 ON	V46K0318NL
OMRSD	V46AL0.910-A-1R

Not Performed: _____

*** End of APU Pre-Start Checks ***

APU Post-Start Checks

42-38

CAPU

IF A SCRUB IS NOT ISSUED PRIOR TO APU START,

THEN PERFORM:

CRT (VWF57)

VERIFY

OPERATE-RUN

APU 1 ON

V46S0126E1

APU 2 ON

V46S0226E1

APU 3 ON

V46S0326E1

OMRSD [V46AL0.920-1R](#)

Not Performed: _____

*** End of APU Post-Start Checks ***

APU Cooldown (Contingency)

NOTE
Perform this option if required for Recycle after APU start.

APU Cooldown (Contingency) Not Performed: _____

42-39 OTC CAPU 132

Perform APU Cooldown.

Report completion.

NOTE
Normal restart of APU is allowed only if all parameters are less than their maximum allowable LCC recycle limit.

Limits do not constrain resuming count at T-20M.

42-40 CAPU

CRT (VWF48)

MONITOR FOLLOWING RECYCLE COOLDOWN TEMPERATURES
TO FALL WITHIN LCC LIMITS:

APU 1

INJ TUBE TEMP-390 DEG F MAX	V46T0174A1
FUEL PUMP DISCHARGE TEMP-205 DEG F MAX	V46T0112A1
FUEL PUMP HEAT SINK TEMP-205 DEG F MAX	V46T0192A1
GGVM HEAT SINK TEMP-180 DEG F MAX	V46T1172A1

APU 2

INJ TUBE TEMP-390 DEG F MAX	V46T0274A1
FUEL PUMP DISCHARGE TEMP-205 DEG F MAX	V46T0212A1
FUEL PUMP HEAT SINK TEMP-205 DEG F MAX	V46T0292A1
GGVM HEAT SINK TEMP-180 DEG F MAX	V46T1272A1

APU 3

INJ TUBE TEMP-390 DEG F MAX	V46T0374A1
FUEL PUMP DISCHARGE TEMP-205 DEG F MAX	V46T0312A1
FUEL PUMP HEAT SINK TEMP-205 DEG F MAX	V46T0392A1
GGVM HEAT SINK TEMP-180 DEG F MAX	V46T1372A1

42-41

CAPU

Verify all temperatures trending downward to or within LCC recycle limits.

42-42

CAPU

OTC

132

APU Recycle Cooldown complete. Ready to resume count.

***** End of APU Cooldown (Contingency) *****

APU Heater Deactivation (Contingency)

NOTE

APU Heater Deactivation (Contingency) may be required if Orbiter Recycle and Cryo Offload is to be performed.

APU Heater Deactivation (Contingency) Not Performed: _____

42-43 OTC CAPU 132

Perform APU Heater Deactivation.

Report completion.

42-44 CAPU

CONSOLE KYBD (VWF57)
PFK10 KEY - PRESS (INITIATES 'COMMAND/BT4 MENU'
AND PERFORMS BT4 TEST)

APU 1

TANK AND LINE HTRS B AUTO OFF
XMIT CURSOR KEY - PRESS
LUBE OIL HTRS A AUTO OFF
XMIT CURSOR KEY - PRESS
GG/FUEL PUMP/FUEL LINE HTRS A AUTO OFF
XMIT CURSOR KEY - PRESS

APU 2

TANK AND LINE HTRS B AUTO OFF
XMIT CURSOR KEY - PRESS
LUBE OIL HTRS A AUTO OFF
XMIT CURSOR KEY - PRESS
GG/FUEL PUMP/FUEL LINE HTRS A AUTO OFF
XMIT CURSOR KEY - PRESS

APU 3

TANK AND LINE HTRS B AUTO OFF
XMIT CURSOR KEY - PRESS
LUBE OIL HTRS A AUTO OFF
XMIT CURSOR KEY - PRESS
GG/FUEL PUMP/FUEL LINE HTRS A AUTO OFF
XMIT CURSOR KEY - PRESS

42-45

CAPU

CRT (VWF57)

VERIFY

APU 1

TANK AND LINE HTRS B AUTO OFF	V46K0109NL
LUBE OIL HTRS A AUTO OFF	V46K0116NL
GG/FUEL PUMP/FUEL LINE HTRS A AUTO OFF	V46K0118NL

APU 2

TANK AND LINE HTRS B AUTO OFF	V46K0209NL
LUBE OIL HTRS A AUTO OFF	V46K0216NL
GG/FUEL PUMP/FUEL LINE HTRS A AUTO OFF	V46K0218NL

APU 3

TANK AND LINE HTRS B AUTO OFF	V46K0309NL
LUBE OIL HTRS A AUTO OFF	V46K0316NL
GG/FUEL PUMP/FUEL LINE HTRS A AUTO OFF	V46K0318NL

42-46

CAPU

CRT (VWF57)

VERIFY

APU 1

TANK AND LINE HTRS A AUTO OFF	V46K0103NL
LUBE OIL HTRS B AUTO OFF	V46K0117NL
GG/FUEL PUMP/FUEL LINE HTRS B AUTO OFF	V46K0119NL

APU 2

TANK AND LINE HTRS A AUTO OFF	V46K0203NL
LUBE OIL HTRS B AUTO OFF	V46K0217NL
GG/FUEL PUMP/FUEL LINE HTRS B AUTO OFF	V46K0219NL

APU 3

TANK AND LINE HTRS A AUTO OFF	V46K0303NL
LUBE OIL HTRS B AUTO OFF	V46K0317NL
GG/FUEL PUMP/FUEL LINE HTRS B AUTO OFF	V46K0319NL

42-47

CAPU OTC 132

APU Heater Deactivation is complete.

***** End of APU Heater Deactivation (Contingency) *****

***** End of Operation 42 *****

**06-24-2011
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APPROVED**

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OPERATION 43 GN & C System Operations

Shop: **GNC**

Cntrl Rm Console: **C11**

OPR: **GNC**

Zone: **100, 200, 300, 500**

Hazard (Y/N): **Y**

Duration (Hrs): **4.0**

Option List and Description

NOTE

Multiple options are contained within this operation. Each option is independent and is used for specific contingencies. All unused options shall remain open until the successful completion of Launch Countdown.

1. OMS Gimbal Profile:

Executes the OMS Gimbal Profile.

Nominally performed at T-7H30M.

Requires: total time = 30 minutes.

2. Orbiter RGA Powerdown:

Orbiter RGAs are powered down.

Normally performed when Launch is delayed more than 24 hours with the remaining GN&C systems remaining active with LCC monitoring (SWB02 active).

Requires: CDR (5 minutes), total time = 10 minutes

3. Orbiter RGA Powerup & Self Test:

Orbiter RGAs are powered up and self-test is performed.

Normally performed when the RGAs have been powered down for a Launch delay where the remaining GN&C systems are active with LCC monitoring (SWB02 active). This option supports recycle from Option 2 above.

Requires: CDR (5 minutes), total time = 15 minutes

4. RCS Logic Powerup & Normal Jet Single Command Test:

RCS logic power is reapplied and the Normal Jet Single Command Test is performed.

Normally performed when Launch is delayed less than 72 hours and the remaining GN&C systems have remained active with LCC monitoring (SWB02 active).

Requires: DEU3, CDR (5 minutes), total time = 15 minutes

5. GN&C System Powerdown:

All GN&C systems are powered down.

Normally performed when Launch is delayed 72 hours or more.

Requires: CDR (15 minutes), total time = 15 minutes

6. GN&C System Powerup:

All GN&C systems are powered up.

Normally performed when Launch is delayed 72 hours or more and all GN&C systems were powered down. This option supports recycle from Option 5 above.

Requires: CDR (30 minutes), total time = 30 minutes

7. GN&C System Self Tests:

ADTA, AA and Orbiter RGA Self Tests with the normal jet single command test are performed. IMUs are powered on and a star tracker powerup/self-test option is provided. LDG NOWOW and the brake RWOW are rechecked. The LCC monitor (SWB02) is activated.

Normally performed when Launch is delayed 72 hours or more and all GN&C systems were powered down. This option supports recycle from Option 5 above.

Requires: DEU3, CDR (15 minutes), total time = 40 minutes

***** End of Option List and Description *****

Flight Control System General Notes

LRU Powerup and Powerdown in LCD

When the powerup/powerdown software is used after the LCC monitor has been activated, the routine will not capture the switch changes and, therefore, appears to not respond as normally expected. As a workaround, all of the LRU(s) switches and RPCs will be verified to be all on or all off depending on the configuration expected. The PFK7 continue option of VSB31 will then be used to allow the operation to continue.

The powerup/powerdown software relies upon GOAL FEP interrupts to field the switch and RPC changes. Due to the design of the C11 software for LCD, GOAL FEP interrupts are not activated or used as they are prior to the LCC Monitor Activation at L-28H.

Activation of RCS Logic may cause power transients which in turn may cause PC Discretes (EMONS) to go high (on) for approx. 0.20 sec.

***** End of Flight Control System General Notes *****

Option 1 - OMS Gimbal Profile

NOTE

Perform this option if OMS gimbal profile is scheduled.

Option 1 Not Performed: _____

WARNING

OMS Nozzle movement will occur.

Contact may cause bodily injuries.

WHP033 02-16-04

NOTE

Hazardous steps follow due to OMS Nozzle movement.

43-1 OTC COFC 132

Perform OMS TVC Testing.

43-2 COFC

Verify the following:

1. DPS Mode G9/42, 44, or 60.
2. OMS engine areas clear of all personnel and equipment within 3 ft of OMS engine nozzles.
3. OMS engine covers removed.

Deactivate OMS TVC LCC Monitoring

43-3 COFC

APPL PG-A (SAB20/SWB02)
PFK13 KEY - PRESS (ACT EMON SETUP)

43-4 COFC

CURSOR CNTL (SAB20/SWB02 PG-A)
I - OMS TVC
XMIT CURSOR KEY - PRESS

43-5 COFC

APPL PG-B (SAB20/SWB02)
PFK13 KEY - PRESS (DEACT EMON SETUP)

***** End of Deactivate OMS TVC LCC Monitoring *****

Initiate OMS Profile S/W

43-6 COFC

CURSOR CNTL (SAB19/SWB01)
OMS - OPS MAN
XMIT CURSOR KEY - PRESS

43-7 COFC

CURSOR CNTL (SAB19/SWB01)
OMS - OVERVIEW
XMIT CURSOR KEY - PRESS

43-8 COFC

CURSOR CNTL (VABM5)
GIMBAL PROFILE
XMIT CURSOR KEY - PRESS

43-9 COFC

CRT (VABM5 PG-B)
VERIFY MSG:

VABM5-004
OMS SAFE MOVE LIMITS
YAW -7.0 TO 7.0 DEG
PITCH -5.9 TO 5.9 DEG

43-10 COFC

APPL PAGE (VABM5 PG-B)
PFK1 KEY - PRESS
(PERFORM TEST IN CURRENT CONFIGURATION)

43-11 COFC

CRT (VABM5/VSB48)
VERIFY DEU PROMPT

43-12 COFC

CONSOLE KYBD (VABM5/VSB48)
PFKX KEY - PRESS (X = DEU NO.)

43-13 COFC

CRT (VABM5/VSB48)
VERIFY OMS GIMBAL PROFILE TEST MENU DISPLAYED
WITH BOTH PODS ALL ACTUATORS AND ACT SYS 1
PRINTER PLOTTER OPTION HIGHLIGHTED.

43-14

COFC

CURSOR CNTL (VABM5/VSB48 PG-B)
PLOT CONTROL

IF PRINTER/PLOTTER SYS 1 IS NOT AVAILABLE,

THEN SELECT ONE OF THE FOLLOWING PRINTER/PLOTTER
OPTIONS PER PREVIOUS PRINTER/PLOTTER SETUP:

1. INH P/P
XMIT CURSOR KEY - PRESS

Not Performed: _____
SS1

2. ACT SYS 2
XMIT CURSOR KEY - PRESS

Not Performed: _____
SS2

NOTE

The next step initiates OMS engine movement. If the OMS engines are not at Stow position (down and out), the software will ramp them to Stow prior to beginning Gimbal Profile. The test sequence is as follows (listed in degrees):

Left yaw standby	-6.01, 6.01
Left yaw active	-6.01, 6.01
Left pitch standby	-5.80, 5.80
Left pitch active	-5.80, 5.80
Right yaw standby	6.01, -6.01
Right yaw active	6.01, -6.01
Right pitch standby	-5.80, 5.80
Right pitch active	-5.80, 5.80

43-15

COFC

CURSOR CNTL (VABM5/VSB48)
START TEST
XMIT CURSOR KEY - PRESS

43-16

COFC

APPL PG-B (VABM5/VSB48)
VERIFY MSG VSB48-007:
RATE CALCULATION SUMMARY TEST COMPLETE

OMRSD [V79AZ0.080 \(VSB48\)](#)

43-17

COFC

CONSOLE KYBD (VABM5/VSB48)
PFK9 KEY - PRESS (RETURN TO TEST MENU)

43-18

COFC

CONSOLE KYBD (VABM5/VSB48)
PFK7 KEY - PRESS (RESTORE NOMINAL CONFIG AND TERM
VSB48)

43-19 COFC

CURSOR CNTL (VABM5)
TERMINATE
XMIT CURSOR KEY - PRESS

43-20 COFC

CRT (VWB27)
VERIFY * BY OMS NO-OP

43-21 COFC

CONSOLE KYBD (VWB27 PG-B)
PFK15 KEY - PRESS (TERM VWB27)

NOTE

Hazardous operations due to OMS gimbaling complete.

NOTE

The next five steps are performed to reduce Main Engine 1 yaw drift from the OPS 101 transition command of +0.2 deg. The position must be maintained within 2.0 deg of this command at APU start.

NOTE

E1Y NULL Commanding is performed since the OMS TVC profile test sequence executes an AI Mode 1.

43-22 COFC

CURSOR CNTL (SAB19/SWB01)
COUNTDOWN - OPS MANAGER
XMIT CURSOR KEY - PRESS

43-23

COFC

CURSOR CNTL (SAB23/VSB100)
E1Y NULL COMMANDING
XMIT CURSOR KEY - PRESS

43-24

COFC

CURSOR CNTL (SAB23/VSB100)
START TEST
XMIT CURSOR KEY - PRESS

43-25

CFOC

CRT (SAB23/VSB100)
VERIFY
E1Y NULL COMMANDING SUCCESSFUL

43-26

CFOC

CONSOLE KYBD (SAB23/VSB100)
PFK15 KEY - PRESS

***** End of Option 1 - OMS Gimbal Profile *****

Option 2 - ORB RGA Powerdown

NOTE
Perform this option if ORB RGA power is to be terminated.

Option 2 Not Performed: _____

NOTE
LCC monitor and EMON failures will be generated by the next step.
Acknowledge and clear failures when the operation is complete.

43-27 COFC CDR 141

PANEL O14

ROW A
RGA 1 SW - OFF

PANEL O15

ROW A
RGA 2 SW - OFF
RGA 4 SW - OFF

PANEL O16

ROW A
RGA 3 SW - OFF

LCC Parameter Inhibit

43-28 COFC

APPL PAGE (SAB20/SWB02 PG-B)

PFK3 KEY - PRESS (ACT PARAM INH/ACT PG)

NOTE

Repeat the following two steps as required for the listed measurements.

Table No.	FD
17	V76X4293E1 - RGA 1 RPC A
17	V76X4295E1 - RGA 4 RPC A
17	V76X4296E1 - RGA 4 RPC C
17	V79X1860X1 - RGA 1 ROLL SMRD
18	V79X1861X1 - RGA 1 PITCH SMRD
18	V79X1862X1 - RGA 1 YAW SMRD
18	V79X1865X1 - RGA 2 ROLL SMRD
18	V79X1866X1 - RGA 2 PITCH SMRD
18	V79X1867X1 - RGA 2 YAW SMRD
18	V79X1870X1 - RGA 3 ROLL SMRD
18	V79X1871X1 - RGA 3 PITCH SMRD
18	V79X1872X1 - RGA 3 YAW SMRD
18	V79X1875X1 - RGA 4 ROLL SMRD
18	V79X1876X1 - RGA 4 PITCH SMRD
18	V79X1877X1 - RGA 4 YAW SMRD

43-29

COFC

CURSOR CNTL (SAB20/SWB02 PG-B)

PAGE AHEAD

XMIT CURSOR KEY - PRESS

REPEAT UNTIL PAGE = TABLE NO.

43-30

COFC

CURSOR CNTL (SAB20/SWB02 PG-B)

(FD)

XMIT CURSOR KEY - PRESS

(INVERT MEASUREMENT)

REPEAT FOR EACH FD LISTED

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43-31

COFC

APPL PAGE (SAB20/SWB02 PG-B)
PFK11 KEY - PRESS (CLEAR FAILURES)

***** End of LCC Parameter Inhibit *****

43-32

COFC

APPL PAGE (SAB20/SWB02 PG-B)
PFK5 KEY - PRESS (RETURN TO ACTIVITY PG)

***** End of Option 2 - ORB RGA Powerdown *****

Option 3 - ORB RGA Powerup & Self Test

NOTE

Perform this option if RGA power is not applied and the full GN&C system activation is not required.

Option 3 Not Performed: _____

NOTE

For the next step, reference “LRU Powerup and Powerdown in LCD” in the Flight Control System General Notes section at the beginning of this operation.

43-33

COFC

Perform ORB RGA Powerup/Self Test per RT OMI [V1123.010](#)
(5 minutes with CDR; total = 15 minutes).

RT OMI Log No. _____

LCC Parameter Re-activate

43-34

COFC

APPL PAGE (SAB20/SWB02 PG-B)
PFK3 KEY - PRESS (ACT PARAM INH/ACT PG)

NOTE
Repeat the following two steps as required for the listed measurements.

Table No.	FD
17	V76X4293E1 - RGA 1 RPC A
17	V76X4295E1 - RGA 4 RPC A
17	V76X4296E1 - RGA 4 RPC C
17	V79X1860X1 - RGA 1 ROLL SMRD
18	V79X1861X1 - RGA 1 PITCH SMRD
18	V79X1862X1 - RGA 1 YAW SMRD
18	V79X1865X1 - RGA 2 ROLL SMRD
18	V79X1866X1 - RGA 2 PITCH SMRD
18	V79X1867X1 - RGA 2 YAW SMRD
18	V79X1870X1 - RGA 3 ROLL SMRD
18	V79X1871X1 - RGA 3 PITCH SMRD
18	V79X1872X1 - RGA 3 YAW SMRD
18	V79X1875X1 - RGA 4 ROLL SMRD
18	V79X1876X1 - RGA 4 PITCH SMRD
18	V79X1877X1 - RGA 4 YAW SMRD

43-35

COFC

CURSOR CNTL (SAB20/SWB02 PG-B)
PAGE AHEAD
XMIT CURSOR KEY - PRESS
REPEAT UNTIL PAGE = TABLE NO.

43-36

COFC

CURSOR CNTL (SAB20/SWB02 PG-B)
(FD)
XMIT CURSOR KEY - PRESS
(CLEAR INVERTED MEAS)
REPEAT FOR EACH FD LISTED

43-37

COFC

APPL PAGE (SAB20/SWB02 PG-B)
PFK5 KEY - PRESS (RETURN TO ACTIVITY PG)
***** End of LCC Parameter Re-activate *****
***** End of Option 3 - ORB RGA Powerup & Self Test *****

Option 4 - RCS Logic Powerup & Normal Jet Single Command Test

NOTE

Perform this option if RCS logic power is not applied unless the full GN&C System Activation is required.

Option 4 Not Performed: _____

NOTE

BFC CRT DISP switch must be off prior to performing the next three steps.

43-38 **COFC** **OTC** **132**
 OTC **CDPS**

Change the responsible console for CRT 3 to Console C11.

43-39 **CDPS**

CONSOLE KYBD
HOME CMD KEY - PRESS
ISSU N72IV102D #B00B
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

HOME CMD KEY - PRESS
C CO _DEU3G LDBA C11
XMIT CMD KEY - PRESS

43-40 **CDPS** **OTC** **132**
 OTC **COFC**

Responsible console control to use CRT 3 assigned to C11.

NOTE

For the next step, reference “LRU Powerup and Powerdown in LCD” in the Flight Control System General Notes section at the beginning of this operation.

43-41

COFC

Perform RCS Logic Powerup and Normal Jet Single Command Test per RT OMI [V1123.090](#) (5 minutes with CDR; total = 15 minutes).

RT OMI Log No. _____

43-42

COFC

```
CONSOLE KYBD
C CO _DEU3G LDBA C12
XMIT CMD KEY - PRESS
ISSU N72IV102D 0
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS
```

43-43

```
COFC      OTC      132
OTC       CDPS
```

CRT 3 has been returned to C12.

***** End of Option 4 - RCS Logic Powerup & Normal Jet Single Command Test *****

Option 5 - GN&C System Powerdown

NOTE
Perform this option if all GN&C systems are to be powered down.

Option 5 Not Performed: _____

GN&C LCC EMON De-activation

43-44

COFC

APPL PG-A (SAB20/SWB02)
PFK13 KEY - PRESS (ACT EMON SETUP)

43-45

COFC

CURSOR CNTL (SAB20/SWB02 PG-A)
(ON ITEMS BELOW)
XMIT CURSOR KEY - PRESS

1. I - IMU PWR UP
2. I - IMU OPERATE
3. I - OMS TVC
4. I - SRB TVC
5. I - RJD DRIVER
6. I - SRB RGA
7. I - CIRC PUMPS
8. I - NON-PREREQUISITE

43-46

COFC

APPL PG-A (SAB20/SWB02)
PFK13 KEY - PRESS (DE-ACT EMON SETUP)

43-47

COFC

CURSOR CNTL (SAB20/SWB02 PG-B)
TERMINATE
XMIT CURSOR KEY - PRESS
EXEC CMD KEY - PRESS

***** End of GN&C LCC EMON De-activation *****

System Monitor Re-activation

NOTE

Perform the next four steps to support GNC System Powerdown. PGM VSB31 will not recognize LRU Powerdown when VSB79 is not active (GOAL FEP interrupts de-activated).

NOTE

The following four steps will manually activate SAB20/VSB79.

43-48

COFC

CONSOLE KYBD
SAB20
PERF PGM KEY - PRESS

43-49

COFC

APPL PG (SAB20 PG-A)
RESU PGM KEY - PRESS (RESUME FROM STOP)

43-50

COFC

APPL PG (SAB20 PG-A)
1 (LOGICAL CONC NO. 1 INPUT)
XMIT RESP KEY - PRESS

43-51

COFC

CRT (SAB20/VSB79 PG-B)
VERIFY VSB79 ACTIVE (IN APPROX 30 SEC)

***** End of System Monitor Re-activation *****

43-52

COFC
CGNC

Perform GN&C System Powerdown per RT OMI [V1123.140](#)
(CDR 15 minutes; total time = 15 minutes).

RT OMI Log No. _____

***** End of Option 5 - GN&C System Powerdown *****

Option 6 - GN&C System Powerup

NOTE

Perform this option if the full GN&C System Activation is required.

Option 6 Not Performed: _____

NOTE

The next step performs a systematic, panel-by-panel switch configuration of the following GN&C systems:

AA, ADTA, ASA, ATVC, Brakes, Controllers, NWS, RJD Logic, RGA, Star Tracker, Flt Control switches, No WOW Checks, and Redundant Weight On Wheels (RWOW) Status.

GOAL Software VWB37 verifies RWOW and Null Fail Status in Downlist 42.

NOTE

The following step will require an I/O reset. DPS can expect I/O errors to occur for items not powered up at this time.

NOTE

Noted requirements are satisfied by the following steps.

OMRS V51AF0.245-1R

OMRS V51AF0.250

43-53

COFC
CGNC
CDPS

Perform GN&C System Powerup per RT OMI [V1123.120](#)
(30 minutes CDR).

RT OMI Log No. _____

Redundant Weight on Wheels (RWOW) Status

NOTE

Perform Redundant Weight On Wheels (RWOW) Status if Downlist Format is 60.

Redundant Weight On Wheels (RWOW) Status Not Performed: _____

NOTE

Next step performs an LDB Read to obtain RWOW discrete.
RWOW discrettes are not available in Downlist Format 60.

43-54

COFC

APPL PG (VWB37 PG-B)
PFK5 KEY - PRESS (LDB READ)

43-55

COFC

CRT (VWB37 PG-B)
BRAKES STATUS AND TEST SELECT

LANDING GEAR STATUS

VERIFY "RWOW" STATUS = ON/UP ARROW (U)

R NO WOW	1U	2U	3U	4U
NULL FAILL	1U	2U	3U	4U

*****End of Redundant Weight On Wheels (RWOW) Status*****

43-56 COFC OTC 132
 CGNC

GN&C System Power Up complete.

NOTE

The following OMRS is satisfied by GOAL software in format 42 or 44. This step is also satisfied by previous Redundant Weight on Wheels (RWOW) Status if Downlist Format is 60.

43-57

Noted requirements complete.

OMRSD [V51AF0.245-1R](#)

OMRSD [V51AF0.250](#)

43-58

COFC

CURSOR CNTL (SAB19/SWB01)

COUNTDOWN - OPS MANAGER

XMIT CURSOR KEY - PRESS

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APPROVED

43-59

COFC

CURSOR CNTL (SAB23/SWB100)
AEROSURFACE DRIVER CHECKS
XMIT CURSOR KEY - PRESS

43-60

COFC

CURSOR CNTL (SAB23/VSB100)
START TEST
XMIT CURSOR KEY - PRESS

43-61

COFC

CRT (SAB23/VSB100)
VERIFY
AEROSURFACE DRIVER CHECKS SUCCESSFUL

NOTE

Pre-launch MPS actuator position checks perform a “reasonablenss check” of the SSME TVC positions. The limits specified in GOAL program VSB100 are arbitrary and are based upon nominal time line for SSME TVC null lock removal and typical actuator drift rates. If locks are removed earlier than normal, launch is delayed or scrubbed, or drift rates are higher than typical, VSB100 may indicate “PRE-LAUNCH MPS POSN CHECKS UNSUCCESSFUL”. The OMRS allows drift rates up to 0.578 deg/30 minutes.

43-62

COFC

CURSOR CNTL (SAB23/VSB100)
PRE-LAUNCH MPS ACTUATOR POSITION CHECKS
XMIT CURSOR KEY - PRESS

43-63

COFC

CURSOR CNTL (SAB23/VSB100)
START TEST
XMIT CURSOR KEY - PRESS

NOTE

Perform next step for nominal SSME TVC actuator drift.

43-64

COFC

CRT (SAB21/VSB100)
VERIFY
PRE-LAUNCH MPS ACTUATOR POSITION CHECKS SUCCESSFUL

Not Performed:_____

NOTE

Perform next three steps if VSB100 indicates "PRE-LAUNCH MPS POSN CHECKS UNSUCCESSFUL".

43-65

COFC

IF pre-launch MPS actuator position checks unsuccessful:

THEN perform the following:

1. **VERIFY MSG:**
 VSB100-035 PRE-LAUNCH MPS ACTR POSN CHECKS
 UNSUCCESSFUL
 SELECT PFK 3 - RETRY
 PFK 9 - TERMINATE TASK AND RETURN
 TO MENU
 PFK 15 - TERMINATE PROGRAM

2. **CURSOR CNTL**
 PFK 9 - PRESS

Not Performed: _____

43-66

COFC

CRT (SAB21/VWB03

VERIFY THE FOLLOWING:

- (1) SSME 1 PITCH POSN = -10.48 DEG TO +10.94 DEG
- (2) SSME 1 YAW POSN = -1.81 DEG TO +2.19 DEG
- (3) SSME 2 PITCH POSN = -1.68 DEG TO +10.48 DEG
- (4) SSME 2 YAW POSN = -4.31 DEG TO +8.48 DEG
- (5) SSME 3 PITCH POSN = -2.32 DEG TO +10.94 DEG
- (6) SSME 3 YAW POSN = -8.86 DEG TO +4.69 DEG

Not Performed: _____

06-24-2011
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APPROVED

43-67

For those SSME TVC positions that failed the VSB100 “Reasonablenss checks”, use data retrievals to verify that the current positions are the result of SSME drift and not that of a step function shift.

Not Performed:_____

43-68

COFC

CONSOLE KYBD (SAB23/VSB100)
PFK15 KEY - PRESS

***** End of Option 6 - GN&C System Powerup *****

Option 7 - GN&C System Self Tests

NOTE
Perform this option if the full GN&C system activation is performed.

Option 7 Not Performed: _____

IDP 3 to Console C11

NOTE
IDP is required for the RCS single command tests only and is not a prerequisite for any other GNC system activation.

43-69 **COFC** **OTC** **132**
 OTC **CDPS**

Change responsible console for IDP 3 to Console C11.

43-70 **CDPS**

CONSOLE KYBD
HOME CMD KEY - PRESS
ISSU N72IV102D #B00B
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

HOME CMD KEY - PRESS
C CO _DEU3G LDBA C11
XMIT CMD KEY - PRESS

43-71 **CDPS** **OTC** **132**
 OTC **COFC**

Responsible console for IDP 3 now assigned to C11.

NOTE

The following are independent operations and may be performed in parallel, in any order, and in conjunction, with IMU or Star Tracker operations.

NOTE

Downlist Format 42 is not required for Countdown RJD single command test. Do not change to Format 42 (per OMI V1123) unless this test must be used to verify RJD driver out discretes.

43-72

**COFC
CGNC**

Perform GN&C System Self Tests per RT OMI [V1123.130](#) .

1. ADTA Self Test (5 minutes)
2. Orbiter RGA Turnaround Null/Self Test (ground test)
(10 minutes)
3. AA Turnaround Self Test (10 minutes)
4. RCS Trickle Current Single Command Test (normal jets only)
(15 minutes)

RT OMI Log No. _____

IMU Warm-up/Standby

NOTE

IMU Warm-up/Standby shall occur no later than L-15H20M.

NOTE

The next step will require ECL to activate one IMU fan to support IMU operations for remainder of this OMI.

NOTE

IMU and star tracker are independent operations and may be performed in parallel.

43-73

CGNC

Perform Orbiter IMU Powerup/Standby operations per RT OMI [V1123.260](#) (30 minutes; 5 minutes with CDR).

RT OMI Log No. _____

***** End of IMU Warm-up/Standby *****

Star Tracker Functional Checkout

NOTE

Star Tracker Functional Checkout is required one time prior to Launch, making the repeat of the test optional for a recycle Launch Countdown. Do not perform this test if it has been performed in the previous Countdown unless there is concern over activity in the general LRU area, concern over possible trend data, or concern over time elapsed since last test.

Star Tracker Functional Checkout can be performed before or after, but not in parallel with, the switch list part of GNC System Powerup. The switch positions are incompatible for both operations.

Star Tracker Functional Checkout Not Performed: _____

NOTE

The next step will require an I/O reset. DPS can expect I/O errors to occur for items not powered up at this time.

43-74

CGNC

Perform Star Tracker Functional Checkout:

1. Star Tracker Powerup per RT OMI [V1123.320](#)
(20 minutes; 5 minutes with CDR)
2. Star Tracker Self Test per RT OMI [V1123.320](#) (5 minutes)
3. Star Tracker Powerdown per RT OMI [V1123.330](#)
(5 minutes with CDR)

RT OMI Log No. _____

***** End of Star Tracker Functional Checkout *****

IDP 3 Return to C12

43-75

COFC

```
CONSOLE KYBD
C CO _DEU3G LDBA C12
XMIT CMD KEY - PRESS
ISSU N72IV102D 0
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS
```

43-76

COFC

**OTC
CDPS**

132

Responsible console for IDP 3 is now C12.

***** End of IDP 3 Return to C12 *****

GNC LCC Monitor Activation

NOTE

Perform the next step after completion of GN&C System Powerup, GN&C System Self Tests and IMU Powerup.

NOTE

Allow one to two minutes for the next step to complete.

NOTE

Activation of the GN&C LCC monitor satisfies the listed requirement by the absence of an LCC GNC-26 failure annunciation.

43-77

COFC

CURSOR CONTROL (SAB20/VSB79 PG-B)

ACTIVATE LCC MONITOR

XMIT CURSOR KEY - PRESS

OMRSD [S00FM0.110-1R \(SWB02\)](#)

***** End of GNC LCC Monitor Activation *****

OV105 Speedbrake EMON Limit

NOTE

The following step will change the EMON limit for the speedbrake channel 1 position feedback from the default limit of 5 +/- 1 deg, to an adjusted limit of 3.5 deg to 6.0 deg. This is to account for a known bias of approximately -0.75 deg in the OV-105 speedbrake channel 1 position.

Perform the next step only if vehicle is OV-105 and only after LCC monitor activation has been completed.

43-78

COFC

CONSOLE KYBD
C EL V57H0201C1 3.5 6.0
XMIT CMD KEY - **PRESS**

Not Performed: _____

End of OV105 Speedbrake EMON Limit

Activate IMU Powerup LCC EMON

43-79

CGNC

APPL PG-A (SAB20/SWB02)
PFK13 KEY - PRESS (ACT EMON SETUP)

43-80

CGNC

CURSOR CONTROL (SAB20/SWB02 PG-A)
A-IMU PWR UP
XMIT CURSOR KEY - PRESS

43-81

CGNC

APPL PG-A (SAB20/SWB02)
PFK13 KEY - PRESS (DEACT EMON SETUP)

***** End of Activate IMU Powerup LCC EMON *****

Clear GNC LCC Disk Files

43-82 COFC

APPL PG-B (SAB20/SWB02)
PFK3 KEY - PRESS (PARAM ACT/INH PG)

NOTE

“Clear All Bypasses” will turn magenta while LCC parameters are cleared (approx 1 minute) then go back to cyan.

43-83 COFC

CURSOR CNTL (SAB20/SWB02 PG-B)
CLEAR ALL BYPASSES
XMIT CURSOR KEY - PRESS

43-84 COFC

APPL PG-B (SAB20/SWB02)
PFK5 KEY - PRESS (LCC MONITOR ACTIVITY PG)

***** End of Clear GNC LCC Disk Files *****

GNC OPS 101 Profile MON Setup

43-85

COFC

CURSOR CNTL (SAB19/SWB01 PG-B)
COUNTDOWN - DETAIL
XMIT CURSOR KEY - PRESS

43-86

COFC

APPL PAGE (VWB05 PG-B)
PFK8 KEY - PRESS (CLEAR ALL BYPASSES)
PFK15 KEY - PRESS (TERMINATE)

***** End of GNC OPS 101 Profile MON Setup *****

***** End of Option 7 - GN&C System Self Tests *****

***** End of Operation 43 *****

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OPERATION 44 MPS Helium Tank Load GSE Set Point Verification

Shop: **MLP**
Cntrl Rm Console: **C4**
OPR: **MPS**
Zone: **N/A**
Hazard (Y/N): **N**
Duration (Hrs): **4.0**

NOTE

Perform this operation if MPS GSE Helium GSE Set Point Verification is required during Scrub Turnaround operations.

Operation (Not Performed:)

NOTE

This operation may be performed multiple times.

Record data and verifications for this operation in Table 44-1 - MPS Helium Tank Loading/GSE Set Point Verification.

NOTE

MPS Rationale for S72-0685-1 Panel Leg Set Points:

LCC MPS-01 specifies that the MPS/SSME helium tanks must be between 4100 and 4500 psia from T-2M55S to T-13S. If these limits are exceeded, the GLS will initiate a Cutoff which will result in Recycle to T-20M and, most likely, a minimum Scrub of 24 hours.

In order to provide maximum redundancy during terminal count, both the primary and secondary reg isolation valves must be configured OPEN to maintain supply pressure to the on-board Orbiter helium tanks. In this configuration, if the reg set points are close together, supply to the vehicle oscillates between the two legs causing unacceptable wear on the leg isolation check valves. This leads to particulate generation and premature failure of the CVs.

Primary and Secondary leg control bands and set point values are based on the following operational considerations:

- 1) To minimize outlet Check Valve wear, the regulators will be set with an absolute minimum differential of 50 psi between set points.
- 2) The SSME helium tank pressures can decrease as much as 150 psi during the transition between PSN3 and PSN4.
- 3) The highest helium tank pressure control point during S72-0685-1 panel setup is limited to 4450 psia to protect the upper LCC and OMRS limit of 4500 psia.
- 4) Helium load is marginal for worst case RTLS missions, so loading towards the upper limit of the overall control band is preferable.

Taking the above into account has resulted in the recommended control bands and optimum set points for the primary and secondary 4500 regulators. The control bands and set points are applied to the highest MPS/SSME helium tank pressure.

Control band for the primary reg is 4400 to 4450 psia with the optimum set point as close to 4450 as is reasonably obtainable while maintaining at least a 50 psi differential between that setting and the setting of the secondary reg.

Control band for the secondary reg is 4325 to 4375 psia with the optimum set point as close to 4375 as is reasonably obtainable while maintaining at least a 50 psi differential between that setting and the setting of the primary reg.

NOTE

Adjustment of GSE regulators, with associated vent and isolation valves open and/or closed, may be performed as required to obtain/maintain desired set points.

44-1 OTC CMPS 132
 *PAD
 QMTG

Perform Helium GSE Set Point Verification on Channel 168.

CAUTION

If the SSMEs are in PSN3, there will be approximately 33 scfm demand for each engine. If the GSE supply must be secured, the helium tanks will decay rapidly at approximately 20 psi/min. Do not allow the pressure delta to exceed 400 psi. A tank cycle will be incurred on the 17.3 cu ft tanks in the Midbody if a pressure delta of 425 psi is attained.

NOTE

The S72-0685-1 Panel 4500 Primary and Secondary legs may be in one of the following three nominal configurations depending on regulator performance during the previous Load/Launch attempt:

1. Both primary and secondary 4500 leg reg isolation valves Open.
2. Primary 4500 leg reg isolation valve Open,
Secondary 4500 leg reg isolation valve Closed.
3. Primary 4500 leg reg isolation valve Closed,
Secondary 4500 leg reg isolation valve Open.

NOTE

In the next steps, the primary 4500 reg isolation valve will be closed to verify the set point of the secondary 4500 reg. The Orbiter interconnect in valves will remain open to allow the MPS tank to track the SSME tanks during regulator adjustment.

44-2 **CMPS QMTG 168**

Valves will be cycled within the S72-0685-1 panel. Valve cycling and changes in flow may be audible.

44-3 **CMPS**

CURSOR CNTL (VAE18 PG-B)

IF presently open,
A74935 (4500 PRIMARY REG ISOL VLV) - CLOSE

Not Performed:_____

44-4 **CMPS**

CURSOR CNTL (VAE18 PG-B)

IF presently closed,

THEN:

A74937 (4500 SECONDARY REG ISOL VLV) - OPEN

Not Performed:_____

NOTE

Allow MPS/SSME helium tank pressures to reach secondary reg control pressure stabilization point prior to making any adjustments to the secondary reg set point. If MPS/SSME helium tank pressures deviate from the 4300 to 4450 psia range, begin regulator adjustment. Optimum set point will maintain the highest Orbiter helium tank pressure at 4375 psia.

50 psid minimum between primary and secondary leg final set points is required.

44-5

CMPS

CRT (VAE18 PG-B)

RECORD INITIAL SECONDARY REG STABILIZATION POINT
(N/A IF REG ADJUSTMENT REQUIRED BEFORE
STABILIZATION POINT IS ATTAINED) :

S72-0685-1 PANEL :

SECONDARY REG OUT PRESSURE (_____)

PANEL OUT PRESSURE (_____)

ORBITER HELIUM SUPPLY :

MPS HELIUM TANK SUPPLY PRESSURE (_____)

SSME 1 HELIUM TANK SUPPLY PRESSURE (_____)

SSME 2 HELIUM TANK SUPPLY PRESSURE (_____)

SSME 3 HELIUM TANK SUPPLY PRESSURE (_____)

Secondary Reg Set Point Verification Under Flow

NOTE

Perform this option if initial secondary reg set point is not between 4325 and 4375 psia as indicated on the highest helium tank supply pressure or if optimization for control at 4375 is desired.

Secondary Reg Set Point Verification Under Flow (Not Performed:)

NOTE

Secondary reg set point must be adjusted to control the highest helium tank supply pressure between 4325 and 4375 psia. Reg adjustment to fine tune reg to optimal set point of 4375 psia for the highest helium tank supply pressure is optional.

In the next step, the vent valve may be cycled open/closed as required to set the reg.

44-6 CMPS QMTG 168

IF SSMEs are not in PSN3

AND/OR additional flow is desired to facilitate Secondary Reg Set Point Adjustment,

THEN perform:

S72-0685-1 Panel 44A

A74941 vent valve -

Open 1/2 to 1 turn (CCW) to obtain audible flow.

Close (CW) when adjustment is complete.

(Not Performed:)

(T:)

44-7 CMPS QMTG 168

S72-0685-1 Panel 44A

Adjust the A74946 secondary reg (increase CW, decrease CCW) per CMPS direction to obtain the desired Orbiter helium control set point. Gage A74944 may be monitored for indication of reg out pressure.

(T:)

NOTE

The A74937 secondary 4400 reg isolation valve may be cycled closed/open as required to optimize reg set point.

44-8

CMPS

IF REQUIRED TO OPTIMIZE REG SET POINT,

THEN PERFORM:

CURSOR CNTL (VAE18 PG-B)

A74937 (4500 SECONDARY REG ISOL VLV) - CLOSE/OPEN

(Not Performed:)

NOTE

50 psid minimum between primary and secondary leg final set points is required.

44-9

CMPS

CRT (VAE18 PG-B)

VERIFY SECONDARY REG SET POINT IS CONTROLLING
THE HIGHEST HELIUM TANK PRESSURE BETWEEN
4325 AND 4375 PSIA.

44-10

CMPS QMTG 168

S72-0685-1 Panel 44A

A74941 vent valve -

Verify fully closed (CW).

(T:)

***** End of Secondary Reg Set Point Verification Under Flow *****

44-11

CMPS

CRT (VAE18 PG-B)

RECORD SECONDARY REG FINAL SET POINT:

S72-0685-1 PANEL:

SECONDARY REG OUT PRESSURE (_____)

PANEL OUT PRESSURE (_____)

ORBITER HELIUM SUPPLY:

MPS HELIUM TANK SUPPLY PRESSURE (_____)

SSME 1 HELIUM TANK SUPPLY PRESSURE (_____)

SSME 2 HELIUM TANK SUPPLY PRESSURE (_____)

SSME 3 HELIUM TANK SUPPLY PRESSURE (_____)

NOTE

In the next steps, the secondary 4500 reg isolation valve will be closed to verify the set point of the primary 4500 reg. The Orbiter interconnect in valves will remain open to allow the MPS tank to track the SSME tanks during reg adjustment.

44-12

CMPS

CURSOR CNTL (VAE18 PG-B)

A74935 (4500 PRIMARY REG ISOL VLV) - OPEN

A74937 (4500 SECONDARY REG ISOL VLV) - CLOSE

NOTE

Allow MPS/SSME helium tank pressures to reach primary reg control pressure prior to making any adjustments to the primary reg set point. If MPS/SSME helium tank pressures deviate from the 4300 to 4450 psia range, begin reg adjustment. Optimum set point will maintain the highest Orbiter helium tank pressure at 4450 psia.

50 psid minimum between primary and secondary leg final set points is required.

44-13

CMPS

CRT (VAE18 PG-B)

RECORD INITIAL PRIMARY REG STABILIZATION POINT
(N/A IF REG ADJUSTMENT REQUIRED BEFORE
STABILIZATION POINT IS ATTAINED) :

S72-0685-1 PANEL:

PRIMARY REG OUT PRESSURE(_____)

PANEL OUT PRESSURE(_____)

ORBITER HELIUM SUPPLY:

MPS HELIUM TANK SUPPLY PRESSURE(_____)

SSME 1 HELIUM TANK SUPPLY PRESSURE(_____)

SSME 2 HELIUM TANK SUPPLY PRESSURE(_____)

SSME 3 HELIUM TANK SUPPLY PRESSURE(_____)

Primary Reg Set Point Verification Under Flow

NOTE

Perform this option if initial primary reg set point is not between 4400 and 4450 psia as indicated on the highest helium tank supply pressure, or if optimization for control at 4450 is desired.

Primary Reg Set Point Verification Under Flow (Not Performed:)

NOTE

Primary reg set point must be adjusted to control the highest helium tank supply pressure between 4400 and 4450 psia. Reg adjustment to fine tune reg to optimal set point of 4450 psia for the highest helium tank supply pressure is optional.

In the next step, the vent valve may be cycled open/closed as required to set reg.

44-14 CMPS QMTG 168

IF the SSMEs are not in PSN3
AND/OR additional flow is desired to facilitate primary reg set point adjustment,

THEN perform:
S72-0685-1 Panel 44A

A74931 vent valve -
Open 1/2 to 1 turn (CCW) to obtain audible flow.
Close (CW) when adjustment is complete.

(Not Performed:)
(T:)

44-15 CMPS QMTG 168

S72-0685-1 Panel 44A

Adjust the A74926 primary reg (increase CW, decrease CCW) per CMPS direction to obtain the desired Orbiter helium control set point.
Gage A74928 may be monitored for indication of reg out pressure.

(T:)

NOTE

The A74935 primary 4500 reg isolation valve may be cycled closed/open as required to set reg.

44-16

CMPS

IF REQUIRED TO SET REG,

THEN PERFORM:

CURSOR CNTL (VAE18 PG-B)

A74935 PRIMARY 4500 REG ISOL - CLOSE/OPEN

(Not Performed:)

NOTE

50 psid minimum between primary and secondary leg final set points is required.

44-17

CMPS

CRT (VAE18 PG-B)

VERIFY PRIMARY REG SET POINT IS CONTROLLING
THE HIGHEST HELIUM TANK PRESSURE BETWEEN
4400 AND 4450 PSIA.

44-18

CMPS QMTG 168

S72-0685-1 Panel 44A

A74931 vent valve -

Verify fully closed (CW).

(T:)

***** End of Primary Reg Set Point Verification Under Flow *****

44-19

CMPS

CRT (VAE18 PG-B)
RECORD PRIMARY REG FINAL SET POINT:

S72-0685-1 PANEL:
PRIMARY REG OUT PRESSURE (_____))
PANEL OUT PRESSURE (_____))

ORBITER HELIUM SUPPLY:
MPS HELIUM TANK SUPPLY PRESSURE (_____))
SSME 1 HELIUM TANK SUPPLY PRESSURE (_____))
SSME 2 HELIUM TANK SUPPLY PRESSURE (_____))
SSME 3 HELIUM TANK SUPPLY PRESSURE (_____))

44-20

CMPS

CURSOR CNTL (VAE18 PG-B)

A74937 (4500 SECONDARY REG ISOL VLV) - OPEN

NOTE

The following two steps verify proper configuration of the S72-0685-01 Panel Primary and Secondary legs to support Launch Countdown.

44-21

CMPS

CRT (VAE18 PG-B)

Verify

A74935 (4500 PRIMARY REG ISOL VLV) - OPEN
A74937 (4500 SECONDARY REG ISOL VLV) - OPEN

44-22

CMPS

CRT (VAE18 PG-B)

VERIFY PRIMARY REG IS CONTROLLING BETWEEN 4400 AND 4450 PSIA, SECONDARY SET POINT IS BETWEEN 4325 AND 4375 PSIA, AND THERE IS 50 PSID MINIMUM BETWEEN SET POINT.

RECORD THE FINAL PRIMARY AND SECONDARY SET POINT VALUES FOR THE HIGHEST ORBITER HELIUM TANK PRESSURE:

(PRIMARY _____)

(SECONDARY _____)

44-23

CMPS
OTC

OTC
***PAD**

132

S72-0685-1 Panel Primary and Secondary 4500 Leg Set Point Verification is complete.

NOTE

Table 44-1 - MPS Helium Tank Loading/GSE Set Point Verification provides verification record for performance of MPS Helium Tank Loading/GSE Set Point Verification per Operation 44 during Scrub Turnaround operations.

Table 44-1 Not Performed: _____

Table 44-1 - MPS Helium Tank Loading/GSE Set Point Verification					
Step	Run 1	Run 2	Run 3	Run 4	Run 5
44-1					
44-2					
44-3					
Not Performed:					
44-4					
Not Performed:					
44-5 - Initial Secondary Reg Stabilization Point					
Sec R/O Press					
PNL Out Press					
MPS					
SSME 1					
SSME 2					
SSME 3					
Secondary Reg Set Point Verification Under Flow					
Not Performed:					
44-6 Not Performed:					

Table 44-1 - MPS Helium Tank Loading/GSE Set Point Verification (cont'd)					
Step	Run 1	Run 2	Run 3	Run 4	Run 5
T:					
44-7					
T:					
44-8					
Not Performed:					
44-9					
44-10					
T:					
*** End of Secondary Reg Set Point Verification Under Flow ***					
44-11 - Secondary Reg Final Set Point					
Secondary R/O					
Panel Out					
MPS					
SSME 1					
SSME 2					
SSME 3					
44-12					
44-13 - Initial Primary Reg Stabilization Point					
Primary R/O					
Panel Out					
MPS					
SSME 1					
SSME 2					
SSME 3					

Table 44-1 - MPS Helium Tank Loading/GSE Set Point Verification (cont'd)					
Step	Run 1	Run 2	Run 3	Run 4	Run 5
Primary Reg Set Point Verification Under Flow					
Not Performed:					
44-14 Not Performed:					
T:					
44-15 T:					
44-16 Not Performed:					
44-17					
44-18 T:					
*** End of Primary Reg Set Point Verification Under Flow ***					
44-19 - Primary Reg Final Set Point					
Primary R/O					
Panel Out					
MPS					
SSME 1					
SSME 2					
SSME 3					
44-20					

Table 44-1 - MPS Helium Tank Loading/GSE Set Point Verification (cont'd)					
Step	Run 1	Run 2	Run 3	Run 4	Run 5
44-21					
44-22 Primary					
Secondary					
44-23					

*** End of Operation 44 ***

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OPERATION 45 ECLSS System

Shop: **FWD**

Cntrl Rm Console: **C5**

OPR: **ECL**

Zone: **121, 122, 123**

Hazard (Y/N): **Y**

Duration (Hrs): **6.0**

NOTE

Perform the following options when directed by the controlling sequences.

Option A - ECLSS Reconfiguration to Support Ingress Switch List

NOTE
Perform this option if directed by controlling sequence.

Option A Not Performed: _____

NOTE
Steps involving Crit 1, 1R and/or 1S items are contained in the following operation.

45-1 OTC CECL 132
CDR

Perform ECLSS Reconfiguration to Support Ingress Switch List.

45-2 CECL CDR 143

PANEL L2

FLASH EVAP
FEEDLINE HTR
 A SUPPLY SW - 2 L2A01S023
 B SUPPLY SW - 2 L2A01S024

45-3 CECL

CRT (VAG28 PG-B)
FDLN HTR A SPLY
HA-2 SON ON V63S1861E1
FDLN HTR B SPLY
HB-2 SON ON V63S1866E1

45-4 CECL CDR 143

PANEL L1

FLASH EVAP CONTROLLER
SEC SELECT SW - A SPLY L1A02S045

HI LOAD EVAP SW - ENABLE L1A02S034

45-5 CECL

CRT (VAG28 PG-B)
FES CONTROLLER CMDS
HI-LD ENABLE SON ON V63S1620E1

45-6 CECL CDR 143

PANEL L1

FIRE SUPPRESSION
AV BAY 1 SW - SAFE L1A01S001
AV BAY 2 SW - SAFE L1A01S002
AV BAY 3 SW - SAFE L1A01S003

45-7 CECL

IF VAG60 IS IN AUTO MODE,

THEN PERFORM:

CURSOR CNTL (VAG60)
AUTO
XMIT CURSOR KEY - PRESS

CRT
VERIFY VAG60 IN MANUAL MODE

Not Performed: _____

45-8

CECL

CRT (VAG59, PG-B)

RECORD

AVIONICS BAY 1 FAN A (SWITCH)

FAN DELTA PRESS _____ IN. H₂O BD

AIR OUT TEMP _____ DEG F BD

AVIONICS BAY 2 FAN B (SWITCH)

FAN DELTA PRESS _____ IN. H₂O BD

AIR OUT TEMP _____ DEG F BD

AVIONICS BAY 3 FAN A (SWITCH)

FAN DELTA PRESS _____ IN. H₂O BD

AIR OUT TEMP _____ DEG F BD

45-9

CECL

CRT (VAG10, PG-B)

RECORD

CABIN PRESS _____ PSIA BD

45-10

CECL

RECONFIGURE COOLING TO POST CREW INGRESS
CHECKLIST CONFIGURATION USING OMI [S9001.105](#) .

FC LOOP 1

PUMP A OFF
PUMP B ON (VIA CABIN SW)

FC LOOP 2

PUMP A OFF
PUMP B ON (VIA CABIN SW)

H₂O LOOP 2

SEC PUMP ON (VIA CABIN SW)

BYPASS VALVE ADJUSTED TO AN INTRX FLOW OF
950-1000 LBHR

H₂O LOOP 1

BYPASS VALVE ADJUSTED TO AN INTRX FLOW OF
950-1000 LBHR

PUMP A OFF

NOTE

Pump B will be run for 2 minutes minimum to verify its ability to support Countdown operations.

PUMP B ON
PUMP B OFF

AVIONICS BAY 1

FAN B ON (VIA CABIN SW)
FAN A OFF

AVIONICS BAY 2

FAN A ON (VIA CABIN SW)
FAN B OFF

AVIONICS BAY 3

FAN B ON (VIA CABIN SW)
FAN A OFF

IMU

FAN A OFF

NOTE

Allow Fan C to run independently for 2 minutes minimum prior to performing Fan B on, to verify ability to support Countdown operations.

FAN B ON (VIA CABIN SW)
FAN C OFF

CABIN

FAN A ON (VIA CABIN SW)
FAN B OFF

HUMIDITY SEP

SEP A OFF
SEP B ON

45-11

CECL

CURSOR CNTL (VAG60)
AUTO
XMIT CURSOR KEY - PRESS

CRT
VERIFY VAG60 IN AUTO MODE

45-12 CECL

CONSOLE KYBD
SET V61K2866NL OFF
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

SET N61IV011E OFF
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

45-13 CECL CDR 143

PANEL L1

CABIN TEMP CNTLR SW - OFF

CAUTION

To avoid valve damage, do not move the motor arm in the next step. The valve arm may be moved to allow connection to the motor.

45-14 CECL CDR 143

IF THE CABIN TEMPERATURE CONTROLLER LINKAGE IS NOT CONNECTED TO THE SECONDARY ACTUATOR,

THEN PERFORM:

PANEL MD44F

1. **REMOVE** VALVE LINK SV755665-2 CABTVL FROM TEMP CONTROL PRIMARY ACTUATOR BY RELEASING QUICK-RELEASE PIN.
2. **CONNECT** VALVE LINK SV755665-2 CABTVL TO TEMP CONTROL SECONDARY ACTUATOR UTILIZING QUICK-RELEASE PIN.

Not Performed: _____

45-15 CECL CDR 143

PANEL L1

CABIN TEMP CNTLR SW - 2

45-16 CECL

CRT (VAG30 PG-B)
CABIN AIR, CT CTR
SS1 OFF
SS2 ON

45-17 CECL CDR 143

PANEL L1

CABIN TEMP SW - WARM (FULL CW)

45-18 CECL

CRT (VAG30, PG-B)
CT CTR 2
CTS _____ PCT 95 MIN

NOTE

It may take several minutes for valve to move from the full cold position as verified in the next step.

It may take up to nine minutes for the motor valve to move to full warm position as verified by the CDR.

45-19

CECL

CRT (VAG30 PG-B)
CT CTR 2
HXF OFF

45-20

CECL CDR 143

PANEL MD44F

VERIFY SECONDARY ACTUATOR IN FULL WARM POSITION

45-21

CECL CDR 143

PANEL L1

CABIN TEMP CNTLR SW - OFF

45-22

CECL

CRT (VAG30 PG-B)
CABIN AIR, CT CTR
SS1 OFF
SS2 OFF

CAUTION

To avoid valve damage, do not move the motor arm in the next step. The valve arm may be moved to allow connection to the motor.

45-23 CECL CDR 143

PANEL MD44F

1. **REMOVE** VALVE LINK SV755665-2 CABTVL FROM TEMP CONTROL SECONDARY ACTUATOR BY RELEASING QUICK-RELEASE PIN.
2. **CONNECT** VALVE LINK SV755665-2 CABTVL TO TEMP CONTROL PRIMARY ACTUATOR UTILIZING QUICK-RELEASE PIN.

45-24 CECL CDR 143

PANEL L1

CABIN TEMP CNTLR SW - 1

45-25 CECL

CRT (VAG30 PG-B)
CABIN AIR, CT CTR
SS1 ON
SS2 OFF

45-26 CECL CDR 143

PANEL L1

CABIN TEMP SW - COOL (FULL CCW)

45-27

CECL

CRT (VAG30, PG-B)
CABIN AIR CT CTR 1
CTS _____PCT 5 MAX

NOTE

It may take up to nine minutes for the motor to move to the full cool position.

45-28

CECL

CRT (VAG30 PG-B)
CT CTR 1
HXF ON

45-29

CECL CDR 143

PANEL MD44F

VERIFY PRIMARY ACTUATOR IN FULL COOL POSITION.

45-30

CECL CDR 143

PANEL L1A2

CABIN TEMP CNTRL SW - OFF

L1A2S11

45-31 CECL CDR 143

PANEL O1

AIR TEMP	
SELECT SW - CAB HX OUT	O1A01S002
H ₂ O PUMP OUT PRESS	
LOOP SW - LOOP 2	O1A01S003
FREON SW - LOOP 1	O1A01S004
O ₂ /N ₂ FLOW	
SELECT SW - SYS 1 O ₂	O1A01S005
PPO ₂	
SENSOR SW - SENSOR A	O1A01S006

45-32 CECL CDR 143

PANEL L2

FREON LOOP ISOLATION
MODE SW - OFF (CENTER)

45-33 CECL CDR 143

PANEL L4

ROW N
AC 2
 RAD ISOL A
 PH C CB - CLOSE
AC 3
 RAD ISOL B
 PH C CB - CLOSE

45-34 CECL CDR 143

PANEL O14

ROW C

RAD ISOL CONTR CB - CLOSE

45-35 CECL CDR 143

PANEL O14

ROW D

MN A

ATM PRESS CONTROL

N₂ SUPPLY 1 CB - CLOSE O14A14C018

O₂/N₂ CNTLR 1 CB - CLOSE O14A14C019

O₂ XOVR 1 CB - CLOSE O14A14C020

N₂ REG INLET 1 CB - CLOSE O14A14C021

45-36 CECL PLT 143

PANEL O15

ROW D

MN B

ATM PRESS CONTROL

N₂ SUPPLY 2 CB - CLOSE O15A15C017

O₂/N₂ CNTLR 2 CB - CLOSE O15A15C018

O₂ XOVR 2 CB - CLOSE O15A15C019

N₂ REG INLET 2 CB - CLOSE O15A15C020

45-37 CECL PLT 143

PANEL O16

ROW D

MN C

ATM PRESS CONTROL

O₂ EMER CB - CLOSE O16A16C016

NOTE

Master alarms may occur in next three steps due to oxygen and nitrogen flow rates being above 4.9 pph momentarily. Reset the master alarm.

45-38 CECL CDR 143

PANEL L2

ATM PRESS CONTROL

O₂ EMER SW - CLOSE UNTIL O₂ EMER TB CL, L2A01S012
THEN RELEASE L2A01DS008

45-39 CECL

CRT (VAG10 PG-B)

VLV 5

V61X2163E1

PCL

V61X2165E1

45-40 CECL CDR 143

PANEL O16

ROW D

MN C

H₂O ALT PRESS CB - CLOSE 016A16C015

ATM PRESS CONTROL

O₂ EMER CB - OPEN 016A16C016

N₂ System 2 Supply Valve Configure

NOTE
Perform this option for OV-103 only.

N₂ System 2 Supply Valve Configure Not Performed: _____

45-41 **CECL CDR 143**

PANEL L2

ATM PRESS CONTROL
N₂ SYS 1
 SUPPLY SW - CL UNTIL TB CL
 REG INLET SW - CL UNTIL TB CL
N₂ SYS 2
 SUPPLY SW - CL UNTIL TB CL
 REG INLET SW - OP UNTIL TB OP

45-42 **CECL CDR 143**

PANEL MO10W

H₂O TK N₂ REG INLET
 SYS 2 VLV - OPEN
H₂O TK N₂ ISOL
 SYS 2 VLV - OPEN

45-43 **CECL CDR 143**

PANEL L1

H₂O ALTERNATE PRESS SW - OPEN

45-44 **CECL**

CRT (VAG10 PG-B)
RECORD

P8 : _____ PSIA LESS THAN 150

45-45 CECL CDR 143

PANEL L1

H₂O ALTERNATE PRESS SW - CLOSE

45-46 CECL CDR 143

PANEL L2

ATM PRESS CONTROL
N₂ SYS 2
SUPPLY SW - OP UNTIL TB OP

45-47 CECL

CRT (VAG10 PG-B)

VERIFY

VLV 6 - POP

***** End of N₂ System 2 Supply Valve Configure *****

45-48 CECL CDR 143

IF FOR OV-104 AND OV-105,

THEN PERFORM:
PANEL L2

ATM PRESS CONTROL

 O₂ XOVR

 SYS 1 SW - OPEN L2A01S015

 SYS 2 SW - OPEN L2A01S018

 N₂ SYS 1

 SUPPLY SW - OPEN UNTIL SUPPLY TB - OP, L2A01S013
 THEN RELEASE L2A01DS006

 REG INLET SW - OPEN UNTIL REG INLET L2A01S014
 TB - OP, THEN RELEASE L2A01DS007

 N₂ SYS 2

 SUPPLY SW - OPEN UNTIL SUPPLY TB - OP, L2A01S021
 THEN RELEASE L2A01DS010

 REG INLET SW - OPEN UNTIL REG INLET L2A01S022
 TB - OP, THEN RELEASE L2A01DS011

O₂/N₂ CNTLR VLV

 SYS 1 SW - OPEN L2A01S016

 SYS 2 SW - CLOSE L2A01S019

PPO₂ SNSR/VLV - NORM L2A01S017

Not Performed: _____

45-49 CECL CDR 143

IF FOR OV-103,

**THEN PERFORM:
PANEL L2**

ATM PRESS CONTROL

O₂ XOVR

SYS 1 SW - OPEN L2A01S015

SYS 2 SW - OPEN L2A01S018

N₂ SYS 1

SUPPLY SW - OPEN UNTIL SUPPLY TB - OP, L2A01S013

THEN RELEASE L2A01DS006

REG INLET SW - OPEN UNTIL REG INLET L2A01S014

TB - OP, THEN RELEASE L2A01DS007

O₂/N₂ CNTLR VLV

SYS 1 SW - OPEN L2A01S016

SYS 2 SW - CLOSE L2A01S019

PPO₂ SNSR/VLV - NORM L2A01S017

Not Performed:_____

45-50

CECL

CRT (VAG10 PG-B)	
VLV 7	
SOPN	V61S2100E1
POP	V61X2103F1
VLV 9	
SOPN	V61S2200E1
POP	V61X2203F1
VLV 2	
POP	V61X2323E1
VLV 4	
POP	V61X2321E1
VLV 6	
POP	V61X2319E1
VLV 8	
POP	V61X2328E1
SYS 1 VLV	
SOP ON	V61S2370E1
S AUTO OFF	V61S2371E1
VLV 10	
POP ON	V61X2372E1
SYS 2 VLV	
SOP OFF	V61X2375E1
S AUTO OFF	V61X2376E1
VLV 12	
PCL	V61X2377E1
SNSR/VLV	
SNRM ON	V61X2350E1
SYS 1 MODE	
SNRM ON	V61S2140E1
SYS 2 MODE	
SNRM ON	V61S2142E1

45-51 CECL CDR 143

PANEL C5

DIRECT O₂ VLV - CLOSE

NOTE

LEH oxygen valves will remain closed until the seat oxygen hoses have been installed and oxygen samples performed.

45-52 CECL CDR 143

PANEL C6

LEH O₂ 1 VLV - CLOSE

LEH O₂ 2 VLV - CLOSE

LEH O₂ 3 VLV - CLOSE

LEH O₂ 4 VLV - CLOSE

45-53 CECL CDR 143

PANEL C7

LEH O₂ SUPPLY

SYS 1 VLV - OPEN

SYS 2 VLV - OPEN

45-54 CECL CDR 143

PANEL L4

ROW N

AC 2

FREON FLOW PROP 1

PH A CB - CLOSE

L4A04C042

AC 3

FREON FLOW PROP 2

PH A CB - CLOSE

L4A04C045

ROW P

AC 1

RAD CNTLR 1B

PH A CB - CLOSE

L4A04C128

RAD CNTLR 2B

PH B CB - CLOSE

L4A04C044

AC 2

RAD CNTLR 1A

PH B CB - CLOSE

L4A04C129

AC 3

RAD CNTLR 2A

PH B CB - CLOSE

L4A04C047

45-55 CECL CDR 143

PANEL O14

ROW C

MN A

SMOKE DETN

L/R FLT DK CB - CLOSE O14A14C007

BAY 2A/3B CB - CLOSE O14A14C008

FIRE SUPPR BAY 3 CB - CLOSE O14A14C009

ROW D

MN A

FREON

RAD CNTLR

1 CB - CLOSE O14A14C014

2 CB - CLOSE O14A14C015

ATM PRESS CONTROL

CABIN VENT CB - CLOSE O14A14C022

CABIN VENT ISOL CB - CLOSE O14A14C034

45-56 CECL PLT 143

PANEL O15

ROW C

MN B

SMOKE DETN

BAY 1B/3A CB - CLOSE O15A15C007

FIRE SUPPR BAY 1 CB - CLOSE O15A15C008

ROW D

MN B

FREON

RAD CNTLR

1 CB - CLOSE O15A150014

2 CB - CLOSE O15A150015

NOTE

In the next step, master alarm and klaxon may occur due to cabin DP/DT. Reset the master alarm.

ATM PRESS CONTROL

CABIN DP/DT CB - CLOSE O15A15C016

CABIN RELIEF A CB - CLOSE O15A15C022

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45-57 CECL PLT 143

PANEL O16

ROW C

MN C

SMOKE DETN

CABIN CB - CLOSE

O16A16C006

BAY 1A/2B CB - CLOSE

O16A16C007

FIRE SUPPR BAY 2 CB - CLOSE

O16A16C008

ROW D

MN C

ATM PRESS CONTROL

CABIN RELIEF B CB - CLOSE

O16A16C017

45-58 CECL PLT 143

PANEL O17

ROW C

SIGNAL CONDITIONER

FREON

A SW - AC 2

B SW - AC 3

NOTE
For questions about switch position, contact CPLE.

45-59 CECL CDR 143

IF FOR OV-103 AND OV-104 ONLY (NON-SPACEHAB) ,

THEN PERFORM:
PANEL C3

PAYLOAD SAFING
RTG PUMP SW - PRI

Not Performed:_____

45-60 CECL CDR 143

PANEL L4

ROW J
AC 3
SIG CONDR
HUM SEP
PH A CB - OPEN
IMU FAN
PH B CB - OPEN

NOTE
Verification of the next step may take up to 45 seconds.

45-61 CECL

CRT (VAG59 PG-B)
VERIFY

IMU FAN B INVERT RED XXX
HUM SEP B INVERT RED XXX

45-62 CECL CDR 143

PANEL L1

H₂O ALTERNATE PRESS SW - CLOSE L1A2S028

45-63

CECL

CRT (VAG10 PG-B)
VLV 14
SOPF

V61S2308E1

45-64

CECL CDR 143

IF CABIN VENT AND RELIEF VALVES POSITION
INDICATORS ARE NOT AS SHOWN,

THEN PERFORM:
PANEL L2

CABIN RELIEF

A SW - ENABLE UNTIL A TB ENA,
THEN RELEASE

L2A01S001
L2A01DS001

Not Performed:_____

45-65

CECL

CRT (VAG10 PG-B)
CAB + RV
A PEN ON
A PCL OFF

V61X2131E1
V61X2130E1

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45-66 CECL CDR 143

IF CABIN VENT AND RELIEF VALVES POSITION
INDICATORS ARE NOT AS SHOWN,

THEN PERFORM:
PANEL L2

CABIN RELIEF

B SW - ENABLE UNTIL B TB ENA, L2A01S002
THEN RELEASE L2A01DS002

Not Performed: _____

45-67 CECL

CRT (VAG10 PG-B)

CAB + RV

B PEN ON

V61X2136E1

B PCL OFF

V61X2135E1

45-68 CECL CDR 143

IF CABIN VENT AND RELIEF VALVES POSITION
INDICATORS ARE NOT AS SHOWN,

THEN PERFORM:
PANEL L2

CABIN VENT

VENT ISOL SW - CLOSE UNTIL VENT ISOL L2A01S003
TB CL, THEN RELEASE L2A01DS003

Not Performed: _____

45-69 CECL

CRT (VAG10 PG-B)

CAB ISOL

POP OFF

V61X2025E1

PCL ON

V61X2005E1

45-70 CECL CDR 143

IF CABIN VENT AND RELIEF VALVES POSITION
INDICATORS ARE NOT AS SHOWN,

THEN PERFORM:
PANEL L2

CABIN VENT
VENT SW - CLOSE UNTIL VENT TB CL, L2A01S004
THEN RELEASE L2A01DS004

Not Performed: _____

45-71 CECL

CRT (VAG10 PG-B)
CAB VENT
POP OFF V61X2065E1
PCL ON V61X2045E1

<p>NOTE Perform the CARGO COOLANT LOOP HEATERS switch verification for OV-103 and OV-105.</p>
--

45-72 CECL CDR 143

PANEL A14

CARGO COOLANT LOOP HEATERS
ORBITER ACCUM A AUTO - OFF
B AUTO - OFF
C AUTO - OFF
CARGO LINE A AUTO - OFF
B AUTO - OFF

Not Performed: _____

Docking System Configuration

NOTE

Perform this option if Docking System Panel (DSP) is installed.

Docking System Configuration Not Performed: _____

45-73 CECL CDR 143

PANEL O13

ROW A

ESS 1BC MN A CNTL CB - CLOSE

ROW C

ESS 2CA MN B CNTL CB - CLOSE

45-74 CECL CDR 143

PANEL A6A3

ESS 1BC

SYS PWR CNTL

SYS 1 CB - CLOSE

ESS 2CA

SYS PWR CNTL

SYS 2 CB - CLOSE

SYSTEM POWER

MN A SW - ON, VERIFY SYS 1 TB ON

MN B SW - ON, VERIFY SYS 2 TB ON

45-75 CECL CDR 143

PANEL A6A3

ESS 1BC
 DEPRESS
 SYS 1 VENT ISOL CB - CLOSE

MAIN A
 DEPRESS
 SYS 1 VENT CB - CLOSE

ESS 2CA
 DEPRESS
 SYS 2 VENT ISOL CB - CLOSE

MAIN B
 DEPRESS
 SYS 2 VENT CB - CLOSE

45-76 CECL CDR 143

PANEL A6A3

VESTIBULE DEPRESS VALVE
 SYS 1
 VENT ISOL SW - CLOSE UNTIL TB CL
 VENT SW - CLOSE UNTIL TB CL
 SYS 2
 VENT ISOL SW - CLOSE UNTIL TB CL
 VENT SW - CLOSE UNTIL TB CL

45-77

CECL

CRT (VAG32 PG-B)

VERIFY

VESTIBULE ISO VLV A OPEN OFF	V64X0141E1
VESTIBULE ISO VLV A CLOSE ON	V64X0142E1
VESTIBULE VLV A OPEN OFF	V64X0143E1
VESTIBULE VLV A CLOSE ON	V64X0144E1
VESTIBULE ISO VLV B OPEN OFF	V64X0145E1
VESTIBULE ISO VLV B CLOSE ON	V64X0146E1
VESTIBULE VLV B OPEN OFF	V64X0147E1
VESTIBULE VLV B CLOSE ON	V64X0148E1

45-78

CECL CDR 143

PANEL A6A3

ESS 1BC

DEPRESS

SYS 1 VENT ISOL CB - OPEN

MAIN A

DEPRESS

SYS 1 VENT CB - OPEN

ESS 2CA

DEPRESS

SYS 2 VENT ISOL CB - OPEN

MAIN B

DEPRESS

SYS 2 VENT CB - OPEN

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45-79 CECL CDR 143

PANEL A6A3

SYSTEM POWER

MN A SW - OFF, VERIFY SYS 1 TB OFF

MN B SW - OFF, VERIFY SYS 2 TB OFF

ESS 1BC

SYS PWR CNTL

SYS 1 CB - OPEN

ESS 2CA

SYS PWR CNTL

SYS 2 CB - OPEN

45-80 CECL CDR 143

PANEL O13

ROW A

ESS 1BC MN A CNTL CB - OPEN

ROW C

ESS 2CA MN B CNTL CB - OPEN

***** End of Docking System Configuration *****

45-81 CECL MS1 143

IF FOR OV-104 AND OV-105 ONLY,

THEN PERFORM:
PANEL MO51F, CO₂ REMOVAL SYSTEM

CONTROLLER 1
MN A SW - OFF
AC 1 SW - (CENTER)
MODE SW - (CENTER)
COMMON INSTR SW - OFF

AC 1
PH A CB - OPEN
PH B CB - OPEN
PH C CB - OPEN

CONTROLLER 2
MN C SW - OFF
AC 3 SW - (CENTER)
MODE SW - (CENTER)

AC 3
PH A CB - OPEN
PH B CB - OPEN
PH C CB - OPEN

Not Performed: _____

45-82 CECL MS1 143

PANEL ML86B

ROW B
MN A
VACUUM VENT ISOL VLV CB - CLOSE ML86BC067
MN B
VACUUM VENT NOZ HTR CB - CLOSE ML86BC066
VACUUM VENT ISOL VLV CB - CLOSE ML86BC068

45-83 CECL MS1 143

IF THE VALVE POSITION INDICATOR IS NOT AS SHOWN,

THEN PERFORM:
PANEL ML31C

VACUUM VENT
ISOL VLV

BUS SEL SW - MN A ML31CS010
CONTROL SW - CLOSE (15 SEC MAX) ML31CS011
UNTIL ISOL VLV TB - CL, ML31CDS007
THEN RELEASE

Not Performed: _____

45-84 CECL

CRT (VAG32 PG-B)
VAC VT ISO VLV MODE MN A ON V62S0205E1
VAC VT ISO VLV MODE MN B OFF V62S0206E1
VAC VENT ISOL VLV OPEN OFF V62S0207E1
VAC VENT ISOL VLV CLOSE ON V62S0208E1

45-85 CECL MS1 143

PANEL ML31C

VACUUM VENT
NOZZLE HTR SW - OFF ML31CS009

45-86 CECL MS1 143

PANEL ML86B

ROW B
MN A
VACUUM VENT ISOL VLV CB - OPEN ML86BC067
MN B
VACUUM VENT NOZ HTR CB - OPEN ML86BC066
VAC VENT ISOL VLV CB - OPEN ML86BC068

45-87 CECL MS1 143

PANEL ML86B

ROW C

MN A

EXTERNAL AIRLOCK HTR LINE

STRUC Z 1/2/3 CB - OPEN

VEST Z 1/2/3 CB - OPEN

MN B

EXTERNAL AIRLOCK HTR LINE

STRUC Z 1/2/3 CB - OPEN

VEST Z 1/2/3 CB - OPEN

45-88 CECL MS1 143

PANEL MO13Q

AIRLOCK FAN A SW - OFF

AIRLOCK FAN B SW - OFF

45-89 CECL CDR 143

PANEL MA73C

ROW G AC 1

ARLK TNL FAN A

PH A CB - OPEN

PH B CB - OPEN

PH C CB - OPEN

ROW G AC 2

ARLK TNL FAN B

PH A CB - OPEN

PH B CB - OPEN

PH C CB - OPEN

45-90 CECL MS1 143

IF ACCESS IS AVAILABLE,

THEN PERFORM:

MIDDECK FLOOR FWD OF AIRLOCK

EMU O₂ ISOL VLV - CLOSE 80V64MV20

CABIN PURGE VLV - CLOSE 80V64MV22

CABIN PURGE ISOL VLV - CLOSE 80V64MV21

Not Performed: _____

45-91 CECL MS1 143

PANEL ML86B

ROW D

MN A

MANNED MANUV UNIT

GN₂ SUPPLY

ISOL VLV A CB - CLOSE

PORT HTR A CB - OPEN

STBD HTR A CB - OPEN

MN B

MANNED MANUV UNIT

GN₂ SUPPLY

ISOL VLV B CB - CLOSE

PORT HTR B CB - OPEN

STBD HTR B CB - OPEN

45-92 CECL MS1 143

PANEL R13L

MANNED MANUV UNIT

GN₂ SUPPLY

ISOL VLV A - CLOSE UNTIL TB CLOSE

ISOL VLV B - CLOSE UNTIL TB CLOSE

45-93 CECL MS1 143

IF FOR OV-104 AND OV-105 ONLY,

THEN PERFORM:
PANEL ML86B

ROW E

MN A

CO₂ SYS1 CNTLR CB - OPEN

MN B

CO₂ COMMON INSTR CB - OPEN

MN C

CO₂ SYS2 CNTLR CB - OPEN

Not Performed: _____

45-94 CECL MS1 143

PANEL ML86B

ROW D

MN A

MANNED MANUV UNIT

GN₂ SUPPLY

ISOL VLV A CB - OPEN

MN B

MANNED MANUV UNIT

GN₂ SUPPLY

ISOL VLV B CB - OPEN

FCL1 & 2 Flow Control Valves to Full Cold Position

NOTE
 Payload Bay doors must be closed for flight prior to performing this option.

45-95 **CECL** **CDR** **143**

PANEL L1

RAD CONTROLLER

BYPASS VALVE

MODE

1 SW - AUTO L1A2S35

2 SW - AUTO L1A2S36

45-96 **CECL**

CRT (VAG04 PG-B)

FREON LOOP 1

BYP MODE

S AUTO ON V63S1220E1

S MAN OFF V63S1221E1

FREON LOOP 2

BYP MODE

S AUTO ON V63S1420E1

S MAN OFF V63S1421E1

45-97 **CECL** **CDR** **143**

IF THE VALVE POSITION INDICATORS ARE NOT AS SHOWN,

THEN PERFORM:

PANEL L1

FLOW PROP VLV

LOOP 1 SW - INTCHGR UNTIL LOOP 1 TB ICH, L1A2DS021
 THEN RELEASE (15 SEC MAX) L1A2DS001

FLOW PROP VLV

LOOP 2 SW - INTCHGR UNTIL LOOP 2 TB ICH, L1A2DS022
 THEN RELEASE (15 SEC MAX) L1A2DS002

Not Performed:_____

45-98 CECL CDR 143

PANEL L1

RAD CONTROLLER

LOOP 1 SW - AUTO A L1A2S26
LOOP 2 SW - AUTO A L1A2S27

45-99 **CECL**

CRT (VAG04 PG-B)

FREON LOOP 1

RAD CNTLR AUTO
SA ON V63S1211E1
SB OFF V63S1212E1

FREON LOOP 2

RAD CNTLR AUTO
SA ON V63S1411E1
SB OFF V63S1412E1

<p>NOTE Allow 90 seconds minimum prior to proceeding.</p>
--

45-100 CECL CDR 143

PANEL L1

VERIFY

RAD CONTROLLER

BYPASS VLV

1 TB - RAD L1A2DS003
2 TB - RAD L1A2DS004

45-101 **CECL**

CRT (VAG04 PG-B)

FREON LOOP 1

BYP VLV
PRAD ON V63X1222E1
PBYP OFF V63X1223E1

FREON LOOP 2

BYP VLV
PRAD ON V63X1422E1
PBYP OFF V63X1423E1

|

<p>NOTE</p> <p>Allow flow through radiators for 5 minutes minimum.</p>

45-102

CECL

CRT (VAG04 PG-B)		
FREON LOOP 1		
RAD OUT TEMP (T7)	_____ DEG F	V63T1208A1
	40 MINIMUM	
FREON LOOP 2		
RAD OUT TEMP (T6)	_____ DEG F	V63T1408A1
	40 MINIMUM	

<p>NOTE</p> <p>Payload Bay doors must be closed for Flight prior to working the next two steps.</p>
--

45-103

CECL

CRT (VAG04 PG-B)		
FREON LOOP 1		
INTERCHANGER FLOW	_____ LB/HR	V63R1100A1
	1950 MIN	
FREON LOOP 2		
INTERCHANGER FLOW	_____ LB/HR	V63R1300A1
	1950 MIN	

OMRSD [V63AD0.071 \(VAG59\)](#)

45-104

CECL CDR 143

PANEL L1

RAD CONTROLLER		
BYPASS VALVE		
MODE		
1 SW - MAN		L1A2S35
2 SW - MAN		L1A2S36

45-105

CECL

CRT (VAG04 PG-B)
FREON LOOP 1
BYP MODE
 SAUTO OFF V63S1220E1
 SMAN ON V63S1221E1

FREON LOOP 2
 BYP MODE
 SAUTO OFF V63S1420E1
 SMAN ON V63S1421E1

45-106

CECL CDR 143

PANEL L1

RAD CONTROLLER
BYPASS VALVE MAN SEL
1 SW - BYPASS UNTIL 1 TB BYP, L1A2S29
 THEN RELEASE (3 SECS MAX) L1A2DS003

2 SW - BYPASS UNTIL 2 TB BYP, L1A2S30
 THEN RELEASE (3 SECS MAX) L1A2DS004

45-107

CECL

CRT (VAG04 PG-B)
FREON LOOP 1
 BYP VL
 PRAD OFF V63X1222E1
 PBYP ON V63X1223E1

FREON LOOP 2
 BYP VL
 PRAD OFF V63X1422E1
 PBYP ON V63X1423E1

45-108

CECL CDR 143

PANEL L1

RAD CONTROLLER
 LOOP 1 SW - OFF L1A2S26
 LOOP 2 SW - OFF L1A2S27
 OUT TEMP SW - NORM L1A2S25

45-109

CECL

CRT (VAG04 PG-B)

FREON LOOP 1

RAD CNTLR AUTO

SA OFF

V63S1211E1

SB OFF

V63S1212E1

FREON LOOP 2

RAD CNTLR AUTO

SA OFF

V63S1411E1

SB OFF

V63S1412E1

NOTE

Perform one, both, or neither of the next two steps if required to supply cooling to payload for mission during Liftoff.

45-110

CECL

CDR

143

IF REQUIRED TO SUPPLY COOLING TO PAYLOAD FOR MISSION DURING LIFTOFF,

THEN PERFORM:

PANEL L1

FLOW PROP VLV

LOOP 1 SW - PAYLOAD UNTIL LOOP 1 TB PLBD,

THEN RELEASE (15 SEC MAX)

Not Performed:_____

45-111 CECL CDR 143

IF REQUIRED TO SUPPLY COOLING TO PAYLOAD FOR
MISSION DURING LIFTOFF,

THEN PERFORM:
PANEL L1

FLOW PROP VLV
LOOP 2 SW - PAYLOAD UNTIL LOOP 2 TB PLBD,
THEN RELEASE (15 SEC MAX)

Not Performed: _____

***** End of FCL1 & 2 Flow Control Valves to Full Cold Position *****

45-112 CECL OTC 132

ECLSS Reconfiguration to Support Ingress Switch List is complete.

***** End of Option A - ECLSS Reconfiguration to Support Ingress Switch List *****

Option B - C70-1226-3 Pressurization and Oxygen Sample

NOTE
Perform this option if directed by controlling sequence.

Option B Not Performed: _____

45-113 OTC CECL 132
 *PAD *PAD
 *PAD OMTO

Perform C70-1226-3 Pressurization and Oxygen Sample
(0-100 percent meter required).

45-114 CECL OMTO 143

C70-1226-3

1. A501543 supply shutoff valve - OPEN (CCW)
2. **Verify** no audible leaks.

T: _____

45-115 CECL OTC 132
 OTC STM
 STM JBPN 111

Request JBPN to support ECL on Channel 143 for Breathing Air Purge.

45-116 CFCL JBPN 143

Record initial breathing air storage vessel pressure and cabin air supply
regulated pressure (Pad A display B1A, Pad B display B1B):

A154332 _____ psi BD

A139957 _____ psi BD

Support: [PNSA](#)

45-117	CECL	OTC	132
	OTC	STM	
	STM	JBPN	111

Verify breathing air tube bank disconnected.

Support: [PNSA](#)

<p style="text-align: center;">WARNING</p> <p>There is a potential for loud noise during venting or release of high-pressure gas. Exposure may cause hearing damage.</p> <p>Wear ear cups during venting operations.</p> <p style="text-align: right;">WLN027a 09-12-2008</p>
--

<p style="text-align: center;">NOTE</p> <p style="text-align: center;">Acoustics level in Whiteroom will increase above 85 decibels.</p>

45-118	CECL	OTC	132
--------	------	-----	-----

Notify Whiteroom personnel that hearing protection is required.

45-119	OTC	CECL	132
--------	-----	------	-----

Personnel have been notified to use hearing protection.

Proceed with breathing air panel venting.

45-120	CECL	JBPN	143
--------	------	------	-----

Monitor storage vessel pressure during venting for a nominal drop of 6 psi/min. Valve A501552 is opened 4-5 turns to minimize venting time and maintain noise at a reasonable level.

45-121 CECL OMTO 143

C70-1226-3

1. A501552 vent shutoff valve - OPEN (CCW) (4 to 5 full turns)
2. **Wait** 7-8 minutes.
3. **Verify** no significant reduction in noise level during purging operations.
4. A501552 vent shutoff valve - CLOSE (CW)

T: _____

45-122 CECL JBPN 143

Record final breathing air storage vessel pressure and cabin air supply regulated pressure (Pad A display B1A, Pad B display B1B)

A154332 _____ psi 1000 minimum

A139957 _____ psi BD

Support: [PNSA](#)

45-123 CECL

Verify final high pressure gas storage area breathing air supply pressure decreased from initial reading 4.5-8.5 psi/min.

45-124 CECL OMTO 143

C70-1226-3

Remove KC150-C4 cap assembly (tethered to A501551) from sample port A501551.

T: _____

45-125 CECL OMTO 143

C70-1226-3

1. A501567 sample shutoff valve - adjust to take oxygen sample from port A501551
 2. **Record:** _____ pct 20-25
Cal No. _____
 3. A501567 sample shutoff valve - CLOSE (CW)
 4. A501543 supply shutoff valve - CLOSE (CW)
- T:** _____

45-126 CECL OMTO 143

CSR-242

C70-1226-3

- Install** (1) KC150K4 cap, tube on sample port A501551.
(1) Torque to 135-160 in-lbs.
- Cal No. _____
- T:** _____

NOTE

Noted requirements are satisfied by the following steps annotated with OMRS code.

OMRS V61AQ0.010-1R

45-127 OTC CECL 132

Verify breathing air sample provided by JBPN (OMI S0007.200) meets SE-S-0073 Table 6.3-29 standards.

OMRS V61AQ0.010-1R

45-128 CECL OTC 132
 OTC *PAD

C70-1226-3 Pressurization and Oxygen Sample Complete.

***** End of Option B - C70-1226-3 Pressurization and Oxygen Sample *****

Option C - ECLSS Oxygen Sample for Suited Crew Ingress

NOTE
Perform this option if directed by controlling sequence.

Option C Not Performed: _____

45-129	OTC	CECL CFCP *PAD OMTO *PAD PQCG	132
--------	-----	--	-----

Perform ECLSS Oxygen Sample for Suited Crew Ingress
(0-100 percent meter required).

45-130

CFCP

CURSOR CNTL (VWR70)

V15 - CLOSED
A99 - CLOSED
A08 - OPEN

RECORD P40 _____ PSIG 870-980

V15 - OPEN

RECORD FOLLOWING AFTER STABILIZATION.

O2 MANIFOLD 1 _____ PSIA NLT 100

O2 MANIFOLD 2 _____ PSIA NLT 100

45-131

CECL CFCP

Verify PRSD oxygen manifolds will remain pressurized by ground reactants for next 30 minutes.

45-132

CFCP CDR 132

PANEL L2

ATM PRESS CONTROL

O₂ SYS 1 SUPPLY SW - OPEN L2A01S01
UNTIL O₂ SYS 1 SUPPLY TB OP L2A01DS05

O₂ SYS 2 SUPPLY SW - OPEN L2A01S02
UNTIL O₂ SYS 2 SUPPLY TB OP L2A01DS09

NOTE

Prior to performing ECLSS Oxygen Sample for Suited Crew Ingress, ensure that the PRSD oxygen supply valves (VAG10 VLV1 and VLV3 are open).

LEH oxygen 1-8 valves will be reconfigured for Flight by ASP during Pre-Ingress Checklist.

The switches on panels C6 and C7 have similar nomenclature. Ensure CDR is aware of the situation and make sure he is on the correct panel.

NOTE

Noted requirements are satisfied by the following steps annotated with OMRS code.

OMRS V61AT0.094-A-1R

OMRS V61AT0.094-B-1R

45-133 CECL CDR 143

PANEL C7

LEH O₂ SUPPLY 1 VLV - OPEN
LEH O₂ SUPPLY 2 VLV - CLOSE

OMRS V61AT0.094-A-1R

45-134 CECL CDR 143

PANEL C6

LEH O₂ 1 VLV - OPEN
LEH O₂ 2 VLV - CLOSE

45-135 CECL CDR 143

PANEL L2

ATM PRESS CONTROL
O₂ XOVR SYS 2 SW - CLOSE

L2A01S018

OMRS V61AT0.094-A-1R

45-136

CECL

CRT (VAG10 PG-B)
VLV 9
SOPF
PCL

V61S2200E1
V61X2203E1

CAUTION

Damage to Servomex O₂ Analyzer may result if probe is inserted into LES lead/adapter. Hold O₂ Analyzer probe in close proximity to O₂ outlet to obtain sample.

45-137

CECL OMTO 143

CDR SEAT

1. CLOSE MV1 ON L070-000153-001 ADAPTER.
2. IF LES LEAD IS INSTALLED,
THEN CONNECT ADAPTER TO CDR LES LEAD.

Not Performed: _____
SS2

3. IF LES LEAD NOT INSTALLED,
THEN CONNECT ADAPTER DIRECTLY TO PORT.

Not Performed: _____
SS3

4. CRT (VAG10 PG-B)

RECORD: P1 _____ V45P1140A1
P3 _____ V61P2102A1
P17 _____ V64P0202A1

5. OPEN MV1 ONE AND A HALF (1 1/2) TURNS ON
ADAPTER, PURGE FOR 2 MIN MINIMUM.

START TIME: _____

STOP TIME: _____

6. CRT (VAG10 PG-B)

RECORD: P1 _____ V45P1140A1
P3 _____ V61P2102A1
P17 _____ V64P0202A1

7. **OBTAIN** O₂ CONCENTRATION USING MV1 TO
CONTROL FLOW.

