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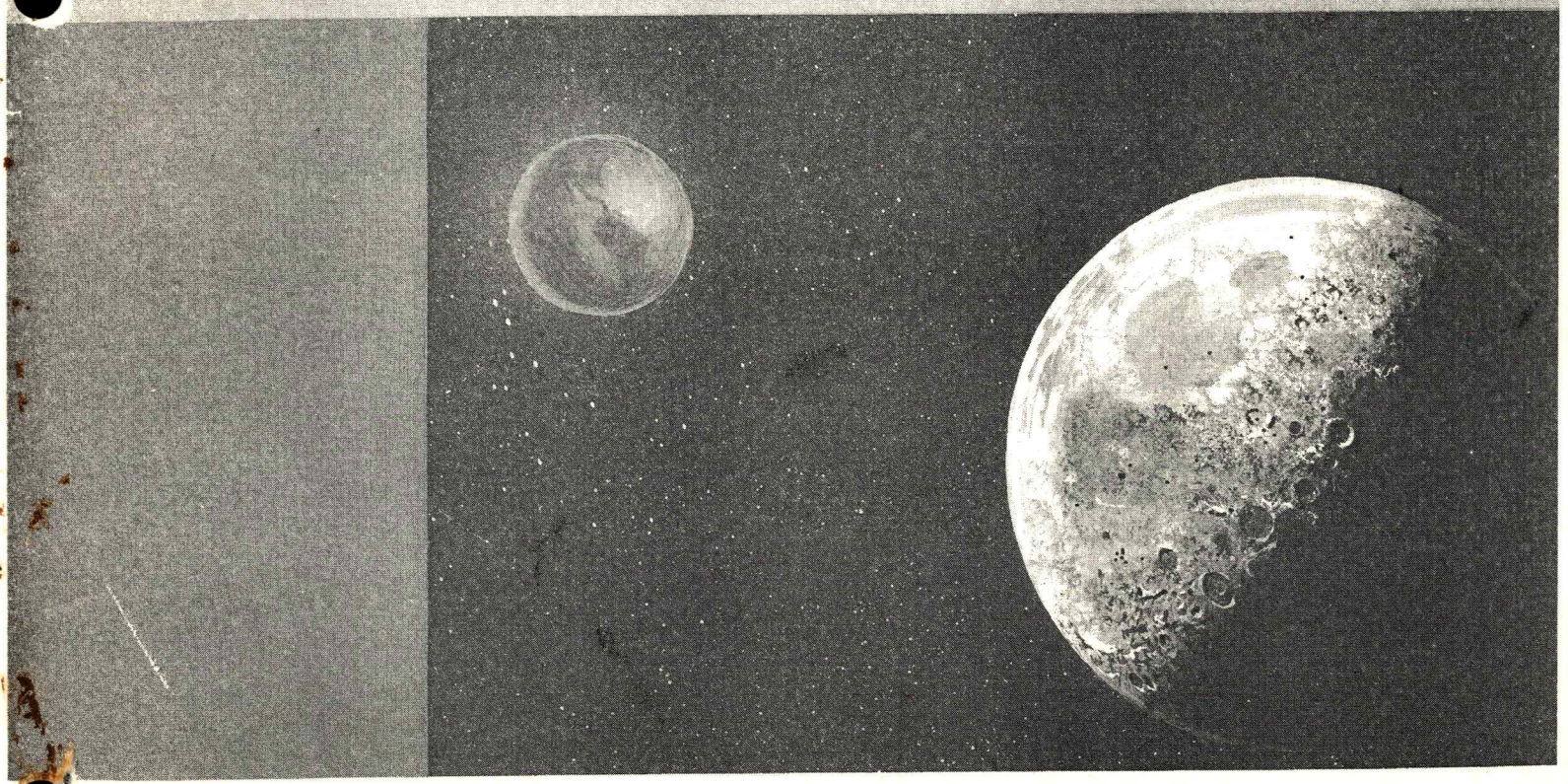
project apollo

KENNEDY SPACE CENTER
NASA

SPACECRAFT TEST AND CHECKOUT PROCEDURES

SPACECRAFT OPERATIONS FOR SPACE VEHICLE LAUNCH COUNTDOWN/ COUNTDOWN DEMONSTRATION



THIS PROCEDURE CONTAINS HAZARDOUS OPERATIONS.

T Bruce Aldrin
APOLLO XI

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SPACECRAFT OPERATIONS FOR SPACE VEHICLE LAUNCH COUNTDOWN/ COUNTDOWN DEMONSTRATION

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SECTION I

GENERAL INFORMATION

1.0 TEST OBJECTIVES

1.1 LAUNCH COUNTDOWN..

A. TO PROVIDE THE SEQUENCE OF OPERATIONS REQUIRED TO PREPARE FOR LAUNCH.

B. TO LAUNCH THE SPACE VEHICLE.

1.2 COUNTDOWN DEMONSTRATION..

A. TO PRACTICE LAUNCH COUNTDOWN OPERATIONS

B. TO VERIFY SPACE VEHICLE RF COMPATIBILITY (STRUCTURE AWAY)

C. TO VERIFY SPACECRAFT PYROTECHNIC CIRCUITRY IS NOT SUSCEPTIBLE TO RF.

2.0 LIST OF REFERENCES

2.1 DOCUMENTS..

NUMBERS	ORIGINATOR	TITLE
OCP-K-10027	NAA	GSE REMOVAL LC39
MA0201-5121	NAA	ACE - S/C PROGRAMMING REQUIREMENTS FOR S/C 017 - LC39
OCP-K-10026	NAA	LC 39A CSM CHECKLIST
OCP-K-10004	NAA	SPACECRAFT INSTALLATIONS AND REMOVALS
OCP-K-10019	NAA	GSE INITIAL CONFIG SETUPS (MSOB)
OCP-K-10020	NAA	GSE INITIAL CONFIGURATION SETUPS (LUT/LCC)
OCP-K-10021	NAA	GSE INITIAL CONFIG SETUPS (MSS)
OCP-K-5044	NAA	ECS H2O SYSTEM SERVICING
OCP-K-4617	NAA	PYRO INSTALLATIONS
OCP-K-10023	NAA	GSE INITIAL CONFIG SETUPS (LC39)
	NASA	AS501 FLIGHT PLAN
OCP-K-9187	NAA	S14-065 SERVICING
OCP-K-9188	NAA	S14-066 SERVICING
MA0201-3359	NAA	PLACARDS AND LIMITATIONS
MA0203-0313		PAD SERVICING AND C/O REQMTS FOR CGSS
MA0610-017	NAA	CLEANLINESS PROCESS FOR APOLLO FLUID SYSTEM, PARTS AND ASSEMBLIES
MSFC-SPEC-234	MSFC	NITROGEN SPACE VEHICLE GRADE LIQUID AND GAS
MA0203-0020	NAA	FUEL CELL POWER PLANT CHECK OUT, START UP PROCEDURE AND SHUTDOWN PROCEDURE FOR.
MIL-P-27401B	USA	NITROGEN, PROPELLANT PRESSURIZING AGENT
MSFC-SPEC-356	MSFC	HYDROGEN, LIQUID AND GAS

MSFC-SPEC-364A (MODIFIED)	MSFC	HELIUM
MSFC-SPEC-399A	MSFC	OXYGEN, LIQUID AND GAS
KMI 1710.1	NASA	THE KSC SAFETY PROGRAM
K-V-053	NASA	KSC APOLLO/SATURN V GROUND SAFETY PLAN
SOP-NO. 39-SC-2	NASA	SPACECRAFT FUEL CELL LIQUID OXYGEN (LO2) SERVICING.
SOP-NO. 39-SC-3	NASA	SPACECRAFT FUEL CELL LIQUID HYDROGEN (LH2) SERVICING.
SOP-NO. 39-SV-10A	NASA	EED INSTALLATION, REMOVAL AND ELECTRICAL CONNECTION.
SOP-NO. 39-SV-10C	NASA	S/C ORDNANCE AND CONTINUITY TESTING.

2.2 DRAWINGS..

NUMBER	ORIGINATOR	TITLE
G14-900017	NAA	GSE FUNCTIONAL INTEGRATED SYSTEM SCHEMATICS
G16-850129	NAA	CABLES - RF TRANSMISSION LINE SET

3.0 LIST OF ABBREVIATIONS

3.1 ALL ABBREVIATIONS USED UNLESS OTHERWISE LISTED ARE FOUND IN THE FOLLOWING

3.1.1 NAA DRM

3.1.2 NASA SP6001

4.0 TEST SUPPORT REQUIREMENTS

4.1 SPECIAL TOOLS AND TEST EQUIPMENT

NOMENCLATURE	MANUFACTURER AND/ OR PART NUMBER	APPLICATION
PLASTIC BAGS	(NAA SUPPLIED)	PROTECT TUBE ENDS, FITTINGS, ETC.
BLACK TAPE	(NAA SUPPLIED)	PROTECT TUBE ENDS, FITTINGS, ETC.
WHITE TAPE (FLITE COMPATIBLE)	4370	GIMBAL THUMBWHEEL COVER
LEAK TEST SOLUTION	MIL-L-25567A	BUBBLE-TYPE LEAK TEST
VOISHAN SEALS (3 EA)	VSF1015A4	02 SERV CLOSEOUT
TORQUE WRENCHES 200-250 IN. LBS. 100 IN. LBS. (BREAKOVER PREFERRED)		
THREAD LUBE	INVELCO 33 F	02 SERV CLOSEOUT
GROUNDING CABLE	NAA	GROUND S14-079
LEAD TAPE	3M-420 MINN. MINING AND MAN.	HATCH SEALING (IF REQ.)
UNIVERSAL TOOL SET	V16-601-484	HATCH INSTALLATION
Z00-025-401 PRESSURE PANEL	SK818-2017-401	SURGE TANK PRESS MAINT UNIT
2 FLEX LINES CLEANED TO MA0610-017, LEVEL 2 OR BETTER	BB8BBXX-30G	JUMPER G36MV1 AND G36MV3 JUMPER G35MV1 AND G35MV3

NOTE

XX = 72 IN. MIN
144 IN. MAX

60 CPS TO 400 CPS CONVERTER (115V, SINGLE PHASE)		FCS STANDBY
Z00-065 (2 EA) (COUNTDOWN ONLY)		C.B. GUARD FOR PANEL 25
0 TO 10 PSIG GAGE (0.1 PCNT)	WALLACE/TIERNAN OR EQUIV	
GAS ANALYZER	BECKMAN D2 OR EQUIV	
GO2 SAMPLING SETUP FOR S14-079		
REGULATORS (2) 02 H2		REDUCE TUBE TANK PRESS TO TRANSFER UNITS 3000 1100 3000 TO 350
SEALS (8) (2)	RACO 11324-1000 REQ'D RACO 11324-937 REQ'D	FLIGHT CAP SEALS
MCP TVC BYPASS PLUG	P492	SCS/G+N TEST
G+N SHORTING PLUG	1007593-011	
PSA TRAY CONNECTOR COVERS	8102650	
Z00-066-401 (2 EA)	SUPPORT BKTS	CM RCS HE ACCESS
Z00-066-601 (4 EA)	SUPPORT BKTS	CM RCS HE ACCESS
ADJUSTABLE TORQUE WRENCHES (15-30 FT. LB.) (1/4 IN. SQ. DRIVE)		PROPULSION DUST CAP TORQUE.
Z00-092		Q.D. WRENCH
FACE SHIELDS (16)		HELIUM DISCONNECT
SAFETY BELTS		
WRENCH (1 IN.) WRENCH (1 1/2 IN.)		RCS GHE QD INSTALL/REMOVE

BREAKOUT BOX	X00-029	PROVIDE TEST POINTS TO CHECK TANK FANS
RECORDER	X00-003	TANK FAN CHECKS
CABLE	Y00-006 (FF1)	CONNECT X00-003 TO X00-029 IN TANK FAN CHECKS
CABLE	Y00-079	CONNECT C14-358 TO X00-029

4.2 GROUND SUPPORT EQUIPMENT AND TEST EQUIPMENT FOR PRECOUNT AND COUNT.

NOTE

1. LEGEND X = REQUIRED
   0 = NOT REQUIRED
2. PRECOUNT COLUMN COVERS THE PERIOD FROM T-83 30 HOURS TO T-42 00 HRS
3. MIDCOUNT/COUNT COLUMN COVERS THE PERIOD FROM START OF SERVICING POWER UP (T-42 00) TO T-00 00.

PART NO.	NOMENCLATURE	STATION CALL	PRECOUNT	MID-COUNT/ COUNT
A14-052	HEATER PWR SUPPLY	LPDS	0	X
A14-074	ELECTRICAL LOAD BANK	LPDS	X	X
A14-218	400 CPS PWR	LPDS	X	X
A14-237	ANTENNA COUPLER SET	SCET	X	0
C14-205	FILTER AND DISTRIBUTION UNIT	UFET	X	X
C14-207	CARRY-ON DTCS	SATT	X	0
C14-232	DATA INTERLEAVING SYSTEM	UFET	X	X
C14-240	SERVICING EQUIPMENT ACE-S/C ADAPTER	SFET	X	0
C14-240	SERVICING EQUIPMENT ACE/SC ADAPTER	LFET	X	X
C14-261	LINE DRIVER	LFET	X	X
C14-267	EXTERNAL DTCS	UFET	X	X
C14-268	SERVICE EQUIPMENT DTCS	SFET	X	X

C14-300-101	FDS ELECT CONT SW UNIT	SFET	X	X
C14-316	SC GND FILTER	UCET	X	X
C14-339	LUT CABLE SET	SPAD	X	X
C14-340	MSS CABLE SET	SPAD	X	X
C14-341	PAD CABLE SET	SPAD	X	X
C14-346	SEQUENTIAL SYSTEM CONTROL UNIT	LFET	X	X
C14-348	RANGING TEST SET	MOLC	X	X
C14-354	PYRO INITIATOR C/O BRIDGE SET	LFET	X	0
C14-389	ICTC MON/CONT	LFET	X	X
C14-442	RF CHECKOUT EQUIP	MOLC	X	X
C14-429	UP-DATA BME	MUDL	X	X
C14-481	DC GROUND POWER DISTRIBUTION UNIT	LPDS	X	X
C14-484	EXTERNAL SIGNAL CONDITIONAL UNIT	LFET	X	X
C14-574	CARRY ON CABLE SET	SPAD	X	0
C14-590	PURGE MONITOR AND CONTROL UNIT	SFET	X	X
C14-620	ELECT PWR DIST	LPDS	X	X
C14-621	BATTERY B/U UNIT	LPDS	X	X
C14-624	REDUND PWR SUP	LPDS	X	X
C14-626	PWR SUPPLY	LPDS	X	X
C14-626-101	PWR SUPPLY	LPDS	X	X
C14-628	RELAY AND PATCH DISTR	LPDS	X	X

C14-630	FDSCU	SHCU	X	X
C14-630	FDSCU (2)	SLHT	X	X
C14-630	FDSCU (2)	SLOT	X	X
C34-655	POWER SUPPLY	UFET	X	X
S14-009	HELIUM TRANSFER UNIT	SHTR	0	X
S14-132	FLUID DISTRIBUTION SYSTEM AS FOLLOWS..			
8G14-840112	LH2 VALVE BOX	SHFD	X	X
8G14-840111	LO2 VALVE BOX	SOMD	X	X
8G14-840023	CSM HELIUM VALVE BOX	SHVB	0	X
8G14-840099	SPS HELIUM VALVE BOX	SHVB	0	X
8G14-880070-21	SPS OX VALVE BOX	SFMT	0	X
8G14-880070-11	SPS FUEL VALVE BOX	SFMT	0	X
S14-026	LH2 TRANS UNIT	SLHM	X	X
S14-032	LO2 TRANS UNIT	SLOM	X	X
S14-053(2EA)	WATER GLYCOL TRIM CONTROL UNIT	UGCU	X	X
S14-053(2EA)	WATER GLYCOL TRIM UNIT	UGTR	X	X
S14-060	TOXIC VAPOR DISPOSAL UNIT (FUEL)	PFRS	X	X
S14-061	TOXIC VAPOR DISPOSAL UNIT (OXID)	PORS	X	X
S14-065	LO2 STOR UNIT	PLOM	X	X
S14-066	LH2 STOR UNIT	PLHM	X	X
S14-079	PORTABLE MODULE LEAK TESTER	UCMT	0	X
S14-112	SCUPPER SET	SPAD	X	X

S14-113	VACUUM PUMP (LH2)	SHFD	X	0
S14-113	VACUUM PUMP (LOX)	SOMD	X	0
S14-121 (2 EA.)	W/G REFRIG. UNIT	UWGR	X	X
S14-125	W/G CIRC UNIT	UGTR	X	X
S23-114	PTC	LFET	X	X

4.3 SPECIAL SUPPORT

HAZARD MONITOR SYSTEM (LC39)
COMMON USE RF CHECKOUT EQUIPMENT
ACE CONTROL ROOM
ACE COMPUTER COMPLEX
OPEN LOOP COMM STATION
TM PCM GROUND STATION
ETR SUPPORT
CCTV

REQUIRED SUPPORT AND
REQUIRED SAFETY EQUIPMENT
PER K-V-053, SOP NO.
39-SC-2, SOP NO. 39-SC-3
SOP NO. 39-SV-10A AND
SOP NO. 39-SC-10C.

GASEOUS NITROGEN	SOURCE CAPABLE OF FLOWING UP TO 100 SCFM AT 125-150 PSIG. AND CONFORMING TO MIL-P-27401B (OR EQUIV.).
GO2, 4 ''K'' BOTTLES	MIL-O-27210A OR EQUIV
GN2, 4 ''K'' BOTTLES	MIL-P-27401B OR EQUIV
LIQUID NITROGEN (2000 GAL MIN)	GFE
GHE, 1 ''K'' BOTTLE	MSFC 364A

GASEOUS NITROGEN	MSFC-SPEC-234	SUPPLY SOURCE 2000 PSIG MIN (0-50 SCFM)
LIQUID OXYGEN	MSFC-SPEC-399A	OPERATING FLUID
LIQUID HYDROGEN	MSFC-SPEC-356	OPERATING FLUID
LIQUID NITROGEN	MSFC-SPEC-234	02 SUBCOOLER
GN2	MIL-P-27401B	CABINET PURGE
HELIUM	MSFC-SPEC-364A (MOD)	PRESSURIZATION
GO2 TUBE TRAILER(2)	MSFC-SPEC-399A	FDS PURGE AND F/C STARTUP
GH2 TUBE TRAILER(2)	MSFC-SPEC-356	FDS PURGE AND F/C STARTUP

GO2 ''K'' BOTTLE (1 EA)	MSFC-SPEC-399A	MSS LEVEL 4A REACTANT GAS BACKUP
GH2 ''K'' BOTTLE (1 EA)	MSFC-SPEC-356	MSS LEVEL 4A REACTANT GAS BACKUP
GN2 ''K'' BOTTLE (2 EA)	MSFC-SPEC-234	MSS LEVEL 4A FCP GAS BACKUP
GHE ''K'' BOTTLE (1 EA)	MSFC-SPEC-364A	MSS LEVEL 4A POD PRESS BACKUP.

4.4 PERSONNEL

4.4.1 PERSONNEL REQUIRED TO SUPPORT THIS TEST ARE LISTED IN THE ''CALLS TO STATIONS''

4.4.2 PERSONNEL REQUIREMENTS ARE THE DIRECT RESPONSIBILITY OF SUPERVISION AND MAY BE CHANGED AS REQUIRED.

5.0 SAFETY REQUIREMENTS

5.1 GENERAL

5.1.1 SAFETY IS THE RESPONSIBILITY OF NAA AND NASA SUPERVISION. SUPERVISION IS RESPONSIBLE FOR PROVIDING SAFE WORKING CONDITIONS AND OBTAINING PERSONNEL COMPLIANCE WITH ALL NAA AND NASA KSC SAFETY REQUIREMENTS AND INSTRUCTIONS.

5.1.2 SUPERVISION WILL INSURE COORDINATION OF ANY DEVIATION FROM ACCEPTED SAFETY STANDARDS OR WRITTEN REQUIREMENTS WITH NAA SAFETY AND KSC SYSTEMS SAFETY.

5.1.3 SUPERVISION WILL INSURE THAT ONLY PROPERLY TRAINED AND QUALIFIED PERSONNEL PARTICIPATE IN OPERATIONS OR TASKS THAT ARE POTENITALLY HAZARDOUS.

5.1.4 SUPERVISION WILL INUSRE THAT THE TEST AREA CONFORMS TO GOOD HOUSEKEEPING STANDARDS.

5.1.5 FAMILIARIZATION WITH THE FOLLOWING DOCUMENTS AND PROCEDURES IS REQUIRED OF ALL PERSONNEL CONCERNED..

A. SECTION V - THIS PROCEDURE - EMERGENCY SHUTDOWN PROCEDURES.
B. K-V-053 APOLLO/SATURN V GROUND SAFETY PLAN, SOP NO. 39-SV-9, LAUNCH PAD EMERGENCY EVACUATION PLAN.
SOP NO. 39-SC-2, SPACECRAFT FUEL CELL LIQUID OXYGEN (LO2) SERVICING.
SOP NO. 39-SC-3, SPACECRAFT FUEL CELL LIQUID HYDROGEN (LH2) SERVICING.
SOP NO. 39-SV-10A, EED INSTALLATION, REMOVAL AND ELECTRICAL CONNECTION.
SOP NO. 39-SV-10C, S/C ORDNANCE AND CONTINUITY TESTING.
C. KMI 1710.1 - THE KSC SAFETY PROGRAM.

5.2 SPECIFIC HAZARDS AND PRECAUTIONS

5.2.1 PERSONNEL INVOLVED IN THE TESTING WILL BE INFORMED OF THE SPECIFIC HAZARDS TO BE ENCOUNTERED DURING EACH TEST. THESE HAZARDS INCLUDE ORDNANCE, HIGH PRESSURE GASES, CRYOGENICS AND TOXIC/FLAMMABLES.

5.2.2 NAA SAFETY ENGINEER SHALL BE PRESENT DURING PERFORMANCE OF HAZARDOUS OPERATIONS.

5.2.3 CONCURRENCE OF THE SYSTEMS SAFETY SUPERVISOR IS REQUIRED PRIOR TO THE START OF A HAZARDOUS OPERATION.

6.0 INSTRUCTIONS

6.1 STANDARD INSTRUCTIONS

6.1.1 NEW CAL DATA WILL BE INSERTED AT REQUEST OF TPE/STC

6.1.2 EXTERNAL POWER SUPPLIES MAY BE ADJUSTED AT THE DISCRETION OF MEPS.

6.1.3 IN THE EVENT OF A TEST HOLD OR TO CONSERVE OPERATING TIME, SYSTEM SHUTDOWN MAY BE ACCOMPLISHED AT THE DISCRETION OF SYSTEM ENGINEERS WITH CONCURRENCE OF MTPE AND MSTC.

6.1.4 SELECTION OF TRIM UNITS AND REFR. UNIT IS AT DISCRETION OF MECS.

6.1.5 TRIM UNIT TEMP CONTROLS MAY BE ADJUSTED AS REQUIRED TO MAINTAIN 47 +/- 17 DEG AT SC. FLOW RATES MAY BE ADJUSTED AS REQUIRED TO MAINTAIN 200 +/- 20 LBS/HR.

6.1.6 IF SYNC IS NOT ACQUIRED WHEN GOING FROM INTERNAL SYNC MODE TO EXTERNAL SYNC MODE WHEN DATA INTERLEAVER C14-232 IS IN REMOTE, MACE MAY GO TO INTERNAL SYNC MODE THEN BACK TO EXTERNAL SYNC MODE. REPEAT UNTIL EXTERNAL SYNC IS ACQUIRED.

6.1.7 PRESSURE REGULATORS MAY BE ADJUSTED AS REQUIRED TO MAINTAIN SYSTEM PRESSURES.

6.1.8 IN THE EVENT AN ACE ERROR IS GENERATED (P-7) IT MAY BE RESET BY R144, ERROR RESET ON KZ0024. IF IT DOES NOT RECUR WITHIN 5 SEC AFTER BEING RESET, SYSTEM OPERATION SHALL BE CONSIDERED NORMAL AND TESTING MAY BE CONTINUED WITHOUT DEVIATION OR IDR.

6.1.9 MGNS MAY DIRECT MGNR TO CHANGE THE PIPA DISPLAY ON THE SCOPE BY USE OF R147 AT HIS OPTION.

6.1.10 IN THE EVENT THAT MAIN BUS A AND B POWER IS LOST, OPEN ALL G+N CIRCUIT BREAKERS (AT DIRECTION OF MGNS) PRIOR TO REAPPLICATION OF MAIN BUS POWER.

6.1.11 G AND N (R152) MAY BE PERFORMED AT DISCRETION OF MGNS.

6.1.12 OPTICS HAND CONTROLLER SPEED MAY BE CHANGED AS REQUIRED WHEN USING OPTICS.

6.1.13 MGNS MAY SET LIFT/SEP FLAGS AS REQUIRED TO PREVENT G AND N SYSTEM FROM RESPONDING TO INADVERTANT INTERFACE SIGNALS ORIGINATING FROM THE IU. (DO NOT PERFORM AFTER T-13 HOURS).

6.1.14 ACCUM QUAN ADJUST MAY BE PERFORMED AT DISCRETION OF MECS.

6.1.15 MEPS MAY MOMENTARILY CLOSE BATTERY C.B. TO READ BATT VOLTS WITH CONCURRENCE OF MTPE/MSTC.

6.1.16 MGNS MAY DIRECT MGNL TO PERFORM C-156 EXECUTIONS FOR HIGH RATE CHANNEL CALL UP OR TAPE READER DELAY TIME.

6.1.17 TRANSFER OF W/G GSE FROM LOCAL TO REMOTE OR REMOTE TO LOCAL MAY BE PERFORMED AT DISCRETION OF MTPE/MSTC.

6.1.18 DRAINING OF POTABLE WATER TANK MAY BE PERFORMED AT DISCRETION OF MECS AS REQUIRED.

6.2 SPECIAL INSTRUCTIONS

6.2.1 A 1100 PSIG MINIMUM GO2 OUTLET PRESSURE FROM THE TUBE TRAILER OR S16-065 IS NECESSARY. IF IT IS REQUIRED TO SERVICE THE UNIT, IT WILL BE DONE PER APPLICABLE STEPS IN S14-065 TURN ON CHECKLIST AS REQUESTED BY MLFC.

6.2.2 A 350 PSIG MINIMUM GH2 OUTLET PRESSURE FROM THE TUBE TRAILER OR S14-066 IS NECESSARY. IF IT IS REQUIRED TO SERVICE THE UNIT, IT WILL BE DONE PER APPLICABLE STEPS IN S14-66 TURN ON CHECKLIST AS REQUESTED BY MLFC.

6.2.3 A MINIMUM OF 1500 GALLONS OF LH2 SHALL BE IN THE S14-066 STORAGE UNIT FOR 12 HOURS PRIOR TO FLOW. IF S14-066 NEEDS TO BE TOPPED OFF WITH LH2 DURING TEST, PERFORM TOPOFF PER SEQ 06, OCP-K-9188.

6.2.4 A MINIMUM OF 1100 GALLONS OF LO2 SHALL BE IN THE S14-065 STORAGE UNIT. IF S14-065 NEEDS TO BE TOPPED OFF WITH LO2 DURING TEST, PERFORM TOPOFF PER SEQ 04, OCP-K-9187.

6.2.5 LEAD TAPE (3M-420 MINN. MINING AND MAN.) MAY BE USED FOR INNER HATCH SEALING IF REQUIRED.

7.0 COMMUNICATION AND STATION ASSIGNMENTS

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8.0 TEST SETUP

8.1 TEST SETUP SHEET NO. 1 - GENERAL

8.1.1 PERFORM TEST SETUPS LISTED FOR PRE-COUNT.

NOTE

PERSONNEL LISTED IN THE CALL TO STATIONS WHICH DO NOT HAVE SETUP SHEETS ARE REQUIRED IN THE GSE POWER VERIFICATION

8.2	SC01	- TEST SETUP SHEET NO. 2
8.3	SC02	- TEST SETUP SHEET NO. 3
8.4	SSET	- TEST SETUP SHEET NO. 4
8.5	LFET	-TEST SETUP SHEET NO. 5
8.6	LGSE, LGSM	- TEST SETUP SHEET NO. 6
8.7	LPDS	- TEST SETUP SHEET NO. 7
8.8	UCET	- TEST SETUP SHEET NO. 8
8.10	UFET	- TEST SETUP SHEET NO. 10
8.11	UGCU	- TEST SETUP SHEET NO. 11
8.12	UGTR	- TEST SETUP SHEET NO. 12
8.13	UWGR	- TEST SETUP SHEET NO. 13
8.14	PGSE, PGSM	- TEST SETUP SHEET NO. 14
8.17	SATT	- TEST SETUP SHEET NO. 17
8.18	SCMT	- TEST SETUP SHEET NO. 18
8.19	SFET	- TEST SETUP SHEET NO. 19
8.30	SWSU	- TEST SETUP SHEET NO. 30
8.31	MACE	- TEST SETUP SHEET NO. 31
8.32	MCOM,MRCF,MECE,MEPS,MGNL,MGNR,MGNS,MGQC, MNQC,MOLC,MPWR,MRCE,MRCS,MREC,MSCA,MSCE, MSCS,MSPE,MSPS,MUDL - TEST SHEET NO. 32	

8.1.2 PERFORM TEST SETUPS LISTED FOR MID COUNT.

NOTE

PERSONNEL LISTED IN THE CALL TO STATIONS WHICH DO NOT HAVE SETUP SHEETS ARE REQUIRED IN THE GSE POWER VERIFICATION.

8.2	SCO1	- TEST SETUP SHEET NO. 2
8.3	SCO2	- TEST SETUP SHEET NO. 3
8.4	SSET	- TEST SETUP SHEET NO. 4
8.6	LGSE, LGSM	- TEST SETUP SHEET NO. 6
8.8	UCET	- TEST SETUP SHEET NO. 8
8.14	PGSE, PGSM	- TEST SETUP SHEET NO. 14
8.15	PLHM	- TEST SETUP SHEET NO. 15
8.16	PLOM	- TEST SETUP SHEET NO. 16
8.20	SHCU	- TEST SETUP SHEET NO. 20
8.21	SHFD	- TEST SETUP SHEET NO. 21
8.22	SHTR	- TEST SETUP SHEET NO. 22
8.23	SHVB	- TEST SETUP SHEET NO. 23
8.24	SLHM	- TEST SETUP SHEET NO. 24
8.25	SLHT	- TEST SETUP SHEET NO. 25
8.26	SLOM	- TEST SETUP SHEET NO. 26
8.27	SLOT	- TEST SETUP SHEET NO. 27
8.28	SLVB	- TEST SETUP SHEET NO. 28
8.29	SOMD	- TEST SETUP SHEET NO. 29
8.33	LFET	- TEST SETUP SHEET NO. 33
8.34	LMDR	- TEST SETUP SHEET NO. 34
8.35	LPDS	- TEST SETUP SHEET NO. 35
8.36	UFET	- TEST SETUP SHEET NO. 36

8.1.3 PERFORM TEST SETUPS LISTED FOR COUNT.

8.9	UCMT	- TEST SETUP SHEET NO. 9
8.6	LGSE, LGSM	- TEST SETUP SHEET NO. 6
8.14	PGSE, PGSM	- TEST SETUP SHEET NO. 14

8.2 TEST SETUP SHEET NO. 2 (SC01)

A. PANEL 18 FUEL CELL AND ELECTRICAL POWER

FUEL CELL	
PURGE	
1 (S1)	CENTER
2 (S2)	CENTER
3 (S3)	CENTER
REACTANTS	
1 (S4)	CENTER
2 (S5)	CENTER
3 (S6)	CENTER
MAIN BUS A	
1 (S12)	OFF
2 (S13)	OFF
3 (S14)	OFF
RESET (S15)	OFF
MAIN BUS B	
1 (S16)	OFF
2 (S17)	OFF
3 (S18)	OFF
RESET (S19)	OFF
FUEL CELL INDICATIONS (S7)	1
MASTER ALARM (S11)	OFF
BATTERY CHARGER (S10)	OFF
DC INDICATORS (S20)	MNA
AC INVERTER	
1 (S22)	OFF
2 (S23)	OFF
3 (S24)	OFF
AC BUS 1	
1 (S26)	OFF
2 (S27)	OFF
3 (S28)	OFF
RESET (S25)	OFF
AC BUS 2	
1 (S30)	OFF
2 (S31)	OFF
3 (S32)	OFF
RESET (S29)	OFF
AC INDICATORS (S33)	BUS-1 PHASE-A

B. PANEL 20 COMMUNICATIONS, DATA LINK, SERVICE

PROPULSION SYSTEM AND S-BAND ANTENNA SELECT

S-BAND	
XPONDER/XPONDER PWR	
AMPL (S1)	CENTER
PWR AMPL (S2)	HI
OSC (S3)	PRIM
VOICE	
RNG/RNG ONLY (S5)	RNG
TAPE (S6)	CENTER
TV (S7)	CENTER
EMERG (S4)	CENTER
UP DATA (S4)	CENTER
S-BAND ANTENNA (S32)	A
VHF AM	
SQUELCH THUMBWHEEL (R1)	LEVEL 1
T/R REC (S14)	CENTER
RCVR (S15)	1
C-BAND (S13)	CENTER
VHF FM (S12)	OFF
RECOVERY	
VHF BCN (S11)	OFF
HF ON/OFF (S10)	OFF
HF SSB/BCN/AM (S9)	SSB
TAPE RECORDER	
PLAY (S19)	CENTER
SPEED (S18)	CENTER
RECORD/PLAY (S16)	CENTER
FWD/REV (S17)	CENTER
POWER	
SCE (S22)	ON
PMP (S23)	OFF
TLM INPUTS	
PCM (S20)	HIGH
UNLABELED SW (S21)	DOWN
BIO MED (S24)	2
VHF ANTENNA (S35)	UPPER
SPS HELIUM	
LEFT (S26)	AUTO
RIGHT (S27)	AUTO

C. PANEL 13 RADIATION, AUDIO, CRYGENICS AND ECS

H2 HEATERS	
1 (S16)	OFF
2 (S17)	OFF
POWER PTT/OFF/VOX (S5)	OFF
S-BAND (S1)	T/R
RCDR HF (S2)	OFF
VHF-AM (S3)	T/R
INTERCOM (S4)	OFF
02 HEATERS	
1 (S14)	OFF
2 (S15)	OFF
H2 FANS	
1 (S33)	OFF
2 (S34)	OFF
02 FANS	
1 (S31)	OFF
2 (S32)	OFF
VOX SENS THUMBWHEEL (R3)	MAX
INTERCOM BALANCE THUMBWHEEL (R2)	LEVEL 1
VOLUME THUMBWHEEL (R1)	LEVEL 1
WASTE H20 TK REFILL (S36)	OFF
GLYCOL EVAP	
H20 FLOW (S22)	CENTER
STEAM PRESS	
AUTO/MAN (S23)	MAN
INCR/DECR (S24)	CENTER
TEMP IN (S25)	MAN
CABIN TEMP	
AUTO/MAN (S12)	MAN
AUTO THUMBWHEEL (R4)	1

D. PANEL 19 ANTENNA CONTROL SYSTEM

UP TLM CMD (S12)	DOWN

E. PANEL 24 MISSION SEQUENCE CONTROL

EDS POWER (S1)	OFF
PYRO ARM/SAFE (S3)	ARM
LOGIC/OFF (S4)	LOGIC
SCS GROUP 2	
ROTATION CONTROL POWER (S16)	OFF
BMAG POWER (S9)	OFF
TVC2 PWR (S15)	OFF

SCS GROUP 1	
PARTIAL SCS POWER (S13)	OFF
TVC 1 POWER (S14)	OFF
RATE GYRO POWER (S12)	OFF

F. PANEL 3 EMERGENCY DETECTION/DRIVE CONTROL

L/VAOA/SPS PC (S9)	LV/AOA
MASTER ALARM (S5)	OFF
ABORT (XDS1)	OFF
SPS	
GIMBAL MOTORS	
PITCH 1 (S3)	OFF
PITCH 2 (S4)	OFF
YAW 1 (S1)	OFF
YAW 2 (S2)	OFF
INJECT PRE-VALVES	
A (S7)	OFF
B (S8)	OFF

G. PANEL 6 ATTITUDE SET AND GIMBAL DISPLAY

ATTITUDE SET	
FDAI ALIGN (S1)	OFF
ATT SET (S2)	OFF
ROLL THUMBWHEEL (B3)	162.0
PITCH THUMBWHEEL (B2)	331.7
YAW THUMBWHEEL (B1)	009.6
GIMBAL POSITION	
YAW (R1)	+5.24
PITCH (R2)	+1.50

H. PANEL 8 ELS/SCS CREW SAFETY CONTROL

DIRECT RCS (S15)	OFF
LIMIT CYCLE (S6)	OFF
ATT DEADBAND (S7)	MIN
RATE GYRO	
ROLL (S8)	NORMAL
PITCH (S9)	NORMAL
YAW (S10)	NORMAL
ELS LOGIC (S16)	OFF
.05G ENTRY (S5)	OFF
LCL VERT (S4)	OFF
DELTA V (S2)	OFF
G AND N/SCS (S3)	SCS
ATTITUDE/MONITOR/ENTRY (S1)	MONITOR

SCS CHANNEL	
A + C ROLL (S11)	OFF
B + D ROLL (S12)	OFF
PITCH (S13)	OFF
YAW (S14)	OFF
DIGITAL EVENT TIMER	
RESET (S17)	UP
START/STOP (S18)	CENTER
MIN (S19)	CENTER
SEC (S20)	CENTER
COUCH UNLOCK (S21)	OFF
CM PROP JETT	
LOGIC (S22)	OFF
DUMP (S23)	OFF
PURGE (S24)	OFF

I. PANEL 12 REACTION CONTROL SYSTEM AND GMT

RCS INDICATORS SELECTOR (S2)	SM-A

J. PANEL 14 GUIDANCE AND NAVIGATION COMPUTER CONTROL

UPTL (S1)	ACCEPT
BRIGHTNESS THUMBWHEEL (R1)	DIM

K. PANEL 15 REACTION CONTROL SYSTEM

H2 PURGE LINE HTR (S1)	OFF
UNLABELED SW (S2)	DOWN
S/M RCS	
HELIUM 1	
A (S3)	CENTER
B (S4)	CENTER
C (S5)	CENTER
D (S6)	CENTER
HELIUM 2	
A (S9)	CENTER
B (S10)	CENTER
C (S11)	CENTER
D (S12)	CENTER
PROPELLANT	
A (S15)	CENTER
B (S16)	CENTER
C (S17)	CNETER
D (S18)	CENTER
C/M RCS PRPLNT	
A (S13)	CENTER
B (S14)	CENTER

L. PANEL 16 CREW SAFETY CONTROL

ELS (S18)	MAN
ABORT SYSTEM	
OX DUMP AUTO/RCS CMD AUTO (S1)	RCS CMD
	AUTO
2 ENGINE OUT (S8)	AUTO
L/V RATES (S9)	AUTO
LES MODE/TWR JETT SPS MODE (S15)	TWR JETT
	SPS MODE
EDS (S2)	OFF
REACTION CONTROL SYS	
CMD (S11)	CENTER
CM PRESS (S3)	DOWN
TRANS (S14)	CENTER
CM/SM SEP (S16)	DOWN
MAIN CHUTE RELEASE (S17)	DOWN

M. VHF SURVIAL BEACON

VOICE/BCN/OFF (S1)	OFF

N. PANEL C14A15 AUXILIARY POWER SYSTEM

POST LANDING	
BAT 3 (CB6)	OPEN
BAT 2 (CB7)	OPEN
BAT 1 (CB5)	OPEN
MAIN BUS B BAT 3 (CB4)	OPEN
MAIN BUS A BAT 3 (CB3)	OPEN
MAIN BUS B BAT 2 (CB2)	OPEN
MAIN BUS A BAT 1 (CB1)	OPEN

8.3 TEST SET SHEET NO. 3 (SC02)

A. PANEL 25 L.H. CIRCUIT BREAKER

	PRE POWER
POST LANDING	
FLOAT BAG 1 PL BUS (CB68)	OPEN
VENT FAN	
PL BUS FLOAT BAG 2 (CB63)	OPEN
HI/LOW/OFF (S11)	OFF
FLOAT BAG	
1 (S12)	CENTER
2 (S13)	CENTER
3 (S14)	CENTER
ANTENNA DEPLOY	
A (S8)	OFF
B (S16)	OFF
BEACON LIGHTS (S9)	OFF
FSCM	
MNA (CB57)	OPEN
MNB(CB58)	OPEN
COUCH ATTEN AND FLOODLIGHTS	
MNA (CB38)	OPEN
MNB (CB37)	OPEN
STABILIZATION AND CONTROL SYSTEM	
DIRECT CONT	
MNA (CB42)	OPEN
MNB (CB41)	OPEN
A AND C ROLL	
MNA (CB36)	OPEN
MNB (CB35)	OPEN
B AND D ROLL	
MNA (CB34)	OPEN
MNB (CB33)	OPEN
PITCH	
MNA (CB40)	OPEN
MNB (CB39)	OPEN
YAW	
MNA (CB32)	OPEN
MNB (CB31)	OPEN
FDAI LIGHTING (S15)	OFF
GROUP 1	
AC1 (CB46)	OPEN (SLUGGED)
AC2 (CB45)	OPEN

GROUP 2	
AC1 (CB67)	OPEN
AC2 (CB66)	OPEN
GROUP 1	
MNA (CB44)	OPEN
MNB (CB43)	OPEN
GROUP 2	
MNA (CB65)	OPEN
MNB (CB64)	OPEN
BIO-MED COMM	
MNA (CB59)	CLOSED
MNB (CB60)	CLOSED
SERVICE PROPULSION SYSTEM	
GAUGING	
MNA (CB22)	CLOSED
MNB (CB21)	CLOSED
AC1 (CB20)	CLOSED
AC2 (CB19)	CLOSED
HE VALVE	
MNA (CB28)	OPEN
MNB (CB27)	OPEN
GIMBAL MOTOR CONTROL	
PITCH 1 BAT A (CB26)	OPEN
PITCH 2 BAT B (CB25)	OPEN
YAW 1 BAT A (CB24)	OPEN
YAW 2 BAT B (CB23)	OPEN
G AND N SYNC (S1)	OFF
GAUGING (S6)	AC1
AC SNSR SIG	
AC1 (CB48)	CLOSED
AC2 (CB47)	CLOSED
REACTION CONTROL SYSTEM	
SPARE (CB18)	OPEN
SPARE (CB17)	OPEN
PROP ISOL	
MNA (CB16)	OPEN
MNB (CB15)	OPEN
C/M-S/M TRANSFER	
MNA (CB10)	CLOSED
MNB (CB9)	CLOSED
CAUT/WARN	
MNA (CB50)	OPEN
MNB (CB51)	OPEN
EDS	
1 BAT A (CB52)	CLOSED
2 BAT C (CB54)	OPEN
3 BAT B (CB53)	CLOSED
ELS	
A BAT A/FLOAT BAG 3 (CB8)	OPEN
B BAT B (CB7)	OPEN

B. PANEL 22 R.H. CIRCUIT BREAKER

FUEL CELL PUMP	
1 (S1)	OFF
2 (S2)	OFF
3 (S3)	OFF
FUEL CELL 1	
CIR AND SEP MOTORS AC (CB64)	OPEN
H2 AND 02 VALVE (CB63)	CLOSED
BUS CONT (CB65)	CLOSED
PURGE (CB66)	CLOSED
FUEL CELL 2	
CIR AND SEP MOTORS AC (CB83)	OPEN
H2 AND 02 VALVE (CB82)	CLOSED
BUS CONT (CB84)	CLOSED
PURGE (CB85)	CLOSED
FUEL CELL 3	
CIR AND SEP MOTORS AC (CB87)	OPEN
H2 AND 02 VALVE (CB86)	CLOSED
BUS CONT (CB88)	CLOSED
PURGE (CB89)	CLOSED
INVERTER CONTROL	
1 (CB39)	CLOSED
2 (CB38)	CLOSED
3 (CB37)	CLOSED
MAIN BUS TIE	
BAT A AND C (S9)	OFF
BAT B AND C (S10)	OFF
MASTER EVENT SEQ CONT	
ARM	
A BAT A (CB19)	OPEN
B BAT B (CB18)	OPEN
LOGIC	
A BAT A (CB21)	CLOSED
B BAT B (CB20)	CLOSED
DC SNSR SIG	
MNA (CB15)	CLOSED
MNB (CB14)	CLOSED
CENTRAL TIMING SYSTEM	
MNA (CB53)	OPEN
MNB (CB52)	OPEN
BAT RLY BUS	
BAT A (CB13)	CLOSED
BAT B (CB12)	CLOSED
BATTERY CHARGER	
BAT A CHGE (CB78)	CLOSED
BAT B CHGE (CB77)	CLOSED
MNA (CB80)	CLOSED
MNB (CB79)	CLOSED

COMMUNICATION C-BAND XPNDR (CB120)	CLOSED
G AND N LIGHTING (S7)	AC-1
COMMUNICATIONS	
A (S12)	AUTO
B (S13)	OFF
GAS ANAL AC1 (CB116)	OPEN
COMMUNICATIONS	
GROUP	
1 AC (CB49)	CLOSED
2 AC (CB48)	CLOSED
3 (CB47) (NOT USED)	OPEN
4 (CB46)	CLOSED
5 (CB45)	CLOSED
6 AC (CB50)	CLOSED
S-BAND AC (CB51)	CLOSED
ECS H2O ACCUM	
MNA (CB94)	OPEN
MNB (CB95)	OPEN
INST ESS	
MNA (CB41) (NOT USED)	OPEN
MNB (CB40) (NOT USED)	OPEN
COMM	
FLT QUAL RCDR (CB96)	CLOSED
C-BAND (CB97)	CLOSED
GUIDANCE AND NAVIGATION	
IMU HTR	
MNA (CB61)	OPEN
MNB (CB60)	OPEN
IMU	
MNA (CB59)	OPEN
MNB (CB58)	OPEN
COMPUTER	
MNA (CB57)	OPEN
MNB (CB56)	OPEN
OPTICS	
MNA (CB55)	OPEN
MNB (CB54)	OPEN
LIGHTING	
AC1 (CB93)	OPEN
AC2 (CB62)	OPEN
ENVIRONMENTAL CONTROL SYSTEM	
CABIN AIR FAN 1 AC1	
PHASE A (CB76)	CLOSED
PHASE B (CB75)	CLOSED
PHASE C (CB74)	CLOSED
CABIN AIR FAN 2 AC2	
PHASE A (CB73)	CLOSED
PHASE B (CB72)	CLOSED
PHASE C (CB71)	CLOSED

SUIT COMPRESSORS AC1	
PHASE A (CB33)	OPEN
PHASE B (CB32)	OPEN
PHASE C (CB31)	OPEN
SUIT COMPRESSORS AC2	
PHASE A (CB30)	OPEN
PHASE B (CB29)	OPEN
PHASE C (CB28)	OPEN
GLYCOL PUMPS AC1	
PHASE A (CB27)	OPEN
PHASE B (CB26)	OPEN
PHASE C (CB25)	OPEN
GLYCOL PUMPS AC2	
PHASE A (CB24)	CLOSED
PHASE B (CB23)	CLOSED
PHASE C (CB22)	CLOSED
TRANSDUCER	
WASTE AND POT H20	
MNA (CB92)	CLOSED
MNB (CB91)	CLOSED
PRESS GROUPS 1	
MNA (CB9)	CLOSED
MNB (CB8)	CLOSED
PRESS GROUP 2	
MNA (CB43)	CLOSED
MNB (CB34)	CLOSED
TEMP	
MNA (CB11)	CLOSED
MNB (CB10)	CLOSED
RAD VALVE AC1	
1A (CB70)	OPEN
2B (CB69)	OPEN
RAD VALVE AC2	
1B (CB68)	CLOSED
2A (CB67)	OPEN
POT H20 HTR	
MNA (CB3)	OPEN
MNB (CB2)	OPEN
CRYOGENIC TANK FAN MOTOR	
1 AC1	
PHASE A (CB100)	CLOSED
PHASE B (CB99)	CLOSED
PHASE C (CB98)	CLOSED

	PRE POWER
2 AC2	
PHASE A (CB103)	CLOSED
PHASE B (CB102)	CLOSED
PHASE C (CB101)	CLOSED
CRYOGENIC SYSTEM	
TANK HEATERS	
H2 1 MNA (CB7)	CLOSED
H2 2 MNB (CB6)	CLOSED
O2 1 MNA (CB5)	CLOSED
O2 2 MNB (CB4)	CLOSED
QTY AMPL PHASE C	
1 AC1 (CB44)	OPEN
2 AC2 (CB90)	OPEN

C. PANEL 21 R.H. SIDE CONSOLE SWITCHING

ECS GLYCOL (S14)	OFF
CABIN AIR FAN 1 (S16)	OFF
CABIN AIR FAN 2 (S17)	OFF
RCS HEATERS	
A MNB (CB1)	OPEN
B MNA (CB2)	OPEN
C MNB (CB3)	OPEN
D MNA (CB4)	OPEN
SNSR UNIT	
DC BUS A (CB5)	OPEN
DC BUS B (CB6)	OPEN
AC BUS 1 (CB7)	CLOSED
AC BUS 2 (CB8)	CLOSED

D. MISCELLANEOUS ECS CONTROLS

CABIN PRESSURE RELIEF	
LEFT	BOOST/ENTRY
RIGHT	BOOST/ENTRY
ENTRY 02	OFF
GLYCOL ACCUMULATOR	CCW
CABIN TEMP	FULL C
CABIN AIR LOUVERS	OPEN
EVAP H20 VALVE	AUTO

E. WATER CONTROL PANEL

WASTE TANK SERVICING	OFF (CLOSED)
PRESSURE RELIEF	BOTH (1 AND 2)
POTABLE TANK INLET	OPEN
WASTE TANK INLET	AUTO

F. OXYGEN CONTROL PANEL

MAIN REGULATOR	NORMAL
WATER AND GLYCOL TANKS PRESSURE	
REGULATOR SELECTOR INLET (5.24A)	NORMAL
RELIEF SELECTOR OUTLET (5.24B)	NORMAL
PLSS FILL VALVE (4.13)	CLOSED
EMERGENCY CABIN PRESSURE (4.22C)	OFF
CABIN REPRESS (3.28C)	CLOSED

G. PANEL 204 INSTRUMENTATION PWR CONT

ESSENTIAL	
CB1	CLOSED
CB2	CLOSED
CB3	CLOSED
CB4	CLOSED
NON ESSENTIAL	
CB5 (SPARE)	OPEN
CB6 (SPARE)	OPEN
CB7	CLOSED
CB8	CLOSED
CB9	CLOSED
CB10	CLOSED

H. PANEL C14A14

AUX BAT SYS	
POST LDG BUS TIE	
BAT 1 AND 3 (S7)	OFF
BAT 2 AND 3 (S9)	OFF
AUX TO MAIN BUS TIE (S11)	OFF
AUX BUS TIE	
BAT 1 AND 3 (S8)	OFF
BAT 2 AND 3 (S10)	OFF
AUX BUS A	
MCP 1 (CB9)	OPEN
MCP 2 (CB10)	OPEN
MAIN BUS A ESSENT INST (CB14)	OPEN
MAIN BUS B	
UNLABELED (CB18)	OPEN
NON ESSENT BUS (CB13)	OPEN

AUX BUS B	
MCP 1 (CB11)	OPEN
MCP 2 (CB12)	OPEN
MAIN BUS B	
ESSENT INST (CB15)	OPEN
AUX TO MAIN	
UNLABELED (CB17)	OPEN
BUS TIE CONT (CB16)	OPEN
AUX BAT POST LDG MCP (CB8)	OPEN (SLUGGED)

I. IMU CONTROL PANEL 101

TRANSFER (S4)	MANUAL

J. G AND N OPTICS CONTROL PANEL 105

TRUNNION (A1)	NEUTRAL
CHECK COOLANT (S2)	AS IS
MARK (S24)	AS IS
MARK REJECT SWITCH	AS IS
ATTITUDE IMPULSE	
CONTROLLER JOY STICK (S19)	AS IS
ENABLE (S10)	OFF
CONDITION LAMPS (S5)	OFF
OPTICS	
SLAVE TELESCOPE (S17)	STAR/LOS
CONTROLLER	
SPEED (S3)	LOW
MODE (S15)	DIRECT
ZERO OPTICS/MANUAL/	ZERO
COMPUTER (S11)	OPTICS
TRACKER POWER (S4)	OFF
MAP AND DATA VIEWER	
POWER AND BRIGHTNESS (S18)	OFF
FILM DRIVE	
SINGLE FRAME	
UP (S20)	AS IS
DOWN S21)	AS IS
SLEW (S9)	CENTER
PANEL BRIGHTNESS (R1)	DIM
CHECK MODE LAMPS (S17)	AS IS
IMU TEMP MODE (S16)	AUTO
	OVERRIDE
ZERO (S7)	AS IS
GAIN PIPA (S2)	AS IS
IRIG (S23)	AS IS

K. NAV DISPLAY AND KEYBOARD 106

BRIGHTNESS (R1)	DIM

L. AGC MODE PANEL 107

AGC MODE (S1)	ON

M. PANEL 150 BATTERY CIRCUIT BREAKER

PYRO A	
SEQ A (CB14)	OPEN
RCS FUEL DUMP (CB15)	OPEN
PYRO B	
SEQ B (CB17)	OPEN
RCS FUEL DUMP (CB16)	OPEN
BAT CHGR BAT C (CB20)	OPEN
BAT C PWR POST LANDING ENTRY (CB19)	OPEN
BAT B PWR ENTRY (CB22)	OPEN
BAT A PWR ENTRY (CB21)	OPEN

N. PANEL 203 ELECTRICAL POWER MAIN

CIRCUIT BREAKER

MAIN A	
BAT BUS A (CB12)	OPEN
BAT C (CB11)	OPEN
MAIN B	
BAT C (CB10)	OPEN
BAT BUS B (CB9)	OPEN
POST LDG	
BAT BUS A (CB8)	OPEN
BAT BUS B (CB7)	OPEN
BAT C (CB13)	OPEN
MAIN A (CB6)	CLOSED
MAIN B (CB5)	CLOSED
INVERTER PWR	
NO. 1 MN A (CB4)	CLOSED
NO. 2 MN B (CB3)	CLOSED
NO. 3 MN A (CB2)	CLOSED
NO. 3 MN B (CB1)	CLOSED

O. PANEL 205 UPRIGHTING SYSTEM

COMPR NO. 1 (CB4)	OPEN
COMPR NO. 2 (CB5)	OPEN

P. ECS STEAM DUCT HTR PANEL

ECS STEAM DUCT HTR	
MNA (CB23)	OPEN
MNB (CB24)	OPEN

O. DSE RECORDER

ERASE/OFF SW	ERASE

8.4 TEST SET UP SHEET NO. 4 (SSET)

	PRE-POWER
S14A1	
REMOTE SENSE BUS A (CB10)	CLOSED
REMOTE SENSE BUS B (CB9)	OPEN
S14A22	
AUX PITCH (CB2)	CLOSED
AUX YAW (CB1)	CLOSED

8.5 TEST SETUP SHEET NO. 5 (LEFT)

8.6.1 PERFORM GSE PLACARD PER OCP-K-10020 FOR THE FOLLOWING EQUIPMENT..

C14-346
C14-354
C14-389
S23-114

8.6 TEST SETUP SHEET NO. 6 (LGSE, LGSM)

8.6.1 PERFORM GSE PLACARD PER OCP-K-10020

8.7 TEST SETUP SHEET NO. 7 (LPDS)

8.7.1 PERFORM GSE PLACARD PER OCP-K-10020 FOR THE FOLLOWING EQUIPMENT..

A14-074
A14-218
C14-481-301
C14-624
C14-626, P.S. 3 AND 4
C14-628, P.S. 3 AND 4
REDUNDANT POWER SUPPLY CONTROL PANEL
C14-621, UNITS 1 AND 2

8.8 TEST SETUP SHEET NO. 8 (UCET)

8.8.1 PERFORM GSE PLACARD PER OCP-K-10020 FOR THE FOLLOWING EQUIPMENT..

C14-316

8.9 TEST SETUP SHEET NO. 9 (UCMT)

8.9.1 PERFORM GSE PLACARD PER OCP-K-10020 FOR THE FOLLOWING EQUIPMENT..

S14-079

8.10 TEST SETUP SHEET NO. 10 (UFET)

8.10.1 PERFORM GSE PLACARD PER OCP-K-10020 FOR THE FOLLOWING EQUIPMENT..

C34-655

8.10.2 C14-205

CB1 - ON
CB18 - ON

VERIFY CB1 AND 18 LITES ON

8.11 TEST SETUP SHEET NO. 11 (UGCU)

8.11.1 PERFORM GSE PLACARD PER OCP-K-10020 FOR THE FOLLOWING EQUIPMENT..

S14-053

8.12 TEST SETUP SHEET NO. 12 (UGTR)

8.12.1 PERFORM GSE PLACARD PER OCP-K-10020 FOR THE FOLLOWING EQUIPMENT..

S14-053

8.13 TEST SETUP SHEET NO. 13 (UWGR)

8.13.1 PERFORM GSE PLACARD PER OCP-K-10020 FOR THE FOLLOWING EQUIPMENT..

S14-121

8.14 TEST SETUP SHEET NO. 14 (PGSE, PGSM)

8.14.1 PERFORM GSE PLACARD PER OCP-K-10023.

8.15 TEST SETUP SHEET NO. 15 (PLHM)

8.15.1 PERFORM GSE PLACARD PER OCP-K-10023 FOR THE FOLLOWING EQUIPMENT..

S14-066

8.16 TEST SETUP SHEET NO. 16 (PLOM)

8.16.1 PERFORM GSE PLACARD PER OCP-K-10023 FOR THE FOLLOWING EQUIPMENT..

S14-065

8.17 TEST SETUP SHEET NO. 17 (SATT)
CONCURRENTLY EXCEPT AS NOTED FOR THAT PARTICULAR

8.17.1 PERFORM GSE PLACARD PER OCP-K-10021 FOR THE
FOLLOWING EQUIPMENT..

C14-207
C14-208

8.18 TEST SETUP SHEET NO. 18 (SCMT)

8.18.1 PERFORM GSE PLACARD PER OCP-K-10021 FOR THE FOLLOWING EQUIPMENT..

Z00-025-401

8.19 TEST SETUP SHEET NO. 1 (SPET)

8.19.1 PERFORM GSE PLACARD PER OCP-K-10021 FOR THE FOLLOWING EQUIPMENT..

C14-300

8.20 TEST SETUP SHEET NO. 20 (SHCU)

8.20.1 PERFORM GSE PLACARD PER OCP-K-10021 FOR THE FOLLOWING EQUIPMENT..

C14-630 HELIUM FDSCU

8.21 TEST SETUP SHEET NO. 21 (SHFD)

8.21.1 PERFORM GSE PLACARD PER OCP-K-10021 FOR THE FOLLOWING EQUIPMENT..

8G14-840112
S14-113
LH2 SUBCOOLER

8.22 TEST SETUP SHEET NO. 22 (SHTR)

8.22.1 PERFORM GSE PLACARD PER OCP-K-10021 FOR THE FOLLOWING EQUIPMENT..

S14-009

8.23 TEST SETUP SHEET NO. 23 (SHVB)

8.23.1 PERFORM GSE PLACARD PER OCP-K-10021 FOR THE FOLLOWING EQUIPMENT..

8G14-840023
8G14-840099

8.24 TEST SETUP SHEET NO. 24 (SLHM)

8.24.1 PERFORM GSE PLACARD PER OCP-K-10021 FOR THE FOLLOWING EQUIPMENT..

S14-026

8.25 TEST SETUP SHEET NO. 25 (SLHT)

8.25.1 PERFORM GSE PLACARD PER OCP-K-10021 FOR THE FOLLOWING EQUIPMENT..

C14-630 LH2 FDSCU NO. 1
C14-630 LH2 FDSCU NO. 2

8.26 TEST SETUP SHEET NO. 26 (SLOM)

8.26.1 PERFORM GSE PLACARD PER OCP-K-10021 FOR THE FOLLOWING EQUIPMENT..

S14-032

8.27 TEST SETUP SHEET NO. 27 (SLOT)

8.27.1 PERFORM GSE PLACARD PER OCP-K-10021 FOR THE FOLLOWING EQUIPMENT..

C14-630 LO2 FDSCU NO. 1
C14-630 LO2 FDSCU NO. 2

8.28 TEST SETUP SHEET NO. 28 (SLVB)

8.28.1 PERFORM GSE PLACARD PER OCP-K-10021 FOR THE FOLLOWING EQUIPMENT..

8G14-840041-11 OXID VLV BOX (LEM)

8.29 TEST SETUP SHEET NO. 29 (SOMD)

8.29.1 PERFORM GSE PLACARD PER OCP-K-10021 FOR THE FOLLOWING EQUIPMENT..

8G14-840111
S14-113

8.30 TEST SETUP SHEET NO. 30 (SWSU)

8.30.1 PERFORM GSE PLACARD PER OCP-K-5044 FOR THE FOLLOWING EQUIPMENT..

S14-119

8.31 TEST SETUP SHEET NO. 31 (MACE)

8.31.1 REPORT TID NO. AT PRE-TEST BRIEFING.
TID NO. _____

8.31.2 PERFORM GSE PLACARD PER OCP-K-10019.

8.32 TEST SETUP SHEET NO. 32 (MCOM, MCRF, MECE, MECS, MEPS, MGNL, MGNR, MGNS, MGQC, MNQC, MOLC, MPWR, MRCE, MRCS, MREC, MSCA, MSCE(MSCS, MSEQ, MSRE, MSPS, MUDL).

8.32.1 PERFORM GSE PLACARD PER OCP-K-10019.

8.33 TEST SETUP SHEET NO. 33 (LFET)

8.33.1 PERFOKM GSE PLACARD PER OCP-K-10020 FOR THE FOLLOWING EQUIPMENT..

C14-389

8.34 TEST SETUP SHEET NO. 34 (LMDR)

8.34.1 PERFORM GSE PLACARD PER OCP-K-10020 FOR THE FOLLOWING EQUIPMENT..

X00-003

8.35 TEST SETUP SHEET NO. 35 (LPDS)

8.35.1 PERFORM GSE PLACARD PER OCP-K-10020 FOR THE FOLLOWING EQUIPMENT..

A14-052

A14-074

A14-218

C14-481

C14-626, (PS 3 AND PS 4)

C14-628 (PS 3 AND PS 4)

C14-621, (UNITS 1, 2)

C14-624

REDUNDANT PWR SUPPLY CONTROL PANEL

8.36 TEST SETUP SHEET NO. 36 (UFET)

8.36.1 PERFORM GSE PLACARD PER OCP-K-10020 FOR THE FOLLOWING EQUIPMENT..

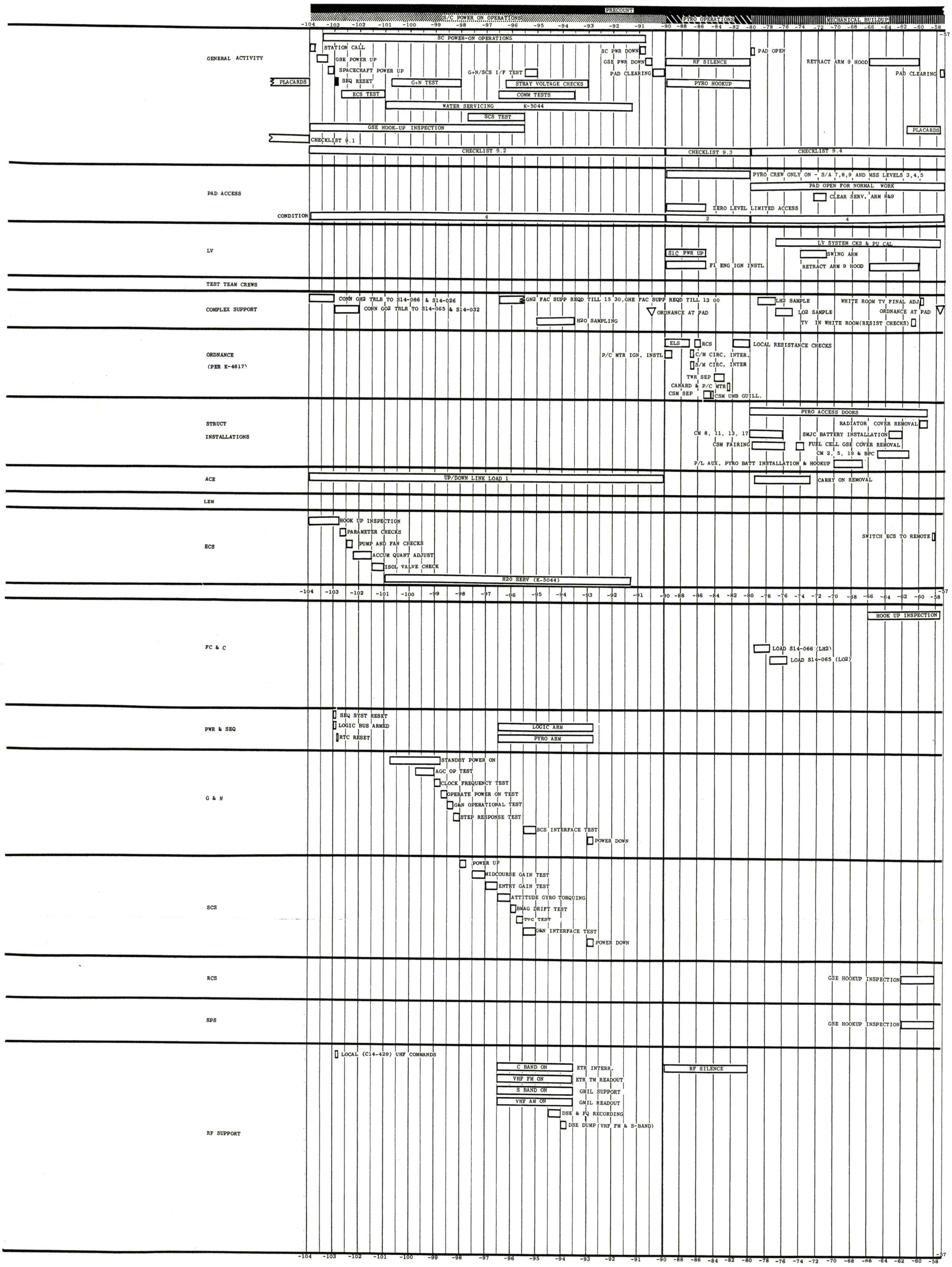
C34-655

LAUNCH COUNTDOWN SC 017

SHEET 1 OF 3

0-72
25 OCT 1967

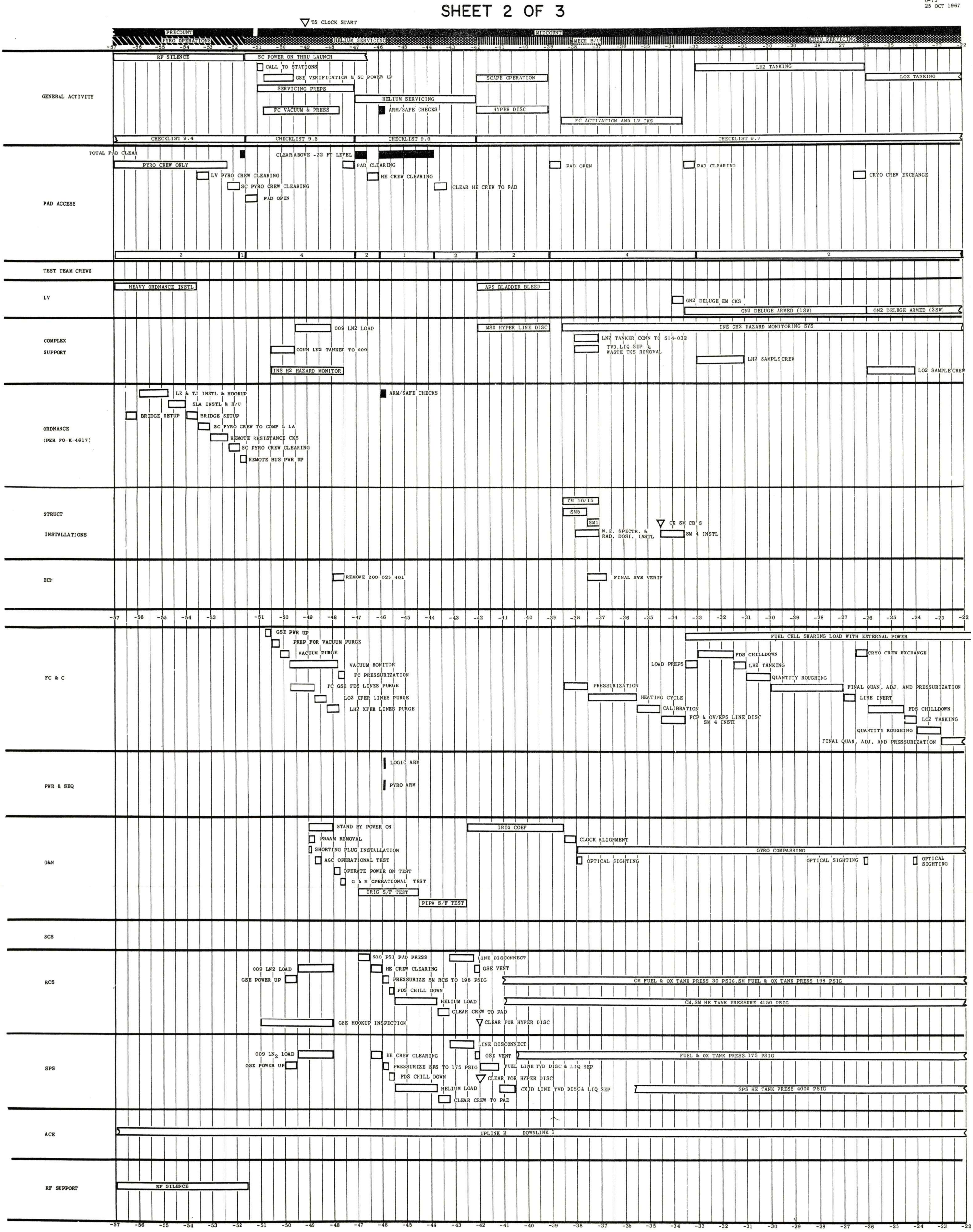
LV S&A CHECKS



LAUNCH COUNTDOWN SC 017

SHEET 2 OF 3

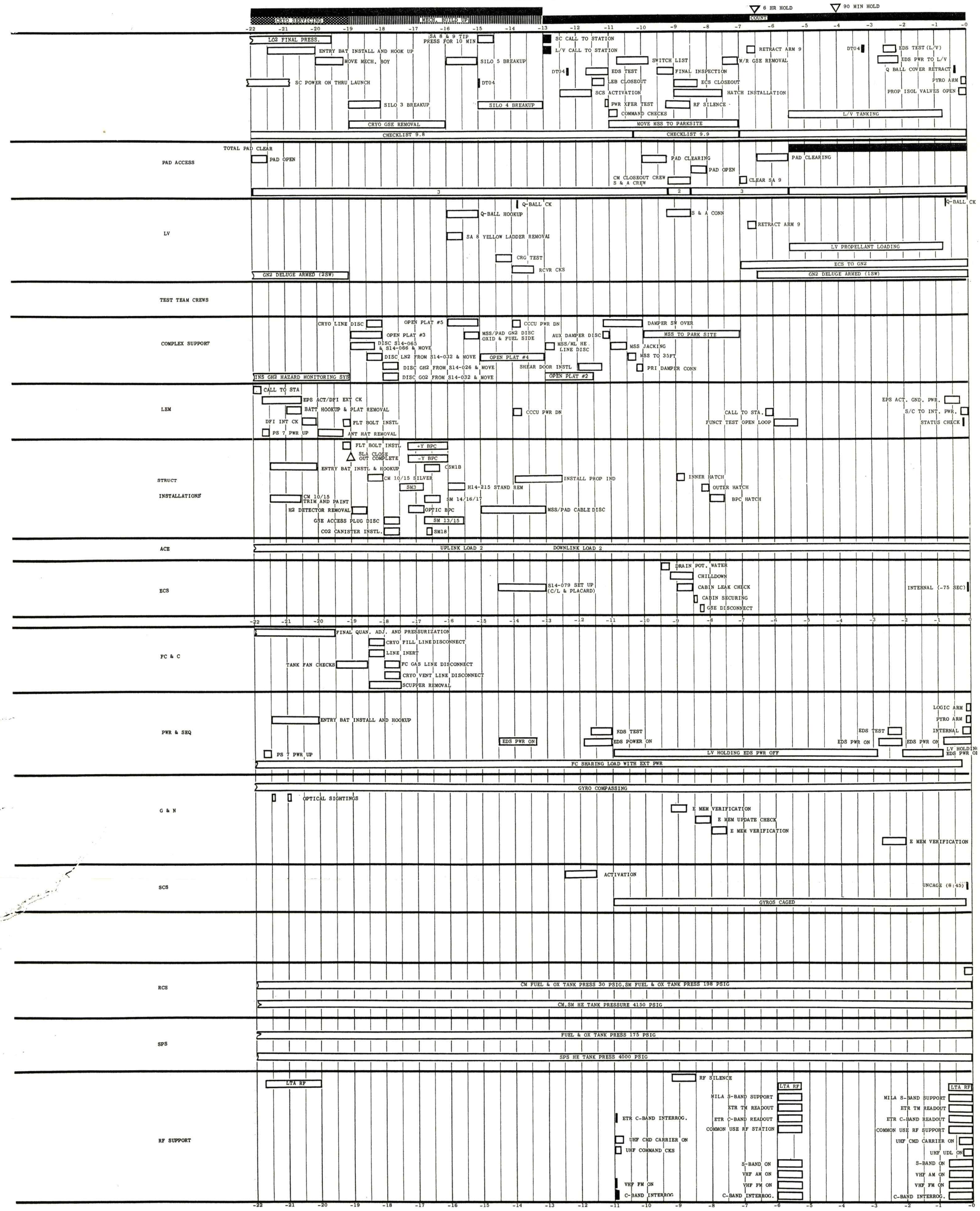
0-73
25 OCT 1967



LAUNCH COUNTDOWN SC 017

SHEET 3 OF 3

0-74
25 OCT 1967



NOTE

PERFORM THE FOLLOWING AS REQUIRED AT THE DISCRETION OF MLFC

MLFC	SLHT	H_2 FDSCU NO 1 VALVE POS POWER SW - ON VALVE XDUCER POWER SW - ON LOCAL/STANDBY SW. - LOCAL
MLFC	SLHT	H_2 FDSCU NO 2 LOCAL/STANDBY SW - LOCAL
MLFC	SLOT	O_2 FDSCU NO 1 VALVE POS POWER SW - ON VALVE XDUCER POWER SW - ON LOCAL/STANDBY SW - LOCAL
MLFC	SLOT	O_2 FDSCU NO 2 LOCAL/STANDBY SW - LOCAL
MLFC	SLOM	S14-032 CONTROL LOCATION SW - LOCAL
MLFC	SLHM	S14-026 CONTROL LOCATION SW - LOCAL
MLFC	PLOM	S14-065 LO_2 FLO - ON IF REQ'D
	PLHM	S14-066 LH_2 FLO - ON IF REQ'D

NOTE

PROCEED WITH FUEL CELL/CRYO OPERATIONS SUBSTITUTING FDS LOCAL CONTROL COMMANDS FOR REMOTE CONTROL STIMULI AS INDICATED IN THE FOLLOWING TABLE

FDS REMOTE CONTROL - ACE -				FDS LOCAL CONTROL		FUNCTION
R-START COMMAND	R-START STOP CMD	UPLINK	DNLINK	START COMMAND	STOP COMMAND	
GN_2 PORT M FC PRG.	STOP 032 FC MODES	KC 7473 (R070)	FC N2 PORT M FC 5958	GN_2 PORT M START (FC PANEL)	IN PROGRESS STOP FUEL CELL	SUPPLY 1450-1500 PSIG GN_2 TO PORT "M" - PV 13 OPEN - N/A AT CX39A
GN_2 PORT E FC PRG.	STOP 032 FC MODES	KC 7477 (R070)	FC N2 PORT E FC 5954	GN_2 PORT E START (FC PANEL)	IN PROGRESS STOP FUEL CELL	SUPPLY 100 PSIG GN_2 TO PORT E PV-12 OPEN
GO_2 PORT E FC	STOP 032 FC MODES	KC 7478 (R070)	FC O_2 PORT E FC 5955	GO_2 START (FC PANEL)	IN PROGRESS STOP FUEL CELL	SUPPLY 935 PSIG GO_2 TO PORT E PV-11 OPEN
GHe PURGE PRE-X	STOP O_2 CRYO MODES KC 7485	KC 7242 (R064)	He PRE 1/P FC 5236	HELIUM PURGE START (He PANEL)	He IN PROGRESS STOP	GHe AT 260 PSIG FROM PV-8 TO 032 PORT "D". PURGE OUT G35 PV-10 PV 7 OPEN
SC O2 CGSS C/O	STOP O_2 CRYO MODES	KC 7474 (R065)	O_2 CGSS C/O FC 5957	S/C CGSS C/O START	S/C CGSS C/O STOP	GO_2 @ 1100 PSIG SUPPLIED TO PORT D PV 15 OPEN
GO_2 PURGE PRE-X	STOP O_2 CRYO MODES	KC 7244 (R064)	O_2 PRE 1/P FC 5239	OXYGEN PURGE START (O2 PANEL)	O_2 IN PROGRESS STOP	GO_2 AT 260 PSIG FROM PV 14 TO 032 PORT "D" GO_2 PURGE OUT G35 PV 10 PV 7 OPEN
SUBCLR FILL O_2 032	STOP O_2 CRYO MODES	KC 7248 (R064)	CLR FIL 1/P FC 5247	SUB COOLER FILL START (S. CLR.)	SUB-CLR IN PROGRESS STOP	LO_2 SUPPLIED TO SUB CLR THRU PV-4
032 O2 SUB CLR ON	032 O_2 SUB CLR OFF	KC 7246 (R066)	CLR FIL 1/P FC 5247	LN_2 ON (S. CLR)	LN_2 OFF (S. CLR)	LN_2 SUPPLIED TO SUB CLR THRU PV-16 PV-4 CLOSED
	032 O2 SUB CLR OFF	KC 7247 (R066)			LN_2 OFF (S. CLR)	PV-16 CLOSES AND PV-4 OPENS LO2 REPLACES LN_2 IN SUB-CLR

FDS REMOTE CONTROL - ACE -				FDS LOCAL CONTROL		FUNCTION
R-START COMMAND	R-START STOP CMD	UPLINK	DNLINK	START COMMAND	STOP COMMAND	
PUMP COOLDOWN	STOP O_2 CRYO MODES	KC 7249 (R064)	PMP CL 1/P FC 5249	PUMP COOLDOWN START	SUB-CLR IN PROGRESS STOP	LO_2 FLOWS THRU PUMP THRU PV-1 AND OUT PORT F
START CIRCUL O_2 032	STOP XFR-CIRCUL KC 7253	KC 7251 (R065)	LO_2 CIR 1/P FC 5251	CIRCULATE START	CIRCULATE AND TRANSFER STOP	LO_2 FLOWS OUT PORT D INTO PORT G THRU PV-2 - PV-7 OPEN WHEN LINES CHILL PV-6 OPENS AND PV-7 CLOSES TO MAINTAIN STEADY STATE
LIQUID DUMP O_2	LIQUID DUMP O_2 OFF	KC 7476 (R065)		LIQUID DUMP (DEPRESS IN)	LIQUID DUMP (RELEASE)	DUMPS LO_2 OUT PORT F PV-7 OPENS - PV-6 CLOSE
INCR O_2 PMP SPEED	STOPS AUTO AFTER 3 SEC	KC 7254 (R066)		PUMP SPEED INCREASE	PUMP SPEED INCREASE (RELEASE)	INCREASE O_2 PUMP SPEED TO OBTAIN HIGHER O_2 FLOWRATE
DECR O_2 PMP SPEED	STOPS AUTO AFTER 3 SEC	KC 7255 (R066)		PUMP SPEED DECREASE	PUMP SPEED DECREASE (RELEASE)	DECREASE O_2 PUMP SPEED TO REDUCE O_2 FLOWRATE
LOW BLEED O_2 032-ON	LOW BLEED O_2 032-OFF	KC 7475 (R065)		LOW PRESSURE BLEED	LOW PRESSURE BLEED (RELEASE)	OPENS PV-1 FULLY TO ALLOW ADDITIONAL PUMP COOLDOWN
LIQUID XFR O_2 032	STOP XFR CIRCUL	KC 7252 (R068)	LO_2 XRF 1/P FC 5254	TRANSFER START	CIRCULATE AND TRANSFER STOP	CIRCUL MODE STOPS PV-6 CLOSES PV-5 OPENS FLOW THRU FDS
LIQUID DETANK O_2	STOP O_2 CRYO MODES	KC 7240 (R069)	CRYO DRN FC 5258	S/C DETANK CRYO DRAIN	DRAIN IN PRO-GRESS STOP	GO_2 AT 30 PSIG FROM PV-10 TO 032 PORT "K" PURGE LO_2 OUT G35 LV 10 PV 3- PV 10 OPEN

FDS REMOTE CONTROL - ACE -				FDS LOCAL CONTROL		FUNCTION
R-START COMMAND	R-START STOP CMD	UPLINK	DNLINK	START COMMAND	STOP COMMAND	
GN_2 O_2 DE-TANK PORT K	STOP O_2 CRYO MODES	KC 7479 (R069)	GN_2 DRN LO_2 FC 5956	GN_2 TO S/C (DRAIN PANEL)	DRAIN IN PRO-GRESS STOP	GN_2 AT 25 PSIG FROM PV 9 TO 032 PORT "K" GO_2 OUT G35 LV 10 PV 9 - PV 3 OPEN
LO_2 LINES DRAIN	STOP O_2 CRYO MODES	KC 7241 (R068)	LINES DRN FC 5260	DRAIN INTERCON-NECTING LINES	DRAIN IN PRO-GRESS STOP	LO_2 GRAVITY DRAINS THRU PV-3 AND PV 7 FROM LO_2 FILL LINES
GO_2 PURGE POST - X	STOP O_2 CRYO MODES	KC 7245 (R068)	O_2 POST 1/P FC 5244	OXYGEN POST CON-DITION START	OXYGEN IN PRO-GRESS STOP	GO_2 AT 260 PSIG FROM PV 14 TO 032 PORT "D" GO_2 OUT G35 PV 10 PV 7 OPEN
GHe PURGE POST -X	STOP O_2 CRYO MODES	KC 7243 (R069)	He POST 1/P FC 5233	HELIUM POST CON-DITION START	HELIUM IN PRO-GRESS STOP	GHe AT 260 PSIG FROM PV 8 TO 032 PORT "D" GNe OUT G35 PV10 PV 7 OPEN
	032 O_2 EMERG.STOP	KC 7256 (R046)		CB-1 RESET	EMERGENCY STOP	REMOVES ALL POWER FROM XFR UNIT OPENS CB-1
(C052) ENTER 3300102301 AUTO DETANK	(C052) ENTER 3300102301 DETNK-DE-ACT.	CRT DIS-PLAY 02 AUTO DE-TANK ON P11, L 24	MONITOR 02 TK, QUANT. SF0032 TK1 SF0033 TK2	O_2 EMERGENCY DETANK	CIRCULATE AND TRANSFER STOP	PV 20 OPEN He AT 135 PSIG INTO FDS FILL SYS - WILL NOT DETANK UNLESS PV5 IS CLOSED AND G35LV 10 IS OPENED
032 PV 5 VENT O_2 TKS	STOP O_2 CRYO MODES	KC 7579 (R032)	FC SC TKS VT FC 5164	MV 5 OPEN (AUTO)	MV 5 CLOSE	PV 5 - OPEN VENTS FDS AND S/C THRU FDS FILL SYS
GN_2 PORT E FC PRG	STOP 026 FC MODES	KC 7466 (R074)	FC N_2 PORT E FC 5950	FUEL CELL GN_2 START	FUEL CELL IN PROGRESS STOP	GN_2 AT 100 PSIG FROM PV12 TO 026 PORT "E"

FDS REMOTE CONTROL - ACE -				FDS LOCAL CONTROL		FUNCTION
R-START COMMAND	R-START STOP CMD	UPLINK	DNLINK	START COMMAND	STOP COMMAND	
GH_2 PORT E FC	STOP 026 FC MODES	KC 7470 (R074)	FC H_2 PORT E FC 5951	FUEL CELL GH_2 START	FUEL CELL IN PROGRESS STOP	GH_2 AT 260 PSIG FROM PV 11 TO 026 PORT "E"
GHe PURGE PRE - X	STOP H_2 CRYO MODES KC 7472	KC 7272 (R048)	He PRE 1/P FC 5271	HELIUM PURGE START (HELIUM PANEL)	HELIUM IN PROGRESS STOP	GHe AT 260 PSIG FROM PV 8 TO 026 PORT "D" PURGE OUT G36PV2 PV 7 - OPEN
SC H_2 CGSS C/O	STOP H_2 CRYO MODES	KC 7467 (R049)	SC CGSS C/O FC 5952	S/C CGSS C/O START	S/C CGSS C/O STOP	GH_2 AT 375 PSIG FROM PV 15 TO 026 PORT D
GH_2 PURGE PRE-X	STOP H_2 CRYO MODES	KC 7274 (R048)	GH_2 PRE 1/P FC 5274	HYDROGEN PURGE START	HYDROGEN IN PROGRESS STOP	GH_2 AT 260 PSIG FROM PV 8 TO 026 PORT "D" PURGE GHe OUT G36PV2 PV 3 OPEN
SUB-CLR FILL H_2 026	STOP H_2 CRYO MODES	KC 7248 (R048)	CLR FIL 1/P FC 5282	SUBCOOLER FILL START	SUB-CLR IN PROGRESS STOP	LH_2 SUPPLIED TO SUBCOOLER THRU PV-4
026 H_2 SUB-CLR ON	026 H_2 SUB SUB-CLR OFF	KC 7276 (R050)		SUBCOOLER VACUUM ON	SUB-CLR VACUUM OFF	GN_2 AT 200 PSIG FROM PV 13 TO SUB-CLR EJECTOR, SUPERCOOLS LH_2
PUMP COOLDOWN	STOP H_2 CRYO MODES	KC 7279 (R048)	PUMP CL 1/P FC 5284	PUMP COOLDOWN START	SUB-CLR IN PROGRESS STOP	LH_2 FLOWS THRU PUMP THRU PV 1 AND OUT PORT F

FDS REMOTE CONTROL - ACE -				FDS LOCAL CONTROL		FUNCTION
R-START COMMAND	R-START STOP CMD	UPLINK	DNLINK	START COMMAND	STOP COMMAND	
START CIRCUL H_2 026	STOP XFR CIRCUL KC 7283	KC 7281 (R049)	LH_2 CIR 1/P FC 5286	CIRCULATE START	CIRCULATE AND TRANSFER STOP	LH_2 FLOWS OUT PORT D INTO PORT G THRU PV 2 - PV 7 OPEN WHEN LINES CHILL PV 6 OPENS AND PV 7 CLOSES TO MAINTAIN STEADY STATE
LIQUID DUMP H_2 - ON	LIQUID DUMP H_2 OFF	KC 7469 (R049)		LIQUID DUMP (DEPRESS IN)	LIQUID DUMP (RELEASE)	DUMPS LH_2 OUT PORT F PV 7 OPENS - PV 6 CLOSES
INCR H_2 PMP SPEED	STOPS AUTO AFTER 3 SEC	KC 7284 (R050)		PUMP SPEED INCREASE	PUMP SPEED INCREASE (RELEASE)	INCREASE H_2 PUMP SPEED TO OBTAIN HIGHER H_2 FLOWRATE
DECR H_2 PMP SPEED	STOPS AUTO AFTER 3 SEC	KC 7285 (R050)		PUMP SPEED DECREASE	PUMP SPEED DECREASE (RELEASE)	DECREASE H_2 PUMP SPEED TO REDUCE H_2 FLOWRATE
LOW BLEED H_2 026 ON	LOW BLEED H_2 026 OFF	KC 7468 (R049)		LOW PRESSURE BLEED	LOW PRESSURE BLEED (RELEASE)	OPENS PV 1 FULLY TO ALLOW ADDITIONAL PUMP COOLDOWN
LIQUID XFR H_2 026	STOP XFR CIRCUL	KC 7282 (R072)	LH_2 XFR 1/P FC 5289	TRANSFER START	CIRCULATE AND TRANSFER STOP	CIRCUL MODE STOPS PV-6 CLOSES PV 5 OPENS LH_2 FLOW THRU FDS
LIQUID DE-TANK H_2	STOP H_2 CRYO MODES	KC 7270 (R073)	CRYO DRN FC 5293	S/C DETANK CRYO DRAIN	DRAIN IN PRO-GRESS STOP	GH2 AT 30 PSIG FROM PV-10 TO 026 PORT "K" PURGE LH_2 OUT G36PV2 PV3 - PV10 OPEN

FDS REMOTE CONTROL - ACE -				FDS LOCAL CONTROL		FUNCTION
R-START COMMAND	R-START STOP CMD	UPLINK	DNLINK	START COMMAND	STOP COMMAND	
GN_2 H_2 DE-TANK PORT K	STOP H_2 CRYO MODES	KC 7471 (R073)	GN_2 DRN LH_2 FC 5948	GN2 TO S/C DRN PANEL	DRAIN IN PROGRESS STOP	GN_2 AT 25 PSIG FROM PV-9 TO 026 PORT "K" PURGE GH_2 OUT G36PV2 PV3 - PV 9 OPEN
LH_2 LINES DRAIN	STOP H_2 CRYO MODES	KC 7271 (R072)	LINES DRN FC 5295	DRAIN INTERCON-NECTING LINES	DRAIN IN PROGRESS STOP	LH_2 GRAVITY DRAINS THRU PV 3 AND PV 7 FROM LH_2 FILL LINES
GH_2 PURGE POST -X	STOP H_2 CRYO MODES	KC 7275 (R072)	H_2 POST 1/P FC 5279	HYDROGEN POST CONDITION START	HYDROGEN IN PROGRESS STOP	GH2 AT 260 PSIG FROM PV 14 TO 026 PORT "D" PURGE LH_2 OUT G36PV2 PV 7 OPEN
GHe PURGE POST - X	STOP H_2 CRYO MODES	KC 7273 (R073)	He POST 1/P FC 5268	HELIUM POST CONDITION START	HELIUM IN PROGRESS STOP	GHe AT 260 PSIG FROM PV 8 TO 026 PORT "D" PURGE GH_2 OUT G36PV2 PV 7 OPEN
	026 H_2 EMERG. STOP	KC 7286 (R046)		CB-1 RESET	EMERGENCY STOP	REMOVES ALL PWR FROM XFR UNIT OPENS CB-1
(C052) ENTER 3300101301 AUTO DETANK	(C052) ENTER 3300101300 DETNK-DE-ACT	CRT DIS-PLAY H_2 AUTO DETANK-ON P11, L19	MONITOR TK, QUANT. SF0030 TK1 SF0031 TK2	H_2 EMERGENCY DETANK	CIRCULATE AND TRANSFER STOP	PV 20 OPEN - He AT 135 PSI INTO FDS FILL SYS. - WILL NOT DETANK UNLESS PV 5 IS CLOSED AND G35PV2 AND G36PV3 ARE OPEN
026 PV 5 VENT H_2 TKS	STOP H_2 CRYO MODES	KC 7578 (R032)	FC SC TK VT FC5163	MV 5 OPEN (AUTO)	MV 5 CLOSE	PV 5 OPEN VENTS FDS AND S/C THRU FDS FILL SYS

01-000

SECTION II - OPERATING PROCEDURES

CALL TO STATION - PRECOUNT

-10405 01-001 MSTC CVTS
1. VERIFY SAFETY CLEARANCE TO START TEST.
2. POWER WILL BE APPLIED TO THE SPACECRAFT IN APPROX 30 MIN.

NOTE

TEST SETUPS CONTAINED IN SECT 8.1.1

-10400 01-002 MTPE
START INTERNAL COUNTDOWN CLOCK

PA 01-003 MSTC ALL
1. ALL SC STATIONS REPORT COMPLETION OF PRE-POWER SETUPS ON ASSIGNED CHANNELS.
2. DO NOT REMOVE R-START FUNCTIONS.

01-004 MTPE
RECORD SETUP COMPLETION REPORTS..

MACE ----- REPORTS FOR ACE

MECS ----- REPORTS FOR MECE SECS UGCU UGTR UWGR SCMT SWSU

MLFC ----- REPORTS FOR MHFC

MEPS ----- REPORTS FOR MSEQ LPDS SSET MPWR SPDS

MSCS ----- REPORTS FOR MSCE MSCA

MSPS ----- REPORTS FOR MSPE PFRS PORS

MRCS ----- REPORTS FOR MRCE

MREC ----- REPORTS FOR MCCE

MGNS ----- REPORTS FOR MGNL MGNR

MCOM -----MUDL REPORTS FOR MOLC MCRF

MNQC -----

MGQC -----

01-004

SPAD REPORTS FOR
-----SFET UFET SSMT
SC01 SC02 LFET
UCET SATT SCET
SECC SMCC SC03

SPAD ALSO VERIFIES COMPLETION OF
OCP-K-10026, CHECKLIST 9.1
(NO. 6.1 FOR CDDT)

PGSE REPORTS FOR ELECTRICAL
-----GSE
PGSM REPORTS FOR MECHANICAL
-----GSE
LGSE REPORTS FOR ELECTRICAL
-----GSE
LGSM REPORTS FOR MECHANICAL
-----GSE
SGQC

SNQC

CSAT

NOTE

THE SETUPS REQUIRED UNDER THE
STATIONS ABOVE ARE FOR
PRECOUNT ONLY.

01-005 MSTC SNQC REPORT VERIFICATION OF OCP-K-10026,
SGQC CHECKLIST 6.1/9.1.

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NAA QC NASA QC

01-006 MSTC MNQC REPORT CONSTRAINTS LIST STATUS.
MGQC

01-007 MSTC ALL PERSONNEL FOLD OUT EMERGENCY SHUTDOWN
PROCEDURE, SECT. V.

01-008 MSTC MTPE PROCEED WITH TEST.

01-009 MTPE MECS BEGIN PERSONAL INSPECTION OF GSE
SETUPS

02-000 GSE VERIFICATION AND POWER UP -

PRECOUNT

-10345 02-001 MTPE MEPS ACTIVATE GSE

02-002 MEPS MACE MAG TAPE RECORDERS ON

02-003 MEPS UFET C14-205 VERIFY
CB 1, 2, 18, AND 19 LITES ON

02-004 MEPS MACE EXECUTE THE FOLLOWING R-START INSERTS..

		D	C	B	A
1.	R112	1	0	1	0
2.	R113	0	1	1	1
3.	R114	1	0	1	0
4.	R115	0	0	0	1

MACE SYNC ACQUIRED

02-005 MEPS CSAT VERIFY..

1. ML ACE PS BATT ENABLE ACTIVATED LITE ON
2. ML ACE BATT ON LITE OFF
3. ML CSM ACE (BUS B ACTIVATED) LITE ON
4. MSS ACE PS BATT ENABLE ACTIVATED LITE ON
5. MSS ACE BATT ON LITE OFF
6. MSS ACE BUS ACTIVATED LITE ON

02-006 MEPS LFET C14-240 VERIFY..

1. AC PWR LITE ON
2. -12 VDC PWR LITE ON
3. +6 VDC PWR LITE ON
4. +12 VDC PWR LITE ON

02-006

5. +28 VDC PWR LITE ON

C14-346 VERIFY..
C14-261 LITE (THRU WINDOW)

C14-484 VERIFY..

1. AM-1 LITE ON

2. AM-2 LITE ON

3. EM-1 LITE ON

02-007 MEPS LPDS C14-621 (UNITS 4 THRU 9) VERIFY..

1. 115 VAC LITE ON

2. 208 VAC LITE ON

3. REMOTE LOCAL SW - REMOTE

C14-624 VERIFY..
C1B-1 - CLOSED

C14-626 PS 2 VERIFY..

1. AC INPUT POWER ON LITE ON

2. DC OUTPUT POWER ON LITE ON

C14-626 PS 8 VERIFY..

1. AC INPUT POWER ON LITE ON

2. DC OUTPUT POWER ON LITE ON

C14-628 PS 2 VERIFY..
BATTERY ON LITE ON

C14-628 PS 8 VERIFY..
BATTERY ON LITE ON

02-008 MEPS UFET C14-232 VERIFY..