O₂ ANALYZER

CAL NO. _____

O₂ _____ PCT 95 MIN

8. **CLOSE** MV1

OMRS V61AT0.094-A-1R

T: _____

45-138 CECL CDR 143

PANEL L2

ATM PRESS CONTROL

O₂ XOVER SYS 2 SW - OPEN L2A01S018

O₂ XOVER SYS 1 SW - CLOSE L2A01S015

OMRS V61AT0.094-B-1R

45-139 CECL CDR 143

PANEL C7

LEH O2 SUPPLY 1 VLV - CLOSE

LEH O2 SUPPLY 2 VLV - OPEN

OMRS V61AT0.094-B-1R

45-140 CECL

CRT (VAG10 PG-B)

VLV 9

SOPN V61S2200E1

POP V61X2203E1

VLV 7

SOPF V61S2100E1

PCL V61X2103E1

45-141 CECL OMTO 143

CDR SEAT

1. CRT (VAG10 PG-B)

RECORD: P7 _____ V45P1145A1

P9 _____ V61P2202A1

P17 _____ V64P0202A1

2. OPEN MV1 ONE AND A HALF (1 1/2) TURNS ON
ADAPTER, PURGE FOR 2 MIN MINIMUM.

START TIME _____

STOP TIME: _____

3. CRT (VAG10 PG-B)

RECORD: P7 _____ V45P1145A1

P9 _____ V61P2202A1

P17 _____ V64P0202A1

4. **OBTAIN** O₂ CONCENTRATION USING MV1 TO
CONTROL FLOW.

O₂ ANALYZER

CAL NO. _____

O₂ _____ PCT 95 MIN

5. DISCONNECT ADAPTER FROM CDR LES LEAD (OR
PORT) .

6. CLOSE MV1

OMRS V61AT0.094-B-1R

T:_____

45-142 CECL CDR 143

PANEL L2

ATM PRESS CONTROL

O₂ XOVER SYS 2 SW - OPEN

L2A01S018

O₂ XOVER SYS 1 SW - OPEN

L2A01S015

OMRS V61AT0.094-A-1R

OMRS V61AT0.094-B-1R

45-143 CECL CDR 143

PANEL C7

LEH O₂ SUPPLY 1 VLV - OPEN

LEH O₂ SUPPLY 2 VLV - OPEN

OMRS V61AT0.094-A-1R

OMRS V61AT0.094-B-1R

45-144 CECL CDR

PANEL C6

LEH O₂ 1 VLV - CLOSE

LEH O₂ 2 VLV - CLOSE

45-145

Noted requirements complete.

OMRSD V61AT0.094-A-1R
OMRSD V61AT0.094-B-1R

45-146

CECL

CRT (VAG10 PG-B)

VLV 9

SOPN

POP

V61S2200E1

V61X2203F1

VLV 7

SOPN

POP

V61S2100E1

V61X2103F1

RECORD: P1 _____

V45P1140A1

P3 _____

V61P2102A1

P7 _____

V45P1145A1

P9 _____

V61P2202A1

P17 _____

V64P0202A1

NOTE

GN₂ venting from middeck ceiling will occur. Personnel should be notified of audible venting.

45-147

CECL

CDR

143

PANEL C5

DIRECT O₂ VLV - OPEN (1 MINUTE MIN)

45-148

CECL

CRT (VAG10 PG-B)

VERIFY

O₂ SYS 1 900 PSI PRESSURE
(P3) DECREASES

V61P2102A1

O₂ SYS 2 900 PSI PRESSURE
(P9) DECREASES

V61P2202A1

RECORD: P1 _____

V45P1140A1

P3 _____

V61P2102A1

P7 _____

V45P1145A1

P9 _____

V61P2202A1

P17 _____

V64P0202A1

45-149

CECL

CDR

143

PANEL C5

DIRECT O₂ VLV - CLOSE

NOTE
Next step places O2 tanks on T-0 BPR.

45-150

CFCP

CURSOR CNTL (VWR70, PG-B)

V15 - CLOSED

A99 - OPEN

AFTER 10 SEC MINIMUM,
A08 - CLOSED

V15 - OPEN

RECORD TIME _____ GMT

NOTE
Ensure Closeout Crew retains the L070-000153-001 sample adapter for possible use during contingency operations/Scrubs.

45-151

CECL	OTC	132
OTC	*PAD	

ECLSS Oxygen Sampling is complete. Ready for Crew Ingress.

***** End of Option C - ECLSS Oxygen Sample for Suited Crew Ingress *****

Option D - Crew Module Pressurization and Cabin 2 psid Leak Check

NOTE
Perform this option if directed by controlling sequence.

Option D Not Performed: _____

NOTE
SPOC Quality will not be present if Option D is being performed by the Closeout Crew. In this case, record the NASA QC stamp number in place of SPOC QC.

45-152	OTC	CECL	132
		*PAD	
	*PAD	OMTO	
		PQCG	

Perform Crew Module Pressurization and Cabin 2 psid Leak Check.

45-153	CECL	OMTO	143
--------	------	------	-----

Whiteroom Ceiling

IF not connected
AND not the first run of OMI,

THEN connect probe assembly QDs:

1. A501563 QD to A501562 QD
2. A501559 QD to A501558 QD

T: _____

Not Performed: _____

45-154 CECL OMTO 143

IF V070-332629-001 cap has not been removed from TP 80V61TP38,

THEN perform:
Crew Module Ingress/Egress Hatch

1. **Disconnect** V070-332629-001 cap from 80V61TP38 on the Crew Module Ingress/Egress Hatch.

2. **Double-bag** and seal

3. **Record:** V070-332629-001 OCN_____

T:_____ N:_____

Not Performed:_____

45-155 CECL OMTO 143

OK To Install N:_____

Crew Module Ingress/Egress Hatch

1. **Install (1) G070-582492-002 gage, adapt. probe** on 80V61TP38.

2. **Tighten** hand-tight.

T:_____ N:_____

45-156 CECL OMTO 143

C70-1226-3

VERIFY/CONFIGURE

A501565 GAGE SHUTOFF VALVE - OPEN (CCW)
A501543 SUPPLY SHUTOFF VALVE - CLOSE (CW)
A501545 CABIN SHUTOFF VALVE - CLOSE (CW)
A501552 VENT SHUTOFF VALVE - CLOSE (CW)
A501549 CABIN VENT VALVE - CLOSE (CW)
A501567 SAMPLING VALVE - CLOSE (CW)
A501547 CABIN PRESSURE GAGE -
READING 0 +/- 0.5 PSIG

T: _____

45-157 CECL

CRT (VAG29 PG-B)
RECORD

CABIN PRESS _____ PSIA V61P2405A1
AMB

45-158 CECL CDR 143

PANEL 01A1

RECORD

CABIN PRESS _____ PSIA BD O1A1M4

45-159 CECL

CRT (VAG29 PG-B)
RECORD

CABIN DP/DT _____ PSIA/MIN BD V61R2401A1

OMRS V61AQ0.010-1R

NOTE

The following two steps will occur during cabin pressurization.

45-160

CECL

CRT (VAG29 PG-B)

MONITOR V73X1567E1 FOR MASTER ALARM AND ON OCCURRENCE.

RECORD

CABIN PRESS _____ PSIA BD

V61P2405A1

45-161

CECL

CRT (VAG29 PG-B)

RECORD DURING CABIN PRESSURIZATION OR DEPRESSURIZATION TO VERIFY CHANGE FROM BASELINE READING.

CABIN DP/DT _____ PSIA/MIN

V61R2401A

OMRS V61AQ0.010-1R

NOTE
To maintain cabin pressure, valve A501545, cabin shutoff valve, may be cycled.

45-162 CECL OMTO 143

C70-1226-3

- 1. A501565 gage shutoff valve - OPEN (CCW)
- 2. **Record:**
A501547 cabin pressure gage _____ psig amb
- 3. A501543 supply shutoff valve - OPEN (CCW)
- 4. A501545 cabin shutoff valve - OPEN (CCW) until cabin pressure on VAG29 indicates ambient plus 2.0 + 0.25/- 0.0 psia
- 5. A501545 cabin shutoff valve - CLOSE (CW)

T: _____ N: _____

45-163 CECL

CRT (VAG29 PG-B)
RECORD

CABIN PRESS _____ PSIA V61P2405A1
AMB PLUS 2.0 + 0.25/- 0.0

45-164 CECL OMTO 143

C70-1226-3

A501547 cabin pressure gage _____ psig BD

T: _____

45-165 CECL OMTO 143

C70-1226-3

A501543 supply shutoff valve - CLOSE (CW)

T:_____

45-166 CECL OMTO 143

C70-1226-3

A501552 vent valve - OPEN (CCW)

T:_____

45-167 CECL OMTO 143

C70-1226-3

When venting ceases, A501552 vent valve - CLOSE (CW)

T:_____

NOTE

Perform the next two substeps as rapidly as possible to prevent venting Crew Module any more than necessary.

NOTE

Klaxon and M/A may occur due to high cabin leak rate in this step.

NOTE

If the seal is dislodged during probe removal, do not replace the seal. Install the flight cap.

45-168 CECL OMTO 143

OK To Install N: _____

Crew Module Ingress/Egress Hatch

1. **Remove** G070-582492-002 probe assembly from 80V61TP38.
2. **Install** cap assembly V070-332629-001 on 80V61TP38.

 Tighten hand-tight after cap bottoms on fitting.
3. **Record:** V070-332629-001 OCN _____

T: _____ **N:** _____

45-169 CECL OMTO 143

Perform the following:

1. **Double-bag** and seal probe assembly.
2. **Demate** QDs A501563 and A501559 from environmental chamber.
3. **Secure** probe assembly and flexlines for Launch by stowing in Whiteroom storage box.

T:_____ N:_____

45-170 CECL OMTO 143

CSR-242

Install safety wire (1) 5277-0028-002 [inconel lockwire](#) per MAO101-301 [ref [Dwg: V070-332502 EO \(B19\) Hatch Assy-FUS, LH Egress, Complete, X0510.62 Z0 368.00](#)].

T:_____ N:_____

NOTE
Allow for stabilization prior to performing the next step.

45-171

CECL

CRT (VAG29 PG-B)
RECORD

CABIN PRESS _____ PSIA V61P2405A1
AMB PLUS 2 +/- 0.25

DP/DT _____ PSIA/MIN V61R2401A1
BASELINE +/- 0.01

OMRS V61AQ0.010-1R

45-172

Noted requirements are complete.

OMRSD [V61AQ0.010-1R](#)

45-173

CECL OTC 132
OTC *PAD

Crew Module Pressurization and Cabin 2 psid Leak Check complete.

***** End of Option D - Crew Module Pressurization and
Cabin 2 psid Leak Check *****

Option E - LCC Monitor Activation

NOTE

Perform this option if directed by the controlling sequence.

Option E Not Performed: _____

45-174

CECL

INITIALIZE (VAG29)

CONSOLE KEYBOARD
HOME CMD KEY - PRESS
VAG29
PERF PGM KEY - PRESS
SELECT APP PG-B

45-175

CECL

PFP (VAG59)
WHILE VIEWING PG-A

PFPK2 EMON SELECTION - PRESS ONCE
PFK13 - PRESS ONCE
PFK12 - PRESS ONCE

CRT
VERIFY SMOKE DETECTION/FIRE BOTTLE INFO DISPLAYED
ON PG-A

45-176

CECL

CRT (VAG59, PG-B)

RECORD

AVIONICS BAY 1 FAN B (SWITCH)

FAN DELTA PRESS _____ IN. H₂O BD

AIR OUT TEMP _____ DEG F BD

AVIONICS BAY 2 FAN A (SWITCH)

FAN DELTA PRESS _____ IN. H₂O BD

AIR OUT TEMP _____ DEG F BD

AVIONICS BAY 3 FAN B (SWITCH)

FAN DELTA PRESS _____ IN. H₂O BD

AIR OUT TEMP _____ DEG F BD

45-177

CECL

CRT (VAG29, PG-B)

RECORD

CABIN PRESS _____ PSIA BD

End of Option E - LCC Monitor Activation

*** End of Operation 45 ***

**06-24-2011
APPROVED**

**OMI S0007.400 A23
APPROVED**

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06-24-2011
APPROVED

OMI S0007.400 A23
APPROVED

OPERATION 46 Hydraulic System

Shop: **HYD**

Cntrl Rm Console: **C8**

OPR: **HYD**

Zone: **310**

Hazard (Y/N): **N**

Duration (Hrs): **2.0**

WSB Steam Vent Heater Activation

NOTE

Noted requirements are satisfied by the following steps annotated with OMRS code.

OMRS S00FC0.070-1R

46-1

CHYD

CRT (VWF43)
VERIFY BLR A AC/DC 1-2-3: ON

OMRS S00FC0.070-1R

46-2

CHYD

CURSOR CNTL (VWF19)
WSB AC AND DC PWR
WSB 1 AC - ON
WSB 1 DC - ON
WSB 2 AC - ON
WSB 2 DC - ON
WSB 3 AC - ON
WSB 3 DC - ON

CRT
VERIFY

BT4 HYD COMMAND STATUS
WSB PWR CMDS (SIX) ON

OMRS S00FC0.070-1R

46-3

CHYD CDR 171

PANEL R2

APU/HYD
BOILER PWR
1 SW - ON
2 SW - ON
3 SW - ON

OMRS S00FC0.070-1R

46-4 CHYD

CRT (VWF43)

VERIFY

1 BLR A CONTRL ON

2 BLR A CONTRL ON

3 BLR A CONTRL ON

OMRS S00FC0.070-1R

46-5 CHYD

Monitor WSB steam vent temps for heater cycling.

46-6 CHYD

CRT (VWF19)

VERIFY WSB BYPASS VLV 1-2-3: BY

OMRS S00FC0.070-1R

***** End of WSB Steam Vent Heater Activation *****

Hydraulic System Configuration for Cryo Load

46-7 OTC CHYD 132

Configure hydraulic system for Shuttle Cryo Loading.

46-8 CHYD

CRT (VWF19)

VERIFY LDG EXTEND ISO VLV CLOSE

OMRS S00FC0.070-1R

ECP AI Mode 1: Match CMDS to POSN

46-9

COFC

CURSOR CNTL (SAB19/SWB01)
COUNTDOWN - OPS MANAGER
XMIT CURSOR KEY - PRESS

46-10

COFC

CURSOR CNTL (SAB23/VSB100)
ORBITER AI MODE 1
XMIT CURSOR KEY - PRESS

46-11

COFC

CURSOR CNTL (SAB23/VSB100)
START TEST
XMIT CURSOR KEY - PRESS

46-12

COFC

CRT (SAB23/VSB100)
VERIFY
AI MODE 1 REQUEST COMPLETE

***** End of ECP AI Mode 1: Match CMDS to POSN *****

46-13 COFC CHYD

Flight controls ready for hydraulic pressurization.

46-14 CHYD CEPD 151

Verify ready to support hydraulic circulation pump activation on OIS Channel 171.

46-15 CHYD

IF THE FUEL CELLS ARE NOT ACTIVATED,

THEN PERFORM:

DMON **VERIFY**

MN A AFT VOLT IS 30.5 VDC MAX	V76V3091A1
MN B AFT VOLT IS 30.5 VDC MAX	V76V3092A1
MN C AFT VOLT IS 30.5 VDC MAX	V76V3093A1

OMRS (general) [V58GEN.042](#)

OMRS S00FC0.070-1R

Not Performed: _____

46-16

CHYD

CRT (VWF43)

VERIFY

- 1 CIRC AUTO A ON
- 2 CIRC AUTO B ON
- 3 CIRC AUTO C ON

OMRS S00FC0.070-1R

CAUTION

Delay 30 seconds minimum between circ pump starts to allow for Bus stabilization. Not allowing for Orbiter Main Bus stabilization could result in an Orbiter Main Bus overvoltage or undervolt condition that may damage Orbiter electrical hardware.

46-17

CHYD

CURSOR CNTL (VWF19)

CIRC PUMP

PUMP 1 - ON

PUMP 2 - ON

PUMP 3 - ON

OMRS S00FC0.070-1R

46-18

CHYD PLT 171

IF MPS TVC ISOLATION VALVES ARE NOT OPEN,

THEN PERFORM:

PANEL R4

HYDRAULIC

MPS/TVC ISO VLV

SYS 1 SW - HOLD OPEN UNTIL OPEN TB (5 SEC MIN)

SYS 2 SW - HOLD OPEN UNTIL OPEN TB (5 SEC MIN)

SYS 3 SW - HOLD OPEN UNTIL OPEN TB (5 SEC MIN)

Not Performed:_____

46-19

CHYD

CRT
VERIFY

MPS TVC ISOL VLVS 1,2,3 OP IND - ON V58X1136E1
V58X1236E1
V58X1336E1

OMRS S00FC0.070-1R

46-20

CHYD

CRT (VWF19)
VERIFY

CIRC PRESS 1: 330 PSIA MIN
CIRC PRESS 2: 330 PSIA MIN
CIRC PRESS 3: 330 PSIA MIN

OMRS S00FC0.070-1R

46-21

CHYD

PPF (VWF19)
RSVR/GN₂ ACTIVATE - PUSH
CIRC/WSB ACTIVATE - PUSH
RECORD LCC LIMITS - PUSH

46-22

CHYD

CRT (VWF43)
VERIFY

1 CIRC PUMP A INHIB B ON
2 CIRC PUMP B INHIB C ON
3 CIRC PUMP C INHIB A ON

1 CIRC PUMP B INHIB A OFF
2 CIRC PUMP C INHIB B OFF
3 CIRC PUMP A INHIB C OFF

OMRS S00FC0.070-1R

46-23

CHYD

Monitor OMRS parameters for duration of Cryo Loading.

	OMRS Parameters	Degrees F
1	RSVR HYD temp	35-100
1	HEAT EXCH IN temp	139 max
1	HEAT EXCH OUT temp	139 max
1	ETACT RL LO ₂ temp	35 min
1	ETACT RL LH ₂ temp	35 min
2	RSVR HYD temp	35-100
2	HEAT EXCH IN temp	139 max
2	HEAT EXCH OUT temp	139 max
2	ETACT RL LO ₂ temp	35 min
2	ETACT RL LH ₂ temp	35 min
3	RSVR HYD temp	35-100
3	HEAT EXCH IN temp	139 max
3	HEAT EXCH OUT temp	139 max
3	ETACT RL LO ₂ temp	35 min
3	ETACT RL LH ₂ temp	35 min

OMRSD [S00FC0.071-1R](#)

LDG System Final Fill

NOTE
Perform the next four steps to replenish LDG voids.

46-24

CHYD

CRT (VWF19)
RECORD RESERVOIR VOLUMES :

SYS 1 _____ PCT

SYS 2 _____ PCT

SYS 3 _____ PCT

NOTE
Noted requirements are satisfied by the following series of steps.
OMRS S00FC0.072-1R

46-25

CHYD PLT 171

PANEL R4

HYDRAULICS
BRAKE ISOL VLV
1 SW - HOLD OPEN UNTIL OPEN TB (5 SEC MIN)
2 SW - HOLD OPEN UNTIL OPEN TB (5 SEC MIN)
3 SW - HOLD OPEN UNTIL OPEN TB (5 SEC MIN)

46-26

CHYD

Wait 15 minutes minimum prior to performing the next step.

46-27

CHYD

CRT (VWF19)
RECORD RESERVOIR VOLUMES:

SYS 1 _____ PCT

SYS 2 _____ PCT

SYS 3 _____ PCT

46-28

CHYD PLT 171

PANEL R4

HYDRAULICS

BRAKE ISOL VLV

1 SW - HOLD CLOSE UNTIL CLOSE TB (5 SEC MIN)

2 SW - HOLD CLOSE UNTIL CLOSE TB (5 SEC MIN)

3 SW - HOLD CLOSE UNTIL CLOSE TB (5 SEC MIN)

OMRS S00FC0.070-1R

46-29

Noted requirements are complete.

OMRSD [S00FC0.072-1R](#)

***** End of LDG System Final Fill *****

NOTE

If pressure for hydraulic systems 1, 2 or 3 bootstrap accumulators is greater than 1500 psi, then do not perform precharge pressure plotting.

46-30

CHYD

Determine bootstrap accumulators 1, 2 and 3 GN₂ precharge pressure by plotting the circulation pump pressure increase curve.

1. **Plot** the following FDs:
V58P0(N)67A1, V58X0(N)35A1 and V58T0(N)11A1
(where N = 1, 2 and 3).
Ref. Figure 46-1 - Knee of Circulation Pump Pressure Curve.
2. **Record** bootstrap accumulator GN₂ precharge flight pressure:

_____ psi (SYS 1) BD

_____ psi (SYS 2) BD

_____ psi (SYS 3) BD
3. **Use** Figure 46-2 - Knee of Circulation Pump Pressure Curve, Detail.

or

Calculate min/max pressure adjusted for temperature:

$$\begin{aligned} \text{Min P} &= 3.85T + 1380 \\ \text{Max P} &= 4.15T + 1460 \\ &\text{(1650-1750 at 70 deg F)} \end{aligned}$$

Not Performed: _____

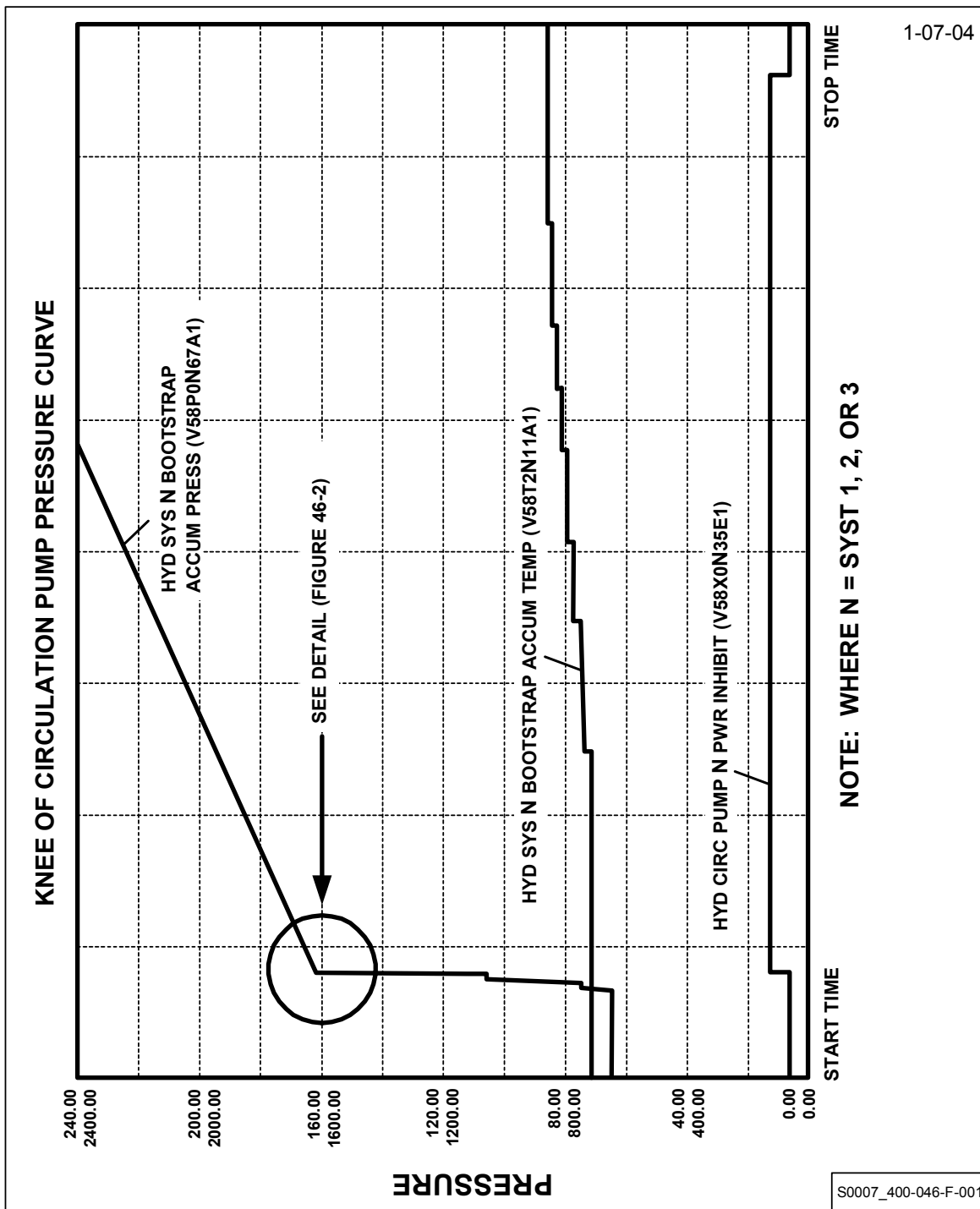


Figure 46-1 - Knee of Circulation Pump Pressure Curve
(For Reference Only)

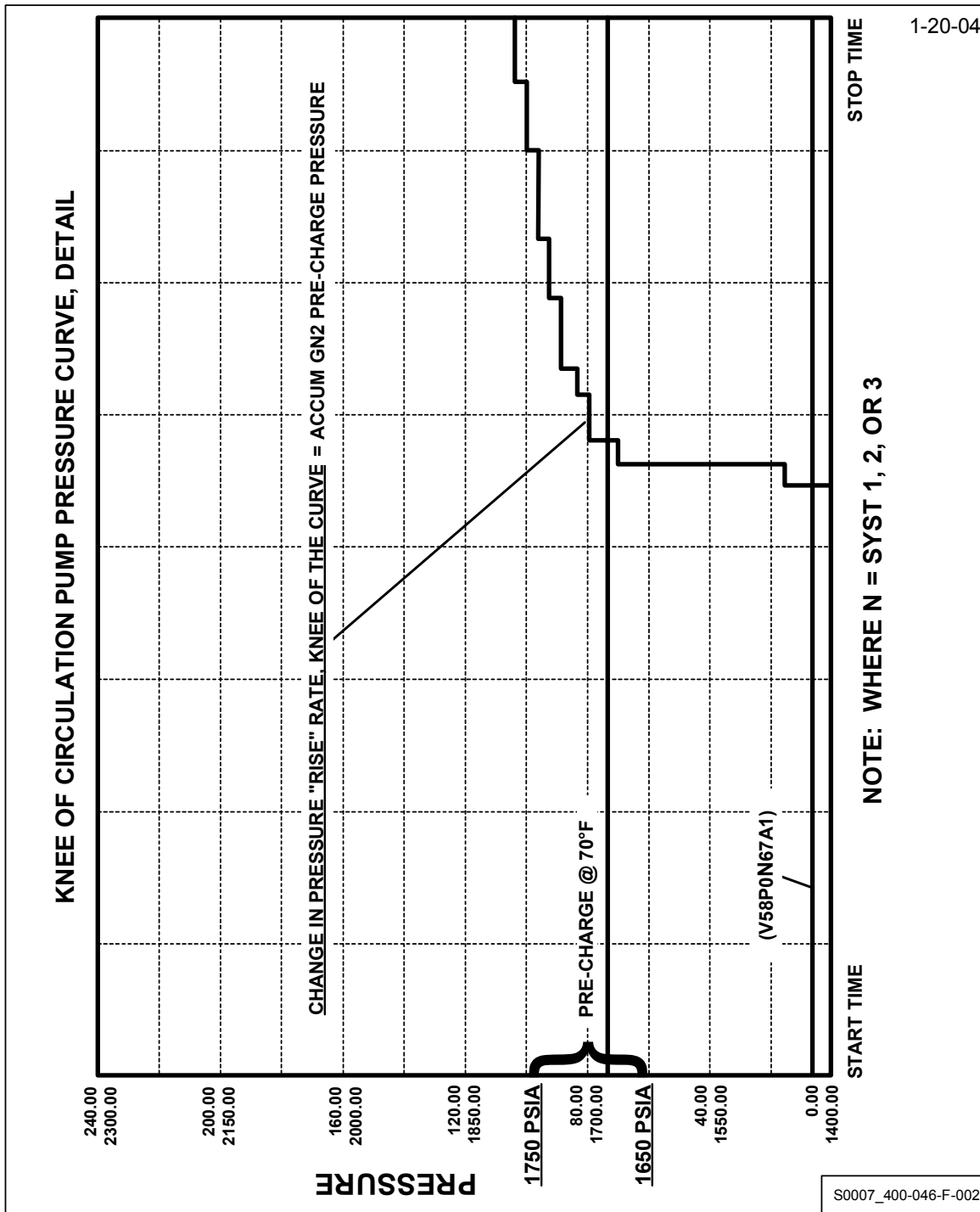


Figure 46-2 - Knee of Circulation Pump Pressure Curve, Detail
(For Reference Only)

Elevon Positioning to Null

NOTE

Perform the next two steps to initialize the C11 Safe Move Limits prior to initiating elevon positioning. The C11 software default is 0.0 high and 0.0 low which, if maintained, will prevent any C11 software-initiated actuator movement.

46-31

COFC

CURSOR CNTL (SAB19/SWB01 PG-B)
ACTR STATUS
XMIT CURSOR KEY - PRESS

46-32

COFC

APPL PG (SAB19/SWB05 PG-B)
PFK15 KEY - PRESS (TERM SWB05)

46-33

COFC

CURSOR CNTL (SAB19/SWB01)
AEROSURFACE - OPS MAN
XMIT CURSOR KEY - PRESS

46-34

COFC

CURSOR CNTL (VABM7/VWB33)
MANUAL POSN/CLEARANCE
XMIT CURSOR KEY - PRESS

46-35

COFC

CURSOR CNTL (VABM7/SSB09 PG-B)
NULL ELEVONS
XMIT CURSOR KEY - PRESS

46-36

COFC

APPL PG (VABM7/SSB09 PG-B)
PFK1 KEY - PRESS (EXECUTE)

46-37 COFC

APPL PG (VABM7/SSB09 PG-B)
PFK15 KEY - PRESS (TERM SSB09)

46-38 COFC

APPL PG (VABM7/VWB33 PG-B)
PFK15 KEY - PRESS (TERM VABM7)

***** End of Elevon Positioning to Null *****

Activate Elevon Posn/CMD EMONs

46-39 COFC

APPL PG-A (SAB20/SWB02)
PFK13 KEY - PRESS (ACT EMON SETUP)

46-40 COFC

CURSOR CNTL (SAB20/SWB02)
A-CIRC PUMPS
XMIT CURSOR KEY - PRESS

46-41 COFC

APPL PG-A (SAB20/SWB02)
PFK13 KEY - PRESS (DE-ACT EMON SETUP)

***** End of Activate Elevon Posn/CMD EMONs *****

E1Y OPS 101 CMD

NOTE

The next step is performed to reduce E1Y actuator drift from the OPS 101 transition command of +0.2 deg. The position must be maintained within 2.0 deg of this command at APU start.

E1Y NULL COMMANDING

46-42

COFC

CURSOR CNTL (SAB23/VSB100)
E1Y NULL COMMANDING
XMIT CURSOR KEY - PRESS

46-43

COFC

CURSOR CNTL (SAB23/VSB100)
START TEST
XMIT CURSOR KEY - PRESS

46-44

COFC

CRT (SAB23/VSB100)
VERIFY
E1Y NULL COMMANDING SUCCESSFUL

46-45

COFC

CONSOLE KYBD (SAB23/VSB100)
PFK15 KEY - PRESS

46-46

CHYD

CRT (VWF19)

VERIFY WSB STEAM VENT TEMPS 1-2-3:

130 DEG F MINIMUM

46-47

CHYD

CDR

171

PANEL R2

APU/HYD

BOILER N₂ SPLY

1 SW - ON

2 SW - ON

3 SW - ON

OMRS S00FC0.070-1R

46-48

CHYD

CRT (VWF43)

VERIFY

1 N₂ SUPPLY OFF - OFF

2 N₂ SUPPLY OFF - OFF

3 N₂ SUPPLY OFF - OFF

OMRS S00FC0.070-1R

46-49

CHYD

CRT (VWF19)

VERIFY WSB GN₂ REG OUT PRESS 1-2-3: 39-44 PSIA

OMRS S00FC0.070-1R

46-50

CHYD

CRT (VWF19)

VERIFY WSB 1-2-3 OK INDICATION: OK (ON)

OMRS S00FC0.070-1R

46-51

CHYD CDR 171

PANEL R2

APU/HYD

BOILER N₂ SPLY

1 SW - OFF

2 SW - OFF

3 SW - OFF

46-52

CHYD

CRT VWF19/VWF43

WSB 1, 2 & 3

VERIFY

1. N₂ SPLY VLVS CLOSED
V58S0153E - ON
V58S0253E - ON
V58S0353E - ON

2. WSB OK - OFF
V58X0182E
V58X0282E
V58X0382E

OMRS S00FC0.070-1R

46-53

Noted requirements are complete.

OMRSD [S00FC0.070-1R](#)

46-54

CHYD OTC 132

Hydraulic System Configure for Cryo Load complete.

***** End of Hydraulic System Configuration for Cryo Load *****

Hydraulic APU Start Checks

NOTE

Do not perform this option if a 24-hour Hold occurs at T-6H.

Hydraulic APU Start Checks Not Performed: _____

Hydraulic Pre-APU Start Checks

46-55

CHYD

CRT (VWF43)

VERIFY

- 1 DPRSS ENA A ON
- 2 DPRSS ENA B ON
- 3 DPRSS ENA C ON

- 1 DPRSS ENA B ON
- 2 DPRSS ENA C ON
- 3 DPRSS ENA A ON

- 1 PCA PUMP RPC A ON
- 2 PCA PUMP RPC B ON
- 3 PCA PUMP RPC C ON

- 1 PCA PUMP RPC B ON
- 2 PCA PUMP RPC C ON
- 3 PCA PUMP RPC A ON

OMRSD [V46AL0.910-B-1R](#)

46-56

CHYD

PFP (VWF19)

- 1. APU RUN ACTIVATE - PUSH
- 2. RECORD LCC LIMITS - PUSH

***** End of Hydraulic Pre-APU Start Checks *****

Hydraulic Post-APU Start Checks

NOTE

Perform this option if APUs were started during terminal Countdown.

Hydraulic Post-APU Start Checks Not Performed: _____

NOTE

Noted requirements are satisfied by the following series of steps.

OMRS S00FM0.175-1R

46-57

CHYD

CRT (VWF19)

VERIFY

- 1 SUPPLY PRESS B: 500-1000 PSIA
- 2 SUPPLY PRESS B: 500-1000 PSIA
- 3 SUPPLY PRESS B: 500-1000 PSIA

46-58

CHYD

CRT (VWF43)

VERIFY

1 DPRSS ENA A OFF
2 DPRSS ENA B OFF
3 DPRSS ENA C OFF

1 DPRSS ENA B OFF
2 DPRSS ENA C OFF
3 DPRSS ENA A OFF

1 PCA PUMP RPC A OFF
2 PCA PUMP RPC B OFF
3 PCA PUMP RPC C OFF

1 PCA PUMP RPC B OFF
2 PCA PUMP RPC C OFF
3 PCA PUMP RPC A OFF

1 CIRC AUTO A OFF
1 CIRC AUTO B OFF
2 CIRC AUTO B OFF
2 CIRC AUTO C OFF
3 CIRC AUTO C OFF
3 CIRC AUTO A OFF

1 CIRC PUMP A INHIB B ON
2 CIRC PUMP B INHIB C ON
3 CIRC PUMP C INHIB A ON

1 CIRC PUMP B INHIB A ON
2 CIRC PUMP C INHIB B ON
3 CIRC PUMP A INHIB C ON

46-59

CHYD

CRT (VWF19)

VERIFY

1-2-3 SUPPLY PRESS B: 2850-3400 PSIA

1-2-3 SUPPLY PRESS C: 2800-3400 PSIA

46-60

Noted requirements are complete.

OMRSD [S00FM0.175-1R](#)

***** End of Hydraulic Post-APU Start Checks *****

***** End of Hydraulic APU Start Checks *****

***** End of Operation 46 *****

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OPERATION 47 Fuel Cell Purge

Shop: **FCP**

Cntrl Rm Console: **C6**

OPR: **FCP**

Zone: **N/A**

Hazard (Y/N): **N**

Duration (Hrs): **1.0**

47-1 OTC CFCP 132

Perform Fuel Cell Purge.

CAUTION

Fuel cells must run one (1) hour minimum after purging prior to shutdown except in an emergency.

Fuel cell purging is a sequential operation. Fuel cells must not be purged in parallel. Simultaneous purge of multiple fuel cells may result in exceeding vent line flow capability. This may lead to a hydrogen overpressure condition which may damage the fuel cell power section.

NOTE

This operation may be performed anytime after T-2H. Each cell will be purged for 2 minutes minimum.

Additional fuel cell purges may be performed as determined by System Engineering dependent upon fuel cell performance.

NOTE

Data and verifications for multiple runs of this operation will be recorded in Table 47-1 - Fuel Cell Purge Runs.

NOTE

Noted requirements are satisfied by the following series of steps.

OMRS V45CH0.040

47-2 CFCP

CURSOR CNTL (VWR05 PG-B)
FC1 PURGE - OPEN (P INV CYAN)

47-3

CFCP

CRT (VWR05 PG-B)

RECORD

FC1 PURGE START TIME (_____) GMT

FC1 COOL PSI (_____) PSIA V45P0147A1
65 +/- 10

47-4

CFCP

CURSOR CNTL (VWR05 PG-B)

AFTER 2 MINUTES MIN

FC1 PURGE - CLOSED

47-5

CFCP

CRT (VWR05 PG-B)

FC1 COOL PSI (_____) PSIA V45P0147A1
65 +/- 10

47-6

CFCP

CURSOR CNTL (VWR05 PG-B)

FC2 PURGE - OPEN (P INV CYAN)

47-7

CFCP

CRT (VWR05 PG-B)

RECORD

FC2 PURGE START TIME (_____) GMT

FC2 COOL PSI (_____) PSIA V45P0247A1
65 +/- 10

47-8

CFCP

CURSOR CNTL (VWR05 PG-B)

AFTER 2 MINUTES MIN

FC2 PURGE - CLOSED

47-9

CFCP

CRT (VWR05 PG-B)
FC2 COOL PSI () PSIA V45P0247A1
65 +/- 10

47-10

CFCP

CURSOR CNTL (VWR05 PG-B)
FC3 PURGE - OPEN (P INV CYAN)

47-11

CFCP

CRT (VWR05 PG-B)
RECORD

FC3 PURGE START TIME () GMT

FC3 COOL PSI () PSIA V45P0347A1
65 +/- 10

47-12

CFCP

CURSOR CNTL (VWR05 PG-B)
AFTER 2 MINUTES MIN
FC3 PURGE - CLOSED

47-13

CFCP

CRT (VWR05 PG-B)
FC3 COOL PSI () PSIA V45P0347A1
65 +/- 10

47-14

CFCP OTC 132

Fuel Cell Purge is complete.

47-15

Noted requirements are complete.

OMRSD [V45CH0.040](#)

Table 47-1 - Fuel Cell Purge Runs									
Step	Run 1	Run 2	Run 3	Run 4	Run 5	Run 6	Run 7	Run 8	Run 9
47-1									
47-2									
47-3 GMT									
PSIA									
47-4									
47-5 PSIA									
47-6									
47-7 GMT									
PSIA									
47-8									
47-9 PSIA									
47-10									
47-11 GMT									
PSIA									
47-12									
47-13 PSIA									
47-14									
47-15									

*** End of Operation 47 ***

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OPERATION 48 SRB PIC Resistance Test (Go)

Shop: **SBE**

Cntrl Rm Console: **C10**

OPR: **SBE**

Zone: **N/A**

Hazard (Y/N): **Y**

Duration (Hrs): **0.5**

NOTE

Steps involving Crit 1, 1R and/or 1S items are contained in the following operation.

NOTE

Record data and verifications for multiple runs of this operation in Table 48-1 - SRB PIC Resistance Test (Go).

WARNING

Pyrotechnic devices could explode while being tested.

Personnel may suffer bodily injury or death.

WPYR018 04-07-04

NOTE

All personnel must be clear of BDA before proceeding with the SRB PIC resistance test.

48-1 TBC CPWR 136

Perform SRB Go PIC Resistance Test on OIS Channel 176.

Report completion.

48-2 CPWR TBC 136

Verify all personnel clear of BDA.

48-3 CPWR

CURSOR CNTL (SDC01)
SRB OPTIONS PIC RESISTANCE
XMIT CURSOR KEY - PRESS

CRT
VERIFY SWC01 TERMINATES AND DISPLAY SKELETON
BDE06 DISPLAYED

48-4

CPWR

CURSOR CNTL (BDE06)
GO
XMIT CURSOR KEY - PRESS

CRT
VERIFY GO (INVERT CYAN)

CURSOR CNTL
TEST ALL
XMIT CURSOR KEY - PRESS

48-5

CPWR

CRT (BSE04 PG-A)
VERIFY BSE04 CALLS BKE08

VERIFY MESSAGE:
SRB - PIC RESISTANCE TEST COMPLETED SUCCESSFULLY.

48-6

CPWR

CONSOLE KYBD (BDE06)
PFK15 KEY - PRESS

CRT
VERIFY

BWE06 TERMINATES
SYSTEM MENU RE-DISPLAYED.

48-7

CPWR TBC 136

SRB PIC Resistance Test (Go) complete.

Table 48-1 - SRB PIC Resistance Test (Go)				
Step	Run _____ Date_____	Run _____ Date_____	Run _____ Date_____	Run _____ Date_____
48-1				
48-2				
48-3				
48-4				
48-5				
48-6				
48-7				

*** End of Operation 48 ***

06-24-2011
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OPERATION 49 DPS Systems

Shop: **DPS**

Cntrl Rm Console: **C12**

OPR: **DPS**

Zone: **121**

Hazard (Y/N): **N**

Duration (Hrs): **10.0**

Index to Operation 49

NOTE

The blank lines provided in the verification column on this page are for Engineering use only. No data or quality verification is required for these items.

- | | | |
|-----|---|-------|
| 1. | Backup Flight Controller Test | _____ |
| 2. | IDP 1/2/4 Load (OPS 0) | _____ |
| 3. | Transition GPC1 to G9 Simplex | _____ |
| 4. | BFS Load - GPC5 | _____ |
| 5. | BFS Dump, Retrieval and Compare | _____ |
| 6. | BFS DAP140 Retrieval Option | _____ |
| 7. | BFS Retrieval/Compare - LPS Option | _____ |
| 8. | Final TFL/PDI Loads for Flight | _____ |
| 9. | HUD Powerup & Self Test | _____ |
| 10. | MEDS System Activation | _____ |
| 11. | Transition to G9 RS | _____ |
| 12. | LCC Monitor Activation/LDB Redundancy Check | _____ |
| 13. | Configure for IMU MM1 Checkpoint | _____ |
| 14. | Configure for IMU MM2 Checkpoint | _____ |
| 15. | Restore Original Configuration after IMU Checkpoint | _____ |
| 16. | GMT and MET Adjust | _____ |
| 17. | MEDS System Securing | _____ |
| 18. | DPS Securing | _____ |

Option 1. Backup Flight Controller Test

NOTE
Perform this option for initial Launch attempt.

Option 1 Not Performed: _____

49-1 **OTC CDPS 132**

Perform Backup Flight Controller Test.

49-2 **CDPS CTPE**

Request transfer of DDU RSYS (Group 25) to C12.

Report completion

49-3 **CDPS**

CURSOR CNTL (SAS25 PG-B)
DED DISPLAYS SYS MONITOR (VWS48)
XMIT CURSOR KEY - PRESS

49-4 **CDPS PLT 152**

PANEL O16

ROW E
MN C
DDU
RIGHT CB - CLOSE

49-5 **CDPS**

CRT (VWS48 PG-B)
VERIFY

<u>DDU</u>	<u>GOOD</u>	<u>P/SA</u>	<u>P/SB</u>	<u>P/SC</u>
2	ON	OFF	OFF	OFF

49-6 CDPS PLT 152

PANEL O15

ROW E

MN B

DDU

LEFT CB - CLOSE

RIGHT CB - CLOSE

49-7 CDPS

CRT (VWS48 PG-B)

VERIFY

<u>DDU</u>	<u>GOOD</u>	<u>P/SA</u>	<u>P/SB</u>	<u>P/SC</u>
1	ON	OFF	OFF	OFF
2	ON	OFF	OFF	OFF

49-8 CDPS CDR 152

PANEL O14

ROW E

MN A

DDU

LEFT CB - CLOSE

49-9 CDPS CDR 152

PANEL F6

FLT CNTLR POWER SW - ON

49-10 CDPS PLT 152

PANEL F8

FLT CNTLR POWER SW - ON

49-11

CDPS

CRT (VWS48 PG-B)

VERIFY

DDU BITE MONITOR

<u>DDU</u>	<u>GOOD</u>	<u>P/SA</u>	<u>P/SB</u>	<u>P/SC</u>
1	ON	ON	ON	ON
2	ON	ON	ON	ON

APPL PAGE (VWS48 PG-B)

PFK15 KEY - PRESS

NOTE

If an MDU fails to come up at power application, turn bezel knob off for 3 seconds, then back to on (ref H/W-0002).

49-12

CDPS

CDR

152

PANEL F7

CRT 1 MDU

POWER KNOB - ON

CRT 2 MDU

POWER KNOB - ON

CRT 3 MDU

POWER KNOB - ON

CAUTION

When turned on, IDP power must remain on a minimum of 30 seconds or hardware damage may result.

OMRS (general) [V70GEN.030](#)

49-13 CDPS CDR 152

PANEL C2

LEFT CRT SEL SW - 1
IDP/CRT 1
POWER SW - ON
MAJ FUNC SW - GNC
IDP/CRT 2
POWER SW - ON
MAJ FUNC SW - GNC
IDP/CRT 3
POWER SW - ON
MAJ FUNC SW - GNC

49-14 CDPS CDR

IF CRT 1, 2 or 3 not configured to DPS display,
THEN Configure CRT 1,2, 3 to DPS display via MDU Edgekey menu.

Not Performed:_____

49-15 CDPS CDR 152

PANEL O14

ROW F
MMU 1 SW - ON

49-16 CDPS CDR 152

PANEL O15

ROW F
MMU 2 SW - ON

49-17

CDPS

CURSOR CNTL (SAS01 PG-B)
FC & PL MDM BSR READ
XMIT CURSOR KEY - PRESS
EXEC CMD KEY - PRESS

CRT (VAS93 PG-A)
VERIFY NO UNEXPLAINED BSR'S

49-18

CDPS CDR 152

PANEL C3

BFC CRT
DISPLAY SW - OFF

49-19

CDPS

CRT (VAS59 PG-B)
VERIFY NO ACTIVE TCS SEQUENCES OR ECP'S

VERIFY DISP ID FOR COMMANDED CRT'S = 9011

49-20

CDPS CDR 152

IF IN G9 REDUNDANT SET,

THEN PERFORM:

L KYBD
OPS 000
PRO

CRT 1
0001/GPC MEMORY

Not Performed:_____

49-21 CDPS CDR 152

PANEL O6

IPL SOURCE SW - MMU 1
GENERAL PURPOSE COMPUTER
MODE
 ___ SW - STBY (ACTIVE GPC)
 1 SW - HALT
 2 SW - HALT
 3 SW - HALT
 4 SW - HALT
 5 SW - HALT
OUTPUT
 1 SW - NORMAL
 2 SW - NORMAL
 3 SW - NORMAL
 4 SW - NORMAL
 5 SW - NORMAL
POWER
 1 SW - ON
 2 SW - ON
 3 SW - ON
 4 SW - ON
 5 SW - ON

49-22 CDPS CDR 152

PANEL O6

GENERAL PURPOSE COMPUTER
INITIAL PROGRAM LOAD
 1 PB - PRESS, REL
MODE
 1 TB IPL THEN BP
 1 SW - STBY
 1 TB RUN (WITHIN 2 MIN)
 1 SW - RUN

49-23 CDPS CDR 152

L KYBD
SPEC 1
PRO
CRT1
DPS UTILITY

49-24 CDPS CDR 152

L KYBD
ITEM 50
EXEC
RESUME

49-25 CDPS

CONSOLE KYBD
ISSU N72IV063D #1001
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

49-26 CDPS CDR 152

PANEL O6

GENERAL PURPOSE COMPUTER
INITIAL PROGRAM LOAD
2 PB - PRESS, REL
MODE
2 TB IPL THEN BP
2 SW - STBY
2 TB RUN (WITHIN 2 MIN)
2 SW - RUN

49-27 CDPS

CRT (VAS59 PG-B)
VERIFY GPC 2 JOINS CS

49-28 CDPS CDR 152

PANEL O6

GENERAL PURPOSE COMPUTER
INITIAL PROGRAM LOAD
3 PB - PRESS, REL
MODE
3 TB IPL THEN BP
3 SW - STBY
3 TB RUN (WITHIN 2 MIN)
3 SW - RUN

49-29 **CDPS**

CRT (VAS59 PG-B)
VERIFY GPC 3 JOINS CS

49-30 **CDPS CDR 152**

PANEL O6

GENERAL PURPOSE COMPUTER
INITIAL PROGRAM LOAD
4 PB - PRESS, REL
MODE
4 TB IPL THEN BP
4 SW - STBY
4 TB RUN (WITHIN 2 MIN)
4 SW - RUN

49-31 **CDPS**

CRT (VAS59 PG-B)
VERIFY GPC 4 JOINS CS

49-32 **CDPS CDR 152**

PANEL O6

GENERAL PURPOSE COMPUTER
INITIAL PROGRAM LOAD
5 PB - PRESS, REL
MODE
5 TB IPL THEN BP
5 SW - STBY
5 TB RUN (WITHIN 2 MIN)
5 SW - RUN

49-33 **CDPS**

CRT (VAS59 PG-B)
VERIFY GPC 5 JOINS CS

49-34 **CDPS CDR 152**

PANEL O6

IPL SOURCE SW - OFF

49-35 CDPS

CURSOR CNTL (SAS25 PG-B)
GPC DISCRETES (VWS98)
XMIT CURSOR KEY - PRESS

NOTE

Noted requirements are satisfied by the following series of steps.

OMRS V72CA0.030-1R

49-36 CDPS CDR 152

PANEL C3

BFC CRT
SELECT SW - 1+2
DISPLAY SW - ON

49-37 CDPS

CRT (VWS98 PG-B)
VERIFY

		GPC						

		1	2	3	4	5		
38		0	0	0	0	0	CRT	SELECT A
39		1	1	1	1	1	CRT	SELECT B

49-38 CDPS CDR 152

PANEL C3

BFC CRT
SELECT SW - 2+3

49-39 CDPS

CRT (VWS98 PG-B)
VERIFY

		GPC						

		1	2	3	4	5		
38	1	1	1	1	1	1	CRT	SELECT A
39	0	0	0	0	0	0	CRT	SELECT B

49-40 CDPS CDR 152

PANEL C3

BFC CRT
SELECT SW - 3+1

49-41 CDPS

CRT (VWS98 PG-B)
VERIFY

		GPC						

		1	2	3	4	5		
38	1	1	1	1	1	1	CRT	SELECT A
39	1	1	1	1	1	1	CRT	SELECT B

49-42 CDPS CDR 152

PANEL C3

BFC CRT
DISPLAY SW - OFF

49-43 CDPS

CRT (VWS98 PG-B)
VERIFY

		GPC						

		1	2	3	4	5		
38	0	0	0	0	0	0	CRT	SELECT A
39	0	0	0	0	0	0	CRT	SELECT B

49-44 Noted requirements are complete.

OMRSD [V72CA0.030-1R](#)

NOTE

Noted requirements are satisfied by the following series of steps.

OMRS V72CA0.020-1R

49-45 CDPS CDR 152

PANEL O6

MDM

FLT CRIT FWD

FF1 SW - OFF

FF2 SW - OFF

FF3 SW - OFF

49-46 CDPS CDR 152

PANEL O6

GENERAL PURPOSE COMPUTER

OUTPUT

5 SW - BACKUP

49-47 CDPS

CRT (VWS98 PG-B)

VERIFY

GPC

	1	2	3	4	5	
13	0	0	0	0	1	I/O TERM B
35	0	0	0	0	0	BFC ENGAGE 1
36	0	0	0	0	0	BFC ENGAGE 2
37	0	0	0	0	0	BFC ENGAGE 3

49-48 CDPS PLT 152

RH RHC

BFC ENGAGE PB - PRESS, REL

49-49

CDPS

CRT (VWS98 PG-B)

VERIFY

GPC

```
-----  
      1  2  3  4  5  
13    1  1  1  1  0  I/O TERM B  
35    1  1  1  1  1  BFC ENGAGE 1  
36    1  1  1  1  1  BFC ENGAGE 2  
37    1  1  1  1  1  BFC ENGAGE 3
```

49-50

CDPS

CDR

152

PANEL F6

BFC SW - DISENGAGE, REL

49-51

CDPS

CRT (VWS98 PG-B)

VERIFY

GPC

```
-----  
      1  2  3  4  5  
13    0  0  0  0  1  I/O TERM B  
35    0  0  0  0  0  BFC ENGAGE 1  
36    0  0  0  0  0  BFC ENGAGE 2  
37    0  0  0  0  0  BFC ENGAGE 3
```

49-52

CDPS

CDR

152

LH RHC

BFC ENGAGE PB - PRESS, REL

49-53 CDPS

CRT (VWS98 PG-B)

VERIFY

GPC

```
-----  
      1  2  3  4  5  
13    1  1  1  1  0  I/O TERM B  
35    1  1  1  1  1  BFC ENGAGE 1  
36    1  1  1  1  1  BFC ENGAGE 2  
37    1  1  1  1  1  BFC ENGAGE 3
```

49-54 CDPS CDR 152

PANEL O6

GENERAL PURPOSE COMPUTER

OUTPUT

5 SW - NORMAL

49-55 CDPS

CRT (VWS98 PG-B)

VERIFY

GPC

```
-----  
      1  2  3  4  5  
13    0  0  0  0  0  I/O TERM B  
35    0  0  0  0  0  BFC ENGAGE 1  
36    0  0  0  0  0  BFC ENGAGE 2  
37    0  0  0  0  0  BFC ENGAGE 3
```

49-56 CDPS

APPL PAGE (VWS98 PG-B)

PFK15 KEY - PRESS (TERMINATE)

49-57 Noted requirements are complete.

OMRSD [V72CA0.020-1R](#)

49-58 CDPS CDR 152

PANEL O6

MDM
 FLT CRIT FWD
 FF1 SW - ON
 FF2 SW - ON
 FF3 SW - ON

49-59 **CDPS**

Perform Power Supply BITE on MDMs FF1, FF2 and FF3:

1. CONSOLE KYBD
 CBTU RBSR FF1
 XMIT CMD KEY - PRESS
 EXEC CMD KEY - PRESS

 CRT
 RESULT = X8000

2. CONSOLE KYBD
 CBTU BT3 FF1
 XMIT CMD KEY - PRESS
 EXEC CMD KEY - PRESS

 CBTU RBSR FF1
 XMIT CMD KEY - PRESS
 EXEC CMD KEY - PRESS

 CRT
 RESULT = X0023

3. Repeat previous two substeps for MDM FF2 and FF3.

49-60 CDPS CDR 152

L KYBD
I/O RESET
EXEC
MSG RESET

49-61 CDPS PLT 152

PANEL F8

FLT CNTLR POWER SW - OFF

49-62 CDPS CDR 152

PANEL F6

FLT CNTLR POWER SW - OFF

49-63 CDPS PLT 152

PANEL O16

ROW E
MN C
DDU

RIGHT CB - OPEN

49-64 CDPS CDR 152

PANEL O15

ROW E
MN B
DDU

LEFT CB - OPEN
RIGHT CB - OPEN

49-65 CDPS CDR 152

PANEL O14

ROW E

MN A

DDU

LEFT CB - OPEN

49-66 CDPS OTC 132
CISL

Master alarms will occur during GPC deactivation.

49-67 CDPS CDR 152

PANEL O6

GENERAL PURPOSE COMPUTER

MODE

5 SW - STBY

5 TB BP

49-68 CDPS CDR 152

PANEL F2

MASTER ALARM PB - PRESS, REL

49-69 CDPS CDR 152

PANEL O6

GENERAL PURPOSE COMPUTER

MODE

4 SW - STBY

4 TB BP

49-70 CDPS CDR 152

PANEL F2

MASTER ALARM PB - PRESS, REL

49-71 CDPS CDR 152

PANEL O6

GENERAL PURPOSE COMPUTER
MODE
3 SW - STBY
3 TB BP

49-72 CDPS CDR 152

PANEL F2

MASTER ALARM PB - PRESS, REL

49-73 CDPS CDR 152

PANEL O6

GENERAL PURPOSE COMPUTER
MODE
2 SW - STBY
2 TB BP

49-74 CDPS CDR 152

PANEL F2

MASTER ALARM PB - PRESS, REL

49-75 CDPS CDR 152

CRT 1
GPC MEMORY

49-76 CDPS CDR 152

L KYBD
ITEM 48
EXEC

49-77 CDPS CDR 152

PANEL O6

GENERAL PURPOSE COMPUTER
MODE

- 2 SW - HALT
- 3 SW - HALT
- 4 SW - HALT
- 5 SW - HALT

49-78 CDPS CDR 152

PANEL O1

VERIFY ALL CAM LIGHTS OUT

49-79 CDPS LPS 152

OIS FEP will go "No-Go" momentarily during Time Update operations.

49-80 CDPS

CURSOR CNTL (SAS01 PG-B)
DPS
XMIT CURSOR KEY - PRESS

CURSOR CNTL (SAS01 PG-B)
TIME UPDATE PROGRAM (VAS58)
XMIT CURSOR KEY - PRESS

PFK2 KEY - PRESS

49-81

CDPS

CURSOR CNTL (VAS58 PG-B)
PERFORM TIME SYNC
XMIT CURSOR KEY- PRESS

CRT (VAS58)
VAS58 WAITING FOR OPTION SELECT

DELTA RESULTS 1 = _____MS (RECORD)

49-82

CDPS

CURSOR CNTL (VAS58 PG-B)
SELECT ANOTHER OPTION
XMIT CURSOR KEY - PRESS

49-83

CDPS

IF GMT delta is greater than +/- 14 ms,

Verify

THEN Perform:

CURSOR CNTL (VAS58 PG-B)
INITIAL GMT UPDATE
XMIT CURSOR KEY - PRESS

ELSE Perform:

CURSOR CNTL (VAS58 PG-B)
ADJUST GMT
XMIT CURSOR KEY - PRESS

49-84

CDPS

CRT (VAS58)

VERIFY

VAS58 WAITING FOR OPTION SELECT
FINAL DELTA RESULTS = 0 +/- 1 MS

49-85

CDPS

CURSOR CNTL (VAS58 PG-B)

SELECT ANOTHER OPTION

XMIT CURSOR KEY - PRESS

CURSOR CNTL (VAS58 PG-B)

DETERMINE MET/GMT DELTA (NO UPDATE)

XMIT CURSOR KEY - PRESS

CRT (VAS58)

RECORD DELTA RESULTS = _____MS (RECORD)

49-86

CDPS

IF MET DELTA IS GREATER THAN 40 MS,

THEN PERFORM:

CURSOR CNTL (VAS58 PG-B)

SELECT ANOTHER OPTION

XMIT CURSOR KEY - PRESS

CURSOR CNTL (VAS58 PG-B)

SET MET = GMT

XMIT CURSOR KEY - PRESS

CRT (VAS58)

VERIFY

VAS58 WAITING FOR OPTION SELECT

FINAL DELTA = 0 +/- 500 MS

Not Performed:_____

49-87

CDPS

CURSOR CNTL (VAS58 PG-B)

TERMINATE VAS58

XMIT CURSOR KEY - PRESS

49-88

CDPS CTPE

Request transfer of DDU Group 25 RSYS to C11.

49-89

CDPS OTC 132

Backup Flight Controller Test complete. LDB silence no longer required.

***** End of Option 1. Backup Flight Controller Test *****

Option 2. IDP 1/2/4 Load (OPS 0)

NOTE

Perform this option for initial Launch attempt.

NOTE

Steps involving Crit 1, 1R and/or 1S items are contained in the following operation.

Option 2 Not Performed: _____

NOTE

When IDP load switch is engaged, CRT MDUs driven by this IDP will be blanked except for a "VM LOAD IN PROGRESS" message at the center of the display. This message will remain until the load is complete, at which time the DPS display will return.

An "INVALID BRANCH ADDRESS" IDP error may be annunciated at conclusion of VM load (DR 109752).

49-90 CDPS CDR 152

CRT 1
0001/GPC MEMORY

49-91 CDPS CDR 152

PANEL O6

INTEGRATED DISPLAY PROCESSOR
1 SW - LOAD, RELEASE

CRT 1
VERIFY "VM LOAD IN PROGRESS" MESSAGE, THEN GPC
MEMORY DISPLAY

OMRSD [V70CA0.010-A-1](#)

49-92 CDPS CDR 152

CRT 2
0001/GPC MEMORY

49-93 CDPS CDR 152

PANEL O6

INTEGRATED DISPLAY PROCESSOR
2 SW - LOAD, RELEASE

CRT 2
VERIFY "VM LOAD IN PROGRESS" MESSAGE, THEN GPC
MEMORY DISPLAY

OMRSD [V70CA0.010-B-1](#)

NOTE

If an MDU fails to come up at power application, turn bezel knob off for 3 seconds, then back to on (ref H/W-0002).

49-94 CDPS CDR 152

PANEL R11U

CRT 4 MDU
POWER KNOB - ON

CAUTION

When turned on, IDP power must remain on a minimum of 30 seconds or hardware damage may result.

OMRS (general) [V70GEN.030](#)

49-95 CDPS CDR 152

PANEL R11L

IDP/CRT 4
MAJ FUNC SW - GNC
POWER SW - ON

49-96 CDPS CDR 152

PANEL C2

LEFT CRT SEL SW - 1

49-97 CDPS CDR 152

LEFT KYBD
GPC/CRT 03
EXEC
GPC/CRT 14
EXEC

49-98 CDPS CDR 152

IF DPS DISPLAY IS NOT ACTIVE ON CRT 4,

THEN PERFORM:

PANEL R11U

CRT 4 MDU

PRESS UP ARROW EDGE KEY TO MAIN MENU

PRESS DPS EDGE KEY

Not Performed: _____

49-99 CDPS CDR 152

CRT 4
0001/GPC MEMORY

49-100 CDPS CDR 152

PANEL O6

INTEGRATED DISPLAY PROCESSOR

4 SW - LOAD, RELEASE

CRT 4

VERIFY "VM LOAD IN PROGRESS" MESSAGE, THEN GPC
MEMORY DISPLAY

OMRSD [V70CA0.010-D-1](#)

06-24-2011
APPROVED

OMI S0007.400 A23
APPROVED

49-101 CDPS CDR 152

LEFT KYBD
GPC/CRT 04
EXEC
GPC/CRT 13
EXEC

49-102 CDPS OTC 132

IDP 1/2/4 Load complete.

***** End of Option 2. IDP 1/2/4 Load (OPS 0) *****

Option 3. Transition GPC 1 to G9 Simplex

NOTE

Perform this option for initial Launch attempt.

Option 3 Not Performed: _____

49-103

CDPS

CURSOR CNTL (SAS01 PG-B)
DPS
XMIT CURSOR KEY - PRESS

CURSOR CNTL (SAS01 PG-B)
DPS RECONFIGURATION (VAS90)
XMIT CURSOR KEY - PRESS

PFK2 KEY - PRESS

49-104

CDPS

CURSOR CNTL (VAS90 PG-B)
QUICK NBAT MODIFY - GPC1 SMPLX
XMIT CURSOR KEY - PRESS

CURSOR CNTL (VAS90 PG-B)
MOD NBAT - G9
XMIT CURSOR KEY - PRESS

CURSOR CNTL (VAS90 PG-B)
PRIMARY OPS TRANS - GNC 9
XMIT CURSOR KEY - PRESS

49-105

CDPS

IF DOWNLIST FORMAT 60 IS REQUIRED FOR PAYLOAD
SUPPORT (REF. OMI S0007.100, OPERATION 272 - DPS
LAUNCH SUPPORT CONFIGURATION) ,

THEN PERFORM:

APPL PAGE (VAS90 PG-B)
PFK7 KEY - PRESS

CURSOR CNTL (VAS90 PG-B)
DOWNLIST FORMAT LOAD - FMT 60
XMIT CURSOR KEY - PRESS

Not Performed:_____

49-106

CDPS

PFP (VAS90)
EXECUTE KEY - PRESS

CRT (VAS90 PG-B)
"SUCCESSFUL COMPLETION OF JOB"

CRT (VAS90 PG-A)
NO ERROR MESSAGES DISPLAYED

Select SRB Poll Bus 2

NOTE

Perform this option if SRB power is up.

Select SRB Poll Bus 2 Not Performed: _____

49-107

CDPS

IF DPS RECONFIGURATION MENU PAGE 2 IS NOT ALREADY ACTIVE,

THEN PERFORM:

APPL PAGE (VAS90 PG-B)

PFK7 KEY - PRESS

Not Performed: _____

49-108

CDPS

CURSOR CNTL (VAS90 PG-B)

SRB POLL BUS - LDB2

XMIT CURSOR KEY - PRESS

49-109

CDPS

PFK (VAS90)

EXECUTE KEY - PRESS

CRT (VAS90 PG-B)

"SUCCESSFUL COMPLETION OF JOB"

CRT (VAS90 PG-A)

NO ERROR MESSAGES DISPLAYED

***** End of Select SRB Poll Bus 2 *****

49-110

CDPS

PFK (VAS90)

TERMINATE KEY - PRESS

49-111

CDPS

CURSOR CNTL (SAS01 PG-B)
FC & PL MDM BSR READ
XMIT CURSOR KEY - PRESS
EXEC CMD KEY - PRESS

49-112

CDPS

CRT (VAS93 PG-B)
VERIFY NO UNEXPECTED ERRORS

49-113

CDPS

CURSOR CNTL (SAS01 PG-B)
ACT CYCLIC BSR READ
XMIT CURSOR KEY - PRESS
EXEC CMD KEY - PRESS

CRT (SA PG)
CYC BSR - ACT

49-114

CDPS OTC 132

GPC1 is in G9 Simplex Format _____ (44 or 60) with LDB polling and HDA enabled.

***** End of Option 3. Transition GPC 1 to G9 Simplex *****

Option 4. BFS Load - GPC5

NOTE
Perform this option for initial Launch attempt.

NOTE
Steps involving Crit 1, 1R and/or 1S items are contained in the following operation.

Option 4 Not Performed: _____

NOTE
Noted requirements are satisfied by the following series of steps.

OMRS V72CA0.051-B

49-115 CDPS CDR 152

PANEL O6

IPL SOURCE SW - MMU 1

GENERAL PURPOSE COMPUTER

MODE

5 SW - HALT

OUTPUT

5 SW - NORMAL

POWER

5 SW - OFF, THEN ON

GENERAL PURPOSE COMPUTER

INITIAL PROGRAM LOAD

5 PB - PRESS, REL

MODE

5 TB IPL THEN BP

49-116 CDPS CDR 152

PANEL C2

LEFT CRT SEL SW - 3

CRT 3

MAJ FUNC SW - GNC

49-117 CDPS CDR 152

PANEL C3

BFC CRT

SELECT SW - 3+1

DISPLAY SW - ON

NOTE Noted requirements are satisfied by the following series of steps. OMRS V70CA0.010-C-1
--

49-118 CDPS CDR 152

PANEL O6

INTEGRATED DISPLAY PROCESSOR
3 SW - LOAD, REL

GENERAL PURPOSE COMPUTER
MODE
5 SW - STBY

49-119 CDPS CDR 152

CRT 3
IPL MENU (1) (WITHIN TWO MIN)
VERIFY MESSAGES STILL IN LIST = 2

49-120 Noted requirements are complete.

OMRSD [V70CA0.010-C-1](#)

49-121 CDPS CDR 152

L KYBD (BFS)
MSG RESET (PRESS TWICE)

49-122 CDPS CDR 152

L KYBD (BFS)
ITEM 2 (BFS1)
EXEC

49-123 CDPS CDR 152

CRT 3
BSL LOADED MSG ON MSG LINE
(WITHIN 2 MIN)

49-124 CDPS CDR 152

L KYBD (BFS)
MSG RESET (PRESS ONCE)

NOTE

Due to BSL mechanization, computed checksum errors may occur during BFS load (BFS checksum error, IMU checkpoint checksum error, TFL format computed checksum error - ref User Note B06546A).

49-125 CDPS CDR 152

IF BFS CHECKSUM ERROR, IMU CHECKPOINT CHECKSUM ERROR, OR TFL FORMAT COMPUTED CHECKSUM ERROR MESSAGE APPEARS ON CRT MESSAGE LINE,

THEN PERFORM THE FOLLOWING FOR EACH OCCURRENCE:

L KYBD (BFS)
MSG RESET (PRESS ONCE)

Not Performed: _____

49-126 CDPS CDR 152

CRT 3
VERIFY

MSG: (WITHIN 3 MINUTES)

KSC RR.VV.P.II.MM LOADED_SET MMU SEL SW TO OFF

WHERE:

RR = RELEASE NUMBER
VV = VERSION NUMBER
P = PATCH SET NUMBER
II = I LOAD SET NUMBER
MM = MASS MEMORY AREA NUMBER

49-127 CDPS CDR 152

CRT 3
VERIFY MESSAGES STILL IN LIST = 1

49-128 CDPS CDR 152

PANEL O6

IPL SOURCE SW - OFF

NOTE

BFS GPC error "ILLEGAL ENGAGE/TERM B" will occur in the following step.

49-129 CDPS CDR 152

L KYBD
MSG RESET (PRESS ONCE)

CRT 3
BFS MEMORY

49-130 CDPS

APPLICATIONS PAGE (VAS59 PG-B)
DL FMT 12 ACTIVE

49-131 Noted requirements are complete.

OMRSD [V72CA0.051-B](#)

49-132 CDPS

CONSOLE KYBD
ISSU N72IV067D #1001
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

49-133 CVFS

CURSOR CNTL (SAS10 PG-B)
BFS MONITOR (VASB9)
XMIT CURSOR KEY - PRESS

49-134 CVFS CDR 152

L KYBD (BFS)
FAULT SUMM

CRT 3
READ AND REPORT ANY FSP MESSAGES

49-135 CVFS

APPLICATION PAGE (VASB9 PG-B)
VERIFY NO UNEXPLAINED GPC, I/O, OR FAULT SUMMARY
MESSAGES.

49-136 CVFS CDR 152

L KYBD (BFS)
SPEC 99
PRO
RESUME

CRT 3
BFS MEMORY

49-137 CDPS CDR 152

LEFT KYBD (BFS KYBD)
ITEM 39
EXEC

CRT 3
GMT 39 *

49-138 CDPS CDR 152

LEFT KYBD (BFS KYBD)
GPC/CRT 54
EXEC

CRT 4
BFS MEMORY

NOTE

Error message will occur in the next step if EMON notification for MSIDs is already active.

49-139

CDPS

CONSOLE KYBD
A SX V98J2258C1,ANY
XMIT CMD KEY - PRESS
(BFS I/O ERROR COUNT)

A SX V98J2299C1,ANY
XMIT CMD KEY - PRESS
(BFS GPC ERROR COUNT)

NOTE

The following step patches BFS GPC memory to prevent nuisance alarms during ascent. The alarms are due to a Left OMS Ox Tank ullage pressure transducer that is biased. The ullage pressure upper limit is 288 psia and will be changed to 296 psia.

49-140

CDPS

Patch BFS GPC memory per OMI [V1184 Tracking Sheet](#) .

Record:

RTOMI Log #: _____

RASS # 135.05

***** End of Option 4. BFS Load - GPC5 *****

Option 5. BFS Dump, Retrieval and Compare

NOTE

Perform this option for initial Launch attempt.

Option 5 Not Performed: _____

NOTE

LPS is required to report frame count or tape errors to CVFS during dump. Any error encountered may require restart of dump.

NOTE

Steps involving Crit 1, 1R and/or 1S items are contained in the following operation.

NOTE

Noted requirements are satisfied by the following series of steps.

OMRS V72CA0.051-C

49-141 CVFS LPS 152

Perform Tape Switch at PDR

Monitor system message page for “GPCA OR GPCS FORMAT 90
FRAME COUNT ERROR” during BFS Dump and report any occurrence.

49-142 CVFS CDR 152

L KYBD (BFS)
ITEM 24
EXEC (START DUMP)

49-143 CVFS CMQC 152
 LPS

Record dump start time:

_____ : _____ / _____
ddd hhmm ss

49-144 CVFS

CRT (VAS59 PG-B)
DL FMT 90 IN AREA 2.

49-145 CVFS

AFTER APPROX 7 MINUTES,
CRT (VAS59 PG-B)
DL FMT 12 ACTIVE IN AREA 2.

49-146 CVFS CMQC 152
 LPS

Record dump stop time:

_____ : _____ / _____
ddd hhmm ss

49-147 CVFS LPS 152

Verify no GPCA or GPCS Format 90 frame count errors were received.

49-148 CVFS LPS 152

IF an error was detected in GPCA or GPCS frame counts,
THEN repeat the previous seven steps.

Not Performed: _____

49-149

CVFS

Perform BFS Dump, Retrieval and Compare (using DAP 140 SDC program, OMI S0007.400, Operation 49, Option 6) on Channel 152 (15 minutes).

49-150

CVFS

Verify DAP 140 runs to completion with expected mismatches.

49-151

CDPS

CDR

152

PANEL C3

BFC CRT

DISPLAY SW - OFF

49-152 CDPS CDR 152

CRT 3
GPC MEMORY DISP

49-153 CDPS CDR 152

PANEL C2

LEFT CRT SEL SW - 1

NOTE

BFS will remain active through Launch. Periodic Area 2 Format 12 downlist frame count errors and FDA messages are expected. (DR B08062)

49-154 Noted requirements are complete.

OMRSD [V72CA0.051-C](#)

49-155 CVFS OTC 132

BFS Dump and Compare complete. Miscompares are as expected.

***** End of Option 5. BFS Dump, Retrieval and Compare *****

Option 6. BFS DAP-140 Retrieval Option

NOTE

Perform this option for initial Launch attempt if SDC will be used to perform BFS Dump and Compare.

Option 6 Not Performed: _____

49-156

CVFS

CONSOLE KYBD
CDS ENABLE KEY - PRESS (FR3)
SDC ENABLE KEY - PRESS (FR4)

CRT
VERIFY ASSIGNED TO CDS LINE 1 OR 2

49-157

CVFS

CONSOLE KYBD
SDC
SIGN-ON KEY - PRESS

49-158

CVFS

CRT
VERIFY RSHELL>

49-159

CVFS

CONSOLE KYBD
DAP
CDS XMIT KEY - PRESS (FR3)
SDC XMIT KEY - PRESS (FR4)

NOTE

In the following step, the sequence is:

BFSDC TCID FEP;
start time (hhmmss) stop time (hhmmss)
date (mmddy); STS No./filename

49-160

CVFS

CONSOLE KYBD

BFSDC _____ GPCA;

_____ ; -FL STS _____ / _____ . _____ . _____

CDS XMIT KEY - PRESS (FR3)

SDC XMIT KEY - PRESS (FR4)

49-161

CVFS

CRT

VERIFY BFS VERIFICATION COMPLETED MESSAGE

49-162

CVFS

IF MISCOMPARES ARE ENCOUNTERED,

THEN PERFORM:

CRT

VERIFY DO YOU WANT TO DISPLAY MISCOMPARES?

Y OR N

Not Performed: _____

49-163

CVFS

IF MISCOMPARES ARE ENCOUNTERED,

THEN PERFORM:

CONSOLE KYBD

Y

CDS XMIT KEY - PRESS (FR3)

SDC XMIT KEY - PRESS (FR4)

CRT

VERIFY VALUE RECEIVED AND VALUE EXPECTED ARE
DISPLAYED WITH THE GPC ABSOLUTE ADDRESS.

Not Performed: _____

Select Print Miscompares Option

NOTE
Perform this option to print miscompares if desired.

Select Print Miscompares Option Not Performed: _____

49-164

CVFS

CRT
VERIFY

DO YOU WANT TO PRINT MISCOMPARES? Y OR N

49-165

CVFS

CONSOLE KYBD
Y
CDS XMIT KEY - PRESS (FR3)
SDC XMIT KEY - PRESS (FR4)

49-166

CVFS

CRT
VERIFY

ENTER PRINTER NAME

NOTE
In the following step, enter desired LAN printer name for miscompare printout.

49-167

CVFS

CONSOLE KYBD
(PRINTER NAME)
CDS XMIT KEY - PRESS (FR3)
SDC XMIT KEY - PRESS (FR4)

CRT
VERIFY PRINTING FOR THE BFS DUMP AND COMPARE IS
COMPLETE

***** End of Select Print Miscompares Option *****

49-168

CVFS

CRT
VERIFY

TPAP SDC TERMINATED
RSHELL>

49-169

CVFS

CONSOLE KYBD
EXIT
CDS XMIT KEY - PRESS (FR3)
SDC XMIT KEY - PRESS (FR4)

49-170

CVFS

CPU ENABLE KEY - PRESS (FR3)
FRONT KEY - PRESS (FR4)

***** End of Option 6. BFS DAP-140 Retrieval Option *****

Option 7. BFS Dump Retrieval and Compare via LPS

NOTE

Perform this option if BFS Dump and Compare using LPS retrieval method required due to DAP140 anomaly.

Option 7 Not Performed: _____

49-171 CVFS LPS 152

Perform BFS Downlist Dump Retrieval and Compare per:

Maximo Work Order _____

49-172 C4SE

Verify BFS compare completes with successful output of number of mismatches.

Deliver printout to CVFS Engineer at Console C-12.

49-173 CPDR

Remove BFS compare tape from tape unit.

Remove BFS processed tape from tape T1.

Deliver BFS compare tape and processed tape to LPS tape locker.

BFS dump and compare now complete.

49-174 CVFS

Verify dump and compare listing.

***** End of Option 7. BFS Dump Retrieval and Compare via LPS *****

Option 8. Final TFL/PDI Loads for Flight

NOTE

Steps involving Crit 1, 1R and/or 1S items are contained in the following operation.

NOTE

Perform this option for initial Launch attempt. Obtain formats and inputs from OMI S0007.100, Operation 272 - DPS Launch Support Configuration.

Option 8 Not Performed: _____

NOTE

Noted requirements are satisfied by the following series of steps.

OMRS S00FA0.301-1R

Final PCMMU Telemetry Loads for Flight

NOTE

PMU/DL I/O cycle WRAP or cyclic overrun GPC error may occur during PCMMU format load.

49-175 CISL JRPS 152

Perform OMI S0007.100, Operation 262 - RPS TFL Setup.

Report completion.

49-176 CISL JRPS 152

Verify recording OI 64KB data on ground recorder(s).

Start decom lock status and MDM WRAP display recorder.

49-177 CISL CDR 152

PANEL C3

OI PCMMU
FORMAT SW - FIXED

NOTE

During PCMMU Switchover and LDR Format Load, multiple console alarms may occur due to temporary PCMMU BITE Bit failures.

NOTE

Erroneous BFS FDA messages may be annunciated at PCMMU switchover.

49-178 CISL CDR 152

IF OI PCMMU 1 IS ACTIVE,

THEN PERFORM:

PANEL C3

OI PCMMU
PWR SW - 2

Not Performed:_____

49-179 CISL

CRT (SAQ06/VWQ11)

VERIFY

PCMMU

PCM 2 ON
FORMAT 129 FIXED
BITE
1-14 GOOD

MDM

WRAP (ALL) GOOD

MTU

GMT ADVANCING

49-180 CISL CDPS 152

Perform TFL to PCM2 FMT _____ HDR, FMT _____ LDR using
PASS software.

49-181

CDPS

CURSOR CNTL (SAS01 PG-B)
DPS
XMIT CURSOR KEY PRESS

CURSOR CNTL (SAS01 PG-B)
DPS RECONFIGURATION (VAS90)
XMIT CURSOR KEY - PRESS

PFK 2 KEY - PRESS

49-182

CDPS

APPL PAGE (VAS90 PG-B)
PFK-8 KEY - PRESS

49-183

CDPS

CURSOR CNTL (VAS90 PG-B)
TFL LOAD
XMIT CURSOR KEY - PRESS

FMT _____ (HDR FMT)
XMIT CURSOR KEY - PRESS

49-184

CDPS

PFP (VAS90 PG-B)
EXECUTE KEY - PRESS

CRT (VAS90 PG-B)
"SUCCESSFUL COMPLETION OF JOB"

CRT (VAS90 PG-A)
NO ERROR MESSAGES DISPLAYED

49-185

CDPS

CURSOR CNTL (VAS90 PG-B)
TFL LOAD
XMIT CURSOR KEY - PRESS

FMT _____ (LDR FMT)
XMIT CURSOR KEY - PRESS

49-186

CDPS

PFP (VAS90 PG-B)
EXECUTE KEY - PRESS

CRT (VAS90 PG-B)
"SUCCESSFUL COMPLETION OF JOB"

CRT (VAS90 PG-A)
NO ERROR MESSAGES DISPLAYED

NOTE

If an on-orbit format was loaded, downlist data will be invalid and frame count errors will occur for the duration of the time that the OI format is active.

49-187

CDPS CDR 152

PANEL C3
OI PCMMU
FORMAT SW - PROGRAM

49-188

CDPS

CRT (VAS59 PG-B)
VERIFY OI DATA CYAN

49-189

CDPS CISL 152

Telemetry format loads for PCMMU 2 complete.

NOTE

The next step will show PCMMU BITE bits 11, 12 and 15 fail or toggling if PDI is powered down.

49-190

CISL

CRT (SAQ04/SWQ01)

VERIFY

PCMMU

PCM 2 ON

FORMAT _____ PROG

BITE

1-14 GOOD

MDM

WRAP (ALL) GOOD

MTU

GMT ADVANCING

49-191

CISL

JISE

152

Verify decom lock on OI PCM 2

Fmt LDR _____

MDM WRAPs dynamic

GMT advancing

NOTE

Erroneous BFS FDA messages may be annunciated at PCMMU switchover.

49-192

CISL

CDR

152

PANEL C3

OI PCMMU

FORMAT SW - FIXED

PWR SW - 1

49-193

CISL

CRT (SAQ06/VWQ11)

VERIFY

PCMMU

PCM 1 ON

FORMAT 129 FIXED

BITE

1-14 GOOD

MDM

WRAP (ALL) GOOD

MTU

GMT ADVANCING

NOTE

Monitor MTU CMD channels for a minimum of 5 minutes to verify no toggling.

49-194

CISL

CDR

152

IF MTU CMD CHANNEL A, B, OR C IS TOGGLING,

THEN REPEAT THE FOLLOWING UNTIL STABILIZED:

PANEL C3

OI PCMMU

PWR SW - OFF, THEN - 1

Not Performed:_____

49-195

CISL

CDPS

152

Perform TFL to PCM1 FMT _____ HDR, FMT _____ LDR using
PASS software.

49-196

CDPS

CURSOR CNTL (VAS90 PG-B)
TFL LOAD
XMIT CURSOR KEY - PRESS

FMT _____ (HDR FMT)
XMIT CURSOR KEY - PRESS

49-197

CDPS

PFP (VAS90 PG-B)
EXECUTE KEY - PRESS

CRT (VAS90 PG-B)
"SUCCESSFUL COMPLETION OF JOB"

CRT (VAS90 PG-A)
NO ERROR MESSAGES DISPLAYED

49-198

CDPS

CURSOR CNTL (VAS90 PG-B)
TFL LOAD
XMIT CURSOR KEY - PRESS

FMT _____ (LDR FMT)
XMIT CURSOR KEY - PRESS

49-199

CDPS

PFP (VAS90 PG-B)
EXECUTE KEY - PRESS

CRT (VAS90 PG-B)
"SUCCESSFUL COMPLETION OF JOB"

CRT (VAS90 PG-A)
NO ERROR MESSAGES DISPLAYED

49-200

CDPS

IF PDI loads will not be performed,

THEN:

PFP (VAS90 PG-B)
TERMINATE KEY - PRESS

Not Performed: _____

NOTE

If an on-orbit format was loaded, downlist data will be invalid and frame count errors will occur for duration of time OI format is active.

49-201

CDPS

CDR

152

PANEL C3

OI PCMMU
FORMAT SW - PROGRAM

49-202

CDPS

CRT (VAS59 PG-B)
VERIFY OI DATA CYAN

49-203

CDPS

CISL

152

Telemetry format loads for PCMMU1 complete.

NOTE
The next step will show PCMMU BITE bits 11, 12 and 15 fail or toggling if PDI is powered down.

49-204

CISL

CRT (SAQ06/VWQ11)

VERIFY

PCMMU

PCM 1 ON

FORMAT _____ PROG

BITE

1-14 GOOD

MDM

WRAP (ALL) GOOD

MTU

GMT ADVANCING

49-205

CISL

JISE

152

Verify decom lock on OI PCM 1

FMT LDR _____

MDM WRAPs dynamic

GMT advancing

49-206

CISL

JRPS

152

Stop decom lock status and MDM WRAP display recorder.

Continue recording of OI 64KB data.

Upload to the RPS Web

49-207

CDPS

CDR

152

PANEL C3

OI PCMMU

FORMAT SW - FIXED

49-208

CDPS

CRT (VAS59 PG-B)
VERIFY 129 CYAN

49-209

CDPS

CDR

152

PANEL C3

OI PCMMU
FORMAT SW - GPC

49-210

CISL

CRT (SAQ06/VWQ11)
VERIFY

PCMMU
PCM 1 ON
FORMAT 129 FIXED
SW SCAN GPC
BITE
1-14 GOOD
MDM
WRAP (ALL) GOOD
MTU
GMT ADVANCING

49-211

CDPS

CISL
JRPS

152

CISL, JRPS support no longer required.

***** End of Final PCMMU Telemetry Loads for Flight *****

Final PDI Decom Loads for Flight

NOTE
Perform this option if PDI formats are required.

Final PDI Decom Loads for Flight Not Performed: _____

49-212

CDPS

IF VAS90 is not currently active,

THEN:

CURSOR CNTL (SAS01 PG-B)
DPS
XMIT CURSOR KEY - PRESS

CURSOR CNTL (SAS01 PG-B)
DPS RECONFIGURATION (VAS90)
XMIT CURSOR KEY - PRESS

PFK2 KEY - PRESS

Not Performed: _____

49-213

CDPS

APPL PAGE (VAS90 PG-B)
PFK9 KEY - PRESS

NOTE
Repeat the next three steps for each Decom (1-4) required to be loaded
(ref OMI S0007.100, Operation 272 - DPS Launch Support Configuration).

49-214

CDPS

CURSOR CNTL (VAS90 PG-B)
SELECT ELEMENT - DECOM X (1-4)
XMIT CURSOR KEY - PRESS

49-215

CDPS

IF FORMAT LOAD IS REQUIRED,

THEN PERFORM:

CURSOR CNTL (VAS90 PG-B)
SELECT FORMAT - XX (01-31)
XMIT CURSOR KEY - PRESS

Not Performed: _____

49-216

CDPS

CURSOR CNTL (VAS90 PG-B)
SELECT INPUT - PL SRC X (0-6)
XMIT CURSOR KEY - PRESS

49-217

CDPS

Record selections below.

Record 'N/A' in blanks for not performed options.

Decom 1 fmt _____ input _____

Decom 2 fmt _____ input _____

Decom 3 fmt _____ input _____

Decom 4 fmt _____ input _____

49-218

CDPS

IF FPM LOAD IS REQUIRED,

THEN PERFORM:

CURSOR CNTL (VAS90 PG-B)
SELECT ELEMENT - FPM
XMIT CURSOR KEY - PRESS

CURSOR CNTL (VAS90 PG-B)

SELECT FORMAT - _____
XMIT CURSOR KEY - PRESS

Not Performed:_____

49-219

CDPS

PFP (VAS90)
EXECUTE KEY - PRESS

CRT (VAS90 PG-B)
"SUCCESSFUL COMPLETION OF JOB" (GREEN)

CRT (VAS90 PG-A)
NO ERROR MESSAGES DISPLAYED

49-220

CDPS

PFP (VAS90)
TERMINATE KEY - PRESS

***** End of Final PDI Decom Loads for Flight *****

49-221

CDPS OTC 132

Final TFL/PDI Loads for Flight complete.

49-222

Noted requirements are complete.

OMRSD [S00FA0.301-1R](#)

***** End of Option 8. Final TFL/PDI Loads for Flight *****

Option 9. HUD Powerup and Self Test

NOTE
Perform this option for initial Launch attempt.

Option 9 Not Performed: _____

49-223 CDPS CDR 152

PANEL F6

AIR DATA SW - NAV
ADI
 ATTITUDE SW - REF
 ERROR SW - MED
 RATE SW - MED
HSI SELECT
 MODE SW - ENTRY
 SOURCE
 TACAN/NAV/MLS SW - NAV (103, 104)
 GPS/NAV/MLS SW - NAV (105)
 1/2/3 SW - 1
RADAR ALTM SW - 1
HUD DATA BUS SW - 1

49-224 CDPS PLT 152

PANEL F8

AIR DATA SW - NAV
ADI
 ATTITUDE SW - REF
 ERROR SW - MED
 RATE SW - MED
HSI SELECT
 MODE SW - ENTRY
 SOURCE
 TACAN/NAV/MLS SW - NAV (103, 104)
 GPS/NAV/MLS SW - NAV (105)
 1/2/3 SW - 2
RADAR ALTM SW - 2
HUD DATA BUS SW - 4

49-225 CDPS MS1 152

PANEL A6U

ADI

ATTITUDE SW - INRTL

ERROR SW - MED

RATE SW - MED

UNUSED ROTARY SW - FULL CCW

HUD No. 1 (Left) Powerup & Self Test

CAUTION

PDU shall be operated at minimum allowable brightness setting. All glass surfaces are optically coated and must not be touched. Failure to follow the above criteria may result in premature failure of the PDU, or interfere with the visual display presented on the PDU.

OMRS (general) [V73GEN.030-C](#)

OMRS (general) [V73GEN.030-D](#)

49-226 CDPS CDR 152

PANEL F3

HUD (LEFT)

POWER SW - OFF

49-227 CDPS CDR 152

PANEL F6

HUD (LEFT)

DIM/BRT SW - DIM (CCW)

MODE SW - NORM

BRT SW - MAN DAY

49-228 CDPS CDR 152

PANEL F3

HUD (LEFT)

POWER SW - ON

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OMI S0007.400 A23
APPROVED

49-229 CDPS CDR 152

PANEL F6

HUD (LEFT)

DIM/BRT SW - ADJUST TO MIN BRIGHTNESS
FOR ADEQUATE VISIBILITY

PDU (LEFT)

VERIFY BIG X (WITHIN TWO MIN)

49-230

CDPS

CRT (SA-PAGE)

HUD PWR/BITE STAT

CDR ON

NOTE

The test pattern displayed on PDU is dynamic and runs for approximately 5 seconds upon initiation of Test mode. Test mode is entered by placing the mode switch on Panel F6A9 in TEST position. In order to perform the entire test, the mode select switch must remain in the Test position until termination indicator "COMPLETE" appears on PDU. The test may be repeated as necessary by placing the mode switch on Panel F6A9 to NORM then TEST positions.

The completed test will display test pattern symbols (i.e., circles inside of diamonds) in all four quadrants, and the word "COMPLETE" will be present. The circles may not close completely, and the diamond line segments may not meet or cross at corners. Portions of the small symbol (U/R quadrant) may be missing. This is acceptable as long as some portion of the small symbol is visible.