1. MODE LOCAL/REMOTE SW REMOTE

2. DC POWER ON/OFF SW - ON

3. ELAPSED TIME METER RUNNING

C14-267 VERIFY..

02-008

1. FDTCS NO. 1 PWR LITE ON

2. FDTCS NO. 2 PWR LITE ON

02-009 MEPS PFRS S14-060 VERIFY..

1. POWER ON LITE ON

2. CABINET PRESSURE GAGE INDICATES 5 +1/- 0 IN. H20

3. PURGE ON LITE OFF

4. UNIT READY LITE ON

5. PHASE CORRECT LITE ON

02-010 MEPS PORS S14-061 VERIFY..

1. POWER ON LITE ON

2. CABINET PRESSURE GAGE INDICATES 5+1/-0 IN. H20

3. PURGE ON LITE OFF

4. UNIT READY LITE ON

5. PHASE CORRECT LITE ON

02-011 (DELETED)

02-012 MEPS SATT C14-207 VERIFY..

1. POWER ON LITE ON

2. ELAPSED TIME METER OPERATING

C14-208 VERIFY..

02-012

1. ALL POWER DISTRIBUTION PANEL LITES ON

2. ELAPSED TIME METERS OPERATING

02-013 MEPS SFET C14-240 VERIFY..

1. AC PWR LITE LITE ON

2. -12 VDC PWR LITE ON

3. +6 VDC PWR LITE ON

4. +12 VDC PWR LITE ON

5. +28 VDC PWR LITE ON

C14-268 VERIFY..

1. AC PWR LITE ON

2. DC PWR LITE ON

C14-590 VERIFY..

1. PANEL PWR SW - ON

2. MAIN PWR CB1 - ON

3. JB1 THRU JB10 - ON

02-014 MEPS SFET C14-590

1. GIVE TP1 THRU TP22 LITE STATUS

2. ALL TP'S SHOWING NO - GO LITES OR NO LITE MAY BE SWITCHED TO OVERRIDE.

3. VERIFY FDS GO LITE ON

MTPE	GSE PURGE GO LITE ON	GV0014
	GSE PURGE NO - GO LITE OFF	GV0015

02-015 MEPS SFMT S14-132

1. J BOX NO. A5 VERIFY..
CB - CLOSED

2. J BOX NO. A6 VERIFY..
CB - CLOSED

02-016 MEPS SPDS C14-621 (UNITS 10, 11, 12, 13)
VERIFY..

1. 115 VAC LITE ON

2. 208 VAC LITE ON

3. REMOTE LOCAL SW - REMOTE

C14-626 (PS 1 + PS 5)
VERIFY..

1. AC INPUT POWER ON LITE ON

2. DC OUTPUT POWER ON LITE ON

C14-628 (PS 1)
VERIFY..
BATTERY ON LITE ON
FEEDER BUS B LITE ON

C14-628 (PS 5)
VERIFY
BATTERY ON LITE ON
FEEDER BUS B AND C LITES ON

02-017 MEPS MPWR	PS 2 OUTPUT ON LITE ON	GC5110	
	PS 2 GSE BUS B LITE ON	GC5115	
	PS 2 MAIN BUS VDC (P2-22) -----	GC5131	31+/-1
	PS 2 OUTPUT VDC -----	GC5114	31+/-1
02-018 MEPS	P/S 1 OUTPUT LITE ON	GC5138	10C22
	P/S 1 OUTPUT VDC -----	GC5141	31+/-1
	P/S 1 BAT ENABLE LITE ON	GC5140	
	P/S 1 BAT ON LITE OFF	GC5139	
	GSE BUS P/S 1 VDC -----	GC5149	31+/-1

02-019 MEPS LPDS C14-481
DC POWER ON LITE ON
AC POWER ON LITE ON
BLOWER OPERATION
HEAT SINK NO. 1 FAN OFF LITE OFF
HEAT SINK NO. 2 FAN OFF LITE OFF
VERIFY PS CONT REMOTE LITES ON

02-019			VERIFY S/M MTR SW REMOTE LITE ON		
	MEPS		HEAT SINK NO. 1 FAN OFF LITE OFF	GC5026	
			HEAT SINK NO. 2 FAN OFF LITE OFF	GC5027	
02-020	MEPS		PS 2 REMOTE SENSE (R088) ON	KC7737	
02-021	MEPS	LPDS	C14-628 (PS 2) REMOTE/LOCAL SENSING SW - LOCAL		
02-022	MEPS	MPWR	ADJUST PS A OUTPUT TO 32 VDC (C076)		
	MPWR		300 000 1320 IS INSERTED		
02-023	MEPS	MPWR	ADJUST PS B OUTPUT TO 32 VDC (C076)		
	MPWR		300 000 2320 IS INSERTED		
02-024	MEPS	MPWR	PS A AC START (R100) - ON	KC7022	
	LPDS		PS 3 AC INPUT LITE ON		
	MPWR		S/M MTR SW OPEN LITE ON	SC2410	10C08
02-025	MEPS	MPWR	PWR SUPPLY A DC ON (R100) - ON	KC7698	
	MPWR		GND P/S A VDC (P1-3)	GC5024	30-32
	MEPS		PS A DC OUTPUT LITE ON	GC5124	
	LPDS		PS 3 OUTPUT ON LITE ON		
02-026	MEPS	MPWR	PS A BATTERY ENABLE - ON (R100)	KC7695	
	MPWR		PS A BAT ENABLE LITE ON	GD5126	
	LPDS		BATTERY ON LITE ON		
	MEPS	MPWR	PS A GND PWR FILTER (C076) - ON	KC7768	
	MPWR		220 211 3111 IS INSERTED		
02-027	MEPS	MPWR	PS B AC START (R101) - ON	KC7032	
	LPDS		PS 4 INPUT POWER ON LITE ON		
02-028	MEPS	MPWR	PS B DC ON (R101) - ON	KC7702	
	MPWR		PS B OUTPUT ON LITE ON	GC5128	

02-028			GND PS B VDC (P1-3)	GC5028	30-32
	LPDS		PS 4 OUTPUT POWER ON LITE ON		
02-029	MEPS	MPWR	PS B BAT. ENABLE (R101) - ON	KC7699	
	MPWR		PS B BAT ENABLE LITE ON	GC5130	
02-030	MEPS	MPWR	PS B GND PWR FILTER (C076) - ON	KC7769	
	MPWR		220 211 3121 IS INSERTED		
02-031	MEPS	MPWR	VERIFY		
			P/S 5 OUTPUT LITE ON	GC5143	10C25
			P/S 5 OUTPUT VDC	GC5146	31+/-1
			GSE BUS P/S 5 VDC (P2-23)	GC5150	31+/-1
			P/S 5 BAT ON LITE OFF	GC5144	
			P/S 5 GSE BUS B ON LITE ON	GC5147	10C27
			P/S 5 GSE BUS C ON LITE ON	GC5148	10C28
			P/S 5 BAT ENABLE LITE ON	GC5145	
02-032	MEPS	MTPE	GSE POWER IS UP.		
			PS 8 LOCAL TO REMOTE		
	MTPE	LPDS	C14-626, P/S 8		A1E
			VERIFY..		
			AC INPUT POWER ON LITE ON		
			DC OUTPUT POWER ON LITE ON		
	MTPE	MPWR	VERIFY..		
			PS 8 OUTPUT ON LITE ON	GC5116	
			PS 8 BAT EN LITE ON	GC5118	
	MTPE	LPDS	C14-626, P/S 8		
			DC OUTPUT POWER OFF SW - ON		
	MPWR		PS 8 OUTPUT LITE OFF	GC5116	
			PS 8 BAT ON LITE ON	GC5117	
	LPDS		C14-626, P/S 8		
			DC OUTPUT POWER ON LITE OFF		
	MTPE	LPDS	C14-626, P/S 8		
			AC INPUT POWER STOP SW - ON		

02-032	LPDS		C14-626, P/S 8 AC INPUT POWER ON LITE OFF		
	MTPE	LPDS	C14-628, (PS 8) PWR SUPPLY INPUT ENABLE SW - REMOTE PWR SUPPLY OUTPUT ENABLE - REMOTE CONTROL SELECT SW - REMOTE		
	MTPE	MPWR	PS 8 AC START (R075) - ON	KC7686	
	LPDS		C14-626, P/S 8 AC INPUT POWER ON LITE ON		A1E
	MTPE	MPWR	PS 8 DC ON - ON (R075)	KC7687	
	MPWR		PS 8 OUTPUT LITE ON	GC5116	
	LPDS		C14-626, P/S 8 DC OUTPUT POWER ON LITE ON		A1E
	MTPE	MPWR	PS 8 BAT RESET (R067) - ON	KC7689	
	MTPE	MPWR	PS 8 BAT ENABLE (R075) - ON	KC7688	
02-033	MTPE	LPDS	C14-628 (PS 8) BATTERY BACK UP SW - OFF		
		LPDS	BATTERY ON LITE REMAINS ON		
		MPWR	PS 8 BAT EN LITE REMAINS ON PS 8 BAT ON LITE OFF	GC5118 GC5117	
02-034	MTPE	MPWR	PS 8 FEEDER BUS B (C076) - ON	KC7690	
	MPWR		22 0212 4331 IS INSERTED		
02-035	MTPE	MPWR	PS 8 FEEDER BUS C (C076) - ON	KC7691	
	MPWR		22 0212 4341 IS INSERTED		

CAUTION

SLOW SWITCHING OF THE FOLLOWING TWO FEEDER BUS SWITCHES FROM LOCAL TO REMOTE COULD RESULT IN A POWER LOSS DUE TO THE BREAK BEFORE MAKE ACTION OF THE SWITCHES.

	02-036	MTPE	LPDS	PS 8 FEEDER BUS B - REMOTE	
		LPDS		BUS B FEEDER LITE REMAINS ON	
	02-037	MTPE	LPDS	PS 8 FEEDER BUS C - REMOTE	
		LPDS		BUS C FEEDER LITE REMAINS ON	
	02-038	MTPE	MPWR	400 HZ PRI (C076) - ON	KC7693
		MPWR		220 212 4421 IS INSERTED	
	02-039	MTPE	MPWR	400 HZ BU (C076) - ON	KC7694
		MPWR		220 212 4431 IS INSERTED	
	02-040	MTPE	CSAT	LCC MOBILE LAUNCHER PWR 400 CPS SW - ON	
		CSAT		ACTIVATE LITE ON	
	02-041	MTPE	MPWR	400 HZ PRI (C076) - OFF	KC7693
		MPWR		220 212 4420 IS INSERTED	
		CSAT		ACTIVATE LITE OFF	
		LPDS		LOAD BU LITE ON	
	02-042	MTPE	MPWR	400 HZ PRI PWR (C076) - ON	KC7693
		MPWR		220 212 4421 IS INSERTED	
		CSAT		ACTIVATE LITE ON	
		LPDS		LOAD PRI LITE ON PRIMARY UNIT LOAD LITE ON	
PA	02-043	MSTC		POWER WILL BE APPLIED TO THE SPACECRAFT IN 1 MINUTE	

03-000 SC BUS POWER UP - PRECOUNT

-10315 03-001 MTPE MECS VERIFY GO FOR SC POWER UP.

03-002 MTPE MCOM UDL OFF - ON (R134) KT7038
CM RF OFF - ON (R133) KT7037

03-003 MTPE MSEQ MESC INDICATE POWER - ON

MSEQ MESC PYRO A RLY SAFE ON CD0084
MESC PYRO B RLY SAFE ON CD0085
LOGIC SW SAFE ON CD0088
PYRO SW SAFE ON CD0218
SM JETTISON A SAFE ON SD0352
SM JETTISON B SAFE ON SD0353
RCS SAFE A AND B ON CD0270

03-004 MEPS SC02 PANEL 150
BAT A PWR ENTRY (CB21) - CLOSED
BAT B PWR ENTRY (CB22) - CLOSED
BAT CHGR BAT C (CB20) - CLOSED
BAT C PWR POST LND/ENTRY (CB19) - CLOSED

03-005 MEPS SC01 PANEL 12 - READOUT DC INDICATIONS.

SC01 BAT BUS A VDC AMPS 35.5+-2.5VDC
BAT BUS B VDC AMPS 35.5+-2.5VDC
BAT C VDC AMPS 34.5+-3.5VDC
MAIN BUS A
FUEL CELL 1 IND. BARBERPOLE
FUEL CELL 2 IND. BARBERPOLE
FUEL CELL 3 IND. BARBERPOLE
MAIN BUS B
FUEL CELL 1 IND. BARBERPOLE
FUEL CELL 2 IND. BARBERPOLE
FUEL CELL 3 IND. BARBERPOLE

03-006 MEPS MPWR PS A TO BUS A - ON
PS B TO BUS B - ON

03-007 MEPS MPWR BUS A ISOL ON (C076) KC7655

MPWR 220 2254 431 IS INSERTED

03-008	MEPS	UFET	C14-205 CB16 - CLOSED CB17 - CLOSED		
	MEPS		SM MTR SW OPEN LITE ON		
			MTR SW PS _____ VDC (P1-12)	GC5030	38+2-0
	UFET		C14-205 CB8 THRU 17 LITES ON		
03-009	MEPS	MPWR	SM MTR SW CLOSE (R102) - ON	KC7636	
	MEPS		SM MTR SW OPEN LITE OFF	SC2410	
03-010	MPWR		MN BUS A VOLTS EXP _____ VDC	CC0346	28-31 VDC
			MN BUS B VOLTS EXP _____ VDC	CC0347	28-31 VDC
			POST LDG BUS VOLTS _____ VDC	CC0209	28-31 VDC
	MPWR		INV 1, 2, 3 DC PWR LITES OFF	CC2401 CC2402 CC2403	
03-011	MEPS	SC02	PANEL 22 CENTRAL TIMING SYS MNA (CB53) - CLOSED CENTRAL TIMING SYS MNB (CB52) - CLOSED		
			PANEL 25 EDS 2 BAT C (CB54) - CLOSED		
03-012	MEPS	SC01	PANEL C14A15 MAIN BUS A BAT 1 (CB1) - CLOSED B BAT 2 (CB2) - CLOSED A BAT 3 (CB3) - CLOSED B BAT 3 (CB4) - CLOSED		
			PANEL 18 AC INVERTER 1 MN A (S22) - MNA AC INVERTER 2 MN B (S23) - MNB		
	MEPS	MPWR	AC INVERTER 1 + 2 DC ON LITE ON	CC2401 CC2402	10C09 10C10

03-013	MEPS	SC01	PANEL 18 AC INVERTER 1 AC BUS 1 (S26) - ON AC INVERTER 2 AC BUS 2 (S31) - ON			
		MPWR	MAIN BUS A VOLTS EXP (P1-2L)	VDC	CC0346	28-31 VDC
			MAIN BUS B VOLTS EXP (P1-2R)	VDC	CC0347	28-31 VDC
		SC01	BUS 1 PHASE A	VAC CPS		115 +/- 2.3 VA
			BUS 1 PHASE B	VAC		115 +/- 2.3 VA
			BUS 1 PHASE C	VAC		115 +/- 2.3 VA
			BUS 2 PHASE A	VAC CPS		115 +/ 2.3 VA
			BUS 2 PHASE B	VAC		115 +/ 2.3 VA
			BUS 2 PHASE C	VAC		115 +/ 2.3 VA
03-014	MEPS	SC01	PANEL 18 AC BUS 1 (S25) - RESET THEN CENTER AC BUS 2 (S29) - RESET THEN CENTER			
		MPWR	AC BUS 1 OL LITE OFF		CC0242	
			AC BUS 2 OL LITE OFF		CC0243	
			AC BUS 1 FAIL LITE OFF		CC0236	
			AC BUS 2 FAIL LITE OFF		CC0237	
03-015	MEPS	SC02	PANEL C14A14 AUX TO MN BUS TIE CONT (CB16) - CLOSED AUX TO MN BUS TIE (S11) - ON AUX BUS A MCP 1 (CB9) - CLOSED MCP 2 (CB10) - CLOSED AUX BUS B MCP 1 (CB11) - CLOSED MCP 2 (CB12) - CLOSED			
03-016	MEPS	MSE0	PROGRAMMER RESET ON (R104)		KV7041	
03-017	MEPS	SC01	PANEL 18 AC BUS 1 RESET (S25) - RESET THEN CENTER.			
03-018	MEPS	MTPE	PWR ACTIVATION IS COMPLETE			
03-019	MTPE	SC02	PANEL 22 COMM B (S13) - AUTO			

03-020 MTPE MACE EXECUTE R112 (0000)

VERIFY EXT SYNC ACQUIRED

03-021 MREC	1. PCM TIMING EXTERNAL LITE ON.		CT0340	
	2. PCM BIT RATE NORMAL (P11-12) 01100110		CT0120	
	3. PCM HI LEVEL 85 PCT (P11-7)	VDC	CT0125	4.29 4.37
	4. PCM HI LEVEL 15 PCT VDC (P11-8)		CT0126	.709 .807
	5. PCM LO LEVEL 85 PCT MVDC (P11-9)		CT0127	34.02 35.27
	6. PCM LO LEVEL 15 PCT MVDC (P11-10)		CT0128	5.36 6.76
MREC	SCE POS SUP	VDC (P11-3)	CT0015	+20 +/-0.5
	SCE NEG SUP	VDC (P11-4)	CT0016	-20 +/-0.5
	SIG CON T	DEGREES F (P11-2)	CT0010	142 MAX
	SEN EX +5V	VDC (P11-5)	CT0017	5 +/-.2
	SEN EX +10V	VDC (P11-6)	CT0018	10 +/-.4

NOTE

MONITOR SCE PKG. TEMP. F
TEMPERATURE RISES ABOVE 142
DEGREES F. NOTIFY MTPE.

03-022 MTPE SC02 PANEL C14A14

MAIN BUS A ESSENT INSTR (CB14) - CLOSED
MAIN BUS B ESSENT INSTR (CB15) - CLOSED

03-023 MREC MTPE DATA SYSTEM IS OPERATIONAL

03-024 MTPE MSTC SC POWER UP COMPLETE

04-000 TEST OPERATIONS - PRECOUNT

-10300	04-001	MTPE	MSEQ	PROG RESET - ON (R104)	KV7041	
	04-002	MTPE	SC02	PANEL 22 MESC ARM A BAT A (CB19) - CLOSED MESC ARM B BAT B (CB18) - CLOSED PANEL 25 ELS A BAT A (CB8) - CLOSED ELS B BAT B (CB7) - CLOSED		
	04-003	MTPE	SC01	PANEL 16 RCS CMD (S11) - OFF (MOM) RCS TRANSFER (S14) - SM (MOM)		
	04-004	MTPE	MSEQ	GSE SM RESET - ON (R081)	KR9422	
	04-005	MTPE	CSAT	ARM ENABLE SW - ON VERIFY SAFE SW - OFF		
			MSEQ	ARM ENABLE LITE ON	GD5072	
111	04-006	MSTC	CVTS	SC POWER UP COMPLETE LOGIC BUS WILL BE ARMED		
	04-007	MTPE	MSEQ	LOGIC BUS ARM - ON (R080)	KC7016	
			MSEQ	LOGIC SW ARM LITE ON	CD0089	
				LOGIC SW SAFE LITE OFF	CD0088	
				LOGIC BUS A VDC -----	CD0200	34.5+/- 2.5 VD
				LOGIC BUS B VDC -----	CD0201	34.5+/- 2.5 VD
				PYRO BUS A VDC -----	CD0005	0.0
				PYRO BUS B VDC -----	CD0006	0.0
				BOOSTER CUT OFF A AND B LITES	CD0044	
				OFF	CD0045	
				DIRECT ULLAGE A AND B LITES OFF	CD0140	
					CD0141	
				RCS ACTIVATE A AND B LITES OFF	CD0170	
					CD0171	
				RCS TRANS A AND B LITES OFF	CR0248	
					CR0249	

04-007			ELS SAFE LITES (8) ON	CE0310 THRU CE0317	
			PYRO SW IND SAFE ON	CD0218	
			MESC PYRO RLYS A + B SAFE LITES ON	CD0084 CD0085	
			RCS SAFE A AND B LITE ON	CD0270	
			SM JETT SAFE A AND B LITES ON	SD0352 SD0353	
04-008	MTPE	MSEQ	LOGIC BUS A+B SAFE - ON (R080)	KD7019 KD7020	
	MSEQ		LOGIC SW SAFE LITE ON	CD0088	
			LOGIC SW ARM LITE OFF	CD0089	
			LOGIC BUS A VDC -----	CD0200	0.0 VDC
			LOGIC BUS B VDC -----	CD0201	0.0 VDC
04-009	MTPE	CSAT	ARM ENABLE SW - OFF		
	MSEQ		ARM ENABLE LITE OFF	GD5072	
10255 04-010	MSTC	CVTS	1. BUSES ARE SAFE 2. VERIFY CLEARANCE FOR MSOB UHF AND S-BAND COMMAND CARRIERS. (C14-429)		
04-011	MTPE	MCOM	VERIFY A14-237 IN PROPER CONFIGURATION		
04-012	MTPE	SC01	PANEL 20 UP DATA (S8) - UHF		
04-013	MTPE	MCOM	START BIO-MED RECORDER		
04-014	MTPE	MUDL	1. LOCAL COMMAND CARRIER - ON 2. SET UP TO MONITOR RTC'S ON UHF.		
04-015	MTPE	MCOM	UDL OFF (R134) - OFF	KT7039	
04-016	MTPE	MUDL	SEND THE FOLLOWING REAL TIME COMMANDS 5 53 13 60 23 70 43 50 VERIFY PROPER COMMANDS SENT		
04-017	MTPE	MCOM	VERIFY MAPS		

04-018 MTPE SC01 PANEL 20
S-BAND XPONDER (S1) - XPONDER PA
UPDATA (S8) - S-BAND

04-019 MTPE MCOM CM RF OFF (R133) - OFF KT7038

04-020 MTPE MUDL 1. LOCAL S-BAND CARRIER = ON
2. SET UP TO SEND AND MONITOR S-BAND COMMANDS.

04-021 MTPE MCOM VERIFY READY TO RECEIVE S-BAND UDL COMMANDS

04-022 MTPE MUDL 1. SEND TEST MESSAGES A AND B.

04-023 MTPE MCOM 1. VERIFY PROPER COMMANDS SENT.
2. TURN OFF BIO-MED RECORDER

04-024 MTPE SC01 PANEL 20
S-BAND XPONDER (S1) - CENTER
UPDATA (S8) - CENTER

04-025 MTPE MCOM UDL OFF (R134) - ON KT7039
CM RF OFF (R133) - ON KT7038

04-026 MTPE MUDL COMMAND CARRIERS - OFF

-10250 04-027 MSTC CVTS LOCAL COMMAND CARRIERS ARE OFF
STARTING ECS TEST

04-028 MTPE MECS VERIFY PERSONAL INSPECTION OF PLUMBING HOOKUP IS COMPLETE

04-029 MECS MTPE REQUEST SAFETY AND FIREMAN SUPPORT FOR H2O SERVICING IN APPROX 1.5 HRS.

04-030 MTPE SC02 C14A14
MAIN BUS B NON ESSENT BUS (CB13) - CLOSED

-10245 04-031 MTPE MECS PROCEED WITH SYSTEM TEST PER SEQ.
MECE 16 ON CH 227.
SC02
UGCU
UGTR
UWGR
SCMT
MNQC

-10230 04-032 MECS MTPE PREPS COMPLETE PROCEEDING
WITH FAN AND PUMP CHECKS

-10215	04-033	MECS	MTPE	FAN AND PUMP CHECKS COMPLETE PROCEEDING WITH ACCUMULATOR QUANTITY ADJUST
-10130	04-034	MECS	MTPE	ACCUM QUAN ADJUST COMPLETE SEND MSEQ TO CH 227 FOR WG ISOL VALVE CHECK.
	04-035	MTPE	MSEQ	SW TO CH 227.
	04-036	MSTC	CVTS	VERIFY SAFETY GO FOR WATER SERVICING.
-10100	04-037	MECS	MTPE	ECS SYSTEM TEST COMPLETE. PROCEEDING WITH WATER SERVICING PER K-5044, SEQ 05, 06, 07. SCO3, SWSU AND SCMT REQUIRED.
-10045	04-038	MTPE	MGNS MGNR MGNL SCO2 MNQC	SW TO CH 215 FOR SYSTEM TEST PER SECTION 20
	04-039	MSTC	CVTS	ECS SYSTEM TEST COMPLETE. STARTING G AND N TEST. STARTING WATER SERVICING
-10040	04-040	MGNS	MTPE	WARM-UP STARTED CONTINUING WITH AGC TESTS.
-99 00	04-041	MGNS	MTPE	AGC TESTS COMPLETE. PROCEEDING WITH CLOCK FREQUENCY TEST. SCO2 BACK ON STATION
-98 45	04-042	MGNS	MTPE	CLOCK FREQUENCY TEST COMPLETE
-98 40	04-043	MGNS	MTPE	READY TO CONTINUE G AND N TEST. SEND SCO2 TO CH 215.
	04-044	MTPE	SCO2	SW TO CH 215 TO SUPPORT G AND N.
-98 30	04-045	MGNS	MTPE	OPERATE POWER ON TEST COMPLETE. SCO2 BACK ON CH 222.
-98 00	04-046	MGNS	MTPE	STAR LOOP RESPONSE TEST COMPLETE. ALL PERSONNEL BACK ON CH 222

	04-047	MTPE	SC01	VERIFY P492 (MCP TVC BYPASS) INSTALLED.
	04-048	MTPE	SNQC	REPORT VERIF. OF P492 INSTALLATION
				------ ------- NAA QC NASA QC
	04-049	MTPE	MSEQ	PROG RESET (R104) - ON KV7041
	04-050	MTPE	MSCS MSCE MSCA SC01 MNQC	SWITCH TO CH 225 FOR SYSTEM TEST PER SECTION 18
-97 00	04-051	MSCS	MTPE	RATE MIDCOURSE GAIN CHECKS COMPLETE
-96 30	04-052	MSCS	MTPE	RATE GYRO TORQUING CHECKS COMPLETE
	04-053	MTPE	SC02	PANEL 150 PYRO A SEQ A (CB14) - CLOSED RCS FUEL DUMP (CB15) - CLOSED PYRO B SEQ B (CB17) - CLOSED RCS FUEL DUMP (CB16) - CLOSED
	04-054	MTPE	MCOM	REMOVE POWER CONNECTOR A1W1P1 FROM MICRODOT 400-500 MHZ FM SIGNAL GENERATOR IN C14-429. BAG AND SEAL BOTH POWER PLUG AND CONNECTOR.
	04-055	MTPE	CSAT	ARM ENABLE-ON SAFE SW - OFF
		MSEQ		ARM ENABLE LITE ON GD5072
	04-056	MSTC	CVTS	1. LOGIC AND PYRO BUSSES WILL BE ARMED 2. INSTALLED PYROS ARE SHORTED AND WILL REMAIN SHORTED UNTIL T-90 00 HRS.

04-057	MTPE	MSEQ	LOGIC BUS ARM (R080) - ON	KD7016	
	MSEQ		LOGIC SW ARM LITE ON	CD0089	
			LOGIC SW SAFE LITE OFF	CD0088	
			LOGIC BUS A VDC -----	CC0200	30 VDC MIN
			LOGIC BUS B VDC -----	CC0201	30 VDC MIN
04-058	MTPE	MSEQ	PYRO BUS ARM (R084) - ON	KD7015	
	MSEQ		PYRO SW ARM LITE ON	CD0219	
			PYRO SW SAFE LITE OFF	CD0218	
			PYRO BUS A VDC -----	CD0005	36 VDC MIN
			PYRO BUS B VDC -----	CD0006	36 VDC MIN
04-059	MTPE	SC02	PANEL 20 S-BAND XPONDER/XPONDER PWR AMPL (S1) - XPONDER PWR AMPL VHF AM T/R (S14) - T/R C-BAND (S13) - 2 PULSE VHF FM (S12) - ON POWER PMP (S23) - ON		
			PANEL 13 POWER (S5) - VOX		
04-060	MSTC	CVTS	VERIFY CLEARANCE FOR SC RF AS FOLLOWS C-BAND S-BAND VHF-FM (237.8) VHF-AM (296.8) SEND GMIL AND ORNG TO CH 214 BRING UP C-BAND INTERROGATION		
04-061	MTPE	MCOM	CM RF OFF - OFF	KT7038	
04-062	MTPE	MCOM MOLC MCRF	SW TO CH 214 FOR PRECOUNT READOUTS PER SEQUENCE 14		
04-063	CVTS	MSTC	C-BAND INTERROGATION ON, ORNG AND GMIL STANDING BY AN CH 214		
-96 15 04-064	MTPE	SPAD	PROCEED WITH POWER ON STRAY VOLTAGE CHECKS PER OCP-K-4617.		
04-065	MSTC	CVTS	STARTING POWER ON STRAY VOLTAGE CHECK		
-96 00 04-066	MSCS	MTPE	ATTITUDE BYRO TORQUING (ENTRY GAIN) CHECK COMPLETE.		

04-067 (DELEET ED

04-068 (DELETED)

-95 45 04-069 MSCS MTPE
1. DRIFT TEST COMPLETE.
2. SEND MSPS, SSET AND SSMT TO CH 225 TO SUPPORT SCS DURING GIMBALING TEST.
3. VERIFY AREA IS CLEAR TO GIMBAL.
4. PUT ENTRY BATTS ON MAIN BUS.

04-070 MTPE SPAD VERIFY AREA CLEAR TO GIMBAL

04-071 MTPE MSPS SSMT SSET SW TO CH 225 FOR SCS PITCH TVC TEST PER SECTION 18

04-072 MTPE SNQC REPORT VERIFICATION OF GIMBAL CLEARANCE

NAR QC	NASA QC

04-073 MTPE SC02 PANEL 203
MAIN A BAT BUS A (CB 12) - CLOSED
MAIN B BAT BUS B (CB 9) - CLOSED

PANEL 22
MAIN BUS TIE BAT A + C - BAT A + C
MAIN BUS TIE BAT B + C - BAT B + C

04-074 MTPE MSCS ENTRY BATTS ON MAIN BUS
AREA CLEAR TO GIMBAL

04-075 (DELETED)

04-076 (DELETED)

-95 35	04-077			(DELETED)
-95 30	04-078	MSCS	MTPE	1. SCS TEST COMPLETE. 2. GIMBALING COMPLETE. 3. TAKE ENTRY BATTS OFF MAIN BUS 4. READY FOR G AND N/SCS INTERFACE TEST.
	04-079	MSTC	CVTS	SCS TEST COMPLETE, STARTING G+N/SCS INTERFACE TEST
	04-080	MTPE	MGNS MGNR MGNL MNQC	GO TO CH 225 FOR G AND N/SCS INTERFACE TEST PER SEQ. 21.
	04-081	MTPE	SC02	PANEL 22 MAIN BUS TIE BAT A + C - OFF MAIN BUS TIE BAT B + C - OFF PANEL 203 MAIN A BAT BUS A (CB 12) - OPEN MAIN B BAT BUS B (CB 9) - OPEN
-95 15	04-082			(DELETED)
-95 00	04-083			(DELETED)
	04-084	MSCS	MTPE	G AND N/SCS INTERFACE TEST COMPLETE.
	04-085	MSTC	CVTS	G AND N/SC INTERFACE TEST COMPLETE
	04-086	MTPE	SC01	DISCONNECT AND REMOVE P492 (MCP TVC BYPASS) FROM SPACECRAFT.
	04-087	MTPE	SNQC	REPORT VERIFICATION OF P492 REMOVAL. ------ ------- NAA QC NASA QC
	04-088	MTPE	MSEQ	PROG RESET (R104) - ON KV7041

-94	40		04-089	MTPE MREC SC01 SC02 MNQC	PROCEED WITH INSTRUMENTATION TEST PER SEQ. 12 ON CH 213.

NOTE

MREC WILL COMPLETE DATA SHEETS ON A NON-INTERFERENCE BASIS.

		04-090	MECS	MTPE	REQUEST BENDIX SAMPLE SUPPORT FOR H2O SERVICING.
-94	05	04-091	MREC	MTPE	REQUEST MACE AND MCCE ON CH 213 FOR DSE DUMP SET-UP.
		04-092	MREC	MTPE	1. FQR AND DSE RECORDING COMPLETE. 2. REQUEST CLEARANCE FOR DSE DUMP
	214	04-093	MTPE	MCOM	VERIFY READY FOR DSE DUMP ON S-BAND FM AND VHF-FM.
-94	00	222	04-09+	MTPE	MREC	PROCEED WITH DSE DUMP ON CH 213 PER SEQ. 12.
-93	45		04-095	MREC	MTPE	STANDBY FOR LOSS OF STORED DATA
	214	04-096	MTPE	MCOM	STANDBY FOR LOSS OF STORED PCM MODULATION.
-93	40	222	04-097	MREC	MTPE	DSE DUMP IS COMPLETE.
			04-098	MTPE	SPAD	1. REMOVE TAPES FROM FQ AND DSE RECORDERS PER C/L 6.2/9.2. DELIVER TAPES TO MREC. 2. INSTALL FLIGHT TAPE IN FQR AND DSE RECORDER PER C/L 6.4/9.4.

NOTE

DO NOT INSTALL COVERS ON FQR AND DSE.

04-099 MTPE MREC PROCEED WITH TAPE RECORDER FLIGHT SET-UP PER SEQ. 12. REPORT WHEN COMPLETE.

04-100 MTPE SNQC REPORT VERIFICATION OF TAPE EXCHANGE

NAA QC	NASA QC

04-101 DELETED

-93 15 04-102 MTPE MCOM CM RF OFF - ON KT7038

NOTE

RF SILENCE UNTIL T-80 00

04-103 MTPE SC01 PANEL 20
VHF AM T/R (S14) - CENTER
C-BAND (S13) - CENTER
VHF FM (S12) - OFF
S-BAND XPONDER (S1) - OFF
POWER PMP (S23) - OFF

PANEL 13
POWER (S5) - OFF

04-104 MSTC CVTS SC RF IS OFF AND SC THRU WITH C-BAND AND S-BAND SUPPORT.

04-105 MTPE SPAD NOTIFY PYRO PEOPLE RF IS OFF

04-106 DELETED

-93 00 04-107 MTPE SPAD 1. VERIFY POWER ON STRAY VOLTAGE CHECKS COMPLETE
2. STAND BY TO START ORDNANCE HOOK-UP

04-108 MSTC CVTS POWER ON STRAY VOLTAGE CHECK COMPLETE.

04-109 MTPE SNQC REPORT VERIFICATION OF STRAY VOLT CKS.

NAA QC	NASA QC

	04-110	MTPE	MGNS MSCS SC01 MNQC	PROCEED WITH SYSTEM POWER DOWN PER SEQ. 21.		
	04-111			DELETED		
	04-112			DELETED		
-92 45	04-113	MTPE	MSEQ	PYRO BUS A SAFE - ON (R084)	KD7017	
				PYRO BUS B SAFE - ON (R084)	KD7018	
		MSEQ		PYRO SW ARM LITE OFF	CD0219	
				PYRO SW SAFE LITE ON	CD0218	
				PYRO BUS A VDC (19-7) -----	CD0005	0VDC
				PYRO BUS B VDC (19-8) -----	CD0006	0VDC
	04-114	MTPE	MSEQ	LOGIC BUS A SAFE - ON	KD7019	
				LOGIC BUS B SAFE - ON	KD7020	
		MSEQ		LOGIC SW ARM LITE OFF	CD0089	23C03
				LOGIC SW SAFF LITE ON	CD0088	
				LOGIC BUS A VDC (P19-5) -----	CD0200	0VDC
				LOGIC BUS B VDC (P19-6) -----	CD0201	0VDC
	04-115	MTPE	CSAT	ARM ENABLE - OFF SAFE SW - ON S/C BUSSES ARE SAFE		
		MSEQ		ARM ENABLE LITE OFF	GD5072	
	04-116	MTPE	MGNS MSCS	VERIFY SYSTEM POWER DOWN COMPLETE.		

NOTE

DO NOT PROCEED IF WATER SERVICING IS NOT COMPLETE.

-91 15

04-117 MTPE MECS VERIFY COMPLETION OF WATER SERVICING.

04-118 MTPE SC03 VACATE THE SPACECRAFT

04-119 MTPE SNQC REPORT VERIF. OF WATER SERV. COMPLETION

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NAA QC	NASA QC

04-120 MSTC CVTS WATER SERVICING COMPLETE

04-121 DELETED

04-122 DELETED

04-123 MTPE SC02 PANEL C14A14
MAIN BUS A ESS INST (CB14) - OPEN
MAIN BUS B ESS INST (CB15) - OPEN
MAIN BUS B NON ESS BUS (CB13) - OPEN

04-124 MTPE ALL STAND BY FOR MOMENTARY LOSS OF SYNC

04-125 MTPE MACE EXECUTE THE FOLLOWING R112
INSERT 1 0 1 0

04-126 MTPE SC02 PANEL 22
COMMUNICATIONS B (S13) - OFF
CENTRAL TIMING MNA (CB53) - OPEN
CENTRAL TIMING MNB (CB52) - OPEN

04-127 MTPE MSEQ PROG RESET - ON (R104) KV7041

-91 00

04-128 MTPE MEPS PROCEED WITH SC POWER DOWN

04-129 MEPS SC02 PANEL C14 A14
AUX BUS A
MCP 2 (CB10) - OPEN
MCP 1 (CB9) - OPEN
AUX BUS B
MCP 2 (CB12) - OPEN
MCP 1 (CB11) - OPEN
AUX TO MAIN BUS TIE (S11) - OFF
AUX TO MAIN BUS TIE CONT (CB16) - OPEN

04-130	MEPS	SC01	PANEL 18 AC BUS 1 RESET (S25) - OFF AC BUS 2 RESET (S29) - OFF AC INV 1 AC BUS 1 (S26) - OFF AC INV 2 AC BUS 2 (S31) - OFF AC INV 1 (S22) - OFF AC INV 2 (S23) - OFF		
	MPWR		INV 1, 2, AND 3 DC PWR LITES OFF	CC2401 CC2402 CC2403	
	MEPS		AC VOLTS 1 AND 2 OFF		
			MTR SW PS VDC (P1-12)	GC5030	38+2-0
04-131	MEPS	MPWR	SM MTR SW CLOSE - OFF (R102)	KC7636	
	MPWR		SM MTR SW OPEN LITE ON	SC2410	
			SC BUS A VOLTS EXP LESS THAN 21 (PI-2L)	CC0346	
			SC BUS B VOLTS EXP LESS THAN 21 (PI-2R)	CC0347	
04-132	MEPS	MPWR	BUS A ISOL OFF (C076) 220 2254 430 IS INSERTED		
	UFET		C14-205, CB8 THRU 15 LITES OFF		
04-133	MEPS	UFET	C14-205 CB16 - OPEN CB17 - OPEN		
	UFET		CB16 AND 17 LITES OFF		
04-134	MEPS	MPWR	PS A TO BUS A-OFF (R100)	KC7024	
			PS B TO BUS B OFF (R101)	KC7034	
04-135	MEPS	MPWR	PS B BAT ENABLE (R101) - OFF	KC7699	
		MPWR	PS B BAT EN LITE OFF	GC5130	
		LPDS	C14-628 PS 4 BATT ON LITE OFF		

04-136 MEPS	MPWR	PS B DC ON (R101) - OFF	KC7702
	MPWR	GSE BUS PS B IS 0+2-0 (P1-11) PS B OUTPUT ON LITE OFF	GC5128
	LPDS	C14-626 P/S 4 DC OUTPUT POWER LITE OFF	
04-137 MEPS	MPWR	PS B AC START (R101) - OFF	KC7032
	MPWR	GSE BUS PS B IS 0+2-0 (P1-3)	GC5028
	MEPS	GND PS B VDC IND. 0 +/- 1 VDC	GC5028
	LPDS	C14-626 PS 4 AC INPUT POWER ON LITE OFF	
04-138 MEPS	MPWR	PS A BAT ENABLE (R100) - OFF	KC7695
	MPWR	PS A BAT EN LITE OFF	GC5126
	LPDS	C14-628 PS 3 BAT ON LITE OFF	
04-139 MEPS	MPWR	PS A DC ON (R100) - OFF	KC7698
	MPWR	GSE BUS PS A IS 0+2-1 (P1-11) PS A OUTPUT ON LITE OFF	GC5132 GC5124
	LPDS	C14-626 PS 3 DC OUTPUT POWER ON LITE OFF	
04-140 MEPS	MPWR	PS A AC START (R100) - OFF	KC7022
	MPWR	GND PS VOLTS BUS A IS 0+2-0 (P1-3)	GC5024
	MEPS	GND PS A VDC IND. 0 +/- 1 (M)	GC5024
	LPDS	C14-626 PS 3 AC INPUT POWER ON LITE OFF	

04-141 MEPS SC02 PANEL 150
PYRO A
SEQ A (CB14) - OPEN
RCS FUEL DUMP (CB15) - OPEN
PYRO B
SEQ B (CB17) - OPEN
RCS FUEL DUMP (CB16) - OPEN
BAT CHGR BAT C (CB20) - OPEN
BAT C PWR POST LANDING (CB19) - OPEN
BAT A PWR ENTRY (CB21) - OPEN
BAT B PWR ENTRY (CB22) - OPEN

04-142 MEPS SC01 PANEL C14A15
POST LANDING
BAT 3 (CB6) - OPEN
BAT 2 (CB7) - OPEN
BAT 1 (CB5) - OPEN
MAIN BUS B BAT 3 (CB4) - OPEN
MAIN BUS A BAT 3 (CB3) - OPEN
MAIN BUS B BAT 2 (CB2) - OPEN
MAIN BUS A BAT 1 (CB1) - OPEN
PANEL 22
MESC LOGIC
A BAT A (CB21) - OPEN
B BAT B (CB20) - OPEN
MESC ARM
A BAT A (CB19) - OPEN
B BAT B (CB18) - OPEN

PANEL 25
EDS 2 BAT C (CB54) - OPEN
ELS
A BAT A (CB8) - OPEN
B BAT B (CB7) - OPEN
C/M - S/M TRANSFER
MN A (CB10) - OPEN
MN B (CB9) - OPEN

SC01 PANEL 18
NO AC OR DC VOLTAGE INDICATIONS.

04-143 MEPS MSEQ MESC IND PWR (R084) - OFF KD7021

MSEQ MESC PYRO A RLY SAFE OFF CD0084
MESC PYRO B RLY SAFE OFF CD0085
LOGIC SW SAFE OFF CD0088
PYRO SW SAFE OFF CD0218
SM JETTISON A SAFE OFF SD0352
SM JETTISON B SAFE OFF SD0353

04-144 MEPS MTPE SC POWER DOWN COMPLETE

04-145 MTPE UFET C14-205 CB1 - OPEN
CB18 - OPEN

04-146 MTPE SATT C14-207
CB1 - OPEN
CB2 - OPEN
CB3 - OPEN
C14-208
CB1 THRU CB11 - OPEN

04-147 MTPE MACE LOAD UPLINK/DOWNLINK LOAD 2

-90 30 04-148 MTPE SPAD 1. START CLEARING NON-ESSENTIAL PERSONNEL FOR ORDNANCE HOOK-UP
2. CLEAR FROM S/A 7, 8, 9, AND MSS LEVELS 3, 4 AND 5 EXCEPT FOR ESSENTIAL PERSONNEL

NOTE

ESSENTIAL SC PERSONNEL ARE..

NAR	NASA
SPAD (1)	QC (2)
TECHNICIAN (7)	ENG. (2)
SHOP SUPVR. (1)	
QC (4)	SUPPORT
ENG. (3)	
SAFETY (1)	VEHICLE DRIVERS (2)
	GAEC
	PLAT 3 STAGE MONITORS (2)

04-149 MSTC CVTS 1. PYRO AND LOGIC BUSES ARE SAFED
2. VERIFY RF SILENCE ON UNTIL T-80 00
3. SC IS POWERED DOWN
4. VERIFY SAFETY CLEARANCE FOR ORDNANCE HOOK-UP

04-150 MSTC CSAT TURN OVER ARM/SAFE SW KEY TO CPSS.

-80 00	04-151	MTPE	SPAD	PROCEED WITH ORDNANCE OPERATIONS PER OCP-K-4617
	04-152	MSTC	CVTS	STARTING INITIAL ORDNANCE INSTALLATION AND HOOKUP
-80 00	04-153	MTPE	SPAD	1. VERIFY PYRO INSTALLATION AND HOOK-UP COMPLETE
	04-154	MTPE	SNQC	REPORT VERIFICATION OF PYRO H/U.

NAA QC	NASA QC
04-155 MSTC CVTS	1. INITIAL PYRO WORK COMPLETE
	2. COMPLEX MAY BE OPENED FOR NORMAL WORK.

NOTE

WAIT FOR SPAD TO REPORT CREW ON STATION.

-80 00 04-156 MTPE SPAD PROCEED WITH MECHANICAL OPERATIONS PER CHECKLIST 6.4 (CDDT)/9.4 (COUNT)

NOTE

1. REMAINING SC OPERATIONS TO START OF SERVICING OPERATIONS DO NOT REQUIRE SC BUS POWER. CHECKLIST SHOULD BE COMPLETE BY T-57 30 HRS.

2. SC PRE-POWER SWITCHLIST IS RE-RUN APPROXIMATELY 2 HRS PRIOR TO START OF HEAVY ORDNANCE HOOKUP. PANEL 6 GIMBAL POSITION THUMBWHEELS TO REMAIN TAPED. DO NOT MOVE THUMBWHEELS.

3. ALL GSE EQUIPMENT WILL RETAIN ITS PRESENT ON/OFF STATUS UNTIL CHANGED BY MIDCOUNT TEST SET-UPS (SECT. 8.1.2).

04-157 MTPE MECS DISCONNECT WATER SERVICING GSE FROM SC AND SECURE GSE PER OCP-K-5044.

NOTE

FOR REMAINDER OF TEST, ITEMS INDICATED AS (L/V) OR (SUPPORT) MAY NOT BE VERIFIED OVER INTERCOM. FUNCTIONS ARE PROVIDED FOR INFO ONLY AND DO NOT REQUIRE QC VERIFICATION.

04-158 CVTS MSTC SERVICE ARM 8 + 9 WILL BE PRESSURIZED BETWEEN T-7230 AND T-7100. THERE WILL BE NO ARM ACCESS DURING THIS TIME.

-73 00		04-159	MTPE	SPAD	CLEAR ALL PERSONNEL FROM SERVICE ARMS 8 AND 9 AND W/R FROM T-72 30 UNTIL T-71 00 FOR SERVICE ARM PRESSURIZATION BY LV.
		04-160	MECS	MTPE	WATER SERVICING GSE IS SECURED.
		04-161	MTPE	SPAD	INSTALL MOVIE CAMERA PER C/L 9.4.
-71 00		04-162	CVTS	MSTC	PERSONNEL ARE NOW CLEAR TO ENTER ARMS 8 AND 9
		04-163	MTPE	SPAD	PERSONNEL ARE NOW CLEAR TO ENTER ARMS 8 AND 9
-67 00	111	04-164	MSTC	CVTS	VERIFY CSA9 (SUPPORT) READY FOR SERVICE ARM 9 HOOD RETRACT IN 1 HOUR (T-66 00).
-66 00		04-165	MSTC	CVTS	HAVE SERVICE ARM 9 HOOD RETRACTED
		04-165A	MTPE	MLFC	BEGIN PERSONAL INSPECTION OF GSE SETUPS.

-63 00	04-166 MTPE	SPAD	PROCEED WITH TV SETUP FOR REMOTE RESISTANCE CHECKS.
			NOTE
			CSAT COORDINATE TV CAMERA ADJUSTMENTS WITH BOTV.
-60 00	04-167 MTPE	SPAD	VERIFY HATCH AREA BUILD UP COMPLETE AND READY FOR HOOD RETURN.
	04-168 MSTC	CVTS	HAVE CSA9 CONNECT SERVICE ARM 9 HOOD.
	04-169 MTPE	MRCS	PROCEED WITH GSE HOOKUP PERSONAL INSPECTION.
-58 15	04-170 MTPE	MECS MECE UGCU UWGR MNQC	TRANSFER ECS GSE TO REMOTE CONTROL PER SEQ 16 ON CH 227.
-57 30	04-170A MLFC	MTPE	F.C. GSE INSPECTION IS COMPLETE.
	04-171 MTPE	SPAD	1. CLEAR NON-ESSENTIAL PERSONNEL FOR HEAVY ORDNANCE HOOK-UP.
			2. CLEAR TO FALL BACK AREA.
			NOTE
			ESSENTIAL SC PERSONNEL ARE..
			NAR --- SPAD (1) TECHNICIANS (7) SHOP SUPV (1) QC (4) ENG. (3) SAFETY (1) NASA --- QC (2) ENG (2) SUPPORT --- VEHICLE DRIVERS (2)
-57 00	04-172 MSTC	CVTS	1. VERIFY RF SILENCE ON UNTIL -51 30.
			2. VERIFY SAFETY CLEARANCE FOR HEAVY ORDNANCE HOOK-UP.
	04-173 CVTS	MSTC	CLEAR TO PROCEED WITH S/C ORDNANCE HOOK UP
	04-174 MTPE	SPAD	PROCEED WITH ORDNANCE OPERATIONS PER OCP-K-4617.

-54 00

04-175 MTPE SPAD 1. VERIFY HEAVY ORDNANCE INSTALLATION AND HOOK-UP COMPLETE.

04-176 MTPE SNQC REPORT VERIFICATION OF ORD. H/U.

NAA QC	NASA QC

2. PROCEED WITH BRIDGE SET-UP.

3. HAVE PYRO PERSONNEL VERIFY TV SET UP FOR REMOTE RESISTANCE CHECKS.

NOTE

CSAT COORDINATE TV CAMERA ADJUSTMENTS WITH BOTV

4. REPORT IN PRIOR TO CLEARING FOR REMOTE RESISTANCE CHECKS

-53 30

04-177 MSTC CVTS 1. CLEAR LV PYRO PERSONNEL FROM PAD FOR SC REMOTE RESISTANCE CHECKS.
2. NOTIFY BOTV THAT W/R TV CAMERA MUST NOT BE REPATCHED UNTIL COMPLETION OF REMOTE RESISTANCE CHECKS.

04-178 SPAD MTPE 1. BRIDGE SETUP COMPLETE.
2. NON-ESSENTIAL PERSONNEL ARE CLEARING TO FALL BACK AREA.
3. READY FOR REMOTE RESIS CKS.

04-179 MTPE SNQC REPORT VERIFICATION OF BRIDGE SETUP COMPLETION.

NAR QC	NASA QC

NOTE

ESSENTIAL SC PERSONNEL AS FOLLOWS..

NAR (1 EA.)	NASA (1 EA.)
SPAD	ENGINEER
ENGINEER	QC
TECHNICIAN	
QC	

SUPPORT (1 EA.)
VEHICLE DRIVER

-53 00 04-180 MSTC CVTS VERIFY PAD CLEAR OF ALL NON-ESSENTIAL PERSONNEL (L/V) FOR REMOTE RESISTANCE CHECKS

04-181 MTPE SPAD
1. CLEAR WITH PYRO PERSONNEL TO COMP. 1A FOR REMOTE RESISTANCE
2. REPORT ARRIVAL
3. SPAD CLEAR TO LUT 280 FT LEVEL AT THE C14-205 AND PERFORM THE FOLLOWING..
   C14-205
   CB16 - CLOSED
   CB17 - CLOSED

NOTE

WAIT FOR SPAD REPORT FROM COMPT 1A.

04-182 MTPE SPAD PROCEED WITH REMOTE RESISTANCE CHECKS PER OCP-K-4617.
REPORT COMPLETION

NOTE

WAIT FOR COMPLETION

	04-183 MTPE	SPAD	1.	CLEAR SC PERSONNEL FROM PAD FOR REMOTE POWER UP
			2.	CLEAR TO FALL BACK AREA
			3.	HAVE PYRO CREW DISCONNECT BRIDGE SET-UP PRIOR TO CLEARING.
-52 15	04-184 MSTC	CVTS	1.	REMOTE RESISTANCE CHECKS COMPLETE
			2.	REPORT WHEN PAD IS CLEARED FOR REMOTE BUS POWER UP

-51 45	04-185	CVTS	MSTC	CLEAR TO PROCEED WITH REMOTE BUS PWR UP		
-51 45	04-186	MTPE		STATUS CHECK FOR REMOTE POWER UP MSEQ ----- MEPS ----- MACE ----- SPAD ----- MSTC -----		
	04-187	MTPE	MSEQ	MESC IND PWR (R084) - ON	KD7021	
		MSEQ		MESC PYRO A RLY SAFE ON MESC PYRO B RLY SAFE ON LOGIC SW SAFE ON PYRO SW SAFE ON SM JETTISON A SAFE ON SM JETTISON B SAFE ON RCS SAFE A AND B ON	CD0084 CD0085 CD0088 CD0218 SD0352 SD0353 CD0270	
	04-188	MTPE	MCOM	UDL OFF (R134) - ON CM RF OFF (R133) - ON	KT7038 KT7037	
	04-189	MTPE	MEPS	ACTIVATE PS A AND PS B.		
	04-190	MEPS	MPWR	ADJUST PS A OUTPUT TO 32 VDC (C076)		
		MPWR		300 000 1320 IS INSERTED		
	04-191	MEPS	MPWR	ADJUST PS B OUTPUT TO 32 VDC (C076)		
		MPWR		300 000 2320 IS INSERTED		
	04-192	MEPS	MPWR	PS A AC START (R100) - ON	KC7022	
		LPDS		PS 3 AC INPUT LITE ON		
		MPWR		S/M MTR SW OPEN LITE ON	SC2410	10C08
	04-193	MEPS	MPWR	PWR SUPPLY A DC ON (R100) - ON	KC7628	
		MPWR		GND P/S A VDC (P1-3) -----	GC5024	28-31
	04-194	MEPS		PS A DC OUTPUT LITE ON	GC5124	
		LPDS		PS 3 OUTPUT ON LITE ON		

04-195	MEPS	MPWR	PS A BATTERY ENABLE - ON	KC7695	
	MPWR		PS A BAT ENABLE LITE ON	GD5126	
	LPDS		BATTERY ENABLE LITE ON		
04-196	MEPS	MPWR	PS B AC START (R101) - ON	KC7032	
	LPDS		PS 4 INPUT ON LITE ON		
04-197	MEPS	MPWR	PS B DC ON (R101) - ON	KC7632	
	MPWR		PS B OUTPUT ON LITE ON	GC5128	
			GND PS B VDC (P1-3)	GC5028	28-31
			PS B OUTPUT ON LITE ON	GV0129	
	LPDS		PS 4 OUTPUT ON LITE ON		
04-198	MEPS	MPWR	PS B BAT. ENABLE (R101) - ON	KC7699	
	MPWR		PS B BAT ENABLE LITE ON	GC5130	
04-199	MEPS	MPWR	BUS A ISOL ON (C076)	KC7655	
	MPWR		220 2254 431 IS INSERTED		

	04-200	MEPS	MPWR	PS A TO BUS A (R100) - ON	KC7024	
				PS B TO BUS B (R101) - ON	KC7034	
		MEPS		SM MTR SW OPEN LITE ON	SC2410	
				MTR SW PS VDC (P1-12)	GC5030	38+2-0
				GND PS A CURR AMPS (P1-4)	GC5025	
				GND PS B CURR AMPS (P1-4)	GC5029	
	04-201	MEPS	MPWR	SM MTR SW CLOSE (R102) - ON	KC7636	
		MEPS		SM MTR OPEN LITE OFF	SC2410	
				GND PS A CURR AMPS (P1-4)	GC5025	
				GND PS B CURR AMPS (P1-4)	GC5029	
	04-202	MEPS	MTPE	MAIN BUS A AND B ARE POWERED		
-51 30	04-203	MSTC	CVTS	1. REMOTE POWER UP COMPLETE 2. COMPLEX MAY BE OPENED FOR NORMAL WORK 3. HAVE W/R TV REMOVED.		

NOTE

WAIT FOR SPAD TO REPORT CREW ON STATION

00 05-000 CALL TO STATIONS - MIDCOUNT

- SERVICING OPERATIONS -

NOTE

1. GSE POWER IS ON
2. ACE UPLINK AND DOWNLINK ARE ON.

111 05-001 MSTC CVTS SC POWER COMING UP

NOTE

TEST SETUPS CONTAINED IN SECT 8.1.2

05-002 MSTC ALL
1. ALL STATIONS REPORT COMPLETION OF PREPOWER SETUPS ON ASSIGNED CHANNELS.
2. DO NOT REMOVE R START FUNCTIONS

05-003 MTPE RECORD SETUP COMPLETION REPORTS..

MACE	REPORTS FOR ACE	
MSCS	REPORTS FOR	MSCE MSCA
MECS	REPORTS FOR	MFCE UCMT UGCU UGTR UWGR
MLFC	REPORTS FOR	MHFC SLHM SHFD SLHT SLOM SOMD SLOT PLHM PLOM
MEPS	REPORTS FOR	MPWR LPDS MSEQ SPDS SSET
MSPS	REPORTS FOR	MSPE PFRS PFCU PORS POCU SFMT
MRCS	REPORTS FOR	MRCE SHTR SHVB SHCU
MREC	REPORTS FOR	MCCE
MGNS	REPORTS FOR	MGNL MGNR
MCOM		

05-003 CSAT

PGSE ---------- REPORTS FOR ELECTRICAL GSE

PGSM ---------- REPORTS FOR MECHANICAL GSE

LGSE ---------- REPORTS FOR ELECTRICAL GSE

LGSM ---------- REPORTS FOR MECHANICAL GSE

MNQC ----------

MGQC ----------

SGQC ----------

SNQC ----------

SPAD ---------- REPORTS FOR SCET
LFET SFET UFET
SECC SMCC UCET
SC01 SC02 SCMT
SATT LMDR

NOTE

SPAD ALSO VERIFIES COMPLETION OF OCP-K-10026, CHECKLIST 9.4

05-004 MSTC SNQC SGQC REPORT VERIFICATION OF OCP-K-10026, CHECKLIST 6.4/9.4.

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NAA QC NASA QC

05-005 MSTC MNQC MGQC REPORT CONSTRAINTS LIST STATUS.

05-006 MSTC MRCS VERIFY PERSONAL INSPECTION OF GSE HOOK UP STARTED

05-007 MSTC ALL PERSONNEL FOLD OUT EMERGENCY SHUTDOWN PROCEDURE, SECT. V.

50 45 05-008 MSTC CVTS VERIFY SAFETY CLEARANCE TO PROCEED WITH MID COUNT.

05-009 MSTC MTPE PROCEED WITH TEST.

-50 45

06-000 GSE POWER UP - SERVICING OPERATIONS

06-001 MID-COUNT VERIFICATION

06-002 MTPE CSAT VERIFY..
1. ML ACE PS BATT ENABLE ACTIVATED LITE ON
2. ML ACE BATT ON LITE OFF
3. ML CSM ACE (BUS B ACTIVATED LITE ON
4. MSS ACE PS BATT ENABLE ACTIVATED LITE ON
5. MSS ACE BATT ON LITE OFF
6. MSS ACE BUS ACTIVATED LITE ON

06-003 MTPE LFET C14-240 VERIFY..
1. AC PWR LITE ON
2. -12 VDC PWR LITE ON
3. +6 VDC PWR LITE ON
4. +12 VDC PWR LITE ON
5. +28 VDC PWR LITE ON

C14-346 VERIFY..
C14-261 LITE (THRU WINDOW)

C14-484 VERIFY..
1. AM-1 LITE ON
2. AM-2 LITE ON
3. EM-1 LITE ON

06-004 MTPE LPDS C14-621 (UNITS 4 THRU 9) VERIFY..
1. 115 VAC LITE ON
2. 208 VAC LITE ON
3. REMOTE LOCAL SW - REMOTE

C14-624 VERIFY..
C1B-1 - CLOSED

C14-626 PS 2 VERIFY..
1. AC INPUT POWER ON LITE ON
2. DC OUTPUT POWER ON LITE ON

C14-626 PS 8 VERIFY..
1. AC INPUT POWER ON LITE ON
2. DC OUTPUT POWER ON LITE ON

C14-628 PS 2 VERIFY..
BATTERY ON LITE ON

06-004

C14-628 PS 8 VERIFY..
BATTERY ON LITE ON

C14-481
DC POWER ON LITE ON
AC POWER ON LITE ON
BLOWER OPERATION
HEAT SINK NO. 1 FAN OFF LITE OFF
HEAT SINK NO. 2 FAN OFF LITE OFF
VERIFY PS CONT REMOTE LITES - ON
VERIFY S/M MTR SW REMOTE LITES - ON

06-005 MTPE UFET C14-232 VERIFY..
1. MODE LOCAL/REMOTE SW REMOTE
2. DC POWER ON/OFF SW - ON
3. ELAPSED TIME METER RUNNING

C14-267 VERIFY..
1. EDTCS NO. 1 PWR LITE ON
2. EDTCS NO. 2 PWR LITE ON

C14-205 VERIFY..
CB2 AND CB19 LITES ON

06-006 MTPE MECS VERIFY ECS GSE IN REMOTE CONTROL

06-007 MTPE SFET C14-240 VERIFY..
1. AC PWR LITE ON
2. -12 VDC PWR LITE ON
3. +6 VDC PWR LITE ON
4. +12 VDC PWR LITE ON
5. +28 VDC PWR LITE ON

C14-268 VERIFY..
1. AC PWR LITE ON
2. DC PWR LITE ON

C14-590 VERIFY..
1. PANEL PWR SW - ON
2. MAIN PWR CB1 - ON

06-008 MTPE SPDS C14-621 (UNITS 10, 11, 12, 13)
VERIFY..
1. 115 VAC LITE ON
2. 208 VAC LITE ON
3. REMOTE LOCAL SW - REMOTE

C14-626 PS1 AND PS5
VERIFY..
1. AC INPUT POWER ON LITE ON
2. DC OUTPUT POWER ON LITE ON
C14-628 PS1 AND PS5
VERIFY..
BATTERY ON LITE ON

06-009	MTPE	SPDS	C14-626 (PS1) VERIFY.. AC INPUT POWER ON LITE ON DC OUTPUT POWER ON LITE ON		
			C14-628 (PS1) FEEDER BUS B ON LITE ON		
		MPWR	P/S 1 OUTPUT LITE ON	GC5138	10C22
			P/S 1 OUTPUT VDC	GC5141	29+/-1

			P/S 1 BAT ENABLE LITE ON	GC5140	
			P/S 1 BAT ON LITE OFF	GC5139	
			GSE BUS P/S 1 VDC	GC5149	29+/-1

06-010	MTPE	SPDS	C14-626 PS5 VERIFY.. AC INPUT POWER ON LITE ON		
06-011	MTPE	MPWR	VERIFY.. P/S 5 OUTPUT LITE ON	GC5143	10C25
			P/S 5 OUTPUT VDC	GC5146	31+/-1

			GSE BUS P/S 5 VDC	GC5150	31+/-1
			(P2-23) -----		
			P/S 5 BAT ON LITE OFF	GC5144	
		MPWR	VERIFY.. P/S 5 GSE BUS B ON LITE ON	GC5147	10C28
			P/S 5 GSE BUS C ON LITE ON	GC5148	10C28
			P/S 5 BAT ENABLE LITE ON	GC5145	
		SPDS	C14-628 (PS5) (VERIFY) FEEDER BUS B ON LITE ON FEEDER BUS C ON LITE ON		
06-012	MTPE	SFET	LDW410-11180-1 (LEM SW UNIT) +28 VDC SW - +28 VDC		
		SFET	+28 VDC FACILITY LITE ON MODE CONCURRENT LITE ON		
06-013	MTPE	SFET	C14-626 CB1 (C BUS) - CLOSED		
06-014			DELETED		
06-015	MTPE	MLFC MHFC SLHT SLOT SHFD SOMD SLOM	PROCEED WITH PREP FOR VACUUM PURGE PER SEQ 25 ON CH 224. SLHM PGSM MNQC		

	06-016	MTPE	MRCS MRCE SHCU POCU PFCU SHTR MNQC	PROCEED WITH GSE POWER UP PER SECTION 24 ON CH 216.
	06-017	MTPE	SPAD	VERIFY G + N SHORTING PLUG 1007593-011 AVAILABLE IN W/P.
-50 30	06-018	MSTC	CVTS	VERIFY INS H2 HAZARD MONITOR SYSTEM IS READY TO SUPPORT FUEL CELL PRESSURIZATION.
	06-019	MLFC	MTPE	FC GSE PWR UP COMPLETE. PROCEEDING WITH BLANKET INITIATION.
	06-020	MSTC	CVTS	STARTING FUEL CELL VACUUM AND PRESSURE TEST.
-50 10	06-021	MLFC	MTPE	PREP FOR VACUUM PURGE COMPLETE. PROCEEDING WITH FC AND CGSS VACUUM PURGE PER SEQ. 26 SEND SC01 TO CH 224. (NOTE - A14-019 WILL BE RECONFIGURED)

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07-000 SC BUS POWER UP - SERVICING OPERATIONS

07-001 MTPE MECS VERIFY GO FOR AC PWR UP

07-002 MTPE MEPS ACTIVATE REMAINING S/C BUSSES.

07-003 MEPS SC02 PANEL 150
BAT A ENTRY (CB21) - CLOSED
BAT B ENTRY (CB22) - CLOSED
BAT CHRG BAT C (CB20) - CLOSED
BAT B PWR POST LND/ENTRY (CB19) - CLOSED
PYRO A RCS FUEL DUMP (CB15) - CLOSED
PYRO B RCS FUEL DUMP (CB16) - CLOSED

PANEL C14A15
POST LANDING
BAT 3 (CB6) - CLOSED
BAT 2 (CB7) - CLOSED
BAT 1 (CB5) - CLOSED

MPWR INVERTER 1, 2, 3 DC PWR LITES OFF CC2401 CC2402 CC2403

07-004 MEPS SC01 PANEL 22
CTE MNA (CB53) - CLOSED
CTE MNB (CB52) - CLOSED

07-005 MEPS SC01 PANEL 18
AC INVERTER 1 (S22) - ON
AC INVERTER 2 (S23) - ON

MEPS MPWR AC INVERTER 1 + 2 DC POWER LITE ON CC2401 10C09 CC2402 10C09

07-006 MEPS SC01 PANEL 18
1. AC INVERTER 1 AC BUS 1 (S26) - ON
2. AC INVERTER 2 AC BUS 2 (S31) - ON
3. AC BUS 1 (S25) - RESET THEN CENTER
4. AC BUS 2 (S29) - RESET THEN CENTER

07-007 MEPS SC02 PANEL C14A14
AUX BUS A
MCP 1 (CB9) - CLOSED
MCP 2 (CB10) - CLOSED
AUX BUS B
MCP 1 (CB11) - CLOSED
MCP 2 (CB12) - CLOSED
AUX TO MN BUS TIE (CB16) - CLOSED
AUX TO MN BUS TIE (S11) - ON

07-008 MEPS MSEQ PROGRAMMER RESET (R104) - ON KC7041

07-009 MEPS SC01 PANEL 18
AC BUS 1 RESET (S25) - RESET THEN CENTER

07-010 MEPS MTPE AC PWR ACTIVATION IS COMPLETE.

07-011 MTPE MSTC PWR ACTIVATION COMPLETE.

07-012 MTPE SC01 PANEL 22
COMMUNICATIONS B (S13) - AUTO

07-013 MTPE MACE EXECUTE R112 (0000)

VERIFY EXT SYNC ACQUIRED

07-014 MREC

1.	PCM TIMING EXTERNAL LITE ON.	CT0340	
2.	PCM BIT RATE NORMAL INDICATION ON 01100110	CT0120	
3.	PCM HI LEVEL 85 PCT VDC (P11-7) --.--	CT0125	4.33 +/-.04
4.	PCM HI LEVEL 15 PCT VDC (P11-8) --.--	CT0126	.758 +/-.049
5.	PCM LO LEVEL 85 PCT MVDC (P11-9) --.--	CT0127	34.645 +/-.625
6.	PCM LO LEVEL 15 PCT MVDC (P11-10) --.--	CT0128	6.06 +/-0.7

07-014 MREC		SCE POS SUP VDC (P11-3)	CT0015	+20 +/-0.5
		SCE NEG SUP VDC (P11-4)	CT0016	-20 +/-0.5
		SCE EX +5V VDC (P11-5)	CT0017	5 +/- .2
		SCE EX +10V VDC (P11-6)	CT0018	10 +/- .4
	MSEQ	ELS SAFE LITES (8) ON	CE0310 THRU CE0317	
07-015 MREC	SC02	PANEL C14A14 MAIN BUS A ESSENT INSTR (CB14) - CLOSED MAIN BUS B ESSENT INSTR (CB15) - CLOSED		
07-016 MREC	MTPE	DATA SYSTEM IS OPERATIONAL		
07-017 MTPE	MACE	VERIFY UPLINK LOAD 2 AND DOWNLINK LOAD 2		
07-018 MTPE	SC01 MEPS	PANEL 18 AND CRT READ THE FOLLOWING..		

	SC01	MEPS		
PYRO BAT B	VDC	VDC	CC0228	36 MIN
PYRO BAT A	VDC	VDC	CC0227	36 MIN
BAT C	VDC	VDC	CC0212	36 MIN
BAT BUS B	VDC	VDC	CC0211	30 MIN
BAT BUS A	VDC	VDC	CC0210	30 MIN
MN BUS B	VDC	VDC	CC0207	28.5-32
MN BUS A	VDC	VDC	CC0206	28.5-3.2
AC BUS 1 PHA	VAC	VAC	CC0200	115+/-2.3
AC BUS 1 PHA	CPS	CPS	CC0213	400+/-2
AC BUS 1 PHB	VAC	VAC	CC0201	115+/-2.3
AC BUS 1 PHC	VAC	VAC	CC0202	115+/-2.3
AC BUS 2 PHA	VAC	VAC	CC0203	115+/-

07-018

	AC BUS 2 PHA	CPS	CPS	CC0217	2.3 400+/- 2
	AC BUS 2 PHB	VAC	VAC	CC0204	115+/- 2.3
	AC BUS 2 PHC	VAC	VAC	CC0205	115+/- 2.3
MEPS	AUX BAT 1	VDC		CC0191	36 MIN
	AUX BAT 2	VDC		CC0192	36 MIN
	AUX BAT 3	VDC		CC0193	36 MIN
	SMJC BAT 1	VDC		CD0350	36 MIN
	SMJC BAT 2	VDC		CD0351	36 MIN

07-019 MTPE SC02 PANEL 150
PYRO A RCS FUEL DUMP (CB15) - OPEN
PYRO B RCS FUEL DUMP (CB16) - OPEN

PANEL C14A15
POST LANDING
BAT 1 (CB5) - OPEN
BAT 2 (CB6) - OPEN
BAT 3 (CB7) - OPEN

-49 45 07-020 MLFC MTPE
1. 2 HOUR VACUUM PURGE STARTED.
2. BEGINNING EDS PURGE.
3. SC01 BACK ON CHANNEL 222.
4. REQUEST SAFETY CLEARANCE TO FLOW GN2.

08-000

SERVICING OPERATIONS

-49 00

08-001 MTPE MGNS MGNL MGNR SC02 MNQC — PROCEED WITH G AND N POWER UP AND AGC OPERATIONAL TEST PER SEQUENCE 22-000 ON CH 215.

08-002 MTPE MRCS
1. VERIFY GSE POWER UP COMPLETE
2. VERIFY GSE LN2 FILL IS IN PROGRESS
3. STANDBY FOR SC SOLENOID VALVE SET UP.

08-003 MTPE SC01 — VERIFY OR SET SWITCH CONFIGURATIONS ON THE FOLLOWING PANELS..

REMOVE C.B. GUARDS (3 EA.) - (NOT REQUIRED FOR CDDT) (Z00-065)

08-004 MTPE SNQC — REPORT VERIFICATION OF C.B. GUARD REM.

NAR QC _____ NASA QC _____

NOTE

RETAIN IN W/R TOOL BOX FOR INSTALLATION AFTER HELIUM SERVICING.

A. LH CIRCUIT BREAKER PANEL NO. 25
REACTION CONTROL SYSTEM
PROP ISOL.
MNA (CB16) CLOSED
MNB (CB15) CLOSED
SERVICE PROPULSION SYSTEM
HE VALVE
MNA (CB28) CLOSED
MNB (CB27) CLOSED

B. REACTION CONTROL SYSTEM PANEL 15
S/M RCS HELIUM NO. 1
A (S3) OFF, THEN CENTER INDICATOR BARBERPOLE
B (S4) OFF, THEN CENTER INDICATOR BARBERPOLE
C (S5) OFF, THEN CENTER INDICATOR BARBERPOLE
D (S6) OFF, THEN CENTER INDICATOR BARBERPOLE

08-004

S/M RCS HELIUM NO. 2
A (S9) OFF, THEN CENTER
INDICATOR BARBERPOLE
B (S10) OFF, THEN CENTER
INDICATOR BARBERPOLE
C (S11) OFF, THEN CENTER
INDICATOR BARBERPOLE
D (S12) OFF, THEN CENTER
INDICATOR BARBERPOLE

C/M RCS PROPELLANT (VERIFY)
A INDICATOR DS11 BARBERPOLE
B INDICATOR DS12 BARBERPOLE
S/M RCS PROPELLANT (VERIFY)
A INDICATOR DS13 BARBERPOLE
B INDICATOR DS14 BARBERPOLE
C INDICATOR DS15 BARBERPOLE
D INDICATOR DS16 BARBERPOLE

C. PANEL 20
SPS HELIUM (S26) OFF
INDICATOR (DS5) GRAY
SPS HELIUM (S27) OFF
INDICATOR (DS6) GRAY

-48 50 08-005 MGNS MTPE STANDBY POWER TURN ON COMPLETE.

08-006 MTPE SPAD SUPPORT MGNS ON CH 215 WITH PSAAM REMOVAL PER CHECKLIST 6.5/9.5 FOR COUNT

-48 20 08-007 MGNS MTPE AGC OPERATIONAL TEST COMPLETE AND PSAAM REMOVED

08-008 MTPE SNQC REPORT VERIF. OF PSAAM REMOVAL ----- -------
NAR QC NASA QC

-48 00	08-009	MGNS	MTPE	OPERATE POWER ON TEST STARTING
	08-010	MTPE	SCO2	SW TO CH 215
	08-011	MTPE	MRCS	VERIFY PERSONAL INSPECTION OF GSE HOOKUP COMPLETE.
	08-012	MSTC	CVTS	READY TO DISCONNECT LN2 TANKERS FROM S14-009
-47 45	08-013	MGNS	MTPE	G AND N OP TEST STARTING (SEQ 20) SCO2 SENT TO CH 222
	08-014	MLFC	MTPE	VACUUM MONITOR PERIOD AND EDS PURGE ARE COMPLETED. PROCEEDING WITH REMAINDER OF VACUUM PURGE PER SEQ. 26-XXX.
	08-015	MTPE	SPAD	CLEAR ALL NON-ESSENTIAL SC PERSONNEL TO PAD AREA FOR ARM/SAFE CHECK SET-UP.

NOTE

ESSENTIAL PERSONNEL ARE..

SCO1 SHED SLHT SLOM SCMT
SCO2 SOMD SLOT SNQC (2)
SPAD SSMT SLHM SGQC (2)

-47 40	08-016	MLFC	MTPE	1. READY FOR EC PRESSURIZATION 2. NOTIFY ECS THAT O2 SYSTEM WILL BE PRESSURIZED TO 100 PSIG AT THIS TIME.
	08-017	MTPE	SPAD	DISCONNECT 700-025-401 PER CHECKLIST 9.6/6.6 FOR CDDT.
	08-018	MTPE	SNQC	REPORT VERIFICATION OF -401 DISCONNECT. ------ NAR QC ------- NASA QC
-47 30	08-019	MTPE	SPAD	VERIFY HELIUM SERVICING SETUP PER K-10026 C/L 6.5/9.5.
	08-020	MTPE	SNQC	REPORT VERIF. OF HEL. SERV. SETUP. ------ NAR QC ------- NASA QC
	08-021	MLFC	MTPE	FUEL CELL PRESSURIZATION COMPLETE. **ALL PERSONNEL BACK ON CH 222**

08-022	MSTC	CVTS	VERIFY POWER DOWN OF MSS LEVEL 'G' AIR HANDLING UNITS AH-1 AND AH-2.	
08-023	MTPE	MSEQ	PROG RESET (R104) - ON	KV7041
			VERIFY PYRO AND LOGIC SAFE LITES ON	CD0088 CD0218
08-024	MTPE	SC01	PANEL 22 MESC ARM A BAT A (CB19) - CLOSED MESC ARM B BAT B (CB18) - CLOSED PANEL 25 ELS A BAT A (CB8) - CLOSED ELS B BAT B (CB7) - CLOSED	

08-025 MTPE SC02 PANEL 150
PYRO A
SEQ A (CB14) - CLOSED
RCS FUEL DUMP (CB15) - CLOSED
PYRO B
SEQ B (CB17) - CLOSED
RCS FUEL DUMP (CB16) - CLOSED

08-026 MTPE SC01 PANEL 25
C/M-S/M TRANSFER MNA (CB10) - CLOSED
C/M-S/M TRANSFER MNB (CB9) - CLOSED

08-027 MTPE SC01 PANEL 16
RCS CMD (S11) - OFF (MOM)
RCS TRNASFER (S14) - SM (MOM)

08-028 MTPE MSEQ GSE SM RESET (R081) - ON KR9422

08-029 MTPE SC02 PANEL 25
C/M-S/M TRNASFER MNA (CB10) - OPEN
C/M-S/M TRNASFER MNB (CB9) - OPEN

08-030 MTPE SPAD CLEAR ALL PERSONNEL FROM PAD AREA DURING HE SERVICING EXCEPT THE FOLLOWING..

PFCU - -22 FT. LEVEL
POCU - -22 FT. LEVEL
SHTR - -22 FT. LEVEL
SHCU - -22 FT. LEVEL
SNQC - -22 FT. LEVEL
SGQC - -22 FT. LEVEL
2 BENDIX LN2 TANKER OPERATORS - -42 FT LEVEL.

08-031 MTPE MGNS PROCEED WITH IRIG S/F TEST

-47 00 08-032 MSTC CVTS VERIFY SAFETY CLEARANCE FOR HE SERVICING TO PRE-FLIGHT PAD PRESSURE.

08-033 MTPE MRCS PROCEED WITH HELIUM SERVICING PRE-FLIGHT PAD PRESSURIZATION PER SEQ. 24 ON CH 216.

-46 30	08-034	MRCS	MTPE	RCS PRE-FLIGHT PAD PRESSURIZATION IS COMPLETE.		
	08-035	MTPE	SPAD	CLEAR TOTAL PAD FOR HELIUM SERVICING AND ARM/SAFE CHECK.		
-46 00	08-036	MSTC	CVTS	VERIFY SAFETY CLEARANCE AND REPORT PAD CLEAR FOR ARM/SAFE CHECK AND HELIUM SERVICING TO FLIGHT PRESSURE.		
	08-037	MTPE	MRCS	PROCEED WITH HELIUM SERVICING TO FLIGHT PRESSURES PER SEQ. 24.		
	08-038	MSTC	CVTS	1. HAVE CPSS PROVIDE KEY FOR ARM ENABLE SWITCH. 2. SC LOGIC AND PYRO BUSSES WILL BE ARMED. INSTALLED PYROS ARE CONNECTED.		
	08-039	MTPE	CSAT	ARM ENABLE - ON SAFE SW - OFF		
		MSEQ		ARM ENABLE LITE ON	GD5072	
	08-040	MTPE	MSEQ	LOGIC BUS ARM - ON (R084)	KD7016	
		MSEQ		LOGIC SW ARM LITE ON	CD0089	23C03
				LOGIC SW SAFE LITE OFF	CD0088	
				ELS SAFE LITES (8) ON	CE0310 THRU CE0317	
				PYRO FIRING RLYS A AND B	CD0084	
				SAFE LITES - ON	CD0085	
				RCS SAFE A AND B LITE ON	CD0270	
				SM JETT SAFE A AND B LITES ON	SD0352 SD0353	
				BOOSTER CUTOFF A + B LITES OFF	CD0044 CD0045	
				DIRECT ULLAGE A + B LITES OFF	CD0140 CD0141	
				RCS ACT A + B LITES OFF	CD0170 CD0171	
				LOGIC BUS A ----- VDC (P19-5)	CD0200	34+/- 2.5 VDC
				LOGIC BUS B ----- VDC (P19-6)	CD0201	34+/- 2.5 VDC

08-041	MTPE	MSEQ	PYRO BUS ARM - ON (P084)	KC7015	
	MSEQ		PYRO SW ARM LITE ON	CD0219	
			PYRO SW SAFE LITE OFF	CD0218	
			PYRO FIRING RLYS A AND B	CD0084	
			SAFE LITES ON	CD0085	
			PYRO BUS A VDC (P19-7)	CD0005	35.5+/- 2.5 VDC
			PYRO BUS B VDC (P19-8)	CD0006	35.5+/- 2.5 VDC
08-042	MTPE	MSEQ	PYRO BUS A SAFE - ON (R084)	KD7017	
			PYRO BUS B SAFE - ON (R084)	KD7018	
	MSEQ		PYRO SW ARM LITE OFF	CD0219	12C091
			PYRO SW SAFE LITE ON	CD0218	
			PYRO BUS VOLTS ZERO	CD0005	
				CD0006	
08-043	MTPE	MSEQ	LOGIC BUS A SAFE - ON	KD7019	
			LOGIC BUS B SAFE - ON	KD7020	
	MSEQ		LOGIC SW ARM LITE OFF	CD0089	23C03
			LOGIC SW SAFE LITE ON	CD0088	
			LOGIC BUS VOLTS ZERO	CD0200	
				CD0201	
08-044	MTPE	CSAT	ARM ENABLE - OFF SAFE SW - ON RETURN ARM/SAFE KEY TO CPSS		
	MSEQ		ARM ENABLE LITE OFF	G05072	
08-045	MSTC	CVTS	SC ARM/SAFE CHECK COMPLETE. LOGIC AND PYRO BUSES ARE SAFE		
-44 30 08-046	MTPE	MGNS	VERIFY IRIG SCALE FACTOR TEST COMPLETE. START PIPA S/F TEST		
08-047	MRCS	MTPE	1. HELIUM SERVICING IS COMPLETE		
			2. CLEAR DISCONNECT CREW TO THE VEHICLE - TO REPORT IN TO MRCS ON CH 226		
			NOTE DISCONNECT CREW..		

08-047

4C LEVEL	4A LEVEL
SPAD	SSMT (4)
SCMT (4)	SPSS
SNQC (4)	
SGQC (4)	
	SGQC
(22 FT LEVEL	S14-060
POCU	PFRS (2)
PFCU	
SHCU	S14-061
SHTR	
SNQC	PORS (2)
SGQC	

	08-048	MSTC	CVTS	VERIFY SAFETY CLEARANCE FOR HELIUM LINE DISCONNECT CREW.
-43 15	08-049	MTPE	MRCS	PROCEED WITH LINE DISCONNECT PER SEQ. 24.
	08-050	MRCS	MTPE	SM QUAD LINE DISCONNECT COMPLETE TIME HRS.
				PROCEEDING WITH CM LINE DISCONNECT.
-42 30	08-051	MGNS	MTPE	PIPA S/F TEST COMPLETE STARTING IRIG COEF TEST
-42 00	08-052	MRCS	MTPE	HELIUM LINE DISCONNECT IS COMPLETE. HELIUM SERVICING GSE IS POWERED DOWN. HELIUM PERSONNEL ARE CLEARING FOR SCAPE OPERATIONS.

NOTE

FOLLOWING UNITS ARE POWERED DOWN..

S14-009	C14-630 (HE)
S14-060	C14-630 (FU)
S14-061	C14-630 (OX)

	08-053	MSTC	CVTS	1. HELIUM LINE DISCONNECT + GSE VENTINGS COMPLETE
				2. VERIFY SAFETY CLEARANCE TO PROCEED WITH SCAPE OPERATIONS.
	08-054	MTPE		NOTIFY FUEL SCAPE CREW TO REPORT ON STATION
	08-055	MTPE	MSPS	PROCEED WITH HYPERGOLIC LINE DISCONNECT
-41 15	08-056	MSPS	MTPE	FUEL SCAPE CREW COMPLETE AND CLEARING.
	08-057	MTPE		NOTIFY OXID SCAPE CREW TO REPORT ON STATION
-40 30	08-058	MSPS	MTPE	OXID SCAPE CREW COMPLETE AND CLEARING.

-40 30

08-059 MSTC CVTS
1. SC HYPERGOLIC LINE DISCONNECT COMPLETE.
2. VERIFY WHEN PAD OPEN FOR NORMAL WORK.

NOTE

WAIT FOR SPAD TO REPORT CREW ON STATION (APPROX 2 HRS)

08-060 MTPE SPAD
1. STAND BY TO SECURE FROM ARM/SAFE CHECK.
2. HAVE SC01 AND SC02 ENTER SPACECRAFT

08-061 MTPE MSEQ
SECURE FROM ARM/SAFE CHECK

08-062 MSEQ SC02
PANEL 150
PYRO A
SEQ A (CB14) - OPEN
RCS FUEL DUMP (CB15) - OPEN
PYRO B
SEQ B (CB17) - OPEN
RCS FUEL DUMP (CB16) - OPEN

08-063 MSEQ SC01
PANEL 22
MECS ARM A BAT A (CB19) - OPEN
MESC ARM B BAT B (CB18) - OPEN
PANEL 25
ELS A BAT A (CB8) - OPEN
ELS B BAT B (CB7) - OPEN

08-064 MSEQ MTPE
SECURING COMPLETE.

08-065 MTPE PGSM
PROCEED WITH HELIUM GSE REMOVAL FROM PAD.

08-066 MTPE SPAD
DISCONNECT SCUPPERS PER C/L 9.6

08-067 MTPE SC01
PANEL 25
SERVICE PROPULSION SYSTEM
HE VALVE MN A (CB28) - OPEN
HE VALVE MN B (CB27) - OPEN

REPLACE Z00-065 C.B. GUARDS OVER C.B. PANEL.

08-068 MTPE MEPS READ OUT SERVICE MODULE BATTERIES

MEPS SM BATT A VOLTS ____ VDC (P1-19) SD0350 36 VDC MIN

SM BATT B VOLTS ____ VDC (P1-19) SD0351 36 VDC MIN.

08-069 MTPW SPAD CONTINUE WITH C/L 6.6/9.6. PROCEED WITH C/L 6.7/9.7.

-38 40 08-070 MTPE MLFC PERFORM PRESSURIZATION PREPS PER SEQ. 29.

08-071 MTPE MECS 1. VERIFY POTABLE WATER TANK QUANTITY IS ZERO.

2. GO TO CH. 224

-38 30 08-072 MLFC MTPE 1. PRESSURIZATION PREPS COMPLETE

2. FUEL CELL PRESSURIZATION CYCLE IN PROGRESS.

08-073 MSTC CVTS 1. STARTING FUEL CELL ACTIVATION

2. VERIFY THE INS HAZARD MONITORING SYSTEM IS READY TO SUPPORT GH2 FLOW. HAVE SEHZ GO TO CHANNEL 222 TO ADVISE OF H2 PERCENT CONCENTRATION TO MSTC.

NOTE

DURING LH2 FLOW, SEHZ WILL MONITOR HYDROGEN DETECTION SYSTEM METERS AND INFORM MSTC OF ALL HYDROGEN INDICATIONS, SPECIFYING SENSOR I.D. AND (PERCENT GAS CONCENTRATION. SYSTEM SAFETY (SPSS) WILL VERIFY READINGS USING PORTABLE GAS DETECTOR. (A FOUR PERCENT CONCENTRATION OF HYDROGEN CONSTITUTES AN EXPLOSIVE ATMOSPHERE). MSTC DIRECT SECURING OF LH2 FLOW UNDER CONDITIONS OF RAPID INCREASE IN H2 CONCENTRATION OR A REPORTED READING NEARING FOUR PERCENT AT ANY SENSOR.

08-073 TIME PERMITTING, MSTC WILL CONFER WITH SPSS AND MLFC PRIOR TO DIRECTING ANY INTERRUPTION OF FLOW. MSTC WILL DIRECT USE OF THE GN2 DELUGE PURGE AS FOLLOWS..

1. CLEAR ALL PERSONNEL FROM MSS LEVELS 3 AND 4 AND OBTAIN SAFETY VERIFICATION.
2. DIRECT CSAT TO TURN ON DELUGE PURGE. IN CASE OF FIRE IN THE SM DURING CRYOGENIC LOADING, MSTC WILL DIRECT USE OF THE SM DELUGE PURGE AS OUTLINED ABOVE. FIRE AND EMERGENCY PROCEDURES IN SECTION 5 WILL BE FOLLOWED.

08-074 MTPE SC01 SW TO CH 224

08-075 MTPE SC02 PANEL 315
VERIFY POTABLE TANK INLET - OPEN

08-076 MGNS MTPE 1. IRIG COEFFICIENT TEST COMPLETE.

2. READY FOR CLOCK ALIGNMENT.

-38 25 08-077 MLFC MTPE 1. O2 SYSTEM WILL BE PRESSURIZED TO FLIGHT PRESSURE.

2. OBTAIN SAFETY GO AND SEND MECS TO CH. 224.

-38 00 08-078 MTPE SPAD 1. INSTALL NUCLEAR EMULSION SPECTROMETER AND RADIATION DOSIMETER PER CHECKLIST 6.7/9.7.

2. REMOVE CAMERA LENS COVER PER C/L 9. 7.2 ------ -------
NAR QC NASA QC

08-079 MSTC CVTS READY TO CONNECT LN2 TRAILERS TO S14-032.

	08-080	MTPE	SNQC	REPORT VERIFICATION OF N.E.S/R.D. INSTALLATION AND CAMERA LENS COVER REMOVAL.
				NAA QC NASA QC
	08-081	MGNS	MTPE	1. CLOCK ALIGNMENT COMPLETE
				2. PROCEEDING WITH GYRO COMPASSING.
	08-082	MTPE	SC02	REMOVE COVER FROM OPTICS EYE PIECES.
	08-083	MTPE	SNQC	REPORT VERIFICATION OF OPTICS COVER REM
				NAA QC NASA QC
	08-084	MTPE	SPAD	CLEAR TARGET LINE-OF-SIGHT.
-37 30	08-085	MLFC	MTPE	1. FUEL CELL PRESSURIZATION CYCLE AND VERIFICATION OF ECS WATER TANKS COMPLETE.
				2. PROCEEDING WITH FUEL CELL HEATING CYCLE.
	08-086	MTPE	MECS UGCU UGTR UWGR MNQC	PERFORM FINAL SYSTEM VERIFICATION PER SEQUENCE 17
	08-087	MTPE	SC01 SC02	MOVE TO CH227 TO SUPPORT ECS
-36 45	08-088	MECS	MTPE	1. SYSTEM TEST COMPLETE
				2. SC01, SC02 BACK ON CH222.

NOTE

FOLLOWING TIME FOR REFERENCE ONLY. BUS B ISOLATION WILL BE A FUNCTION OF COMPLETION OF HEATING CYCLE.

-35 30

08-089 MLFC MTPE 1. FUEL CELL HEATING CYCLE COMPLETE

2. PROCEEDING WITH CALIBRATION AND LOADING

3. REQUEST MEPS ISOLATE BUS B FOR FUEL CELL CALIBRATION.

NOTE

MLFC PROCEEDS WITH FC CALIBRATION

08-090 MTPE ALL BUS B WILL BE ISOLATED FOR FUEL CELL CALIBRATION

08-091 MTPE MEPS ISOLATE BUS B LOAD

NOTE

1. BUS B ISOLATION TO TAKE PLACE ON CH222. WAIT FOR MLFC REQUEST.

2. LOG SWITCHING AS ''ACTION'' OR ''VERIFY''. ''ACTION'' CB'S WILL BE TURNED BACK ON UPON COMPLETION OF FC CALIBRATION AT THE DISCRETION OF THE APPROPRIATE LEAD SYSTEM ENGINEER

08-092 MEPS SC02 ELECTRICAL POWER (MAIN) CIRCUIT BREAKER

PANEL 203
INVERTER PWR
NO. 3 MN B (CB1) - OPEN
NO. 2 MN B (CB3) - OPEN
POST LDG MAIN B (CB5) - OPEN

PANEL 206
ECS STEAM DUCT MN B (CB24) - OPEN
PANEL C14A14
MAIN BUS B
ESSENT. INST CB15 -OPEN
NON ESSENT BUS (CB13 - OPEN)

08-093 MEPS SC01 PANEL 21
RCS HEATERS
A MN B (CB1) - OPEN
C MN B (CB3) - OPEN
PANEL 22
MAIN BUS TIE
BAT A AND C (S9) - OFF
BAT B AND C (S10) - OFF
BATTERY CHARGER
MNB (CB79)) - OPEN
S-BAND AC (CB51) - OPEN
COMM
FLT QUAL RCDR (CB96) - OPEN
C-BAND (CB97) - OPEN

CAUTION

THE IMU C.B. SLIDE BOX MUST BE REMOVED TO PERFORM NEXT SEQUENCE. USE EXTREME CAUTION WHILE REMOVING BOX AND POSITION BREAKERS EXACTLY AS SHOWN.

GUIDANCE AND NAVIGATION
IMU MN B (CB58) - OPEN
IMU HTR MN B (CB60) - OPEN
COMPUTER MN B (CB56) - OPEN
OPTICS MNB (CB54) - OPEN
CENTRAL TIMING SYS MN B (CB52) OPEN

08-093

ECS TRANSDUCER
WASTE AND POT H20 MN B (CB91)
OPEN
PRESS GROUPS
1 MN B (CB8) - OPEN
2 MN B (CB34) - OPEN
TEMP MN B (CB10) OPEN

ENVIRONMENTAL CONTROL SYSTEM
POT H20 HTR MN B (CB2) - OPEN

CRYOGENIC SYSTEM
H2 TK HTR 2 MN B (CB6) - OPEN
02 TK HTR 2 MN B (CB4) - OPEN

PANEL 25

REACTION CONTROL SYSTEM
PROP ISOL MN B (CB15) - OPEN
C/M - SM TRANSFER MN B (CB9)-
OPEN
SERVICE PROPULSION SYSTEM
HE VALVE MN B (CB27) - OPEN
GAUGING MN B (CB21) - OPEN

STABILIZATION AND CONTROL SYSTEM
DIRECT CONT MN B (CB41) - OPEN
A AND C ROLL MN B (CB35) - OPEN
B AND D ROLL MN B (CB33) - OPEN
PITCH MN B (CB39) - OPEN
YAW MN B (CB31) - OPEN
GROUP 1 MNB (CB43) - OPEN
GROUP 2 MN B (CB64) - OPEN
FLOODLIGHTS MN B (CB37) - OPEN
BIO-MED COMM MN B (CB60) - OPEN
FCSM MN B (CB58) - OPEN
PANEL 18
FUEL CELL
MAIN BUS A
1 (S12) CTR
2 (S13) CTR
3 (S14) CTR
MAIN BUS B
1 (S16) CTR
2 (S17) CTR
3 (S18) CTR

08-094 MEPS MPWR PS B GND PWR FILTER - OFF (C076)KC7769

MPWR 220 2113 120 IS INSERTED

08-095 MEPS MPWR PS B TO BUS B - OFF (R101) KC7034
PS B BAT ENABLE (R101) - OFF

08-096 MEPS MLFC BUS B ISOLATION COMPLETE

08-097 MEPS MPWR GO TO CH 224 TO SUPPORT FUEL CELL OPERATIONS.

-34 30 08-098 MLFC MTPE 1. FC CALIBRATION COMPLETE

2. BUS B LOADS MAY BE REAPPLIED

08-099 MTPE ALL GIVE STATUS FOR REAPPLICATION OF BUS B LOADS

MSCS

MECS

MLFC

MEPS

MSPS

MRCS

MREC

MGNS

MCOM

(TURN ON IS AT DISCRETION OF LEAD SYSTEMS ENGINEERS)

08-100 MTPE MEPS PROCEED WITH BUS B LOAD SWITCH UP

NOTE

MEPS TURNS ON CB'S PREVIOUSLY TURNED OFF DURING BUS B ISOLATION

08-101 MEPS MPWR PS B TO BUS B (R101) - ON KC7034

08-102 MEPS MSEQ PROGRAMMER RESET - ON (R104) KV7041

CAUTION

PERFORM NEXT STEP WITH
EXTREME CAUTION AND WITH
DIRECTION OF MGNS.

08-103 MEPS SC02 REPLACE IMU C.B. SLIDE BOX OVER IMU CIRCUIT BREAKERS.

08-104 MTPE SNQC REPORT VERIF. OF SLIDE BOX REPLACEMENT.