49-231 CDPS CDR 152

PANEL F6

HUD (LEFT)

MODE SW - TEST

PDU (LEFT)

VERIFY TEST PATTERN DYNAMIC WITH DISPLAY SYMBOLOGY MOVING IN CONTINUOUS FASHION UNTIL "COMPLETE" APPEARS, AT WHICH TIME DISPLAY BECOMES STATIC.

49-232 CDPS CDR 152

PANEL F6

HUD (LEFT)

MODE SW - NORM

PDU (LEFT)

VERIFY BIG X

49-233 CDPS CDR 152

PANEL F6

HUD (LEFT)

DIM/BRT SW - ROTATE FROM DIM (CCW) TO BRT (CW) AND VERIFY PDU DISPLAY INTENSITY VARIES ACCORDINGLY

HUD No. 1 Powerdown

49-234 CDPS CDR 152

PANEL F6

HUD (LEFT)
DIM/BRT SW - MID RANGE
MODE SW - NORM
BRT SW - MAN/DAY

49-235 CDPS CDR 152

PANEL F3

HUD (LEFT)
POWER SW - OFF

***** End of HUD No. 1 Powerdown *****

HUD No. 2 (Right) Powerup & Self Test

CAUTION

PDU shall be operated at minimum allowable brightness setting. All glass surfaces are optically coated and must not be touched. Failure to follow the above criteria may result in premature failure of the PDU, or interfere with the visual display presented on the PDU.

OMRS (general) [V73GEN.030-C](#)

OMRS (general) [V73GEN.030-D](#)

49-236 CDPS PLT 152

PANEL F3

HUD (RIGHT)
POWER SW - OFF

49-237 CDPS PLT 152

PANEL F8

HUD (RIGHT)
DIM/BRT SW - DIM (CCW)
MODE SW - NORM
BRT SW - MAN DAY

49-238 CDPS PLT 152

PANEL F3

HUD (RIGHT)
POWER SW - ON

49-239 CDPS PLT 152

PANEL F8

HUD (RIGHT)
DIM/BRT SW - (ADJUST TO MIN BRIGHTNESS
FOR ADEQUATE VISIBILITY)
PDU (RIGHT)
VERIFY BIG X (WITHIN TWO MIN)

49-240

CDPS

CRT (SA-PAGE)
HUD PWR/BITE STAT
PLT ON

NOTE

The test pattern displayed on the PDU is dynamic and runs for approximately 5 seconds upon initiation of Test mode. Test mode is entered by placing the mode switch on Panel F8A9 in TEST position. In order to perform the entire test, the mode select switch must remain in the TEST position until termination indicator "COMPLETE" appears on PDU. The test may be repeated as necessary by placing the mode switch on Panel F8A9 to NORM then TEST positions.

The completed test will display test pattern symbols (i.e., circles inside of diamonds) in all four quadrants, and the word "COMPLETE" will be present. The circles may not close completely, and the diamond line segments may not meet or cross at corners. Portions of the small symbol (U/R quadrant) may be missing. This is acceptable as long as some portion of the small symbol is visible.

49-241

CDPS

CDR

152

PANEL F8

HUD (RIGHT)
MODE SW - TEST
PDU (RIGHT)

VERIFY TEST PATTERN DYNAMIC WITH DISPLAY
SYMBOLGY MOVING IN CONTINUOUS FASHION UNTIL
"COMPLETE" APPEARS AT WHICH TIME DISPLAY
BECOMES STATIC.

49-242

CDPS

CDR

152

PANEL F8

HUD (RIGHT)
MODE SW - NORM
PDU (RIGHT)

VERIFY BIG X

49-243 CDPS PLT 152

PANEL F8

HUD (RIGHT)

DIM/BRT SW - ROTATE FROM DIM (CCW) TO BRT (CW)
AND VERIFY PDU DISPLAY INTENSITY
VARIES ACCORDINGLY

HUD No. 2 Powerdown

49-244 CDPS PLT 152

PANEL F8

HUD (RIGHT)

DIM/BRT SW - MID RANGE
MODE SW - NORM
BRT SW - MAN/DAY

49-245 CDPS PLT 152

PANEL F3

HUD (RIGHT)

POWER SW - OFF

***** End of HUD No. 2 Powerdown *****

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APPROVED

49-246 CDPS OTC 132

HUD Powerup and Self Test complete.

***** End of Option 9. HUD Powerup and Self Test *****

Option 10. MEDS System Activation

NOTE

Perform this option for initial Launch attempt.

Option 10: MEDS System Activation Not Performed: _____

49-247 CDPS CDR 152

PANEL C2

LEFT CRT SEL SW - 1
RIGHT CRT SEL SW - 2

49-248 CDPS CDR 152

PANEL R14

ROW A

MN A
ADC
1A/2A CB - CLOSE
MDU
MFD2 CB - CLOSE
PLT1 CB - CLOSE

MN B

ADC
1B/2B CB - CLOSE
MDU
MFD1 CB - CLOSE
CDR2 CB - CLOSE

MN C

MDU
CDR1 CB - CLOSE
PLT2 CB - CLOSE
AFD1 CB - CLOSE

NOTE

If an MDU fails to come up at power application, turn the bezel knob off for 3 seconds, then back to on (ref H/W-0002).

49-249 CDPS CDR 152

PANEL F6

CDR1 MDU
POWER KNOB - ON
CDR2 MDU
POWER KNOB - ON

49-250 CDPS CDR 152

PANEL F7

MFD1 MDU
POWER KNOB - ON
MFD2 MDU
POWER KNOB - ON

49-251 CDPS CDR 152

PANEL F8

PLT1 MDU
POWER KNOB - ON
PLT2 MDU
POWER KNOB - ON

49-252 CDPS CDR 152

Remove AFD1 MDU cover (Shop Aid SK-2K7-021) and retain for later installation.

49-253 CDPS CDR 152

ORBIT STATION
AFD1 MDU
POWER KNOB - ON

49-254 CDPS CDR

Adjust brightness knob on all 11 MDUs to obtain minimum readable brightness level.

49-255 CDPS CDR 152

PANEL F7
CRT 1 MDU
 PRESS UP ARROW EDGE KEY TO MAIN MENU
 PRESS MEDS MAINT EDGE KEY

CRT 1
VERIFY MEDS SYSTEM STATUS DISPLAY
VERIFY ADC1A AND ADC2A BOXES HAVE BLUE BACKGROUND
VERIFY RECONFIGURATION MODE FIELD IN THE FOLLOWING
MDU BOXES IS NOT BLANK (SHOULD BE "AUT" OR "MAN"):

CRT1, CDR1, CDR2, MFD2, PLT1

49-256 CDPS CDR 152

PANEL F7
CRT 1 MDU
 PRESS UP ARROW EDGE KEY TO MAIN MENU
 PRESS DPS EDGE KEY

CRT 1
VERIFY GPC MEMORY DISPLAY

49-257 CDPS CDR 152

PANEL F7
CRT 2 MDU
 PRESS UP ARROW EDGE KEY TO MAIN MENU
 PRESS MEDS MAINT EDGE KEY

CRT 2
VERIFY MEDS SYSTEM STATUS DISPLAY
VERIFY ADC1A AND ADC2A BOXES HAVE BLUE BACKGROUND
VERIFY RECONFIGURATION MODE FIELD IN THE FOLLOWING
MDU BOXES IS NOT BLANK (SHOULD BE "AUT" OR "MAN"):

CRT2, CDR2, MFD1, PLT1, PLT2, AFD1

49-258 CDPS CDR 152

PANEL F7
CRT 2 MDU
 PRESS UP ARROW EDGE KEY TO MAIN MENU
 PRESS DPS EDGE KEY

CRT 2
VERIFY GPC MEMORY DISPLAY

49-259 CDPS CDR 152

PANEL F7
CRT 3 MDU
 PRESS UP ARROW EDGE KEY TO MAIN MENU
 PRESS MEDS MAINT EDGE KEY

CRT 3
VERIFY MEDS SYSTEM STATUS DISPLAY
VERIFY ADC1B AND ADC2B BOXES HAVE BLUE BACKGROUND
VERIFY RECONFIGURATION MODE FIELD IN THE FOLLOWING
MDU BOXES IS NOT BLANK (SHOULD BE "AUT" OR "MAN"):

 CRT3, CDR1, MFD1, MFD2, PLT2

49-260 CDPS CDR 152

PANEL F7
CRT 3 MDU
 PRESS UP ARROW EDGE KEY TO MAIN MENU
 PRESS DPS EDGE KEY

CRT 3
VERIFY GPC MEMORY DISPLAY

49-261 CDPS CDR 152

PANEL R11

CRT 4 MDU

PRESS UP ARROW EDGE KEY TO MAIN MENU

PRESS MEDS MAINT EDGE KEY

CRT 4

VERIFY MEDS SYSTEM STATUS DISPLAY

VERIFY ADC1B AND ADC2B BOXES HAVE BLUE BACKGROUND

VERIFY RECONFIGURATION MODE FIELD IN THE FOLLOWING
MDU BOXES IS NOT BLANK (SHOULD BE "AUT" OR "MAN"):

CRT4, AFD1

49-262 CDPS CDR 152

PANEL R11

CRT 4 MDU

PRESS UP ARROW EDGE KEY TO MAIN MENU

PRESS DPS EDGE KEY

CRT 4

VERIFY BFS MEMORY DISPLAY

NOTE

The next step will configure each MDU for Flight Crew Ingress. Configurations will be established via MDU edge key menus (reference Figure 49-1 for MDU display field legend and Figure 49-2 for edge key menu hierarchy).

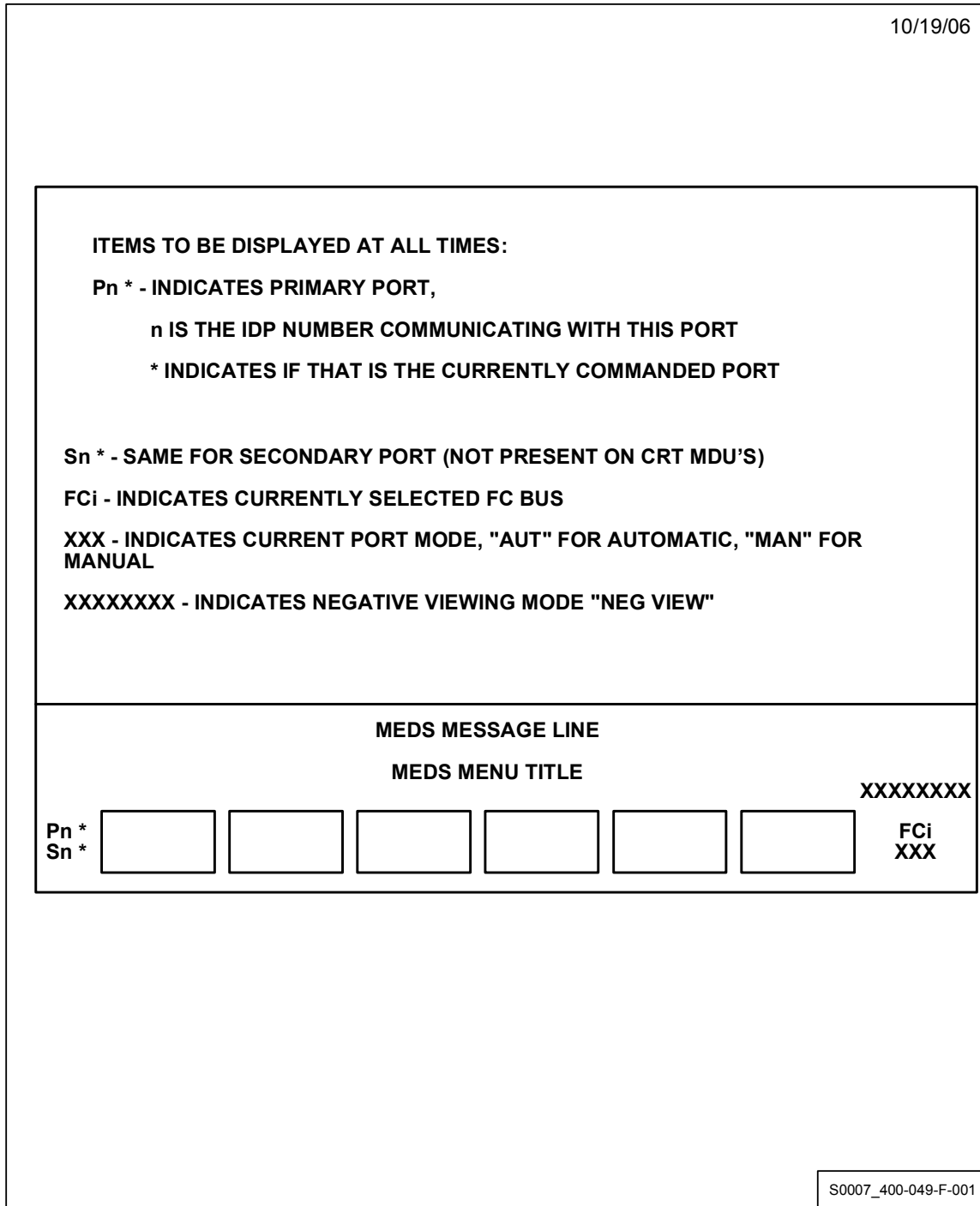
NOTE

In next step, establishing proper MDU configuration requires table entries to be worked in left to right column order.

49-263 CDPS CDR 152

Establish the following MDU configuration:

<u>MDU</u>	<u>VIEW</u>	<u>MODE</u>	<u>PORT</u>	<u>FC</u>	<u>DISPLAY</u>	<u>EDGE KEY MENU</u>
CRT1	STD	MAN	PRI	___	DPS	DPS
CRT2	STD	MAN	PRI	___	DPS	DPS
CRT3	STD	MAN	PRI	___	DPS	DPS
CRT4	NEG	MAN	PRI	___	DPS	DPS
CDR1	STD	AUTO	PRI	___	_____	_____
CDR2	STD	AUTO	PRI	___	_____	_____
MFD1	STD	AUTO	PRI	___	_____	_____
MFD2	STD	AUTO	PRI	___	_____	_____
PLT1	STD	AUTO	PRI	___	_____	_____
PLT2	STD	AUTO	PRI	___	_____	_____
AFD1	NEG	AUTO	PRI	1	ORBIT PFD	FLT INST



*Figure 49-1: Generic MDU Screen
(For Reference Only)*

04/21/08

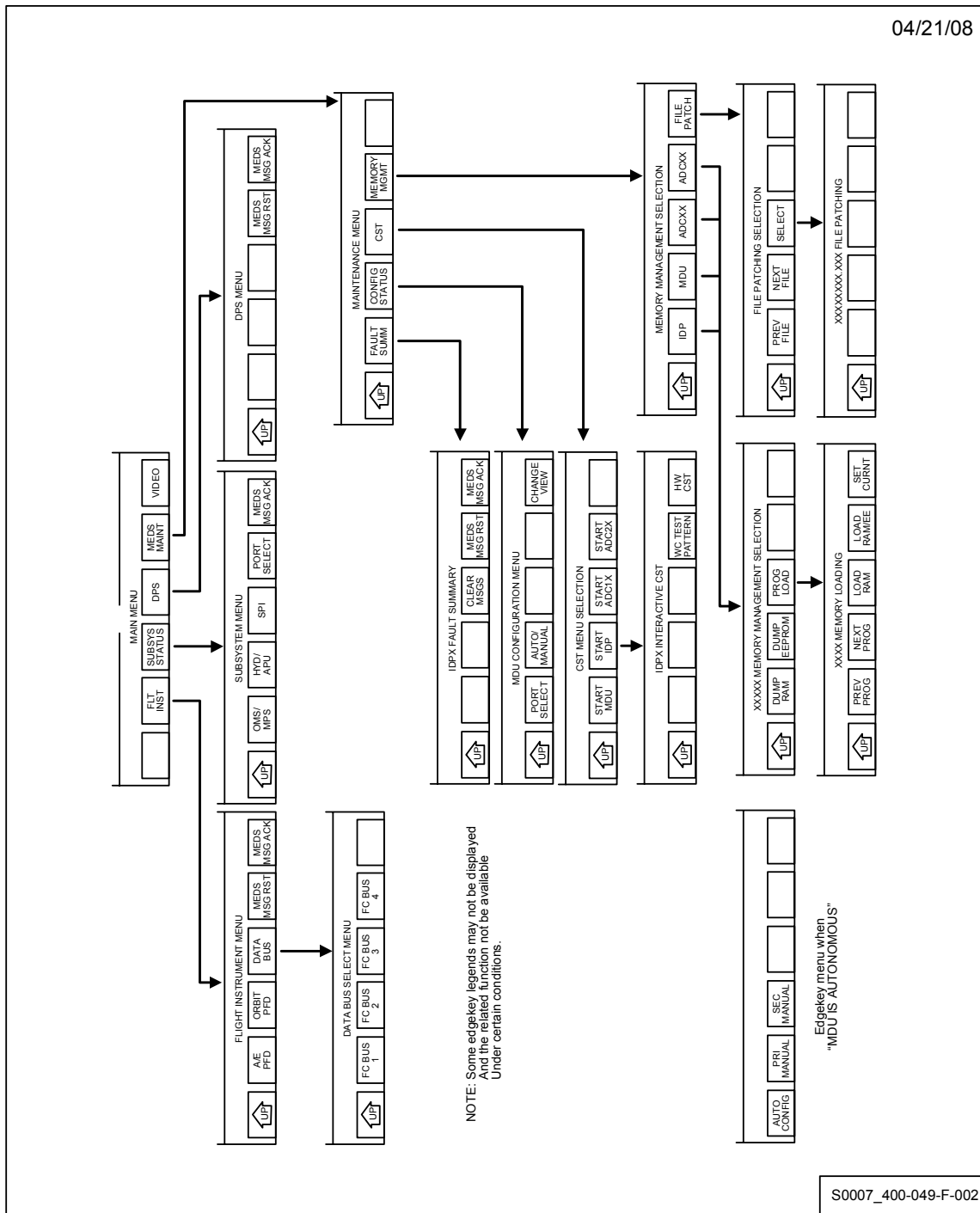


Figure 49-2: MEDS Edge Key Menu Tree (IDP 07.01)
(For Reference Only)

49-264 CDPS CDR 152

ORBIT STATION
AFD1 MDU
POWER KNOB - OFF

49-265 CDPS CDR 152

Install AFD1 MDU cover (Shop Aid SK-2K7-021).

49-266 CDPS LPS 152
LPS CPDR 127

Restrict software activities at PDR/SPA during dump and \$OCF activity
(i.e., no INTP/INRC or \$SPSAR).

49-267 CDPS

CURSOR CNTL (SAS01 PG-B)
DPS
XMIT CURSOR KEY - PRESS

49-268 CDPS

CURSOR CNTL (SAS01 PG-B)
DEU DUMP AND COMPARE (VAS44)
XMIT CURSOR KEY - PRESS

PFK2 KEY - PRESS

49-269

CDPS

CURSOR CNTL (VAS44 PG-B)
NO-COMPARE DUMP - IDP 1
XMIT CURSOR KEY - PRESS

CRT (VAS44 PG-B)
FOLLOW PROGRAM PROMPTS

49-270

CDPS

CRT (VAS44 PG-B)
VERIFY MSG: "IDP 1 SUCCESSFUL"

RECORD

DUMP START TIME _____

DUMP END TIME _____

49-271

CDPS

CONSOLE KYBD (VAS44 PG-B)
PFK3 KEY - PRESS

49-272

CDPS

CURSOR CNTL (VAS44 PG-B)
NO-COMPARE DUMP - IDP 2
XMIT CURSOR KEY - PRESS

CRT (VAS44 PG-B)
FOLLOW PROGRAM PROMPTS

49-273

CDPS

CRT (VAS44 PG-B)
VERIFY MSG: "IDP 2 SUCCESSFUL"

RECORD

DUMP START TIME _____

DUMP STOP TIME _____

49-274

CDPS

CONSOLE KYBD (VAS44 PG-B)
PFK3 KEY - PRESS

49-275

CDPS

CURSOR CNTL (VAS44 PG-B)
NO-COMPARE DUMP - IDP 3
XMIT CURSOR KEY - PRESS

CRT (VAS44 PG-B)
FOLLOW PROGRAM PROMPTS

49-276

CDPS

CRT (VAS44 PG-B)
VERIFY MSG: "IDP 3 SUCCESSFUL"

RECORD

DUMP START TIME _____

DUMP STOP TIME _____

49-277

CDPS

CONSOLE KYBD (VAS44 PG-B)
PFK3 KEY - PRESS

49-278

CDPS

CDR

152

LEFT KYBD (G9 KYBD)
GPC/CRT 03
EXEC
GPC/CRT 04
EXEC
GPC/CRT 14
EXEC

49-279

CDPS

CRT (VWS25 PG-B)
IDP 4 SW 1-3 = 8000 0000 0000

49-280

CDPS

CURSOR CNTL (VAS44 PG-B)
NO-COMPARE DUMP - IDP 4
XMIT CURSOR KEY - PRESS

CRT (VAS44 PG-B)
FOLLOW PROGRAM PROMPTS

49-281

CDPS

CRT (VAS44 PG-B)
VERIFY MSG: "IDP 4 SUCCESSFUL"

RECORD

DUMP START TIME _____

DUMP STOP TIME _____

49-282

CDPS

CONSOLE KYBD (VAS44 PG-B)
PFK15 KEY - PRESS (TERMINATE)

49-283

CDPS CDR 152

LEFT KYBD (G9 KYBD)
GPC/CRT 04
EXEC
GPC/CRT 54
EXEC
GPC/CRT 13
EXEC

49-284

CDPS CDR 152

IF CRT 4 MAJ FUNC SWITCH IS REQUIRED TO BE IN SM
FOR ASCENT (REF. OMI S0007.100, OPERATION 272 -
DPS LAUNCH SUPPORT CONFIGURATION),

THEN PERFORM:
PANEL R11

IDP/CRT 4
MAJ FUNC SW - SM

Not Performed: _____

49-285 CDPS CDR 152

PANEL F7

CRT 1 MDU

PRESS UP ARROW EDGE KEY TO MAIN MENU

PRESS MEDS MAINT EDGE KEY

CRT 1

VERIFY NO RED DATA APPEARS ON MEDS SYSTEM STATUS
DISPLAY

49-286 CDPS CDR 152

PANEL F7

CRT 1 MDU

PRESS FAULT SUMM EDGE KEY

CRT 1

REPORT MEDS FAULT SUMMARY MESSAGES

49-287 CDPS CDR 152

PANEL F7

CRT 1 MDU

PRESS CLEAR MSGS EDGE KEY

PRESS UP ARROW EDGE KEY TO MAIN MENU

PRESS DPS EDGE KEY

49-288 CDPS CDR 152

PANEL F7

CRT 2 MDU

PRESS UP ARROW EDGE KEY TO MAIN MENU

PRESS MEDS MAINT EDGE KEY

CRT 2

VERIFY NO RED DATA APPEARS ON MEDS SYSTEM STATUS
DISPLAY

49-289 CDPS CDR 152

PANEL F7

CRT 2 MDU
PRESS FAULT SUMM EDGE KEY

CRT 2
REPORT MEDS FAULT SUMMARY MESSAGES

49-290 CDPS CDR 152

PANEL F7

CRT 2 MDU
PRESS CLEAR MSGS EDGE KEY
PRESS UP ARROW EDGE KEY TO MAIN MENU
PRESS DPS EDGE KEY

49-291 CDPS CDR 152

PANEL F7

CRT 3 MDU
PRESS UP ARROW EDGE KEY TO MAIN MENU
PRESS MEDS MAINT EDGE KEY

CRT 3
VERIFY NO RED DATA APPEARS ON MEDS SYSTEM STATUS
DISPLAY

49-292 CDPS CDR 152

PANEL F7

CRT 3 MDU
PRESS FAULT SUMM EDGE KEY

CRT 3
REPORT MEDS FAULT SUMMARY MESSAGES

49-293 CDPS CDR 152

PANEL F7

CRT 3 MDU

PRESS CLEAR MSGS EDGE KEY

PRESS UP ARROW EDGE KEY TO MAIN MENU

PRESS DPS EDGE KEY

49-294 CDPS CDR 152

PANEL R11U

CRT 4 MDU

PRESS UP ARROW EDGE KEY TO MAIN MENU

PRESS MEDS MAINT EDGE KEY

CRT 4

VERIFY NO RED DATA APPEARS ON MEDS SYSTEM STATUS
DISPLAY

49-295 CDPS CDR 152

PANEL R11U

CRT 4 MDU

PRESS FAULT SUMM EDGE KEY

CRT 4

REPORT MEDS FAULT SUMMARY MESSAGES

49-296 CDPS CDR 152

PANEL R11U

CRT 4 MDU

PRESS CLEAR MSGS EDGE KEY

PRESS UP ARROW EDGE KEY TO MAIN MENU

PRESS DPS EDGE KEY

49-297 **CDPS**

APPL PAGE (VWS25 PG-B)

REVIEW/CLEAR IDP 1-4 BITE QUEUE VIA CURSOR AND
VERIFY NO UNEXPECTED ERRORS

CRT (VWS25 PG-B)

IDP 1 SW 1-3 = 0070 0000 0000

IDP 2 SW 1-3 = 0070 0000 0000

IDP 3 SW 1-3 = 8044 0000 0000

IDP 4 SW 1-3 = 8800 0000 0000

NOTE

Next step will activate Exception Monitoring on BFS IDP SW1 for MDU
command bit changes. Error message will occur if EMON is already active.

49-298 **CDPS**

CONSOLE KYBD

A SX V98M4864P1

XMIT CMD KEY - PRESS

49-299 CDPS OTC 132

MEDS System Activation complete.

***** End of Option 10. MEDS System Activation *****

Option 11. Transition to G9 RS

NOTE
Perform this option for initial Launch attempt.

Option 11 Not Performed: _____

NOTE
Noted requirements are satisfied by the following series of steps.

OMRS V72CA0.051-A

49-300

CDPS

CRT (VAS59 PG-B)
VERIFY NO ACTIVE TCS SEQUENCES OR ECP'S

VERIFY CRT 1,2,3 DISP ID = 9011

49-301

CDPS CDR 152

PANEL 06

IPL SOURCE SW - MMU1

49-302 CDPS CDR 152

PANEL O6

GENERAL PURPOSE COMPUTER
MODE

1 SW - STBY
1 TB BP
1 SW - HALT

2 SW - HALT
3 SW - HALT
4 SW - HALT

OUTPUT

1 SW - NORMAL
2 SW - NORMAL
3 SW - NORMAL
4 SW - NORMAL

POWER

1 SW - ON (VERIFY)
2 SW - OFF, THEN ON
3 SW - OFF, THEN ON
4 SW - OFF, THEN ON

49-303 CDPS CDR 152

PANEL C3

BFC CRT
DISPLAY SW - OFF

49-304 CDPS CDR 152

PANEL O6

GENERAL PURPOSE COMPUTER
INITIAL PROGRAM LOAD

1 PB - PRESS, REL

MODE

1 TB IPL THEN BP
1 SW - STBY
1 TB RUN (WITHIN 2 MIN)
1 SW - RUN

OUTPUT

1 TB GRAY

49-305

CDPS

CRT (VAS59 PG-B)
DL FMT 20 ACTIVE
GPC 1 TIME SOURCE A1

49-306

CDPS

CRT (VAS97 PG-B)
VERIFY GPC ERROR (PMU TIME INVALID) DID NOT OCCUR
WHEN GPC 1 WAS BROUGHT TO RUN.

49-307

CDPS

CDR

152

PANEL C2A2

LEFT CRT SEL SW - 1

49-308

CDPS

CDR

152

LEFT KYBD
SPEC 1
PRO

CRT1
DPS UTILITY

49-309

CDPS

CDR

152

LEFT KYBD
ITEM 50
EXEC
RESUME

49-310

CDPS

CRT (VAS59 PG-B)
VERIFY LDB POLL ACTIVE ON BUS 1

49-311

CDPS

CURSOR CNTL (SAS01 PG-B)
DPS
XMIT CURSOR KEY PRESS

CURSOR CNTL (SAS01 PG-B)
DPS RECONFIGURATION (VAS90)
XMIT CURSOR KEY - PRESS

PFK 2 KEY - PRESS

49-312

CDPS

CURSOR CNTL (VAS90 PG-B)
PRIMARY OPS TRANS - GNC 9
XMIT CURSOR KEY - PRESS

49-313

CDPS

IF DL format 60 is required for payload support (ref S0007.100 Orbiter
Operation 272)

THEN:

APPL PAGE (VAS90 PG-B)
PFK-7 KEY - PRESS

CURSOR CNTL (VAS90 PG-B)
FMT 60
XMIT CURSOR KEY - PRESS

Not Performed:_____

49-314

CDPS

PFP (VAS90 PG-B)
EXECUTE KEY - PRESS

CRT (VAS90 PG-B)
"SUCCESSFUL COMPLETION OF JOB"

CRT (VAS90 PG-A)
NO ERROR MESSAGES DISPLAYED

49-315

CDPS

CRT (VAS59 PG-B)
VERIFY GPC'S 1,2,3,4 IN RS AND FORMAT 44 OR 60
ACTIVE.

49-316

Noted requirements are complete.

OMRSD [V72CA0.051-A](#)

49-317

CDPS

PFP (VAS90 PG-B)
TERMINATE KEY - PRESS

49-318

CDPS CDR 152

LEFT KYBD
SPEC 2
PRO

CRT 1
TIME DISPLAY

49-319 CDPS CDR 152

LEFT KYBD
ITEM 2
EXEC

CRT 1
MET 2*

49-320 CDPS CDR 152

LEFT KYBD
RESUME

CRT 1
9011 GPC MEMORY

49-321 CDPS

CURSOR CNTL (SAS01 PG-B)
ACT CYCLIC BSR READ
XMIT CURSOR KEY - PRESS
EXEC CMD KEY - PRESS

49-322 CDPS

CRT (SA PG)
CYC BSR - ACT

Re-start SRB Poll

NOTE

Perform this option if SRBs are powered up (restarts SRB polling).

Re-start SRB Poll Not Performed: _____

49-323

CDPS

CURSOR CNTL (SAS01 PG-B)
DPS
XMIT CURSOR KEY - PRESS

CURSOR CNTL (SAS01 PG-B)
SRB READ PORT 1 & 2
XMIT CURSOR KEY - PRESS

PFK2 KEY - PRESS

49-324

CDPS

CRT (BSM06 PG-A)
NO UNEXPLAINED BSR'S RECORDED
"BSM06 TERMINATED"

49-325

CDPS

CURSOR CNTL (SAS01 PG-B)
SRB DPS OVERVIEW (BKM01)
XMIT CURSOR KEY - PRESS

CRT (SAS01 PG-B)
SRB POLLING UP
SRB PROM BYP OK

PFK2 KEY - PRESS

***** End of Re-start SRB Poll *****

06-24-2011
APPROVED

OMI S0007.400 A23
APPROVED

49-326 CDPS OTC 132

Transition to G9 RS, Downlist Format _____ (44 or 60) complete.

***** End of Option 11. Transition to G9 RS *****

Option 12. LCC Monitor Activation/LDB Redundancy Check

NOTE

Perform this option if countdown was terminated after LCC Monitor Activation.

Option 12 Not Performed: _____

NOTE

Steps involving Crit 1, 1R and/or 1S items are contained in the following operation.

49-327

CDPS

IF CYCLIC BSR READ IS ACTIVE,

THEN PERFORM:

CURSOR CNTL (SAS01 PG-B)
INH CYCLIC BSR READ
XMIT CURSOR KEY - PRESS
EXEC CMD KEY - PRESS

CRT (SA PAGE)
CYC BSR - INH

Not Performed: _____

49-328

CDPS

CURSOR CNTL (SAS01 PG-B)
DPS
XMIT CURSOR KEY - PRESS

CURSOR CNTL (SAS01 PG-B)
ACTIVATE DPS EMONS
XMIT CURSOR KEY - PRESS

CRT (SA PAGE)
DPS EMONS ACTIVATED (WITHIN 5 MIN)

06-24-2011
APPROVED

OMI S0007.400 A23
APPROVED

49-329

CDPS

CURSOR CNTL (SAS01 PG-B)
MDM BSR READ PROGRAM (VAS93)
XMIT CURSOR KEY - PRESS

PFK2 KEY - PRESS

49-330

CDPS

APPL PAGE (VAS93 PG-B)
PFK4 KEY - PRESS

CRT (VAS93 PG-B)
NO UNEXPLAINED BSR'S

NOTE

Noted requirements are satisfied by the following series of steps.

OMRS S00FB0.230-1R

49-331

CDPS

CRT (SAS05 SA-PG)
VERIFY LH & RH SRB POWER IS UP

49-332

CDPS

CURSOR CNTL (VAS93 PG-B)
PORT _____ (ACTIVE LDB NO.)
XMIT CURSOR KEY - PRESS

APPL PAGE (VAS93 PG-B)
PFK5 KEY - PRESS

CRT (VAS93 PG-B)
NO UNEXPLAINED BSR'S

49-333

CDPS

CONSOLE KYBD
GPCC LDBC
XMIT CMD KEY - PRESS

NOTE

In the following step, switch to inactive LDB.

49-334

CDPS

CURSOR CNTL (\$GM)
POLL GSE ON LDB NO. _____
XMIT CURSOR KEY - PRESS

PFK1 KEY - PRESS

49-335

CDPS

CRT (VAS59 PG-B)
LDB __ POLLING ACTIVE

49-336

CDPS

CURSOR CNTL (VAS93 PG-B)
PORT _____ (ACTIVE LDB NO.)
XMIT CURSOR KEY - PRESS

APPL PAGE (VAS93 PG-B)
PFK5 KEY - PRESS

CRT (VAS93 PG-B)
NO UNEXPLAINED BSR'S

49-337

CDPS

APPL PAGE (VAS93 PG-B)
PFK15 KEY - PRESS

Select LDB1

NOTE

Perform this option if currently polling on LDB2.

Select LDB1 Not Performed: _____

49-338

CDPS

CONSOLE KYBD
GPCC LDBC
XMIT CMD KEY - PRESS

49-339

CDPS

CURSOR CNTL (\$GM)
POLL GSE ON LDB NO. 1
XMIT CURSOR KEY - PRESS

PFK1 KEY - PRESS

49-340

CDPS

CRT (VAS59 PG-B)
LDB 1 POLLING ACTIVE

***** End of Select LDB1 *****

49-341

Noted requirements are complete.

OMRSD [S00FB0.230-1R](#)

NOTE

IMU Bypass will be annunciated during LCC monitor activation if IMUs are not in Operate.

BFS I/O Term B will be annunciated if BFS is active and output switch is in Normal.

49-342

CDPS

CURSOR CNTL (SAS01 PG-B)
DPS INIT DISPLAY (SAS01)
XMIT CURSOR KEY - PRESS

CURSOR CNTL (SAS01 PG-B)
TERMINATE OPS MGR 1 (SAS07)
XMIT CURSOR KEY - PRESS

CONSOLE KYBD (SAS01 PG-B)
PFK2 KEY - PRESS

49-343

CDPS

CONSOLE KYBD
VASP9
PERF PGM KEY - PRESS

CRT (VASP9 PG-B)
LCC MONITOR HOST PROGRAM

NOTE

In the following step, replace "X" with the concurrency number (1-6) in which the CCME S/W is running.

49-344

CDPS

CURSOR CNTL (VASP9 PG-B)
ERROR NOTIF TO: XA, XB
XMIT CURSOR KEY - PRESS

CRT (VASP9 PG-B)
PAGE XA, XB INHIBITED

49-345

CDPS

CURSOR CNTL (VASP9 PG-B)
ACTIVATE LCC MONITORING
XMIT CURSOR KEY - PRESS

CONSOLE KYBD (VASP9 PG-B)
PFK1 KEY - PRESS

MEDS Display Verification

49-346

CDPS

CDR

152

PANEL F7
CRT 1 MDU
PRESS UP ARROW EDGE KEY TO MAIN MENU
PRESS MEDS MAINT EDGE KEY
PRESS FAULT SUMM EDGE KEY

CRT 1
REPORT MEDS FAULT SUMMARY MESSAGES

49-347

CDPS

CDR

152

PANEL F7
CRT 1 MDU
PRESS CLEAR MSGS EDGE KEY (AS REQUIRED)
PRESS UP ARROW EDGE KEY TO MAIN MENU
PRESS DPS EDGE KEY

49-348

CDPS

CDR

152

PANEL F7
CRT 2 MDU
PRESS UP ARROW EDGE KEY TO MAIN MENU
PRESS MEDS MAINT EDGE KEY
PRESS FAULT SUMM EDGE KEY

CRT 2
REPORT MEDS FAULT SUMMARY MESSAGES

49-349 CDPS CDR 152

PANEL F7
CRT 2 MDU
PRESS CLEAR MSGS EDGE KEY (AS REQUIRED)
PRESS UP ARROW EDGE KEY TO MAIN MENU
PRESS DPS EDGE KEY

49-350 CDPS CDR 152

PANEL F7
CRT 3 MDU
PRESS UP ARROW EDGE KEY TO MAIN MENU
PRESS MEDS MAINT EDGE KEY
PRESS FAULT SUMM EDGE KEY

CRT 3
REPORT MEDS FAULT SUMMARY MESSAGES

49-351 CDPS CDR 152

PANEL F7
CRT 3 MDU
PRESS CLEAR MSGS EDGE KEY (AS REQUIRED)
PRESS UP ARROW EDGE KEY TO MAIN MENU
PRESS DPS EDGE KEY

49-352 CDPS CDR 152

PANEL R11U
CRT 4 MDU
PRESS UP ARROW EDGE KEY TO MAIN MENU
PRESS MEDS MAINT EDGE KEY
PRESS FAULT SUMM EDGE KEY

CRT 4
REPORT MEDS FAULT SUMMARY MESSAGES

49-353 CDPS CDR 152

PANEL R11U
CRT 4 MDU
PRESS CLEAR MSGS EDGE KEY (AS REQUIRED)
PRESS UP ARROW EDGE KEY TO MAIN MENU
PRESS DPS EDGE KEY

NOTE

The next step will confirm MDU displays and edge key menus configured for Flight Crew Ingress. If necessary, establish specified displays and menus via MDU edge keys (reference Figure 49-2 for edge key menu hierarchy).

Mission-specific display and edge key menu information is contained in OMI S0007.100, Operation 272 - DPS Launch Support Configuration.

49-354 **CDPS** **CDR** **152**

Establish following MDU configuration:

	<u>MDU</u>	<u>Display</u>	<u>Edge Key Menu</u>
CRT1		DPS	DPS
CRT2		DPS	DPS
CRT3		DPS	DPS
CRT4		DPS	DPS
CDR1		_____	_____
CDR2		_____	_____
MFD1		_____	_____
MFD2		_____	_____
PLT1		_____	_____
PLT2		_____	_____

49-355 CDPS CDR 152

MEDS displays and edge key menus are configured for Flight Crew
Ingress.

Request no further autonomous edge key operations.

49-356 CDPS

INVOKE MEDS MONITOR DISPLAY (VWS25)

CRT (VWS25 PG-B)

IDP 1 SW 1-3 = 0070 0000 0000

IDP 2 SW 1-3 = 0070 0000 0000

IDP 3 SW 1-3 = 8044 0000 0000

NOTE

MEDS Monitor no longer required. Console displays may be reconfigured as required.

NOTE

An error message will occur in the next step if exception monitoring is already active.

49-357

CDPS

CONSOLE KYBD
A SX V72M5670PX
XMIT CMD KEY - PRESS

REPEAT FOR THE FOLLOWING:

V72M5740PX
V72M5830PX
V98M4862P1

***** End of MEDS Display Verification Option *****

49-358

CDPS

OTC

132

DPS LCC Monitor Activation and LDB Redundancy Check complete.

***** End of Option 12. LCC Monitor Activation/LDB Redundancy Check *****

Option 13. Configure for IMU MM1 Checkpoint

NOTE
Perform this option if MM must be configured to support OMI V1123, GN&C Countdown and Mission Support Testing (LPS).

Option 13 Not Performed: _____

49-359

CDPS

CRT (VAS59 PG-B)
MMU 1 ON

49-360

CDPS

CONSOLE KYBD
DEUE KEY - PRESS
DEST GN 1 LDBA
XMIT CMD KEY - PRESS

DEUE KEY - PRESS
SPEC 1 PRO
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

49-361

CDPS

CRT (VAS59 PG-B)
CRT 1 DISP 0010

49-362

CDPS

CONSOLE KYBD
DEUE KEY - PRESS
ITEM 1 EXEC
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

DEUE KEY - PRESS
RESUME
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

49-363

CDPS CGNC 152

Configured for MM1 checkpoint.

***** End of Option 13. Configure for IMU MM1 Checkpoint *****

Option 14. Configure for IMU MM2 Checkpoint

NOTE
Perform this option if MM must be configured to support OMI V1123, GN&C
Countdown and Mission Support Testing (LPS).

Option 14 Not Performed: _____

49-364

CDPS

CRT (VAS59 PG-B)
MMU 2 ON

49-365

CDPS

CONSOLE KYBD
DEUE KEY - PRESS
DEST GN 1 LDBA
XMIT CMD KEY - PRESS

DEUE KEY - PRESS
SPEC 1 PRO
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

49-366

CDPS

CRT (VAS59 PG-B)
CRT 1 DISP 0010

49-367

CDPS

CONSOLE KYBD
DEUE KEY - PRESS
ITEM 2 EXEC
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

DEUE KEY - PRESS
RESUME
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

49-368

CDPS CGNC 152

Configured for MM2 Checkpoint.

***** End of Option 14. Configure for IMU MM2 Checkpoint *****

Option 15. Restore Original Configuration After IMU Checkpoint

NOTE
Perform this option if MM configuration was changed to support OMI V1123,
GN&C Countdown and Mission Support Testing (LPS).

Option 15 Not Performed: _____

49-369

CDPS

```
CONSOLE KYBD
DEUE KEY - PRESS
DEST GN 1 LDBA
XMIT CMD KEY - PRESS

DEUE KEY - PRESS
SPEC 1 PRO
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS
```

49-370

CDPS

```
CRT (VAS59 PG-B)
CRT 1 DISP 0010
```

49-371

CDPS

```
CONSOLE KYBD
DEUE KEY - PRESS
ITEM 1 EXEC
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

DEUE KEY - PRESS
RESUME
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS
```

49-372

CDPS CGNC 152

Original MM configuration restored.

***** End of Option 15. Restore Original Configuration After IMU Checkpoint *****

Option 16. GMT and MET Adjustment

NOTE

Do not perform this option if Count is scrubbed prior to T-1H20M.

Option 16 Not Performed: _____

NOTE

Steps involving Crit 1, 1R and/or 1S items are contained in the following operation.

NOTE

Noted requirements are satisfied by the following series of steps.

OMRS S00FG0.085

49-373

CDPS

CONSOLE KYBD
HOME CMD KEY - PRESS
\$SYS
PERF PGM KEY - PRESS

VERIFY TCG 1 OR 2 ACTIVE

49-374

CDPS

CURSOR CNTL (\$SYS)
TCGX (X=ACTIVE TCG)
XMIT CURSOR KEY - PRESS

CRT (\$SYS)
VERIFY TCG COMMUNICATING
AND IN 'GO' MODE

TCG STATUS:
ON INTERNAL CLOCK?

YES

NO

NOTE

If LPS time source changes from internal TCG clock to external clock, GMT delta check must be re-performed.

49-375

CDPS

CURSOR CNTL (\$SYS)
TERMINATE
XMIT CURSOR KEY - PRESS

49-376

CDPS

CRT (VAS59 PG-B)
VERIFY RS TIME SOURCE = A1
VERIFY OIS FEP ACTIVE

49-377

CDPS

CURSOR CNTL (SAS01 PG-B)
DPS
XMIT CURSOR KEY - PRESS

49-378

CDPS

CURSOR CNTL (SAS01 PG-B)
TIME UPDATE PROGRAM
XMIT CURSOR KEY - PRESS

PFK2 KEY - PRESS

49-379

CDPS

CURSOR CNTL (VAS58 PG-B)
DETERMINE LPS/GMT DELTA (NO UPDATE)
XMIT CURSOR KEY - PRESS

CRT (VAS58 PG-B)
LPS/GMT DELTA IS ____ MILLISECONDS.

GMT Adjustment

NOTE
Perform GMT Adjustment if +/- delta is greater than 0 MS (i.e. greater than 4 tics).

GMT Adjustment Not Performed: _____

49-380

CDPS

CURSOR CNTL (VAS58 PG-B)
SELECT ANOTHER OPTION
XMIT CURSOR KEY - PRESS

CURSOR CNTL (VAS58 PG-B)
ADJUST GMT
XMIT CURSOR KEY - PRESS

49-381

CDPS

CRT (VAS58 PG-B)
VERIFY GMT ADJUST COMPLETE
DELTA = 0 MS +/-1 MS
VERIFY TIME SOURCE = A1

***** End of GMT Adjustment *****

49-382

CDPS

CURSOR CNTL (VAS58 PG-B)
SELECT ANOTHER OPTION
XMIT CURSOR KEY - PRESS

49-383

CDPS

CURSOR CNTL (VAS58 PG-B)
DETERMINE MET/GMT DELTA (NO UPDATE)
XMIT CURSOR KEY - PRESS

CRT (VAS58 PG-B)
MET/GMT DELTA IS _____ MILLISECONDS.

MET Adjustment

NOTE
Perform this option if MET/GMT delta is greater than 500 MS.

MET Adjustment Not Performed: _____

49-384

CDPS

CURSOR CNTL (VAS58 PG-B)
SELECT ANOTHER OPTION
XMIT CURSOR KEY - PRESS

CURSOR CNTL (VAS58 PG-B)
SET MET = GMT
XMIT CURSOR KEY - PRESS

49-385

CDPS

CRT (VAS58 PG-B)
MET UPDATE COMPLETE. ABSOLUTE VALUE OF DELTA IS
LESS THAN 500 MS.

***** End of MET Adjustment *****

49-386

CDPS

CURSOR CNTL (VAS58 PG-B)
TERMINATE VAS58
XMIT CURSOR KEY - PRESS

49-387

CDPS OTC 212

MTU/GMT Adjustment and MET/GMT Adjustment are complete.

49-388

Noted requirements are complete.

OMRSD [S00FG0.085](#)

***** End of Option 16. GMT and MET Adjustment *****

Option 17. MEDS System Securing

NOTE
Perform this option if Extended Scrub/Turnaround is declared.

Option 17 Not Performed: _____

49-389 CDPS CDR 152

PANEL F6

CDR1 MDU
POWER KNOB - OFF
CDR2 MDU
POWER KNOB - OFF

49-390 CDPS CDR 152

PANEL F7

MFD1 MDU
POWER KNOB - OFF
MFD2 MDU
POWER KNOB - OFF

49-391 CDPS CDR 152

PANEL F8

PLT1 MDU
POWER KNOB - OFF
PLT2 MDU
POWER KNOB - OFF

49-392 CDPS CDR 152

PANEL R11L

IDP/CRT 4
POWER SW - OFF
MAJ FUNC SW - GNC

PANEL R11U

CRT4 MDU
POWER KNOB - OFF

49-393 CDPS CDR 152

ORBIT STATION
AFD1 MDU
POWER KNOB - OFF

49-394 CDPS CDR 152

PANEL R14
ROW A
MN A
ADC
1A/2A CB - OPEN
MDU
MFD2 CB - OPEN
PLT1 CB - OPEN
MN B
ADC
1B/2B CB - OPEN
MDU
MFD1 CB - OPEN
CDR2 CB - OPEN
MN C
MDU
CDR1 CB - OPEN
PLT2 CB - OPEN
AFD1 CB - OPEN

49-395 CDPS CDR 152

PANEL F7
CRT 1 MDU
PRESS UP ARROW EDGE KEY TO MAIN MENU
PRESS MEDS MAINT EDGE KEY
PRESS FAULT SUMM EDGE KEY

CRT 1
REPORT MEDS FAULT SUMMARY MESSAGES

49-396 CDPS CDR 152

PANEL F7
CRT 1 MDU
PRESS CLEAR MSGS EDGE KEY
PRESS UP ARROW EDGE KEY TO MAIN MENU
PRESS DPS EDGE KEY

49-397 CDPS CDR 152

PANEL F7

CRT 2 MDU

PRESS UP ARROW EDGE KEY TO MAIN MENU

PRESS MEDS MAINT EDGE KEY

PRESS FAULT SUMM EDGE KEY

CRT 2

REPORT MEDS FAULT SUMMARY MESSAGES

49-398 CDPS CDR 152

PANEL F7

CRT 2 MDU

PRESS CLEAR MSGS EDGE KEY

PRESS UP ARROW EDGE KEY TO MAIN MENU

PRESS DPS EDGE KEY

49-399 CDPS CDR 152

PANEL F7

CRT 3 MDU

PRESS UP ARROW EDGE KEY TO MAIN MENU

PRESS MEDS MAINT EDGE KEY

PRESS FAULT SUMM EDGE KEY

CRT 3

REPORT MEDS FAULT SUMMARY MESSAGES

49-400 CDPS CDR 152

PANEL F7

CRT 3 MDU

PRESS CLEAR MSGS EDGE KEY

PRESS UP ARROW EDGE KEY TO MAIN MENU

PRESS DPS EDGE KEY

49-401

CDR

IF the Panel C2 IDP power switch 30 second advisory tag is not installed,

THEN:

PANEL C2
IDP/CRT 1, 2 AND 3 POWER SWITCHES

Install tag annotated with "IDP/CRT PWR SW MUST REMAIN ON FOR 30 SECONDS" over the three switches.

Not Performed: _____

T: _____

49-402

CDR

IF the Panel R11 IDP power switch 30 second advisory tag is not installed,

THEN:

PANEL R11L
IDP/CRT 4 POWER SWITCH

Install tag annotated with "IDP/CRT PWR SW MUST REMAIN ON FOR 30 SECONDS" over the switch.

Not Performed: _____

T: _____

49-403

CDPS OTC 212

MEDS System Securing complete.

*** End of Option 17. MEDS System Securing ***

Option 18. DPS Securing (Scrub)

NOTE

Perform this option for Extended Scrub/Turnaround.

Option 18 Not Performed: _____

49-404

CDPS

CURSOR CNTL (SAS01 PG-B)
DPS
XMIT CURSOR KEY - PRESS

CURSOR CNTL (SAS01 PG-B)
DPS RECONFIGURATION (VAS90)
XMIT CURSOR KEY - PRESS

PFK2 - PRESS

49-405

CDPS

CURSOR CNTL (VAS90 PG-B)
QUICK NBAT MOD - GPC___ SMPLX (GPC1-4)
XMIT CURSOR KEY - PRESS

CURSOR CNTL (VAS90 PG-B)
MOD NBAT - G9
XMIT CURSOR KEY - PRESS

CRT (VAS90 PG-B)
VERIFY G9 NBAT ASSIGNED FOR SIMPLEX GPC (GREEN)

49-406

CDPS

CURSOR CNTL (VAS90 PG-B)
PRIMARY OPS TRANS - GNC9
XMIT CURSOR KEY - PRESS

NOTE

The format to select in the next step will be provided by OTC.

49-407

CDPS

IF DOWNLIST FORMAT CHANGE IS REQUIRED TO SUPPORT
VEHICLE OPERATIONS,

THEN PERFORM:

APPL PAGE (VAS90 PG-B)
PFK7 - PRESS

CURSOR CNTL (VAS90 PG-B)
DOWNLIST FORMAT LOAD - FMT ____
XMIT CURSOR KEY - PRESS

Not Performed: _____

49-408

CDPS

IF OI FORMAT 129 IS REQUIRED
AND IS NOT CURRENTLY ACTIVE,

THEN PERFORM:

APPL PAGE (VAS90 PG-B)
PFK8 - PRESS

CURSOR CNTL (VAS90 PG-B)
ACTIVATE FIXED 129
XMIT CURSOR KEY - PRESS

Not Performed: _____

49-409

CDPS

PFP (VAS90)
EXECUTE KEY - PRESS

49-410

CDPS

CRT (VAS90 PG-B)
FOLLOW PROGRAM PROMPTS UNTIL 'SUCCESSFUL
COMPLETION OF JOB' MESSAGE RECEIVED.

49-411

CDPS

PFP (VAS90 PG-B)
TERMINATE KEY - PRESS

49-412

CDPS

IF CYCLIC BSR READS ARE TO BE ACTIVATED,

THEN PERFORM:

CURSOR CNTL (SAS01 PG-B)
ACT CYCLIC BSR READ (VSSD4)
XMIT CURSOR KEY - PRESS
EXEC CMD KEY - PRESS

CRT (SA PAGE)
CYC BSR - ACT

Not Performed: _____

49-413

CDPS

OTC

132

DPS configured to G9 Simplex, Format _____/_____.

BFS Deactivation

NOTE

Perform this option if BFS is active and is not required for Extended Scrub.

BFS Deactivation Not Performed: _____

49-414 CDPS CDR 152

PANEL O6

GENERAL PURPOSE COMPUTER

MODE

5 SW - HALT

OUTPUT

5 SW - NORMAL

POWER

5 SW - OFF

49-415 CDPS CDR 152

PANEL C3

BFC CRT

DISPLAY SW - OFF

***** End of BFS Deactivation *****

***** End of Option 18. DPS Securing (Scrub) *****

***** End of Operation 49 *****

**06-24-2011
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**OMI S0007.400 A23
APPROVED**

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**OPERATION 50 MET Initialization and Switch/Circuit Breakers
Configuration**

Shop: **FWD**

Cntrl Rm Console: **C10**

OPR: **EPD**

Zone: **121, 122**

Hazard (Y/N): **N**

Duration (Hrs): **1.0**

NOTE

Do not perform this operation for 24-, 48-, or 72-hour Turnaround.

Operation Not Performed: _____

50-1 OTC CEPD 132
 CDR

Perform Orbiter MET Initialization and Switch/Circuit Breaker Configuration.

Report completion.

MET Initialization

50-2 CEPD CDR 151

PANEL O14

ROW B

MN A

MISSION TIMER FWD CB - CLOSE

EVENT TIMER AFT CB - CLOSE

50-3 CEPD PLT 151

PANEL O15

ROW B

MN B

MISSION TIMER AFT CB - CLOSE

EVENT TIMER FWD CB - CLOSE

50-4 CEPD CDR 151

PANEL L4

ROW Q

AC 2

LIGHTING

NUMERIC OS

PH C CB - CLOSE

ROW R

AC 1

NUMERIC FWD

PH B CB - CLOSE

50-5 CEPD PLT 151

PANEL O8

LIGHTING

PANEL

NUMERIC SW - (MIDWAY BETWEEN OFF AND BRIGHT)

50-6 CEPD MS1 151

PANEL A6U

ORBIT STATION LIGHTING

NUMERIC SW - (MIDWAY BETWEEN OFF AND BRIGHT)

AFT Mission Timer

50-7 CEPD MS1 151

PANEL A4

MISSION TIMER SW - GMT

VERIFY MISSION TIMER NUMERICS ILLUMINATED AND
TIME ADVANCING.

VERIFY FAULT INDICATOR LT OFF

50-8 CEPD MS1 151

PANEL A4

MISSION TIMER SW - TEST (HOLD)

VERIFY ALL EIGHTS ARE DISPLAYED

VERIFY FAULT INDICATOR LT ON

50-9 CEPD MS1 151

PANEL A4

MISSION TIMER SW - RELEASE

VERIFY MISSION TIMER NUMERICS ILLUMINATED AND
TIME ADVANCING (MET).

VERIFY FAULT INDICATOR LT OFF

***** End of AFT Mission Timer *****

AFT Event Timer

50-10 CEPD MS1 151

PANEL A4

VERIFY EVENT TIMER NUMERICS ILLUMINATED
VERIFY FAULT INDICATOR LT OFF

50-11 CEPD MS1 151

PANEL A6U

EVENT TIMER
MODE SW - TEST (HOLD)

50-12 CEPD MS1 151

PANEL A4

VERIFY EVENT TIMER DISPLAYS ALL 8'S
VERIFY FAULT INDICATOR LT ON

50-13 CEPD MS1 151

PANEL A6U

EVENT TIMER
MODE SW - UP

50-14 CEPD MS1 151

PANEL A4

VERIFY EVENT TIMER NUMERICS ILLUMINATED
VERIFY FAULT INDICATOR LT OFF

***** End of AFT Event Timer *****

Forward Mission Timer

50-15 CEPD PLT 151

PANEL O3

MISSION TIMER SW - GMT
VERIFY MISSION TIMER NUMERICS ILLUMINATED AND
TIME ADVANCING.
VERIFY FAULT INDICATOR LT OFF

50-16 CEPD PLT 151

PANEL O3

MISSION TIMER SW - TEST (HOLD)
VERIFY ALL EIGHTS ARE DISPLAYED
VERIFY FAULT INDICATOR LT ON

50-17 CEPD PLT 151

PANEL O3

MISSION TIMER SW - RELEASE
VERIFY MISSION TIMER NUMERICS ILLUMINATED AND
TIME ADVANCING.
VERIFY FAULT INDICATOR LT OFF

***** End of Forward Mission Timer *****

Forward Event Timer

50-18 CEPD PLT 151

PANEL F7

VERIFY EVENT TIMER NUMERICS ILLUMINATED.
VERIFY FAULT INDICATOR LT OFF

50-19 CEPD PLT 151

PANEL C2

TIMER SET TW'S - 0900
TIMER SW - SET (MOM)
EVENT TIMER
MODE SW - TEST (HOLD)

50-20 CEPD PLT 151

PANEL F7

VERIFY EVENT TIMER DISPLAYS ALL 8'S
VERIFY FAULT INDICATOR LT ON

50-21 CEPD PLT 151

PANEL C2

EVENT TIMER
MODE SW - RELEASE

50-22 CEPD PLT 151

PANEL F7

VERIFY EVENT TIMER INDICATES 0900
VERIFY FAULT INDICATOR LT OFF

***** End of Forward Event Timer *****

Switch/Circuit Breaker Configuration

50-23 CEPD CDR 151

PANEL L4

ROW Q

AC 1

LIGHTING

PANEL

L/CTR

PH A CB - CLOSE

L OVHD

PH B CB - CLOSE

INST OS

PH C CB - OPEN

AC 2

LIGHTING

PANEL

R OVHD

PH A CB - CLOSE

R

PH B CB - CLOSE

NUMERIC OS

PH C CB - OPEN

AC 3 LIGHTING

COAS

PH A CB - OPEN

PANEL

MS

PH B CB - OPEN

OS

PH C CB - OPEN

ROW R

AC 1

INST R

PH A CB - CLOSE

AC 2

INST OVHD

PH B CB - CLOSE

AC 3

INST L/CTR

PH B CB - CLOSE

50-24 CEPD CDR 151

PANEL O14

ROW C

MN A

FLOOD LEFT CNSL CB - CLOSE

FIRE SUPPR BAY 3 CB - CLOSE

VERIFY/REMOVE "DO NOT USE OR OPERATE" TAG
INSTALLED PER OMI [S5009.102](#) .

RECORD LOTO TAG NO. _____

50-25 CEPD PLT 151

PANEL O15

ROW C

MN B

FLOOD

RIGHT CNSL CB - CLOSE

LEFT CTR CB - CLOSE

FIRE SUPPR BAY 1 CB - CLOSE

VERIFY/REMOVE "DO NOT USE OR OPERATE" TAG
INSTALLED PER OMI [S5009.102](#) .

RECORD LOTO TAG No. _____

ROW E

MN B

DRAG CHUTE SYS 2 CB - CLOSE

50-26 CEPD PLT 151

PANEL O16

ROW C

MN C

FLOOD RIGHT CTR CB - CLOSE

FIRE SUPPR BAY 2 CB - CLOSE

VERIFY/REMOVE "DO NOT USE OR OPERATE" TAG

INSTALLED PER OMI [S5009.102](#) .

RECORD LOTO TAG NO. _____

ROW E

MN C

DRAG CHUTE SYS 1 CB - CLOSE

50-27 CEPD PLT 151

PANEL O8

LIGHTING

PANEL

NUMERIC SW - BRT

50-28 CEPD PLT 151

PANEL C3

SRB SEPARATION

MAN/AUTO SW - AUTO

ET SEPARATION

MAN/AUTO SW - AUTO

50-29 CEPD PLT 151

PANEL F9

DC VOLT/AMP SW - MAIN VOLTS B

50-30 CEPD MS1 151

PANEL A6U

ORBIT STATION LIGHTING
 NUMERIC SW - OFF
ANNUNCIATOR
 BUS SELECT SW - OFF

50-31 CEPD MS1 151

PANEL R14

ROW B

 MN A
 CONTROL BUS BC1/2/3 CB - CLOSE
 MN B
 CONTROL BUS CA1/2/3 CB - CLOSE
 MN C
 CONTROL BUS AB1/2/3 CB - CLOSE

ROW E

 MN A
 PS FLOOD CB - CLOSE
 MN C
 MS FLOOD CB - CLOSE

ROW F

 ESS 1BC
 FLOOD LEFT GLRSHLD CB - CLOSE
 LDG GEAR ARM/DN RESET CB - OPEN
 ESS 2CA
 FLOOD RIGHT GLRSHLD CB - CLOSE

50-32 CEPD MS1 151

PANEL ML86B

ROW E

MN A
FLOOD TUNNEL ADAPTER 2 CB - OPEN
MN B
FLOOD TUNNEL ADAPTER 3 CB - OPEN
MN C
FLOOD TUNNEL ADAPTER 4 CB - OPEN

ROW F

MN A
FLOODS
MIDDECK 1/8 CB - CLOSE
WMC/MO13Q CB - OPEN
AIRLOCK 1 CB - OPEN
MIDDECK 9 CB - OPEN
MN B
FLOODS
MIDDECK 2/6 CB - CLOSE
BUNK 2/4 CB - OPEN
MIDDECK 10 CB - OPEN
AIRLOCK 3 CB - OPEN
MN C
FLOODS
MIDDECK
5/7 CB - CLOSE
3/4/MO13Q CB - CLOSE
BUNK 1/3 CB - OPEN
AIRLOCK 4 CB - OPEN

ROW G

ESS 1BC
FLOOD
AIRLOCK 2 CB - OPEN
TUNNEL ADAPTER 1 CB - OPEN

***** End of Switch/Circuit Breaker Configuration *****

Utility Outlet Configuration

NOTE

Obtain the switch and circuit breaker positions for the following steps from VITT office (861-9224).

50-33 CEPD CDR 151

PANEL MO13Q

DC UTILITY POWER

MN B SW - _____

AC UTILITY POWER

AC 3 SW - _____

50-34 CEPD CDR 151

PANEL MO30F

DC UTILITY POWER

MN C SW - _____

50-35 CEPD CDR 151

PANEL MO52J

DC UTILITY POWER

MN A SW - _____

AC UTILITY POWER

AC 1 SW - _____

50-36 CEPD CDR 151

PANEL MO63P

MAIN C-DC UTILITY POWER

CB4/J4 CB- _____

CB3/J3 CB- _____

CB2/J2 CB- _____

J2 SW- _____

POWER SELECT 15A/10A SW- _____ (J2/J3, J4)

J3 SW- _____

J4 SW- _____

J5 SW- _____

POWER SELECT 15A/10A SW- _____ (J5/J6)

J6 SW- _____

CB5/J5 CB- _____

CB6/J6 CB- _____

RLY PWR CB- _____

50-37 CEPD CDR 151

PANEL ML85E (MUP)

AC

S1 SW - OFF

CB1 - OPEN

DC 10 AMP MN B

S2 SW - _____

CB2 - _____

S3 SW - _____

CB3 - _____

S4 SW - _____

CB4 - _____

S5 SW - _____

CB5 - _____

PUMPS

S6 SW - OFF

2 CB7 - OPEN

1 CB6 - OPEN

50-38 CEPD CDR 151

PANEL ML86B

ROW E

MN B

MAR 1 CB- _____

MAR 2 CB- _____

50-39 CEPD CDR 151

PANEL F1

DC UTILITY POWER

MN B SW - _____

AC UTILITY POWER

AC 1 SW - _____

50-40 CEPD CDR 151

PANEL O19

DC UTILITY POWER

MN A SW - OFF

50-41 CEPD CDR 151

PANEL A11

DC UTILITY POWER

MN C SW - OFF

50-42 CEPD CDR 151

PANEL A15

DC UTILITY POWER

MN C SW - OFF

AC UTILITY POWER

AC 3 SW - _____

50-43 CEPD CDR 151

PANEL L4

ROW B

UTILITY POWER

F1/MO52J AC 1 CB - _____

A15/MO13Q AC 3 CB - _____

50-44 CEPD CDR 151

PANEL O14

ROW C

MN A

UTILITY POWER 019/MO52J CB - CLOSE

50-45 CEPD CDR 151

PANEL O15

ROW C

MN B

UTILITY POWER F1/MO13Q CB - _____

50-46 CEPD CDR 151

PANEL O16

ROW C

MN C

UTILITY POWER A11/A15/MO30F CB - CLOSE

***** End of Utility Outlet Configuration *****

Seat Power Configuration

50-47 CEPD PLT 151

PLT SEAT (LOWER-LEFT SIDE)
SEAT BUS SEL SW - AC 3 (DN)

50-48 CEPD CDR 151

CDR SEAT (LOWER-LEFT SIDE)
SEAT BUS SEL SW - AC 2 (UP)

***** End of Seat Power Configuration *****

50-49 CEPD OTC 132
 CTPE

If LOTO tags were removed per this operation,

THEN Remove the following tag number(s) from the LOTO Database:

<u>Panel</u>	<u>Circuit Breaker</u>	<u>Tag Number</u>
O14	Fire Suppr Bay 3	_____
O15	Fire Suppr Bay 1	_____
O16	Fire Suppr Bay 2	_____

Not Performed: _____

50-50 CEPD OTC 132

MET Initialization and Switch Configuration complete.

***** End of MET Initialization *****

***** End of Operation 50 *****

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OPERATION 51 OMS Propellant Tank Repress

Shop: **OMS**

Cntrl Rm Console: **C7**

OPR: **ORP**

Zone: **540, 550**

Hazard (Y/N): **Y**

Duration (Hrs): **1.0**

NOTE

This operation is performed only after Pad is cleared for Cryo Loading. No essential personnel are allowed within the pad perimeter until OMS Repress complete. Nonessential LDB traffic will degrade TCS performance. This sequence is not compatible with IMU calibrations.

NOTE

Propellant and helium tank pressures may vary due to temperature changes and may decrease due to helium absorption with large pressure drops observed with high percentage propellant loads. OMS Tank Repress ensures oxidizer and fuel tank pressures meet LCC requirements.

NOTE

Steps involving Crit 1, 1R and/or 1S items are contained in the following operation.

51-1

COOS

Verify Format 129 or 166/44 or 42 or 60 active.

WARNING

Hypergolic propellant liquid and/or vapors may be released at high pressures in the event of a component leakage or failure during propellant tank pressurization. Hypergolic vapors are toxic and are severe irritants.

Exposure may cause severe eye, skin and respiratory system irritation and permanent damage. Sudden release of pressure may cause bodily injury.

WT013 12-07-2005

NOTE

Hazardous steps follow due to OMS/RCS helium regulator lockups and propellant tank pressurizations.

NOTE

VWD19 TCS burst disc protection closes the helium valves at 288 psia (actual). A large pressure delta between the oxidizer and the fuel propellant tanks with one tank near lockup can cause an overshoot on the tank near lockup with the possibility of activating TCS. For this condition, verify the overshoot is within the engineering experience base and does not approach burst disk pressure. VWD41 should be loaded on PC GOAL for this monitoring.

NOTE

OMS burst disk protection uses OMDP or NASA OMS website offset data. Initiating VWD19 will display the last value entered into the GPC shared registers. Values are updated when the new offsets are entered for OMS using XMIT response key and returned to the console to the next rounded down bit value. When the LOAD TCS target is keyed for LOMS or ROMS the value passes from the console through the shared register then to the private write area of the GPC/TCS register. To verify the value was not corrupted in transit through the shared register the 'Download Current Ullage Pressure Offsets' target must be keyed to read the shared registers to verify offset values did not change.

LOMS Oxid/Fuel Propellant Tank Repress

NOTE

Noted requirements are satisfied by the following steps annotated with OMRS code.

OMRS V43CF0.110-A

51-2 **COOS** **OTC** **132**
OTC **CGNC**

Verify IMUs are in Term Idle.

51-3 **COOS**

CRT (VWD42)

1. RECORD LOMS GHE TANK ULLAGE PRESSURE:

INDICATED _____ PSIA (-) OFFSET _____ =
P1 OR P2 (CIRCLE ONE)

ACTUAL _____ PSIA

2. VERIFY LOMS GHE TANK PRESSURE NLT 2000 PSIA

OMRS V43CF0.110-A

51-4

COOS

CRT (VWD41/42)

RECORD LOMS FUEL AND OXID ULLAGE TANK ULLAGE
PRESSURE/TEMP (VALUES ARE BD) :

OXID ULLAGE _____ PSIA (-) OFFSET _____ =

ACTUAL _____ PSIA

TEMPERATURE _____ DEG F

FUEL ULLAGE _____ PSIA (-) OFFSET _____ =

ACTUAL _____ PSIA

TEMPERATURE _____ DEG F

51-5

COOS

CURSOR CNTL (VWD19)

LOMS VFD06

SELECT 'SET ULLAGE OFFSET FU' - XMIT CURSOR

ENTER OFFSET - XMIT RESPONSE

SELECT 'SET ULLAGE OFFSET OX' - XMIT CURSOR

ENTER OFFSET - XMIT RESPONSE

DOWNLOAD CURRENT ULLAGE PRESSURE OFFSETS - XMIT
CURSOR

VERIFY CORRECT UPDATE OFFSETS.

(ALLOW FOR ROUNDING DOWN TO NEAREST BIT VALUE)

(VALUES ARE BD)

RECORD:

VFD06 LOMS FUEL _____ PSI

OXID _____ PSI

51-6

COOS

CURSOR CNTL (VWD19)

1. LOAD TCS SEQUENCE - XMIT CURSOR

VERIFY TCS STATUS - LOADED

VERIFY 'TCS LOADED' (YELLOW UP ARROW)

DOWNLOAD CURRENT ULLAGE PRESSURE OFFSETS - XMIT CURSOR

VERIFY OFFSETS MATCH VALUES RECORDED IN PREVIOUS STEP.

2. **IF** OFFSETS DO NOT MATCH,

THEN:

CANCEL TCS SEQUENCE - XMIT CURSOR

REPEAT PREVIOUS STEP AND SS1 OF THIS STEP UNTIL OFFSETS MATCH.

Not Performed: _____
SS2

51-7

COOS

CURSOR CNTL (VWD42)

1. V1 - OPEN
VERIFY PRESSURES STABLE

2. H-3 - OPEN

OMRS V43CF0.110-A

LOMS TCS Executed

NOTE

Perform this option if TCS ran.

LOMS TCS Executed Not Performed: _____

51-8

COOS

CURSOR CNTL (VWD42)

IF EITHER PROPELLANT TANK WAS ALREADY NEAR LOCKUP
AND PRESSURE EXCEEDED 281,

(EXCEPTION: TEMPERATURE INCREASES CAN CAUSE
PROPELLANT TANKS TO BE ABOVE 281 PSIA PRIOR
TO START OF REPRESS)

THEN VERIFY LOCKUP PRESSURE OF REG DID NOT EXCEED
281 PSIA ACTUAL USING ULLAGE TRANSDUCER FROM LOWER
PRESSURE TANK.

RECORD IPR NUMBER _____
(N/A IF IPR IS NOT REQUIRED)

Not Performed: _____

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OMI S0007.400 A23
APPROVED

51-9

COOS

CURSOR CNTL (VWD42)

IF REGULATOR PERFORMANCE IS NOT PER ENGINEERING
EXPERIENCE BASE OF A PRESSURE SPIKE,

THEN EVALUATE AND INITIATE VEHICLE IPR.

RECORD IPR NUMBER _____
(N/A IF IPR IS NOT REQUIRED)

Not Performed: _____

NOTE

OMS TCS programs run at 288 psia actual. TCS will close the helium isolation valves.

51-10

COOS

CURSOR CNTL (VWD19)
LOMS VFD06

1. **VERIFY** ULLAGE OFFSET ENTRY

VERIFY TCS STATUS - CANCELLED

LOAD TCS SEQUENCE - XMIT CURSOR

VERIFY 'TCS LOADED' (YELLOW UP ARROW)

VERIFY VFD06 TCS STATUS - LOADED

DOWNLOAD CURRENT ULLAGE PRESSURE OFFSETS -
XMIT CURSOR

VERIFY OFFSETS MATCH VALUES RECORDED IN STEP
51-04

2. **IF** OFFSETS DO NOT MATCH,

THEN:

CANCEL TCS SEQUENCE - XMIT CURSOR

REPEAT STEP 51-4 AND SS1 OF THIS STEP UNTIL
OFFSETS MATCH

Not Performed: _____
SS2

51-11

COOS

CURSOR CNTL (VWD42)

PERFORM THE FOLLOWING TO RE-OPEN THE HELIUM ISOLATION VALVE:

1. VALVE SYNC - XMIT CURSOR KEY - PRESS
2. H3 - OPEN

51-12

COOS

IF TCS executes without completing regulator lockup in spec,

THEN repeat the previous two steps until OX and Fuel tanks are NLT 265 and NMT 281 psia actual (Primary Lockup) as read on ullage transducer of lower pressure tank.

Record:

Number of times performed: _____

Not Performed: _____

***** End of LOMS TCS Executed *****

51-13 COOS

CRT (VWD41/42)

VERIFY LOMS OXID AND FUEL ULLAGE PRESSURES ARE
STABLE.

51-14 COOS

CURSOR CNTL (VWD42)

H3 - CLOSED

V1 - CLOSED

51-15 COOS

CURSOR CNTL (VWD19)

LOMS VFD06

CANCEL TCS SEQUENCE - XMIT CURSOR

VERIFY TCS STATUS - CANCELLED

VERIFY 'TCS LOADED' (RED DOWN ARROW)

51-16

COOS

CRT (VWD41/42)

RECORD LOMS FUEL AND OXID ULLAGE TANK ULLAGE
PRESSURE/TEMP (VALUES ARE BD) :

OXID ULLAGE _____ PSIA (-) OFFSET _____ =

ACTUAL _____ PSIA

TEMPERATURE _____ DEG F

FUEL ULLAGE _____ PSIA (-) OFFSET _____ =

ACTUAL _____ PSIA

TEMPERATURE _____ DEG F

VERIFY LOMS OXIDIZER AND FUEL PROPELLANT TANK
PRESSURE DIFFERENTIALS NOT MORE THAN 15 PSID.

RECORD DIFFERENTIAL (ACTUAL) _____ PSID

OMRS V43CF0.110-A

51-17

COOS

CRT (VWD42)

RECORD LOMS GHE TK PRESSURE AND TEMP
(VALUES ARE BD) :

PRESSURE P1 _____ PSIA

PRESSURE P2 _____ PSIA

TEMPERATURE _____ DEG F

VERIFY V1 AND V2 CLOSED.

VERIFY H3 AND H4 CLOSED.

OMRS V43CF0.110-A

51-18

Noted requirements are complete.

OMRSD [V43CF0.110-A](#)

***** End of LOMS Oxid/Fuel Propellant Tank Repress *****

ROMS Oxid/Fuel Propellant Tank Repress

NOTE

Noted requirements are satisfied by the following steps annotated with OMRS code.

OMRS V43CF0.110-B

51-19

COOS

CRT (VWD42)

1. RECORD ROMS GHE TANK PRESSURE :

INDICATED _____ PSIA (-) OFFSET _____ =
P1 OR P2 (CIRCLE ONE)

ACTUAL _____ PSIA

2. VERIFY ROMS GHE TANK PRESSURE NLT 2000 PSIA

OMRS V43CF0.110-B

51-20

COOS

CRT (VWD41/42)

RECORD ROMS FUEL AND OXID PROP TANK ULLAGE
PRESSURE/TEMP (VALUES ARE BD) :

OXID ULLAGE _____ PSIA (-) OFFSET _____ =

ACTUAL _____ PSIA

TEMPERATURE _____ DEG F

FUEL ULLAGE _____ PSIA (-) OFFSET _____ =

ACTUAL _____ PSIA

TEMPERATURE _____ DEG F

51-21

COOS

CURSOR CNTL (VWD19)
ROMS VFD07

SELECT 'SET ULLAGE OFFSET FU' - XMIT CURSOR

ENTER OFFSET - XMIT RESPONSE

SELECT 'SET ULLAGE OFFSET OX' - XMIT CURSOR

ENTER OFFSET - XMIT RESPONSE

DOWNLOAD CURRENT ULLAGE PRESSURE OFFSETS - XMIT
CURSOR

VERIFY CORRECT UPDATE OF OFFSETS
(ALLOW FOR ROUNDING DOWN TO NEAREST BIT VALUE)
(VALUES ARE BD)

RECORD:

VFD07 ROMS FUEL _____ PSI

OXID _____ PSI

51-22

COOS

CURSOR CNTL (VWD19)
ROMS VFD07

1. LOAD TCS SEQUENCE - XMIT CURSOR

VERIFY TCS STATUS - LOADED

VERIFY 'TCS LOADED' (YELLOW UP ARROW)

DOWNLOAD CURRENT ULLAGE PRESSURE OFFSETS -
XMIT CURSOR

VERIFY OFFSETS MATCH VALUES RECORDED IN
PREVIOUS STEP

2. **IF** OFFSETS DO NOT MATCH

THEN:

CANCEL TCS SEQUENCE - XMIT CURSOR

REPEAT PREVIOUS STEP AND SS1 OF THIS STEP
UNTIL OFFSETS MATCH.

Not Performed: _____
SS2

51-23

COOS

CURSOR CNTL (VWD42)

1. V5 - OPEN

VERIFY PRESSURES STABLE

2. H7 - OPEN

OMRS V43CF0.110-B

ROMS TCS Executed

NOTE

Perform this option if TCS ran.

ROMS TCS Executed Not Performed: _____

51-24

COOS

CURSOR CNTL (VWD42)

IF EITHER PROPELLANT TANK WAS ALREADY NEAR LOCKUP
AND PRESSURE EXCEEDED 281 PSIA,

(EXCEPTION: TEMPERATURE INCREASES CAN CAUSE
PROPELLANT TANKS TO BE ABOVE 281 PSIA PRIOR TO
START OF REPRESS)

THEN VERIFY LOCKUP PRESSURE OF REG DID NOT EXCEED
281 PSIA ACTUAL USING ULLAGE TRANSDUCER FROM
LOWER PRESSURE TANK.

RECORD IPR NUMBER _____
(N/A IF IPR IS NOT REQUIRED)

Not Performed: _____

06-24-2011
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OMI S0007.400 A23
APPROVED

51-25

COOS

CURSOR CNTL (VWD42)

IF REGULATOR PREFORMANCE IS NOT PER ENGINEERING
EXPERIENCE BASE OF A PRESSURE SPIKE,

THEN EVALUATE ON SECURE AND INITIATE VEHICLE IPR.

RECORD IPR NUMBER _____
(N/A IF IPR IS NOT REQUIRED)

Not Performed: _____

NOTE

OMS TCS programs run at 288 psia actual. TCS will close the helium isolation valves.

51-26

COOS

CURSOR CNTL (VWD19)
ROMS VFD07

1. **VERIFY** ULLAGE OFFSET ENTRY

VERIFY TCS STATUS - CANCELLED

LOAD TCS SEQUENCE - XMIT CURSOR

VERIFY 'TCS LOADED' (YELLOW UP ARROW)

VERIFY VFD07 TCS STATUS - LOADED

DOWNLOAD CURRENT ULLAGE PRESSURE OFFSETS -
XMIT CURSOR

VERIFY OFFSETS MATCH VALUES RECORDED IN STEP
51-20

2. **IF** OFFSETS DO NOT MATCH,

THEN:

CANCEL TCS SEQUENCE - XMIT CURSOR

REPEAT STEP 51-20 AND SS1 OF THIS STEP UNTIL
OFFSETS MATCH

Not Performed: _____
SS2

51-27

COOS

CURSOR CNTL (VWD42)

PERFORM THE FOLLOWING TO RE-OPEN THE HELIUM ISOLATION VALVE:

1. VALVE SYNC - XMIT CURSOR KEY - PRESS
2. H7 - OPEN

51-28

COOS

IF TCS executes without completing regulator lockup in spec,

THEN repeat the previous two steps until Ox and Fuel tanks are NLT 265 and NMT 281 psia actual (primary lockup) as read on ullage transducer of lower pressure tank.

Record:

Number of times performed: _____

Not Performed: _____

***** End of ROMS TCS Executed *****

51-29 **COOS**

CRT (VWD41/42)

VERIFY ROMS OXID AND FUEL ULLAGE PRESSURES ARE
STABLE.

51-30 **COOS**

CURSOR CNTL (VWD42)

H7 - CLOSED

V5 - CLOSED

51-31 **COOS**

CURSOR CNTL (VWD19)

ROMS VFD07

CANCEL TCS SEQUENCE - XMIT CURSOR

VERIFY TCS STATUS - CANCELLED

VERIFY 'TCS LOADED' (RED DOWN ARROW)

51-32

COOS

CRT (VWD41/42)

RECORD ROMS FUEL AND OXID ULLAGE TANK ULLAGE
PRESSURE/TEMP (VALUES ARE BD) :

OXID ULLAGE _____ PSIA (-) OFFSET _____ =

ACTUAL _____ PSIA

TEMPERATURE _____ DEG F

FUEL ULLAGE _____ PSIA (-) OFFSET _____ =

ACTUAL _____ PSIA

TEMPERATURE _____ DEG F

VERIFY ROMS OXIDIZER AND FUEL PROPELLANT TANK
PRESSURE DIFFERENTIALS NOT MORE THAN 15 PSID.

RECORD DIFFERENTIAL (ACTUAL) : _____ PSID

OMRS V43CF0.110-B

51-33

COOS

CRT (VWD42)

RECORD ROMS GHE TK PRESSURE AND TEMP
(VALUES ARE BD) :

PRESSURE P1 _____ PSIA

PRESSURE P2 _____ PSIA

TEMPERATURE _____ DEG F

VERIFY V5 AND V6 CLOSED.

VERIFY H7 AND H8 CLOSED.

OMRS V43CF0.110-B

51-34

Noted requirements are complete.

OMRSD [V43CF0.110-B](#)

***** End of ROMS Oxid/Fuel Propellant Tank Repress *****

**06-24-2011
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**OMI S0007.400 A23
APPROVED**

51-35 COOS OTC 132

OMS Propellant Tank Repress complete.

NOTE

S007.200 OP16 will control toxic vapor checks and reopening of the pad to essential personnel during the CRYO load.

NOTE

Hazardous steps are complete.

***** End of Operation 51 *****

06-24-2011
APPROVED

OMI S0007.400 A23
APPROVED

OPERATION 52 Orbiter/GSE PIC Resistance Test

Shop: **EPD**

Cntrl Rm Console: **C10**

OPR: **EPD**

Zone: **N/A**

Hazard (Y/N): **Y**

Duration (Hrs): **0.5**

NOTE

Record data and verifications for multiple runs of this operation in
Table 52-1 - Orbiter/GSE PIC Resistance Test.

Orbiter MEC and LCA Resistance Tests

WARNING

Pyrotechnic devices could explode while being tested.
Personnel may suffer bodily injury or death.

WPYR018 04-07-04

NOTE

All personnel must be clear of BDA before proceeding with the Orbiter/GSE PIC resistance test.

52-1 **OTC CEPD 132**

Perform PIC Resistance Test.

Report completion.

52-2 **CEPD OTC 132**

Verify all personnel clear of BDA.

52-3 **CEPD**

CURSOR CNTL (VWC10)
MEC CYCL ENBL - ON
XMIT CURSOR KEY - PRESS

52-4 **CEPD**

DELAY 10 SECONDS MINIMUM:

CURSOR CNTL (VWC10)
MEC R/T - ON
XMIT CURSOR KEY - PRESS

52-5 **CEPD**

CURSOR CNTL (VWC10)
LCA R/T - ON
XMIT CURSOR KEY - PRESS

52-6

CEPD

CRT (VWC10)
VERIFY RESISTANCE TEST INDICATIONS (G=ON, N=OFF)

<u>MEC</u>	<u>LEFT-HAND</u>		<u>RIGHT-HAND</u>	
	<u>SYS A</u>	<u>SYS B</u>	<u>SYS A</u>	<u>SYS B</u>
	R	R	R	R
UMB D-1	G	G	G	G
UMB D-2	G	G	G	G
UMB D-3	G	G	G	G
AFT SEP	G	G	G	G

<u>LCA</u>	<u>LCA-1</u>	<u>LCA-2</u>	<u>LCA-3</u>
	R	R	R
NLG EXT B/A	-	G	G
LMG EXT B/A	-	G	G
RMG EXT B/A	-	G	G
NLG THR 2/1	-	G	G
FEX 3/1/2	G	G	G
FWD SEP A/B	G	G	-
KU NUT A/B	G	-	G
KU GLT A/B	G	-	G

52-7

CEPD

CURSOR CNTL (VWC10)
LCA R/T - OFF
XMIT CURSOR KEY - PRESS

52-8

CEPD

CURSOR CNTL (VWC10)
MEC R/T - OFF
XMIT CURSOR KEY - PRESS

52-9

CEPD

DELAY 10 SECONDS MINIMUM:
CURSOR CNTL (VWC10)
MEC CYCL ENBL - OFF
XMIT CURSOR KEY - PRESS

RMS Resistance Test - All Ordnance

NOTE
Perform this option if all RMS ordnance is installed.

RMS Resistance Test - All Ordnance (Not Performed:)

52-10

CEPD

CURSOR CNTL (VWC10)

RMS R/T - ON
XMIT CURSOR KEY - PRESS

CRT (VWC10)
RMS R/T IND ON

52-11

CEPD

CRT (VWC10)

	SYS A	SYS B	SYS A	SYS B
RMS	R	R	R	R
	BLT		GLT	
FWD	G	G	G	G
MID	G	G	G	G
AFT	G	G	G	G
SHLD	G	G	G	G

(G EQUALS ON, N EQUALS OFF)

52-12

CEPD

CURSOR CNTL (VWC10)

RMS R/T - OFF
XMIT CURSOR KEY - PRESS

CRT (VWC10)
RMS R/T IND OFF

***** End of RMS Resistance Test - All Ordnance *****

RMS Resistance Test - Shoulder Ordnance Only

NOTE
Perform this option if only RMS Shoulder ordnance is installed.

RMS Resistance Test - Shoulder Ordnance Only (Not Performed:)

52-13

CEPD

CURSOR CNTL (VWC10)

RMS R/T - ON
XMIT CURSOR KEY - PRESS

CRT (VWC10)
RMS R/T IND ON

52-14

CEPD

CRT (VWC10)

RMS SYS A SYS B SYS A SYS B
 R R R R
 BLT GLT
FWD N N N N
MID N N N N
AFT N N N N
SHLD G G G G

52-15

CEPD

CURSOR CNTL (VWC10)

RMS R/T - OFF
XMIT CURSOR KEY - PRESS

CRT (VWC10)
RMS R/T IND OFF

*** End of RMS Resistance Test - Shoulder Ordnance Only ***

BOOM Resistance Test - All Ordnance

NOTE
Perform this option if all BOOM ordnance is installed.

BOOM Resistance Test - All Ordnance (Not Performed:)

52-16

CEPD

CURSOR CNTL (VWC10)

RMS
XMIT CURSOR KEY - PRESS (SWITCH TO BOOM MSMTS)

BOOM R/T - ON
XMIT CURSOR KEY - PRESS

CRT (VWC10)
BOOM R/T IND ON

52-17

CEPD

CRT (VWC10)

	SYS A	SYS B	SYS A	SYS B
BOOM	R	R	R	R
	BLT		GLT	
FWD	G	G	G	G
AFT	G	G	G	G
SHLD	G	G	G	G

(G EQUALS ON, N EQUALS OFF)

52-18

CEPD

CURSOR CNTL (VWC10)

BOOM R/T - OFF
XMIT CURSOR KEY - PRESS

CRT (VWC10)
BOOM R/T IND OFF

*** End of BOOM Resistance Test - All Ordnance ***

BOOM Resistance Test - No Ordnance

NOTE
Perform this option if no BOOM ordnance is installed.

BOOM Resistance Test - No Ordnance (Not Performed:)

52-19

CEPD

CURSOR CNTL (VWC10)

RMS
XMIT CURSOR KEY - PRESS (SWITCH TO BOOM MSMTS)

BOOM R/T - ON
XMIT CURSOR KEY - PRESS

CRT (VWC10)
BOOM R/T IND ON

52-20

CEPD

CRT (VWC10)

	SYS A	SYS B	SYS A	SYS B
BOOM	R	R	R	R
	BLT		GLT	
FWD	N	N	N	N
AFT	N	N	N	N
SHLD	N	N	N	N

52-21

CEPD

CURSOR CNTL (VWC10)

BOOM R/T - OFF
XMIT CURSOR KEY - PRESS

CRT (VWC10)
BOOM R/T IND OFF

***** End of BOOM Resistance Test - No Ordnance *****

GSE Go PIC Resistance Test

52-22

CEPD

CURSOR CNTL (VWC10)
GRD SYS - ON
XMIT CURSOR KEY - PRESS

CRT (VWC10)
VERIFY THE FOLLOWING VOLTAGES FOR SYS A & B:

- H₂ BURN AND LR GND PWR GREATER THAN 26 VDC
- H₂ BURN AND LR CPA PRI & RED GREATER THAN 26 VDC
- ALL PIC CAP PRI & RED LESS THAN 1.5 VDC

52-23

CEPD

CRT (VWC10)
GRD T-0 RESET IND RESET
GRD STATUS SW IND OFF

52-24

CEPD

CURSOR CNTL (VWC10)
GND R/T - ON
XMIT CURSOR KEY - PRESS

52-25

CEPD

CRT (VWC10)

VERIFY RESISTANCE TEST INDICATIONS (G=ON, N=OFF)

	LEFT-HAND		RIGHT-HAND	
	<u>SYS A</u>	<u>SYS B</u>	<u>SYS A</u>	<u>SYS B</u>
	R	R	R	R
<u>H₂ BURN</u>				
ENG 1	G	-	-	G
ENG 2/3	G	G	G	G
<u>LAUNCH REL</u>				
HDP 5/1	G	G	G	G
HDP 6/2	G	G	G	G
HDP 7/3	G	G	G	G
HDP 8/4	G	G	G	G
ETVAS	-	-	G	G
H/O TSM	G	G	G	G
LANYARD	-	-	G	G

52-26

CEPD

CURSOR CNTL (VWC10)

GND R/T - OFF

XMIT CURSOR KEY - PRESS

*** End of GSE Go PIC Resistance Test ***

Drag Chute Resistance Test

52-27

CEPD

CONSOLE KYBD (VWC10)
DRAG CHUTE
R/T CMD - ON
XMIT CMD KEY - PRESS

CRT (VWC10)
DRAG CHUTE
R/T IND ON

<u>DRAG CHUTE</u>	<u>SYS-1</u>	<u>SYS-2</u>
DPLY	G	G
JETT	G	G

52-28

CEPD

CONSOLE KYBD (VWC10)
DRAG CHUTE
R/T CMD - OFF
XMIT CMD KEY - PRESS

CRT (VWC10)
DRAG CHUTE
R/T IND OFF

<u>DRAG CHUTE</u>	<u>SYS-1</u>	<u>SYS-2</u>
DPLY	N	N
JETT	N	N

*** End of Drag Chute Resistance Test ***

52-29

CEPD OTC 132

Orbiter/GSE Go PIC Resistance Test complete.

Table 52-1 - Orbiter/GSE PIC Resistance Test				
Step	Run _____ Date _____	Run _____ Date _____	Run _____ Date _____	Run _____ Date _____
52-1				
52-2				
52-3				
52-4				
52-5				
52-6				
52-7				
52-8				
52-9				
RMS Resistance Test - All Ordnance				
Not Performed:				
52-10				
52-11				
52-12				
*** End of RMS Resistance Test - All Ordnance ***				

Table 52-1 - Orbiter/GSE PIC Resistance Test (cont'd)				
Step	Run _____ Date _____	Run _____ Date _____	Run _____ Date _____	Run _____ Date _____
RMS Resistance Test - Shoulder Ordnance Only				
Not Performed:				
52-13				
52-14				
52-15				
*** End of RMS Resistance Test - Shoulder Ordnance Only ***				
BOOM Resistance Test - All Ordnance				
Not Performed				
52-16				
52-17				
52-18				
*** End of BOOM Resistance Test - All Ordnance ***				
BOOM Resistance Test - No Ordnance				
Not Performed				
52-19				
52-20				
52-21				
*** End of BOOM Resistance Test - No Ordnance ***				

Table 52-1 - Orbiter/GSE PIC Resistance Test (cont'd)				
Step	Run _____ Date _____	Run _____ Date _____	Run _____ Date _____	Run _____ Date _____
GSE Go PIC Resistance Test				
52-22				
52-23				
52-24				
52-25				
52-26				
*** End of GSE Go PIC Resistance Test ***				
Drag Chute Resistance Test				
52-27				
52-28				
*** End of Drag Chute Resistance Test ***				
52-29				

*** End of Operation 52 ***

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OPERATION 53 Middeck Payload Interface Verification Test

Shop: **PTC**

Cntrl Rm Console: **C1**

OPR: **PTC**

Zone: **NA**

Hazard (Y/N): **N**

Duration (Hrs): **1.0**

GLACIER (Powered) Interface Verification Test

NOTE

Perform this option if a GLACIER is currently installed, not powered from a previous launch attempt and will launch **powered**.

GLACIER (Powered) Interface Verification Test Not Performed: _____

53-1 PTC OTC 132

Request CDR and CMQC support on OIS CH 174 for MF28E/G
GLACIER IVT.

53-2 PTC XMLE 134

Perform GLACIER Switchover to Orbiter power and IVT on OIS Channel
174.

NOTE

In the following steps, XME1 and XME2 are NASA engineers.

53-3 **XMLE** **XME1** **174**

MUP PANEL (ML85E)

Verify Orbiter power cable P/N V213-773918-001 labeled “A/E Payload DC Pwr MUP J11 (GLACIER Pwr J1/MF28E/G)” is connected to DC power connector J11 and the other end is routed correctly to support IVT.

53-4 **PTC** **CDR** **174**

PANEL ML86B

ROW E

MN B

MAR 1 CB - OPEN (OUT)

CAUTION

Power interruptions greater than 20 minutes may result in damage to temperature sensitive samples.

NOTE

GLACIER battery SW will be in the "ON" position during all operations. When GLACIER is not powered, the battery SW light will blink.

Voltage error might occur if the voltage applied to GLACIER dropped below 24 volts during transport. No action is required. Error will be reset after GLACIER is on Orbiter power.

NOTE

Perform the following step if "HOME" is not shown on the GLACIER display.

53-5 XMLE XME1 174

GLACIER

Press right button (EXIT) until "HOME" appears.

Not Performed: _____

53-6 XMLE XME1 174

GLACIER

Verify/Set GLACIER "BATTERY" SW - ON

53-7 XMLLE XME1 174

GLACIER

Perform the following:

1. **Record** the following information (BD)

Curr Temp: _____ deg C

GPS: _____: _____: _____

2. **Press** left button (MENU) once and verify the following appears:

“MAIN MENU”

“QUICK STATUS 1/5”

3. **Press** left button (NEXT) four times and verify the following appears:

“MAIN MENU”

“SHUTDOWN 5/5”

4. **Press** center button (SELECT) once and verify the following appears:

“SHUTDOWN”

“SHUTDOWN 1/2”

5. **Press** center button (SELECT) once and verify the following appears:

“CONFIRM SHUTDOWN”

“SHUTDOWN”

6. **Press** left button (APPLY) once and verify the following appears:

“GLACIER”
“SYSTEM”
“SHUTTING DOWN”
“PLEASE WAIT...”

7. **Verify** the following appears:

“GLACIER”
“SHUTDOWN COMPLETE”
“TURN POWER OFF”

CAUTION

Wait five seconds before proceeding with substep 8 below.

NOTE

Power CB light can take up to two minutes to fully extinguish after the power CB is pulled out.

8. **Pull** “POWER CB” - OPEN (OUT)

9. **Record** time:

Time: _____ (Local)

53-8 XMLE XME2 174

1. Breakout Box

Set

Power Supply/Battery SW - None (Center)

2. Record:

Time: _____ (Local)

53-9 XMLE XME1 174

GLACIER

Disconnect cable (P/N 82K07179-9D1) from the GLACIER "POWER J1" connector.

OK to Disconnect XME1: _____

N: _____

Disconnect OK XME1: _____

N: _____

53-10 XMLE XME1 174

GLACIER

Connect Orbiter power cable (P/N V213-773918-001) to GLACIER "POWER J1" connector.

OK to Connect XME1: _____

N: _____

Connect OK XME1: _____

N: _____

53-11 PTC CDR 174

PANEL ML86B
ROW E
MN B
MAR 1 CB - CLOSED (IN)

53-12 XMLE XME1 174

GLACIER

1. "POWER CB" - CLOSED (IN)

2. **Record**

Time: _____ (Local)

Time without power: _____ (Min)

NOTE

Noted requirement satisfied by the following steps annotated with OMRS code.

OMRS P1558EB.100

53-13 XMLE XME1 174

GLACIER

1. **Verify** power LED ("POWER CB" light) illuminated

2. **Verify** display active.

OMRS P1558EB.100

53-14 XMLE

Noted requirement complete.

OMRSD [P1558EB.100](#)

NOTE

GLACIER system initialization may take up to three minutes. Initialization complete once line one of display reads "HOME" or "ERROR PENDING". May take four minutes longer for line three to read "SET POINT".

NOTE

Perform the following four steps if the display toggles "ERROR PENDING".

53-15 XMLE XME1 174

GLACIER

Press right button (EXIT) until "HOME" appears.

Not Performed: _____

NOTE

In the event of an error, Line 2 of the GLACIER display will include the error message (such as “current range”, “voltage range” or “hardware error” and the error event (“X/Y where X and Y are numbers).

53-16 XMLE XME1 174

GLACIER

Perform the following:

1. **Press** left button (MENU) once to access main menu quick status 1/5 display.
2. **Press** left button (NEXT) twice to access error handling 3/5 display.
3. **Press** center button (SELECT) once.
4. **Press** left button (PEND) once.
5. **Record** the following information:

Time: _____ (Local)

Line 2: _____ (Error Message
and Error Event)

Line 3: _____ (Error Status)

NOTE

Perform substeps 6 thru 9 if error status is "INACTIVE/PENDING".

6. **Press** center button (SELECT) once.
7. **Press** left button (RESET) once.
8. **Verify** line 3 reads: "INACTIVE/ACK"
9. **Press** left button (NEXT) once.

Substeps 6-9 Not Performed: _____

NOTE

Perform substeps 10 thru 12 if error status is "ACTIVE/PENDING".

10. **Press** center button (SELECT) once.
11. **Press** center button (ACK) once.
12. **Press** left button (NEXT) once.

Substeps 10 - 12 Not Performed: _____

Entire Step Not Performed: _____

NOTE

If more than one error event is present (anything but 1/1 indicates multiple events present), repeat substeps 5-12 and record number of additional iterations below in Table 53-1.

53-17 XMLE XME1 174

GLACIER

Record additional iterations of substeps 5-12 of previous step and data below in Table 53-1.

Not Performed: _____

Table 53-1			
Iteration	Time (Local)	Line 2 (Error Message and Error Event)	Line 3 (Error Status)

53-18 XMLE XME1 174

GLACIER

Press right button (EXIT) until “HOME” display appears.

Not Performed: _____

53-19 XMLE XME1 174

GLACIER

1. **Verify** display line 1: "HOME"
2. **Verify** display line 3: "SET POINT"
3. **Verify** cryo-cooler(s) - turned on (audible)

53-20 XMLE XME1 174

GLACIER

Record from GLACIER display (BD):

Curr Temp: _____ deg C

Set Point: _____ deg C

GPS: _____: _____: _____

NOTE

Wait at least 10 minutes and then proceed with the following step.

53-21 XMLE XME1 174

GLACIER

Perform the following:

1. **Press** left (MENU) button once to access main menu quick status 1/5 display.
2. **Press** left (NEXT) button once to access main menu status 2/5 display.
3. **Press** center (SELECT) button once to access status Cryogenic 1/3.
4. **Press** center (SELECT) button once to access Cryogenic Cooler 1 stroke 1/23 and record cooler 1 Stroke value in Table 53-2.
5. **Press** center (NEXT) button once to access Cryogenic Cooler 2 stroke 2/23 and record cooler 2 Stroke value in Table 53-2.
6. **Press** center (NEXT) button once to access Cryogenic HX 1 3/23 and record HX 1 value in Table 53-2.
7. **Press** center (NEXT) button once to access Cryogenic HX 2 4/23 and record HX 2 value in Table 53-2.
8. **Press** center (NEXT) button once to access Cold Head 1A 5/23 and record Cold Head 1A value in Table 53-2.
9. **Press** center (NEXT) button once to access Cold Head 1B 6/23 and record Cold Head 1B value in table 53-2.
10. **Press** center (NEXT) button once to access Cold Head 2A 7/23 and record Cold Head 2A value in Table 53-2.
11. **Press** center (NEXT) button once to access Cold Head 2B 8/23 and record Cold Head 2B value in Table 53-2.

12. **Press** center (NEXT) button 11 times to access Cryogenic Heater 1 power 19/23 and record heater 1 Power value in Table 53-2.
13. **Press** center (NEXT) button once to access Cryogenic Heater 2 power 20/23 and record heater 2 Power value in Table 53-2.
14. **Press** right (EXIT) button once to access status Cryogenic 1/3 display.
15. **Press** left (NEXT) button once to access status Resources 2/3.
16. **Press** center (SELECT) once to access Resources AAA Outlet 1/10.
17. **Press** center (NEXT) button 6 times to access Resources Main Current 7/10 and record Main Current value in table 53-2.
18. **Press** center (NEXT) button once to access Resources Main Voltage 8/10 and record Main Voltage value in table 53-2.
19. **Press** right (exit) button until “HOME” is displayed.

Table 53-2		
Parameter	Value	Comment
Cooler 1 Stroke		
Cooler 2 Stroke		
HX 1		
HX 2		
Cold Head 1A		
Cold Head 1B		
Cold Head 2A		
Cold Head 2B		
Heater 1 Power		
Heater 2 Power		
Main Current		
Main Voltage		

53-22 XMLE XME1 174

GLACIER

Record from GLACIER display (BD):

Curr Temp: _____ deg C

Set Point: _____ deg C

GPS: _____: _____: _____

53-23 XMLE XME1 174

GLACIER

Verify with FCE that the Orbiter cable will not be routed over the GLACIER door.

53-24 XMLE PTC 174

GLACIER IVT is complete.

***** End of GLACIER Interface Verification Test *****

<p>NOTE Perform the following step if all payload IVTs are complete.</p>

53-25 PTC OTC 132

Middeck payload IVTs are complete. CDR and CMQC support are released.

Not Performed: _____

GLACIER (Unpowered) Interface Verification Test

NOTE

Perform this option if a GLACIER is currently installed and will launch **unpowered.**

GLACIER (Unpowered) Interface Verification Test Not Performed: _____

| 53-26 PTC OTC 132

Request CDR and CMQC support on OIS CH 174 for GLACIER MF28E/G IVT.

| 53-27 PTC XMLE 134

Perform GLACIER Switchover to Orbiter power and IVT on OIS Channel 174.

NOTE

In the following steps, XME1 and XME2 are NASA engineers.

| 53-28 XMLE XME1 174

MUP PANEL (ML85E)

Verify Orbiter power cable P/N V213-773918-001 labeled “A/E Payload DC Pwr MUP J11 (GLACIER Pwr J1/MF28E/G)” is connected to DC power connector J11 and the other end is routed correctly to support IVT.

| 53-29 PTC CDR 174

PANEL ML86B
ROW E
 MN B
 MAR 1 CB - OPEN (OUT)

| 53-30 XMLE XME1 174

GLACIER

Verify GLACIER “POWER CB” - OPEN (OUT)

Verify/Set GLACIER “BATTERY” SW - OFF

NOTE

GLACIER battery SW will be in the “OFF” position during all operations. The battery SW light will not be illuminated.

| 53-31 XMLE XME1 174

GLACIER

Connect Orbiter power cable (P/N V213-773918-001) to GLACIER
“POWER J1” connector.

OK to Connect XME1: _____

N: _____

Connect OK XME1: _____

N: _____

| 53-32 PTC CDR 174

PANEL ML86B

ROW E

MN B

MAR 1 CB - CLOSED (IN)

| 53-33 XMLE XME1 174

GLACIER

1. **Verify/Set** GLACIER “BATTERY” SW - OFF
2. “POWER CB” - CLOSED (IN)
3. **Record**

Time: _____ (Local)

NOTE

Noted requirement satisfied by the following steps annotated with OMRS code.

OMRS P1558EB.100

| 53-34 XMLE XME1 174

GLACIER

1. **Verify** power LED (“POWER CB” light) illuminated
2. **Verify** display active.

OMRS P1558EB.100

53-35 XMLE

Noted requirement complete.

OMRSD [P1558EB.100](#)

NOTE

GLACIER system initialization may take up to 3 minutes. Initialization complete once line one of display reads "HOME" or "ERROR PENDING". May take four minutes longer for line three to read "SET POINT".

NOTE

Perform the following four steps if the display reads "ERROR PENDING".

| 53-36 XMLE XME1 174

GLACIER

Press right button (EXIT) until "HOME" appears.

Not Performed: _____

NOTE

In the event of an error, Line 2 of the GLACIER display will include the error message (such as “current range”, “voltage range”, or “hardware error”) and the error event (“X/Y” where X and Y are numbers).

| 53-37 XMLE XME1 174

GLACIER

Perform the following:

1. **Press** left button (MENU) once to access MAIN MENU QUICK STATUS 1/5 display.
2. **Press** left button (NEXT) twice to access ERROR HANDLING 3/5 display.
3. **Press** center button (SELECT) once.
4. **Press** left button (PEND) once.
5. **Record** the following information:

Time: _____ (Local)

Line 2: _____ (Error Message
and Error Event)

Line 3: _____ (Error Status)

|

NOTE

Perform substeps 6 thru 9 if error status is "INACTIVE/PENDING" .

6. **Press** center button (SELECT) once.
7. **Press** left button (RESET) once.
8. **Verify** line 3 reads: "INACTIVE/ACK"
9. **Press** left button (NEXT) once.

Substeps 6-9 Not Performed: _____

NOTE

Perform substeps 10 thru 12 if error status is "ACTIVE/PENDING".

10. **Press** center button (SELECT) once.
11. **Press** center button (ACK) once
12. **Press** left button (NEXT) once.

Substeps 10-12 Not Performed: _____

Entire Step Not Performed: _____

NOTE

If more than one error event is present (anything but 1/1 indicates multiple events present), repeat substeps 5-12 and record number of additional iterations below in Table 53-3.

| 53-38 XMLE XME1 174

GLACIER

Record additional iterations of substeps 5-12 of previous step and data below in Table 53-3.

Not Performed: _____

Table 53-3			
Iteration	Time (Local)	Line 2 (Error Message and Error Event)	Line 3 (Error Status)

| 53-39 XMLE XME1 174

GLACIER

Press right button (EXIT) until “HOME” display appears.

Not Performed: _____

| 53-40 XMLE XME1 174

GLACIER

1. **Verify** display line 1: "HOME"
2. **Verify** display line 3: "SET POINT"
3. **Verify** cryo-cooler(s) - turned on (audible)

| 53-41 XMLE XME1 174

GLACIER

Record from GLACIER display (BD):

Curr Temp: _____ deg C

GPS: _____ : _____ : _____

|

NOTE

Wait at least 10 minutes and then proceed with the following step.

| 53-42

XMLE XME1 174

GLACIER

Perform the following:

1. **Press** left (MENU) button once to access main menu quick status 1/5 display.
2. **Press** left (NEXT) button once to access main menu status 2/5 display.
3. **Press** center (SELECT) button once to access status Cryogenic 1/3.
4. **Press** center (SELECT) button once to access Cryogenic Cooler 1 stroke 1/23 and record cooler 1 Stroke value in Table 53-4.
5. **Press** center (NEXT) button once to access Cryogenic Cooler 2 stroke 2/23 and record cooler 2 Stroke value in Table 53-4.
6. **Press** center (NEXT) button once to access Cryogenic HX 1 3/23 and record HX 1 value in Table 53-4.
7. **Press** center (NEXT) button once to access Cryogenic HX 2 4/23 and record HX 2 value in Table 53-4.
8. **Press** center (NEXT) button once to access Cold Head 1A 5/23 and record Cold Head 1A value in Table 53-4.
9. **Press** center (NEXT) button once to access Cold Head 1B 6/23 and record Cold Head 1B value in table 53-4.
10. **Press** center (NEXT) button once to access Cold Head 2A 7/23 and record Cold Head 2A value in Table 53-4.
11. **Press** center (NEXT) button once to access Cold Head 2B 8/23 and record Cold Head 2B value in Table 53-4.

12. **Press** center (NEXT) button 11 times to access Cryogenic Heater 1 power 19/23 and record heater 1 Power value in Table 53-4.
13. **Press** center (NEXT) button once to access Cryogenic Heater 2 power 20/23 and record heater 2 Power value in Table 53-4.
14. **Press** right (EXIT) button once to access status Cryogenic 1/3 display.
15. **Press** left (NEXT) button once to access status Resources 2/3.
16. **Press** center (SELECT) once to access Resources AAA Outlet 1/10.
17. **Press** center (NEXT) button 6 times to access Resources Main Current 7/10 and record Main Current value in table 53-4.
18. **Press** center (NEXT) button once to access Resources Main Voltage 8/10 and record Main Voltage value in table 53-4.
19. **Press** right (exit) button until “HOME” is displayed.

Parameter	Value	Comment
Cooler 1 Stroke		
Cooler 2 Stroke		
HX 1		
HX 2		
Cold Head 1A		
Cold Head 1B		
Cold Head 2A		
Cold Head 2B		
Heater 1 Power		
Heater 2 Power		
Main Current		
Main Voltage		

| 53-43 XMLE XME1 174

GLACIER

Record from GLACIER display (BD)

Curr Temp: _____ deg C

GPS: _____: _____: _____

53-44 XMLE XME1 174

GLACIER

Perform the following:

1. **Press** left button (MENU) once and verify the following appears:
"MAIN MENU"
"QUICK STATUS 1/5"
2. **Press** left button (NEXT) three times and verify the following appears:
"MAIN MENU"
"SETUP 4/5"
3. **Press** center button (SELECT) once and verify the following appears:
"SETUP"
"TEMP CONTROL 1/3"

4. **Press** center button (SELECT) once and verify the following appears:
“TEMP CONTROL”
“SET POINT TEMP 1/18”
5. **Press** left button (NEXT) once and verify the following appears:
“TEMP CONTROL”
“CONTROL MODE 2/18”
6. **Press** center button (SELECT) once and verify the following appears:
“CONTROL MODE”
“SET POINT”
7. **Press** left button (NEXT) twice and verify the following appears:
“CONTROL MODE”
“IDLE”
8. **Press** center (APPLY) once.
9. **Press** left (APPLY) once.
10. **Confirm** New Control Mode = IDLE.
11. **Press** right (EXIT) button until “HOME” is displayed.
12. GLACIER
Verify display line 1: “HOME”
13. GLACIER
Verify display line 3: “IDLE MODE”

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53-45 XMLE XME1 174

GLACIER

Verify/Set GLACIER "BATTERY" SW - OFF

| 53-46 XML E XME1 174

GLACIER

Perform the following:

1. **Press** left button (MENU) once and verify the following appears:
“MAIN MENU”
“QUICK STATUS 1/5”

2. **Press** left button (NEXT) four times and verify the following appears:
“MAIN MENU”
“SHUTDOWN 5/5”

3. **Press** center button (SELECT) once and verify the following appears:
“SHUTDOWN”
“SHUTDOWN 1/2”

4. **Press** center button (SELECT) once and verify the following appears:
“CONFIRM SHUTDOWN”
“SHUTDOWN”

5. **Press** left button (APPLY) once and verify the following appears:
“GLACIER”
“SYSTEM”
“SHUTTING DOWN”
“PLEASE WAIT...”

|

6. **Verify** the following appears:

“GLACIER”
“SHUTDOWN COMPLETE”
“TURN POWER OFF”

CAUTION

Wait 5 seconds before proceeding with substep 7 below.

NOTE

Power CB light can take up to 2 minutes to fully extinguish after the power CB is pulled out.

7. **Pull** “POWER CB” - OPEN (OUT)

53-47 **PTC CDR 174**

PANEL ML86B

ROW E
MN B
MAR1 CB - OPEN (OUT)

| 53-48 **XMLE XME1 174**

GLACIER

Verify with FCE that the Orbiter power cable will not be routed over the GLACIER door.

| 53-49 **XMLE PTC 174**

GLACIER IVT is complete.

***** End of GLACIER Interface Verification Test *****

NOTE

In the following steps, XME1 and XME2 are NASA engineers.

| 53-53 XMLE XME1 174

PANEL (MO63P)

| **Verify** Orbiter power cable P/N 10108-10082-05 labeled “A/E Payload DC Pwr MO63P J4 (NLP-VACCINE/CGBA DC JUMPER/MF71E)” is connected to DC power connector J4 and other end is routed correctly to support IVT.

| 53-54 PTC CDR 174

PANEL MO63P

| POWER SELECT SW (J2/J3/J4) – 10A
J4 SW - OFF
CB4/J4 - OPEN (OUT)

CAUTION

Power interruptions of greater than 15 minutes may result in damage to temperature sensitive samples.

| 53-55 **XMLE XME1 174**

NLP-VACCINE/CGBA (MF71E)
On Keypad:

- Press "MENU"**
- Press "7"**
- Press "ENTER"**
- Press "1"**
- Press "ENTER"**

NOTE

Wait approximately 60 seconds until message "Ok to power down" appears before proceeding.

| 53-56 **XMLE XME1 174**

NLP-VACCINE/CGBA (MF71E)

- 1. Set "MAIN POWER" CB – OPEN (OUT)**
- 2. Record:**

GMT: ____/____/____

| 53-57 **XMLE XME2 174**

Power control box for NLP-VACCINE/CGBA

- 1. Set Run/Test SW - OFF (CENTER)**
- 2. Record:**

Battery Run Time: _____

| 53-58 XMLE XME1 174

Disconnect power control box cable, P/N 82K07338-6, connector from DC jumper P/N 528-21123-1.

OK to Disconnect: XME1: _____

N: _____

Disconnect OK XME1: _____

N: _____

| 53-59 XMLE XME1 174

Connect Orbiter power cable, P/N 10108-10082-05, to DC Jumper P/N 528-21123-1.

OK to Connect: XME1: _____

N: _____

Connect OK XME1: _____

N: _____

| 53-60 PTC CDR 174

Panel MO63P

CB4/J4 - CLOSED (IN)
J4 SW – ON

| 53-61 XMLE XME1 174

NLP-VACCINE/CGBA (MF71E)

1. **Set** “MAIN POWER” CB – CLOSED (IN)

2. **Record:**

GMT: _____/_____/_____

Time without power: _____ (Min)

NOTE

Noted requirement satisfied by the following step annotated with OMRS code.

OMRS P1558EB.300

| 53-62 XMLE XME1 174

NLP-VACCINE/CGBA (MF71E)

1. **Verify** “MAIN POWER” CB-CLOSED (IN)

2. **Verify** display on

OMRS P1558EB.300

53-63 XMLE

Noted requirement complete.

OMRSD [P1558EB.300](#)

NOTE

Wait approximately 60 seconds before proceeding to allow the boot-up sequence to complete.

In the next step, "X" on the LCD represents the temperature, and date/time is on the bottom line.

| 53-64 XMLE XME1 174

NLP-VACCINE/CGBA (MF71E)

Verify LCD reads as follows:

"EET DDD/HH:MM" or "WAITING FOR LAUNCH"

"TEMP XX.X C"

"SET_TEMP XX.X C"

"DAY MONTH YEAR HH:MM:SS"

| 53-65 XMLE XME1 174

NLP-VACCINE/CGBA (MF71E)

Record Temp from LCD:

Temp: _____ deg C

| 53-66 XMLE XME1 174

NLP-VACCINE/CGBA Power Switchover and IVT are complete.

***** End of NLP-VACCINE/CGBA Interface Verification Test *****

NOTE

Perform next step if all payload IVTs are complete.

53-67 PTC OTC 132

Middeck Payload IVTs are complete. CDR and CMQC support are released.

Not Performed: _____

MICRO 4/CGBA Interface Verification Test

NOTE

Perform this option if MICRO 4/CGBA is currently installed and not powered from a previous launch attempt.

MICRO 4/CGBA Interface Verification Test Not Performed: _____

53-68 PTC OTC 132

Request CDR and CMQC support on OIS CH 174 for MA16D MICRO 4/CGBA IVT.

53-69 PTC XMLE 134

Perform MICRO 4/CGBA Switchover to Orbiter power and IVT on OIS Channel 174.

NOTE

In the following steps, XME1 and XME2 are NASA engineers.

53-70 XMLE XME1 174

Panel ML85E (MUP)

Verify Orbiter power cable P/N 10108-10082-07 labeled "A/E Payload DC Pwr MUP-J22 (MICRO4/CGBA DC JUMPER/MA 16D)" is connected to MUP DC power connector J22 and other end is routed correctly to support IVT.

53-71 PTC CDR 174

PANEL ML85E (MUP)

SW 4 - OFF
CB 4 - OPEN (OUT)

CAUTION

Power interruptions greater than 15 minutes may result in damage to temperature sensitive samples.

53-72 XMLE XME1 174

MICRO 4/CGBA (MA16D)
On Keypad:

Press "MENU"
Press "7"
Press "ENTER"
Press "1"
Press "ENTER"

NOTE

Wait approximately 60 seconds until message "OK to power down" appears before proceeding.

53-73 XMLE XME1 174

MICRO 4/CGBA (MA16D)

1. Set "MAIN POWER" CB - OPEN (OUT)

2. Record:

GMT: ____/____/____

53-74 XMLE XME2 174

Power Control Box for MICRO 4/CGBA

1. Set Run/Test SW - OFF (CENTER)

2. Record:

Battery Run Time: _____

53-75 XMLE XME1 174

Disconnect power control box cable, P/N 82K07338-6, connector from DC jumper P/N 528-21123-1.

OK to Disconnect: XME1: _____

N: _____

Disconnect OK: XME1: _____

N: _____

53-76 XMLE XME1 174

Connect Orbiter power cable, P/N 10108-10082-07, to DC Jumper P/N 528-21123-1.

OK to Connect: XME1: _____

N: _____

Connect OK: XME1: _____

N: _____

53-77 PTC CDR 174

Panel ML85E (MUP)

CB4 - CLOSED (IN)
SW 4 - ON

53-78 XMLE XME1 174

MICRO 4/CGBA (MA16D)

1. Set "MAIN POWER" CB - CLOSED (IN)

2. Record:

GMT: _____/_____/_____

Time without power: _____ (Min)

NOTE

Noted requirement satisfied by the following step annotated with OMRS code.

OMRS P1558EB.400

53-79 XMLE XME1 174

MICRO 4/CGBA (MA16D)

1. Verify "MAIN POWER" CB-CLOSED (IN)

2. Verify display on

OMRS P1558EB.400

53-80 XMLE

Noted requirement complete.

OMRSD P1558EB.400

NOTE

Wait approximately 60 seconds before proceeding to allow the boot-up sequence to complete.

NOTE

In the next step, "X" on the LCD represents the temperature, and the date/time is on the bottom line.

53-81 **XMLE** **XME1** **174**

MICRO 4/CGBA (MA16D)

Verify LCD reads as follows:

"EET DDD/HH:MM" or "WAITING FOR LAUNCH"

"TEMP XX.X C"

"SET TEMP XX.X C"

"DAY MONTH YEAR HH:MM:SS"

53-82 **XMLE** **XME1** **174**

MICRO 4/CGBA (MA16D)

Record Temp from LCD

Temp: _____deg C

53-83 XMLE XME1 174

MICRO 4/CGBA Power Switchover and IVT are complete.

***** End of MICRO 4/CGBA Interface Verification Test*****

NOTE

Perform next step if all payload IVTs are complete.

53-84 PTC OTC 132

Middeck Payload IVTs are complete. CDR and CMQC support are released.

Not Performed: _____

CBTM/AEM Interface Verification Test

NOTE

Do not perform the following option if CBTM/AEM is currently installed and powered from a previous launch attempt.

CBTM/AEM Interface Verification Test Not Performed: _____

53-85 PTC OTC 132

Request CDR and CMQC support on OIS CH 174 for CBTM/AEM IVT.

53-86 PTC XMLE 134

Perform CBTM/AEM Switchover to Orbiter power and IVT on OIS Channel 174.

NOTE

In the following steps, XME1 and XME2 are NASA Engineers.

53-87 XMLE XME1 174

Panel MO63P

Verify Orbiter “W” power cable P/N SED39122456-302 labeled “A/E Payload DC W PWR MO63P J3 (AEM-1 PWR/MF43K)(AEM-2 PWR/MF57M)(AEM-3 PWR/MF57H)” is connected to DC power connector J3 and the other end is routed correctly to support IVT.

53-88 PTC CDR 174

PANEL MO63P
POWER SELECT SW (FOR J2/J3/J4) - 10A
J3 SW - OFF
CB3/J3 - OPEN (OUT)

CAUTION
Power interruptions greater than 15 minutes may result in damage to internal science.

53-89 XMLE XME1 174

AEM-1 (MF43K)

Fans SW - OFF (DOWN) Lights
SW - OFF (CENTER) Main
Breaker CB - OPEN (OUT)

Record:

GMT: _____/_____/_____

53-90 XMLE XME1 174

AEM-2 (MF57M)

Fans SW - OFF (DOWN) Lights
SW - OFF (CENTER) Main
Breaker CB - OPEN (OUT)

Record:

GMT: _____/_____/_____

53-91 XMLE XME1 174

AEM-3 (MF57H)

Fans SW - OFF (DOWN) Lights
SW - OFF (CENTER) Main
Breaker CB - OPEN (OUT)

Record:

GMT: _____/_____/_____

53-92 XMLE XME2 174

Power Control Box for AEM-1 (MF43K)
Run/Test SW - OFF (CENTER)

Record:

Battery Run Time: _____

53-93 XMLE XME2 174

Power Control Box for AEM-2 (MF57M)
Run/Test SW - OFF (CENTER)

Record:

Battery Run Time: _____

53-94 XMLE XME1 174

Power Control Box for AEM-3 (MF57H)
Run/Test SW - OFF (CENTER)

Record:

Battery Run Time: _____

53-95 XMLE XME1 174

AEM-1 (MF43K)

Disconnect Power Control Box cable, P/N 82K07338-6, connector P2 from
AEM main power connector J1.

OK to Disconnect: XME1: _____

N: _____

Disconnect OK: XME1: _____

N: _____

53-96 XMLE XME1 174

AEM-2 (MF57M)

Disconnect Power Control Box cable, P/N 82K07338-6, connector P2 from
AEM main power connector J1.

OK to Disconnect: XME1: _____

N: _____

Disconnect OK: XME1: _____

N: _____

53-97 XMLE XME1 174

AEM-3 (MF57H)

Disconnect Power Control Box cable, P/N 82K07338-6, connector P2 from
AEM main power connector J1.

OK to Disconnect: XME1: _____

N: _____

Disconnect OK: XME1: _____

N: _____

53-98 XMLE XME1 174

AEM-1 (MF43K)

Connect J1 connector of DC “W” power cable, P/N SED39122456-302, to
AEM main power connector J1..

OK to connect: XME1: _____

N: _____

Connect OK: XME1: _____

N: _____

53-99 XMLE XME1 174

AEM-2 (MF57M)

Connect J2 connector of DC “W” power cable, P/N SED39122456-302, to
AEM main power connector J1.

OK to connect: XME1: _____

N: _____

Connect OK: XME1: _____

N: _____

53-100 XMLE XME1 174

AEM-3 (MF57H)

Connect J3 connector of DC “W” power cable, P/N SED39122456-302, to AEM main power connector J1.

OK to connect: XME1: _____

N: _____

Connect OK: XME1: _____

N: _____

53-101 PTC CDR 174

Panel MO63P
CB3/J3 - CLOSED (IN)
J3 SW - ON

53-102 XMLE XME1 174

AEM-1 (MF43K)

Main Breaker CB - CLOSED (IN)
Fans SW - ON (UP)
Lights SW - AUTO (DOWN)

Record:

GMT: _____ / _____ / _____

Payload Timer GMT: _____ (BD)

Time without power: _____ (Min)

53-103 XMLE XME1 174

AEM-2 (MF57M)

Main Breaker CB - CLOSED (IN)

Fans SW - ON (UP)

Lights SW - AUTO (DOWN)

Record:

GMT: _____ / _____ / _____

Payload Timer GMT: _____ (BD)

Time without power: _____ (Min)

53-104 XMLE XME1 174

AEM-3 (MF57H)

Main Breaker CB - CLOSED (IN)

Fans SW - ON (UP)

Lights SW - AUTO (DOWN)

Record:

GMT: _____ / _____ / _____

Payload Timer GMT: _____ (BD)

Time without power: _____ (Min)

NOTE

Noted requirement satisfied by the following step annotated with OMRS code.

OMRS P1558EB.500

53-105 XMLE XME1 174

AEM-1 (MF43K)

Verify:

Main Power CB - CLOSED (IN)

Fans A & D CB - CLOSED (IN)

Fans B & C CB - CLOSED (IN)

Fans SW - ON (UP)

Fans - Running (Audible or air flow detected at inlet/outlet)

OMRS P1558EB.500

53-106 XMLE

Noted requirement complete.

OMRSD [P1558EB.500](#)

53-107 XMLE XME1 174

AEM-1 (MF43K)

Verify:

Pump CB - OPEN (OUT)

Two Fans Lights - ILLUMINATED

Lights Breaker A & D - OPEN (OUT)

Lights Breaker B & C - CLOSED (IN)

Lights SW - AUTO (DOWN)

Lights A & D indicator - NOT ILLUMINATED

Lights B & C indicator - Record Status _____ (BD)
(ILLUM/NOT ILLUM)

NOTE

Display should have format of "OXYHH:MM" where X is N or F, and Y is N, D, or blank, and HH:MM is a time.

53-108 XMLE XME1 174

AEM-1 (MF43K)

Record Digital Display Reading _____ (BD)

Depress Menu Button

Record Digital Display Reading _____ (BD)

Depress Menu Button

Record Digital Display Reading _____ (BD)

Depress Menu Button

NOTE

Noted requirement satisfied by the following step annotated with OMRS code.

OMRS P1558EB.600

53-109 XMLE XME1 174

AEM-2 (MF57M)

Verify:

Main Power CB - CLOSED (IN)

Fans A & D CB - CLOSED (IN)

Fans B & C CB - CLOSED (IN)

Fans SW - ON (UP)

Fans - Running (Audible or air flow detected at inlet/outlet)

OMRS P1558EB.600

53-110 XMLE

Noted requirement complete.

OMRSD [P1558EB.600](#)

NOTE

Noted requirement satisfied by the following step annotated with OMRS code.

OMRS P1558EB.700

53-113 XMLE XME1 174

AEM-3 (MF57H)

Verify:

Main Power CB - CLOSED (IN)

Fans A & D CB - CLOSED (IN)

Fans B & C CB - CLOSED (IN)

Fans SW - ON (UP)

Fans - Running (Audible or air flow detected at inlet/outlet)

OMRS P1558EB.700

53-114 XMLE

Noted requirement complete.

OMRSD [P1558EB.700](#)

53-115 XMLE XME1 174

AEM-3 (MF57H)

Verify:

Pump CB - OPEN (OUT)

Two Fans Lights - ILLUMINATED

Lights Breaker A & D - OPEN (OUT)

Lights Breaker B & C - CLOSED (IN)

Lights SW - AUTO (DOWN)

Lights A & D indicator - NOT ILLUMINATED

Lights B & C indicator - Record Status _____ (BD)
(ILLUM/NOT ILLUM)

53-116 XMLE XME1 174

AEM-3 (MF57H)

Record Digital Display Reading _____ (BD)

Depress Menu Button

Record Digital Display Reading _____ (BD)

Depress Menu Button

Record Digital Display Reading _____ (BD)

Depress Menu Button

NOTE

Perform the following three steps if the PD directs the reset of the AEM timer.
Depressing the minute button will advance the display in 15 minute increments.

53-117 XMLE XME1 174

AEM-1 (MF43K)

1. **Record** new timer “D” setting provided by PD
 _____D_____:(BD)
2. **Depress** menu button until 3rd digit in timer display reads “D”.
3. **Depress** hours button until timer displays correct hours.
4. **Depress** minutes button until timer displays correct minutes.
5. **Record** new timer “N” settings provided by PD.
 _____N_____:(BD)
6. **Depress** menu button until 3rd digit in timer display reads “N”.
7. **Depress** hours button until timer displays correct hours.
8. **Depress** minutes button until timer displays correct minutes.
9. **Depress** menu button until timer display reads “OX HH:MM” (3rd
 digit is blank)

Not Performed:_____

53-118 XMLLE XME1 174

AEM-2 (MF57M)

1. **Record** new timer “D” setting provided by PD
 _____D _____: _____(BD)
2. **Depress** menu button until 3rd digit in timer display reads “D”.
3. **Depress** hours button until timer displays correct hours.
4. **Depress** minutes button until timer displays correct minutes.
5. **Record** new timer “N” settings provided by PD.
 _____N _____: _____(BD)
6. **Depress** menu button until 3rd digit in timer display reads “N”.
7. **Depress** hours button until timer displays correct hours.
8. **Depress** minutes button until timer displays correct minutes.
9. **Depress** menu button until timer display reads “OX HH:MM” (3rd
 digit is blank)

Not Performed: _____

53-119 XMLE XME1 174

AEM-3 (MF57H)

1. **Record** new timer “D” setting provided by PD
_____D_____:_____(BD)
2. **Depress** menu button until 3rd digit in timer display reads “D”.
3. **Depress** hours button until timer displays correct hours.
4. **Depress** minutes button until timer displays correct minutes.
5. **Record** new timer “N” settings provided by PD.
_____N_____:_____(BD)
6. **Depress** menu button until 3rd digit in timer display reads “N”.
7. **Depress** hours button until timer displays correct hours.
8. **Depress** minutes button until timer displays correct minutes.
9. **Depress** menu button until timer display reads “OX HH:MM” (3rd digit is blank)

Not Performed: _____

53-120 XMLE XME1 174

CBTM/AEM Power Switchover and IVT are complete.

*****End of CBTM/AEM Interface Verification Test*****

NOTE

Perform the following step if all payload IVTs are complete.

53-121 PTC OTC 132

Middeck payload IVTs are complete. CDR and CMQC support are released.

Not Performed: _____

STL Interface Verification Test

NOTE

Do not perform the following option if STL is currently installed and powered from a previous launch attempt.

STL Interface Verification Test Not Performed: _____

53-122 PTC OTC 132

Request CDR and CMQC support on OIS Ch 174 for STL IVT.

53-123 PTC XMLE 134

Perform STL switchover to Orbiter power and IVT on OIS Channel 174.

NOTE

In the following steps, XME1 and XME2 are NASA engineers.

53-124 XMLE XME1 174

Panel MO63P

Verify Orbiter power cable P/N 10108-10082-05 labeled “A/E Payload DC PWR MO63P J6 (STL PWR J1/MA9G)” is connected to DC power connector J6 and the other end is routed correctly to support IVT.

53-125 PTC CDR 174

PANEL MO63P
POWER SELECT SW (FOR J5/J6) - 10A
J6 SW - OFF
CB6/J6 - OPEN (OUT)

CAUTION
Power interruptions greater than 15 minutes may result in damage to temperature sensitive samples.

53-126 XMLE XME1 174

STL
Power SW - OFF
Record:

GMT: _____/_____/_____

53-127 XMLE XME2 174

Power Control Box for STL
Run/Test SW - OFF (CENTER)
Record:

Battery Run Time: _____

53-128 XMLE XME1 174

STL

Disconnect Power Control Box cable, P/N 82K07338-6, connector P2 from STL connector J1.

OK to Disconnect: XME1: _____

N: _____

Disconnect OK: XME1: _____

N: _____

53-129 XMLE XME1 174

STL

Connect Orbiter power cable, P/N 10108-10082-05, to STL connector J1.

OK to Connect: XME1: _____

N: _____

Connect OK: XME1: _____

N: _____

53-130 PTC CDR 174

PANEL MO63P
CB6/J6 - CLOSED (IN)
J6 SW - ON

53-131 XMLE XME1 174

STL

Power SW - ON

Record:

GMT: _____ / _____ / _____

Time without power: _____ (Min)

NOTE

STL LCD will display a series of status messages when powered on.

NOTE

Noted requirement satisfied by the following step annotated with OMRS code.

OMRS P1558EB.200

53-132 **XMLE** **XME1** **174**

STL

Verify power SW - ON

Verify LCD display active

Verify power LED indicator - GREEN

OMRS P1558EB.200

53-133 **XMLE**

Noted requirement complete.

OMRSD [P1558EB.200](#)

53-134 XMLE XME1 174

STL Power Switchover and IVT are complete.

*****End of STL Interface Verification Test*****

NOTE

Perform the following step if all payload IVTs are complete.

53-135 PTC OTC 132

Middeck payload IVTs are complete. CDR and CMQC support are released.

Not Performed: _____

***** End of Operation 53 *****

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OPERATION 54 Potable/Supply Water Tank A Drain Options

Shop: **FWD**

Cntrl Rm Console: **C6**

OPR: **FCP**

Zone: **122**

Hazard (Y/N): **N**

Duration (Hrs): **1.0**

NOTE

This operation is a contingency only and is to be performed to ensure proper ullage to meet targeted liftoff quantity for this mission.

Operation (Not Performed:)

NOTE

This operation contains the following options:

Option A - Initiate Water Drain

Option B - Tank A Quantity Adjustment During Continuous Drain

Option C - Terminate Water Drain

NOTE

Drain options should be repeated as necessary to support OMIs S0007.200 and S0007.300 contingencies. Record the data and verification of the performance of these steps in Table 54-1 - Potable/Supply Water Tank A Drain. Not perform the options that are not used.

NOTE

SPOC Quality will not be present if this operation is being performed by the Closeout Crew. In this case, record NASA QC stamp number in place of SPOC QC.

54-1 OTC CFCP 132
 *PAD *PAD
 OMTO
 PQCG

Perform Potable/Supply Water Tank A Drain on OIS Channel 153.

Option A - Initiate Water Drain

NOTE
Perform this option as directed by the controlling sequence.

(Option A Not Performed:)

54-2 CFCP ASP 153

PANEL ML26C
SUPPLY H₂O GN₂
TK VENT VLV - PRESS (UP)
TK A SUPPLY VLV - OPEN (UP)

54-3 CFCP ASP 153

PANEL ML86B
ROW A
MN C
SUPPLY H₂O
GALLEY SUPPLY CB - CLOSE

54-4 CFCP

CRT (VAG12 PG-B)
VERIFY POSITIVE PRESSURE ON POTABLE WATER SYSTEM.
RECORD P0430 (_____) PSIA NLT 20
OMRS (general) [V62GEN.045](#)

54-5 CFCP ASP 153

PANEL R11
SUPPLY H₂O
GALLEY SPLY VLV SW - OPEN (15 SEC MAX)
UNTIL GALLEY SPLY TB
OPEN, THEN RELEASE.

54-6 CFCP

CRT (VAG12 PG-B)
SUPPLY H₂O
TK A INLET
LV1
POP ON

GALLEY SUPPLY VLV
LV 9
POP ON

54-7 CFCP

CRT (VAG12 PG-B)
RECORD

TK A QTY (_____) PCT BD

54-8 CFCP OMTO 153

TP4 Drain Hose Assembly
(consists of L070-000101-001 and -002 Assemblies):

Route flexhose to create a highpoint (above hot water tank) to preclude air ingestion back into galley during drain operations.

(T:)

54-9 CFCP OMTO 153

IF for Scrub Turnaround only
AND configuring for continuous drain (Tank A isolated and all fuel cell water continuously drained through TP4),

THEN perform:
TP4 Drain Hose Assembly

Connect tygon potable drain hose assembly to end.

Tighten wrench-tight.

(Not Performed:)

(T:)

54-10 CFCP OMT0 153

IF for Scrub Turnaround only
AND configuring for continuous drain (Tank A isolated and all fuel cell water continuously drained through TP4),

THEN perform:
Tygon Drain Hose

Route tygon drain from Whiteroom across OAA to drain point on FSS.

Secure drain hose (to preclude tripping hazard) using tie-wraps.

(Not Performed:)
(T:)

NOTE

The following two steps initiate drain.

If not configured for continuous drain, MV1 may be closed/opened if required to empty drain bucket.

54-11 CFCP OMT0 153

TP4 Drain Hose Assembly

1. MV1 - OPEN
2. **Verify** drain hose assembly configured to drain bucket or continuous drain.
3. **Verify** ready to initiate water flow.

(T:)

54-12 CFCP OMT0 153

(OKT:)

Galley

Remove cap from TP4, clean the mating QDs with 70-percent aqueous ethyl alcohol sterile cotton pads, allow the alcohol to evaporate prior to connecting, and connect TP4 drain hose assembly.

(T:)

54-13 CFCP OMTO 153

TP4 Drain Hose Assembly

Verify water flow.

(T:)

54-14 CFCP ASP 153

IF CONFIGURING FOR CONTINUOUS DRAIN (ISOLATES
TANK A) ,

THEN PERFORM:
PANEL R11

SUPPLY H₂O

TK A INLET SW - CLOSE (15 SEC MAX)
UNTIL TK A INLET TB CL,
THEN RELEASE

(Not Performed:)

54-15 CFCP

IF CONFIGURING FOR CONTINUOUS DRAIN (ISOLATES
TANK A) ,

THEN PERFORM:
CRT (VAG12 PG-B)
LV1
POP OFF

(Not Performed:)

***** End of Option A - Initiate Water Drain *****

Option B - Tank A Quantity Adjustment During Continuous Drain

NOTE

Perform this option to drain Tank A to the T-3H target quantity. The target quantity is mission dependent.

(Option B Not Performed:)

NOTE

For Scrub Turnaround operations, the system will remain in continuous drain until the T-3H Hold point.

NOTE

Tank A quantity adjustment may be performed anytime during continuous drain, but must be completed prior to Pad clear for ET Cryo Load.

54-16

CFCP

Record desired T-3H Tank A quantity:

Tank A target qty (____) pct

54-17

CFCP

ASP

153

PANEL R11

SUPPLY H₂O

TK A INLET SW - OPEN (15 SEC MAX) UNTIL

TK A INLET TB OP, THEN RELEASE

RECORD TK A QTY (____) PCT

TIME (____) GMT

54-18

CFCP

CRT (VAG12)

LV1 POP ON

NOTE

When Tank A quantity is within +/-3 percent of target value, perform the next step to isolate Tank A and return to Continuous Drain mode.

54-19 CFCP ASP 153

PANEL R11

SUPPLY H₂O

TK A INLET SW - CLOSE (15 SEC MAX) UNTIL
TK A INLET TB CL, THEN RELEASE

54-20 CFCP

CRT (VAG12 PG-B)
LV1 POP OFF

RECORD TK A QTY (_____) PCT BD

TIME (_____) GMT

54-21 CFCP

CRT (VAG12 PG-B)

1. **RETRIEVE** DRAIN PLOT OF TANK A. PLOT SHOULD CONSIST OF TANK A QUANTITY (V62Q0410A1), SUPPLY - H₂O STORAGE INLET PRESSURE (V62P0430A1), AND SYS 1 N₂/H₂O TANK PRESS (V61P2307A1).
2. **REVIEW** DRAIN PLOT OF TANK A. LOOK FOR FLOW RATE DECREASE WITHOUT A CORRESPONDING CHANGE IN DELTA PRESSURE ACROSS THE BELLOWS (INCLUDING BELLOWS SPRING FORCE), WHICH COULD INDICATE A STICKY BELLOWS AND SHOULD BE EVALUATED.

***** End of Option B - Tank A Quantity Adjustment During Continuous Drain *****

Option C - Terminate Water Drain

NOTE
Perform this option as directed by the controlling sequence.

(Option C Not Performed:)

Terminate Continuous Drain

NOTE
Perform this option to terminate continuous drain when no longer required.

Terminate Continuous Drain (Not Performed:)

54-22 CFCP ASP 153

PANEL R11

SUPPLY H₂O

TK A INLET SW - OPEN (15 SEC MAX) UNTIL
TK A INLET TB OP, THEN RELEASE

54-23 CFCP

CRT (VAG12 PG-B)
LV1
POP ON

54-24 CFCP OMT0 153

TP4 Drain Hose Assembly

1. MV1 - CLOSE
2. **Disconnect** tygon drain hose assembly (at KC126C4 union)
 from flexhose assembly.
3. **Bag and seal** open fittings.

(T:)

54-25 CFCP OMTO 153

Tygon Drain Hose

Remove tygon drain hose from OAA and stow.

(T:)

***** End of Terminate Continuous Drain *****

NOTE

Final Tank A quantity shall be determined by FC/PRSD Engineering.

NOTE

MV-1 on the TP4 drain hose assembly may be opened and closed as needed during drain.

54-26 CFCP OMTO 153

IF the continuous drain option was not utilized,

THEN perform the following to terminate Tank A drain:

TP4 Drain Hose Assembly

1. When Tank A quantity reaches desired quantity (per CFCP direction) -

MV-1 - CLOSE (CW)

2. **Record:**

Stop time (_____) GMT (BD)

(Not Performed:)

(T:)

54-27 CFCP

CRT (VAG12 PG-B)

RECORD TK A QTY (____) PCT BD

P0430 (____) PSIA 22.7-36.7

OMRS (general) [V62GEN.100-1R](#)

54-28 CFCP OMTO 153

(OKQw:)

Galley

1. **Disconnect** TP4 drain hose assembly potable water sampling apparatus from TP4.
2. **Inspect** TP4 QD sealing surface and cap O-ring for damage and no visible leakage in 15 minutes.

OMRS (general) [V62GEN.080](#)

OMRS (general) [V62GEN.100-1R](#)

3. **Install** cap on TP4.

(TQw:)

54-29 CFCP

IF CONTINUOUS DRAIN OPTION IS NOT UTILIZED,

THEN PERFORM:

CRT (VAG12 PG-B)

1. **RETRIEVE** DRAIN PLOT OF TANK A. PLOT SHOULD CONSIST OF TANK A QUANTITY (V62Q0410A1), SUPPLY - H₂O STORAGE INLET PRESSURE (V62P0430A1), AND SYS 1 N₂/H₂O TANK PRESS (V61P2307A1).
2. **REVIEW** DRAIN PLOT OF TANK A. LOOK FOR FLOW RATE DECREASE WITHOUT A CORRESPONDING CHANGE IN DELTA PRESSURE ACROSS THE BELLOWS INCLUDING BELLOWS SPRING FORCE), WHICH COULD INDICATE A STICKY BELLOWS AND SHOULD BE EVALUATED.

(Not Performed:)

54-30 CFCP OMTO 153

Route drain equipment from Crew Module.

(T:)

54-31 CFCP ASP 153

PANEL R11

SUPPLY H₂O
GALLEY SPLY VLV SW - CLOSE (15 SEC MAX HOLD)
UNTIL GALLEY SPLY VLV TB
CLOSE, THEN RELEASE

54-32 CFCP ASP 153

PANEL ML86B

ROW A
MN C
SUPPLY H₂O
GALLEY SUPPLY CB - OPEN

54-33 CFCP ASP 153

IF THIS IS THE LAST DRAIN PRIOR TO LAUNCH,

**THEN PERFORM:
PANEL ML26C**

SUPPLY H₂O GN₂
TK A SUPPLY VLV - CLOSE
TK VENT VLV - VENT

(Not Performed:)

***** End of Option C - Terminate Water Drain *****

54-34 CFCP OTC 132
OTC *PAD

Potable/Supply Water Tank A Drain Options complete.

OMRSR [V62AG0.018](#)

Table 54-1 - Potable/Supply Water Tank A Drain							
Step	Run ____ Date -	Run ____ Date -	Run ____ Date -	Run ____ Date -	Run ____ Date -	Run ____ Date -	Run ____ Date -
Operation Not Performed:							
54-1							
Option A - Initiate Water Drain							
Not Performed:							
54-2							
54-3							
54-4 P0430 psia:							
54-5							
54-6							
54-7 Tank A Qty:							
54-8 T:							
54-9 T:							
Not Performed:							
54-10 T:							
Not Performed:							

Table 54-1 - Potable/Supply Water Tank A Drain (cont'd)							
Step	Run ____ Date -	Run ____ Date -	Run ____ Date -	Run ____ Date -	Run ____ Date -	Run ____ Date -	Run ____ Date -
54-11 T:							
54-12 OK To Install T:							
T:							
54-13 T:							
54-14 Not Performed:							
54-15 Not Performed:							
*** End of Option A - Initiate Water Drain ***							

Table 54-1 - Potable/Supply Water Tank A Drain (cont'd)							
Step	Run _____ Date -	Run _____ Date -	Run _____ Date -	Run _____ Date -	Run _____ Date -	Run _____ Date -	Run _____ Date -
Option B - Tank A Quantity Adjustment During Continuous Drain							
Not Performed:							
54-16 Tank A Target Qty:							
54-17 Tank A Qty:							
Time GMT:							
54-18							
54-19							
54-20 Tank A Qty:							
Time GMT:							
54-21							
*** End of Option B - Tank A Quantity Adjustment During Continuous Drain ***							

Table 54-1 - Potable/Supply Water Tank A Drain (cont'd)							
Step	Run ____ Date -	Run ____ Date -	Run ____ Date -	Run ____ Date -	Run ____ Date -	Run ____ Date -	Run ____ Date -
Option C - Terminate Water Drain							
Not Performed:							
Terminate Continuous Drain							
Not Performed:							
54-22							
54-23							
54-24 T:							
54-25 T:							
*** End of Terminate Continuous Drain ***							
54-26 Time GMT:							
T:							
Not Performed:							
54-27 Tank A Qty:							
P0430:							
54-28 OK To Install Qw:							
TQw:							

Table 54-1 - Potable/Supply Water Tank A Drain (cont'd)							
Step	Run ____ Date -	Run ____ Date -	Run ____ Date -	Run ____ Date -	Run ____ Date -	Run ____ Date -	Run ____ Date -
54-29 Not Performed:							
54-30 T:							
54-31							
54-32							
54-33 Not Performed:							
*** End of Option C - Terminate Water Drain ***							
54-34							

*** End of Operation 54 ***

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**OPERATION 55 EPDC/Fuel Cell Ground Power Connection and FC
Load Share Adjustment**

Shop: **EPD**

Cntrl Rm Console: **C10**

OPR: **EPD**

Zone: **N/A**

Hazard (Y/N): **N**

Duration (Hrs): **0.5**

NOTE

This is a contingency operation. Perform only if called out by the Recycle operation.

Operation Not Performed: _____

Re-establish GSE Power

NOTE

If ground power is connected, proceed directly to the Fuel Cell Load Sharing Adjustment steps.

NOTE

Noted requirements are satisfied by the following series of steps.

OMRS S00E00.A00

Power Supply Restart

55-1

CEPD

IF POWER SUPPLIES ARE OFF,

THEN START 1D100, 1D200 AND 1D300 POWER SUPPLIES
AND ADJUST VOLTAGE TO 29-30 VDC AS FOLLOWS:

1. RECORD POWER SUPPLIES TO BE STARTED:

1D100 (MN A) _____

1D200 (MN B) _____

1D300 (MN C) _____

2. CRT (VWC17)
MN X GND PWR M/SW IND OFF

3. CRT (VWC15)
1DX00 ITCU-PRI AND SEC CMD INDS OFF

4. CURSOR CNTL (VWC15)
1DX00 ITCU RES BYPASS - OFF

1DX00 PS - START
VERIFY START IND ON

1DX00 VOLT ADJUST - UP/DN (AS REQ)

1DX00 PS OUTPUT - ON
VERIFY OUTPUT ON

1DX00 ITCU RES BYPASS - ON
VERIFY ITCU RES BYPASS IND ON

Not Performed: _____

Ground Power Connection

55-2

CEPD

IF 1D100, 1D200 AND 1D300 SUPPLIES ARE ON,

THEN CONTINUE WITH GSE MN BUS POWER APPLICATION
AND F/C LOAD SHARING ADJUSTMENT.

1. CURSOR CNTL (VWC17)
VERIFY/ADJUST MN A ITCU VOLTAGE TO EQUAL AFT
PCA VOLTAGE (+0.5/-0.0).

MN A ITCU CONTACT - ON
XMIT CURSOR KEY - PRESS

VERIFY MN A ITCU CONTACT IND ON.

MN A GND POWER M/SW - ON
XMIT CURSOR KEY - PRESS

VERIFY MN A GND PWR M/SW IND ON.

2. CURSOR CNTL (VWC17)
VERIFY/ADJUST MN B ITCU VOLTAGE TO EQUAL AFT
PCA VOLTAGE (+0.5/-0.0).

MN B ITCU CONTACT - ON
XMIT CURSOR KEY - PRESS

VERIFY MN B ITCU CONTACT IND ON.

MN B GND PWR M/SW - ON
XMIT CURSOR KEY - PRESS

VERIFY MN B GND POWER M/SW IND ON.

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3. CURSOR CNTL (VWC17)
VERIFY/ADJUST MN C ITCU VOLTAGE TO EQUAL AFT
PCA VOLTAGE (+0.5/-0.0) .

MN C ITCU CONTACT - ON
XMIT CURSOR KEY - ON

VERIFY MN C ITCU CONTACT IND ON.

MN C GND PWR M/SW - ON
XMIT CURSOR KEY - PRESS

VERIFY MN C GND POWER M/SW IND ON.

Not Performed: _____

55-3 Noted requirements are complete.

OMRSD [S00E00.A00](#)

***** End of Ground Power Connection *****

Fuel Cell Load Sharing Adjustment

NOTE

CECL monitor head load impact of the following step.

Maintain fuel cell loads at 125 amps nominal to minimize water production during Scrub Turnaround operations.

55-4 **CEPD CFCP 153**

Ready to perform Load Sharing Adjustment.

55-5 **CEPD
CFCP**

Adjust fuel cell loads to between 100 and 175 amps (125 amps nominal).

55-6 **CFCP**

Monitor fuel cell performance using V-1 curve reference OMRSD File III, V45CH0.010-1A current 100-175 amps.

OMRSD [S00E00.680-1R](#)

55-7 **CEPD CFCP 153**

Load Share Adjustment complete.

***** End of Fuel Cell Load Sharing Adjustment *****

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55-8

CFCP

CURSOR CNTL (VWR04 PG-B)
ACTIVATE CONTROL LOGIC FOR FUEL CELLS 1, 2 AND 3.

VERIFY

VCH01 - INVERT GREEN
VCH02 - INVERT GREEN
VCH03 - INVERT GREEN

55-9

CEPD OTC 132
CFCP

Ground Power Connection and FC Load Share Adjustment complete.

*** End of Operation 55 ***

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OPERATION 56 Post Abort Water Intrusion Inspection

Shop: AFT

Cntrl Rm Console: C6

OPR: PVD

Zone: 300, 330

Hazard (Y/N): N

Duration (Hrs): 2.0

NOTE

This is a contingency operation. Perform only if an on-Pad engine abort occurs.

Operation Not Performed: _____

56-1 OTC CPVD 132

Record position of Vent Doors 8 & 9 both sides.

Left-hand Vent Doors 8 & 9 _____

Right-hand Vent Doors 8 & 9 _____

56-2 OTC CPVD 132

IF Vent Doors 8 & 9 are not open on both sides,

THEN open Vent Doors 8 & 9 both sides per RT OMI [V1314.001](#)
Operation - Routine Vent Door Operations, Control and Monitoring (Pad).

RT OMI Operation _____

Not Performed: _____

56-3 CPVD OTC 132
 OTC NTD 232

Vent doors configured for water intrusion inspection.

NOTE

Water intrusion inspection shall be performed area by area with discrepancies noted in the following table. Damage caused by water spray or areas contaminated by water spray intrusion shall also be documented on a PR/DR.

56-4	NTD	OTC	232
	OTC	*PAD	132
	*PAD	OMTO	
		PQCG	

Inspect external and internal AFT fuselage, ET umbilical area, and Vent Doors 8 & 9 plenums for water contamination.

Inspect external Payload Bay doors and AFT fuselage for damage caused by water spray.

Record and map areas damaged or contaminated with water in Table 56-1 - Water Intrusion Inspection (additional sheets may be copied and attached if required).

Report results to NTD.

OMRSD [S00E00.995-A](#)

(TQwN:)

NOTE

If water is detected, the next step will remove the water from the affected areas. Record the quantity of water that has accumulated in each area.

56-5

OMTO

Remove water from contaminated areas, as noted in previous step, using shop vacuum and tygon tubing and/or Rymple cloth.

Record the quantity of water removed in Table 56-2 - Water Removal and update the Vehicle Spill Log (as applicable). Additional sheets may be copied and attached if required.

OMRSD [S00E00.995-C](#)

OMRSD [S00E00.995-D](#)

(TQwN:)

WARNING

LOC Multi-Purpose Cleaner is a mild irritant.
Exposure may cause eye and respiratory system irritation.

Wear **nitrile (Sol-Vex) gloves** and **industrial goggles** .
Wear **face shield** over goggles when work is at eye level or above.

WS083 10-17-2007

56-6

OMTO

IF traces of residue/staining left by water are present,

THEN remove with Rymple cloth and/or lint-free wipes wetted with a solution of 1.0 percent (1) CO 6850014005976 cleaning compound, **l.o.c.** in deionized water.

T: _____ **Qw:** _____ **N:** _____

Not Performed: _____

56-7

OMTO *PAD

Post Abort Water Intrusion Inspection complete.

56-8

***PAD OTC 132**
OTC CPVD

IF Vent Doors 8 & 9 were opened earlier in this operation,

THEN reposition Vent Doors 8 & 9 to the position recorded earlier in this operation per RT OMI **V1314.001** , Operation - Routine Vent Door Operations, Control and Monitoring (Pad).

RT OMI Operation _____

Not Performed: _____

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56-9	*PAD	OTC	132
	OTC	NTD	232

Post Abort Water Intrusion Inspection complete.

***** End of Operation 56 *****

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OPERATION 57 Final Inspection

Shop: *FIT

Cntrl Rm Console: NA

OPR: *FIT

Zone: NA

Hazard (Y/N): Y

Duration (Hrs): 2.0

NOTE

Do not perform this operation if Launch is scrubbed prior to tanking.

Operation Not Performed: _____

WARNING

Large volumes of water might be inadvertently released by the sound suppression system if the hydraulic valves open or fail.

Personnel may suffer serious bodily harm or death.

WM109.b 02-23-04

NOTE

Sound suppression water is present on MLP zero level and guard rails are removed. Final Inspection Team must exercise extreme caution while on MLP zero level. Under no circumstances will sound suppression water system be activated while personnel are on MLP zero level. Controlled switching will be in effect while Final Inspection Team is on structure. Access above 155-ft FSS limited to 14 personnel maximum.

NOTE

Stay times and inspection points are per OMI S6444.002, SSV Ice and Debris Assessment.

57-1 *FIT NTD DIR 7

Final Inspection Team is at OSB II and ready for Pad entry.

57-2 NTD *FIT DIR
 *SCC 232
 *PAC
*SCC *PSE DIR 7

Perform Final Inspection per Operation 57 (OMI S0007.400) and OMI [S6444.002](#) .

Proceed to Launch Pad and report in on OIS Channel 232.

NOTE

JYVO/JYVR, *SCC, *PAC shall follow progress of Final Inspection Team via OTV cameras noted in each step.

57-3	NTD	STM	232
	STM	JYVO	138
		JYVR	

Track and video record the Final Inspection Team at the Pad using following OTV cameras in sequence:

Pad A - 056, 055, 054, 062, 004, 006, 003, 001

Support: [OTV](#)

NOTE

Perform the following two steps if an initial stop on MLP zero level is required.

57-4	*FIT	NTD	DIR 7
------	-------------	------------	--------------

Final Inspection Team proceeding to Zero Level MLP.

Not Performed: _____

57-5	*FIT	NTD	DIR 7
------	-------------	------------	--------------

Final Inspection Team on Zero Level MLP (Cameras 054, 055 and 056).

Not Performed: _____

57-6 *FIT NTD DIR 7

Final Inspection Team proceeding to 255-ft level.

57-7 *FIT NTD DIR 7

Final Inspection Team on 255-ft level (Camera 001).

57-8 *FIT NTD DIR 7

Final Inspection Team proceeding to 215-ft level (ET access platform, FSS and RSS).

57-9 *FIT NTD DIR 7

Final Inspection Team on 215-ft level (ET access platform, FSS and RSS) (Cameras 004, 003, and 062).

57-10 *FIT NTD DIR 7

Final Inspection Team proceeding to 195-ft level (OAA).

57-11 *FIT NTD DIR 7

Final Inspection Team on 195-ft level (OAA) (Camera 004).

Report on environmental conditions that would affect Flight Crew Ingress.

57-12 *FIT NTD DIR 7

Final Inspection Team proceeding to 135-ft level.

57-13 *FIT NTD DIR 7

Final Inspection Team on 135-ft level (Camera 056).

57-14 *FIT NTD DIR 7

Final Inspection Team proceeding to zero-level MLP.

57-15 NTD TBC 232
 TBC CHPU 136

Verify SRB Aft Skirt GN₂ purge is secured prior to 17-in. disc sample line removal.

57-16 *FIT NTD DIR 7

Final Inspection Team on zero-level MLP (Cameras 054, 055, and 056).

Hydrogen Sample Line Removal

NOTE

The following steps provide coordination between the Final Inspection Team, NTD, and CHGD in securing 17-in. disc hydrogen sample lines. Perform this option if sample lines are installed.

Hydrogen Sample Line Removal Not Performed: _____

57-17 *FIT NTD DIR 7

Request ET/Orbiter monitoring instrumentation pump secured prior to hydrogen sample line removal from 17-in. disc area or disconnect at LH₂ TSM.

**57-18 NTD OTC 232
 OTC CHGD 132**

Secure ET/Orbiter monitoring instrumentation pump and report completion.

57-19 CHGD CLHY 166

LD54/LD55 pump securing will begin momentarily.

57-20 CHGD

CURSOR CNTL (SAW01/HWW13)
LD54/55 PUMP - OFF
XMIT CURSOR KEY - PRESS

57-21 NTD *FIT DIR 7

Proceed with 17-in. disc sample line removal.

***** End of Hydrogen Sample Line Removal *****

57-26	NTD	TBC	232
	TBC	CHPU	136

Reactivate SRB Aft Skirt GN₂ Purge.

57-27	*PSE	*SCC	DIR 7
	*SCC	NTD	232

Final Inspection Team clear of Pad gate.

57-28	NTD	*SCC	232
	*SCC	*PSE	DIR 7

Verify Final Inspection Team at Roadblock A/B-11.

57-29	*PSE	*SCC	DIR 7
	*SCC	NTD	232

Final Inspection Team at Roadblock A/B-11.

57-30	NTD	STM	232
	STM	JYVO	138
		JYVR	

Terminate video tracking and recording of Final Inspection Team.

Support: [OTV](#)

NOTE

All debris identified by the sweep should be bagged and forwarded to the NTD and then the Launch Operations Quality Manager immediately with a location list (OMI S0007.400 Data Sheet - FOD Identified in Final OPS/Safety Walkdown and Final Inspection at T-3 Hours). The Launch Operations Quality Manager will enter the debris data found into the IQSD (FOD Database) and the debris routed to the Pad Support Building Quality Impound Area.

57-31 *FIT NTD 232
 *NTD *SCC

Final Inspection is complete.

*** End of Operation 57 ***

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OPERATION 58 P/L SSP/PRLA Switch Configuration

Shop: **PLE**

Cntrl Rm Console: **C1**

OPR: **PLE**

Zone: **120**

Hazard (Y/N): **N**

Duration (Hrs): **0.5**

58-1 CPLE ASP 134

PANEL A6U

PAYLOAD RETENTION

LOGIC POWER

SYS 1 SW - OFF

SYS 2 SW - OFF

PAYLOAD SELECT SW - MONITOR (BETWEEN POSITIONS
1 AND 2)

PAYLOAD RETENTION LATCHES

1 SW - OFF

1 TB BP

2 SW - OFF

2 TB BP

3 SW - OFF

3 TB BP

4 SW - OFF

4 TB BP

5 SW - OFF

5 TB BP

READY TO LATCH

1 TB BP

2 TB BP

3 TB BP

4 TB BP

5 TB BP

NOTE

The following switch is located on the RMS rotational hand controller, to the right of Panel A8U.

58-2 CPLE ASP 134

IF THE RMS RHC IS INSTALLED,

THEN PERFORM:

RMS RHC

RATE SW - VERNIER

Not Performed: _____

58-3 CPLE ASP 134

IF PANEL A8L IS INSTALLED,

THEN PERFORM:
PANEL A8L

STARBOARD RMS
 DEPLOY/STOW SW - OFF
 TB STO (BP IF NO MPM INSTALLED)

HEATER
 A SW - OFF
 B SW - OFF

RETENTION LATCHES
 REL/LAT SW - OFF

 TB LAT (BP IF MPM'S NOT INSTALLED)

 READY FOR LATCH
 AFT TB GRAY (BP IF STARBOARD RMS/OBSS
 NOT INSTALLED)
 MID TB GRAY (BP IF STARBOARD RMS/OBSS
 NOT INSTALLED)
 FWD TB GRAY (BP IF STARBOARD RMS/OBSS
 NOT INSTALLED)

RMS SELECT SW - OFF
RMS POWER SW - OFF
PORT RMS
 DEPLOY/STOW SW - OFF
 TB STO (BP IF NO MPM INSTALLED)

HEATER
 A SW - OFF
 B SW - OFF

RETENTION LATCHES
 REL/LAT SW - OFF
 TB LAT (BP IF MPM'S NOT INSTALLED)

 READY FOR LATCH
 AFT TB GRAY (BP IF PORT RMS NOT INSTALLED)
 MID TB GRAY (BP IF PORT RMS NOT INSTALLED)
 FWD TB GRAY (BP IF PORT RMS NOT INSTALLED)

Not Performed: _____

58-4 CPLE ASP 134

IF PANEL A8U IS INSTALLED,

THEN PERFORM:

PANEL A8U

MODES MATRIX (ALL 12 LIGHTS OFF)
BRAKES SW - ON
TB OFF

SAFING SW - AUTO (CENTER)
TB BP

MODE

SELECT SW - TEST
ENTER PBI - AS IS
AUTO SEQ SW - (CENTER)
LIGHTS (2) - OFF

SOFTWARE STOP TB GRAY

CAUTION/WARNING TONE VOLUME SW - AS IS
CAUTION/WARNING (ALL LIGHTS OFF)

MASTER ALARM LIGHT - OFF

RATE

MIN TB OFF
HOLD TB OFF
SCALE TB GRAY

END EFFECTOR

MODE SW - OFF
MAN CONTR SW - (CENTER)
(ALL 6 TB'S BP)

BACKUP CONTROL

JOINT SW - SHOULDER YAW
PAYLOAD RELEASE SW - OFF
DIRECT DRIVE SW - (CENTER)
PARAMETER SW - PORT TEMP LED/ABE/ID

JOINT

SELECT SW - CRIT TEMP
SINGLE/DIRECT DRIVE SW - (CENTER)

LIGHTING
ANNUN/NUM
BRIGHT/VAR SW - VAR (DOWN)
SEL SW - LOW
PANEL/INST SW - OFF

SHOULDER BRACE RELEASE SW - (CENTER)
TB BP

Not Performed: _____

58-5 CPLE ASP 134

IF VPU FLOWN ON R12,

**THEN PERFORM:
PANEL R12**

VPU POWER SW - OFF

Not Performed: _____

58-6 CPLE ASP 134

IF THE OBSS IS FLOWN ON PANEL R12,

**THEN PERFORM:
PANEL R12U**

OPP SW POWER CB 1 - OPEN
OBSS SW POWER SW - OFF

OBSS
S1 SW - (DOWN)
RSC PWR SW - OFF
ITVC ENA SW - OFF
SPEE PWR SW - OFF
S5 SW - (DOWN)
S6 SW - (DOWN)

Not Performed: _____

58-7 CPLE ASP 134

IF THE NON-FUNCTIONAL COMPUTER INTERFACE PANEL IS
INSTALLED,

THEN PERFORM:
PANEL R12

COMPUTER INTERFACE PANEL
NON FUNCTIONAL SW - OFF (DOWN)
NON FUNCTIONAL SW - OFF (DOWN)

Not Performed:_____

58-8 CPLE ASP 134

IF THE FUNCTIONAL COMPUTER INTERFACE PANEL IS
INSTALLED,

THEN PERFORM:
PANEL R12

COMPUTER INTERFACE PANEL
DC POWER 1 SW - OFF
DC POWER 2 SW - OFF

Not Performed:_____

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58-9 CPLE ASP 134

IF THE OSVS PANEL IS INSTALLED,

THEN PERFORM:
PANEL R12

OSVS POWER CB - OPEN
OSVS POWER SW - OFF

Not Performed: _____

58-10 CPLE OTC 132

SSP/PRLA Switch Configuration complete.

*** End of Operation 58 ***

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OPERATION 59 EPDC Post-Launch Securing

Shop: **EPD**

Cntrl Rm Console: **C10**

OPR: **EPD**

Zone: **NA**

Hazard (Y/N): **N**

Duration (Hrs): **0.5**

NOTE

Do not perform EPDC Post-Launch Securing if Launch Abort occurs.

Operation Not Performed: _____

59-1

CEPD

IF POST-LAUNCH SAFING FOR HYDROGEN BURN SYSTEM A
OR SYSTEM B ARM, F1, OR F2 WAS NOT INITIATED BY
GLS,

THEN PERFORM:

CURSOR CNTL (VWC13)

H₂ BURN

SYS A

ARM - OFF

XMIT CURSOR KEY - PRESS

Not Performed: _____

F1 - OFF

XMIT CURSOR KEY - PRESS

Not Performed: _____

F2 - OFF

XMIT CURSOR KEY - PRESS

Not Performed: _____

SYS B

ARM - OFF

XMIT CURSOR KEY - PRESS

Not Performed: _____

F1 - OFF

XMIT CURSOR KEY - PRESS

Not Performed: _____

F2 - OFF

XMIT CURSOR KEY - PRESS

Not Performed: _____

Entire Step Not Performed: _____

Post-Launch Ground PIC Resistance Test

59-2 **CEPD**

CURSOR CNTL (VWC10)
GND R/T - ON
XMIT CURSOR KEY - PRESS

59-3 **CEPD**

CRT (VWC10)
VERIFY RESISTANCE TEST INDICATIONS.

RECORD ANY "G" INDICATIONS IN
"GROUND PIC TEST COMPLETE" (OMI S0007.200).

	LEFT-HAND		RIGHT-HAND	
	<u>SYS A</u>	<u>SYS B</u>	<u>SYS A</u>	<u>SYS B</u>
	R	R	R	R
H ₂ BURN				
ENG 1	N	-	-	N
ENG 2/3	N	N	N	N
LAUNCH REL				
ETVAS	-	-	N	N
H/O TSM	N	N	N	N
LANYARD	-	-	N	N

59-4 **CEPD**

CURSOR CNTL (VWC10)
GND R/T - OFF
XMIT CURSOR KEY - PRESS

59-5 **CEPD**

CURSOR CNTL (VWC10)
GRD T-0 RESET
XMIT CURSOR KEY - PRESS

CRT (VWC10)
GRD T-0 RESET IND RESET
GRD SW STATUS IND OFF

59-6 **CEPD**

CURSOR CNTL (VWC10)
GND SYS - OFF
XMIT CURSOR KEY - PRESS

CRT (VWC10)
ALL H₂ AND LR BURN CPA AND GRD PWR INDICATIONS OFF
AND ALL CPA VOLTAGES LL

***** End of Post-Launch Ground PIC Resistance Test *****

**Orbiter Ground Power System
Powerdown**

59-7 **CEPD**

CURSOR CNTL (VWC16)
BUS CONTROL SINGLE PF 1 - OFF
XMIT CURSOR KEY - PRESS

CRT (VWC16)
REQUESTED OPERATION COMPLETE

59-8 **CEPD**

CURSOR CNTL (VWC16)
BUS CONTROL SINGLE PF 2 - OFF
XMIT CURSOR KEY - PRESS

CRT (VWC16)
REQUESTED OPERATION COMPLETE

1D100 Powerdown

59-9 **CEPD**

CURSOR CNTL (VWC01)
MLP 1D100 PS D
XMIT CURSOR KEY - PRESS

CRT (VWC01)
REQUESTED OPERATION COMPLETE

1D200 Powerdown

59-10 **CEPD**

CURSOR CNTL (VWC01)
MLP 1D200 PS D
XMIT CURSOR KEY - PRESS

CRT (VWC01)
REQUESTED OPERATION COMPLETE

1D300 Powerdown

59-11 **CEPD**

CURSOR CNTL (VWC01)
MLP 1D300 PS D
XMIT CURSOR KEY - PRESS

CRT (VWC01)
REQUESTED OPERATION COMPLETE

1D500 Powerdown

59-12

CEPD

CURSOR CNTL (VWC01)
MLP 1D500 PS D
XMIT CURSOR KEY - PRESS

CRT (VWC01)
1D500 PS VOLT/ITCU VOLT/CURRENT FAILED

NOTE

Due to backup battery, ITCU voltage will not go to lower limit.

59-13

CEPD

CURSOR CNTL (VWC01)
CONTINUE TO THE PROGRAM TERMINATION STEP
XMIT CURSOR KEY - PRESS

CRT (VWC01)
REQUESTED OPERATION COMPLETE

***** End of 1D500 Powerdown *****

1D600 Powerdown

59-14 **CEPD**

CURSOR CNTL (VWC01)
MLP 1D600 PS D
XMIT CURSOR KEY - PRESS

CRT (VWC01)
1D600 PS VOLT/ITCU VOLT/CURRENT FAILED

<p>NOTE Due to backup battery, ITCU voltage will not go to lower limit.</p>
--

59-15 **CEPD**

CURSOR CNTL (VWC01)
CONTINUE TO THE PROGRAM TERMINATION STEP
XMIT CURSOR KEY - PRESS

CRT (VWC01)
REQUESTED OPERATION COMPLETE

***** End of 1D600 Powerdown *****

SSME Heaters Powerdown

59-16 **CEPD**

CURSOR CNTL (VWC01)
1D700 PS DN
XMIT CURSOR KEY - PRESS

CRT (VWC01)
REQUESTED OPERATION COMPLETE

59-17 **CEPD**

CURSOR CNTL (VWC01)
1D800 PS DN
XMIT CURSOR KEY - PRESS

CRT (VWC01)
REQUESTED OPERATION COMPLETE

***** End of SSME Heaters Powerdown *****

1T100 Powerdown

59-18

CEPD

CURSOR CNTL (VWC01)
1T100 ON/OFF
XMIT CURSOR KEY - PRESS

CRT (VWC01)
1T100 ON/OFF IND OFF

1T200 Powerdown

59-19

CEPD

CURSOR CNTL (VWC01)
1T200 ON/OFF
XMIT CURSOR KEY - PRESS

CRT (VWC01)
1T200 ON/OFF IND OFF

***** End of Orbiter Ground Power System Powerdown *****

59-20

CEPD

CURSOR CNTL (SWC02)
LAUNCH COMMIT EMON - INH
XMIT CURSOR KEY - PRESS

CRT (SWC02)
SYSTEM EXCEPTION MONITORING IS INHIBITED

59-21

CEPD OTC 132

Post-Launch Securing complete.

***** End of Operation 59 *****

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OPERATION 60 Reserved

Shop: NA
Cntrl Rm Console: NA
OPR: NA
Zone: NA
Hazard (Y/N): NA
Duration (Hrs): NA

***** End of Operation 60 *****

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OPERATION 61 SRB Ignition S&A Device Verification (Contingency)

Shop: NA
Cntrl Rm Console: C10
OPR: SBE
Zone: NA
Hazard (Y/N): Y
Duration (Hrs): 0.5

NOTE

Perform this operation only if contingency S&A verification is required.

Operation Not Performed: _____

WARNING

Controlled switching: No flight vehicle/element or GSE commands issued, no switches, or circuit breakers operated on the Flight Element or GSE electrically connected to the Flight Elements.

The only exceptions are those commands and switch/circuit breaker operations directed by the WAD (and subtasks) requiring controlled switching.

WLTC002 01-31-01

WARNING

Pyrotechnic devices could explode while being tested.

Personnel may suffer bodily injury or death.

WPYR018 04-07-04

WARNING

Lightning radiates energy that may cause ordnance items to explode.

Personnel may suffer bodily injury or death.

Adhere to strict lightning policy during all work or operations involving ordnance devices.

WPYR010 04-07-04

NOTE

Steps involving Crit 1, 1R and/or 1S items are contained in the following operation.

NOTE

Do not perform this operation during a Phase 1 Lightning Advisory or a Phase 2 Lightning Warning.

NOTE

Hazardous steps follow. BDA clear remains in effect.

61-1

TBC

CPWR

136

Perform SRB Ignition S&A Device Verification.

61-2 CPWR OTC 132

Verify all personnel clear of BDA.

61-3 CPWR

IF IGN HEATER POWER IS ON,

THEN PERFORM:

CURSOR CNTL (BDE11)

AUTO SEQ - IGN

XMIT CURSOR KEY - PRESS

CRT

VERIFY LH/RH IGN HTR CURRENT <0.5 AMP AC

Not Performed: _____

61-4 CPWR

CRT (BDE11)

VERIFY LH/RH IGN HEATER POWER OFF

61-5 CPWR

CURSOR CNTL (SDC01)

SRB OPTIONS IGN SAFE/ARM

XMIT CURSOR KEY - PRESS

CRT

VERIFY SWC01 TERMINATES AND DISPLAY SKELETON
BDE07 DISPLAYED

61-6 CPWR

CURSOR CNTL (BDE07)

TEST 1 CYCLE

XMIT CURSOR KEY - PRESS

CRT

VERIFY TEST LEFT & RIGHT (GREEN)

61-7

CPWR

CRT (BSE06 PG-A)
VERIFY BSE06 CALLS BKE07

VERIFY MESSAGES:

LH S&A DEVICE ROTATED 1 CYCLE
RH S&A DEVICE ROTATED 1 CYCLE
BKE07 - TERMINATED SUCCESSFULLY
SRB - IGNITION S&A TEST COMPLETED SUCCESSFULLY

61-8

CPWR

RECORD COMPLETION:

GMT _____

61-9

CPWR

APPL PAGE (BDE07)
PFK15 KEY - PRESS

CRT
VERIFY

BWE07 TERMINATES
SYSTEM MENU IS REDISPLAYED

61-10

CPWR

IF SRB IGN HEATER POWER WAS REMOVED FOR S&A
ROTATION,

THEN REAPPLY POWER PER THE FOLLOWING:

CURSOR CNTL (BDE11)
AUTO SEQ - IGN
XMIT CURSOR KEY - PRESS

CRT
VERIFY

LH/RH IGN HTR POWER ON
LH/RH IGN HTR AUTO SEQ ACT

Not Performed: _____

61-11

CPWR TBC 136

SRB Left-hand/Right-hand Ignition S&A Rotation complete and ignition
S&A devices are in Safe position.

NOTE

For purposes of time/life cycle, one cycle is defined as from Safe to Arm and
back to Safe.

61-12

CPWR CMQC

Initiate USA Form 110-099, Time/Cycle/Action Update SRB, to record
cycles used for S&A device, P/N 1U77387, for each SRB.

Forward to Thiokol LSS for update of time/life cycles.

OMRSD [C00CB0.010008B](#)

Qv: _____

*** End of Operation 61 ***

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OPERATION 62 GLS Functional Initialization and LCC Activation

Shop: TCO

Cntrl Rm Console: INTG

OPR: TCO

Zone: NA

Hazard (Y/N): N

Duration (Hrs): 1.0

NOTE

Perform this operation, GLS Functional Initialization and LCC Activation, at the direction of the Test Team.

Operation Not Performed: _____

NOTE

A list of GLS masks and bypasses to support test objectives, together with a signature page, will be provided by CGLS. This list will contain each kick-off step in this operation, referencing this list along with corresponding inputs for that step.

62-1 OTC CGLS 212

Perform GLS Functional Initialization on Channel ____.

Report completion.

62-2 CGLS CTPE

Provide two concurrencies at BKUP and five concurrencies at INTG.

62-3 CGLS

PFP

VERIFY APPL TASKS 1 THROUGH 5 INACTIVE

KEY 7 - PRESS

VERIFY ALL OC TASKS - INACTIVE

62-4 CGLS

CONSOLE KYBD

SELECT APP PG-1B

HOME CMD KEY - PRESS

SLP03

PERF PGM KEY - PRESS

62-5 CGLS

CRT (SLP03)

SELECT SITE

CONSOLE KYBD

_____ (KSCA OR KSCB)

XMIT RESP KEY - PRESS

62-6 CGLS

CONSOLE KYBD

PFP

PFPK7 - PRESS

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62-7

CGLS

CONSOLE KYBD
PFP PNL (SLP03)
PFPK1 - PRESS
VERIFY INTEGRATED PFP DISPLAY

62-8

CGLS

KEY 7 - PRESS

PFP PNL
VERIFY TASK
SLP03-1
SLP02-2
SLP01-3

Pseudo Initialization

62-9 CGLS

CONSOLE KYBD
SELECT APP PG-1B
CRT
VERIFY INTG MENU

62-10 CGLS

CONSOLE KYBD
SELECT - PSEUDO INIT
XMIT CURSOR KEY - PRESS

NOTE

Perform one of the following three steps if required based on whether disk files were already loaded at integration.

62-11 CGLS

POSITION CURSOR TO ALL PSEUDOS AND DISK FILES.
XMIT CURSOR KEY - PRESS

Not Performed:_____

62-12 CGLS

POSITION CURSOR TO ALL DISK FILES.
XMIT CURSOR KEY - PRESS

Not Performed:_____

62-13 CGLS

POSITION CURSOR TO ALL PSEUDOS.
XMIT CURSOR KEY - PRESS

Not Performed:_____

Cryo Safing Pseudo

NOTE

Perform this option if page B message indicates "SEE PAGE A FOR OPERATION INPUT."

Cryo Safing Pseudo Not Performed: _____

62-14 CGLS

CRT
VERIFY PAGE A MSG: (N03IS511E) CRYO SAFING ENABLED IS ON. THIS INDICATES SCRUB/CRYO DRAIN IN PROGRESS.

62-15 CGLS

CONSOLE KYBD (SLP02 PG-A)
ENTER "1" IF CRYO SAFING SUPPORT COMPLETED AND SLP50 NOT ACTIVE TO INITIALIZE (N03IS511E) TO OFF.
ENTER "2" TO LEAVE (N03IS511E) UNCHANGED.

_____ (1 OR 2)
XMIT RESPONSE KEY - PRESS

CRT
VERIFY MSG INDICATING PSEUDO STATE

***** End of Cryo Safing Pseudo *****

62-16 CGLS

VERIFY - PSEUDO HOUSEKEEPING COMPLETE. (PG-A)
VERIFY - NO EXCEPTIONS PG-A
TERMINATE
XMIT CURSOR KEY - PRESS

***** End of Pseudo Initialization *****

GLS Site Pseudo Mods

62-17

CGLS

Verify each of the following pseudos is in the indicated state:

<u>Pseudo</u>	<u>State</u>	<u>Description</u>
N03IS080E	ON	Test location Pad
1. IF vehicle at Pad A,		
THEN:		
NTBISKPADA	ON	TCID build in Support for KPADA
NTBISKPADB	OFF	TCID build in Support for KPADB

Not Performed: _____
SS1

2. IF vehicle at Pad B,		
THEN:		
NTBISKPADA	OFF	TCID build in Support for KPADA
NTBISKPADB	ON	TCID build in Support for KPADB

Not Performed: _____
SS2

3. IF vehicle is OV-105		
THEN:		
NGPS3STRNG	ON	Vehicle uses 3 string GPS system

Not Performed: _____
SS3

4. IF vehicle is not OV-105		
THEN:		
NGPS3STRNG	OFF	Vehicle uses TACAN system

Not Performed: _____
SS4

62-18

CGLS

IF A PSEUDO IN THE PREVIOUS STEP IS NOT IN THE INDICATED STATE,

THEN PERFORM:

CONSOLE KYBD
HOME CMD KEY - PRESS

SET _____ (PSEUDO AND STATE)

XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

VERIFY SUCCESSFUL

Not Performed: _____

62-19

CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS

PVO NORBTAILNO
XMIT CMD KEY - PRESS

VERIFY PSEUDO FD IS SET TO CORRECT VEHICLE FOR CURRENT TEST

62-20

CGLS

IF THE PSEUDO IN THE PREVIOUS STEP WAS SET TO AN INCORRECT VALUE,

THEN PERFORM:

CONSOLE KYBD
HOME CMD KEY - PRESS

ISSU _____ (PSEUDO AND VALUE)

XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

VERIFY SUCCESSFUL

Not Performed: _____

*** End of GLS Site Pseudo Mods ***

System Bypass

62-21 CGLS

CONSOLE KYBD
SELECT APP PG-1B

CRT
VERIFY INTG MENU

62-22 CGLS

CONSOLE KYBD
SELECT - SYSTEM BYPASS
XMIT CURSOR KEY - PRESS

CRT
VERIFY SYSTEM BYPASS DISPLAY

NOTE
For the next step, reference the GLS System Bypass list for requirements.