NAA QC NASA QC

08-105 MTPE SSET S14A1
REMOTE SENSE BUS B (CB9) - CLOSED

-34 30 08-106 MLFC MTPE FUEL CELL ACTIVATION COMPLETE

08-107 MSTC CVTS 1. FUEL CELL ACTIVATION COMPLETE.
2. VERIFY ALL NON-EXPLOSION PROOF VACUUM PUMPS ARE TURNED OFF AND WILL REMAIN OFF DURING CRYO SERVICING.

-34 00 08-108 CVTS CLTC MSTC HAVE CPDC AND CSAT GO TO CH 262 AND PERFORM GN2 DELUGE SYSTEM ELECTRO-MECH CHECKS.

NOTE

GN2 WILL NOT FLOW INTO SM

CSAT

08-109 CSAT ON MY MARK GN2 DELUGE SW - PRIMARY (UP)

08-110 CSAT CPDC VERIFY PROPER RESPONSE

08-111 CSAT ON MY MARK, GN2 DELUGE SW - OFF (CENTER)

08-112 CSAT CPDC VERIFY PROPER RESPONSE

08-113 CSAT ON MY MARK, GN2 DELUGE SW - BACKUP (DOWN)

08-114 CSAT CPDC VERIFY PROPER RESPONSE

08-115 CSAT — ON MY MARK, GN2 DELUGE SW - OFF (CENTER)

08-116 CSAT CPDC — VERIFY PROPER RESPONSE

08-117 CSAT MSTC — GN2 DELUGE SYSTEM ELECTRO-MECH CHECK COMPLETE.

-33 30 08-118 MLFC MTPE — CLEAR PERSONNEL FOR LH2 FLOW.

08-119 MTPE SPAD — CLEAR ALL NON-ESSENTIAL PERSONNEL FROM SERVICE STRUCTURE TO FALL BACK AREA.

NOTE

FOLLOWING PERSONNEL REQUIRED ON STATION..

4A LEVEL	4C LEVEL
SPAD	SC01
SPSS	SC02
SGSM	
SHFD	-22 FT. LEVEL
SSMT	SPSS
SNQC	SLHM
SGQC	SLHT
BENDIX SAMPLER (2)	SNQC
0 LEVEL	PAD APRON
SEHZ (2)	PLHM
	PNQC
	VEHICLE DRIVERS (2)

08-120 MSTC CVTS

1. SPACECRAFT PERSONNEL ARE CLEARING SERVICE STRUCTURE.
2. VERIFY SAFETY CLEARANCE TO START LH2 SERVICING.
3. VERIFY THE GN2 DELUGE SYSTEM IS READY TO SUPPORT LH2 TANKING.

-33 00 08-121 CVTS MSTC — CLEAR TO PROCEED WITH SC LH2 TANKING.

08-122 MTPE MLFC — PROCEED WITH LH2 FDS CHILLDOWN.

08-123 MTPE

NOTE

ALERT BATT SHOP ENTRY BATTS WILL BE INSTALLED IN APPROX. 11 HOURS.

NOTE

FOLLOWING TIME IS FOR REFERENCE ONLY. FUNCTION IS TO BE PERFORMED 10 HOURS AFTER COMPLETION OF SM QUAD LINE DISCONNECT (APPROX. T-42 45. (LAUNCH ONLY)

-32 45 08-124 MTPE MRCS SM RCS HE ISOL VAL CLOSE (R210A) - ON (TIME _____) KR9312

MRCS HE ISOL VAL CLOSED LITES ON SR5101 SR5102 SR5103 SR5104 SR5105 SR5106 SR5107 SR5108

CAUTION

MRCS MONITOR SM HELIUM MANIFOLD PRESSURES UNTIL HATCH CLOSEOUT. IF PRESSURES DECREASE TO 190 PSIA, OPEN APPROPRIATE SM RCS HE VALVES IN COORDINATION WITH SAFETY.

-31 00	08-125	MLFC	MTPE	LH2 TANKING IS COMPLETE. LH2 SYSTEM QUANTITY ROUGHING STARTING.
-30 00	08-126	MLFC	MTPE	QUANTITY ROUGHING COMPLETE. STARTING FINAL QUANTITY ADJUST AND PRESSURIZATION.
	08-127	MLFC	MTPE	GSE HAS BEEN PERSONALLY INSPECTED AND IS IN CORRECT CONFIGURATION FOR LH2 TANK PRESSURIZATION.
	08-128	MLFC	MTPE	REQUEST AREA CLEAR FOR LH2 TANK PRESSURIZATION.
	08-129	MTPE	SPAD	CLEAR ALL NON-ESSENTIAL PERSONNEL FROM SERVICE STRUCTURE TO FALL BACK AREA.

NOTE

FOLLOWING PERSONNEL REQUIRED ON STATION..

-22 FT. LEVEL	COMPT 1A
SLHM	LPDS
SPSS	LNOC
SNOC	

0 LEVEL

SEHZ (2)

	08-130	MTPE	MGNS	PERFORM IMU COMPENSATION UPDATE IF REQUIRED.
	08-131	MSTC	CVTS	1. SPACE CRAFT PERSONNEL ARE CLEARING SERVICE STRUCTURE 2. VERIFY SAFETY CLEARANCE TO START LH2 TANK PRESSURIZATION.
	08-132	MTPE	MLFC	PROCEED WITH LH2 PRESSURIZATION

08-133 MLFC MTPE 1. PRESSURE STABILIZED FOR 5 MINUTES.
2. REQUEST FOLLOWING PERSONNEL ON STATION TO PERFORM QUAN. ADJ.

4C LEVEL	4A LEVEL
SC01	SHFD
SC02	SNQC

PAD APRON (LO2 STOR. TANK)

PLOM
PNQC

-29 00 08-134 MSTC CUTS GIVE STATUS OF LH2 SAMPLE.

-27 00 08-135 MLFC MTPE 1. FINAL QUANTITY ADJUST COMPLETE.
2. LINE INERTING IN PROGRESS
3. REQUEST LO2 PERSONNEL ON STATION.

08-136 MTPE SPAD CLEAR ESSENTIAL PERSONNEL TO PAD FOR LO2 SERVICING.

NOTE

FOLLOWING PERSONNEL REQUIRED ON STATION..

4A LEVEL	4C LEVEL
SPAD	SC01
SPSS	SC02
SGSM	
SOMD	-22 FT LEVEL
SSMT	SPSS
SNQC	SLOM
SGQC	SLOT
BENDIX	SNQC
SAMPLER (2)	

0 LEVEL	PAD APRON
SEHZ (2)	PLOM
	PNQC
	LN2 TANKER CREW (2)
	VEHICLE
	DRIVERS (2)

-26 30	08-137	MSTC	CVTS	1. SPACECRAFT PERSONNEL ARE CLEARING TO SERVICE STRUCTURE. 2. VERIFY SAFETY CLEARANCE TO START LO2 SERVICING. 3. HAVE CPDC TURN PANEL POWER OFF TO DISARM THE GN2 DELUGE SYSTEM. (2 SW) NOTE BETWEEN T-22 HRS 30 MIN AND T-15 HRS, IF AN H2 CONCENTRATION IS OBSERVED, CPDC, ON MSTC COMMAND WILL TURN ON PANEL POWER AND CSAT WILL STANDBY FOR DIRECTIONS FROM MSTC.
-26 00	08-138	MTPE	MLFC	PROCEED WITH LO2 SERVICING
	08-139	MLFC	MTPE	GSE HAS BEEN PERSONALLY INSPECTED AND IS IN CORRECT CONFIGURATION FOR LO2 FLOW.
	08-140	MTPE	MGNS	VERIFY READY FOR FIRST SIGHTING (SEQ 22)
	08-141	MTPE	SC02	SWITCH TO CH 215
-24 00	08-142	MLFC	MTPE	1. LO2 TANKING COMPLETE. 2. PROCEEDING WITH QUANTITY ROUGHING.
	08-143	MTPE	MGNS	VERIFY READY FOR SECOND OPTICAL SIGHTING (SEQ. 22)
	08-144	MTPE	SC02	SWITCH TO CH 215.

-23 00 08-145 MLFC MTPE 1. QUANTITY ROUGHING COMPLETE.

2. STARTING FINAL QUANTITY ADJUST AND PRESSURIZATION.

08-146 MLFC MTPE 1. GSE HAS BEEN PERSONALLY INSPECTED AND IS IN CORRECT CONFIGURATION FOR LO2 TANK PRESSURIZATION.

2. REQUEST AREA CLEAR FOR LO2 TANK PRESSURIZATION.

08-147 MTPE SPAD CLEAR ALL NON ESSENTIAL PERSONNEL FROM SERVICE STRUCTURE FALL BACK AREA.

NOTE

FOLLOWING PERSONNEL REQUIRED ON STATION.

-22 FT LEVEL	COMP 1A
SLOM	LPDS
SPSS	LNQC
SNQC	

0 LEVEL

SEHZ (2)

08-148 MSTC CVTS 1. SPACECRAFT PERSONNEL ARE CLEARING SERVICE STRUCTURE.
2. VERIFY SAFETY CLEARANCE TO START LO2 TANK PRESSURIZATION.

08-149 CVTS MSTC CLEAR TO START LO2 TANK PRESSURIZATION.

08-150 MTPE MLFC PROCEED WITH LO2 PRESSURIZATION

-22 30 08-151 MSTC CVTS GIVE STATUS OF LO2 SAMPLE.

-22 00 08-152 MLFC MTPE 1. PRESSURE STABILIZED FOR 5 MINUTES.
2. PAD MAY BE OPENED FOR NORMAL WORK.

08-153 CSAT MSTC 1. GRUMMAN LTA PICKING UP COUNT
2. STARTING DFI SYS TEST

	08-154 MSTC	CVTS	1. CRYO LOADING COMPLETE 2. FINAL QUANTITY ADJUSTMENT AND PRESSURIZATION IN PROGRESS. 3. PAD MAY BE OPENED FOR NORMAL WORK. NOTE WAIT FOR SPAD TO REPORT ON STATION
-21 45	08-155 MSTC	CVTS	VERIFY CLEARANCE FOR LTA RF SYSTEMS PROVIDE READOUTS OF FOLLOWING ON CH 223 PAM FM/FM 247.3 MC CBW FM/FM 230.9 MC
-21 30	08-156 MTPE	MGNS	PERFORM OPTICAL SIGHTINGS AT T-21 30 AND T-21 00.
	08-157 MTPE	SPAD SC02	VERIFY READY FOR FLIGHT ENTRY BATTERY HOOK UP.
	08-158 MTPE	SC02	PANEL 150 BAT A PWR ENTRY (CB21) - OPEN CONNECT FLIGHT ENTRY BATT A PER C/L 6.8/9.8, REPORT COMPLETION.
	08-159 MTPE	SC02	PANEL 150 BAT A PWR ENTRY (CB21) - CLOSED BAT B PWR ENTRY (CB22) - OPEN CONNECT FLIGHT ENTRY BATT B PER C/L 6.8/9.8, REPORT COMPLETION.
	08-160 MTPE	SC02	PANEL 150 BAT B PWR ENTRY (CB22) - CLOSED
	08-161 MTPE	SC02	LEAK CHECK 900 PSI 02 TEST PORT

-21 15	08-162	CSAT	MSTC	1. VERIFY RANGE CLEARANCE TO ACTIVATE LTA RF. 2. PROVIDE RANGE READOUTS ON CH 243. PAM FM/FM 247.3 CBW FM/FM 230.9
-21 00	08-163	CSAT	MSTC	LTA BATT ELECT MATE AND PLATFORM REMOVAL IN PROGRESS.
	08-164	MGNS	MTPE	1. FINAL OPTICAL VERIFICATION COMPLETED. 2. HAVE SPAD REMOVE OPTICS EYEPIECES.
	08-165	MTPE	SPAD	1. REMOVE OPTICS EYE PIECES PER C/L 6.8/9.8.
	08-166	MTPE	SNQC	REPORT VERIF. OF OPTICS EYE PIECE REM. ------ ------- NAA QC NASA QC
				2. POSITION MECHANICAL BOY FOR FLIGHT PER C/L 6.8/9.8.
	08-167	MTPE	SNQC	REPORT VERIF. OF MECH. BOY POSITIONING. ------ ------- NAA QC NASA QC
-20 00	08-168	MTPE	SPAD	VERIFY ENTRY BATT HOOK CONNECTION COMPLETE.
	08-169	MTPE	SNQC	REPORT VERIF. OF ENTRY BATT H/U ------ ------- NAA QC NASA QC
	08-170	CSAT	MSTC	1. DFI SYS TEST COMPLETE 2. READY FOR SLA ANT HAT COUPLER REMOVAL.

-19 30	08-171	MLFC	MTPE	1. LO2 SERVICING OPERATIONS COMPLETE 2. FUEL CELLS ON INTERNAL REACTANTS. 3. PROCEEDING WITH TANK FAN CHECKS REQUEST LGSE AND LMDR SUPPORT ON CH. 224.
	08-172	MTPE	SPAD	SC TECHNICIANS REQUIRED FOR SLA ANTENNA HAT BOLT INSTALLATION AT APPROX. T-19 15. REPORT COMPLETION ON CH 212.
-19 15	08-173	CSAT	MSTC	1. SLA ANT HAT COUPLER REMOVAL COMPLETE. 2. REQUEST PERMISSION TO SECURE LTA TEST TEAM.
	08-174	MTPE	SPAD	INSTALL ANT FLIGHT BOLTS PER C/L 9.8
	08-175	MSTC	CVTS	CLEAR TO BREAKUP SILO 3 VEHICLE OBSERVERS ARE ON STATION.
-19 00	08-176			SILO 3 BREAKUP START (SUPPORT)
	08-177	MLFC	MTPE	1. H2 TANK FAN CHECK COMPLETE. 2. PROCEEDING WITH O2 FAN CHECK.
	08-178	CVTS	MSTC	THE GN2 DELUGE SYSTEM IS SECURED. SEHZ MAY SECURE THE HAZARD MONITORING SYSTEM
	08-179	MTPE	SPAD	1. VERIFY READY FOR SM SECTOR 1 AND 4 H2 DOOR CLOSE OUT
	08-180	MTPE	SPAD	1. PROCEED WITH SM SECTOR 1 AND 4 H2 DETECTOR REMOVAL PER C/L 6.8/9.8. 2. DISCONNECT CRYO SERVICE LINES PER C/L 6.8/9.8.
	08-181	MTPE	SNQC	REPORT VERIF. OF PREVIOUS SEQ. COMPLETION.

NAA QC NASA QC

-18 30	08-182	MLFC	MTPE	1. TANK FAN CHECKS COMPLETE. 2. PROCEEDING WITH GAS LINE INERTING.
	08-183	MSTC	CVTS	CLEAR TO DISCONNECT PAD/MSS CRYO LINES.
-18 00	08-184	MLFC	MTPE	1. EDS LINE INERTING COMPLETE. 2. READY FOR CRYO GSE DISCONNECT. 3. PROCEEDING WITH GSE POWER DOWN. 4. READY FOR FACILITY GHE SUPPLY TO TRANSFER UNITS S14-026 AND S14-032 TO BE CLOSED.
	08-185			SILO 3 OPEN (SUPPORT)
	08-186	MTPE	SPAD	1. DISCONNECT GSE ACCESS CONNECTORS J21, J22, J23, J24. INSTALL ACCESS PLATE CSM1B PER C/L 6.8/9.8.
	08-187	MTPE	SNQC	REPORT VERIF. OF PREVIOUS SEQ. COMPLETION. ------ ------ NAA QC NASA QC 2. PROCEED WITH DISCONNECT OF MSS/PAD INTERCONNECT CABLES PER C/L 6.8/9.8.
	08-188	MSTC	CVTS	CLEAR TO DISCONNECT PAD/MSS LINES (SUPPORT)
-17 30	08-189	MLFC	MTPE	GSE POWER DOWN COMPLETE
	08-190	MTPE	PGSM	COORDINATE CRYO GSE REMOVAL PER OCP-K-10027.

08-191	MTPE	MEPS	PS 5 BATT ENABLE (R094) - OFF	KC7711
	MEPS		PS 5 BAT EN LITE OFF	GC5145
	MPWR		PS 5 BAT EN LITE OFF	GC5145
	SPDS		C14-628 PS 5 BATTERY ON LITE OFF	
08-192	MTPE	MPWR	FEEDER BUS C (C076) - OFF	KC7714
	MPWR		220 3234 330 IS INSERTED	
	MPWR		PS 5 GSE BUS C ON LITE OFF	GC5148
	SPDS		C14-628 PS 5 FEEDER BUS C ON LITE OFF	
08-193	MTPE	MPWR	FEEDER BUS B (C076) - OFF	KC7713
	MPWR		220 3234 320 IS INSERTED	
	MPWR		PS 5 GSE BUS B ON LITE OFF	GC5147
	SPDS		C14-628 PS 5 FEEDER BUS B ON LITE OFF	
08-194	MTPE	SFET	LDW410-11180-1 (LEM SW UNIT) +28 VDC SW - OFF	
08-195	MTPE	MEPS	PS 5 DC ON (R094) - OFF	KC7710
	MEPS		PS 5 OUTPUT ON LITE OFF	GC5143
			GSE BUS PS 5 IS 0+ 2-0 (P2-23)	GC5150
	MPWR		PS 5 OUTPUT ON LITE OFF	GC5143
	SPDS		C14-626 PS 5 DC OUTPUT POWER ON LITE OFF	
08-196	MTPE	MEPS	PS 5 AC START (R094) - OFF	KC7709
	MEPS		PS 5 OUTPUT VDC INDICATES 0+/-1(M)	GC5146
	MPWR		PS 5 OUTPUT VDC INDICATES 0+/-1(M)	GC5146
	SPDS		C14-626 PS5 AC INPUT POWER ON LITE OFF	

08-197	MTPE	CSAT	MSS ACE PS BATT ENABLE - OFF	
	CSAT		ACTIVATED LITE OFF	
	SPDS		C14-628 PS 1 BATTERY ON LITE OFF	
	MPWR		PS 1 BAT EN LITE OFF	GC5140
	MEPS		PS 1 BAT EN LITE OFF	GC5140
08-198	MTPE	CSAT	MSS/CSM ACE BUS - OFF	
	CSAT		ACTIVATED LITE OFF	
	MPWR		PS 1 GSE BUS B ON LITE OFF	GC5142
08-199	MTPE	CSAT	MSS ACE PS OUTPUT - OFF	
	CSAT		ACTIVATED LITE OFF	
	SPDS		C14-626 PS 1 DC OUTPUT POWER ON LITE OFF	
	MPWR		PS 1 OUTPUT ON LITE OFF	GC5138
	MEPS		PS 1 OUTPUT ON LITE OFF	GC5138
			GSE BUS PS 1 IS 0+2-0 (P2-23)	GC5149
08-200	MTPE	CSAT	MSS ACE PS INPUT - OFF	
	CSAT		INPUT LITE OFF	
08-201	MTPE	MACE	EXECUTE THE FOLLOWING..	
			DCBA	
			R114 1011	
08-202	MTPE	SFET	C14-240	
			DC PWR - 12V SW - OFF	
			DC PWR +6V SW - OFF	
			DC PWR +12V SW - OFF	
			DC PWR +28V SW - OFF	
			AC PWR SW - OFF	
	SFET		-12 DC PWR LITE OFF	
			+6V DC PWR LITE OFF	
			+12V DC PWR LITE OFF	
			+28V DC PWR LITE OFF	
			AC PWR LITE OFF	

-16 05	08-203	MSTC	CVTS	CLEAR TO BREAKUP SILO 5, VEHICLE OBSERVERS ARE ON STATION. CLEAR TO REMOVE SA-8 YELLOW LADDER.
-16 00	08-204			SILO 5 BREAKUP START (SUPPORT)
-15 20	08-205	MSTC	CVTS	READER TO DISCONNECT MSS/PAD GN2
-15 20	08-206	MTPE	SPAD	CLEAR ALL PERSONNEL OFF PLAT 4A AND 4C FOR BREAKUP. VERIFY WHEN CLEAR.
-15 05	08-207	MSTC	CVTS	CLEAR TO BREAKUP SILO 4. VEHICLE OBSERVERS ARE ON STATION
-15 00	08-208			SILO 4 BREAKUP START (SUPPORT)
	08-209	MSTC	CVTS	NOTIFY BENDIX PERSONNEL TO PREP CABIN PURGE SETUP.
	08-210	CVTS	MSTC	THERE WILL BE NO PERSONNEL ENTERING THE SC FOR 10 MIN. BETWEEN T-15 TO T-14-30
	08-211			SA8, 9 TIP PRESSURIZATION (L/V) 10 MIN.
		MTPE	MACE	VERIFY READY FOR SC/LV LINK TEST (DT-04) IN 5 MINUTES ON CH. 223.
		MSTC	CVTS	HAVE BGCC MEET MACE ON CH. 223 FOR SC/LV LINK TEST PER OCP-K-0042
		MTPE	MACE	MEET BGCC ON CH. 223 FOR SC/LV LINK TEST PER OCP-K-0042
-14 30	08-212	MTPE	SPAD	START S14-079 CABIN PURGE SETUP PER C/L 6.8/9.8.
	08-213	CVTS	MSTC	SA 8 AND 9 OPEN FOR NORMAL WORK
		MSTC	CVTS	EDS POWER IS COMING ON

NOTE

FOR THE L/V CONTROL RATE GYRO TEST (T-14-30 TO 14-00) AND LV RCUR CKS (T-14-00 TO 13-20) EPS POWER WILL BE TURNED OFF EXCEPT WHEN SIGNALS ARE BEING TRANSMITTED ACROSS THE SLA/IU INTERFACE (CRG TEST-APPROX 10 MIN AND RCUR CKS-APPROX 5 MIN). THIS IS BEING DONE TO CONSERVE ENTRY BATTERY POWER. THE MSTC WILL TURN EPS PWR OFF AND ON BY THE FOLLOWING STEPS.

MSTC SCO1 PANEL 24
EPS POWER (S1) - OFF

MSTC SCO1 PANEL 24
EPS POWER (S1) - ON

08-214 MTPE SCO1 PANEL 25
EDS 1 BAT A (CB52) - CLOSED (VERIFY)
EDS 2 BAT C (CB54) - CLOSED
EDS 3 BAT B (CB53) - CLOSED (VERIFY)

PANEL 24
EDS POWER (S1) - ON

NOTE

SCO1 - PANEL 5
LV ENGINE LITES 1 THRU 5 WILL COME ON

MSEQ - ENGINE 1 THRU 5 OUT LITES WILL COME ON — BS0030 BS0032 BS0034 BS0036 BS0038

NOTE

SCO1 - PANEL 5
LV RATE LITE WILL COME ON AND OFF 18 TIMES AS A RESULT OF LV RATE GYRO TESTING.

MSEQ - LV RATE EXCESSIVE LITE WILL COME ON AND OFF 18 TIMES AS A RESULT OF LV RATE GYRO TESTING. — BS0020

-14 00 08-215 MTPE SPAD INSTALL PROPELLANT INDICATORS PER C/L 6.8/9.8.

08-216 MTPE SNQC REPORT VERIF. OF PROP. IND INSTALLATION

NAA QC NASA QC

08-217 MSTC CVTS READY FOR LEM CCCU TO BE SECURED

-13 55	08-218	MSTC	MREC	MONITOR Q BALL CAL (P19-10) ON CH 121. AT T-1349.
-13 20	08-219	MSTC	CVTS	EPS POWER IS GOING OFF
		MSTC	SW1	PANEL 25 EPS POWER (S1) - OFF
-13 00	08-020			LAUNCH VEHICLE CALL - TO - STATION (L/V)
	08-021			SILO 4 OPEN (SUPPORT)
	08-022	MSTC	CVTS	READY FOR ML/MSS HE LINE DISCONNECT.

13 00 09-000 CALL TO STATIONS - COUNT

NOTE

TEST SET UPS CONTAINED IN SECT. 8.1.3.

09-001 MSTC ALL REPORT READINESS TO PICK UP THE COUNT..

MACE	REPORTS FOR ACE	
MECS	REPORTS FOR	
	UCMT MECE	UWGR
	UGTR	UGCU
MLFC	REPORTS FOR MUEC	
MEPS	REPORTS FOR MPWR	
		MSEQ
		LPDS
MSCS	REPORTS FOR MSCE	
		MSCA
MSPS	REPORTS FOR MSPE	
MRCS	REPORTS FOR MRCE	
MREC	REPORTS FOR MCCE	
MGNS	REPORTS FOR MGNP	
		MGNL
MCOM	REPORTS FOR MOLC	
		MCRF
MNQC		
MGQC		
SPAD	REPORTS FOR LEET	
	SC02 UEET	SC01

SPAD ALSO VERIFIES COMPLETION OF CHECKLIST 6.8/9.8

09-001

CSAT

PGSF ---------- REPORTS FOR ELEC. GSE

PGSM ---------- REPORTS FOR MECH. GSE

LGSF ---------- REPORTS FOR ELEC. GSE

LGSM ---------- REPORTS FOR MECH. GSE

SGQC

SNQC

09-002 MSTC SNQC REPORT VERIFICATION OF OCP-K-10026/
SGQC CHECKLIST 6.8/9.8.

09-003 MSTC MNQC REPORT CONSTRAINTS LIST STATUS
MGQC

-12 45 10-000 TEST OPERATIONS - COUNT

10-001 MTPE SC01 PANEL 25
RCS PROP ISOL MN A - OFF
RCS PROP ISOL MN B - OFF
REPLACE 700-065 C.B. GUARD

10-002 MTPE SN0C REPORT VERIF. OF C.B. GUARD REPLACEMENT

NAA QC	NASA QC

10-003 MTPE MSEQ PROGRAMMER RESET - ON (P104) KV7541

10-004 MTPE SC02 PANEL 20
TAPE RECORDER RECORD/PLAY - RECORD
TAPE RECORDER FWD/REV S17 - FWD

10-005 MTPE MREC TAPE RECORDER ON EQ T/R (R128) KT7031
- ON

MREC TAPE ON - DSE LITE ON CT0012
TAPE ON - EOR LITE ON CT0013

10-006 MTPE MREC TAPE RECORDER STOP EQ T/R KT7033
(R128) - ON

MREC TAPE ON - DSE LITE OFF CT0012
TAPE ON - EOR LITE OFF CT0013

10-007 MTPE MSEQ COMM CONT XFER (P104) - ON KT7029
MASTER CONTROL XFER (P104) - ON KV7042

-12 30 221 10-008 MTPE MSCE RECORDER 17
1/4 2/2 3/3 4/3 5/4 6/1 7/3 8/2

RECORDER 18
1/1 2/3 3/4 4/4 5/4 6/2 7/1 8/1

RECORDER 21
5/3 6/3

RECORDER 22
5/2 6/2 7/2 8/2

10-009 MTPE MSCE RECORDER 16 TO 5 MM/SEC
RECORDERS 17, 18, 19, 21 AND 22 TO 2
MM/SEC
ANNOTATE RECORDERS

10-010 MTPE SC01 PANEL 25
SCS GROUP 1 AC1 (CB46) - OPEN (SLUGGED)
SCS GROUP 1 AC2 (CB45) - CLOSED
SCS GROUP 2 AC1 (CB67) - CLOSED
SCS GROUP 2 AC2 (CB66) - CLOSED
SCS GROUP 1 MN-A (CB44) - CLOSED
SCS GROUP 1 MN-B (CB43) - CLOSED
SCS GROUP 2 MN-A (CB65) - CLOSED
SCS GROUP 2 MN-B (CB64) - CLOSED

PANEL 8
SCS CH A AND C ROLL (S11) - OFF
SCS CH B AND D ROLL (S12) - OFF
SCS CH PITCH (S13) - OFF
SCS CH YAW (S14) - OFF
G+N/SCS (S3) - G+N
A/M/E (S1) - MONITOR

PANEL 24
PARTIAL SCS POWER (S13) - AC1
ROTATION CONTROL POWER (S16) - AC1

MSCE MONITOR MODE LITE ON CH0103

10-011 MTPE MSCE COMBINED RATE GYRO SMRD VDC CH2026 .5MAX
(P17-21) -----

10-012 MTPE MSCE COMPLETE SCS DATA TABLE I
(PCM DATA ONLY)

NOTE

TIMED SEQUENCE FOLLOWS

10-013 MTPE SC01 PANEL 24
ON MY MARK
RATE GYRO POWER (S12) - AC1

MSCE VERIFY COMBINED RATE GYRO SMRD CH2026 4.8+/-
IS 4.84 VDC IN 20 SECONDS MAX FROM 0.2
(S12) POWER ON
(P17-21) VDC SEC
----- -----

10-014 MTPE SC01 PANEL 25
SCS DIRECT CONTROL MN-A (CB42) - CLOSED
SCS DIRECT CONTROL MN-B (CB41) - CLOSED
SCS A AND C ROLL MN-A (CB36) - CLOSED
SCS A AND C ROLL MN-B (CB35) - CLOSED
SCS B AND D ROLL MN-A (CB34) - CLOSED
SCS B AND D ROLL MN-B (CB33) - CLOSED
SCS PITCH MN-A (CB40) - CLOSED
SCS PITCH MN-B (CB39) - CLOSED
SCS YAW MN-A (CB32) - CLOSED
SCS YAW MN-B (CB31) - CLOSED
PANEL 24
TVC 1 POWER (S14) - AC1
TVC 2 POWER (S15) - AC1

10-015 MTPE MSCE COMPLETE SCS DATA TABLE NO. II AND III (PCM DATA ONLY).

NOTE

TIMED SEQUENCE FOLLOWS..

10-016 MTPE SC01 PANEL 24
ON MY MARK
BMAG POWER (S9) - AC1

MSCE START TIMING FOR BMAG WARMUP OF APPROXIMATELY 45 MINUTES AND RECORD..

TIME				
COMBINED ATT GYRO SMRD (P17-20)	____	VDC	CH2015	.5 MAX
COMBINED ATT GYRO TEMP (P17-22)	____	VDC	CH2030	.5 MAX

	10-017 MTPE	MSCE	RECORD AFTER BMAG WARMUP..	
			TIME FROM BMAG POWER ON UNTIL COMBINED ATT GYRO TEMP READS +4.6 VDC MIN.	
			MIN	45 MIN MAX
			COMBINED ATT GYRO TEMP VDC CH2030 (P17-22)	4.8 +/-0.2
			COMBINED ATT GYRO SMRD VDC CH2015 (P17-20)	4.8 +/-0.2
	10-018 MTPE	MSCE	COMPLETE SCS DATA TABLE NO. IV (PCM DATA ONLY)	
	10-019 MTPE	SPAD	START CLEARING NON-ESSENTIAL PERSONNEL.	
-12 20	10-020 MTPE	MACE	VERIFY READY FOR SC/LV LINK TEST (DT-04) IN 5 MINUTES ON CH. 223.	
-12 15	10-021 MSTC	CVTS	HAVE BGCC MEET MACE ON CH. 223 FOR SC/LV LINK TEST PER OCP-K-0042	
	10-022 MTPE	MACE	MEET BGCC ON CH. 223 FOR SC/LV LINK TEST PER OCP-K-0042	
	10-023 MTPE	SPAD	VERIFY READY FOR SHEAR DOOR INSTALLATION	
-12 00	10-024 MSTC	CVTS	CLEAR FOR SHEAR DOOR INSTALLATION (SUPPORT)	

-11 45 10-025 MSTC CVTS EDS POWER IS COMING ON

10-026 MTPE SC01 PANEL 25 (VERIFY)
EDS 1 BAT A (CB52) - CLOSED
EDS 2 BAT C (CB54) - CLOSED
EDS 3 BAT B (CB53) - CLOSED

PANEL 24
EDS POWER (S1) - ON

NOTE

SC01 - PANEL 5
LV ENGINE LITES 1 THRU 5 WILL COME ON

MSEQ - ENGINE 1 THRU 5 OUT LITES WILL COME ON BS0030 BS0032 BS0034 BS0036 BS0038

10-027 MTPE SC01 MSEQ MSTC MOVE TO CH. 223 FOR EDS TEST

NOTE

MSTC REQUIRED ON CH 212 AT T-11 00 FOR CMD CHECKS

NOTE

SC01 - PANEL 5
LV RATE LITE WILL COME ON AND OFF 18 TIMES AS A RESULT OF LV RATE GYRO TESTING.

MSEQ - LV RATE EXCESSIVE LITE WILL COME ON AND OFF 18 TIMES AS A RESULT OF LV RATE GYRO TESTING. BS0020

-11 40 10-028 MSTC CVTS 1. SC EDS POWER IS ON
2. SC PERSONNEL ARE MOVING TO CH. 223 FOR EDS TEST.

10-029 MTPE SPAD VERIFY MSS MOVE OBSERVERS IN PLACE

NOTE

MSS OBSERVERS AS FOLLOWS..

PLATFORM	OBSERVER
3	SS31
	SS32
4A	SS41
	SS42
4C	SS43
	SS44
5	SS51
	SS52

-11 30 10-030 MTPE
SC02
MNQC
CONDUCT LOWER EQUIPMENT BAY CLOSEOUT PER TABLE 1.

NOTE

ALL SYSTEMS MONITOR.

TABLE I

LOWER EQUIPMENT BAY CLOSEOUT SWITCHLIST

A. MISCELLANEOUS ECS CONTROL

CABIN TEMP	(FULL C) CW
ENTRY O2	OFF
GLYCOL ACCUMULATOR	ON (FULL CCW)
CABIN AIR CIRC PKG LOUVRES	OPEN

NOTE

THE FOLLOWING VALVE IS COVERED BY AN ATTENUATION PANEL POSITION IS AS SHOWN

EVAP H20 (5.29)	AUTO

B. WATER CONTROL PANEL (C23A10)

WASTE TANK SERVICING	CLOSED
WASTE TANK SERVICING PORT	CAPPED
OVERBOARD PRESSURE RELIEF	1 AND 2 (BOTH)
POTABLE TANK INLET	ON (OPEN)
WASTE TANK INLET	ON (AUTO)

C. OXYGEN CONTROL PANEL (C23A2)

MAIN REGULATOR	NORMAL
WATER AND GLYCOL TANKS PRESSURE	
REGULATOR SELECTOR INLET	NORMAL
RELIEF SELECTOR OUTLET	NORMAL
PLSS VALVE	CLOSED
PLSS FILL PORT	CAPPED
EMERGENCY CABIN PRESS	OFF
CABIN REPRESS VALVE	CLOSED (CCW)

D. INSTRUMENTATION POWER CONTROL PANEL 204

ESSENTIAL	
CB1	CLOSED
CB2	CLOSED
CB3	CLOSED
CB4	CLOSED
NON ESSENTIAL INST BUS	
CB5 (NOT USED)	OPEN
CB6 (NOT USED)	OPEN
CB7	CLOSED
CB8	CLOSED
CB9	CLOSED
CB10	CLOSED

F. ELEC. AUXILIARY DC POWER CONTROL BOX C14A14

POST LDG BUS TIE	
BAT 1 AND 3 (S7)	AUTO
BAT 2 AND 3 (S9)	AUTO
AUX TO MAIN BUS TIE (S11)	AUTO
AUX BUS TIE	
BAT 1 AND 3 (S8)	AUTO
BAT 2 AND 3 (S10)	AUTO
AUX BUS A	
MCP1 (CB9)	CLOSED
MCP2 (CB10)	CLOSED
MAIN BUS A ESSENT INST (CB14)	CLOSED
MAIN BUS B	
UNTITLED (CB18)	CLOSED
NON ESSENT BUS (CB13)	CLOSED
AUX BUS B	
MCP1 (CB11)	CLOSED
MCP2 (CB12)	CLOSED
MAIN BUS B ESSENT INST (CB15)	CLOSED
AUX TO MAIN	
UNTITLED (CB17)	CLOSED
BUS TIE CONT (CB16)	CLOSED
AUX BAT POST LDG MCP (CB8)	OPEN (SLUGGED)

F. IMU CONTROL PANEL 101

IMU-CDU DIFFERENCE (M1)	OUTER	0.X
	MIDDLE	0.X
	INNNER	0.X
TRANSFER (S4)		COMPUTER
MANUAL ALIGN (S3)		AS IS
MODE		
ZERO ENCODER (S5)		AS IS, LITE OFF
COURSE ALIGN (S6)		AS IS, LITE OFF
FINE ALIGN (S8)		AS IS, LITE ON
CDU MANUAL (S7)		AS IS, LITE OFF
ATT CONT (S9)		AS IS, LITE OFF
ENTRY (S10)		AS IS, LITE OFF

G. CDU CONTROL PANEL 102

2X TRUNNION (A1) THUMBWHEEL	180.0
SHAFT ANGLE (A2) THUMBWHEEL	AS IS 180.0
OUTER GIMBAL (ROLL)	
SLEW (A3S1)	AS IS
THUMBWHEEL (A3)	AS IS
INNER GIMBAL (PITCH)	
SLEW (A4S1)	AS IS
THUMBWHEEL (A4)	AS IS
MIDDLE GIMBAL (YAW)	
SLEW (A5S1)	AS IS
THUMBWHEEL (A5)	AS IS

H. G AND N OPTICS CONTROL PANEL 105

OPTICS CONTROLLER (A1) (STICK)	AS IS
CHECK COOLANT (S2)	AS IS
MARK (S24)	AS IS
MARK REJECT SWITCH	AS IS
ATTITUDE IMPULSE	
CONTROLLER STICK (S19)	AS IS (CENTERED)
ENABLE (S10)	OFF
CONDITION LAMPS (S5)	ON
OPTICS	
SLAVE TELESCOPE (S14)	STAR LOS
CONTROLLER	
SPEED (S3)	LOW
MODE (S15)	DIRECT
ZERO OPTICS/MANUAL/COMPUTER (S11)	ZERO OPTICS
TRACKER POWER (S4)	OFF
PANEL BRIGHTNESS (P1)	FULL DIM
CHECK MODE LAMPS (S17)	AS IS
CHECK CONDITION LAMPS (S1)	AS IS
IMU TEMP MODE AUTO O/R (S16)	AUTO OVERRIDE
ZERO (S7)	AS IS
GAIN PIPA (S2)	AS IS
IRIG (S23)	AS IS

I. AGC COMPUTER DISPLAY AND KEYBOARD PANEL 106

BRIGHTNESS (R1)	FULL DIM

J. G AND N COMPUTER PANEL 107

AGC MODE (S1)	ON

K. BATTERY CIRCUIT BREAKER PANEL 150

PYRO A	
SEQ A (CB14)	CLOSED
RCS FUEL DUMP (CB15)	CLOSED
PYRO B	
SEQ B (CB17)	CLOSED
RCS FUEL DUMP (CB16)	CLOSED
BAT CHGR BAT C (CB20)	CLOSED
BAT C PWR POST LND/ENTRY (CB19)	CLOSED
BAT B PWR ENTRY (CB22)	CLOSED
BAT A PWR ENTRY (CB21)	CLOSED

L. ELECTRICAL POWER CB PANEL 203

MAIN A	
BAT BUS A (CB12)	CLOSED
BAT C (CB11)	CLOSED
MAIN B	
BAT C (CB10)	CLOSED
BAT BUS B (CB9)	CLOSED
POST LDG	
BAT BUS A (CB8)	CLOSED
BAT BUS B (CB7)	CLOSED
BAT C (CB13)	CLOSED
MAIN A (CB6)	CLOSED
MAIN B (CB5)	CLOSED
INVERTER PWR	
NO. 1 MN A (CB4)	CLOSED
NO. 2 MN B (CB3)	CLOSED
NO. 3 MN A (CB2)	CLOSED
NO. 3 MN B (CB1)	CLOSED

M. ECS STEAM DUCT HTR PANEL 206

MN A (CB23)	CLOSED
MN B (CB24)	CLOSED

N. DSE RECORDER

ERASE/OFF SWITCH	ERASE

O. PANEL 205

UPRIGHTING SYSTEM	
COMPR 1 (CB4)	CLOSED
COMPR 2 (CB5)	CLOSED

P. CABIN PRESS RELIEF

1 (3.1A)-LEFT	BOOST ENTRY
2 (3.1B)-RIGHT	BOOST ENTRY

11 15 11 05	10-031 CVTS MTPE	MSTC MEPS	VERIFY READY FOR AUX DAMPER DISCONNECT. PROCEED WITH INTERNAL POWER TRANSFER CHECK ON CH. 222.	

NOTE

FOLLOWING READOUTS FOR ENG. INFO ONLY.

	MEPS	MAIN BUS A	VDC (P1-5)	CC0206
		MAIN BUS B	VDC (P1-5)	CC0207
		BAT BUS A	VDC (P1-14)	CC0210
		BAT BUS A	AMPS (P1-15)	CC0222
		BAT BUS B	VDC (P1-14)	CC0211
		BAT BUS B	AMPS (P1-15)	CC0223
		PL BAT	VDC (P1-14)	CC0212
		PL BAT	VDC (P1-15)	CC0224

10-032	MEPS	SC02	PANEL 203 (PERFORM OR VERIFY) MAIN A BAT BUS A (CB12) - CLOSED MAIN B BAT BUS B (CB9) - CLOSED PANEL 22 MAIN BUS TIE BAT A AND C (S8) - ON BAT B AND C (S10) - ON		
10-033	MEPS		MTR SW PS VDC (P1-12)	GC5030	38+2-0

10-034 MEPS	MPWR	SM MTR SW CLOSE (P102) - OFF	KC7636
	MEPS	SM MTR SW OPEN LITE ON	SC2410

NOTE

FOLLOWING READOUTS FOR ENGINEERING INFO ONLY.

	MEPS	MAIN BUS A VDC ----- (P1-5)	CC0206
		MAIN BUS B VDC ----- (P1-5)	CC0207
		BAT BUS A VDC (P1-14) -----	CC0210
		BAT BUS A AMPS (P1-15) -----	CC0222
		BAT BUS B VDC (P1-14) -----	CC0211
		BAT BUS B AMPS (P1-15) -----	CC0223
		BAT C VDC (P1-14) -----	CC0212
		BAT C AMPS (P1-15) -----	CC0224
10-035 MEPS	MPWR	SM MTR SW CLOSE (P102) - ON	KC7636
	MEPS	SM MTR SW OPEN LITE OFF	SC2410
10-036 MEPS	SC02	PANEL 22 MAIN BUS TIE BAT A AND C (S9) - OFF BAT B AND C (S10) - OFF	
10-037 MEPS	MTPE	INTERNAL POWER TRANSFER TEST COMPLETED AND GO	

	10-038	MSTC	CVTS	EDS TEST COMPLETE. L/V HOLDING EDS POWER OFF	
11 00	10-039	MSTC	CVTS	READY FOR MSS JACKING	
	10-039A			MSS START JACKING (SUPPORT)	
211	10-040	MSTC	CVTS	1. VERIFY CLEARANCE TO ACTIVATE SC RF SYSTEMS MOMENTARILY.. A. VHF-FM 237.8 MC B. C BAND BEACON 2. C BEACON INTERROGATION ON 3. NO RANGE READOUT REQUIRED 4. COMMAND CARRIER-ON. RECEIVER IS OFF. HAVE HFLT STANDBY ON CH. 212 FOR COMMAND CHECK.	
	10-041	MTPE	SC01	PANEL 20 UPDATA (S8) - UHF	
	10-042	MTPE	MCOM	UDL OFF - OFF (P134)	KT7038
				CM RF OFF - OFF (R133)	KT7037
	10-043	MTPE	MCOM MGNR SC01	GO TO CH. 212 FOR COMMAND CHECKS.	
	10-044	MSTC	HFLT	1. SC IS IN UHF ACCEPT UPLINK MODE 2. SEND C-BAND ON (RTC 75) 3. SEND PCM HBR-VHF XMTR ON (RTC 77)	
		MCOM		C BAND XMTR ON	CT0089
				VHF FM XMTR ON	CT0330
	10-045	MSTC	MCOM	CM RF OFF - ON (R133)	KT7037
	10-046	MSTC	CVTS	1. REMOVE C-BAND INTERROGATION 2. SC RF IS OFF	
	10-047	MSTC	HFLT	R, P, Y BACKUP RATE CMDS - ON RTC 44 RTC 45 RTC 46	
	10-048	MTPE	MSCS	VERIFY WHEN RMAGS IN BACKUP RATES	
	10-049	MSTC	MGNS	CHECK AGC DELTA TIME DURING CTE UPDATE	

212 222	10-050	MSTC	ALL	STANDBY FOR MOMENTARY LOS.
				NOTE
				FOLLOWING STEP IS PERFORMED TO GENERATE CTE GMT ERROR
212	10-051	MSTC	SC01	PANEL 22 CENTRAL TIMING SYS MNA (CB53) - OPEN MNB (CB52) - OPEN MNA (CB53) - CLOSED MNB (CB52) - CLOSED
	10-052	MSTC	SC01	RETURN TO CH. 222.
	10-053	MSTC	HFLT	SEND CTE GMT UPDATE
	10-054	MSTC	MREC	VERIFY CTE GMT UPDATE
	10-055	MSTC	HFLT	START PRELAUNCH COMMAND CHECK EMU NO. 1 V21 N01
		MGNR		V21 N01
	10-056	MSTC	HFLT	EXECUTE E
		MGNR		V21 N01 (FLASH)
	10-057	MSTC	HFLT	EXECUTE ADDRESS/DATA R1 = 01234 R3 = 01740
	10-058	MSTC	HFLT	EXECUTE E V21 N01 (STOPS FLASHING)
	10-059	MSTC	HFLT	DSKY INSERT VERB
		MGNR		VERB BLANKS
	10-060	MSTC	HFLT	DSKY INSERT 0
		MGNR		0 INSERTED
	10-061	MSTC	HFLT	DSKY INSERT 1
		MGNR		1 INSERTED
	10-062	MSTC	HFLT	DSKY INSERT NOUN
		MGNR		NOUN BLANKS

10-063	MSTC	HFLT	DSKY INSERT 0
	MGNR		0 INSERTED
10-064	MSTC	HFLT	DSKY INSERT 1
	MGNR		1 INSERTED
10-065	MSTC	HFLT	EXECUTE E
	MGNR		V01 N01 (FLASH)
10-066	MSTC	HFLT	DSKY INSERT 1740
	MGNR		1740 INSERTED
10-067	MSTC	HFLT	EXECUTE E
10-068	MSTC	HFLT	INSERT EMU NO. 2

	10-068	MGNR		V21 N01 INSERTED
	10-069	MSTC	HFLT	EXECUTE E
		MGNR		V21 N01 (FLASH)
	10-070	MSTC	HFLT	EXECUTE ADDRESS/DATA
		MGNR		R1 = 00000
				R3 = 01740
	10-071	MSTC	HFLT	EXECUTE E
				DSKY INSERT
				VERB
		MGNR		VERB BLANKS
	10-072	MSTC	HFLT	DSKY INSERT
				0
		MGNR		0 INSERTED
	10-073	MSTC	HFLT	DSKY INSERT
				1
		MGNR		1 INSERTED
	10-074	MSTC	HFLT	DSKY INSERT
				NOUN
		MGNR		NOUN BLANKS
		MSTC	HFLT	DSKY INSERT
				1740
				0
		MGNR		0 INSERTED
	10-075	MSTC	HFLT	DSKY INSERT
				1
		MGNR		1 INSERTED
	10-076	MSTC	HFLT	EXECUTE E
		MGNR		V01 N01 (FLASH)
	10-077	MSTC	HFLT	DSKY INSERT
				1740
		MGNR		1740 IS INSERTED
	10-078	MSTC	HFLT	EXECUTE E
		MGNR		R1 = 00000
				R3 = 1740
	10-079	MSTC	MCOM	UDL OFF - ON (R124) KT7038
211	10-080	MSTC	CVTS	1. COMMAND CHECKS COMPLETE
				2. SC THROUGH WITH COMMAND CARRIER
				3. SC CMD RCVR IS OFF.
212	10-081	MSTC	MCOM	RETURN TO CH. 222.
			MGNR	

222	10-082	MSCS	MTPE	1. RMAGS IN BACKUP RATES 2. READY FOR FDAI ALIGN		
	10-083	MTPE	SC01	PANEL 6 PRESS FDAI ALIGN UNTIL READINGS STABILIZE ON MSCA CONSOLE.		
		MSCE		AGCU ATT ANGLE - PITCH DEG (P17-16)	CH4100	332 +/-4.0
				AGCU ATT ANGLE - YAW DEG (P17-16)	CH4102	010 +/- 4.0
				AGCU ATT ANGLE - ROLL DEG (P17-16)	CH4104	163 +/- 4.0
	10-084	MTPE	SC01	PANEL 6 ROLL THUMBWHEEL (B3) PITCH THUMBWHEEL (B2) YAW THUMBWHEEL (B1)		 035.7 279.3 355.1

10-085 MTPE SC01 TIGHTEN SCREWS ON LOCKING PLATE ASSY ME124-0005-0001 OVER ATTITUDE THUMBWHEELS.

10-086 MTPE MECS PERFORM W/G EVAPORATOR WICK WETTING (LAUNCH COUNT ONLY)

10-087 MECS SC02 PANEL 22
POT H2O HTR CB'S MNA AND MNB CLOSE

PANEL 13
GLYCOL EVAP H2O FLOW (S22) TO ON

NOTE

WAIT 2 MIN 30 SEC BEFORE PERFORMING NEXT SEQ.

10-088 MECS SC02 PANEL 13
GLYCOL EVAP H2O FLOW (S22) TO OFF (CENTER)

PANEL 22
POT H2O HTR CB'S MNA AND MNB OPEN

10-089 MECS MTPE W/G EVAPORATING WICK WETTING IS COMPLET E

10-090 MTPE SPAD PROCEED WITH CHECKLIST 6.9/9.9.

10-091 MTPE SPAD START REMOVAL OF Z00-065 C.B. GUARDS PER C/L 9.9. PLACE IN W/R TOOL BOX.

10-091A MSTC CVTS READY FOR PRIMARY DAMPER CONNECT

-10 15 10-092 PRIMARY DAMPER CONNECT (L/V)

10-093 MTPE SC01 MNQC PERFORM CLOSEOUT SWITCH LIST VERIFICATION PER TABLE 2

TABLE 2

HATCH CLOSEOUT SWITCHLIST - MAIN DISPLAY CONSOLE

A. RH CIRCUIT BREAKER PANEL 22

FUEL CELL PUMP	
1 (S1)	AC 1
2 (S2)	AC 2
3 (S3)	AC 2
FUEL CELL 1	
CIR AND SEP MOTORS AC (CB64)	CLOSED
H2 + 02 VALVE (CB63)	CLOSED
BUS CONT (CB65)	CLOSED
PURGE (CB66)	CLOSED
FUEL CELL 2	
CIR AND SEP MOTORS AC (CB83)	CLOSED
H2 + 02 VALVE (CB82)	CLOSED
BUS CONT (CB84)	CLOSED
PURGE (CB85)	CLOSED
FUEL CELL 3	
CIR AND SEP MOTORS AC (CB87)	CLOSED
H2 + 02 VALVE (CB86)	CLOSED
BUS CONT (CB88)	CLOSED
PURGE (CB89)	CLOSED
INVERTER CONTROL	
1 (CB39)	CLOSED
2 (CB38)	CLOSED
3 (CB37)	CLOSED
MAIN BUS TIE	
BAT A + C (S9)	AUTO
BAT B + C (S10)	AUTO
MA EVENT SEQ CONT	
ARM	
A BAT A (CB19)	CLOSED
B BAT B (CB18)	CLOSED
LOGIC	
A BAT A (CB21)	CLOSED
B BAT B (CB20)	CLOSED
DC SNSR SIG	
MN A (CB15)	CLOSED
MN B (CB14)	CLOSED
CENTRAL TIMING SYSTEM	
MNA (CB53)	CLOSED
MNB (CB52)	CLOSED
BAT RLY BUS	
BAT A (CB13)	CLOSED
BAT B (CB12)	CLOSED

BATTERY CHARGER	
BAT A CHGE (CB78)	CLOSED
BAT B CHGE (CB77)	CLOSED
MN A (CB80)	CLOSED
MN B (CB79)	CLOSED
COMMUNICATION C-BAND XPONDER (CB120)	CLOSED
G AND N LIGHTING (S7)	AC 2
COMMUNICATION	
A (S12)	AUTO
B (S13)	AUTO
GAS ANAL AC 1 (CB116) (NOT USED)	OPEN
COMMUNICATIONS	
1 AC (CB49)	CLOSED
2 AC (CB48)	CLOSED
3 (CB47) (NOT USED)	OPEN
4 (CB46)	CLOSED
5 (CB45)	CLOSED
6 AC (CB50)	CLOSED
S BAND AC (CB61)	CLOSED
ECS	
H20 ACCUM MN A (CB94)	OPEN
(NOT USED)	
H20 ACCUM MN B (CB95)	OPEN
(NOT USED)	
INST	
ESS MN A (CB41) (NOT USED)	OPEN
ESS MN B (CB40) (NOT USED)	OPEN
COMM	
FLT QUAL RCDR (CB96)	CLOSED
C-BAND (CB97)	CLOSED
GUIDANCE AND NAVIGATION	
IMU HTR	
MN B (CB60)	CLOSED
IMU	
MN A (CB59)	CLOSED
MN B (CB58)	CLOSED
COMPUTER	
MN A (CB57)	CLOSED
MN B (CB56)	CLOSED
OPTICS	
MN A (CB55)	CLOSED
MN B (CB54)	CLOSED
LIGHTING	
AC1 (CB93)	CLOSED
AC2 (CB62)	CLOSED

ENVIRONMENTAL CONTROL SYSTEM	
CABIN AIR FAN-1-AC1	
PHASE A (CB76)	CLOSED
PHASE B (CB75)	CLOSED
PHASE C (CB74)	CLOSED
CABIN AIR FAN-2-AC2	
PHASE A (CB73)	CLOSED
PHASE B (CB72)	CLOSED
PHASE C (CB71)	CLOSED
SUIT COMPRESSORS (NOT USED)	
AC1 PHASE A (CB33)	OPEN
AC1 PHASE B (CB32)	OPEN
AC1 PHASE C (CB31)	OPEN
AC2 PHASE A (CB30)	OPEN
AC2 PHASE B (CB29)	OPEN
AC2 PHASE C (CB28)	OPEN
* (SIMULTANEOUSLY)	
GLYCOL PUMPS	
*AC1 PHASE A (CB27)	CLOSED
*AC1 PHASE B (CB26)	CLOSED
*AC1 PHASE C (CB25)	CLOSED
AC2 PHASE A (CB24)	CLOSED
AC2 PHASE B (CB23)	CLOSED
AC2 PHASE C (CB22)	CLOSED
TRANSDUCER	
WASTE AND POT H2O	
MN A (CB92)	CLOSED
MN B (CB91)	CLOSED
PRESS GROUPS	
1 MN A (CB9)	CLOSED
1 MN B (CB8)	CLOSED
2 MN A (CB43)	CLOSED
2 MN B (CB34)	CLOSED
TEMP MN A (CB11)	CLOSED
TEMP MN B (CB10)	CLOSED
RAD VALVE AC 1	
1A (CB70) (NOT USED)	OPEN
2B (CB 69) (NOT USED)	OPEN
RAD VALVE AC 2	
1B (CB68)	CLOSED
2A (CB67) (NOT USED)	OPEN
POT H2O HTR	
MN A (CB3)	OPEN
MN B (CB2)	OPEN
CRYOGENIC TANK FAN MOTORS	
1 AC1 PHASE A (CB100)	CLOSED
1 AC1 PHASE B (CB99)	CLOSED
1 AC1 PHASE C (CB98)	CLOSED
2 AC2 PHASE A (CB103)	CLOSED
2 AC2 PHASE B (CB102)	CLOSED
2 AC2 PHASE C (CB101)	CLOSED

CRYOGENIC SYSTEM	
H2 TK HTR	
1 MN A (CB7)	CLOSED
2 MN B (CB6)	CLOSED
O2 TK HTR	
1 MN A (CB5)	CLOSED
2 MN B (CB4)	CLOSED
QTY AMPL	
1 AC 1 (CB44)	CLOSED
2 AC 2 (CB90)	CLOSED

B. RH SIDE CONSOLE BUS SWITCHING PANEL 21

ECS GLYCOL (S14)	PUMP2/AC2
CABIN AIR FAN	
1 (S16)	ON
2 (S17)	ON
RCS HEATERS	
A MN B (CB1)	CLOSED
B MNA (CB2)	CLOSED
C MNB (CB3)	CLOSED
D MNA (CB4)	CLOSED
SNSR UNIT	
DC BUS A (CB5) (NOT USED)	OPEN
DC BUS B (CB6) (NOT USED)	OPEN
AC BUS 1 (CB7)	CLOSED
AC BUS 2 (CB8)	CLOSED

C. FUEL CELL AND ELECTRICAL POWER PANEL 18

FUEL CELL	
PURGE	
1 (S1)	OFF (CENTER)
2 (S2)	OFF (CENTER)
3 (S3)	OFF (CENTER)
REACTANTS	
1 (S4)	CENTER
INDICATOR (DS6)	GRAY
2 (S5)	CENTER
INDICATOR (DS7)	GRAY
3 (S6)	CENTER
INDICATOR (DS8)	GRAY
MAIN BUS A	
1 (S12)	CENTER
INDICATOR (DS9)	GRAY
2 (S13)	CENTER
INDICATOR (DS10)	GRAY
3 (S14)	CENTER
INDICATOR (DS11)	BARBERPOLE
RESET (S15) (NOT USED)	CENTER

MAIN BUS B	
1 (S16)	CENTER
INDICATOR (DS12)	BARBERPOLE
2 (S17)	CENTER
INDICATOR (DS13)	GRAY
3 (S18)	CENTER
INDICATOR (DS14)	GRAY
RESET (S19) (NOT USED)	CENTER
FUEL CELL INDICATORS (S7)	1
PH HI (DS1)	GRAY
FC RAD TEMP LOW (DS2)	GRAY
H2 FLOW	LB/HR

O2 FLOW	LB/HR

MODULE TEMP SKIN	DEG F (X10)

MODULE TEMP COND EXH	DEG F (X10)

REG OUT PRESS H1	
H2 (DS4)	GRAY
O2 (DS3)	GRAY
N2 (DS5)	GRAY
FUEL CELL INDICATORS (S7)	2
PH HI (DS1)	GRAY
FC RAD TEMP LOW (DS2)	GRAY
H2 FLOW	LB/HR

O2 FLOW	LB/HR

MODULE TEMP SKIN	DEG F (X10)

MODULE TEMP COND EXH	DEG F (X10)

REG OUT PRESS H1	
H2 (DS4)	GRAY
O2 (DS3)	GRAY
N2 (DS5)	GRAY
FUEL CELL INDICATORS (S7)	3
PH HI (DS1)	GRAY
FC RAD TEMP LOW (DS2)	GRAY
H2 FLOW	LB/HR

O2 FLOW	LB/HR

MODULE TEMP SKIN	DEG F (X10)

MODULE TEMP COND EXH	DEG F (X10•

REG OUT PRESS H1	GRAY
H2 (DS4)	GRAY
O2 (DS3)	GRAY
N2 (DS5)	1
FUEL CELL INDICATORS (S7)	OFF
BATTERY CHARGER (S10)	FUEL CELL 1
DC INDICATORS (S20)	
DC AMPS	

DC INDICATORS (S20)	FUEL CELL 2
DC AMPS	

DC INDICATORS (S20)	FUEL CELL 3
DC AMPS	

DC INDICATORS (S20)	MAIN BUS A 29 +/- 2 VDC
DC VOLTS	

DC INDICATORS (S20)	MAIN BUS B 29 +/- 2 VDC
DC VOLTS	

DC INDICATORS (S20)	BAT BUS A 30 VDC MIN
DC VOLTS	

DC AMPS	

DC INDICATORS (S20)	BAT BUS B 30 VDC MIN
DC VOLTS	

DC AMPS	

DC INDICATORS (S20)	BAT C 34.5 +/- 3.5 VDC
DC VOLTS	

DC AMPS	

DC INDICATORS (S20)	PYRO BAT A 35.5 +/- 2.5 VDC
DC VOLTS	

DC AMPS	

DC INDICATORS (S20)	PYRO BAT B 35.5 +/- 2.5 VDC
DC VOLTS	

DC AMPS	

DC INDICATOR (S20)	RETURN TO MAIN BUS A

AC INVERTER	
1 (S22)	MNA
2 (S23)	MNB
3 (S24)	OFF (CENTER)
AC BUS 1	
1 (S26)	ON
2 (S27)	OFF
3 (S28)	OFF
RESET (S25)	CENTER
AC BUS 2	
1 (S30)	OFF
2 (S31)	ON
3 (S32)	OFF
RESET (S29)	CENTER
AC INDICATOR (S33)	BUS 1 PH A
BUS 1 PH A	V _____ CPS _____
BUS 1 PH B	V _____ CPS _____
BUS 1 PH C	V _____ CPS _____
BUS 2 PH A	V _____ CPS _____
BUS 2 PH B	V _____ CPS _____
BUS 2 PH C	V _____ CPS _____
RETURN TO BUS 1 PH A	115.5 +2-3 VDC 400 +/- 2 CPS

D. COMMUNICATIONS, DATA LINK, SERVICE PROPULSION SYSTEM AND S-BAND ANTENNA SELECT PANEL 20

S-BAND	
XPONDER/XPONDER PWR AMP (S1)	XPONDER PWR AMP
PWR AMP HIGH/LOW (S2)	HIGH
OSC PRIM/SEC (S3)	PRIM
VOICE	
RNG (S5)	RNG
TAPE (S6)	CENTER
TV (S7)	CENTER
EMERG (S4)	CENTER
UP DATA (S8)	UHF
S-BAND ANTENNA (S32)	A (CENTER)
VHF AM	
SQUELCH THUMBWHEEL (R1)	AS IS
T/R REC (S14)	T/R
RCVR (S15)	1
C-BAND (S13)	CENTER
VHF FM (S12)	OFF
RECOVERY	
VHF BCN (S11)	ON
HF ON/OFF (S10)	ON
HF SSB/BCN/AM (S9)	BCN
TAPE RECORDER	
PLAY (S19)	CENTER
SPEED (S18)	CENTER
RECORD/PLAY (S16)	RECORD
FWD/REV (S17)	FWD
POWER	
SCE (S22)	ON
PMP (S23)	ON
TLM INPUTS	
PCM (S20)	HIGH
UNTITLED (S21)	UP (NOT USED)
BIO MED (S24)	1 (NOT USED)
VHF ANTENNA (S35)	UPPER (CENTER)
SPS HELIUM	
LEFT (S26)	AUTO
FLAG (DS5)	GRAY
RIGHT (S27)	AUTO
FLAG (DS6)	GRAY

E. RADIATION, AUDIO, CRYOGENIC AND ECS SYSTEMS PANEL 13

H2 HEATERS	
1 (S16)	AUTO
2 (S17)	AUTO
POWER (S5)	VOX
S-BAND (S1)	T/R
RCDR HF (S2)	OFF
VHF-AM (S3)	T/R
INTERCOMM (S4)	OFF
VOX SENS (R3)	MAX
INTERCOM BALANCE (R2)	AS IS (NOT USED)
VOLUME (R1)	AS IS (NOT USED)
WASTE H2O TK REFILL (S36)	OFF (NOT USED)
O2 HEATERS 1 (S14)	OFF
O2 HEATERS 2 (S15)	AUTO
H2 FANS 1 (S33)	AUTO
H2 FANS 2 (S34)	AUTO
O2 FANS 1 (S31)	AUTO
O2 FANS 2 (S32)	AUTO
GLYCOL EVAP	
H2O FLOW (S22)	CENTER
STEAM PRESS	
AUTO/MAN (S23)	AUTO
INCR/DECR (S24)	CENTER
TEMP IN (S25)	MAN
CABIN TEMP	
AUTO/MAN (S12)	MAN
AUTO (R4)	1

F. ANTENNA CONTROL SYSTEM PANEL 19

UP TLM CMD (S12)	OFF

G. LH CIRCUIT BREAKER PANEL 25

POST LANDING	
FLOAT BAG 1 PL BUS (CB68)	CLOSED
VENT FAN	
PL BUS FLOAT BAG 2 (CB63)	CLOSED
HIGH/LOW/OFF (S11)	OFF
FLOAT BAG	
1 (S12)	CENTER
2 (S13)	CENTER
3 (S14)	CENTER
ANTENNA	
A (S8)	OFF
B (S16)	OFF
BEACON LIGHTS (S9)	BEACON LIGHTS

FCSM	
MN A (CB57)	CLOSED
MN B (CB58)	CLOSED
COUCH ATTEN FLOODLIGHTS	
MN A (CB38)	CLOSED
MN B (CB37)	CLOSED
STABILIZATION AND CONTROL SYSTEM	
DIRECT CONT	
MN A (CB42)	CLOSED
MN B (CB41)	CLOSED
A AND C ROLL	
MN A (CB36)	CLOSED
MN B (CB35)	CLOSED
B AND D ROLL	
MN A (CB34)	CLOSED
MN B (CB33)	CLOSED
PITCH	
MN A (CB40)	CLOSED
MN B (CB39)	CLOSED
YAW	
MN A (CB32)	CLOSED
MN B (CB31)	CLOSED
FDAI LTG (S15)	OFF
GROUP 1	
AC 1 (CB46)	OPEN (SLUGGED)
AC 2 (CB45)	CLOSED
GROUP 2	
AC 1 (CB67)	CLOSED
AC 2 (CB66)	CLOSED

GROUP 1	
MN A (CB44)	CLOSED
MN B (CB43)	CLOSED
GROUP 2	
MN A (CB65)	CLOSED
MN B (CB64)	CLOSED
BIO-MED COMM	
MN A (CB59)	CLOSED
MN B (CB60)	CLOSED
SERVICE PROPULSION SYSTEM	
GAUGING	
MN A (CB22)	CLOSED
MN B (CB21)	CLOSED
AC 1 (CB20)	CLOSED
AC 2 (CB19)	CLOSED
HE VALVE	
MN A (CB28)	OPEN
MN B (CB27)	OPEN
GIMBAL MOTOR	
PITCH	
1 BAT A (CB26)	CLOSED
2 BAT B (CB25)	CLOSED
YAW	
1 BAT A (CB24)	CLOSED
2 BAT B (CB23)	CLOSED
G AND N SYNC (S1)	OFF
SPS GAUGING (S6)	AC 1
AC SNSR SIG	
AC 1 (CB48)	CLOSED
AC 2 (CB47)	CLOSED
REACTION CONTROL SYSTEM	
UNTITLED (CB18)	OPEN
UNTITLED (CB17)	OPEN
PROP ISOL	
MN A (CB16)	CLOSED
MN B (CB15)	CLOSED
C/M-S/M TRANSFER	
MN A (CB10)	CLOSED
MN B (CB9)	CLOSED
CAUT/WARN	
MN A (CB50)	OPEN
MN B (CB51)	OPEN
EDS	
1 BAT A (CB52)	CLOSED
2 BAT C (CB54)	CLOSED
3 BAT B (CB53)	CLOSED
ELS	
A BAT A (CB8)	CLOSED
B BAT B (CB7)	CLOSED

****VERIFY EDS TEST COMPLETE BEFORE PROCEEDING

H. LH MISSION SEQUENCE CONTROL PANEL 24

EDS POWER (S1)	ON
MASTER EVENT SEQ CONT	
PYRO (S3)	ARM
LOGIC (S4)	LOGIC
SCS GROUP 2	
TVC 2 PWR (S15)	AC1
ROTATION CONTROL PWR (S16)	AC1
BMAG PWR (S9)	AC1 MNA
SCS GROUP 1	
PARTIAL SCS POWER (S13)	AC1 MNA
TVC 1 POWER (S14)	AC1
RATE GYRO POWER (S12)	AC1

I. EMERGENCY DETECTION/DRIVE CONTROL PANEL 3

LV/AOA/SPS PC (S9)	LV/AOA
MASTER ALARM (S5) - PUSH TO RESET	OFF
ABORT (XDS1)	OFF
SPS	
GIMBAL MOTORS	
PITCH 1 (S3)	OFF
PITCH 2 (S4)	OFF
YAW 1 (S1)	OFF
YAW 2 (S2)	OFF
INJECT PRE-VALVES	
A (S7)	OFF
B (S8)	OFF

J. ATTITUDE SET AND GIMBAL DISPLAY PANEL 6

ATTITUDE SET	
FDAI ALIGN (S1)	AS IS (DO NOT PUSH)
ATT SET (S2)	OFF
ROLL THUMBWHEEL (B3) (TBD)	035.7
PITCH THUMBWHEEL (B2) TBD)	279.3
YAW THUMBWHEEL (B1) (TBD)	355.1
GIMBAL POSITION THUMBWHEELS	
YAW (R1) - VERIFY TAPED (+5.24)	AS IS, DO NOT TURN
PITCH (R2) - VERIFY TAPED (+1.50)	AS IS, DO NOT TURN

K. ELS/SCS CREW SAFETY CONTROL PANEL 8

DIRECT RCS (S15)	DIRECT RCS
LIMIT CYCLE (S6)	LIMIT CYCLE
ATT DEADBAND (S7)	MAX
RATE GYRO	
ROLL (S8)	NORMAL
PITCH (S9)	NORMAL
YAW (S10)	NORMAL
ELS LOGIC (S16)	OFF (GUARD DOWN)
.05G ENTRY (S5)	OFF
LCL VERT (S4)	OFF
DELTA V (S2)	OFF
G+N/SCS (S3)	G AND N
ATTITUDE/MONITOR/ENTRY (S1)	MONITOR
SCS CHANNEL	
A+C ROLL (S11)	A+C ROLL
B+D ROLL (S12)	B+D ROLL
PITCH (S13)	PITCH
YAW (S14)	YAW
DIGITAL EVENT TIMER	
RESET (S17)	UP (CENTER)
START (S18)	CENTER
MIN (S19)	CENTER
SEC (S20)	CENTER
COUCH UNLOCK (S21)	DOWN
C/M PROP JETT	
LOGIC (S22)	LOGIC (UP)
DUMP (S23)	OFF
PURGE (S24)	OFF (DOWN)

L. REACTION CONTROL SYSTEM AND GMT PANEL 12

RCS INDICATORS (S2) CM A

HE _____ PSIA

F _____ PSIA

OX _____ PSIA

CM TEMP HE _____ DEG F

RCS INDICATORS (S2) CM B

HE _____ PSIA

F _____ PSIA

OX _____ PSIA

CM TEMP HE _____ DEG F

RCS INDICATORS SELECTOR (S2) SM A

HE _____ PSIA

MANF _____ PSIA

SM TEMP PKG _____ DEG F

RCS INDICATORS SELECTOR (S2) SM B

HE _____ PSIA

MANF _____ PSIA

SM TEMP PKG _____ DEG F

RCS INDICATORS SELECTOR (S2) SM C

HE _____ PSIA

MANF _____ PSIA

SM TEMP PKG _____ DEG F

RCS INDICATORS SELECTOR (S2) SM D

HE _____ PSIA

MANF _____ PSIA

SM TEMP PKG _____ DEG F

RCS INDICATORS SELECTOR (S2) CM A

M. GUIDANCE AND NAVIGATION COMPUTER CONTROL PANEL 14

UPTL (S1)	ACCEPT
BRIGHTNESS THUMBWHEEL (R1)	FULL DIM
ALL DSKY PUSH BUTTONS	NOT DEPRESSED

N. REACTION CONTROL SYSTEM PANEL 15

H2 PURGE LINE HTR (S1)	ON
UNNAMED SWITCH (S2)	DOWN (NOT USED)
S/M RCS HELIUM NO. 1	
A (S3)	ON, THEN CENTER
INDICATOR (DS1)	GRAY
B (S4)	ON, THEN CENTER
INDICATOR (DS2)	GRAY
C (S5)	ON, THEN CENTER
INDICATOR (DS3)	GRAY
D (S6)	ON, THEN CENTER
INDICATOR (DS4)	GRAY
S/M RCS HELIUM NO. 2	
A (S9)	ON, THEN CENTER
INDICATOR (DS7)	GRAY
B (S10)	ON, THEN CENTER
INDICATOR (DS8)	GRAY
C (S11)	ON, THEN CENTER
INDICATOR (DS9)	GRAY
D (S12)	ON, THEN CENTER
INDICATOR (DS10)	GRAY
C/M RCS PROPELLANT	
A (S13)	ON, THEN CENTER
INDICATOR (DS11)	GRAY
B (S14)	ON, THEN CENTER
INDICATOR (DS12)	GRAY
A (S15)	AS IS
INDICATOR (DS13)	BARBERPOLE
B (S16)	AS IS
INDICATOR (DS14)	BARBERPOLE
C (S17)	AS IS
INDICATOR (DS15)	BARBERPOLE
D (S18)	AS IS
INDICATOR (DS16)	BARBERPOLE

O. CREW SAFETY CONTROL PANEL 16

ELS (S18)	AUTO
ABORT SYSTEM	
OX DUMP AUTO/RCS CMD AUTO (S1)	OX DUMP AUTO
2 ENG OUT (S8)	AUTO
L/V RATES (S9)	AUTO
LES MODE-TWR JETT SPS MODE (S15)	TWR JETT SPS MODE
EDS (S2)	OFF
RCS	
CMD (S11)	OFF - THEN CENTER (DO NOT MOVE) VERIFY DOWN
C/M PRESS (S3)	SM - THEN CENTER (DO NOT MOVE) VERIFY DOWN
TRANSFER (S14)	
C/M-S/M SEP (S16)	
MAIN CHUTE RELEASE (S17)	

P. MISCELLANEOUS

VHF SURVIVAL BEACON (S1)	BCN

Q. AUX POWER SYSTEM CIRCUIT BREAKER BOX C14A15

ALL CIRCUIT BREAKERS (S7)	CLOSED

-10 00	10-094	MSTC	SPAD	CLEAR ALL NON-ESSENTIAL PERSONNEL FROM PAD FOR L/V S AND A CONNECTION AT T-09 15.
				NOTE FOLLOWING PERSONNEL REQUIRED ON STATION.. SPAD (1) VEHICLE DRIVER (1) MECHANIC (1) NASA QC (1) TECHNICIANS (3)
-09 30	10-095	MTPE	MECS	COORDINATE WITH SC02 TO DRAIN THE POTABLE WATER TANK. USE CHANNEL 222.
	10-096	MTPE	MLFC	PERFORM FUEL CELL PURGE AT YOUR DISCRETION
	10-097	MTPE	SPAD	1. PERFORM FINAL CABIN INSPECTION PER ITI 816-9 2. REPORT WHEN READY FOR INNER HATCH
-09 15	10-098	MTPE	MFCE UGCU UGTR MNQC	1. PROCEED WITH ECS CHILLDOWN PER SEQ 17 2. USE CH 227 FOR COORDINATION 3. REPORT COMPLETION ON CH 222
	10-099	MTPE	MECS	VERIFY POTABLE TANK DRAIN COMPLETE
	10-100	MTPE	SPAD	SECURE POTABLE TANK DRAIN SETUP PER CHECKLIST 6.9/9.9.
	10-101	MTPE	MGNS MACE	PROCEED WITH E-MEMORY VERIF. PER SEQ 23 ON CH. 215.
	10-102	MTPE	SNQC	REPORT VERIF. OF DRAIN SETUP SECURING.

NAA QC NASA QC

10-103 MTPE SNQC REPORT VERIF. OF FINAL CABIN INSP.

NAA QC	NASA QC

222 10-104 MSTC ALL SWITCH TO CH. 212

NOTE

LEAD ENGINEERS RESPONSIBLE FOR MOVING SUBORDINATES TO CH. 212.

10-105 MSTC ALL REPORT STATUS FOR HATCH INSTALLATION..

MACF

MECS

MEPS

MLFC

MSCS

MSPS

MRCS

MREC

MCOM

MSEQ

MGNS

SPAD

MACF (SWITCH RECORDERS TO CH. 212)

10-106 MSTC CVTS GIVE STATUS FOR HATCH INSTALLATION

10-107 MSTC MEPS REMOVE FUEL CELLS FROM MAIN BUS. CABIN PRESSURE WILL BE GOING OVER 16.5 PSIA.

10-108 MEPS MPWR REMOVE EXTERNAL LOADS FROM MAIN BUS A AND B (C076)

10-109 MPWR 210 0000 100 IS INSERTED

10-110 MPWR 210 0000 200 IS INSERTED

10-111 MEPS MPWR FC 2 TO BUS A (P103) - OFF KC7305
FC 2 TO BUS B (P103) - OFF KC7307
ADJUST BUS A AND B VOLTAGE TO 30.0 VDC.
MN BUS A VDC CC0206 30+/- 0.5 VDC
MN BUS B VDC CC0207 30+/- 0.5 VDC

10-112 MEPS MPWR FC 1 TO BUS A (P102) - OFF KC7301 0.5 VDC
ADJUST BUS A VOLTAGE TO 30 VDC
MN BUS A VDC CC0206 30+/- 0.5 VDC

10-113 MEPS MPWR PS A BAT ENABLE (P100) - ON KC7695
FC 3 TO BUS B (P103) - OFF KC7311
ADJUST MN BUS A AND B FOR 29 VDC
MN BUS A VDC CC0206 29+/- 1.0 VDC
MN BUS B VDC CC0207 29+/- 1.0 VDC

10-114 MEPS MPWR PS B BAT ENABLE (P101) - ON KC7699

10-115 MEPS MSTC FUEL CELLS ARE OFF MAIN BUS

10-116 MSTC CVTS PROCEEDING WITH INNER HATCH INSTALLATION.

-09 00 10-117 MSTC SPAD 1. INSTALL INNER HATCH PER CHECKLIST 9.9 (6.9 CDDT)
2. REPORT COMPLETION

NAA QC NASA QC

10-118 MSTC MECS 1. PROCEED WITH CABIN PURGE AND CABIN LEAK CHECK PER SEQUENCE 17 ON CH 235.

	10-118			3. REPORT COMPLETION
				------ -------
				NAA QC NASA QC
-08 30	10-119	MSTC	MECS	1. VERIFY CABIN PURGE AND CABIN LEAK CHECK COMPLETE. 2. PROCEED WITH CABIN SECURING PER SEQUENCE 17 ON CH 227 3. REPORT COMPLETION ON CH 212
	10-120	MSTC	SNQC	REPORT VERIF. OF PURGE + LK. CK. COMPLETION.
-08 20	10-121	MSTC	MECS SPAD	1. VERIFY CABIN SECURING COMPLETE. 2. SECURE ECS GSE AND CAB PURGE FITTINGS
	10-122	MSTC	SNQC	REPORT VERIF. OF CABIN SECURING COMPLETION.
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				NAA QC NASA QC
	10-123	MSTC	SPAD	START CLEARING W/R GSE
	10-124	MSTC	MGNS	VERIFY ERASABLE MEMORY VERIFICATION COMPLETE
	10-125	MSTC	SPAD	VERIFY READY FOR SA-8 TIP RETRACT
111	10-126	MSTC	CVTS	S/C READY FOR SA-8 TIP RETRACT.

-08 15 212	10-127	MECS	MSTC	CABIN FUNCTIONS COMPLETE		
	10-128	MSTC	MEPS	RETURN FUEL CELLS TO MAIN BUS		
	10-129	MEPS	MPWR	PS A BAT ENABLE (R100) - OFF	KC7695	
				PS B BAT ENABLE (R101) - OFF	KC7699	
				ADJUST MN BUS A AND B TO 28.0 VDC		
				MN BUS A VDC	CC0206	28+/- 0.5 VDC
				MN BUS B VDC	CC0207	28+/- 0.5 VDC
	10-130	MEPS	MPWR	FC 1 TO BUS A (R102) - ON	KC7300	
				FC 3 TO BUS B (R103) - ON	KC7310	
				ADJUST MN BUS A AND B TO 28.0 VDC		
				MN BUS A VDC	CC0206	28 +/- 0.5 VDC
				MN B BUS VDC	CC0207	28 +/- 0.5 VDC
	10-131	MEPS	MPWR	FC 2 TO BUS A (R103) - ON	KC7304	
				FC 2 TO BUS B (R103) - ON	KC7306	
				ADJUST P.S. A AND B FOR 28.0 VDC		
				GND PS A VDC	GC5024	27-28 VDC
				GND PS B VDC	GC5028	27-28 VDC
	10-132	MEPS	MSTC	FUEL CELLS BACK ON MAIN BUS		
	10-133	MSTC	SPAD	PROCEED WITH OUTER HATCH AND ABLATIVE PLUG INSTALLATION PER CHECKLIST 9.9 (6.9 CDDT)		
	10-134	MSTC	CVTS	READY FOR GN2 TO W/R TO BE TERMINATED.		
	10-135	MSTC	MGNS	PROCEED WITH E-MEMORY UPDATE AS REQUIRED.		

8 00 10-136 MSTC SPAD 1. VERIFY OUTER HATCH INSTALLATION COMPLETE

10-137 MSTC SNQC REPORT VERIF. OF OUTER HATCH INSTL.

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NAA QC	NASA QC

2. PROCEED WITH FINAL BPC INSTALLATION PER CHECKLIST 9.9 (6.9 CDDT)

10-138 MECE MTPE 1. CHILLDOWN COMPLETE
2. ALL PERSONNEL BACK ON CH 212

10-139 MSTC MGNS IF E-MEMORY UPDATE HAS BEEN PERFORMED, PROCEED WITH E-MEMORY VERIFICATION PER SEQ. 23 ON CH 215.

-07 30 10-140 MSTC SPAD VERIFY BPC INSTALLATION COMPLETE

10-141 MSTC SNQC REPORT VERIF. OF BPC INSTALL.

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NAA QC	NASA QC

10-142 MSTC SPAD VERIFY CHECKLIST 9.9 (6.9 CDDT) COMPLETE

NOTE

ALL GSE MUST BE REMOVED FOR SA-9 RETRACT AT T-06 45.

10-143 MSTC SNQC REPORT VERIF. OF C/L 9.9 COMPLETION

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NAA QC	NASA QC

10-144 MSTC SPAD PERFORM FINAL INSPECTION

10-145 MSTC SNQC REPORT VERIF. OF FINAL INSPECTION

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NAA QC	NASA QC

10-146 MSTC LFET VERIFY DOOR ON LUT IS SEALED PRIOR TO LEAVING STATION.

-07 00 10-147 MTPE ALL GIVE STATUS FOR ACCESS ARM CLEARING IN 15 MIN.

NOTE

THIS IS FINAL SC STATUS PRIOR TO L/V TANKING

MACF _____	MRCS _____	SC01 _____
MECS _____	MREC _____	SC02 _____
MEPS _____	MLEC _____	MNQC _____
MSCS _____	MCOM _____	
MSPS _____	MSEQ _____	
MGNS _____	SPAD _____	

10-148 MSTC SPAD CLEAR ALL PERSONNEL FROM SA-9. VERIFY WHEN CLEAR.

10-149 MSTC CVTS SPACECRAFT CLOSEOUT COMPLETE SPACECRAFT PERSONNEL CLEARING READY FOR SA-9 RETRACT

-06 45 10-150 SERVICE ARM 9 RETRACTED (L/V)

-06 30 10-151 MTPE SPAD 1. CLEAR THE COMPLEX
2. PICK UP COOLANT PERSONNEL, UFET, LFET AND LPDS.

111 10-152 MSTC CVTS SC PERSONNEL ARE CLEARING THE COMPLEX.

10-153 CVTS MSTC GN2 DELUGE SYSTEM IS ARMED

10-153 **********

NOTE

BUILT-IN HOLD OF 6 HOURS (MAX) TO BE UTILIZED AS A NON-SCHEDULED WORK PERIOD. PREVIOUS ACCUMULATED HOLD TIMES WILL REDUCE THIS HOLD BY A CORRESPONDING PERIOD.

****

-06 00 10-154 CSTC CVTS
1. VERIFY CLEARANCE TO ACTIVATE SC RF SYSTEMS.
2. C BEACON INTERROGATION - ON
3. PROVIDE RANGE READOUTS OF THE FOLLOWING TO MCOM ON CH 214.

A. VHF-FM 237.8 MC
B. C-BAND

4. HAVE GMIL PROVIDE S-BAND SUPPORT AND READOUTS ON CH 214 PER SEQ. 15.

A. S-BAND
B. VHF AM 296.8 MC

5. VERIFY CLEARANCE TO ACTIVATE LTA RF. PROVIDE RANGE READOUTS ON CH 243
A. PAM FM/FM 247.3
B. CBW FM/FM 230.9

10-155 MSTC MCOM MOLC MCRF
1. CM RF OFF-OFF (R133) KT7037
2. PROCEED WITH RF READOUTS PER SEQ. 15.

10-156 CSAT MSTC
GRUMMAN LTA PICKING UP COUNT + STARTING DFI TEST.

-05 30 10-157
PROPELLANT LOADING STARTS (L/V)

-05 15 10-158 MCOM MSTC
RF CHECKS COMPLETE

10-159 MSTC MCOM
CM RF OFF-ON (R133) KT7037

10-160 MSTC CVTS
1. REMOVE C-BAND INTERROGATION.
2. SC RF IS OFF

10-161 CSAT MSTC
DFI OPEN LOOP TEST COMPLETE

-05 00 10-162 MSTC MLFC INCREASE FUEL CELL HEATER VOLTAGES AS REQUIRED TO MAINTAIN SKIN TEMP OF 440 +/- 10 DEG. F.

CAUTION

BUS A AND B MUST NOT EXCEED 32 VDC.

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NOTE

BUILT-IN HOLD OF 90 MIN WILL BE UTILIZED TO COMPLETE S-II LO2 LOADING.

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-03 15 10-163 MSTC MSEQ MNQC MOVE TO CH. 223 FOR EDS TEST AT T-02 35

-03 00 10-164 MSTC HFLT GIVE STATUS ON COLD SOAK ANGLES

NOTE

IF NO GO, PERFORM FOLLOWING SEQ.

10-165 MSTC MGNS PERFORM 2 COLD DOAK E-MEMORY UPDATE PER SEQ. 23.

NOTE

THE FOLLOWING WILL OCCUR FROM T-2:45 TO T-2:35

1. MSEQ - LV GUIDANCE FAIL LITE WILL COME ON AND OFF AS A RESULT OF LV FT33 TESTING. BS0016

2. MSEQ - LV RATES EXCESS LITE WILL COME ON AND OFF 18 TIMES AS A RESULT OF LV RATE GYRO TESTING. BS0020

-02 45		10-166 MSTC	MGNS	PERFORM ERASABLE MEMORY VERIFY PER SEQ. 23 ON CH 215. REPORT IF G + N FAIL IS GENERATED **********
		10-167		NOTE FOLLOWING TIMES IN MIN AND SEC. **********
-50 00		10-168 MSTC	MREC	MONITOR Q BALL CAL (P19-10) ON CH 121 AT T- 41 00.
		10-169 MSTC	CUTS	RECONFIGURE SC EDS CIRCUITRY FOR LOADS PER OCP-K-0042 (L/V 1-ILLVV-3014)
-45 00	111	10-170 MSTC	CVTS	1. VERIFY CLEARANCE TO ACTIVATE SC RF SYSTEMS 2. C BEACON INTERROGATION ON 3. PROVIDE RANGE READOUTS OF THE FOLLOWING TO MCOM ON CH 214 A. VHF-FM 237.8 B. C BAND BEACON 4. GMIL S BAND INTERROGATION ON. HAVE GMIL PROVIDE READOUTS ON 214 PER SEQ 15 A. S-BAND XMTR B. VHF AM 296.8 5. PROVIDE READOUTS OF THE FOLLOWING ON CH 243. PAM FM/FM 247.3 CBW 230.9

	10-171 MSTC	MCOM MOLC MUDL MCRF MNQC	1. CM RF OFF - OFF (R133) KT7037 2. PROCEED WITH RF READOUTS PER SEQUENCE 15 3. USE CH 214 FOR COORDINATION	
	10-172 MSTC	MCCE	START MAG TAPE RECORDER	
	10-173		PROPELLANT LOADING COMPLETE (L/V)	
	10-174		DAMPER STRUT RETRACTED (SUPPORT)	
-30 00	10-175 MSTC	MACE	VERIFY RF PCM OPERATION SATISFACTORY	
			NOTE MOMENTARY BLINKING OF APPLICABLE AIRBORNE PARAMETERS MAY BE SEEN ON CONTROL ROOM DIRECT DRIVEN DISPLAYS	
	10-176 MSTC	MACE	SWITCH COMPUTER INPUT TO RF (51.2 KBS) LEAVE DIRECT DISPLAYS ON H/L PLUGS OUT (204.8 KBS)	
	10-177 CSAT	MSTC	DFI SYSTEM GROUND POWER TEST IN PROGRESS.	
-27 00	10-178 MSTC	CVTS	COMMAND CARRIER - ON COMMAND RECEIVER COMING ON AT T-18 00 SEND HFLT TO CH 212 FOR CMD CHECKS	
-20 00	10-179 CSAT	MSTC	1. DFI SYSTEM TEST - GROUND POWER COMPLETE. 2. GOING TO INTERNAL POWER AT T-15 00	
-18 00	10-180 MSTC	MCOM	UDL OFF - OFF (R134) KT7038	
	10-181 MSTC	CVTS	UDL RECEIVER IS ON.	
	10-182 MSTC	HFLT	SC IS IN UHF ACCEPT UPLINK MODE.	
-15 00	10-183 MSTC	HFLT	PERFORM CTE GMT UPDATE	
	10-184 MREC		CTE GMT UPDATE VERIFIED	
	10-185 MSTC	CSAT	OBTAIN ARM/SAFE SW KEY FROM CPSS	

-15 00

10-186	MSTC	HFLT	SEND PROP ON - SM A (RTC 32)	
	MRCS		SM A COMB ISO VL OFF	SR5050
10-187	MSTC	HFLT	SEND PROP ON - SM B (RTC 33)	
	MRCS		SM B COMB ISO VL OFF	SR5051
10-188	MSTC	HFLT	SEND PROP ON - SM C (RTC 34)	
	MRCS		SM C COMB ISO VL OFF	SR 5052
10-189	MSTC	HFLT	SEND PROP ON - SM D (RTC 35)	
	MRCS		SM D COMB ISO VL OFF	SR5053
10-190	MSTC	CVTS	SC GOING TO FULL INTERNAL POWER	
10-191	MSTC	MPWR	INSERT BUT DO NOT EXECUTE FC 1 MN BUS A (R102) - ON SM MTR SW CLOSE (R102) - OFF	KC7300 KC7636
10-192	MSTC	MPWR	EXECUTE R102	
	MEPS		SM MTR SW OPEN LITE ON	SC2410
			MAIN BUS A VDC (P1-5) -----	CC0206 29 +/- 2 VDC
			MAIN BUS B VDC (P1-5) -----	CC0207 29 +/- 2 VDC
			BAT BUS A VDC (P1-14) -----	CC0210 30 VDC MIN
			BAT BUS B VDC (P1-14) -----	CC0211 30 VDC MIN
			BAT C VDC (P1-21) -----	CC0212 30 VDC MIN
			BAT BUS A AMPS (P1-15) -----	CC0222
			BAT BUS B AMPS (P1-15) -----	CC0223
			BAT C AMPS (P1-15) -----	CC0224

	10-193	MSTC	MPWR	PS B TO BUS B (R101) - OFF PS B DC (R101) - OFF PS B AC START (R101) - OFF	KC7034 KC7702 KC7032	
	10-194	MSTC	MPWR	PS 2, 3, 4, 7, 8 COMMIT LOCKOUT (C076) - ON		
			MPWR	220 213 3441 IS INSERTED		
			MPWR	PS 2, 3, 4, 7, 8 LOCKOUT ON LITE ON	GC5137	
-12 00	10-195			Q-BALL COVER RETRACT (L/V)		
				NOTE MSEQ - LV RATE EXCESSIVE LITE WILL COME ON AND OFF AS A RESULT OF LV RATE GYRO TESTING.	BS0020	
-10 00	10-196	MSTC	CVTS	REQUEST PERMISSION TO ARM		
	10-197	CSAT		ARM ENABLE - ON SAFE - OFF		
			MSEQ	ARM ENABLE LITE ON	GD5072	
	10-198	MSTC	MSEQ	LOGIC BUS ARM - ON (R080)	KD7016	
			MSEQ	LOGIC SW ARM LITE ON	C00089	
				LOGIC BUS A VDC (P19-5)	CD0200	30 VDC MIN
				LOGIC BUS B VDC (P19-6)	CD0201	30 VDC MIN
				ELS SAFE LITES (8) ON	CE0310 THRU CE0317	
				MESC PYRO RLYS A AND B SAFE LITES ON	CD0084 CD0085	
				SM JETT SAFE A AND B LITES ON	SD0352 SD0353	
				RCS SAFE A AND B LITE ON	CD0270	

	10-199	MSTC	MSEQ	PYRO BUS ARM - ON (R084)	KD7015	
			MSEQ	PYRO SW ARM LITE ON	CD0219	
				PYRO BUS A _____ VDC (P19-7)	CD0005	36 MIN
				PYRO BUS B _____ VDC (P19-8)	CD0006	36 MIN
111	10-200	MSTC	CVTS	SC IS ARMED		

NOTE

ANY HOLD AFTER THIS POINT
WILL REQUIRE IMMEDIATE SAFING
OF THE PYRO AND LOGIC BUSES.

-08 45	10-201	MSTC	HFLT	RESET BACKUP RATES (SEND RTC 50)		

NOTE

ANY HOLD AFTER THIS TIME
REQUIRES RTC 44, 45, AND 46

	10-202	MSTC	HFLT	DSKY INSERT (BACKUP L/O DISCRETE) V75		
			MGNR	V75		
	10-203	MSTC	HFLT	EXECUTE E		
			MGNR	V21 N01 FLASH R1 BLANK R3 = 00616		
-08 30	10-204	MSTC	MHFC	FUEL CELL 1, 2 AND 3 HEATERS ON - OFF (R036)	KC7000 KC7001 KC7002	
				FC1 OH HOLD OPEN ON/OFF - ON (R037)	KC7312	
				FC2 OH HOLD OPEN ON/OFF - ON (R038)	KC7313	
				FC3 OH HOLD OPEN ON/OFF - ON (R039)	KC7314	
			MLFC	VERIFY BINARY DISPLAY CRT (P13-24) IS XXX111XX.		

-08 00	10-205	MSTC	ALL	GIVE FINAL STATUS..
				MACE
				MECS
				MEPS
				MLFC
				MSCS
				MSPS
				MRCS
				MREC
				MCOM
				MGNS
				MSEQ
				MTPE
				CSAT (REPORTS FOR LTA)
	10-206	MSTC	CSAT	S/C READY - ON
-06 00	10-207	MSTC	CVTS	SC IS GO

NOTE

FOR THE REMAINDER OF COUNTDOWN, FUNCTIONS WILL BE PERFORMED BY THE CLOCK TIME AND PER THE PROCEDURE TO REDUCE TALK OVER OIS.

-03 45	10-208		MSCS	VERIFY GYROS AGCU CONTROLLED

-03 08	10-209		LAUNCH SEQUENCE START (L/V)		
-01 30	10-210 MECE		ECS BYPASS ON/OFF - ON (R021) (VERIFY) (R025)	KF7097 KF7011	
-01 15	10-211	MSEQ	START ECS OPER - ON (R105)	KF7014	
		MPWR	AUX BATS ON AUX BUSES		
			AUX BAT 1 ----- VDC (P1-21L)	CC0191	31 VDC MIN
			AUX BAT 2 ----- VDC (P1-21M)	CC0192	31 VDC MIN
			AUX BAT 3 ----- VDC (P1-21R)	CC0193	31 VDC MIN

NOTE

IN CASE OF HOLD AFTER -01 00, MREC MAY STOP TAPE RECORDERS.

-01 00	10-212	MREC	TAPE RECORDER ON FQ T/R (R128) - ON TAPE ON - DSE LITE ON TAPE ON - FQR LITE ON	KT7031 CT0012 CT0013	
-00 55	10-213	MREC	TM CALIBRATE - ON	KT7039	
-00 25	10-214	MREC	TM CALIBRATE - OFF	KT7039	
-00 20		MPWR	PS A TO BUS A (R100) - OFF PS A DC (R100) - OFF PS A AC START (R100) - OFF	KC7024 KC7698	
-00 08	10-215		IGNITION COMMAND (L/V)		
-00 00	10-216		HOLDDOWN RELEASE (L/V)		
+00 00	10-217		LIFTOFF (L/V)		

10-218

NOTE

PERFORM FOLLOWING FUNCTIONS
AFTER UMBILICAL DISCONNECT.

10-219 MECS	ECS SWITCHOVER (R021) - ON	KF7096
	ECS SWITCHOVER (R025) - ON	KF7012
	REFR NO. 1 ON/OFF - OFF (R024)	KF7006
	REFR NO. 2 ON/OFF - OFF (R020)	KF7096

10-220 MACE EXECUTE THE FOLLOWING R112
INSERT 1010

NOTE

AFTER PERMANENT AIRBORNE LOS

10-221 MACE RETURN TO INTERLEAVED DATA

NOTE

1. COMPUTER RELOAD REQUIRED FOR CRT DISPLAYS. (ESTIMATED 2 MINUTES)

2. ACCOMPLISH GSE PWR DOWN PER FOLLOWING SCRUB LIST OMITTING SC FUNCTIONS

NOTE

UTILIZE FOLLOWING RECYCLE PROCEDURES AT DISCRETION OF MSTC.