62-23 CGLS

IF SYSTEM BYPASSES ARE REQUIRED FOR THIS FLOW,

THEN PERFORM:

CRT
CURSOR CNTL _____ (SYS)
XMIT CURSOR KEY - PRESS

<u>SYSTEM</u>	<u>BYPASS</u>
APU	_____
ARMS	_____
BELE	_____
BHYD	_____
BINST	_____
BRS	_____
BPYRO	_____

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PLINTG	_____
COMM	_____
DPS	_____
ECLS	_____
ECS	_____
EPDC	_____
FCP	_____
GNS	_____
GOX	_____
HYD	_____
HYFUEL	_____
HYOXID	_____
INSTR	_____
INTG	_____
LH2	_____
LOX	_____
MECH	_____
MPS	_____
NAVAID	_____
FCL	_____
PVD	_____
SSME	_____
TINST	_____
WATER	_____

Not Performed: _____

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62-24

CGLS

CONSOLE KYBD
HARDCOPY KEY - PRESS

62-25

CGLS

CONSOLE KYBD
SELECT - TERMINATE
XMIT CURSOR - PRESS

CRT
VERIFY

BYPASS SELECTION
PROCESS TERMINATION

***** End of System Bypass *****

GLS Functional Changes

NOTE

Console reboot or disk re-initialization will probably destroy this data. In the event this happens, verify that data is lost; if so, re-enter data.

62-26

CGLS

SELECT APP PG-2B
PFPK2 (SLP02) - PRESS
VERIFY INTG MENU

62-27

CGLS

CURSOR CNTL
ML FUNC CHNGS
XMIT CURSOR KEY - PRESS

62-28

CGLS

PFP
PFPK1 (ML BYPASS FILE) - PRESS
VERIFY MAINLINE BYPASS DISPLAY

GLS Mainline Bypass

NOTE

Perform this option if bypass file update is required.

GLS Mainline Bypass Not Performed: _____

62-29 CGLS

PFP
PFPK5 (ADD) - PRESS

NOTE

To bypass GLS mainline function line item, use GLSDD to determine seq number. Reference the GLS Mainline Bypass list for required inputs.

62-30 CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS
_____ (SEQ NUMBER)
XMIT RESP KEY - PRESS

NOTE

Perform the next step only after all required entries have been completed.

62-31 CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS
-9999
XMIT RESP KEY - PRESS

62-32 CGLS

CONSOLE KYBD
HARDCOPY KEY - PRESS

***** End of GLS Mainline Bypass *****

NOTE

A functional line item entered into bypass file may not be entered into any other file.

62-33

CGLS

PFP

PFPK2 (ML ANALOG FILE) - PRESS

VERIFY MAINLINE ANALOG FILE DISPLAY

GLS Analog Changes

NOTE

Perform this option if mainline analog file update is required.

GLS Analog Changes Not Performed: _____

62-34

CGLS

PFP
PFPK5 (ADD) - PRESS

NOTE

To verify an analog using limits that are different from limits in GLSDD, perform the following four steps. Reference the GLS ML Analog Disk File list for required inputs.

NOTE

Repeat the following three steps for each analog limit change record.

62-35

CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS
_____ (SEQ NUMBER)
XMIT RESP KEY - PRESS

62-36

CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS
_____ (NEW HIGH LIMIT)
XMIT RESP KEY - PRESS

62-37

CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS
_____ (NEW LOW LIMIT)
XMIT RESP KEY - PRESS

NOTE

Perform the next step only after all required entries have been completed.

62-38

CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS
-9999
XMIT RESP KEY - PRESS

62-39

CGLS

CONSOLE KYBD
HARDCOPY KEY - PRESS

***** End of GLS Analog Changes *****

62-40

CGLS

PFP
PFPK3 (PRESEQ ANALOG FILE) - PRESS
VERIFY PRESEQUENCER ANALOG FILE DISPLAY

GLS Presequence Analog Changes

NOTE

Perform this option to verify a presequence analog measurement with limits different from those in the GLSDD. Reference the GLS Presequence Analog File list for required inputs.

GLS Presequence Analog Changes Not Performed: _____

62-41 CGLS

PFP
PFPK5 (ADD) - PRESS

NOTE

Repeat the next three steps for each presequence analog change record.

62-42 CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS
_____ (SEQ NUMBER)
XMIT RESP KEY - PRESS

62-43 CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS
_____ (NEW HIGH LIMIT)
XMIT RESP KEY - PRESS

62-44 CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS
_____ (NEW LOW LIMIT)
XMIT RESP KEY - PRESS

NOTE

Perform the next step only after all required entries have been completed.

62-45

CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS
-9999
XMIT RESP KEY - PRESS

62-46

CGLS

CONSOLE KYBD
HARDCOPY KEY - PRESS

***** End of GLS Presequence Analog Changes *****

Delete GLS Disk File Entries

NOTE

Perform this option to delete an item that has been updated into any disk file.
Reference the attached disk file lists for changes.

Delete GLS Disk File Entries Not Performed: _____

62-47 CGLS

PFP
PFPK6 (DELETE) - PRESS

62-48 CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS
_____ (SEQ NUMBER)
XMIT RESP KEY - PRESS

62-49 CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS
-9999
XMIT RESP KEY - PRESS

62-50 CGLS

CONSOLE KYBD
HARDCOPY KEY - PRESS

***** End of Delete GLS Disk File Entries *****

62-51 CGLS

CURSOR CNTL
TERMINATE
XMIT CURSOR KEY - PRESS

CRT
INTG MENU

***** End of GLS Functional Changes *****

Limit Change

62-52

CGLS

SELECT APP PG-2B
VERIFY INTEGRATED MENU

62-53

CGLS

PFP
PFPK2 (SLP02) - PRESS

62-54

CGLS

PFP
PFPK4 (LCC CONTROL) - PRESS
CRT
VERIFY LCC C AND D (SDP08)

62-55

CGLS

CURSOR CNTL
GLS LIMIT CHG
XMIT CURSOR KEY - PRESS
CRT
VERIFY GLS DUAL INTERRUPT NOTIFICATION

62-56

CGLS

CURSOR CNTL
CONSOLE BACKUP
XMIT CURSOR - PRESS
CRT
VERIFY BACKUP BLOCK SOLID

62-57

CGLS

CURSOR CNTL
ACTIVATE DUAL NOTIFICATION
XMIT CURSOR - PRESS
CRT
VERIFY ACTIVE SOLID BLOCK

LCC Interrupt Processors

62-58 CGLS

Verify two concurrencies are available in backup console.

62-59 CGLS

PFPK2 - PRESS (TERM LIMIT CHANGE)
VERIFY LCC C AND D

62-60 CGLS

CURSOR CNTL
ACT LIP 1
XMIT CURSOR - PRESS

62-61 CGLS

CURSOR CNTL
ACT LIP 2
XMIT CURSOR - PRESS

62-62 CGLS

Verify SLPBO and SLPCO active in backup console.

End of LCC Interrupt Processors

62-63 CGLS

PFPK2 (LIMIT CHANGE) - PRESS
VERIFY GLS LIMIT CHNG

62-64 CGLS

CRT
SELECT XFER TO GLS FOR ALL

CURSOR CNTL
XMIT CURSOR - PRESS

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62-65

CGLS

CRT
VERIFY MESSAGE: ALL LIMIT CHANGES COMPLETE EXCEPT
FOR BRS

***** End of Limit Change *****

62-66

CGLS

PFPK1 (INTG MENU) - PRESS
CRT
VERIFY INTEGRATED MENU

62-67

CGLS

IF RDM OR SPACEHAB LCC'S WILL NOT BE MONITORED
THIS TEST,

THEN PERFORM:
HOME CMD KEY - PRESS
PVO NPAYLOADID
XMIT CMD KEY - PRESS

VERIFY PAYLOADID IS 0 (NO PLD MONITORED)

Not Performed: _____

GLS Standalone CVFY Activation

NOTE

Perform this option if RDM or SpaceHab LCCs are applicable.

GLS Standalone CVFY Activation Not Performed:_____

62-68

CGLS

SELECT - APP PG-1B
VERIFY INTG MENU (SLP03)
SELECT - TERMINATE
XMIT CURSOR KEY - PRESS

62-69

CGLS

IF FOR SPACEHAB ONLY,

THEN PERFORM:
HOME CMD KEY - PRESS
PVO NPAYLOADID - XMIT CMD

VERIFY PAYLOADID IS 5 (SPACEHAB)

Not Performed:_____

62-70

CGLS

IF FOR RDM/SPACEHAB ONLY,

THEN PERFORM:
HOME CMD KEY - PRESS
S FD V98X2621X1 - XMIT CMD

VERIFY PROC HALT STAT 1 - BCE 10 ENABLED IS OFF

Not Performed:_____

62-71 **CGLS**

HOME CMD KEY - PRESS
SLP81
PERF PGM KEY - PRESS

62-72 **CGLS**

CONSOLE KYBD
PFP PNL
PFPK7 - PRESS

62-73 **CGLS**

CONSOLE KYBD
PFP
PFPK1 (SLP81) - PRESS
VERIFY TOP LEVEL PFP DISPLAY

62-74 **CGLS**

IF SPACEHAB IS INSTALLED,

THEN PERFORM:
PFP (SHAB INHIBITED)
PFPK2 - PRESS
VERIFY PFPK2 LED, SPACEHAB ACTIVE

Not Performed: _____

62-75 CGLS

IF RDM IS INSTALLED,

THEN PERFORM:

PFP

PFPK4 (RDM INHIBITED) - PRESS

VERIFY PFPK4 LED, RDM ACTIVE

Not Performed:_____

62-76 CGLS

PFP

PFPK5 (SELECTION CMPLT) - PRESS

62-77 CGLS

PFP

PFPK1 (CONFIGURATION) - PRESS

PFP

PFPK1 (PSEUDO INIT) - PRESS

VERIFY PSEUDO INIT LED DISPLAY

62-78 CGLS

PFP

PFPK2 (ALL PSEUDOS) - PRESS

VERIFY ALL PSEUDOS ARE INITIALIZED (PG-1A)

NOTE

For the following step, printer/plotter must be online and functional.

62-79 CGLS

IF CGLS DESIRES A COPY OF PSEUDO FD'S CURRENT VALUE,

THEN PERFORM:

PFP

PFPK4 (PSEUDOS TO PP) - PRESS

VERIFY PSEUDOS WRITING TO CONSOLE P/P

Not Performed:_____

62-80 CGLS

PFP
PFPK6 (CONFIG LEDS) - PRESS
VERIFY CONFIG LEDS DISPLAY

62-81 CGLS

PFP
PFPK2 (RSYS TRANSFER) - PRESS

62-82 CGLS

CRT (SLP81) PG-1A
SELECT RSYS CONSOLE
_____ (1=INTG, 2=BKUP,
 3=MSTR, 4=IGNORE)
XMIT RESPONSE KEY - PRESS
VERIFY RSYS XFER CMPLT TO CONSOLE SPECIFIED FOR
SELECTED SYSTEMS, PG-1A.

62-83 CGLS

PFP
PFPK3 (LIMIT CHG SELECT) - PRESS

62-84 CGLS

Verify limit change complete, PG-1A.

<p>NOTE Reference the attached list provided by CGLS at runtime for required inputs.</p>

62-85 CGLS

IF SHAB/RDM MISSION,

THEN PERFORM THE FOLLOWING TO MODIFY VOTING LOGIC:
CONSOLE KYBD
HOME CMD KEY - PRESS
SET _____ ON
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

Not Performed: _____

NOTE

Perform the next step per GLS Mask and Bypass list.

62-86

CGLS

CONSOLE KEYBOARD
HOME CMD KEY - PRESS

C GL _____
 FD LO HI

XMIT CMD KEY - PRESS

Not Performed: _____

62-87

CGLS

PFP
PFPK4 (ACTIVATE CVFY) - PRESS
VERIFY ACTIVATION COMPLETE, PG-1A.

62-88

CGLS

PFP
PFPK5 (OPS LEDS) - PRESS
VERIFY OPS LEDS DISPLAY

62-89

CGLS

IF VL FAILURES WERE NOT REPORTED,

THEN PERFORM:

PFP
PFPK1 (LOOKUP SELECT) - PRESS
VERIFY 25 LOOKUP DISPLAY (SDP81)

Not Performed: _____

Mask/Reset FDs

NOTE

For this option, if standalone CVFY FDs are required to be masked/reset, reference the attached list provided by CGLS at run time.

NOTE

Repeat this option to mask or reset all required FDs.

Mask/Reset FDs Not Performed: _____

62-90

CGLS

IF FD IS TO BE MASKED,

THEN PERFORM:

CURSOR CNTL

M - PAGE/ROW _____

XMIT CURSOR KEY - PRESS

VERIFY "M" ADJACENT TO FD SELECTED

Not Performed: _____

62-91

CGLS

IF FD IS TO BE RESET,

THEN PERFORM:

CURSOR CNTL

R - PAGE/ROW _____

XMIT CURSOR KEY - PRESS

VERIFY BLANK ADJACENT TO FD SELECTED

Not Performed: _____

62-92

CGLS

PFP

PFPK1 (ADVANCE PG) - PRESS

***** End of Mask/Reset FDs *****

62-93 CGLS

IF HISTORICAL HARDCOPIES ARE REQUIRED,

THEN PERFORM:
HARDCOPY KEY - PRESS

Not Performed: _____

62-94 CGLS

PFP
PFPK6 (OPS LEADS) - PRESS
VERIFY 25 LOOKUP DISPLAY CLEARS

*** End of GLS Standalone CVFY Activation ***

Single Shot Verification

62-95 CGLS

CRT
INTG MENU

CURSOR CNTL
SINGLE SHOT VFY
XMIT CURSOR - PRESS

CRT
SINGLE SHOT VFY
SELECTION

62-96 CGLS

CURSOR CNTL
XMIT CURSOR KEY - PRESS
EACH ITEM
ML INT -

CRT
VERIFY INVERTED CURSOR BLOCK

62-97

CGLS

IF REQUIRED TO CHANGE VERIFY SELECTION,

THEN PERFORM:

CURSOR CNTL

XMIT CURSOR - PRESS

CRT

VERIFY CURSOR BLOCK OPEN

Not Performed: _____

62-98

CGLS

CURSOR CNTL

SELECTION END

XMIT CURSOR - PRESS

CRT

PRE-SEQ VFY

SELECTION

NOTE

Nomenclature displayed inverted denotes system bypassed or verify option not selected.

NOTE

Reference the GLS Single Shot Masks list for required inputs.

62-99

CGLS

IF REQUIRED TO MASK AN FD,

THEN PERFORM:

CURSOR CNTL

MASK FD _____

XMIT CURSOR - PRESS

CRT

CURSOR BLOCK INVERT

YELLOW (M)

Not Performed: _____

NOTE

Reference the GLS Single Shots Resets list for required inputs. FDs which have been bypassed by system may not be reset individually.

62-100

CGLS

IF REQUIRED TO RESET AN FD,

THEN PERFORM:

CURSOR CNTL

RESET FD _____

XMIT CURSOR - PRESS

CRT

CURSOR BLOCK OPEN CYAN

Not Performed: _____

62-101

CGLS

WHEN MASK/RESET SELECTIONS ARE COMPLETE,

BEGIN VFY'S

PFPK4 - PRESS

VERIFY TITLE

SINGLE SHOT VERIFY FAILURES

62-102

CGLS

IF PAGE FULL,

THEN PERFORM:

PFK15 - PRESS

VERIFY NEXT PAGE FAILURES

Not Performed: _____

62-103

CGLS

WHEN VERIFIES COMPLETE,

VERIFY MESSAGE: VERIFY CYCLE COMPLETE

<p>NOTE Perform one of the next two steps if a verify failure occurs.</p>
--

62-104

CGLS

PFPK1 (TERM VFY'S) - PRESS

Not Performed:_____

62-105

CGLS

PFPK2 (RESTART VFY'S) - PRESS

Not Performed:_____

62-106

CGLS

PFPK1 (SYSTEM MENU) - PRESS
VERIFY INTEGRATED PFP PANEL

***** End of Single Shot Verification *****

GLS Mainline Masks/Resets

NOTE

For mainline interrupt FDs to be masked or reset, reference the GLS Mainline Masks list or GLS ML Mask-resets list for required inputs.

NOTE

Perform this option if masks or resets are required.

GLS Mainline Masks/Resets Not Performed: _____

NOTE

Repeat the next step for each mainline table containing an FD to be masked.

62-107

CGLS

PFPK5 (VIEW INTERRUPT) - PRESS
VERIFY VIEW INTERRUPT SKELETON
(SDPC2)
CURSOR CONTROL
TABLE _____ (TABLE NUMBER)
XMIT CURSOR KEY - PRESS
VERIFY DISPLAY PG-2B

NOTE

Repeat the next step for each mainline CVFY FD to be masked.

62-108

CGLS

CURSOR CNTL

MASK _____ (FD)
XMIT CURSOR KEY - PRESS
VERIFY FD SHOWS "M" ADJACENT TO FD SELECTED

Not Performed: _____

NOTE
Repeat the next step for each FD to be reset.

62-109

CGLS

CURSOR CNTL

RESET _____ (FD)
XMIT CURSOR KEY - PRESS
VERIFY BLANK NEXT TO EACH FD RESET

Not Performed: _____

NOTE
Repeat the next step for each new mainline table.

62-110

CGLS

PFPK2 (ADVANCE) - PRESS
VERIFY NEXT TABLE PG-2B
REPEAT UNTIL NEXT DESIRED TABLE DISPLAYED

Not Performed: _____

*** End of GLS Mainline Masks/Resets ***

Modify Mainline Discrete Measurements

NOTE

Perform this option if required to change GOAL limits for discrete MIP measurements.

NOTE

Repeat this option for each discrete FD requiring a limit change. A list of discrete FDs requiring limit change and corresponding states will be provided with the GLS Mask and Bypass list.

Modify Mainline Discrete Measurements Not Performed: _____

62-111

CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS
I GX _____ (FD)
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS
VERIFY SUCCESSFUL

62-112

CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS
C GL _____ (FD) _____ (STATE)
XMIT CMD KEY - PRESS
VERIFY SUCCESSFUL

***** End of Modify Mainline Discrete Measurements *****

Modify Mainline Analog Measurements

NOTE

Repeat the next step for each analog FD requiring a limit change. A list of analog FDs requiring limit change and corresponding values will be provided with the GLS Mask and Bypass list.

62-113

CGLS

IF REQUIRED TO CHANGE GOAL LIMITS FOR ANALOG MIP MEASUREMENTS ,

THEN PERFORM:

CONSOLE KYBD
HOME CMD KEY - PRESS

C GL _____ (FD) _____ (LO) _____ (HI)
XMIT CMD KEY - PRESS

VERIFY SUCCESSFUL

Not Performed: _____

***** End of Modify Mainline Analog Measurements *****

Modify Mainline Digital Pattern Measurements

NOTE

Repeat the next step for each digital pattern FD requiring a limit change. A list of digital pattern FDs requiring limit change and corresponding values will be provided with the GLS Mask Bypass list.

62-114

CGLS

IF REQUIRED TO CHANGE GOAL LIMITS FOR DIGITAL
PATTERN MIP MEASUREMENT,

THEN PERFORM:

CONSOLE KYBD

HOME CMD KEY - PRESS

C GL ____ (FD) ____ (EQ/NE/ANY) ____ (VALUE)

XMIT CMD KEY - PRESS

VERIFY SUCCESSFUL

Not Performed: _____

***** End of Modify Mainline Digital Pattern Measurements *****

GLS LCC Masks/Resets

NOTE

For LCC interrupt FDs to be masked or reset, reference the GLS LCC Masks list or GLS LCC Mask-resets list for required inputs.

NOTE

Perform this option if masks or resets are required.

GLS LCC Masks/Resets Not Performed: _____

62-115

CGLS

PFPK5 (LCC SELECTIONS) - PRESS
VERIFY LCC SELECTIONS (SDPB2)
PG-2B

62-116

CGLS

CURSOR CNTL

TABLE _____ (TABLE NO. UPPER/LOWER)
XMIT CURSOR KEY - PRESS
VERIFY SELECTED TABLE PG-2B

Mask/Reset FDs on Table

NOTE
Repeat this option for each table to be modified.

Mask/Reset FDs on Table Not Performed: _____

NOTE
Repeat the next step for all required LCC FDs to be masked in this table.

62-117

CGLS

CURSOR CNTL

MASK _____ (FD)

XMIT CURSOR KEY - PRESS

VERIFY "M" ADJACENT TO FD'S SELECTED

Not Performed: _____

NOTE
Repeat the next step for all required LCC FDs to be reset in this table.

62-118

CGLS

CURSOR CNTL

RESET _____ (FD)

XMIT CURSOR KEY - PRESS

VERIFY BLANK ADJACENT TO FD'S SELECTED

Not Performed: _____

<p>NOTE Repeat the next step for each new LCC table as required.</p>

62-119

CGLS

PFPK2 (ADVANCE) - PRESS
VERIFY NEXT TABLE DISPLAYED TO PG-2B
REPEAT UNTIL NEXT DESIRED TABLE IS DISPLAYED

Not Performed:_____

***** End of Mask/Reset FDs on Table *****

62-120

CGLS

PFPK1 (INTG MENU) - PRESS
VERIFY INTEGRATED MENU

***** End of GLS LCC Masks/Resets *****

Modify LCC Discrete Measurements

NOTE

Perform this option if required to change GOAL limits for discrete LIP measurements.

NOTE

Repeat this option for each discrete FD requiring a limit change. A list of discrete FDs requiring limit changed and corresponding states will be provided with the GLS Mask and Bypass list.

Modify LCC Discrete Measurements Not Performed:_____

62-121

CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS
I GX _____ (FD)
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS
VERIFY SUCCESSFUL

62-122

CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS
A GX _____ (FD) _____ (STATE)
XMIT CMD KEY - PRESS
VERIFY SUCCESSFUL

***** End of Modify LCC Discrete Measurements *****

Modify LCC Analog Measurements

NOTE

Perform this option if required to change GOAL limits for analog LIP measurements. The section will be repeated for each analog FD requiring a limit change. A list of analog FDs requiring limit change and corresponding values will be provided with the GLS Mask and Bypass list.

Modify LCC Analog Measurements Not Performed: _____

62-123

CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS
C GL _____ (FD) _____ (LO) _____ (HI)
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS
VERIFY SUCCESSFUL

62-124

CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS
A GX _____ (FD)
XMIT CMD KEY - PRESS
VERIFY SUCCESSFUL

***** End of Modify LCC Analog Measurements *****

Modify LCC Digital Pattern Measurements

NOTE

Repeat the next step for each digital pattern FD requiring a limit change. A list of digital pattern FDs requiring limits changed and corresponding values will be provided with the GLS Mask and Bypass list.

62-125

CGLS

IF REQUIRED TO CHANGE GOAL LIMITS FOR DIGITAL
PATTERN LIP MEASUREMENTS,

THEN PERFORM:

HOME CMD KEY - PRESS

CONSOLE KYBD

A GX ____ (FD) ____ (EQ/NE/ANY) ____ (VALUE)

XMIT CMD KEY - PRESS

VERIFY SUCCESSFUL

Not Performed: _____

***** End of Modify LCC Digital Pattern Measurements *****

NOTE

When LIP command processor limit changes are complete, make a check of LCC failures for command processor limit changed measurements.

62-126

CGLS

TO TERMINATE

PFPK1 - PRESS

VERIFY INTG MENU

Clock Control

62-127

CGLS

SELECT APP PG-3B
PFPK7 PRESS
PFPK3 (SLP01) PRESS
PFPK6 (GLS CONTROL) - PRESS

62-128

CGLS

CURSOR CNTL SELECT
CDC CONTROL
XMIT CURSOR KEY - PRESS

62-129

CGLS

CURSOR CONTROL SELECT
SET HOLD AVAILABLE
XMIT CURSOR KEY - PRESS
 /
HHMM/SS
XMIT RESP KEY - PRESS

62-130

CGLS

CRT
VERIFY HOLD AVAILABLE SET

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62-131

CGLS

CURSOR CONTROL SELECT
RETURN TO MS/ML DISPLAY
XMIT CURSOR KEY - PRESS

***** End of Clock Control *****

62-132

CGLS

HOME CMD - PRESS
ISSU N03IS162D 540
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS
VERIFY SUCCESSFUL

***** End of Operation 62 *****

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OPERATION 63 Reserved

Shop: NA

Cntrl Rm Console: NA

OPR: NA

Zone: NA

Hazard (Y/N): NA

Duration (Hrs): NA

***** End of Operation 63 *****

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**OPERATION 64 SRB HPU N2H4 Manifold Refill and Bearing Seal
Soak**

Shop: **HPU**
Cntrl Rm Console: **C8**
OPR: **HPU**
Zone: **NA**
Hazard (Y/N): **N**
Duration (Hrs): **2.0**

NOTE

Perform this operation only if any SRB HPUs started in OMI S0007.

Operation Not Performed: _____

NOTE

Do not remove SRB OI power until SRB HPU N₂H₄ manifold refill is complete.

NOTE

During fuel isolation valve cycling, gas generator bed temperatures shall be monitored for any rise in temperature (shall not increase more than 20 degrees).

NOTE

Noted requirements are satisfied by the following series of steps.

OMRS S00E00.721-B-1

64-1 **TBC CHPU 136**

Perform N₂H₄ Manifold Refill and Bearing Soak and report completion (30 minutes).

NOTE

Wait until SRB HPU cooldown satisfies the next step prior to proceeding.

64-2 **CHPU**

CRT (BAT04)
VEHICLE
GAS GENRTR
P TEMP

VERIFY

LEFT A (LESS THAN 220 DEG F)
LEFT B (LESS THAN 220 DEG F)
RGHT A (LESS THAN 220 DEG F)
RGHT B (LESS THAN 220 DEG F)

64-3 **CHPU**

CURSOR CNTL (BAT04)
VEHICLE
UPDT (BLOCK)
XMIT CURSOR KEY - PRESS

CRT

NOTE CRT SCREEN UPDATE

64-4

CHPU

CRT (BAT04)
VEHICLE
GAS GENRTR
P TEMP

1. RECORD: P TEMP (STARTING)

LEFT A
(ROCK) _____ BD

LEFT B
(TILT) _____ BD

RGHT A
(ROCK) _____ BD

RGHT B
(TILT) _____ BD

**2. VERIFY ALL OF ABOVE TEMPERATURES LESS THAN
220 DEG F.**

NOTE

The next step is CRT data verification only.

64-5

CHPU

CRT (BAT04)
VEHICLE
FUEL SUPPLY MODULE
SEC VLV

VERIFY

LEFT A (CL) GREEN
LEFT B (CL) GREEN
RGHT A (CL) GREEN
RGHT B (CL) GREEN

64-6 CHPU

Record fuel isolation valve cycling start time:

Time _____ GMT

Date _____

64-7 CHPU

CURSOR CNTL (BAT04)
VEHICLE
FUEL SUPPLY MODULE
ISO VLV
LEFT A - OP
WAIT 10 SEC MINIMUM THEN
LEFT A - CL

64-8 CHPU

CURSOR CNTL (BAT04)
VEHICLE
FUEL SUPPLY MODULE
ISO VLV
LEFT B - OP
WAIT 10 SEC MINIMUM THEN
LEFT B - CL

64-9 CHPU

CURSOR CNTL (BAT04)
VEHICLE
FUEL SUPPLY MODULE
ISO VLV
RGHT A - OP
WAIT 10 SEC MINIMUM THEN
RGHT A - CL

64-10

CHPU

CURSOR CNTL (BAT04)
VEHICLE
FUEL SUPPLY MODULE
ISO VLV
RGHT B - OP
WAIT 10 SEC MINIMUM THEN
RGHT B - CL

64-11

CHPU

CRT (BAT04)
VEHICLE
GAS GENRTR
P TEMP

1. RECORD: P TEMP (ENDING)

LEFT A
(ROCK) _____ BD

LEFT B
(TILT) _____ BD

RGHT A
(ROCK) _____ BD

RGHT B
(TILT) _____ BD

2. VERIFY ENDING TEMPERATURES DID NOT INCREASE MORE THAN 20 DEGREES FROM STARTING TEMPERATURES FOR LEFT ROCK, LEFT TILT, RIGHT ROCK, RIGHT TILT.

64-12

CHPU

Record fuel isolation valve cycling end time.

Time _____ GMT

Date _____

64-13

CHPU

Perform the following:

1. Use PC GOAL to verify that the isolation valve states changed from "OFF" to "ON" to "OFF" for the following FDs:

B46X1851X1 - LEFT A ISO VLV OPEN IND
B46X1852X1 - LEFT B ISO VLV OPEN IND
B46X2851X1 - RIGHT A ISO VLV OPEN IND
B46X2852X1 - RIGHT B ISO VLV OPEN IND

2. **Attach** hardcopy of PC Goal plot data.

64-14

CHPU

TBC

136

SRB HPU N₂H₄ Manifold Refill and Bearing Seal Soak complete.

64-15

Noted requirements are complete.

OMRSD [S00E00.721-B-1](#)

***** End of SRB HPU N₂H₄ Manifold Refill and Bearing Seal Soak *****

***** End of Operation 64 *****

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OPERATION 65 GLS Recycle to T-20 Minutes

Shop: **GLS**
Cntrl Rm Console: **INTG**
OPR: **GLS**
Zone: **NA**
Hazard (Y/N): **N**
Duration (Hrs): **0.5**

NOTE

Perform this operation if supporting recycle option to T-20M.

Operation Not Performed: _____

NOTE

A list of GLS masks and bypasses to support test objectives, together with a signature page, will be provided by CGLS. This list will contain each kick-off step in this operation referencing this list, along with the corresponding inputs for that step.

Perform GLS Cutoff

NOTE

Do not perform this option if cutoff and safing have already been issued.

Perform GLS Cutoff Not Performed: _____

65-1

CGLS

PFPK7 - PRESS
PFPK3 (SLP01) - PRESS
PFPK5 (CUTOFF) - PRESS
PFPK6 (CUTOFF EXECUTE) - PRESS

65-2

CGLS

APP 3B
GLS SAFING SEQUENCES
HARDCOPY WHEN COMPLETE.

65-3

CGLS

APP 3A
SYSTEMS STATUS CHECKS
HARDCOPY KEY - PRESS

***** End of Perform GLS Cutoff *****

Mainline Termination

NOTE

If a cutoff has been issued, perform this option as required to terminate safing.

Mainline Termination Not Performed: _____

65-4

CGLS

APP 3B
PFPK7 - PRESS
PFPK3 (SLP01) - PRESS
PFPK4 (TERMINATE SAFING) - PRESS
PFPK6 (EXECUTE TERM) - PRESS

65-5

CGLS

CONSOLE KYBD
SGPR2
TERM PGM KEY - PRESS

65-6

CGLS

Verify SGPO2, SGPR2 are inactive.

***** End of Mainline Termination *****

MIP and LIP Deactivation

65-7 CGLS

APP 2B
PFPK7 - PRESS
PFPK2 (SLP02) - PRESS

65-8 CGLS

PFP
PFPK4 (LCC CONTROL) - PRESS
VERIFY LCC C&D

NOTE

Do not perform the next step if MIPs have termed due to breakout or an RSLs abort has occurred.

65-9 CGLS

1. **IF** SLPA0 IS STILL ACTIVE,

THEN PERFORM:

CURSOR CNTL
TERM MIP1
XMIT CURSOR KEY - PRESS

Not Performed: _____
SS1

2. **IF** SLPA1 IS STILL ACTIVE,

THEN PERFORM:

CURSOR CNTL
TERM MIP2
XMIT CURSOR KEY - PRESS

Not Performed: _____
SS2

3. **VERIFY** SLPA0 AND SLPA1 INACTIVE IN BACKUP
CONSOLE

NOTE Do not perform the next step if LIPs have termed due to breakout.
--

65-10

CGLS

1. **IF** SLPBO IS STILL ACTIVE,

THEN PERFORM:

CURSOR CNTRL

TERM LIP 1

XMIT CURSOR KEY - PRESS

Not Performed: _____
SS1

2. **IF** SLPCO IS STILL ACTIVE,

THEN PERFORM:

CURSOR CNTRL

TERM LIP 2

XMIT CURSOR KEY - PRESS

Not Performed: _____
SS2

3. **VERIFY** SLPBO AND SLPCO INACTIVE IN BACKUP
CONSOLE

***** End of MIP and LIP Deactivation *****

Pseudo Reinit

NOTE

Prior to Pseudo Reinit, make all necessary hardcopies.

65-11

CGLS

APP 2B
PF PK1 (INTG MENU) - PRESS

65-12

CGLS

CURSOR CNTL
PSEUDO INIT
XMIT CURSOR KEY - PRESS

NOTE

Do not alter disk files unless new requirements are identified by
USA-TPE and NASA-SPE.

ALL PSEUDOS
XMIT CURSOR KEY - PRESS

Cryo Safing Pseudo

NOTE
Perform this option if page B message indicates "SEE PAGE A FOR OPERATOR INPUT."

Cryo Safing Pseudo Not Performed: _____

65-13 CGLS

CRT
VERIFY PAGE A MSG:

(N03IS511E) CRYO SAFING ENABLED IS ON. THIS INDICATES SCRUB/CRYO DRAIN IN PROGRESS.

65-14 CGLS OTC 132
OTC CLHY

Verify with LH₂ Engineer that Scrub/Boiloff is complete and ready to reactivate SLP50 RCL RSYS transfer.

65-15 CGLS

CONSOLE KYBD (SLP02 PG-A)

ENTER "1" IF CRYO SAFING SUPPORT COMPLETED AND SLP50 NOT ACTIVE TO INITIALIZE (N03IS511E) TO OFF

ENTER "2" TO LEAVE (N03IS511E) UNCHANGED

_____ (1 OR 2)
XMIT RESPONSE KEY - PRESS

CRT
VERIFY MSG INDICATING PSEUDO STATE

***** End of Cryo Safing Pseudo *****

65-16 CGLS

Verify all pseudo boxes invert.

65-17 CGLS

PFPK6 (TERM PGM) - PRESS

***** End of Pseudo Reinit *****

Cancel Recycle

NOTE Perform this option in the event that a new T-0 is not known.
--

Cancel Recycle Not Performed: _____

65-18 CGLS

Verify CCM flags are inhibited.

Not Performed: _____

65-19 OTC CGLS 132

Do not perform remaining steps of GLS Recycle to T-20 Minutes.

Not Performed: _____

*** End of Cancel Recycle ***

Reset SLP50

NOTE

Perform this option if SLP50 is active due to Scrub/LH₂ Boiloff operations.

Reset SLP50 Not Performed: _____

NOTE

From T-6 hours thru initial scrub operations, any SLP50/SA001 messages should be relayed to CGLS on channel 162.

65-20 CGLS LPS 127

PFP (SLP50)
PFPK2 (RECYCLE COMPLT) - PRESS

CRT (SLP50 PG-A)
VERIFY MESSAGE:
RECYCLE FUNCTION COMPLETE
AUTO RESPONSE TO ALL CONSOLE FAILURES RESUMED
MANUAL RSYS XFER/SAFING CAPABILITY ACTIVE

65-21 CGLS LPS 127

IF PGM SA001 IS NOT AUTOMATICALLY INITIALIZED,

THEN PERFORM:

CRT (SLP50 PG-A)

VERIFY MESSAGE:

PSEUDO NLHK0706X IS ON, INDICATING SA001 ALREADY
ACTIVE, SPECIFY WHETHER TO PROCEED....

- 1 - ACTIVATE SA001
- 2 - DO NOT ACT SA001 NOW

CONSOLE KYBD

1

XMIT RESPONSE KEY - PRESS

VERIFY PGM SA001 ACTIVE

CRT

VERIFY MESSAGE:

CRYOGENIC RECOVERY FUNCTION WILL BE HANDLED BY
SA001.

CRYO SAFING RESPONSE DISABLED.

Not Performed:_____

***** End of Reset SLP50 *****

Timer Configuration

NOTE

Perform this option if attempting a new T-0 for current day.

Timer Configuration Not Performed: _____

Timer No. 1 Window Remaining

65-22 CGLS JTCR 178

Set up window remaining Timer No. 1 to following time:

Timer No. 1 _____:_____:_____ (window remaining)

Support: [TCD](#)

65-23 JTCR

For Timer No. 1, at the T-9M holding point:

Active OVRD switch - On

Counthold switch - Off

When Timer No. 5 decrements to zero:

Activate counthold switch - Auto

Support: [TCD](#)

NOTE

Timer No. 1 should decrement when holds occur from this point to completion of window.

***** End of Timer No. 1 Window Remaining *****

Timer No. 2 LO₂ Drain Back Elapsed Hold Time

65-24 CGLS JTCR 178

Set LO₂ drain back hold Timer No. 2 to +0:00.

Support: [TCD](#)

NOTE

Timer No. 2 counts at any hold after T-5M and counting.

65-25 CGLS JTCR 178

Verify Timer No. 2 in Remote and in Counting Up mode.

Support: [TCD](#)

***** End of Timer No. 2 LO₂ Drain Back Elapsed Hold Time *****

Timer No. 5 Hold Time Remaining

65-26 CGLS JTCR 178

Verify hold time remaining (Timer No. 5).

Set to the following times:

NOTE

The times are to reflect the planned hold duration. After the T-9M planned hold expires, Timer No. 5 will accumulate time at any additional hold.

T-20M Hold _____:_____:_____ (hold time remaining)

T-9M Hold _____:_____:_____ (hold time remaining)

Support: [TCD](#)

***** End of Timer No. 5 Hold Time Remaining *****

***** End of Timer Configuration *****

Reinit GLS MS/ML Display

65-27

CGLS

PFPK7 - PRESS
PFPK3 (SLP01) - PRESS
PFPK6 (GLS CONTROL) - PRESS
VERIFY MS/ML DISPLAY

65-28

CGLS

CURSOR CNTL
CDC CONTROL
XMIT CURSOR KEY - PRESS
VERIFY CDC CONTROL DISPLAY

65-29

CGLS

CURSOR CNTL
SET CDT
XMIT CURSOR KEY - PRESS
CONSOLE KYBD
-00:0020/00
XMIT RESP KEY - PRESS
VERIFY CDC SET TO -00:0020/00 AND HOLDING

65-30

CGLS

CURSOR CNTL
HOLD AVAILABLE
XMIT CURSOR KEY - PRESS
CONSOLE KYBD
__:____/____
DD HHMM SS
XMIT RESP KEY - PRESS
VERIFY HOLD AVAILABLE SET

06-24-2011
APPROVED

OMI S0007.400 A23
APPROVED

65-31

CGLS

CURSOR CNTL
RETURN TO MS/ML DISPLAY
XMIT CURSOR KEY - PRESS
VERIFY MS/ML DISPLAY

65-32

CGLS

HOME CMD - PRESS
ISSU N03IS162D 540
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS
VERIFY SUCCESSFUL

***** End of Reinit GLS MS/ML Display *****

System Bypass Reset

65-33 CGLS

APP 2B
CURSOR CNTL
SYSTEM BYPASS
XMIT CURSOR KEY - PRESS

NOTE
For the following step, reference the GLS System Bypass list for requirements.

65-34 CGLS

IF SYSTEM BYPASSES ARE REQUIRED FOR THIS FLOW,

THEN PERFORM:

CRT

CURSOR CNTL _____ (SYS)
XMIT CURSOR KEY - PRESS

<u>SYSTEM</u>	<u>BYPASS</u>
APU	_____
ARMS	_____
BELE	_____
BHYD	_____
BINST	_____
BRS	_____
BPYRO	_____

<u>SYSTEM</u>	<u>BYPASS</u>
PLINTG	_____
COMM	_____
DPS	_____
ECLS	_____
ECS	_____
EPDC	_____
FCP	_____
GNS	_____
GOX	_____
HYD	_____
HYFUEL	_____
HYOXID	_____
INST	_____
INTG	_____
LH2	_____
LOX	_____

<u>SYSTEM</u>	<u>BYPASS</u>
MECH	_____
MPS	_____
NAVAID	_____
FCL	_____
PVD	_____
SSME	_____
TINST	_____
WATER	_____

Not Performed: _____

65-35

CGLS

CONSOLE KYBD
HARDCOPY KEY - PRESS

65-36

CGLS

APP 2B
CURSOR CNTL
TERMINATE
XMIT CURSOR KEY - PRESS

VERIFY BYPASS SELECTION PROCESS TERMINATING

***** End of System Bypass Reset *****

GLS Functional Changes

NOTE

Console reboot or disk re-initialization will probably destroy this data. In the event this happens, verify that data is lost; if so, re-enter data.

65-37

CGLS

CURSOR CNTL
ML FUNC CHNGS
XMIT CURSOR KEY - PRESS

65-38

CGLS

PFP
PFPK1 (ML BYPASS FILE) - PRESS
VERIFY MAINLINE BYPASS DISPLAY

GLS Mainline Bypass

NOTE
Perform this option if bypass file update is required.

GLS Mainline Bypass Not Performed: _____

65-39 CGLS

PFP
PFPK5 (ADD) - PRESS

NOTE
To bypass GLS mainline function line item, use GLSDD to determine seq number. Reference the GLS Mainline Bypass list for required inputs.

65-40 CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS

_____ (SEQ NUMBER)
XMIT RESP KEY - PRESS

65-41 CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS
-9999
XMIT RESP KEY - PRESS

65-42 CGLS

CONSOLE KYBD
HARDCOPY KEY - PRESS

***** End of GLS Mainline Bypass *****

NOTE
A functional line item entered into bypass file may not be entered into any other file.

65-43 CGLS

PFP
PFPK2 (ML ALALOG FILE) - PRESS
VERIFY ANALOG FILE DISPLAY

GLS Analog Changes

NOTE

Perform this option if mainline analog file update is required.

GLS Analog Changes Not Performed: _____

65-44 CGLS

PFP
PFPK5 (ADD) - PRESS

NOTE

Perform the following four steps to monitor an analog using limits that are different from limits in GLSDD. Reference the GLS ML Analog Disk File list for required inputs.

65-45 CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS
_____ (SEQ NUMBER)
XMIT RESP KEY - PRESS

65-46 CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS
_____ (NEW HIGH LIMIT)
XMIT RESP KEY - PRESS

65-47 CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS
_____ (NEW LOW LIMIT)
XMIT RESP KEY - PRESS

65-48

CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS
-9999
XMIT RESP KEY - PRESS

65-49

CGLS

CONSOLE KYBD
HARDCOPY KEY - PRESS

***** End of GLS Analog Changes *****

65-50

CGLS

PFPF
PFPK3 (PRSEQ ANALOG FILE) - PRESS
VERIFY PRESEQUENCER ANALOG FILE DISPLAY

GLS Presequence Analog Changes

NOTE

To monitor a presequence analog measurement with limits different from those in the GLSDD, perform this option. Reference the GLS Presequence Analog File list for required inputs.

GLS Presequence Analog Changes Not Performed: _____

65-51

CGLS

PFPK5 (ADD) - PRESS

65-52

CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS
_____ (SEQ NUMBER)
XMIT RESP KEY - PRESS

65-53

CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS
_____ (NEW HIGH LIMIT)
XMIT RESP KEY - PRESS

65-54

CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS
_____ (NEW LOW LIMIT)
XMIT RESP KEY - PRESS

65-55

CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS
-9999
XMIT RESP KEY - PRESS

65-56

CGLS

CONSOLE KYBD
HARDCOPY KEY - PRESS

***** End of GLS Presequence Analog Changes *****

Delete GLS Disk File Entries

NOTE

Perform this option to delete an item that has been updated into any disk file.
Reference the attached disk file list for changes.

Delete GLS Disk File Entries Not Performed: _____

65-57

CGLS

PF6
PF6 (DELETE) - PRESS

65-58

CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS
_____ (SEQ NUMBER)
XMIT RESP KEY - PRESS

65-59

CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS
-9999
XMIT RESP KEY - PRESS

65-60

CGLS

CONSOLE KYBD
HARDCOPY KEY - PRESS

***** End of Delete GLS Disk File Entries *****

65-61 CGLS

CURSOR CNTL
TERMINATE
XMIT CURSOR KEY - PRESS

CRT
INTG MENU

65-62 CGLS

Verify the following pseudos are in the desired recycle configuration.

N03IS080E = ON (LOC test-Pad)
N03IS003E = OFF (LCC hold)

65-63 CGLS

IF PSEUDOS NOT IN CONFIG AS INDICATED IN PREVIOUS
STEP,

THEN SET OR ISSUE ABOVE PSEUDOS AS REQUIRED FOR
CORRECT INDICATION.

CONSOLE KYBD
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

Not Performed:_____

***** End of GLS Functional Changes *****

Dual Interrupt Notification

65-64 CGLS

APP2B
PFPK7 - PRESS
PFPK2 - PRESS

65-65 CGLS

PFP
PFPK4 (LCC CONTROL) - PRESS

CRT
VERIFY LCC C AND D

65-66 CGLS

CURSOR CNTL
GLS LIMIT CHANGE
XMIT CURSOR KEY - PRESS

CRT
VERIFY GLS DUAL INTERRUPT NOTIFICATION

65-67 CGLS

CURSOR CNTL
BACKUP
XMIT CURSOR KEY - PRESS

VERIFY BACKUP BLOCK SOLID

65-68 CGLS OTC 212

FEP Dual Interrupt Notification will be activated momentarily and may cause re-annunciation of error messages at systems consoles for interrupt monitored parameters currently out of GLS limits.

***** End of Dual Interrupt Notification *****

Limit Change

65-69

CGLS

APP 2B
CNTL
ACTIVATE
XMIT CURSOR KEY - PRESS

VERIFY ACTIVE SOLID BLOCK

65-70

CGLS

Verify two concurrencies are available in backup console.

65-71

CGLS

PPFK2 (TERM LIMIT CHG) - PRESS
VERIFY LCC C AND D

65-72

CGLS

CURSOR CNTL
ACT LIP 1
XMIT CURSOR KEY - PRESS

65-73

CGLS

CURSOR CNTL
ACT LIP 2
XMIT CURSOR KEY - PRESS

65-74

CGLS

Verify SLPBO and SLPCO active in backup console.

65-75

CGLS

PPFK2 (LIMIT CHANGE) - PRESS
VERIFY GLS LIMIT CHNG

65-76 CGLS

CRT
SELECT XFER TO GLS FOR ALL
XMIT CURSOR KEY - PRESS

65-77 CGLS

VERIFY LIMIT CHANGES COMPLETE EXCEPT FOR BRS

CRT SELECT

BRS - XMIT CURSOR

VERIFY LIMIT CHANGE TO GLS FOR BRS COMPLETE

65-78 CGLS

CRT
VERIFY DISPLAY SHOWS ALL SELECTED SYSTEMS LIMITS
XFERED TO GLS

65-79 CGLS

PFPK1 (INTG MENU) - PRESS

CRT
VERIFY INTEGRATED MENU

***** End of Limit Change *****

GLS Standalone CVFY Activation

NOTE

Perform this option if RDM or SpaceHab LCCs are applicable.

GLS Standalone CVFY Activation Not Performed:_____

65-80

CGLS

HOME CMD KEY - PRESS
S FD V98X2621X1 - XMIT CMD

VERIFY PROC HALT STAT 1-BCE ENABLED OFF

65-81

CGLS

HOME CMD KEY - PRESS
SLP81
PERF PGM KEY - PRESS

65-82

CGLS

PFP PNL
PFPK7 - PRESS

65-83

CGLS

PFP
PFPK1 (SLP81) - PRESS
VERIFY TOP LEVEL PFP DISPLAY

65-84

CGLS

IF SPACEHAB IS INSTALLED,

THEN PERFORM:

PFP

PFPK2 (SHAB INHIBITED) - PRESS

VERIFY PFPK2 LED, SPACEHAB ACTIVE

Not Performed: _____

65-85

CGLS

IF RDM IS INSTALLED,

THEN PERFORM:

PFP

PFPK4 (RDM INHIBITED) - PRESS

VERIFY PFPK4 LED, RDM ACTIVE

Not Performed: _____

65-86

CGLS

PFP

PFPK5 (SELECTION CMPLT) - PRESS

65-87

CGLS

PFP

PFPK1 (CONFIGURATION) - PRESS

PFP

PFPK1 (PSEUDO INITS) - PRESS

VERIFY PSEUDO INIT LED DISPLAY

NOTE
Perform one of following three steps.

65-88

CGLS

PFP
PFPK1 (FAIL/VL) - PRESS
VERIFY FAIL PSEUDO INIT COMPLETE (PG-1A)

Not Performed: _____

65-89

CGLS

PFP
PFPK2 (ALL PSEUDOS) - PRESS
VERIFY VL PSEUDO INIT COMPLETE (PG-1A)

Not Performed: _____

65-90

CGLS

PFP
PFPK3 (MASK) - PRESS
VERIFY MASK PSEUDO INIT COMPLETE (PG-1A)

Not Performed: _____

NOTE
For the following step, the printer/plotter must be online and functional.

65-91

CGLS

IF CGLS DESIRES A COPY OF PSEUDO FD'S CURRENT
VALUE,

THEN PERFORM:

PFP
PFPK4 (PSEUDOS TO PP) - PRESS
VERIFY PSEUDOS WRITING TO CONSOLE P/P

Not Performed: _____

65-92 CGLS

PFP
PFPK6 (CONFIG LEDS) - PRESS
VERIFY CONFIG LEDS DISPLAY

65-93 CGLS

PFP
PFPK2 (RSYS TRANSFER) - PRESS

65-94 CGLS

CRT (SLP81) PG-1A
SELECT RSYS CONSOLE
_____ (1=INTG, 2=BKUP, 3=MSTR, 4=IGNORE)
XMIT RESPONSE KEY - PRESS
VERIFY RSYS XFER CMPLT TO CONSOLE SPECIFIED, PG-1A.

65-95 CGLS

PFP
PFPK3 (LIMIT CHG SELECT) - PRESS
VERIFY LIMIT CHANGE COMPLETE, PG-1A.

NOTE

Reference the attached list provided by CGLS at runtime for required inputs.

65-96 CGLS

IF MODIFYING VOTING LOGIC FOR SHAB/RDM LCCS IS
REQUIRED,

THEN PERFORM:

CONSOLE KYBD
HOME CMD KEY - PRESS
SET _____ ON
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

Not Performed: _____

NOTE

Repeat the next step for each standalone CVFY listed in the GLS Mask and Bypass List.

65-97

CGLS

CONSOLE KEYBOARD
HOME CMD KEY - PRESS

C GL _____
 FD LO HI

XMIT CMD KEY - PRESS

Not Performed:_____

65-98

CGLS

PFP
PFPK4 (ACTIVATE CVFY) - PRESS
VERIFY ACTIVATION COMPLETE, PG-1A

65-99

CGLS

PFP
PFPK5 (OPS LEDS) - PRESS
VERIFY OPS LEDS DISPLAY

65-100

CGLS

PFP
PFPK1 (LOOKUP SELECT) - PRESS
VERIFY 25 LOOKUP DISPLAY (SDP81)

Standalone CVFY Mask or Reset

NOTE

For the next two steps, if standalone CVFY FDs are required to be masked/reset, reference the attached list provided by CGLS at run time.

NOTE

Repeat this option if FDs are required to be reset or masked.

Standalone CVFY Mask or Reset Not Performed: _____

65-101

CGLS

IF FD IS TO BE MASKED,

THEN PERFORM:

CURSOR CNTL

M - PAGE/ROW _____

XMIT CURSOR KEY - PRESS

VERIFY "M" ADJACENT TO FD SELECTED

Not Performed: _____

65-102

CGLS

IF FD IS TO BE RESET,

THEN PERFORM:

CURSOR CNTL

R - PAGE/ROW _____

XMIT CURSOR KEY - PRESS

VERIFY BLANK ADJACENT TO FD SELECTED

Not Performed: _____

65-103

CGLS

PFP

PFPK1 (ADVANCE PAGE) - PRESS

***** End of Standalone CVFY Mask or Reset *****

65-104

CGLS

CONSOLE KYBD
HARDCOPY KEY - PRESS

65-105

CGLS

PFP
PFPK6 (OPS LEDES) - PRESS
VERIFY 25 LOOKUP DISPLAY CLEARS

***** End of GLS Standalone CVFY Activation *****

Single Shot Verification

65-106

CGLS

CRT
INTG MENU

CURSOR CNTL
SINGLE SHOT VFY
XMIT CURSOR KEY - PRESS

CRT
VERIFY

SINGLE SHOT VFY SELECTION

65-107

CGLS

CURSOR CNTL
(SELECT AS REQD)
XMIT CURSOR KEY - PRESS
EACH ITEM
ML INT -

CRT
VERIFY INVERTED CURSOR BLOCK

65-108

CGLS

IF REQUIRED TO CHANGE VERIFY SELECTION,

THEN PERFORM:

CURSOR CNTL
XMIT CURSOR KEY - PRESS

CRT
VERIFY CURSOR BLOCK OPEN

Not Performed:_____

65-109

CGLS

CURSOR CNTL
SELECTION END
XMIT CURSOR KEY - PRESS

CRT
VERIFY

PRE-SEQ VFY
SELECTION

NOTE

Nomenclature displayed as invert yellow denotes systems bypassed or verify option not selected.

NOTE

Reference the GLS Single Shot Masks list for required inputs.

65-110

CGLS

IF REQUIRED TO MASK AN FD,

THEN PERFORM:

CURSOR CNTL

MASK FD _____
XMIT CURSOR KEY - PRESS

CRT
VERIFY

CURSOR BLOCK INVERT
YELLOW (M)

Not Performed:_____

NOTE

Reference the GLS Single Shot Resets list for required inputs. FDs which have been bypassed by system may not be reset individually.

65-111

CGLS

IF REQUIRED TO RESET AN FD,

THEN PERFORM:

CURSOR CNTL

RESET FD _____

XMIT CURSOR KEY - PRESS

CRT

VERIFY

CURSOR BLOCK OPEN

CYAN

Not Performed: _____

65-112

CGLS

WHEN MASK/RESET SELECTIONS ARE COMPLETE, BEGIN

VERIFIES

PFPK4 - PRESS

VERIFY TITLE

SINGLE SHOT VERIFY FAILURES

65-113

CGLS

IF PAGE FULL,

THEN PERFORM:

PFK15 - PRESS

VERIFY NEXT PAGE FAILURES

Not Performed: _____

65-114

CGLS

WHEN VERIFIES COMPLETE

VERIFY MESSAGE: VERIFY CYCLE COMPLETE

NOTE Perform one of the next two steps if a verify failure occurs.
--

65-115

CGLS

PFPK1 (TERM VFY'S) - PRESS

Not Performed:_____

65-116

CGLS

PFPK2 (RESTART VFY'S) - PRESS

Not Performed:_____

65-117

CGLS

TO TERMINATE
PFPK1 - PRESS
VERIFY INTG MENU

***** End of Single Shot Verification *****

GLS Mainline Masks/Resets

NOTE

For mainline interrupt FDs to be masked or reset, reference the GLS Mainline Masks list or GLS ML Mask-Resets list for required inputs.

NOTE

Perform this option if masks or resets are required.

GLS Mainline Masks/Resets Not Performed: _____

65-118

CGLS

PFPK5 (VIEW INTERRUPT) - PRESS
VERIFY VIEW INTERRUPT SKELETON
(SDPC3)
CURSOR CONTROL

TABLE _____ (TABLE NUMBER)
XMIT CURSOR KEY - PRESS
VERIFY DISPLAY PG-2B

NOTE

Repeat the next step for each mainline CVFY FD to be masked.

65-119

CGLS

CURSOR CONTROL

MASK _____ (FD)
XMIT CURSOR KEY - PRESS

CRT
VERIFY FD SHOW "M" ADJACENT TO FD SELECTED

NOTE

Repeat the next step for each FD to be reset.

65-120

CGLS

CURSOR CNTL

RESET _____ (FD)
XMIT CURSOR KEY - PRESS

65-121

CGLS

PFPK2 (ADVANCE) - PRESS
VERIFY NEXT TABLE PG-2B
REPEAT UNTIL NEXT DESIRED TABLE DISPLAYED

*** End of GLS Mainline Masks/Resets ***

Modify Mainline Discrete Measurements

NOTE

Perform this option to change GOAL limits for discrete MIP measurements.

NOTE

Repeat this option for each discrete FD requiring a limit change. A list of discrete FDs requiring limit change and corresponding states will be provided with the GLS Mask and Bypass list.

Modify Mainline Discrete Measurements Not Performed: _____

65-122

CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS
I GX _____ (FD)
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS
VERIFY SUCCESSFUL

65-123

CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS
C GL _____ (FD) _____ (STATE)
XMIT CMD KEY - PRESS
VERIFY SUCCESSFUL

***** End of Modify Mainline Discrete Measurements *****

Modify Mainline Analog Measurements

NOTE

Repeat the next step for each analog FD requiring a limit change. A list of analog FDs requiring limit change and corresponding values will be provided with the GLS Mask and Bypass list.

65-124

CGLS

IF REQUIRED TO CHANGE GOAL LIMITS FOR ANALOG MIP MEASUREMENTS ,

THEN PERFORM:

CONSOLE KYBD

HOME CMD KEY - PRESS

C GL ____ (FD) ____ (LO) ____ (HI)

XMIT CMD KEY - PRESS

VERIFY SUCCESSFUL

Not Performed: _____

***** End of Modify Mainline Analog Measurements *****

Modify Mainline Digital Pattern Measurements

NOTE

Repeat the next step for each digital pattern FD requiring a limit change. A list of digital pattern FDs requiring limit change and corresponding values will be provided with the GLS Mask Bypass list.

Modify Mainline Digital Pattern Measurements Not Performed: _____

65-125

CGLS

IF REQUIRED TO CHANGE GOAL LIMITS FOR DIGITAL
PATTERN MIP MEASUREMENT,

THEN PERFORM:

CONSOLE KYBD

HOME CMD KEY - PRESS

C GL _____ (FD) _____ (EQ/NE/ANY) _____ (VALUE)

XMIT CMD KEY - PRESS

VERIFY SUCCESSFUL

Not Performed: _____

*** End of Modify Mainline Digital Pattern Measurements ***

GLS LCC Masks/Resets

NOTE

For LCC interrupt FDs to be masked or reset, reference the GLS LCC Masks list or GLS LCC Mask-resets list for required inputs.

NOTE

Perform this option if masks or resets are required.

GLS LCC Masks/Resets Not Performed: _____

65-126

CGLS

PFPK5 (LCC SELECTIONS) - PRESS
VERIFY LCC SELECTIONS (SDPB2)
CURSOR CNTL

TABLE _____ (TABLE NO. UPPER/LOWER)
XMIT CURSOR KEY - PRESS
VERIFY SELECTED TABLE PG-2B

NOTE

Repeat the next step for all required LCC FDs to be masked in this table.

65-127

CGLS

CURSOR CNTL

MASK _____ (FD)
XMIT CURSOR KEY - PRESS

CRT
VERIFY FD
SHOW "M" ADJACENT TO FD

Not Performed: _____

NOTE
Repeat the next step for all required LCC FDs to be reset in this table.

65-128

CGLS

CURSOR CNTL

RESET _____ (FD)
XMIT CURSOR KEY - PRESS

Not Performed: _____

65-129

CGLS

PFPK2 (ADVANCE) - PRESS
VERIFY NEXT TABLE DISPLAYED TO PG-2B
REPEAT UNTIL NEXT DESIRED TABLE IS DISPLAYED

Not Performed: _____

65-130

CGLS

PFPK1 (INTG MENU) - PRESS
VERIFY INTEGRATED MENU

***** End of GLS LCC Masks/Resets *****

Modify LCC Discrete Measurements

NOTE

Perform this option to change GOAL limits for discrete LCC measurements.

NOTE

Repeat this option for each discrete FD requiring a limit change. A list of discrete FDs requiring limit change and corresponding states will be provided with the GLS Mask and Bypass list.

Modify LCC Discrete Measurements Not Performed: _____

65-131

CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS

I GX _____ (FD)
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS
VERIFY SUCCESSFUL

65-132

CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS

A GX _____ (FD) _____ (STATE)
XMIT CMD KEY - PRESS
VERIFY SUCCESSFUL

***** End of Modify LCC Discrete Measurements *****

Modify LCC Analog Measurements

NOTE

Perform this option if required to change GOAL limits for analog LCC measurements. Repeat next two steps for each analog FD requiring a limit change. A list of analog FDs requiring limit change and corresponding values will be provided with the GLS Mask and Bypass list.

Modify LCC Analog Measurements Not Performed: _____

65-133

CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS

C GL _____ (FD) _____ (LO) _____ (HI)
XMIT CMD KEY - PRESS

VERIFY SUCCESSFUL

65-134

CGLS

CONSOLE KYBD
HOME CMD KEY - PRESS

A GX _____ (FD)
XMIT CMD KEY - PRESS

VERIFY SUCCESSFUL

***** End of Modify LCC Analog Measurements *****

Modify LCC Digital Pattern Measurements

NOTE

Repeat the next step for each digital pattern FD requiring a limit change. A list of digital pattern FDs requiring limits change and corresponding values will be provided with the GLS Mask and Bypass list.

65-135

CGLS

IF REQUIRED TO CHANGE GOAL LIMITS FOR DIGITAL
PATTERN LCC MEASUREMENTS,

THEN PERFORM:

CONSOLE KYBD

HOME CMD KEY - PRESS

A GX _____ (FD) _____ (EQ/NE/ANY) _____ (VALUE)

XMIT CMD KEY - PRESS

VERIFY SUCCESSFUL

Not Performed: _____

***** End of Modify LCC Digital Pattern Measurements *****

NOTE

When LCC command processor limit changes are complete, make a check of LCC failures for command processor limit changed measurements.

GLS Mainline Activation

65-136

CGLS

CONSOLE KYBD
SELECT APP PG-3B - PRESS

CRT
VERIFY MS/ML DISPLAY

65-137

CGLS

CURSOR CNTL
INITIATE MAINLINE
XMIT CURSOR KEY - PRESS

NOTE
Select GLS presequencer bypasses as applicable from the following list and perform the following step.

65-138

CGLS

SELECT APP PG-4B

CRT

SELECT GLS FUNCTIONS TO BYPASS

CONSOLE KYBD (SGPO2)

XMIT CURSOR KEY - PRESS

<u>FUNCTION</u>	<u>BYPASS</u>
BRS LIMIT CHANGE	_____
ONE-SHOT DATA TRANSFER	_____
T-20 MINUTES AUTO HOLD	_____
OPS TRANSITION	_____
SEND GMTLO	_____
GPC DUMP AND COMPARE	_____
SLPAO, SLPA1 PERFORMS	_____
RF SWITCH SELECT	<u> x </u>
SINGLE SHOT VERIFY	_____
T-9 MINUTES AUTO HOLD	_____
BYPASS ALL	_____

65-139

CGLS

CONSOLE KYBD (SGPO2)
PFPK7 - PRESS
PFPK4 (SGPO2) - PRESS
PFPK2 (PROCEED) - PRESS

CRT (SGPO2)
VERIFY GLS MAINLINE ACTIVE MESSAGE

65-140

CGLS

APP 4A

CRT
VERIFY

GLS MAINLINE ACTIVE
VERIFY RSLs DOES NOT START COUNTING

65-141

CGLS

PFPK7 - PRESS
VERIFY SGPO2, SGPR2 ACTIVE.
VERIFY STATUS IS T-20 MIN AND HOLDING

65-142

CGLS

IF AUTOMATIC RESUME IN 10 MINUTES IS NOT DESIRED,

THEN PERFORM:

APP 3B
CURSOR CNTL
CANCEL PENDING CDC REQUESTS
XMIT CURSOR KEY - PRESS
VERIFY SUCCESSFUL

Not Performed: _____

65-143

CGLS

Verify following pseudo is in desired recycle configuration.

N03IS331D = X0001 (RSS hold)

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APPROVED

65-144

CGLS

CONSOLE KYBD
IF PSEUDO NOT IN CONFIGURATION AS INDICATED IN
PREVIOUS STEP,

THEN ISSUE THE PSEUDO TO CORRECT INDICATION.

ISSU N03IS331D X0001
XMIT CMD KEY - PRESS
EXEC CMD KEY - PRESS

Not Performed: _____

65-145

CGLS

OTC

212

GLS Recycle to T-20 Minutes is complete.

*** End of Operation 65 ***

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OPERATION 66 ECLSS Safing Scrub/Turnaround Ops Contingency

Shop: **ECL**

Cntrl Rm Console: **C5**

OPR: **ECL**

Zone: **121, 122**

Hazard (Y/N): **N**

Duration (Hrs): **0.5**

NOTE

This is a contingency operation. Perform this operation to support Extended Scrub/Turnaround.

Operation Not Performed: _____

66-1 OTC CECL 132
 CDR
 CFCP
 *PAD
*PAD OMTO

Perform ECLSS ARPCS Safing on Channel 143.

66-2 CECL CDR 143

Perform the switch positions listed below and install the switchguards.

PANEL L1

GUARD P/N

FLASH EVAP CONTROLLER

PRI A SW - OFF

G070-700930-001

PRI B SW - OFF

(ONE GUARD/TWO SWITCHES)

FLASH EVAP CONTROLLER

SEC MODE SW - OFF

G070-700919-001

NH3 CONTROLLER

A SW - OFF

G070-700921-001

B SW - OFF

G070-700921-001

66-3 CECL CDR 143

PANEL L1A2

HI LOAD EVAP SW - OFF

66-4 CECL CDR 143

PANEL L2A1

FLASH EVAP

FEEDLINE HTR

A SUPPLY SW - OFF

B SUPPLY SW - OFF

ECLSS GSE Cooling Reconfigure

66-5 OTC CECL 132

IF directed by CECL,

THEN perform GSE Cooling Reconfigure from REFR to Chilled Water mode (remote with backup unit down) per OMI [S9001.105](#) on Channel 143.

Report completion.

Not Performed: _____

ARPCS Oxygen Supply Valve 1 and 2 Closure

66-6 CECL CFCP

Perform ARPCS oxygen supply valve 1 and 2 closure.

66-7 CFCP CDR 153

IF THE VALVE POSITION INDICATORS ARE NOT AS SHOWN,

THEN PERFORM:
PANEL L2

ATM PRESS CONTROL	
O ₂ SYS 1 SUPPLY SW - CLOSE	L2A1S11
UNTIL	
O ₂ SYS 1 SUPPLY TB CL	L2A1DS5
O ₂ SYS 2 SUPPLY SW - CLOSE	L2A1S20
UNTIL	
O ₂ SYS 2 SUPPLY TB CL	L2A1DS9

Not Performed: _____

66-8 CECL

IF THE VALVE POSITION INDICATORS ARE NOT AS SHOWN,

THEN PERFORM:

CRT (VAG10 PG-B)

VERIFY

PRSD O₂ ECS PRIM SUP VLV
(VLV 1) PCL V45X1080E

PRSD O₂ ECS SEC VLV
(VLV 3) PCL V45X1083E

Not Performed:_____

66-9 CECL CDR 143

PANEL L2

ATM PRESS CONTROL

O₂ XOVR

SYS 1 - OPEN

SYS 2 - OPEN

66-10 CECL CDR 143

IF VAG10 (P17) GREATER THAN 100 PSIA,

THEN PERFORM:

PANEL C5

DIRECT O₂ VALVE - OPEN UNTIL VAG10 (P17)
AIRLOCK O₂ PRESS IS
50 TO 100 PSIA, THEN CLOSE

Not Performed:_____

66-11 CECL CDR 143

PANEL L2

ATM PRESS CONTROL

O₂ XOVR

SYS 1 - CLOSE

SYS 2 - CLOSE

66-12 CFCP CECL 153

ARPCS Oxygen Supply Valve 1 and 2 Closure is complete.

***** End of ARPCS Oxygen Supply Valve 1 and 2 Closure *****

66-13 CECL CDR 143

PANEL L2A1

ATM PRESS CONTROL

N₂ SYS 1

SUPPLY SW - CLOSE UNTIL L2A1S13

SUPPLY TB CL L2A1DS6

REG INLET SW - CLOSE UNTIL L2A1S14

REG INLET TB CL L2A1DS7

N₂ SYS 2

SUPPLY SW - CLOSE UNTIL L2A1S21

SUPPLY TB CL L2A1DS10

REG INLET SW - CLOSE UNTIL L2A1S22

REG INLET TB CL L2A1DS11

66-14 CECL CDR 143

PANEL O16

ROW D

MN C

ATM PRESS CONTR

O₂ EMER CB - CLOSE

66-15 **CECL**

CRT (VAG10 PG-B)

VERIFY O₂ EMER (VLV 5) PCL

66-16 CECL CDR 143

PANEL O16

ROW D

MN C

ATM PRESS CONTR

O₂ EMER CB - OPEN

66-17 CECL CDR 143

PANEL C7

LEH O₂ SUPPLY
SYS 1 VLV - CLOSE
SYS 2 VLV - CLOSE

66-18 CECL CDR 143

PANEL L4

ROW F
AC 1
H₂O LOOP PUMP 1A/2
PH A CB - CLOSE
PH B CB - CLOSE
PH C CB - CLOSE

ROW J
AC 3
SIG CONDR
HUM SEP
PH A CB - CLOSE
IMU FAN
PH B CB - CLOSE

66-19 CECL PLT 143

PANEL C6

LEH O₂ 1 VLV - CLOSE
LEH O₂ 2 VLV - CLOSE
LEH O₂ 3 VLV - CLOSE
LEH O₂ 4 VLV - CLOSE

66-20 CECL CDR 143

PANEL O14

ROW C
SMOKE DETN
L/R FLT DK CB - OPEN O14A14C007
BAY 2A/3B CB - OPEN O14A14C008

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66-21 CECL PLT 143

PANEL O15

ROW C

MN B

SMOKE DETN

BAY 1B/3A CB - OPEN

O15A15C007

66-22 CECL PLT 143

PANEL O16

ROW C

MN C

SMOKE DETN

CABIN CB - OPEN

BAY 1A/2B CB - OPEN

O16A16C006

O16A16C007

CAUTION

To avoid valve damage, do not move the motor arm in the next step. Valve arm may be moved to allow connection to motor.

NOTE

Valve link will have been stowed for Flight in Panel R3, pilot's FWD flight data file container.

66-23 CECL OMTO 143

OK To Install T: _____

IF ACCESS TO PANEL MD44F IS NOT RESTRICTED BY TREADMILL OR OTHER EQUIPMENT,

THEN PERFORM:
PANEL MD44F

SV755665-2 VALVE LINK CAB TVL

CONNECT SV755665-2 VALVE LINK CAB TVL TO TEMP CONTROL PRI ACTUATOR AND TO TEMP CONTROL VALVE ARM UTILIZING QUICK-RELEASE PINS (2) PROVIDED. (FOLLOW ORIENTATION INSTRUCTIONS PRINTED ON THE VALVE LINK.)

Not Performed: _____

T: _____

66-24 CECL OTC 132
 OTC *PAD

ECLSS Safing complete.

***** End of ECLSS GSE Cooling Reconfigure *****

***** End of Operation 66 *****

06-24-2011
APPROVED

OMI S0007.400 A23
APPROVED

OPERATION 67 FC/PRSD System Safing (Contingency)

Shop: **FCP**

Cntrl Rm Console: **C6**

OPR: **FCP**

Zone: **121, 122**

Hazard (Y/N): **N**

Duration (Hrs): **0.5**

NOTE

This is a contingency operation. Perform only for Extended Scrub/Turnaround.

Operation Not Performed: _____

NOTE
Cryo controller and quantity CBs will remain closed until completion of PRSD de-tank.

67-1 CFCP PLT 153

PANEL R11

FUEL CELL

- PURGE HEATER SW - OFF
- H₂O RELIEF HTR SW - OFF
- H₂O LINE HTR SW - OFF

PURGE VALVES

- 1 SW - CLOSE
- 2 SW - CLOSE
- 3 SW - CLOSE

67-2 CFCP

Verify fuel cells powered down prior to continuing.

67-3 CFCP CDR 153

PANEL L4

ROW C

AC 1

FUEL CELL 1

PUMPS

- PH A CB - OPEN
- PH B CB - OPEN
- PH C CB - OPEN

AC 2

FUEL CELL 2

PUMPS

- PH A CB - OPEN
- PH B CB - OPEN
- PH C CB - OPEN

AC 3

FUEL CELL 3

PUMPS

- PH A CB - OPEN
- PH B CB - OPEN
- PH C CB - OPEN

67-4 CFCP CDR 153

PANEL O14

ROW A

FC 1 CNTLR SW - OFF

67-5 CFCP CDR 153

PANEL O15

ROW A

FC 2 CNTLR SW - OFF

67-6 CFCP CDR 153

PANEL O16

ROW A

FC 3 CNTLR SW - OFF

67-7 CFCP

CRT (VWR05 PG-B)

VERIFY

FC1 ECU PWR - OFF

FC2 ECU PWR - OFF

FC3 ECU PWR - OFF

NOTE

The next step reconfigures the tank heater switches to "Off." Tank heaters will remain in Auto via LPS until prior to de-tank operations.

67-8 CFCP CDR 153

PANEL R1

CRYO

H₂ TK 1 HEATERS

A SW - OFF

H₂ TK 2 HEATERS

A SW - OFF

O₂ TK 1 HEATERS

A SW - OFF

O₂ TK 2 HEATERS

A SW - OFF

NOTE

Fuel cell and PRSD switchguards are installed in Operation 80 - Switchguard Installation/Verification (OMI S0007.400).

67-9 CFCP OTC 132

FC/PRSD System Safing (Contingency) complete.

*** End of Operation 67 ***

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OPERATION 68 Reserved

Shop: NA
Cntrl Rm Console: NA
OPR: NA
Zone: NA
Hazard (Y/N): NA
Duration (Hrs): NA

***** End of Operation 68 *****

**06-24-2011
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OPERATION 69 Fuel Cell Performance Calibration and PRSD System Integrity Check

Shop: **FCP**
Cntrl Rm Console: **C6**
OPR: **FCP**
Zone: **NA**
Hazard (Y/N): **N**
Duration (Hrs): **2.0**

NOTE

Do not perform this operation if a recycle occurred and fuel cells remained active.

Operation Not Performed: _____

NOTE

Steps involving Crit 1, 1R and/or 1S items are contained in the following operation.

NOTE

The following operation will coordinate and record real-time data by HGDS during PRSD integrity check. HGDS Engineering will perform trend and/or statistical analysis of the data gathered by the following operation and report results to PRSD Engineering.

69-1 OTC CFCP 132
 CEPD
 CHGD

Perform Fuel Cell Performance Calibration and PRSD Integrity Check.

69-2 CHGD

Perform the following:

1. **Verify** “ET Load Air to GN₂ Oxygen Decay Profile” compares to “PRSD Load Air to GN₂ Oxygen Decay Profile.”
2. **Start** archive files:
 HGDS 2000 operation = “PRSD Perform CI”

69-3 CHGD CPVD 172

Verify Payload Bay absolute humidity (FD GECQ7P88A) is less than or equal to 5 grains.

Record:

Absolute humidity _____ GR/LB

NOTE

A PLB circuit flowrate above nominal is used to expedite the PLB/Midbody compartment inerting and reduction in PLB purge R.H.

69-4 CHGD OTC 132
 OTC CPVD

IF the PLB circuit flowrate is above the nominal value listed in OMI V1122.004, Table II,

THEN restore ECS PLB circuit GN₂ purge flowrate to nominal flowrate listed in OMI V1122.004, Table II. (Maintain PLB I/F temperature within payload OMRS limits listed in Table II.)

Not Performed: _____

69-5 CPVD OTC 132
 OTC CHGD
 CFCP

ECS PLB circuit GN₂ purge flowrate is configured to nominal flowrate listed in OMI V1122.004, Table II.

69-6 CHGD

Perform the following:

1. **Perform** RTOMI [V3540 ET Load Preps](#) for HGDS 2000 Autocal Configurations for PRSD Integrity Check.

Operation No.: _____ Run No.: _____

RTOMI Log No.: _____

2. **Record** the following:

System: _____ (HGDSA or HGDSB)

Last autocal time: _____ GMT

3. **Record** Limits of Resolution and Detection calculated in V3540:

Hydrogen LOD = _____ PPM

Hydrogen Resolution = _____ PPM

Oxygen LOD = _____ PPM

Oxygen Resolution = _____ PPM

4. **Verify** system ready to support.

69-7

CHGD

Perform the following:

1. **Change** points for statistics to 30.

Points for Statistics = _____ (≥ 5)

2. **Select** Midbody sample line.

Start Time: _____ GMT

Wait 5 minutes.

3. **Record** Midbody baseline.

Hydrogen average = _____ PPM (BD)

Oxygen average = _____ PPM (BD)

NOTE

Fuel cells will be adjusted to a load of 230-290 amps and maintained for a minimum of 10 minutes to monitor fuel cell performance. During this time, the PRSD System Integrity Check will be performed in parallel after the fuel cells have been brought to the high loads and thermally stabilized.

During Fuel Cell Performance Calibration and PRSD System Integrity Checks, individual fuel cell currents are allowed to be less than 230 amps each if the total fuel cell power is not less than 21 kw and total vehicle power has been applied to the fuel cells. Individual fuel cell currents may exceed 290 amps for this condition, provided EPD Main Bus voltage LCC minimum requirement of 28.325 VDC is protected.

NOTE

CFCP to monitor fuel cell substack delta voltages during performance of test. Maximum allowable change shall not exceed 28 MV absolute.

NOTE

Noted requirements are satisfied by the following series of steps.

OMRS V45CH0.020-1R
OMRS V45CH0.030-1

69-8

CFCP

CRT (VWR05)

RECORD FUEL CELL 1,2,3 STK 1,2,3 DV (150 MV MAX) .

	<u>FC1</u>	<u>FC2</u>	<u>FC3</u>
STK 1 DV	___	___	___
STK 2 DV	___	___	___
STK 3 DV	___	___	___

OBTAIN PC GOAL FCMS HARDCOPY OF EACH FUEL CELL DISPLAY (IF AVAILABLE) .

69-9 CFCP CEPD 153

Perform fuel cell load adjustment to 230-290 amps.

NOTE

Steady-state operation outside specified temperature limits is acceptable provided FCP inlet and outlet electrolyte concentrations remain within 24-48 percent (ref OMI V1040.220, PRSD Cryo Load and Fuel Cell Activation, Figure 160-2, FCP Electrolyte Concentration Nomograph). Any violation of specified temperature limits requires Design Engineering assessment.

69-10 CFCP

CRT (VWR05 PG-B)

MONITOR FUEL CELL PERFORMANCE USING FOLLOWING CRITERIA:

VOLTAGE - REF OMI V1040.220, FIG 160-3, FUEL CELL POWERPLANT PERFORMANCE, MINIMAL PERFORMANCE FOR LAUNCH

CURRENT - 230-290 AMPS OR NLT 21 KW TOTAL FC PWR

STACK COOL OUT TEMP - REF OMI V1040.220, FIG 160-4, FUEL CELL POWERPLANT STACK EXIT TEMPERATURE LIMITS

STACK COOL IN TEMP - 176-191 DEG F

COND EXIT TEMP - 140-160 DEG F

COOLANT RET TEMP - 40-140 DEG F

COOLANT PRESSURE - 55-75 PSIA

SUBSTACK DELTA V - NMT 28 MV CHANGE ABSOLUTE

PERF CAL START TIME _____ GMT

69-11 CFCP

CURSOR CNTL (VWR05 PG-B)

V15 - CLOSED

V45 - CLOSED

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69-12 CFCP CHGD 153

PRSD Integrity Check has been initiated.

Integrity Check Start Time _____ GMT

NOTE

PRSD will remain on internal reactants for 5 minutes minimum.

69-13 CFCP

CURSOR CNTL (VWR05 PG-B)
V15 - OPEN
V45 - OPEN

69-14 CFCP CHGD 153

PRSD Integrity Check has been terminated.

Integrity Check Stop Time _____ GMT

69-15 CHGD

Zero Gas Select

Record zero gas start time _____ GMT

Remain on zero gas a minimum of 3 minutes before proceeding.

69-16 CHGD

PRSD Test Gas Check

1. **Select** Midbody gas

Start time _____ GMT

Wait 3 minutes minimum.

2. **Select** PRSD gas

Start time _____ GMT

Wait 3 minutes minimum.

3. **Change** points for statistics to 5.

69-17

CFCP

CRT (VWR05 PG-B)
AFTER 10 MINUTES MINIMUM FROM PERFORMANCE CAL
START,

VERIFY FUEL CELL PERFORMANCE MEETS FOLLOWING
CRITERIA:

VOLTAGE - REF OMI V1040.220, FIGURE 160-3, FUEL
CELL POWERPLANT PERFORMANCE, MINIMAL PERFORMANCE
FOR LAUNCH

CURRENT - 230-290 AMPS OR
NLT 21 KW TOTAL FC PWR

STACK COOL OUT TEMP - REF OMI V1040.220,
FIGURE 160-4, FUEL CELL POWERPLANT STACK EXIT
TEMPERATURE LIMITS

STACK COOL IN TEMP - 176-191 DEG F

COND EXIT TEMP - 140-160 DEG F

COOLANT RET TEMP - 40-140 DEG F

COOLANT PRESSURE - 55-75 PSIA

RECORD FUEL CELL 1,2,3 STK 1,2,3 DV (150 MV MAX)

	<u>FC1</u>	<u>FC2</u>	<u>FC3</u>
STK 1 DV	___	___	___
STK 2 DV	___	___	___
STK 3 DV	___	___	___

OBTAIN PC GOAL FCMS HARDCOPY OF EACH FUEL CELL
DISPLAY (IF AVAILABLE).

RECORD PERFORMANCE CAL STOP TIME _____ GMT

69-18 CFCP CEPD 153

Perform fuel cell load adjustment to 100-175 amps.

69-19 CFCP

CRT (VWR05 PG-B)

MONITOR FUEL CELL PERFORMANCE USING STEADY-STATE PARAMETERS:

VOLTAGE - REF OMI V1040.220, FIGURE 160-3, FUEL CELL POWERPLANT PERFORMANCE, MINIMAL PERFORMANCE FOR LAUNCH

CURRENT - 100-175 AMPS

STACK COOL OUT TEMP - REF OMI V1040.220, FIGURE 160-4, FUEL CELL POWERPLANT STACK EXIT TEMPERATURE LIMITS

STACK COOL IN TEMP - 176-191 DEG F

COND EXIT TEMP - 140-160 DEG F

COOL RTN TEMP - 40-140 DEG F

COOLANT RETURN TEMPERATURE SHALL NOT EXCEED 110 DEG F FOR ELECTRICAL LOADS OF 4KW OR LESS PER FCP.

Substack Delta Voltage Stability Check

69-20

CFCP

CRT (VWR05 PG-B)

MONITOR FUEL CELL SUBSTACK DELTA VOLTAGES FOR 1 HOUR BEGINNING 10 MINUTES AFTER COMPLETION OF LOAD ADJUSTMENT TO 100-175 AMPS.

RECORD START TIME GMT _____

RECORD FUEL CELL 1,2,3 STK 1,2,3 DV (150 MV MAX)

	<u>FC1</u>	<u>FC2</u>	<u>FC3</u>
STK 1 DV	_____	_____	_____
STK 2 DV	_____	_____	_____
STK 3 DV	_____	_____	_____

OBTAIN PC GOAL FCMS HARDCOPY OF EACH FUEL CELL DISPLAY (IF AVAILABLE).

RECORD STOP TIME GMT _____

RECORD FUEL CELL 1,2,3 STK 1,2,3 DV (150 MV MAX)

	<u>FC1</u>	<u>FC2</u>	<u>FC3</u>
STK 1 DV	_____	_____	_____
STK 2 DV	_____	_____	_____
STK 3 DV	_____	_____	_____

VERIFY NO CHANGE GREATER THAN 10 MV ABSOLUTE.

OBTAIN PC GOAL FCMS HARDCOPY OF EACH FUEL CELL DISPLAY (IF AVAILABLE).

FCP Substack DV Baseline in PCG2

NOTE

The following steps will establish FCP Stack delta voltage baselines within the PCG2 RTSE set. Baseline values are set using a two step process. First, the data value is inserted into the CDBR (FD N45IV990A) followed by a location command (N45IV980D) which transfers this value to the appropriate PCG2 FD location (K45VXXXXA).

69-21

CFCP

PCG2

Load PCG2 display "FCP_STDV_CMD"

Verify Command FD N45IV980D and Data FD N45IV990A displayed on the left side.

69-22

CFCP

CPRO

Configure FCP Stack Delta Voltage monitoring FDs in PCGoal per the following

1) **Apply** FCP Stack DV Baseline Value from step 69-20 for appropriate FCP and Substack location to buffer

```
APPL N45IV990A XX.X [69-20 Table]
Xmit Command
Exec Command
```

2) Verify value XX.X in FD N45IV990A

3) **Issue** Baseline command to buffer

```
ISSU N45IV980D XXX [see table below]
Xmit Command
Exec Command
```

4) **Verify** Baseline value now located in PCG2 FD
K45VXXXXA [see table below]

5) **Issue** command removal to buffer

```
ISSU N45IV980D 0
      Xmit Command
      Exec Command
```

6) Repeat Substeps 1-5 to insert FCP 1,2,3 Stack
DV baseline values

7) **Apply** 0 to Baseline value buffer

```
APPL N45IV990A 0.0
      Xmit Command
      Exec Command
```

	Command Value (SS3)	PCG2 Baseline FD (SS4)
FCP 1 STK1 DV	110	K45V0112A
FCP 1 STK2 DV	120	K45V0113A
FCP 1 STK3 DV	130	K45V0114A
FCP 2 STK1 DV	210	K45V0212A
FCP 2 STK2 DV	220	K45V0213A
FCP 2 STK3 DV	230	K45V0214A
FCP 3 STK1 DV	310	K45V0312A
FCP 3 STK2 DV	320	K45V0313A
FCP 3 STK3 DV	330	K45V0314A

69-23

CFCP

PCG2 (FCP_STDV_CMD)

Record values for Baseline Storage FDs from table below.

Verify Command FD N45IV980D and Data FD N45IV990A displayed on left side are 0.

	Command Value (SS3)	PCG2 Baseline FD (SS4)
FCP 1 STK1 DV	K45V0112A	
FCP 1 STK2 DV	K45V0113A	
FCP 1 STK3 DV	K45V0114A	
FCP 2 STK1 DV	K45V0212A	
FCP 2 STK2 DV	K45V0213A	
FCP 2 STK3 DV	K45V0214A	
FCP 3 STK1 DV	K45V0312A	
FCP 3 STK2 DV	K45V0313A	
FCP 3 STK3 DV	K45V0314A	

69-24

CFCP

Verify that PCG2 Baseline values in steps 69-23 correspond to values in Step 69-20.

*****End of FCP Substack DV Baseline in PCG2*****

NOTE

If Midbody gas concentrations remain below the calculated LOD for Hydrogen and/or Oxygen during the PRSD Integrity Check, then “No Leakage” may be reported.

Report all Hydrogen and Oxygen transient indications in PPM and times in GMT. Transient indications are defined as an increase greater than the calculated “Resolution” above the stable “Midbody baseline average.”

For decreasing Oxygen trends due to Orbiter inerting, transients will be reported as the difference between the lowest PPM data point and the highest data point during the transient.

69-25

CHGD

Perform HGDS data review of PRSD Integrity Check and record results.

Transients: _____(yes or no)

Time (GMT)	Gas (GH ₂ or GO ₂)	Maximum (PPM)
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

69-26 CFCP

Verify HGDS data review of PRSD Integrity Check is acceptable.

USA PRSD Engineering: _____

NASA PRSD Engineering: _____

Boeing PRSD Engineering: _____

69-27 Noted requirements are complete.

OMRSD V45CH0.020-1R

OMRSD V45CH0.030-1

69-28 CFCP OTC 132

Fuel Cell Performance Calibration and PRSD System Integrity Checks are complete.

*** End of Operation 69 ***

**06-24-2011
APPROVED**

**OMI S0007.400 A23
APPROVED**

OPERATION 70 FEP RF Source Verification

Shop: **LPS**

Cntrl Rm Console: **MASTER**

OPR: **LPS**

Zone: **NA**

Hazard (Y/N): **N**

Duration (Hrs): **0.5**

NOTE

If the FMSP RF system has been configured to provide the Firing Room with main engine 60KB data, do not perform this operation.

Operation Not Performed:_____

70-1 **LPS** **CCME** **128**
 JRPS
 ***MIL**

Verify ready to support RF FEP source verification.

70-2 **LPS** **C4SE**

Verify ME1/2/3 BIT syncs are in remote.

70-3 **LPS** **C4MC** **128**

Verify AWP01 active and T-55 M window not inverted.

NOTE

The following program requires 2 OC and 1 application TCB for execution.

70-4 **LPS** **C4MC** **128**

CURSOR CNTL (AWP01 PG-B)
SOURCE 2 TARGET
XMIT CURSOR KEY - PRESS

70-5 **LPS** **C4SE** **128**

Verify ME 1/2/3 bit syncs indicate source 2 data processing.

70-6 **LPS** **C4MC** **128**

Verify Source 2, Go mode, no error conditions exist for ME 1/2/3.

70-7 LPS CCME 128

Verify data valid on ME 1/2/3 RF data.

70-8 LPS C4MC 128

CURSOR CNTL (AWP01 PG-B)
SOURCE 1 TARGET
XMIT CURSOR KEY - PRESS

70-9 LPS C4SE 128

Verify ME 1/2/3 bit syncs indicate source 1 data processing

70-10 LPS C4MC 128

Verify Source 1, Go mode, no error conditions exist for ME 1/2/3.

70-11 LPS CCME 128

Verify data valid on ME 1/2/3 hardline data

70-12 LPS C4MC 128

CURSOR CNTL (AWP01 PG-B)
LOCKOUT TARGET
XMIT CURSOR KEY - PRESS

70-13 LPS CCME 128
 *MIL
 JRPS

Released to command channel.

70-14 LPS C4SE 128

Switch VSB to source 2, high rate.

Verify FR LED is on.

70-15 LPS CBSE 163

Biomed data now on RF source.

Verify data valid.

70-16 LPS NTD 232

FEP RF Source Verification complete.

*** End of Operation 70 ***

06-24-2011
APPROVED

OMI S0007.400 A23
APPROVED

OPERATION 71 ET LO2 Feedline Bellows Heater Functional Test

Shop: **GSE**

Cntrl Rm Console: **C10**

OPR: **EEP**

Zone: **NA**

Hazard (Y/N): **N**

Duration (Hrs): **0.5**

NOTE

Do not perform this operation for 24-, 48- or 72-hour Turnaround.

Operation Not Performed: _____

71-1 CPWR PPW4 176

PTCR Room 210
Rack 5174

ET Bellows Heater GFI/Current Sensor Panel 5174B3

1. **Remove** Do Not Use or Operate tags (FORM-KSC4-622) from the switches listed below. **Reference** Placard OMI S3006.
2. **Position** the listed switches to On/Close:

PRIMARY POWER SUPPLY Switch S1
SECONDARY POWER SUPPLY Switch S2

T: _____

NOTE

Noted requirement is satisfied by the following series of steps.

OMRS S00FA0.155

71-2

CPWR

CURSOR CNTL (SWC01)

ET OPTIONS

BELLOWS HTRS

XMIT CURSOR KEY - **PRESS**

VERIFY SWC01 IS REPLACED BY TW400

71-3 CPWR

SAFING PANEL

ET BIPOD/BELLOWS HEATERS

VERIFY/SET

PRI PWR - ON

VERIFY

PRI PWR OFF LAMP OFF

71-4 CPWR

SAFING PANEL

ET BIPOD/BELLOWS HEATERS

VERIFY/SET

SEC PWR - ON

VERIFY

SEC PWR OFF LAMP OFF

71-5 CPWR

CURSOR CNTL (TW400)

FUNC TEST

XMIT CURSOR KEY - **PRESS**

VERIFY TS408 ACTIVE

71-6 CPWR

PFP PANEL (TS408)

PFP KEY 2 (CONTINUE) - **PRESS**

71-7

CPWR

CRT (TS408)

VERIFY EACH OF THE FOLLOWING MILESTONES

BEGINNING PS INITIALIZATION
POWERING ON 1106 PRI HEATER
POWERING OFF 1106 PRI HEATER
POWERING ON 1106 SEC HEATER
POWERING OFF 1106 SEC HEATER
BEGINNING PS RECONFIGURATION
FUNCTIONAL TEST COMPLETE - PRESS PFK15 TO
TERMINATE

71-8

Noted requirement complete.

OMRSD [S00FA0.155](#)

71-9

CPWR

CURSOR CNTL (TS408)

PFK15 KEY - **PRESS**

VERIFY TS408 TERMINATES

*** End of Operation 71 ***

06-24-2011
APPROVED

OMI S0007.400 A23
APPROVED

OPERATION 72 ET Bipod Heater Verification

Shop: GSE
Cntrl Rm Console: C10
OPR: EEP
Zone: NA
Hazard (Y/N): N
Duration (Hrs): 0.5

NOTE

Do not perform this operation for 24-, 48- or 72-hour Turnaround.

Operation Not Performed: _____

NOTE

Steps involving Crit 1, 1R and/or 1S items are contained in the following operation.

72-1 CPWR PPW4 176

PTCR RM 210

Primary ET Bipod Heater Rack 5133

1. **Perform** Placard OMI [S3006](#) Lockout/Tagout for GSE and Hardware procedure for the removal of the yellow “Do Not Use or Operate” tags (KSC Form 4-622) from the switches in the following substep.

2. PRIMARY BI-POD HEATER CONTROL UNIT
Configure switches as follows:

LH INBOARD PS 1 S1 - On/Closed
LH OUTBOARD PS 3 S3 - On/Closed
RH INBOARD PS 1 S5 - On/Closed
RH OUTBOARD PS 3 S7 - On/Closed

T: _____

72-2 CPWR PPW4 176

PTCR RM 210

Secondary ET Bipod Heater Rack 5134

1. **Perform** Placard OMI [S3006](#) Lockout/Tagout for GSE and Hardware procedure for the removal of the yellow “Do Not Use or Operate” tags (KSC Form 4-622) from the switches in the following substep.

2. SECONDARY BI-POD HEATER CONTROL UNIT
Configure switches as follows:

LH INBOARD PS 2 S2 - On/Closed
LH OUTBOARD PS 4 S4 - On/Closed
RH INBOARD PS 2 S6 - On/Closed
RH OUTBOARD PS 4 S8 - On/Closed

T: _____

NOTE

Noted requirements are satisfied by the following series of steps.

OMRS S00FA0.150

72-3

CPWR

CURSOR CNTL (SWC01)

ET OPTIONS
ET HTR OVIEW
XMIT CURSOR KEY - PRESS

VERIFY SWC01 IS REPLACED BY TW495

72-4

CPWR

IF CRT (TW495) BUS VOLTS LESS THAN 22 VDC,

THEN PERFORM:

CRT (TW495)

POWER UP 23D100 PS PER OMI [S9001.104](#) .

Not Performed: _____

72-5

CPWR

SAFING PANEL

ET BI-POD HEATERS

VERIFY

PRI PWR SWITCH - ON

VERIFY

PRI PWR OFF LAMP - OFF

72-6

CPWR

SAFING PANEL

ET BI-POD HEATERS

VERIFY

SEC PWR SWITCH - ON

VERIFY

SEC PWR OFF LAMP - OFF

72-7

CPWR

CURSOR CNTL (TW495)

TS495

XMIT CURSOR KEY - PRESS

VERIFY TD495 DISPLAYED

72-8

CPWR

CRT (TS495)

VERIFY

<JTOY>BEGINNING FUNCTIONAL TEST

SELECT CONTINUE OR TERMINATE

72-9

CPWR

CURSOR CNTL (TS495)

CONTINUE

XMIT CURSOR KEY - PRESS

72-10

CPWR

CRT (TS495)

VERIFY

<JTOY>ET BI-POD FUNCTIONAL TEST COMPLETE

06-24-2011
APPROVED

OMI S0007.400 A23
APPROVED

72-11 Noted requirements are complete.

OMRSD [S00FA0.150](#)

72-12

CPWR

CURSOR CNTL (TS495)

TERM -

XMIT CURSOR KEY - PRESS

VERIFY TD495 TERMINATES

*** End of Operation 72 ***

**06-24-2011
APPROVED**

**OMI S0007.400 A23
APPROVED**

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06-24-2011
APPROVED

OMI S0007.400 A23
APPROVED

OPERATION 73 WWMS Preparations for Switch List

Shop: **FCP**

Cntrl Rm Console: **C6**

OPR: **FCP**

Zone: **122**

Hazard (Y/N): **N**

Duration (Hrs): **1.0**

NOTE

Perform this operation as directed by the controlling operation.

Operation Not Performed: _____

73-1 CFCP MS1 153

PANEL ML86B

ROW A

MN A

SUPPLY H₂O

TK A INLET CB - CLOSE

TK B OUTLET CB - CLOSE

WASTE H₂O DUMP VLV/NOZ

HTR/CB - CLOSE

H₂O LINE HTR A CB - OPEN

MN B

SUPPLY H₂O

TK B INLET CB - CLOSE

TK C OUTLET CB - CLOSE

DUMP ISOL CB - CLOSE

B SUPPLY ISOL VLV CB - CLOSE

H₂O LINE HTR B CB - OPEN

MN C

SUPPLY H₂O

TK A OUTLET CB - CLOSE

TK C INLET CB - CLOSE

DUMP VLV/NOZ HTR CB - CLOSE

XOVR VLV CB - CLOSE

GALLEY SUPPLY CB - CLOSE

ROW B

MN A

WASTE H₂O TK 1 VLV CB - CLOSE

SPLY H₂O TK D OUTLET CB - CLOSE

WASTE H₂O DUMP ISOL CB - CLOSE

MN B

WASTE H₂O TK 1 DRAIN CB - CLOSE

SPLY H₂O TK D INLET CB - CLOSE

73-2 CFCP MS1 153

PANEL R11

SUPPLY H₂O

1. TK A INLET TB _____ (OP/CL)

2. **IF** TK A INLET TB CL,

THEN PERFORM:

TK A INLET SW - OPEN (15 SEC MAX) UNTIL
TK A INLET TB OP,
THEN RELEASE

Not Performed: _____
SS2

73-3 CFCP

CRT (VAG12 PG-B)
LV1
POP ON

73-4 CFCP MS1 153

PANEL R11

SUPPLY H₂O
VERIFY TK A OUTLET TB CL

73-5 CFCP

CRT (VAG12 PG-B)
LV2
POP OFF

73-6 CFCP MS1 153

PANEL R11

SUPPLY H₂O

1. DUMP ISOL VLV TB _____ (OP/CL)

2. **IF** DUMP ISOL VLV TB OP,

THEN PERFORM:

DUMP ISOL VLV SW - CLOSE (15 SEC MAX) UNTIL
DUMP ISOL VLV TB CL,
THEN RELEASE

Not Performed: _____
SS2

73-7 CFCP

CRT (VAG12 PG-B)
LV11
POP OFF

73-8 CFCP MS1 153

PANEL R11

SUPPLY H₂O

DUMP VLV ENABLE/NOZ HTR SW - ON

73-9 CFCP MS1 153

PANEL R11

SUPPLY H₂O

1. DUMP VLV TB _____ (OP/CL)

2. **IF** DUMP VLV TB OP,

THEN PERFORM:

DUMP VLV SW - CLOSE (15 SEC MAX) UNTIL
DUMP VLV TB CL, THEN RELEASE

Not Performed: _____
SS2

73-10 CFCP

CRT (VAG12 PG-B)
LV10
POP OFF

73-11 CFCP MS1 153

PANEL R11

SUPPLY H₂O
DUMP VLV ENAB/NOZ HTR SW - OFF
DUMP VLV TB BP

73-12 CFCP MS1 153

PANEL R11

SUPPLY H₂O

1. TK B INLET TB _____ (OP/CL)

2. IF TK B INLET TB CL,

THEN PERFORM:

TK B INLET SW - OPEN (15 SEC MAX) UNTIL
TK B INLET TB OP,
THEN RELEASE

Not Performed: _____
SS2

73-13 CFCP

CRT (VAG12 PG-B)
LV3
POP ON

73-14 CFCP MS1 153

PANEL R11

SUPPLY H₂O

1. TK B OUTLET TB _____ (OP/CL)

2. IF TK B OUTLET TB CL,

THEN PERFORM:

TK B OUTLET SW - OPEN (15 SEC MAX) UNTIL
TK B OUTLET TB OP,
THEN RELEASE

Not Performed: _____
SS2

73-15 CFCP

CRT (VAG12 PG-B)
LV4
POP ON

73-16 CFCP MS1 153

PANEL R11

SUPPLY H₂O

1. CROSSOVER VLV TB _____ (OP/CL)

2. IF CROSSOVER VLV TB OP,

THEN PERFORM:

CROSSOVER VLV SW - CLOSE (15 SEC MAX) UNTIL
CROSSOVER VLV TB CL,
THEN RELEASE

Not Performed: _____
SS2

73-17 CFCP

CRT (VAG12 PG-B)
LV13
POP OFF

73-18 CFCP MS1 153

PANEL R11

SUPPLY H₂O

1. GALLEY SPLY VLV TB _____ (OP/CL)
2. IF GALLEY SPLY TB OP,

THEN PERFORM:

GALLEY SPLY VLV SW - CLOSE (15 SEC MAX) UNTIL
GALLEY SPLY VLV TB CL,
THEN RELEASE

Not Performed: _____
SS2

73-19 CFCP

CRT (VAG12 PG-B)
LV9
POP OFF

73-20 CFCP MS1 153

PANEL R11

SUPPLY H₂O

1. TK C INLET TB _____ (OP/CL)
2. IF TK C INLET TB CL,

THEN PERFORM:

TK C INLET SW - OPEN (15 SEC MAX) UNTIL
TK C INLET TB OP,
THEN RELEASE

Not Performed: _____
SS2

73-21

CFCP

CRT (VAG12 PG-B)
LV5
POP ON

73-22

CFCP MS1 153

PANEL R11

SUPPLY H₂O

1. TK C OUTLET TB _____ (OP/CL)

2. IF TK C OUTLET TB CL,

THEN PERFORM:

TK C OUTLET SW - OPEN (15 SEC MAX) UNTIL
TK C OUTLET TB OP,
THEN RELEASE

Not Performed: _____
SS2

73-23

CFCP

CRT (VAG12 PG-B)
LV6
POP ON

73-24

CFCP MS1 153

PANEL R11

SUPPLY H₂O

1. B SPLY ISOL VLV TB _____ (OP/CL)

2. IF B SPLY ISOL VLV TB CL,

THEN PERFORM:

B SPLY ISOL VLV SW - OPEN (15 SEC MAX) UNTIL
B SPLY ISOL VLV TB OP,
THEN RELEASE

Not Performed: _____
SS2

73-25

CFCP

CRT (VAG12 PG-B)
LV12
POP ON

73-26

CFCP MS1 153

PANEL ML31C

WASTE H₂O

1. TK 1 DRAIN VLV TB _____ (OP/CL)
2. **IF** TK 1 DRAIN VLV TB CL,

THEN PERFORM:

TK 1 DRAIN VLV SW - OPEN (15 SEC MAX) UNTIL
TK 1 DRAIN VLV TB OP,
THEN RELEASE

Not Performed: _____
SS2

73-27

CFCP

CRT (VAG31 PG-B)
TK 1 DRAIN
POP ON

73-28 CFCP MS1 153

PANEL ML31C

WASTE H₂O

1. TK 1 VLV SW TB _____ (OP/CL)
2. **IF** TK 1 VLV SW TB CL,

THEN PERFORM:

TK 1 VLV SW - OPEN (15 SEC MAX) UNTIL
TK 1 VLV SW TB OP,
THEN RELEASE

Not Performed: _____
SS2

73-29 CFCP

CRT (VAG31 PG-B)
TK 1 VLV
POP ON

73-30 CFCP MS1 153

PANEL ML31C

WASTE H₂O

1. DUMP ISOL VLV TB _____ (OP/CL)
2. **IF** DUMP ISOL VLV TB OP,

THEN PERFORM:

DUMP ISOL VLV SW - CLOSE (15 SEC MAX) UNTIL
DUMP ISOL VLV TB CL,
THEN RELEASE

Not Performed: _____
SS2

73-31 CFCP

CRT (VAG31 PG-B)
DUMP ISOL
POP OFF

73-32 CFCP MS1 153

PANEL ML31C

WASTE H₂O
DUMP VLV ENABLE/NOZ HTR SW - ON

73-33 CFCP MS1 153

PANEL ML31C

WASTE H₂O

1. DUMP VLV TB _____ (OP/CL)
2. IF DUMP VLV TB OP,

THEN PERFORM:

DUMP VLV SW - CLOSE (15 SEC MAX) UNTIL
DUMP VLV TB CL, THEN RELEASE

Not Performed: _____
SS2

73-34 CFCP

CRT (VAG31 PG-B)
DUMP VLV
POP OFF

73-35 CFCP MS1 153

PANEL ML31C

WASTE H₂O
DUMP VLV ENAB/NOZ HTR SW - OFF
DUMP VLV TB BP

73-36 CFCP MS1 153

PANEL ML31C

SUPPLY H₂O

1. TK D INLET TB _____ (OP/CL)

2. IF TK D INLET TB CL,

THEN PERFORM:

TK D INLET SW - OPEN (15 SEC MAX) UNTIL
TK D INLET TB OP,
THEN RELEASE

Not Performed: _____
SS2

73-37 CFCP

CRT (VAG12 PG-B)
LV7
POP ON

73-38 CFCP MS1 153

PANEL ML31C

SUPPLY H₂O

1. TK D OUTLET TB _____ (OP/CL)

2. IF TK D OUTLET TB CL,

THEN PERFORM:

TK D OUTLET SW - OPEN (15 SEC MAX) UNTIL
TK D OUTLET TB OP,
THEN RELEASE

Not Performed: _____
SS2

73-39

CFCP

CRT (VAG12 PG-B)
LV8
POP ON

73-40

CFCP

MS1

153

PANEL ML86B

ROW A

MN A

WASTE H₂O DUMP VLV/NOZ
HTR CB - OPEN

MN B

SUPPLY H₂O
DUMP ISOL CB - OPEN

MN C

SUPPLY H₂O
DUMP VLV/NOZ HTR CB - OPEN
GALLEY SUPPLY CB - OPEN

ROW B

MN A

WASTE H₂O DUMP ISOL CB - OPEN
WCS CNTLR CB - OPEN
GALLEY OVEN CB - OPEN

MN B

WCS CNTLR CB - OPEN
GALLEY H₂O HTR CB - OPEN

73-41 CFCP MS1 153

PANEL ML86B

ROW C

MN A

EXTERNAL AIRLOCK HTR LINE

ZONE 1 CB - OPEN

ZONE 2 CB - OPEN

MN B

EXTERNAL AIRLOCK HTR LINE

ZONE 1 CB - OPEN

ZONE 2 CB - OPEN

H₂O S/O VALVE CB - CLOSE

MN C

EXTERNAL AIRLOCK HTR LINE

ZONE 1 CB - OPEN

ZONE 2 CB - OPEN

73-42 CFCP MS1 153

PANEL MO13Q

1. AIRLOCK H₂O S/O VLV TB _____ (OP/CL)

2. **IF** AIRLOCK H₂O S/O VLV TB CL,

THEN PERFORM:

AIRLOCK H₂O S/O VLV SW - OPEN (15 SEC MAX)
UNTIL AIRLOCK H₂O
S/O VLV TB OP,
THEN RELEASE

Not Performed: _____
SS2

73-43 CFCP MS1 153

PANEL MA73C

ROW E

AC 1

WCS FAN SEP 1
PH A CB - OPEN
PH B CB - OPEN
PH C CB - OPEN

AC 2

WCS FAN SEP 2
PH A CB - OPEN
PH B CB - OPEN
PH C CB - OPEN

ROW G

AC 3

GALLEY FAN
PH A CB - OPEN
PH B CB - OPEN
PH C CB - OPEN

73-44 CFCP MS1 153

PANEL ML86B

ROW E

MN A

EMU 2 H₂O
SUPPLY CB - OPEN
WASTE CB - OPEN

MN C

EMU 1 H₂O
SUPPLY CB - OPEN
WASTE CB - OPEN

73-45 CFCP ASP 153

PANEL WCS (COMMODE AREA)

AUTO INHIBIT/AUTO SW - AUTO
COMMODE CONTROL HANDLE - DOWN/OFF (AFT POSITION)
(UP IF VAC VENT INERT I/W)
MODE SW - AUTO (COMMODE/MANUAL/EMU IF VAC VENT
INERT I/W)
VACUUM VALVE SW - CLOSE (OPEN IF VAC VENT INERT I/W)
SEP 1 BYPASS SW - OFF
SEP 2 BYPASS SW - OFF
FAN SEP SW - OFF
HOSE BLOCK - SEP 1
COMPACTOR ANGLE = <33 DEGREES

STOW URINAL HOSE IN LAUNCH POSITION (STOWED ALONG
LEFT SIDE OF WCS AND SECURED USING VELCRO) .

73-46 CFCP OTC 132

WWMS Preparations for Switch List complete.

*** End of Operation 73 ***

06-24-2011
APPROVED

OMI S0007.400 A23
APPROVED

OPERATION 74 Orbiter Potable (L-3) Water Samples and Tank A Quantity Adjustment

Shop: **FWD**

Cntrl Rm Console: **C6**

OPR: **FCP**

Zone: **122**

Hazard (Y/N): **N**

Duration (Hrs): **2.0**

NOTE

This operation is performed for initial Launch attempt and for Scrub Turnaround of 72 hours or longer (if sufficient water exists in Tank A for sample -- 10 percent minimum).

Operation (Not Performed:)

NOTE

Repeat this operation as required to support OMIs S0007.200 and S0007.300 contingencies. Record data and verification of performance of these steps in Table 74-1.

74-1 OTC CFCP 132
 CECL
 *PAD
 *PAD OMTO
 PQCG

Perform Orbiter Potable (L-3 Day) Water Samples and Tank A Quantity Adjustment on OIS Channel 153.

74-2 CECL CDR 153

PANEL O14

ROW D

MN A

ATM PRESS CONTROL

N₂ SUPPLY 1 CB - CLOSE

N₂ REG INLET 1 CB - CLOSE

NOTE

The next step may activate master alarm due to GN₂ flow rate exceeding 4.9 pph momentarily. Reset master alarm.

74-3 CECL CDR 153

PANEL L2

ATM PRESS CONTROL

N₂ SYS 1

SUPPLY SW - OPEN

SUPPLY TB - OP

REG INLET SW - OPEN

REG INLET TB - OP

74-4

CECL

CRT (VAG10 PG-B)
VLV 2
POP

VLV 4
POP

74-5

CFCP

CRT (VAG12 PG-B)
SUPPLY H₂O
TK A QTY
RECORD () PCT
 BD

74-6

CFCP CDR 153

PANEL ML26C
SUPPLY H₂O
TK VENT VLV - PRESS (UP)
TK A SUPPLY VLV - OPEN (UP)

74-7

CECL CDR 153

PANEL MO10W
H₂O TK N₂ REG INLET
SYS 1 VLV - OPEN
H₂O TK N₂ ISOL
SYS 1 VLV - OPEN

74-8

CFCP CDR 153

PANEL ML86B
ROW A
MN A
SUPPLY H₂O
TK A INLET CB - CLOSE
ROW A
MN C
SUPPLY H₂O
GALLEY SUPPLY CB - CLOSE

74-9 CFCP

CRT (VAG12 PG-B)
VERIFY POSITIVE PRESSURE ON POTABLE WATER SYSTEM
RECORD P0430 (_____) PSIA NLT 20
OMRS (general) [V62GEN.045](#)

74-10 CFCP CDR 153

PANEL R11
SUPPLY H₂O
GALLEY SPLY VLV SW - OPEN (15 SEC MAX) UNTIL
GALLEY SPLY TB OPEN,
THEN RELEASE

74-11 CFCP

CRT (VAG12 PG-B)
SUPPLY H₂O
TK A INLET
LV1
POP - ON

GALLEY SUPPLY VLV
LV9
POP - ON

SYS 1 N₂/H₂O TNK PRESS (P2307)
RECORD (_____) PSIG
BD

POTABLE H₂O
TK A QTY
RECORD (_____) PCT
BD

74-12 CFCP CDR 153

PANEL ML86B
ROW B
MN A
GALLEY OVEN CB - CLOSE

74-13 CFCP OMTO

Orbiter Galley

1. Oven/RHS SW - On
2. **Pull** back slide assembly at rehydration station as far away from
 needle as possible.
3. **Remove** clean bag from galley needle if installed.
4. **Connect** Shuttle Sample Line (SSL) (Sampling Contractor supplied)
 at galley needle using sterile technique.
5. **Turn** volume selector knob to 8.0 ounces.

(T:)

NOTE

The following step performs a cold flush prior to taking a sample. The sensor lever can be released to stop flow for any reason. Bionetics should retain flush water for swab sample if tank A quantity is not sufficient.

74-14 CFCP OMTO

Orbiter Galley

1. Sensor lever - Depress and Hold

NOTE

Dispense button will remain lit during water flow and will flash on and off when cycle is complete.

2. Cold Button - Depress to initiate water flow
3. **Wait** until cold light flashes on/off.
4. Sensor lever - Release
5. **Repeat** to flow approximately 1000 ml into waste container.
(5 dispenses total).

(T:)

74-15 CFCP OMTO 153

Orbiter Galley

1. **Disconnect** sample line from galley needle.
2. **Connect** new sample line to water dispenser needle using sterile technique.

(T:)

74-16 CFCP OMTO

Orbiter Galley

1. Sensor Lever - Depress and Hold
2. Cold Button - Depress
3. **Wait** until cold light flashes on/off
4. Sensor Lever - Release
5. **Repeat** substeps 1 to 4 as directed by sampling contractor to obtain samples.
6. **Sampling Contractor**

Obtain water samples for microbial, chemical, pH, conductivity, dissolved gas and iodine analysis in that order.

OMRSD [V62AE0.010-C-1R](#)

(TQw:)

74-17 CFCP OMTO

Orbiter Galley

IF a SWAB Sample is required this flow
AND Tank A quantity is greater than 8.5 percent,

THEN perform the following:

1. Sensor Lever - Depress and Hold
2. Cold Button - Depress to initiate water flow
3. **Wait** until cold light flashes on/off
4. Sensor Lever - Release
5. **Repeat** to flow 800 ml minimum into Sampling Contractor supplied sample container. (4 dispenses total)

OMRSD [P1396BA.100-C](#)

Not Performed: _____

(TQw:)

WARNING

Isopropyl Alcohol (IPA) is flammable and is an irritant.

Usage near heat, sparks or open flame may result in fire. Exposure may cause eye and skin irritation.

Wear **nitrile (N-Dex) gloves** .

Wear **industrial goggles** when work is at eye level or above.

WS002.a 10-17-2007

74-18 CFCP OMTO

Orbiter Galley

1. **Disconnect** SSL from galley needle.
2. **Wipe** galley needle with alcohol wiper and allow to dry.
3. **Bag and seal** galley needle.
4. Oven/RHS - Off

(T:)

74-19 CFCP CDR 153

PANEL ML86B

ROW B

MN A

GALLEY OVEN CB - OPEN

NOTE

The next step will remain open until Bionetics delivers sample report(s). Sample results are not required for Launch.

74-20

CFCP

Analyze samples per requirements of SE-S-0073, Specification Fluid Procurement and Use Control, Table 6.4.6, for reference only (L-3 day sample).

Quality shall attach a copy of Sample Report No. (_____) to this OMI.

***** End of L-3 Day Water Sample *****

Tank A Quantity Adjustment

NOTE

Perform this option if potable/supply water system quantity adjustment is to be performed.

Final Tank A quantity shall be determined by FC/PRSD Engineering.

Nominal L-3 Tank A target quantity is 7.5 - 12.5 percent.

Tank A Quantity Adjustment (Not Performed:)

74-21 CFCP OMT0 153

TP4 Drain Hose Assembly

(consists of L070-000101-001 and -002 Assemblies)

Route TP4 drain hose assembly to create a high point (above hot water tank) to preclude air ingestion back into galley during drain operations.

(T:)

NOTE

Sample valve may be opened/closed as required in the next step to accomplish drain operation.

74-22 CFCP OMT0 153

TP4 Drain Hose Assembly

1. **Route** open end into drain bucket.
2. MV1 - OPEN (CCW)
3. **Verify** ready to initiate water flow.

(T:)

74-23 CFCP OMTO 153

(OKT:)

Galley

Remove cap from TP4, clean the mating QDs with 70-percent aqueous ethyl alcohol sterile cotton pads, allow the alcohol to evaporate prior to connecting, and connect TP4 drain hose assembly.

(T:)

74-24 CFCP OMTO 153

TP4 Drain Hose Assembly

1. **Record:** Start time (_____) GMT BD
2. **Verify water flow at drain line end.**
3. **Sample valve - CLOSE (CW) when Tank A quantity indicator indicates desired quantity (7.5-12.5 percent nominal).**
4. **Record:** Stop time (_____) GMT BD

(T:)

74-25 CFCP

CRT (VAG12 PG-B)

RECORD P0430 (_____) PSIA 22.7 - 36.7

74-26 CFCP OMTO 153

(OKQw:)

Perform the following:

1. **Disconnect** TP4 Drain Hose Assembly from TP4.
2. **Inspect** TP4 QD sealing surface and cap O-ring for damage and no visible leakage in 15 minutes.
3. **Install** cap on TP4.

(TQw:)
SS3

OMRS (general) [V62GEN.080](#)

OMRS (general) [V62GEN.100-1R](#)

74-27 CFCP

CRT (VAG12 PG-B)

1. **RECORD** TK A QTY (_____) PCT
BD
2. **RETRIEVE** DRAIN PLOT OF TANK A USING START AND STOP TIMES. PLOT SHOULD CONSIST OF TANK A QUANTITY (V62Q0410A1), SUPPLY - H₂O STORAGE INLET PRESSURE (V62P0430A1), AND SYS 1 N₂/H₂O TANK PRESS (V61P2307A1).
3. **REVIEW** DRAIN PLOT OF TANK A. LOOK FOR FLOW RATE DECREASE WITHOUT A CORRESPONDING CHANGE IN DELTA PRESSURE ACROSS THE BELLOWS (INCLUDING BELLOWS SPRING FORCE) WHICH COULD INDICATE A STICKY BELLOWS AND SHOULD BE EVALUATED.

74-28 CFCP OMTO 153

Route drain apparatus from Orbiter.

(T:)

*** End of Tank A Quantity Adjustment ***

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74-29 CFCP CDR 153

PANEL R11

SUPPLY H₂O
GALLEY SPLY VLV SW - CLOSE (15 SEC MAX) UNTIL
GALLEY SPLY VLV TB CL,
THEN RELEASE

74-30 CFCP

CRT (VAG12 PG-B)
GALLEY SUPPLY VLV
LV9
POP - OFF

74-31 CFCP CDR 153

PANEL ML86B

ROW A
MN C
SUPPLY H₂O
GALLEY SUPPLY CB - OPEN

Supply Water Dump Line Drain

NOTE

This option performs drain of potable water dump line. Perform for initial L-3 day sample only.

Supply Water Dump Line Drain (Not Performed:)

74-32 CFCP CDR 153

PANEL ML86B

MN B, SUP H₂O
DUMP ISOL CB - CLOSE
MN C, SUP H₂O
DUMP VLV NOZ HTR CB - CLOSE

74-33 CFCP CDR 153

PANEL R11

DUMP ISOL VLV SW - CLOSE (15 SEC MAX) UNTIL
DUMP ISOL VLV TB CL

NOTE

The next step opens supply dump isolation valve CB to preclude inadvertent cycle during dump line gravity drain.

74-34 CFCP MS1 153

PANEL ML86B

ROW A

MN B
SUPPLY H₂O
DUMP ISOL CB - OPEN

74-35 CFCP CDR 153

PANEL R11

DUMP VLV ENABLE/NOZZLE HTR SW - ON
DUMP VLV SW - OPEN (15 SEC MAX) UNTIL
DUMP VLV TB - OP

74-36

CFCP

CRT (VAG12)

VERIFY ALL POTABLE H₂O TANK QUANTITIES ARE STABLE

74-37

CFCP

OMTO

153

(OKT:)

WCS Compartment - Contingency X-tie

1. **Remove** cap from potable X-tie port. Retain cap for reinstallation.

NOTE

A very small amount of water may leak out during QD mate operation in the following substep. Be prepared to catch/wipe up any water that may spill.

2. **Verify** "Potable Water X-tie Assembly" filter end open to atmosphere.
3. **Connect** "Potable Water X-tie Assembly" to potable X-tie QD.
4. **Wait** 5 minutes minimum before continuing.

(T:)

74-38 CFCP CDR 153

PANEL R11

DUMP VLV SW - CLOSE (15 SEC MAX) UNTIL
DUMP VLV TB CL
DUMP VLV ENABLE/NOZ HTR SW - OFF

74-39 CFCP OMTO 153

(OKQw:)

WCS Compartment - Contingency X-tie Panel

1. **Disconnect** potable water X-tie assembly from potable X-tie QD.

2. **Inspect** QD sealing surface and cap O-ring for damage.

OMRS (general) [V62GEN.080](#)

(TQw:)
SS2

3. **Connect** cap assembly to potable X-tie QD.

(TQw:)
SS3

4. **Bag and seal** GSE QD. Route to stock.

(T:)

74-40 CFCP OMTO 153

Potable Water X-tie Assembly

1. **Remove** ME286-0069-0009 filter from MC276-0020-2192 (or -2152) QD.
2. **Bag and seal** components. Label "Used on Orbiter Supply Water System."
3. **Route** parts back to Logistics.

(T:)

***** End of Supply Water Dump Line Drain *****

74-41 CFCP OTC 132
 OTC *PAD

Orbiter Potable (L-3 Day) Water Samples and Tank A Quantity Adjustment complete.

Table 74-1 - Orbiter Potable (L-3 Day) Water Samples and Tank A Quantity Adjustment							
Step	Run ____ Date -	Run ____ Date -	Run ____ Date -	Run ____ Date -	Run ____ Date -	Run ____ Date -	Run ____ Date -
Operation Not Performed:							
74-1							
74-2							
74-3							
74-4							
74-5							
pct:							
74-6							
74-7							
74-8							
74-9							
psia:							
74-10							

Table 74-1- Orbiter Potable (L-3 Day) Water Samples and Tank A Quantity Adjustment (cont'd)							
Step	Run ____ Date -	Run ____ Date -	Run ____ Date -	Run ____ Date -	Run ____ Date -	Run ____ Date -	Run ____ Date -
74-11							
psig:							
pct:							
74-12							
74-13							
T:							
74-14							
T:							
74-15							
T:							
74-16							
TQw:							
74-17							
TQw:							

Table 74-1- Orbiter Potable (L-3 Day) Water Samples and Tank A Quantity Adjustment (cont'd)							
Step	Run Date -	Run Date -	Run Date -	Run Date -	Run Date -	Run Date -	Run Date -
N/P							
74-18							
T:							
74-19							
74-20							
Report No.							
Tank A Quantity Adjustment							
Not Performed:							
74-21							
T:							
74-22							
T:							
74-23 OK To Install T:							
T:							

Table 74-1 - Orbiter Potable (L-3 Day) Water Samples and Tank A Quantity Adjustment (cont'd)							
Step	Run _____ Date -	Run _____ Date -	Run _____ Date -	Run _____ Date -	Run _____ Date -	Run _____ Date -	Run _____ Date -
Tank A Quantity Adjustment							
74-24 SS1 Time:							
SS4 Time:							
T:							
74-25 P0430:							
74-26 OK To Install Qw:							
TQw:							
74-27 pct							
74-28							
T:							
*** End of Tank A Quantity Adjustment ***							
74-29							

Table 74-1 - Orbiter Potable (L-3 Day) Water Samples and Tank A Quantity Adjustment (cont'd)							
Step	Run _____ Date -	Run _____ Date -	Run _____ Date -	Run _____ Date -	Run _____ Date -	Run _____ Date -	Run _____ Date -
74-30							
74-31							
Supply Water Dump Line Drain							
Not Performed:							
74-32							
74-33							
74-34							
74-35							
74-36							
74-37 OK To Install T:							
T:							
74-38							

Table 74-1 - Orbiter Potable (L-3 Day) Water Samples and Tank A Quantity Adjustment (cont'd)							
Step	Run ____ Date -	Run ____ Date -	Run ____ Date -	Run ____ Date -	Run ____ Date -	Run ____ Date -	Run ____ Date -
74-39 OK To Install Qw:							
SS2 TQw:							
SS3 TQw:							
T:							
74-40 T:							
*** End of Supply Water Dump Line Drain ***							
74-41							

*** End of Operation 74 ***

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OPERATION 75 Waste Tank Quantity Adjustment

Shop: **FWD**

Cntrl Rm Console: **C5**

OPR: **FCP**

Zone: **122**

Hazard (Y/N): **N**

Duration (Hrs): **1.0**

NOTE

Perform this operation if waste tank quantity adjustment is required to meet OMRS targeted liftoff quantity as defined by Flight Operations (nominally 5-10 percent). (See V62AM0.020-B-1R.)

Operation Not Performed: _____

75-1 OTC CFCP 132
 *PAD
 *PAD OMTO
 PQCG

Perform Waste Tank Quantity Adjustment on OIS Channel 153.

75-2 CFCP CDR 143

PANEL ML86B

ROW A

MN A

WASTE H₂O DUMP VLV/NOZ HTR CB - CLOSE

ROW B

MN A

WASTE H₂O DUMP ISOL CB - CLOSE

WASTE H₂O TK 1 VLV CB - CLOSE

75-3 CFCP CDR 143

PANEL ML31C

WASTE H₂O

DUMP ISO VLV - CLOSE (15 SEC MAX) UNTIL TB CL

TK 1 VLV SW - OPEN (15 SEC MAX) UNTIL

TK 1 VLV TB OP, THEN RELEASE

NOTE

Noted requirements are satisfied by the following series of steps.

OMRS V62AM0.020-B-1R

75-4 CFCP OMTO 143

Perform the following:

1. **Route** G070-683291-003 waste drain hose assembly into crew module.
2. **Place** loose end of tygon drain hose in waste container.

T: _____

75-5 CFCP OMTO 143

Contingency X-tie Panel

Disconnect cap from waste QD.

T: _____

75-6 CFCP OMTO

OK To Install T: _____

Waste Contingency X-Tie (QD Connection)

1. **Inspect** sealing surfaces of Contingency X-Tie Waste QD and Sample Assy. provided by IHA.

Verify no discrepancies that would affect QD function or fit.

OMRS (general) [V62GEN.080](#)

2. **Connect** Sample Assy. provided by IHA to WASTE Contingency X-Tie.
3. **Monitor** Sample Assy. for leakage during the following steps.

T: _____

NOTE

Opening the Dump Isol Vlv in the following step will initiate water flow for the sample. The valve may be opened and closed as required to support sampling.

75-7 CFCP CDR

PANEL ML31C
WASTE H₂O
DUMP ISOL VLV SW - OPEN (15 SEC MAX) UNTIL
DUMP ISOL VLV TB OP THEN
RELEASE

75-8 CFCP OMTO

Waste Contingency Cross-Tie

1. **Obtain** samples in two one-liter sample bottles.
2. **Label** Sample Number 1 with the following:

Waste Tank Sample No. 1: _____

Time/Date of Sample 1: _____

OV- _____ STS- _____

3. **Label** Sample Number 2 with the following:

Waste Tank Sample No. 2: _____

Time/Date of Sample 2: _____

OV- _____ STS- _____

4. **Route** sample containers to IHA for refrigerated transport to JSC:

NASA/LYNDON B. JOHNSON SPACE CENTER
TRANSPORTATION OFFICER, BLDG. 421
2101 NASA PARKWAY
HOUSTON, TX 77058

MARK FOR/ATTN:
RUBEN ZAVALA, BLDG. 7A, ROOM 230C, PHONE: 281-483-3765

T: _____

75-9 CFCP OMTO

Waste Contingency Cross-Tie

1. **Obtain** a sample for analysis by IHA for the following:
- pH
 - NH₃
 - Microbial
2. **Record** IHA sample no.

Sample ID _____

T: _____

75-10 CFCP CDR

PANEL ML31C
WASTE H₂O
DUMP ISOL VLV SW - CLOSE (15 SEC MAX) UNTIL
DUMP ISOL VLV TB CL THEN
RELEASE

75-11 CFCP OMTO

Waste Contingency X-Tie (QD Disconnection)

Disconnect Sample Assy. from WASTE Contingency X-Tie.

T: _____

75-12 CFCP OMTO 143

OK To Install T: _____

G070-683291-003 Hose Assembly

Connect G070-683291-003 drain hose assembly (S0989MD9) to contingency X-tie waste QD.

T: _____

75-13 CFCP

CRT (VAG31 PG-B)

RECORD:

WASTE TANK QTY _____

_____ PCT BD

START TIME _____ GMT BD

75-14 CFCP OMTO 143

Verify ready for water flow into waste container.

T: _____

NOTE

The next step will initiate flow.

Waste H₂O dump isolation valve may be open/closed as required in the next step to accomplish drain operation.

Final waste tank quantity shall be 6.5-8.5 percent.

75-15 CFCP CDR 143

PANEL ML31C

WASTE H₂O
DUMP ISO VLV - OPEN (15 SEC MAX) UNTIL TB - OP

T: _____

75-16 CFCP OMTO 143

Drain Hose Assembly G070-683291-003

Verify water flow at drain line end.

T: _____

NOTE

Perform the next step when waste tank quantity indicates the desired quantity (6.5-8.5 percent nominal).

75-17 CFCP CDR 143

PANEL ML31C

WASTE H₂O
DUMP ISOL VLV - CLOSE (15 SEC MAX) UNTIL
DUMP ISOL TB - CL

RECORD STOP TIME _____ GMT

T: _____

NOTE
The next step opens waste dump isolation valve CB to preclude inadvertent cycle during dump line gravity drain.

75-18 CFCP CDR 143

PANEL ML86B
ROW B
MN A
WASTE H₂O DUMP ISOL CB - OPEN

NOTE
The following steps gravity drain the Orbiter dump line.

75-19 CFCP OMTO 143

Hold free end of tygon tube above water surface to prevent water backflow during following step.

T: _____

75-20 CFCP CDR 143

PANEL ML31C
WASTE H₂O
DUMP VLV ENABLE/NOZ HR SW - ON
DUMP VLV - OPEN (15 SEC MAX) UNTIL
DUMP VLV TB - OP

T: _____

NOTE
Wait at least 5 minutes.

75-21 CFCP CDR 143

AFTER 5 MINUTES MINIMUM:

PANEL ML31C

WASTE H₂O

DUMP VALVE - CLOSE (15 SEC MAX) UNTIL
DUMP VALVE TB - CL

DUMP VALVE ENABLE/NOZ HTR SWITCH - OFF

T:_____

75-22 CFCP

CRT (VAG29 PG-B)

1. RECORD:

WASTE TANK

QTY _____ PCT 6.5-8.5 NOMINAL

WASTE LIQUID

PRESSURE _____ 8-22 PSIG

2. RETRIEVE DRAIN PLOT OF WASTE TANK USING
START AND STOP TIMES. PLOT SHOULD CONSIST OF
WASTE TANK QUANTITY (V62Q0540A1), WASTE
LIQUID PRESSURE (V62P0500A1), AND SYS 1
N₂/H₂O TANK PRESS (V61P2307A1).

3. REVIEW DRAIN PLOT OF WASTE TANK. LOOK FOR
FLOW RATE DECREASE WITHOUT A CORRESPONDING
CHANGE IN DELTA PRESSURE ACROSS THE BELLOWS
(INCLUDING BELLOWS SPRING FORCE), WHICH
COULD INDICATE A STICKY BELLOWS AND SHOULD
BE EVALUATED.

75-23 Noted requirements are complete.

OMRSD [V62AM0.020-B-1R](#)

75-24 CFCP OMTO 143

OK To Install Qw: _____

Perform the following:

1. **Disconnect** G070-683291-003 drain hose assembly (S0989MD9) from contingency X-tie waste QD.
2. **Inspect** QD sealing surface and cap O-ring for damage.

OMRS (general) [V62GEN.080](#)

T: _____ Qw: _____
SS2

3. **Connect** QD cap on MC276-0020-1101 to waste QD

T: _____ Qw: _____
SS3

75-25 CFCP OMTO 143

Remove G070-683291-003 drain hose assembly from Orbiter.

T: _____

75-26 CFCP OMTO 143

G070-683291-003 QD Assembly

1. **Remove** tygon tube from the G070-683291-003 QD assembly. Discard tygon tube.
2. **Disconnect** the 1/2-in. half back-to-back from the G070-683291-003 QD assembly.
3. **Install** cap onto G070-683291-003 QD assembly. Double bag and seal. Annotate with the following: "G070-683291-003 QD assembly used to drain sanitation fluid from Orbiter waste tank."
4. **Route** G070-683291-003 assembly, half back-to-back, and clamp back to Logistics.

T: _____

75-27 CFCP OTC 132
 OTC *PAD

Waste Tank Quantity Adjustment complete.

*** End of Operation 75 ***

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OPERATION 76 Shuttle Ascent Switch List

Shop: **TCO**

Cntrl Rm Console: **NA**

OPR: **TCO**

Zone: **121, 122**

Hazard (Y/N): **N**

Duration (Hrs): **2.0**

Section 1 - Flight Deck/C&W Setups

76-1 OTC ALL

The purpose of this operation is to verify that Flight Deck and Middeck switches are configured for Launch.

Switches left in other than ascent position (ref JSC Ascent Checklist) by this operation must have predefined steps in OMI S0007 to position them to ascent position prior to T-0.

All switches (other than pushbutton/analog switches or those associated with cockpit lighting, Biomed or Panel MA73C left- and right-seat 3PH CBs, Panel F9 meter switches, or unspecified/unlabeled switches/circuit breakers) should already be in switch list-specified position at the time they are performed. All unspecified/unlabeled switches will be in the down (for a 2-position switch) or center (for a 3-position switch), unlabeled talkbacks - barberpole, unlabeled circuit breakers - open, unlabeled rotary switches - full counterclockwise. System Engineering personnel must be prepared to explain any differences found and will be required to give a "Go" prior to a switch being repositioned. Any switches repositioned, other than those exempted above, must be documented in Table 76-1 - Switches Repositioned During Ascent Checklist.

Any cockpit troubleshooting activity subsequent to this switch list must return switches to their positions prior to troubleshooting.

The switch list is divided into two sections and may be performed in parallel with each section performed by an OTC and ASP:

- Section 1 consists of Flight Deck Panels and caution and warning setups.
- Section 2 consists of Middeck and AFT Flight Deck Panels, Airlock and Waste Management Station.

The Middeck Switch List may be performed prior to the AFT Flight Deck Switch List.

All vehicles have different thumbwheel/pushbutton configurations. The generic term pushbutton (PB) will be used regardless of configuration.

NOTE

Crew Compartment lighting switches may be found in a position different from that published to facilitate the crew's visibility of the panels.

List of Exceptions for Switchguard Removals

1. **PANEL O14 (1 MULTI-SW GUARD)**

RCS DRIVER SW'S
L OMS ENG VLV SW
(WILL BE REMOVED AT FLT CREW INGRESS)

2. **PANEL O15 (1 MULTI-SW GUARD)**

RCS DRIVER SW'S
(WILL BE REMOVED AT FLT CREW INGRESS)

3. **PANEL O16 (1 MULTI-SW GUARD)**

RCS DRIVER SW'S
R OMS ENG VLV SW
(WILL BE REMOVED AT FLT CREW INGRESS)

4. CREW PREFERENCE SW GUARDS

<p>NOTE</p> <p>The following crew preference and payload switchguard matrices will be completed by a member of VITT (861-9224).</p>
--

Crew Preference Switchguards - Mission Unique

Panel	SW/CB

***** End of List of Exceptions for Switchguard Removals *****

Flight Deck Switch List

CAUTION

To prevent damage to equipment, do not reposition any switch without obtaining Firing Room concurrence.

Panel L5 (CDR)

76-2 OTC ASP

PANEL L5

LEFT COMM POWER SW - OFF

*** End of Panel L5 (CDR) ***

Left-side Overhead Flood

NOTE

The following is a standalone florescent light under Panel O5 adjacent to Panel L5.

76-3 OTC ASP

NEAR PANEL 05

LEFT-SIDE OVERHEAD FLOOD - BRT

*** End of Left-side Overhead Flood ***

Panel L4 (CDR)

76-4 OTC ASP

PANEL L4

ROW B

UTILITY POWER

F1/MO52J

AC 1 CB - OPEN

A15/MO13Q

AC 3 CB - OPEN

ROW C (ALL CLOSED)

AC 1

FUEL CELL 1

PUMPS

PH A CB - CLOSE

PH B CB - CLOSE

PH C CB - CLOSE

AC 2

FUEL CELL 2

PUMPS

PH A CB - CLOSE

PH B CB - CLOSE

PH C CB - CLOSE

AC 3

FUEL CELL 3

PUMPS

PH A CB - CLOSE

PH B CB - CLOSE

PH C CB - CLOSE

PANEL L4 (CONTINUED)

ROW D (ALL CLOSED)

AC 1

CTR ENGINE

PH A CB - CLOSE

PH B CB - CLOSE

PH C CB - CLOSE

AC 2

CTR ENGINE

PH A CB - CLOSE

PH B CB - CLOSE

PH C CB - CLOSE

AC 3

RIGHT ENGINE

PH A CB - CLOSE

PH B CB - CLOSE

PH C CB - CLOSE

ROW E (ALL CLOSED)

AC 1

RIGHT ENGINE

PH A CB - CLOSE

PH B CB - CLOSE

PH C CB - CLOSE

AC 2

LEFT ENGINE

PH A CB - CLOSE

PH B CB - CLOSE

PH C CB - CLOSE

AC 3

LEFT ENGINE

PH A CB - CLOSE

PH B CB - CLOSE

PH C CB - CLOSE

PANEL L4 (CONTINUED)

ROW F (ALL CLOSED)

AC 1

H₂O LOOP PUMP

1A/2

PH A CB - CLOSE

PH B CB - CLOSE

PH C CB - CLOSE

AC 2

H₂O LOOP PUMP

1B

PH A CB - CLOSE

PH B CB - CLOSE

PH C CB - CLOSE

AC 3

H₂O LOOP PUMP

2

PH A CB - CLOSE

PH B CB - CLOSE

PH C CB - CLOSE

ROW G (ALL CLOSED)

AC 1

AV BAY 1

FAN A

PH A CB - CLOSE

PH B CB - CLOSE

PH C CB - CLOSE

AC 2

AV BAY 1

FAN B

PH A CB - CLOSE

PH B CB - CLOSE

PH C CB - CLOSE

AC 3

AV BAY 3

FAN A

PH A CB - CLOSE

PH B CB - CLOSE

PH C CB - CLOSE

PANEL L4 (CONTINUED)

ROW H (ALL CLOSED)

AC 1
AV BAY 3
FAN B
PH A CB - CLOSE
PH B CB - CLOSE
PH C CB - CLOSE

AC 2
AV BAY 2
FAN A
PH A CB - CLOSE
PH B CB - CLOSE
PH C CB - CLOSE

AC 3
AV BAY 2
FAN B
PH A CB - CLOSE
PH B CB - CLOSE
PH C CB - CLOSE

ROW I (ALL CLOSED)

AC 1
IMU FAN A
PH A CB - CLOSE
PH B CB - CLOSE
PH C CB - CLOSE

AC 2
IMU FAN B
PH A CB - CLOSE
PH B CB - CLOSE
PH C CB - CLOSE

AC 3
IMU FAN C
PH A CB - CLOSE
PH B CB - CLOSE
PH C CB - CLOSE

PANEL L4 (CONTINUED)

ROW J

AC 1

HUMIDITY SEPARATOR

A

PH A CB - CLOSE

PH B CB - CLOSE

PH C CB - CLOSE

AC 2

HUMIDITY SEPARATOR

B

PH A CB - CLOSE

PH B CB - CLOSE

PH C CB - CLOSE

AC 3

SIG CONDR

HUM SEP

PH A CB - OPEN

IMU FAN

PH B CB - OPEN

ROW K (ALL CLOSED)

AC 1

H₂O CNTLR 2

PH A CB - CLOSE

CABIN AIR S/C

PH B CB - CLOSE

AC 2

CABIN FAN

B

PH A CB - CLOSE

PH B CB - CLOSE

PH C CB - CLOSE

AC 3

CABIN FAN

A

PH A CB - CLOSE

PH B CB - CLOSE

PH C CB - CLOSE

PANEL L4 (CONTINUED)

ROW L (ALL CLOSED)

AC 1
CABIN T CNTLR 2
PH A CB - CLOSE
AV BAY 2 S/C
PH B CB - CLOSE

AC 2
CABIN T CNTLR 1
PH A CB - CLOSE
AV BAY 3 S/C
PH B CB - CLOSE

AC 3
H₂O CNTLR 1
PH A CB - CLOSE
AV BAY 1 S/C
PH B CB - CLOSE

ROW M (ALL CLOSED)

AC 1
FREON LOOP 1
PUMP A
PH A CB - CLOSE
PH B CB - CLOSE
PH C CB - CLOSE

AC 2
FREON LOOP 1
PUMP B
PH A CB - CLOSE
PH B CB - CLOSE
PH C CB - CLOSE

AC 3
FREON LOOP 2
PUMP A
PH A CB - CLOSE
PH B CB - CLOSE
PH C CB - CLOSE

PANEL L4 (CONTINUED)

ROW N (ALL CLOSED)

AC 1
FREON LOOP 2
PUMP B
PH A CB - CLOSE
PH B CB - CLOSE
PH C CB - CLOSE

AC 2
FREON FLOW PROP 1
PH A CB - CLOSE

FREON SIG CONDR
PH B CB - CLOSE

RAD ISOL A
PH C CB - CLOSE

AC 3
FREON FLOW PROP 2
PH A CB - CLOSE

FREON SIG CONDR
PH B CB - CLOSE

RAD ISOL B
PH C CB - CLOSE

ROW O (ALL CLOSED)

AC 1
BLR HYD BYPASS 1B
PH A CB - CLOSE

HYD QTY 1
PH B CB - CLOSE

BLR HYD BYPASS 3A
PH C CB - CLOSE

AC 2
BLR HYD BYPASS 1A
PH A CB - CLOSE

HYD QTY 2
PH B CB - CLOSE

BLR HYD BYPASS 2B
PH C CB - CLOSE

PANEL L4 (CONTINUED)

ROW O (CONTINUED)

AC 3

BLR HYD BYPASS 2A
PH A CB - CLOSE

HYD QTY 3
PH B CB - CLOSE

BLR HYD BYPASS 3B
PH C CB - CLOSE

ROW P

AC 1

RAD CNTLR 1B
PH A CB - CLOSE

RAD CNTLR 2B
PH B CB - CLOSE
UNLABELED CB - OPEN

AC 2

LG SNSR 2
PH A CB - CLOSE

RAD CNTLR 1A
PH B CB - CLOSE
UNLABELED CB - OPEN

AC 3

LG SNSR 1
PH A CB - CLOSE

RAD CNTLR 2A
PH B CB - CLOSE
UNLABELED CB - OPEN

PANEL L4 (CONTINUED)

ROW Q

AC 1

LIGHTING

PANEL

L/CTR

PH A CB - CLOSE

L OVHD

PH B CB - CLOSE

INST OS

PH C CB - OPEN

AC 2

LIGHTING

PANEL

R OVHD

PH A CB - CLOSE

RIGHT

PH B CB - CLOSE

NUMERIC OS

PH C CB - OPEN

AC 3

LIGHTING

COAS

PH A CB - OPEN

PANEL

MS

PH B CB - OPEN

OS

PH C CB - OPEN

ROW R (ALL CLOSED)

AC 1

INST R

PH A CB - CLOSE

NUMERIC FWD

PH B CB - CLOSE

AC 2

INST OVHD

PH B CB - CLOSE

AC 3

INST L/CTR

PH B CB - CLOSE

*** End of Panel L4 (CDR) ***

Panel L1 (CDR)

76-5 OTC ASP

PANEL L1

HUMIDITY SEP
 A SW - OFF
 B SW - ON

CABIN TEMP SW - FULL COOL
CABIN TEMP CNTRL SW - OFF

CABIN FAN
 A SW - ON
 B SW - OFF

IMU FAN
 A SW - OFF
 B SW - ON
 C SW - OFF

H₂O PUMP
 LOOP 1
 GPC/OFF/ON SW - OFF
 A/B SW - B

 LOOP 2
 GPC/OFF/ON SW - ON

H₂O LOOP 1 BYPASS
 MAN SW - (CENTER)
 MODE SW - MAN

H₂O LOOP 2 BYPASS
 MAN SW - (CENTER)
 MODE SW - MAN

AV BAY 1 FAN
 A SW - OFF
 B SW - ON

AV BAY 2 FAN
 A SW - ON
 B SW - OFF

AV BAY 3 FAN
 A SW - OFF
 B SW - ON

PANEL L1 (CONTINUED)

NOTE

If payload is powered up and requires cooling, Freon loop TB will be in payload position. Either loop may be used, or both.

FLOW PROP VLV
LOOP 1 SW - (CENTER)
LOOP 1 TB - _____

FLOW PROP VLV
LOOP 2 SW - (CENTER)
LOOP 2 TB - _____

FREON PUMP
LOOP 1 SW - B
LOOP 2 SW - B

RAD CONTROLLER
OUT TEMP SW - NORM
LOOP 1 SW - OFF
LOOP 2 SW - OFF

H₂O ALTERNATE PRESS SW - CLOSE

RAD BYPASS VALVE
MAN SEL
1 SW - (CENTER)
2 SW - (CENTER)
1 TB _____ (RAD OR BYP)
2 TB _____ (RAD OR BYP)

MODE
1 SW - MAN
2 SW - MAN

NH₃ CONTROLLER
A SW - OFF
B SW - PRI/GPC

PANEL L1 (CONTINUED)

FLASH EVAP CONTROLLER

PRI A SW - GPC

PRI B SW - OFF

SEC

A SPLY/B SPLY SW - A SPLY

GPC/OFF/ON SW - OFF

HI LOAD EVAP SW - ENABLE

IF THE SWITCH LIST IS BEING PERFORMED PRIOR TO FES PLUG REMOVAL (REF OMI S0007.100, OPERATION 252 - ECLSS FES, NH3, O₂/N₂ PLUG SETS REMOVAL/INSTALLATION),

THEN VERIFY THE FOLLOWING FOUR SWITCH POSITIONS:

TOPPING EVAPORATOR HEATER

NOZZLE

L SW - OFF

R SW - OFF

DUCT SW - OFF

HI LOAD DUCT HTR SW - OFF

Not Performed: _____

IF THE SWITCH LIST IS BEING PERFORMED AFTER FES PLUG REMOVAL (REF OMI S0007.100, OPERATION 252 - ECLSS FES, NH3, O₂/N₂ PLUG SETS REMOVAL/INSTALLATION),

THEN VERIFY THE FOLLOWING FOUR SWITCH POSITIONS:

TOPPING EVAPORATOR HEATER

NOZZLE

L SW - A AUTO

R SW - A AUTO

DUCT SW - A

HI LOAD DUCT HTR SW - A

Not Performed: _____

PANEL L1 (CONTINUED)

FIRE SUPPRESSION

AV BAY 1 SW - SAFE
AV BAY 2 SW - SAFE
AV BAY 3 SW - SAFE

AV BAY 1 AGENT DISCH PB - AS IS
AV BAY 2 AGENT DISCH PB - AS IS
AV BAY 3 AGENT DISCH PB - AS IS

AV BAY 1 AGENT DISCH LIGHT OFF
AV BAY 2 AGENT DISCH LIGHT OFF
AV BAY 3 AGENT DISCH LIGHT OFF

SMOKE DETECTION (ALL LIGHTS OFF)

A

CABIN LIGHT OFF
L FLT DECK LIGHT OFF
AV BAY 1 LIGHT OFF
AV BAY 2 LIGHT OFF
AV BAY 3 LIGHT OFF

B

PAYLOAD LIGHT OFF
R FLT DECK LIGHT OFF
AV BAY 1 LIGHT OFF
AV BAY 2 LIGHT OFF
AV BAY 3 LIGHT OFF

SENSOR RESET SW - (DOWN)

CIRCUIT TEST SW - OFF

***** End of Panel L1 (CDR) *****

Panel L2 (CDR)

76-6 OTC ASP

PANEL L2

CABIN RELIEF

A SW - (CENTER)
B SW - (CENTER)
A TB ENA
B TB ENA

CABIN VENT

VENT ISOL SW - (CENTER)
VENT SW - (CENTER)
VENT ISOL TB CL
VENT TB CL

FLASH EVAP

FEEDLINE HTR
A SUPPLY SW - 2
B SUPPLY SW - 2

ANTISKID SW - ON

NOSE WHEEL STEERING SW - 1

BODY FLAP SW - AUTO/OFF
SBTC HANDLE - FULL FWD
ENTRY MODE SW - AUTO

TRIM

ROLL SW - (CENTER)
PITCH SW - (CENTER)

FREON ISOL

MODE SW - OFF
LOOP 1 SW - (CENTER)
LOOP 2 SW - (CENTER)

ATM PRESS CONTROL

O₂ SYS 1 SUPPLY SW - (CENTER)
O₂ SYS 2 SUPPLY SW - (CENTER)

PANEL L2 (CONTINUED)

IF FUEL CELL FLOW THRU PURGES OR O2 SEAT SAMPLES
ARE COMPLETE,

THEN PERFORM:

ATM PRESS CONTROL
O₂ SYS 1 SUPPLY TB OP
O₂ **SYS 2 SUPPLY TB OP**

Not Performed: _____

ELSE PERFORM:

ATM PRESS CONTROL
O₂ SYS 1 SUPPLY TB CL
O₂ **SYS 2 SUPPLY TB CL**

Not Performed: _____

ATM PRESS CONTROL
O₂ EMER SW - (CENTER)
O₂ EMER TB BP

O₂ XOVR
SYS 1 SW - OPEN
SYS 2 SW - OPEN

N₂ SYS 1
SUPPLY SW - (CENTER)
REG INLET SW - (CENTER)

SUPPLY TB OP
REG INLET TB OP

N₂ SYS 2
SUPPLY SW - (CENTER)
REG INLET SW - (CENTER)

SUPPLY TB OP
REG INLET TB OP

YAW TRIM SW - (CENTER)

O₂/N₂ CNTLR VLV
SYS 1 SW - OPEN
SYS 2 SW - CLOSE

PPO₂ SNSR/VLV SW - NORM

***** End of Panel L2 (CDR) *****

CDR Seat

76-7 OTC ASP

CDR SEAT (LOWER-LEFT SIDE)

SEAT BUSS SELECT SW - AC 2 (UP)

HORIZ CONTR - (CENTER)

VERT CONTR - (CENTER)

***** End of CDR Seat *****

Panel F1 (CDR)

76-8 OTC ASP

PANEL F1

DC UTILITY POWER SW - OFF

AC UTILITY POWER SW - OFF

***** End of Panel F1 (CDR) *****

Panel F2 (CDR)

76-9 OTC ASP

PANEL F2 (ALL LIGHTS OFF)

BFC PB LIGHT OFF

BODY FLAP PB
 AUTO LIGHT OFF
 MAN LIGHT OFF

SPD BK/THROT PB
 AUTO LIGHT OFF
 MAN LIGHT OFF

PITCH
 CSS PB LIGHT OFF
 AUTO PB LIGHT OFF

ROLL/YAW
 CSS PB LIGHT OFF
 AUTO PB LIGHT OFF

MASTER ALARM PB LIGHT OFF

DRAG CHUTE ARM PB
 1 LITE OFF
 2 LITE OFF
DRAG CHUTE DPY PB
 1 LITE OFF
 2 LITE OFF

***** End of Panel F2 (CDR) *****

HUD Left (CDR)

76-10 OTC ASP

MODE SW - NORM
DIM/BRT SW - MID-RANGE
BRT SW - AS REQUIRED

***** End of HUD Left (CDR) *****

Panel F3 (CDR)

76-11 OTC ASP

PANEL F3

DRAG CHUTE JETT PB

1 LITE OFF

2 LITE OFF

HUD (LEFT)

POWER SW - OFF

TRIM (LEFT)

RHC/PANEL SW - INHIBIT

PANEL SW - ON

NWS FAIL LIGHT OFF

ANTISKID FAIL LIGHT OFF

DRAG CHUTE ARM PB

1 LITE OFF

2 LITE OFF

DRAG CHUTE DPY PB

1 LITE OFF

2 LITE OFF

TRIM (RIGHT)

RHC/PANEL SW - INHIBIT

PANEL SW - ON

HUD (RIGHT)

POWER SW - OFF

***** End of Panel F3 (CDR) *****

HUD Right (PLT)

76-12 OTC ASP

MODE SW - NORM
DIM/BRT SW - MID-RANGE
BRT SW - AS REQUIRED

***** End of HUD Right (PLT) *****

Panel F4 (PLT)

76-13 OTC ASP

PANEL F4 (ALL LIGHTS OFF)

DRAG CHUTE JETT PB
 1 LITE OFF
 2 LITE OFF
MASTER ALARM PB LIGHT OFF

PITCH
 AUTO PB LIGHT OFF
 CSS PB LIGHT OFF

ROLL/YAW
 AUTO PB LIGHT OFF
 CSS PB LIGHT OFF

SPD BK/THROT PB
 AUTO LIGHT OFF
 MAN LIGHT OFF

BODY FLAP PB
 AUTO LIGHT OFF
 MAN LIGHT OFF

BFC PB LIGHT OFF

***** End of Panel F4 (PLT) *****

Panel F6 (CDR)

76-14 OTC ASP

PANEL F6

BFC DISENGAGE SW - (RIGHT)
HUD DATA BUS SW - 1
RANGE SAFE ARM LIGHT OFF
MDU (CDR 1) POWER SW - ON
 BRT SW - AS REQUIRED
MDU (CDR 2) POWER SW - ON
 BRT SW - AS REQUIRED
LANDING GEAR
 LEFT TB UP
 NOSE TB UP
 RIGHT TB UP
 ARM PB - AS IS
 LIGHT OFF
 DN PB - AS IS
 LIGHT OFF
HSI SELECT
 MODE SW - ENTRY
 SOURCE
 TACAN/NAV/MLS SW - NAV(OV-103/104)
 GPS/NAV/MLS SW - NAV (OV-105)
 1/2/3 SW - 1
RDR ALTM SW - 1
FLT CNTLR POWER SW - ON
ADI
 ATTITUDE SW - REF
 ERROR SW - MED
 RATE SW - MED
ABORT MODE SW - OFF
ABORT PB LIGHT OFF
ATT REF PB - AS IS
RCS COMMAND (ALL LIGHTS OFF)
 ROLL L LIGHT OFF
 ROLL R LIGHT OFF
 PITCH U LIGHT OFF
 PITCH D LIGHT OFF
 YAW L LIGHT OFF
 YAW R LIGHT OFF
AIR DATA SW - NAV

***** End of Panel F6 (CDR) *****

Panel F7 (CDR)

76-15 OTC ASP

PANEL F7

CAUTION/WARNING MATRIX INDICATOR LIGHTS OFF
EXCEPT:

1. HYD PRESS LIGHT ON
2. FUEL CELL STACK TEMP LIGHT ON
 (IF FUEL CELLS NOT ACTIVATED)
3. FUEL CELL PUMP LIGHT ON
 (IF FUEL CELLS NOT ACTIVATED)
4. MPS LIGHT ON
 (IF HELIUM REGULATOR OUT PRESS IS OUT OF
 C&W LIMITS)

MDU (CRT 1) POWER SW - ON
 BRT SW - AS REQUIRED

MDU (CRT 2) POWER SW - ON
 BRT SW - AS REQUIRED

MDU (CRT 3) POWER SW - ON
 BRT SW - AS REQUIRED

MDU (MFD 1) POWER SW - ON
 BRT SW - AS REQUIRED

MDU (MFD 2) POWER SW - ON
 BRT SW - AS REQUIRED

MAIN ENGINE STATUS
 LEFT LIGHT (TWO) OFF
 CTR LIGHT (TWO) OFF
 RIGHT LIGHT (TWO) OFF
SM ALERT LIGHT OFF

***** End of Panel F7 (CDR) *****

Panel F8 (PLT)

76-16 OTC ASP

PANEL F8

HUD DATA BUS SW - 4

MDU (PLT 1)
POWER SW - ON
BRT SW - AS REQUIRED

MDU (PLT 2)
POWER SW - ON
BRT SW - AS REQUIRED

LANDING GEAR
ARM PB - AS IS
DN PB - AS IS
ARM LIGHT OFF
DN LIGHT OFF
LEFT TB UP
NOSE TB UP
RIGHT TB UP

HSI SELECT
MODE SW - ENTRY
SOURCE
TACAN/NAV/MLS SW - NAV (OV-103/104)
GPS/NAV/MLS SW - NAV (OV-105)
1/2/3 SW - 2
RDR ALTM SW - 2

FLT CNTLR PWR SW - ON

ADI
ATTITUDE SW - REF
ERROR SW - MED
RATE SW - MED

ATT REF PB - AS IS
AIR DATA SW - NAV

***** End of Panel F8 (PLT) *****

Panel F9 (PLT)

76-17 OTC ASP

PANEL F9

AC VOLTS SW - AS REQD
SIGNAL STRENGTH
DC VOLTS/AMP SW - MAIN VOLTS B

***** End of Panel F9 (PLT) *****

Panel R1 (PLT)

76-18 OTC ASP

PANEL R1

POWER DISTRIBUTION
CONTROL BUS PWR
MN A SW - (DOWN)
MN B SW - (DOWN)
MN C SW - (DOWN)

ESS BUS SOURCE
MN B/C SW - ON
MN C/A SW - ON
MN A/B SW - ON

FC1 SW - OFF
FC2 SW - OFF
FC3 SW - OFF

FC/MAIN BUS
A SW - (CENTER)
B SW - (CENTER)
C SW - (CENTER)

NOTE

If the fuel cells are activated, the following three TBs will be on.

A TB OFF
B TB OFF
C TB OFF

PANEL R1 (CONTINUED)

MN BUS TIE
A SW - (CENTER)
B SW - (CENTER)
C SW - (CENTER)
A TB OFF
B TB OFF
C TB OFF

NOTE

VITT/CPLD will provide the switch positions and talkback indications.

POWER DISTRIBUTION

PAYLOAD

CABIN SW - _____

PRI MN B SW - (CENTER)

PRI MN B TB _____

PRI FC3 SW - (CENTER)

PRI FC3 TB _____

PRI MN C SW - (CENTER)

PRI MN C TB _____

AUX SW - _____

AFT MN B SW - _____

AFT MN C SW - _____

POWER DISTRIBUTION

INV POWER

1 SW - (CENTER)

2 SW - (CENTER)

3 SW - (CENTER)

1 TB ON

2 TB ON

3 TB ON

PANEL R1 (CONTINUED)

INV/AC BUS

- 1 SW - (CENTER)
- 2 SW - (CENTER)
- 3 SW - (CENTER)

- 1 TB ON
- 2 TB ON
- 3 TB ON

AC CONTR

AC 1

- PH A CB - OPEN
- PH B CB - OPEN
- PH C CB - OPEN

AC 2

- PH A CB - OPEN
- PH B CB - OPEN
- PH C CB - OPEN

AC 3

- PH A CB - OPEN
- PH B CB - OPEN
- PH C CB - OPEN

IF THE NEXT THREE SWITCHES ARE NOT ALREADY IN
THE MONITOR POSITION:

THEN PERFORM:

AC BUS SNSR

- 1 SW - OFF (1 SEC)
THEN MONITOR
- 2 SW - OFF (1 SEC)
THEN MONITOR
- 3 SW - OFF (1 SEC)
THEN MONITOR

Not Performed: _____

PANEL R1 (CONTINUED)

CRYO

O₂ MANIFOLD VLV

TANK 1 SW - (CENTER)

TANK 2 SW - (CENTER)

TANK 1 TB OP

TANK 2 TB OP

O₂ TK 1 HEATERS

A SW - AUTO

B SW - OFF

RESET/TEST SW - (CENTER)

O₂ TK 2 HEATERS

A SW - AUTO

B SW - OFF

RESET/TEST SW - (CENTER)

O₂ TK 3 HEATERS

A SW - OFF

B SW - OFF

RESET/TEST SW - (CENTER)

CRYO

FUEL CELL 1 REAC SW - (CENTER)

FUEL CELL 3 REAC SW - (CENTER)

FUEL CELL 2 REAC SW - (CENTER)

FUEL CELL 1 REAC O₂ TB OP

FUEL CELL 1 REAC H₂ TB OP

FUEL CELL 3 REAC O₂ TB OP

FUEL CELL 3 REAC H₂ TB OP

FUEL CELL 2 REAC O₂ TB OP

FUEL CELL 2 REAC H₂ TB OP

FUEL CELL

1 SW - (CENTER)

2 SW - (CENTER)

3 SW - (CENTER)

PANEL R1 (CONTINUED)

NOTE

If the fuel cells have been activated, the following six TBs will be gray.

FUEL CELL

READY FOR LOAD

1 TB BP

2 TB BP

3 TB BP

COOLANT PUMP DELTA P

1 TB BP

2 TB BP

3 TB BP

CRYO

H₂ MANIFOLD VLV

TANK 1 SW - (CENTER)

TANK 2 SW - (CENTER)

TANK 1 TB OP

TANK 2 TB OP

H₂ TK 1 HEATERS

A SW - AUTO

B SW - OFF

H₂ TK 2 HEATERS

A SW - AUTO

B SW - OFF

H₂ TK 3 HEATERS

A SW - OFF

B SW - OFF

*** End of Panel R1 (PLT) ***

Panel R2 (PLT)

76-19 OTC ASP

PANEL R2

MPS

PRPLT DUMP

SEQUENCE SW - GPC

BACKUP LH₂ VLV SW - GPC

ENGINE POWER (ALL ON)

LEFT AC 2 SW - ON

CTR AC 1 SW - ON

RIGHT AC 3 SW - ON

LEFT AC 3 SW - ON

CTR AC 2 SW - ON

RIGHT AC 1 SW - ON

HE ISOLATION A (ALL GPC)

LEFT SW - GPC

CTR SW - GPC

RIGHT SW - GPC

HE ISOLATION B (ALL GPC)

LEFT SW - GPC

CTR SW - GPC

RIGHT SW - GPC

PNEUMATICS

L ENG HE XOVR SW - GPC

HE ISOL SW - GPC

LH₂ ULLAGE PRESS SW - AUTO

HE INTERCONNECT (ALL GPC)

LEFT SW - GPC

CTR SW - GPC

RIGHT SW - GPC

APU/HYD

READY TO START

1 TB BP

2 TB BP

3 TB BP

PANEL R2 (CONTINUED)

APU OPERATE

- 1 SW - OFF
- 2 SW - OFF
- 3 SW - OFF

APU SPEED SELECT

- 1 SW - NORM
- 2 SW - NORM
- 3 SW - NORM

HYD MAIN PUMP PRESS

- 1 SW - NORM
- 2 SW - NORM
- 3 SW - NORM

APU FU TK VLV ENA (ALL OPEN)

- 1A CB - OPEN
- 1B CB - OPEN
- 2A CB - OPEN
- 2B CB - OPEN
- 3A CB - OPEN
- 3B CB - OPEN

HYD CIRC PUMP

- 1 SW - GPC
- 2 SW - GPC
- 3 SW - GPC

APU CNTLR PWR

- 1 SW - OFF
- 2 SW - OFF
- 3 SW - OFF

APU FUEL TK VLV

- 1 SW - CLOSE
- 2 SW - CLOSE
- 3 SW - CLOSE

APU AUTO SHUT DOWN

- 1 SW - ENABLE
- 2 SW - ENABLE
- 3 SW - ENABLE

PANEL R2 (CONTINUED)

BOILER CNTLR/HTR

1 SW - A

2 SW - A

3 SW - A

BOILER PWR

1 SW - OFF

2 SW - OFF

3 SW - OFF

BOILER N₂ SUPPLY

1 SW - OFF

2 SW - OFF

3 SW - OFF

ET UMBILICAL DOOR

MODE SW - GPC

CENTERLINE LATCH SW - GND

CENTERLINE LATCH TB BP

LEFT

DOOR SW - OFF

DOOR TB OP

LATCH SW - OFF

LATCH TB REL

RIGHT

DOOR SW - OFF

DOOR TB OP

LATCH SW - OFF

LATCH TB REL

*** End of Panel R2 (PLT) ***

Panel R4 (PLT)

76-20 OTC ASP

PANEL R4

HYDRAULICS

BRAKE HEATER

A SW - OFF

B SW - OFF

C SW - OFF

BRAKE ISOL VLV

1 SW - GPC (CENTER)

2 SW - GPC (CENTER)

3 SW - GPC (CENTER)

1 TB CL

2 TB CL

3 TB CL

MPS/TVC ISOL VLV

SYS 1 SW - GPC (CENTER)

SYS 2 SW - GPC (CENTER)

SYS 3 SW - GPC (CENTER)

SYS 1 TB AS IS

SYS 2 TB AS IS

SYS 3 TB AS IS

MAIN PROPULSION SYSTEM

ENGINE CNTLR HTR

LEFT SW - OFF

CTR SW - OFF

RIGHT SW - OFF

MANF PRESS

LO₂ SW - GPC

LH₂ SW - GPC

PANEL R4 (CONTINUED)

PROPELLANT FILL/DRAIN

LO₂

OUTBD SW - GND

INBD SW - GND

LH₂

OUTBD SW - GND

INBD SW - GND

H₂ PRESS LINE VENT SW - GND

LO₂ PREVALVE

LEFT SW - GPC

CTR SW - GPC

RIGHT SW - GPC

LH₂ PREVALVE

LEFT SW - GPC

CTR SW - GPC

RIGHT SW - GPC

LG EXTEND ISO VALVE SW - GPC

LG EXTEND ISO VALVE TB CL

FEEDLINE RLF ISOL

LO₂ SW - GPC

LH₂ SW - GPC

LG/NWS HYD SYS SW - AUTO 1/2

***** End of Panel R4 (PLT) *****

Panel R6 (PLT)

76-21 OTC ASP

PANEL R6

RIGHT COMM POWER SW - OFF

***** End of Panel R6 (PLT) *****

Right-side Overhead Flood (PLT)

NOTE

The following is a standalone florescent light under Panel O9.

76-22 OTC ASP

NEAR PANEL 09

RIGHT-SIDE OVERHEAD FLOOD - BRT

***** End of Right-side Overhead Flood (PLT) *****

Panel C2 (CDR)

76-23 OTC ASP

PANEL C2

IDP/CRT 1
POWER SW - ON
MAJ FUNC SW - GNC

IDP/CRT 3
POWER SW - ON
MAJ FUNC SW - GNC

IDP/CRT 2
POWER SW - ON
MAJ FUNC SW - GNC

IDP/LEFT CRT SEL SW - AS IS

IDP/RIGHT CRT SEL SW - AS IS

EVENT TIMER
MODE SW - DOWN
CONTROL SW - (CENTER)

TIMER SET PB'S - 0900

TIMER SW - (CENTER)

***** End of Panel C2 (CDR) *****

Panel C3 (CDR)

76-24 OTC ASP

PANEL C3

OMS ENG

LEFT SW - OFF

RIGHT SW - OFF

BFC CRT

DISPLAY SW - OFF

SELECT SW - 3 + 1

FCS CHANNEL

1 SW - AUTO

2 SW - AUTO

3 SW - AUTO

4 SW - AUTO

BODY FLAP SW - AUTO/OFF

AIR DATA

PROBE STOW

LEFT SW - INHIBIT

RIGHT SW - INHIBIT

MAIN ENGINE

LIMIT SHUT DN SW - AUTO

MAIN ENGINE SHUTDOWN

LEFT LIGHT - OFF

CTR LIGHT - OFF

RIGHT LIGHT - OFF

ROLL TRIM SW - (CENTER)

PITCH TRIM SW - (CENTER)

SBTC HANDLE - FULL FWD

PANEL C3 (CONTINUED)

ORBITAL DAP (ALL LIGHTS OFF)

SELECT

A LIGHT OFF

B LIGHT OFF

CONTROL

AUTO LIGHT OFF

INTRL LIGHT OFF

LVLH LIGHT OFF

FREE LIGHT OFF

MANUAL MODE (ALL LIGHTS OFF)

TRANSLATION

X

SPARE (BLANK PBI)

LIGHT OFF

NORM LIGHT OFF

PULSE LIGHT OFF

Y

LOW Z LIGHT OFF

NORM LIGHT OFF

PULSE LIGHT OFF

Z

HIGH Z LIGHT OFF

NORM LIGHT OFF

PULSE LIGHT OFF

ROTATION

ROLL

PRI LIGHT OFF

DISC RATE LIGHT OFF

PULSE LIGHT OFF

PITCH

ALT LIGHT OFF

DISC RATE LIGHT OFF

PULSE LIGHT OFF

YAW

VERN LIGHT OFF

DISC RATE LIGHT OFF

PULSE LIGHT OFF

SRB SEPARATION

MAN/AUTO SW - AUTO

SEP LIGHT - OFF

PANEL C3 (CONTINUED)

ET SEPARATION
MAN/AUTO SW - AUTO
SEP LIGHT - OFF

YAW TRIM SW - (CENTER)

AUDIO CENTER SW - 1

OI PCMMU
PWR SW - OFF
FORMAT SW - GPC

S-BAND PM
CONTROL SW - CMD

NOTE

When switching S-band PM antenna selector switch, pause a minimum of 2 seconds in each position.

ANTENNA SW - GPC

AIR DATA PROBE
LEFT SW - STOW
RIGHT SW - STOW

FUEL CELL REACT VLV
1 SW - (DOWN)
2 SW - (DOWN)
3 SW - (DOWN)
1 CB - OPEN
2 CB - OPEN
3 CB - OPEN

UPLINK SW - ENABLE

MASTER MADS POWER SW - ON

CAUTION/WARNING
MEMORY SW - (CENTER)
MODE SW - NORM

PANEL C3 (CONTINUED)

NOTE

For questions about switch position, contact CPLE.

IF FOR OV-103 AND OV-105 ONLY (NON-SPACEHAB) ,

THEN PERFORM THE FOLLOWING SIX SWITCH SETTINGS:

PAYLOAD SAFING

- 1 SW - SAFE (OV-105)
- RTG PUMP - PRI (OV-103 ONLY)
- 2 SW - SAFE
- 3 SW - SAFE
- 4 SW - SAFE
- 5 SW - SAFE

Not Performed:_____

IF FOR OV-104 ONLY,

THEN PERFORM THE FOLLOWING FIVE SWITCH SETTINGS:

- RTG PUMP SW - PRI
- RTG SHORT
- PRI
- ENA/DSBL SW - DSBL
- SHORT/OFF SW - OFF
- SEC
- ENA/DSBL SW - DSBL
- SHORT/OFF SW - OFF

Not Performed:_____

EMERGENCY LIGHTING SW - OFF/ON

***** End of Panel C3 (CDR) *****

Panel C5 (PLT)

76-25 OTC ASP

PANEL C5

DIRECT O₂ VALVE - CLOSED

***** End of Panel C5 (PLT) *****

PLT Seat

76-26 OTC ASP

PLT SEAT (LOWER LEFT)

SEAT BUSS SELECT SW - AC 3

HORIZ CONTR - (CENTER)

VERT CONTR - (CENTER)

***** End of PLT Seat *****

Panel C6 (PLT)

NOTE

LEH oxygen 1-4 valves will be configured for Flight by ASP during Pre-Ingress Checklist.

76-27 OTC ASP

PANEL C6

LEH O₂ 1 VLV - CLOSE

LEH O₂ 2 VLV - CLOSE

LEH O₂ 3 VLV - CLOSE

LEH O₂ 4 VLV - CLOSE

***** End of Panel C6 (PLT) ****

Panel C7 (PLT)

76-28 OTC ASP

PANEL C7

LEH O₂ SUPPLY

SYS 1 VLV - OPEN

SYS 2 VLV - OPEN

***** End of Panel C7 (PLT) *****

Panel O1 (CDR)

76-29 OTC ASP

PANEL O1

COAS SW - OFF
GPC STATUS (MATRIX) LIGHTS OFF
AIR TEMP SW - CAB HX OUT
H₂O PUMP OUT PRESS SW - LOOP 2
FREON SW - LOOP 1
O₂/N₂ FLOW SW - SYS1 O₂
PPO₂ SW - SNSR A

***** End of Panel O1 (CDR) *****

Panel O2 (CDR)

76-30 OTC ASP

PANEL O2

CRYO
O₂ HTR ASSY TEMP SW - TK 1 1
O₂/H₂ SW - TK 1

FUEL CELL STACK TEMP SW - 1

***** End of Panel O2 (CDR) *****

Panel O3 (PLT)

76-31 OTC ASP

PANEL O3

RCS/OMS PRESS SW - RCS HE X10
RCS/OMS PRPLT QTY SW - OMS FUEL
MISSION TIME SW - MET

***** End of Panel O3 (PLT) *****

Panel O5 (CDR)

76-32 OTC ASP

PANEL O5

LEFT AUDIO

TACAN ID (OV-103/104)

ON/OFF SW - OFF

1/2/3 SW - 1

UNLABELED SWITCHES (OV-105)

LEFT SW - AS REQUIRED

RIGHT SW - AS REQUIRED

VOX SENS SW - AS IS

A/G

1 SW - T/R

2 SW - T/R

A/A SW - T/R

ICOM

A SW - T/R

B SW - T/R

POWER SW - AUD/TONE

CONTROL - NORM

XMIT/ICOM MODE SW - PTT/VOX

VOLUME

A/G

1 PB - AS IS

2 PB - AS IS

A/A PB - AS IS

ICOM

A PB - AS IS

B PB - AS IS

TACAN PB - 5 (OV-103/104)

TACAN PB - AS IS (OV-105)

PAGE SW - (DOWN)

***** End of Panel O5 (CDR) *****

Panel O6 (CDR)

NOTE

Panel and instrument switches (*) will be "1/4 bright" for a night Launch.

76-33 OTC ASP

PANEL O6

LIGHTING

PANEL

LEFT/CENTER SW - OFF*

LEFT OVERHEAD SW - OFF*

INSTRUMENT

LEFT/CENTER SW - OFF*

OVERHEAD SW - AS REQ'D*

LEFT GLARESHIELD FLOOD

BRIGHT/VAR/OFF SW - VAR

DIM/BRT SW - AS REQ'D

LEFT SEAT/CTR CNSL FLOOD

SEAT/OFF/CTR CNSL SW - OFF

DIM/BRT SW - BRIGHT

STAR TRACKER

DOOR CONTROL

SYS 1 SW - OFF

SYS 2 SW - OFF

NOTE

Star Tracker door TB may be BP if MCA logic is not on.

DOOR POSITION

-Y TB CL

-Z TB CL

POWER

-Y SW - OFF

-Z SW - OFF

PANEL O6 (CONTINUED)

UHF

SPLX/EVA XMIT FREQ SW - 259.7/414.2
SPLX/EVA PWR AMPL SW - ON
SPLX SQUELCH SW - ON
EVA STRING SW - 1
ENCRYPT SW - ON
UHF MODE SW - SPLX

ANNUNCIATOR

LAMP TEST SW - (CENTER)

BUS SELECT

ACA 1 SW - MN A
ACA 2/3 SW - MN B

INTENSITY

BRIGHT/VAR SW - BRIGHT
LOW/MED SW - MED

MASTER TIMING UNIT SW - AUTO

MDM

PL 1 SW - ON

PL 2 SW - ON

PL 3 SW - OFF

INTEGRATED DISPLAY PROCESSOR

1 SW - (DOWN)
2 SW - (DOWN)
3 SW - (DOWN)
4 SW - (DOWN)

MDM

FLT CRIT AFT
FA1 SW - ON
FA2 SW - ON
FA3 SW - ON
FA4 SW - ON

PANEL O6 (CONTINUED)

FLT CRIT FWD
FF1 SW - ON
FF2 SW - ON
FF3 SW - ON
FF4 SW - ON

GENERAL PURPOSE COMPUTER
POWER

1 SW - ON
2 SW - ON
3 SW - ON
4 SW - ON
5 SW - ON

OUTPUT

1 SW - NORMAL
2 SW - NORMAL
3 SW - NORMAL
4 SW - NORMAL
5 SW - NORMAL
1 TB GRAY
2 TB GRAY
3 TB GRAY
4 TB GRAY
5 TB BP

INITIAL PROGRAM LOAD

1 PB - AS IS
2 PB - AS IS
3 PB - AS IS
4 PB - AS IS
5 PB - AS IS

IPL SOURCE SW - OFF

MODE

1 SW - RUN
2 SW - RUN
3 SW - RUN
4 SW - RUN
5 SW - STBY
1 TB RUN
2 TB RUN
3 TB RUN
4 TB RUN
5 TB RUN

*** End of Panel O6 (CDR) ***

Panel O7 (PLT)

76-34 OTC ASP

PANEL O7

IF VEHICLE IS OV-103/104

THEN PERFORM:

TACAN 1
MODE SW - OFF
ANT SEL SW - AS IS
CHANNEL PB'S - AS IS
TACAN 2
MODE SW - OFF
ANT SEL SW - AS IS
CHANNEL PB'S - AS IS
TACAN 3
MODE SW - OFF
ANT SEL SW - AS IS
CHANNEL PB'S - AS IS

IF VEHICLE IS OV-105

THEN PERFORM:

GPS 1
PRE AMPL UPPER SW - OFF
 LOWER SW - OFF
ENCRYPT SW - NORMAL
POWER SW - OFF

GPS 2
PRE AMPL UPPER SW - OFF
 LOWER SW - OFF
ENCRYPT SW - NORMAL
POWER SW - OFF

GPS 3
PRE AMPL UPPER SW - OFF
 LOWER SW - OFF
ENCRYPT SW - NORMAL
POWER SW - OFF

Not Performed: _____

Not Performed: _____

PANEL 07 (CONTINUED)

AFT LEFT RCS

HE PRESS

A SW - OPEN

B SW - OPEN

A TB OP

B TB OP

TANK ISOLATION

1/2 SW - GPC

1/2 TB OP

3/4/5

A SW - GPC

B SW - GPC

A TB OP

B TB OP

MANIFOLD ISOLATION

1 SW - GPC

2 SW - GPC

3 SW - GPC

4 SW - GPC

5 SW - GPC

1 TB OP

2 TB OP

3 TB OP

4 TB OP

5 TB OP

LEFT RCS CROSSFEED

1/2 SW - GPC

3/4/5 SW - GPC

1/2 TB CL

3/4/5 TB CL

MASTER RCS CROSSFEED SW - OFF

AFT RIGHT RCS

HE PRESS

A SW - OPEN

B SW - OPEN

A TB OP

B TB OP

PANEL 07 (CONTINUED)

TANK ISOLATION

1/2 SW - GPC

1/2 TB OP

3/4/5

A SW - GPC

B SW - GPC

A TB OP

B TB OP

MANIFOLD ISOLATION

1 SW - GPC

2 SW - GPC

3 SW - GPC

4 SW - GPC

5 SW - GPC

1 TB OP

2 TB OP

3 TB OP

4 TB OP

5 TB OP

RIGHT RCS CROSSFEED

1/2 SW - GPC

3/4/5 SW - GPC

1/2 TB CL

3/4/5 TB CL

***** End of Panel O7 (PLT) *****

Panel O8 (PLT)

76-35 OTC ASP

PANEL O8

RADAR ALTIMETER

- 1 SW - OFF
- 2 SW - OFF

MLS

- 1 SW - OFF
- 2 SW - OFF
- 3 SW - OFF

CHANNEL

- 1 TW - 6
- 2 TW - 6
- 3 TW - 6

RIGHT SEAT/CTR CNSL FLOOD

- SEAT/OFF/CTR SW - OFF
- DIM/BRT SW - BRT

NOTE

Panel and instrument switches (*) will be "1/4 bright" for night Launch.