11-000 RECYCLE/SCRUB PROCEDURES

11-001 CAUTION

IN THE EVENT OF A HOLD
IMMEDIATELY PERFORM FOLLOWING,
IN THE ORDER SHOWN,
FOR CONDITIONS INDICATED...

11-002 -------ANY HOLD INSIDE T-10 00--------

11-003	MSTC	MSEQ	SAFE THE PYRO AND LOGIC BUSES	
			PYRO BUS A SAFE (R084) - ON	KD7017
			PYRO BUS B SAFE (R084) - ON	KD7018
			LOGIC BUS A SAFE (R080) - ON	KD7019
			LOGIC BUS B SAFE (R080) - ON	KD7020
		MSEQ	PYRO SWITCH SAFE LITE ON	CD0218
			LOGIC SW SAFE LITE ON	CD0088
11-004	MSTC	CVTS	SC PYRO AND LOGIC BUSSES ARE SAFE	
			**********	

11-005 -------ANY HOLD INSIDE T-08 45--------

11-006	MSTC	HFLT	R, P, Y BACKUP RATE CMDS - ON (RTC 44, 45, AND 46)	
		MSCS	VERIFY RMAGS IN BACK-UP RATES	

11-007 -------ANY HOLD INSIDE T-01 30--------

11-008	MSTC	MECE	GO TO EXTERNAL CIRCULATION	KF7091
			ECS BYPASS OFF	KC7011

11-009 -------ANY HOLD INSIDE T-01 00 -------

11-010	MSTC	MREC	TAPE RECORDER STOP FQ T/R (R128) - ON	KT7033
		MREC	TAPE ON - DSE LITE OFF	CT0012
			TAPE ON - FOR LITE OFF	CT0013

11-011			NOTE CONTINUE WITH THE FOLLOWING FOR THE CONDITION INDICATED...		
11-012			------- HOLD INSIDE T-45 00 ---- ----- (PERFORM AT DISCRETION OF MCOM)		
11-013	MSTC	MCOM	CM RF (R133) - ON	KT7038	
11-014	MSTC	CVTS	REMOVE C BEACON INTERROGATION		
11-015			------- HOLD INSIDE T-20 00 -------- -		
11-016	MSTC	MCOM	UDL OFF (R134) - ON	KT7039	
11-017			------- HOLD INSIDE T-15 00 --------		
11-018	MSTC	MPWR	PS2, 3, 4, 7, AND 8 COMMIT LOCKOUT (C076) - OFF	KC7703	
	MPWR		2202133440 IS INSERTED		
	MPWR		PS 2, 3, 4, 7, 8 LOCKOUT ON LITE OFF	GC5137	
11-019	MSTC	MPWR	PS B AC START (P101) - ON PS B DC (R101) - ON PS B TO BUS B (R101) - ON	KC7032 KC7702 KC7034	
	MEPS		MTR SW PS VDC (P1-12)	GC5030	38+2-0
11-020	MSTC	MPWR	INSERT BUT DO NOT EXECUTE FC 1 MN BUS A (P102) - ON SM MTR SW CLOSE (R102) - ON	KC7300 KC7636	
11-021	MSTC	MPWR	EXECUTE R102		
11-022			------- HOLD INSIDE T-10 00 ---------		
11-023	MSTC	CSAT	ARM ENABLE - OFF SAFE - ON GIVE ARM/SAFE SW KEY TO CPSS		
11-024			------- HOLD INSIDE T-08 45 --------		
11-025	MSTC	MGNR	DSKY INSERT V34E		

11-026 ------- HOLD INSIDE T-08 30 ---------

11-027	MSTC	MHFC	FC1 OH HOLD OPEN ON/OFF - OFF (R037)	KC7312
			FC2 OH HOLD OPEN ON/OFF - OFF (R038)	KC7313
			FC3 OH HOLD OPEN ON/OFF - OFF	KC7314
			FUEL CELL 1, 2 AND 3 HEATER ON - ON (R036)	KC7000 KC7001 KC7002
		MLFC	VERIFY BINARY DISPLAY CRT (P13-24) IS XXX000XX.	

11-028 ------- HOLD INSIDE T-00 20 ---------

11-029	MSTC	MPWR	PS A AC START (R100) - ON	KC7022
			PS A DC (R100) - ON	KC7698
			PS A TO BUS A (R100) - ON	KC7024

11-030 NOTE

1. SC IS NOW IN CONFIGURATION FOR A HOLD AT T-20 00.
2. PRIOR TO PICKING UP COUNT AT T-20 00, THE FOLLOWING 2 STEPS MAY BE REQUIRED...

11-031	MSTC	MCOM	CM RF OFF (R133) - OFF	KT7038
11-032	MSTC	CVTS	PROVIDE C BEACON INTERROGATION	

11-033 NOTE

IN EVENT OF SCRUB, PERFORM REMAINDER OF SEQ. 11.

11-034	MSTC	MACE	RETURN CONTROL ROOM AND COMPUTER TO DECOM FORMAT 1.

11-034 NOTE

PERFORM FOLLOWING 5 STEPS AT DISCRETION OF MSCS.

11-035	MSTC	CVTS	UHF CMD CARRIER - ON	
11-036	MSTC	MCOM	UDL OFF (R134) - OFF	KT7039
11-037	MSTC	HFLT	RESET BACKUP RATES (RTC 50)	
11-038	MSTC	MCOM	UDL OFF (R134) - ON	KT7039
11-039	MSTC	CVTS	REMOVE CMD CARRIER	
11-040	MSTC	ALL	RETURN TO CH 222	
11-041	MGNS	MGNR	K148 INSERT V36 ENTER V41N20 E -09000 E +00000 E +05700 E	
		MGNR	COARSE ALIGN LITE ON	
11-042	MSTC	CVTS	REPORT WHEN SC CREW MAY RETURN TO PAD	

A. AFTER SAFETY INSPECTION IS COMPLETE VERIFY THE FOLLOWING AREAS HAVE BEEN SNIFFED AND ARE SAFE

1. COMPARTMENT 1A IN ML
2. ELEVATORS ON LUT
3. 280 FT ACE ROOM
4. SWING ARM 9 AND WHITE ROOM

B. VERIFY GN2 DELUGE SYSTEM IS DISABLED.

C. HAVE SNIFFER PERSONNEL STANDBY IN THE WHITE ROOM TO VERIFY 02 CONTENT REMAINS SAFE AS CM IS VENTED AND HATCH IS REMOVED.

11-042 NOTE

WAIT FOR SPAD TO ARRIVE AT SC.
ANTICIPATED WAIT TIME IS
APPROX 6 HOURS.

11-043 MTPE SPAD 1. REMOVE BOOST PROTECTIVE COVER FROM CM HATCH AREA

11-044 MTPE SNQC REPORT VERIF. OF BPC REMOVAL.

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NAA QC NASA QC

2. REMOVE OUTER HATCH

11-045 MTPE SNQC REPORT VERIF. OF OUTER HATCH REMOVAL.

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NAA QC NASA QC

NOTE

WAIT FOR CONNECTION OF ECS AIR.
(SUPPORT FUNCTION).

11-046 MTPE SNQC REPORT VERIF. OF ECS AIR CONN.

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NAA QC NASA QC

3. REMOVE PURGE PORT V16-612022

11-047 MTPE SNQC REPORT VERIF. OF PURGE PORT REMOVAL.

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NAA QC NASA QC

11-047

WARNING

ENTRY TO CM WILL NOT BE MADE UNTIL CM ATMOSPHERE IS VERIFIED SAFE (02 CONTENT 19.5 OR MORE).

11-048 MTPE SNQC REPORT VERIF. OF SAFE ATMOSPHERE.

NAA QC	NASA QC

4. REMOVE INNER HATCH

11-049 MTPE SNQC REPORT VERIF. OF INNER HATCH REMOVAL.

NAA QC	NASA QC

5. PROCEED WITH PSAAM INSTALLATION PER C/L 6.10.

11-050 MTPE SPAD COORDINATE WITH ECS FOR POTABLE WATER TANK DRAIN

111 11-051 MSTC CVTS EDS POWER IS GOING OFF.

222 11-052 MTPE SC01 PANEL 24
EDS POWER (S1) - OFF

NOTE

SC01 - PANEL 5 LV ENGINE LITES 1 THRU 5 WILL GO OFF.

MSE0 - ENGINE 1 THRU 5 OUT LITES WILL GO OUT. BS0030 BS0032 BS0034 BS0036 BS0038

11-052

PANEL 25
ELS
A BAT A/FLOAT BAG (CB8) - OPEN
B BAT B (CB7) - OPEN
BEACON LIGHTS (S9) - OFF

11-053 MTPE SC02

PANEL 150
PYRO A
SEQ A (CB14) - OPEN
RCS FUEL DUMP (CB25) - OPEN
PYRO B
SEQ B (CB17) - OPEN
RCS FUEL DUMP (CB16) - OPEN
BAT C PWR POST LDG AND ENTRY (CB19) - OPEN
BAT CHGR BAT C (CB20) - OPEN

11-054 MTPE SC02

PANEL C14A15
MN BUS A BAT 1 CB1 - OPEN
MN BUS B BAT 2 CB2 - OPEN
MN BUS A BAT 3 CB3 - OPEN
MN BUS B BAT 3 CB4 - OPEN
POST LDG BAT 1 CB5 - OPEN
BAT 3 CB6 - OPEN
BAT 2 CB7 - OPEN

PANEL C14-A14
MAIN BUS B NON ESS BUS (CB13) - OPEN

11-055 MTPE SC01

PANEL 20
T/R FWD/REV (S17) - CENTER
T/R REC/PLAY (S16) - PLAY
T/R SPEED (S18) - HIGH
T/R FWD/REV (S17) - REV

11-056 MTPE MREC

TAPE RECORD REWIND FQ T/R (R128) - ON KT7032

MREC

TAPE ON - DSE LITE ON CT0012
TAPE ON - FOR LITE ON CT0013

NOTE

ALLOW T/R TO RUN TO REV E.O.T., THEN PERFORM THE FOLLOWING 3 SEQUENCES.

11-057 MTPE MREC TAPE RECORD STOP FQ T/R (R128) - ON KT7033

11-058 MTPE SC01 PANEL 20
T/R FWR/REV (S17) - CENTER
T/R SPEED (S16) - CENTER

11-059 MTPE SPAD REMOVE DSE AND FQR TAPES PER C/L 6.11/9.10.

11-060 MTPE SNQC REPORT VERIF. OF TAPE REMOVAL.

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NAA QC NASA QC

11-061 MTPE SC01 PANEL 20
S BAND XPONDER/XPONDER PWR AMPL (S1) - CENTER (OFF)
UP DATA (S8) - CENTER (OFF)
VHF AM T/R (S14) - CENTER (OFF)
PWR PMP (S23) - OFF
RECOVERY
HF ON/OFF (S10) - OFF
VHF BCN (S11) - OFF

PANEL 13
POWER (S5) - OFF
PANEL 19
UP TLM CMD (S12) - RESET (MOM)

PANEL 22
COMMUNICATIONS S BAND AC (CB51) - OPEN
SURVIVAL BEACON (S1) - OFF

PANEL 21
RCS HEATERS
A MN B (CB1) - OPEN
B MN A (CB2) - OPEN
C MN B (CB3) - OPEN
D MN A (CB4) - OPEN

11-062 MTPE SC01

PANEL 8
- DIRECT RCS (S15) - OFF
- LIMIT CYCLE (S6) - OFF
- SCS CHANNEL
  - A + C ROLL (S11) - OFF
  - B + D ROLL (S12) - OFF
  - PITCH (S13) - OFF
  - YAW (S14) - OFF

PANEL 24
- TVC 1 PWR (S14) - OFF
- TVC 2 PWR (S15) - OFF
- RMAG POWER (S9) - OFF
- RATE GYRO POWER (S12) - OFF
- ROT CONTROL PWR (S16) - OFF
- PARTIAL SCS PWR (S13) - OFF

PANEL 25
- SCS
- DIRECT CONTROL MNA (CB42) - OPEN
- DIRECT CONTROL MN B (CB41) - OPEN
  - GROUP 1 AC 1 (CB46) - OPEN
  - GROUP 1 AC 2 (CB45) - OPEN
  - GROUP 2 AC 1 (CB67) - OPEN
  - GROUP 2 AC 2 (CB66) - OPEN
  - GROUP 1 MNA (CB44) - OPEN
  - GROUP 1 MN B (CB43) - OPEN
  - GROUP 2 (CB65) - OPEN
  - GROUP 2 (CB64) - OPEN

SPS GIMBAL MOTOR CONTROL
- PITCH 1 BAT A (CB26) - OPEN
- YAW 1 BAT A (CB24) - OPEN
- PITCH 2 BAT B (CB25) - OPEN
- YAW 2 BAT B (CB23) - OPEN

NOTE

WHEN ACCESS AVAILABLE,
PERFORM THE FOLLOWING..

11-063 SSMT

S14A1 PWR DIST BOX
- REMOTE SENSE (CB9) - OPEN

11-064 MTPE SC01 PANEL 21

ECS GLYCOL (S14) - OFF
CABIN AIR FAN
1 (S16) - OFF
2 (S17) - OFF

PANEL 22 (SIMULTANEOUSLY)
GLYCOL PUMPS AC1
PHASE A (CB27) - OPEN
PHASE B (CB26) - OPEN
PHASE C (CB25) - OPEN

PANEL 15

S/M RCS HELIUM NO. 1
A (S3) - OFF, THEN CENTER
INDICATOR DS1 BARBERPOLE
B (S4) - OFF, THEN CENTER
INDICATOR DS2 BARBERPOLE
C (S5) - OFF, THEN CENTER
INDICATOR DS3 BARBERPOLE
D (S6) - OFF, THEN CENTER
INDICATOR DS4 BARBERPOLE

S/M RCS HELIUM NO. 2
A (S9) - OFF, THEN CENTER
INDICATOR DS7 BARBERPOLE
B (S10) - OFF, THEN CENTER
INDICATOR DS8 BARBERPOLE
C (S11) - OFF, THEN CENTER
INDICATOR DS9 BARBERPOLE
D (S12) - OFF, THEN CENTER
INDICATOR DS10 BARBERPOLE

CM RCS PROPELLANT
A (S13) - OFF THEN CENTER
INDICATOR BARBERPOLE
B (S14) - OFF THEN CENTER
INDICATOR BARBERPOLE

11-064

NOTE

SM RCS PROPELLANT A, B, C, AND D ARE TO BE ACCOMPLISHED FOR CDDT ONLY.

S/M RCS PROPELLANT
A (S15) - OFF THEN CENTER
INDICATOR BARBERPOLE
B (S16) - OFF THEN CENTER
INDICATOR BARBERPOLE
C (S17) - OFF THEN CENTER
INDICATOR BARBERPOLE
D (S18) - OFF THEN CENTER
INDICATOR BARBERPOLE

11-065 MTPE SC02 PANEL 101
TRANSFER SW - MANUAL

PANEL 206
ECS STEAM DUCT HEATERS
MN A (CB23) - OPEN
MN B (CB24) - OPEN

11-066 MTPE SPAD VERIFY PSAAM INSTALLED

11-067 MTPE SNQC REPORT VERIF. OF PSAAM INSTALL.

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NAA QC NASA QC

11-068 MTPE SC02 PREPARE TO TRANSFER IMU HEATER PWR TO
MGNS EXTERNAL
11-069 MGNS UFET STANDBY TO APPLY PTC PWR

CAUTION

MUST BE COMPLETED WITHIN 15 MIN.

11-070 MGNS SC02 PANEL 22
G AND N IMU MNA (CB59) - OPEN
MNB (CB58) - OPEN
TIME _____ Z

IMU HTR MNA (CB61) - OPEN
IMU HTR MNB (CB60) - OPEN

11-071 MGNS SC02 REMOVE SHORTING PLUG FROM TRAY 7 J2

11-072 MGNS SNQC REPORT VERIF. OF SHORT. PLUG REMOVAL

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NAA QC NASA QC

11-073 MGNS SC02 CONNECT CABLE 1901529 FROM PSAAM TO J2 OF TRAY 7.

11-074 MGNS SNQC REPORT VERIF. OF CABLE CONNECTION.

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NAA QC NASA QC

DISCONNECT W111 FROM W0407P1 AND
CONNECT W0407P1 CABLE TO PSAAM J207

11-075 MGNS SNQC REPORT VERIF. OF CABLE CONNECTION.

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NAA QC NASA QC

11-076 MGNS UFET PTC PWR ON
IF ALARM OCCURS - RESET ALARM.

11-077 MGNS SC02 PANEL 22
COMPUTER MNA (CB57) - OPEN
MNB (CB56) - OPEN
G AND N LIGHTING AC1 (CB93) - OPEN
AC2 (CB63) - OPEN
G AND N OPTICS MNA (CB55) - OPEN
MNB (CB54) - OPEN
AFTER TEMPERATURE HAS STABILIZED RESET ALARMS TO CLEAR SYSTEM. APPROX 130 DEG.

-07 45	11-078	CVTS	MSTC	VERIFY POTABLE WATER DRAIN COMPLETE AND READY FOR RF SILENCE AND CONTROLLED SWITCHING.

NOTE

AFTER LV PAD CLEAR OPERATIONS ARE COMPLETE PERFORM THE FOLLOWING STEP.

	11-079	MTPE	MECS	SWITCH ECS GSE TO LOCAL CONTROL PER SEQUENCE 16-000.

NOTE

DO NOT PROCEED BEYOND THIS SEQUENCE UNTIL RECYCLE PLAN HAS BEEN ESTABLISHED. REMAINDER OF POWER DOWN SEQUENCE IS PROVIDED TO BE USED AS A GUIDE IN THE EVENT SC AND GSE POWER DOWN IS REQUIRED. DO NOT PROCEED UNTIL RECYCLE PLAN IS ESTABLISHED.

NOTE

1. WAIT FOR MSS TO BE POSITIONED (APPROX. T+13 HRS, 30 MIN).
2. PROCEED WITH SERVICE STRUCTURE POWER UP WHEN CABLE INSTALLATION IS COMPLETE.

+13 30	11-080	MTPE	SPAD	PROCEED WITH MSS RECABLE PER C/L 6.11. REPORT COMPLETION.

MSS POWER UP

	11-081	MTPE CSAT SPDS	CSAT	MSS ACE PS INPUT - ON ACTIVATE LITE ON C14-626 (PS 1) AC INPUT ON LITE ON

11-082	MTPE	CSAT	MSS ACE PS OUTPUT ON	
	CSAT		ACTIVATE LITE ON	
	SPDS		C14-626 (PS 1)	
			DC OUTPUT ON LITE ON	
11-083	MTPE	CSAT	MSS CSM ACE BUS - ON	
	CSAT		ACTIVATE LITE ON	
	SPDS		C14-628 (PS 1)	
			FEEDER BUS BCN LITE ON	
11-084	MTPE	SFET	C14-240	
			CONSOLE PWR CONTROL AC PWR SW - ON	
	SFET		PWR ON LITE ON	
11-085	MTPE	SFET	DC PWR +28 VDC SW - ON	
	SFET		+28 VDC PWR ON LITE ON	
			VOLTAGE VDC	28 +/- 1 VDC
11-086	MTPE	SFET	DC PWR +12V SW - ON	
	SFET		+12V PWR ON LITE ON	
			VOLTAGE VDC	12 +/- 1 VDC
11-087	MTPE	SFET	DC PWR +6V SW - ON	
	SFET		+6V PWR ON LITE ON	
			VOLTAGE VDC	6 +/- 1 VDC
11-088	MTPE	SFET	DC PWR -12V SW - ON	
	SFET		-12V PWR ON LITE ON	
			VOLTAGE VDC	-12+/- 1 VDC
			BLOWER IS OPERATING	

11-089	MTPE	MACE	EXECUTE THE FOLLOWING INSERT	
			D C B A R114 1 0 1 0	
		MACE	SYNC ACQUIRED	
		MPWR	PS 1 OUTPUT LITE ON	GC5138
			GSE BUS PS 1 OUTPUT IS 29 +1 VDC (P2-23)	GC5149
11-090	MTPE	MEPS	P/S 5 AC START (R094) - ON	KC7709
		SPDS	C14-626 P/S 5 AC INPUT POWER ON LITE ON	
11-091	MTPE	MEPS	P/S 5 DC ON (R094) - ON	KC7710
		SPDS	C14-626 P/S 5 DC OUTPUT POWER ON LITE ON	
		MPWR	P/S 5 OUTPUT ON LITE ON	CG5143
			P/S 5 OUTPUT VDC INDICATES 31 +/- 1 (M)	GC5146
			GSE BUS P/S 5 IS 31 +/- 1 VDC (P2-23)	GC5150
			P/S 5 BAT EN LITE OFF	GC5145
			P/S 5 BAT ON LITE OFF	GC5144
11-092	MTPE	MPWR	FEEDER BUS B (C076) - ON	KC7713
		MPWR	220 3234 321 IS INSERTED	
		MPWR	P/S 5 GSE BUS B ON LITE ON	GC5147
		SPDS	C14-628 P/S 5 FEEDER BUS B ON LITE ON	
11-093	MTPE	MPWR	FEEDER BUS C (C076) - ON	KC7714
	MPWR		220 3234 331 IS INSERTED	
		MPWR	P/S 5 GSE BUS C ON LITE ON	GC5148
		SPDS	C14-628 P/S 5 FEEDER BUS C ON LITE ON	

11-094	MTPE	MEPS	P/S 5 BATT ENABLE (R094) - ON	KC7711
	MPWR		P/S 5 BAT EN LITE ON	GC5145
	SPDS		C14-628 P/S 5 BATTERY ON LITE ON	

11-095 MTPE MLFC PROCEED WITH FUEL CELL DEACTIVATION SEQ 32. USE CH224. WHEN SPAD REPORTS COMPLETION OF SET-UP.

NOTE

PROCEED WITH REMAINDER OF SHUTDOWN AT DISCRETION OF MTPE AND MSTC. MPWR ADJUST DC LOADS AS REQUIRED TO SUPPORT FUEL CELL COOLDOWN.

NOTE

WAIT FOR COMPLETION OF FUEL CELL COOLDOWN BEFORE PROCEEDING

NOTE

FOLLOWING SEQ. WILL VENT SURGE TANK.

11-096 MTPE SC02

1. EMERGENCY CABIN PRESSURE (4.22C) -1+2
2. DEPRESS ''PRESS-TO-TEST'' AND HOLD TO VENT SURGE TANK.
3. RELEASE ''PRESS-TO-TEST''
4. EMERGENCY CABIN PRESSURE (4.22C) - OFF

11-097 MTPE MECS PERFORM WATER DE-SERVICE PER OCP-K-5044

11-098 MTPE ALL STANDBY FOR LOSS OF SYNC

11-099 MTPE MACE EXECUTE THE FOLLOWING R112
INSERT 1 0 1 0

11-100 MTPE SC02 PANEL C14A14
MAIN BUS A ESSENT INST (CB14) - OPEN
MAIN BUS B ESSENT INST (CB15) - OPEN
MAIN BUS B NON ESSENT BUS (CB13) - OPEN
PANEL 22
COMMUNICATIONS B (S13) - OFF
CENTRAL TIMING MN A (CB53) - OPEN
CENTRAL TIMING MN B (CB52) - OPEN

11-101 MTPE MSEQ PROG RESET (R104) - ON

11-102 MTPE MEPS PROCEED WITH SC POWER DOWN

11-103	MEPS	SC02	PANEL C14 A14 AUX BUS A MCP 2 (CB10) - OPEN MCP 1 (CB9) - OPEN AUX BUS B MCP 2 (CB12) - OPEN MCP 1 (CB11) - OPEN AUX TO MN BUS TIE (S11) - OFF AUX TO MN BUS TIE CONT (CB16) - OPE N		
11-104	MEPS	SC01	PANEL 18 AC BUS 1 RESET S25 - OFF AC BUS 2 RESET S29 - OFF AC INV 1 AC BUS 1 S26 - OFF AC INV 2 AC BUS 2 S31 - OFF AC INV 1 S22 - OFF AC INV 2 S23 - OFF		
	MPWR		INV 1, 2, AND 3 DC PWR LITES OFF	CC2401 CC2402 CC2403	
11-105	MEPS		SM MTR SW PS ------ VDC (P1-12)	GC5030	38 +2 -0 VDC
11-106	MEPS	MPWR	SM MTR SW CLOSE - OFF (R102) PS A TO BUS A - OFF (R100) PS B TO BUS B OFF (R101)	KC7636 KC7024 KC7034	
		MPWR	SM MTR SW OPEN LITE ON	SC2410	
11-107	MEPS	SC02	PANEL 150 BAT A PWR ENTRY (CB2) - OPEN BAT B PWR ENTRY (CB22) - OPEN		
11-108	MEPS	SC01	PANEL 22 MESC ARM A BAT A CB19 - OPEN ARM B BAT B CB18 - OPEN PANEL 25 EDS 2 BAT C (CB54) - OPEN RCS PROP ISOL MN A (CB16) - OPEN RCS PROP ISOL MN B (CG15) - OPEN		
11-109	MEPS	SC01	PANEL 18 NO AC OR DC VOLTAGE INDICATIONS.		
11-110	MEPS	MTPE	SC POWER DOWN COMPLETE		

11-110 PS 8 REMOTE TO LOCAL

11-111	MTPE	LPDS	PS 8 FEEDER BUS B - LOCAL	
		LPDS	BUS B FEEDER LITE REMAINS ON	
11-112	MTPE	LPDS	PS 8 FEEDER BUS C - LOCAL	
		LPDS	BUS C FEEDER LITE REMAINS ON	
11-113	MTPE	MPWR	PS 8 FEEDER BUS B (C076) - OFF	KC7690
		MPWR	220 212 4330 IS INSERTED	
11-114	MTPE	MPWR	PS 8 FEEDER BUS C (C076) - OFF	KC7691
		MPWR	220 212 4340 IS INSERTED	
11-115	MTPE	LPDS	C14-628 (PS 8) BATTERY PACK UP SW - ENABLE	
11-116	MTPE	MPWR	PS 8 BAT ENABLE (R075) - OFF	KC7688
		LPDS	BAT ON LITE REMAINS ON	
		MPWR	PS 8 BAT EN LITE REMAINS ON	GC5118
11-117	MTPE	MPWR	PS 8 DC ON (R075) - OFF	KC7687
		MPWR	PS 8 OUTPUT LITE OFF PS 8 BAT ON LITE ON	GC5116 CG5117
		LPDS	C14-626, P/S 8 DC OUTPUT POWER ON LITE OFF	
11-118	MTPE	MPWR	PS 8 AC START (R075) - OFF	KC[686
		LPDS	C14-626, P/S 8 AC INPUT POWER ON LITE OFF	
11-119	MTPE	LPDS	C14-628, CSM AND LEM GSE PWR SUP (PS 8) PWR SUPPLY INPUT ENABLE SW - LOCAL PWR SUPPLY OUTPUT ENABLE SW - LOCAL CONTROL SELECT SW - LOCAL	

11-120	MTPE	LPDS	C14-626, P/S 8 AC INPUT POWER START SW - ON	
		LPDS	C14-626, P/S 8 AC INPUT POWER ON LITE ON	
11-121	MTPE	LDPS	C14-626, P/C 8 DC OUTPUT POWER ON SW - ON	
	LPDS		C14-626, P/S 8 DC OUTPUT POWER ON LITE ON	
	MPWR		PS 8 OUTPUT ON LITE ON	CG5116
11-122	MTPE	LDPS	BATTERY BACKUP RESET SW - ON	
	MPWR		PS 8 BAT ON LITE OFF	
11-123	MTPE	CSAT	MOBILE LAUNCHER PWR 400 CPS SW - OFF	
	CSAT		ACTIVATE LITE OFF	
11-124	MTPE	MEPS	POWER DOWN GSE DISTRIBUTION	
11-125	MEPS	LPDS	A14-074 MAIN POWER 28 VDC SW - OFF MAIN POWER 115 VAC SW - OFF	
11-126	MEPS	MPWR	BUS A ISOL OFF (C076) - OFF 220 2254 430 IS INSERTED	KC7655
11-127	MEPS	MPWR	400 HZ BU PWR (C076) - OFF	KC7694
	MPWR		220 212 4430 IS INSERTED	
11-128	MEPS	MPWR	400 HZ PRI PWR (C076) - OFF	KC7693
	MPWR		220 212 4420 IS INSERTED	
	LPDS		A14-218 PRIMARY PWR REMAINED ON	
11-129	MEPS	UFET	C14-205 CB16 - OPEN CB17 - OPEN	
		UFET	C14-205 CB16 AND 17 LITES OFF	

11-130	MEPS	MPWR	P/S B BATTERY ENABLE - OFF (R101)	KC7699
	LPDS		BATTERY ENABLE LITE OFF	
11-131	MEPS	MPWR	P/S B DC ON/OFF (R101)	KC7632
	MPWR		P/S B OUTPUT LITE OFF	GV0129
	LPDS		P/S 4 POWER ON LITE OFF	
11-132	MEPS	MPWR	P/S B AC START STOP (R101) - OFF	KC7032
	LPDS		P/S 4 AC ON LITE OFF	
11-133	MEPS	MPWR	P/S A BATTERY ENABLE OFF (R100)	KC7695
	LPDS		BATTERY ENABLE LITE OFF	
11-134	MEPS	MPWR	P/S A DC ON/OFF (R100)	KC7698
	LPDS		P/S 3 OUTPUT POWER ON LITE OFF	
11-135	MEPS	MPWR	P/S A AC START/STOP (R100) - OFF	KC7022
	MPWR		P/S A AC ON LITE OFF	GV0135
	LPDS		P/S 3 AC INPUT POWER ON LITE OFF	
11-136	MEPS	LPDS	C14-481 CONSOLE POWER PANEL AC CB - OPEN DC CB - OPEN	
	LPDS		DC POWER ON LITE OFF AC POWER ON LITE OFF	
11-137	MEPS	LPDS	C14-628 (P.S.2) REMOTE/LOCAL SW - REMOTE	
11-138	MEPS		P/S 2 REMOTE SENSE - OFF (R088)	KC7737
11-139	MEPS	CSAT	P/S 2 BATT ENABLE - OFF P/S 2 BATT ON LITE OFF	

11-140	MEPS	ALL	STOP RECORDERS AND STANDBY FOR LOSS OF DOWNLINK		
11-141	MEPS		P/S 5 BATT ENABLE (R094) - OFF	KC7711	
	MPWR		P/S 5 BATT ENABLE LITE OFF	GC5145	
11-142	MEPS	MPWR	GSE BUS C (C076) - OFF 220 3234 330 IS INSERTED	KC7714	
	MPWR		P/S 5 GSE BUS C ON LITE OFF	GC5148	10C28
	SPDS		FEEDER BUS C LITE OFF		
11-143	MEPS	MPWR	GSE BUS B (C076) - OFF 220 3234 320 IS INSERTED	KC7713	
	MPWR		P/S 5 GSE BUS B ON LITE OFF	GC5147	10C28
11-144	MEPS	SPDS	CSM AND LEM GSE POWER SUPPLY FEEDER INDICATION.. BUS B ON LITE OFF		
11-145	MEPS		P/S 5 DC ON (R094) - OFF	KC7710	
			P/S 5 OUTPUT LITE OFF	GC5143	
		SPDS	C14-626 PS 5 DC OUTPUT POWER ON LITE OFF		
11-146	MEPS		P/S 5 AC START (R094) - OFF	KC7709	
		SPDS	C14-626 P/S 5 AC INPUT POWER ON LITE OFF		
		CSAT	MSS CSM ACE FEEDER ON SW - OFF MSS ACE BATT ENABLE SW - OFF MSS ACE PS OUTPUT SW - OFF MSS ACE PS INPUT SW - OFF		
			MSS CSM ACE FEEDER ON LITE OFF MSS ACE PS OUTPUT LITE OFF MSS ACE PS INPUT LITE OFF		

11-147	MEPS	UFET	C34-655 PS BATTERY STANDBY SW - OFF DC OUTPUT PWR OFF SW - ON		
	UFET		DC OUTPUT PWR LITE OFF		
11-148	MEPS	UFET	C34-655 PS AC INPUT STEW SW - ON		
	UFET		AC INPUT PWR ON LITE OFF		
	MPWR		MOTOR SW GND PS _____ VDC	GC5030	0+2/-0 VDC
11-149	MEPS	CSAT	ML CSM ACE BUS SW - OFF		
	CSAT		ACTIVATE LITE OFF		
	UFET		C14-205 CB 2 AND 19 LITES OFF		
11-150	MEPS	CSAT	ML ACE PS OUTPUT SW - OFF		
	CSAT		ACTIVATE LITE OFF		
	LPDS		C14-626 (PS 2) PS OUTPUT POWER ON LITE OFF		
	LPDS		C14-626 (PS 2) AC INPUT POWER ON LITE OFF		

11-151 MTPE LFET A. C14-484
AM-1 SW - OFF
AM-2 SW - OFF
AM-3 SW - OFF
EM-1 SW - OFF
AC SW - OFF

222

B. C14-240
DC POWER +28V SW - OFF
DC POWER + 6V SW - OFF
DC POWER -12V SW - OFF
DC POWER +12V SW - OFF
AC POWER SW - OFF

C. C14-346
AC CB - OFF

D. A14-052
DC PS OFF SW - ON
28 V CB - OFF
120/208 VAC CB A, B, C - OFF

11-152 MEPS MTPE GSE POWER IS DOWN.

212 11-153 MTPE CSAT TURN OFF POWER TO CRT'S AND TV MONITORS ON SC CONSOLES.

11-154 MTPE CSAT ASSISTANT STC CONSOLE
SRE POWER LITES SW - OFF
CONSOLE POWER LITE SW - OFF
PDU POWER SW - OFF

222 11-155 MTPE MACE SECURE FROM TEST

11-156 MTPE MUDL CONNECT POWER CONNECTOR A1W1P1 TO MICRODOT 400-500 MC FM SIGNAL GENERATOR IN C14-429.

12-000 INSTRUMENTATION TEST - PRECOUNT

12-001 MREC SC02 PANEL C14A14
MAIN BUS B NON ESSENT BUS (CB13) - CLOSED

12-002 MREC TAPE RECORD REWIND FQ T/R (R128) - ON KT7032

12-003 MREC SC01 PANEL 20
TAPE RECORDER REC/PLAY - RECORD
TAPE RECORDER FWD/REV - FWD

-94 30 12-004 MREC TAPE RECORDER ON FQ T/R (R128) - ON KT7031

MREC TAPE ON - FOR LITE ON CT0013
TAPE ON - DSE LITE ON CT0012
TIME

12-005 MREC T/M CAL (R130) - ON (30SEC) KT7039
T/M CAL (R130) - OFF KT7039

NOTE

ALLOW RECORDERS TO RUN TO FWD E.O.T.

-94 00 12-006 MREC TAPE RECORDER STOP FQ T/R (R128) - ON KT7033

12-007 MREC SC01 PANEL 20
TAPE RECORDER REC/PLAY (S16) - CENTER
TAPE RECORDER FWD/REV (S17) - CENTER
PANEL 22
COMMUNICATIONS
FLT QUAL RCDR (CB96) - OPEN

12-008 MREC SC02 PANEL C14A14
MAIN BUS B NON ESS BUS (CB13) - OPEN
RETURN TO CH. 222.

12-009 MREC SC01 PANEL 20
T/R REC/PLAY (S16) - PLAY
T/R SPEED (S18) - HIGH
T/R FWD/REV (S17) - REV

NOTE

ALLOW T/R TO RUN TO REV
E.O.T. RETURN TO CH 222 AND
REPORT TO MTPE

12-010 MREC SC01 PANEL 20
T/R FWD/REV (S17) - CENTER
T/R SPEED (S18) - CENTER
S - BAND VOICE TAPE (S6) - TAPE
T/R PLAY (S19) - PCM

222 12-011 MREC MTPE 1. FQR AND DSE RECORDING COMPLETE.
2. REQUEST CLEARANCE FOR DSE DUMP.
3. REQUEST MACE AND MCCE ON CH 213 FOR DSE DUMP SET - UP

12-012 MREC MACE UNIT 10
PRIMARY DECOM - ENABLE
STBY DECOM - INHIBIT
1. VERIFY READY TO READOUT REFERENCE PARAMETERS AT DECOM
2. VERIFY STANDBY DECOM SET UP FOR LINK 2 VIA RF
3. RF 1400 RECORDER - ON

12-013 MREC MCCE 1. STANDBY FOR DSE DUMP ON VHF -FM.
2. START MAG TAPE RECORDER.
3. RUN BRUSH RECORDER FOR DURATION OF DUMP.

222 12-014 MTPE MREC PROCEED WITH DSE DUMP ON CH 213 PER SEQ 12

12-015 MREC SC01 PANEL 20
T/R FWD/REV (S17) - FWD

12-016 MREC TAPE RECORDER ON FQ T/R (R128) - ON KT7031
TAPE ON - DSE LITE ON CT0012
TIME

12-016 NOTE

DURING PLAYBACK, MREC MAY TURN RECORDER OFF AND ON AS REQUIRED TO VERIFY DATA ACQUISITION.

12-017 MREC MACE VERIFY SATISFACTORY DATA COMING IN ON RF. READOUT FOLLOWING..

PCM HI LEVEL 85 PERCENT CT0125

PCM HI LEVEL 15 PERCENT CT0126

PCM LO LEVEL 85 PERCENT CT0127

PCM LO LEVEL 15 PERCENT CT0128

NOTE

TAPE MAY BE RUN UNTIL PROPER EVALUATION IS MADE.

12-018 MREC MACE 1. STANDBY FOR LOSS OF STORED PCM DATA AND RE-ACTIVATION OF REAL TIME PCM
2. FR 1400 RECORDER - OFF

12-019 MREC MCCE 1. STANDBY FOR LOSS OF STORED PCM DATA
2. STOP BRUSH RECORDER.
3. STOP MAG TAPE RECORDER.

222 12-020 MREC MTPE STANDBY FOR LOSS OF STORED DATA

12-021 MREC SC01 PANEL 20
T/R FWD/REV (S17) - CENTER
T/R REC/PLAY (S16) - CENTER
S-BAND VOICE (S6) - CENTER
T/R PLAY (S19) - CENTER
TIME

12-022 MREC TAPE RECORDER STOP FQ T/R (R128) - ON KT7033

12-023 MREC MACE 1. RETURN TO NORMAL DECOM CONFIGURATION
2. VERIFY RECIVING PCM DATA RF LINK 2

222 12-024 MREC MTPE DSE DUMP IS COMPLETE.

12-025 MREC SC01 VERIFY FLT. TAPES ARE INSTALLED AND THE DSE AND FQR COVERS NOT INSTALLED.

12-026 MREC SC01 DOUBLE CHECK TIGHTNESS OF 4 REEL LOCK HUB ASSEMBLIES.

12-027 MREC SC01 PANEL 20
T/R RECORD/PLAY - PLAY KT7032
T/R FWD/REV - FWD KT7033

PANEL 22
COMMUNICATIONS, FLT QUAL RCDR (CB96) - CLOSED

MREC FQ RECORDER REWIND (R128) - ON KT7032
FQ RECORDER STOP (R128) - ON KT7033
FQ RECORDER RECORD (R128) - ON KT7031

TAPE ON - FQR LITE ON CT0013
TAPE ON - DSE LITE ON CT0012

12-028 MREC SC01 VERIFY RECORDERS OPERATING PROPERLY
VERIFY TAPE IS NOT SLIPPING ON REELS
VERIFY TAPE IS STACKING PROPERLY.

MREC TAPE RECORDER STOP (R128) - ON KT7033

TAPE ON - FQR LITE OFF CT0013
TAPE ON - DSE LITE OFF CT0012

12-029 MREC SC01 PANEL 20
T/R RECORD/PLAY - CENTER
T/R FWD/PLAY - CENTER

PANEL 22
COMMUNICATIONS, FLT. QUAL RCDR (CB96) - OPEN

12-030 MREC SC01 INSTALL AND TORQUE T/R COVERS PER C/L SLA, REPORT COMPLETION.

12-031 MREC SC01 RETURN TO COMMAND CHANNEL AND REPORT TO MTPE

222 12-032 MREC MTPE T/R FLIGHT SET UP IS COMPLETE

13-000 RESERVED

14-000 COMMUNICATIONS TEST-PRECOUNT

214 14-001 MCOM MCRF SIG STRENGTH AND CENTER FREQ RECORDERS ON.

-96 30 14-002 PCM TLM XMTR = L+NK 3-237.8

FUNCTION	MCRF	MOLC		SRO
SIG STR			UV	
CNTR FREQ			MC	
DEVIATION			KC	
TIME			HRS	

MCOM	XMTR TEMP (P20-1)	DEG F	CT0065
	XMTR PA RF	VDC	CT0330

14-003

VHF AM XMTR

FUNCTION	MOLC	GMIL
SIG STR	_____	_____
MOD QUAL (GO/NO GO)	_____	_____
CNT- FREQ	_____	_____
TIME	_____	_____

MCOM	XMTR TEMP (P20-3) _____	DEG F	CT0194
	XMTR RF OUT _____	VDC	CT0320
	FINAL GRID (P20-11) _____	VDC	CT0325

14-004

UDL RCVR READOUTS..

MCOM	1. SIG STR _____	VDC	CT0261

14-005

C BAND READOUTS..

	MOLC	SRO	
RADAR NO.	XXXX		
INTER FREQ	XXXX		NOM. MC.
REPLY FREQ			NOM. MC.
BCN DELAY	XXXX		YDS.
PULSE WIDTH			USEC
RANGE JITTER	XXXX		YDS.
COUNTDOWN	XXXX		PERCENT
SIG STR	XXXX		DB
LOOP BAL	XXXX		DB
PRF			
TIME			Z
DATE			
BCN GO/NO GO			

MCOM

XMTR OUTPUT (P20-9) PRF CT0089

C BAND DECODER OUT (P20-10) METER PRF PCT CT0098

XPNDR TEMP (P20-2) METER DEG F PCT CT0096

14-005

S-BAND READOUTS

MOLC GMIL

UNLOCKED FREQ	XXXX	MC
SIG STR		DBM
TWO WAY LOCK	XXXX	SEC
LOCK FREQ AT FC UPLINK		MC
RNG (-70 DBM)	XXXX	USEC
RNG (-90 DBM)	XXXX	USEC
SUBCARRIER BELOW CARRIER		GO/ NO GO
1.024		DB
1.250 MC		DB
PCM SYNC	XXXX	GO/NOGO
400 CPS MOD		GO/ NO GO

MCOM

RCVR AGC _____ _____	CT0147
ST PH ERROR _____ _____	CT0212
XMTR RF _____ _____	CT0215

MACE VERIFY QUALITY OF S-BAND PCM GO _____ NO GO _____ .

	214	14-006	MCOM	MOLC	1. SWITCH TO 222
					2. JOIN SEQUENCE 03 AT PRESENT T-TIME.
-93	30	222	14-007	MCOM	MTPE COMM TEST IS COMPLETE.

15-000 COMMUNICATIONS TEST - COUNT

15-001 MCOM ALL STATION CALL

MOLC MCRF MNQC

NOTE

SERVICE TOWER IS IN LAUNCH POSITION BY -07 00

-06 00
-00 45

15-002 MCOM MCRF START SIG STRENGTH AND CENTER FREQ RECORDERS

15-003 PCM TLM XMTR READOUTS.. 237.8

	T-06 00		T-00 45		
FUNCTION	MCRF	MOLC	ETR	MCRF	MOLC ETR
SIG STR					UV
CNTR FREQ					MC
DEVIATION					KC
TIME					HRS

T-06 00 T-00 45

MCOM XMTR PA RF VDC CT0330

15-004

VHF AM XMTR READOUTS..

FUNCTION	T-06 00 MOLC	T-06 00 GMIL	T-00 45 MOLC	T-00 45 GMIL	
SIG STR					UV
FREQ					MC
MOD QUAL					GO/NOGO
TIME					HRS

MCOM VHF AM XMTR RF OUT _____ _____ CT0320

15-005

UDL RCVR READOUTS..

	-11 00	-18 00		
MCOM SIG STR	_____	_____	VDC	CT0261

15-006

C BAND READOUTS..

	T-06 00		T-00 45		
	MOLC	ETR	MOLC	ETR	
RADAR NO.	XXXX		XXXX		
INTER FREQ	XXXX		XXXX		NOM. MC.
REPLY FREQ.					NOM. MC.
BCN DELAY	XXXX		XXXX		USEC
PULSE WIDTH					YDS
RANGE JITTER	XXXX		XXXX		YDS
COUNTDOWN	XXXX		XXXX		PER CENT
BCN RCVRY TIME	XXXX	XXXX	XXXX	XXXX	YDS
SENS	XXXX		XXXX		DB
LOOP BAL	XXXX		XXXX		DB
DECODER SPACING	XXXX		XXXX		US
PRF					
TIME					Z
DATE					
BCN GO/NO GO					

MCOM

XMTR OUTPUT _____ _____ PRF CT0089

DECODER OUTPUT _____ _____ PRF CT0098

15-006

S-BAND READOUTS

SYSTEM TEST T-06 00 / T-00 45

	MOLC	GMIL	MOLC	GMIL	
UNLOCKED FREQ	XXXX		XXXX		MC
SIG STR					DBM
TWO WAY LOCK	XXX		XXX		SEC
RNG (-70 DBM)	XXXX		XXXX		USEC
RNG (-90 DBM)	XXXX		XXXX		USEC
SUBCARRIER BELOW CARRIER					GO/ NO GO
1.024 MC					DB
1.250 MC					DB
PCM SYNC	XXXX		XXXX		GO/NOGO
400 CPS MOD					GO/ NO GO

MCOM RCVR AGC _____ _____ DBM CT0147

ST PH ERROR _____ _____ KDCS CT0212

XMTR RF _____ _____ VDC CT0215

15-007 MCOM MACE VERIFY QUALITY OF S-BAND PCM
GO _____ NO GO _____ .

214 15-008 MCOM MOLC 1. SWITCH TO 222, (212 INSIDE T-45 MIN) SIDETONE 214.
2. JOIN SEQUENCE 10 AT PRESENT T-TIME

15 222 15-009 MCOM MTPE COMM TEST IS COMPLETE
15 212 MSTC

16-000 ECS TEST - PRECOUNT

-10245 227 16-001 MECS VERIFY READY TO SUPPORT ECS TEST

UGTR	_____	SCO2	_____
UGCU	_____	MECE	_____
MECE	_____	UWGR	_____
SCMT	_____	MNQC	_____

16-002 MECS MECE RECORDERS 1, 2, 3 AND 4 TO 2 MM/SEC

16-003 MECS SCMT Z00-025-401
OPEN SHUTOFF VALVE V1
ADJUST REG (R1) TO 250 +/- 25
PSIG ON GA1

_____	_____
NAR QC	NASA QC

WARNING

DO NOT EXCEED 30 PSI/MIN
INCREASE

16-004 MECS MECE READ/RECORD THE FOLLOWING AT AMBIENT..

1.	OXYGEN SURGE TANK P PSIA (P8-1)		CF0006
2.	02 REG OUTLET PRESS PSIG (P8-2)		CF0036
3.	02 FLOWRATE (P8-3)	LB/HR	CF0035
4.	CABIN TEMP (P8-4)	DEG F	CF0002
5.	GLYCOL PUMP OUTLET P PSIA (P8-9)		CF0016
6.	ACCUMULATOR Q (P8-10)	PCNT	CF0019
7.	EVAP STEAM T (P8-11)	DEG F	CF0017
8.	EVAP STEAM P (P8-12)	PSIA	CF0034
9.	CABIN PRESS (P8-13L)	PSIA	CF0001
10.	EVAP INLET T (P8-14L)	DEG F	CF0181
11.	EVAP LIQUID T (P8-14R)	DEG F	CF0018
12.	WASTE Q	PCNT (P8-15)	CF0009
13.	POT Q	PCNT (P8-15)	CF0010
14.	02 REG INLET TEMP (P9-15)	DEG F	CF0235
15.	CP BR1 TEMP INLET (P9-17)	DEG F	CF0481
16.	CP BR1 TEMP OUTLET (P9-18)	DEG F	CF0482
17.	CP BR2 TEMP INLET (P9-19)	DEG F	CF0483
18.	CP BR2 TEMP OUTLET (P9-20)	DEG F	CF0484
19.	CP BR1 DIFF PRESS (P9-21)	PSID	CF0549
20.	CP BR2 DIFF PRESS (P9-22)	PSID	CF0550

16-005 MECS UGCU ON TRIM NO. 2 VERIFY/PERFORM THE FOLLOWING

A. PRESS ECS BYPASS OPEN

UGCU ON TRIM NO. 1 VERIFY/PERFORM THE FOLLOWING

A. PRESS W/G PUMP START
B. PRESS ECS BYPASS CLOSE

UWGR ON REFRIG NO. 2 VERIFY/PERFORM THE FOLLOWING

A. PRESS W/G PUMP CIRC OR W/G PUMP FILL STOP
B. PRESS REFRIG SYSTEM - OFF

UWGR ON REFRIG NO. 1 VERIFY/PERFORM THE FOLLOWING

A. PRESS W/G PUMP CIRCU. OR W/G PUMP FILL - START
B. PRESS REFRIG SYSTEM - ON

227 16-006 MECS MECE TRIM UNIT NO. 1
UGCU

NOTE

GSE READOUTS FROM UGCU

1.	WG SUPPLY PRESSURE (P8-16L)	PSIA	FF5026
	GSE	PSIA	
2.	WG SUPPLY TEMP (P8-17L)	DEG F	FF5030
	GSE	DEG F	
3.	WG RETURN TEMP (P8-18L)	DEG F	FF5029
	GSE	DEG F	
4.	WG DIFF PRESSURE (P8-19L)	PSID	FF5028
	GSE	PSID	
5.	WG FLOW RATE (P8-20L)	LB/HR	FF5027
	GSE	LB/HR	

16-007 MECE REFRIG. UNIT NO. 1
UWGR

1.	WG SUPPLY PRESS (P8-21L)	PSIG	FF5311
	GSE	PSIG	
2.	WG SUPPLY TEMP (P18-22L)	DEG F	FF5310
	GSE	DEG F	
3.	WG DIFF PRESS (P8-23L)	PSID	FF5313
	GSE	PSID	
4.	WG FLOWRATE (P8-24L)	GPM	FF5307
	GSE	GPM	
5.	WG RETURN TEMP (P9-24L)	DEG F	FF5312
	GSE	DEG F	

16-008 MECS MGCU

A. ON TRIM NO. 1 (VERIFY/PERFORM)
PRESS ECS BYPASS OPEN

B. ON TRIM NO. 2 (VERIFY/PERFORM)
PRESS ECS BYPASS CLOSE

16-009 MECS UWGR ON REFRIG NO. 1 (VERIFY/PERFORM)

A. PRESS W/G PUMP CIRCULATE OR W/G PUMP FILL STOP

B. PRESS REFRIG SYSTEM OFF

ON REFRIG NO. 2 (VERIFY/PERFORM)

A. PRESS W/G PUMP CIRCULATE OR W/G PUMP FILL START

B. PRESS REFRIG SYSTEM - ON

227 16-010 MECS MECE TRIM UNIT NO. 2
UGCU

1.	WG SUPPLY PRESS	PSIA	FF5062
	(P8-16R)	----	
	GSE	PSIA	

2.	WG SUPPLY TEMP	DEG F	FF5066
	(P8-17R)	-----	
	GSE	DEG F	

3.	WG RETURN TEMP	DEG F	FF5065
	(P8-18R)	-----	
	GSE	DEG F	

4.	WG DIFF PRESS	PSID	FF5064
	(P8-19R)	-----	
	GSE	PSID	

5.	WG FLOWRATE	LB/HR	FF5063
	(P8-20R)	-----	
	GSE	LB/HR	

16-011 MECS MECE REFRIG. UNIT NO. 2
UWGR

1.	WG SUPPLY PRESS	PSIG	FF5050
	(P8-21R)	-----	
	GSE	PSIG	

2.	WG SUPPLY TEMP	DEG F	FF5049
	(P8-22R)	-----	
	GSE	DEG F	

3.	WG DIFF PRESS	PSID	FF5052
	(P8-23R)	-----	
	GSE	PSID	

4.	WG FLOWRATE	GPM	FF5046
	(P8-24R)	-----	
	GSE	GPM	

5.	WG RETURN TEMP	DEG F	FF5051
	(P9-24R)	-----	
	GSE	DEG F	

.0230 222 16-012 MECS MTPE PREPS COMPLETE PROCEEDING WITH
FAN AND PUMP CHECK

16-013 CABIN AIR FANS CHECK

16-014 MECS SC02 PANEL 21
CABIN AIR FAN 1 (S16) - ON
(TIME)

SC02 CABIN AIR FAN 1 IS OPERATING.

16-015 MECS SC02 PANEL 21
CABIN AIR FAN 2 (S17) - ON
(TIME)

SC02 CABIN AIR FAN 2 IS OPERATING.

16-016 MECS SC02 PANEL 21
CABIN AIR FAN 1 (S16) - OFF
(TIME)

SC02 CABIN AIR FAN 1 HAS STOPPED.

16-017 MECS SC02 PANEL 21
CABIN AIR FAN 2 (S17) - OFF
(TIME)

SC02 CABIN AIR FAN 2 HAS STOPPED

PUMPS CHECK

16-018 MECS UGCU ADJUST TEMP CONTROLLER SET POINT TO 25 +/- 10 DEG. F TO OBTAIN A GLYCOL EVAP LIQUID OUT TEMP OF 40-45 DEG. F.

MECE RECORD TEMP W/G EVAP CF0018
DEG. F. (P8-14)

NOTE

ACCUM QUANTITY ADJUST MAY BE PERFORMED NOW AT MECS DISCRETION

16-019 MECS UGCU ECS BYPASS - OPEN.
UGCU ECS BYPASS OPEN LITE ON

16-020 MECS SC02 PANEL 22
SIMULTANEOUSLY SET THE FOLLOWING CBS
ECS GLYCOL PUMP
AC 1 PH A (CB27) - CLOSED
AC 1 PH B (CB26) - CLOSED
AC 1 PH C (CB25) - CLOSED
TIME
_____

MECS

GLYCOL PUMP OUTLET PRESS (P8-9) _____	PSIA	CF0016
ACCUM QUANTITY (P8-10) _____	PCNT	CF0019
CP BR 1 DIFF PRESS (P9-21) _____	PSID	CF0549
CP BR 2 DIFF PRESS (P9-22) _____	PSID	CF0550

16-021 MECS SC02 PANEL 22
SIMULTANEOUSLY SET THE FOLLOWING
CBS TO OFF
ECS GLYCOL PUMP
AC 1 PH A (CB27) - OPEN
AC 1 PH B (CB26) - OPEN
AC 1 PH C (CB25) - OPEN
(TIME)
_____

PANEL 21
ECS GLYCOL PUMP 2 (S14) - AC2
TIME
_____

MECE

GLYCOL PUMP OUTLET (P8-9) _____	PSIA	CF0016
ACCUM QUANTITY (P8-10) _____	PCNT	CF0019
CP BR 1 DIFF PRESS (P9-21) _____	PSID	CF0549
CP BR 2 DIFF PRESS (P9-22) _____	PSID	CF0550

16-022 MECS SCO2 PANEL 22
ECS GLYCOL PUMP AC-1
(SIMULTANEOUSLY)
PHASE A (CB27) - CLOSED
PHASE B (CB26) - CLOSED
PHASE C (CB25) - CLOSED
TIME

MECE	GLYCOL PUMP OUTLET (P8-9)	PSIA	CF0016
	ACCUM QUANTITY (P8-10)	PCNT	CF0019
	CP BR 1 DIFF PRESS (P9-21)	PSID	CF0549
	CP BR 2 DIFF PRESS	PSID	CF0550

16-023 MECS SCO2 PANEL 21
ECS GLYCOL PUMP (S14) - OFF

16-024 MECS UGCU ECS BYPASS - CLOSE.

UGCU	ECS BYPASS CLOSE LITE ON ECS RETURN FLOW LITE ON		
MECE	GLYCOL PUMP OUTLET (P8-9)	PSIA	CF0016
	ACCUM QUANTITY (P8-10)	PCNT	CF0019

16-025 MECS SCO2 PANEL 22
ECS GLYCOL PUMP AC1
(SIMULTANEOUSLY)
PHASE A (CB27) - OPEN
PHASE B (CB26) - OPEN
PHASE C (CB25) - OPEN
TIME

-10215 222 16-026 MECS MTPE PUMP + FAN CHECKS COMPLETE PROCEEDING WITH ACCUMULATOR QUANTITY ADJUST

16-027 ACCUMULATOR QUANTITY ADJUST

NOTES

WHEN TEMP STABILIZES PERFORM NEXT STEP AT MECS DISCRETION

TRIM UNIT NO. 2 WITH W/G FILL UNIT ATTACHED IS PRIMARY UNIT IN FOLLOWING SEQUENCES.

16-028 MECS UGCU ON TRIM 1 AND 2

1. PRESS W/G PUMP STOP
2. PRESS BYPASS CLOSE

16-029 MECS UGTR
UGCU 1. VERIFY/ADJUST GN2 REG ON ''K'' BOTTLE TO 100 +/- 20 PSIG

_____ _____
NAR QC NASA QC

2. VERIFY/ADJUST PRESS REG R1 ON S14-140 TO 25 +/- 5 PSIG

_____ _____
NAR QC NASA QC

3. POSITION MV3 ON S14-140 TO OPEN

_____ _____
NAR QC NASA QC

4. OPEN W/G FILL VALVE V24 ON PRIMARY UNIT

_____ _____
NAR QC NASA QC

5. ADJUST PRESS ON W/G CANNISTER TO OBTAIN WATER/GLYCOL SUPPLY PRESSURE OF 70-80 PSIA

_____ _____
NAR QC NASA QC

16-030 MECS MECE ALLOW PRESSURE TO STABILIZE.

MECE GLYCOL PUMP OUTLET PRESS CF0016
(P8-9) PSIA
_____

QUANTITY GLYCOL ACCUM PCNT CF0019
(P8-10) _____

W/G SUPPLY PRESSURE PSIA FF5026
(P8-16) _____

16-031 MECS UGTR CLOSE W/G FILL VALVE V24 (PRIMARY)

_____ _____
NAR QC NASA QC

16-032 MECS UGTR S14-053 (PRIMARY)
1. OPEN V5 AND BLEED 300 +/- 30 ML GLYCOL INTO GRADUATED CONTAINER.

_____ _____
NAR QC NASA QC

2. CLOSE V5

_____ _____
NAR QC NASA QC

16-033 MECE W/G SUPPLY PRESSURE PSIA FF5026
(P8-16) _____
ACCUMULATOR QUAN. PCNT CF0019
(P8-10) _____
GLYCOL PUMP OUTLET PRESS CF0016
(P8-9) PSIA
_____

GLYCOL EVAP LIQUID TEMP CF0018
(P8-14) DEG F
_____

16-034 MECS UGCU ON TRIM 1 AND 2
ECS BYPASS - OPEN

UGCU ECS BYPASS OPEN LIGHT ON

_____ _____
NAR QC NASA QC

16-035 MECS UGCU PRESS W/G PUMP START

16-036 MECS SC02 PANEL (22)
ECS GLYCOL PUMP (SIMULTANEOUSLY)
AC 1 PHA (CB27) - CLOSED
AC 1 PHB (CB26) - CLOSED
AC 1 PHC (CB25) - CLOSED
(TIME)

PANEL 21
ECS GLYCOL (S14) - PUMP 2 AC2
(TIME)

16-037 MECE

ACCUMULATOR QUAN (P8-10) (40-60) -----	PCNT	CF0019
GLYCOL PUMP OUTLET PRESS -----	PSIA	CF0016
GLYCOL EVAP LIQ TEMP (P8-14) -----	DEG F	CF0018
CP 1 DIFF PRESS (P9-21) -----	PSID	CF0549
CP 2 DIFF PRESS (P9-22) -----	PSID	CF0550

16-038 MECS SC02 PANEL 22
ECS GLYCOL PUMP (SIMULTANEOUSLY)
AC 1 PHASE A (CB27) - OPEN
AC 1 PHASE B (CB26) - OPEN
AC 1 PHASE C (CB25) - OPEN
PANEL 21
ECS GLYCOL PUMP S14 - OFF
TIME

16-039 MECS UGCU ECS BYPASS - CLOSE
UGCU ECS BYPASS CLOSE LITE ON

NAR QC NASA QC

16-040 MECS UGTR S14-140
ADJUST GN2 REGULATOR R1 TO 25 +/- 5 PSIG

_____ _____
NAR QC NASA QC

16-041 MECS UGTR CLOSE V3 ON FILL UNIT

_____ _____
NAR QC NASA QC

-10145 222 16-042 MECS MTPE ACCUM QUANTITY ADJUST COMPLETE SEND MSEQ TO CH 227 FOR WG ISOL VALVE CHECK

16-042 ISOL VALVE CHECK

227 16-043 MECS SC02 1. VERIFY S/C CONNECTOR (C23LV3P224) TO W/G ISOLATION VALVE (C23LV3J1) AND SAFETY WIRED

_____ _____
NAA QC NASA QC

2. VERIFY S/C CONNECTOR (C23LV2P223) TO ISOLATION VALVE (C23LV2J1) AND SAFETY WIRED

_____ _____
NAR QC NASA QC

16-044 MECS UGCU ECS BYPASS - OPEN
ECS BYPASS OPEN LITE ON

16-045 MECS SC02 PANEL 22
ECS GLYCOL PUMP (CLOSE SIMULTANEOUSLY)
AC1 PHA, PHB + PHC - CLOSED
TIME
_____

16-046 MECS MSEQ START ECS OPERATION - ON (R105)
SC02 VERIFY W/G ISOLATION VALVE OPERATION

16-047 MECS MSEQ SAFE LOGIC BUS B
SC02 VERIFY W/G ISOLATION VALVE OPERATION

16-048 MECS SC02 PANEL 22
ECS GLYCOL PUMP (OPEN SIMUL.)
AC1 PHA, PHB + PHC - OPEN TIME
_____

16-049 MECS UGCU ECS BYPASS - CLOSE
UGCU ECS BYPASS CLOSE LITE ON

10100 222 16-050 MECS MTPE ECS SYSTEM TEST COMPLETE.

16-051 MTPE MECS PROCEED WITH WATER SERVICING PER K-5044

16-052 XFER ECS GSE CONTROL TO REMOTE

(AS REQUIRED)

16-053 MECS ALL VERIFY READY

MECE _____ UGCU _____

UWGR _____ MNQC _____

NOTE

PERFORM THE REMAINDER OF THIS PAGE ONLY IF TRIM 1 IS SUPPORTING SC

16-054 MECE TRIM NO. 2 ON-OFF - ON (R021) KF7095
ECS BYPASS NO. 2 - ON (R021) KF7097

16-055 MECE UGCU 1. UNIT NO. 2, STATION SELECT SWITCH TO ACE
2. MODE SELECT SWITCH TO AUTO

UGCU UNIT NO. 2, ACE LITE ON

MECE TRIM NO. 2 LIGHT ON
TRIM NO. 2 REMOTE LIGHT ON
ECS BYPASS NO. 2 OPEN LIGHT ON
TRIM NO. 2 MAIN FLMT LIGHT ON

16-056 MECE TRIM NO. 1 ON-OFF - ON (R025) KF7009

16-057 MECS UGCU UNIT NO. 1 STATION SELECT SWITCH TO ACE
MODE SELECT SWITCH TO AUTO

UGCU UNIT NO. 1 ACE LIGHT ON

MECE TRIM NO. 1 LIGHT ON
TRIM NO. 1 REMOTE LIGHT ON
TRIM NO. 1 MAIN FLMT LIGHT ON

16-057 NOTE

PERFORM REMAINDER OF THIS PAGE ONLY IF TRIM 2 IS SUPPORTING SC.

16-058	MECE		TRIM NO. 1 ON-OFF - ON (R025) ECS BYPASS NO. 1 - ON (R025)	KF7009 KF7011
16-059	MECE	UGCU	UNIT NO. 1 STATION SELECT SWITCH TO ACE MODE SELECT SWITCH TO AUTO	
	UGCU		UNIT NO. 1 ACE LITE ON	
	MECE		TRIM NO. 1 ON LITE ON TRIM NO. 1 REMOTE LITE ON ECS BYPASS NO. 1 OPEN LITE ON TRIM NO. 1 MAIN FLMT LITE ON	
16-060	MECE		TRIM NO. 2 ON-OFF - ON (R021)	KF7095
16-061	MECE	UGCU	UNIT NO. 2 STATION SELECT SWITCH TO ACE MODE SELECT SWITCH TO AUTO	
	UGCU		UNIT NO. 2 ACE LITE ON	
	MECE		TRIM NO. 2 ON LITE TRIM NO. 2 REMOTE LITE ON TRIM NO. 2 MAIN FLMT LITE ON	

16-061

NOTE

IF REFR 1 IS SUPPORTING SC,
PERFORM REMAINDER OF THIS
PAGE

16-062 MECE REFR NO. 1 ON-OFF - ON (R024) KF7006

16-063 MECE UWGR UNIT NO. 1 STATION SELECT SWITCH TO ACE,
MODE SELECT SWITCH TO AUTO

UWGR STATION-ACE LITE ON
MODE-AUTO LITE ON

MECE REFR UNIT LIGHT ON
REFR REMOTE LITE ON
REFR FLOWMETER IN USE LITE ON
MAIN GLYCOL PUMP ON LITE ON

16-064 MECE UWGR UNIT NO. 2 STATION SELECT SWITCH TO ACE,
MODE SELECT SWITCH TO AUTO

UWGR ALL LAMPS OFF
REFR. NO. 2

MECE ALL LAMPS OFF
REFR. NO. 2

16-064 NOTE

IF REFR 2 IS SUPPORTING SC,
PERFORM REMAINDER OF THIS
PAGE

16-065 MECE REFR NO. 2 ON-OFF - ON (R020) KF7096

16-066 MECE UWGR UNIT NO. 2 STATION SELECT SWITCH TO ACE,
MODE SELECT SWITCH TO AUTO

UWGR STATION-ACE LITE ON
MODE AUTO LITE ON

MECE REF. UNIT NO. 2 ON LIGHT - ON
REFR NO. 2 REMOTE LITE ON
REFR NO. 2 MAIN FLOWMETER ON LITE ON
MAIN NO. 2 GLYCOL PUMP ON LITE ON

16-067 MECE UWGR UNIT NO. 1 STATION SELECT SWITCH-ACE,
MODE SELECT SWITCH-AUTO

UWGR ALL LAMPS OFF ON
REF. NO. 1

MECE ALL LAMPS OFF ON
REF. NO. 1

16-068 MECE ALL SW TO CH 222

16-069 MECE MTPE ECS GSE IS IN REMOTE CONTROL.

16-069 OPTIONAL QUANTITY ADJUST IN REMOTE

222 16-070 MECS MTPE OPTIONAL QUANTITY ADJUST STARTING

16-071 MECS MECE ECS SWITCHOVER - ON (R021) KC7096
ECS BYPASS NO. 2 - OFF (R021) KF7097
ECS SWITCHOVER - ON (R025) KF7012
ECS BYPASS NO. 1 - OFF (R025) KF7011

16-072 MECS UGTR OPEN W/G FILL VALVE V24 ON PRIMARY TRIM UNIT
OPEN V3 ON FILL UNIT S14-140

------ -------
NAR QC NASA QC

16-073 MECS UGTR ADJUST PRESSURE ON W/G CANNISTER
MECE TO OBTAIN 70-80 PSIG ON TRIM UNIT W/G SUPPLY PRESSURE

------ -------
NAR QC NASA QC

NOTE

ALLOW PRESSURE TO STABILIZE.

16-074 MECS UGTR CLOSE W/G FILL VALVE V24 ON PRIMARY TRIM UNIT

------ -------
NAR QC NASA QC

16-075 MECS UGTR AT S14-053 PRIMARY UNIT OPEN V5 AND BLEED 300 +/- 30 ML OF W/G INTO GRADUATED CONTAINER. POSITION V5 CLOSED.

------ -------
NAA QC NASA QC

16-076	MECS	MECE	ECS BYPASS NO. 1 - ON (R025)	KF7011
			ECS BYPASS NO. 2 - ON (R021)	KF7097
			ECS SWITCHOVER - OFF (R025)	KF7012
			ECS SWITCHOVER - OFF (R021)	KF7096
16-077	MECS	MECE	ECS BYPASS NO. 1 - OFF (R025)	KF7011
		MECE	ECS BYPASS NO. 1 OPEN LITE - OFF	
16-078	MECS	UGTR	S14-140 1. ADJUST GN2 REGULATOR R1 TO 25 +/- 5 PSIG	
			------ NAR QC ------- NASA QC	
16-079	MECS	UGTR	CLOSE V3 ON FILL UNIT	
			------ NAR QC ------- NASA QC	
16-080	MECS	MTPE	ECS ACCUMULATOR QUANTITY ADJUST COMPLETE.	

16-080 ECS GSE SWITCHOVER TO LOCAL

(AS REQUIRED)

16-081 MECS ALL VERIFY READY

MECE	_____	UWGR	_____
MNQC	_____	UGCU	_____

16-082 MECS MECE NORMALIZE ALL R-STARTS

R020	R024
R021	R025

16-083 MECS UWGR ON REFR NO. 1 SET STATION SELECT SWITCH TO REFR AND MODE SELECT SWITCH TO MANUAL

16-084 MECS UWGR ON REFR NO. 2 SET STATION SELECT SWITCH TO REFR AND MODE SELECT SWITCH TO MANUAL

16-085 MECS UGCU ON TRIM NO. 1 SET STATION SELECT SWITCH TO TRIM AND MODE SELECT SWITCH TO MAN.

16-086 MECS UGCU ON TRIM NO. 2 SET STATION SELECT SWITCH TO TRIM AND MODE SELECT SWITCH TO MAN.

16-087 MECS UGCU ON TRIM NO. 1

1. PRESS 28 VDC POWER ON
2. PRESS 120 VAC POWER ON
3. PRESS 120/208 VAC 400 CYC POWER ON
4. PRESS ECS BYPASS OPEN
5. PRESS FLOW AND TEMP CONTROL ON
6. PRESS PRIMARY SUPPLY AND RETURN OPEN

16-088 MECS UGCU ON TRIM NO. 2

1. PRESS 28 VDC POWER ON
2. PRESS 120 VAC POWER ON
3. PRESS 120/208 VAC 400 CYC POWER ON
4. PRESS ECS BYPASS OPEN
5. PRESS FLOW AND TEMP CONTROL ON

16-088

NOTE

PERFORM THE FOLLOWING STEP ONLY IF REFR NO. 1 IS SUPPORTING S/C

16-089 MECS UWGR ON REFR NO. 1

1. PRESS 28 VDC POWER
2. PRESS 120 VAC ON
3. PRESS 480 VAC ON
4. PRESS TEMP AND FLOW CONTROL ON
5. PRESS W/G CIRCULATING PUMP START - VERIFY FLOW
6. PRESS REFRIGERATION SYSTEM START - VERIFY

ON REF NO. 2

1. PRESS 28 VDC POWER ON
2. PRESS 120 VAC POWER ON
3. PRESS 480 VAC POWER ON
4. PRESS TEMP CONTROL AND FLOW CONTROL ON

16-089

NOTE

PERFORM THE FOLLOWING STEP ONLY IF REFR NO. 2 IS SUPPORTING S/C

16-090 MECS UWGR ON REFR NO. 2

1. SET 28 VDC POWER ON
2. PRESS 120 VAC ON
3. PRESS 480 VAC ON
4. PRESS TEMP AND FLOW CONTROL ON
5. PRESS W/G CIRCULATING PUMP START - VERIFY FLOW
6. PRESS REFRIGERATION SYSTEM START - VERIFY

ON REFR NO. 1

1. PRESS 28 VDC POWER ON
2. PRESS 120 VAC POWER ON
3. PRESS 480 VAC POWER ON
4. PRESS TEMP CONTROL AND FLOW CONTROL ON

16-090 NOTE

PERFORM THE FOLLOWING STEP ONLY IF TRIM NO. 1 IS SUPPORTING S/C

16-091 MECS UGCU 1. ON TRIM NO. 1

PRESS W/G PUMP START - VERIFY BYPASS FLOW LAMP - ON

PRESS ECS BYPASS CLOSE - VERIFY ECS RETURN FLOW LAMP - ON

2. ON TRIM NO. 2 (OPTIONAL)

PRESS W/G PUMP START - VERIFY BYPASS FLOW LAMP - ON

NOTE

PERFORM THE FOLLOWING STEP ONLY IF TRIM NO. 2 IS SUPPORTING S/C

16-092 MECS UGCU 1. ON TRIM NO. 2

PRESS W/G PUMP START

VERIFY BYPASS FLOW LAMP - ON

PRESS ECS BYPASS CLOSE

VERIFY ECS RETURN FLOW LAMP ON

2. ON TRIM NO. 1 (OPTIONAL)

PRESS W/G PUMP START

VERIFY BYPASS FLOW LAMP - ON.

16-093 MECS ALL SWITCH TO CH 222

222 16-094 MECS MTPE ECS W/G GSE IS NOW IN LOCAL CONTROL.

-58 15

16-094 XFER ECS GSE TO REMOTE CONTROL

NOTE

PERFORM REMAINDER OF THIS PAGE ONLY IF TRIM 1 IS SUPPORTING SC

16-095	MECS	MECE	TRIM NO. 2 ON-OFF - ON (R021) ECS BYPASS NO. 2 - ON (R021)	KF7095 KF7097
16-096	MECS	UGCU	1. UNIT NO. 2, STATION SELECT SWITCH TO ACE 2. MODE SELECT SWITCH TO AUTO TO ACE	
		UGCU	TRIM NO. 2 ACE LITE ON	
		MECE	TRIM NO. 2 LITE ON TRIM NO. 2 REMOTE LITE ON ECS BYPASS NO. 2 OPEN LITE ON TRIM NO. 2 MAIN FLWMT LITE ON	
16-097	MECS	MECE	1. TRIM NO. 1 ON-OFF - ON (R025)	KF7009
16-098	MECS	UGCU	UNIT NO. 1 STATION SELECT SWITCH TO ACE MODE SELECT SWITCH TO AUTO	
		UGCU	TRIM NO. 1 ACE LITE ON	
		MECE	TRIM NO. 1 LITE ON TRIM NO. 1 REMOTE LITE ON TRIM NO. 1 MAIN FLWMT LITE ON	

NOTE

PERFORM REMAINDER OF THIS PAGE ONLY IF TRIM 2 IS SUPPORTING SC

16-099	MECS	MECE	TRIM NO. 1 ON - OFF - ON (R025) ECS BYPASS NO. 1 - ON (R025)	KF7009 KF7011

16-100 MECS UGCU 1. UNIT NO. 1 STATION SELECT SWITCH TO ACE
2. MODE SELECT SWITCH TO AUTO

UGCU UNIT NO. 1 ACE LITE ON
MECE TRIM NO. 1 LITE ON
TRIM NO. 1 REMOTE LITE ON
ECS BYPASS NO. 1 OPEN LITE ON
TRIM NO. 1 MAIN FLWMT LITE ON

16-101 MECS MECE TRIM NO. 2 ON - OFF - ON KF7095
(R021)

16-102 MECS UGCU 1. UNIT NO. 2 STATION SELECT SWITCH TO ACE
2. MODE SELECT SWITCH TO AUTO

UGCU UNIT NO. 2 ACE LITE ON
MECE TRIM NO. 2 LITE ON
TRIM NO. 2 REMOTE LITE ON
TRIM NO. 2 MAIN FLWMT. LITE ON

NOTE

IF REFR NO. 1 IS SUPPORTING S/C, USE THIS PAGE.

16-103 MECS MECE REFR NO. 1 ON-OFF - ON (R024) KF7006

16-104 MECS UWGR REFR NO. 1 STATION SELECT SWITCH TO ACE
MODE SELECT SWITCH TO AUTO

UWGR STATION-ACE LITE ON
MODE-AUTO LITE ON

MECS REFR UNIT LITE ON
REFR REMOTE LITE ON
REFR MAIN FLWMTR LITE ON
MAIN GLYCOL PUMP LITE ON

16-105 MECS UWGR REFR NO. 2 STATION SELECT SWITCH TO ACE
MODE SELECT SWITCH TO AUTO

UWGR REFR NO. 2
ALL LAMPS OFF

MECS REFR NO. 2
ALL LAMPS OFF

16-105

NOTE

IF REFR 2 IS SUPPORTING SC,
USE THIS PAGE.

16-106	MECS	MECE	REFR NO. 2 ON - OFF - ON (R020)	KF7092
16-107	MECS	UWGR	REFR NO. 2 STATION SELECT SWITCH TO ACE MODE SELECT SWITCH TO AUTO	
		UWGR	STATION-ACE LITE ON MODE-AUTO LITE ON	
		MECS	REFR UNIT NO. 2 LITE ON REFR NO. 2 REMOTE LITE ON REFR NO. 2 FLOWMETER LITE ON REFR NO. 2 MAIN GLY PUMP LITE ON	
16-108	MECS	UWGR	REFR NO. 1 STATION SELECT SWITCH-ACE MODE SELECT SWITCH TO AUTO	
		UWGR	REFR NO. 1 ALL LAMPS OFF	
		MECE	REFR NO. 1 ALL LAMPS OFF	
-58 00 16-109	MECS	MTPE	ECS GSE XFER TO REMOTE COMPLETE	

17-000 ECS TEST - MIDCOUNT

-37 30 ECS FINAL SYSTEM VERIFICATION

17-001 MECS MECE REFR NO. 1 (R024) - ON KF7006
REFR NO. 2 (R020) - ON KF7092

17-002 MECS MECE

1.	OXYGEN SURGE TANK P (P8-1) _____ PSIA	CF0006
2.	02 REG OUTLET PRESS (P8-2) _____ PSIG	CF0036
3.	02 FLOWRATE _____ LB/HR (P8-3)	CF0035
4.	CABIN TEMP _____ DEG F (P8-4)	CF0002
5.	GLYCL PUMP OUTLT P (P8-9) _____ PSIA	CF0016
6.	ACCUMULATOR Q _____ PCNT (P8-10)	CF0019
7.	EVAP STEAM T _____ DEG F (P8-11)	CF0017
8.	EVAP STEAM P _____ PSIA (P8-12)	CF0034
9.	CABIN PRESS _____ PSIA (P8-13L)	CF0001
10.	EVAP INLET T _____ DEG F (P8-14L)	CF0181
11.	EVAP LIQUID T _____ DEG F (P8-14R)	CF0018
12.	WASTE Q _____ PCNT (P8-15)	CF0009
13.	POT Q _____ PCNT (P8-15)	CF0010
14.	02 REF INLET TEMP (P9-15) _____ DEG F	CF0245
15.	CP BR1 TEMP INLET (P9-17) _____ DEG F	CF0481
16.	CP BR1 TEMP OUTLET (P9-18) _____ DEG F	CF0482
17.	CP BR2 TEMP INLET (P9-19) _____ DEG F	CF0483

17-002		18. CP BR2 TEMP OUTLET (P9-20) DEG F		CF0484
		19. CP BR1 DIFF PRESS (P9-21) PSID		CF0549
		20. CP BR2 DIFF PRESS (P9-22) PSID		CF0550
17-003	MECS	MECE	VERIFY/PERFORM FOLLOWING	
			A. ECS BYPASS NO. 2 (R021) - ON	KF7097
			B. ECS SWITCHOVER NO. 1 (R025) - OFF	KF7012
			C. ECS BYPASS NO. 1 (R025) - OFF	KF7011
			D. REFR NO. 2 (R020) - OFF	KF7096
			E. REFR NO. 1 (R024) - ON	KH7006
17-004	MECS	MECE UGCU	TRIM UNIT NO. 1	
			1. WG SUPPLY PRESSURE (P8-16L) PSIA	FF5026
			GSE PSIA	
			2. WG SUPPLY TEMP (P8-17L) DEG F	FF5030
			GSE DEG F	
			3. WG RETURN TEMP (P8-18L) DEG F	FF5029
			GSE DEG F	
			4. WG DIFF PRESSURE (P8-19L) PSID	FF5028
			GSE PSID	
			5. WG FLOW RATE (P8-20L) LB/HR	FF5027
			GSE LB/HR	

17-005 MECS MECE UWGR REFRIG. UNIT NO. 1

1.	WG SUPPLY PRESS (P8-21L)	PSIG	FF5311
	GSE	PSIG	
2.	WG SUPPLY TEMP (P8-22L)	DEG F	FF5310
	GSE	DEG F	
3.	WG DIFF PRESS (P8-23L)	PSID	FF5313
	GSE	PSID	
4.	WG FLOWRATE (P8-24L)	GPM	FF5307
	GSE	GPM	
5.	WG RETURN TEMP (P9-24L)	DEG F	FF5312
	GSE	DEG F	

17-006 MECS MECE VERIFY/PERFORM FOLLOWING

A.	ECS BYPASS NO. 1 (R025) - ON	KF7011
B.	ECS SWITCHOVER NO. 2 (R021) - OFF	KF7096
C.	ECS BYPASS NO. 2 (R021) - OFF	KF7097
D.	REFRIG NO. 1 ON-OFF - OFF (R024)	KF7006
E.	REFRIG NO. 2 ON-OFF - ON (R020)	KF7092

17-007 MECS MECE UGCU — TRIM UNIT NO. 2

1.	WG SUPPLY PRESS (P8-16R)	PSIA	FF5062
	GSE	PSIA	
2.	WG SUPPLY TEMP (P8-17R)	DEG F	FF5066
	GSE	DEG F	
3.	WG RETURN TEMP (P8-18R)	DEG F	FF5065
	GSE	DEG F	
4.	WG DIFF PRESS (P8-19R)	PSID	FF5064
	GSE	PSID	
5.	WG FLOWRATE (P8-20R)	LB/HR	FF5063
	GSE	LB/HR	

17-008 MECS MECE UWGR — REFRIG. UNIT NO. 2

1.	WG SUPPLY PRESS (P8-21R)	PSIG	FF5050
	GSE	PSIG	
2.	WG SUPPLY TEMP (P8-22R)	DEG F	FF5049
	GSE	DEG F	
3.	WG DIFF PRESS (P8-23R)	PSID	FF5052
	GSE	PSID	
4.	WG FLOWRATE (P8-24R)	GPM	FF5046
	GSE	GPM	
5.	WG RETURN TEMP (P9-24R)	DEG F	FF5051
	GSE	DEG F	

17-008 CABIN AIR FANS CHECK

17-009 MECS SC01 PANEL 22

CABIN AIR FAN 1 SW. (S16) - ON.
(TIME)

SC01 CABIN AIR FAN 1 IS OPERATING.

17-010 MECS SC02 CABIN AIR FAN 2 (S17) - ON.
(TIME)

SC01 CABIN AIR FAN 2 IS OPERATING.

17-011 MECS SC01 CABIN AIR FAN 1 (S16) - OFF.
(TIME)

SC01 CABIN AIR FAN 1 HAS STOPPED.

17-012 MECS SC01 CABIN AIR FAN 2 (S17) - OFF.
(TIME)

SC01 CABIN AIR FAN 2 HAS STOPPED.

17-013 ECS PUMPS CHECK

17-014 MECS UGCU SLOWLY ADJUST TEMP CONTROLLER SET POINT TO OBTAIN A GLYCOL EVAP LIQUID OUT TEMP OF 40-45 DEG F.

MECE RECORD TEMP W/G EVAP DEG F (P8-14R) _____ CF0018

NOTE

ACCUM QUANTITY ADJUST MAY BE PERFORMED HERE AT MECS DISCRETION

17-015 MECS MECE ECS BYPASS - ON KF7097 KF7011

17-016 UGCU ECS BYPASS OPEN LITE ON

17-017 MECS SC01 PANEL 22
SIMULTANEOUSLY SET THE FOLLOWING
CBS ECS GLYCOL PUMP
AC 1 PH A (CB27) - CLOSED
AC 1 PH B (CB26) - CLOSED
AC 1 PH C (CB25) - CLOSED
TIME _____

MECS GLYCOL PUMP OUTLET PRESS (P8-9) _____ PSIA CF0016

ACCUM QUANTITY (P8-10) _____ PCNT CF0019

CP BR1 DIFF PRESS (P9-21) _____ PSID CF0549

CP BR2 DIFF PRESS (P9-22) _____ PSID CF0550

17-018 MECS SC01 PANEL 22
SIMULTANEOUSLY SET THE FOLLOWING
CBS
ECS GLYCOL PUMP
AC 1 PH A (CB27) - OPEN
AC 1 PH B (CB26) - OPEN
AC 1 PH C (CB25) - OPEN
TIME _____

17-019 MECS SC01 PANEL 21
ECS GLYCOL (S14) - PUMP 2 AC2
TIME

MECE
1. GLYCOL PUMP OUTLET PRESS (P8-9) PSIA ----- CF0016
2. ACCUM QUANTITY (P8-10) PCNT ----- CF0019

CP BR1 DIFF PRESS (P9-21) PSID ----- CF0549
CP BR2 DIFF PRESS (P9-22) PSID ----- CF0550

17-020 MECS SC01 PANEL 22
ECS GLYCOL PUMP AC1
CLOSE SIMULTAINEOUSLY
PH A (CB27) - CLOSED
PH B (CB_B26) - CLOSED
PH C (CB25) - CLOSED
TIME

MECE
1. GLYCOL PUMP OUTLET (P8-9) PSIA ----- CF0016
2. ACCUM QUANTITY (P8-10) PCNT ----- CF0019

CP BR1 DIFF PRESS (P9-21) PSID ----- CF0549
CP BR2 DIFF PRESS (P9-22) PSID ----- CF0550

17-021 MECS SC01 PANEL 21
ECS GLYCOL (S14) - OFF
TIME

17-022 MECS MECE ECS BYPASS - OFF KF7097
UGCU ECS BYPASS CLOSE LITE ON KF7011
ECS RETURN FLOW LITE ON

MECE
GLYCOL PUMP OUTLET PRESS (P8-9) PSIA ----- CF0016
ACCUM QUAN (P8-10) PCNT ----- CF0019

17-023 MECS SC01 PANEL 22
ECS GLYCOL PUMP 1 AC1 OPEN
SIMULTAINEOUSLY
PH A (CB27) - OPEN
PH B (CB26) - OPEN
PH C (CB25) - OPEN
TIME

17-024 MECS MTPE ECS PUMP CHECKS COMPLETE

NOTE

THE FOLLOWING ACCUMULATOR QUANTITY ADJUST MAY BE PERFORMED AT DISCRETION OF MECS.

17-025 ACCUMULATOR QUANTITY ADJUST

NOTES

WHEN TEMP STABILIZES PERFORM NEXT STEP. PERFORM ONLY AT ECS DISCRETION

TRIM UNITS WITH W/G FILL UNIT ATTACHED WILL BE REFERRED TO AS THE PRIMARY TRIM UNIT.

17-026	MECS	ECS SWITCHOVER - ON (R21)	KF7096
		ECS BYPASS NO. 2 - OFF (R21)	KF7097
		ECS SWITCHOVER - ON (R25)	KF7012
		ECS BYPASS NO. 1 - OFF (R25)	KF7011

17-027 MECS UGTR ON PRIMARY UNIT OPEN W/G FILL VALVE V24

------ -------
NAA QC NASA QC

17-028 MECS UGTR ON S14-140 FILL UNIT OPEN V3
UGCU ON S14-140 ADJUST PRESS REG R1 TO
MECE OBTAIN W/G SUPPLY PRESS OF 70-80 PSIA ON TRIM UNIT

------ -------
NAR QC NASA QC

17-028 NOTE

ALLOW PRESSURE TO STABILIZE.

17-029 MECS UGTR CLOSE W/G FILL VALVE V24 ON PRIMARY TRIM UNIT.

NAR QC NASA QC

17-030 MECS UGTR ON PRIMARY TRIM UNIT OPEN V5 AND BLEED 300 +/- 30 ML OF W/G INTO GRADUATED CONTAINER POSITION V5 CLOSED.

NAR QC NASA QC

17-031 MECS MECE ECS BYPASS NO. 1 - ON (R025) KF7011
ECS BYPASS NO. 2 - ON (R021) KF7097
ECS SWITCHOVER - OFF (R025) KF7012
ECS SWITCHOVER - OFF (R021) KF7096

MECS SC02 PANEL (22)
ECS GLYCOL PUMP (SIMULTANEOUSLY)
AC 1 PHA (CB27) - CLOSED
AC 1 PHB (CB26) - CLOSED
AC 1 PHC (CB25) - CLOSED
(TIME)

PANEL 21
ECS GLYCOL (S14) - PUMP 2 AC2
(TIME)

MECE ACCUMULATOR QUAN PCNT CF0019
(P8-10) (40-60)
GLYCOL PUMP OUTLET PRESS CF0016
PSIA
GLYCOL EVAP LIQ TEMP DEG F CF0018
(P8-14)
CP 1 DIFF PRESS PSID CF0549
(P9-21)
CP 2 DIFF PRESS PSID CF0550
(P9-22)

17-031 MECS SC02 PANEL 22
ECS GLYCOL PUMP (SIMULTANEOUSLY)
AC 1 PHASE A (CB27) - OPEN
AC 1 PHASE B (CB26) - OPEN
AC 1 PHASE C (CB25) - OPEN

PANEL 21
ECS GLYCOL PUMP S14 - OFF
(TIME)

17-032 MECS MECE ECS BYPASS NO. 1 OFF (R025)

MECE ECS BYPASS OPEN LITE OFF

17-033 MECS UGTR ON S14-140 ADJUST GN2 REG R1 TO 25 +/- 5 PSIG

NAA QC NASA QC

17-034 MECS UGTR CLOSE V3 ON FILL UNIT

NAA QC NASA QC

17-035 MECS MTPE ECS ACCUMULATOR QUANTITY ADJUST COMPLETE.

17-035 ECS W/G GSE CHILLDOWN

-09 15 17-036 MECE ALL REPORT ON STATION

UGCU _____ UWGR _____

UGTR _____ MNQC _____

NOTE

1. WATER GLYCOL QUANTITY ADJUST MAY BE PERFORMED AT MECE DISCRETION.

17-037 MECE SET/VERIFY
1. REFR NO. 1 - ON KF7006
2. REFR NO. 2 - ON KF7092

17-038 MECE UWGR ON REFR NO. 1 VERIFY/ADJUST
1. ADJUST FREON PACKAGE TEMP CONTROL SET POINT TO -20 DEG F
2. ADJUST W/G TEMP CONTROL SET POINT TO -5 DEG F
3. SET FLOW CONTROL SET POINT TO 3.5 GPM

17-039 MECE UWGR ON REFR NO. 2 VERIFY/ADJUST
1. ADJUST FREON PACKAGE TEMP CONTROL SET POINT TO -20 DEG F
2. ADJUST W/G TEMP CONTROL SET POINT TO -5 DEG F
3. SET FLOW CONTROL SET POINT TO 3.5 GPM

17-040 MECE UWGR ADJUST W/G TEMP CONTROL SET POINTS AS
UWGR NECESSARY TO OBTAIN -5 +/- 5 DEG F W/G SUPPLY TEMP ON REFR NO. 1 AND REFR NO. 2. NOTIFY MECS WHEN STABILIZATION IS OBTAINED.

17-040

NOTE

TRIM UNIT NO. 1 WILL BE SUPPORTING S/C AND TRIM UNIT NO. 2 WILL BE IN BYPASS OPEN MODE BEFORE CONTINUING.

17-041 MECE

ON TRIM UNIT NO. 1 AND 2
ADJUST TEMP CONTROL SET POINT TO 20 +/- 10 DEG F
ADJUST FLOW CONTROL SET POINT TO 250 +/- 50 LB/HR

NOTE

UGCU WILL ADJUST FLOW AND TEMP CONTROL SET POINTS WITHIN THE PRESCRIBED LIMITS, AT DIRECTION OF MECS, TO STABILIZE S/C COOLING CF0018 (40-45 DEG F)

17-042 MECE

RECORD..

GLYCOL PUMP OUTLET PRESS PSIA		CF0016
ACCUMULATOR QUANT	PERCENT	CF0019
TRIM NO. 1 SUPPLY TEMP DEG F		FF5030
TRIM NO. 1 FLOWRATE	LB/HR	FF5027
GLYCOL EVAP LIQUID TEMP DEG/F		CF0018

17-043 MECE

TRIM NO. 1 ECS BYPASS - ON	KF7011
TRIM NO. 2 ECS BYPASS - OFF	KF7097

17-044 MECE UGCU

ON TRIM NO. 2
VERIFY/ADJUST TEMP CONTROL SET POINT TO 20 +/- 10 DEG F
VERIFY/ADJUST FLOW CONTROL SET POINT TO 250 +/- 50 LB/HR

17-044

UGCU WILL ADJUST FLOW AND
TEMP CONTROL SET POINTS
WITHIN THE PRESCRIBED LIMITS,
AT DIRECTION OF MECS, TO
STABILIZE S/C COOLING CF0018
(40-45 DEG F)

17-045 MECS RECORD..
GLYCOL PUMP OUTLET PRESS CF0016
PSIA

ACCUMULATOR QUANT PERCENT CF0019

TRIM NO. 2 SUPPLY TEMP FF5066
DEG F

TRIM NO. 2 FLOWRATE LB/HR FF5063

GLYCOL EVAP LIQ TEMP DEG F CF0018

17-046 MECE TRIM NO. 2 ECS BYPASS - ON KF7097

17-047 MECE RECORD..
GLYCOL PUMP OUTLET PRESS CF0016
PSIA

ACCUMULATOR QUANT PERCENT CF0019

17-048 MECE TRIM NO. 1 ECS BYPASS - OFF KF7011
(R025)

17-049 MECE UGCU SECURE UNITS PER OCD-K-10020
UWGR
UGTR

17-050 MECE ALL RETURN TO 222

-08 30 17-051 MECE MTPE W/G CHILLDOWN COMPLETE

Q* OBEN BNDGE AVFAE (WA2)
MVB QC MV2V QC

S* OBEN UNIFEI 2HNIOEE AVFAE (WA#)
MVB QC MV2V QC

AEBIEX TS2 +\- S2 B2IG GN GVGE BCH
T* OBEN EVCIFIIX GV2 2NBBFX AVFAE*
MVB QC MV2V QC

10 TS2 +\- S2 B2IG*
#* AEBIEX\[illegible] EVCIFIIX GV2 2NBBFX
MVB QC MV2V QC

BBE22 GVGE 10 VBVBIEB
Q* COMMECI BBE22* 2EN2 HO2E EBOW M\I
MVB QC MV2V QC

10 VBVBIEB*
S* COMMECI BBE22* HO2E EBOW 2IN-010
MVB QC MV2V QC

10 IMMEB HVICH IE2I EIIIING
T* COMMECI BBE22* VBVBIEB (2IN-8H8I2B)

11-021 CVRIN BNDGE VMD CVRIN FEVR CHECK

SC - 011
SC OCT 1967

V B O F F

AT000\EXO
11-11

25 OCT 1967
SC - 017

VALVE (MV6)

NAR QC NASA QC

17-053 5. OPEN GO2/GN2 SUPPLY VALVE (MV2)

CAUTION

DO NOT EXCEED 6.8 PSIG IN NEXT SEQ.

NAR QC NASA QC

17-054 MECS SPAD CONTINUE TO INCREASE CABIN PRESSURE UNTIL CABIN RELIEF VALVE UNSEATS. RECORD C/M PRESS _____ PSIG.

NOTE

C/M RELIEF VALVE WILL CYCLE. OBTAIN RESEAT VALUE.

NAR QC NASA QC

17-055 MECS SPAD MONITOR CABIN RELIEF VALVE FOR RESEAT. RECORD C/M PRESS _____ PSIG.

NAR QC NASA QC

17-056 MECS SPAD CONTINUE GN2 FLOW TO PURGE C/M FOR APPROX. 10 MIN., THEN CLOSE GO2/GN2 SUPPLY VALVE (MV2).

NAR QC NASA QC

17-057 MECS SPAD 1. OPEN SAMPLING VALVE.

NAR QC NASA QC

2. ALLOW BLEED FLOW AT D-2 ANALYZER TEE FOR 60 SEC THEN ADJUST D-2 ANALYZER TO OBTAIN STEADY INDICATION OF O2 CONCENTRATION.

17-057 NOTE

MAX O2 CONCENTRATION SHOULD BE LESS THAN 5 PERCENT (95 PERCENT GN2). REPEAT NECESSARY STEPS TO OBTAIN PROPER O2 CONCENTRATION.

3. CLOSE SAMPLING VALVE.

--- ---
NAR QC NASA QC

17-058 MECS SPAD 1. OPEN DUMP VALVE MV10 TO VENT CABIN TO 5.0 TO 5.2 PSIG.