LIGHTING

PANEL

- RIGHT SW - OFF*
- RIGHT OVERHEAD SW - OFF*
- RIGHT INSTRUMENT SW - OFF*
- NUMERIC SW - BRT*

RIGHT GLARESHIELD FLOOD

- BRIGHT/VAR/OFF SW - VAR
- DIM/BRT SW - AS REQ'D

OMS KIT

- HE PRESS/VAPOR ISOL
- A SW - CLOSE
- B SW - CLOSE

PANEL 08 (CONTINUED)

TANK ISOLATION

A SW - CLOSE
B SW - CLOSE

A TB BP
B TB BP

LEFT OMS

HE PRESS/VAPOR ISOL

A SW - GPC
B SW - GPC

TANK ISOLATION

A SW - GPC
B SW - GPC
A TB OP
B TB OP

LEFT OMS CROSSFEED

A SW - GPC
B SW - GPC
A TB CL
B TB OP

RIGHT OMS

HE PRESS/VAPOR ISOL

A SW - GPC
B SW - GPC

TANK ISOLATION

A SW - GPC
B SW - GPC
A TB OP
B TB OP

RIGHT OMS CROSSFEED

A SW - GPC
B SW - GPC
A TB CL
B TB CL

PANEL O8 (CONTINUED)

FWD RCS

HE PRESS

A SW - OPEN

B SW - OPEN

A TB OP

B TB OP

TANK ISOLATION

1/2 SW - GPC

3/4/5 SW - GPC

1/2 TB OP

3/4/5 TB OP

MANIFOLD ISOLATION

1 SW - GPC

2 SW - GPC

3 SW - GPC

4 SW - GPC

5 SW - GPC

1 TB OP

2 TB OP

3 TB OP

4 TB OP

5 TB OP

ANNUNCIATOR LAMP TEST SW - (CENTER)

***** End of Panel O8 (PLT) *****

Panel O9 (PLT)

76-36 OTC ASP

PANEL O9

RIGHT AUDIO

POWER SW - AUD/TONE

A/G

1 SW - T/R

2 SW - T/R

A/A SW - T/R

ICOM

A SW - T/R

B SW - T/R

VOX SENS SW - AS REQD

TACAN ID (OV-103/104)

ON/OFF SW - OFF

1/2/3 SW - AS REQD

UNLABELED SWITCHES (OV-105)

LEFT SW - AS REQUIRED

RIGHT SW - AS REQUIRED

PAGE SW - (DOWN)

VOLUME

A/G

1 PB - AS IS

2 PB - AS IS

A/A PB - AS IS

ICOM

A PB - AS IS

B PB - AS IS

TACAN PB - 5 (OV-103/104)

TACAN PB - AS IS (OV-105)

XMIT/ICOM MODE SW - PTT/VOX

CONTROL SW - NORM

***** End of Panel O9 (PLT) *****

Panel O13 (CDR)

76-37 OTC ASP

PANEL O13

ROW A

ESS 1BC
 C/W A CB - CLOSE
 MN A CONTR CB - OPEN
 AC 1 SNSR CB - CLOSE
 MTU A CB - CLOSE

ROW B (ALL CLOSED)

ESS 1BC
 CRYO CNTLR
 O₂ TK 2 CB - CLOSE
 H₂ TK 2 CB - CLOSE
 CRYO QTY
 O₂ TK 2 CB - CLOSE
 H₂ TK 2 CB - CLOSE

ROW C

ESS 2CA
 C/W B CB - CLOSE
 MN B CONTR CB - OPEN
 AC 2 SENSR CB - CLOSE
 MTU B CB - CLOSE

ROW D (ALL CLOSED)

ESS 2CA
 CRYO CNTLR
 O₂ TK 1 CB - CLOSE
 H₂ TK 1 CB - CLOSE
 CRYO QTY
 O₂ TK 1 CB - CLOSE
 H₂ TK 1 CB - CLOSE

ROW E

ESS 3AB
 MN C CONTR CB - OPEN
 AC 3 SNSR CB - CLOSE
 GPC STATUS CB - CLOSE

***** End of Panel O13 (CDR) *****

Panel O14 (CDR)

76-38 OTC ASP

PANEL O14

ROW A (ALL ON)

BRAKES MN A SW - ON
RGA 1 SW - ON
IMU 1 SW - ON
FC 1 CNTLR SW - ON

ROW B

MN A
OPERATIONAL INST
SIG CONDR
OF 1/4 A CB - CLOSE
OM 1/2 A CB - CLOSE

MDM
OF 1/2 A CB - CLOSE
OF 3/4 A CB - CLOSE

H₂O BYP LOOP 1 SNSR CB - CLOSE
TIRE PRESS CB - CLOSE

MN C CONTR CB - OPEN

MISSION TIMER FWD CB - CLOSE

EVENT TIMER AFT CB - CLOSE

ROW C (ALL CLOSED)

MN A

TACAN 1 CB - CLOSE (OV-103/104)

CRYO O₂ HTR TK 1 SNSR 1 CB - CLOSE

SMOKE DETN
L/R FLT DK CB - CLOSE
BAY 2A/3B CB - CLOSE

PANEL O14 (CONTINUED)

ROW C (CONTINUED)

FIRE SUPPR BAY 3 CB - CLOSE

UTILITY POWER O19/MO52J CB - CLOSE

FLOOD LEFT CNSL CB - CLOSE

ANNUN FWD ACA 1 CB - CLOSE

RAD ISOL CONTR CB - CLOSE

ROW D

MN A

FREON

RAD CNTLR

1 CB - CLOSE

2 CB - CLOSE

IF VEHICLE IS OV-103

THEN PERFORM:

GPS

PRE AMPL

UC CB - OPEN

LC CB - OPEN

Not Performed:_____

IF VEHICLE IS OV-104,

THEN PERFORM:

GPS1

PRE AMPL

UPPER CB - OPEN

LOWER CB - OPEN

Not Performed:_____

IF VEHICLE IS OV-105

THEN PERFORM:

GPS1

PRE AMPL UPPER CB - CLOSE

LOWER CB - CLOSE

Not Performed:_____

PANEL O14 (CONTINUED)

ATM PRESS CONTROL

N₂ SUPPLY 1 CB - CLOSE
O₂/N₂ CNTLR 1 CB - CLOSE
O₂ XOVR 1 CB - CLOSE
N₂ REG INLET 1 CB - CLOSE
CABIN VENT CB - CLOSE
CABIN VENT ISOL CB - CLOSE

ROW E

MN A

RADAR ALTM 1 CB - CLOSE
MLS 1 CB - CLOSE
ADTA 1 CB - CLOSE
STAR TRKR -Z CB - CLOSE
ACCEL 1 CB - CLOSE

DDU

LEFT CB - CLOSE
AFT CB - OPEN

NOSE WHEEL STEERING CB - CLOSE

ROW F

MMU 1 SW - ON

RJDA 1A

L2/R2 MANF
LOGIC SW - ON
DRIVER SW - OFF
(GUARDED - LOCKED)
(SW GUARD REMOVED AT FLT CREW INGRESS)

RJDA 2A

L4/R4 MANF
LOGIC SW - ON
DRIVER SW - OFF
(GUARDED - LOCKED)
(SW GUARD REMOVED AT FLT CREW INGRESS)

RJDF 1B

F1 MANF
LOGIC SW - ON
DRIVER SW - OFF
(GUARDED - LOCKED)
(SW GUARD REMOVED AT FLT CREW INGRESS)

L OMS ENG VLV SW - OFF

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(GUARDED)
(SW GUARD REMOVED AT FLT CREW INGRESS)

ASA 1 SW - ON

***** End of Panel O14 (CDR) *****

Panel O15 (PLT)

76-39 OTC ASP

PANEL O15

ROW A (ALL ON)

BRAKES MN B SW - ON

RGA

2 SW - ON

4 SW - ON

IMU 2 SW - ON

FC 2 CNTLR SW - ON

ROW B

MN B

OPERATIONAL INST

SIG CONDR

OM 3 A CB - CLOSE

OF 1/4 B CB - CLOSE

OF 2/3 A CB - CLOSE

OM 1/2 B CB - CLOSE

MDM OF 1/2 B CB - CLOSE

H₂O BYP LOOP 2 SNSR CB - CLOSE

TIRE PRESS CB - CLOSE

MN A CONTR CB - OPEN

MISSION TIMER AFT CB - CLOSE

EVENT TIMER FWD CB - CLOSE

PANEL O15 (CONTINUED)

ROW C

MN B

TACAN 2 CB - CLOSE (OV-103)

GPS 2 PREAMPL UPPER CB - CLOSE (OV-104/105)

CRYO O₂ HTR TK 2 SNSR 2 CB - CLOSE

SMOKE DETN BAY 1B/3A CB - CLOSE

FIRE SUPPR BAY 1 CB - CLOSE

UTILITY PWR F1/MO13Q CB - OPEN

FLOOD

RIGHT CNSL CB - CLOSE

LEFT CTR CB - CLOSE

ANNUNCIATOR

FWD

ACA 1 CB - CLOSE

ACA 2/3 CB - CLOSE

AFT

ACA 4/5 CB - CLOSE

ROW D (ALL CLOSED)

MN B

FREON

RAD CNTLR

1 CB - CLOSE

2 CB - CLOSE

NOSE WHEEL STEERING CB - CLOSE

ATM PRESS CONTROL

PPO₂ C CABIN DP/DT CB - CLOSE

N₂ SUPPLY 2 CB - CLOSE

O₂/N₂ CNTLR 2 CB - CLOSE

O₂ XOVR 2 CB - CLOSE

N₂ REG INLET 2 CB - CLOSE

CABIN RELIEF A CB - CLOSE

GPS 2 PREAMPL LOWER CB - CLOSE (OV-104/105)

PANEL O15 (CONTINUED)

ROW E (ALL CLOSED)

MN B

RADAR ALTM 2 CB - CLOSE

MLS 2 CB - CLOSE

ADTA 2 CB - CLOSE

STAR TRKR -Y CB - CLOSE

ACCEL 2 CB - CLOSE

DDU

LEFT CB - CLOSE

RIGHT CB - CLOSE

TACAN 2 CB - CLOSE (OV-104)

DRAG CHUTE SYS 2 CB - CLOSE

ROW F

MMU 2 SW - ON

RJDA 1B

L1/L5/R1 - MANF - L1/R1

LOGIC SW - ON

DRIVER SW - OFF

(GUARDED - LOCKED)

(SW GUARD REMOVED AT FLT CREW INGRESS)

RJDF 1A

F2 MANF

LOGIC SW - ON

DRIVER SW - OFF

(GUARDED - LOCKED)

(SW GUARD REMOVED AT FLT CREW INGRESS)

ASA 2 SW - ON

ACCEL 4 SW - ON

*** End of Panel O15 (PLT) ***

Panel O16 (PLT)

76-40 OTC ASP

PANEL O16

ROW A (ALL ON)

BRAKES MN C SW - ON
RGA 3 SW - ON
IMU 3 SW - ON
FC 3 CNTLR SW - ON

ROW B

MN C
OPERATIONAL INST
SIG CONDR
OM 3 B CB - CLOSE
OF 2/3 B CB - CLOSE
MDM
OF 3/4 B CB - CLOSE
MN B CONTR CB - OPEN
AUX TIMING BUFFER CB - CLOSE

ROW C (ALL CLOSED)

MN C

TACAN 3 CB - CLOSE (OV-103/104)

CRYO O₂ HTR
TK 1 SNSR 2 CB - CLOSE
TK 2 SNSR 1 CB - CLOSE

SMOKE DETN
CABIN CB - CLOSE
BAY 1A/2B CB - CLOSE

FIRE SUPPR BAY 2 CB - CLOSE

UTILITY POWER A11/A15/MO30F CB - CLOSE

FLOOD RIGHT CTR CB - CLOSE

ANNUNCIATOR
FWD ACA 2/3 CB - CLOSE
AFT ACA 4/5 CB - CLOSE

PANEL 016 (CONTINUED)

ROW D
MN C

IF VEHICLE IS OV-103,

THEN PERFORM:

GPS
PRE AMPL
UC CB - CLOSE
LC CB - CLOSE

Not Performed: _____

IF VEHICLE IS OV-104,

THEN PERFORM:

GPS 3
PRE AMPL
UPPER CB - OPEN
LOWER CB - OPEN

Not Performed: _____

IF VEHICLE IS OV-105,

THEN PERFORM:

GPS 3
PRE AMPL UPPER CB - CLOSE
LOWER CB - CLOSE

Not Performed: _____

H₂O ALT PRESS CB - CLOSE

ATM PRESS CONTR
O₂ EMER CB - OPEN
CABIN RELIEF B CB - CLOSE

PANEL O16 (CONTINUED)

ROW E

MN C

MLS 3 CB - CLOSE

ADTA

3 CB - CLOSE

4 CB - CLOSE

DDU

RIGHT CB - CLOSE

AFT CB - OPEN

RCS/OMS PRPLT QTY GAUGE CB - CLOSE

DRAG CHUTE SYS 1 CB - CLOSE

ROW F

RJDA 2B

L3/R3/R5 - MANF - L3/R3

LOGIC SW - ON

DRIVER SW - OFF

(GUARDED - LOCKED)

(SW GUARD REMOVED AT FLT CREW INGRESS)

RJDF 2A

F3 MANF

LOGIC SW - ON

DRIVER SW - OFF

(GUARDED - LOCKED)

(SW GUARD REMOVED AT FLT CREW INGRESS)

RJDF 2B

F4/F5 - MANF - F4

LOGIC SW - ON

DRIVER SW - OFF

(GUARDED - LOCKED)

(SW GUARD REMOVED AT FLT CREW INGRESS)

R OMS ENG VLV SW - OFF (GUARDED)

(SW GUARD REMOVED AT FLT CREW INGRESS)

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ASA

3 SW - ON

4 SW - ON

ACCEL 3 SW - ON

RJD MANF

L5/F5/R5

DRIVER SW - OFF

(GUARDED - LOCKED)

(SW GUARD REMOVED AT FLT CREW INGRESS)

***** End of Panel O16 (PLT) *****

Panel O17 (PLT)

76-41 OTC ASP

PANEL O17

ROW A (ALL ON)

ATVC

1 SW - ON

2 SW - ON

3 SW - ON

4 SW - ON

ROW B (ALL ON)

EIU

L-C SW - ON

C-R SW - ON

R-L SW - ON

ROW C

SIGNAL CONDITIONER

FREON

A SW - AC 2

B SW - AC 3

OL 1/2 SW - ON

OR 1/2 SW - ON

ROW D

SIG CONDR OA 1/2/3 SW - ON

MDM OA 1/2/3 SW - ON

MEC

1 SW - ON

2 SW - ON

***** End of Panel O17 (PLT) *****

Panel O19 (CDR)

NOTE

If Scrub Turnaround, DC utility may be On for seat cooling unit.

76-42

OTC

ASP

PANEL O19 (ALL OFF)

TV PWR SW - OFF

DC UTILITY POWER MN A SW - OFF

COAS PWR SW - OFF

***** End of Panel O19 (CDR) *****

***** End of Flight Deck Switch List *****

Caution and Warning Setups

Panel O13 (CDR)

NOTE

The following steps cycle power to the caution and warning CBs in order to reset the memory to the PROM values, then set parameter Launch limits.

Caution and warning master alarm will occur in next two steps. Advise CISL.

76-43 **OTC ASP**

PANEL O13

ROW A

ESS 1BC
C/W A CB - OPEN

ROW C

ESS 2CA
C/W B CB - OPEN

76-44 **OTC ASP**

PANEL O13

ROW C

ESS 2CA
C/W B CB - CLOSE

ROW A

ESS 1BC
C/W A CB - CLOSE

76-45 **OTC ASP**

Verify master alarm lights ON on Panels F2 and F4.

Verify audible alarm tone.

Master alarm PB - press/release

Verify master alarm light OFF on Panels F2 and F4 and audible alarm tone OFF.

***** End of Panel O13 (CDR) *****

Panel R13U (MS1)

NOTE

The next three steps will set the upper caution and warning limits.

76-46

OTC ASP

IF for OV-103,

THEN Perform the following:

PANEL R13

CAUTION/WARNING

LIMIT SET

LIMIT SW - UPPER

PARAM SEL PB'S - 079 (LH2 MANF PRESS)

LIMIT SET

VALUE PB'S - 3.25

FUNC SW - SET/THEN READ

VERIFY 079 = 3.25

PARAM SEL PB'S - 074 (CABIN FAN DELTA P)

LIMIT SET

VALUE PB'S - 4.25

FUNC SW - SET/THEN READ

VERIFY 074 = 4.25

PARAM SEL PB'S - 004 (CABIN PRESS)

LIMIT SET

VALUE PB'S - 3.85

FUNC SW - SET/THEN READ

VERIFY 004 = 3.85

PARAM SEL PB'S - 007 (OMS TK P OX-L)

LIMIT SET

VALUE PB'S - 3.60

FUNC SW - SET/THEN READ

VERIFY 007 = 3.60

PANEL R13 (CONTINUED)

PARAM SEL PB'S - 017 (OMS TK P FU-L)
LIMIT SET
VALUE PB'S - 3.60
FUNC SW - SET/THEN READ
VERIFY 017 = 3.60

PARAM SEL PB'S - 037 (OMS TK P OX-R)
LIMIT SET
VALUE PB'S - 3.60
FUNC SW - SET/THEN READ
VERIFY 037 = 3.60

PARAM SEL PB'S - 047 (OMS TK P FU-R)
LIMIT SET
VALUE PB'S - 3.60
FUNC SW - SET/THEN READ
VERIFY 047 = 3.60

PARAM SEL PB'S - 107 (FREON LOOP 1 EVAP OUT T)
LIMIT SET
VALUE PB'S - 4.30
FUNC SW - SET/THEN READ
VERIFY 107 = 4.30

PARAM SEL PB'S - 117 (FREON LOOP 2 EVAP OUT T)
LIMIT SET
VALUE PB'S - 4.30
FUNCT SW - SET/THEN READ
VERIFY 117 = 4.30

PARAM SEL PB'S - 039 (MPS E1A REG OUT PRESS)
LIMIT SET
VALUE PB'S - 4.00
FUNC SW - SET/THEN READ
VERIFY 039 = 4.00

PARAM SEL PB'S - 049 (MPS E2A REG OUT PRESS)
LIMIT SET
VALUE PB'S - 4.00
FUNC SW - SET THEN/READ
VERIFY 049 = 4.00

Not Performed: _____

76-47 OTC ASP

IF for OV-104,

THEN Perform the following:

PANEL R13

CAUTION/WARNING

LIMIT SET

LIMIT SW - UPPER

PARAM SEL PB'S - 079 (LH2 MANF PRESS)

LIMIT SET

VALUE PB'S - 3.25

FUNC SW - SET/THEN READ

VERIFY 079 = 3.25

PARAM SEL PB'S - 074 (CABIN FAN DELTA P)

LIMIT SET

VALUE PB'S - 4.25

FUNC SW - SET/THEN READ

VERIFY 074 = 4.25

PARAM SEL PB'S - 004 (CABIN PRESS)

LIMIT SET

VALUE PB'S - 3.85

FUNC SW - SET/THEN READ

VERIFY 004 = 3.85

PARAM SEL PB'S - 105 (H2O LOOP 1 PUMP OUT P)

LIMIT SET

VALUE PB'S - 2.75

FUNC SW - SET/THEN READ

VERIFY 105 = 2.75

PARAM SEL PB'S - 007 (OMS TK P OX-L)

LIMIT SET

VALUE PB'S - 3.70

FUNC SW - SET/THEN READ

VERIFY 007 = 3.70

PANEL R13 (CONTINUED)

PARAM SEL PB'S - 017 (OMS TK P FU-L)
LIMIT SET
VALUE PB'S - 3.60
FUNC SW - SET/THEN READ
VERIFY 017 = 3.60

PARAM SEL PB'S - 037 (OMS TK P OX-R)
LIMIT SET
VALUE PB'S - 3.60
FUNC SW - SET/THEN READ
VERIFY 037 = 3.60

PARAM SEL PB'S - 047 (OMS TK P FU-R)
LIMIT SET
VALUE PB'S - 3.60
FUNC SW - SET/THEN READ
VERIFY 047 = 3.60

PARAM SEL PB'S - 107 (FREON LOOP 1 EVAP OUT T)
LIMIT SET
VALUE PB'S - 4.30
FUNC SW - SET/THEN READ
VERIFY 107 = 4.30

PARAM SEL PB'S - 117 (FREON LOOP 2 EVAP OUT T)
LIMIT SET
VALUE PB'S - 4.30
FUNCT SW - SET/THEN READ
VERIFY 117 = 4.30

PARAM SEL PB'S - 039 (MPS E1A REG OUT PRESS)
LIMIT SET
VALUE PB'S - 4.10
FUNC SW - SET/THEN READ
VERIFY 039 = 4.10

PARAM SEL PB'S - 024 (CAB O2 FLOW 2)
LIMIT SET
VALUE PB'S - 4.00
FUNC SW - SET/THEN READ
VERIFY 024 = 4.00

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PARAM SEL PB'S - 014 (CAB O2 FLOW 1)
LIMIT SET
VALUE PB'S - 4.00
FUNC SW - SET THEN/READ
VERIFY 014 = 4.00

Not Performed:_____

76-48 OTC ASP

IF for OV-105,

THEN Perform the following:

PANEL R13

CAUTION/WARNING

LIMIT SET
LIMIT SW - UPPER

PARAM SEL PB'S - 079 (LH2 MANF PRESS)

LIMIT SET
VALUE PB'S - 3.25
FUNC SW - SET/THEN READ
VERIFY 079 = 3.25

PARAM SEL PB'S - 074 (CABIN FAN DELTA P)

LIMIT SET
VALUE PB'S - 4.25
FUNC SW - SET/THEN READ
VERIFY 074 = 4.25

PARAM SEL PB'S - 007 (OMS TK P OX-L)

LIMIT SET
VALUE PB'S - 3.60
FUNC SW - SET/THEN READ
VERIFY 007 = 3.60

PARAM SEL PB'S - 017 (OMS TK P FU-L)

LIMIT SET
VALUE PB'S - 3.60
FUNC SW - SET/THEN READ
VERIFY 017 = 3.60

PARAM SEL PB'S - 037 (OMS TK P OX-R)

LIMIT SET
VALUE PB'S - 3.60
FUNC SW - SET/THEN READ
VERIFY 037 = 3.60

PANEL R13 (CONTINUED)

PARAM SEL PB'S - 047 (OMS TK P FU-R)
LIMIT SET
VALUE PB'S - 3.60
FUNC SW - SET/THEN READ
VERIFY 047 = 3.60

PARAM SEL PB'S - 004 (CABIN PRESS)
LIMIT SET
VALUE PB'S - 3.90
FUNC SW - SET/THEN READ
VERIFY 004 = 3.90

PARAM SEL PB'S - 059 (MPS E3A REG OUT PRESS)
LIMIT SET
VALUE PB'S - 3.90
FUNC SW - SET/THEN READ
VERIFY 059 = 3.90

PARAM SEL PB'S - 039 (MPS E1A REG OUT PRESS)
LIMIT SET
VALUE PB'S - 4.10
FUNC SW - SET/THEN READ
VERIFY 039 = 4.10

PARAM SEL PB'S - 107 (FREON LOOP 1 EVAP OUT T)
LIMIT SET
VALUE PB'S - 4.30
FUNC SW - SET/THEN READ
VERIFY 107 = 4.30

PARAM SEL PB'S - 117 (FREON LOOP 2 EVAP OUT T)
LIMIT SET
VALUE PB'S - 4.30
FUNCT SW - SET/THEN READ
VERIFY 117 = 4.30

PARAM SEL PB'S - 014 (CAB O2 FLOW 1)
LIMIT SET
VALUE PB'S - 4.00
FUNC SW - SET THEN/READ
VERIFY 014 = 4.00

PARAM SEL PB'S - 024 (CAB O2 FLOW 2)
LIMIT SET
VALUE PB'S - 4.00
FUNC SW - SET THEN/READ
VERIFY 024 = 4.00

PARAM SEL PB'S - 054 (CAB N2 FLOW 1)
LIMIT SET
VALUE PB'S - 4.00
FUNC SW - SET THEN/READ
VERIFY 054 = 4.00

PARAM SEL PB'S - 064 (CAB N2 FLOW 2)
LIMIT SET
VALUE PB'S - 4.00
FUNC SW - SET THEN/READ
VERIFY 064 = 4.00

Not Performed: _____

NOTE

The next three steps will set the lower caution and warning limits.

76-49 **OTC ASP**

IF for OV-103

THEN Perform the following:

PANEL R13

CAUTION/WARNING

LIMIT SET
LIMIT SW - LOWER

PARAM SEL PB'S - 106 (FREON FLOW 1)
LIMIT SET
VALUE PB'S - 0.80
FUNC SW - SET/THEN READ
VERIFY 106 = 0.80

PARAM SEL PB'S - 116 (FREON FLOW 2)
LIMIT SET
VALUE PB'S - 0.80
FUNC SW - SET/THEN READ
VERIFY 116 = 0.80

PARAM SEL PB'S - 074 (CABIN FAN DELTA P)
LIMIT SET
VALUE PB'S - 2.60
FUNC SW - SET/THEN READ
VERIFY 074 = 2.60

PARAM SEL PB'S - 039 (MPS E1A REG OUT PRESS)
LIMIT SET
VALUE PB'S - 3.30
FUNC SW - SET/THEN READ
VERIFY 039 = 3.30

PANEL R13 (CONTINUED)

PARAM SEL PB'S - 049 (MPS E2A REG OUT PRESS)

LIMIT SET

VALUE PB'S - 3.35

FUNC SW - SET/THEN READ

VERIFY 049 = 3.35

PARAM SEL PB'S - 004 (CABIN PRESS)

LIMIT SET

VALUE PB'S - 3.45

FUNC SW - SET/THEN READ

VERIFY 004 = 3.45

Not Performed:_____

76-50 OTC ASP

IF for OV-104

THEN Perform the following:

PANEL R13

CAUTION/WARNING

LIMIT SET

LIMIT SW - LOWER

PARAM SEL PB'S - 074 (CABIN FAN DELTA P)

LIMIT SET

VALUE PB'S - 2.60

FUNC SW - SET/THEN READ

VERIFY 074 = 2.60

PARAM SEL PB'S - 116 (FREON FLOW 2)

LIMIT SET

VALUE PB'S - 0.80

FUNC SW - SET/THEN READ

VERIFY 116 = 0.80

PARAM SEL PB'S - 106 (FREON FLOW 1)

LIMIT SET

VALUE PB'S - 0.80

FUNC SW - SET/THEN READ

VERIFY 106 = 0.80

PARAM SEL PB'S - 105 (H2O LOOP 1 PUMP OUT P)

LIMIT SET

VALUE PB'S - 0.75

FUNC SW - SET/THEN READ

VERIFY 105 = 0.75

PARAM SEL PB'S - 004 (CABIN PRESS)

LIMIT SET

VALUE PB'S - 3.45

FUNC SW - SET/THEN READ

VERIFY 004 = 3.45

Not Performed: _____

76-51 OTC ASP

IF for OV-105

THEN Perform the following:

PANEL R13

CAUTION/WARNING

LIMIT SET

LIMIT SW - LOWER

PARAM SEL PB'S - 059 (MPS E3A REG OUT PRESS)

LIMIT SET

VALUE PB'S - 3.30

FUNC SW - SET/THEN READ

VERIFY 059 = 3.30

PARAM SEL PB'S - 039 (MPS E1A REG OUT PRESS)

LIMIT SET

VALUE PB'S - 3.45

FUNC SW - SET/THEN READ

VERIFY 039 = 3.45

PARAM SEL PB'S - 004 (CABIN PRESS)

LIMIT SET

VALUE PB'S - 3.45

FUNC SW - SET/THEN READ

VERIFY 004 = 3.45

PARAM SEL PB'S - 074 (CABIN FAN DELTA P)

LIMIT SET

VALUE PB'S - 2.60

FUNC SW - SET/THEN READ

VERIFY 074 = 2.60

PARAM SEL PB'S - 106 (FREON FLOW 1)

LIMIT SET

VALUE PB'S - 0.80

FUNC SW - SET/THEN READ

VERIFY 106 = 0.80

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PANEL R13 (CONTINUED)

PARAM SEL PB'S - 116 (FREON FLOW 2)
LIMIT SET
VALUE PB'S - 0.80
FUNC SW - SET/THEN READ
VERIFY 116 = 0.80

Not Performed: _____

NOTE

The following step will set the Lower Caution and Warning Limits for the LOMS/ROMS OX/FU Propellant Tank Ullage Pressure Transducers to support Helium Absorption Pressure Decrease concerns.

76-52 OTC ASP

PANEL R13

CAUTION/WARNING

PARAM SEL PB'S - 007 (OMS TK P OX-L)
LIMIT SET
VALUE PB'S - 2.50
FUNC SW - SET/THEN READ
VERIFY 007 = 2.50

PARAM SEL PB'S - 017 (OMS TK P FU-L)
LIMIT SET
FUNC SW - SET/THEN READ
VERIFY 017 = 2.50

PARAM SEL PB'S - 037 (OMS TK P OX-R)
LIMIT SET
FUNC SW - SET/THEN READ
VERIFY 037 = 2.50

PARAM SEL PB'S - 047 (OMS TK P FU-R)
LIMIT SET
FUNC SW - SET/THEN READ
VERIFY 047 = 2.50

NOTE

Parameters 055, 065, 075, 085, 095 and 097 support powered payload C&W parameters and will be inhibited for flight until a powered payload requires their use.

NOTE

The next four steps will inhibit caution and warning parameters. Use the caution and warning parameter switch on the lower right. Verification of inhibited status will be performed using the caution and warning parameter status switch on the upper left.

76-53

OTC ASP

PANEL R13U

CAUTION/WARNING

PARAM SELECT PB'S - 055 (PAYLOAD WARNING A)
PARAM SW - INHIBIT, REL

PARAM SELECT PB'S - 065 (PAYLOAD WARNING B)
PARAM SW - INHIBIT, REL

PARAM SELECT PB'S - 075 (PAYLOAD WARNING C)
PARAM SW - INHIBIT, REL

PARAM SELECT PB'S - 085 (PAYLOAD WARNING D)
PARAM SW - INHIBIT, REL

PARAM SELECT PB'S - 095 (PAYLOAD WARNING E)
PARAM SW - INHIBIT, REL

PARAM SELECT PB'S - 097 (PAYLOAD CAUTION)
PARAM SW - INHIBIT, REL

PARAM SELECT PB'S - 087 (OMS KIT FU TK ULLAGE)
PARAM SW - INHIBIT, REL

PARAM SELECT PB'S - 077 (OMS KIT OX TK ULLAGE)
PARAM SW - INHIBIT, REL

PARAM SELECT PB'S - 008 (APU 1 EGT 1)
PARAM SW - INHIBIT, REL

PANEL R13 (CONTINUED)

PARAM SELECT PB'S - 018 (APU 2 EGT 1)
PARAM SW - INHIBIT, REL

PARAM SELECT PB'S - 028 (APU 3 EGT 1)
PARAM SW - INHIBIT, REL

PARAM STATUS SW - INHIBITED, HOLD
VERIFY STATUS LTS ON: 008, 018, 028, 055, 065,
075, 077, 085, 087, 095,
097
PARAM STATUS SW - RELEASE

76-54 OTC ASP

IF FOR OV-104,

THEN PERFORM THE FOLLOWING:

PANEL R13U

CAUTION/WARNING

PARAM SELECT PB'S - 054 (CAB N2 FLOW 1)
PARAM SW - INHIBIT, REL

PARAM SELECT PB'S - 064 (CAB N2 FLOW 2)
PARAM SW - INHIBIT, REL

PARAM STATUS SW - INHIBITED, HOLD
VERIFY STATUS LTS ON: 054, 064
PARAM STATUS SW - RELEASE

Not Performed: _____

76-55 OTC ASP

IF TANK SET FIVE IS NOT INSTALLED,

THEN PERFORM:
PANEL R13U

CAUTION/WARNING

PARAM SELECT PB'S - 040 (CRYO O₂ TK 5 HTR CNTL PR)
PARAM SW - INHIBIT, REL

PARAM SELECT PB'S - 081 (CRYO O₂ HTR TK 5 HTR 1 T)
PARAM SW - INHIBIT, REL

PARAM SELECT PB'S - 090 (CRYO H₂ TK 5 HTR CNTL PR)
PARAM SW - INHIBIT, REL

PARAM STATUS SW - INHIBITED, HOLD
VERIFY STATUS LTS ON: 040, 081, 090
PARAM STATUS SW - RELEASE

Not Performed:_____

76-56 OTC ASP

IF TANK SET FOUR IS NOT INSTALLED,

THEN PERFORM:
PANEL R13U

CAUTION/WARNING

PARAM SELECT PB'S - 080 (CRYO H₂ P TK 4/5)
PARAM SW - INHIBIT, REL

PARAM SELECT PB'S - 071 (CRYO O₂ HTR2 TK 4)
PARAM SW - INHIBIT, REL

PARAM SELECT PB'S - 061 (CRYO O₂ HTR1 TK 4)
PARAM SW - INHIBIT, REL

PARAM SELECT PB'S - 030 (CRYO O₂ P TK 4/5)
PARAM SW - INHIBIT, REL

PARAM STATUS SW - INHIBITED, HOLD
VERIFY STATUS LTS ON: 030, 061, 071, 080
PARAM STATUS SW - RELEASE

Not Performed:_____

76-57 OTC ASP

PANEL R13U

CAUTION/WARNING

PARAM STATUS SW - TRIPPED, HOLD

REPORT ALL MATRIX LIGHTS ON

RECORD IN OMI S0007.400, FIGURE 76-1, SECTION P-4

VERIFY LIGHTS:

099 ON

109 ON

119 ON

PARAM STATUS SW - RELEASE

76-58 OTC ASP

PANEL R13U

CAUTION/WARNING

MEMORY SW - READ, HOLD

REPORT ALL MATRIX LIGHTS ON

RECORD IN OMI S0007.400, FIGURE 76-1, SECTION P-5

VERIFY LIGHTS:

099 - ON

109 - ON

119 - ON

MEMORY SW - CLEAR, RELEASE

76-59 OTC ASP

PANEL R13U

CAUTION/WARNING

PARAM STATUS SW - INHIBITED, HOLD

REPORT ALL MATRIX LIGHTS ON

RECORD IN OMI S0007.400, FIGURE 76-1, SECTION P-3

PARAM STATUS SW - RELEASE

76-60 OTC ASP

PANEL R13U

CAUTION/WARNING

PARAM STATUS SW - (CENTER)

MEMORY SW - (CENTER)

LAMP TEST SW - (CENTER)

PARAM SELECT PB'S - 120

LIMIT SET

VALUE PB'S - 0.00

LIMIT SW - LOWER

FUNC SW - (CENTER)

PARAM SW - (CENTER)

***** End of Panel R13U (MS1) *****

Panel F7

76-61 OTC ASP

PANEL F7

REPORT ALL ANNUNCIATOR LIGHTS ON

RECORD IN OMI S0007.400, FIGURE 76-1, SECTION P-1

***** End of Panel F7 *****

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P-1: PANEL F7		DATE/TIME	SEQ	STEP
O2 PRESS	H2 PRESS	FUEL CELL REACT	FUEL CELL STACK TEMP	FUEL CELL PUMP
CABIN ATM	O2 HEATER TEMP	MAIN BUS UNDERVOLT	AC VOLTAGE	AC OVERLOAD
FREON LOOP	AV BAY / CABIN AIR	IMU	FWD RCS	RCS JET
H2O LOOP	RGA / ACCEL	AIR DATA	LEFT RCS	RIGHT RCS
SPARE	LEFT RHC	RIGHT / AFT RHC	LEFT OMS	RIGHT OMS
PAYLOAD WARNING	GPC	FCS SATURATION	OMS KIT	OMS TVC
PAYLOAD CAUTION	PRIMARY C/W	FCS CHANNEL	MPS	SPARE
BACKUP C/W ALARM	APU TEMP	APU OVERSPEED	APU UNDERSPEED	HYD PRESS

NO LIGHTS ON F7

P-2	ENABLED SEQ									STEP
	0	1	2	3	4	5	6	7	8	9
00	000	001	002	003	004	005	006	007	008	009
01	010	011	012	013	014	015	016	017	018	019
02	020	021	022	023	024	025	026	027	028	029
03	030	031	032	033	034	035	036	037	038	039
04	040	041	042	043	044	045	046	047	048	049
05	050	051	052	053	054	055	056	057	058	059
06	060	061	062	063	064	065	066	067	068	069
07	070	071	072	073	074	075	076	077	078	079
08	080	081	082	083	084	085	086	087	088	089
09	090	091	092	093	094	095	096	097	098	099
10	100	101	102	103	104	105	106	107	108	109
11	110	111	112	113	114	115	116	117	118	119

P-3	INHIBITED SEQ									STEP
	0	1	2	3	4	5	6	7	8	9
00	000	001	002	003	004	005	006	007	008	009
01	010	011	012	013	014	015	016	017	018	019
02	020	021	022	023	024	025	026	027	028	029
03	030	031	032	033	034	035	036	037	038	039
04	040	041	042	043	044	045	046	047	048	049
05	050	051	052	053	054	055	056	057	058	059
06	060	061	062	063	064	065	066	067	068	069
07	070	071	072	073	074	075	076	077	078	079
08	080	081	082	083	084	085	086	087	088	089
09	090	091	092	093	094	095	096	097	098	099
10	100	101	102	103	104	105	106	107	108	109
11	110	111	112	113	114	115	116	117	118	119

P-4	TRIPPED SEQ									STEP
	0	1	2	3	4	5	6	7	8	9
00	000	001	002	003	004	005	006	007	008	009
01	010	011	012	013	014	015	016	017	018	019
02	020	021	022	023	024	025	026	027	028	029
03	030	031	032	033	034	035	036	037	038	039
04	040	041	042	043	044	045	046	047	048	049
05	050	051	052	053	054	055	056	057	058	059
06	060	061	062	063	064	065	066	067	068	069
07	070	071	072	073	074	075	076	077	078	079
08	080	081	082	083	084	085	086	087	088	089
09	090	091	092	093	094	095	096	097	098	099
10	100	101	102	103	104	105	106	107	108	109
11	110	111	112	113	114	115	116	117	118	119

P-5	MEMORY TRIPPED SEQ									STEP
	0	1	2	3	4	5	6	7	8	9
00	000	001	002	003	004	005	006	007	008	009
01	010	011	012	013	014	015	016	017	018	019
02	020	021	022	023	024	025	026	027	028	029
03	030	031	032	033	034	035	036	037	038	039
04	040	041	042	043	044	045	046	047	048	049
05	050	051	052	053	054	055	056	057	058	059
06	060	061	062	063	064	065	066	067	068	069
07	070	071	072	073	074	075	076	077	078	079
08	080	081	082	083	084	085	086	087	088	089
09	090	091	092	093	094	095	096	097	098	099
10	100	101	102	103	104	105	106	107	108	109
11	110	111	112	113	114	115	116	117	118	119

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Figure 76-1 - Sections P-1, P-2, P-3, P-4, and P-5
(For Reference Only)

1-20-04

P-6: CAUTION AND WARNING SOFTWARE CHANGES (ASCENT SWITCHES)

DATE: _____

TIME: _____

PARAMETER #	LO LIMIT	HI LIMIT

S0007_400-076-D-001

**Figure 76-2 - Section P-6: Caution and Warning Software Changes
(Ascent Switches) (For Reference Only)**

***** End of Caution and Warning Setups *****

Section 2 - Aft Flight Deck/Middeck/Airlock/ Waste Management Station

76-62 OTC ALL

The purpose of this operation is to verify that the Flight Deck and Middeck switches are configured for Launch.

Switches left in other than ascent position (ref JSC Ascent Checklist) by this operation must have predefined steps in OMI S0007 to position them to ascent position prior to T-0.

All switches (other than pushbutton/analog switches or those associated with cockpit lighting, Biomed or Panel MA73C left- and right-seat 3PH CBs, Panel F9 meter switches, or unspecified/unlabeled switches/circuit breakers) should already be in switch list-specified position at the time they are performed. All unspecified/unlabeled switches will be in the down (for a 2-position switch) or center (for a 3-position switch), unlabeled talkbacks - barberpole, unlabeled circuit breakers - open, unlabeled rotary switches - full counterclockwise. System Engineering personnel must be prepared to explain any differences found and will be required to give a "Go" prior to a switch being repositioned. Any switches repositioned, other than those exempted above, must be documented in Table 76-1 - Switches Repositioned During Ascent Checklist.

Any cockpit troubleshooting activity subsequent to this switch list must return switches to their position prior to troubleshooting.

The switch list is divided into two sections and may be performed in parallel with each section performed by an OTC and ASP:

- Section 1 consists of Flight Deck Panels and caution and warning setups.
- Section 2 consists of Middeck and AFT Flight Deck Panels, Airlock and Waste Management Station.

The Middeck Switch List may be performed prior to the AFT Flight Deck Switch List.

All vehicles have different thumbwheel/pushbutton configurations. The generic term pushbutton (PB) will be used regardless of configuration.

NOTE

Crew Compartment lighting switches may be found in positions different from those published to facilitate the crew's visibility of the panels.

List of Exceptions for Switchguard Removals

1. Crew preference switchguards
2. Payload switchguards

NOTE

The following crew preference and payload switchguard matrices will be completed by a member of VITT (861-9224).

Crew Preference Switchguards - Mission Unique

Panel	SW/CB

Aft Flight Deck Switch List

Panel R10 (MS1)

76-63 OTC ASP

PANEL R10

MISSION STATION AUDIO

POWER SW - AUD/TONE

A/G

1 SW - T/R

2 SW - T/R

A/A SW - T/R

ICOM

A SW - T/R

B SW - T/R

VOX SENS SW - AS IS

PAGE SW - (DOWN)

VOLUME

A/G

1 PB - AS IS

2 PB - AS IS

A/A PB - AS IS

ICOM

A PB - AS IS

B PB - AS IS

XMIT/ICOM MODE SW - PTT/VOX

MS LIGHTING

PANEL SW - OFF

FLOOD

ON/OFF SW - OFF (FOR NIGHT LAUNCH)

- ON (FOR DAY LAUNCH)

DIM/BRT SW - BRT

BIOMED

CHANNEL 1 SW - MIDDECK CTR

CHANNEL 2 SW - MIDDECK R

*** End of Panel R10 (MS1) ***

Panel R11U (MS1)

76-64 OTC ASP

PANEL R11U

MDU (CRT 4)
POWER SW - ON
BRT SW - AS REQUIRED

FUEL CELL
GPC PURGE SEQ SW - (DOWN)

GPC PURGE SEQ ON TB BP

PURGE HEATER SW - GPC

PURGE VALVES
1 SW - GPC
2 SW - GPC
3 SW - GPC

STARTUP HEATER
1 SW - ENABLE
2 SW - ENABLE
3 SW - ENABLE

H₂O LINE HTR SW - A AUTO

H₂O RELIEF HTR SW - A AUTO

***** End of Panel R11U (MS1) *****

Panel R11L (MS1)

76-65 OTC ASP

PANEL R11L

ENCRYPTOR SW - NORM
MS AUDIO CONTROL SW - NORM

IDP/CRT 4
POWER SW - ON
MAJ FUNC SW - ____ (GNC OR SM)

<p>NOTE TB may indicate closed "CL" for Scrub scenarios.</p>

SUPPLY H₂O

TK A INLET SW - (CENTER)
TB OP
TB CL (IF CONTINUOUS H₂O DRAIN IN PROGRESS)
TK A OUTLET SW - (CENTER)
TB CL
DUMP ISOL VLV SW - (CENTER)
TB BP
DUMP VLV SW - (CENTER)
TB BP
DUMP VLV ENABLE/NOZ
HTR SW - OFF

TK B INLET SW - (CENTER)
TB OP
TK B OUTLET SW - (CENTER)
TB OP

CROSSOVER VLV SW - (CENTER)
TB CL

PANEL R11L (CONTINUED)

GALLEY SPLY VLV SW - (CENTER)
TB BP

OR

(IF H₂O DRAIN IN PROGRESS)
GALLEY SPLY VLV SW - (CENTER)
TB OPEN

TK C INLET SW - (CENTER)
TB OP
TK C OUTLET SW - (CENTER)
TB OP

B SPLY ISOL VLV SW - (CENTER)
TB OP

***** End of Panel R11L (MS1) ****

Panel R12 (MS1)

76-66 OTC ASP

IF VPU FLOWN ON PANEL R12,

THEN PERFORM:
PANEL R12

VPU POWER SW - OFF

Not Performed:_____

76-67 OTC ASP

IF THE OBSS IS FLOWN ON PANEL R12,

THEN PERFORM:
PANEL R12U

OPP

OBSS SW POWER CB1 - OPEN
SW - OFF

OBSS

S1 SW - (DOWN)
RSC PWR SW - OFF
ITVC ENA SW - OFF
SPEE PWR SW - OFF
S5 SW - (DOWN)
S6 SW - (DOWN)

Not Performed:_____

***** End of Panel R12 (MS1) *****

Panel R13U (MS1)

76-68 OTC ASP

PANEL R13U

CAUTION/WARNING

 TONE VOLUME

 A ADJUST SCREW - AS IS

 B ADJUST SCREW - AS IS

 PARAM STATUS SW - (CENTER)

 MEMORY SW - (CENTER)

 LAMP TEST SW - (CENTER)

 PARAM SEL PB'S - 120

LIMIT SET

 VALUE PB'S - 0.00

 LIMIT SW - LOWER

 FUNC SW - (CENTER)

 PARAM SW - (CENTER)

***** End of Panel R13U (MS1) *****

Panel R13L (MS1)

76-69 OTC ASP

PANEL R13L

PL BAY DOOR
SYS 1 SW - DISABLE
SYS 2 SW - DISABLE

PL BAY MECH PWR
SYS 1 SW - OFF
SYS 2 SW - OFF

PL BAY DOOR SW - STOP
TB AS IS

NOTE

Stbd and Port Radiator TB's will indicate BP if AFT MCA logic is not on.

RADIATOR
LATCH CONTROL
SYS A SW - OFF
SYS B SW - OFF
STBD TB LAT
PORT TB LAT

RADIATOR CONTROL
SYS A SW - OFF
SYS B SW - OFF
STBD TB STO
PORT TB STO

KU ANTENNA
DIRECT STOW SW - OFF

DEPLOY/GND/STOW SW - GND
TB - STO

MANNED MANEUV UNIT
GN₂ SPLY ISOL VLV
A SW - (CENTER)
A TB BP
B SW - (CENTER)
B TB BP

***** End of Panel R13L (MS1) *****

Panel A1U (MS1)

76-70 OTC ASP

PANEL A1U

SIGNAL STRENGTH SW - S-BAND PM

SLEW

AZIMUTH SW - (CENTER)

ELEV SW - (CENTER)

RATE SW - SLOW

KU BAND

SCAN WARN TB BP

TRACK TB BP

SEARCH TB BP

CONTROL SW - CMD

KU BAND SW - MAN SLEW

KU BAND SEARCH SW - (DOWN)

POWER SW - OFF

MODE SW - RDR PASSIVE

RADAR OUTPUT SW - HI

KU SIG PROC

HI DATA RATE SW - TV

LOW DATA RATE SW - MMU 1

TAGS SW - CLEAR

***** End of Panel A1U (MS1) *****

Panel A1L (MS1)

76-71 OTC ASP

PANEL A1L

S-BAND PAYLOAD

CONTROL SW - COMMAND
ANT POLAR SW - L CIRC
XMTR PWR SW - LOW

CHANNEL SELECT

INTRG 1 TW'S - 910
INTRG 2 TW'S - 910

FREQ SWEEP SW - OFF
MOD SW - OFF

POWER

SYSTEM SW - OFF
SELECT SW - PSP

PSP CMD OUTPUT SW - PL UMB

PL DATA INTLVR POWER SW - ON

S-BAND PM

ANT SW ELEC SW - 1
PRE AMPL SW - 1
PWR AMPL
STANDBY SW - 1
OPERATE SW - 1
MODE SW - STDN HI
XPNDR SW - 1

NETWORK SIG PROC

DATA RATE
XMIT SW - HIGH
RCV SW - HIGH

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PANEL A1L (CONTINUED)

UPLINK DATA SW - S-BD
CODING
XMIT SW - OFF
RCV SW - ON

POWER SW - 1

ENCRYPTION

PWR SW - ON
MODE SW - SELECT
SELECT SW - RCV

***** End of Panel A1L (MS1) *****

Panel A1R (MS1)

NOTE
All unlabeled switches on Panel A1R "AS-REQUIRED."

76-72 **OTC** **ASP**

PANEL A1R

AUDIO CENTER

VOICE RECORD SELECT

CHANNEL 1 SW - ICOM A

CHANNEL 2 SW - ICOM B

DOCKING RING (7 SW'S OFF)

TONE SW - OFF

PAGE SW - OFF

A/G

1 SW - OFF

2 SW - OFF

A/A SW - OFF

ICOM

A SW - OFF

B SW - OFF

SPACELAB (7 SW'S OFF)

TONE SW - OFF

PAGE SW - OFF

A/G

1 SW - OFF

2 SW - OFF

A/A SW - OFF

ICOM

A SW - OFF

B SW - OFF

UHF

A/G

1 SW - OFF

2 SW - OFF

A/A SW - OFF

PL BAY OUTLETS

ICOM

A SW - OFF

B SW - OFF

S-BAND FM

CONTROL SW - COMMAND

ANT SW - GPC

POWER SW - 1

DATA SOURCE SW - ME

***** End of Panel A1R (MS1) *****

AFT MDU (Orbit Station)

76-73 OTC ASP

PANEL AFT MDU

MDU (AFD 1)
POWER SW - OFF
BRT SW - AS REQUIRED

***** End of AFT MDU (Orbit Station) *****

Panel A6U (MS1)

76-74 OTC ASP

PANEL A6U

SENSE SW - (-) Z
FLT CNTLR POWER SW - OFF
ATT REF PB - AS IS
UNLABELED ROTARY SW - FULL COUNTERCLOCKWISE

ADI
ATTITUDE SW - INRTL
ERROR SW - MED
RATE SW - MED

ORBITAL DAP (ALL LIGHTS OFF)
SELECT
A LIGHT OFF
B LIGHT OFF
CONTROL
AUTO LIGHT OFF
INRTL LIGHT OFF
LVLH LIGHT OFF
FREE LIGHT OFF

PANEL A6U (CONTINUED)

MANUAL MODE (ALL LIGHTS OFF)

TRANSLATION

X

SPARE (BLANK PBI) LIGHT OFF
NORM LIGHT OFF
PULSE LIGHT OFF

Y

LOW Z LIGHT OFF
NORM LIGHT OFF
PULSE LIGHT OFF

Z

HIGH Z LIGHT OFF
NORM LIGHT OFF
PULSE LIGHT OFF

ROTATION

ROLL

PRI LIGHT OFF
DISC RATE LIGHT OFF
PULSE LIGHT OFF

PITCH

ALT LIGHT OFF
DISC RATE LIGHT OFF
PULSE LIGHT OFF

YAW

VERN LIGHT OFF
DISC RATE LIGHT OFF
PULSE LIGHT OFF

ORBIT STATION LIGHTING

FLOOD

ON/OFF SW - ON
DIM/BRT SW - BRT
PANEL SW - OFF
INSTRUMENT SW - OFF
NUMERIC SW - OFF

ANNUNCIATOR

BUS SELECT SW - OFF
LAMP TEST SW - (CENTER)
INTENSITY
BRIGHT/VAR SW - VAR
LOW/MED SW - MED

PANEL A6U (CONTINUED)

PAYLOAD RETENTION

LOGIC POWER
SYS 1 SW - OFF
SYS 2 SW - OFF

PAYLOAD SELECT SW - MON (BETWEEN POSITIONS 1 AND 2)

PAYLOAD RETENTION LATCHES

READY TO LATCH

1 TB BP
2 TB BP
3 TB BP
4 TB BP
5 TB BP

LATCH SWITCHES

1 SW - OFF
TB BP
2 SW - OFF
TB BP
3 SW - OFF
TB BP
4 SW - OFF
TB BP
5 SW - OFF
TB BP

EVENT TIMER

SET PB'S - AS REQD
MODE SW - UP
CONTROL SW - (CENTER)
TIMER SW - (CENTER)

***** End of Panel A6U (MS1) *****

Panel A6L (Docking System Power Panel - DSP)

76-75 OTC ASP

IF DOCKING SYSTEM PANEL A6L (DSP) IS INSTALLED,

**THEN PERFORM:
PANEL A6L**

DOCKING SYSTEM POWER (ALL 24 CB'S OPEN)

ESS 1BC

 SYS PWR CNTL SYS 1 CB - OPEN

 DEPRESS SYS 1 VENT ISOL CB - OPEN

MAIN A

 DEPRESS SYS 1 VENT CB - OPEN

 DOCK LIGHT

 TRUSS FWD CB - OPEN

 VEST PORT CB - OPEN

ESS 2CA

 SYS PWR CNTL SYS 2 CB - OPEN

 DEPRESS SYS 2 VENT ISOL CB - OPEN

MAIN B

 DEPRESS SYS 2 VENT CB - OPEN

 DOCK LIGHT

 AFT CB - OPEN

 VEST STBD CB - OPEN

MAIN A

 LOGIC 3 CB - OPEN

 LOGIC 1 CB - OPEN

MAIN B

 LOGIC 1 CB - OPEN

 LOGIC 2 CB - OPEN

MAIN C

 LOGIC 2 CB - OPEN

 LOGIC 3 CB - OPEN

PMA 2/3 GRP 1 HOOKS

 SYS A OPEN CB - OPEN

 SYS A CLOSE CB - OPEN

 SYS B OPEN CB - OPEN

 SYS B CLOSE CB - OPEN

PANEL A6L (CONTINUED)

PMA 2/3 GRP 2 HOOKS

SYS A OPEN CB - OPEN
SYS A CLOSE CB - OPEN
SYS B OPEN CB - OPEN
SYS B CLOSE CB - OPEN

SYSTEM POWER SYS 1 SW - (CENTER)
TB OFF

SYSTEM POWER SYS 2 SW - (CENTER)
TB OFF

PYRO POWER

MN A SW - OFF
MN C SW - OFF

PMA 2/3 HOOKS GROUP

SYS A SW - (CENTER)
TB BP
SYS B SW - (CENTER)
TB BP

VESTIBULE DEPRESS VALVE

SYS 1 VENT ISOL SW - (CENTER)
TB BP

VENT SW - (CENTER)
TB BP

SYS 2 VENT ISOL SW - (CENTER)
TB BP

VENT SW - (CENTER)
TB BP

PSU POWER

MN A SW - OFF
MN B SW - OFF

LIGHTS

TRUSS FWD SW - OFF
TRUSS AFT SW - OFF

VESTIBULE PORT SW - OFF
VESTIBULE STBD SW - OFF

Not Performed:_____

***** End of Panel A6L (Docking System Power Panel - DSP) *****

Panel A6L (MS1)

76-76 OTC ASP

PANEL A6L

MADS

POWER MN B CB - CLOSE

RECORDER

POWER SW - OFF

PB FWD SW - CMD

STRAIN GAGE SW - PCM ENA

WIDEBAND/ACIP PCM SW - CMD

PCM

CMD/ON SW - CMD

RCD MODE SW - SAMPLE

FDM

CONTROL SW - DATA

MAN CALBR SW - DC 0

ACIP HTR SW - OFF

***** End of Panel A6L (MS1) *****

Panel A7U (MS1)

76-77 OTC ASP

PANEL A7U

MASTER ALARM LIGHT OFF

PAYLOAD BAY FLOOD

AFT

STBD SW - OFF

PORT SW - OFF

MID

STBD SW - OFF

PORT SW - OFF

FWD

STBD SW - OFF

PORT SW - OFF

DOCKING SW - OFF

FWD BHD SW - OFF

PORT RMS

LIGHT SW - OFF

CAMERA SW - ELBOW

WIRELESS VIDEO

HEATER SW - OFF

POWER SW - OFF

PANEL A7U (CONTINUED)

AFT RHC - AS REQD

TV

TV POWER

CONTROL SW - CMD

CONTR UNIT SW - OFF

CAMERA POWER

A SW - (CENTER)

TB OFF

B SW - (CENTER)

TB OFF

C SW - (CENTER)

TB OFF

D SW - (CENTER)

TB OFF

RMS SW - (CENTER)

TB OFF

TV

DOWNLINK SW - ENABLE

SYNC SW - NORMAL

VIDEO INPUT (ALL LIGHTS OFF)

A LIGHT OFF

B LIGHT OFF

C LIGHT OFF

D LIGHT OFF

RMS LIGHT OFF

FLT DECK LIGHT OFF

MIDDECK LIGHT OFF

PL 1 LIGHT OFF

PL 2 LIGHT OFF

PL 3 LIGHT OFF

MUX 1 LIGHT OFF

MUX 2 LIGHT OFF

TEST LIGHT OFF

PANEL A7U (CONTINUED)

VIDEO OUTPUT (ALL LIGHTS OFF)

MON 1 LIGHT OFF

DOWNLINK LIGHT OFF

MON 2 LIGHT OFF

DTV LIGHT OFF

MUX 1 L LIGHT OFF

MUX 1 R LIGHT OFF

MUX 2 L LIGHT OFF

MUX 2 R LIGHT OFF

CAMERA COMMAND

PAN/TILT SW - LOW RATE

FOCUS SW - (CENTER)

ZOOM SW - (CENTER)

IRIS SW - (CENTER)

TILT SW - (CENTER)

PAN SW - (CENTER)

MENU (ALL LIGHTS OFF)

MODE (ALL LIGHTS OFF)

***** End of Panel A7U (MS1) *****

Panel A7L (APDS Control Panel MS1)

76-78

OTC ASP

IF APDS CONTROL PANEL IS INSTALLED,

THEN PERFORM:

PANEL A7L

APDS CONTROL PANEL

CNTL PNL PWR A SW - OFF

CNTL PNL PWR B SW - OFF

CNTL PNL PWR C SW - OFF

HTRS/DCU PWR H1 SW - OFF

HTRS/DCU PWR H2/DCU SW - OFF

HTRS/DCU PWR H3/DCU SW - OFF

APDS PWR ADS SW - OFF

ADS LIGHT - OFF

APDS PWR BDS SW - OFF

BDS LIGHT - OFF

APDS PWR CDS SW - OFF

CDS LIGHT - OFF

LAMP TEST LIGHT - OFF

STATUS LITES (ALL 36 LITES OFF)

PYROS AP SW - OFF

AP LIGHT - OFF

PYROS BP SW - OFF

BP LIGHT - OFF

PYROS CP SW - OFF

CP LIGHT - OFF

PYRO PROTECT/CIRC OFF LITES (2) - OFF

APDS CONTROL COMMANDS (ALL 8 LITES OFF)

Not Performed:_____

***** End of Panel A7L (APDS Control Panel MS1) *****

Panel A8U (MS1)

76-79 OTC ASP

IF PANEL A8U (RMS) IS INSTALLED,

**THEN PERFORM:
PANEL A8U**

RMS

BRAKES SW - ON
TB OFF

MODE MATRIX LIGHTS OFF (12)

SAFING SW - AUTO
TB BP

MODE

SELECT SW - TEST
ENTER PBI - AS IS
AUTO SEQ SW - (CENTER)
LIGHTS (2) - OFF

SOFTWARE STOP TB GRAY

CAUTION WARNING

TONE VOL - AS IS
RMS C/W LIGHTS (11) - OFF

MASTER ALARM LIGHT - OFF

RATE

MIN TB OFF
HOLD TB OFF
SCALE TB GRAY

END EFFECTOR

MODE SW - OFF
MAN CONTR SW - (CENTER)

TB BP (SIX)

PANEL A8U (CONTINUED)

BACKUP CONTROL

JOINT SW - SHOULDER YAW
PAYLOAD RELEASE SW - OFF
DIRECT DRIVE SW - (CENTER)

PARAMETER

SELECT SW - PORT TEMP LED/ABE/ID

LIGHTING

ANNUN/NUM
BRT/VAR SW - VAR
SEL SW - LOW

PANEL/INST

SW - OFF

JOINT

SELECT SW - CRIT TEMP
SINGLE/DIRECT
DRIVE SW - (CENTER)

SHOULDER BRACE RELEASE SW - (CENTER)

TB BP

Not Performed:_____

***** End of Panel A8U (MS1) *****

Panel A8L (MS1)

76-80 OTC ASP

IF PANEL A8L (RMS) IS INSTALLED,

THEN PERFORM:

PANEL A8L

STARBOARD RMS

DEPLOY/STOW SW - OFF

TB STO (BP IF MPM'S NOT INSTALLED)

HEATER

A SW - OFF

B SW - OFF

RETENTION LATCHES

RELEASE/OFF/LATCH SW - OFF

TB LAT (BP IF MPM'S NOT INSTALLED)

READY FOR LATCH

AFT TB GRAY (BP IF STARBOARD RMS/OBSS
NOT INSTALLED)

MID TB GRAY (BP IF STARBOARD RMS/OBSS
NOT INSTALLED)

FWD TB GRAY (BP IF STARBOARD RMS/OBSS
NOT INSTALLED)

RMS SELECT SW - OFF

RMS POWER SW - OFF

PORT RMS

DEPLOY/STOW SW - OFF

TB STO (BP IF MPM'S NOT INSTALLED)

HEATER

A SW - OFF

B SW - OFF

RETENTION LATCHES

RELEASE/OFF/LATCH SW - OFF

TB LAT (BP IF MPM'S NOT INSTALLED)

READY FOR LATCH

AFT TB GRAY (BP IF PORT RMS NOT INSTALLED)

MID TB GRAY (BP IF PORT RMS NOT INSTALLED)

FWD TB GRAY (BP IF PORT RMS NOT INSTALLED)

Not Performed: _____

***** End of Panel A8L (MS1) *****

RMS RHC (MS1)

NOTE
The following switches are located on RMS RHC to right of Panel A8U.

76-81 OTC ASP

IF RMS RHC IS INSTALLED,

THEN PERFORM:

RMS RHC

RATE SW - VERNIER

Not Performed:_____

***** End of RMS RHC (MS1) *****

Panel A2 (PS1)

76-82 OTC ASP

PANEL A2

DIGI-DIS SELECT SW - EL/AZ

X-PNTR SCALE SW - X10

***** End of Panel A2 (PS1) *****

Panel A4 (PS1)

76-83 OTC ASP

PANEL A4

MISSION TIMER SW - MET

***** End of Panel A4 (PS1) *****

Panel A3U (PS1)

76-84 OTC ASP

PANEL A3U (TV MON 1)

POWER LIGHT OFF
POWER SW - OFF
SELECT PB - AS IS
FUNCTION SW - (CENTER)
CONTRAST SW - (CENTER)
BRIGHTNESS SW - (CENTER)
COLOR - AS IS
TINT - AS IS

***** End of Panel A3U (PS1) *****

Panel A3L (PS1)

76-85 OTC ASP

PANEL A3L (TV MON 2)

POWER LIGHT OFF
POWER SW - OFF
SELECT PB - AS IS
FUNCTION SW - (CENTER)
CONTRAST SW - (CENTER)
BRIGHTNESS SW - (CENTER)
COLOR - AS IS
TINT - AS IS

***** End of Panel A3L (PS1) *****

Panel L9 (PS1)

76-86 OTC ASP

PANEL L9

PS FLOOD

ON/OFF SW - ON (FOR DAY LAUNCH)
 - OFF (FOR NIGHT LAUNCH)
DIM/BRT SW - BRT

PAYLOAD STATION AUDIO

POWER SW - AUD/TONE
A/G

1 SW - T/R
2 SW - T/R
A/A SW - T/R

ICOM

A SW - T/R
B SW - T/R
VOX SENS SW - AS REQD
PAGE SW - DOWN

VOLUME

A/G
1 PB - AS IS
2 PB - AS IS
A/A PB - AS IS

ICOM

A PB - AS IS
B PB - AS IS
XMIT/ICOM MODE SW - PTT/PTT

***** End of Panel L9 (PS1) *****

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Panel L10

76-87 OTC ASP

IF ADVANCED VIDEO INTERFACE UNIT (AVIU) IS
INSTALLED IN PANEL L10__ STOWAGE CONTAINER,

THEN PERFORM:

PANEL L10__

OPEN STOWAGE CONTAINER

AVIU, QTY-2

SYNC/VIDEO SW - VIDEO

PWR SELECT SW - HIGH

HI-Z/75 SW - HI-Z

CLOSE STOWAGE CONTAINER

Not Performed: _____

76-88 OTC ASP

PANEL L10L (MUX)

VTR/CC PWR - 1 (UP)
MUX BYPASS - ACT
MUX/VTR/CC - 0 (DOWN)
CHANNEL 0
 RATE SEL - _____
CHANNEL 1
 RATE SEL - _____
CHANNEL 2
 RATE SEL - _____

PANEL L10L (VIP)

REMOVE COVER

PWR - 0
ATU - REC
CCTV VIDEO IN - J3

INSTALL COVER

PANEL L10L (VTR)

REMOVE COVER

VERIFY ALL LTS OFF
ON/STANDBY LT - OFF
TIMER - REC
AUDIO OUTPUT SELECT - CH-1/2
PHONE LEVEL - MIDRANGE
KEY INH - OFF
CHARACTER DISPLAY (LCD) - ON (NO BLACK BACK)
DISPLAY SELECT - DATA
CHARACTER DISPLAY - OFF
INPUT SELECT - VIDEO
COUNTER SELECT - TC
AUDIO INPUT - FIX
AUDIO REC LEVEL CH-1 - AS IS
AUDIO REC LEVEL CH-2 - AS IS

INSTALL COVER

*** End of Panel L10 ***

Panel L11

76-89 OTC ASP

IF PAYLOAD DATA INTERFACE PANEL IS INSTALLED ON
PANEL L11U **WITH** MPLM DATA OVERLAY,

THEN PERFORM:

PANEL L11U (PDIP #2)

PAYLOAD DATA INTERFACE PANEL
MPLM DATA SW - OIU (CENTER)
DC POWER 1 SW - OFF
DC POWER 2 SW - OFF

Not Performed:_____

76-90 OTC ASP

IF PAYLOAD DATA INTERFACE PANEL IS INSTALLED ON
L11U AND T-0/OIU/OIU OVERLAY INSTALLED,

THEN PERFORM:

PANEL L11U (PDIP #2)

PAYLOAD DATA INTERFACE PANEL
T-0/OIU/OIU SW - OIU (CENTER)
DC POWER 1 SW - OFF
DC POWER 2 SW - OFF

Not Performed:_____

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76-91 OTC ASP

PANEL L11U (PDIP #2)

IF PAYLOAD DATA INTERFACE PANEL IS INSTALLED ON
L11U AND AMS 1553 DATA OVERLAY INSTALLED,

THEN PERFORM:

PAYLOAD DATA INTERFACE PANEL
AMS 1553 DATA SW - T-0 (CENTER)
DC POWER 1 SW - OFF
DC POWER 2 SW - OFF

Not Performed: _____

***** End of Panel L11 *****

NOTE

Perform the following two steps for STS-135 mission only.

Panel L12

76-92 **OTC ASP**

PANEL L12U (SSP-1)

VERIFY ALL TB'S BP

S1 SW - (CENTER)
S2 SW - (CENTER)
APCU 1 CONV SW - OFF
APCU 1 OUTPUT RLY SW - OPEN
S5 SW - (CENTER)
APCU 2 CONV SW - OFF
APCU 2 OUTPUT RLY SW - OPEN
SW PWR 1 CB2 - OPEN
PDIP 1 PWR 2/KUBAND RLY CB1 - OPEN
MPLM CHAN 1 HTR PWR SW - OFF
S9 SW - (CENTER)
S10 SW - (DOWN)
MPLM CHAN 2 HTR PWR SW - OFF
S12 SW - (CENTER)
S13 SW - (CENTER)
S14 SW - (CENTER)
TCS PWR SW - OFF
S16 SW - (DOWN)
PSSC DEPLOY SW - (CENTER)
PSSC PRE-ARM SW - SAFE
S19 SW - (DOWN)
SW PWR2 CB4 - OPEN
X1/X2 SW PDIP 1 PWR 1 CB3 - OPEN
ODS CONN MATE X1 TLM PWR SW - OFF
S21 SW - (CENTER)
ODS CONN MATE X2 TLM PWR SW - OFF
PSSC ARM SW - SAFE
OIU PWR SW - OFF

Not Performed:_____

76-93 OTC ASP

PANEL L12L (SSP-2)
VERIFY ALL TB'S BP

S1 SW - (CENTER)
S2 SW - (CENTER)
MPLM KEEL CAM PWR SW - OFF
MPLM KEEL CAM HTR/ILLUM PWR SW - OFF
S5 SW - (CENTER)
S6 SW - (DOWN)
S7 SW - (DOWN)
SW PWR 3 CB - OPEN
PDIP 2 PWR 2 MPLM RLY CB1 - OPEN
S8 SW - (DOWN)
S9 SW - (CENTER)
TRIDAR PWR SW - OFF
S11 SW - (DOWN)
C/L CAM PWR SW - OFF
S13 SW - (CENTER)
S14 SW - (CENTER)
S15 SW - OFF
S16 SW - (DOWN)
S17 SW - (CENTER)
S18 SW - (DOWN)
S19 SW - OFF
CB4 - OPEN
PDIP 2 PWR 1 CB3 - OPEN
S20 SW - OFF
S21 SW - (CENTER)
S22 SW - (DOWN)
S23 SW - (DOWN)
S24 SW - (CENTER)

Not Performed: _____

76-94 OTC ASP

IF PAYLOAD DATA INTERFACE PANEL (PDIP) IS
INSTALLED AT PANEL L12,

THEN PERFORM:

PANEL L12L (PDIP #1)

PAYLOAD DATA INTERFACE PANEL

KU BAND RATE SW - OFF

DC POWER 1 SW - OFF

DC POWER 2 SW - OFF

Not Performed:_____

Panel L15

76-95 OTC ASP

IF IMAX PANEL IS INSTALLED,

THEN PERFORM:

PANEL L15

IMAX CAMERA POWER

POWER SW - OFF

CIRCUIT BREAKER SW - OFF

Not Performed:_____

*** End of Panel L15 ***

Panel A15

76-96 OTC ASP

PANEL A15

PS COMM CCU POWER SW - OFF
DC UTILITY POWER MN C SW - OFF
AC UTILITY POWER AC 3 SW - OFF

ROW A

CRYO TANK 5 HEATERS

O₂

A SW - OFF

B SW - OFF

RESET/TEST SW - (CENTER)

H₂

A SW - OFF

B SW - OFF

PANEL A15 (CONTINUED)

ROW F

PALLET CRYO TANK HEATERS

TANK 8/12

O₂

A SW - OFF

B SW - OFF

TANK 8 RESET/TEST SW - (CENTER)

H₂

A SW - OFF

B SW - OFF

ROW G

PALLET CRYO TANK HEATERS

TANK 9/13

O₂

A SW - OFF

B SW - OFF

TANK 9 RESET/TEST SW - (CENTER)

H₂

A SW - OFF

B SW - OFF

ROW H

PALLET CRYO

ESS 1BC

TANK 6/10

CNTRLR

O₂ CB - OPEN

H₂ CB - OPEN

TANK 6 QTY

O₂ CB - OPEN

H₂ CB - OPEN

MN A

TANK 6/10

O₂ HTR

SNSR 1 CB - OPEN

MN B

TANK 6/10

O₂ HTR

SNSR 2 CB - OPEN

PANEL A15 (CONTINUED)

ROW I

PALLET CRYO

ESS 1 BC

TANK 7/11

CNTRLR

O₂ CB - OPEN

H₂ CB - OPEN

TANK 7 QTY

O₂ CB - OPEN

H₂ CB - OPEN

MN A

TANK 7/11

O₂ HTR

SNSR 1 CB - OPEN

MN B

TANK 7/11

O₂ HTR

SNSR 2 CB - OPEN

ROW J

PALLET CRYO

ESS 2 CA

TANK 8/12

CNTRLR

O₂ CB - OPEN

H₂ CB - OPEN

TANK 8 QTY

O₂ CB - OPEN

H₂ CB - OPEN

MN A

TANK 8/12

O₂ HTR

SNSR 1 CB - OPEN

MN B

TANK 8/12

O₂ HTR

SNSR 2 CB - OPEN

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PANEL A15 (CONTINUED)

ROW K

PALLET CRYO

ESS 2 CA

TANK 9/13

CNTRLR

O₂ CB - OPEN

H₂ CB - OPEN

TANK 9 QTY

O₂ CB - OPEN

H₂ CB - OPEN

MN A

TANK 9/13

O₂ HTR

SNSR 1 CB - OPEN

MN B

TANK 9/13

O₂ HTR

SNSR 2 CB - OPEN

Not Performed: _____

76-98 OTC ASP

IF VEHICLE IS OV-103/105,

THEN PERFORM:

PANEL A15 (CONTINUED)

ROW B

PTU

PTU 1 TB - OFF

2 TB - OFF

CNTL PWR

PTU 1 CB - OPEN

PTU 2 CB - OPEN

ROW C (TB'S ON ROW B)

PTU

PTU/MAIN BUS

A SW - (CENTER)

B SW - (CENTER)

ODS MATE

X1 SW - OFF

X2 SW - OFF

ROW D

PTU

OPCU 1

CONV SW - OFF

V-ADJ

CMD/PNL SW - OFF

UP/DOWN SW - (CENTER)

APCU 1

CONV SW - OFF

OUTPUT SW - OFF

ROW E

PTU

OPCU 2

CONV SW - OFF

V-ADJ

CMD/PNL SW - OFF

UP/DOWN SW - (CENTER)

APCU 2

CONV SW - OFF

OUTPUT SW - OFF

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ROW F

UNLABELED SW'S (FIVE) - OFF
(MOMENTARY - CENTER, OTHERS - DOWN)

ROW G

UNLABELED SW'S (FIVE) - OFF
(MOMENTARY - CENTER, OTHERS - DOWN)

ROW H

UNLABELED CB'S (SIX) - OPEN

ROW I

UNLABELED CB'S (SIX) - OPEN

ROW J

UNLABELED CB'S (SIX) - OPEN

ROW K

UNLABELED CB'S (SIX) - OPEN

Not Performed: _____

***** End of Panel A15 *****

Panel A14 (PS1)

76-99 OTC ASP

PANEL A14

RCS/OMS HEATERS

FWD RCS SW - OFF

LEFT POD

A AUTO SW - OFF

B AUTO SW - OFF

RIGHT POD

A AUTO SW - OFF

B AUTO SW - OFF

OMS

KIT SW - OFF

CRSFD LINES

A AUTO SW - A AUTO

B AUTO SW - B AUTO

FWD RCS JET

1 SW - AUTO

2 SW - AUTO

3 SW - AUTO

4 SW - AUTO

5 SW - AUTO

AFT RCS JET

1 SW - AUTO

2 SW - AUTO

3 SW - AUTO

4 SW - AUTO

5 SW - AUTO

NOTE

Perform the CARGO COOLANT LOOP HEATERS switch verification for OV-103 and OV-105

CARGO COOLANT LOOP HEATERS
ORBITER/OFF/ACCUM (SELECT)
A AUTO - OFF
B AUTO - OFF
C AUTO - OFF
CARGO LINE/OFF (SELECT)
A AUTO - OFF
B AUTO - OFF

Not Performed: _____

PANEL A14 (CONTINUED)

PYRO (ALL 13 SW'S SAFE)
KU ANT
ARM SW - SAFE
JETT SW - SAFE

STARBOARD RMS
ARM SW - SAFE
SHLDR SW - SAFE
LATCHES
FWD SW - SAFE
MID SW - SAFE
AFT SW - SAFE

PORT RMS
ARM SW - SAFE
SHLDR SW - SAFE
LATCHES
FWD SW - SAFE
MID SW - SAFE
AFT SW - SAFE

RMS LATCHES SW - SAFE

***** End of Panel A14 (PS1) *****

Panel A13 (MS1)

76-100 OTC ASP

IF VEHICLE IS OV-103,

**THEN PERFORM:
PANEL A13**

GPS

PRE-AMPL

UC SW - OFF

LC SW - OFF

POWER SW - OFF

GPS/SIGI POWER SW - OFF

ENCRYPT SW - NORMAL

GPS/SIGI ENCRYPT SW - NORMAL

Not Performed:_____

06-24-2011
APPROVED

OMI S0007.400 A23
APPROVED

76-101 OTC ASP

IF VEHICLE IS OV-104,

THEN PERFORM:

PANEL A13

GPS

PRE-AMPL

UC SW - OFF (CENTER)

LC SW - OFF (CENTER)

POWER SW - OFF

UNLABELED SW - (DOWN)

ENCRYPT SW - NORMAL

UNLABELED SW - (DOWN)

Not Performed: _____

76-102 OTC ASP

PANEL A13

OS AUDIO

MASTER SPEAKER VOL SW - AS IS

SPKR PWR SW - OFF

*** End of Panel A13 (MS1) ***

Panel A12 (MS1)

76-103 OTC ASP

PANEL A12

APU HEATER

GAS GEN/FUEL PUMP

1 SW - OFF

2 SW - OFF

3 SW - OFF

LUBE OIL LINE

1 SW - OFF

2 SW - OFF

3 SW - OFF

TANK/FUEL LINE/H₂O SYS

1A SW - OFF

1B SW - OFF

2A SW - OFF

2B SW - OFF

3A SW - OFF

3B SW - OFF

LG ARM/DN RESET SW - (DOWN)

FC3 STRUCT RTN SW - (CENTER)

TB ON

HYDRAULIC HEATER

RUDDER SPD BK

A SW - OFF

B SW - AUTO

BODY FLAP

A SW - AUTO

B SW - OFF

ELEVON

A SW - AUTO

B SW - OFF

AFT FUSELAGE

A SW - AUTO

B SW - OFF

HYD CIRC PUMP POWER

1 SW - MN A

2 SW - MN B

3 SW - MN C

***** End of Panel A12 (MS1) *****

Panel A11 (MS1)

76-104 OTC ASP

IF FOR OV-103,

THEN PERFORM:

PANEL A11

CRYO TANK 4 HEATERS

O₂

A SW - OFF

B SW - OFF

RESET/TEST SW - (CENTER)

H₂

A SW - OFF

B SW - OFF

MS COMM CCU PWR SW - OFF

DC UTILITY POWER MN C SW - OFF

Not Performed: _____

76-105 OTC MS1

IF FOR OV-105,

THEN PERFORM:
PANEL A11

ROW A

CRYO TANK 4 HEATERS

O₂

A SW - OFF

B SW - OFF

RESET/TEST SW - (CENTER)

H₂

A SW - OFF

B SW - OFF

ROW B

PALLET CRYO TANK HEATERS

TANK 10

O₂

A SW - OFF

B SW - OFF

RESET/TEST SW - (CENTER)

H₂

A SW - OFF

B SW - OFF

ROW C

PALLET CRYO TANK HEATERS

TANK 11

O₂

A SW - OFF

B SW - OFF

RESET/TEST SW - (CENTER)

H₂

A SW - OFF

B SW - OFF

PANEL A11 (CONTINUED)

ROW D

PALLET CRYO TANK HEATERS

TANK 12

O₂

A SW - OFF

B SW - OFF

RESET/TEST SW - (CENTER)

H₂

A SW - OFF

B SW - OFF

ROW E

PALLET CRYO TANK HEATERS

TANK 13

O₂

A SW - OFF

B SW - OFF

RESET/TEST SW - (CENTER)

H₂

A SW - OFF

B SW - OFF

ROW F

PALLET CRYO

ESS 1 BC

TANK 10 CNTLR

O₂ CB - OPEN

H₂ CB - OPEN

QTY

O₂ CB - OPEN

H₂ CB - OPEN

MN A

O₂ HTR SNSR 1 CB - OPEN

MN B

O₂ HTR SNSR 2 CB - OPEN

PANEL A11 (CONTINUED)

ROW G

PALLET CRYO

ESS 1BC

TANK 11 CNTLR

O₂ CB - OPEN

H₂ CB - OPEN

QTY

O₂ CB - OPEN

H₂ CB - OPEN

MN A

O₂ HTR SNSR 1 CB - OPEN

MN B

O₂ HTR SNSR 2 CB - OPEN

ROW H

PALLET CRYO

ESS 3AB

TANK 12 CNTLR

O₂ CB - OPEN

H₂ CB - OPEN

QTY

O₂ CB - OPEN

H₂ CB - OPEN

MN A

O₂ HTR SNSR 1 CB - OPEN

MN B

O₂ HTR SNSR 2 CB - OPEN

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PANEL A11 (CONTINUED)

ROW I

PALLET CRYO

ESS 3AB

TANK 13 CNTLR

O₂ CB - OPEN

H₂ CB - OPEN

QTY

O₂ CB - OPEN

H₂ CB - OPEN

MN A

O₂ HTR SNSR 1 CB - OPEN

MN B

O₂ HTR SNSR 2 CB - OPEN

MS COMM CCU PWR SW - OFF

DC UTILITY PWR MN C SW - OFF

PALLET HEATERS

C SW - OFF

D SW - OFF

Not Performed: _____

76-106 OTC ASP

IF FOR OV-104,

THEN PERFORM:
PANEL A11

CRYO TANK 4 HEATERS

O₂

A SW - OFF

B SW - OFF

RESET/TEST SW - (CENTER)

H₂

A SW - OFF

B SW - OFF

CRYO TANK SELECT 6/10 O₂ SW - (CENTER)

CRYO TANK SELECT 6/10 H₂ SW - (CENTER)

CRYO TANK SELECT 7/11 O₂ SW - (CENTER)

CRYO TANK SELECT 7/11 H₂ SW - (CENTER)

CRYO TANK SELECT 8/12 O₂ SW - (CENTER)

CRYO TANK SELECT 8/12 H₂ SW - (CENTER)

CRYO TANK SELECT 9/13 O₂ SW - (CENTER)

CRYO TANK SELECT 9/13 H₂ SW - (CENTER)

PALLET CRYO

ESS BUS 1BC

TANK 10 QTY

O₂ CB - OPEN

H₂ CB - OPEN

TANK 11 QTY

O₂ CB - OPEN

H₂ CB - OPEN

ESS BUS 3AB

TANK 12 QTY

O₂ CB - OPEN

H₂ CB - OPEN

TANK 13 QTY

O₂ CB - OPEN

H₂ CB - OPEN

MS COMM CCU PWR SW -OFF

DC UTILITY POWER MN C SW - OFF

Not Performed: _____

*** End of Panel A11 (MS1) ***

Panel R14 (MS1)

76-107 OTC ASP

PANEL R14

ROW A

MN A

AUDIO MS CB - CLOSE

ADC 1A/2A CB - CLOSE

MDU

MFD 2 CB - CLOSE

PLT 1 CB - CLOSE

MN B

AUDIO MIDDECK SPKR CB - CLOSE

ADC 1B/2B CB - CLOSE

MDU

MFD 1 CB - CLOSE

CDR 2 CB - CLOSE

MN C

AUDIO

AUD CTR 2 CB - CLOSE

PS/AIRLOCK CB - CLOSE

MDU

CDR 1 CB - CLOSE

PLT 2 CB - CLOSE

AFD 1 CB - CLOSE

ROW B

MN A

UHF CB - CLOSE

GCILC CB - CLOSE

CONTROL BUS BC1/2/3 CB - CLOSE

PALLET DSC 1A/2B CB - OPEN (OV-104/105)

PALLET DSC 3A CB - OPEN (OV-104/105)

MN B

CONTROL BUS CA1/2/3 CB - CLOSE

PANEL R14 (CONTINUED)

ROW B (CONTINUED)

PALLET DSC 1B CB - OPEN (OV-104/105)
PALLET DSC 4B CB - OPEN (OV-104/105)

MN C

UHF CB - CLOSE
GCILC CB - CLOSE
CONTROL BUS AB1/2/3
CB - CLOSE

PALLET DSC 2A CB - OPEN (OV-104/105)
PALLET DSC 3B/4A CB - OPEN (OV-104/105)

ROW C

MN A

UHF EVA CB - OPEN

MN B

KU

ELEC CB - OPEN
ANT HTR CB - OPEN
CABLE HTR CB - OPEN

MN C

KU SIG PROC CB - OPEN
UHF EVA CB - OPEN
MANF ISOL L5 CB - CLOSE
MANF ISOL R5 CB - CLOSE
MANF ISOL F5 CB - CLOSE

PANEL R14 (CONTINUED)

ROW D

MN A
TV
C CAMR
CAMR/PTU CB-OPEN
CAMR HTR CB - OPEN
ILLUM/PTU HTR CB - OPEN
CONTR UNIT CB - OPEN
MON 1 CB - OPEN

MN B

TV
A CAMR
CAMR/PTU CB - OPEN
CAMR HTR CB - OPEN
ILLUM/PTU HTR CB - OPEN
CONTR UNIT CB - OPEN
MON 2 CB - OPEN
VPU CB - OPEN

MN C

TV
B CAMR
CAMR/PTU CB - OPEN
CAMR HTR CB - OPEN
ILLUM/PTU HTR CB - OPEN
CABIN CB - CLOSE

ROW E

MN A

PS FLOOD CB - CLOSE
D CAMR
CAMR/PTU CB-OPEN
CAMR HTR CB - OPEN
ILLUM/PTU HTR CB - OPEN

MN B

OS FLOOD CB - CLOSE
RMS CAMR
CAMR/PTU CB - OPEN
WRIST ILLUM/CAMR HTR CB - OPEN
ELB ILLUM/PTU HTR CB - OPEN

MN C

MS FLOOD CB - CLOSE

PANEL R14 (CONTINUED)

ROW F

ESS 1BC

FLOOD LEFT GLRSHLD CB-CLOSE

AUDIO LEFT CB - CLOSE

LDG GEAR ARM/DN RESET

CB - OPEN

ESS 2CA

FLOOD RIGHT GLRSHLD CB-CLOSE

AUDIO

RIGHT CB - CLOSE

AUD CTR 1 CB - CLOSE

***** End of Panel R14 (MS1) *****

***** End of AFT Flight Deck Switch List *****

Middeck Switch List

Panel ML86B (MS1)

76-108 OTC ASP

PANEL ML86B

ROW A

MN A

SUPPLY H₂O

TK A INLET CB - CLOSE

TK B OUTLET CB - CLOSE

WASTE H₂O DUMP VLV/NOZ HTR CB - OPEN

H₂O LINE HTR A CB - OPEN

MN B

SUPPLY H₂O

TK B INLET CB - CLOSE

TK C OUTLET CB - CLOSE

DUMP ISOL CB - OPEN

B SPLY ISOL VLV CB - CLOSE

H₂O LINE HTR B CB - OPEN

MN C

SUPPLY H₂O

TK A OUTLET CB - CLOSE

TK C INLET CB - CLOSE

DUMP VLV/NOZ HTR CB - OPEN

XOVR VLV CB - CLOSE

GALLEY SUPPLY CB - OPEN

OR CLOSED (H₂O DRAIN
IN PROGRESS)

PANEL ML86B (CONTINUED)

ROW B

MN A

WASTE H₂O TK 1 VALVE CB - CLOSE
SUPPLY H₂O TK D OUTLET CB - CLOSE
WASTE H₂O DUMP ISOL CB - OPEN
VAC VENT ISOL VLV CB - OPEN
WCS CNTLR CB - OPEN
GALLEY OVEN CB - OPEN

MN B

WASTE H₂O TK 1 DRAIN CB - CLOSE
SUPPLY H₂O TK D INLET CB - CLOSE
VACUUM VENT
NOZ HTR CB - OPEN
ISOL VLV CB - OPEN
WCS CNTLR CB - OPEN
GALLEY H₂O HTR CB - OPEN

ROW C

MN A

EXTERNAL AIRLOCK HTR
LINE
ZONE 1 CB - OPEN
ZONE 2 CB - OPEN
STRUC Z1/2/3 CB - OPEN
VEST Z1/2/3 CB - OPEN

MN B

EXTERNAL AIRLOCK HTR
LINE
ZONE 1 CB - OPEN
ZONE 2 CB - OPEN
H₂O S/O VALVE CB - CLOSE
STRUC Z1/2/3 CB - OPEN
VEST Z1/2/3 CB - OPEN

MN C

EXTERNAL AIRLOCK HTR
LINE
ZONE 1 CB - OPEN
ZONE 2 CB - OPEN

PANEL ML86B (CONTINUED)

ROW D

MN A

PYRO JETT SYS A
KU ANT CB - OPEN
STBD RMS CB - OPEN
MAN MANUV UNIT
GN₂ SPLY ISOL VLV A CB - OPEN
PORT HTR A CB - OPEN
STBD HTR A CB - OPEN

MN B

PYRO JETT SYS A
PORT RMS CB - OPEN
MAN MANUV UNIT
GN₂ SPLY ISOL VLV B CB - OPEN
PORT HTR B CB - OPEN
STBD HTR B CB - OPEN

MN C

PYRO JETT SYS B
KU ANT CB - OPEN
PORT RMS CB - OPEN
STBD RMS CB - OPEN

ROW E

MN A

EMU 2 H₂O
SUPPLY CB - OPEN
WASTE CB - OPEN
FC PCM - CLOSED
CO₂ SYS 1 CNTLR CB - OPEN (OV-104/105)
FLOOD TUNNEL ADAPTER 2 CB - OPEN

NOTE

VITT/Payloads will provide MAR 1 CB and MAR 2 CB positions.

MN B

MAR 1 CB - _____
MAR 2 CB - _____
SEAT
LEFT CB - CLOSE
RIGHT CB - CLOSE
CO₂ COMMON INSTR CB - OPEN (OV-104/105)
FLOOD TUNNEL ADAPTER 3 CB - OPEN

PANEL ML86B (CONTINUED)

ROW E (CONTINUED)

MN C

EMU 1 H₂O

SUPPLY CB - OPEN

WASTE CB - OPEN

SEAT

LEFT CB - CLOSE

RIGHT CB - CLOSE

CO₂ SYS 2 CNTLR CB - OPEN (OV-104/105)

FLOOD TUNNEL ADAPTER 4 CB - OPEN

ROW F

MN A

FLOODS

MIDDECK 1/8 CB - CLOSE

WMC/MO13Q CB - OPEN

AIRLOCK 1 CB - OPEN

MIDDECK 9 CB - OPEN

CRYO O₂ HTR

TK 3 SNSR 1 CB - CLOSE

NOTE

If Tank Set 5 is installed, CB - CLOSE.

If Tank Set 5 is not installed, next CB - OPEN.

CRYO O₂ HTR

TK 5 SNSR 1 CB - _____

MN B

FLOODS

MIDDECK 2/6 CB - CLOSE

BUNK 2/4 CB - OPEN

MIDDECK 10 CB - OPEN

AIRLOCK 3 CB - OPEN

CRYO O₂ HTR

TK 3 SNSR 2 CB - CLOSE

PANEL ML86B (CONTINUED)

ROW F (CONTINUED)

NOTE

If Tank Set 4 is installed, CB - CLOSE.
If Tank Set 4 is not installed, CB - OPEN.

CRYO O₂ HTR
TK 4 SNSR 1 CB - _____

MN C
FLOODS
MIDDECK
5/7 CB - CLOSE
3/4/MO13Q CB - CLOSE

BUNK 1/3 CB - OPEN
AIRLOCK 4 CB - OPEN

NOTE

If Tank Set 5 is installed, CB - CLOSE.
If Tank Set 5 is not installed, next CB - OPEN.

CRYO O₂ HTR
TK 5 SNSR 2 CB - _____

NOTE

If Tank Set 4 is installed, CB - CLOSE.
If Tank Set 4 is not installed, CB - OPEN.

CRYO O₂ HTR
TK 4 SNSR 2 CB - _____

PANEL ML86B (CONTINUED)

ROW G

ESS 1BC

FLOOD

AIRLOCK 2 CB - OPEN

TUNNEL ADAPTER 1 CB - OPEN

NOTE

If Tank Set 4 is installed, next four CBs - CLOSE.
If Tank Set 4 is not installed, next four CBs - OPEN.

CRYO CNTLR

O₂ TK 4 CB - _____

H₂ TK 4 CB - _____

CRYO QTY

O₂ TK 4 CB - _____

H₂ TK 4 CB - _____

NOTE

If Tank Set 5 is installed, next four CBs - CLOSE.
If Tank Set 5 is not installed, next four CBs - OPEN.

ESS 2CA

CRYO CNTLR

O₂ TK 5 CB - _____

H₂ TK 5 CB - _____

CRYO QTY

O₂ TK 5 CB - _____

H₂ TK 5 CB - _____

ESS 3AB

CRYO CNTLR

O₂ TK 3 CB - CLOSE

H₂ TK 3 CB - CLOSE

CRYO QTY

O₂ TK 3 CB - CLOSE

H₂ TK 3 CB - CLOSE

*** End of Panel ML86B (MS1) ***

Panel ML85E (MS1)

NOTE
VITT/Payloads will provide the following switch and CB positions.

76-109 OTC ASP

PANEL ML85E

AC

S1 SW - _____

CB1 - _____

DC 10 AMP MN B

S2 SW - _____

CB2 - _____

S3 SW - _____

CB3 - _____

S4 SW - _____

CB4 - _____

S5 SW - _____

CB5 - _____

PUMPS

S6 SW - _____

PUMP 2 CB7 - _____

PUMP 1 CB6 - _____

***** End of Panel ML85E (MS1) *****

Galley (MS1)

76-110 OTC ASP

GALLEY

WATER VOL - AS IS
WATER PB LIGHTS (2) - OFF
OVEN FAN - OFF
REHYD STA LEVER - CLOSED AND LATCHED

TEST PORT 4 QD OUTLET CAP INSTALLED
OR
TEST PORT 4 QD CONNECTED TO DRAIN HOSE (IF H₂O
DRAIN IN PROGRESS)

A5J105 QD OUTLET - CAP INSTALLED
AUX PORT QD OUTLET - CAP INSTALLED
WATER HEATER SWITCHES (2) - OFF
OVEN/RHS SW - OFF
MV2 VALVE - (AS IS)
OVEN DOOR - CLOSED

***** End of Galley (MS1) *****

Panel MO13Q (MS1)

76-111 OTC ASP

PANEL MO13Q

MIDDECK FLOODS

- 3 SW - OFF
- 6 SW - ON
- 1 SW - OFF
- 4 SW - ON
- 7 SW - OFF
- 2 SW - OFF
- 5 SW - OFF
- 8 SW - ON
- 9 SW - OFF
- 10 SW - OFF

AIRLOCK H₂O S/O VALVE SW - (CENTER)
TB OPEN

AIRLOCK FAN A SW - OFF
AIRLOCK FAN B SW - OFF

MO13Q LTG SW - OFF

AIRLOCK 2 SW - OFF/ON

TUNNEL ADAPTER 1 SW - OFF/ON

DC UTILITY POWER MN B SW - OFF

AC UTILITY POWER AC 3 SW - OFF

***** End of Panel MO13Q (MS1) *****

Panel ML31C (MS1)

76-112 OTC ASP

PANEL ML31C

WASTE H₂O

TK 1 DRAIN VLV SW - (CENTER)

TB OP

TK 1 VLV SW - (CENTER)

TB OP

DUMP ISOL VLV SW - (CENTER)

TB BP

DUMP VLV SW - (CENTER)

TB BP

DUMP VLV ENABLE/NOZ HTR SW - OFF

SUPPLY H₂O

TK D INLET SW - (CENTER)

TB OP

TK D OUTLET SW - (CENTER)

TB OP

VACUUM VENT

ISOL VLV

BUS SELECT SW - MN A

CONTROL SW - (CENTER)

TB BP

NOZ HTR SW - OFF

***** End of Panel ML31C (MS1) *****

Panel ML26C (MS1)

76-113 OTC ASP

PANEL ML26C

SUPPLY H₂O GN₂
TK A SUPPLY VLV - OPEN
TK VENT VLV - PRESS

***** End of Panel ML26C (MS1) *****

Panel ML18F (MS1)

76-114 OTC ASP

PANEL ML18F

EMERGENCY LIGHTING SW - ON/OFF
WASTE MANAGEMENT COMPARTMENT FLOOD SW - OFF

***** End of Panel ML18F (MS1) *****

Panel ML30N (MS1)

76-115 OTC ASP

PANEL ML30N (NOT LABELED)

CABIN NEG PRESS RELIEF VLV CAPS (2) - INSTALLED/
SEATED

***** End of Panel ML30N (MS1) *****

Panel MA73C (MS1)

76-116 OTC ASP

PANEL MA73C

ROW A (ALL ON)

MCA LOGIC

MN A

FWD 1 SW - ON

MID 1 SW - ON

MN B

FWD 2 SW - ON

MID 1 SW - ON

MID 2 SW - ON

MN C

FWD 3 SW - ON

MID 2 SW - ON

ROW B (ALL ON)

MCA LOGIC

MN A

AFT 1 SW - ON

MID 3 SW - ON

MN B

AFT 2 SW - ON

MID 3 SW - ON

MID 4 SW - ON

MN C

AFT 3 SW - ON

MID 4 SW - ON

ROW C (ALL CLOSED)

MCA POWER AC 1 3 PH

FWD 1 CB - CLOSE

MID 1 CB - CLOSE

MCA POWER AC 2 3 PH

FWD 2 CB - CLOSE

MID 1 CB - CLOSE

MID 2 CB - CLOSE

MCA POWER AC 3 3 PH

FWD 3 CB - CLOSE

MID 2 CB - CLOSE

PANEL MA73C (CONTINUED)

ROW D (ALL CLOSED)

MCA POWER AC 1 3 PH
AFT 1 CB - CLOSE
MID 3 CB - CLOSE

MCA POWER AC 2 3 PH
AFT 2 CB - CLOSE
MID 3 CB - CLOSE
MID 4 CB - CLOSE

MCA POWER AC 3 3 PH
AFT 3 CB - CLOSE
MID 4 CB - CLOSE

ROW E (ALL OPEN)

AC 1
WCS FAN SEP 1
PH A CB - OPEN
PH B CB - OPEN
PH C CB - OPEN

AC 2
WCS FAN SEP 2
PH A CB - OPEN
PH B CB - OPEN
PH C CB - OPEN
PAYLOAD 3 PH CB - OPEN

AC 3
PAYLOAD 3 PH CB - OPEN

ROW F

AC 1
RMS PRIMARY PH A CB - OPEN
MAR 3 PH CB - OPEN
OPS INST HYD ACTR
PH C CB - CLOSE

AC 2
RMS BACKUP PH A CB - OPEN
L SEAT 3 PH CB - CLOSE
OPS INST HYD ACTR PH C CB - CLOSE

AC 3
L SEAT 3 PH CB - CLOSE

PANEL MA73C (CONTINUED)

ROW G

AC 1

ARLK TNL FAN A
PH A CB - OPEN
PH B CB - OPEN
PH C CB - OPEN
UNLABELED SW - DOWN

AC 2

ARLK TNL FAN B
PH A CB - OPEN
PH B CB - OPEN
PH C CB - OPEN
RIGHT SEAT 3 PH CB - CLOSE

AC 3

GALLEY FAN
PH A CB - OPEN
PH B CB - OPEN
PH C CB - OPEN
RIGHT SEAT 3 PH CB - CLOSE

ROW H (ALL CLOSED)

AC 1

FWD RCS VLV
PH A CB - CLOSE
PH B CB - CLOSE
PH C CB - CLOSE

AC 2

FWD RCS VLV
PH A CB - CLOSE
PH B CB - CLOSE
PH C CB - CLOSE

AC 3

FWD RCS VLV
PH A CB - CLOSE
PH B CB - CLOSE
PH C CB - CLOSE

PANEL MA73C (CONTINUED)

ROW I (ALL CB CLOSED, SW ON)

AC 1

AFT POD VLV GP1

PH A CB - CLOSE

PH B CB - CLOSE

PH C CB - CLOSE

AFT POD VLV LOGIC GP 1/3 SW - ON

AC 2

AFT POD VLV GP2

PH A CB - CLOSE

PH B CB - CLOSE

PH C CB - CLOSE

AFT POD VLV LOGIC GP 1/2 SW - ON

AC 3

AFT POD VLV GP3

PH A CB - CLOSE

PH B CB - CLOSE

PH C CB - CLOSE

AFT POD VLV LOGIC GP 2/3 SW - ON

*** End of Panel MA73C (MS1) ***

Panel MO30F (MS1)

76-117 OTC ASP

PANEL MO30F

DC UTILITY POWER MN C SW - OFF

***** End of Panel MO30F (MS1) *****

Panel MO32M (MS1)

NOTE

LEH oxygen 5-6 valves will be configured for flight by ASP during Pre-Ingress Checklist.

76-118 OTC ASP

PANEL MO32M

LEH O₂ 5 VLV - CLOSE

LEH O₂ 6 VLV - CLOSE

***** End of Panel MO32M (MS1) *****

Panel MO39M (MS1)

76-119 OTC ASP

PANEL MO39M

MIDDECK COMM CCU PWR SW - OFF

***** End of Panel MO39M (MS1) *****

Panel MO42F (MS1)

76-120 OTC ASP

PANEL MO42F

MIDDECK SPEAKER AUDIO
POWER SW - AUD/TONE

A/G

1 SW - T/R

2 SW - RCV

A/A SW - RCV

ICOM

A SW - T/R

B SW - RCV

VOX SENS SW - AS IS

MASTER SPEAKER VOLUME SW - 8

PAGE SW - (DOWN)

VOLUME

A/G

1 PB - 7

2 PB - 7

A/A PB - 7

ICOM

A PB - 7

B PB - 7

XMIT/ICOM MODE SW - PTT/PTT

TONES SW - ACCU/BYPASS

SPKR PWR SW - SPKR

GPC MEMORY DUMP SW - OFF

BYPASS TONE VOL ADJUST SCREW - AS IS

***** End of Panel MO42F (MS1) *****

Panel MO51F

76-121 OTC ASP

IF FOR OV-104 AND OV-105 ONLY,

THEN PERFORM:

PANEL MO51F

CNTRLR 1 OPER LTS (2) - OFF

CNTRLR 2 OPER LTS (2) - OFF

MN A SW - OFF

AC 1 SW - (CENTER)

MODE SW - (CENTER)

COMMON INSTR SW - OFF

MN C SW - OFF

AC 3 SW - (CENTER)

MODE SW - (CENTER)

AC 1 PH A CB - OPEN

AC 1 PH B CB - OPEN

AC 1 PH C CB - OPEN

AC 3 PH A CB - OPEN

AC 3 PH B CB - OPEN

AC 3 PH C CB - OPEN

Not Performed: _____

***** End of Panel MO51F *****

Panel MO58F (MS1)

76-122 OTC ASP

PANEL MO58F

SLEEP STA TONES OUTLET - CAP INSTALLED

TV POWER SW - OFF

TV OUTLET - CAP INSTALLED OR CABLE MATED

***** End of Panel MO58F (MS1) *****

Panel MO52J (MS1)

76-123 OTC ASP

PANEL MO52J

DC UTILITY POWER SW - OFF
AC UTILITY POWER SW - OFF
MASTER ALARM LIGHT OFF

***** End of Panel MO52J (MS1) *****

Panel MO62M (MS1)

76-124 OTC ASP

PANEL MO62M

MIDDECK BIOMED - ALL THREE CAPS INSTALLED

***** End of Panel MO62M (MS1) *****

Panel MO63P (MS1)

NOTE
VITT will provide switch and CB positions.

76-125 OTC ASP

PANEL MO63P

MAIN DC UTILITY POWER

CB4/J4 CB - _____
CB3/J3 CB - _____
CB2/J2 CB - _____
J2 SW - _____
15A/10A SW - _____
J3 SW - _____
J4 SW - _____
J5 SW - _____
15A/10A SW - _____
J6 SW - _____
CB6/J6 CB - _____
CB5/J5 CB - _____
RLY PWR CB - _____

***** End of Panel MO63P (MS1) *****

Panel MO69M (MS1)

NOTE

LEH oxygen 7-8 valves will be configured by ASP during Pre-Ingress Checklist.

76-126 OTC ASP

PANEL MO69M

LEH O₂ 7 VLV - CLOSE

LEH O₂ 8 VLV - CLOSE

***** End of Panel MO69M (MS1) *****

Panel MD44F (MS1)

76-127 OTC ASP

PANEL MD44F (UNDER FLOOR)

CABIN TEMP CONTROL VALVE - FULL COOL

PRIMARY ACTUATOR - PINNED TO TEMP CONTROLLER

SECONDARY ACTUATOR - FULL HEAT POSITION

***** End of Panel MD44F (MS1) *****

**Middeck Floor
(FWD of Airlock)**

NOTE

Velcro attached debris/closeout netting may be repositioned to facilitate the following step.

76-128 OTC ASP

MIDDECK FLOOR (FWD OF AIRLOCK)

EMU O₂ ISOL VALVE - CLOSE
CABIN PURGE VALVE - CLOSE
CABIN PURGE ISOL VALVE - CLOSE

***** End of Middeck Floor (FWD of Airlock) *****

Middeck Experiment Switch List

76-129 OTC ASP

IF TEPC (TISSUE EQUIVALENT PROPORTIONAL COUNTER)
IS INSTALLED,

THEN PERFORM:
TEPC SWITCHBOX NEAR MA9D
TEPC SWITCHBOX
SW 1 - OFF
PWR LIGHT - OFF

Not Performed:_____

NOTE
If display is in sleep mode, press "Menu" key to reactivate.

76-130 OTC ASP

IF CGBA IS INSTALLED AND IF POWERED,

THEN PERFORM:

PANEL _____

CGBA

MAIN POWER CB - CLOSE

MAIN POWER LIGHT - ON

DISPLAY TEMP

_____ DEG C BD

(DISPLAY TEMP SHOULD BE WITHIN 2 DEG OF SET TEMP)

Not Performed: _____

76-131 OTC ASP

IF CGBA is installed
and

IF unpowered,

THEN Perform

PANEL _____

CGBA

MAIN POWER CB - OPEN

MAIN POWER LIGHT - OFF

DISPLAY BLANK

Not Performed: _____

76-132 OTC ASP

IF STL is installed and powered for ascent,

THEN Perform:

PANEL _____

ON/OFF SWITCH - ON
POWER LIGHT - ON
F1 LIGHT - OFF

Not Performed: _____

76-133 OTC ASP

IF MERLIN is installed AND powered for Ascent,

THEN Perform:

PANEL MF71E

MERLIN

STATUS LIGHT - OFF

POWER MAIN CB - CLOSED
POWER LIGHT - ON

POWER PAYLOAD CB - OPEN (WHITE BAND VISIBLE)
POWER PAYLOAD LIGHT - OFF

Not Performed: _____

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76-134 OTC ASP

IF MERLIN is installed **AND NOT** powered for Ascent,

THEN Perform:

PANEL MF71E

MERLIN

STATUS LIGHT - OFF

POWER MAIN CB - OPEN (WHITE BAND VISIBLE)

POWER LIGHT - OFF

POWER PAYLOAD CB - OPEN (WHITE BAND VISIBLE)

POWER PAYLOAD LIGHT - OFF

Not Performed: _____

76-135 OTC ASP

IF AEM-1 is installed and powered for ascent,

THEN Perform:

PANEL _____

PUMP BREAKER CB - OPEN
MAIN BREAKER CB - CLOSED

FANS A&D CB - CLOSED
FANS A&D LIGHT - ON

FANS B&C CB CLOSED
FANS B&C LIGHT - ON

FANS SW - ON
(AUDIBLE FAN OPERATION)

LIGHTS SW - AUTO

LIGHTS B&C CB - CLOSED
LIGHTS B&C LIGHT - RECORD STATUS _____

LIGHTS A&D CB - OPEN
LIGHTS A&D LIGHT - OFF

LED DISPLAY _____ (PAYLOAD TIMER GMT)

Not Performed: _____

76-136 OTC ASP

IF AEM-2 is installed and powered for ascent,

THEN Perform:

PANEL _____

PUMP BREAKER CB - OPEN
MAIN BREAKER CB - CLOSED

FANS A&D CB - CLOSED
FANS A&D LIGHT - ON

FANS B&C CB CLOSED
FANS B&C LIGHT - ON

FANS SW - ON
(AUDIBLE FAN OPERATION)

LIGHTS SW - AUTO

LIGHTS B&C CB - CLOSED
LIGHTS B&C LIGHT - RECORD STATUS _____

LIGHTS A&D CB - OPEN
LIGHTS A&D LIGHT - OFF

LED DISPLAY _____ (PAYLOAD TIMER GMT)

Not Performed: _____

76-137 OTC ASP

IF CBTM #3 is installed,

THEN Perform:

PANEL MF43K

CBTM #3
PUMP BREAKER CB - OPEN
MAIN BREAKER CB - CLOSED

FANS A&D CB - CLOSED
FANS A&D LIGHT - ON

FANS B&C CB CLOSED
FANS B&C LIGHT - ON

FANS SW - ON
(AUDIBLE FAN OPERATION)

LIGHTS SW - AUTO

LIGHTS B&C CB - CLOSED
LIGHTS B&C LIGHT - RECORD STATUS _____ (BD)

LIGHTS A&D CB - OPEN
LIGHTS A&D LIGHT - OFF

LED DISPLAY _____ (PAYLOAD TIMER GMT)

Not Performed: _____

76-138 OTC ASP

IF GLACIER is installed

and

IF powered,

THEN perform:

PANEL _____

GLACIER

POWER CB - CLOSE (LIGHT ON)

BATTERY SW - ON (LIGHT ON)

Not Performed:_____

76-139 OTC ASP

IF GLACIER is installed,

and

IF unpowered,

THEN perform the following:

PANEL : _____

GLACIER

POWER CB - OPEN (LIGHT OFF)

BATTERY SW - OFF (LIGHT OFF)

Not Performed:_____

***** End of Middeck Experiment Switch List *****

Waste Management Station Switch List

Panel WCS

76-140 OTC ASP

PANEL WCS (Commode Area)

Auto Inhibit/Auto SW - Auto

76-141 OTC ASP

IF VAC Vent Inerting is in progress,

THEN Perform:

Commode Control Handle-Telescoped up (AFT Position)

MODE SW - Commode/Manual/EMU

Vacuum Valve SW - Open

Not Performed: _____

76-142 OTC ASP

IF Vac Vent Inerting not in progress,

THEN Perform:

Commode Control Handle - Seated Down/Off (AFT Position)

MODE SW - Auto

Vacuum Valve SW - Close

Not Performed: _____

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76-143 OTC ASP

SEP 1 Bypass SW - OFF
SEP 2 Bypass SW - OFF
Fan SEP SW - OFF
Hose Block - SEP 1
Compactor Angle = <33 Degrees (0-10 PCT)

Stow Urinal Hose in launch position (stowed along left side of WCS and secured using velcro).

***** End of Panel WCS *****

***** End of Waste Management Station Switch List *****

Panel MO10W

76-144 OTC ASP

PANEL MO10W

14.7 PSI CABIN REG INLET

SYS 1 VLV - CLOSE

SYS 2 VLV - CLOSE

SYS 1 PPO₂ CONTR SW - NORM

SYS 2 PPO₂ CONTR SW - NORM

O₂ REG INLET

SYS 1 VLV - CLOSE

SYS 2 VLV - CLOSE

H₂O TK N₂ REG INLET

SYS 1 VLV - OPEN

SYS 2 VLV - OPEN

PAYLOAD N₂ SUPPLY

SYS 1 VLV - CLOSE

SYS 2 VLV - CLOSE

O₂ EMER VLV - CLOSE

N₂ XOVER VLV - CLOSE

H₂O TK N₂ ISOL

SYS 1 VLV - OPEN

SYS 2 VLV - OPEN

PAYLOAD O₂

SYS 1 VLV - CLOSE

SYS 2 VLV - CLOSE

***** End of Panel MO10W *****

***** End of Middeck Switch List *****

Table 76-1 - Switches Repositioned During Ascent Checklist			
Panel	Switch Nomenclature	System	Position Found In

*** End of Operation 76 ***

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OPERATION 77 Reserved

Shop: NA

Cntrl Rm Console: NA

OPR: NA

Zone: NA

Hazard (Y/N): N

Duration (Hrs): NA

*** End of Operation 77 ***

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OPERATION 78 Reserved

Shop: NA
Cntrl Rm Console: NA
OPR: NA
Zone: NA
Hazard (Y/N): N
Duration (Hrs): NA

***** End of Operation 78 *****

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OPERATION 79 Pre-Ascent Switch Lists

Shop: **NA**

Cntrl Rm Console: **NA**

OPR: **TCO**

Zone: **121, 122**

Hazard (Y/N): **N**

Duration (Hrs): **0.5**

79-1 NTD PTC 232

Perform Pre-Ascent Switch Lists.

NOTE ASP, SCO, or CDR may be used to perform the Pre-Ascent Switch List.
--

79-2 PTC OTC 132

Request _____ support on OIS Channel 134 and perform Pre-Ascent Switch List.

NOTE

Perform the following three steps for the STS-135 mission only.

79-3

PTC CDR

PANEL L12U (SSP-1)

VERIFY ALL TB'S ARE BP

S1 SW - (CENTER)	L12US01
S2 SW - (CENTER)	L12US02
APCU 1 CONV SW - OFF	L12US03
APCU 1 OUTPUT RLY SW - OPEN	L12US04
S5 SW - (CENTER)	L12US05
APCU 2 CONV SW - OFF	L12US06
APCU 2 OUTPUT RLY SW - OPEN	L12US07
SW PWR 1 CB2 - OPEN	L12UCB2
PDIP 1 PWR 2/KUBAND RLY CB 1 - OPEN	L12UCB1
MPLM CHAN 1 HTR PWR SW - OFF	L12US08
S9 SW - (CENTER)	L12US09
S10 SW - (DOWN)	L12US10
MPLM CHAN 2 HTR PWR SW - OFF	L12US11
S12 SW - (CENTER)	L12US12
S13 SW - (CENTER)	L12US13
S14 SW - (CENTER)	L12US14
TCS PWR SW - OFF	L12US15
S16 SW - (DOWN)	L12US16
PSSC DEPLOY SW - (CENTER)	L12US17
PSSC PRE-ARM SW - SAFE	L12US18
S19 SW - (DOWN)	L12US19
SW PWR 2 CB4 - OPEN	L12UCB4
X1/X2 SW PDIP 1 PWR 1 CB3 - OPEN	L12UCB3
ODS CONN MATE X1 TLM PWR SW - OFF	L12US20
S21 SW - (CENTER)	L12US21
ODS CONN MATE X2 TLM PWR SW - OFF	L12US22
PSSC ARM SW - SAFE	L12US23
OIU PWR SW - OFF	L12US24

Not Performed: _____

79-4 PTC CDR

PANEL L12L (SSP-2)

VERIFY ALL TB'S BP

S1 SW - (CENTER)	L12LS01
S2 SW - (CENTER)	L12LS02
MPLM KEEL CAM PWR SW - OFF	L12LS03
MPLM KEEL CAM HTR/ILLUM PWR SW - OFF	L12LS04
S5 SW - (CENTER)	L12LS05
S6 SW - (DOWN)	L12LS06
S7 SW - (DOWN)	L12LS07
SW PWR 3 CB - OPEN	L12LCB2
PDIP 2 PWR 2 MPLM RLY CB1 - OPEN	L12LCB1
S8 SW - (DOWN)	L12LS08
S9 SW - (CENTER)	L12LS09
TRIDAR PWR SW - OFF	L12LS10
S11 SW - (DOWN)	L12LS11
C/L CAM PWR SW - OFF	L12LS12
S13 SW - (CENTER)	L12LS13
S14 SW - (CENTER)	L12LS14
S15 SW - (DOWN)	L12LS15
S16 SW - (DOWN)	L12LS16
S17 SW - (CENTER)	L12LS17
S18 SW - (DOWN)	L12LS18
S19 SW - (DOWN)	L12LS19
CB4 - OPEN	L12LCB4
PDIP 2 PWR 1 CB3 - OPEN	L12LCB3
S20 SW - (DOWN)	L12LS20
S21 SW - (CENTER)	L12LS21
S22 SW - (DOWN)	L12LS22
S23 SW - (DOWN)	L12LS23
S24 SW - (CENTER)	L12LS24

Not Performed: _____

79-5 CPLE ASP

IF PAYLOAD DATA INTERFACE PANEL IS INSTALLED ON
L12L,

THEN PERFORM:

PANEL L12L (PDIP #1)

PAYLOAD DATA INTERFACE PANEL

Ku BAND RATE SW - OFF
DC POWER 1 SW - OFF
DC POWER 2 SW - OFF

Not Performed: _____

79-6 PTC CDR

PANEL L11U (PDIP #2)

IF PAYLOAD DATA INTERFACE PANEL IS INSTALLED ON
L11U AND MPLM DATA OVERLAY INSTALLED,

THEN PERFORM:

PAYLOAD DATA INTERFACE PANEL

MPLM 1553 DATA SW - OIU (CENTER)
DC POWER 1 SW - OFF
DC POWER 2 SW - OFF

Not Performed: _____

79-7 PTC CDR

PANEL L11U (PDIP #2)

IF PAYLOAD DATA INTERFACE PANEL IS INSTALLED ON
L11U AND T-0/OIU/OIU OVERLAY INSTALLED,

THEN PERFORM:

PAYLOAD DATA INTERFACE PANEL
T-0/OIU/OIU SW - OIU (CENTER)
DC POWER 1 SW - OFF
DC POWER 2 SW - OFF

Not Performed: _____

79-8 PTC

(ASP, SCO or CDR) - Support released from payload Pre-Ascent Switch
List support.

Return to command channel.

79-9 PTC NTD 232

Pre-Ascent Switch List for payloads complete.

*** End of Operation 79 ***

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OPERATION 80 Switchguard Installation/Verification

Shop: **FWD**

Cntrl Rm Console: **NA**

OPR: **TCO**

Zone: **121, 122**

Hazard (Y/N): **N**

Duration (Hrs): **1.0**

NOTE

The intent of this operation is to install, or verify installed, the guards on the Orbiter switches and circuit breakers. Some guards may be on from previous testing or Scrub operations. This operation to be performed at OTC option to support contingency operations (i.e., Scrub post-test secure).

Operation Not Performed: _____

80-4

PANEL O7

1. SWITCHGUARD G070-700919-001
ON AFT LEFT RCS - HE PRESS A SWITCH.
2. SWITCHGUARD G070-700919-001
ON AFT LEFT RCS - HE PRESS B SWITCH.
3. SWITCHGUARD G070-700919-001
ON AFT RIGHT RCS - HE PRESS A SWITCH.
4. SWITCHGUARD G070-700919-001
ON AFT RIGHT RCS - HE PRESS B SWITCH.
5. SWITCHGUARD G070-700919-001
ON AFT LEFT RCS - TANK ISOL 1/2 SWITCH.
6. SWITCHGUARD G070-700930-001
ON AFT LEFT RCS - TANK ISOL
3/4/5 A AND B SWITCHES.
7. SWITCHGUARD G070-700919-001
ON AFT RIGHT RCS - TANK ISOL 1/2 SWITCH.
8. SWITCHGUARD G070-700930-001
ON AFT RIGHT RCS - TANK ISOL
3/4/5 A AND B SWITCHES.
9. MULTIPLE SWITCHGUARD G070-700935-001
ON AFT LEFT RCS - MANIFOLD ISOL 1, 2, 3, 4,
5 SWITCHES.
10. MULTIPLE SWITCHGUARD G070-700935-001
ON AFT RIGHT RCS - MANIFOLD ISOL 1, 2, 3,
4, 5 SWITCHES.
11. SWITCHGUARD G070-700919-001
ON AFT LEFT RCS - CROSSFEED 1/2 SWITCH.
12. SWITCHGUARD G070-700919-001
ON AFT LEFT RCS - CROSSFEED 3/4/5 SWITCH.
13. SWITCHGUARD G070-700919-001
ON AFT RIGHT RCS - CROSSFEED 1/2 SWITCH.
14. SWITCHGUARD G070-700919-001
ON AFT RIGHT RCS - CROSSFEED 3/4/5 SWITCH.

80-5 PANEL 08

1. SWITCHGUARD G070-700930-001
 ON OMS KIT - HE PRESS/VAPOR
 ISOL A AND B SWITCHES.
2. SWITCHGUARD G070-700930-001
 ON LEFT OMS - HE PRESS/VAPOR
 ISOL A AND B SWITCHES.
3. SWITCHGUARD G070-700930-001
 ON RIGHT OMS - HE PRESS/VAPOR
 ISOL A AND B SWITCHES.
4. SWITCHGUARD G070-700930-001
 ON OMS KIT - TANK ISOL A AND B SWITHCES.
5. SWITCHGUARD G070-700930-001
 ON LEFT OMS - TANK ISOL A AND B SWITCHES.
6. SWITCHGUARD G070-700930-001
 ON RIGHT OMS - TANK ISOL A AND B SWITCHES.
7. SWITCHGUARD G070-700930-001
 ON LEFT OMS - CROSSFEED A AND B SWITCHES.
8. SWITCHGUARD G070-700930-001
 ON RIGHT OMS - CROSSFEED A AND B SWITCHES.
9. SWITCHGUARD G070-700919-001
 ON FWD RCS - HE PRESS A SWITCH.
10. SWITCHGUARD G070-700919-001
 ON FWD RCS - HE PRESS B SWITCH.
11. SWITCHGUARD G070-700919-001
 ON FWD RCS - TANK ISOL 1/2 SWITCH.
12. SWITCHGUARD G070-700919-001
 ON FWD RCS - TANK ISOL 3/4/5 SWITCH.
13. MULTIPLE SWITCHGUARD G070-700935-001
 ON FWD RCS - MANIFOLD ISOL 1, 2, 3, 4, 5
 SWITCHES.

T: _____

NOTE

In the following three steps, TACAN switchguards will be installed for OV103 and OV104.

80-6

PERFORM THE FOLLOWING CB GUARD INSTALLATION:
PANEL O14

MN A
ROW C

CB GUARD G070-700406-001 ON TACAN 1 CB
(OV-103/104)

Not Performed: _____

MN A
ROW C

INSTALL G070-700406-001 SWITCHGUARD
ON CRYO O₂ HTR TK 1 SNSR 1 CB

MN A
ROW E

1. CB GUARD G070-700406-001 ON RADAR ALTM 1 CB.
2. CB GUARD G070-700406-001 ON MLS 1 CB.

ROW F

MULTIPLE SWITCHGUARD G070-700923-001
ON RJDA 1A, 2A, RJDF 1B DRIVERS AND L OMS ENG VLV
SWITCHES (LOCK AND KEY).

T:_____

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80-7 **PERFORM** THE FOLLOWING CB GUARD INSTALLATION:
PANEL O15

MN B
ROW C

CB GUARD G070-700406-001 ON TACAN 2 CB
(OV-103/104)

Not Performed: _____

MN B
ROW C

INSTALL G070-700406-001 SWITCHGUARD
ON CRYO O₂ HTR TK 2 SNSR 2 CB.

MN B
ROW E

1. CB GUARD G070-700406-001 ON RADAR ALTM 2 CB.
2. CB GUARD G070-700406-001 ON MLS 2.

ROW F

MULTIPLE SWITCHGUARD G070-924-001
ON RJDA 1B DRIVER AND RJDF 1A DRIVER SWITCHES
(LOCK AND KEY).

T: _____

80-8 **PERFORM THE FOLLOWING CB GUARD INSTALLATION:
PANEL 016**

MN C
ROW C

CB GUARD G070-700406-001 ON TACAN 3 CB
(OV-103/104)

Not Performed: _____

MN C
ROW C
CRYO O₂ HTR

1. **INSTALL** G070-700406-001 SWITCHGUARD
 ON CRYO O₂ HTR TK 1 SNSR 2 CB.
2. **INSTALL** G070-700406-001 SWITCHGUARD
 ON CRYO O₂ HTR TK 2 SNSR 1 CB.

MN C
ROW E

CB GUARD G070-700406-001 ON MLS 3 CB.

ROW F

1. **INSTALL** MULTIPLE SWITCHGUARD G070-700925-001
 ON RJDA 2B DRIVER, RJDF 2A DRIVER AND
 RJDF 2B DRIVER SWITCHES (LOCK AND KEY).
2. **INSTALL** SWITCHGUARD G070-700919-001
 ON R OMS ENG VLV SWITCH.
3. **INSTALL** SWITCHGUARD G070-700934-002
 ON RJD MANF L5/F5/R5 DRIVER SWITCH
 (LOCK AND KEY).

T: _____

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80-9

PANEL R1

ESS BUS SOURCE

1. G070-700919-001 SWITCHGUARD ON FC1 SW
2. G070-700919-001 SWITCHGUARD ON FC2 SW
3. G070-700919-001 SWITCHGUARD ON FC3 SW

T: _____

80-10 CFCP PLT 153

PANEL R1

<p>NOTE Use switchguard G070-700919-001 for the following 12 substeps.</p>

VERIFY FOLLOWING SWITCHES OFF, THEN:

1. **INSTALL** SWITCHGUARD ON O₂ TK 1 HEATERS A SW.
2. **INSTALL** SWITCHGUARD ON O₂ TK 1 HEATERS B SW.
3. **INSTALL** SWITCHGUARD ON O₂ TK 2 HEATERS A SW.
4. **INSTALL** SWITCHGUARD ON O₂ TK 2 HEATERS B SW.
5. **INSTALL** SWITCHGUARD ON O₂ TK 3 HEATERS A SW.
6. **INSTALL** SWITCHGUARD ON O₂ TK 3 HEATERS B SW.
7. **INSTALL** SWITCHGUARD ON H₂ TK 1 HEATERS A SW.
8. **INSTALL** SWITCHGUARD ON H₂ TK 1 HEATERS B SW.
9. **INSTALL** SWITCHGUARD ON H₂ TK 2 HEATERS A SW.
10. **INSTALL** SWITCHGUARD ON H₂ TK 2 HEATERS B SW.
11. **INSTALL** SWITCHGUARD ON H₂ TK 3 HEATERS A SW.
12. **INSTALL** SWITCHGUARD ON H₂ TK 3 HEATERS B SW.

T:_____

80-11 **PANEL R2**

1. SWITCHGUARD G070-700903-001
 ON APU OPERATE SWITCHES.
2. SWITCHGUARD G070-700919-001
 ON HYD CIRC PUMP 1 SWITCH.
3. SWITCHGUARD G070-700904-001
 ON HYD CIRC PUMP 2, 3 SWITCHES.
4. SWITCHGUARD G070-700920-001
 ON APU 1 FUEL TK VLV SWITCH.
5. SWITCHGUARD G070-700905-001
 ON APU 2, 3 FUEL TK VLV SWITCHES.
6. SWITCHGUARD G070-700920-001
 ON ET UMBILICAL DOOR MODE SWITCH.

T:_____

80-12 **PANEL R4**

SWITCHGUARD G070-700922-001
ON LG HYD ISOL VLV 1, 2, 3 SWITCHES.

T:_____

80-13 **PANEL A1R**

SWITCHGUARD G070-700919-001
ON S-BAND FM POWER SWITCH.

T:_____

80-14 **PANEL A1L**

1. SWITCHGUARD G070-700919-001
 ON S-BAND PM XPNDR SWITCH.
2. SWITCHGUARD G070-700919-001
 ON S-BAND PAYLOAD POWER SYSTEM SWITCH.

T:_____

80-15 **PANEL A7**

1. SWITCHGUARD G070-700919-001
 ON PAYLOAD BAY FLOOD AFT STBD SWITCH.
2. SWITCHGUARD G070-700919-001
 ON PAYLOAD BAY FLOOD AFT PORT SWITCH.
3. SWITCHGUARD G070-700919-001
 ON PAYLOAD BAY FLOOD MID STBD SWITCH.
4. SWITCHGUARD G070-700919-001
 ON PAYLOAD BAY FLOOD MID PORT SWITCH.
5. SWITCHGUARD G070-700919-001
 ON PAYLOAD BAY FLOOD FWD STBD SWITCH.
6. SWITCHGUARD G070-700919-001
 ON PAYLOAD BAY FLOOD FWD PORT SWITCH.
7. SWITCHGUARD G070-700919-001
 ON PAYLOAD BAY FLOOD DOCKING SWITCH.
8. SWITCHGUARD G070-700919-001
 ON PAYLOAD BAY FLOOD FWD BHD SWITCH.

T:_____

80-16 CFCP PS1 153

PANEL A11

1. SWITCHGUARD G070-700926-001
ON O₂ CRYO TANK 4 HEATERS A, B SWITCHES.
2. SWITCHGUARD G070-700926-001
ON H₂ CRYO TANK 4 HEATERS A, B SWITCHES.

T:_____

80-17 CFCP PS1 153

PANEL A15

Verify

IF G070-300091-001 Panel guard is available,

THEN Install G070-300091-001 Panel guard over Panel A15

ELSE Install switchguards.

1. SWITCHGUARD G070-700926-001
ON O₂ CRYO TK 5 HTRS A, B SWITCHES.
2. SWITCHGUARD G070-700926-001
ON H₂ CRYO TK 5 HTRS A, B SWITCHES.

T:_____

80-18 PANEL ML86B

ROW D

G070-700919-001 CB GUARD
ON MN A PYRO JETT SYS A KU ANT CB

G070-700919-001 CB GUARD
ON MN B PYRO JETT SYS A PORT RMS CB

G070-700919-001 CB GUARD
ON MN C PYRO JETT SYS B KU ANT CB

G070-700919-001 CB GUARD
ON MN C PYRO JETT SYS B PORT RMS CB

ROW F

MN A

INSTALL G070-700406-001 SWITCHGUARD
ON CRYO O₂ HTR TK 3 SNSR 1 CB.

IF TK 5 IS INSTALLED,

THEN INSTALL G070-700406-001 SWITCHGUARD
ON CRYO O₂ HTR TK 5 SNSR 1 CB.

Not Performed: _____

MN B

CRYO O₂ HTR

INSTALL G070-700406-001 SWITCHGUARD
ON CRYO O₂ HTR TK 3 SNSR 2 CB.

INSTALL G070-700406-001 SWITCHGUARD
ON CRYO O₂ HTR TK 4 SNSR 1 CB.

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OMI S0007.400 A23
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MN C
CRYO O₂ HTR

INSTALL G070-700406-001 SWITCHGUARD
ON CRYO O₂ HTR TK 4 SNSR 2 CB.

IF TK 5 IS INSTALLED,

THEN INSTALL G070-700406-001 SWITCHGUARD
ON CRYO O₂ HTR TK 5 SNSR 2 CB.

Not Performed:_____

T:_____

80-19 OTC CDR 132

PANEL C2

INSTALL TAGOUT "IDP/CRT PWR SW MUST REMAIN ON FOR
30 SECONDS" ON IDP/CRT1, 2 AND 3 SWITCHES.

T:_____

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80-20 OTC CDR 132

PANEL R11

INSTALL TAGOUT "IDP/CRT PWR SW MUST REMAIN ON FOR
30 SECONDS" ON IDP/CRT4.

T:_____

80-21 CDR OTC 132
PLT
MS1

Switchguard Installation/Verification complete.

T:_____

*** End of Operation 80 ***

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OPERATION 81 ET/Orbiter Plate Gap Transducer Evaluation

Shop: **MPS**

Cntrl Rm Console: **C4, C6**

OPR: **MPS**

Zone: **300**

Hazard (Y/N): **N**

Duration (Hrs): **1.0**

NOTE

This is a contingency operation to be performed at CMPS Engineering direction for pre- and post cryo loading evaluation of the plate gap pressure transducers. This operation will evaluate the plate gap pressure transducers by cycling the aft fuselage vent doors and varying the internal pressure of the aft fuselage.

Operation Not Performed: _____

NOTE

Completion of this operation satisfies noted requirement.

OMRS S00E00.583

81-1 CMPS OTC 132

Perform the following:

1. **Request** permission to perform Orbiter/ET Delta P measurement test.
Length of test - 15 minutes.
2. Request CPVD on 166 to support Vent Door Cycling Operations for Orbiter/ET Delta P Transducer Evaluation.

81-2 CMPS OTC 132

Verify the following:

1. **Verify** no rain at Pad _____
2. RSS is retracted.
3. S0007 Ascent Switch List is complete.

81-3 **CMPS**

Verify that the LH2 Orbiter/ET plate gap purge is active.

81-4 **CMPS**

Verify conditions from the previous three steps are complete prior to continuing with the Cryo ET/Orbiter Plate Gap Delta P Transducer Evaluation.

81-6 CMPS CPVD 168

VAM65A (PG-B)

PERFORM THE FOLLOWING PRIOR TO CYCLING VENT DOORS:

1. **VERIFY** NO RSYS MESSAGES DISPLAYED AT
BOTTOM OF CRT OR REQUEST TPE TRANSFER RSYS
TO C6.
2. **VERIFY** DOWNLINK NUMBER IS DISPLAYED IN
GREEN.
3. **VERIFY** DOWNLIST NUMBER IS DISPLAYED IN
GREEN.
4. **VERIFY** LDB ARROW UP GREEN.
5. **STATUS** VENT DOOR COMMAND FDS AS FOLLOWS:
PFPK4 - PRESS ONCE
6. **VERIFY** MESSAGE "CMD STATUS COMPLETE, NO
CMD FD'S ARE ON" IS DISPLAYED AT BOTTOM-
CENTER OF VAM65A, PG-B, AFTER GREEN LIGHT
ON PFPK4 GOES OFF.
7. **VERIFY** PFP3 READS "DISABL 1&2, 8&9 RCL."

81-7 CMPS CPVD 168

CONSOLE KYBD VAM65A (PG-B)

CONFIGURE VENT DOORS 8 & 9 FOR START OF TEST:

1. **IF** RH VENT DOORS 8 & 9 ARE NOT IN PURGE POSITION,
THEN POSITION RH VENT DOORS 8 & 9 TO PURGE POSITION USING CURSOR/KEYBOARD CONTROL.

Not Performed: _____
SS1

2. CRT
VERIFY LH AND RH VENT DOORS 8 & 9 IN PURGE CONFIGURATION.
3. **RECORD** LEEWARD VENT DOORS 8 & 9

(LEFT OR RIGHT): _____
4. **NOTIFY** CMPS THAT VENT DOORS ARE CONFIGURED FOR START OF TEST.

81-8

CMPS

CRT (C4)
DMON - PRESS
DMON <FD> FOR APPLICABLE FD'S LISTED IN THE PLATE
GAP TRANSDUCER FD TABLE
<XMIT CMD> - PRESS

READ AND RECORD THE VALUES OF LO₂ ET/ORB PLATE GAP
TRANSDUCER (X.XX)

LO₂ #1 LOW (V41P1987H) : _____ PSID (BD)

LO₂ #1 HIGH (V41P1988H) : _____ PSID (BD)

LO₂ #2 LOW (V41P1989H) : _____ PSID (BD)

LO₂ #2 HIGH (V41P1990H) : _____ PSID (BD)

READ AND RECORD THE VALUES OF LH₂ ET/ORB PLATE GAP
TRANSDUCER (X.XX)

LH₂ #1 LOW: (V41P1977H) _____ PSID (BD)

LH₂ #1 HIGH: (V41P1978H) _____ PSID (BD)

LH₂ #2 LOW: (V41P1979H) _____ PSID (BD)

LH₂ #2 HIGH: (V41P1980H) _____ PSID (BD)

81-9

CMPS CPVD 168

CONSOLE KYBD VAM65A (PG-B)

CYCLE LEEWARD VENT DOORS 8 & 9 FROM PURGE TO OPEN
USING CURSOR/KEYBOARD CONTROL.

REPORT COMPLETION.

81-10

CMPS

CRT (DMON PAGE)

READ AND RECORD THE VALUES OF LO₂ ET/ORB PLATE GAP
TRANSDUCER (X.XX)

LO₂ #1 LOW (V41P1987) : _____ PSID (BD)

LO₂ #1 HIGH (V41P1988H) : _____ PSID (BD)

LO₂ #2 LOW (V41P1989H) : _____ PSID (BD)

LO₂ #2 HIGH (V41P1990H) : _____ PSID (BD)

READ AND RECORD THE VALUES OF LH₂ ET/ORB PLATE GAP
TRANSDUCER (X.XX)

LH₂ #1 LOW (V41P1977H) : _____ PSID (BD)

LH₂ #1 HIGH (V41P1978H) : _____ PSID (BD)

LH₂ #2 LOW (V41P1979H) : _____ PSID (BD)

LH₂ #2 HIGH (V41P1980H) : _____ PSID (BD)

81-11

CMPS CPVD 168

VAM65A (PG-B)

CYCLE LEEWARD VENT DOORS 8 & 9 FROM OPEN TO PURGE
USING CURSOR/KEYBOARD CONTROL.

REPORT COMPLETION.

81-12

CMPS

CRT (DMON PAGE)

READ AND RECORD THE VALUES OF LO₂ ET/ORB PLATE GAP
TRANSDUCER (X.XX)

LO₂ #1 LOW (V41P1987H) : _____ PSID (BD)

LO₂ #1 HIGH (V41P1988H) : _____ PSID (BD)

LO₂ #2 LOW (V41P1989H) : _____ PSID (BD)

LO₂ #2 HIGH (V41P1990H) : _____ PSID (BD)

READ AND RECORD THE VALUES OF LH₂ ET/ORB PLATE GAP
TRANSDUCER (X.XX)

LH₂ #1 LOW (V41P1977H) : _____ PSID (BD)

LH₂ #1 HIGH (V41P1978H) : _____ PSID (BD)

LH₂ #2 LOW (V41P1979H) : _____ PSID (BD)

LH₂ #2 HIGH (V41P1980H) : _____ PSID (BD)

81-13 CMPS CPVD 168

Return Pad ECS to pre-test configuration as follows:

1. **IF** PLB purge circuit flow rate was adjusted for this test,

THEN set PLB purge circuit flow rate to pre-test set point and tolerance per OMI [V1122.004](#) , Pad ECS FR Console Monitoring and Routine Adjustments. (Refer to payload OMRS for specific mission requirements and limitations.)

Not Performed: _____
SS1

2. **IF** AFT purge circuit flow rate was adjusted for this test,

THEN set AFT purge circuit flow rate to pre-test set point and tolerance per OMI [V1122.004](#) , Pad ECS FR Console Monitoring and Routine Adjustments.

Not Performed: _____
SS2

3. **Notify** CMPS that Pad ECS Purge Circuits No. 2 and 3 are returned to pre-test configurations.

81-14 CPVD CMPS 168

PLB and AFT ECS purge circuits are in pre-test configuration.

81-15 CMPS CPVD 168

CONSOLE KYBD VAM65A (PG-B)

IF VENT DOORS 8 & 9 ARE REQUIRED TO BE
RECONFIGURED TO WEATHER PROTECTION POSITION.

THEN CYCLE RIGHT-HAND VENT DOORS 8 & 9 FROM PURGE
TO CLOSED USING CURSOR/KEYBOARD CONTROL.

REPORT COMPLETION.

Not Performed: _____

81-16 CMPS

Completion of this operation satisfies noted requirement.

OMRSD [S00E00.583](#)

81-17 CMPS OTC 132

ET/Orbiter Plate Gap Pressure Transducers Evaluation is complete.

*** End of Operation 81 ***

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OPERATION 82 ET Camera RF Open Loop Functional Test

Shop: **EEP**

Cntrl Rm Console: **C10**

OPR: **EEP**

Zone: **NA**

Hazard (Y/N): **N**

Duration (Hrs): **0.5**

NOTE

Do not perform this operation for a Scrub Turnaround less than 72 hours.

Operation Not Performed: _____

82-1

CPWR

IF CRT (TW495) 23D120
AND/OR 23D120X BUSSES ARE OFF,

THEN PERFORM:

CURSOR CNTL (TW495)
23D120 BUS -
23D120X BUS -
XMIT CURSOR KEY - PRESS

VERIFY

23D120 BUS ON
23D120X BUS ON

Not Performed: _____

82-2

CPWR

CURSOR CNTL (SDC01)

ET OPTIONS
ET/SRB CAMERA
XMIT CURSOR KEY - PRESS

VERIFY TD496 DISPLAYED

NOTE

The following step inhibits the 5-second delay logic required for SRB Camera functions.

82-3

CPWR

CURSOR CNTL (TD496)

SRB CAMERAS
SRB UPDATE
XMIT CURSOR KEY - PRESS

CRT (TD496)

VERIFY SRB UPDATE DISABLED

82-4

CPWR

CURSOR CNTL (TD496)

ET CAMERA COMMANDS
PRI
PS ON
XMIT CURSOR KEY - PRESS

SEC
PS ON
XMIT CURSOR KEY - PRESS

CRT (TD496)
VERIFY
PRI
PS IND - ON

SEC
PS IND - ON

82-5

CPWR

CURSOR CNTL (TD496)

ET CAMERA COMMANDS
PRI
PS OFF
XMIT CURSOR KEY - PRESS

SEC
PS OFF
XMIT CURSOR KEY - PRESS

CRT (TD496)
VERIFY
PRI
PS IND - OFF

SEC
PS IND - OFF

NOTE

Noted requirements are satisfied by the following series of steps.

OMRS S00FA0.110

82-6

CPWR

CURSOR CNTL (TD496)

ET CAMERA SEQUENCERS
FUNC TEST
XMIT CURSOR KEY - PRESS

VERIFY TD497 DISPLAYED

82-7

CPWR

CRT (TD497)

MESSAGES & PROMPTS
VERIFY THE FOLLOWING MESSAGE/PROMPT (YELLOW)
<JTOY> BEGINNING FUNCTIONAL TEST
SELECT CONTINUE OR TERMINATE

CURSOR CNTL (TD497)
CONTINUE (INVERT CYAN)
XMIT CURSOR KEY - PRESS

82-8

CPWR

CRT (TD497)
FOLLOW PROMPTS

82-9

CPWR

CRT (TD497)

SEQUENCER

VERIFY

COMPLETE INTIALIZATION

COMPLETE PRIMARY CAMERA TEST

COMPLETE SECONDARY CAMERA TEST

COMPLETE TERMINATION

MESSAGES & PROMPTS

VERIFY THE FOLLOWING MESSAGE (YELLOW)

<JTOY> ET CAMERA TERMINATION COMPLETE

RECORD ET CAMERA TOTAL POWER-ON TIME: _____

82-10

Noted requirements are complete.

OMRSD [S00FA0.110](#)

82-11

CPWR

CONSOLE KYBD (TD497)

TERM

XMIT CURSOR KEY - PRESS

CRT (TD497)

VERIFY TD497 TERMINATES AND SDC01 IS DISPLAYED

82-12

CPWR TBC 136

ET Camera RF Open Loop Functional Test complete.

*** End of Operation **82** ***

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OPERATION 83 Reserved

Shop: NA

Cntrl Rm Console: NA

OPR: NA

Zone: NA

Hazard (Y/N): NA

Duration (Hrs): NA

***** End of Operation 83 *****

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OPERATION 84 Reserved

Shop: NA

Cntrl Rm Console: NA

OPR: NA

Zone: NA

Hazard (Y/N): NA

Duration (Hrs): NA

*** End of Operation **84** ***

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**OMI S0007.400 A23
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OPERATION 85 Reserved

Shop: NA

Cntrl Rm Console: NA

OPR: NA

Zone: NA

Hazard (Y/N): NA

Duration (Hrs): NA

***** End of Operation 85 *****

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APPROVED

OMI S0007.400 A23
APPROVED

OPERATION 86 Reserved

Shop: NA

Cntrl Rm Console: NA

OPR: NA

Zone: NA

Hazard (Y/N): NA

Duration (Hrs): NA

*** End of Operation 86 ***

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OMI S0007.400 A23
APPROVED

OPERATION 87 Reserved

Shop: NA

Cntrl Rm Console: NA

OPR: NA

Zone: NA

Hazard (Y/N): NA

Duration (Hrs): NA

***** End of Operation 87 *****

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APPROVED

OMI S0007.400 A23
APPROVED

OPERATION 88 Reserved

Shop: NA

Cntrl Rm Console: NA

OPR: NA

Zone: NA

Hazard (Y/N): NA

Duration (Hrs): NA

*** End of Operation 88 ***

**06-24-2011
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APPROVED

OMI S0007.400 A23
APPROVED

OPERATION 89 Reserved

Shop: NA

Cntrl Rm Console: NA

OPR: NA

Zone: NA

Hazard (Y/N): NA

Duration (Hrs): NA

***** End of Operation 89 *****

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OPERATION 90 Thermal Protection System Inspection

Shop: **TPS**
Cntrl Rm Console: **NA**
OPR: **TPS**
Zone: **NA**
Hazard (Y/N): **N**
Duration (Hrs): **8.0**

NOTE

Perform this operation if an on-Pad engine abort occurs and/or Firex system is activated.

Operation Not Performed: _____

NOTE

Noted requirements are satisfied by completion of this operation.

OMRS S00E00.033-A-1
OMRS S00E00.033-B-1
OMRS S00E00.033-C-1
OMRS S00E00.033-D-1
OMRS S00E00.033-E-1
OMRS S00E00.033-F-1
OMRS S00E00.033-G-1
OMRS S00E00.033-H-1
OMRS S00E00.033-I-1
OMRS S00E00.034-A-1
OMRS S00E00.034-B-1
OMRS S00E00.034-C-1
OMRS S00E00.034-D-1
OMRS S00E00.034-E-1
OMRS S00E00.034-F-1
OMRS S00E00.035-A-1
OMRS S00E00.035-B-1
OMRS S00E00.035-C-1

90-1

OTC
***PAD**

***PAD**
OTPS

132

Verify the following personnel on station or have been notified of upcoming inspection:

SPOC/NASA TPS Quality Inspection Team
SPOC/NASA TPS Engineering Team

NOTE

RSI that is AFT of the 1307 bulkhead is to be inspected per this OMI.

Inspect each area to the following criteria and type (macro/contamination) of inspection noted.

All steps may be worked out of sequence in support of this inspection.

A macro inspection is a walkaround inspection from three-to-five feet. Inspection distances may be increased to accommodate Orbiter configuration at Pad. Binoculars may be used where access is limited.

Utilize ML0601-0002 in conjunction with following criteria in support of inspection.

90-2 **Criteria**

Macro

1. Tile (HRSI/LRSI):

Document unacceptable chips, gouges, cracked, crushed or missing tile, or having missing coating with silica showing on HRSI/LRSI tile. No loose tiles as identified by highlighting (visual check at low incidence view angle) for evidence of excessive step. No damage to repairs.

2. FIB:

Document unacceptable OML surface and visible edges for cuts, tears, frayed areas and broken quilting, stitches in excess of spec allowances. Inspect for evidence of blanket joint gaps opening and evidence of out-of-tolerance steps developing. No missing or flaking coating, contamination and/or discoloration.

3. FRSI:

Document unacceptable cracked coating, butt joint separation, abnormal discoloration, embrittlement, tears, cuts or rips.

4. Silica plug:

Document unacceptable recession/protrusion from OML. No cracks and/or chips.

5. FRSI plug:

Document unacceptable protrusion above OML, plug shrinkage, missing plug (cavity), char at OML, or discoloration.

6. Pillow gap fillers and thermal barriers:

Document unacceptable open holes, tears or breaks of pillow gap fillers or thermal barriers. Minor surface abrasion or broken threads is acceptable. No missing gap fillers or thermal barriers or butt joint separation. Document loose or debonded gap fillers or thermal barriers as evident by abnormal protrusion. No excessive recession, protrusion or missing and/or overtemp coating. No evidence of thermal barrier crushing.

7. Thermal barrier RTV coating:
Document color change from black to dull gray.
8. RCC:
Document evidence of RCC burn through/coating chips.
9. Areas noted "Contamination" will be inspected for possible hydraulic oil spill or other contamination.
10. RSI surfaces:
Document evidence of contamination (i.e., hydraulic oil spill, etc.)
11. Rudder speed brake perimeter barrier seal:
Document evidence of cracks, breaks or unacceptable bends in the Inconel spring seal.
12. Conical seal:
Document evidence of chips, cracks, or gouges in conical seal.
13. RTV:
Document unacceptable RTV bubbling or charring.

90-3 Wing, Left-hand Lower

1. Lower wing, AFT of xo = 1307 (macro)

Qw: _____ N: _____
SS1
2. Lower inboard elevon (macro)

Qw: _____ N: _____
SS2
3. Lower outboard elevon (macro)

Qw: _____ N: _____
SS3
4. Elevon split sidewalls (macro)

Qw: _____ N: _____
SS4
5. Inboard/Elevon trailing edge and ends (macro)

Qw: _____ N: _____
SS5
6. Outboard elevon trailing edge and ends (macro)

Qw: _____ N: _____
SS6
7. RCC panel numbers 20, 21, 22 and associated T-seals.
(macro) (ref VC70-000004; 69-13, 69-14, 69-15)

Qw: _____ N: _____
SS7

90-4 Wing, Right-hand Lower

1. Lower wing AFT of xo = 1307 (macro)
Qw: _____ N: _____
SS1
2. Lower inboard elevon (macro)
Qw: _____ N: _____
SS2
3. Lower outboard elevon (macro)
Qw: _____ N: _____
SS3
4. Inboard/Elevon trailing edge and ends (macro)
Qw: _____ N: _____
SS4
5. Outboard/Elevon trailing edge and ends (macro)
Qw: _____ N: _____
SS5
6. Elevon split sidewalls (macro)
Qw: _____ N: _____
SS6
7. RCC panel numbers 20, 21, 22 and associated T-seals (macro)
(ref VC70-000004; 69-28, 69-29, 69-30)
Qw: _____ N: _____
SS7

90-5 Wing, Right-hand Upper

1. Upper wing AFT of xo = 1307 (macro)

Qw: _____ N: _____
SS1

2. Upper inboard elevon (macro)

Qw: _____ N: _____
SS2

3. Upper outboard elevon (macro)

Qw: _____ N: _____
SS3

90-6 Wing, Left-hand Upper

1. Upper wing AFT of xo = 1307 (macro)

Qw: _____ N: _____
SS1

2. Upper inboard elevon (macro)

Qw: _____ N: _____
SS2

3. Upper outboard elevon (macro)

Qw: _____ N: _____
SS3

9. RSI adjacent to flash evaporator topping vent duct
(lower AFT Fuselage right-hand side) (contamination)

Qw: _____ N: _____
SS9

10. RSI adjacent to MPS LO₂ relief vent
(lower AFT fuselage right-hand side) (contamination)

Qw: _____ N: _____
SS10

90-8 AFT Fuselage, Upper

1. Body flap (macro)

Qw: _____ N: _____
SS1

2. Base heat shield (macro)

Qw: _____ N: _____
SS2

90-9 AFT Fuselage, Right-hand Upper

Sidewall (macro)

Qw: _____ N: _____

90-10 AFT Fuselage, Left-hand Upper

Sidewall (macro)

Qw: _____ N: _____

90-11 **Right-hand Vertical Tail**

1. Vertical stabilizer (macro)

Qw: _____ N: _____
SS1

2. Rudder RSI (macro)

Qw: _____ N: _____
SS2

3. Leading edge (macro)

Qw: _____ N: _____
SS3

4. Rudder trailing edge and ends (macro)

Qw: _____ N: _____
SS4

5. Fin trailing edge and ends (macro)

Qw: _____ N: _____
SS5

6. Vertical stabilizer/AFT fuselage interface thermal barrier
(macro)

Qw: _____ N: _____
SS6

7. Speed brake (macro)

Qw: _____ N: _____
SS7

8. Rudder speed brake split line thermal barrier (macro)

Qw: _____ N: _____
SS8

9. IF speed brake is open,

THEN perform:
Rudder speed brake conical seal (macro)

Qw: _____ N: _____
SS9

Not Performed: _____
SS9

90-12 Left-hand Vertical Tail

1. Vertical stabilizer (macro)

Qw: _____ N: _____
SS1

2. Rudder RSI (macro)

Qw: _____ N: _____
SS2

3. Leading edge (macro)

Qw: _____ N: _____
SS3

4. Rudder trailing edge and ends (macro)

Qw: _____ N: _____
SS4

5. Fin trailing edge and ends (macro)

Qw: _____ N: _____
SS5

6. Vertical stabilizer/AFT fuselage interface thermal barrier
(macro)

Qw: _____ N: _____
SS6

7. Speed brake (macro)

Qw: _____ N: _____
SS7

8. Rudder speed brake split line thermal barrier (macro)

Qw: _____ N: _____
SS8

9. IF speed brake is open,

THEN perform:
Rudder speed brake perimeter barrier seal (macro)

Qw: _____ N: _____
SS9

Not Performed: _____
SS9

10. IF speed brake is open,

THEN perform:
Rudder speed brake conical seal (macro)

Qw: _____ N: _____
SS10

Not Performed: _____
SS10

90-13 OMS, Right-hand

1. Pod (macro)

Qw: _____ N: _____
SS1

2. RSI adjacent to APU exhaust (contamination)

Qw: _____ N: _____
SS2

3. RSI adjacent to OMS pod fuel and oxidizer relief ports
(contamination)

Qw: _____ N: _____
SS3

4. Right-hand OMS RCS RSI (macro)

Qw: _____ N: _____
SS4

5. Right-hand OMS RCS thruster interfacing tiles and thermal
barrier (macro)

Qw: _____ N: _____
SS5

6. Right-hand OMS pod, AFT fuselage interface (macro)

Qw: _____ N: _____
SS6

7. Right-hand OMS pod to base heat shield thermal barrier
(macro)

Qw: _____ N: _____
SS7

90-14 OMS, Left-hand

1. Pod (macro)

Qw: _____ N: _____
SS1

2. RSI adjacent to APU exhausts (contamination)

Qw: _____ N: _____
SS2

3. RSI adjacent to OMS pod fuel and oxidizer relief ports (contamination)

Qw: _____ N: _____
SS3

4. Left-hand OMS RCS RSI (macro)

Qw: _____ N: _____
SS4

5. Left-hand OMS RCS thruster interfacing tiles and thermal barriers (macro)

Qw: _____ N: _____
SS5

6. Left-hand OMS pod, AFT fuselage interface (macro)

Qw: _____ N: _____
SS6

7. Left-hand OMS pod to base heat shield thermal barrier (macro)

Qw: _____ N: _____
SS7

90-15 Completion of this operation satisfies the noted requirements.

OMRSD S00E00.033-A-1
OMRSD S00E00.033-B-1
OMRSD S00E00.033-C-1
OMRSD S00E00.033-D-1
OMRSD S00E00.033-E-1
OMRSD S00E00.033-F-1
OMRSD S00E00.033-G-1
OMRSD S00E00.033-H-1
OMRSD S00E00.033-I-1
OMRSD S00E00.034-A-1
OMRSD S00E00.034-B-1
OMRSD S00E00.034-C-1
OMRSD S00E00.034-D-1
OMRSD S00E00.034-E-1
OMRSD S00E00.034-F-1
OMRSD S00E00.035-A-1
OMRSD S00E00.035-B-1
OMRSD S00E00.035-C-1

90-16 **OTPS *PAD**
 ***PAD OTC 132**
 PQCG CMQC

Thermal Protection System Inspection complete.

***PAD: _____**

*** End of Operation 90 ***

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OPERATION 91 Engineering Inspection/Additional Micro-Inspection

Shop: **TPS**

Cntrl Rm Console: **NA**

OPR: **TPS**

Zone: **NA**

Hazard (Y/N): **N**

Duration (Hrs): **2.0**

NOTE

Perform this operation if an on-Pad engine abort occurs and/or Firex system is activated.

Operation Not Performed: _____

91-1 OTC *PAD 132
 *PAD CTPS

Verify that the following personnel are on station or notified of upcoming inspection and are available at regular work station:

SPOC/NASA TPS Engineering Team

NOTE

Criteria: TPS Engineering shall perform Walkdown Inspection of Orbiter to determine if areas in addition to those called for in Operation 90 - Thermal Protection System Inspection require additional inspection by Quality Inspection Team. Inspection shall be performed area by area. Requests for additional inspection shall be returned to Quality Inspection Team for processing.

91-2 Verification

1. Engineering Inspection complete.
 Engineering Supervisor _____

Or

 Lead Vehicle Engineer _____

2. **IF** additional Micro-Inspections required,
 THEN perform inspections.

 Engineering Supervisor _____

Or

 Lead Vehicle Engineer _____

Not Performed: _____

91-3 IF additional Micro-Inspections are required,

THEN verify all additional Micro-Inspections requested by Engineering complete.

Engineering Supervisor _____

Or

Lead Vehicle Engineer _____

Not Performed: _____

91-4 **CTPS** ***PAD**
 ***PAD** **OTC** **132**
 PQCG **CMQC**

Engineering Inspection/Additional Micro-Inspection complete.

***PAD:** _____

*** End of Operation **91** ***

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OPERATION 92 Pole CES Assembly Lowering from 195-ft Level

Shop: **STM**
Cntrl Rm Console: **NA**
OPR: **STM**
Zone: **NA**
Hazard (Y/N): **Y**
Duration (Hrs): **1.0**

NOTE

Perform this operation if required by FCE Engineering for an Extended Scrub.

Operation Not Performed: _____

92-1 NTD STM 232
 *SCC
 *PSE NET 105
 PSTM NET 104
 GBHE

Perform Pole CES Assembly Lowering from 195-ft Level.

Support: [HESA](#)

92-2 GBHE STM NET 104
 STM NTD 232

Ready to proceed with pole CES lifting operation. Controlling 50-ft radius of lift area on Pad surface (southwest side) and 10-ft area on 195-ft level of FSS.

Support: [HESA](#)

92-3 GBHE

Verify mobile crane or aerial work platform rated load test is current.

Support: [HESA](#)

T: _____

92-4 STM GBHE NET 104

Perform safety inspection of the local control area and Egress route(s) from control area.

Verify no discrepancies which affect the operation and/or safe Egress from control area.

Date: _____

Support: [HESA](#)

TTL: _____

92-5 STM GBHE NET 104

Clear all nonessential personnel within 50-ft radius of lift area on Pad surface (southwest side) and 10-ft area on 195-ft level of FSS.

Support: [HESA](#)

T: _____

Essential Personnel		
	SPOC	NASA
Quality	1	
Safety	1	1
Engineer	1	1
Operator	1	
Lead Crane Ops	1	
Supervisor	1	
Rigger	2	

92-6 STM NTD 232
 PA

Attention on Pad ____: All nonessential personnel clear within 50-ft radius of lift on Pad surface and 10-ft area on 195-ft level of FSS for escape pole handling cart lift.

92-7 GBHE STM NET 104
 STM NTD 232
 NTD *SCC

Nonessential personnel have been cleared. 50-ft radius of lift area established on Pad surface (southwest side) and 10-ft area on 195-ft level of FSS for escape pole handling cart lift.

Request Safety concurrence to proceed.

Support: [HESA](#)

T: _____

92-8	*SCC	NTD	232
	NTD	STM	
	STM	GBHE	NET 104

You have Safety concurrence to proceed with escape pole lifting operation.

<p style="text-align: center;">WARNING</p> <p>The suspended load may fall during hoisting, rotation, raising or lowering. Personnel impacted by falling or moving hardware may suffer serious injury and/or loss of life.</p> <p>Wear hard hats and safety shoes/boots .</p> <p style="text-align: right;">WCLH003 11-14-2008</p>

92-9 GBHE

CSR-342
CSR-343

Locate mobile crane or aerial work platform to cleared area.

Support: HESA

T:_____

92-10 GBHE

Verify mobile crane or aerial work platform rated load test is current.

Support: HESA

T:_____

92-11 GBHE OOCS

Remove tiedowns securing PCES/cart on right side of ET vent arm, or at any other temp storage location, and move PCES/cart to west side of FSS on 195-ft level from where it will be lowered to Pad surface.

T: _____

92-12 Move Director, Crane Supervisor, or Engineer in charge:

Brief personnel on operational hazards that will be present and emergency steps. **Verify** personnel certified, equipped and ready to proceed.

Support: [HESA](#)

92-13 **Attach** (4 ea) shackles (500 lbs SWL min) to support legs on
SED38110336-301 pole handling cart.

Support: [HESA](#)

T: _____ Qv: _____

92-14 **Rig** pole handling cart for lifting by mobile crane or aerial work platform.

Support: [HESA](#)

T: _____ Qv: _____

92-15 [CSR-342](#)
[CSR-343](#)

Lower pole and handling cart from 195-ft level down to Pad surface using
mobile crane or aerial work platform and manual guidance.

Support: [HESA](#)

T: _____

92-16 **Remove** lifting sling from cart.

Support: [HESA](#)

T: _____

<p style="text-align: center;">NOTE Hazardous steps complete.</p>
--

92-17 GBHE STM NET 104
 STM NTD 232
 NTD *SCC

Escape pole lifting operation complete.

Request Safety concurrence to open control area for controlled work.

Support: [HESA](#)

T: _____

92-18 *SCC NTD 232
 NTD STM
 STM GBHE NET 104

You have Safety concurrence to open control area for controlled work.

92-19 GBHE OOCS

Transport PCES/Cart to flight kits area in VAB.

T: _____

92-20 GBHE STM NET 104

PCES/Cart Lowering complete. All support personnel are released.

Support: [HESA](#)

92-21 STM PSTM NET 104
 NTD 232
 PSOQ CMQC

Pole CES Assembly Lowering from 195-ft Level complete.

Support: [HESA](#)

(FAC) Qv: _____

*** End of Operation 92 ***

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OPERATION 93 Vehicle Fire Damage Inspection Post Abort

Shop: **PAD LEADER**
Cntrl Rm Console: **NA**
OPR: **PAD LEADER**
Zone: **NA**
Hazard (Y/N): **N**
Duration (Hrs): **2.0**

NOTE

Perform this operation if an on-Pad engine abort occurs.

Operation Not Performed: _____

93-1 OTC *PAD 132

Verify the following personnel on station or notified of upcoming inspection and are available at regular work station:

- *Pad Leader
- AFT Shop
- GSE Shop
- MLP Shop

93-2 *PAD ALL

Perform walkdown of vehicle external areas paying particular attention to vehicle AFT and T-0 umbilicals.

Look for any possible fire damage caused by the abort.

Record results:

93-3 *PAD

Verify Post Abort Vehicle Fire Damage Inspection complete.

OMRSD [S00E00.996](#)

*PAD: _____

93-4 *PAD OTC 132
PQCG CMQC

Vehicle Fire Damage Inspection Post Abort complete.

*PAD: _____

*** End of Operation 93 ***

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OPERATION 94 Equipment Return

Shop: **FWD**

Cntrl Rm Console: **NA**

OPR: **FWD**

Zone: **NA**

Hazard (Y/N): **N**

Duration (Hrs): **0.5**

NOTE

Do not perform this operation if a Scrub has been declared.

Operation Not Performed: _____

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OPERATION 95 Reserved - ET

Shop: NA
Cntrl Rm Console: NA
OPR: NA
Zone: NA
Hazard (Y/N): NA
Duration (Hrs): NA

***** End of Operation 95 *****

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OPERATION 96 Reserved - SRB

Shop: NA

Cntrl Rm Console: NA

OPR: NA

Zone: NA

Hazard (Y/N): NA

Duration (Hrs): NA

***** End of Operation 96 *****

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OPERATION 97 FCP Pump Motor Event Configuration

Shop: NA
Cntrl Rm Console: NA
OPR: NA
Zone: NA
Hazard (Y/N): NA
Duration (Hrs): NA

NOTE

The following operation will configure BMU system to record data in support of FCP pump motor event tracking. Recording will be terminated by direction of EPD for S0007 operations, S0018 lighting or other higher priority operations as per the Test Team direction.

97-1 OTC JRPS

Perform "FCP Pump Motor Event" configuration.

S0007.200 Step _____

97-2 JRPS

Perform/configure of EPD &C and supplemental measurements listed in Table 97-1 for recording of Fuel Cell pump motor events.

Table 97-1 EPDC, FM and OI Channelization (Event Monitor)		
Measurement	Description	BMU
Group 1 FCP 1		
V76C1540H	AC BUS 1 PH A Current	BM2-2
V76C1541H	AC BUS 1 PH B Current	BM2-3
V76C1542H	AC BUS 1 PH C Current	BM2-4
V76V1500H	AC BUS 1 PH A Volts	BM4-1
V76V1501H	AC BUS 1 PH B Volts	BM4-2
V76V1502H	AC BUS 1 PH C Volts	BM4-3
Group 2 FCP 2		
V76C1640H	AC BUS 2 PH A Current	BM1-1
V76C1641H	AC BUS 2 PH B Current	BM1-2
V76C1642H	AC BUS 2 PH C Current	BM1-3
V76V1600H	AC BUS 2 PH A Volts	BM4-4
V76V1601H	AC BUS 2 PH B Volts	BM3-1
V76V1602H	AC BUS 2 PH C Volts	BM3-2
Group 3 FCP 3		
V76C1740H	AC BUS 3 PH A Current	BM1-4
V76C1741H	AC BUS 3 PH B Current	BM1-5
V76C1742H	AC BUS 3 PH C Current	BM2-1
V76V1700H	AC BUS 3 PH A Volts	BM3-3
V76V1701H	AC BUS 3 PH B Volts	BM3-4
V76V1702H	AC BUS 3 PH C Volts	BM3-5

97-3 JRPS

Perform/configure of EPD&C and supplemental measurements listed in Table 97-2 for Neutronmeter recording and distribution to consoles C6/C10. Group 1-3 FDs are duplicates of Table 97-1.

Table 97-2 EPDC, FM and OI Channelization (Neutronmeter)		
Measurement	Description	BMU
Group 1 FCP 1		
V76C1540H	AC BUS 1 PH A Current	BM2-2
V76C1541H	AC BUS 1 PH B Current	BM2-3
V76C1542H	AC BUS 1 PH C Current	BM2-4
V76V1500H	AC BUS 1 PH A Volts	BM4-1
V76V1501H	AC BUS 1 PH B Volts	BM4-2
V76V1502H	AC BUS 1 PH C Volts	BM4-3
Group 2 FCP 2		
V76C1640H	AC BUS 2 PH A Current	BM1-1
V76C1641H	AC BUS 2 PH B Current	BM1-2
V76C1642H	AC BUS 2 PH C Current	BM1-3
V76V1600H	AC BUS 2 PH A Volts	BM4-4
V76V1601H	AC BUS 2 PH B Volts	BM3-1
V76V1602H	AC BUS 2 PH C Volts	BM3-2
Group 3 FCP 3		
V76C1740H	AC BUS 3 PH A Current	BM1-4
V76C1741H	AC BUS 3 PH B Current	BM1-5
V76C1742H	AC BUS 3 PH C Current	BM2-1
V76V1700H	AC BUS 3 PH A Volts	BM3-3
V76V1701H	AC BUS 3 PH B Volts	BM3-4
V76V1702H	AC BUS 3 PH C Volts	BM3-5

Table 97-2 EPDC, FM and OI Channelization (Neutrometer)		
Measurement	Description	BMU
Additional Data Channels		
V76V0100H	MAIN BUS A VOLTAGE	
V76V0200H	MAIN BUS B VOLTAGE	
V76V0300H	MAIN BUS C VOLTAGE	
V45V0114A1	FCP NO 1 H2 PUMP MTR CONDITION	
V45V0214A1	FCP NO 2 H2 PUMP MTR CONDITION	
V45V0314A1	FCP NO 3 H2 PUMP MTR CONDITION	
Support Channels (Derived Data)		
AC1 Channels		
V76V1500H_AVE	Running Avg V76V1500H	
V76V1501H_AVE	Running Avg V76V1501H	
V76V1502H_AVE	Running Avg V76V1502H	
AC1_Vazero	AC1 Φ A zero corrected	
AC1_Vbzero	AC1 Φ B zero corrected	
AC1_Vczero	AC1 Φ C zero corrected	
AC1_Vsum	AC1 phase sum	
AC1_Neutrometer	RMS value AC1 sum	
AC2 Channels		
V76V1600H_AVE	Running Avg V76V1600H	
V76V1601H_AVE	Running Avg V76V1601H	
V76V1602H_AVE	Running Avg V76V1602H	
AC2_Vazero	AC2 Φ A zero corrected	
AC2_Vbzero	AC2 Φ B zero corrected	
AC2_Vczero	AC2 Φ C zero corrected	
AC2_Vsum	AC2 phase sum	
AC2_Neutrometer	RMS value AC2 sum	

Table 97-2 EPDC, FM and OI Channelization (Neutrometer)		
Measurement	Description	BMU
AC3 Channels		
V76V0100H_AVE	Running Avg V76V1700H	
V76V0101H_AVE	Running Avg V76V1701H	
V76V0102H_AVE	Running Avg V76V1702H	
AC3_Vazero	AC3 Φ A zero corrected	
AC3_Vbzero	AC3 Φ B zero corrected	
AC3_Vczero	AC3 Φ C zero corrected	
AC3_Vsum	AC3 phase sum	
AC3_Neutrometer	RMS value AC3 sum	
RMS Voltages		
AC1_PhA Volts_RMS	RMS AC1 Φ A volts	
AC1_PhB Volts_RMS	RMS AC1 Φ B Volts	
AC1_PhC Volts_RMS	RMS AC1 Φ C Volts	
AC2_PhA Volts_RMS	RMS AC2 Φ A Volts	
AC2_PhB Volts_RMS	RMS AC2 Φ B Volts	
AC2_PhC Volts_RMS	RMS AC2 Φ C Volts	
AC3_PhA Volts_RMS	RMS AC3 Φ A Volts	
AC3_PhB Volts_RMS	RMS AC3 Φ B Volts	
AC3_PhC Volts_RMS	RMS AC3 Φ C Volts	

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***** End of Operation 97 *****

OPERATION 899 Walkdown Discrepancy List

Shop: NA
Cntrl Rm Console: NA
OPR: **PAD LEADER**
Zone: NA
Hazard (Y/N): N
Duration (Hrs): **24.0**

NOTE

Do not perform this operation if vehicle is in a Scrub Turnaround and Walkdowns have not been scheduled.

Operation Not Performed: _____

NOTE

The Walkdown Discrepancy List is created by OMI S0007.100, Operation 500 - Integrated Prerequisite Operation - Safety/Facility/Fire Walkdown, and other operational walkdowns.

Additional pages may be added to the list by making copies of the next page and adding them to this book.

The following are recorded on Walkdown Discrepancy List:

- (1) Location
- (2) Originator
- (3) Responsible organization that will clear discrepancy
- (4) Valid constraints: PRSD Load
RSS Rotation
ET Load
- (5) Cleared by: name (signature or stamp); date; time;
and identified as permanent or temporary

All items checked temporary (with the exception of items located on the MLP) will be recorded in the applicable PDTL (Potential Discrepancy Tracking Log) for evaluation on future integrated walkdowns. These types of discrepancies are a temporary resolution and/or are acceptable for one Launch.

			03-23-06
ITEM NO. _____	DISCREPANCY & RESOLUTION _____ _____ _____	(1) LOCATION _____ _____ _____	
	PR, DR, TROUBLE TICKET OR MAXIMO # _____		
	(2) ORIGINATOR _____	(3) RESP. ORG. _____	<input type="checkbox"/> PERMANENT
	(4) CONSTRAINT _____	(5) CLEARED BY _____	<input type="checkbox"/> TEMPORARY
ITEM NO. _____	DISCREPANCY & RESOLUTION _____ _____ _____	(1) LOCATION _____ _____ _____	
	PR, DR, TROUBLE TICKET OR MAXIMO # _____		
	(2) ORIGINATOR _____	(3) RESP. ORG. _____	<input type="checkbox"/> PERMANENT
	(4) CONSTRAINT _____	(5) CLEARED BY _____	<input type="checkbox"/> TEMPORARY
ITEM NO. _____	DISCREPANCY & RESOLUTION _____ _____ _____	(1) LOCATION _____ _____ _____	
	PR, DR, TROUBLE TICKET OR MAXIMO # _____		
	(2) ORIGINATOR _____	(3) RESP. ORG. _____	<input type="checkbox"/> PERMANENT
	(4) CONSTRAINT _____	(5) CLEARED BY _____	<input type="checkbox"/> TEMPORARY
ITEM NO. _____	DISCREPANCY & RESOLUTION _____ _____ _____	(1) LOCATION _____ _____ _____	
	PR, DR, TROUBLE TICKET OR MAXIMO # _____		
	(2) ORIGINATOR _____	(3) RESP. ORG. _____	<input type="checkbox"/> PERMANENT
	(4) CONSTRAINT _____	(5) CLEARED BY _____	<input type="checkbox"/> TEMPORARY

S0007_400-899-D-001

Figure 899-1 - Walkdown Discrepancy List
 (For Reference Only)

			03-23-06
ITEM NO. _____	DISCREPANCY & RESOLUTION _____ _____ _____	(1) LOCATION _____ _____ _____	
	PR, DR, TROUBLE TICKET OR MAXIMO # _____		
	(2) ORIGINATOR _____	(3) RESP. ORG. _____	<input type="checkbox"/> PERMANENT
	(4) CONSTRAINT _____	(5) CLEARED BY _____	<input type="checkbox"/> TEMPORARY
ITEM NO. _____	DISCREPANCY & RESOLUTION _____ _____ _____	(1) LOCATION _____ _____ _____	
	PR, DR, TROUBLE TICKET OR MAXIMO # _____		
	(2) ORIGINATOR _____	(3) RESP. ORG. _____	<input type="checkbox"/> PERMANENT
	(4) CONSTRAINT _____	(5) CLEARED BY _____	<input type="checkbox"/> TEMPORARY
ITEM NO. _____	DISCREPANCY & RESOLUTION _____ _____ _____	(1) LOCATION _____ _____ _____	
	PR, DR, TROUBLE TICKET OR MAXIMO # _____		
	(2) ORIGINATOR _____	(3) RESP. ORG. _____	<input type="checkbox"/> PERMANENT
	(4) CONSTRAINT _____	(5) CLEARED BY _____	<input type="checkbox"/> TEMPORARY
ITEM NO. _____	DISCREPANCY & RESOLUTION _____ _____ _____	(1) LOCATION _____ _____ _____	
	PR, DR, TROUBLE TICKET OR MAXIMO # _____		
	(2) ORIGINATOR _____	(3) RESP. ORG. _____	<input type="checkbox"/> PERMANENT
	(4) CONSTRAINT _____	(5) CLEARED BY _____	<input type="checkbox"/> TEMPORARY

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Figure 899-1 - Walkdown Discrepancy List (continued)
 (For Reference Only)

ITEM NO.	DISCREPANCY & RESOLUTION	(1) LOCATION	03-23-06
_____	_____ _____ _____	_____ _____ _____	
	PR, DR, TROUBLE TICKET OR MAXIMO #	_____	
	(2) ORIGINATOR	(3) RESP. ORG.	<input type="checkbox"/> PERMANENT
	(4) CONSTRAINT	(5) CLEARED BY	<input type="checkbox"/> TEMPORARY
_____	_____ _____ _____	_____ _____ _____	
	PR, DR, TROUBLE TICKET OR MAXIMO #	_____	
	(2) ORIGINATOR	(3) RESP. ORG.	<input type="checkbox"/> PERMANENT
	(4) CONSTRAINT	(5) CLEARED BY	<input type="checkbox"/> TEMPORARY
_____	_____ _____ _____	_____ _____ _____	
	PR, DR, TROUBLE TICKET OR MAXIMO #	_____	
	(2) ORIGINATOR	(3) RESP. ORG.	<input type="checkbox"/> PERMANENT
	(4) CONSTRAINT	(5) CLEARED BY	<input type="checkbox"/> TEMPORARY
_____	_____ _____ _____	_____ _____ _____	
	PR, DR, TROUBLE TICKET OR MAXIMO #	_____	
	(2) ORIGINATOR	(3) RESP. ORG.	<input type="checkbox"/> PERMANENT
	(4) CONSTRAINT	(5) CLEARED BY	<input type="checkbox"/> TEMPORARY

S0007_400-899-D-001

Figure 899-1 - Walkdown Discrepancy List (continued)
 (For Reference Only)

			03-23-06
ITEM NO. _____	DISCREPANCY & RESOLUTION _____ _____ _____	(1) LOCATION _____ _____ _____	
	PR, DR, TROUBLE TICKET OR MAXIMO # _____		
	(2) ORIGINATOR _____	(3) RESP. ORG. _____	<input type="checkbox"/> PERMANENT
	(4) CONSTRAINT _____	(5) CLEARED BY _____	<input type="checkbox"/> TEMPORARY
ITEM NO. _____	DISCREPANCY & RESOLUTION _____ _____ _____	(1) LOCATION _____ _____ _____	
	PR, DR, TROUBLE TICKET OR MAXIMO # _____		
	(2) ORIGINATOR _____	(3) RESP. ORG. _____	<input type="checkbox"/> PERMANENT
	(4) CONSTRAINT _____	(5) CLEARED BY _____	<input type="checkbox"/> TEMPORARY
ITEM NO. _____	DISCREPANCY & RESOLUTION _____ _____ _____	(1) LOCATION _____ _____ _____	
	PR, DR, TROUBLE TICKET OR MAXIMO # _____		
	(2) ORIGINATOR _____	(3) RESP. ORG. _____	<input type="checkbox"/> PERMANENT
	(4) CONSTRAINT _____	(5) CLEARED BY _____	<input type="checkbox"/> TEMPORARY
ITEM NO. _____	DISCREPANCY & RESOLUTION _____ _____ _____	(1) LOCATION _____ _____ _____	
	PR, DR, TROUBLE TICKET OR MAXIMO # _____		
	(2) ORIGINATOR _____	(3) RESP. ORG. _____	<input type="checkbox"/> PERMANENT
	(4) CONSTRAINT _____	(5) CLEARED BY _____	<input type="checkbox"/> TEMPORARY

S0007_400-899-D-001

Figure 899-1 - Walkdown Discrepancy List (continued)
 (For Reference Only)

FOD Identified in the BDA Final Clear OPS/Safety Sweep Walkdown and Final Inspection at T-3 Hours

NOTE

Perform the following FOD data sheet only if FOD is identified during OMI S0007.100, Operation 555 - BDA Final Clear OPS/Safety Sweep and OMI S0007.400 Operation 57 - Final Inspection.

FOD Identified in the BDA Final Clear OPS/Safety Walkdown and Final Inspection at T-3 Hours Not Performed: _____

NOTE

By definition, discrepancies identified are not a constraint to Launch.
Multiple copies of the FOD data sheet may be used. Identify each discrepancy on a separate page.
Location of FOD may be identified using Figure 899-2 - MLP Zero Level.

Section 1 - To be completed by Walkdown/Inspection Personnel	
Discrepancy	
Location	
Additional Areas Searched	
Possible Systems/Sources	
Additional Remarks	
Identified by:	
Section 2 - To be completed by responsible System Engineer	
Acceptance Rationale	
Dispositioned by	
Section 3 - To be completed by Quality Inspector	
Quality to enter FOD data sheet item into the Integrated Quality Support Database. (FOD database)	
Qv: _____	

1-20-04

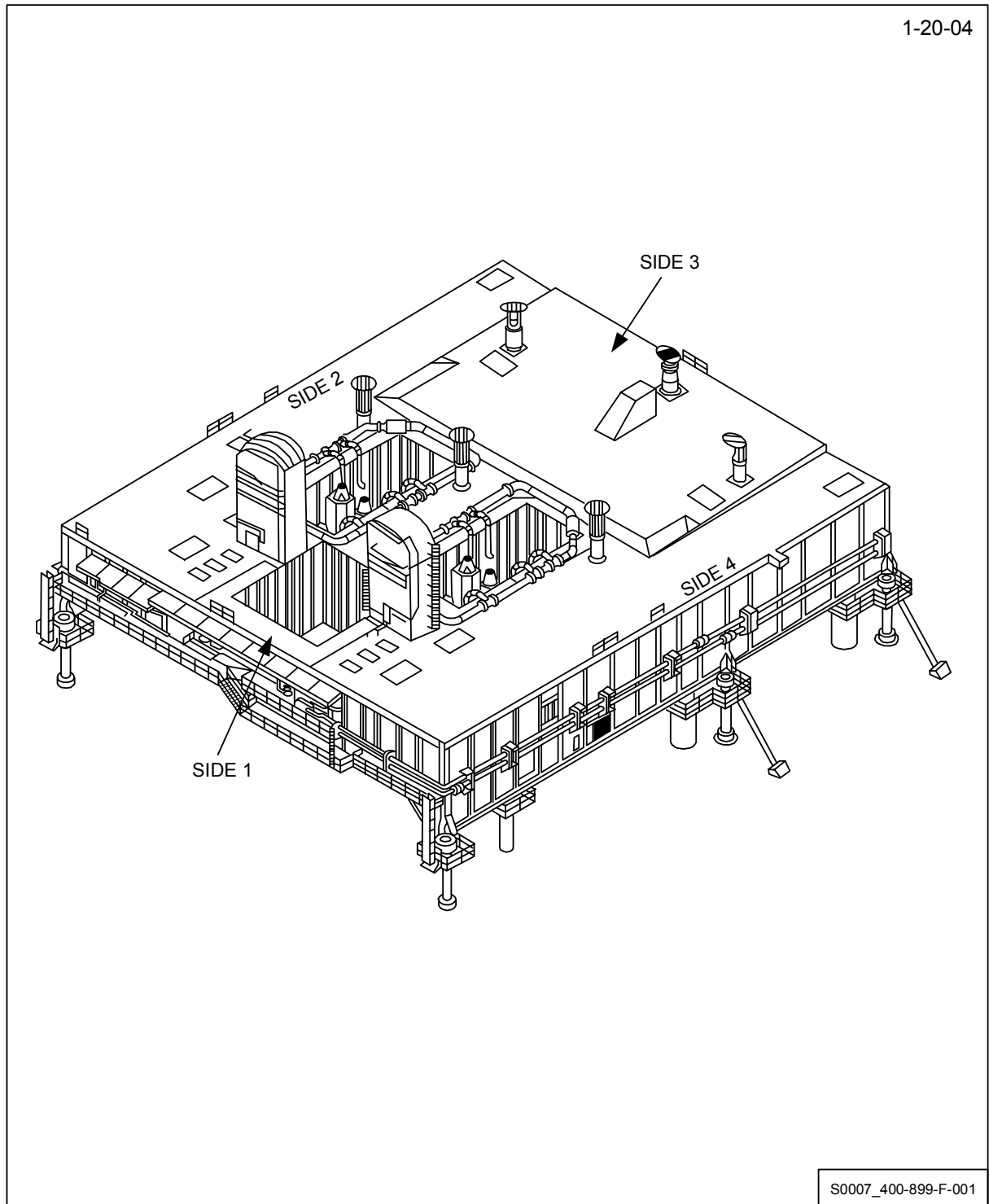


Figure 899-2 - MLP Zero Level
(For Reference Only)

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***** End of FOD Identified in the BDA Final Clear OPS/Safety Walkdown and
Final Inspection at T-3 Hours *****

***** End of Operation 899 *****

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Approval Record

SHUTTLE COUNTDOWN - (LPS)

Role:	Signed by:	Date (GMT): Reason for signing:
TCO-TC	Gross George W United Space Alliance LLC 93540 Mail:USK-023 Phone:321/861-7438 Documentum User Name : grossgw	06/24/2011 11:44: Concur with approval
TSM-GSS	Dorn Deborah L United Space Alliance LLC 95620 Mail:USK-043 Phone:321/861-4484 Documentum User Name : dorndl	06/24/2011 11:47:45 Concur with approval
NTD-NASA	Spaulding Jeffrey G Nasa Ksc Mail: Phone: Documentum User Name : Spaulding Jeffrey G	06/24/2011 11:48:16 Concur with approval
OMD	Poppino James D United Space Alliance LLC 93250 Mail:USK-187 Phone:321/861-4911 Documentum User Name : poppijd1	06/24/2011 11:52:21 Concur with approval
SPE-NASA	Greenwell Shawn M Nasa Ksc NE-O-A Mail: Phone: Documentum User Name : Greenwell Shawn M	06/24/2011 12:01:39 Concur with approval
TCO-CTC	Wyrick Roberta United Space Alliance LLC 93010 Mail:USK-229 Phone:321/861-5121 Documentum User Name : Wyrick Roberta	06/24/2011 13:26:07 Concur with approval
SFP-SF	Ross Jerome United Space Alliance LLC 92331 Mail:USK-291 Phone:321/861-6285 Documentum User Name : rossj	06/24/2011 14:22:32 Concur with approval
RPE	Zeps Anita K United Space Alliance LLC 93220 Mail:USK-246 Phone:321/867-9563 Documentum User Name : zepsa	06/24/2011 15:50:07 Concur with approval