--- ---
NAR QC NASA QC

2. CLOSE MV10.

--- ---
NAR QC NASA QC

17-059 MECS SPAD WHEN C/M PRESSURE (W/T PRESS GAGE) INDICATED 5.0 +/- .2 PSIG CLOSE FOLLOWING S14-079 VALVES

1. OUTLET SHUTOFF VALVE MV4

--- ---
NAR QC NASA QC

2. PURGE VALVE MV3

--- ---
NAR QC NASA QC

3. CM FILL VALVE MV6

--- ---
NAR QC NASA QC

4. GO2/GN2 SUPPLY VALVE MV2

--- ---
NAR QC NASA QC

17-060 MECS SPAD READOUT CABIN PRESSURE DURING PRESS DECAY.

1. RECORD THE FOLLOWING

TIME	CABIN PRESS.	CABIN TEMP
0	---------	----------
2	---------	----------
4	---------	----------
6	---------	----------
8	---------	----------
10	---------	----------

NOTE

TIME MAYBE CHANGED AT ECS DISCRETION.

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NAA QC NASA QC

-08 30 222 17-061 MECS MTPE CABIN PURGE AND LEAK CHECK COMPLETE READY FOR CABIN SECURING

------ -------
NAR QC NASA QC

17-062 MECS SPAD 1. CLOSE FACILITY GAS SUPPLY VALVE

------ -------
NAR QC NASA QC

2. OPEN MV4 AND MV10 TO VENT CABIN 2 PSIG. THEN CLOSE MV4 AND MV10.

------ -------
NAR QC NASA QC

17-062

NOTE

PERFORM STEPS 3 AND 4 AS QUICKLY AS POSSIBLE

3. DISCONNECT PRESS HOSE AND SENSE HOSE FROM ADAPTER G14-848758

NAR QC NASA QC

4. REMOVE ADAPTER FROM INNER HATCH TEST POINT.

NAR QC NASA QC

5. PREPARE TO INSTALL V16-612022 PLUG TO INNER HATCH AT DISCRETION OF MECS
6. INSTALL VI6-612022 PLUG
7. RECORD CABIN PRESS PSIA CF0001

NAR QC NASA QC

-08 20 17-063 MECS MTPE CABIN SECURING COMPLETE

NAR QC NASA QC

17-064 MECS SPAD 1. COMPLETE INSTALLATION OF V16-612022 PLUG TO THE INNER HATCH PER CHECKLIST 9.9 (6.9 CDDT)

NAR QC NASA QC

17-065 MECS SPAD RETURN TO CH 222

-08 15 222 17-066 MECS MTPE ECS CABIN FUNCTIONS COMPLETE

18-000 SCS TEST - PRECOUNT

-98 00 18-001 MSCS ALL VERIFY READY TO SUPPORT SCS SYSTEM TEST

MSCA MNQC

MSCE SC01

18-002 MSCS MSCE RECORDER 17,
1/4, 2/1, 3/3, 4/2, 5/4, 6/1, 7/4, 8/4

RECORDER 18
1/1, 2/1, 3/4, 4/4, 5/4, 6/2, 7/1, 8/1

START RECORDER 16 AT 5 MM/SEC
START RECORDERS 17, 18 AND 19 AT 2 MM/SEC
ANNOTATE RECORDERS.

-97 55 SCS ACTIVATION

18-003 MSCS SC01 PANEL 8
DIRECT RCS (S15) - OFF
LIMIT CYCLE (S6) - OFF
ATT DEADBAND (S7) - MIN
RATE GYRO, ROLL (S8) - NORMAL
RATE GYRO, PITCH (S9) - NORMAL
RATE GYRO, YAW (S10) - NORMAL
.05G (S5) - OFF
LOCAL VERTICAL (S4) - OFF
DELTA V (S2) - OFF
G-N/SCS (S3) - SCS
ATT/MON/ENTRY (S1) - MONITOR
SCS CH. AC ROLL (S11) - OFF
SCS CH. BD ROLL (S12) - OFF
SCS CH. PITCH (S13) - OFF
SCS CH. YAW (S14) - OFF

18-004 MSCS SC01 PANEL 25
SCS GROUP 1 AC-1 (CB46) - OPEN
SCS GROUP 1 AC-2 (CB45) - CLOSED
SCS GROUP 2 AC-1 (CB67) - CLOSED
SCS GROUP 2 AC-2 (CB66) - CLOSED
SCS GROUP 1 MN-A (CB44) - CLOSED
SCS GROUP 1 MN-B (CB43) - CLOSED
SCS GROUP 2 MN-A (CB65) - CLOSED
SCS GROUP 2 MN-B (CB64) - CLOSED

18-005 MSCS SC01 PANEL 24
PARTIAL SCS PWR (S13) - AC1
TVC 1 PWR (S14) - OFF
TVC 2 PWR (S15) - OFF
BMAG PWR (S9) - OFF
ROTATION CONTROL PWR (S16) - AC1

MSCE MONITOR LITE ON CH0103
ALL S/D LITES ON

NOTE

S/D AND S/D DISABLE LITES WILL REMAIN ON THROUGHOUT THE TEST.

18-006 MSCS MSCE COMPLETE SCS DATA TABLE I

18-007 MSCA ALL TIMED SEQUENCE FOLLOWS..

18-008 MSCS SC01 PANEL 24
RATE GYRO PWR (S12) - AC1
GIVE MSCS MARK TO START TIMING

18-009 MSCS MSCE VERIFY COMBINED RATE GYRO SMRD CH2026 4.8
IS 4.8 VDC IN 20 SECONDS MAX +/- .2
FROM (S12) POWER ON (P17-21)

VDC	SECONDS

NOTE

MSCE OR MSCA AT ANY TIME MAY EXERCISE R-STARTS TO CALL UP FOR DISPLAY AN INDIVIDUAL SMRD(S). THE FOLLOWING TABLE LISTS THE R-START NECESSARY TO ILLUSTRATE THE PARTICULAR SMRD INDICATION DESIRED.

PARAMETER	R-START (R160)		SELECTION	
CH2016			C	D
CH2017	A	B		
CH2018	A		C	D
CH2027	A	B	C	
CH2028		B	C	D
CH2029	A	B		D

THE PARAMETER SELECTED WILL BE ILLUSTRATED IN EACH OF SIX CRT POSITIONS.

18-009		MSCE	PITCH R/G SMRD PPS (P17-11) -----	CH2027	1600 +/- 1
			YAW R/G SMRD PPS (P17-11) -----	CH2028	1600 +/- 1
			ROLL R/G SMRD PPS (P17-11) -----	CH2029	1600 +/- 1
18-010	MSCS	MSCE	COMPLETE SCS DATA TABLE II.		
18-011	MSCS	MSCE	COMPLETE SCS DATA TABLE III.		
			BMAG ACTIVATION ----------		
18-012	MSCS	MSCE	RECORDER 17, 1/4, 2/4, 3/4, 4/4, 5/4, 6/4, 7/3, 8/4		
			RECORDER 18, 1/1, 2/1, 3/4, 4/4, 5/4, 6/2, 7/1, 8/1		
18-013	MSCS	SC01	PANEL 24 BMAG POWER (S9) - AC1		
		MSCE	START TIMING FOR BMAG WARMUP TIME ----------		

NOTE

MSCE RECORD THE FOLLOWING AFTER THE BMAGS HAVE REACHED OPERATING TEMPERATURE (45 MINUTES MAX).

NOTE

IT IS DESIRABLE THAT THE SCS TESTING BE CONTINUED DURING THE BMAG WARMUP PERIOD. RATE MIDCOURSE GAIN CHECKS MAY BE ACCOMPLISHED DURING BMAG WARMUP.

18-014 MSCS MSCE TIME FROM APPLICATION OF (S9) BMAG POWER UNTIL COMBINED ATT. GYRO TEMP READS +4.6 VDC MIN.
MINUTES

COMB A/G TEMP VDC (P17-22)	CH2030	4.8	+/- .2
COMB A/G SMRD VDC (P17-20)	CH2015	4.8	+/- .2
PITCH A/G SMRD PPS (P17-10)	CH2016	800	+/- 1
YAW A/G SMRD PPS (P17-10)	CH2017	800	+/- 1
ROLL A/G SMRD PPS (P17-10)	CH2018	800	+/- 1

18-015 MSCS MSCE COMPLETE SCS DATA TABLE IV.
97 30 RATE GYRO TORQUING
(ATTITUDE MODE)

THE FOLLOWING SEQUENCES TORQUE THE RATE GYRO TO +/- 1 DEG/SEC.

18-016 MSCS SC01 PANEL 8
ATT. DEADBAND (S7) - MIN
RATE GYRO, ROLL (S8) - NORMAL
RATE GYRO, PITCH (S9) - NORMAL
RATE GYRO, YAW (S10) - NORMAL
DELTA V - (S2) - OFF
G AND N/SCS (S3) - SCS
ATTITUDE/MONITOR-ENTRY (S1) - MONITOR
SCS CH. A AND C ROLL (S11) - OFF
SCS CH. B AND D ROLL (S12) - OFF
SCS CH. PITCH (S13) - OFF
SCS CH. YAW (S14) - OFF

MSCE MONITOR LITE ON CH0103

PANEL 16
RCS CMD (S11) - ON THEN CENTER
RCS TRANSFER (S14) - SM THEN CENTER

18-017 PITCH RATE

18-018	MSCS	MSCE	PITCH RATE GYRO PADDED TORQUE ON (R184).	KH7024	
			RATE GYRO FIELD POWER ON (R187)	KH7043	
18-019	MSCS MSCE	MSCE	PITCH RATE (C180) - 140 001 234 IS INSERTED	KV7057	
		MSCE	DAC 7 OUT VDC (P17-15) -----	GV0106	-14+/- .6
			PITCH RATE GYRO NULL VRMS (P17-3) -----	CH0045	+.15 +/-.04
			PITCH RATE ERROR VDC (P17-12) -----	CH0050	-0.9 +/-.3
			PITCH TOTAL ERROR VDC (P17-8) -----	CH0060	+10+/- 2.8

18-020	MSCS MSCE	MSCE	PITCH RATE (C180) + 140 001 234 IS INSERTED	KV7057	
		MSCE	DAC 7 OUTPUT VDC (17-15) -----	GV0106	+14 +/-.6
			PITCH RATE GYRO NULL VRMS (P17-3) -----	CH0045	-.15 +/-.04
			PITCH RATE ERROR VDC (P17-12) -----	CH0050	+0.9 +/- .3
			PITCH TOTAL ERROR VDC (P17-8) -----	CH0060	-10+/- 2.8
18-021	MSCS MSCE	MSCE	PITCH RATE (C180) + 000 001 234 IS INSERTED	KV7057	
			PITCH RATE GYRO PADDED TORQUE - OFF (R184)	KH7024	
18-022			YAW RATE --------		
18-023	MSCS	MSCE	YAW RATE GYRO PADDED TORQUE - ON (R185).	KH7025	
18-024	MSCS MSCE	MSCE	YAW RATE (C164) - 140 001 231 IS INSERTED	KV7054	
		MSCE	DAC 4 OUT VDC (P17-14) -----	GV0103	-14+/- .6
			YAW RATE GYRO NULL VRMS (P17-3) -----	CH1045	+.15 +/-.04
			YAW RATE ERROR VDC (P17-12) -----	CH1050	-.9 +/- .3
			YAW TOTAL ERROR VDC (P17-8) -----	CH1060	+10+/- 2.8

18-025	MSCS MSCE	MSCE	YAW RATE (C164) + 140 001 231 IS INSERTED	KV7054	
		MSCE	DAC 4 OUT VDC (P17-14) -----	GV0103	+14 +/-.6
			YAW RATE GYRO NULL VRMS (P17-3) -----	CH1045	-.15 +/-.04
			YAW RATE ERROR VDC P17-12) -----	CH1050	+0.9 +/-.3
			YAW TOTAL ERROR VDC (P17-8) -----	CH1060	-10+/- 2.8
18-026	MSCS MSCE	MSCE	YAW RATE (C164) + 000 001 231 IS INSERTED	KV7054	
			YAW RATE GYRO PADDED TORQUE - OFF (R185)	KH7025	
18-027			ROLL RATE ---------		
18-028	MSCS	MSCE	ROLL RATE G PADDED TORQUE - ON (R186).	KH7026	
18-029	MSCS MSCE	MSCE	ROLL RATE (C172) - 140 001 222 INSERTED	KV7051	
		MSCE	DAC 1 OUT VDC (P17-13) -----	GV0100	-14+/- .6
			ROLL RATE GYRO NULL VRMS (P17-3) -----	CH2045	+.15 +/-.04
			ROLL RATE ERROR VDC (P17-12) -----	CH2050	-.9 +/- .3
			ROLL TOTAL ERROR VDC (P17-8) -----	CH2060	+10.0 +/-2.8

18-030	MSCS MSCE	MSCE	ROLL RATE (C172) + 140 001 222 IS INSERTED	KV7051	
		MSCE	DAC 1 OUT VDC (P14-13) -----	GV0100	+14 +/-.6
			ROLL RATE GYRO NULL VRMS (P17-3) -----	CH2045	-.15 +/-.04
			ROLL RATE ERROR VDC (P17-12) -----	CH2050	+.9 +/- .3
			ROLL TOTAL ERROR VDC (P17-8) -----	CH2060	-10.0 +/-2.8
18-031	MSCS MSCE	MSCE	ROLL RATE (C172) + 000 001 222 IS INSERTED	KV7051	
		MSCE	ROLL RATE GYRO PADDED TORQUE-OFF (R186)	KH7026	

NOTE

PROCEED WITH TEST AFTER BMAG WARMUP COMPLETE.

18-032 MSCS SC01 PANEL 8
RATE GYRO
ROLL (S8) - BMAG
PITCH (S9) - BMAG
YAW (S10) - BMAG

18-033 MSCS MSCE COMPLETE SCS DATA TABLE V.

-97 00 18-034 MSCS MTPE RATE MIDCOURSE GAIN CHECKS COMPLETE

18-035 RATE GYRO TORQUING (ENTRY MODE)

18-036 MSCS SC01 PANEL 8
ATTITUDE/MONITOR/ENTRY (S1) - ENTRY
ATT DEADBAND (S7) - MAX
RATE GYRO
ROLL (S8) - NORMAL
PITCH (S9) - NORMAL
YAW (S10) - NORMAL

MSCE SCS ENTRY LITE ON CH1102

THE FOLLOWING SEQUENCE TORQUES RATE GYROS TO +/- 4 DEGS/SEC. IN PITCH AND YAW, AND +/- 10 DEG/SEC. IN ROLL.

18-037 MSCS MSCE PITCH RATE GYRO UNPADDED TORQUE - ON (R184) KH7027
YAW RATE GYRO UNPADDED TORQUE - ON (R185) KH7028
ROLL RATE GYRO UNPADDED TORQUE - ON (R186) KH7029

NOTE

1. RATE GYRO READINGS ARE FOR ENGINEERING INFO ONLY.

2. THE C-START VOLTAGES IN SEQUENCES 18-037, -038, -040, -041, -043, AND 18-044 ARE FOR REFERENCE. ADJUST THIS VOLTAGE UNTIL CHXX24 IS WITHIN THE TOLERANCE SPECIFIED. RECORD THE VALUE OF EACH PARAMETER.

18-037 PITCH

18-038	MSCS MSCE	MSCE	PITCH RATE (C180) - 056 001 234 IS INSERTED.	KV7057	
		MSCE	DAC 7 OUT VDC (P17-15) -----	GV0106	-5.6 +/- .5
			PITCH RATE GYRO VRMS (P17-2) -----	CH0024	+.56 +/-.21
			PITCH RATE ERROR VDC (P17-12) -----	CH0050	-3.2 +/- .8
			PITCH TOTAL ERROR VDC (P17-8) -----	CH0060	+4.1 +/-1.1
18-039	MSCS MSCE	MSCE	PITCH RATE (C180) + 056 001 234 IS INSERTED.	KV7057	
		MSCE	DAC 7 OUT VDC (P17-15) -----	GV0105	+5.6 +/- .5
			PITCH RATE GYRO VRMS (P17-2) -----	CH0024	-.56 +/-.21
			PITCH RATE ERROR VDC (P17-12) -----	CH0050	+3.2 +/-.8
			PITCH TOTAL ERROR VDC (P17-8) -----	CH0060	-4.1 +/-1.1
18-040	MSCS MSCE	MSCE	PITCH RATE (C180) + 000 001 234 IS INSERTED	KV7057	

18-040 YAW

18-041	MSCS MSCE	MSCE	YAW RATE (C164) - 056 001 231 IS INSERTED.	KV7054	
		MSCE	DAC 4 OUT VDC (P17-14) -----	GV0103	-5.6 +/- .5
			YAW RATE GYRO VRMS (P17-2) -----	CH1024	.56 +/-.21
			YAW RATE ERROR VDC (P17-12) -----	CH1050	-3.2 +/-.8
			YAW TOTAL ERROR VDC (P17-8) -----	CH1060	+4.1 +/-1.1
18-042	MSCS MSCE	MSCE	YAW RATE (C164) + 056 001 231 IS INSERTED.	KV7054	
		MSCE	DAC 4 OUT VDC (P17-14) -----	GV0103	5.6 +/- .5
			YAW RATE GYRO VRMS (P17-2) -----	CH1024	-.56 +/-.21
			YAW RATE ERROR VDC (P17-12) -----	CH1050	+3.2 +/- .8
			YAW TOTAL ERROR VDC (P17-8) -----	CH1060	-4.1 +/-1.1
18-043	MSCS MSCE	MSCE	YAW RATE (C164) + 000 001 231 INSERTED	KV7054	

	18-043			ROLL ----		
	18-044	MSCS MSCE	MSCE	ROLL RATE (C172) -125 001 222 IS INSERTED.	KV7051	
			MSCE	DAC 1 OUT VDC (P17-13) -----	GV0100	-12.5 +/- .5
				ROLL RATE GYRO VRMS (P17-2) -----	CH2024	+1.4 +/-.35
				ROLL TOTAL ERROR VDC (P17-8) -----	CH2060	+10 +/-2.1
	18-045	MSCS MSCE	MSCE	ROLL RATE (C172) +125 001 222 IS INSERTED.	KV7051	
			MSCE	DAC 1 OUT VDC (P17-13) -----	GV0100	+12.5 +/- .5
				ROLL RATE GYRO VRMS (P17-2) -----	CH2024	-1.4 +/-.35
				ROLL TOTAL ERROR VDC (P17-8) -----	CH2060	-10 +/-2.1
	18-046	MSCS MSCE	MSCE	ROLL RATE (C172) +000 001 222 IS INSERTED	KV7051	
	18-047	MSCS	MSCE	PITCH RATE GYRO UNPADDED TORQUE - OFF (R184)	KH7027	
				YAW RATE GYRO UNPADDED TORQUE - OFF (R185)	KH7028	
				ROLL RATE GYRO UNPADDED TORQUE - OFF (R186)	KH7029	
				RATE GYRO FIELD POWER - OFF (R187)	KH7043	
-96 30 -96 30	18-048	MSCS	MTPE	RATE GYRO TORQUING CHECKS COMPLETE ATTITUDE GYRO TORQUING (ENTRY MODE) ----------		
	18-049	MSCS	SC01	PANEL 8 ATT. DEADBAND (S7) - MAX RATE GYRO, ROLL (S8) - RMAG RATE GYRO, PITCH (S9) - RMAG RATE GYRO, YAW (S10) - RMAG DELTA V (S2) - OFF G AND N/SCS (S3) - SCS ATTITUDE/MONITOR/ENTRY (S1) - ENTRY		

18-049			SCS CH. A AND C ROLL (S11) - OFF	
			SCS CH. B AND D ROLL (S12) - OFF	
			SCS CH. PITCH (S13) - OFF	
			SCS CH. YAW (S14) - OFF	
		MSCE	SCS ENTRY LITE ON	CH1102
18-050	MSCS	MSCE	RECORDER 17	
			1/4 2/1 3/1 4/4 5/4 6/1 7/3 8/1	
			RECORDER 18	
			1/1 2/1 3/4 4/1 5/4 6/2 7/1 8/1	
18-051	MSCS	MSCE	PITCH BMAG TORQUE - ON (R176)	KH7010
			YAW BMAG TORQUE - ON (R177)	KH7011
			ROLL BMAG TORQUE - ON (R178)	KH7012
			THE FOLLOWING SEQUENCES TORQUE BMAG'S TO +/- 10 DEG.	
18-052	MSCS	MSCE	PITCH ATTITUDE (C180)	
	MSCE		45+ 148 1233 IS INSERTED	
			EXECUTE C180	
	MSCE		5 001 500 005 IS INSERTED	
			DO NOT EXECUTE C180	
18-053	MSCS	MSCE	YAW ATTITUDE (C164)	
			45+ 148 1232 IS INSERTED	
			EXECUTE C164	
	MSCE		5 001 500 005 IS INSERTED	
			DO NOT EXECUTE C164	
18-054	MSCS	MSCE	ROLL ATTITUDE (C172)	
	MSCE		45+ 148 1223 IS INSERTED	
			EXECUTE C172	
	MSCE		5 001 500 005 IS INSERTED	
			DO NOT EXECUTE C172	

18-054 NOTE

TIME CRITICAL SEQUENCE FOLLOWS. MSCE STAND BY TO VERIFY SIGNAL AFTER STIMULUS IS APPLIED

18-055 MSCS SC01 PANEL 8 UNCAGE BMAG'S
ROLL RATE GYRO (S8) - NORMAL
PITCH RATE GYRO (S9) - NORMAL
YAW RATE GYRO (S10) - NORMAL

18-056 MSCS MSCE EXECUTE C180
EXECUTE C164
EXECUTE C172

18-057 MSCS	MSCE	PITCH ATTITUDE GYRO (TM) (P17-5)	VRMS -----	CH0075	-5 +/-.6
		PITCH TOTAL ERROR (P17-8)	VDC -----	CH0060	-11.4 +/-2.3
		YAW ATTITUDE GYRO (TM) (P17-5)	VRMS -----	CH1075	-5 +/-.6
		YAW TOTAL ERROR (P17-8)	VDC -----	CH1060	-11.4 +/-2.3
		ROLL ATTITUDE GYRO (TM) (P17-5)	VRMS -----	CH2075	-5 +/-.6
		ROLL TOTAL ERROR (P17-8)	VDC -----	CH2060	-11.8 +/-2.4

18-058 MSCS SC01 PANEL 8 CAGE BMAG'S
ROLL RATE GYRO (S8) - BMAG
PITCH RATE GYRO (S9) - BMAG
YAW RATE GYRO (S10) - BMAG

18-059 MSCS MSCE PITCH ATTITUDE (C180)
MSCE 45- 148 1233 IS INSERTED
EXECUTE C180
MSCE 5 001 500 005 IS INSERTED
DO NOT EXECUTE C180

18-060 MSCS MSCE YAW ATTITUDE (C164)
MSCE 45- 148 1232 IS INSERTED
EXECUTE C164
MSCE 5 001 500 005 IS INSERTED
DO NOT EXECUTE C164

18-060			ROLL ATTITUDE (C172) 45- 148 1223 IS INSERTED EXECUTE C172		
		MSCE	5 001 500 005 IS INSERTED DO NOT EXECUTE C172		
18-061	MSCS	SC01	UNCAGE BMAG'S PANEL 8 ROLL RATE GYRO (S8) - NORMAL PITCH RATE GYRO (S9) - NORMAL YAW RATE GYRO (S10) - NORMAL		
18-062	MSCS	MSCE	EXECUTE C180 EXECUTE C164 EXECUTE C172		
18-063	MSCS	MSCE	PITCH ATTITUDE GYRO (TM) (P17-5) -----	VAC	CH0075 5.0 +/- .6
			PITCH TOTAL ERROR (P17-8) -----	VDC	CH0060 11.4 +/-2.3
			YAW ATTITUDE GYRO (TM) (P17-5) -----	VAC	CH1075 5.0 +/- .6
			YAW TOTAL ERROR (P17-8) -----	VDC	CH1060 11.4 +/-2.3
			ROLL ATTITUDE GYRO (TM) (P17-5) -----	VAC	CH2075 5.0 +/- .6
			ROLL TOTAL ERROR (P17-8) -----	VDC	CH2060 11.8 +/-2.4
18-064	MSCS	SC01	CAGE BMAG'S PANEL 8. ROLL RATE GYRO (S8) - BMAG PITCH RATE GYRO (S9) - BMAG YAW RATE GYRO (S10) - BMAG		
18-065	MSCS	MSCE	PITCH BMAG TORQUE - OFF (R176)		KH7010
			YAW BMAG TORQUE - OFF (R177)		KH7011
			ROLL BMAG TORQUE - OFF (P178)		KH7012
-96 00 18-066	MSCS	MTPE	ATTITUDE GYRO TORQUING (ENTRY GAIN) CHECK COMPLETE		

-96 00 18-066 BMAG DRIFT TEST

18-067 MSCS SC01 PANEL 8
ATT. DEADBAND (S7) - MIN
RATE GYRO, ROLL (S8) - BMAG
RATE GYRO, PITCH (S9) - BMAG
RATE GYRO, YAW (S10) - BMAG
G AND N/SCS (S3) - SCS
ATTITUDE/MONITOR/ENTRY (S1) - ATTITUDE
SCS CH. A AND C ROLL (S11) - OFF
SCS CH. B AND D ROLL (S12) - OFF
SCS CH. PITCH (S13) - OFF
SCS CH. YAW (S14) - OFF
MSCF SCS ATTITUDE LITE ON CH1101

18-068 MSCS MSCF RECORDER 17
1/4 2/1 3/4 4/4 5/4 6/1 7/3 8/4

RECORDER 18
1/1 2/1 3/4 4/4 5/4 6/2 7/1 8/1

RECORDER 21
5/3 6/3

RECORDER 22
5/2 6/2 7/2 8/2

18-069 MSCS MSCF RECORDER 16 AT 5 MM/SEC.
RECORDERS 17, 18 AND 19 AT 2 MM/SEC.
ANNOTATE

NOTE
TIMED SEQUENCE FOLLOWS..

18-070 MSCS SC01 UNCAGE BMAG'S AND GIVE MSCE MARK.
PANEL 8
ROLL RATE GYRO (S8) - NORMAL
PITCH RATE GYRO (S9) - NORMAL
YAW RATE GYRO (S10) - NORMAL

MSCF RECORD VALUES 5 SEC'S AFTER UNCAGE.
START TIMING.
PITCH TOTAL ERROR VDC CH0060
(P17-8) -----

YAW TOTAL ERROR VDC CH1060
(P17-8) -----

ROLL TOTAL ERROR VDC CH2060
(P17-8) -----

18-071 MSCE

AT END OF 4 MINUTES
RECORD THE FOLLOWING..

PITCH TOTAL ERROR (P17-8) _____ VDC CH0060

YAW TOTAL ERROR (P17-8) _____ VDC CH1060

ROLL TOTAL ERROR (P17-8) _____ VDC CH2060

NOTE

TOLERANCES FOR BMAG DRIFT
HAVE BEEN CALCULATED TO
INCLUDE EARTH RATE. S/C
IS ASSUMED TO HAVE X AXIS
VERTICAL +/- 2 DEGREES
AND -Z AXIS ORIENTATED
ON AN AZIMUTH OF 90 DEGREES
TRUE +/- 2 DEGREES.
CALCULATIONS TO BE MADE AFTER TEST

18-072 MSCS SC01

CAGE BMAG'S
PANEL 8
ROLL RATE GYRO (S8) - BMAG
PITCH RATE TYRO (S9) - BMAG
YAW RATE GYRO (S10) - BMAG

18-073

DRIFT CALCULATIONS

PITCH -1.42 X (CHANGE IN CH0060) -13.20
= DEG/HR DRIFT
YAW -1.42 X (CHANGE IN CH1060)
= DEG/HR DRIFT
ROLL -1.40 X (CHANGE IN CH2060) -7.22
= DEG/HR DRIFT

DRIFT

PITCH _____ DEG/HR 2.8 MAX

YAW _____ DEG/HR 2.8 MAX

ROLL _____ DEG/HR 2.8 MAX

95 45	18-074 MSCS	MTPE	1. DRIFT TEST COMPLETE	
			2. SEND MSPS AND SSMT TO CH 225 TO SUPPORT SCS DURING GIMBALING TEST.	
			3. PUT ENTRY BATTS ON MAIN BUS.	
	18-075 MTPE	MSCS	ENTRY BATTS ON MAIN BUS	
			PITCH TVC TEST	
	18-076 MSCS	MSCE	RECORDER 17 1/2 2/2 3/1 4/3 5/2 6/2 7/3 8/2	
			RECORDER 18 1/2 2/2 3/2 4/2 5/2 6/2 7/2 8/2	
			ANNOTATE RECORDERS	
	18-077 MSCS	SC01	PANEL 8 ATT DEADBAND (S7) - MIN RATE GYRO, ROLL (S8) - RMAG RATE GYRO, PITCH (S9) - RMAG RATE GYRO, YAW (S10) - RMAG DELTA V (S2) - DELTA V G AND N/SCS - SCS A/M/E (S1) - ATTITUDE SCS CH A AND C ROLL (S11) - OFF SCS CH B AND D ROLL (S12) - OFF SCS CH PITCH (S13) - OFF SCS CH YAW (S14) - OFF PANEL 24 TVC 1 PWR (S14) - AC1 TVC 2 PWR (S15) - AC1	
		MSCE	SCS DELTA V LITE ON	CH1100
	18-078 MSCS	MSCE	ENGINE IGNITION (R169) - ON	KH7107
			PITCH TVC INTEGRATOR CUTOUT - ON (R169)	KH7085
			YAW TVC INTEGRATOR CUTOUT - ON (R170)	KH7076
		MSCA	ENGINE IGNITION LITE ON	CH0214
			P AND Y AUTO INTERRUPTS ON	CH0217 CH1217

18-079	MSCS	SC01	PANEL 6 ADJUST PITCH AND YAW GIMBAL THUMBWHEELS TO OBTAIN 0.0 +/- 0.1 VDC AT TOTAL ERROR POINT.			
18-080	MSCS	MSCE	PITCH TOTAL ERROR NULL (P18-14)	VDC	CH0613	0.0+/- 0.1
			YAW TOTAL ERROR NULL (P18-14)	VDC	CH1613	0.0+/- 0.1
18-081	MSCS	SC01	PANEL 25 SPS GIM MOT 1 PITCH BAT A (CB26) - CLOSED			
			SPS GIM MOT 1 YAW BAT A (CB24) - CLOSED			
18-082	MSCS	SEMT	S14A1 PWR DIST BOX REMOTE SENSE BUS B (CB9) - CLOSED			
	MSCE		TVC TRANSFER LITES ON		CH0209 CH1209	
18-083	MSCS	SSMT	VERIFY AREA CLEAR TO GIMBAL			
18-084	MSCS	MSPS	RECORD TIMES			
18-085	MSCS	SC01	PANEL 3 SPS GIM MOT 1 PITCH (S3) - START THEN ON EST			
			SPS GIM MOT 1 YAW (S1) - START THEN ON EST			
	MSCS		TVC TRANSFER LITES OFF		CH0209 CH1209	

NOTE

ALLOW ENGINE TO POSITION

18-086	MSCS	SC01	PANEL 3 SPS GIM MOT 1 PITCH (S3) - OFF _____ EDT		
			SPS GIM MOT 1 YAW (S1) - OFF _____ EDT		
		SSMT MSCE	GIMBAL MOTORS HAVE STOPPED TVC TRANSFER LITES ON	CH0209 CH1209	
		MSPS	GIMBAL MOTOR RUN TIME P1 _____ SEC Y1 _____ SEC		
18-087	MSCS	SC01	PANEL 25 SPS GIM MOT 1 PITCH BATT A (CB26)-OPEN SPS GIM MOT 1 YAW BATT A (CB24) - OPEN		
18-088	MSCS	SSET	S14A1 PWR DIST BOX REMOTE SENSE BUS B (CB9) - OPEN		
		MSCE	TVC TRANSFER LITES OFF	CH0209 CH1209	
18-089	MSCS	MSCE	APPLY SIMULATED PITCH RATE OF +1 DEG/SEC AS FOLLOWS..		
			PITCH RATE G SIM INJECT - ON (R184)	KH7045	
			PITCH RATE (C180) -072 00 1233 IS INSERTED	KV7057	
			DAC 6 OUT _____ VDC (P18-12)	GV0105	-7.2 +/-0.6
			PTVC TOTAL ERROR NULL _____ VDC (P18-14)	CH0613	1.6+/- .5
			PTVC DIFF CLUTCH _____ AMPS (P18-22)	CH0047	.265 +/- .085
			PITCH RATE G SIM INJECT - OFF (R184)	KH7045	
18-090	MSCS	SC01	PANEL 25 SPS GMBL MOT 1 PITCH BATT A (CB26) - CLOSED		

18-091	MSCS	SSET	S14A1 PWR DIST BOX REMOTE SENSE BUS B (CB9) - CLOSED		
	MSCE		TVC TRANSFER LITES ON	CH0209 CH1209	
18-092	MSCS	MSCE	APPLY SIMULATED ATTITUDE INPUT OF -1.89 DEG (+4.1 VDC) AS FOLLOWS.. PITCH BMAG SIM - ON (R176)	KH7020	
			PITCH BMAG SIM HI (R171) - ON		
			PITCH RATE (C180) +041 00 1234 IS INSERTED	KV7057	
			DAC 7 OUT VDC (P18-12) -----	GV0106	4.1+/- .4
			PTVC TOTAL ERROR (P18-13)	CH0413	-10.67 +/-.82
			PTVC DIFF CLUTCH AMPS (P18-22) -----	CH0047	+.401 MIN
			PITCH BMAG SIM - OFF (R176)	KH7020	
			PITCH BMAG SIM HI (R171) - OFF		
18-093	MSCS	SC01	PANEL 25 SPS GMBL NO 1 PITCH BATT A CB26) - OPEN		
18-094	MSCS	SSET	S14A1 PWR DIST BOX REMOTE SENSE BUS B (CB9) - OPEN		
	MSCE		TVC TRANSFER LITES OFF	CH0209 CH1209	
18-095	MSCS	MSCE	PITCH RATE (C180)	KV7057	
	MSCE		+000 00 1233 IS INSERTED		
			PITCH RATE (C180)	KV7057	
	MSCE		+000 00 1234 IS INSERTED		
18-096			YAW TVC TEST ----------		
18-097	MSCS	MSCE	RECORDER 17 SET SWITCHES AS FOLLOWS.. 1/3 2/3 3/3 4/3 5/3 6/3 7/3 8/1		
			RECORDER 18 SET SWITCHES AS FOLLOWS.. 1/2 2/3 3/3 4/3 5/3 6/3 7/3 8/3		
			ANNOTATE RECORDERS		

18-098	MSCS	MSCE	APPLY SIMULATED YAW RATE OF +1 DEG/SEC		
			YAW RATE G SIM INJECT - ON (R185)	KH7046	
			YAW RATE (C164)	KV7054	
		MSCE	-15 100 1232 IS INSERTED		
			DAC 5 OUT VDC (P18-12) -----	GV0104	-15.1 +/-1.2
			YTVC TOTAL ERROR NULL VDC (P18-14) -----	CH1613	1.6+/- 0.5
			YTVC DIFF CLUTCH AMPS (P18-22) -----	CH1047	-.265 +/- .085
18-099	MSCS	MSCE	YAW RATE G SIM INJECT - OFF (R185)	KH7046	
18-100	MSCS	SC01	PANEL 25 SPS GIM MOT 1 YAW MN A (CB24) - CLOSED		
18-101	MSCS	SSET	S14A1 PWR DIST BOX REMOTE SENSE BUS B (CB9) - CLOSED		
		MSCE	TVC TRANSFER LITES ON	CH0209 CH1209	
18-102	MSCS	MSCE	APPLY SIMULATED ATTITUDE INPUT OF -1.89 DEG (+4.1 VDC) AS FOLLOWS..		
			YAW BMAG SIM - ON (R177) YAW BMAG SIM HI (R171) - ON	KH7021	
			YAW RATE (C164)	KV7054	
		MSCE	+04 100 1231 IS INSERTED		
		MSCE	DAC 4 OUT VDC (P18-11) -----	GV0103	+4.1 +/-0.4
			YTVC TOTAL ERROR VDC (P18-13) -----	CH1413	-10.67 +/- 0.82
			YTVC DIFF CLUTCH AMPS (P18-22) -----	CH1047	.401 MIN
			YAW BMAG SIM - OFF (R177) YAW BMAG SIM HI (R171) - OFF	KH7021	

18-103	MSCS	SC01	PANEL 25 SPS GIM MOT YAW 1 BATT A (CB24) - OPEN	
18-104	MSCS	SSET	S14A1 PWR DIST BOX REMOTE SENSE BUS B (CB9) - OPEN	
	MSCE		TVC TRANSFER LITES OFF	CH0209 CH1209
18-105	MSCS	MSCE	YAW RATE (C164) +00 000 1231 IS INSERTED	KV7054
			YAW RATE (C164) +00 000 1232 IS INSERTED	KV7054
			PTVC INTEGRATOR CUTOUT - OFF (R169)	KH7085
			YTVC INTEGRATOR CUTOUT - OFF (R170)	KH7076
			ENGINE IGNITION - OFF (R169)	KH7107
	MSCE		ENGINE IGNITION LITE OFF P AND Y AUTO INTERRUPTS OFF	CH0214 CH0217 CH1217
18-106	MSCS	SC01	PANEL 8 DELTA V (S2) - OFF ATT/MON/ENTRY (S1) - MONITOR	
	MSCE		MONITOR MODE LITE ON	CH0103

18-106 GIMBAL POSITION SETUP

18-107 MSCS SC01
MSCE
PANEL 6
SET GIMBAL POSITION THUMBWHEELS TO FLIGHT VALUES AT MSCE DIRECTION

PITCH THUMBWHEEL +1.5 DEGREES

MSCE	PTVC MANUAL TRIM (P18-23)	VDC -----	CH0053	3.3+/- 0.9

YAW THUMBWHEEL +5.24 DEGREES

	YTVC MANUAL TRIM (P18-23)	VDC -----	CH1053	2.9+/- 0.9

18-108 MSCS SC01 SEAL THUMBWHEEL WITH WHITE FLIGHT COMPATIBLE TAPE. WRITE THUMBWHEEL SETTING ON TAPE.

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NAR QC NASA QC

18-109 MSCS SC01
PANEL 24
TVC 1 PWR (S14) - OFF
TVC 2 PWR (S15) - OFF

·95 30 18-110 MSCS MTPE
1. SCS TEST COMPLETE
2. GIMBALING COMPLETE.
3. TAKE ENTRY BATTS OFF MAIN BUS
4. READY FOR G AND N/SCS I/F TEST.

18-111 MSCS MSPS
SSMT
SW TO CH 222

-12 30 19-000

SCS TEST - COUNT

NOTE

SCS TEST OPERATIONS DURING COUNT CONSIST OF SYSTEM TURN ON PER SEQUENCE 10. THIS SECTION IS RESERVED FOR FUTURE USE.

20-000 GUIDANCE AND NAVIGATION TEST - PRECOUNT

20-001 MGNS ALL VERIFY ON STATION
MGNR
MGNL
SC02
MNQC

-10045 20-002 MGNS SC02 PANEL 14
UPTEL (S1) - ACCEPT

PANEL 105
SLAVE TELESC (S14) - ST LOS (UP)
ZERO OPTICS/MAN/COMP (S11) - ZERO OPTICS
OPTICS MODE (S15) - DIRECT
CONTROLLER SPEED (S3) - LO
IMU TEMP MODE (S16) - AUTO OVERRIDE
ATTITUDE IMPULSE ENABLE (S10) - OFF
POWER AND BRIGHTNESS (S18) - MED
CONDITION LAMP - ON
TRACKER PWR - OFF
PANEL BRIGHTNESS - MAX

PSAAM
ACCEL MONITOR SW - OFF

PANEL 25
G AND N SYNC (S1) - OFF

PANEL 101
TRANSFER (S4) - MANUAL

PANEL 107
AGC MODE ON

20-003 MGNS MGNL EVENT REC 14, 15, 25 2MM/SEC
REC 26 2 MM/SEC
ALL SWITCH POSITIONS TO 1

20-004 MGNS SC02 PANEL 22
G AND N LIGHTING AC1 (CB93) -CLOSED
G AND N LIGHTING AC2 (CB62) -CLOSED
G AND N COMPUTER MN A (CB57) -
CLOSED
G AND N COMPUTER MN B (CB56) -
CLOSED
IGNORE ALARMS
TIME Z

MGNL 28 CMC ON CG1523 15C02
+13 CMC VDC (P3-8) CG1020 13+/-
----- 1.3
+13 CMC NOISE RMS (P3-8R) CG1021 0 +/-
----- .65
+3 CMC VDC (P3-9) CG1030 3+/-
----- 1.12
+3 CMC NOISE RMS (P3-9) CG1031 0 +/-
----- .65
+28 CMC VDC (P3-4) CG1520 27.5
----- +/- 3
+28 CMC NOISE RMS (P3-4) CG1521 0 +/-
----- .7

20-005 MGNS SC02 PANEL 14
ADJUST BRIGHTNESS AS REQUIRED
UPTEL (S1) - ACCEPT

20-006 MGNS SC02 PANEL 14 DSKY INSERT
ERROR RESET
V36
E

MGNR P00
PROGRAM ALARM ON
PGNS ON

20-007 MGNS SC02 INSERT
ERROR RESET

20-008 MGNS MGNR VERIFY LIFTFLAG ON (P6-6)
VERIFY S-IVB SM SEP FLAG ON (P6-12)

20-009 MGNS SC02 PANEL 22
G AND N IMU HTR MNA (CB61) - CLOSED
G AND N IMU HTR MNB (CB60) - CLOSED

Z TIME

-10040 222 20-010 MGNS MTPE WARMUP STARTED, CONTINUING WITH AGC
TESTS

20-010

	MGNL		IMU STANDBY LITE ON	CG1513	15C05
			2V 3200 VRMS (P3-20)	CG1301	3.5 +/- 0.7
			+28 STDBY VDC (P3-3)	CG1510	27.5 +/- 3
			+28 STDBY VRMS NOISE (P3-3)	CG1511	0 +/- .7
20-011	MGNS	MGNL	FOR 1 HR AFTER HTR PWR ON MONITOR AND RECORD		
			IRIG T (P3-20)		
			MAX F MIN F	CG2301	138.3 MAX
					128.6 MIN
			PIPA T (P3-19)		
			MAX F MIN F	CG2300	134.8 MAX
					125.1 MIN
			IMU HTR CURRENT AMP (P3-15)	CG2302	1.7MAX
			T/C BR VDC (P3-17)	CG2304	
		MGNL	AFTER 1 HOUR RECORD		
			TRIG T (P3-20)	CG2301	130+/- 2
			PIPA T (P3-19)	CG2300	130+/- 2
			IMU HTR AMP (P3-5)	CG2302	1.7MAX
20-012	MGNS	MACE	REQUEST CG1202 AND CG1203 BE PATCHED TO SUPPLEMENTAL RECORDER TO SUPPORT G AND N OPER POWER ON IN APPROX 2 HR.		
20-013	MGNS	MGNR	VERIFY QC SEAL ON TAPE CANISTER INTACT. K14B LOAD TAPE F04C0-17-K00012-XX		
			NAR QC NASA QC		
20-014	MGNS	MGNR	START TAPE		
	MGNR		TAPE STOP		
			P00 (07-14)		
			PROGRAM ALARM ON	CG5020	
			PGNS LITE ON	CG5005	

	20-015	MGNS	MGNR	K148 ERROR RESET VERIFY LIFT FLAG ON (P6-6) VERIFY S-IVB SM SEP FLAG ON (P6-12)
	20-016	MGNS MGNR	MGNR	START TAPE (AGC SELF CHECK) TAPE STOP R1, R2, R3 INCREMENTING POSITIVE, WAIT 3 MIN. (APPROXIMATELY) ALLOW TEST TO RUN UNTIL R3 = 00007 (P7-17)
222	20-017	MGNS	MTPE	STARTING AGC OP TEST AGC OP TEST ----------
	20-018	MGNS	MGNR	K148 INSERT V57 E 00007 E
	20-019	MGNS	SC02	OBSERVE PANEL 14 DSKY
			MGNR	OBSERVE ON CRT (P7-15, 16, 17) DISPLAY 9 THROUGH 0 99999 88888 77777 66666 55555 44444 33333 22222 11111 00000 BLANK - +
			MGNR	CHECK FAIL LITE ON KEY RELEASE LITE ON TM FAIL (P7-21) ON PROGR. ALARM LITE ON
	20-020	MGNS	SC02	PANEL 14 DSKY INSERT KEY RELEASE ERROR RESET

CG5023
CG5027

20-021 DSKY PUSHBUTTON CHECK.

20-022	MGNS	SC02	PANEL 106 DSKY INSERT V25 N01 E 1744 CLEAR 1745 E +00123 E -00456 E -00789 E
	MGNR		R1 = +00123 R2 = -00456 R3 = -00789
20-023	MGNS	SC02	PANEL 106 DSKY INSERT V05 N01 E 01745 E
	MGNR		R1 = 00024 R2 = 77664 R3 = 77576
20-024	MGNS	SC02	PANEL 14 DSKY INSERT V25 N01 E 1744 CLEAR 1745 E +00123 E -00456 E -00789 E
	SC02		R1 = +00123 R2 = -00456 R3 = -00789

20-025 MGNS SC02 PANEL 14 DSKY INSERT
V05 N01
E
1745
E

SC02
R1 = 00024
R2 = 77664
R3 = 77576

UPLINK AND DOWNLINK CK

20-026 MGNS MGNR K148 INSERT
V25 N01
E
1751
E
0
E
77777
E
7254
E
DOWNLINK DISPLAY
V05 N01
E
1751
E

MGNR
R1 = 00000 (P7-15)
R2 = 77777 (P7-16)
R3 = 07254 (P7-17)

20-026 BANK SUM CHECK

20-027	MGNS	MGNR	K148 INSERT V36 E	
		MGNR	PROG ALARM ON LIFT FLAG ON (P6-6) S-IVB SM SEP FLAG ON (P6-12)	CG5020
20-028	MGNS	MGNR	K148 INSERT ERROR RESET V56 E	
20-029	MGNS	MGNR	VERIFY BANK SUM DATA TABLE	
			NOTE WAIT 10 SECONDS BETWEEN BANKS	
20-030	MGNS	MGNR	K148 INSERT PROCEED TO NEXT BANK V33 E	
			REPEAT THE PRECEDING STEP UNTIL R2 = 00034	

20-030

BANK SUM DATA.

BANK NO.	R1	R2	R3
1	00001	00001	41444
2	00002	00002	64000
3	00003	00003	70243
4	00004	00004	46717
5	00005	00005	72442
6	00006	00006	72114
7	00007	00007	76351
10	00010	00010	76777
11	00011	00011	72542
12	00012	00012	61061
13	00013	00013	40210
14	00014	00014	71075
21	77756	00021	05320
22	00022	00022	75452
23	00023	00023	50424
24	00024	00024	43052
25	00025	00025	61003
26	00026	00026	45517
27	00027	00027	66062
30	00030	00030	66010
31	00031	00031	71506
32	00032	00032	50116
33	00033	00033	60133
34	00034	00034	60502

20-031 MGNS MGNR K148 INSERT
TERMINATE BANK SUM
V34
E

20-031 C-RELAY CHECK

20-032 MGNS SC02 VERIFY FOLLOWING LITES ON PANEL 103 MOMENTARILY ON DURING THIS TEST..

IMU FAIL
CDU FAIL
ACCEL FAIL
ZERO ENCODE

20-033 MGNS MGNR K148 INSERT
DSKY C-RELAY TEST ROUTINE
V57
E
6
E

MGNR PROGRAM 07 (P7-14)
AFTER APPROX 1 MIN, CONDITION LAMPS WILL FLASH

R3 = 00007 (P7-17)
P00 (PG-7-14)
NO PROGRAM ALARMS

20-033 AGC ALARMS AND INTERRUPTS TEST

NOTE
DISREGARD PROGRAM ALARM, TC TRAP AND RUPT LOCK IN THIS TEST UNLESS NOTED OTHERWISE

20-034	MGNS	MGNR	K148 VERIFY QC SEAL ON TAPE CANISTER INTACT. LOAD TAPE NO. F04C017-K00020-XX ------ ------- NAA QC NASA QC
20-035	MGNS	MGNR	START TAPE
		MGNR	TAPE STOP R1 = 00001 (P7-15)
20-036	MGNS	MGNR	START TAPE
		MGNR	TAPE STOP COMPUTER ACTIVITY (P7-13) ON (APPROX 10 SEC) COMPUTER ACTIVITY LITE ON CG5021
20-037	MGNS	MGNR	START TAPE
		MGNR	TAPE STOP R1 = 00002 (P7-15)
20-038	MGNS	MGNR	START TAPE
		MGNR	TAPE STOP RUPT LOCK LITE ON CG5028 PGNS LITE ON CG5005 DISREGARD OTHER ALARMS
20-039	MGNS	SC02	DSKY INSERT ERROR RESET

20-040	MGNS	MGNR	START TAPE	
	MGNR		TAPE STOP R1 = 00003 (P7-15)	
20-041	MGNS	MGNR	START TAPE	
	MGNR		TAPE STOP RUPT LOCK LITE ON PGNS LITE ON DISREGARD OTHER ALARMS	 CG5028 CG5005
20-042	MGNS	SC02	DSKY INSERT ERROR RESET	
20-043	MGNS	MGNR	START TAPE	
	MGNR		TAPE STOP R1 = 00004 (P7-15)	
20-044	MGNS	MGNR	START TAPE	
	MGNR		TAPE STOP TC TRAP ON PGNS LITE ON DISREGARD OTHER ALARMS	 CG5029 CG5005
20-045	MGNS	SC02	DSKY INSERT ERROR RESET	
20-046	MGNS	MGNR	START TAPE	
	MGNR		TAPE STOP R1 = 00005 (P7-15)	
20-047	MGNS	MGNR	START TAPE	
	MGNR		TAPE STOP TC TRAP ON PGNS LITE ON DISREGARD OTHER ALARMS	 CG5029 CG5005
20-048	MGNS	SC02	DSKY INSERT ERROR RESET	
20-049	MGNS	MGNR	START TAPE	
	MGNR		TAPE STOP R1 = 0006 (P7-15)	

20-050	MGNS	MGNR	START TAPE	
	MGNR		TAPE STOP G + N FAIL LITE ON (MOMEN)	CG5022
	SC02		PGNS LITE ON (WITHIN 3 SEC) DISREGARD OTHER ALARMS	CG5005
20-051	MGNS	SC02	DSKY INSERT ERROR RESET	
20-052	MGNS	MGNR	START TAPE	
	MGNR		TAPE STOP R1 = 00007 (P7-15)	
20-053	MGNS	MGNR	START TAPE	
	MGNR		TAPE STOP CHECK FAIL ON PGNS LITE ON DISREGARD OTHER ALARMS	 CG5023 CG5005
20-054	MGNS	MGNR	K148 INSERT ERROR RESET	
20-055	MGNS	MGNR	START TAPE	
	MGNR		TAPE STOP R1 = +00008 (P7-15)	
20-056	MGNS	MGNR	START TAPE	
	MGNR		TAPE STOP PGNS LITE ON PROGRAM ALARM LITE ON DISREGARD OTHER ALARMS	 CG5005 CG5020
20-057	MGNS	SC02	DSKY ERROR RESET	
	MGNR		PGNS LITE OFF PROG ALARM LITE OFF	
20-058	MGNS	MGNR	START TAPE	
	MGNR		TAPE STOP R1 = +00009 (P7-15)	

20-059	MGNS	MGNR	START TAPE	
	MGNR		TAPE STOP	
			PGNS LITE ON	CG5005
			T/M FAIL ON (P7-21)	
20-060	MGNS	MGNR	K148 INSERT	
			ERROR RESET	
			T/M FAIL OFF (P7-21)	
20-061	MGNS	MGNR	START TAPE	
	GNR		TAPE STOP	
			R1 = +00010	
20-062	MGNS	MGNR	START TAPE	
	MGNR		TAPE STOP	
			PARITY FAIL ON	CG5025
			PGNS LITE ON	CG5005
			DISREGARD OTHER ALARMS	
20-063	MGNS	SC02	PANEL 106 DSKY INSERT	
			ERROR RESET	
20-064	MGNS	SC02	PANEL 106 DSKY INSERT	
			TEST ALARM	
	MGNR		COUNTER FAIL LITE ON	CG5026
			TC TRAP LITE ON	CG5029
			RUPT LOCK LITE ON	CG5028
			PARITY FAIL LITE ON	CG5025
	SC02		PANEL 103	
			PGNS LITE ON	
20-065	MGNS	SC02	PANEL 106 DSKY INSERT	
			ERROR RESET	
	SC02		ALL LITES OFF	
20-066	MGNS	MGNR	VERIFY LIFT FLAG ON (P6-6)	
			VERIFY S-IVB SM SEP FLAG ON (P6-12)	

	20-067	MGNS	SC02	PANEL 105 CHECK COND (S1) - PUSH
			SC02	PANEL 103 ALL LITES ON EXCEPT IMU DELAY MASTER ALARM
			MGNS SC02	PANEL 105 CHECK COOLANT (S2) - ON
			SC02	COOLANT DISCONNECT INSPECTION LITE ON
			MGNS SC02	CHECK IMU QD'S FOR COOLANT LEAKS VERIFY NO LEAKS.
				PANEL 105 CHECK COOLANT (S2) - OFF
			SC02	COOLANT DISCONNECT INSPECTION LITE OFF
			MGNS SC02	PANEL 105 PRESS CHECK MODE LAMPS
				PANEL 101 ALL MODE LAMPS ON
				PANEL 105 VARY PANEL BRIGHTNESS THUMBWHEEL..
				PANEL 101 AND 102 INTENSITY OF LAMP SHALL VARY
	20-068	MGNS	MGNR	K148 INSERT (INITIALIZE AGC SELF CK) V21 N27 E 77777 E
	20-069	MGNS	SC02	ACCEL MON - ACE SELECT
	20-070	MGNS	SC02	RETURN TO 222 AND REPORT
-99 00 222	20-071	MGNS	MTPE	1. AGC OPERATIONAL TEST COMPLETE
				2. PROCEDING WITH AGC CLOCK FREQUENCY TEST
				3. SC02 HAS COMPLETED G AND N SUPPORT

20-072 AGC CLOCK FREQUENCY TEST

NOTE

AGC MUST HAVE BEEN OPERATING AT LEAST 10 MINUTES PRIOR TO START OF THIS TEST.

20-073 MGNS MGNR CONNECT COUNTER TO PIPA HARDLINE TEST POINT 4A3.
COUNTER SETUP
PRESET COUNTER 65536
TIMEBASE - MICROSECONDS
FUNCTION - TIME INTERVAL
MODE - NX PERIOD
SENSITIVITY - 1

20-074 MGNS MGNR PIPA REF - ON (R147) KG7009

20-075 MGNS MGNR 1. ADJUST COUNTER TRIGGER LEVEL AS REQUIRED.
2. REPEAT THE COUNTING CYCLE 20 TIMES (EACH CYCLE WILL LAST APPROXIMATELY 20 SECONDS)
3. CALCULATE THE TIME PER CYCLE FOR THE 20 CYCLES.

20-076 MGNR RECORD THE AVERAGE OF 20 READINGS ----- 20.
480000
+/-
0.
.00004

20-077 MGNS MGNR PIPA REF - OFF (R147) KG7009
DISCONNECT COUNTER

-98 45 222 20-078 MGNS MTPE AGC CLOCK FREQ TEST COMPLETE

20-078 OPERATE POWER ON TEST

CAUTION

VERIFY IMU HTR AND AGC PWR ON AND WARMUP COMPLETE BEFORE CONTINUING.

-98 40 222 20-079 MGNS MTPE READY TO CONTINUE G AND N TEST SEND SCO2 TO 215

20-080 MGNS ALL VERIFY READY TO CONTINUE

MGNR SCO2

MGNL MNQC

20-081 MGNS MACE VERIFY SUPPLEMENTAL RECORDER CG1202
READY TO MONITOR GYRO WHEEL CG1203
RUN-UPTIMES. START RECORDER
AT 5 MM/S, ANNOTATE

CAUTION

VERIFY IMU HTR AND AGC PWR ON AND WARMUP COMPLETE BEFORE CONTINUING TO OPERATE PWR ON TEST.

20-082 MGNS MGNL RECORDER 25 5 MM/SEC
ANOTATE CHARTS
SLIDE CIRCUIT BREAKER GUARD UP

20-083 MGNS SCO2 PANEL 22
G AND N IMU MN A (CB59) - CLOSED
G AND N IMU MN B (CB58) - CLOSED
Z TIME

MGNL IMU DELAY LITE ON FOR APPR CG5008
100 SEC

IMU +28 OPERATE ON CG1503 15C03

20-083 NOTE

ONE OR MORE MODE IND MAY COME ON

28V OPERATE VDC (P3-2)	CG1500	27.5 +/- 3
28V NOISE VRMS (P3-2)	CG1501	+/-0.7 MAX

20-084 MGNS MGNL TRANSIENT ON OG CDU TIME — CG2266

TIME — IMU DELAY OFF

ELAPSED TIME

20-085 MGNS SC02 PANEL 101
COARS ALIGN (S6) - ON

SC02 COARS ALIGN LITE ON

20-086 MGNS MACE STOP SUPPLEMENTAL RECORDER AND STRIP.

20-087 MGNS MGNL SET RECORDER 25 TO 2 MM/SEC

20-088 MGNL

OG CDU IX ERR (P5-18)	CG2266	+/- 2 V MAX
MG CDU IX ERR (P5-18)	CG2236	+/- 2 V MAX
IG CDU 1X ERR (P5-18)	CG2206	+/- 2 V MAX

VERIFY ALL TRANSIENTS DAMPED

20-089 MGNS SC02 PANEL 22
G + N OPTICS MNA (CB55) - CLOSED
G + N OPTICS MNB (CB54) - CLOSED

PANEL 105
1. ZERO OPTICS/MAN/COMP - MAN
2. USE HAND CONTROLLER TO POSITION SHAFT AND 2X TRUNNION CDU TO 0.0 DEG. (PANEL 102)
3. ZERO OPTICS/MAN/COMP - ZERO OPTICS

PANEL 104
VERIFY SHAFT AND TRUN T PAC AT 0 DEG

PANEL 102
VERIFY SHAFT AND 2X-TRUN CDU AT 0.0 DEG

NOTE

VERIFY PWR SUPPLIES WITHIN BLINK LIMITS

20-090 MGNS SC02 PANEL 101
TRANSFER SW - COMPUTER

20-091 MGNL SC02 PANEL 105
IMU TEMP MODE (S16) - EMERGENCY
PANEL 103
IMU TEMP LITE - ON

MGNL	IRIG T (P3-20)	DEG.F.	CG2301	
	PIPA T (P3-19R)	DEG.F.	CG2300	
	HTR AMP (P3-15)	AMPS	CG2302	
	BLWR MA (P3-16)	MA		
	T/C BR (P3-17)	VDC	CG2304	

WAIT ONE HOUR FROM EMERGENCY MODE OR UNTIL IRIG TEMP REACHES 137 DEG.

MGNL	IRIG T (P3-20)	DEG.F.	CG2301	132.8 +/- 2.0
	PIPA T (P3-19)	DEG.F.	CG2300	129.7 +/- 2.

20-092 MGNS SC02 PANEL 105
IMU TEMP MODE (S16) - PROPORTIONAL
(UNTIL IRIG AND PIP TEMP IS
NOMINAL)

20-093 MGNL SC02 PANEL 105
IMU TEMP MODE (S16) - AUTO-OVERRIDE

MGNL	IRIG T		DEG.F.	CG2301	
	(P3-20)	-----			
	PIPA T		DEG.F.	CG2300	
	(P3-19R)	-----			
	HTR AMP		AMPS	CG2302	
	(P3-15)	-----			
	BLWR MA		MA	CG2303	
	(P3-16)	-----			
	T/C BR		VDC	CG2304	
	(P3-17)	---			

WAIT 30 MIN FROM AUTO OVERRIDE

MGNL	IRIG T		DEG.F.	CG2301	133.0
	(P3-20)	-----			136.0
	PIPA T		DEG.F.	CG2300	129.0
	(P3-19R)	-----			131.0
	HTR AMP		AMPS	CG2302	0.55
	(P3-15)	-----			1.41
	BLWR MA		MA	CG2303	0.15
	(P3-16)	-----			0.550
	T/C BR		VDC	CG2304	18.4
	(P3-17)	-----			25.4

20-094 MGNS SC02 SW TO CH 222

-98 30 20-095 MGNS MTPE OPERATE POWER ON TEST
COMPLETE SC02 BACK ON 222

20-095 G+N OPERATIONAL TEST

20-096 MGNS MGNR K148 INSERT
V57
E
4
E

MGNL PROGRAM 07
WAIT 10 MINUTES

20-097 MGNL V06 N66 (FL)
R1 =

R2 =

G VECTOR = R1+XXXXX. R2XXXXX
NOMINAL = +980.00000 +/-
10.0 CM/SEC/SEC

20-098 MGNS MGNR K148 INSERT
V33
E

MGNL R1 =

R2 =

ER = R1XXXXX. R2XXXXX
NOMINAL = 00000.87864 +/-
.05 ERU

20-099 MGNS MGNR K148 INSERT
V34
E
V41 N20
E
0
E
0
E
0
E

MGNL COARS ALIGN ON (P5-2)

20-100 MGNS MGNL

IRIG PWR SUPPLY CHECKS			
+120 (P3-16)	VDC	CG1000	120 +26-8
+120 NOISE (P3-6)	VRMS	CG1001	1.0 MAX
+12 (P3-10)	VDC	CG1003	12 +/- 1.4
+32 (P3-11)	VDC	CG1006	32+3.5 -6.5
PIPA PWR SUPPLY CHECKS			
+120 (P3-7)	VDC	CG1010	120 +25-13
+120 NOISE (P3-3)	VRMS	CG1011	1.0 MAX
+32 (P3-12)	VDC	CG1016	32+3.5 -6.5
-28 ELECT (P3-11)	VDC	CG1101	-28+6.7 -5.7
AGC PWR SUPPLY CHECKS			
+13 (P3-8)	VDC	CG1020	13 +/- 1.5
+13 NOISE (P3-8)	VRMS	CG1021	0.65MAX
+3 (P3-9)	VDC	CG1030	3 +/- 1.12
+3 NOISE (P3-9)	VRMS	CG1031	0.65MAX
.8KC PWR SUPPLIES			
IMU 28 1PCT 0PH (P3-14) VRMS		CG1201	28 +/-1.0
IMU 28 5PCT 90PH (P3-15) VRMS		CG1202	28 +/-1.9
IMU 28 5PCT 0PH (P3-16) VRMS		CG1203	27.5 +/-2.8
CDU 28 5PCT 90PH (P3-17) VRMS		CG1204	28 +/-1.9
OPT 28 1PCT 0PH (P3-18) VRMS		CG1211	28 +/-1.0
OPT 28 5PCT 90PH (P3-19) VRMS		CG1212	28 +/-1.9

20-101 MGNS MGNL 3.2 KC PWR SUPPLIES

MGNL	20V 3200 (P3-24)	VRMS	CG1302	20+/-4.4
	IMU 2 V (P3-20)	VRMS	CG1301	3.5+/-0.7
	+28 VDC CHECKS			
	28 OPER (P3-2)	VDC	CG1500	27.5 +/-3
	28 OPER NOISE (P3-2)	VRMS	CG1501	0.7MAX
	28 STDBY (P3-3)	VDC	CG1510	27.5 +/-3
	28 STBY NOISE (P3-3)	VRMS	CG1511	0.7MAX
	28 AGC (P3-4)	VDC	CG1520	27.5 +/-3
	28 AGC NOISE (P3-4)	VRMS	CG1521	0.7MAX
	28 OPTX (P3-5)	VDC	CG1530	27.5 +/-3
	28 OPTX NOISE (P3-5)	VRMS	CG1531	0.7MAX
	TM REF (P3-12)	VDC	CG1110	2.5 +/-.05
	OPTX 25.6 (P3-22)	VRMS	CG1401	2.5 +/-0.4
	IMU 25.6 (P3-21)	VRMS	CG1400	2.5 +/-0.4

20-102 MGNS MGNL

NOISE PEAK CHECK

+13 AGC PEAKS	OFF	CG1022
+3 AGC PEAKS	OFF	CG1032
+28 BUS 1 PEAKS	OFF	CG1502
+28 BUS 2 PEAKS	OFF	CG1512
+28 BUS 3 PEAKS	OFF	CG1522
+28 BUS 4 PEAKS	OFF	CG1532

20-102

PHASE ANGLE

IMU 1PCT 0PH/5PCT 90PH (P4-13)	DEG	CG1206	-90+/-13
IMU 5PCT 90PH/5PCT 0PH (P4-14)	DEG	CG1207	-90+/-13
IMU 2V/CMC (P4-18)	DEG	CG1306	0+/-12.5
CDU 5PCT 90PH/IMU 1PCT 0PH (P4-15)	DEG	CG1209	-90+/-13
OPTX 1PCT/IMU 5PCT (P4-17)	DEG	CG1220	0.0+/-12.5
OPTX 25.6 IMU 25.6 (P4-19)	DEG	CG1402	0.0+/-32
OPTX 1PCT 0PH/OPTX 5PCT 90PH (P4-16)	DEG	CG1216	-90+/-13

NOTE

THESE MEASUREMENTS FOR ENG. EVAL ONLY.

20-103	MGNS	MGNL	AGC TEMP (P3-21) DEG F	CG4300
			IMU PRESS (P3-14) PSI	CG6000
			PSA TEMP 3 (P3-22) DEG F	CG6020
			PSA TEMP 2 (P3-23) DEG F	CG6021
			PSA TEMP 4 (P3-24) DEG F	CG6022
20-104	MGNS	MGNR	PIPA REF SELECT (R147) ON	KG7009
			ADJUST PHASE TO ZERO	
			REF. SELECT (R147) - OFF	
			X PIPA - ON (R147C)	KG7010
			OBSERVE MODING PATTERN	
			X - PIPA OFF	
			Y PIPA - ON (R147B)	KG7011
			OBSERVE MODING PATTERN	
			Y - PIPA OFF	
			Z PIPA - ON (R147A)	KG7012
			OBSERVE MODING PATTERN	
20-105	MGNS	SC02	PANEL 22	
			OPTICS MN A (CB55) - OPEN	
			OPTICS MN B (CB54) - OPEN	

20-105 STAR LOOP RESPONSE TEST

20-106 MGNS MGNR K148 INSERT
V36
E
ERROR RESET
NO AGC ALARMS
VERIFY LIFT FLAG ON (P6-6)
VERIFY S-IVB SM SEP FLAG ON (P6-12)

20-107 MGNS MGNL C156 INSERT
2010000000
ANNOTATE RECORDER 14

20-108 MGNS MGNR K148 INSERT
V41 N20
E
+00500
E
+00500
E
+00500
E

MGNR COARS ALIGN ON
WAIT 60 SECONDS

20-109 MGNS MGNR K148 INSERT
V41 N20
E
0
E
0
E
0
E

MGNR COARS ALIGN ON
WAIT 60

CAUTION

IF THE TRANSIENT CAUSED BY
THE TRANSITION TO FINE ALIGN
DOES NOT DAMP OUT WITHIN 5
SECONDS SCO? REMOVE IMU
OPERATE POWER AS FOLLOWS..

	20-109		PANEL 22 G AND N IMU MNA (CB59) - OPEN G AND N IMU MNB (CB58) - OPEN	
	20-110 MGNS		VERIFY SC02 STANDING BY FOR NEXT SEQUENCE.	
	20-111 MGNS	MGNR	K148 INSERT V42 E V33	
	20-112 MGNS	MGNL	RECORDER 14 100 MMPS	
	20-113 MGNS MGNR	MGNR	E FINE ALIGN ON	
	20-114 MGNS	MGNL	AFTER TRANSIENT DAMP OUT STOP RECORDER 14 LOOP RESPONSE TIME OG ____ SEC MG ____ SEC IG ____ SEC	 0.8MAX 0.8MAX 0.8MAX
	20-115 MGNS	MGNR	K148 INSERT V40 N20 E WAIT 90 SEC V41 N20 E 0 E 0 E 0 E	
	20-116 MGNS	ALL	SW TO CH 222	
-98 00	20-117 MGNS	MTPE	STAB LOOP RESPONSE TEST COMPLETE ALL PERSONNEL BACK ON CH 222	

21-000 G AND N/SCS INTERFACE TEST

-95 30 225 21-001 MSCS ALL PERSONNEL VERIFY READY TO SUPPORT G AND N/SCS INTERFACE TEST.

SC01
MGNR
MGNS
MSCE
MNQC
MGNL

21-002 MSCS MACE VERIFY SUPPLEMENTAL RECORDERS SET TO MONITOR G AND N/SCS INTERFACE TEST AND START RECORDER PER MSCS AND MGNS DIRECTION

RCDR NO. 1	RCDR NO. 2
CG2209	CH0060
CH0070	CH0067
CG2239	CH1060
CH1070	CG2241
CG2269	CH1067
CH2070	CH2070
CH0413	CH2060
CH1413	CG2271

21-003 MSCS MGNR LOAD G AND N/SCS INTERFACE TAPE NO.
F04C017...K00057XX
START TAPE
STOP TAPE

21-004 MSCS MGNL C156
202 200 0000 IS INSERTED

21-005	MSCS	MSCE	RECORDER 17 1/4 2/1 3/2 4/2 5/4 6/1 7/3 8/3 RECORDER 18 1/4 2/1 3/4 4/4 5/4 6/4 7/4 8/4 START RECORDER 16 AT 5 MM/SEC START RECORDERS 17, 18, 19 AT 2 MM/SEC SEC
21-006	MSCS	SC01	PANEL 8 RATE GYRO, ROLL (S8) - NORMAL RATE GYRO, PITCH (S9) - NORMAL RATE GYRO, YAW (S10) - NORMAL SCS CH A AND C ROLL (S11) - OFF SCS CH B AND D ROLL (S12) - OFF SCS CH PITCH (S13) - OFF SCS CH YAW (S14) - OFF DIRECT RCS (S15) - OFF LIMIT CYCLE (S6) - OFF ATT DEADBAND (S7) - MIN .05 G ENTRY (S5) - OFF LCL VERT (S4) - OFF DELTA V (S2) - OFF G AND N/SCS (S3) - G AND N A/M/E (S1) - ATTITUDE
		MSCE	G + N ATTITUDE LITE ON CH0101
21-007	MSCS	MGNL MGNR	START RECORDER 14 AT 2MM/SEC START TAPE TAPE STOP ZERO ENCODER - ON WAIT 90 SEC. START TAPE TAPE STOP COARSE ALIGN - ON R1 = 77777 (APPROX 5 SEC) START TAPE TAPE STOP FINE ALIGN - ON R1 = 77777 (APPROX 5 SEC)

21-007 NOTE

AFTER TAPE STOP, OBTAIN
READINGS ON MGNS MARK.

21-008 MSCS MGNR ADVANCE TAPE TO +1 DEG R,P,Y ATT CMD

START TAPE
TAPE STOP
ATT CTRL - ON (P5-1)

MGNL ROLL BODY AXIS (P5-5) _____ DEG CG2269

PITCH BODY AXIS (P5-5) _____ DEG CG2209

YAW BODY AXIS (P5-5) _____ DEG CG2239

MSCE ROLL TOTAL ERROR (P17-8) _____ VDC CH2060 10.45 NOM

PITCH TOTAL ERROR (P17-8) _____ VDC CH0060 10.45 NOM

YAW TOTAL ERROR (P17-8) _____ VDC CH1060 10.45 NOM

EVALUATE SCS MEASUREMENT PER
G+N/SCS CHART NO. 1.
ROLL ATT ER (P17-7) _____ DEG CH2070

PITCH ATT ER (P17-7) _____ DEG CH0070

YAW ATT ER (P17-7) _____ DEG CH1070

21-009 MSCS MGNR ADVANCE TAPE TO 0 DEG R,P,Y ATT CMD
START TAPE
TAPE STOP

MGNL COARS ALIGN ON (P5-2)
ROLL BODY AXIS _____ DEG CH2269

PITCH BODY AXIS _____ DEG CG2209

YAW BODY AXIS _____ DEG CH2239

21-009		MSCE	ROLL TOTAL ERROR (P17-8) -----	VDC	CH2060
			PITCH TOTAL ERROR (P17-8) -----	VDC	CH0060
			YAW TOTAL ERROR (P17-8) -----	VDC	CH1060
			EVALUATE SCS MEASUREMENT PER G+N-SCS CHART NO. 1		
			ROLL ATT ERR (P17-7) -----	DEG	CH2070
			PITCH ATT ERR (P17-7) -----	DEG	CH0070
			YAW ATT ERR (P17-7) -----	DEG	CH1070
21-010	MGNS	MGNR	ADVANCE TAPE TO -1 DEG R, P, Y ATT CMD		
			START TAPE		
			TAPE STOP		
		MGNL	ROLL BODY AXIS -----	DEG	CG2269
			PITCH BODY AXIS -----	DEG	CG2209
			YAW BODY AXIS -----	DEG	CG2239
		MSCE	ROLL TOTAL ERROR (P17-8) -----	VDC	CH2060 -10.45 NOM.
			PITCH TOTAL ERROR (P17-8) -----	VDC	CH0060 -10.45 NOM.
			YAW TOTAL ERROR -----	VDC	CH1060 -10.45 NOM.
			EVALUATE SCS MEASUREMENT PER G-N/SCS CHART NO. 1		
			ROLL ATT ERR (P17-7) -----	DEG	CH2070
			PITCH ATT ERR (P17-7) -----	DEG	CH0070
			YAW ATT ERR (P17-7) -----	DEG	CH1070

	21-011	MSCS	MGNR	ADVANCE TAPE TO 0 DEG R, P, Y START TAPE TAPE STOP	
			MGNL	COARS ALIGN - ON (P5-2)	
	21-012	MSCS	SC01	PANEL 8 A/M/E - MONITOR	
		MSCE		MONITOR LITE - ON	CH0103
-95 00	21-013	MSCS	MTPE	G-N/SCS INTERFACE TEST COMPLETE	
-93 00	21-014	MTPE	MSCS MGNS	PROCEED WITH SYSTEM POWER DOWN.	
	21-015	MSCS	SC01	PANEL 16 RCS CMD (S11) - OFF	
				PANEL 24 ROTATION CONTROL PWR (S16) - OFF BMAG PWR (S9) - OFF RATE GYRO PWR (S12) - OFF PARTIAL SCS POWER (S13) - OFF	
				PANEL 25 SCS GROUP 1 AC1 (CB46) - OPEN SCS GROUP 1 AC2 (CB45) - OPEN SCS GROUP 2 AC1 (CB67) - OPEN SCS GROUP 2 AC2 (CB66) - OPEN SCS GROUP 1 MN-A (CB44) - OPEN SCS GROUP 1 MN-B (CB43) - OPEN SCS GROUP 2 MN-A (CB65) - OPEN SCS GROUP 2 MN-B (CB64) - OPEN	
	21-016	MGNS	MGNR	K148 INSERT V41 N20 E -09000 E +00000 E +05700 E	
		MGNL		COARS ALIGN ON WAIT 60 SECONDS DISREGARD PGNS AND PROG ALARM WHEN THEY APPEAR	

21-017 MGNS SC01 PANEL 102 (VERIFY)
OG CDU = 270
IG CDU = 000
MG CDU = 057

PANEL 101
TRANSFER (S4) - MANUAL
COARS ALIGN (S6) - ON
COARS ALIGN LITE ON

PSAAM
ACCEL MONITOR SW - OFF
PANEL 22
G + N IMU MNA (CB59) - OPEN
G + N IMU MNB (CB58) - OPEN

TIME _____ Z

SLIDE B PROTECTIVE COVER

PANEL 22
G AND N IMU HEATER MNA OPEN
G AND N IMU HEATER MNB OPEN

21-018 MGNS SPAD VERIFY PTC HTR PWR
LITE ON
RESET ALARM IF REQ'D
VERIFY HTR CURRENT BEING DRAWN

_____ _____
NAR QC NASA QC

21-019 MGNS SC01 G AND N COMPUTER MNA - OPEN
MNB OPEN
G AND N OPTICS MNA OPEN
MNB OPEN
G AND N LIGHTING AC1 CB OPEN
AC2 CB OPEN

21-020 MGNS ALL SW TO CH 222

21-021 MGNS MTPE G + N POWER DOWN COMPLETE

22-000 G + N TEST - SERVICING OPERATIONS

22-001 MGNS SCO2 VERIFY READY
MGNL
MGNR
MNQC
SCO2

22-002 STANDBY PWR. TURN ON

-49 00 215 22-003 MGNS SCO2 PANEL
SLAVE TELESCOPE (S14) - ST LOS (UP)
ZERO OPTICS/MAN/COMP (S11) - ZERO OPTICS
OPTICS MODE (S15) - DIRECT
POWER AND BRIGHTNESS (S18) - MED
ATTITUDE IMPULSE ENABLE (S10) - OFF
IMU TEMP MODE (S16) - AUTO OVERRIDE
CONDITION LAMPS - ON
CONTROLLER SPEED (S3) - LO
TRACKER POWER - OFF
PANEL BRIGHTNESS - MAX

PSAAM
ACCEL MONITOR SW - OFF

PANEL 101
TRANSFER (S4) - MANUAL

PANEL 25
G AND N SYNC (S1) - OFF

22-004 MGNS MGNL EVENT REC 15 2 MM/SEC

DISREGARD DSKY ALARMS

22-005 MGNS SC02 PANEL 22
G AND N LIGHTING AC1 (CB93) - CLOSED
G AND N LIGHTING AC2 (CB62) - CLOSED
G AND N COMPUTER MNA (CB57) - CLOSED
G AND N COMPUTER MNB (CB56) - CLOSED
TIME Z

22-006 MGNS SC02 PANEL 14
UPTEL (S1) - ACCEPT
ADJUST BRIGHTNESS R1

22-007 MGNS AGC +28 VDC ON CG1523 15C02

22-008 MGNS SC02 PANEL 14 DSKY INSERT
V36
E

MGNR P00 (P7-14)
PROGRAM ALARM ON
PGNS ON

VERIFY LIFT FLAG ON (P6-6)
VERIFY S-IVB SM SEP FLAG ON (P6-12)

22-009 MGNS SC02 PANEL 14
ERROR RESET

22-010 IMU HEATER TRANSFER
---

222 22-011 MGNS MTPE READY FOR HEATER POWER TRANSFER

CAUTION

THE FOLLOWING TRANSFER MUST BE COMPLETED IN 15 MINUTES OR LESS.

222 22-012 MGNS SPAD PTC - OFF.

222 22-013 MGNS LFET RESET ALARM IF NEEDED

22-014 MGNS SC02 PSA TRAY 7 J2
DISCONNECT CABLE 1901529

------ -------
NAR QC NASA QC

CONNECT SHORTING PLUG P/N 1007593-11 AT
TRAY 7 J2

------ -------
NAR QC NASA QC

22-015 MGNS SC02 PANEL 22 PROCEED WITH CAUTION

IMU HTR MNA (CB61) - CLOSED
IMU HTR MNB (CB60) - CLOSED
Z TIME

HEATER TRANSFER COMPLETE

22-016 MGNS SC02 DISCONNECT W001P FROM PSAAM.
REMOVE PSAAM PER C/L 9.5

------ -------
NAR QC NASA QC

22-017 MGNS SC02 PANEL 22
OPTX MNA (CB55) - CLOSED
OPTX MNB (CB54) - CLOSED
PANEL 105
OPTICS SW - MANUAL THEN ZERO OPTICS

MGNL +28 VDC STANDBY LITE ON CG1513 15C05
28 VDC OPTX LITE ON CG1533 15C04

FOR 15 MIN AFTER HTR PWR ON,
MONITOR AND RECORD

22-017	MGNS	MGNL	IRIG T (P3-02) MAX F ----- MIN F ----- PIPA T (P3-19) MAX F ----- MIN F ----- IMU HTR CURRENT ----- AMP (P3-15) IMU BLWR ----- AMP (P3-9)	CG2301 CG2300 CG2302 CG2303	138.3 MAX 128.6 MIN 134.8 MAX 125.1 1.7MAX .5 MAX
22-018	MGNS	MGNR	VERIFY QC SEAL ON TAPE CANISTER IS INTACT. ------ ------- NAA QC NASA QC		
22-019	MGNS	MGNR	K148 LOAD TAPE (F04C017-K000-12-00) START TAPE SECTION 1 ZERO MEMORY		
		MGNR	TAPE STOP P00 (P7-14) PROGRAM ALARM ON PGNS LITE ON		
22-020	MGNS	MGNR	K148 ERROR RESET VERIFY LIFT FLAG ON (P6-6) VERIFY S-IVB SM SEP FLAG ON (P6-12)		
22-021	MGNS	MGNR	START TAPE SECTION 2 AGC SELF CHECK		
		MGNR	TAPE STOP		
22-022	MGNR		R1, R2, R3 INCREMENTING POSITIVE WAIT 3 MIN. (APPROXIMATELY) ALLOW TEST TO RUN UNTIL R3 = 00007 (P7-17)		

-48 45 22-022 AGC OPERATIONAL TEST

22-023 MGNS SC02 PANEL 106 DSKY INSERT
V57
E
7
E

OBSERVE PANEL 14 DSKY

MGNR OBSERVE CRT (P7-14, 15, 16, 17)
DISPLAY 9 THROUGH 0
99999
88888
77777
66666
55555
44444
33333
22222
11111
00000
BLANK
-
+

MGNR CHECK FAIL LITE ON CG5023
KEY RELEASE LITE ON CG5027
PROGR. ALARM LITE ON CG5020
TM FAIL LITE ON (P7-2)

22-024 MGNS MGNR K148 DSKY
ERROR RESET
KEY RELEASE

22-025 MGNS SCO2 PANEL 106 DSKY INSERT
V25N01
E
1744
CLEAR
1745
E
+00123
E
-00456
E
-00789
E

SCO2
R1 = +00123
R2 = -00456
R3 = -00789

22-026 MGNS SCO2 DSKY INSERT
V05N01
E
1745
E
R1 = 00024
R2 = 77664
R3 = 77576

MGNS MGNR K148 INSERT
V25N01
E
1751
E
0
E
77777
E
7254
E
V05N01
E
1751
E

MGNR
R1 = 00000 (P7-15)
R2 = 77777 (P7-16)
R3 = 07254 (P7-17)

22-027 MGNS SCO2 SW TO CH 222

22-027 BANK SUM CHECK

22-028 MGNS MGNR K148 INSERT
V36
E
PROGRAM ALARM - ON
ERROR RESET
VERIFY LIFT FLAG ON (P6-6)
VERIFY S-IVB SM SEP FLAG ON (P6-12)
V56
E

22-029 MGNR VERIFY BANK SUM DATA TABLE

NOTE

WAIT 10 SECONDS BETWEEN BANKS

22-030 MGNS MGNR K148 INSERT
V33
E

22-031 MGNS MGNR REPEAT INSERTING V33 AND E UNTIL
R2 = 00034 (P7-16)

NOTE

1. MEMORY BANKS ARE NUMBERED OCTAL NO. 15, 16, 17 AND 20 NOT USED.

2. WAIT 10 SECONDS.

22-032 MGNS MGNR DSKY INSERT
V34
E

22-032

BANK SUM DATA

BANK NO.	R1	R2	R3
1	00001	00001	41444
2	00002	00002	64000
3	00003	00003	70243
4	00004	00004	46717
5	00005	00005	72442
6	00006	00006	72114
7	00007	00007	76351
10	00010	00010	76777
11	00011	00011	72542
12	00012	00012	61061
13	00013	00013	40210
14	00014	00014	71075
21	77756	00021	05320
22	00022	00022	75452
23	00023	00023	50424
24	00024	00024	43052
25	00025	00025	61003
26	00026	00026	45517
27	00027	00027	66062
30	00030	00030	66010
31	00031	00031	71506
32	00032	00032	50116
33	00033	00033	60133
34	00034	00034	60502

22-032 C-RELAY CHECK

22-033 MGNS MTPE VERIFY MCP READY FOR C-RELAY CHECK AND G AND N FAIL

22-034 MGNS SC02 VERIFY FOLLOWING LITES ON PANEL 103 MOMENTARILY ON DURING THIS TEST..

IMU FAIL
CDU FAIL
ACCEL FAIL
ZERO ENCODE

22-035 MGNS MGNR K148 INSERT
DSKY C-RELAY TEST ROUTINE
V57
E
6
E

MGNR PROGRAM 07 (P7-14)
AFTER APPROX 1 MIN, CONDITION LAMPS WILL FLASH

R3 (P7-17) FINAL = 00007
PROG 00 (P7-14)
NO PROGRAM ALARM

-48 00 22-035

OPERATE POWER ON TEST

CAUTION

VERIFY IMU HTR AND AGC PWR ON FOR WARMUP COMPLETE BEFORE CONTINUING TO OPERATE PWR ON.

22-036 MGNS MGNL RECORDER 25-5 MM/SEC
ANNOTATE CHARTS

22-037 MGNS SC02 PANEL 22
G AND N IMU MNA (CB59) - CLOSED
G AND N IMU MNB (CB58) - CLOSED
Z TIME

NOTE

ONE OR MORE INDICATIONS MAY COME ON.

MGNL IMU DELAY LITE ON FOR APPROX 100 SEC CG5008

MGNL IMU +28 OPERATE ON CG1503 15C03

NOTE

MGNS SC02 PANEL 101
COARS ALIGN (S6) - ON

SC02 COARS ALIGN LITE ON

22-038 MGNS MGNL RECORDER 25 TO 2 MM/SEC

MGNL OG CDU 1X ERR (P5-18) CG2266

MG CDU 1X ERR (P5-18) CG2236

IG CDU 1X ERR (P5-10) CG2206

VERIFY ALL TRANSIENTS HAVE DAMPED.

22-039 MGNS SC02 PANEL 101
TRANSFER (S4) - COMPUTER

22-039 POWER SUPPLY CHECKS

			-28 ELECT (P3-11)	VDC	CG1101	-27.5 +/-6.0

NOTE

THESE MEASUPEMENTS FOR ENG. EVAL ONLY. NO BUY REQD

22-040	MGNS	MGNL	AGC TEMP (P3-21)	DEG F	CG4300
			IMU PRESS (P3-14)	PSI	CG6000
			PSA T3 (P3-22)	DEG F	CG6020
			PSA T2 (P3-23)	DEG F	CG6021
			PSA T4 (P3-24)	DEG F	CG6022

22-041 MGNS SCO2 SW TO CH 222

-47 45 222 22-042 MGNS MTPE

1. OPERATE POWER ON TEST COMPLETE
2. SCO2 SUPPORT IS COMPLETE
3. PROCEEDING WITH G AND N OPERATIONAL TEST

22-042 G AND N OPERATIONAL TEST

22-043 MGNS MGNR K148 INSERT
V57
E
4
E

MGNL P07 (P7-14)
WAIT 10 MINUTES (APPROX.)
V06N66 (P7-14) FLASH
R1 (P7-15) =

R2 =

G VECTOR = R1+XXXXX.R2.....
NOMINAL = +980.00000 +/-
10.0 CM/SEC/SEC

22-044 MGNS MGNR K148 INSERT
V33
E
V06 N66 FLASH

MGNR R1 =

R2 =

ER = R1....., R2.....
NOMINAL = 0000.87862 +/-
.05 EDU

22-045 MGNS MGNR K148 INSERT
V34
E
V41N20
E
0
E
0
E
0
E

MGNL COARS ALIGN (P5-2) ON
WAIT 60 SECONDS

-47 30 222 22-046 MGNS MTPE G AND N OPERATIONAL CHECKS COMPLETE.
PROCEEDING WITH IRIG S/F TEST IN 30
MINUTES.

22-046

IRIG S/E TEST

NOTE

WAIT 1 HOUR FROM OPERATE POWER ON.

-47 00	222	22-047	MGNS	MTPE	REQUEST ALL PERSONNEL IN S/C AREA KEEP MOVEMENT TO MINIMUM.
		22-048	MGNR	MGNR	TRANSFER SWITCH CMC (P7-17) ON
		22-049	MGNS	MGNL	RECORDER 14 2 MM/S AND ANNOTATE
		22-050	MGNS	MGNR	K148 INSERT V57 E 5 E
				MGNR	V21N30 (P7-14) FLASH.
		22-051	MGNS	MGNR	K148 INSERT +00001 E
				MGNL	ZERO ENCODE (P5-1) ON FINE ALIGN (P5-3) ON 20 MIN DELAY
				MGNR	V07N30 (P7-14) FLASH R1 F AND X PPM (P7-15)
		22-052	MGNS	MGNR	K148 INSERT V34 E V57 E 5 E
				MGNR	V21N30 (P7-14) FLASH

22-053	MGNS	MGNR	K148 INSERT +00002 E
		MGNL	ZERO ENCODE (P5-1) ON FINE ALIGN (P5-3) ON 20 MIN DELAY
		MGNR	V07N30 (P7-14) FLASH R1 E AND Y PPM (P7-15)
22-054	MGNS	MGNR	K148 INSERT V34 E V57 E 5 E
		MGNR	V21N30 (P7-14) FLASH
22-055	MGNS	MGNR	K148 INSERT +00003 E
		MGNL	ZERO ENCODE (P5-1) ON FINE ALIGN (P5-3) ON 20 MIN DELAY
		MGNR	V07N30 (P7-14) FLASH R1 (P11-3) E AND Z PPM
22-056	MGNS	MGNR	K148 INSERT V34 E V57 E 5 E
		MGNR	V21N30 (P7-14) FLASH

22-057	MGNS	MGNR	K148 INSERT -00001 E
		MGNL	ZERO ENCODE (P5-1) ON FINE ALIGN (P5-3) ON 20 MIN DELAY
		MGNR	V07N30 (P7-14) FLASH
22-058	MGNL		R1 F-X PPM (P7-15) -----
22-059	MGNS	MGNR	K148 INSERT V34 E V57 E 5 E
		MGNR	V21N30 (P7-14) FLASH
22-060	MGNS	MGNR	K148 INSERT -00002 E
		MGNL	ZERO ENCODE (P5-1) ON FINE ALIGN (P5-3) ON 20 MIN DELAY
		MGNR	V07N30 (P7-14) FLASH
		MGNL	R1 F-Y PPM (P7-15) -----

22-061	MGNS	MGNR	K148 INSERT V34 E V57 E 5 E
		MGNL	V21N30 (P7-14) FLASH
22-062	MGNS	MGNR	K148 INSERT -00003 E
		MGNL	ZERO ENCODE (P5-1) ON FINE ALIGN (P5-3) ON 20 MIN DELAY
		MGNR	V07N30 (P7-14) FLASH R1 E-Z PPM (P7-15) -----
22-063	MGNS	MGNR	K148 INSERT V34 E V41N20 E 0 E 0 E 0 E
		MGNL	COARS ALIGN (P5-2) ON WAIT 60 SECS.
22-064	MGNS	MTPE	IRIG S/F TEST COMPLETE

-44 30

-44 30

22-064 PIPA S/E TEST

22-065 MGNS MGNR TRANSFER SWITCH AGC (P7-17) ON

22-066 MGNS MGNR ANNOTATE RECORDERS
MGNL

22-067 MGNS MGNR K148 INSERT
V57
E
2
E

MGNL P07 (P7-14)
V06N61 (P7-14) FLASH

22-068 MGNS REPORT S/C AZIMUTH FROM TRUE NORTH AND LATITUDE.
MGNR R1 (LATITUDE) ____ DEG
R2 (AZIMUTH) ____ DEG

NOTE

IF UP-DATE IS NOT REQUIRED PROCEED WITH V33 IN THE SEQ AFTER NEXT

22-069 MGNS MGNR K148 INSERT
V21
E
+/- XXX.XX E (AZ DEG)
E
R1 = ____ (P11-3)

22-070 MGNS MGNR LOAD LATITUDE IN AGC
K148 INSERT
V22
E
____ (LAT DEG) +/- XX.XXX
E
V33
E

22-071 MGNL MGNR V06N66 (P7-14) FLASH

NOTE

R1 = 00032 NB TILT
R2 (P7-16) = -00000 TEST INDEX
R3 (P7-17) = +0000X X=POSITION
POSITION 1 THROUGH 6

22-072 MGNS MGNR K148 INSERT
V33
E
WAIT 5 MIN THEN RECORD

22-073 MGNS MGNL RECORD CRT CDU ANGLES (P5-8)
IN TABLE FOR POSITION INDICATED
PIPA S/F TEST
GIMBAL ANGLES
POSITION OG CDU X IG CDU Y MG CDU Z
R3 = 1
= 2
= 3
= 4
= 5
= 6

18 MIN DELAY

MGNR V06N66 (P7-14) FLASH

22-074 MGNS MGNR 1. RECORD R1 (P7-15) AND R2 (P7-16) IN TABLE FOR POSITION INDICATED IN R3.

2. PROCEED WITH V33E (PREVIOUS 4 SEQ.) UNTIL DATA HAS BEEN OBTAINED FOR ALL 6 POSITIONS.

22-075

POSITION	R1 =	R2 =	TERM
R3 = 1	•		A1
2	•		A2
3	•		A3
4	•		A4
5	•		A5
6	•		A6

22-076 MGNS MGNR K148 INSERT
V34
E
V41N20
E
0
E
0
E
0
E

22-077 MGNL COARS ALIGN (P5-2) ON
WAIT 60 SEC.

-42 30 22-078 MGNS MTPE PIPA S/F TEST COMPLETE

-42 30 22-078 IRIG COEFFICIENT DETERMINATION TEST

22-079 MGNS MGNR K148 INSERT
V57
E

MGNR P07 (P7-14)
V21N01 (P7-14) FLASH

22-080 MGNS MGNR K148 INSERT
1
E

MGNR V06 N61 (FLASH)
R1 (AZIM) =
R2 (LAT) =

MGNS REPORT AZIM LATITUDE FROM TRUE NORTH
DEG.

LAT

NOTE

IF UPDATE NOT REQUIRED
PROCEED WITH V33E IN FOLLOWING
SEQ

22-081 MGNS MGNR K148 INSERT
V21
E
+/- XXX.XX (AZIM. DEGR)
E
V22
E
+/- XX.XXX (LATITUDE DEG)
E
V33
E

MGNR V06N66 (P7-14) FLASH
R1 (P7-15) = 0032 (NB TILT)
R2 (P7-16) = +0000 (TEST INDEX)
R3 (P7-17) = +0000X (TEST POSITION)

22-082 MGNS MGNR K148 INSERT
V33
E

NOTE

PGNS LITE MAY COME ON DURING
THIS SEQ. WAIT 7 MINUTES
RECORD CDU ANGLES (P5-8) IN
TABLE FOR POSITION INDICATED.

WAIT APPROX. 14 MIN.

MGNR V06N66 (P7-14) FLASH
RECORD R1 AND R2 IN TABLE FOR POSITION
AS INDICATED IN R3

22-082 MGNS MGNR REPEAT TEST FOR POSITIONS 2 THROUGH 9
BY INSERTING V33E TEST NUMBER INSERT
V33E. WAIT FOR TEST DATA.
VERIFY TEST NUMBER

NOTE

GIMBAL LOCK, PROGRAM ALARM AND
MASTER ALARM LITES MAY COME ON
DURING THIS SEQ.

	R3	R1	R2	OG CDUX	IG CDUY	MG	CDUZ
	--	--	--	-------	-------	--	----
00001							
	-----	-----	-------	-------	--	-----	
00002							
	-----	-----	-------	-------	--	-----	
00003							
	-----	-----	-------	-------	--	-----	
00004							
	-----	-----	-------	-------	--	-----	
00005							
	-----	-----	-------	-------	--	-----	
00006							
	-----	-----	-------	-------	--	-----	
00007							
	-----	-----	-------	-------	--	-----	
00008							
	-----	-----	-------	-------	--	-----	
00009							
	-----	-----	-------	-------	--	-----	

MGNR MGNS TEST POSITION 9 COMPLETED

22-083 MGNS MGNR TERMINATE TEST
K148 INSERT
V34
E
V41N20
E
0
E
0
E
0
E

MGNR COARS ALIGN (P5-2) - ON
WAIT 60 SECONDS

-38 30 22-084 MGNS MTPE IRIG COEFFICIENT TEST COMPLETED.

-38 30

22-085 AGC CLOCK ALIGNMENT

MGNR ACCEPT UPLINK (P7-11) ON
CHECK FAIL (P7-18) OFF
T/M FAIL (P7-21) OFF

222 22-086 MGNS MTPE VERIFY UPLINK LOAD ?

22-087 MGNS MGNR ERROR RESET (R144) - ON KZ0024

MGNR TIME ERROR (P7-2) BLANK

22-088 MGNS MGNL AGC CLOCK ADDRESS AND K-FACT.
C156 INSERT

MGNL ADDRESS K-FAC
70 00035 020 IS INSERTED

22-089 MGNS MGNL C156
INSERT EPOCH ADDRESS

MGNL 7100000000

22-090 MGNS RANGE TIME IN HRS., MIN., SECS

----- ----- -----

22-091 MGNS MGNL ADD 5 MINUTES TO RANGE TIME. INSERT
IN C156

90 XX YY ZZ 0
HRS MINS SEC

90

22-092 MGNS MGNL AGC PRESET TIME

C156 INSERT
91 + 000 RR SS

CAUTION

EXECUTE R52 BEFORE TIME
ENTERED ABOVE OCCURS

22-093	MGNS	MGNL	G AND N 101 (R152) - ON (WAIT FOR VERIFY)	KZ0009
		MGNL	TIME ERROR (P7-2) BLANK	
			NOTE IF TIME ERROR IS PRESENT REPEAT ALL PRECEDING STEPS OF AGC CLOCK ALIGN.	
22-094	MGNS	MGNL	G AND N 101 (R152) - OFF	KZ0009
22-095	MGNS	MGNL	G AND N 102 (R152) - ON	KZ0010
		MGNL	DELTA TIME TIME (P7-2) = ____ . ___ SEC TIME ERROR (P11-23) BLANK	
22-096	MGNS	MGNL	G AND N 102 (R152) - OFF	KZ0010
22-097	MGNS	MGNL	G AND N 103 (R152) - ON	KZ0011
		MGNL	TIME ERROR (P7-2) BLANK	
22-098	MGNS	MGNL	G AND N 103 (R152) - OFF G AND N 102 (R152) - ON	KZ0011 KZ0010
22-099	MGNS	MGNL	RECORD DELTA TIME (P7-2) _____ TIME ERROR (P7-2) BLANK	+/-.01
22-100	MGNS	MGNL	G AND N 102 (P152) - OFF	

-38 00 127 22-101 MGNS MTPE AGC CLOCK ALIGNMENT COMPLETE.
STARTING GYPO COMPASSING

22-102 MGNS CHECK DELTA TIME AS REQUIRED AND RECORD IN TABLE BELOW. /G AND N 102 (P152) - ON, EXECUTE, RECORD, G AND N 102 (R152) - OFF/

TIME (GMT)	DELTA TIME (0.100 MAX)	CHANGE IN DELTA TIME (+/- 0.01 MAX)
------	----------	----------
------	----------	----------
------	----------	----------
------	----------	----------
------	----------	----------
------	----------	----------
------	----------	----------
------	----------	----------
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22-103 GYRO COMPASSING TEST

222 22-104 MGNS MTPE REQUEST MIN SC ACTIVITY DURING GYROCOMPASSING

22-105 MGNS MGNR TRANSFER SW - CMC ON (P7-17)
RECORD DOWNLINK (R145) - ON
RECORD DSKY (R145) - ON

22-106 MGNS MGNR VERIFY QC SEAL ON TAPE F04C017-K00068 CANNISTER IS INTACT.

NAR QC NASA QC

22-107 MGNS MGNR K148
LOAD TAPE
V36
E
LIFT FLAG OFF
S4B SM FLAG OFF
START TAPE

MGNR TAPE STOP
R1 = 00001

22-108 MGNS MGNR LOAD/VERIFY (R146) ON
K148
START TAPE

MGNR TAPE STOP
K SEQUENCE OK (P7-11)
V ERRORS BLANK (P7-10)

22-109 MGNS MGNR LOAD/VERIFY (R146) - OFF
K148
REMOVE TAPE
F04C017-K000068

22-110 MGNS MGNR VERIFY QC SEAL ON TAPE F04C017-K000067 CANISTER IS INTACT.

NAR QC NASA QC

22-111	MGNS	MGNR	K148 LOAD TAPE START TAPE
		MGNR	TAPE STOP R1 = 00002
22-112	MGNS	MGNR	LOAD/VERIFY (R146) - ON K148 START TAPE
		MGNR	TAPE STOP K SEQUENCE OK (P7-11) V ERROR BLANK (P7-10)
22-113	MGNS	MGNR	LOAD/VERIFY (R146) - OFF K148 START TAPE
		MGNR	TAPE STOP R1 = 00003
22-114	MGNS	MGNR	LOAD/VERIFY (R146) - ON K148 START TAPE
		MGNR	TAPE STOP K SEQUENCE OK (P7-11) V ERRORS BLANK (P7-10)
22-115	MGNS	MGNR	LOAD/VERIFY (R146) - OFF K148 START TAPE
		MGNR	TAPE STOP P01 (P7-14) P05 P02 (APPROX. 9 MINUTES) TIME Z

---

222 22-116 MGNS MTPE GYROCOMPASSING HAS STARTED. REQUEST SCO2 ON CHANNEL 215 FOR OPTICAL VERIFICATION.

22-117 MGNS SCO2 PANEL 104
SCT TRAC SHAFT ZEROED
SCT TRAC TRUN ZEROED

PANEL 102
2X TRUN CDU ZEROED
SHAFT CDU ZEROED

NOTE

IF TRACS AND OCDU'S NOT ZEROED, PERFORM THE FOLLOWING SEQUENCE.

22-118 MGNS SCO2 PANEL 105
ZERO OPTICS/MANUAL/COMPUTER (S11) - MANUAL
USING CONTROLLER 'A-1) DRIVE OCDU'S TO ZERO DEGREES (APPROX.)
ZERO OPTICS/MANUAL/COMPUTER (S-11) - ZERO OPTICS

SCO2 PANEL 103 ZERO ENCODE OFF

22-118

OPTICAL VERIFICATION

NOTE

PERFORM OPTICAL VERIFICATIONS UPON ENTERING P02. REPEAT AT INTERVALS AS SPECIFIED IN GYROCOMPASSING DATA TABLE, SEQ. . PERFORM THE FOLLOWING STEP EXCEPT AT INITIAL OPTICAL VERIFICATION.

22-119 MGNS MTPE REQUEST SCO2 ON CHANNEL 215 FOR OPTICAL VERIFICATION

22-120 MGNS SCO2 PANEL 105
ZERO OPTICS/MANUAL/COMPUTER (S-11) - MANUAL

22-121 MGNS MGNR K148 INSERT
INITIATE GYROCOMPASSING VERIFICATION PROGRAM
V37
E
3
E

MGNR P03 (P7-14)
KEY RLSE LITE ON CG5027

22-122 MGNS MGNR K148 INSERT
KEY RLSE

MGN2 V06N61 (P7-14) FLASH
R3 = 00001 (TGT. NO. 1)

22-123	MGNS	MGNR	K148 INSERT PROCEED WITHOUT DATA V33 E
	MGNR		V06 N61 (P7-14) FLASH R3 = 00002 (TGT. NO. 2)
22-124	MGNS	MGNR	K148 INSERT V33 E
	MGNR		V51 (P7-14) FLASH
22-125	MGNS	SC02	PANEL 105 ACQUIRE TARGET NO. 1 IN SXT. FIELD (A-1) APPROX OCDU ANGLES 2X TRUN CDU 76 DEG. SHAFT CDU 208 DEG.
			NOTE IF MARKS ON TARGETS 1 OR 2 ARE UNCERTAIN, INSERT V52 E AND REPEAT MARK SEQUENCE.
	SC02		TARGET NO. 1 IN VIEW
22-126	MGNS	SC02	ALIGN SXT. ST LOS RETICLE ON TGT. NO. 1 MARK AND VERIFY.
22-127	MGNS	SC02	ACQUIRE TARGET NO. 2 IN SXT. FIELD (A-1) APPROX. OCDU ANGLES 2X TRUN CDU 80 DEG. SHAFT CDU 146 DEG.
	SC02		TARGET NO. 2 IN VIEW
22-128	MGNS	SC02	ALIGN SXT ST LOS RETICLE ON TGT. NO. 2. MARK AND VERIFY.
	MGNR		V50 (FLASH)

22-129 MGNS SCO2 PANEL 106 DSKY INSERT
E

MGNR V06 N67 (P17-14) FLASH
R1 = __.____ DEG OGTA
R2 = __.____ DEG IGTA
R3 = __.____ DEG MGTA
TIME _____7

NOTE

RECORD ABOVE DATA IN
GYCOMPASSING DATA TABLE.

22-130 MGNS SCO2 DRIVE OPTICS (A1) TO OCDU ZERO.

SCO2 2X TRUN CDU ZEROED
SHAFT CDU ZEROED

22-131 MGNS SCO2 PANEL 105
ZERO OPTICS/MANUAL/COMPUTER - ZERO
OPTICS

MGNR ZERO ENCODE OFF

22-132 MGNS MGNR K148 INSERT
V34
E

MGNR P02 (P7-14)

22-132

GYROCOMPASSING DATA TABLE

VERIFICATION	R1 (OGTA)	R2 (IGTA)	R3 (MGTA)	TIME (Z)
I INITIAL	.	.	.	
B BASELINE (AFTER 2 HOURS)	.	.	.	
1 T-29 HR	.	.	.	
2 T-27 HR	.	.	.	
3 T-22.30	.	.	.	
4 T-22 HR	.	.	.	

NOTE

INITIAL VERIFICATION IS FOR REFERENCE ONLY.

NOTE

AFTER FINAL OPTICAL VERIFICATION PERFORM THE FOLLOWING SEQUENCE.

22-133 MGNS SC02 PANEL 105
ZERO OPTICS/MANUAL/COMPUTER (S11) - MANUAL
USING HAND CONTROLLER (A1) DRIVE OCDUS TO READ
2X TRUN CDU 180 DEG.
SHAFT CDU 180 DEG.
ZERO OPTICS/MANUAL/COMP (S11) - ZERO OPTICS

PANEL 104
VERIFY TPAC ANGLES
SHAFT 180 DEG.
TRUNNION 90 DEG.

PANEL 105
CONTROLLER SPEED (S3) - LOW

PANEL 103
ZERO ENCODE - OFF

22-134 MGNS MTPE FINAL OPTICAL VERIFICATION COMPLETE.
READY FOR OPTICS CLOSEOUT.

NOTE

AFTER EACH VERIFICATION,
RETURN SC02 TO CHANNEL 222.

40

23-000 GUIDANCE AND NAVIGATION TEST - COUNT

ERASABLE MEMORY VERIFY

23-001	MGNS	MACE	VERIFY THAT BACKUP STATION IS READY TO SUPPORT G AND N FILING ON UPLINK COMMAND FILE TAPE.
23-002	MGNS	MGNL	VERIFY (IN B/U CONT ROOM) RECORD DOWNLINK (R145) - ON RECORD DSKY (R145) - ON
23-003	MGNS	MGNR	LOAD TAPE F04C017-K00067 START TAPE
	MGNR		TAPE STOP R1 = 00002

NOTE

IF NORMAL COLD SOAK ANGLES ARE USED, PROCEED WITH SEQ. 23-004 AND OMIT 23-005. IF SECOND COLD SOAK UPDATE IS TO BE PERFORMED, PROCEED WITH SEQ. 23-005 AND OMIT 23-004.

23-004	MGNS	MGNR	K148 TAPE INHIBIT - ON START TAPE
	MGNR		TAPE STOP
	MGNS	MGNR	TAPE INHIBIT - OFF
23-005	MGNS	MGNR	LOAD/VERIFY (R146) - ON START TAPE
	MGNR		TAPE STOP
	MGNS	MGNR	LOAD/VERIFY (R146) - OFF
23-006	MGNS	MGNR	START TAPE
	MGNR		TAPE STOP R1 = 00003

23-007 MGNS MGNR G AND N VERIFY (R146) - ON

NOTE

IN THE EVENT OF A K-148 NON-VERIFY, THE DATA (R1) AND ADDRESS (R3) WILL BE CONFIRMED BY MGNS AS LISTED IN THE E-MEMORY UPDATE TABLE (SEQ 23-014) BEFORE PROCEEDING. AFTER CONFIRMATION, MGNR PROCEED WITH CLEAR NON-VERIFY, ERROR RESET (R144) AND START TAPE.

23-008 MGNS MGNR START TAPE

MGNR TAPE STOP
K SEQUENCE OK (P7-11)
V ERRORS BLANK (P7-10)

23-009 MGNS MGNR G AND N VERIFY (R146) - OFF
REMOVE TAPE

23-010 MGNS MGNR LOAD TAPE E04C017-K00068
START TAPE

MGNR TAPE STOP
R1 = 00001

23-011 MGNS MGNR G AND N VERIFY (R146) - ON
K148
START TAPE

MGNR TAPE STOP
K SEQUENCE OK (P7-11)
V ERRORS BLANK (P7-10)

23-012 MGNS MGNR G AND N VERIFY (4146) - OFF
REMOVE TAPE

23-013 MGNS MSTC E-MEMORY VERIFICATION COMPLETE
-OR-
SECOND COLD SOAK UPDATE AND E-MEMORY VERIFICATION COMPLETE

23-014

E-MEMORY UPDATE TABLE

ADDRESS (R3)	DATA (R1)

* SECOND COLD SOAK ANGLES *

1673	
1674	
1675	

24-000 HELIUM SERVICING OPERATIONS

226 24-001 MRCS ALL VERIFY READY FOR HELIUM SERVICING
MRCE
SHTR
SNQC

24-002 GSE POWER UP

24-003 MRCS SHTR S14-009..
115 VAC PWR SW - ON

SHTR 115 VAC ON LITE ON
28 VDC ON LITE ON (AFTER APPROX 15 MIN T/D)

24-004 MRCS SHTR ADJUST REGULATOR R3 AS REQUIRED UNTIL GAUGE P1-6 INDICATES 100 +/- 5 PSIG.

------ -------
NAR QC NASA QC

24-005 MRCS SHTR ADJUST REGULATOR R7 AS REQUIRED UNTIL GAUGE P1-7 INDICATES 35 +/- 3 PSIG.

------ -------
NAR QC NASA QC

24-006 MRCS SHTR ADJUST REGULATOR R4 AS REQUIRED UNTIL GAUGE P1-5 INDICATES 2.0 +/- 0.5 IN H20

------ -------
NAR QC NASA QC

24-007 MRCS SHTR S14-009..
VERIFY THE FOLLOWING..

PRESS LAMP TEST - ALL LAMPS LIGHT
EXCEPT RCS/SPS TIMER O/R LIGHT
CONTROL LOCATION LOCAL LITE ON
OUTLET TEMP GAGE TOP OF SCALE
LOW PRESSURE PURGE LITE OFF
INLET PRESS LOW LITE ON
REG R-6 CLOSED (FULLY CCW)
PRESSURE CONTROLLERS PRESSURE GAUGES INDICATE 20 +/- 4 PSIG.

24-007

NOTE

WHILE CHILLER TANK IS FILLING
PROCEED WITH SUBSEQUENT
SEQ'S.

------ -------
NAR QC NASA QC

24-008 MRCS SHTR S14-009..
FILL LN2 CHILLER TANK AS FOLLOWS..

1. VERIFY GSE LN2 TANKER SUPPLY HOSE IS CONNECTED TO LN2 FILL CONNECTION ON UNIT AND TANKER IS PRESSURIZED.

------ -------
NAR QC NASA QC

2. OPEN VALVE V-14.

3. TANKER SUPPLY VALVE - OPEN

4. WHEN LN2 FLOWS FROM CHILLER TANK VENT, THROTTLE BUT DO NOT CLOSE TANKER SUPPLY VALVE.

5. VERIFY LN2 LEVEL 25 GAL, 50 GAL AND 75 GAL LITES ON.

------ -------
NAR QC NASA QC

6. VERIFY LN2 LOW LEVEL LITE OFF.

------ -------
NAR QC NASA QC

24-009 MRCS MRCE SPS OX EMERG. OVERRIDE (R200A) - ON KP7362

24-010 MRCS MRCE SPS OX CONTROL COMMAND (R200 B) - ON KP7361

24-011 MRCS	MRCE	SPS OX TRANSDUCER VOLTAGE (R200 C) - ON	KP7355
24-012 MRCS	MRCE	SPS OX VALVE POSITION POWER (R200 D) - ON	KP7356
	MRCE	132 OXID PV101 CIRC LITE ON	FP5364
		132 PV102 VENT CLOSED LITE ON	FP5366
		132 OX VT LV108 OPEN LITE OFF	FP5199
24-013 MRCS	MRCE	SPS FUEL EMERGENCY OVERRIDE (R204 B) - ON	KP7364
24-014 MRCS	MRCE	SPS FUEL CONTROL COMMAND (R204 A) - ON	KP7363
24-015 MRCS	MRCE	SPS FUEL TRANSDUCER VOLTAGE (R204 D) - ON	KP7357
24-016 MRCS	MRCE	SPS FUEL VALVE POSITION POWER (R204 C) - ON	KP7358
	MRCE	132 FL LD PV101 CIRC LITE ON	FP5360
		132 PV102 VENT CLOSED LITE ON	FP5362
		132 FU VT LV108 OPEN LITE OFF	FP5200
24-017 MRCS	SHTR	S14-009.. FAC HE SUPPLY VALVE - OPEN (SLOWLY) VERIFY 5000 PSIG MIN ON PI-1.	
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		NAA QC NASA QC	
	SMTR	INLET PRESSURE LOW LITE OFF	
24-018 MRCS	MRCE	VERIFY HE SERV IN REMOTE LITE OFF	GV5009
24-019 MRCS	MRCE	FDS EMERG HE OR (R199A) - ON	KV7352
24-020 MRCS	MRCE	CONT COM'D SPS/RCS (C212) - ON	KV7351
	MRCE	210 000 0003 IS INSERTED	

24-021	MRCS	MRCE	XDUCER PWR AND VAL POS PWR	KP7359
			(C212) - ON	KP7360
		MRCE	210 000 0001 IS INSERTED	
			HE EMERG OVERRIDE LITE ON	GV5010
			HE SERV IN REMOTE LITE ON	GV5009
		MRCE	132 SM RCS LV1 LOAD OP LITE OFF	FR8356
			132 SM RCS LV1 LOAD CL LITE ON	FR8357
			132 SM RCS LV2 LOAD OP LITE OFF	FR8358
			132 SM RCS LV2 LOAD CL LITE ON	FR8359
			132 SM RCS LV3 LOAD OP LITE OFF	FR8412
			132 SM RCS LV3 LOAD CL LITE ON	FR8413
			132 SM RCS LV4 LOAD OP LITE OFF	FR8414
			132 SM RCS LV4 LOAD CL LITE ON	FR8415
			132 CM RCS LV5 LOAD OP LITE OFF	FR8416
			132 CM RCS LV5 LOAD CL LITE ON	FR8417
			132 CM RCS LV6 LOAD OP LITE OFF	FR8418
			132 CM RCS LV6 LOAD CL LITE ON	FR8419
			132 LV7 VENT OP LITE OFF	FR8354
			132 LV7 VENT CL LITE ON	FR8355
			132 SPS LV9 LOAD OP LITE OFF	FR5353
			132 SPS LV9 LOAD CL LITE ON	FR5354
			132 SPS LV8 VENT OP LITE OFF	FP5355
			132 SPS LV8 VENT CL LITE ON	FP5356
			HE ISOL VAL 201 OP LITE OFF	FP5520
			HE ISOL VAL 202 CL LITE OFF	FP5521
24-022	MRCS	MRCE	SPS HE ISOL VAL (R210B) - ON	KP7422
		MRCE	HE ISOL VAL 201 OP LITE ON	FP5520
			HE ISOL VAL 202 CL LITE ON	FP5521
24-023	MRCS	SHTR	S14-009	
			CONTROL LOCATION SW - REMOTE	
		SHTR	S14-009	
			REMOTE LITE ON	
			LOCAL LITE OFF	
24-024	MRCS	MTPE	HELIUM GSE POWER UP COMPLETE.	
			READY TO PROCEED WITH HE SERV.	

NOTE

FOR CDDT, OMIT NEXT 10 SEQ'S.

24-025	MTPE	MRCS	PROCEED WITH HELIUM PREFLIGHT PRESSURIZATION.
24-026	MRCS	MRCE	009 RESET (P203 A) - ON KV7296 009 SPS SELECT (R203 D) - ON KP7270 009 SELECT LITE ON FP5193 009 RCS SELECT LITE OFF FR8292
24-027	MRCS	MRCE SHTR	VERIFY READY FOR HE PREFLIGHT PAD PRESSURIZATION.
24-028	MRCS	MRCE	RECORDER 21 - ON (5.0 MM/SEC) RECORDER 22 - ON (5.0 MM/SEC)
24-029	MRCS	MRCE	RCS SMA LD LV1 (R208B) - ON KR9352 RCS SMB LOAD (R208A) - ON KR9353 RCS SMC LOAD (R209D) - ON KR9375 RCS SMD LOAD (R209C) - ON KR9376 RCS CMA LOAD (R209B) - ON KR9377 RCS CMB LOAD (R209A) - ON KR9378
		MRCE	132 SM RCS LV1 LOAD OP LITE ON FR8356 132 SM RCS LV2 LOAD OP LITE ON FR8358 132 SM RCS LV3 LOAD OP LITE ON FR8412 132 SM RCS LV4 LOAD OP LITE ON FR8414 132 CM RCS LV5 LOAD OP LITE ON FR8416 132 CM RCS LV6 LOAD OP LITE ON FR8418
24-030	MRCS	SHTR	S14-009.. V12 - OPEN SLOWLY INCREASE REG R-6 UNTIL PREFLIGHT PAD PRESSURES ARE ESTABLISHED IN FOLLOWING SEQUENCE.

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NAR QC	NASA QC

	24-031	MRCS	MRCE	MONITOR RCS HE TNK PARAMETERS..
				SMA HTP (P14-17L) SR5001
				SMB HTP (P14-20L) SR5002
				SMC HTP (P14-17P) SR5003
				SMD HTP (P14-20R) SR5004
				WHEN PARAMETERS REACH 500 (+/- 50) PSIA..
				RCS SMA LD LV1 (R208B) - OFF KR9352
				RCS SMB LOAD LV2 (R208A) - OFF KR9353
				RCS SMC LOAD LV3 (R209D) - OFF KR9375
				RCS SMD LOAD LV4 (R209C) - OFF KR9376
				RCS CMA LOAD LV5 (R209B) - OFF KR9377
				RCS CMB LOAD LV6 (R209A) - OFF KR9378
			MRCE	132 SM RCS LV1 LOAD CL LITE ON FR8357
				132 SM RCS LV2 LOAD CL LITE ON FR8359
				132 SM RCS LV3 LOAD CL LITE ON FR8413
				132 SM RCS LV4 LOAD CL LITE ON FR8415
				132 CM RCS LV5 LOAD CL LITE ON FR8416
				132 CM RCS LV6 LOAD CL LITE ON FR8418
	24-032	MRCS	SHTR	S14-009..
				STOP INCREASING REG R-6.
				------ -------
				NAR QC NASA QC
	24-033	MRCS	SHTR	S14-009..
				TEMP CONTROLLER - -275 DEG.F.
				SET TANKER SUPPLY VALVE FULL OPEN
222	24-034	MRCS	MTPE	RCS PREFLIGHT PAD PRESSURIZATION IS COMPLETE. PAD AREA MUST BE CLEARED FOR HELIUM SERVICING TO FLIGHT PRESSURES.

WARNING

SYSTEM WILL BE PRESSURIZED TO FLIGHT PRESSURES. SYSTEM SAFETY CLEARANCE REQUIRED BEFORE PROCEEDING WITH TEST. IN THE EVENT ACE IS LOST AND S14-009 SHUTDOWN IS REQUIRED, PERFORM FOLLOWING STEP.

24-035 MRCS CSAT S14-009 EMERGENCY STOP SW (SE21) - ON

24-036 MTPE MRCS PROCEED WITH HELIUM SERVICING.

CAUTION

TIME LIMIT FOR HE SOLENOID
ACTUATION (NO FLOW) IS 10 MIN

24-037 MRCS SPS HE TK P (P14-10) _____ PSIA 800 MIN

24-038 MRCS MRCE HE ISOL VALVE NO. 1
(R206 A) - ON KP7440
HE ISOL VALVE NO. 2
(R206 B) - ON KP7441

MRCE HE SOL VALVE 1 OPEN
LITE ON SP0031
HE SOL VALVE 2 OPEN
LITE - ON SP0031

24-039 MRCS MRCE MONITOR SPS PROP TANK PARAMETERS
SPS O.T.P. (P14-03R) SP0003
SPS F.T.P. (P14-03L) SP0006
WHEN PARAMETERS REACH 190 +/- 2 PSIA...
HE ISOL VALVE NO. 1 KP7440
(R206 A) - OFF
HE ISOL VALVE NO. 2 KP7441
(R206 B) - OFF

MRCE HE SOL VALVE 1 OPEN
LITE - OFF SP0030
HE SOL VALVE 2 OPEN
LITE - OFF SP0031

NOTE

MRCE WILL OPEN AND CLOSE VALVE
BOX VALVES AS REQUIRED TO
OBTAIN 500 PSI NOMINAL PRIOR
TO PERFORMING NEXT STEPS.

24-040 MRCS MRCE SM RCS A HE ISO OP (R211A) - ON KR9308
SM RCS B HE ISO OP (R211B) - ON KR9309
SM RCS C HE ISO OP (R211C) - ON KR9310
SM RCS D HE ISO OP (R211D) - ON KR9311

MRCE SMA HE ISOL A1 LITE OFF SR5101
SMB HE ISOL B1 LITE OFF SR5102
SMC HE ISOL C1 LITE OFF SR5103
SMD HE ISOL D1 LITE OFF SR5104

24-041 MRCS MRCE RECORD HE MANIFOLD PRESSURES..
SMA HMP (P14-19L) _____ PSIA SR5729
SMB HMP (P14-22L) _____ PSIA SR5776
SMC HMP (P14-19R) _____ PSIA SR5817
SMD HMP (P14-22R) _____ PSIA SR5830

NOTE

ALL PRESSURES SHOULD BE 198 (+/- 7) PSIA.

24-042 MRCS MRCE RECORD SPS PRESSURES..
SPS FTP (P14-03L) _____ PSIA SP0006
SPS OTP (P14-03R) _____ PSIA SP0003
SPS HE TNK P (P14-10) _____ PSIA SP0001
SPS HE LIN T (P14-11) _____ DEG F SF0002

NOTE

AFTER TEMP AND PRESSURE STABILIZE FTP AND OTP SHOULD BE 175 (+/- 4) PSIA. IN EVENT PRESSURES ARE TOO HIGH, VENT AS FOLLOWS..

24-042

1. OTP OXIDIZER TVD START KP7104
(R201 A) - ON
061 FAN 1 ON LITE - ON FP5020
061 FAN 2 ON LITE - ON FP5021
061 FAN 3 ON LITE - ON FP5022

SPS OXID LV108 (R201 C) DP7425
CYCLE ON/OFF AS REQUIRED

OXIDIZER TVD STOP KP7105
(R201 B) - ON
061 FAN 1 ON LITE - OFF FP5020
061 FAN 2 ON LITE - OFF FP5021
061 FAN 3 ON LITE - OFF FP5022

2. FTP FUEL TVD START (R205 A) KP7100
- ON
060 FAN 1 ON LITE - ON FP5012
060 FAN 2 ON LITE - ON FP5013
060 FAN 3 ON LITE - ON FP5014

SPS FUEL LV108 (R205 C) KP7426
CYCLE ON/OFF AS REQUIRED

OXIDIZER TVD STOP KP7101
(R205 B) - ON
060 FAN 1 ON LITE - OFF FP5012
060 FAN 2 ON LITE - OFF FP5013
060 FAN 3 ON LITE - OFF FP5014

CAUTION

EXCEPT IN EMERGENCY, DO NOT
VENT FTP AND OTP SIMULTANEOUSLY.

NOTE

1. DURING FOLLOWING
PRESSURIZATION, MRCE WILL
ACTUATE LOADING VALVES AS
REQUIRED TO MEET
RESPECTIVE PRESSURE-
TEMPERATURE CURVES BASED
ON THE NOMINAL FLIGHT LOADS.
SPS HTP 4000 (+/- 50) PSIA
HTT 700 DEG.F.
RCS HTP 4150 (+/- 90) PSIA
HTT 700 DEG.F.

2. PRESSURE-TEMPERATURE LOADING LIMITATIONS
SPS HTP 4350 PSIA MAX.
HTT +121 DEG.F.
RCS HTP 4480 PSIA MAX.
HTT +140 DEG.F.
VALVE BOX TEMP - 250 DEG.F.
TT1 (P16-11L) FR8360
TT2 (P16-19L) FP5351

3. TO STOP LOADING AT ANY TIME..
009 EMERG STOP (R203B) - ON KV7295
009 RESET (P203A) - ON KV7296

4. TO STOP LOADING IF ACE IS LOST..

MRCS CSAT S14-009 EMERG STOP SW - ON (MOMEN.)

5. TO CONTINUE LOADING..
009 RESET (P203A) - ON
009 SPS SELECT (R203D) - ON KP7270
009 SPS START (R207D) - ON KP7271

24-043 MRCS MRCE RCS HE VENT LV7 (R210D) - ON KR9351
MRCE 132 LV7 VENT OP LITE ON FR8354
132 LV7 VENT CL LITE OFF FR8355

24-044 MRCS MRCE 009 SPS START (P207D) - ON KP7271
MRCE 009 SPS XFER LITE ON FP5195

24-045 MRCS MRCE WHEN 132 TT1 (P16-11R) FR8360
INDICATES -160 (+15 -0) DEG. F...
RCS HE VENT LV7 (R210D) - OFF KR9351
MRCS 132 LV7 VENT CL LITE ON FR5355
132 LV7 VENT OP LITE OFF FR5354

24-046 (DELETED)

24-047	MRCS	MRCE	SPS HE LOAD LV9 (R208D) - ON	KP7353
			RCS HE SMA LD LV1 (R208B) - ON	KR9352
			RCS HF SMB LOAD LV2 (R208A) - ON	KR9353
			RCS HF SMC LOAD LV3 (R209D) - ON	KR9375
			RCS HE SMD LOAD LV4 (R209C) - ON	KR9376
			RCS HF CMA LOAD LV5 (R209B) - ON	KR9377
			RCS HF CMB LOAD LV6 (R209A) - ON	KR9378
	MRCS		132 SPS LV9 LOAD OP LITE ON	FP5353
			132 SM RCS LV1 LOAD OP LITE ON	FR8356
			132 SM RCS LV2 LOAD OP LITE ON	FR8358
			132 SM RCS LV3 LOAD OP LITE ON	FR8412
			132 SM RCS LV4 LOAD OP LITE ON	FR8414
			132 CM RCS LV5 LOAD OP LITE ON	FR8416
			132 CM RCS LV6 LOAD OP LITE ON	FR8418
24-048	MRCS	MRCE	WHEN 009 SPS XFER COMP LITE COMES ON 009 SPS TOPOFF START (R207C) - ON	FP5192 KP7274
	MRCE		009 SPS TOPOFF LITE ON	FP5194
			009 SPS XFER LITE ON	FP5195
24-049	MRCS	MRCE	WHEN REQUIRED SPS LOAD IS REACHED...	
			SPS HE LOAD LV9 (R208D) - OFF	KP7353

24-050 MRCS MRCE MONITOR RCS HTP PARAMETERS
WHEN REQUIRED RCS LOADS ARE REACHED...
RCS HE SMA LD LV1 (R208B) - OFF KR9352
RCS HE SMB LOAD LV2 (R208A) - KR9353
OFF
RCS HE SMC LOAD LV3 (R209D) - KR9375
OFF
RCS HE SMD LOAD LV4 (R209C) - KR9376
OFF
RCS HE CMA LOAD LV5 (R209B) - KR9377
OFF
RCS HE CMB LOAD LV6 (R209A) - KR9378
OFF

NOTE

MRCE MAY OPEN/CLOSE VALVE BOX VALVES AS REQUIRED TO MAINTAIN NOMINAL FLIGHT LOADS UNTIL DISCONNECT BEGINS. WHEN A FILL DISCONNECT IS BEING DISCONNECTED, THE CORRESPONDING LOAD VALVE WILL BE CLOSED.

222 24-051 MRCS MTPE HELIUM SERVICING IS COMPLETE. CLEAR DISCONNECT CREW TO VEHICLE TO REPORT IN TO MRCS ON CHANNEL 226.

24-052 LINE DISCONNECT - LAUNCH ONLY

24-053 MTPE MRCS PROCEED WITH LINE DISCONNECT.

226 24-054 MRCS SPAD VERIFY READY FOR DISCONNECT.

WARNING

1. PERSONNEL WILL BE EQUIPPED WITH FACE SHIELDS AND GLOVES.

2. OBSERVE THE FOLLOWING STEPS DURING DISCONNECTION OF S/C HELIUM FILL COUPLINGS..

   1. BACK OFF QD 3-5 TURNS (RCS) 6-8 TURNS (SPS) AND LISTEN FOR AUDIBLE HISSING. A POP WILL OCCUR WHEN POPPETS SEAT.

   2. IF HISSING CONTINUES, RECONNECT QD AND NOTIFY MRCS.

   3. IF HISSING CEASES, COMPLETE QD DISCONNECTION.

NAR QC	NASA QC

24-055 MRCS SSMT DISCONNECT THE FOLLOWING..

1. SM QUAD A TP1
2. SM QUAD B TP1
3. SM QUAD C TP1
4. SM QUAD D TP1

NOTE

REPLACE ALL A/B AND GND COUPLING DUST CAPS. TORQUE A/B DUST CAPS TO 15-16 FT LBS.

24-055

NAR QC _____ NASA QC _____

222 24-056 MRCS MTPE SM QUAD LINE DISCONNECT COMPLETE.
TIME _____ HOURS

PROCEEDING WITH CM LINE DISCONNECT.

NOTE

10 HOURS FROM ABOVE TIME, CLOSE SM RCS HELIUM NO. 2 ISOLATION VALVES PER SEQ. 08-XXX, T-32 45.

24-057 MRCS SCMT DISCONNECT THE FOLLOWING..

1. CM A HE PANEL TP51
2. CM B HE PANEL TP1.

NAR QC _____ NASA QC _____

NOTE

REPLACE ALL A/B AND GND COUPLING DUST CAPS. TORQUE A/B DUST CAPS TO 15-16 FT LBS.

24-058 MRCS SSMT DISCONNECT THE FOLLOWING..

SPS HELIUM PANEL TP1.

24-058

NOTE

REPLACE A/B AND GND COUPLING DUST CAPS. TORQUE A/B DUST CAP TO 30-33 FT. LBS.

NAR QC	NASA QC
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24-059 MRCS

RECORD FINAL PARAMETERS

SPS HE TNK P (P14-15)	PSIA	SP0001
SPS HE LIN T (P14-11)	DEG F	SP0002
RCS SMA HTP (P14-17L)	PSIA	SR5001
RCS SMB HTP (P14-20L)	PSIA	SR5002
RCS SMC HTP (P14-17R)	PSIA	SR5003
RCS SMD HTP (P14-20R)	PSIA	SR5004
RCS SMA HTT (P14-18L)	DEG F	SR5005
RCS SMB HTT (P14-21L)	DEG F	SR5006
RCS SMC HTT (P14-18R)	DEG F	SR5007
RCS SMD HTT (P14-21R)	DEG F	SR5008
RCS CMA HTP (P14-13L)	PSIA	CR0001
RCS CMB HTP (P14-13R)	PSIA	CR0002
RCS CMA HTT (P14-14L)	DEG F	CR0003
RCS CMB HTT (P14-14R)	DEG F	CR0004

24-060 MRCS MRCE 009 SPS TOPOFF STOP (R207C) - ON KP7275

MRCE 009 SPS XFER LITE OFF FP5195

24-061 MRCS SHTR S14-009..

1. FAC HE SUPPLY VALVE - CLOSED
2. CLOSE V-14
3. SET R-6 FULLY CCW.
4. V-2 - OPEN TO VENT SUPPLY SYSTEM
5. WHEN PI-1 INDICATES LESS THAN 50 PSIG, V2 - CLOSED
6. V-12 - OPEN
7. V-9 - OPEN (SLOWLY) UNTIL PI-3 INDICATES LESS THAN 50 PSIG, THEN CLOSE V-9.
8. V-12 - CLOSED
9. PWR 115 VAC SW - OFF
10. CLOSE V-3
11. DISCONNECT LN2 FILL LINE
12. SECURE STATION

24-061A MRCS MRCE

RCS HE SMA LD LV1 (R208B)-ON-	KR9352
RCS HE SMB LOAD LV2 (R208A)-ON-	KR9353
RCS HE SMC LOAD LV3 (R209D) - ON	KR9375
RCS HE SMD LOAD LV4 (R209C) - ON	KR9376
RCS HE CMA LOAD LV5 (R209B) - ON	KR9377
RCS HE CMB LOAD LV6 (R209A) - ON	KR9378
RCS HE VENT LV7 (R210D) - ON	KR9351
SPS HE LOAD LV9 (R208D) - ON	KP7353
SPS HE VENT LV8 (R208C) - ON	KP7354

24-062 MRCS MRCE MONITOR..

132 PP2 (P16-17L)	FP5352
132 PP1 (P16-10R)	FR8361

WHEN PRESSURES ARE LESS THAN 50 PSIG..

RCS HE SMA LD LV1 (R208B) - OFF	KR9352
RCS HE SMB LOAD LV2 (R208A) - OFF	KR9353
RCS HE SMC LOAD LV3 (R209D) - OFF	KR9375
RCS HE SMD LOAD LV5 (R209C) - OFF	KR9376
RCS HE CMA LOAD LV6 (R209B) - OFF	KR9377
RCS HE CMB LOAD (R209A) - OFF	KR9378
RCS HE VENT LV7 (R210D) - OFF	KR9351
SPS HE LOAD LV9 (R208D) - OFF	KP7353
SPS HE VENT LV8 (R208C) - OFF	KP7354

24-063	MRCS	MRCE	SPS HE ISOL VAL (R210B) - OFF	KP7422
24-064	MRCS	MRCE	XDUCER PWR AND VAL POS PWR (C212) - OFF	KP7359 KP7360
		MRCE	210 000 0002 IS INSERTED	
		MRCE	ALL VALVE INDICATION LITES OFF	
24-065	MRCS	MRCE	CNTL COMD SPS/RCS (C212) - OFF	KV7351
		MRCE	210 000 0004 IS INSERTED	
24-066	MRCS	MRCE	FDS EMERG HE OR (R199A) - OFF	KV7352
24-067	MRCS	PORS	S14-061,, VERIFY FANS STOPPED. MAIN PWR CB1 - OFF. SECURE STATION.	
24-068	MRCS	PFRS	S14-060,, VERIFY FANS STOPPED. MAIN PWR CB1 - OFF. SECURE STATION.	
24-069	MRCS	MRCE	SPS FU VALVE POS POWER (R204C) - OFF	KP7358
			SPS FU XDUCER VOLT (R204D) - OFF	KP7357
			SPS FU CONT CMD (R204) - OFF	KP7363
			SPS FU EMERG OVERRIDE (R204B) - OFF	KP7364
24-070	MRCS	MRCE	SPS OX VALVE POS POWER (R200C) - OFF	KP7355
			SPS OX XDUCER VOLT (R200D) OFF	KP7355
			SPS OX CONT CMD (R200A) - OFF	KP7361
			SPS OX EMERG OVERRIDE (R200B) - OFF	KP7362
5 50 24-071	MRCS	MTPE	HELIUM LINE DISCONNECT COMPLETE. HELIUM SERVICING GSE IS POWERED DOWN. HELIUM PERSONNEL ARE CLEARING FOR SCAPE OPERATIONS.	

24-072 MSPS PGSM DISCONNECT AND REMOVE THE FOLLOWING GSE PER OCP-K-10027.

S14-060 FUEL TVD
FUEL LIQUID SEPARATOR

24-073 NOTE

BENDIX TO DISCONNECT AND STOW FOLLOWING FLEX LINES AT FUEL MSS OPERATIONAL DISCONNECT TOWER..

FUEL VENT
FUEL FILL AND DRAIN

BENDIX TO PERFORM THE FOLLOWING ON FUEL FACILITY TANKER..

1. CLOSE SHUT-OFF VALVE
2. DISCONNECT FACILITY TANKER FLEX LINE QD FROM FACILITY FDS INTERFACE FILL AND DRAIN PORT QD. STOW FLEX LINES.
3. REMOVE FUEL FACILITY TANKER TO CLEAR LC-39 AND FALL BACK AREA AFTER PAD OPEN.

24-074 MSPS SSMT 1. VERIFY FUEL FILL/DRAIN QD G33MD523F VALVE CLOSED AT S/C TP-15.

2. DISCONNECT QD FROM S/C TP-15 AND RECONNECT QD TO G14-849710-71 SPS FUEL PURGE LOOP.

24-075 MSPS SSMT 1. CLOSE FUEL RETURN LINE QD G33MD524F VALVE AT S/C TP-16.
2. DISCONNECT QD FROM S/C TP-16 AND RECONNECT QD TO G14-849710-71.

222 24-076 MSPS MTPE FUEL SCAPE CREW COMPLETE AND CLEARING.

24-077 MSPS PGSM DISCONNECT AND REMOVE THE FOLLOWING GSE PER OCP-K-10027..

S14-061 OXIDIZER TVD
OXIDIZER LIQUID SEPARATOR

24-078 NOTE

BENDIX TO DISCONNECT AND STOW FOLLOWING FLEX LINES AT OXID MSS OPERATIONAL DISCONNECT TOWER..

OXIDIZER VENT
OXIDIZER FILL AND DRAIN

BENDIX TO PERFORM THE FOLLOWING ON OXIDIZER FACILITY TANKER..

1. CLOSE SHUT-OFF VALVE
2. DISCONNECT FACILITY TANKER FLEX LINE QD FROM FACILITY FDS INTERFACE FILL AND DRAIN PORT QD. STOW FLEX LINES.
3. REMOVE OXIDIZER FACILITY TANKER TO CLEAR LC-39 AND FALL BACK AREA AFTER PAD OPEN.

24-079 MSPS SSMT 1. VERIFY OXID FILL/DRAIN QD G32MD529F VALVE CLOSED AT S/C TP-13.

2. DISCONNECT QD FROM S/C TP-13 AND RECONNECT QD TO G14-849710-81 SPS OXID PURGE LOOP.

24-080 MSPS SSMT 1. CLOSE OXID RETURN LINE QD G32MD530F VALVE AT S/C TP-14.

2. DISCONNECT QD FROM S/C TP-14 AND RECONNECT QD TO G14-849710-81 SPS OXID PURGE LOOP.

24-081 MSPS SSMT CLEAR MSS TO SCAPE TRAILER.

222 24-082 MSPS MTPE OXID SCAPE CREW COMPLETE AND CLEARING.

CAUTION

MRCS WILL MONITOR SM HELIUM MANIFOLD PRESSURES (RMP) THRUOUT REMAINDER OF COUNTDOWN OPERATIONS (LAUNCH ONLY). IF PRESSURE(S) INCREASE TO 205 PSIA, CLOSE PROP ISOL CB(S AND CLOSE APPROPRIATE HF NO. 2 ISOLATION VALVE.

222 24-083 MRCS MTPE LINE DISCONNECT IS COMPLETE.
HELIUM SERVICING GSE IS POWERED DOWN

CAUTION

MRCS WILL MONITOR SM HELIUM MANIFOLD PRESSURES (HMP) THRUOUT REMAINDER OF COUNTDOWN OPERATIONS (LAUNCH ONLY). IF PRESSURE(S) INCREASE TO 205 PSIA, CLOSE PROP ISOL CB'S AND CLOSE APPROPRIATE HE NO. 2 ISOLATION VALVE.

NOTE

FOLLOWING SEQUENCES ARE FOR CDDT ONLY AND ARE OMITTED LAUNCH DAY.

24-084 DISCONNECT CHECK AND HELIUM VENT - CDDT ONLY

222 24-085 MTPE MRCS PROCEED WITH LINE DISCONNECT CHECK AND VENT

222 24-086 MRCS SPAD VERIFY READY FOR DISCONNECT CHECK AND VENT.

WARNING

PERSONNEL WILL BE EQUIPPED WITH FACE SHIELDS AND GLOVES.

CAUTION

OBSERVE THE FOLLOWING STEPS DURING DISCONNECTION OF S/C HELIUM FILL COUPLINGS..

1. BACK OFF QD 3-5 TURNS (RCS), 6-8 TURNS (SPS), AND LISTEN FOR AUDIBLE HISSING. A POP WILL OCCUR WHEN POPPETS SEAT.
2. IF HISSING CONTINUES, RECONNECT QD AND NOTIFY MRCS.
3. IF HISSING CEASES, QD OPERATION IS SATISFACTORY. FULLY RECONNECT QD FOR HELIUM VENT.

NAR	QC	NASA QC

24-087 MRCS SSMT DISCONNECT, VERIFY OPERATION AND RECONNECT THE FOLLOWING..

1. SM QUAD A TP1
2. SM QUAD B TP1
3. SM QUAD C TP1
4. SM QUAD D TP1
5. SPS HE PANEL TP1

NAR QC	NASA QC

24-088 MRCS SCMT DISCONNECT, VERIFY OPERATION AND RECONNECT THE FOLLOWING..

1. CMA HE PANEL TP51
2. CMB HE PANEL TP1

NAR QC	NASA QC

24-089 SPAD MRCS ALL DISCONNECTS OPERATE SATISFACTORILY AND ARE RECONNECTED FOR HELIUM VENT. ALL PERSONNEL HAVE BEEN ADVISED THAT HELIUM VENTING IS IMMINENT AND HAVE BEEN CLEARED FROM HE VALVE BOX LOCATIONS ON 4C LEVEL.

NAR QC	NASA QC

24-090 MRCS MRCE

RCS HE SMA LD LV1 (R208B) - ON	KR9352
RCS HE SMB LOAD LV2 (R208A) - ON	KR9353
RCS HE SMC LOAD LV3 (R208D) - ON	KR9375
RCS HE SMD LOAD LV4 (R209C) - ON	KR9376
RCS HE CMA LOAD LV5 (R209B) - ON	KR9377
RCS HE CMB LOAD LV6 (R209A) - ON	KR9378
RCS HE VENT LV7 (R210D) - ON	KR9351
SPS HE LOAD LV9 (R208D) - ON	KP7353
SPS HE VENT LV8 (R208C) - ON	KP7354

24-090			WHEN S/C HE TANK PRESSURES SHOW NO FURTHER DECREASE..	
			RCS HE SMA LD LV1 (R208B) - OFF	KR9352
			RCS HE SMB LOAD LV2 (R208A) - OFF	KR9353
			RCS HE SMC LOAD LV3 (R209D) - OFF	KR9375
			RCS HE SMD LOAD LV4 (R209C) - OFF	KR9376
			RCS HE CMA LOAD LV5 (R209B) - OFF	KR9377
			RCS HE CMB LOAD LV6 (R209A) - OFF	KR9378
			RCS HE VENT LV7 (R210D) - OFF	KR9351
			SPS HE LOAD LV9 (R208D) - OFF	KP7353
			SPS HE VENT LV8 (R208C) - OFF	KP7354
24-091	MRCS	MRCE	SPS HE ISOL VAL (R210B) - OFF	KP7422
24-092	MRCS	MRCE	XDUCER PWR AND VAL POS PWR (C212) - OFF	KP7359 KP7360
		MRCE	210 000 0002 IS INSERTED	
		MRCE	ALL VALVE INDICATION LITES OFF	
24-093	MRCS	MRCE	CNTL COM'D SPS/RCS (C212) - OFF	KV7351
		MRCE	210 000 0004 IS INSERTED	
24-094	MRCS	MRCE	FDS EMERG HE OR (R199A) - OFF	KV7352
24-095	MRCS	MRCE	SPS FU VALVE POS POWER (R204C) - OFF	KP7358
			SPS FU XDUCER VOLT (R204D) - OFF	KP7357
			SPS FU CONT. CMD (R204A) - OFF	KP7363
			SPS FU EMERG OVERRIDE (204B) - OFF	KP7364
			SPS OX VALVE POS POWER (R200C) - OFF	KP7356
			SPS OX XDUCER VOLT (R200D) - OFF	KP7355
			SPS OX CONT CMD (R200A) - OFF	KP7361
			SPS OX EMERG OVERRIDE (R200B) - OFF	KP7362

24-095

NOTE

DURING FLEX HOSE DISCONNECT
PROCEED WITH SUBSEQUENT SEQ'S.

24-096 MRCS SSMT DISCONNECT THE FOLLOWING..
SM QUAD A TP1
SM QUAD B TP1
SM QUAD C TP1
SM QUAD D TP1
SPS HE PANEL TP1

NOTE

REPLACE A/B AND GND DUST CAPS
ON ALL COUPLINGS. DO NOT
TORQUE CAPS.

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NAR QC NASA QC

24-097 MRCS SCMT DISCONNECT THE FOLLOWING..,
CMA TP51
CMB TP1

NOTE

REPLACE A/B AND GND DUST CAPS
ON ALL COUPLINGS. DO NOT
TORQUE CAPS.

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NAR QC NASA QC

24-098 MRCS SPAD VERIFY COMPLETION OF HELIUM SERVICING
FLEXHOSE DISCONNECTION.

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NAR QC NASA QC

222 24-099 MRCS MTPE LINE DISCONNECT CHECK AND HELIUM
VENT IS COMPLETE. HELIUM PERSONNEL ARE
CLEARING FOR SCAPE OPERATIONS.

24-100 MSPS PGSM DISCONNECT AND REMOVE THE FOLLOWING GSE PER OCP-K-10027.

S14-060 FUEL TVD FUEL LIQUID SEPARATOR

24-101 NOTE

BENDIX TO DISCONNECT AND STOW FOLLOWING FLEX LINES AT FUEL MSS OPERATIONAL DISCONNECT TOWER..

FUEL VENT
FUEL FILL AND DRAIN

BENDIX TO PERFORM THE FOLLOWING ON FUEL FACILITY TANKER..

1. CLOSE SHUT-OFF VALVE
2. DISCONNECT FACILITY TANKER FLEX LINE. QD FROM FACILITY FDS INTERFACE FILL AND DRAIN PORT QD STOW FLEX LINES.
3. REMOVE FUEL FACILITY TANKER TO CLEAR LC-39 AND FALL BACK AREA AFTER PAD OPEN.

24-102 MSPS SSMT 1. VERIFY FUEL FILL/DRAIN QD G33MD523F VALVE CLOSED AT S/C TP-15.

2. DISCONNECT QD FROM S/C TP-15 AND RECONNECT QD TO G14-849710-71 SPS FUEL PURGE LOOP.

24-103 MSPS SSMT 1. CLOSE FUEL RETURN LINE QD G33MD524F VALVE AT S/C TP-16.

2. DISCONNECT QD FROM S/C TP-16 AND RECONNECT QD TO G14-849710-71 CLEAR CREW FROM MSS TO SCAPE TRAILER.

222 24-104 MSPS MTPE FUEL SCAPE CREW COMPLETE AND CLEARING.

24-105 MSPS PGSM DISCONNECT AND REMOVE THE FOLLOWING GSE PER OCP-K-10027..

S14-061 OXIDIZER TVD
OXIDIZER LIQUID SEPARATOR

24-106 NOTE

BENDIX TO DISCONNECT AND STOW FOLLOWING FLEX LINES AT OXID MSS OPERATIONAL DISCONNECT TOWER..

OXIDIZER VENT
OXIDIZER FILL AND DRAIN

BENDIX TO PERFORM THE FOLLOWING ON OXIDIZER FACILITY TANKER..

1. CLOSE SHUT-OFF VALVE

2. DISCONNECT FACILITY TANKER FLEX LINE QD FROM FACILITY FDS INTERFACE FILL AND DRAIN PORT. QD STOW FLEX LINES.

3. REMOVE OXIDIZER FACILITY TANKER TO CLEAR LC-39 AND FALL BACK AREA AFTER PAD OPEN.

24-107 MSPS SSMT 1. VERIFY OXID FILL/DRAIN QD G32MD529F VALVE CLOSED AT S/C TP-13.
2. DISCONNECT QD FROM S/C TP-13 AND RECONNECT QD TO G14-849710-81 SPS OXID PURGE LOOP.

24-108 MSPS SSMT 1. CLOSE OXID RETURN LINE QD G32MD530F VALVE AT S/C TP-14.
2. DISCONNECT QD FROM S/C TP-14 AND RECONNECT QD TO G14-849710-81 SPS OXID PURGE LOOP.

24-109 MSPS SSMT CLEAR MSS TO SCAPE TRAILER.

222 24-110 MSPS MTPE OXID SCAPE CREW COMPLETE AND CLEARING.

CAUTION

MRCS WILL MONITOR SM HELIUM MANIFOLD PRESSURES (BMP) THRUOUT REMAINDER OF COUNTDOWN OPERATIONS (LAUNCH ONLY). IF PRESSURE(S) INCREASE TO 205 PSIA, CLOSE PROP ISOL CB'S AND CLOSE APPROPRIATE HE NO. 2 ISOLATION VALVE.

SPS FUEL VENT AND DETANK INSTRUCTIONS

(LAUNCH COUNT ONLY)

SPS FUEL TANK VENT

(TO RELIEVE TANK PRESSURE AS DIRECTED)

24-111 MRCS SPS FU EMERG OVERRIDE - ON (R204B) KP7364
SPS FU CONT CMD (R204A) - ON KP7363
SPS FU XDUCER VOLT (R204D) - ON KP7357
SPS FU VALVE POS POWER (R204C) - ON KP7358

1. VERIFY/START TVD FANS (LOCALLY OR FROM ACE)

24-112 MRCS FUEL TVD START (R205) - ON KP7100

2. OPEN FUEL LV108 (MANUALLY OR FROM ACE) UNTIL DESIRED FTP IS REACHED.

24-113 MRCS SPS FUEL LV108 VENT (R205C) - ON KP7426

3. CLOSE LV108

24-114 MRCS SPS FUEL LV108 VENT (R205C) - OFF KP7426

4. STOP TVD FANS

24-115 MRCS

FUEL TVD STOP (R025) - ON	KP7101
SPS FU VALVE POS POWER (R204) - OFF	KP7358
SPS FU XDUCER VOLT (R204) - OFF	KP7357
SPS FU CONT CMD (R204) - OFF	KP7363
SPS FU EMERG OVERRIDE (R204) - OFF	KP7364

SPS FUEL DUMP SEQ AS DIRECTED

1. LEVEL 4A (MSS) (SCAPE OPERATION) AT SPACECRAFT TP-15 OPEN QD VALVE AT FUEL VALVE BOX PV101 TO LOAD (1-3).

MSPS 2. IF FTP IS 60 PSIA OR GREATER HELIUM VALVES WILL NOT REQUIRE CYCLING TO UNLOAD THE S/C. IF BELOW 60 PSIA, CYCLE HELIUM VALVES (R206 A, B) OPEN - CLOSED TO MAINTAIN FTP AT 25 PSIA MINIMUM, BUT DO NOT EXCEED 60 PSIA WHEN CYCLING HELIUM VALVES.

NOTE

A SUDDEN INCREMENTAL FLUCTUATION IN FTP INDICATES TANKS EMPTY OF LIQUIDS. ALSO TANKER PRESSURE AND FTP WILL EQUALIZE.

3. CLOSE WASTE TANKER SHUT-OFF VALVE WHEN S/C TANKS ARE EMPTY. CLOSE S/C TP-15 FUEL QD VALVE PV101 TO CIRC. (1-2).

SPS OXIDIZER VENT AND DETANK

INSTRUCTIONS (LAUNCH COUNT ONLY)

24-115 SPS OXIDIZER TANK VENT

(TO RELIEVE S/C OTP IN AN EMERGENCY)

24-116 MRCS SPS OX EMERG OVERRIDE (R200) - ON KP7362
SPS OX CONT CMD (R200) - ON KP7361
SPS OX XDUCER VOLT (R200) - ON KP7355
SPS OX VALVE POS POWER (R200) - ON KP7356

1. VERIFY/START OX. TVD FANS (LOCALLY OR FROM ACE)

24-117 MRCS OXID TVD START (R201) - ON KP7104

2. LV108 OPEN (MANUALLY OR ACE) UNTIL DESIRED OTP IS REACHED

24-118 MRCS SPS OXID LV108 VENT (R201) - ON KP7425

3. CLOSE LV108

24-119 MRCS SPS OXID LV108 VENT (R201) - OFF KP7425

4. STOP TVD FANS

24-120 MRCS OXID TVD STOP (R201) - OFF KP7105
SPS OX VALVE POS POWER (R200) - OFF KP7356
SPS OX XDUCER VOLT (R200) - OFF KP7355
SPS OX CONT CMD (R200) - OFF KP7361
SPS OX EMERG OVERRIDE (R200) - OFF KP7362

24-120

SPS OXIDIZER TANK UNLOAD AS DIRECTED

1. LEVEL 4A MSS (SCAPE OPERATION) S/C TP-13 OD VALVE (FILL AND DRAIN) OPEN PV101 (FDS OVB) LOAD (1-3)

MSPS 2. IF OTP IS 60 PSIA OR GREATER HELIUM VALVES SHALL NOT BE CYCLED TO UNLOAD OX TANKS. IF BELOW 60 PSIA, CYCLE HELIUM VALVES (R206 A, B) OPEN-CLOSED AS REQUIRED TO MAINTAIN OTP AT 25 PSIA MINIMUM, BUT DO NOT EXCEED 60 PSIA WHEN CYCLING HELIUM VALVES.

NOTE

A SUDDEN INCREMENTAL FLUCTUATION IN FTP INDICATES TANKS EMPTY OF LIQUIDS. ALSO TANKER PRESSURE AND FTP WILL EQUALIZE.

3. CLOSE WASTE TANKER SHUT-OFF VALVE CLOSE. S/C TP-13 OXIDIZER OD VALVE PV101 TO CIRC. (1-2).

-50 45 224 25-000 FUEL CELL OPERATIONS - MIDCOUNT

25-001 MLFC VERIFY THE FOLLOWING READY TO SUPPORT TEST

MHFC _____	SLHT _____	PLOM _____
MNQC _____	SLOM _____	PLHM _____
SOMD _____	SHFD _____	PNQC _____
SLOT _____	SLHM _____	
PGSM _____	SNQC _____	

25-002 MLFC PGSM VERIFY 02, AND H2 SUPPLIES HAVE BEEN SAMPLED AND MEET THE PURITY REQUIREMENTS FOR MSFC SPEC-399A FOR OXYGEN, MSFC SPEC-234 FOR NITROGEN MSFC SPEC-364A FOR HELIUM AND MSFC-SPEC-356 FOR HYDROGEN.

GN2 SAMPLE NO.	_____	_____
G02 SAMPLE NO.	_____	_____
L02 SAMPLE NO.	_____	_____
GHE SAMPLE NO.	_____	_____
GH2 SAMPLE NO.	_____	_____
LH2 SAMPLE NO.	_____	_____
	NAR QC _____	NASA QC _____

25-003 MLFC PGSM SW TO CH 222 AND REPORT TO MTPE

25-004 GSE POWER UP

25-005 MLFC SLHT H2 FDSCU NO. 1
MAIN POWER SW - ON
VALVE POS POWER SW - ON
TRANSDUCER POWER SW - ON
LOCAL/STANDBY SW - STANDBY

SLHT UNIT 1 MAIN POWER ON LITE ON
UNIT 1 MODE STANDBY LITE ON
UNIT 1 FDS GO LITE ON
UNIT 1 PURGE PRESSURE GO LITE ON
28 VDC METER VDC 28 +/-3

25-006 MLFC SLHT H2 FDSCU NO. 2
MAIN POWER SW - ON
LOCAL/STANDBY SW - STANDBY

SLHT UNIT 2 MAIN POWER ON LITE ON
UNIT 2 FDS GO LITE ON
UNIT 2 PURGE PRESSURE GO LITE ON
28 VDC METER VDC 28 +/-3

25-007 MLFC SLOT 02 FDSCU NO. 1
MAIN POWER SW - ON
VALVE POS POWER SW - ON
TRANSDUCER POWER SW - ON
LOCAL/STANDBY SW - STANDBY

SLOT UNIT 1 MAIN POWER ON LITE ON
UNIT 1 MODE STANDBY LITE ON
UNIT 1 FDS GO LITE ON
UNIT 1 PURGE PRESSURE GO LITE ON
28 VDC METER VDC 28 +/-3

25-008	MLFC	SLOT	02 FDSCU NO. 2 MAIN POWER SW - ON LOCAL/STANDBY SW - STANDBY		
		SLOT	UNIT 2 MAIN POWER ON LITE ON UNIT 2 FDS GO LITE ON UNIT 2 PURGE PRESSURE GO LITE ON 28 VDC METER VDC		28 +/-3

25-009	MLFC	MHFC	02 FDS INSTRUM - ON (R045)	KC7600	
			H2 FDS INSTRUM - ON (R045)	KC7576	
		MHFC	H2 STANDBY LITE ON	GC5022	
			02 STANDBY LITE ON	GV5011	
			026 LOCAL CONTROL LITE ON	FC5266	
			032 LOCAL CONTROL LITE ON	FC5232	
25-010	MLFC	MHFC	02 FDS CONTROL COMMAND-ON (R043)	KC7357	
			H2 FDS CONTROL COMMAND-ON (R043)	KC7359	
		MHFC	H2 REMOTE LITE ON	GC5023	
			02 REMOTE LITE ON	GV5012	
25-011	MLFC	SLOM	S14-032 LOCATION CONTROL SW,-REMOTE		
		MHFC	032 REMOTE CONT LITE ON	FC5230	
25-012	MLFC	SLHM	S14-026 LOCATION CONTROL SW.-REMOTE		
		MHFC	026 REMOTE CONT LITE ON	FC5265	

25-013 MLFC MHFC VERIFY THE FOLLOWING..

02 LV1	CLOSED	LITE	ON	FC5925
02 LV2	CLOSED	LITE	ON	FC5917
02 LV4	OPEN	LITE	OFF	FC5971
02 LV5	CLOSED	LITE	ON	FC5409
02 LV6	CLOSED	LITE	ON	FC5411
02 LV7	CLOSED	LITE	ON	FC5413
02 LV8	CLOSED	LITE	ON	FC5415
02 LV9	CLOSED	LITE	ON	FC5417
02 PV10	OPEN	LITE	ON	FC5980
02 PV11	OPEN	LITE	ON	FC5976
02 LV12	CLOSED	LITE	ON	FC5978
02 LV13	CLOSED	LITE	ON	FC5974
02 LV14	CLOSED	LITE	ON	FC5983
02 LV15	CLOSED	LITE	ON	FC5985
02 LV16	OPEN	LITE	ON	FC5987
02 LV17	CLOSED	LITE	ON	FC6001
02 LV18	CLOSED	LITE	ON	FC6003
02 LV22	CLOSED	LITE	ON	FC5432
N2 LV19	CLOSED	LITE	ON	FC6005
N2 LV20	CLOSED	LITE	ON	FC6007
N2 LV21	CLOSED	LITE	ON	FC5919
N2 LV23	CLOSED	LITE	ON	FC5434
H2 LV1	CLOSED	LITE	ON	FC5991
H2 LV2	CLOSED	LITE	ON	FC5993
H2 LV4	CLOSED	LITE	ON	FC5995
H2 LV5	CLOSED	LITE	ON	FC5379
H2 LV6	CLOSED	LITE	ON	FC5381
H2 LV7	CLOSED	LITE	ON	FC5383
H2 LV8	CLOSED	LITE	ON	FC5385
H2 LV9	CLOSED	LITE	ON	FC5387
H2 PV11	OPEN	LITE	ON	FC5999
H2 LV12	CLOSED	LITE	ON	FC6009
H2 LV13	CLOSED	LITE	ON	FC5997
H2 LV14	CLOSED	LITE	ON	FC6018
H2 LV15	CLOSED	LITE	ON	FC6020
H2 LV16	OPEN	LITE	ON	FC5392
H2 LV17	CLOSED	LITE	ON	FC6014
H2 LV18	CLOSED	LITE	ON	FC6016
H2 LV22	CLOSED	LITE	ON	FC5436
PV2	OPEN	LITE	ON	FC5154

25-014 MLFC PLHM S14-066

1. VERIFY/ADJUST GH2 SUPPLY FROM TUBE TRAILER TO 1150 PSIG MINIMUM.
2. VERIFY/OPEN VALVE MV1030.
3. VERIFY 1150 PSIG MINIMUM ON PI-17.
4. VERIFY/OPEN VALVES MV1028 AND MV1035.
5. ADJUST PCV-20 AS REQD TO OBTAIN APPROX 375 PSIG ON PI-7.

25-015 MLFC PLHM GH2 TUBE TRAILER TO S14-026
VERIFY/ADJUST GH2 SUPPLY PRESSURE TO S14-026 TO 350 +/- 25 PSIG.

25-016 MLFC PLOM S14-065

1. VERIFY G02 TUBE BANK TRAILER CONNECTED TO VALVE MV1141 AND ADJUSTED TO APPROX 2150 PSIG.
2. VALVE MV1141 - OPEN
3. VERIFY APPROX 2150 PSIG ON PI-65.
4. VERIFY/OPEN VALVES MV1114 AND MV1137.
5. ADJUST PCV-66 AS REQD TO OBTAIN APPROX 1150 PSIG ON PI-55.

25-017 MLFC PLOM G02 TUBE TRAILER TO S14-032
VERIFY/ADJUST G02 SUPPLY PRESSURE TO S14-032 TO 1150 +/- 50 PSIG.

25-018 MLFC SHFD S14-032 (GHE K-BOTTLE SUPPLY TO POD)
ADJUST K-BOTTLE REGULATOR TO 425 +/- 25 PSIG
VALVE G36MV102 - OPEN
VERIFY GAGE G36PG102 READS 425 +/- 25 PSIG.

25-019 MLFC SHFD S14-032 (GH2 K-BOTTLE SUPPLY TO FDS)
VERIFY/CLOSE VALVE G36MV100
VERIFY GAGE G36MV100 READS APPROX ZERO.

25-020 MLFC SOMD S14-032 (GN2 K-BOTTLE SUPPLY TO POD)
ADJUST K-BOTTLE REGULATOR TO 425 +/- 25 PSIG
VALVE G35MV102 - OPEN
VERIFY GAGE G35PG102 READS 425 +/- 25 PSIG.

25-021 MLFC SOMD S14-132 (GN2 K-BOTTLE SUPPLY TO FDS)
VERIFY/CLOSE VALVE G35MV101
VERIFY GAGE G35PG101 READS APPROX ZERO.

25-022 MLFC SOMD S14-132 (GO2 K-BOTTLE SUPPLY TO FDS)
VERIFY/CLOSE VALVE G35MV100
VERIFY GAGE G35PG100 READS APPROX ZERO.

25-023 MLFC SOMD S14-132 (O2)

G35PG1 -----	PSIG		500 +/- 25
G35PG3 -----	PSIG	------ NAR QC	4 +/- 1

25-024 MLFC SHFD S14-132 (H2)

G36PG6 -----	PSIG		500 +/- 25
G36PG3 -----	PSIG	------ NAR QC	4 +/- 1

	25-025	MLFC		FC1 DC VOLTS (P13-12)	SC2116 26 MAX
				FC2 DC VOLTS (P13-12)	SC2117 26 MAX
				FC3 DC VOLTS (P13-12)	SC2118 26 MAX
	25-026	MLFC	MHFC	VERIFY THE FOLLOWING	
				FC1 H2 PURGE LITE OFF	SC2130
				FC2 H2 PURGE LITE OFF	SC2131
				FC3 H2 PURGE LITE OFF	SC2132
				FC1 02 PURGE LITE OFF	SC2133
				FC2 02 PURGE LITE OFF	SC2134
				FC3 02 PURGE LITE OFF	SC2135
				02 PRESS SW LITE OFF	SF0092
				02 MOTOR SW LITE OFF	SF0093
				H2 PRESS SW LITE OFF	SF0094
				H2 MOTOR SW LITE OFF	SF0095
				FC1 O/H SHUT OFF LITE ON	SC2323
				FC2 O/H SHUT OFF LITE ON	SC2324
				FC3 O/H SHUT OFF LITE ON	SC2325
	25-027	MLFC	MHFC	FC1 GAS REG OP/CL - OFF (R033)	KC7463
				FC2 GAS REG OP/CL - OFF (R034)	KC7464
				FC3 GAS REG OP/CL - OFF (R035)	KC7465
				FC1 N2 FILL OP/CL - OFF (R033)	KC7051
				FC2 N2 FILL OP/CL - OFF (R034)	KC7052
				FC3 N2 FILL OP/CL - OFF (R035)	KC7053
→50	30 222	25-028	MLFC	MTPE	F/C GSE PWR UP COMPLETE. PROCEEDING WITH GN2 BLANKET INITIATION.

25-029 FC GN2 BLANKET INITIATION

-50 30 222 25-030 MLFC MHFC REAL TIME RECORDERS - 2 MM/SEC

25-031 MLFC SLOM S14-132
VERIFY/OPEN FAC GN2 SUPPLY VALVE
VERIFY 475-500 PSIG SUPPLY PRESSURE ON GAGE G35PG20

25-032 MLFC SOMD S14-132

GAGE G35PG7 _____	PSIG.			3 +/-2
GAGE G35PG6 _____	PSIG.			100 +/- 10
GAGE G35PG2 _____	PSIG		------ NAR QC	250 +/- 20

25-033 MLFS SHFD S14-132

GAGE G36PG2 _____	PSIG		------ NAR QC	250 +/- 20

NOTE

ADJUST REGULATORS AS NECESSARY.

MLFC	FC GN2 PRESS (P12-24) _____	PSIA	FC5465	25 MAX
MLFC	FC G02 PRESS (P12-22) _____	PSIA	FC5464	25 MAX
MLFC	FC GH2 PRESS (P12-22) _____	PSIA	FC5461	20 MAX

25-034 MLFC MHFC FC1 N2 FILL OP/CL - ON (R033) KC7051
FC2 N2 FILL OP/CL - ON (R034) KC7052
FC3 N2 FILL OP/CL - ON (R035) KC7053

NOTE

ALLOW STABILIZATION

25-035 MLFC FC1 N2 REG PRESS (P13-2) ----- PSIA SC2060 18+/-3
FC 2 N2 REG PRESS (P13-2) ----- PSIA SC2061 18+/-3
FC 3 N2 REG PRESS (P13-2) ----- PSIA SC2062 18+/-3

CAUTION

FUEL CELL N2 REGULATED
PRESSURE MUST NOT BE ALLOWED
TO DROP BELOW 14.7 PSIA OR
RISE ABOVE 20 PSIA TO PREVENT
FUEL CELL POWER PLANT DAMAGE.

-95 15 222 25-036 MLFC MTPE PREP FOR VACUUM PURGE COMPLETE.
PROCEEDING WITH FC AND CGSS VACUUM
PURGE PER SECTION 26. SEND SC01 TO
CH 224.

-50 15 224 26-000

FUEL CELL AND CGSS VACUUM PURGE

26-001 MTPE SC01 VERIFY ON STATION

NOTE

PERFORM THE NEXT 8 STEPS AT MLFC DISCRETION IF TANK VENTING IS DESIRED

26-002	MLFC	MHFC	032 PV5 VENT 02 TKS - ON (R032) THEN NORMALIZE.	KC7579
	MHFC		032 SC TNKS VT LITE ON	FC5164
26-003	MLFC		02 LV6 - OPEN (C060)	KC7594
			02 LV8 - OPEN (C060)	KC7596
			3+06+08-00 IS INSERTED	
	MHFC		02 LV6 OPEN LITE ON	FC5410
			02 LV8 OPEN LITE ON	FC5414

NOTE

WHEN THE S/C 02 TANKS ARE VENTED PERFORM THE FOLLOWING.

26-004	MLFC		02 LV8 - CLOSED (C060)	KC7596
			02 LV6 - CLOSED (C060)	KC7594
			3-06-08-00 IS INSERTED	
	MHFC		02 LV6 CLOSED LITE ON	FC5411
			02 LV8 CLOSED LITE ON	FC5415
26-005	MLFC	MHFC	026 PV5 VENT H2 TKS - ON (R032) THEN NORMALIZE	KC7578
	MHFC		026 SC TNKS VT LITE ON	FC5163
26-006	MLFC		H2 LV6 - OPEN (C060)	KC7570
			H2 LV8 - OPEN (C060)	KC7572
			5+06+08-00 IS INSERTED	
	MHFC		H2 LV6 OPEN LITE ON	FC5380
			H2 LV8 OPEN LITE ON	FC5384

26-006			NOTE WHEN THE S/C H2 TANKS ARE VENTED PERFORM THE FOLLOWING.		
26-007	MLFC		H2 LV6 - CLOSED (C060) H2 LV8 - CLOSED (C060) 5-06-08-00 IS INSERTED	KC7570 KC7572	
	MHFC		H2 LV6 CLOSED LITE ON H2 LV8 CLOSED LITE ON	FC5381 FC5385	
26-008	MLFC	MHFC	STOP 02 CRYO MODES - ON (R069) THEN NORMALIZE	KC7485	
	MHFC		032 SC TNKS VT LITE OFF	FC5164	
26-009	MLFC	MHFC	STOP H2 CRYO MODES - ON (R073) THEN NORMALIZE	KC7472	
	MHFC		026 SC TNKS VT LITE OFF	FC5163	
26-010	MLFC	SHFD	VERIFY/CONNECT G36FH531 AND G36FH527 TO A14-019 DISCONNECTS AT PORT HR AND PORT HV-EPS RESPECTIVELY.	------ NAR QC	------- NASA QC
26-011	MLFC		H2 LV1 - OPEN (C060) 5+01-00-00 IS INSERTED	KC7580	
	MHFC		H2 LV1 CLOSED LITE OFF	FC5991	
26-012	MLFC	SHFD	VERIFY MOTOR DRIVE PRESSURE IS 110 +/- 10 PSIG.	------ NAR QC	
26-013	MLFC		02 LV1 - OPEN (C060) 3+01-00-00 IS INSERTED	KC7560	
	MHFC		02 LV1 CLOSED LITE OFF	FC5925	

26-014	MLFC	SOMD	VERIFY MOTOR DRIVE PRESSURE IS 110 +/- 10 PSIG.	------ NAR QC

NOTES

1. VACUUM GAGE SHOULD INDICATE THAT THE PUMPS ARE PULLING A VACUUM.
2. REGULATE MOTOR SPEED VALVES IN FOLLOWING STEPS TO MAINTAIN VACUUM PER MLFC INSTRUCTIONS.

26-015	MLFC	H2 LV2 - OPEN (C060)	KC7561
		H2 LV4 - OPEN (C060)	KC7562
		H2 LV15 - OPEN (C060)	KC7575
		5+02+04+15 IS INSERTED	
	MHFC	H2 LV2 OPEN LITE ON	FC5992
		H2 LV4 OPEN LITE ON	FC5994
		H2 LV15 OPEN LITE ON	FC6019
		H2 LV16 CLOSED LITE ON	FC5391
26-016	MLFC	02 LV2 - OPEN (C060)	KC7581
		02 LV4 - OPEN (C060)	KC7583
		02 LV15 - OPEN (C060)	KC7599
		3+02+04+15 IS INSERTED	
	MHFC	02 LV2 OPEN LITE ON	FC5916
		02 LV4 OPEN LITE ON	FC5971
		02 LV15 OPEN LITE ON	FC5984
		02 LV16 CLOSED LITE ON	FC5986
26-017	MLFC	02 LV9 - OPEN (C060)	KC7597
		02 LV13 - OPEN (C060)	KC7584
		3+09+13-00 IS INSERTED	
	MHFC	02 LV9 OPEN LITE ON	FC5416
		02 PV11 CLOSED LITE ON	FC5975
		02 LV13 OPEN LITE ON	FC5973

26-018	MLFC		H2 LV9 - OPEN (C060)	KC7573
			H2 LV13 - OPEN (C060)	KC7563
			5+09+13-00 IS INSERTED	
	MHFC		H2 LV9 OPEN LITE ON	FC5386
			H2 PV11 CLOSED LITE ON	FC5998
			H2 LV13 OPEN LITE ON	FC5996
26-019	MLFC		H2 LV6 - OPEN (C060)	KC7570
			H2 LV8 - OPEN (C060)	KC7572
			5+06+08-00 IS INSERTED	
	MLFC		H2 LV6 OPEN LITE ON	FC5380
			H2 LV8 OPEN LITE ON	FC5384
26-020	MLFC		02 LV6 - OPEN (C060)	KC7594
			02 LV8 - OPEN (C060)	KC7596
			3+06+08-00 IS INSERTED	
	MHFC		02 LV6 OPEN LITE ON	FC5410
			02 LV8 OPEN LITE ON	FC5414
26-021	MLFC	MHFC	FC1 02 PURGE ON/OFF - ON (R037)	KC7318
			FC1 H2 PURGE ON/OFF - ON (R037)	KC7315
26-022	MLFC	MHFC	FC2 02 PURGE ON/OFF - ON (R038)	KC7319
			FC2 H2 PURGE ON/OFF - ON (R038)	KC7316
26-023	MLFC	MHFC	FC3 02 PURGE ON/OFF - ON (R039)	KC7320
			FC3 H2 PURGE ON/OFF - ON (R039)	KC7317
26-024	MLFC	SC01	PANEL 18	
			FC1 REACTANTS SW (S4) - ON - CENTER	
	SC01		VERIFY GRAY	
26-025	MLFC	SC01	PANEL 18	
			FC2 REACTANTS SW (S5) - ON - CENTER	
	SC01		VERIFY GRAY	
26-026	MLFC	SC01	PANEL 18	
			FC3 REACTANTS SW (S6) - ON - CENTER	
	SC01		VERIFY GRAY	
			RECORD TIME	

26-027 MLFC MONITOR THE FOLLOWING

FC1 02 REG PRESS (P13-3)	SC2066
FC2 02 REG PRESS (P13-3)	SC2067
FC3 02 REG PRESS (P13-3)	SC2068
FC1 H2 REG PRESS (P13-4)	SC2069
FC2 H2 REG PRESS (P13-4)	SC2070
FC3 H2 REG PRESS (P13-4)	SC2071

UNTIL PRESSURES ARE 0.5 PSIA OR LESS, THEN RECORD TIME _____.

MONITOR 02 VAC PRESS (P12-20)	FC5328
AND H2 VAC PRESS (P12-20)	FC5390

WHEN VAC PRESS IS 2.5 MM HG OR LESS.

RECORD TIME _____

26-028 MLFC SC01 SW TO CH 222

-49 45 222 26-029 MLFC MTPE 2 HOUR VACUUM PURGE HAS STARTED. BEGINNING FDS PURGE SC01 BACK ON CHANNEL.

NOTE

MAINTAIN SYSTEM PRESSURE FOR 2 HRS MINIMUM.

NOTE

DURING THIS PERIOD PERFORM THE FDS PURGES PER SECTION 27.

26-030	MLFC	MHFC	FC1-02 PURGE ON/OFF - OFF (R037)	KC7318
			FC1-H2 PURGE ON/OFF - OFF (R037)	KC7315
26-031	MLFC	MHFC	FC2-02 PURGE ON/OFF - OFF (R038)	KC7319
			FC2-H2 PURGE ON/OFF - OFF (R038)	KC7316
26-032	MLFC	MHFC	FC3-02 PURGE ON/OFF - OFF (R039)	KC7320
			FC3-H2 PURGE ON/OFF - OFF (R039)	KC7317
26-033	MLFC	SC01	PANEL 18 FC1 REACTANTS (S4) - OFF THEN CENTER	
	SC01		VERIFY BARBERPOLE	
26-034	MLFC	SC01	PANEL 18 FC2 REACTANTS (S5) - OFF THEN CENTER	
	SC01		VERIFY BARBERPOLE	
26-035	MLFC	SC01	PANEL 18 FC3 REACTANTS (S6) - OFF THEN CENTER	
	SC01		VERIFY BARBERPOLE	
			RECORD TIME ----------	
26-036	MLFC		H2 LV2 CLOSED (C060)	KC7591
			H2 LV9 - CLOSED (C060)	KC7573
			5-09-02-00 IS INSERTED	
	MHFC		H2 LV2 CLOSED LITE ON	FC5993
			H2 LV9 CLOSED LITE ON	FC5387

26-037	MLFC	02 LV2 - CLOSED (C060)	KC7581
		02 LV9 - CLOSED (C060)	KC7597
		3-09-02-00 IS INSERTED	
	MHFC	02 LV2 CLOSED LITE ON	FC5917
		02 LV9 CLOSED LITE ON	FC5417
26-038	MLFC	02 LV4 - CLOSED (C060)	KC7583
		02 LV6 - CLOSED (C060)	KC7594
		02 LV8 - CLOSED (C060)	KC7596
		3-04-06-08 IS INSERTED	
	MHFC	02 LV4 OPEN LITE OFF	FC5971
		02 LV6 CLOSED LITE ON	FC5411
		02 LV8 CLOSED LITE ON	FC5415
26-039	MLFC	H2 LV4 - CLOSED (C060)	KC7562
		H2 LV6 - CLOSED (C060)	KC7570
		H2 LV8 CLOSED (C060)	KC7572
		5-04-06-08 IS INSERTED	
	MHFC	H2 LV4 CLOSED LITE ON	FC5995
		H2 LV6 CLOSED LITE ON	FC5381
		H2 LV8 CLOSED LITE ON	FC5385
26-040	MLFC	H2 LV15 - CLOSED (C060)	KC7575
		H2 LV13 - CLOSED (C060)	KC7560
		H2 LV1 - CLOSED (C060)	KC7560
		5-01-15-13 IS INSERTED	
	MHFC	H2 LV1 CLOSED LITE ON	FC5991
		H2 PV11 OPEN LITE ON	FC5999
		H2 LV13 CLOSED LITE ON	FC5997
		H2 LV15 CLOSED LITE ON	FC6020
		H2 LV16 OPEN LITE ON	FC5392
26-041	MLFC	H2 LV6 - OPEN (C060)	KC7570
		H2 LV8 - OPEN (C060)	KC7572
		5+06+08-00 IS INSERTED	
	MHFC	H2 LV6 OPEN LITE ON	FC5380
		H2 LV8 OPEN LITE ON	FC5384

26-041			NOTE	
			PERFORM THE FOLLOWING 2 STEPS AS REQUIRED TO OBTAIN 10-40 PSIG IN H2 FDS VENT LINES.	
26-042	MLFC	MPWR	LIQUID DETANK H2 - ON (R073) NORMALIZE	KC7570
	MHFC		CRYO DRAIN LITE ON	FC5293
26-043	MLFC	MPWR	STOP H2 CRYO MODES - ON (R073) NORMALIZE	KC7472
26-044	MLFC		H2 LV6 - CLOSED (C060)	KC7570
	MHFC		CRYO DRAIN LITE OFF	FC5293
			H2 LV8 - CLOSED (C060) 5-06-08-00 IS INSERTED	KC7572
	MHFC		H2 LV6 CLOSED LITE ON	FC5381
			H2 LV8 CLOSED LITE ON	FC5385
26-045	MLFC		02 LV15 - CLOSED (C060)	KC7599
			02 LV13 - CLOSED (C060)	KC7584
			02 LV1 - CLOSED (C060) 3-01-15-13 IS INSERTED	KC7580
	MHFC		02 LV1 CLOSED LITE ON	FC5925
			02 PV11 OPEN LITE ON	FC5976
			02 LV13 CLOSED LITE ON	FC5974
			02 LV15 CLOSED LITE ON	FC5985
			02 LV16 OPEN LITE ON	FC5987
26-046	MLFC		02 LV6 - OPEN (C060)	KC7594
			02 LV8 - OPEN (C060) 3+06+08-00 IS INSERTED	KC7596
	MLFC		02 LV6 OPEN LITE ON	FC5410
			02 LV8 OPEN LITE ON	FC5414

26-046			NOTE	
			PERFORM THE FOLLOWING 2 STEPS AS REQUIRED TO OBTAIN 10-40 PSIG IN 02 FDS VENT LINES.	
26-047	MLFC	MPWR	LIQUID DETANK 02 - ON (R069) NORMALIZE	KC7240
	MHFC		CRYO DRAIN LITE ON	FC5258
26-048	MLFC	MPWR	STOP 02 CRYO MODES - ON (R069) NORMALIZE	KC7485
	MHFC		CRYO DRAIN LITE OFF	FC5258
26-049	MLFC		02 LV6 - CLOSED (C060) 02 LV8 - CLOSED (C060) 3-06-08-00 IS INSERTED	KC7594 KC7596
	MHFC		02 LV6 CLOSED LITE ON 02 LV8 CLOSED LITE ON	FC5411 FC5415
26-050	MLFC	MHFC	032 PV5 VENT 02 TKS - ON (R032) NORMALIZE 026 PV5 VENT H2 TKS - ON (R032)	KC7579 KC7578
	MHFC		032 SC TNKS VT LITE ON 026 SC TNKS VT LITE ON	FC5164 FC5163
26-051	MLFC	MPWR	STOP 02 CRYO MODES - ON (R069) NORMALIZE STOP H2 CRYO MODES - ON (R073) NORMALIZE	KC7485 KC7472
	MHFC		032 SC TNKS VT LITE OFF 026 SC TNKS VT LITE OFF	FC5164 FC5163

26-051

NOTE

FUEL CELL REACTANT PRESSURES WILL STILL BE AT 0.5 PSIA OR LESS AND GN2 PRESSURE AT 18 +/- 3 PSIA. PRESSURIZE PER SEQ. 28.

					RECORD TIME	NAR QC	NASA QC
	221	26-052	MLFC	SPAD	RECONFIGURE VENT LINES TO A14-019 PER OCP-K-10026 CHECKLIST 9.2./0007 6.2./0033		
-47	45 222	26-053	MLFC	MTPE	READY FOR F/C PRESSURIZATION PER SEQ 28. SEND MECS TO CH 224.		

-49 45

27-000 FC GSE FDS LINES PURGE - PRECOUNT

222 27-001 MLFC MTPE REQUEST SAFETY CLEARANCE TO FLOW GH2
RECORD TIME

224 27-002 MLFC SLHM S14-026
GN2 PURGE VALVE TO H2 VENT - OPEN

27-003 MLFC SHFD S14-132
GN2 PURGE VALVES (2) TO H2 VENTS
- OPEN

WARNING

HAZARDOUS STEPS FOLLOW

27-004 MLFC MPWR GH2 PORT E FC - ON (R074) KC7470
THEN NORMALIZE

MHFC FC H2 PORT E LITE ON KC5951

27-005 MLFC MPWR G02 PORT E FC - ON (R070) KC7478
THEN NORMALIZE

MHFC FC 02 PORT E LITE ON FC5955

27-006 MLFC 02 LV17 - OPEN (C060) KC7589
3+17-00-00 IS INSERTED

MHFC 02 LV17 OPEN LITE ON FC6000

27-007 MLFC H2 LV17 - OPEN (C060) KC7567
5+17-00-00 IS INSERTED

MHFC H2 LV17 OPEN LITE ON FC6013

27-008 MLFC MONITOR G02 PORT E PRESS FC5930
(P12-12) AND GH2 PORT E PRESS FC5953
(P12-12)

NOTE

WHEN G02 PRESSURE IS GREATER
THAN 900 PSIG AND GH2 PRESSURE
IS GREATER THAN 200 PSIG
PERFORM THE FOLLOWING.

27-009	MLFC	MPWR	STOP 026 FC MODES - ON (R074) THEN NORMALIZE	KC7280
	MHFC		FC H2 PORT E LITE OFF	FC5951
27-010	MLFC		H2 LV12 - OPEN (C060) 5+12-00-00 IS INSERTED	KC7564
	MHFC		H2 LV12 OPEN LITE ON	FC6008
27-011	MLFC	MPWR	STOP 032 FC MODES - ON (R070)	KC7250
			THEN NORMALIZE	
	MHFC		FC 02 PORT E LITE OFF	FC5955
27-012	MLFC		02 LV12 - OPEN (C060) 3+12-00-00 IS INSERTED	KC7585
	MHFC		02 LV12 OPEN LITE ON	FC5977
27-013	MLFC		MONITOR GO2 PORT E PRESS (P12-12) AND GH2 PORT E PRESS (P12-12)	FC5930 FC5953

NOTE

WHEN GO2 AND GH2 PRESSURES ARE LESS THAN 20 PSIG PERFORM THE FOLLOWING.

27-014	MLFC		02 LV12 - CLOSED (C060) 3-12-00-00 IS INSERTED	KC7585
	MHFC		02 LV12 CLOSED LITE ON	FC5978
27-015	MLFC		H2 LV12 - CLOSED (C060) 5-12-00-00 IS INSERTED	KC7564
	MHFC		H2 LV12 CLOSED LITE ON	FC6009
27-016	MLFC	MPWR	GH2 PORT E FC - ON (R074) THEN NORMALIZE	KC7470
	MHFC		FC H2 PORT E LITE ON	FC5951
27-017	MLFC	MPWR	GO2 PORT E FC - ON (R070) NORMALIZE	KC7478
	MHFC		FC 02 PORT E LITE ON	FC5955

27-018	MLFC		MONITOR GO2 PORT E PRESS (P12-12) AND GH2 PORT E PRESS (P12-12)	FC5930 FC5953
			NOTE WHEN GO2 PRESSURE IS GREATER THAN 900 PSIG AND GH2 PRESSURE IS GREATER THAN 200 PSIG PERFORM THE FOLLOWING.	
27-019	MLFC	MPWR	STOP 026 FC MODES - ON (R074) NORMALIZE	KC7280
	MHFC		FC H2 PORT E LITE OFF	FC5951
27-020	MLFC		H2 LV12 - OPEN (C060) 5+12-00-00 IS INSERTED	KC7564
	MHFC		H2 LV12 OPEN LITE ON	FC6008
27-021	MLFC	MPWR	STOP 032 FC MODES - ON (R070) NORMALIZE	KC7250
	MHFC		FC 02 PORT E LITE OFF	FC5955
27-022	MLFC		02 LV12 - OPEN (C060) 3+12-00-00 IS INSERTED	KC7585
	MHFC		02 LV12 OPEN LITE ON	FC5977
27-023	MLFC		MONITOR GO2 PORT E PRESS (P12-12) AND GH2 PORT E PRESS (P12-12)	FC5930 FC5953
			NOTE WHEN GO2 AND GH2 PRESSURES ARE LESS THAN 20 PSIG PERFORM THE FOLLOWING.	
27-024	MLFC		02 LV12 - CLOSED (C060) 3-12-00-00 IS INSERTED	KC7585
	MHFC		02 LV12 CLOSED LITE ON	FC5978

27-025	MLFC		H2 LV12 - CLOSED (C060) 5-12-00-00 IS INSERTED	KC7564
	MHFC		H2 LV12 CLOSED LITE ON	FC6009
27-026	MLFC	MPWR	GH2 PORT E FC - ON (R074) NORMALIZE	KC7470
	MHFC		FC H2 PORT E LITE ON	FC5951
27-027	MLFC	MPWR	GO2 PORT E FC - ON (R070) NORMALIZE	KC7478
	MHFC		FC 02 PORT E LITE ON	FC5955
27-028	MLFC		MONITOR GO2 PORT E PRESS (P12-12) AND GH2 PORT E PRESS (P12-12)	FC5930 FC5953

NOTE

WHEN GO2 PRESSURE IS GREATER THAN 900 PSIG AND GH2 PRESSURE IS GREATER THAN 200 PSIG PERFORM THE FOLLOWING.

27-029	MLFC	MPWR	STOP 026 FC MODES - ON (R074) NORMALIZE	KC7280
	MHFC		FC H2 PORT E LITE OFF	FC5951
27-030	MLFC		H2 LV12 - OPEN (C060) 5+12-00-00 IS INSERTED	KC7564
	MHFC		H2 LV12 OPEN LITE ON	FC6008
27-031	MLFC	MPWR	STOP 032 FC MODES - ON (R070) NORMALIZE	KC7250
	MHFC		FC 02 PORT E LITE OFF	FC5955

27-032	MLFC		02 LV12 - OPEN (C060) 3+12-00-00 IS INSERTED	KC7585
	MHFC		02 LV12 OPEN LITE ON	FC5977
27-033	MLFC		MONITOR GO2 PORT E PRESS (P12-12) AND GH2 PORT E PRESS (P12-12)	FC5930 FC5953

NOTE

WHEN GO2 AND GH2 PRESSURES ARE LESS THAN 20 PSIG PERFORM THE FOLLOWING.

27-034	MLFC		02 LV12 - CLOSED (C060) 3-12-00-00 IS INSERTED	KC7585
	MHFC		02 LV12 CLOSED LITE ON	FC5978
27-035	MLFC		H2 LV12 - CLOSED (C060) 5-12-00-00 IS INSERTED	KC7564
	MHFC		H2 LV12 CLOSED LITE ON	FC6009
27-036	MLFC	MPWR	GH2 PORT E FC - ON (R074) NORMALIZE	KC7470
	MHFC		FC H2 PORT E LITE ON	FC5951
27-037	MLFC	MPWR	GO2 PORT E FC - ON (R070) NORMALIZE	KC7478
	MHFC		FC 02 PORT E LITE ON	FC5955
27-038	MLFC		MONITOR GO2 PORT E PRESS (P12-12) AND GH2 PORT E PRESS (P12-12)	FC5930 FC5953

NOTE

WHEN GO2 PRESSURE IS GREATER THAN 900 PSIG AND GH2 PRESSURE IS GREATER THAN 200 PSIG PERFORM THE FOLLOWING.

27-039	MLFC	MHFC	STOP 026 FC MODES - ON (R074) NORMALIZE	KC7280
	MHFC		FC H2 PORT E LITE OFF	FC5951
27-040	MLFC		H2 LV12 - OPEN (C060) 5+12-00-00 IS INSERTED	KC7564
	MHFC		H2 LV12 OPEN LITE ON	FC6008
27-041	MLFC	MHFC	STOP 032 FC MODES - ON (R070) NORMALIZE	KC7250
	MHFC		FC 02 PORT E LITE OFF	FC5955
27-042	MLFC		02 LV12 - OPEN (C060) 3+12-00-00 IS INSERTED	KC7585
	MHFC		02 LV12 OPEN LITE ON	FC5977
27-043	MLFC		MONITOR GO2 PORT E PRESS (P12-12) AND GH2 PORT E PRESS (P12-12)	FC5930 FC5953
			NOTE WHEN GO2 AND GH2 PRESSURES ARE LESS THAN 20 PSIG PERFORM THE FOLLOWING.	
27-044	MLFC		02 LV12 - CLOSED (C060) 3-12-00-00 IS INSERTED	KC7585
	MHFC		02 LV12 CLOSED LITE ON	FC5978
27-045	MLFC		H2 LV12 - CLOSED (C060) 5-12-00-00 IS INSERTED	KC7564
	MHFC		H2 LV12 CLOSED LITE ON	FC6009
27-046	MLFC	MPWR	GH2 PORT E FC - ON (R074) NORMALIZE	KC7470
	MHFC		FC H2 PORT E LITE ON	FC5951
27-047	MLFC	MPWR	GO2 PORT E FC - ON (R070) NORMALIZE	KC7478
	MHFC		FC 02 PORT E LITE ON	FC5955

27-048	MLFC		MONITOR G02 PORT E PRESS (P12-12) AND GH2 PORT E PRESS (P12-12)	FC5930 FC5953
			NOTE WHEN G02 PRESSURE IS GREATER THAN 900 PSIG AND GH2 PRESSURE IS GREATER THAN 200 PSIG PERFORM THE FOLLOWING.	
27-049	MLFC	MPWR	STOP 026 FC MODES - ON (R074) NORMALIZE	KC7280
	MHFC		FC H2 PORT E LITE OFF	FC5951
27-050	MLFC		H2 LV12 - OPEN (C060) 5+12-00-00 IS INSERTED	KC7564
	MHFC		H2 LV12 OPEN LITE ON	FC6008
27-051	MLFC	MPWR	STOP 032 FC MODES - ON (R070) NORMALIZE	KC7250
	MHFC		FC 02 PORT E LITE OFF	FC5955
27-052	MLFC		02 LV12 - OPEN (C060) 3+12-00-00 IS INSERTED	KC7585
	MHFC		02 LV12 OPEN LITE ON	FC5977
27-053	MLFC		MONITOR G02 PORT E PRESS (P12-12) AND GH2 PORT E PRESS (P12-12)	FC5930 FC5953
			NOTE WHEN G02 AND GH2 PRESSURES ARE LESS THAN 20 PSIG PERFORM THE FOLLOWING.	
27-054	MLFC		02 LV12 - CLOSED (C060) 02 LV17 - CLOSED (C060) 02 LV18 - OPEN (C060) 3-12-17+18 IS INSERTED	KC7585 KC7589 KC7590

27-054		MHFC	02 LV12 CLOSED LITE ON	FC5978
			02 LV17 CLOSED LITE ON	FC6001
			02 LV18 OPEN LITE ON	FC6002
27-055	MLFC		H2 LV12 - CLOSED (C060)	KC7564
			H2 LV17 - CLOSED (C060)	KC7567
			H2 LV18 - OPEN (C060)	KC7568
			5-12-17+18 IS INSERTED	
		MHFC	H2 LV12 CLOSED LITE ON	FC6009
			H2 LV17 CLOSED LITE ON	FC6014
			H2 LV18 OPEN LITE ON	FC6015
27-056	MLFC	MPWR	GH2 PORT E FC - ON (R074)	KC7470
			NORMALIZE	
	MHFC		FC H2 PORT E LITE ON	FC5951
27-057	MLFC	MPWR	G02 PORT E FC - ON (R070)	KC7478
			NORMALIZE	
	MHFC		FC 02 PORT E LITE ON	FC5955
27-058	MLFC		MONITOR G02 PORT E PRESS	FC5930
			(P12-12) AND GH2 PORT E PRESS	FC5953
			(P12-12)	

NOTE

WHEN G02 PRESSURE IS 900 PSIG OR GREATER AND GH2 PRESSURE IS GREATER THAN 200 PSIG PERFORM THE FOLLOWING.

27-059	MLFC	MPWR	STOP 026 FC MODES - ON (R074)	KC7280
			NORMALIZE	
	MHFC		FC H2 PORT E LITE OFF	FC5951
27-060	MLFC		H2 LV12 - OPEN (C060)	KC7564
			5+12-00-00 IS INSERTED	
	MHFC		H2 LV12 OPEN LITE ON	FC6008

27-061	MLFC	MPWR	STOP 032 FC MODES - ON (R070) NORMALIZE	KC7250
	MHFC		FC 02 PORT E LITE OFF	FC5955
27-062	MLFC		02 LV12 - OPEN (C060) 3+12-00-00 IS INSERTED	KC7585
	MHFC		02 LV12 OPEN LITE ON	FC5977
27-063	MLFC		MONITOR GO2 PORT E PRESS (P12-12) AND GH2 PORT E PRESS (P12-12)	FC5930 FC5953

NOTE

WHEN GO2 AND GH2 PRESSURES ARE LESS THAN 20 PSIG PERFORM THE FOLLOWING.

27-064	MLFC		02 LV12 - CLOSED (C060) 02 LV18 - CLOSED (C060) 3-12-18-00 IS INSERTED	KC7585 KC7590
	MHFC		02 LV12 CLOSED LITE ON 02 LV18 CLOSED LITE ON	FC5978 FC6003
27-065	MLFC	MHFC	GO2 PORT E FC - ON (R070) NORMALIZE	KC7478
	MHFC		FC 02 PORT E LITE ON	FC5955
27-066	MLFC		H2 LV12 - CLOSED (C060) H2 LV18 - CLOSED (C060) 5-12-18-00 IS INSERTED	KC7564 KC7568
	MHFC		H2 LV12 CLOSED LITE ON H2 LV18 CLOSED LITE ON	FC6009 FC6018

27-067	MLFC	MHFC	GH2 PORT E FC - ON (R074) NORMALIZE	KC7470
		MHFC	FC GH2 PORT E LITE ON	FC5951
27-068	MLFC	SHFD	S14-132 GN2 PURGE VALVES (2) TO H2 VENTS - CLOSED	
27-069	MLFC	SLHM	S14-026 GN2 PURGE VALVE TO H2 VENT - CLOSED RECORD TIME	

NOTE

HAZARDOUS STEPS COMPLETED

-48 45

27-069 LO2 XFER LINES PURGE

27-070	MLFC	SLOM	S14-132 (O2) G35MV501 - OPEN G35MV505 - OPEN	
	MHFC		HE PURG RDY LITE ON	FC5235
27-071	MLFC		O2 PV10 - CLOSED (C060) 3-10-00-00 IS INSERTED	KC7586
	MHFC		O2 PV10 CLOSED LITE ON	FC5979
27-072	MLFC	MPWR	GHE PURGE PRE-X - ON (R064) NORMALIZE	KC7242
	MHFC		HE PRE 1/P LITE ON	FC5236

NOTE

WHEN PORT D PRESS (P12-09) REACHES 250 +/- 50 PSIG PERFORM THE FOLLOWING.. FC5255

27-073	MLFC	MPWR	STOP O2 CRYO MODES - ON (R069) NORMALIZE	KC7485
	MHFC		HE PURG RDY LITE ON	FC5235
27-074	MLFC		O2 PV10 - OPEN (C060) 3+10-00-00 IS INSERTED	KC7586
	MHFC		O2 PV10 OPEN LITE ON	FC5980

NOTE

WHEN O2 FILL PRESS (P12-15) READS LESS THAN 30 PSIG PERFORM THE FOLLOWING.. FC5351

27-075	MLFC		O2 PV10 - CLOSED (C060) 3-10-00-00 IS INSERTED	KC7586
	MHFC		O2 PV10 CLOSED LITE ON	FC5979

27-076	MLFC	MPWR	GHE PURGE PRE-X - ON (R064) NORMALIZE	KC7242
	MHFC		HE PRE 1/P LITE ON	FC5236
			NOTE	
			WHEN PORT D PRESS (P12-09) REACHES 250 +/- 50 PSIG PERFORM THE FOLLOWING..	FC5255
27-077	MLFC	MPWR	STOP 02 CRYO MODES - ON (R069) NORMALIZE	KC7485
	MHFC		HE PURG RDY LITE ON	FC5235
27-078	MLFC		02 PV10 - OPEN (C060) 3+10-00-00 IS INSERTED	KC7586
	MHFC		02 PV10 OPEN LITE ON	FC5980
			NOTE	
			WHEN 02 FILL PRESS (P12-15) READS LESS THAN 30 PSIG PERFORM THE FOLLOWING..	FC5351
27-079	MLFC		02 PV10 - CLOSED (C060) 3-10-00-00 IS INSERTED	KC7586
	MHFC		02 PV10 CLOSED LITE ON	FC5979
27-080	MLFC	MPWR	GHE PURGE PRE-X - ON (R064) NORMALIZE	KC7242
	MHFC		HE PRE 1/P LITE ON	FC5236
			NOTE	
			WHEN PORT D PRESS (P12-09) REACHES 250 +/- 50 PSIG PERFORM THE FOLLOWING..	FC5255

27-081	MLFC	MPWR	STOP 02 CRYO MODES - ON (R069) NORMALIZE	KC7485
	MHFC		HE PURG RDY LITE ON	FC5235
27-082	MLFC		02 PV10 - OPEN (C060) 3+10-00-00 IS INSERTED	KC7586
	MHFC		02 PV10 OPEN LITE ON	FC5980
			NOTE	
			WHEN 02 FILL PRESS (P12-15) READS LESS THAN 30 PSIG PERFORM THE FOLLOWING..	FC5351
27-083	MLFC		02 PV10 - CLOSED (C060) 3-10-00-00 IS INSERTED	KC7586
	MHFC		02 PV10 CLOSED LITE ON	FC5979
27-084	MLFC	MPWR	GHE PURGE PRE-X - ON (R064) NORMALIZE	KC7242
	MHFC		HE PRE 1/P LITE ON	FC5236
			NOTE	
			WHEN PORT D PRESS (P12-09) REACHES 250 +/- 50 PSIG PERFORM THE FOLLOWING..	FC5255
27-085	MLFC	MPWR	STOP 02 CRYO MODES - ON (R069) NORMALIZE	KC7485
	MHFC		HE PURG RDY LITE ON	FC5235
27-086	MLFC		02 PV10 - OPEN (C060) 3+10-00-00 IS INSERTED	KC7586
	MHFC		02 PV10 OPEN LITE ON	FC5980

27-086			NOTE	
			WHEN 02 FILL PRESS (P12-15) READS LESS THAN 30 PSIG PERFORM THE FOLLOWING..	FC5351
27-087	MLFC		02 PV10 - CLOSED (C060) 3-10-00-00 IS INSERTED	FC7586
	MHFC		02 PV10 CLOSED LITE ON	FC5979
27-088	MLFC	MPWR	GHE PURGE PRE-X - ON (R064) NORMALIZE	KC7242
	MHFC		HE PRE 1/P LITE ON	FC5236
			NOTE	
			WHEN PORT D PRESS (P12-09) REACHES 250 +/- 50 PSIG PERFORM THE FOLLOWING..	FC5255
27-089	MLFC	MPWR	STOP 02 CRYO MODES - ON (R069) NORMALIZE	KC7485
	MHFC		HE PURG RDY LITE ON	FC5235
27-090	MLFC		02 PV10 - OPEN (C060) 3+10-00-00 IS INSERTED	KC7586
	MHFC		02 PV10 OPEN LITE ON	FC5980
			NOTE	
			WHEN 02 FILL PRESS (P12-15) READS LESS THAN 30 PSIG PERFORM THE FOLLOWING..	FC5351
27-091	MLFC		02 PV10 - CLOSED (C060) 3-10-00-00 IS INSERTED	KC7586
	MHFC		02 PV10 CLOSED LITE ON	FC5979

27-092 MLFC SLOM S14-132
VALVE G35MV504 - OPEN

27-093 MLFC MPWR GHE PURGE PRE-X - ON (R064) KC7242
NORMALIZE

MHFC HE PRE COMPLETE LITE ON FC5237
02 PURGE READY LITE ON FC5238

27-094 MLFC SLOM S14-132
VALVE G35MV504 - CLOSED

27-095 MLFC 02 PV10 - OPEN (C060) KC7586
3+10-00-00 IS INSERTED

MHFC 02 PV10 OPEN LITE ON FC5980

NOTE

WHEN 02 FILL PRESS FC5351
(P12-15) READS LESS THAN
30 PSIG PERFORM THE
FOLLOWING..

27-096 MLFC 02 PV10 - CLOSED (C060) KC7586
3-10-00-00 IS INSERTED

MHFC 02 PV10 CLOSED LITE ON FC5979

WARNING

HAZARDOUS STEPS FOLLOW

27-097 MLFC MPWR G02 PURGE PRE-X - ON (R064) KC7244
NORMALIZE

MHFC 02 PRE 1/P LITE ON FC5239

NOTE

WHEN PORT D PRESS FC5255
(P12-09) REACHES 250 +/-
50 PSIG PERFORM THE
FOLLOWING..

27-098	MLFC	MPWR	STOP 02 CRYO MODES - ON (R069) NORMALIZE	KC7485
	MHFC		HE PRE CMP LITE ON 02 PURGE RDY LITE ON	FC5237 FC5238
27-099	MLFC		02 PV10 - OPEN (C060) 3+10-00-00 IS INSERTED	KC7586
	MHFC		02 PV10 OPEN LITE ON	FC5980
			NOTE	
			WHEN 02 FILL PRESS (P12-15) READS LESS THAN 30 PSIG PERFORM THE FOLLOWING..	FC5351
27-100	MLFC		02 PV10 - CLOSED (C060) 3-10-00-00 IS INSERTED	KC7586
	MHFC		02 PV10 CLOSED LITE ON	FC5979
27-101	MLFC	MPWR	GO2 PURGE PRE-X - ON (R064) NORMALIZE	KC7244
	MHFC		02 PRE 1/P LITE ON	FC5239
			NOTE	
			WHEN PORT D PRESS (P12-09) REACHES 250 +/- 50 PSIG PERFORM THE FOLLOWING..	FC5255
27-102	MLFC	MPWR	STOP 02 CRYO MODES - ON (R069) NORMALIZE	KC7485
	MHFC		HE PRE CMP LITE ON 02 PURGE RDY LITE ON	FC5237 FC5238
27-103	MLFC		02 PV10 - OPEN (C060) 3+10-00-00 IS INSERTED	KC7586
	MHFC		02 PV10 OPEN LITE ON	FC5980

27-103 NOTE

WHEN 02 FILL PRESS (P12-15) READS LESS THAN 30 PSIG PERFORM THE FOLLOWING.. FC5351

27-104 MLFC 02 PV10 - CLOSED (C060) 3-10-00-00 IS INSERTED KC7586

MHFC 02 PV10 CLOSED LITE ON FC5979

27-105 MLFC MPWR GO2 PURGE PRE-X - ON (R064) NORMALIZE KC7244

MHFC 02 PRE 1/P LITE ON FC5239

NOTE

WHEN PORT D PRESS (P12-09) REACHES 250 +/- 50 PSIG PERFORM THE FOLLOWING.. FC5255

27-106 MLFC MPWR STOP 02 CRYO MODES - ON (R069) NORMALIZE KC7485

MHFC HE PRE CMP LITE ON FC5237
02 PURGE RDY LITE ON FC5238

27-107 MLFC 02 PV10 - OPEN (C060) 3+10-00-00 IS INSERTED KC7586

MHFC 02 PV10 OPEN LITE ON FC5980

NOTE

WHEN 02 FILL PRESS (P12-15) READS LESS THAN 30 PSIG PERFORM THE FOLLOWING.. FC5351

27-108	MLFC		02 PV10 - CLOSED (C060) 3-10-00-00 IS INSERTED	KC7586
	MHFC		02 PV10 CLOSED LITE ON	FC5979
27-109	MLFC	MPWR	G02 PURGE PRE-X - ON (R064) NORMALIZE	KC7244
	MHFC		02 PRE 1/P LITE ON	FC5239
			NOTE	
			WHEN PORT D PRESS (P12-09) REACHES 250 +/- 50 PSIG PERFORM THE FOLLOWING..	FC5255
27-110	MLFC	MPWR	STOP 02 CRYO MODES - ON (R069) NORMALIZE	KC7485
	MHFC		HE PRE CMP LITE ON 02 PURGE RDY LITE ON	FC5237 FC5238
27-111	MLFC		02 PV10 - OPEN (C060) 3+10-00-00 IS INSERTED	KC7586
	MHFC		02 PV10 OPEN LITE ON	FC5980
			NOTE	
			WHEN 02 FILL PRESS (P12-15) READS LESS THAN 30 PSIG PERFORM THE FOLLOWING..	FC5351
27-112	MLFC		02 PV10 - CLOSED (C060) 3-10-00-00 IS INSERTED	KC7586
	MHFC		02 PV10 CLOSED LITE ON	FC5979
27-113	MLFC	MPWR	G02 PURGE PRE-X - ON (R064) NORMALIZE	KC7244
	MHFC		02 PRE 1/P LITE ON	FC5239

27-113			NOTE	
			WHEN PORT D PRESS (P12-09) REACHES 250 +/- 50 PSIG PERFORM THE FOLLOWING..	FC5255
27-114	MLFC	MPWR	STOP 02 CRYO MODES - ON (R069) NORMALIZE	KC7485
	MHFC		HE PRE CMP LITE ON	FC5237
			02 PURGE RDY LITE ON	FC5238
27-115	MLFC		02 PV10 - OPEN (C060) 3+10-00-00 IS INSERTED	KC7586
	MHFC		02 PV10 OPEN LITE ON	FC5980
			NOTE	
			WHEN 02 FILL PRESS (P12-15) READS LESS THAN 30 PSIG PERFORM THE FOLLOWING..	FC5351
27-116	MLFC		02 PV10 - CLOSED (C060) 3-10-00-00 IS INSERTED	KC7586
	MHFC		02 PV10 CLOSED LITE ON	FC5979
27-117	MLFC	SLOM	S14-132 VALVE G35MV504 - OPEN	
27-118	MLFC	MPWR	G02 PURGE PRE-X - ON (R064) NORMALIZE	KC7244
	MHFC		02 PRE CMP LITE ON	FC5240
27-119	MLFC		02 PV10 - OPEN (C060) 3+10-00-00 IS INSERTED	KC7586
	MHFC		02 PV10 OPEN LITE ON	FC5980

27-120 MLFC SLOM S14-132 (02)
VALVE G35MV504 - CLOSED
VALVE G35MV501 - CLOSED
VALVE G35MV505 - CLOSED

27-121 MLFC SLOM S14-032
VALVE MV7 - OPEN

AFTER 5 - 10 SECONDS PERFORM
THE FOLLOWING

27-122 MLFC SLOM S14-032
VALVE MV7 - AUTO
RECORD TIME

NOTE

HAZARDOUS STEPS COMPLETED

43 15 27-122 LH2 TRANSFER LINES PURGE

222 27-123 MLFC MTPE VERIFY SAFETY CLEARANCE STILL IN EFFECT FOR GH2 FLOW

224 27-124 MLFC SLHM S14-026
GN2 PURGE VALVE TO H2 VENT - OPEN

27-125 MLFC SHFD S14-132
GN2 PURGE VALVES (2) TO H2 VENTS - OPEN

27-126 MLFC SLHM S14-132 (H2)
VALVE G36MV501 - OPEN
VALVE G36MV505 - OPEN

MHFC HE PURG RDY LITE ON FC5270

27-127 MLFC MHFC H2 OUT TO SC LV29 - ON (R051) KC7678

27-128 MLFC MHFC LST SUB CLR PRG LV33 - ON (R050) KC7725

27-129 MLFC SHFD S14-132 (LH2 SUBCOOLER)
VERIFY PV2 CLOSED
PV3 OPEN

27-130 MLFC MHFC GHE PURGE PPE-X - ON (R048) KC7272
NORMALIZE

MHFC HE PRE 1/P LITE ON FC5271

NOTE

WHEN PORT D PRESS (P12-09) FC5290
REACHES 250 +/- 50 PSIG
PERFORM THE FOLLOWING..

27-131 MLFC MPWR STOP H2 CRYO MODES - ON (R073) KC7472
NORMALIZE

MHFC HE PURG RDY LITE ON FC5270

27-132 MLFC MHFC LST H2 DISPOS LV34 - ON (R051) KC7726

MHFC PV2 OPEN LITE ON FC5154

27-132			NOTE	
			WHEN H2 FILL PRESS (P12-15) READS LESS THAN 20 PSIG PERFORM THE FOLLOWING..	FC5356
27-133	MLFC	MHFC	LST H2 DISPOS LV34 - OFF (R051)	KC7726
	MHFC		PV2 OPEN LITE OFF	FC5154
27-134	MLFC	MHFC	GHE PURGE PRE-X - ON (R048) NORMALIZE	KC7272
	MHFC		HE PRE 1/P LITE ON	FC5271
			PERFORM THE FOLLOWING.. REACHES 250 +/- 50 PSIG WHEN PORT D PRESS (P12-09)	FC5290
			NOTE	
27-135	MLFC	MPWR	STOP H2 CRYO MODES - ON (R073) NORMALIZE	KC7572
	MHFC		HE PURG RDY LITE ON	FC5270
27-136	MLFC	MHFC	LST H2 DISPOS LV34 - ON (R051)	KC7726
	MHFC		PV2 OPEN LITE ON	FC5154
			NOTE	
			WHEN H2 FILL PRESS (P12-15) READS LESS THAN 20 PSIG PERFORM THE FOLLOWING..	FC5356
27-137	MLFC	MHFC	LST H2 DISPOS LV34 - OFF (R051)	KC7726
	MHFC		PV2 OPEN LITE OFF	FC5154
27-138	MLFC	MHFC	GHE PURGE PRE-X - ON (R048) NORMALIZE	KC7272
	MHFC		HE PRE 1/P LITE ON	FC5271

27-138			NOTE	
			WHEN PORT D PRESS (P12-09) REACHES 250 +/- 50 PSIG PERFORM THE FOLLOWING..	FC5290
27-139	MLFC	MPWR	STOP H2 CRYO MODES - ON (R073) NORMALIZE	KC7472
	MHFC		HE PURG RDY LITE ON	FC5270
27-140	MLFC	MHFC	LST H2 DISPOS LV34 - ON (R051)	KC7726
	MHFC		PV2 OPEN LITE ON	FC5154
			NOTE	
			WHEN H2 FILL PRESS (P12-15) READS LESS THAN 20 PSIG PERFORM THE FOLLOWING..	FC5356
27-141	MLFC	MHFC	LST H2 DISPOS LV34 - OFF (R051)	KC7726
	MHFC		PV2 OPEN LITE OFF	FC5154
27-142	MLFC	MHFC	GHE PURGE PRE-X - ON (R048) NORMALIZE	KC7272
	MHFC		H2 PRE 1/P LITE ON	FC5271
			NOTE	
			WHEN PORT D PRESS (P12-09) REACHES 250 +/- 50 PSIG PERFORM THE FOLLOWING..	FC5290
27-143	MLFC	MPWR	STOP H2 CRYO MODES - ON (R073) NORMALIZE	KC7472
	MHFC		HE PURG RDY LITE ON	FC5270
27-144	MLFC	MHFC	LST H2 DISPOS LV34 - ON (R051)	KC7726
	MHFC		PV2 OPEN LITE ON	FC5154

27-144			NOTE	
			WHEN H2 FILL PRESS (P12-15) READS LESS THAN 20 PSIG PERFORM THE FOLLOWING..	FC5356
27-145	MLFC	MHFC	LST H2 DISPOS LV34 - OFF (R051)	KC7726
	MHFC		PV2 OPEN LITE OFF	FC5154
27-146	MLFC	MHFC	GHE PURGE PRE-X - ON (R048) NORMALIZE	KC7272
	MHFC		HE PRE 1/P LITE ON	FC5271
			NOTE	
			WHEN PORT D PRESS (P12-06) REACHES 250 +/- 50 PSIG PERFORM THE FOLLOWING..	FC5290
27-147	MLFC	MPWR	STOP H2 CRYO MODES - ON (R073) NORMALIZE	KC7472
	MHFC		HE PURG RDY LITE ON	FC5270
27-148	MLFC	MHFC	LST H2 DISPOS LV34 - ON (R051)	KC7726
	MHFC		PV2 OPEN LITE ON	FC5154
			NOTE	
			WHEN H2 FILL PRESS (P12-15) READS LESS THAN 20 PSIG PERFORM THE FOLLOWING..	FC5356
27-149	MLFC	MHFC	LST H2 DISPOS LV34 - OFF (R051)	KC7726
	MHFC		PV2 OPEN LITE OFF	FC5154
27-150	MLFC	SLHM	S14-132 (H2) VALVE G36MV504 - OPEN	
27-151	MLFC	MHFC	GHE PURGE PRE-X - ON (R048) NORMALIZE	KC7272
	MHFC		HE PRE COMP LITE ON	FC5272
			H2 PURGE RDY LITE ON	FC5273

27-152	MLFC	SLHM	S14-132 (H2) VALVE G36MV504 - CLOSED	
27-153	MLFC	MHFC	LST H2 DISPOS LV34 - ON (R051)	KC7726
	MHFC		PV2 OPEN LITE ON	FC5154
			NOTE	
			WHEN H2 FILL PRESS (P12-15) READS LESS THAN 20 PSIG PERFORM THE FOLLOWING..	FC5356
27-154	MLFC	MHFC	LST H2 DISPOS LV34 - OFF (R051)	KC7726
	MHFC		PV2 OPEN LITE OFF	FC5154
			WARNING	
			HAZARDOUS STEPS FOLLOW	
27-155	MLFC	MHFC	GH2 PURGE PRE-X - ON (R048) NORMALIZE	KC7274
	MHFC		H2 PRE 1/P LITE ON	FC5274
			NOTE	
			WHEN PORT D PRESS (P12-09) REACHES 250 +/- 50 PSIG PERFORM THE FOLLOWING..	FC5290
27-156	MLFC	MPWR	STOP H2 CRYO MODES - ON (R073) NORMALIZE	KC7472
	MHFC		HE PRE CMP LITE ON H2 PURGE RDY LITE ON	FC5272 FC5273
27-157	MLFC	MHFC	LST H2 DISPOS LV34 - ON (R051)	KC7726
	MHFC		PV2 OPEN LITE ON	FC5154
			NOTE	
			WHEN H2 FILL PRESS (P12-15) READS LESS THAN 20 PSIG PERFORM THE FOLLOWING..	FC5356

27-158	MLFC	MHFC	LST H2 DISPOS LV34 - OFF (R051)	KC7726
	MHFC		PV2 OPEN LITE OFF	FC5154
27-159	MLFC	MHFC	GH2 PURGE PRE-X - ON (R048) NORMALIZE	KC7274
	MHFC		H2 PRE 1/P LITE ON	FC5274
			NOTE	
			WHEN PORT D PRESS (P12-09) REACHES 250 +/- 50 PSIG PERFORM THE FOLLOWING..	FC5290
27-160	MLFC	MPWR	STOP H2 CRYO MODES - ON (R073) NORMALIZE	KC7472
	MHFC		HE PRE CMP LITE ON	FC5272
			H2 PURGE RDY LITE ON	FC5273
27-161	MLFC	MHFC	LST H2 DISPOS LV34 - ON (R051)	KC7726
	MHFC		PV2 OPEN LITE ON	FC5154
			NOTE	
			WHEN H2 FILL PRESS (P12-15) READS LESS THAN 20 PSIG PERFORM THE FOLLOWING..	FC5356
27-162	MLFC	MHFC	LST H2 DISPOS LV34 - OFF (R051)	KC7726
	MHFC		PV2 OPEN LITE OFF	FC5154
27-163	MLFC	MHFC	GH2 PURGE PRE-X - ON (R048) NORMALIZE	KC7274
	MHFC		H2 PRE 1/P LITE ON	FC5274
			NOTE	
			WHEN PORT D PRESS (P12-09) REACHES 250 +/- 50 PSIG PERFORM THE FOLLOWING..	FC5290

27-164	MLFC	MPWR	STOP H2 CRYO MODES - ON (R073) NORMALIZE	KC7472
	MHFC		HE PRE CMP LITE ON	FC5272
			H2 PURGE RDY LITE ON	FC5273
27-165	MLFC	MHFC	LST H2 DISPOS LV34 - ON (R051)	KC7726
	MHFC		PV2 OPEN LITE ON	FC5154
			NOTE	
			WHEN H2 FILL PRESS (P12-15) READS LESS THAN 20 PSIG PERFORM THE FOLLOWING..	FC5356
27-166	MLFC	MHFC	LST H2 DISPOS LV34 - OFF (R051)	KC7726
	MHFC		PV2 OPEN LITE OFF	FC5154
27-167	MLFC	MHFC	GH2 PURGE PRE-X - ON (R048) NORMALIZE	KC7274
	MHFC		H2 PRE 1/P LITE ON	FC5274
			NOTE	
			WHEN PORT D PRESS (P12-09) REACHES 250 +/- 50 PSIG PERFORM THE FOLLOWING..	FC5290
27-168	MLFC	MPWR	STOP H2 CRYO MODES - ON (R073) NORMALIZE	KC7472
	MHFC		HE PRE CMP LITE ON	FC5272
			H2 PURGE RDY LITE ON	FC5273
27-169	MLFC	MHFC	LST SUB CLR FIL LV30 - ON (R051)	KC7679
			NOTE	
			WHEN H2 FILL PRESS (P12-15) READS LESS THAN 20 PSIG PERFORM THE FOLLOWING..	FC5356
27-170	MLFC	MHFC	LST SUB CLR FIL LV30 - OFF (R051)	KC7679

27-171	MLFC	MHFC	GH2 PURGE PRE-X - ON (R048) NORMALIZE	KC7274
	MHFC		H2 PRE 1/P LITE ON	FC5274
			NOTE	
			WHEN PORT D PRESS (P12-09) REACHES 250 +/- 50 PSIG PERFORM THE FOLLOWING..	FC5290
27-172	MLFC	MPWR	STOP H2 CRYO MODES - ON (R073) NORMALIZE	KC7472
	MHFC		HE PRE CMP LITE ON	FC5272
			H2 PURGE RDY LITE ON	FC5273
27-173	MLFC	MHFC	LST SUB CLR FIL LV30 - ON (R051)	KC7679
			NOTE	
			WHEN H2 FILL PRESS (P12-15) REACHES LESS THAN 20 PSIG PERFORM THE FOLLOWING..	FC5356
27-174	MLFC	MHFC	LST SUB CLR FIL LV30 - OFF (R051)	KC7679
27-175	MLFC	SLHM	S14-132 (H2) VALVE G36MV504 - OPEN	
27-176	MLFC	MHFC	GH2 PURGE PRE-X - ON (R048) NORMALIZE	KC7274
	MHFC		H2 PRE COMP LITE ON	FC5275
27-177	MLFC	SLHM	S14-132 (H2) VALVE G36MV504 - CLOSED	
27-178	MLFC	MHFC	LST H2 DISPOS LV34 - ON (R051)	KC7726
	MHFC		PV2 OPEN LITE ON	FC5154

27-178 NOTE

WHEN H2 FILL PRESS (P12-15) FC5356
READS LESS THAN 20 PSIG
PERFORM THE FOLLOWING..

27-179 MLFC MHFC LST H2 DISPOS LV34 - OFF (R051) KC7726

MHFC PV2 OPEN LITE OFF FC5154

27-180 MLFC SLHM S14-132 (H2)
VALVE G36MV501 - CLOSED
VALVE G36MV505 - CLOSED

27-181 MLFC MHFC H2 OUT TO SC LV29 (R051) - OFF KC7678
LST SUB CLR PRG LV33 KC7725
(R051) - OFF

MHFC PV2 OPEN LITE ON FC5154

27-182 MLFC SHFD S14-132 (H2 SUBCOOLER)
VERIFY PV2 OPEN
PV3 CLOSED

27-183 MLFC SLHM S14-026
VALVE MV7 - OPEN

NOTE

AFTER 5 - 10 SECONDS
PERFORM THE FOLLOWING..

27-184 MLFC SLHM S14-026
VALVE MV7 - AUTO
RECORD TIME
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47 40 222 27-185 MLFC MTPE VACUUM MONITOR PERIOD AND FDS PURGE ARE COMPLETED. PROCEEDING WITH REMAINDER OF VACUUM PURGE STEPS 26-030 THRU 26-053. SEND SC01 TO CH 224.

28-000 FUEL CELL PRESSURIZATION

7 45 222 28-001 MLFC MTPE GSE HAS BEEN PERSONALLY INSPECTED AND IS IN CORRECT CONFIGURATION FOR PRESSURIZATION OF FC AND CGSS LINES.

WARNING
SYSTEM PRESSURIZATION WILL
OCCUR DURING NEXT SEQUENCES

224 28-002 MLFC MHFC VERIFY THE FOLLOWING..

02 LV1	CLOSED	LITE ON	FC5925
02 LV2	CLOSED	LITE ON	FC5917
02 LV4	OPEN	LITE OFF	FC5971
02 LV5	CLOSED	LITE ON	FC5409
02 LV6	CLOSED	LITE ON	FC5411
02 LV7	CLOSED	LITE ON	FC5413
02 LV8	CLOSED	LITE ON	FC5415
02 LV9	CLOSED	LITE ON	FC5417
02 PV10	OPEN	LITE ON	FC5980
02 PV11	OPEN	LITE ON	FC5976
02 LV12	CLOSED	LITE ON	FC5978
02 LV13	CLOSED	LITE ON	FC5974
02 LV14	CLOSED	LITE ON	FC5983
02 LV15	CLOSED	LITE ON	FC5985
02 LV16	OPEN	LITE ON	FC5987
02 LV17	CLOSED	LITE ON	FC6001
02 LV18	CLOSED	LITE ON	FC6003
02 LV22	CLOSED	LITE ON	FC5432
N2 LV19	CLOSED	LITE ON	FC6005
N2 LV20	CLOSED	LITE ON	FC6007
N2 LV21	CLOSED	LITE ON	FC5919
N2 LV23	CLOSED	LITE ON	FC5434
H2 LV1	CLOSED	LITE ON	FC5991
H2 LV2	CLOSED	LITE ON	FC5993
H2 LV4	CLOSED	LITE ON	FC5995
H2 LV5	CLOSED	LITE ON	FC5379
H2 LV6	CLOSED	LITE ON	FC5381
H2 LV7	CLOSED	LITE ON	FC5383
H2 LV8	CLOSED	LITE ON	FC5385
H2 LV9	CLOSED	LITE ON	FC5387
H2 PV11	OPEN	LITE ON	FC5999
H2 LV12	CLOSED	LITE ON	FC6009
H2 LV13	CLOSED	LITE ON	FC5997
H2 LV14	CLOSED	LITE ON	FC6018
H2 LV15	CLOSED	LITE ON	FC6020
H2 LV16	OPEN	LITE ON	FC5392
H2 LV17	CLOSED	LITE ON	FC6014
H2 LV18	CLOSED	LITE ON	FC6016
H2 LV22	CLOSED	LITE ON	FC5436

28-003	MLFC		FC GO2 PSIA (P12-22)	FC5464	25 MAX
			FC GH2 PSIA (P12-22)	FC5461	20 MAX
			FC GN2 PSIA (P12-24)	FC5465	25 MAX
			PRESSURIZATION		
28-004	MLFC	MPWR	GO2 PORT E FC - ON (R070) NORMALIZE	KC7478	
	MHFC		FC 02 PORT E LITE ON	FC5955	
28-005	MLFC	MPWR	GH2 PORT E FC - ON (R074) NORMALIZE	KC7470	
	MHFC		FC H2 PORT E LITE ON	FC5951	
28-006	MLFC	SHFD	S14-132		
			GAGE G36PG4 PSIG		100 +/- 10
			GAGE G36PG5 PSIG		3+/-2
				NAR QC	
28-007	MLFC	SOMD	S14-132		
			GAGE G35PG4 PSIG		100 +/- 10
			GAGE G35PG5 PSIG		3+/-2
			GAGE G35PG6 PSIG		100 +/-10
			GAGE G35PG7 PSIG		3+/-2
				NAR QC	
28-008	MLFC	MHFC	REAL TIME RECORDERS 5, 6, 7 27, AND 28 - ON (2 MM/SEC)		
28-009	MLFC		FC GO2 PSIA (P12-22)	FC5464	3+/-2
			FC GH2 PSIA (P12-22)	FC5461	3+/-2
			FC GN2 PSIA (P12-24)	FC5465	3+/-2

222	28-010	MLFC	MTPE	SEND SC01 TO CH 224.		
224	28-011	MLFC	SC01	PANEL 18 FC1 REACTANTS (S4) - ON THEN CENTER		
		SC01		VERIFY GREY		
	28-012	MLFC	SC01	PANEL 18 FC2 REACTANTS (S5) - ON THEN CENTER		
		SC01		VERIFY GREY		
	28-013	MLFC	SC01	PANEL 18 FC3 REACTANTS (S6) - ON THEN CENTER		
		SC01		VERIFY GREY		
	28-014	MLFC	SC01	RETURN TO CH 222.		
	28-015	MLFC		O2 LV9 - OPEN (C060) 3+09-00-00 IS INSERTED	KC7597	
		MHFC		O2 LV9 OPEN LITE ON	FC5416	
	28-016	MLFC		H2 LV9 - OPEN (C060) 5+09-00-00 IS INSERTED	KC7573	
		MHFC		H2 LV9 OPEN LITE ON	FC5386	
	28-017	MLFC		FC1 N2 REG ----- PSIA (P13-2)	SC2060	18+/-3
				FC2 N2 REG ----- PSIA (P13-2)	SC2061	18 +/-3
				FC3 N2 REG ----- PSIA (P13-2)	SC2062	18 +/-3
				FC1 O2 REG ----- PSIA (P13-3)	SC2066	32 MAX
				FC2 O2 REG ----- PSIA (P13-3)	SC2067	32 MAX
				FC3 O2 REG ----- PSIA (P13-3)	SC2068	32 MAX
				FC1 H2 REG ----- PSIA (P13-4)	SC2069	29.5 MAX
				FC2 H2 REG ----- PSIA (P13-4)	SC2070	29.5 MAX
				FC3 H2 REG ----- PSIA (P13-4)	SC2071	29.5 MAX

47 40

47 40	222	28-018	MLFC	MTPE	NOTIFY MECS THAT O2 SYSTEM WILL BE PRESSURIZED TO 100 PSIG AT THIS TIME
	224	28-019	MLFC		H2 LV17 - OPEN (C060) 5+17-00-00 IS INSERTED KC7567
			MHFC		H2 LV17 OPEN LITE ON FC6013
		28-020	MLFC		O2 LV17 - OPEN (C060) 3+17-00-00 IS INSERTED KC7589
			MHFC		O2 LV17 OPEN LITE ON FC6000
		28-021	MLFC	MTPE	GO2 SYSTEM IS PRESSURIZED TO 100 PSIG
		28-022	MLFC	SOMD	S14-132 (GO2 K-BOTTLE SUPPLY TO FDS) K-BOTTLE SUPPLY VALVE - OPEN ADJUST K-BOTTLE REGULATOR TO 90 +/- 5 PSIG VALVE G35MV100 - OPEN VERIFY GAGE G35MV100 READS 90 +/- 5 PSIG RECORD _____ PSIG ------ NAR QC
		28-023	MLFC	SOMD	S14-132 (GN2 K-BOTTLE SUPPLY TO FDS) K-BOTTLE SUPPLY VALVE - OPEN ADJUST K-BOTTLE REGULATOR TO 90 +/- 5 PSIG VALVE G35MV101 - OPEN VERIFY GAGE G35MV101 READS 90 +/- 5 PSIG. RECORD _____ PSIG ------ NAR QC

28-024 MLFC SHFD S14-132 (GH2 K-BOTTLE SUPPLY TO FDS)

K-BOTTLE SUPPLY VALVE - OPEN
ADJUST K-BOTTLE REGULATOR TO 90 +/- 5 PSIG
VALVE G36MV100 - OPEN
VERIFY GAGE G36MV100 READS 90 +/- 5 PSIG.
RECORD _____ PSIG.

					NAR QC
224	28-025 MLFC	FC GH2 PRESSURE (P12-21) _____	PSIG	FC6022	100 +/-10
		FC GN2 PRESSURE (P12-24) _____	PSIA	FC5465	25 MAX
		FC GO2 PRESSURE (P12-21) _____	PSIG	FC5989	100 +/- 10
	28-026 MLFC	FC1 N2 REG _____	PSIA (P13-2)	SC2060	18 +/- 3
		FC2 N2 REG _____	PSIA (P13-2)	SC2061	18 +/- 3
		FC3 N2 REG _____	PSIA (P13-2)	SC2062	18 +/- 3
		FC1 O2 REG _____	PSIA (P13-3)	SC2066	29 +/- 3
		FC2 O2 REG _____	PSIA (P13-3)	SC2067	29 +/-3
		FC3 O2 REG _____	PSIA (P13-3)	SC2068	29 +/-3
		FC1 H2 REG _____	PSIA (P13-4)	SC2069	26.5 +/- 3
		FC2 H2 REG _____	PSIA (P13-4)	SC2070	26.5 +/- 3
		FC3 H2 REG _____	PSIA (P13-4)	SC2071	26.5 +/- 3

	28-027	MLFC	SHFD	S14-132 POSITION LV17 MANUAL OVERRIDE TO ON	
	28-028	MLFC		H2 LV17 - CLOSED (C060) 5-17-00-00 IS INSERTED	KC7569
		MHFC		VERIFY H2 LV17 OPEN LITE ON	FC6013
	28-029	MLFC	SOMD	S14-132 POSITION LV17 MANUAL OVERRIDE TO ON	
	28-030	MLFC		O2 LV17 - CLOSED (C060) 3-17-00-00 2S INSERTED	KC7589
		MHFC		VERIFY O2 LV17 OPEN LITE ON	FC6000
	28-031	MLFC	SLOM	S14-032 MV11 - OPEN	
	28-032	MLFC	MPWR	STOP 032 FC MODES - ON (R070) NORMALIZE	KC7250
		MHFC		VERIFY FC O2 PORT E LITE ON	FC5955
	28-033	MLFC	SLHM	S14-026 MV11 - OPEN	
	28-034	MLFC	MPWR	STOP 026 FC MODES - ON (R074) NORMALIZE	KC7280
		MHFC		VERIFY FC H2 PORT E LITE ON	FC5951
30 222	28-035	MLFC	MTPE	FUEL CELL AND CGSS PRESSURIZATION IS COMPLETE. ALL PERSONNEL WILL RETURN TO CH 222.	
224	28-036	MLFC	ALL	SW TO CH 222.	

-38 40

29-000

FUEL CELL OPERATIONS - MIDCOUNT (CONT'D)

PRESSURIZATION PREPARATION

29-001 MLFC SHFD OPEN GN2 MIXING VALVE ON HP/HV-EPS VENT MANIFOLD ON 220 ' LEVEL OF LUT

224	29-002	MLFC	MHFC	FC1 H2 PURGE LITE OFF	SC2230 27C02
				FC1 02 PURGE LITE OFF	SC2233 27C03
				FC1 ON MN BUS A LITE OFF	SC2120 10C02
				FC1 ON MN BUS B LITE OFF	SC2125 10C05
				FC2 H2 PURGE LITE OFF	SC2231
				FC2 02 PURGE LITE OFF	SC2134 27C10
				FC2 ON MN BUS A LITE OFF	SC2121 10C03
				FC2 ON MN BUS B LITE OFF	SC2126 10C06
				FC3 H2 PURGE LITE OFF	SC2132 27C16
				FC3 02 PURGE LITE OFF	SC2135 27C17
				FC3 ON MN BUS A LITE OFF	SC2122 10C04
				FC3 ON MN BUS B LITE OFF	SC2127 10C07
	29-003	MLFC	MHFC	FC1 N2 FILL OP-CL - ON (R033)	KC7051
				FC1 GAS REG OP-CL - OFF (R033)	KC7463
	29-004	MLFC	MHFC	FC2 N2 FILL OP-CL - ON (R034)	KC7052
				FC2 GAS REG OP-CL - OFF (R034)	KC7464
	29-005	MLFC	MHFC	FC3 N2 FILL OP-CL - ON (R035)	KC7053
				FC3 GAS REG OP-CL - OFF (R035)	KC7465

29-006 MLFC MHFC VERIFY THE FOLLOWING

02 LV1 CLOSED LITE ON	FC5925
02 LV2 CLOSED LITE ON	FC5917
02 LV4 OPEN LITE OFF	FC5971
02 LV5 CLOSED LITE ON	FC5409
02 LV6 CLOSED LITE ON	FC5411
02 LV7 CLOSED LITE ON	FC5413
02 LV8 CLOSED LITE ON	FC5415
02 LV9 OPEN LITE ON	FC5416
02 PV10 OPEN LITE ON	FC5980
02 PV11 OPEN LITE ON	FC5976
02 LV12 CLOSED LITE ON	FC5978
02 LV13 CLOSED LITE ON	FC5974
02 LV14 CLOSED LITE ON	FC5983
02 LV15 CLOSED LITE ON	FC5985
02 LV16 OPEN LITE ON	FC5987
02 LV17 OPEN LITE ON	FC6000
02 LV18 CLOSED LITE ON	FC6003
02 LV22 CLOSED LITE ON	FC5432
N2 LV19 CLOSED LITE ON	FC6005
N2 LV20 CLOSED LITE ON	FC6007
N2 LV21 CLOSED LITE ON	FC5919
N2 LV23 CLOSED LITE ON	FC5434
H2 LV1 CLOSED LITE ON	FC5991
H2 LV2 CLOSED LITE ON	FC5993
H2 LV4 CLOSED LITE ON	FC5995
H2 LV5 CLOSED LITE ON	FC5379
H2 LV6 CLOSED LITE ON	FC5381
H2 LV7 CLOSED LITE ON	FC5383
H2 LV8 CLOSED LITE ON	FC5385
H2 LV9 OPEN LITE ON	FC5386
H2 PV11 OPEN LITE ON	FC5999
H2 LV12 CLOSED LITE ON	FC6009
H2 LV13 CLOSED LITE ON	FC5997
H2 LV14 CLOSED LITE ON	FC6018
H2 LV15 CLOSED LITE ON	FC6025
H2 LV16 OPEN LITE ON	FC5392
H2 LV17 OPEN LITE ON	FC6013
H2 LV18 CLOSED LITE ON	FC6016
H2 LV22 CLOSED LITE ON	FC5436

29-007	MLFC	MHFC	FC123 H2 HTR ON-OFF - OFF (R032)	KC7603
		MHFC	H2 HTR OFF LITE ON	SC2076
29-008	MLFC		VERIFY THE FOLLOWING INDICATIONS	
			FUEL CELL NO. 1	
			COND TEMP LINE 5	LOW END OF SCALE SC2081
			STACK TEMP LINE 6	AMBIENT SC2084
			RADIATOR OUT TEMP LINE 7	AMBIENT SC2087
			H2 FLOW LINE 9	LESS THAN .05 SC2139
			02 FLOW LINE 10	LESS THAN .08 SC2142
			CURRENT OUT LINE 11	LESS THAN 2.0 SC2113
			DC VOLT OUT LINE 12	LESS THAN 26.0 SC2116
			FUEL CELL NO. 2	
			COND TEMP LINE 5	LOW END OF SCALE SC2082
			STACK TEMP LINE 6	AMBIENT SC2085
			RADIATOR OUT TEMP LINE 7	AMBIENT SC2088
			H2 FLOW LINE 9	LESS THAN .05 SC2140
			02 FLOW LINE 10	LESS THAN .08 SC2143
			CURRENT OUT LINE 11	LESS THAN 2.0 SC2114
			DC VOLT OUT LINE 12	LESS THAN 26.0 SC2117

29-008

FUEL CELL NO. 3		
COND TEMP	LOW END OF SCALE	SC2083
LINE 5		
STACK TEMP	AMBIENT	SC2086
LINE 6		
RADIATOR OUT TEMP	AMBIENT	SC2089
LINE 7		
H2 LFOW	LFSS THAN 0.05	SC2141
LINE 9		
CURRENT OUT	LESS THAN 2.0	SC2115
LINE 11		
DC VOLT OUT	LESS THAN 26.0	SC2118
LINE 12		

FUEL CELL NO. 1 REGULATED PRESSURES			
N2 PSIA	(P12-2)	SC2060	21 MAX
02 PSIA	(P12-3)	SC2066	32 MAX
H2 PSIA	(P12-4)	SC2069	30 MAX
FUEL CELL NO. 2 REGULATED PRESSURES			
N2 PSIA	(P12-2)	SC2061	21 MAX
02 PSIA	(P12-3)	SC2067	32 MAX
H2 PSIA	(P12-4)	SC2070	30 MAX
FUEL CELL NO. 3 REGULATED PRESSURES			
N2 PSIA	(P12-2)	SC2062	21 MAX
02 PSIA	(P12-3)	SC2068	32 MAX
H2 PSIA	(P12-4)	SC2071	30 MAX

NOTE

VENT THE FUEL CELL(S) AS NECESSARY BY PERFORMING THE FOLLOWING APPLICABLE STEPS IF THE PRESSURES ARE OUT OF TOLERANCE AS SPECIFIED IN THE PRECEEDING SEQUENCE.

		29-009	MLFC	MHFC	FC1 02 PURGE ON-OFF - ON (R037) KC7318 FC1 H2 PURGE ON-OFF - ON (R037) KC7315 FC2 02 PURGE ON-OFF - ON (R038) KC7319 FC2 H2 PURGE ON-OFF - ON (R038) KC7316 FC3 02 PURGE ON-OFF - ON (R039) KC7320 FC3 H2 PURGE ON-OFF - ON (R039) KC7317 FC1 GAS REG OP-CL - ON (R033) KC7463 FC2 GAS REG OP-CL - ON (R034) KC7464 FC3 GAS REG OP-CL - ON (R035) KC7465
		29-010	MLFC	MHFC	FC1 02 PURGE ON-OFF - OFF (R037) KC7318 FC1 H2 PURGE ON-OFF - OFF (R037) KC7315 FC2 02 PURGE ON-OFF - OFF (R038) KC7319 FC2 H2 PURGE ON-OFF - OFF (R038) KC7316 FC3 02 PURGE ON-OFF - OFF (R039) KC7320 FC3 H2 PURGE ON-OFF - OFF (R039) KC7317 FC1 GAS REG OP-CL - OFF (R033) KC7463 FC2 GAS REG OP-CL - OFF (R034) KC7464 FC3 GAS REG OP-CL - OFF (R035) KC7465
-38	30 222	29-011	MLFC	MTPE	1. PRESSURIZATION PREPS COMPLETE 2. PROCEEDING WITH FUEL CELL PRESSURIZATION CYCLE

-38 30

29-012 FUEL CELL PRESSURIZATION CYCLE

29-013 MLFC MHFC VERIFY
FC O2 PORT E LITE ON FC5955
FC H2 PORT E LITE ON FC5951

29-014 MLFC SHFD S14-132
GAGE G36PG4 PSIG 100
+/- 10
GAGE G36PG5 PSIG ------- 3 +/- 2
NAR QC

29-015 MLFC SOMD S14-132
GAGE G35PG4 PSIG 100
+/- 10
GAGE G35PG5 PSIG 3 +/- 2
GAGE G35PG6 PSIG 100
+/- 10
GAGE G35PG7 PSIG 3 +/- 2
GAGE G35PG20 PSIG 475
------- +/-25
NAR QC

29-016 MLFC MHFC REAL TIME RECORDERS 5, 6, 7, 27, AND 28 - ON (2 MM/SEC)

29-017 MHFC FC1 OH SHUTOFF LITE OFF SC2323
FC2 OH SHUTOFF LITE OFF SC2324
FC3 OH SHUTOFF LITE OFF SC2325

29-018 MLFC FC GH2 PSIG (P12-21) FC6022 100
+/- 10
FC GN2 PSIG (P12-23) FC5990 10 MAX
FC GO2 PSIG (P12-21) FC5989 100
+/- 10

29-019 MLFC

ON CRT (PAGE 13) VERIFY PRESSURES STABILIZED AT THE FOLLOWING VALUES FOR FUEL CELL REGULATED PRESSURES

N2 (18 +/- 3 PSIA) (LINE 2)
O2 (29 +/- 3) PSIA (LINE 3)
H2 (26.5 +/- 3 PSIA) (LINE 4)

RECORD READINGS..

	FC1	FC2	FC3	
N2	PSIA			
	-----			SC2060
		PSIA		
		-----		SC2061
			PSIA	
			-----	SC2062
O2	PSIA			
	-----			SC2066
		PSIA		
		-----		SC2067
			PSIA	
			-----	SC2068
H2	PSIA			
	-----			SC2069
		PSIA		
		-----		SC2070
			PSIA	
			-----	SC2071

-38 25 222 29-020 MLFC MTPE O2 SYSTEM WILL BE PRESSURIZED TO FLT. PRESS. OBTAIN SAFETY GO AND SEND MECS TO CH 224.

29-021 MLFC O2 LV17 - OPEN (C060) KC7589
3+17-00-00 IS INSERTED

224 29-022 MLFC SOMD S14-132
REMOVE LV17 MANUAL OVERRIDE

	29-023	MLFC		H2 LV17 - OPEN (C060) 5+17-00-00 IS INSERTED	KC7569
	29-024	MLFC	SHFD	S14-132 REMOVE LV17 MANUAL OVERRIDE WARNING MECS - HIGH PRESS O2 WILL BE APPLIED TO SYSTEM IN NEXT SEQUENCE.	
	29-025	MLFC		O2 LV18 - OPEN (C060) O2 LV17 - CLOSED (C060) 3+18-17-00 IS INSERTED	KC7590 KC7589
		MHFC		O2 LV18 OPEN LITE ON O2 LV17 CLOSED LITE ON	FC6002 FC6001
	29-026	MLFC		VERIFY FC GO2 PRESS (P12-21) READS 935-965 PSIG RECORD ____ PSIG	FC5989
224	29-027	MLFC	MTPE	O2 SYSTEM IS PRESSURIZED	
224	29-028	MLFC		H2 LV18 - OPEN (C060) H2 LV17 - CLOSED (C060) 5+18-17-00 IS INSERTED	KC7568 KC7567
		MHFC		H2 LV18 OPEN LITE ON H2 LV17 CLOSED LITE ON	FC6015 FC6014
	29-029	MLFC		VERIFY FC GH2 PRESS (P12-21) READS 235-265 PSIG RECORD ____ PSIG	FC6022
	29-030	MLFC		N2 LV20 - OPEN (C060) 3+20-00-00 IS INSERTED	KC7592
		MHFC		N2 LV20 OPEN LITE ON TIME _____	FC6006

29-031 MLFC

VERIFY FC GN2 PRESS (P12-24) FC5990
READS 100 +/- 10 PSIG.
RECORD PSIG

29-032 MLFC MHFC

FC1 GAS REG OP-CL - ON (R033) KC7463
FC2 GAS REG OP-CL - ON (R034) KC7464
FC3 GAS REG OP-CL - ON (R035) KC7465
TIME

NOTE

APPROXIMATELY 15 MIN IS
REQUIRED FOR FUEL CELL
PRESSURES TO STABILIZE.

29-033 MLFC

MONITOR FUEL CELL REGULATED PRESSURES
DURING PRESSURE RISE AND RECORD THE
FOLLOWING AFTER PRESSURE STABILIZATION.
N2 49 TO 56 PSIA (P13-2)
02 55 +/- 3 PSIA (P13-3)
H2 55 +/- 3 PSIA (P13-4)

	FC1	FC2	FC3
N2	-----	-----	-----
02	-----	-----	-----
H2	-----	-----	-----

29-034 MLFC SOMD

S14-132
POSITION LV18 MANUAL OVERRIDE TO ON
POSITION LV9 MANUAL OVERRIDE TO ON

29-035 MLFC

02 LV18 - CLOSED (C060) KC7590
02 LV9 - CLOSED (C060) KC7597
3-18-09-00 IS INSERTED

MHFC

VERIFY 02 LV18 OPEN LITE ON FC6015
02 LV9 OPEN LITE ON FC5416

29-036	MLFC	SHFD	S14-132 POSITION LV18 MANUAL OVERRIDE TO ON POSITION LV9 MANUAL OVERRIDE TO ON	
29-037	MLFC		H2 LV18 - CLOSED (C060)	KC7568
			H2 LV9 - CLOSED (C060)	KC7573
			5-18-09-00 IS INSERTED	
	MHFC		VERIFY H2 LV18 OPEN LITE ON	FC6015
			H2 LV9 OPEN LITE ON	FC5386
29-038	MLFC	MHFC	FC1 02 PURGE ON-OFF - ON (R037)	KC7318
			FC1 H2 PURGE ON-OFF - ON (R037)	KC7315
	MHFC		FC 1 H2 PURGE LITE ON	SC2130
			FC 1 02 PURGE LITE ON	SC2133
29-039	MLFC	MHFC	FC2 02 PURGE ON-OFF - ON (R038)	KC7319
			FC2 H2 PURGE ON-OFF - ON (R038)	KC7316
	MHFC		FC2 02 PURGE LITE ON	SC2134
			FC2 H2 PURGE LITE ON	SC2131
29-040	MLFC	MHFC	FC3 02 PURGE ON-OFF - ON (R039)	KC7320
			FC3 H2 PURGE ON-OFF - ON (R039)	KC7317
	MHFC		FC 3 H2 PURGE LITE ON	SC2132
			FC 3 02 PURGE LITE ON	SC2235
			RECORD TIME	

29-041 MHFC

AT THE END OF 1 MINUTE,
VERIFY REACTANT FLOW ON CRT AND RECORD.

H2 (P13-9)

FC1 _____	PPH	SC2139
FC2 _____	PPH	SC2140
FC3 _____	PPH	SC2141

02 (P13-10)

FC1 _____	PPH	SC2142
FC2 _____	PPH	SC2143
FC3 _____	PPH	SC2144

29-042	MLFC	FC1 02 PURGE ON-OFF - OFF (R037)	KC7318
		FC1 H2 PURGE ON-OFF - OFF (R037)	KC7315
	MHFC	FC 1 H2 PURGE LITE OFF	SC2130
		FC 1 02 PURGE LITE OFF	SC2133
29-043	MLFC	FC2 02 PURGE ON-OFF - OFF (R038)	KC7319
		FC2 H2 PURGE ON-OFF - OFF (R038)	KC7316
	MHFC	FC2 02 PURGE LITE ON	SC2134
		FC2 H2 PURGE LITE ON	SC2131
29-044	MLFC	FC3 02 PURGE ON-OFF - OFF (R039)	KC7320
		FC3 H2 PURGE ON-OFF - OFF (R039)	KC7317
	MHFC	FC 3 H2 PURGE LITE OFF	SC2132
		FC 3 02 PURGE LITE OFF	SC2135

RECORD TIME _____

29-045 MLFC VERIFY FUEL CELL REACTANT FLOWS ARE NEAR ZERO AND RECORD..

FUEL CELL NO. 1
O2 PPH
_____
H2 PPH
_____

FUEL CELL NO. 2
O2 PPH
_____
H2 PPH
_____

FUEL CELL NO. 3
O2 PPH
_____
H2 PPH
_____

29-046 MLFC MHFC VERIFY THE FOLLOWING

FC1 ON MN BUS A LITE OFF	SC2120
FC2 ON MN BUS A LITE OFF	SC2121
FC3 ON MN BUS A LITE OFF	SC2122
FC1 ON MN BUS B LITE OFF	SC1125
FC2 ON MN BUS B LITE OFF	SC2126
FC3 ON MN BUS B LITE OFF	SC2127

29-047 MLFC MPWR ON CRT (P1-5) VERIFY A MAIN BUS VOLTAGE READING OF 29 +/- 3.

RECORD READING _____ VDC

29-048 MLFC

VERIFY THE FOLLOWING A14-052 HEATER POWER SUPPLY VALUES ON CRT (P13-15, 16, 17, 18, 19, 20)

FUEL CELL 1			
HEAT ZONE 1	2.00	VAC OR LESS	GC5000
	1.00	AMP OR LESS	GC5009
HEAT ZONE 2	2.00	VAC OR LESS	GC5001
	1.00	AMP OR LESS	GC5010
HEAT ZONE 3	2.00	VAC OR LESS	GC5002
	1.00	AMP OR LESS	GC5011
FUEL CELL 2			
HEAT ZONE 1	2.00	VAC OR LESS	GC5003
	1.00	AMP OR LESS	GC5012
HEAT ZONE 2	2.00	VAC OR LESS	GC5004
	1.00	AMP OR LESS	GC5013
HEAT ZONE 3	2.00	VAC OR LESS	GC5005
	1.00	AMP OR LESS	GC5014
FUEL CELL 3			
HEAT ZONE 1	2.00	VAC OR LESS	GC5006
	1.00	AMP OR LESS	GC5015
HEAT ZONE 2	2.00	VAC OR LESS	GC5007
	1.00	AMP OR LESS	GC5016
HEAT ZONE 3	2.00	VAC OR LESS	GC5008
	1.00	AMP OR LESS	GC5017

29-049 MLFC MHFC VERIFY NO LAMPS ARE LIGHTED FOR FUEL CELL SHUTOFF VALVES CLOSED AND FUEL CELL PURGE VALVES OPEN.

29-050 MLFC MHFC VERIFY THAT FC N2 FILL VALVES OPEN HAS BEEN EXECUTED (R033) (R034) (R035) KC7051 KC7052 KC7053

29-051 MLFC SC01 LH EQUIP BAY
WATER CONTROL PANEL
VERIFY POTABLE TANK INLET - OPEN
WASTE TANK INLET - AUTO

222 29-052 MLFC MTPE REQUEST MECS VERIFY POTABLE WATER TANK QUANTITY 2 PERCENT OR LESS

37 30 29-053 MLFC MTPE FUEL CELL PRESSURIZATION CYCLE AND VERIFICATION OF ECS WATER TANKS COMPLETE. PROCEEDING WITH FUEL CELL HEATING CYCLE.

37 30 29-054 FUEL CELLS HEATING CYCLE

224 29-055 MLFC ON CRT, VERIFY THE FOLLOWING INDICATIONS..

FUEL CELL 1, 2 AND 3		
HYDROGEN FLOWRATE (P13-9)	LESS THAN .05	
OXYGEN FLOWRATE (P13-10)	LESS THAN .08	
CURRENT OUT AMPS (P13-11)	LESS THAN 2.0 AMPS	
DC VOLTS OUT (P13-12)	LESS THAN 26 VDC	

29-056 MLFC MHFC VERIFY THE FOLLOWING..

O2 LV9 OPEN LITE ON	FC5416
O2 LV15 CLOSED LITE ON	FC5985
O2 LV16 OPEN LITE ON	FC5987
O2 LV17 CLOSED LITE ON	FC6001
O2 LV18 OPEN LITE ON	FC6002
O2 LV22 CLOSED LITE ON	FC5432
N2 LV19 CLOSED LITE ON	FC6005
N2 LV20 OPEN LITE ON	FC6006
N2 LV21 CLOSED LITE ON	FC5919
N2 LV23 CLOSED LITE ON	FC5434
H2 LV9 OPEN LITE ON	FC5386
H2 LV15 CLOSED LITE ON	FC6020
H2 LV16 OPEN LITE ON	FC5392
H2 LV17 CLOSED LITE ON	FC6014
H2 LV18 OPEN LITE ON	FC6015
H2 LV22 CLOSED LITE ON	FC5436

29-057 MLFC ON CRT (P12-24) VERIFY FC GN2 PRESSURE READING IS 100 +/- 10 PSIG. FC5465
RECORD READING _____ PSIG.

29-058 MLFC

N2 LV20 - CLOSED (C060)	KC7592
N2 LV19 - OPEN (C060)	KC7591

3 - 20 + 19 - 00 IS INSERTED

MHFC

N2 LV19 OPEN LITE ON	FC6004
N2 LV20 CLOSED LITE ON	FC6007

29-059 MLFC

ON CRT VERIFY FC GN2 PRESS IS 475-500 PSIG (P12-23) FC5990

RECORD PRESS _____ PSIG.

29-060 MLFC

ON CRT, VERIFY..

FC GH2 PRESSURE READING IS (P12-21) 260 +/- 15 PSIG. FC6022

FC GO2 PRESSURE READING IS (P12-21) 935-965 PSIG. FC5989

RECORD READINGS

H2 _____ PSIG

02 _____ PSIG

29-061 MLFC

VERIFY FC REGULATED PRESSURE ON CRT (PAGE 13) AND RECORD

N2 (49 TO 56 PSIA) (LINE 2)
O2 (55 +/- 3 PSIA) (LINE 3)
H2 (55 +/- 3) PSIA) (LINE 4)

FC1	FC2	FC3	
N2 _____	N2 _____	N2 _____	PSIA
02 _____	02 _____	02 _____	PSIA
H2 _____	H2 _____	H2 _____	PSIA

RECORD TIME _____

29-062 MLFC MHFC FC1 HEATER PWR CONT 1 - ON (C052) KC7003

MHFC 220 211 1121 IS INSERTED

29-063 MLFC MHFC FC1 HEATER PWR ON-OFF - ON (C052) KC7000

MHFC 220 211 1141 IS INSERTED

29-064 MLFC RECORD FC1 HEAT ZONE READING

HEAT ZONE 1

VAC (77 +/- 5.5 VAC) GC5000
-----(P13-15)

AMPS (P13-18) GC5009

HEAT ZONE 2

VAC (77 +/- 5.5 VAC) GC5001
-----(P13-16)

AMPS (P13-19) GC5010

HEAT ZONE 3

VAC (77 +/- 5.5 VAC) GC5002
-----(P13-17)

AMPS (P13-20) GC5011

TIME

NOTE

WAIT A MINIMUM OF 10 MINUTES
THEN PROCEED.

29-065	MLFC	MHFC	FC2 HEATER PWR CONT 1 - ON (C052)	KC7009
		MHFC	220 211 1321 IS INSERTED	
29-066	MLFC	MHFC	FC2 HEATER PWR ON-OFF - ON (C052)	KC7001
		MHFC	220 211 1341 IS INSERTED	
29-067	MLFC		RECORD FC2 HEAT ZONE READINGS	
			HEAT ZONE 1	
			VAC (77 +/- 5.5 VAC)	GC5003
			----(P13-15)	
			AMPS (P13-18)	GC5012

			HEAT ZONE 2	
			VAC (77 +/- 5.5 VAC)	GC5004
			----(P13-16)	
			AMPS (P13-19)	GC5013

			HEAT ZONE 3	
			VAC (77 +/- 5.5 VAC)	GC5005
			----(P13-17)	
			AMPS (P13-20)	GC5014

			TIME	

			NOTE	
			WAIT A MINIUM OF 10 MINUTES THEN PROCEED.	

29-068 MLFC MHFC FC3 HEATER PWR CONT 1 - ON (C052) KC7015

MHFC 220 211 2121 IS INSERTED

29-069 MLFC MHFC FC123 GSE HTR ON-OFF - ON (R036) KC7000 KC7001 KC7002

29-070 MLFC RECORD FC3 HEAT ZONE READINGS

HEAT ZONE 1
VAC (77 +/- 5.5 VAC) GC5006
----(P13-15)
AMPS (P13-18) GC5015

HEAT ZONE 2
VAC (77 +/- 5.5 VAC) GC5007
----(P13-16)
AMPS (P13-19) GC5016

HEAT ZONE 3
VAC (77 +/- 5.5 VAC) GC5008
----(P13-17)
AMPS (P13-20) GC5017

TIME

NOTE

ON CRT, MONITOR THE FOLLOWING THROUGHOUT THE FUEL CELL OPERATION..

FUEL CELL 1 COND EXH TEMP (P13-5) SC2081

FUEL CELL 2 COND EXH TEMP (P13-5) SC2082

FUEL CELL 3 COND EXH TEMP (P13-5) SC2083

29-071 MLFC

RECORD DATE AND TIME WHEN F/C STACK TEMPERATURE INDICATE 300 DEG. F..

FC 1 TIME _____ DATE _____

FC 2 TIME _____ DATE _____

FC 3 TIME _____ DATE _____

29-072 MLFC

WHEN THE INDIVIDUAL F/C 1, FC2 AND FC 3 STACK TEMPERATURES READ 300 +/- 10 DEGREES F (P13, 6), PERFORM THE FOLLOWING..

SC01 PANEL 22

FUEL CELL 1
CIR + SEP MOTORS (CB64) - CLOSED
FUEL CELL 2
CIR + SEP MOTORS (CB83) - CLOSED
FUEL CELL 3
CIR + SEP MOTORS (CB84) - CLOSED
FC1 PUMP - AC1
FC2 PUMP - AC1
FC3 PUMP - AC1

29-073 MLFC

RECORD STACK TEMPERATURE READINGS.. (P13, 6)

FUEL CELL 1 _____ DEG. F. SC2084

FUEL CELL 2 _____ DEG. F. SC2085

FUEL CELL 3 _____ DEG. F. SC2086

29-073 NOTE

INITIATE FOLLOWING APPROPRIATE STEP AS REQUIRED WHEN THE INDIVIDUAL F/C 1, F/C 2 AND F/C 3 STACK TEMPERATURES READ 330 +/- 10 DEGREES F..

29-074 MLFC MHFC FC1 N2 GAS REG OP-CL - OFF KC7463
(R033)
FC2 N2 GAS REG OP-CL - OFF KC7464
(R034)
FC3 N2 GAS REG OP-CL - OFF KC7465
(R035)

29-075 MLFC RECORD STACK TEMPERATURE READINGS..

FUEL CELL 1 _____ DEG. F SC2084

FUEL CELL 2 _____ DEG. F SC2085

FUEL CELL 3 _____ DEG. F SC2086

29-076 MLFC ON CRT, VERIFY THE FOLLOWING FUEL CELL NO. 1, 2 AND 3 REGULATED PRESSURES..

N2 (49 TO 56 PSIA) (P13-2)
02 (63 +/- 4 PSIA) (P13-3)
H2 (60.5 +/- 4 PSIA) (P13-4)

FC1		FC2		FC3	
N2	PSIA	N2	PSIA	N2	PSIA
02	PSIA	02	PSIA	02	PSIA
H2	PSIA	H2	PSIA	H2	PSIA

29-077 MLFC MONITOR UNTIL STACK TEMPERATURE READING OF (375 +15, -0 DEGREES F) FOR FUEL CELL 1, 2 AND 3 (P13-6) IS OBTAINED THEN PERFORM THE FOLLOWING.

29-078	MLFC		RECORD STACK TEMPERATURE READINGS..	
			F/C 1 _____ DEG. F.	SC2084
			F/C 2 _____ DEG. F.	SC2085
			F/C 3 _____ DEG. F.	SC2086
29-079	MLFC	MHFC	FC1 VOLT OVERRIDE - ON (C052)	KC7004
		MHFC	220 211 1131 IS INSERTED	
29-080	MLFC		RECORD FC1 HEAT ZONE READINGS	
			HEAT ZONE 1	
			VAC (40 VAC NOM) (P13-15) ____	GC5000
			AMPS (P13-18) ____	GC5009
			HEAT ZONE 2	
			VAC (20 VAC NOM) (P13-16) ____	GC5001
			AMPS (P13-19) ____	GC5010
			HEAT ZONE 3	
			VAC (40 VAC NOM) (P13-17) ____	GC5002
			AMPS (P13-20) ____	GC5011
29-081	MLFC	MHFC	FC2 VOLT OVERRIDE - ON (C052)	KC7005
		MHFC	220 211 1331 IS INSERTED	

29-082 MLFC RECORD FC2 HEAT ZONE READINGS

HEAT ZONE 1
VAC (40 VAC NOM) (P13-15) GC5003

AMPS (P13-18) GC5012

HEAT ZONE 2
VAC (20 VAC NOM) (P13-16) GC5004

AMPS (P13-19) GC5013

HEAT ZONE 3
VAC (40 VAC NOM) (P13-17) GC5005

AMPS (P13-20) GC5014

29-083 MLFC MHFC FC3 VOLT OVERRIDE - ON (C052) KC7006

MHFC 220 211 2131 IS INSERTED

29-084 MLFC RECORD FC3 HEAT ZONE READINGS

HEAT ZONE 1
VAC (40 VAC NOM) (P13-15) GC5006

AMPS (P13-18) GC5015

HEAT ZONE 2
VAC (20 VAC NOM) (P13-16) GC5007

AMPS (P13-19) GC5016

HEAT ZONE 3
VAC (40 VAC NOM) (P13-17) GC5008

AMPS (P13-20) GC5017

TIME

29-084

NOTE

THE FOLLOWING 2 STEPS MAY BE PERFORMED IF FC 1, 2 AND 3 STACK TEMPERATURES (P13-6) ARE 385 +/- 5 DEG F.

29-085 MLFC MHFC FC 123 H2 HTR ON/OFF - ON (R032) KC7602

MHFC H2 HTR ON LITE ON SC2075

29-086 MLFC VERIFY LOAD INCREASE ON FC1, 2 AND 3 (P13-11) RECORD SC2113 SC2114 SC2115
FC1 _____ AMPS FC2 _____ AMPS
FC3 _____ AMPS

29-087 MLFC MHFC FC 123 H2 HTR ON/OFF - OFF (R032) KC7602

MHFC H2 HTR ON LITE OFF SC2075

NOTE

THE H2O PH HIGH LITES MAY LITE UNTIL WATER PRODUCED BY THE FUEL CELL FLUSHES THE LINES, (USUALLY AFTER WATER CONDITIONING PERIOD IS COMPLETED)

5 30 29-088 MLFC MTPE 1. FUEL CELL HEATING CYCLE COMPLETE

2. PROCEEDING WITH CALIBRATION AND LOADING.

3. REQUEST MEPS ISOLATE BUS B FOR FUEL CELL CALIBRATION.

-35 30 29-089 FUEL CELLS CALIBRATION AND LOADING.

29-090 MLFC MHFC ASSURE RECORDERS 5, 6, 7, 27 AND 28 ARE OPERATING AT 2 MM/SEC.

NOTE

MONITOR EACH FUEL CELL N2, O2, AND H2 PRESSURES WHEN PURGE VALVES ARE OPENED. IF A DECAY IS NOTICED, NOTIFY MLFC IMMEDIATELY AND BE READY TO CLOSE PURGE VALVES.

29-091 MLFC MHFC FC 1 O2 PURGE ON-OFF-ON (R037) KC7315
FC 1 H2 PURGE ON-OFF-ON (R037) KC7318

MHFC FC1 H2 PURGE LITE ON SC2130
FC1 O2 PURGE LITE ON SC2133

RECORD TIME

29-092 MLFC RECORD FLOW H2 PPH (P13-9)

O2 PPH (P13-10)

NOTE

PURGE FUEL CELL 1 FOR 3 MINUTES. THEN PERFORM THE FOLLOWING.

29-093 MLFC MHFC FC 1 O2 PURGE ON-OFF-OFF (R037) KC7315
FC 1 H2 PURGE ON-OFF-OFF (R037) KC7318

MHFC FC1 H2 PURGE LITE OFF SC2130
FC1 O2 PURGE LITE OFF SC2133

RECORD TIME

	29-094	MLFC	VERIFY H2 FLOW NEAR ZERO PPH 02 FLOW NEAR ZERO PPH	
222	29-095	MLFC MTPE	VERIFY POWER REMOVED FROM MAIN BUS B.	
	29-096	MLFC MHFC	INCREASE THE REAL TIME RECORDERS SPEED TO 5MM/SEC	
	29-097	MLFC	RECORD FC1 OPEN CIRCUIT VOLTAGE. VDC TIME ---------- ----------	
	29-098	MLFC MPWR	VERIFY GND PWR FILTER (C14-316) HAS BEEN REMOVED FROM BUS B	
	29-099	MLFC MPWR	FC 1 BUS B ON/OFF-ON (R102)	KC7302
		MHFC	FC 1 ON MN BUS B LITE ON	SC2125

NOTES

1. CALIBRATE FUEL CELL NO. 1 AT A STACK TEMPERATURE READING OF 380 +/- 10 DEG. F. (13-6) AS FOLLOWS..
2. ALLOW A VOLTAGE STABILIZATION PERIOD OF 5 SECONDS MINIMUM BEFORE RECORDING VALUES.

29-099 DC LOAD BUS B.

29-100 MLFC MPWR FC1 BUS B ON-OFF - OFF (C076) KC7303
MPWR 220 2251 320 IS INSERTED
DO NOT EXECUTE

NOTE

IF DURING CALIBRATION FC1 MUST BE REMOVED FROM BUS B THIS C-START IS TO BE EXECUTED.

29-101 MLFC MPWR FUEL CELL CAL ON-ON (P102) KC7088
NORMALIZE KC7089
KC7090
KC4091
KC7092

29-102 MLFC RECORD THE FOLLOWING FOR FC 1 SC2113
(P13-11, 12) SC2116

10 AMP LOAD

VDC	AMPS
_____	_____
VDC	AMPS

20 AMP LOAD

VDC	AMPS
_____	_____

30 AMP LOAD

VDC	AMPS
_____	_____

40 AMP LOAD

VDC	AMPS
_____	_____

50 AMP LOAD

VDC	AMPS
_____	_____

29-103 MLFC MPWR ON C START C076 APPLY LOAD ON BUS B SO THAT THE BUS B VOLTAGE AS MEASURED ON THE CRT IS APPROXIMATELY ONE VOLT HIGHER THAN THE VOLTAGE MEASURED AT BUS A. USE ONLY THE C STARTS NECESSARY AS LISTED BELOW.

50 AMP BUS B LOAD - ON (C076) KC7092

2100000250 IN INSERTED

40 AMP BUS B LOAD - ON (C076) KC7091

2100000240 IS INSERTED

30 AMP BUS B LOAD - ON (C076) KC7090

2100000230 IS INSERTED

20 AMP BUS B LOAD - ON (C076) KC7089

2100000220 IS INSERTED

10 AMP BUS B LOAD - ON (C076) KC7088

2100000210 IS INSERTED

29-104 MLFC MPWR APPLY LOAD TO BUS A ON C START C076 UNTIL PS A CURRENT IS 40 TO 50 AMPS (P1-4)

21000001XX IS INSERTED

NOTE

IF REQUIRED, ADJUST THE VOLTAGE ON MAIN BUS A WITH C076, INSERT 3000001VVV UNTIL BUS A IS WITHIN 1.0 VOLT OF BUS B AS OBSERVED ON CRT (P1-5)

29-105	MLFC	MPWR	PS A GND PWR FILTER - OFF (C076)	KC7768
		MPWR	220 2113 110 IS INSERTED	
29-106	MLFC	MPWR	FC 1 BUS A ON/OFF - ON (R102)	KC7301
		MHFC	FC 1 ON MN BUS A LITE ON	SC2120
29-107	MLFC	MPWR	FC 1 BUS B ON/OFF-OFF (R102)	KC7303
		MHFC	F/C 1 ON MN BUS B LITE OFF	SC2125
29-108	MLFC	MPWR	REMOVE ALL LOAD ON MAIN BUS B AT THE A14-074 BY PROPER C START C076 EXECUTION.	
29-109	MLFC	MHFC	FC 2 02 PURGE ON-OFF-ON (R038)	KC7316
			FC 2 H2 PURGE ON-OFF-ON (R038)	KC7319
		MHFC	FC 2 H2 PURGE LITE ON	SC2131
			FC 2 02 PURGE LITE ON	SC2134
			RECORD TIME ----------	
29-110	MLFC		RECORD FLOW H2 PPH (P13-9) ----- 02 PPH (P13-10) ----- NOTE PURGE FUEL CELL 2 FOR 3 MINUTES, THEN PERFORM THE FOLLOWING TIME ----------	
29-111	MLFC	MHFC	FC 2 02 PURGE ON-OFF-OFF (R038)	KC7316
			FC 2 H2 PURGE ON-OFF-OFF (R038)	KC7319
		MHFC	FC 2 H2 PURGE LITE OFF	SC2131
			FC 2 02 PURGE LITE OFF	SC2134

29-112 MLFC

VERIFY
H2 FLOW NEAR ZERO PPH
02 FLOW NEAR ZERO PPH

29-113 MLFC

RECORD FC2 OPEN CIRCUIT VOLTAGE

VDC	TIME
----------	----------

29-114 MLFC MPWR FC 2 BUS B ON/OFF-ON (R103) KC7306

MHFC FC 2 ON MN BUS B LITE ON SC2126

NOTES

1. CALIBRATE FUEL CELL NO. 2 AT A STACK TEMPERATURE READING OF 380 +/- 10 DEG. F. (P13-6)
2. ALLOW A VOLTAGE STABILIZATION PERIOD OF 5 SECONDS MINIMUM BEFORE RECORDING VALUES.

29-115 MLFC MPWR FC 2 BUS B ON/OFF - OFF (C076) KC7307

MPWR 220 2251 420 IS INSERTED
DO NOT EXECUTE

NOTE

IF DURING CALIBRATION FC2 MUST BE REMOVED FROM BUS B THIS C START IS TO BE EXECUTED.

29-116 MLFC MPWR FUEL CELL CAL ON-ON (R102) KC7088
NORMALIZE KC7089
KC7090
KC7091
KC7092

29-117 MLFC

RECORD THE FOLLOWING FOR FC 2 (P13-11, 12) SC2114 SC2117

	VDC	AMPS
10 AMP LOAD	_____	_____
20 AMP LOAD	_____	_____
30 AMP LOAD	_____	_____
40 AMP LOAD	_____	_____
50 AMP LOAD	_____	_____

29-118 MLFC MPWR

ON C START C076 APPLY LOAD UNTIL THE BUS B VOLTAGE ON THE CRT IS APPROXIMATELY 1 VOLT HIGHER THAN THE VOLTAGE MEASURED AT BUS A. USE ONLY THE C STARTS NECESSARY AS LISTED BELOW.

50 AMP BUS B LOAD - ON (C076) KC7092

2100000250 IS INSERTED

40 AMP BUS B LOAD - ON (C076) KC7091

2100000240 IS INSERTED

30 AMP BUS B LOAD - ON (C076) KC7090

2100000230 IS INSERTED

20 AMP BUS B LOAD - ON (C076) KC7089

2100000220 IS INSERTED

10 AMP BUS B LOAD - ON (C076) KC7088

2100000210 IS INSERTED

29-119 MLFC MPWR APPLY LOAD TO BUS A WITH C START C076 UNTIL PS A CURRENT (P1-4) PLUS FC1 CURRENT (P16-11) IS 70 TO 80 AMPS. 21000001XX IS INSERTED

NOTE

IF REQUIRED, ADJUST THE VOLTAGE ON THE MAIN BUS A WITH THE VOLT ADJ POWER SUP A ON THE GSE DC POWER CONTROL PANEL UNTIL BUS A IS WITHIN 1.0 VOLT OF BUS B AS INDICATED ON CRT MAIN BUS A AND MAIN BUS B VALUES. (PAGE 1).

29-120 MLFC MPWR FC 2 BUS A ON/OFF-ON (R103) KC7305

MHFC FC 2 ON MN BUS A LITE ON SC2121

29-121 MLFC MPWR FC 2 BUS B ON/OFF-OFF (R103) KC7307

MHFC FC 2 ON MN BUS B LITE OFF SC2126

29-122 MLFC MPWR REMOVE ALL LOAD ON MAIN BUS B AT THE A14-074 BY PROPER C START C076 EXECUTION.

29-123 MLFC MHFC FC 3 O2 PURGE ON-OFF-ON (R039) KC7317
FC3 H2 PURGE ON-OFF-ON (R039) KC7320

MHFC FC 3 H2 PURGE LITE ON SC2132
FC 3 O2 PURGE LITE ON SC2135

29-124 MLFC RECORD FLOW H2 _____ PPH (P13-9)

O2 _____ PPH (P13-10)

RECORD TIME _____

NOTE

PURGE FUEL CELL 3 FOR THREE MINUTES THEN PERFORM THE FOLLOWING

29-125	MLFC	MHFC	FC 3 02 PURGE ON-OFF-OFF (R039)	KC7317
			FC 3 H2 PURGE ON-OFF-OFF (R039)	KC7320
		MHFC	FC 3 H2 PURGE LITE OFF	SC2132
			FC 3 02 PURGE LITE OFF	SC2135
29-126	MLFC		VERIFY	
			H2 FLOW NEAR ZERO PPH	
			02 FLOW NEAR ZERO PPH	
29-127	MLFC		RECORD FC3 OPEN CIRCUIT VOLTAGE	
			VDC ----------	TIME ----------
29-128	MLFC	MPWR	FC 3 BUS B ON/OFF-ON (R103)	KC7310
		MHFC	FC 3 ON MN BUS B LITE ON	SC2127

29-128

NOTE

1. CALIBRATE FUEL CELL NO. 3 AT A MODULE STACK TEMPERATURE READING OF 380 +/- 10 DEG. F. ON CRT (P13, 6) AS FOLLOWS..

2. ALLOW A VOLTAGE STABILIZATION PERIOD OF 5 SECONDS MINIMUM BEFORE RECORDING VALUES.

29-129 MLFC MPWR FC 3 BUS B ON/OFF - OFF KC7311
(C076)
MPWR 220 2252 130 IS INSERTED
DO NOT EXECUTE

NOTE

IF DURING CALIBRATION FC 3 MUST BE REMOVED FROM BUS B THIS C-START IS TO BE EXECUTED.

29-130 MLFC MPWR FUEL CELL CAL ON-ON (R102) KC7088
NORMALIZE KC7089
KC7090
KC7091
KC7092

29-131 MLFC RECORD THE FOLLOWING FOR FC 3 SC2115
(P13-11, 12) SC2118

10 AMP LOAD
VDC AMPS
----- -----
20 AMP LOAD
VDC AMPS
----- -----
30 AMP LOAD
VDC AMPS
----- -----
40 AMP LOAD
VDC AMPS
----- -----
50 AMP LOAD
VDC AMPS
----- -----

29-132 MLFC MPWR ON C START C076 APPLY LOAD UNTIL THE BUS B VOLTAGE ON THE CRT IS APPROXIMATELY 1 VOLT HIGHER THAN THE VOLTAGE MEASURED AT BUS A. USE ONLY THE C STARTS NECESSARY AS LISTED BELOW.

50 AMP BUS B LOAD - ON (C076) KC7092

2100000250 IS INSERTED

40 AMP BUS B LOAD - ON (C076) KC7091

2100000240 IS INSERTED

30 AMP BUS B LOAD - ON (C076) KC7090

2100000230 IS INSERTED

20 AMP BUS B LOAD - ON (C076) KC7089

2100000220 IS INSERTED

		29-132		RECORD TIME	
		29-133	MLFC	MPWR	PS A BATT ENABLE - OFF (R100) KC7695 PS B BATT ENABLE - OFF (R101) KC7699
		29-134	MLFC	MEPS	REMOVE POWER SUPPLY A EFFECTIVELY FROM BUS A BY DECREASING PWR SUPPLY A OUTPUT VOLTAGE TO APPROXIMATELY 27.0 VDC.
		29-135	MLFC	MEPS	REDUCE POWER SUPPLY B OUTPUT VOLTAGE TO APPROX 27.0 VOLTS.
		29-136	MLFC	MPWR	PS B TO BUS B - ON (R101) KC7034
		29-137	MLFC	MPWR	ADJUST BUS A AND B LOADS AS REQUIRED DURING SC LOAD APPLICATION TO MAINTAIN A MINIMUM LOAD OF 20 AMPS PER FC. ADJUST LOADS PER MEPS DISCRETION.
		29-138	MLFC	MPWR	FC 2 BUS B ON/OFF-ON (R103) KC7306
			MHFC		FC 2 ON MN BUS B LITE ON SC2125
4	30 222	29-139	MLFC	MTPE	FUEL CELL CALIBRATION COMPLETE BUS B LOADS MAY BE REAPPLIED
	224	29-140	MLFC	SC01	PANEL 22 FC2 PUMP - AC2 FC3 PUMP - AC2
		29-141	MLFC	MHFC	ASSURE REAL TIME RECORDER 5, 6, AND 27 RECORDER SPEED IS 2 MM/SEC.

29-141

NOTE

1. MAINTAIN A TOTAL OF 20 AMP LOAD MINIMUM FOR EACH FC. FOR A MINIMUM OF 3 HOURS OR UNTIL VOLTAGE STABILIZATION OCCURS.
2. IF THE FUEL CELL STACK TEMPERATURE EXCEEDS 500 DEGREES F NOTIFY THE SYSTEM ENGINEER.
3. F.C. ARE PRODUCING WATER AND C.M. WATER LINE B NUT C.7. WATER PANEL CONNECTION MAY BE LOOSENED AT THIS TIME TO BLEED ENTRAPPED AIR.

29-142 MLFC

RECORD CRT READINGS (P13)

FC1	ZONE 1	VAC	AMPS	GC5000
		-----	-----	GC5009
	ZONE 2	VAC	AMPS	GC5001
		-----	-----	GC5010
	ZONE 3	VAC	AMPS	GC5002
		-----	-----	GC5011
FC2	ZONE 1	VAC	AMPS	GC5003
		-----	-----	GC5012
	ZONE 2	VAC	AMPS	GC5004
		-----	-----	GC5013
	ZONE 3	VAC	AMPS	GC5005
		-----	-----	GC5014
FC3	ZONE 1	VAC	AMPS	GC5006
		-----	-----	GC5015
	ZONE 2	VAC	AMPS	GC5007
		-----	-----	GC5016
	ZONE 3	VAC	AMPS	GC5008
		-----	-----	GC5017

29-142

NOTE

DURING SUBSEQUENT FUEL CELL OPERATIONS ADJUSTMENTS OF A14-052 OUTPUT MAY BE MADE AS REQ'D TO MAINTAIN PROPER STACK TEMP BY THE USE OF THE C052 COMMANDS LISTED BELOW

052 HTR LOW HEAT FC123 - ON (R045)	KC7004 KC7005 KC7006
FC1 HEATER PWR CONT 1 220211112X	KC7003
FC1 HEATER PWR CONT 2 220211111X	KC7007
FC1 HEATER PWR CONT 3 220211124X	KC7008
FC1 HEATER PWR CONT 4 220211123X	KC7010
FC2 HEATER PWR CONT 1 220211132X	KC7009
FC2 HEATER PWR CONT 2 220211131X	KC7013
FC2 HEATER PWR CONT 3 220211144X	KC7014
FC2 HEATER PWR CONT 4 220211143X	KC7016
FC3 HEATER PWR CONT 1 220211212X	KC7015
FC3 HEATER PWR CONT 2 220211211X	KC7019
FC3 HEATER PWR CONT 3 220211224X	KC7020
FC3 HEATER PWR CONT 4 220211223X	KC7021
FC1 HEATER PWR ON/OFF - OFF (C052) 2202111140 IS INSERTED	KC7000
FC2 HEATER PWR ON/OFF - OFF (C052) 2202111340 IS INSERTED	KC7001
FC3 HEATER PWR ON/OFF - OFF (C052) 2202112140 IS INSERTED	KC7002

29-142

PREVIOUS HEAT CONTROL COMMANDS ARE TO BE REMOVED AFTER NEW COMMANDS ARE EXECUTED.
X = 1 FOR ON
X = 0 FOR OFF

29-143 MLFC MHFC FC1 OH HOLD OPEN ON/OFF - ON KC7312
(R037)
FC2 OH HOLD OPEN ON/OFF - ON KC7313
(R038)
FC3 OH HOLD OPEN ON/OFF - ON KC7314
(R039)

MLFC VERIFY BINARY DISPLAY CRT (P13, 24) IS XXX111XX.

29-144 MLFC MHFC FC1 OH HOLD OPEN ON/OFF - OFF KC7312
(R037)
FC2 OH HOLD OPEN ON/OFF - OFF KC7313
(R038)
FC3 OH HOLD OPEN ON/OFF - OFF KC7314
(R039)

MLFC VERIFY BINARY DISPLAY CRT (P13-24) IS XXX 000 XX

29-145 MLFC PERFORM PURGE PER FUEL CELL PURGE SEQUENCES.

NOTE

1. MONITOR FUEL CELL REGULATED PRESSURES AND BE PREPARED TO CLOSE THE PURGE VALVES IMMEDIATELY IF PRESSURE LOSS IS OBSERVED.

2. AT THIS TIME PRESSURE BUILD-UP IN S14-066 (SEQ. 30-007) MAY BE STARTED IF LH2 TANKING IS TO TAKE PLACE IMMEDIATELY AFTER FUEL CELL PURGE.

29-146 MLFC MHFC FC 123 H2 HTR ON/OFF - ON KC7602
(R032)

MHFC H2 HTR ON LITE ON SC2075

29-147 FUEL CELLS PURGE

NOTE

INDIVIDUAL OR ALL POWERPLANT REACTANT GAS SYSTEMS MAY BE PURGED AT THE DISCRETION OF MLFC PER FOLLOWING SEQUENCES.

29-148 MLFC SC01 PANEL 18
FUEL CELL
FC1 PURGE SW - 02 FOR 120 SEC. THEN CENTER

MHFC FUEL CELL 1 02 PURGE LITE ON SC2133

29-149 MLFC SC01 PANEL 18
FUEL CELL
FC2 PURGE SW - 02 FOR 120 SEC. THEN CENTER

MHFC FUEL CELL 2 02 PURGE LITE ON SC2134

29-150 MLFC SC01 PANEL 18
FUEL CELL
FC3 PURGE SW - 02 FOR 120 SEC. THEN CENTER

MHFC FUEL CELL 3 02 PURGE LITE ON SC2135

RECORD TIMES 1. _____ _____
2. _____ _____
3. _____ _____
4. _____ _____
5. _____ _____

29-151 MLFC SC01 PANEL 18
FUEL CELL
FC1 PURGE SW - H2 FOR 80 SEC. THEN CENTER

MHFC FUEL CELL 1 H2 PURGE LITE ON SC2130

29-152 MLFC SC01 PANEL 18
FUEL CELL
FC2 PURGE SW - H2 FOR 80 SEC. THEN CENTER

MHFC FUEL CELL 2 H2 PURGE LITE ON SC2131

29-153 MLFC SC01 PANEL 18
FUEL CELL
FC3 PURGE SW - H2 FOR 80 SEC. THEN CENTER

MHFC FUEL CELL 3 H2 PURGE LITE ON SC2132

RECORD TIME 1. _____ _____
2. _____ _____
3. _____ _____
4. _____ _____
5. _____ _____

29-154 MLFC MHFC FC1 N2 FILL VALVE - CLOSED KC7051
(R033)
FC2 N2 FILL VALVE - CLOSED KC7052
(R034)
FC3 N2 FILL VALVE - CLOSED KC7053
(R035)

-34 30 29-155 MLFC SOMD S14-132 (GN2 K-BOTTLE SUPPLY TO FDS)
VALVE G35MV101 - CLOSED
CLOSE K-BOTTLE SUPPLY VALVE

29-155

NOTE

MONITOR FC N2 PRESSURES DURING THE FOLLOWING STEPS AND BE PREPARED TO REOPEN GN2 SUPPLY VALVE G35MV506 AND G35LV19 AND CLOSE G35LV21.

29-156 MLFC SOMD S14-132
VALVE G35MV506 - CLOSED

29-157 MLFC N2 LV21 - OPEN (C060) KC7588
3+21-00-00 IS INSERTED

MHFC N2 LV21 CLOSED LITE OFF FC5919

29-158 MLFC SOMD S14-132 (GN2 K-BOTTLE SUPPLY TO FDS)
VERIFY GAGE G35PG101 INDICATES PRESSURE DECREASING.

NOTE

WHEN GN2 PRESS (P12-23) READS 30 PSIG MAX PROCEED WITH THE FOLLOWING

29-159 MLFC N2 LV19 - CLOSED (C060) KC7591
N2 LV21 - CLOSED (C060) KC7588
3-21-19-00 IS INSERTED

MHFC N2 LV19 CLOSED LITE ON FC6005
N2 LV21 CLOSED LITE ON FC5919

29-160 MLFC MONITOR GN2 PRESS (P12-23) FOR ANY INCREASE IN PRESSURE FOR 5 MINUTES MINIMUM. IF NO INCREASE IS OBSERVED, PERFORM THE FOLLOWING.

29-161 MLFC SPAD REMOVE LINES FCP AND OV/EPS AND PROCEED WITH INSTALLATION OF PANEL SM4 PER CHECKLIST 9.7.5

-34 15 222 29-162 MLFC MTPE FUEL CELL ACTIVATION IS COMPLETE. READY TO PROCEED WITH LH2 TANKING.

30-000 LH2 SYSTEM TANKING

WARNING

NON-ESSENTIAL PERSONNEL WILL CLEAR ALL LEVELS OF THE MSS AND ML AND A SPECIAL CONTROL AREA OF 100 FEET CENTERED ON THE S14-066.

NOTE

SYSTEM SAFETY CONCURRENCE IS REQUIRED BEFORE PROCEEDING WITH TEST.

WARNING

CRYO FLOW WILL OCCUR DURING NEXT SEQUENCES.

30-001 MLFC MTPE CLEAR PERSONNEL FOR LH2 FLOW

30-002 MLFC ALL VERIFY ON STATION

MHFC _____	SLHT _____	PNQC _____
SHFD _____	SLHM _____	BENDIX SAMPLER (2) _____
PLHM _____	SGQC _____	
SC01 _____	SNQC (2) _____	
SC02 _____	SSMT _____	
SPAD _____	SGSM _____	
SPSS (2) _____		

30-003 MLFC PGSM VERIFY S14-066 LH2 SAMPLE IS ACCEPTABLE
RECORD SAMPLE NO.

1.	2.	
TIME _____	DATE _____	_____
		NAR QC

	30-004	MLFC	MACE	LOAD ADAP PROGRAM IF/0101 ON C-START C124 BY ENTERING 7=+0000801		
222	30-005	MLFC	MTPE	GSE HAS BEEN PERSONALLY INSPECTED AND IS IN CORRECT CONFIGURATION FOR LH2 FLOW		
224	30-006	MLFC	SHED	S14-132 (H2) CONNECT SAMPLING EQUIPMENT TO G36MV7 AND G36MV4	NAR QC	NASA QC
	30-007	MLFC		H2 PV36 - OPEN (C060) 5+36-00-00 IS INSERTED	KC7775	
		MHFC		H2 PV36 OPEN LITE ON	FC5487	
	30-008	MLFC	PLHM	S14-066 CONTROLLER PC-2 - 41 TO 45 PSIG CONTROLLER PC-4 - 39 TO 41 PSIG		

NOTE

ADJUST CONTROLLERS AS NECESSARY TO MAINTAIN PRESSURE OF 40 TO 45 PSIG DURING FLOW.

CAUTION

DO NOT EXCEED 45 PSIG

30-009 DELETED

30-010 DELETED

30-011			DELETED	
30-012	MLFC	MHFC	LST SUB CLR FIL LV-30 - ON (R051)	KC7679
			H2 OUT TO SC LV29 - ON (R051)	KC7678
			LST SUB CLR PRG LV33 - ON (R050)	KC7725
	MHFC		PV2 OPEN LITE OFF	FC5154
30-013	MLFC	SHFD	S14-132 (H2) SUBCOOLER PV3 - OPEN PV2 - CLOSED PV1 - OPEN	
30-014	MLFC	PLHM	VERIFY S14-066 TANK PRESSURE IS 37 +/- 5 PSIG.	
-33 00 30-015	MLFC	MHFC	H2 FLOW ON 066 - (R042) NORMALIZE RECORD TIME	KC7339
			----------	------
				NAR QC
30-016	MLFC		026 PV5 VENT H2 TKS - ON (R032) NORMALIZE	KC7578
	MHFC		FC SC TK VT LITE ON	FC5163
	MLFC	MHFC	SUB CLR FIL H2 026 - ON (R048) NORMALIZE	KC7248
	MHFC		CLR FIL 1/P LITE ON	FC5282
			CLR FIL CMP LITE ON	FC5283
			RECORD TIME	

30-017	MLFC	MHFC	026 H2 SUB-CLR ON-OFF - ON (R050)	KC7276
	MHFC		SUB CL VAC LITE ON	FC5281

30-017

NOTES

1. SUBCOOLER FILL COMPLETE AND/OR FILL IN PROGRESS LITES WILL ALTERNATE BEING ON DURING THE OPERATION TO MAINTAIN LH2 LEVEL IN SUBCOOLER.
2. WHILE CLR FIL CMP LITE IS ON PERFORM THE FOLLOWING.

30-018	MLFC	MHFC	PUMP COOLDOWN - ON (R048) NORMALIZE	KC7279
		MHFC	PUMP CL 1/P LITE ON TIME	FC5284

NOTE

THE FOLLOWING STEPS MAY BE EXECUTED TO MAINTAIN PUMP COOLDOWN

30-019	MLFC	MHFC	LOW BLEED H2 026 - ON (R049)	KC7468
30-020	MLFC	MHFC	LOW BLEED H2 026 - OFF (R049)	KC7468
		MHFC	PUMP CL CMP LITE ON	FC5285
			CIR - XFR READY LITE ON RECORD TIME	FC5949

30-021 DELETED

30-022 DELETED

30-022A	MLFC	SC01	PANEL 13 H2 T1 FAN - ON H2 T2 FAN - ON TIME----------	
30-022B	MLFC		H2 LV6 - OPEN (C060) H2 LV8 - OPEN (C060) 5+06+08-00 IS INSERTED	KC7570 KC7572
	MHFC		H2 LV6 OPEN LITE ON H2 LV8 OPEN LITE ON	FC5380 FC5384
30-022C	MLFC		H2 LV5 - OPEN (C060) H2 LV7 - OPEN (C060) 5+05+07-00 IS INSERTED	KC7569 KC7571
	MHFC		H2 LV 5 OPEN LITE ON H2 LV 7 OPEN LITE ON	FC5378 FC5382
30-022D	MLFC	MHFC	VERIFY THE FOLLOWING H2 PV11 OPEN LITE ON	 FC5999
30-022E	MLFC	SC01	PANEL 22 CRYOGENIC SYSTEM QTY AMPL AC1 (CB-44) - CLOSED AC2 (CB-90) - CLOSED TIME ----------	

30-023	MLFC	MHFC	START LIQUID XFR H2 026 - ON (R072) NORMALIZE	KC7282
			DECR H2 PMP SPEED - ON (R050) UNTIL PUMP IS AT LOW SPEED (APPROX 3 GPM) (P12-11)	KC7285 FC5277
			RECORD TIME	
		MHFC	LH2 XFR 1/P LITE ON	FC5289

NOTE

REGULATE LH2 FLOW BETWEEN 3 AND 7 GPM BY PERFORMING THE FOLLOWING AS REQUIRED.

30-024	MLFC	MHFC	INCR H2 PMP SPEED - ON (R050) NORMALIZE	KC7284
30-025	MLFC	MHFC	DECR H2 PMP SPEED - ON (R050) NORMALIZE	KC7285

NOTE

1. LESS THAN 3 GPM FLOW WILL NOT MAINTAIN PUMP CHILLDOWN

2. EXECUTE/REMOVE LST H2 DISPOS LV34 (R051) AS REQ'D TO OBTAIN FILL LINE CHILLDOWN.

CAUTION

DO NOT DEAD HEAD PUMP

NOTE

MONITOR LH2 SYSTEM FILL LINE PRESSURE (P12-15) AND FILL LINE TEMPERATURE (P12-19) DURING CHILLDOWN AND TANKING PROCEDURE. DO NOT BEGIN SUBCOOLER OPERATION UNTIL TS1 LITE COMES ON. FC5356 FC5480

30-026	MLFC	SHFD	VERIFY VALVE PV3 OPEN VALVE PV2 CLOSED	
		SLHT	NOTIFY MLFC WHEN TS1 INDICATOR LITE COMES ON.	
		MHFC	WHILE TS1 INDICATOR LITE IS ON, PERFORM NEXT STEP.	
30-027	MLFC	MHFC	SUB CLR ON-OFF LV28 - ON (R051)	KC7677
		MHFC	SUBCL - 427 LITE ON	FC5108
30-028	MLFC	SHFD	S14-132 (SUBCOOLER) RECORD P1 _____ PSIG VG1 _____.	
			TIME _____ DATE _____	------
				NAR QC

NOTE

OBTAIN A SAMPLE AT G36MV7 BY OPENING G36MV7 AND G36MV4. (ANALYZE SAMPLE PER MSFC-SPEC-356)

RECORD SAMPLE NO. 1 _____

RECORD SAMPLE NO. 2 _____

TIME _____ DATE _____ ------ ------

NAR QC NASA QC

30-028

NOTES

1. MONITOR H2 TANK NO. 1 AND TANK NO. 2 QUANTITY (P11-15) TEMPERATURE (P11-16) AND PRESSURE (P11-17). FILL H2 TANK NO. 1 AND H2 TANK NO. 2 TO 22 LBS MINIMUM. FLOW RATE INTO TANKS TO BE AT 5 GPM OR GREATER, CYCLE VALVES LV5 AND LV7 AS REQD. SF0039 SF0040 SF0030 SF0031 SF0043 SF0044
2. WHEN 5 TO 10 POUNDS QUANTITY IS NOTED IN EACH TANK PERFORM THE FOLLOWING.

30-029 MLFC SC01 PANEL 13
H2 FAN 1 - OFF
H2 FAN 2 - OFF

TIME

CAUTION

WHEN FIRST TANK FILLS CLOSE APPLICABLE FILL AND VENT VALVES SIMULTANEOUSLY. WHEN SECOND TANK FILLS MHFC PERFORM THE NEXT STEP IMMEDIATELY AND MLFC CLOSE FILL AND VENT VALVES SIMULTANEOUSLY PER FOLLOWING STEP.

30-030 MLFC MHFC LST H2 DISPOS LV34 - ON (R051) KC7726

MHFC PV2 OPEN LITE ON FC5154

30-031	MLFC		H2 LV8 - CLOSED (C060) (TK 2 VENT)	KC7572
			H2 LV7 - CLOSED (C060) (TK 2 FILL)	KC7571
			5-08-07-00 IS INSERTED	
	MHFC		H2 LV8 CLOSED LITE ON	FC5385
			H2 LV7 CLOSED LITE ON	FC5383
30-032	MLFC		H2 LV6 - CLOSED (C060) (TK 1 VENT)	KC7570
			H2 LV5 - CLOSED (C060) (TK 1 FILL)	KC7569
			5-06-05-00 IS INSERTED	
	MHFC		H2 LV6 CLOSED LITE ON	FC5381
			H2 LV5 CLOSED LITE ON	FC5379
30-033	MLFC	SHFD	S14-132 (LH2 SUBCOOLER)	
			VERIFY PV2 OPEN	
			PV3 OPEN	

30-033 RECORD TIME _____

30-034 MLFC RECORD THE FOLLOWING..

	QUAN	PRESS	TEMP
T1	----	-----	----
T2	----	-----	----

NOTE

IF QUANTITY TEMP. AND PRESSURE INDICATIONS ARE SATISFACTORY TO SYSTEM ENGINEERING SECURE THE LH2 TRANSFER SYSTEM. IF READINGS ARE NOT SATISFACTORY TO THE SYSTEM ENGINEER, REPEAT THE APPLICABLE PRECEEDING STEPS.

	30-035	MLFC	MPWR	STOP H2 CRYO MODES - ON (R073)	KC7472
				NORMALIZE	
				LH2 LINES DRAIN - ON (R072)	KC7271
				NORMALIZE	
		MHFC		LINES DRAIN LITE ON	FC5295
				LH2 XFR 1/P LITE OFF	FC5289
				SUB CL - VAC LITE OFF	FC5281
	30-036	MLFC	MHFC	026 H2 SUB CLR ON/OFF -	KC7277
				NORMALIZE	
				(R050)	
	30-037	MLFC	MHFC	H2 FLO OFF 066 - ON (R042)	KC7340
				NORMALIZE	
	30-038	MLFC	MHFC	026 PV5 VENTS H2 TKS - ON	KC7578
				(R032) THEN NORMALIZE	
		MHFC		026 SC TKS VENT LITE ON	FC5163
	30-039	MLFC	SLHM	S14-026	
				MV2 - OPEN	
				MV4 - OPEN	
224	30-040	MLFC	MHFC	LST SUB CLR FIL LV30 - OFF	KC7679
				(R051)	
				SUB CLR ON-OFF LV28 - OFF	KC7677
				(R051)	
	30-041	MLFC	SHFD	LH2 SUBCOOLER	
				VERIFY PV3 OPEN	
				PV2 OPEN	
				PV1 CLOSED	
	30-042	MLFC	PLHM	S14-066,	
				PC4 CONTROLLER - SET TO ZERO PSIG	
				PC2 CONTROLLER - SET TO ZERO PSIG	
				RECORD TIME	

	30-043	MLFC	MPWR	STOP H2 CRYO MODES - ON (R073)	KC7472
				NORMALIZE	
		MHFC		026 SC TNKS VT LITE OFF	FC5163
				LINES DRAIN LITE OFF	FC5295

30-044 MLFC SHFD S14-132 (LH2 SUBCOOLER)
CLOSE GN2 MIXING VALVE TO H2 VENT AT
PORT D OF SUBCOOLER.

30-045 MLFC MHFC GH2 PURGE POST-X - ON (R072) KC7275
NORMALIZE

MHFC H2 POST 1/P LITE ON FC5279

NOTE

MAINTAIN PURGE FOR APPROX 1
TO 2 MINUTES. THEN PERFORM
THE FOLLOWING.

30-046 MLFC H2 LV6 - OPEN (C060) KC7570
H2 LV8 - OPEN (C060) KC7572
5+06+08-00 IS INSERTED

MHFC H2 LV6 OPEN LITE ON FC5380
H2 LV8 OPEN LITE ON FC5384

30-047 MLFC MPWR STOP H2 CRYO MODES - ON (R073) KC7472
NORMALIZE

MHFC H2 POST 1/P LITE OFF FC5279

30-048 MLFC H2 PV36 - CLOSED (C060) KC7775
5-36-00-00 IS INSERTED

MHFC H2 PV36 OPEN LITE OFF FC5487

-31 00 222 30-049 MLFC MTPE LH2 TANKING IS COMPLETE. LH2 SYSTEM
QUANTITY ROUGHING STARTING.

NOTE

PERFORM THE FOLLOWING SF0030
STEPS AS REQD TO REDUCE H2 SF0031
T1 AND T2 QUANTITY (P11-15)
TO APPROX 20 POUNDS IF
NECESSARY. THE 05 AND 07
PORTIONS OF THE FOLLOWING
INSERTS MAY BE PERFORMED AS
INDEPENDENT STEPS WITH
CORRESPONDING LITES VERIFIED.

	224	30-050	MLFC	MPWR	LIQUID DETANK H2 - ON (R073) THEN NORMALIZE	KC7270
			MHFC		026 CRYO DRAIN LITE ON	FC5293
		30-051	MLFC		H2 LV5 - OPEN	KC7569
					H2 LV7 - OPEN (C060)	KC7571
					5+05+07-00 IS INSERTED	
			MHFC		H2 LV5 OPEN LITE ON	FC5378
					H2 LV7 OPEN LITE ON	FC5382
		30-052	MLFC		H2 LV5 - CLOSED (C060)	KC7569
					H2 LV7 - CLOSED (C060)	KC7571
					5-05-07-00 IS INSERTED	
			MHFC		H2 LV5 CLOSED LITE ON	FC5379
					H2 LV7 CLOSED LITE ON	FC5383
		30-053	MLFC	MPWR	STOP H2 CRYO MODES - ON (R073) THEN NORMALIZE	KC7472
			MHFC		026 CRYO DRAIN LITE OFF	FC5293
		30-054	MLFC	MHFC	026 PV5 VENT H2 TKS - ON (R032)	KC7578
			MHFC		026 SC TKS VENT LITE ON	FC5163
-30 00	222	30-055	MLFC	MTPE	QUANTITY ROUGHING COMPLETE. STARTING FINAL QUANTITY ADJUST AND PRESSURIZATION.	
	224	30-056	MLFC	SHFD	S14-132 CONNECT A FLEX LINE TO VALVE G36MV7 AND VALVE G36MV4.	------ NAR QC
	222	30-057	MLFC	MTPE	GSE HAS BEEN PERSONALLY INSPECTED AND IS IN CORRECT CONFIGURATION FOR LH2 TANK PRESSURIZATION.	

CAUTION

SYSTEM PRESS WILL OCCUR DURING NEXT SEQUENCES.

30-058 MLFC SC01 PANEL 13
H2 FAN 1 - ON
H2 FAN 2 - ON
TIME

30-059 MLFC LPDS A14-052
H2 TANK HEATER CONTROL NO. 1 AND NO. 2 H2 TANK SWITCHES - LOCAL.
ADJUST VDC OUT TO 65 - 70 VDC

RECORD VDC

NOTE

A14-052 TANK HEATERS MAY BE ADJUSTED AS REQUIRED TO MAINTAIN PRESSURE.

30-060 MLFC MHFC LST H2 DISPOS LV34 - OFF (R051) KC7726

MHFC PV2 OPEN LITE OFF FC5154

30-061 MLFC SHFD S14-132 (LH2 SUBCOOLER)
VERIFY PV1 CLOSED
PV2 CLOSED
PV3 OPEN

30-062 MLFC SHFD S14-132 (8G14840112)
PV11 MANUAL OVERRIDE - CLOSED AND PINNED

30-063 MLFC SLHM S14-026
MV2 - AUTO
MV4 - AUTO
VERIFY GAGE G36PG10
READS LESS THAN 10 PSIG

30-064 MLFC SHFD S14-132
VALVE G36MV7 - OPEN
VALVE G36MV4 - OPEN

222 30-065 MLFC MTPE REQUEST AREA CLEAR FOR LH2 TANK PRESSURIZATION

30-066 MTPE MLFC PROCEED WITH LH2 TANK PRESSURIZATION

224 30-067 MLFC SLHM S14-026
VALVE G36MV25 - OPEN
ADJUST G36PR10 TO INCREASE PRESSURE
OF APPROX 30 PSI/MINUTE AS DIRECTED

NOTE

WHEN H2 T1 AND T2 PRESS SF0039
(P11-17) REACHES 205 TO SF0040
245 PSIA. RECORD PRESSURE SF0030
PSIA TIME SF0031
------ -----

30-068 MLFC SLHM S14-026
VALVE G36MV25 - CLOSED
BACKOFF G36PR10 TO APPROX ZERO
PSI AS READ ON G36PG10

30-069 MLFC MTPE PRESSURE STABILIZED FOR 5 MINUTES.
REQUEST SHFD, SNQC, SC01 AND SC02 TO
PERFORM QUANTITY REDUCTION. ALSO
REQUEST PLOM AND PNQC TO S14-065 TO
START S14-065 PRESSURIZATION PER SEQ.
31-005.
TIME

30-070 MLFC SHFD S14-132
VALVE G36MV4 - CLOSED

30-071 MLFC MHFC LST H2 DISPOS LV34 - ON (R051) KC7726

MHFC PV2 OPEN LITE ON FC5154

30-072 MLFC SLHM S14-026
MV2 - OPEN
MV3 - OPEN
MV4 - OPEN

30-073 MLFC SHFD S14-132
VALVE G36MV4 - OPEN
SLOWLY AS DIRECTED BY MLFC.
TIME

30-073

NOTE

1. MONITOR H2 TK1 AND TK2 PRESS (P11-17) AND QUAN (P11-15). MAINTAIN A TANK PRESS OF 205-245 PSIA IN BOTH TANKS AND REDUCE H2 QUAN IN BOTH TANKS TO 18.5 +/- 1.5 LBS. ADJUST THE A14-052 AS REQ'D TO MAINTAIN SYSTEM PRESS WHILE REDUCING QUAN. SF0039 SF0040 SF0030 SF0031

2. WHEN H2 TK1 AND TK2 QUAN (P11-15) REACHES 18.5 +/- 1.5 LBS PERFORM THE FOLLOWING TIME SF0030 SF0031

QUAN	TK1	TK2
	(P11-15)	(P11-15)

30-074 MLFC LPDS A14-052
H2 TANK HEATER CONTROL NO. 1 AND NO. 2 H2 TANK SWITCHES OFF. DC VOLTAGE ADJUST FULL CCW.

30-075 MLFC
H2 LV6 - CLOSED (C060) KC7570
H2 LV8 - CLOSED (C060) KC7572
5-06-08-00 IS INSERTED

MHFC
H2 LV6 CLOSED LITE ON FC5381
H2 LV8 CLOSED LITE ON FC5385

30-076 MLFC SC01 PANEL 13
H2 FAN 1 - AUTO
H2 FAN 2 - AUTO
H2 HEATERS 1 (S16) - AUTO
H2 HEATERS 2 (S17) - AUTO
TIME

	30-077 MLFC	MHFC	LST H2 DISPOS LV34 - OFF (R051) LST SUBCLR PRG LV33 - OFF (R050) H2 OUT TO SC LC29 - OFF (R051)	KC7726 KC7725 KC7678
		MHFC	PV2 OPEN LITE ON	FC5154
	30-078 MLFC	SHFD	S14-132 (LH2 SUBCOOLER) VERIFY PV2 OPEN PV3 CLOSED	
	30-079 MLFC	SHFD	S14-132 (8G14-840112) PV11 MANUAL OVERRIDE - OFF	
			NOTE	
			WHEN H2 PORT D PRESS (P12-09) AND H2 VENT LINE PRESS (P12-17) READS APPROX AMBIENT PERFORM THE FOLLOWING.	FC5290 FC6021
	30-080 MLFC	SLHM	S14-026 MV3 - AUTO	
	30-081 MLFC	MPWR	GHE PURGE POST-X - ON (R073) THEN NORMALIZE	KC7273
		MHFC	026 HE POST I/P LITE ON	FC5268
-27 00	30-082 MLFC	MTPE	FINAL QUANTITY ADJUST COMPLETE AND LINE INERTING IN PROGRESS. REQUEST LO2 PERSONNEL ON STATION	
			NOTE	
			MAINTAIN PURGE FOR 5 TO 7 MINUTES THEN PERFORM THE FOLLOWING..	

30-083	MLFC	MPWR	STOP H2 CRYO MODES - ON (R073) THEN NORMALIZE	KC7472
	MHFC		026 HE POST I/P LITE OFF	FC5268
			026 SC TNKS VT LITE OFF	FC5163
30-084	MLFC	MHFC	026 PV5 VENT H2 TNKS - ON (R032)	KC7578
	MHFC		026 SC TNKS VT LITE ON	FC5163
30-085	MLFC	SHFD	S14-132 VALVE G36MV4 - CLOSED VALVE G36MV7 - CLOSED DISCONNECT FLEX LINE FROM G36MV7 AND G36MV4	------ NAR QC
30-086	MLFC	MHFC	STOP H2 CRYO MODES - ON (R073) NORMALIZE	KC7472
	MHFC		026 SC TNKS VT LITE OFF	FC5163
30-087	MLFC	SLHM	S14-026 GN2 PURGE VALVE TO H2 VENT - CLOSED	
30-088	MLFC	SHFD	S14-132 GN2 PURGE VALVES (2) TO H2 VENTS - CLOSED/VERIFY CLOSED RECORD TIME ----------	

-26 00 31-000

LO2 SYSTEM CHILLDOWN, SAMPLING AND TANKING

WARNING

NON-ESSENTIAL PERSONNEL WILL CLEAR ALL LEVELS OF THE MSS AND ML AND A SPECIAL CONTROL AREA OF 100 FEET CENTERED ON THE S14-065.

NOTE

SYSTEM SAFETY CONCURRENCE IS REQUIRED BEFORE PROCEEDING WITH TEST.

31-001 MTPE MLFC PROCEED WITH LO2 SERVICING.

31-002 MLFC ALL VERIFY ON STATION

MHFC	_____	SGQC	_____
PLOM	_____	SLOT	_____
PNQC	_____	SNQC (2)	_____
SC01	_____	SSMT	_____
SC02	_____	SGSM	_____
SPAD	_____	BENDIX SAMPLER (2)	_____
SLOM	_____		_____
SOMD	_____	LN2 TANKER CREW	_____
SPSS	_____		

31-003 MLFC MACE LOAD ADAP PROGRAM IF/0102 ON C-START C124 BY ENTERING 7-+0000802

31-004 MLFC PGSM VERIFY S14-065 LO2 SAMPLE IS ACCEPTABLE. RECORD SAMPLE
NO. 1 TIME DATE
_____ _____ _____
NO. 2
_____

_____ _____
NAR QC NASA QC

WARNING

CRYO FLOW WILL OCCUR DURING NEXT SEQUENCES.

31-005 MLFC SOMD S14-132 (02)
VERIFY CONNECTION/CONNECT SAMPLING EQUIPMENT TO VALVE G35MV1, VENT SAMPLE BOTTLE TO OUTSIDE OF TOWER.

_____ _____
NAR QC NASA QC

31-006 MLFC MTPE GSE HAS BEEN PERSONALLY INSPECTED AND IS IN CORRECT CONFIGURATION FOR LO2 FLOW.

224 31-007 MLFC PLOM S14-065,
SET CONTROLLER PC-60 AT 47 +/- 1 PSIG
SET CONTROLLER PC-54 AT 42 +/- 1 PSIG

NOTE

ADJUST PC54 AS REQD TO MAINTAIN 42 +/- 1 PSIG THROUGHOUT LO2 FLOW.

	31-008 MLFC	SLOM	S14-032 MV19 - CLOSED MV18 - CLOSED MV17 - CLOSED MV2 - AUTO MV4 - AUTO	
	31-009 MLFC	MHFC	032 PV5 VENT 02 TKS - ON (R032) NORMALIZE	KC7579
		MHFC	032 SC TNKS VT LITE ON	FC5164
	31-010 MLFC	SLOM	S14-032 VERIFY/CONNECT LN2 TANKER TO PORT N. PRESSURIZE TANKER TO 25 +/- 5 PSIG. FILL LN2 TANK BY OPENING MV17 AND MV19 AND SUPPLY VALVE ON TANKER. CLOSE VALVE MV19 WHEN LN2 TANK READS APPROX 105 GAL. AT LL1 AND OPEN MV18. RAISE TANKER TRANSFER PRESSURE TO 30 +/- 10 PSIG FOR CHILLDOWN AND TANKING. MAINTAIN FULL LN2 TANK THROUGHOUT TEST BY CYCLING VALVE MV19 AS REQUIRED.	
	31-011 MLFC	PLOM	S14-065, VERIFY AT PRESSURE INDICATOR P1-52 02 TANK PRESSURE 30 TO 45 PSIG ------ NAR QC	
-22 00	31-012 MTPE	MLFC	PROCEED WITH LO2 SERVICING	
	31-013 MLFC	MHFC	02 FLO ON 065 - ON (R042) NORMALIZE	KC7336
	31-014 MLFC	MHFC	SUBCLR FILL 02 032 - ON (R064) NORMALIZE	KC7248
		MHFC	CLR FIL 1/P LITE ON	FC5247
	31-015 MLFC	MHFC	PUMP COOLDOWN - ON (R064) NORMALIZE	KC7249
		MHFC	PMP CL 1/P LITE ON	FC5249

31-015

NOTES

1. A PERIOD OF APPROX 25 MINUTES IS REQD TO ALLOW SUBCOOLER TO STABILIZE BEFORE SUBCOOLER FILL COMPLETE LITE INDICATES NORMALLY.
2. LEVEL SW S-25 WILL CYCLE PV-4 OPEN AND CLOSED TO MAINTAIN PROPER LO2 LEVEL IN THE SUBCOOLER.

	MHFC		CLR FIL CMP LITE ON	FC2548
			CIR-XFR RDY LITE ON	FC5929
			PMP CL CMP LITE ON	FC5250
31-016	MLFC	SC01	PANEL 13	
			02 T1 FAN-ON	
			02 T2 FAN-ON	
			TIME	

31-017	MLFC		02 LV8 - OPEN (C060)	KC7596
			02 LV6 - OPEN (C060)	KC7594
			02 PV36 - OPEN (C060)	KC7776
			3+08+06+36 IS INSERTED	
	MHFC		02 LV8 OPEN LITE ON	FC5414
			02 LV6 OPEN LITE ON	FC5410
			02 PV36 OPEN LITE ON	FC5488
31-018	MLFC		02 LV7 - OPEN (C060)	KC7595
			02 LV5 - OPEN (C060)	KC7593
			02 PV10 - CLOSED (C060)	KC7586
			3+07+05-10 IS INSERTED	
	MHFC		02 PV10 CLOSED LITE ON	FC5979
			02 LV7 OPEN LITE ON	FC5412
			02 LV5 OPEN LITE ON	FC5408
			VERIFY PV11 OPEN LITE ON	FC5976
			RECORD TIME	

31-019	MLFC	MPWR	START LIQUID XFER 02 032 - ON (R068) NORMALIZE	KC7252
			DECR 02 PMP SPEED - ON (R066) NORMALIZE	KC7255
			INCR 02 PMP SPEED - ON (R066) NORMALIZE	KC7254
			AS REQD TO MAINTAIN 3 GPM FLOW (P12-05)	FC5440
	MHFC		032 LO2 XFR 1/P LITE ON RECORD TIME	FC5254

31-020	MLFC	MPWR	032 02 SUB CLR ON/OFF - ON (R066)	KC7246
	MHFC		SUBCOOL VAC LITE ON	FC5246

NOTE

AT THE DISCRETION OF MLFC THE FOLLOWING MAY BE EXECUTED FOR AN ADDITIONAL COOL DOWN PERIOD.

31-021	MLFC	MPWR	LOW BLEED 02-032 - ON (R065)	KC7475
			LOW BLEED 02-032 - OFF (R065)	KC7476

NOTE

REGULATE 02 FLOW DURING CHILLDOWN AND SAMPLING, AS FOLLOWS..

31-022	MLFC	MPWR	DEC 02 PMP SPEED - ON (R066) NORMALIZE	KC7254
			INCREASE 02 PMP SPEED - ON (R066) NORMALIZE	KC7255

31-022

NOTES

1. MONITOR LO2 SYSTEM FILL LINE PRESSURE AND FILL LINE TEMPERATURE DURING CHILLDOWN AND TANKING PROCEDURE (P12-17) (P12-19).
2. LIQUID SAMPLE VALVE G35MV1 MAY BE OPENED TO AID LINE CHILLDOWN.
3. LO2 TANKING AND SAMPLING SHALL BE ACCOMPLISHED SIMULTANEOUSLY.
4. LESS THAN 3 GPM FLOW WILL NOT MAINTAIN PUMP CHILLDOWN.

31-023 MLFC SOMD PGSM OBTAIN SAMPLES AT G35MV1 BY OPENING AND CLOSING G35MV1. ANALYZE SAMPLE PER MSFC-SPEC-399, GRADE A
NOTIFY MLFC BEFORE CLOSING G35MV1 AND REMOVING SAMPLING EQUIP.

RECORD TIME _____

RECORD SAMPLE NO. 1 _____

RECORD SAMPLE NO. 2 _____ _____ _____
NAR QC NASA QC

NOTES

1. PV-10 MAY BE CYCLED TO MAINTAIN PROPER FLOW AND PRESSURE.

31-023

2. MONITOR O2 TANK NO. 1 AND O2 TANK NO. 2 QUANTITY, PRESSURE AND TEMPERATURE. WHEN O2 TANK NO. 1 AND/OR TANK NO. 2 QUANTITY IS 190 POUNDS MINIMUM PROCEED WITH APPLICABLE SEQUENCE AND LET OTHER TANK FILL TO 190 POUNDS MINIMUM

P11-22	SF0037
P11-22	SF0038
P11-20	SF0032
P11-20	SF0033
P11-21	SF0042
P11-21	SF0041

3. WHEN O2 T1 AND T2 QUANTITIES REACH 50-75 POUNDS PERFORM THE FOLLOWING

31-024 MLFC SC01 PANEL 13
O2 FAN 1 - OFF
O2 FAN 2 - OFF
TIME

NOTE

WHEN O2 TANKS FILL, CLOSE APPLICABLE FILL AND VENT VALVES SIMULTANEOUSLY. BEFORE CLOSING 2ND TANK FILL AND VENT VALVES, PV10 MUST BE OPENED FIRST.

31-025 MLFC	O2 LV7 - CLOSED (C060)	KC7595
	O2 LV8 - CLOSED (C060)	KC7596
	3-07-08-00 IS INSERTED	
MHFC	O2 LV7 CLOSED LITE ON	FC5413
	O2 LV8 CLOSED LITE ON	FC5415

31-026	MLFC		02 PV10 - OPEN (C060) 02 LV5 - CLOSED (C060) 02 LV6 - CLOSED (C060) 3+10-05-06 IS INSERTED	KC7586 KC7593 KC7594
	MHFC		02 PV10 OPEN LITE ON 02 LV5 CLOSED LITE ON 02 LV6 CLOSED LITE ON	FC5980 FC5409 FC5411
			RECORD TIME ----------	
31-027	MLFC		RECORD THE FOLLOWING.. QUAN PRESS TEMP T1 ----- ----- ----- T2 ----- ----- ----- (P11-20) (P11-22) (P11-21) IF FILL QUANTITIES ARE NOT ADEQUATE, REPEAT THE APPLICABLE SEQUENCES TO CONTINUE FLOW INTO S/C.	
31-028	MLFC	MPWR	STOP 02 CRYO MODES - ON (R069) NORMALIZE	KC7485
	MHFC		LO2 XFR 1/P LITE OFF SUB COOL VAC LITE OFF 032 SC TNKS VT LITE OFF	FC5254 FC5246 FC5164
31-029	MLFC	MHFC	032 PV5 VENT 02 TKS - ON (R032) THEN NORMALIZE	KC7579
	MHFC		032 SC TKS VT LITE ON	FC5164
31-030	MLFC	MPWR	LO2 LINES DRAIN - ON (R068) NORMALIZE	KC7241
	MHFC		LINES DRAIN LITE ON	FC5260
31-031	MLFC	MPWR	032 02 SUB-CLR - ON/OFF - NORMALIZE (R066)	KC7247

	31-032 MLFC	MHFC	02 FLO OFF 065 - ON (R042) NORMALIZE	KC7337
	31-033 MLFC	SLOM	S14-032 MV2 - OPEN MV4 - OPEN MV18 - CLOSED	
	31-034 MLFC	PLOM	S14-065, PC-54 - ZERO PSIG PC-60 - ZERO PSIG (SLOWLY) RECORD TIME	
	31-035 MLFC	MPWR	STOP 02 CRYO MODES - ON (R069) NORMALIZE	KC7485
		MHFC	LINES DRAIN LITE OFF 032 SC TNKS VT LITE OFF	FC5260 FC5164
	31-036 MLFC	MHFC	032 PV5 VENT 02 TKS - ON (R032) THEN NORMALIZE	KC7579
		MHFC	032 SC TKS VT LITE ON	FC5164
	31-037 MLFC	MPWR	GO2 PURGE POST-X - ON (R068) NORMALIZE	KC7245
		MHFC	02 POST 1/P LITE ON	FC5244
			NOTE MAINTAIN PURGE FOR APPROX. 1 TO 2 MINUTES THEN PERFORM THE FOLLOWING..	
	31-038 MLFC	MPWR	STOP 02 CRYO MODES - ON (R069) NORMALIZE	KC7485
		MHFC	02 POST 1/P LITE OFF 032 SC TKS VT LITE OFF	FC5244 FC5164
-24 00 222	31-039 MLFC	MTPE	LO2 TANKING COMPLETE, PROCEEDING WITH QUANTITY ROUGHING.	

31-040	MLFC		02 LV6 - OPEN (C060)	KC7594
			02 LV8 - OPEN (C060)	KC7596
			02 PV36 - CLOSED (C060)	KC7776
			3+06+08-36 IS INSERTED	
	MHFC		02 LV6 OPEN LITE ON	FC5410
			02 LV8 OPEN LITE ON	FC5414
			02 PV36 OPEN LITE OFF	FC5488
			NOTE	
			PERFORM THE FOLLOWING STEPS AS REQUIRED TO REDUCE 02 T1 AND T2 QUANTITY IF NECESSARY (P11-20) TO APPROX 180 LBS. THE 05 AND 07 PORTIONS OF THE FOLLOWING INSERT MAY BE PERFORMED AS INDEPENDENT STEPS WITH CORRESPONDING LITES VERIFIED.	SF0032 SF0033
31-041	MLFC	MPWR	LIQUID DETANK 02 - ON (R069) THEN NORMALIZE	KC7240
	MHFC		032 CRYO DRAIN LITE ON	FC5258
31-042	MLFC		02 LV5 - OPEN (C060)	KC7593
			02 LV7 - OPEN (C060)	KC7595
			3+05+07-00 IS INSERTED	
	MHFC		02 LV5 OPEN LITE ON	FC5408
			02 LV7 OPEN LITE ON	FC5412
31-043	MLFC		02 LV5 - CLOSED (C060)	KC7593
			02 LV7 - CLOSED (C060)	KC7595
			3-05-07-00 IS INSERTED	
	MHFC		02 LV5 CLOSED LITE ON	FC5409
			02 LV7 CLOSED LITE ON	FC5413
31-044	MLFC	MPWR	STOP 02 CRYO MODES - ON (R069) THEN NORMALIZE	KC7485
	MHFC		032 CRYO DRAIN LITE OFF	FC5258

		31-045	MLFC	MHFC	032 PV5 VENT O2 TKS - ON (R032) KC7579 THEN NORMALIZE	
				MHFC	032 SC TKS VENT LITE ON	FC5164
-23	00	222	31-046	MLFC	MTPE	1. QUANTITY ROUGHING COMPLETE. 2. STARTING FINAL QUANTITY ADJUST AND PRESSURIZATION.
		224	31-047	MLFC	SOMD	S14-132 CONNECT HIGH PRESSURE FLEX HOSE TO VALVE G35MV2 AND VALVE G35MV1. VALVE G35MV2 - OPEN VALVE G35MV1 - OPEN ------ NAR QC
			31-048	MLFC	SOMD	S14-132 (8G14-840111) VALVE G35PV11 - OVERRIDE CLOSED AND PINNED
						WARNING SYSTEM PRESSURIZATION WILL OCCUR DURING FOLLOWING SEQUENCES.
		222	31-049	MLFC	MTPE	GSE HAS BEEN PERSONALLY INSPECTED AND IS IN CORRECT CONFIGURATION FOR TANK PRESSURIZATION. REQUEST AREA CLEAR FOR O2 TANK PRESSURIZATION.
			31-050	MTPE	MLFC	PROCEED WITH LO2 TANK PRESSURIZATION
		224	31-051	MLFC	SLOM	S14-032 MV2 - AUTO MV4 - AUTO
			31-052	MLFC		O2 PV10 - CLOSED (C060) KC7586 3-10-00-00 IS INSERTED
					MHFC	O2 PV10 CLOSED LITE ON FC5979

31-053 MLFC SC01 PANEL 13
02 FAN 1 - ON
02 FAN 2 - ON

TIME

31-054 MLFC LPDS A14-052
02 TANK HEATER CONTROL NO. 1 AND NO. 2 SWITCHES - LOCAL
ADJUST VDC OUT TO 65 - 70 VDC

NOTE

A14-052 TANK HEATERS MAY BE ADJUSTED AS REQUIRED TO MAINTAIN PRESSURE

31-055 MLFC SLOM S14-032
VERIFY GAGE G35PG10 READS LESS THAN 10 PSIG

31-056 MLFC SLOM VALVE G35MV25 - OPEN
ADJUST G35PR10 TO INCREASE PRESSURE AT APPROX 30 PSI/MINUTE AS DIRECTED

31-057 MLFC WHEN 02 T1 AND T2 PRESS (P11-22) REACHES APPROX 900 PSIA. RECORD TIME SF0037 SF0038

-22 00 222 31-058 MLFC MTPE PRESSURE STABILIZED FOR 5 MINUTES. REQUEST PAD BE OPENED FOR NORMAL WORK. TIME

31-059 MLFC SOMD S14-132
VALVE G35MV2 - CLOSED

31-060 MLFC SLOM S14-032
VALVE G35MV25 - CLOSED
BACKOFF G35PR10 UNTIL G35PG10 READS APPROX ZERO

31-061 MLFC 02 PV10 - OPEN (C060) KC7586
3+10-00-00 IS INSERTED

MHFC 02 PV10 OPEN LITE ON FC5980

31-062 MLFC SOMD S14-132 (8G14-840111)
VALVE G35MV2 - OPEN SF0032
SLOWLY AS DIRECTED BY MLFC SF0033
TIME T1 QUAN T2 QUAN
----- ----- -----

NOTE

1. MONITOR 02 TK1 AND TK2 SF0037
PRESS (P11-22) AND SF0038
QUAN (P11-20). SF0032
MAINTAIN A TANK SF0033
PRESSURE OF 750-900
PSIA IN BOTH TANKS AND
REDUCE TK1 AND TK2 02
QUAN. TO 185 +/- 5
POUNDS. ADJUST A14-052
AS REQUIRED TO MAINTAIN
PRESSURE WHILE REDUCING
QUANTITY.
2. WHEN 02 TK1 AND TK2 SF0032
QUAN (P11-20) REACHES SF0033
185 +/- 5 POUNDS PERFORM
THE FOLLOWING..
TIME T1 QUAN
----- -----
T2 QUAN

31-063 MLFC LPDS A14-052
02 TANK HEATER CONTROL NO. 1 AND NO. 2
SWITCHES - OFF
ROTATE VOLTAGE ADJUST FULLY CCW

31-064 MLFC 02 LV6 - CLOSED (C060) KC7594
02 LV8 - CLOSED (C060) KC7596
3-06-08-00 IS INSERTED

MHFC 02 LV6 CLOSED LITE ON FC5411
02 LV8 CLOSED LITE ON FC5415

31-065 MLFC SC01 PANEL 13
02 FAN 1 - AUTO
02 FAN 2 - AUTO
02 HEATERS 1 - AUTO
02 HEATERS 2 - AUTO

TIME

31-066 MLFC SOMD S14-132 (8G14-840111)
REMOVE PV11 MANUAL OVERRIDE

NOTE

MONITOR 02 PORT D PRESS (P12-09) WHEN PRESS READS APPROX AMBIENT PERFORM THE FOLLOWING — FC5255

31-067 MLFC MPWR STOP 02 CRYO MODES - ON (R069) THEN NORMALIZE — KC7485

MHFC 032 SC TNKS VT LITE OFF — FC5164

31-068 MLFC MPWR GHE PURGE POST-X - ON (R069) THEN NORMALIZE — KC7243

MHFC 032 HF POST I/P LITE ON — FC5268

NOTE

MAINTAIN PURGE FOR 5 TO 7 MINUTES THEN PERFORM THE FOLLOWING..

31-069 MLFC MPWR STOP 02 CRYO MODES - ON (R069) THEN NORMALIZE — KC7485

MHFC 032 HF POST I/P LITE OFF — FC5268

31-070 MLFC SOMD S14-132 (8G14-840111)
VALVE G35MV1 - CLOSED
VALVE G35MV2 - CLOSED

31-071 MLFC SOMD S14-132 (8G14-840111)
REMOVE FLEX LINE FROM VALVES G35MV1 AND G35MV2.

NAR 0C

31-072 MLFC SOMD S14-132
REMOVE LV9 MANUAL OVERRIDE

MHFC 02 LV9 CLOSED LITE ON FC5417

31-073 MLFC SHFD S14-132
REMOVE LV9 MANUAL OVERRIDE

MHFC H2 LV9 CLOSED LITE ON FC5387

NOTE

MLFC - MONITOR 02 AND H2 TANK PRESSURES (P11-17, 22). IF TANK PRESSURES SHOULD DECREASE RAPIDLY STAND BY TO OPEN 02 LV9 AND H2 LV9

-19 30 31-074 MLFC MTPE L02 SERVICING OPERATIONS COMPLETE. FUEL CELLS ON INTERNAL REACTANTS. PROCEEDING WITH TANK FAN CHECKS REQUEST LGSE AND LMDR SUPPORT ON CH 224.

H2 TANK FAN CHECK

NOTE

1. IF ANY TANK FAN CHECK IS INCONCLUSIVE, THE APPROPRIATE STEP(S) MAY BE REPEATED.

2. "SHIELD" BANANA PLUG ON CABLE Y00-006 (FF1) NOT USED IN THIS TEST.

3. SET CHART SPEED ON X00-003 TO 40 IN/SEC.

31-075 MLFC LMDR X00-029
CONNECT BANANA PLUGS OF CABLE Y00-006 (FF1) TO PINS..
G
H (RETURN)
SF0362

NOTE

1. ALLOW FANS TO RUN FOR A MINIMUM OF ONE MINUTE

2. AT MLFC MARK LMDR WILL TURN ON THE X00-003 RECORDER, SC01 AT MARK +2 WILL POSITION THE PANEL 13 H2 FANS 2 SWITCH OFF. AT MARK +7, LMDR WILL TURN OFF THE X00-003 RECORDER

31-076 MLFC SC01 PANEL 13
H2 FANS 1 (S33) - ON
TIME

31-077 MLFC LMDR 4..3..2..1..MARK 1..2..3..4..5..6..7
SC01 H2 FANS 1 (S33) - OFF
TIME

31-078 MLFC LMDR X00-029
CONNECT BANANA PLUGS OF CABLE Y00-006 (FF1) TO PINS..
K
L (RETURN)
SF0363

NOTE

1. ALLOW FANS TO RUN FOR A MINIMUM OF ONE MINUTE

2. AT MLFC MARK, LMDR WILL TURN ON THE X00-003 RECORDER, SC01 AT MARK +2 WILL POSITION THE PANEL 13 H2 FANS 2 SWITCH OFF. AT MARK +7 LMDR WILL TURN OFF THE X00-003 RECORDER

31-079 MLFC SC01 PANEL 13
H2 FANS 2 (S34) - ON
TIME

31-080 MLFC LMDR 4....3....2....1....MARK ....1....2
SC01 ....3....4....5..6....7
H2 FANS 2 (S34) - OFF
TIME

-19 00 222 31-081 MLFC MTPE H2 TANK FAN CHECK COMPLETE.
PROCEEDING WITH 02 TANK FAN CHECK

02 TANK FAN CHECK

31-082 MLFC LMDR X00-029
CONNECT BANANA PLUGS OF CABLE SF0360
Y00-006 (FF1) TO PINS..
A
B (RETURN)

NOTE

1. ALLOW FANS TO RUN FOR A MINIMUM OF ONE MINUTE

2. AT MLFC MARK LMDR WILL TURN ON THE X00-003 RECORDER , SC01 AT MARK +2 WILL POSITION THE PANEL 13 02 FANS 1 SWITCH OFF. AT MARK +7, LMDR WILL TURN OFF THE X00-003 RECORDER

31-083 MLFC SC01 PANEL 13
02 FANS 1 (S33) - ON
TIME

31-084 MLFC LMDR 4..3..2..1..MARK 1..2..3..4..5..6..7
SC01 02 FANS 1 (S33) - OFF
TIME

31-085 MLFC LMDR X00-029
CONNECT BANANA PLUGS OF CABLE SF0361
Y00-006 (FF1) TO PINS..
D
F (RETURN)

NOTE

1. ALLOW FANS TO RUN FOR A MINIMUM OF ONE MINUTE

2. AT MLFC MARK, LMDR WILL TURN ON THE X00-003 RECORDER, SC01 AT MARK +2 WILL POSITION FANS 2 SWITCH OFF. AT MARK +7 LMDR WILL TURN OFF THE X00-003 RECORDER

31-086 MLFC SC01 PANEL 13
02 FANS 2 (S34) - ON
TIME

31-087 MLFC LMDR 4....3....2....1....MARK .....1....2
SC01 ....3....4....5....6....7
02 FANS 2 (S34) - OFF
TIME

31-088 MLFC LMDR DISCONNECT CABLE Y00-079 FROM X00-029 AND C14-358.

-18 30 222 31-089 MLFC MTPE TANK FAN CHECK COMPLETE. PROCEEDING WITH GAS LINE INERTING.

31-090 MLFC SOMD S14-132 (G02 K-BOTTLE SUPPLY TO FDS)
VALVE G35MV100 - CLOSED
K-BOTTLE SUPPLY VALVE CLOSED

31-091 MLFC SHFD S14-132 (GH2 K-BOTTLE SUPPLY TO FDS)
VALVE G36MV100 - CLOSED
K-BOTTLE SUPPLY VALVE CLOSED

31-092 MLFC SLOM S14-032
VALVE MV11 - AUTO

31-093 MLFC SLHN S14-026
VALVE MV11 - AUTO

31-094 MLFC MPWR GN2 PORT E FC PRG - ON (R070) KC7478
NORMALIZE

MHFC FC 02 PORT E LITE OFF FC5955
FC N2 PORT E LITE ON FC5954

31-095 MLFC MPWR GN2 PORT E FC PRG - ON (R074) KC7466
NORMALIZE

MHFC FC H2 PORT E LITE OFF FC5951
FC N2 PORT E LITE ON FC5950

NOTE

HAZARDOUS STEPS COMPLETED.

31-096 MLFC 02 LV12 - OPEN (C060) KC7585
3+12-00-00 IS INSERTED

MHFC 02 LV12 OPEN LITE ON FC5977

NOTE

AFTER APPROX 1 MINUTE PERFORM
THE FOLLOWING

31-097 MLFC 02 LV12 - CLOSED (C060) KC7585
3-12-00-00 IS INSERTED

MHFC 02 LV12 CLOSED LITE ON FC5978

NOTE

WHEN FC GO2 PRESS (P12-21) FC5989
STABILIZES PERFORM THE
FOLLOWING

31-098 MLFC	02 LV12 - OPEN (C060) 3+12-00-00 IS INSERTED	KC7585
MHFC	02 LV12 OPEN LITE ON	FC5977

NOTE

AFTER APPROX 1 MINUTE PERFORM THE FOLLOWING

31-099 MLFC	02 LV12 - CLOSED (C060) 3-12-00-00 IS INSERTED	KC7585
MHFC	02 LV12 CLOSED LITE ON	FC5978

NOTE

WHEN FC GO2 PRESS (P12-21) STABILIZES PERFORM THE FOLLOWING — FC5989

31-100 MLFC	02 LV12 - OPEN (C060) 3+12-00-00 IS INSERTED	KC7585
MHFC	02 LV12 OPEN LITE ON	FC5977

NOTE

AFTER APPROX 1 MINUTE PERFORM THE FOLLOWING

31-101 MLFC	02 LV12 - CLOSED (C060) 3-12-00-00 IS INSERTED	KC7585
MHFC	02 LV12 CLOSED LITE ON	FC5978
31-102 MLFC	H2 LV12 - OPEN (C060) 5+12-00-00 IS INSERTED	KC7564
MHFC	H2 LV12 OPEN LITE ON	FC6008

31-102

NOTE

AFTER APPROX 1 MINUTE
PERFORM THE FOLLOWING

31-103 MLFC	H2 LV12 - CLOSED (C060) 5-12-00-00 IS INSERTED	KC7564
MHFC	H2 LV12 CLOSED LITE ON	FC6009

NOTE

WHEN FC GH2 PRESS (P12-21) STABILIZES PERFORM THE FOLLOWING — FC6022

31-104 MLFC	H2 LV12 - OPEN (C060) 5+12-00-00 IS INSERTED	KC7564
MHFC	H2 LV12 OPEN LITE ON	FC6008

NOTE

AFTER APPROX 1 MINUTE
PERFORM THE FOLLOWING

31-105 MLFC	H2 LV12 - CLOSED (C060) 5-12-00-00 IS INSERTED	KC7564
MHFC	H2 LV12 CLOSED LITE ON	FC6009

NOTE

WHEN FC GH2 PRESS (P12-21) STABILIZES PERFORM THE FOLLOWING — FC6022

31-106 MLFC	H2 LV12 - OPEN (C060) 5+12-00-00 IS INSERTED	KC7564
MHFC	H2 LV12 OPEN LITE ON	FC6008

NOTE

AFTER APPROX 1 MINUTE
PERFORM THE FOLLOWING

31-107	MLFC		H2 LV12 - CLOSED (C060) 5-12-00-00 IS INSERTED	KC7564
	MHFC		H2 LV12 CLOSED LITE ON	FC6009
31-108	MLFC	MPWR	STOP 032 FC MODES - ON (R070) NORMALIZE STOP 026 FC MODES - ON (R074) NORMALIZE	KC7478 KC7280
	MHFC		FC N2 PORT F LITE OFF (O2) FC N2 PORT F LITE OFF (H2)	FC5954 FC5950
31-109	MLFC		O2 LV12 - OPEN (C060) 3+12-00-00 IS INSERTED	KC7585
	MLFC		O2 LV12 OPEN LITE ON	FC5977
31-110	MLFC		H2 LV12 - OPEN (C060) 5+12-00-00 IS INSERTED	KC7564
	MHFC		H2 LV12 OPEN LITE ON	FC6008
31-111	MLFC	SHFD	S14-132 REMOVE H2 LV18 OVERRIDE	
31-112	MLFC	SOMD	S14-132 REMOVE O2 LV18 OVERRIDE	

NOTE

WHEN FC GO2 PRESS (P12-21) AND FC GH2 PRESS (P12-21) ARE LESS THAN 20 PSIG PERFORM THE FOLLOWING.

31-113	MLFC		H2 LV12 - CLOSED (C060) 5-12-00-00 IS INSERTED	KC7564
	MHFC		H2 LV12 CLOSED LITE ON H2 LV18 CLOSED LITE ON	FC6009 FC6016
31-114	MLFC		O2 LV12 - CLOSED (C060) 3-12-18-00 IS INSERTED	KC7585
	MHFC		O2 LV18 CLOSED LITE ON O2 LV12 CLOSED LITE ON	FC6003 FC5978

31-115 MLFC MHFC VERIFY THE FOLLOWING..

02 LV1	CLOSED	LITE ON	FC5925
02 LV2	CLOSED	LITE ON	FC5917
02 LV4	OPEN	LITE OFF	FC5971
02 LV5	CLOSED	LITE ON	FC5409
02 LV6	CLOSED	LITE ON	FC5411
02 LV7	CLOSED	LITE ON	FC5413
02 LV8	CLOSED	LITE ON	FC5415
02 PV9	CLOSED	LITE ON	FC5417
02 PV10	OPEN	LITE ON	FC5980
02 PV11	OPEN	LITE ON	FC5976
02 LV12	CLOSED	LITE ON	FC5978
02 LV13	CLOSED	LITE ON	FC5974
02 LV14	CLOSED	LITE ON	FC5983
02 LV15	CLOSED	LITE ON	FC5985
02 LV16	OPEN	LITE ON	FC5987
02 LV17	CLOSED	LITE ON	FC6001
02 LV18	CLOSED	LITE ON	FC6003
02 LV22	CLOSED	LITE ON	FC5432
N2 LV19	CLOSED	LITE ON	FC6005
N2 LV20	CLOSED	LITE ON	FC6007
N2 LV21	CLOSED	LITE ON	FC5919
N2 LV23	CLOSED	LITE ON	FC5434
H2 LV1	CLOSED	LITE ON	FC5991
H2 LV2	CLOSED	LITE ON	FC5993
H2 LV4	CLOSED	LITE ON	FC5995
H2 LV5	CLOSED	LITE ON	FC5379
H2 LV6	CLOSED	LITE ON	FC5381
H2 LV7	CLOSED	LITE ON	FC5383
H2 LV8	CLOSED	LITE ON	FC5385
H2 LV9	CLOSED	LITE ON	FC5387
H2 PV11	OPEN	LITE ON	FC5999
H2 LV12	CLOSED	LITE ON	FC6009
H2 LV13	CLOSED	LITE ON	FC5997
H2 LV14	CLOSED	LITE ON	FC6018
H2 LV15	CLOSED	LITE ON	FC6020
H2 LV16	OPEN	LITE ON	FC5392
H2 LV17	CLOSED	LITE ON	FC6014
H2 LV18	CLOSED	LITE ON	FC6016
H2 LV22	CLOSED	LITE ON	FC5436

-18 00 222 31-116 MLFC MTPE FDS INERTING IS COMPLETE. READY FOR CRYO GSE DISCONNECT PROCEEDING WITH GSE POWERDOWN. READY FOR FAC GHE SUPPLIES TO S14-026 AND S14-032 TO BE CLOSED.

31-117 MLFC PLHM S14-066
VALVE MV1030 - CLOSED
CLOSE TUBE TRAILER SUPPLY VALVE
BACKOFF REG AT GH2 TUBE
TRAILER TO BLEED DOWN LINE
CB1 - OPEN
CB2 - OPEN

PLHM MAIN POWER ON LITE OFF

31-118 MLFC PLHM GH2 TUBE TRAILER SUPPLY TO S14-026
CLOSE TUBE TRAILER SUPPLY VALVE
BACK-OFF REGULATOR TO BLEED DOWN LINE.

31-119 MLFC PLOM S14-065
VALVE MV1141 - CLOSED
CLOSE TUBE TRAILER SUPPLY VALVE
BACKOFF REG AT G02 TUBE
TRAILER TO BLEED DOWN LINE
CB1 - OPEN
CB2 - OPEN

PLOM MAIN POWER ON LITE OFF

31-120 MLFC PLOM G02 TUBE TRAILER SUPPLY TO S14-032
CLOSE TUBE TRAILER SUPPLY VALVE
BACKOFF REGULATOR TO BLEED DOWN LINE

221 31-121 MLFC SPAD S14-065 AND S14-066 POWERED DOWN AND
MAY BE REMOVED PER OCP-K-10027.

224 31-122 MLFC SLHM S14-026
LOCATION CONTROL SW - LOCAL

MHFC 026 LOCAL CONT LITE ON FC5206

31-123 MLFC SLHM S14-026
CB1 - OPEN
CB2 - OPEN

SLHN MAIN POWER ON LITE OFF

31-124	MLFC	SLOM	S14-032 LOCATION CONTROL SW - LOCAL	
	MHFC		032 LOCAL CONT LITE ON	FC5232
31-125	MLFC	SLOM	S14-032 CB1 - OPEN CB2 - OPEN	
	SLOM		MAIN POWER ON LITE OFF	
31-126	MLFC	MHFC	H2 FDS INSTRM - OFF (R045) H2 FDS CONTRL COMMND - OFF (R043)	KC7577 KC7359
	MHFC		H2 STDBY LITE ON	GC5022
	SLHT		UNIT 1 MODE STANDBY LITE ON	
31-127	MLFC	SLHT	H2 FDSCU NO. 1 MODE SW - LOCAL VALVE POS POWER SW - OFF TRANSDUCER POWER SW - OFF MAIN POWER SW - OFF	
	SLHT		MAIN POWER ON LITE OFF VERIFY 28 VDC METER INDICATES ZERO (+/- 0.5 VDC) ELAPSED TIME METER NOT OPERATING	
31-128	MLFC	SLHT	H2 FDSCU NO. 2 MODE SW - LOCAL MAIN POWER SW - OFF	
	SLHT		MAIN POWER ON LITE OFF VERIFY 28 VDC METER INDICATES ZERO (+/- 0.5 VDC) VERIFY ELAPSED TIME METER NOT OPERATING.	

31-129	MLFC	MHFC	02 FDS INSTRM - OFF (R045) 02 FDS CONTRL COMMND - OFF (R043)	KC7601 KC7357
	MHFC		02 STDBY LITE ON	GV5011
	SLOT		UNIT 1 MODE STANDBY LITE ON	
31-130	MLFC	SLOT	02 FDSCU NO. 1 MODE SW - LOCAL VALVE POS POWER SW - OFF TRANSDUCER POWER SW - OFF MAIN POWER SW - OFF	
	SLOT		MAIN POWER ON LITE OFF VERIFY 28 VDC METER INDICATES ZERO +/- 0.5 VDC VERIFY ELAPSED TIME METER NOT OPERATING.	
31-131	MLFC	SLOT	02 FDSCU NO. 2 MODE SW - LOCAL MAIN POWER SW - OFF	
	SLOT		MAIN POWER ON LITE OFF VERIFY 28 VDC METER INDICATES ZERO +/- 0.5 VDC VERIFY ELAPSED TIME METER NOT OPERATING.	
31-132	MLFC	SHFD	S14-132 (LH2 SUBCOOLER) CB1 - OPEN	
31-133	MLFC	SOMD	S14-132 VALVE G35MV507 - CLOSED FAC GN2 SUPPLY VALVE - CLOSED	
31-134	MLFC	SOMD	S14-132 (GN2 K-BOTTLE SUPPLY TO POD) VALVE G35MV102 - CLOSED K-BOTTLE SUPPLY VALVE CLOSED	
31-135	MLFC	SHFD	S14-132 FAC GHE SUPPLY TO POD'S - CLOSED FAC GN2 SUPPLY VALVE TO LH2 SUBCOOLER EJECTORS - CLOSED	

		31-136	MLFC	SHFD	S14-132 (GHE K-BOTTLE SUPPLY TO POD'S) VALVE G36MV102 - CLOSED K-BOTTLE SUPPLY VALVE - CLOSED
		31-137	MLFC	UFET	C14-590 JB5 SW - OFF JB6 SW - OFF MAIN POWER SW - OFF MAIN POWER CB - OFF
		31-138	MLFC	MACE	REMOVE ADAP PROGRAM IF/0101 AND IF/0102 BY INSERTING 7--0000801 AND 7--0000802 ON C124
		31-139	MLFC	ALL	SW TO CH222.
-17	30 222	31-140	MLFC	MTPE	GSE POWERDOWN COMPLETE GSE REMOVAL IN PROGRESS PER OCP-K-10027.

32-000

FUEL CELL OPERATIONS - SCRUB

NOTE

PERFORM APPLICABLE SEQUENCES ONLY PER MLFC DISCRETION. PORTIONS NOT PERFORMED WILL BE MARKED N/A. SEQUENCES WILL BE PERFORMED AS REQUIRED TO FACILITATE SAFE AND SPEEDY COMPLETION.

REAPPLICATION OF F/C HEATER POWER

224	32-001	MLFC MHFC	MHFC	FC1 HEAT CONT 3 - ON (C052) 2202111241 IS INSERTED	KC7008
	32-002	MLFC MHFC	MHFC	FC2 HEAT CONT 3 - ON (C052) 2202111441 IS INSERTED	KC7014
	32-003	MLFC MHFC	MHFC	FC3 HEAT CONT 3 - ON (C052) 2202112241 IS INSERTED	KC7020
	32-004	MLFC	MHFC	FC1 2 3 GSE HTR ON/OFF - ON (R036)	KC7000 KC7001 KC7002

NOTE

FC1, FC2 AND FC3 HEATER VOLTAGES ARE NOMINALLY AS FOLLOWS..

ZONE 1 44 VAC
ZONE 2 22 VAC
ZONE 3 44 VAC

32-005 MLFC RECORD VOLTAGES..

	FC1	FC2	FC3	
ZONE 1				GC5000
ZONE 2				GC5001
ZONE 3				GC5002

32-006 MLFC MHFC ADJUST F/C VOLTAGES BY APPROPRIATE C052 ENTRY PER MLFC DIRECTION.

32-006 PREPS TO RECONNECT CGSS AND FC TO GSE

32-007 MLFC MACE VERIFY/LOAD ADAP PROGRAMS IF/0101 AND IF/0102 HAVE BEEN LOADED INTO COMPUTER WITH INSERTS 7-+0000801 AND 7-+0000802 ON C124

32-008 MLFC SPAD INSTALL CGSS SCUPPERS TO S/C PANELS PER OCP-K-10026. DO NOT INSTALL POD COVERS UNTIL LINES ARE INSTALLED PER LATER STEP.

NAR QC	NASA QC
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32-009 MLFC SPAD PERFORM PLACARDS PER OCP-K-10022A ON FOLLOWING EQUIPMENT AS REINSTALLED PER OCP-K-10027

- SLO - S14-032
- PLOM - S14-065
- SLHM - S14-026
- PLHM - S14-066
- SLOT - C14-630 (O2 FDSCU) - UNITS 1 AND 2
- SLHT - C14-630 (H2 FDSCU) - UNITS 1 AND 2
- SOMD - S14-132 (O2)
- SHFD - S14-132 (H2)

NAR QC

32-010 SPAD MLFC GSE TO SUPPORT FC AND CGSS SCRUB HAS BEEN REINSTALLED PER OCP-K-10027 AND PLACARDS HAVE BEEN PERFORMED PER OCP-K-10021A.

NAR QC

32-011 MLFC SFET C14-590

VERIFY/POSITION THE FOLLOWING

- MAIN POWER SW - ON
- MAIN POWER CB - ON
- TP5 - ON
- TP6 - ON
- JB5 SW - ON
- JB6 SW - ON

32-012	MLFC	SLOT	02 FDSCU UNIT 1 MAIN POWER - ON VALVE POS POWER SW - ON TRANSDUCER POWER SW - ON LOCAL/STANDBY SW - STANDBY UNIT 2 MAIN POWER - ON LOCAL/STANDBY SW - STANDBY VERIFY 28 VDC METER READS 28 +/- 3 VDC	
	SLOT		UNIT 1 MAIN POWER ON LITE ON UNIT 1 MODE STANDBY LITE ON UNIT 1 PURGE PRESS GO LITE ON UNIT 1 FDS GO LITE ON UNIT 2 MAIN POWER ON LITE ON UNIT 2 PURGE PRESS GO LITE ON UNIT 2 FDS GO LITE ON	
32-013	MLFC	MHFC	02 FDS INSTRUM - ON (R045)	KC7600
	MHFC		02 STDBY LITE ON	GV5011
			032 LOCAL CONT LITE ON	FC5232
32-014	MLFC	MHFC	02 FDS CONTRL COMMND - ON (R043)	KC7357
	MHFC		02 REM. CONT LITE ON	FC5230
32-015	MLFC	SLOM	S14-032 LOCATION CONTROL SW - REMOTE	
	MHFC		032 REMOTE CONT LITE ON	FC5230

32-016	MLFC	SLHT	H2 FDSCU UNIT 1 MAIN POWER - ON VALVE POS POWER SW - ON TRANSDUCER POWER SW - ON LOCAL/STANDBY SW - STANDBY UNIT 2 MAIN POWER - ON LOCAL/STANDBY SW - STANDBY VERIFY 28 VDC METER READS 28 +/- 3 VDC	
	SLHT		UNIT 1 MAIN POWER ON LITE ON UNIT 1 MODE STANDBY LITE ON UNIT 1 FDS GO LITE ON UNIT 2 MAIN POWER ON LITE ON UNIT 2 PURGE PRESS GO LITE ON UNIT 2 FDS GO LITE ON	
32-017	MLFC	MHFC	H2 FDS INSTRUM - ON (R045)	KC7577
	MHFC		H2 STDBY LITE ON	GC5022
			026 LOCAL CONT LITE ON	FC5266
32-018	MLFC	MHFC	H2 FDS CONTRL COMMND - ON (R043)	KC7359
	MHFC		H2 REMOTE LITE ON	GC5023
32-019	MLFC	SLHM	S14-026 LOCATION CONTROL SW - REMOTE	
	MHFC		026 REMOTE CONT LITE ON	FC5265

32-020 MLFC MHFC VERIFY THE FOLLOWING

02 LV1	CLOSED LITE ON	FC5925
02 LV2	CLOSED LITE ON	FC5917
02 LV4	OPEN LITE OFF	FC5971
02 LV5	CLOSED LITE ON	FC5409
02 LV6	CLOSED LITE ON	FC5411
02 LV7	CLOSED LITE ON	FC5413
02 LV8	CLOSED LITE ON	FC5415
02 LV9	CLOSED LITE ON	FC5417
02 PV10	OPEN LITE ON	FC5980
02 PV11	OPEN LITE ON	FC5976
02 LV12	CLOSED LITE ON	FC5978
02 LV13	CLOSED LITE ON	FC5974
02 LV14	CLOSED LITE ON	FC5983
02 LV15	CLOSED LITE ON	FC5985
02 LV16	OPEN LITE ON	FC5987
02 LV17	CLOSED LITE ON	FC6001
02 LV18	CLOSED LITE ON	FC6003
02 LV22	CLOSED LITE ON	FC5432
N2 LV19	CLOSED ON	FC6005
N2 LV20	CLOSED LITE ON	FC6007
N2 LV21	CLOSED LITE ON	FC5919
N2 LV23	CLOSED LITE ON	FC5434
H2 LV1	CLOSED LITE ON	FC5991
H2 LV2	CLOSED LITE ON	FC5993
H2 LV4	CLOSED LITE ON	FC5995
H2 LV5	CLOSED LITE ON	FC5379
H2 LV6	CLOSED LITE ON	FC5381
H2 LV7	CLOSED LITE ON	FC5383
H2 LV8	CLOSED LITE ON	FC5385
H2 LV9	CLOSED LITE ON	FC5387
H2 PV11	OPEN LITE ON	FC5999
H2 LV12	CLOSED LITE ON	FC6009
H2 LV13	CLOSED LITE ON	FC5997
H2 LV14	CLOSED LITE ON	FC6018
H2 LV15	CLOSED LITE ON	FC6020
H2 LV16	OPEN LITE ON	FC5392
H2 LV17	CLOSED LITE ON	FC6014
H2 LV18	CLOSED LITE ON	FC6016
H2 LV22	CLOSED LITE ON	FC5436
H2 PV2	OPEN LITE ON	FC5154

32-021 MLFC PLHM S14-066
1. VERIFY/ADJUST GH2 SUPPLY FROM TRAILER TO 1150 PSIG MINIMUM.
2. VERIFY/OPEN VALVE MV1030.
3. VERIFY 1150 PSIG MINIMUM ON PI-17.
4. VERIFY/OPEN VALVE MV1028 AND MV1035.
5. ADJUST PCV-20 AS REQD TO OBTAIN APPROX 375 PSIG ON PI-7.

32-022 MLFC PLHM GH2 TUBE TRAILER SUPPLY TO S14-06.
VERIFY/ADJUST GH2 SUPPLY PRESSURE TO S14-026 TO 350 +/- 25 PSIG

32-023 MLFC PLOM S14-065
1. VERIFY GO2 TUBE BANK TRAILER CONNECTED TO VALVE MV1141 AND ADJUSTED TO APPROX 2150 PSIG.
2. VALVE MV1141 - OPEN.
3. VERIFY APPROX 2150 PSIG ON PI-65
4. VERIFY/OPEN VALVES MV1114 AND MV1137.
5. ADJUST PCV-66 AS REQD TO OBTAIN APPROX 1150 PSIG ON PI-55.

32-024 MLFC PLOM GO2 TUBE TRAILER SUPPLY TO S14-032.
VERIFY/ADJUST GO2 SUPPLY PRESSURE TO S14-032 TO 1150 +/- 50 PSIG

32-025 MLFC SPAD INSTALL FC AND CGSS LINES AND POD COVERS PER OCP-K-10026 CHECKLIST .

NAR QC	NASA QC
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32-026 MLFC MTPE POWER UP COMPLETE. PROCEEDING WITH OP AND HP LINES PURGE.

32-027 FUEL CELL OP AND HP LINES PURGE

32-028 MLFC SLHM S14-026
GN2 PURGE VALVE TO H2 VENT - OPEN

32-029 MLFC SHFD S14-132
GN2 PURGE VALVES (2) TO H2 VENTS - OPEN

32-030	MLFC	MPWR	GH2 PORT E FC - ON (R074) NORMALIZE	KC7470
			GO2 PORT E FC - ON (R070) NORMALIZE	KC7478
	MHFC		FC H2 PORT E LITE ON	KC5951
			FC 02 PORT E LITE ON	FC5955
32-031	MLFC		H2 LV17 - OPEN (C060) 5+17=00=00 IS INSERTED	KC7567
	MHFC		H2 LV17 OPEN LITE ON	FC6013
32-032	MLFC		02 LV17 - OPEN (C060) 3+17=00=00 IS INSERTED	KC7589
	MHFC		02 LV17 OPEN LITE ON	FC6000
32-033	MLFC		MONITOR GO2 PORT E PRESS (P12-12) AND GH2 PORT E PRESS (P12-12)	FC5930 FC5953

NOTE

WHEN GO2 PORT E PRESSURE IS GREATER THEN 900 PSIG AND GH2 PORT E PRESSURE IS GREATER THAN 200 PSIG PERFORM THE FOLLOWING.

32-034	MLFC	MPWR	STOP 026 FC MODES - ON (R074) NORMALIZE	KC7280
	MHFC		FC H2 PORT E LITE OFF	FC5951
32-035	MLFC		H2 LV12 - OPEN (C060) 5+12=00=00 IS INSERTED	KC7564
	MHFC		H2 LV12 OPEN LITE ON	FC6008
32-036	MLFC	MPWR	STOP 032 FC MODES - ON (R070) NORMALIZE	KC7250
	MHFC		FC 02 PORT E LITE OFF	FC5955

32-037	MLFC		02 LV12 - OPEN (C060) 3+12-00-00 IS INSERTED	KC7585
	MHFC		02 LV12 OPEN LITE ON	FC5977
32-038	MLFC		MONITOR GO2 PORT E PRESS (P12-12) AND GH2 PORT E PRESS (P12-12)	FC5930 FC5953

NOTE

WHEN GO2 AND GH2 PORT E PRESSURES ARE LESS THAN 20 PSIG PERFORM THE FOLLOWING..

32-039	MLFC		H2 LV12 - CLOSED (C060) 5-12-00-00 IS INSERTED	KC7564
	MHFC		H2 LV12 CLOSED LITE ON	FC6009
32-040	MLFC	MPWR	GH2 PORT E FC - ON (R074) NORMALIZE	KC7470
	MHFC		FC H2 PORT E LITE ON	FC5951
32-041	MLFC		02 LV12 - CLOSED (C060) 3-12-00-00 IS INSERTED	KC7585
	MHFC		02 LV12 CLOSED LITE ON	FC5978
32-042	MLFC	MPWR	GO2 PORT E FC - ON (R070) NORMALIZE	KC7478
	MHFC		FC 02 PORT E LITE ON	FC5955
32-043	MLFC		MONITOR GO2 PORT E PRESS (P12-12) AND GH2 PORT E PRESS (P12-12)	FC5930 FC5953

NOTE

WHEN GO2 PORT E PRESSURE IS GREATER THAN 900 PSIG AND GH2 PORT E PRESSURE IS GREATER THAN 200 PSIG PERFORM THE FOLLOWING.

32-044	MLFC	MPWR	STOP 026 FC MODES - ON (R074) NORMALIZE	KC7280
	MHFC		FC H2 PORT E LITE OFF	FC5951
32-045	MLFC		H2 LV12 - OPEN (C060) 5+12-00-00 IS INSERTED	KC7564
	MHFC		H2 LV12 OPEN LITE ON	FC6008
32-046	MLFC	MPWR	STOP 032 FC MODES - ON (R070) NORMALIZE	KC7250
	MHFC		FC 02 PORT E LITE OFF	FC5955
32-047	MLFC		02 LV12 - OPEN (C060) 3+12-00-00 IS INSERTED	KC7585
	MHFC		02 LV12 OPEN LITE ON	FC5977
32-048	MLFC		MONITOR G02 PORT E PRESS (P12-12) AND GH2 PORT E PRESS (P12-12)	FC5930 FC5953

NOTE

WHEN G02 AND GH2 PORT E PRESSURES ARE LESS THAN 20 PSIG PERFORM THE FOLLOWING..

32-049	MLFC		H2 LV12 - CLOSED (C060) 5-12-00-00 IS INSERTED	KC7564
	MHFC		H2 LV12 CLOSED LITE ON	FC6009
32-050	MLFC	MPWR	GH2 PORT E FC - ON (R074) NORMALIZE	KC7470
	MHFC		FC H2 PORT E LITE ON	FC5951
32-051	MLFC		02 LV12 - CLOSED (C060) 3-12-00-00 IS INSERTED	KC7585
	MHFC		02 LV12 CLOSED LITE ON	FC5978
32-052	MLFC	MPWR	G02 PORT E FC - ON (R070) NORMALIZE	KC7478
	MHFC		FC 02 PORT E LITE ON	FC5955

32-053	MLFC		MONITOR GO2 PORT E PRESS (P12-12) AND GH2 PORT E PRESS (P12-12)	FC5930 FC5953
			NOTE WHEN GO2 PORT E PRESSURE IS GREATER THAN 900 PSIG AND GH2 PORT E PRESSURE IS GREATER THEN 200 PSIG PERFORM THE FOLLOWING.	
32-054	MLFC	MPWR	STOP 026 FC MODES - ON (R074) NORMALIZE	KC7280
	MHFC		FC H2 PORT E LITE OFF	FC5951
32-055	MLFC		H2 LV12 - OPEN (C060) 5+12-00-00 IS INSERTED	KC7564
	MHFC		H2 LV12 OPEN LITE ON	FC6008
32-056	MLFC	MPWR	STOP 032 FC MODES - ON (R070) NORMALIZE	KC7250
	MHFC		FC 02 PORT E LITE OFF	FC5955
32-057	MLFC		02 LV12 - OPEN (C060) 3+12-00-00 IS INSERTED	KC7585
	MHFC		02 LV12 OPEN LITE ON	FC5977
32-058	MLFC		MONITOR GO2 PORT E PRESS (P12-12) AND GH2 PORT E PRESS (P12-12)	FC5930 FC5953
			NOTE WHEN GO2 AND GH2 PORT E PRESSURES ARE LESS THAN 20 PSIG PERFORM THE FOLLOWING.	
32-059	MLFC		H2 LV12 - CLOSED (C060) 5-12-00-00 IS INSERTED	KC7564
	MHFC		H2 LV12 CLOSED LITE ON	FC6009

32-060	MLFC	MPWR	GH2 PORT E FC - ON (R074) NORMALIZE	KC7280
	MHFC		FC H2 PORT E LITE ON	FC5951
32-061	MLFC		02 LV12 - CLOSED (C060) 3-12-00-00 IS INSERTED	KC7585
	MHFC		02 LV12 CLOSED LITE ON	FC5978
32-062	MLFC	MPWR	GO2 PORT E FC - ON (R070) NORMALIZE	KC7478
	MHFC		FC 02 PORT E LITE ON	FC5955
32-063	MLFC		MONITOR GO2 PORT E PRESS (P12-12) AND GH2 PORT E PRESS (P12-12)	FC5930 FC5953

NOTE

WHEN GO2 PORT E PRESSURE IS GREATER THAN 900 PSIG AND GH2 PORT E PRESSURE IS GREATER THAN 200 PSIG PERFORM THE FOLLOWING.

32-064	MLFC	MPWR	STOP 026 FC MODES - ON (R074) NORMALIZE	KC7280
	MHFC		FC H2 PORT E LITE OFF	FC5951
32-065	MLFC		H2 LV12 - OPEN (C060) 5+12-00-00 IS INSERTED	KC7564
	MHFC		H2 LV12 OPEN LITE ON	FC6008
32-066	MLFC	MPWR	STOP 032 FC MODES - ON (R070) NORMALIZE	KC7250
	MHFC		FC 02 PORT E LITE OFF	FC5955
32-067	MLFC		02 LV12 - OPEN (C060) 3+12-00-00 IS INSERTED	KC7585
	MHFC		02 LV12 OPEN LITE ON	FC5977

32-068	MLFC		MONITOR GO2 PORT E PRESS (P12-12) AND GH2 PORT E PRESS (P12-12)	FC5930 FC5953
			NOTE WHEN GO2 AND GH2 PORT E PRESSURES ARE LESS THAN 20 PSIG PERFORM THE FOLLOWING.	
32-069	MLFC		H2 LV12 - CLOSED (C060) 5-12-00-00 IS INSERTED	KC7564
	MHFC		H2 LV12 CLOSED LITE ON	FC6009
32-070	MLFC	MPWR	GH2 PORT E FC - ON (R074) NORMALIZE	KC7470
	MHFC		FC H2 PORT E LITE ON	FC5951
32-071	MLFC		02 LV12 - CLOSED (C060) 3-12-00-00 IS INSERTED	KC7585
	MHFC		02 LV12 CLOSED LITE ON	FC5978
32-072	MLFC	MPWR	GO2 PORT E FC - ON (R070) NORMALIZE	KC7478
	MHFC		FC 02 PORT E LITE ON	FC5955
32-073	MLFC		MONITOR GO2 PORT E PRESS (P12-12) AND GH2 PORT E PRESS (P12-12)	FC5930 FC5953
			NOTE WHEN GO2 PORT E PRESSURE IS GREATER THAN 900 PSIG AND GH2 PORT E PRESSURE IS GREATER THAN 200 PSIG PERFORM THE FOLLOWING..	
32-074	MLFC	MPWR	STOP 026 FC MODES - ON (R074) NORMALIZE	KC7280
	MHFC		FC H2 PORT E LITE OFF	FC5951

32-075	MLFC		H2 LV12 - OPEN (C060) 3+12-00-00 IS INSERTED	KC7564
	MHFC		H2 LV12 OPEN LITE ON	FC6008
32-076	MLFC	MPWR	STOP 032 FC MODES - ON (R070) NORMALIZE	KC7250
	MHFC		FC 02 PORT E LITE OFF	FC5955
32-077	MLFC		02 LV12 - OPEN (C060) 3+12-00-00 IS INSERTED	KC7585
	MHFC		02 LV12 OPEN LITE ON	FC5977
32-078	MLFC		MONITOR GO2 PORT E PRESS (P12-12) AND GH2 PORT E PRESS (P12-12)	FC5930 FC5953

NOTE

WHEN GO2 AND GH2 PORT E PRESSURES ARE LESS THAN 20 PSIG PERFORM THE FOLLOWING..

32-079	MLFC		H2 LV12 - CLOSED (C060) H2 LV17 - CLOSED (C060) H2 LV18 - OPEN (C060) 5-12-17+18 IS INSERTED	KC7564 KC7567 KC7568
	MHFC		H2 LV12 CLOSED LITE ON H2 LV17 CLOSED LITE ON H2 LV18 OPEN LITE ON	FC6009 FC6014 FC6015
32-080	MLFC	MPWR	GH2 PORT E FC - ON (R074) NORMALIZE	KC7470
	MHFC		FC H2 PORT E LITE ON	FC5951
32-081	MLFC		02 LV12 - CLOSED (C060) 02 LV17 - CLOSED (C060) 02 LV18 - OPEN (C060) 3-12-17+18 IS INSERTED	KC7585 KC7589 KC7590
	MHFC		02 LV12 CLOSED LITE ON 02 LV17 CLOSED LITE ON 02 LV18 OPEN LITE ON	FC5978 FC6001 FC6002

32-082	MLFC	MPWR	GO2 PORT E FC - ON (R070) NORMALIZE	KC7478
	MHFC		FC 02 PORT E LITE ON	FC5955
32-083	MLFC		MONITOR GO2 PORT E PRESS (P12-12) AND GH2 PORT E PRESS (P12-12)	FC5930 FC5953

NOTE

WHEN GO2 PORT E PRESSURE IS 900 PSIG OR GREATER AND GH2 PORT E PRESSURE IS GREATER THAN 200 PSIG PERFORM THE FOLLOWING..

32-084	MLFC	MPWR	STOP 026 FC MODES - ON (R074) NORMALIZE	KC7280
	MHFC		FC H2 PORT E LITE OFF	FC5951
32-085	MLFC		H2 LV12 - OPEN (C060) 5+12-00-00 IS INSERTED	KC7564
	MHFC		H2 LV12 OPEN LITE ON	FC6008
32-086	MLFC	MPWR	STOP 032 FC MODES - ON (R070) NORMALIZE	KC7250
	MHFC		FC 02 PORT E LITE OFF	FC5955
32-087	MLFC		02 LV12 - OPEN (C060) 3+12-00-00 IS INSERTED	KC7585
	MHFC		02 LV12 OPEN LITE ON	FC5977
32-088	MLFC		MONITOR GO2 PORT E PRESS (P12-12) AND GH2 PORT E PRESS (P12-12)	FC5930 FC5953

NOTE

WHEN GO2 AND GH2 PORT E PRESSURES ARE LESS THAN 20 PSIG PERFORM THE FOLLOWING..

	32-089	MLFC		H2 LV12 - CLOSED (C060) 5-12-00-00 IS INSERTED	KC7564	
		MHFC		H2 LV12 CLOSED LITE ON	FC6009	
	32-090	MLFC	MPWR	GH2 PORT E FC - ON (R074) NORMALIZE	KC7280	
		MHFC		FC H2 PORT E LITE ON	FC5951	
	32-091	MLFC		02 LV12 - CLOSED (C060) 3-12-00-00 IS INSERTED	KC7585	
		MHFC		02 LV12 CLOSED LITE ON	FC5978	
	32-092	MLFC	SOMD	S14-132 VERIFY/OPEN GN2 SUPPLY VALVE G35MV506		
	32-093	MLFC	MPWR	GO2 PORT E FC - ON (R070) NORMALIZE	KC7478	
			MHFC	FC 02 PORT E LITE ON	FC5955	
	32-094	MLFC		FC GO2 PRESS PSIG (P12-21) -----	FC5989	935-950
				FC GH2 PRESS PSIG (P12-21) -----	FC6022	260 +/- 25
	32-095	MLFC		N2 LV20 - OPEN (C060) 3+20-00-00 IS INSERTED	KC7592	
		MHFC		N2 LV20 OPEN LITE ON	FC6006	
		MLFC		FC GN2 PRESS PSIG (P12-23) -----	FC5990	100 +/- 10
222	32-096	MLFC	MTPE	OP AND HP LINES PURGE COMPLETE. PROCEEDING WITH FUEL CELLS TO GROUND REACTANTS AND CRYO LINES PURGE.		

32-096 FUEL CELLS TO GROUND REACTANTS

32-097 MLFC SOMD S14-132 (GN2 K-BOTTLE SUPPLY TO POD'S)
K-BOTTLE SUPPLY VALVE - OPEN
VERIFY/ADJUST K-BOTTLE REGULATOR
TO 425 +/- 25 PSIG
VALVE G35MV102 - OPEN
VERIFY GAGE G35PG102 READS 425
+/- 25 PSIG.

32-098 MLFC SOMD S14-132 (GN2 K-BOTTLE SUPPLY TO FDS)
K-BOTTLE SUPPLY VALVE - OPEN
VERIFY/ADJUST K-BOTTLE REGULATOR
TO 90 +/- 5 PSIG
VALVE G35MV101 - OPEN
VERIFY GAGE G35PG101 READS
90 +/- 5 PSIG.

32-099 MLFC SOMD S14-132 (G02 K-BOTTLE SUPPLY TO FDS)
K-BOTTLE SUPPLY VALVE - OPEN
VERIFY/ADJUST K-BOTTLE REGULATOR
90 +/- 5 PSIG
VALVE G35MV100 - OPEN
VERIFY GAGE G35PG100 READS
90 +/- 5 PSIG.

32-100 MLFC SHFD S14-132 (GHE K-BOTTLE SUPPLY TO POD'S)
K-BOTTLE SUPPLY VALVE - OPEN
VERIFY/ADJUST K-BOTTLE REGULATOR
TO 425 +/- 25 PSIG
VALVE G36MV102 - OPEN
VERIFY GAGE G36PG102 READS
425 +/- 25 PSIG

32-101 MLFC SHFD S14-132 (GH2 K-BOTTLE SUPPLY TO FDS)
K-BOTTLE SUPPLY VALVE - OPEN
VERIFY/ADJUST K-BOTTLE REGULATOR
TO 90 +/- 5 PSIG
VALVE G36MV100 - OPEN
VERIFY GAGE G36PG100 READS
90 +/- 5 PSIG.

222 32-102 MLFC SC01 PANEL 13
H2 FANS 1 - OFF
H2 FANS 2 - OFF
H2 HEATERS 1 - OFF
H2 HEATERS 2 - OFF
02 FANS 1 - OFF
02 FANS 2 - OFF
02 HEATERS 1 - OFF
02 HEATERS 2 - OFF
TIME

32-103 MLFC MHFC ASSURE REAL TIME RECORDERS 5, 6, 7, 27, AND 28 SPEED IS 2 MM/SEC.

32-104 MLFC 02 LV9 - OPEN (C060) KC7597
3+09-00-00 IS INSERTED

MHFC 02 LV9 OPEN LITE ON FC5416

32-105 MLFC H2 LV9 - OPEN (C060) KC7573
5+09-00-00 IS INSERTED

MHFC H2 LV9 OPEN LITE ON FC5386

H2 CYRO LINES PURGE

32-106 MLFC SLHN S14-132 (H2)
VALVE G36MV501 - OPEN
VALVE G36MV505 - OPEN

32-107 MLFC MHFC H2 OUT TO SC LV29 - ON (R051) KC7725
LST SUB CLR PRG LV33 - ON KC7679
(R050)
GHE PURGE PRE-X - ON (R048) KC7272
NORMALIZE

MHFC HE PRE 1/P LITE ON FC5271

NOTE

WHEN H2 PORT D PRESSURE FC5290
REACHES 250 +/- 50 PSIG
PERFORM THE FOLLOWING..
(P12-9)

32-108	MLFC	MPWR	STOP H2 CRYO MODES - ON (R073) NORMALIZE	KC7472
	MHFC		HE PRE 1/P LITE OFF	FC5271
32-109	MLFC	MHFC	LST H2 DISPOS LV34 - ON (R051)	KC7726
	MHFC		PV2 OPEN LITE ON	FC5154
			NOTE	
			WHEN H2 FILL PRESS (P12-15) READS LESS THAN 20 PSIG PERFORM THE FOLLOWING..	FC5356
32-110	MLFC	MHFC	LST H2 DISPOS LV34 - OFF (R051)	KC7726
	MHFC		PV2 OPEN LITE OFF	FC5154
32-111	MLFC	MHFC	GHE PURGE PRE-X - ON (R048) NORMALIZE	KC7272
	MHFC		HE PRE 1/P LITE ON	FC5271
			NOTE	
			WHEN H2 PORT D PRESSURE REACHES 260 +/- 50 PSIG (P12-09) PERFORM THE FOLLOWING..	FC5290
32-112	MLFC	MPWR	STOP H2 CRYO MODES - ON (R073) NORMALIZE	KC7472
	MHFC		HE PRE 1/P LITE OFF OFF	FC5271
32-113	MLFC	MHFC	LST H2 DISPOS LV34 - ON (R051)	KC7726
	MHFC		PV2 OPEN LITE ON	FC5154
			NOTE	
			WHEN H2 FILL PRESS (P12-15) READS LESS THAN 20 PSIG PERFORM THE FOLLOWING..	FC5356

32-114	MLFC	MHFC	LST H2 DISPOS LV34 - OFF (R051)	KC7726
	MHFC		PV2 OPEN LITE OFF	FC5154
32-115	MLFC	MHFC	GHE PURGE PRE-X - ON (R048) NORMALIZE	KC7272
	MHFC		HE PRE 1/P LITE ON	FC5271
			NOTE	
			WHEN PORT D PRESSURE REACHES 260 +/- 50 PSIG (P12-9) PERFORM THE FOLLOWING..	FC5290
32-116	MLFC	MPWR	STOP H2 CRYO MODES - ON (R073) NORMALIZE	KC7472
	MHFC		HE PRE I/P LITE OFF	FC5271
32-117	MLFC	MHFC	LST H2 DISPOS LV34 - ON (R051)	KC7726
	MHFC		PV2 OPEN LITE ON	FC5154
			NOTE	
			WHEN H2 FILL PRESS (P12-15) READS LESS THAN 20 PSIG PERFORM THE FOLLOWING	FC5356
32-118	MLFC	MHFC	LST H2 DISPOS LV34 - OFF (R051)	KC7726
	MHFC		PV2 OPEN LITE OFF	FC5154
32-119	MLFC	SLHN	S14-026 VALVE G36MV504 - OPEN	
32-120	MLFC	MHFC	GHE PURGE PRE-X-ON (R048) NORMALIZE	KC7272
	MHFC		HE PRE CMP LITE ON	FC5272
			H2 PRG RDY LITE ON	FC5273
			NOTE	
			WHEN H2 PORT D PRESSURE REACHES 250 +/- 50 PSIG PERFORM THE FOLLOWING.. (P12-9)	FC5290

32-121	MLFC	MPWR	STOP H2 CRYO MODES - ON (R073) NORMALIZE	KC7472
	MHFC		HE PRE I/P LITE OFF	FC5271
32-122	MLFC	MHFC	LST H2 DISPOS LV34 - ON (R051)	KC7726
	MHFC		PV2 OPEN LITE ON	FC5154
			NOTE	
			WHEN H2 FILL PRESS (P12-15) READ LESS THAN 20 PSIG PERFORM THE FOLLOWING	FC5356
32-123	MLFC	MHFC	LST H2 DISPOS LV34 - OFF (R051)	KC7726
	MHFC		PV2 OPEN LITE OFF	FC5154
32-124	MLFC	SLHM	S14-132 (H2) VALVE G36MV501 - CLOSED VALVE G36MV505 - CLOSED VALVE G36MV504 - CLOSED	
32-125	MLFC	MHFC	H2 OUT TO SC LV29 - OFF (R051)	KC7725
			LST SUB CLR PRG LV33 - OFF (R050)	KC7678
32-126	MLFC	SHFD	S14-132 (LH2 SUBCOOLER) VERIFY PV2 OPEN PV3 CLOSED	

32-126 02 CRYO LINES PURGE

32-127 MLFC SLOM S14-132 (02)
VALVE G35MV501 - OPEN
VALVE G35MV505 - OPEN

32-128 MLFC 02 PV10 - CLOSED (C060) KC7586
3-10-00-00 IS INSERTED
MHFC 02 PV10 CLOSED LITE ON FC5979

32-129 MLFC MPWR GHE PURGE PRE-X-ON (R064) KC7242
NORMALIZE
MHFC HE PRE I/P LITE ON FC5236

NOTE

WHEN PORT D PRESS (P12-09) FC5255
REACHES 260 +/- 50 PSIG
PERFORM THE FOLLOWING..

32-130 MLFC MPWR STOP 02 CRYO MODES - ON KC7485
(R069) NORMALIZE

MLFC HE PURG RDY LITE ON FC5235

32-131 MLFC 02 PV10-OPEN (C060) KC7586
3+10-00-00 IS INSERTED

MHFC 02 PV10 OPEN LITE ON FC5980

NOTE

WHEN 02 FILL PRESS (P12-15) FC5351
READS LESS THAN 30 PSIG
PERFORM THE FOLLOWING..

32-132 MLFC 02 PV10-CLOSED (C060) KC7586
3-10-00-00 IS INSERTED

MHFC 02 PV10 CLOSED LITE ON FC5979

32-133 MLFC MPWR GHE PURGE PRE-X-ON (R064) KC7242
NORMALIZE

MLFC HE PRE I/P LITE ON FC5236

32-133			NOTE	
			WHEN PORT D PRESS (P12-09) REACHES 260 +/- 50 PSIG PERFORM THE FOLLOWING..	FC5255
32-134	MLFC	MPWR	STOP 02 CRYO MODES - ON (R069) NORMALIZE	KC7485
	MLFC		HE PURG RDY LITE ON	FC5235
32-135	MLFC		02 PV10 - OPEN (C060) 3+10-00-00 IS INSERTED	KC7586
	MHFC		02 PV10 OPEN LITE ON	FC5980
			NOTE	
			WHEN 02 FILL PRESS (P12-15) READS LESS THAN 30 PSIG PERFORM THE FOLLOWING..	FC5351
32-136	MLFC		02 PV10 - CLOSED (C060) 3-10-00-00 IS INSERTED	KC7586
	MHFC		02 PV10 CLOSED LITE ON	FC5979
32-137	MLFC	MPWR	GHE PURGE PRE-X-ON (R064) NORMALIZE	KC7242
	MHFC		HE PRE I/P LITE ON	FC5236
			NOTE	
			WHEN PORT D PRESS (P12-09) REACHES 260 +/- 50 PSIG PERFORM THE FOLLOWING..	FC5255
32-138	MLFC	MPWR	STOP 02 CRYO MODES - ON (R069) NORMALIZE	KC7485
	MHFC		HE PURG RDY LITE ON	FC5235
32-139	MLFC		02 PV10 - OPEN (C060) 3+10-00-00 IS INSERTED	KC7586
	MHFC		02 PV10 OPEN LITE ON	FC5980

32-139			NOTE	
			WHEN 02 FILL PRESS (P12-15) READS LESS THAN 30 PSIG PERFORM THE FOLLOWING..	FC5351
32-140	MLFC		02 PV10 - CLOSED (C060) 3-10-00-00 IS INSERTED	KC7586
	MHFC		02 PV10 CLOSED LITE ON	FC5979
32-141	MLFC	MPWR	GHE PURGE PRE-X-ON (R064) NORMALIZE	KC7242
	MHFC		HE PRE I/P LITE ON	FC5236
			NOTE	
			WHEN PORT D PRESS (P12-09) REACHES 260 +/- 50 PSIG PERFORM THE FOLLOWING..	FC5255
32-142	MLFC	MPWR	STOP 02 CRYO MODES - ON (R069) NORMALIZE	KC7485
	MHFC		HE PURG RDY LITE ON	FC5235
32-143	MLFC		02 PV10 - OPEN (C060) 3+10-00-00 IS INSERTED	KC7586
	MHFC		02 PV10 OPEN LITE ON	FC5980
			NOTE	
			WHEN 02 FILL PRESS (P12-15) READS LESS THAN 30 PSIG PERFORM THE FOLLOWING..	FC5351
32-144	MLFC		02 PV10-CLOSED (C060) 3-10-00-00 IS INSERTED	KC7586
32-145	MLFC	SLOM	S14-132 VALVE G35MV504 - OPEN	
32-146	MLFC	MPWR	GHE PURGE PRE-X-ON (R064) NORMALIZE	KC7242
			HE PRE COMP LITE ON	FC5237
			02 PURGE READY LITE ON	FC5238

	32-147	MLFC	02 PV10 - OPEN (C060) 3+10-00-00 IS INSERTED	KC7586
		MHFC	02 PV10 OPEN LITE ON	FC5980
			NOTE WHEN 02 FILL PRESSURE (P12-15) READS LESS THAN 30 PSIG PERFORM THE FOLLOWING..	FC5351
	32-148	MLFC SLOM	S14-132 (02) VALVE G35MV504 - CLOSED VALVE G35MV501 - CLOSED VALVE G35MV505 - CLOSED	
222	32-149	MLFC MTPE	CRYO LINES PURGE COMPLETE. PROCEEDING WITH LO2 AND LH2 DETANKING.	

33-000 LH2 DETANKING

33-001 MLFC MACE VERIFY/PERFORM LH2 AUTO DETANK ADAP PROGRAM IF/00101 HAS BEEN INSERTED IN COMPUTER WITH INSERT 7-+0000801 ON C124

224 33-002 MLFC MHFC H2 AUTO DETANK (C052) - ON

MHFC 3300101301 IS INSERTED

33-003 MLFC MONITOR CRT (P11-19) DURING H2 DETANK. A VENT I/P DISPLAY MAY APPEAR BRIEFLY FOLLOWED BY A BRIEF VENT COMPLETE. FOLLOWING THIS, H2 AUTO DETANK PURGE I/P WILL APPEAR. A PROGRAM TIME DELAY OF 10 MINUTES IS ALLOWED FOR DETANKING AND INERT GAS PURGE

WHEN H2 TK1 AND H2 TK2 QUANTITY READING (P11-15) HAVE BEEN STABILIZED AT LOW VALUES FOR A MINIMUM OF 5 MINUTES DURING THE PURGE I/P CYCLE, MLFC MAY TERMINATE DETANKING PRIOR TO AUTOMATIC PROGRAM EXIT BY SENDING H2 AUTO DETANK DE-ACT ON C052 WITH INSERT 330 0101 300

33-004 MLFC MHFC VERIFY THE FOLLOWING

H2 LV5 OPEN LITE ON	FC5378
H2 LV6 OPEN LITE ON	FC5380
H2 LV7 OPEN LITE ON	FC5382
H2 LV8 OPEN LITE ON	FC5384
026 SC TNKS VT LITE OFF	FC5163

NOTE

WHEN CRT (P11-19) READS H2 AUTO DETANK - PROGRAM COMPLETE. PERFORM THE FOLLOWING

33-005 MLFC MHFC VERIFY THE FOLLOWING

H2 LV5 CLOSED LITE ON	FC5379
H2 LV6 CLOSED LITE ON	FC5381
H2 LV7 CLOSED LITE ON	FC5383
H2 LV8 CLOSED LITE ON	FC5385
026 SC TNKS VT LITE OFF	FC5163

33-005			NOTE	
			CONTINUE TO MONITOR H2 T1 AND T2 PRESSURES (P11-17) AND QUANTITIES (P11-15) PERIDOICALLY IF PRESSURE BUILD-UP IS NOTED PERFORM THE FOLLOWING AS REQD TO VENT DOWN PRESSURE	SF0039 SF0040 SF0030 SF0031
33-006	MLFC	MHFC	SC HV1 LV6 OP/CL (R041) - ON	KC7570
	MHFC		H2 LV6 OPEN LITE ON	FC5380
33-007	MLFC	MHFC	SC - HV2 LV8 OP/CL (R041) - ON	KC7572
	MHFC		H2 LV8 OPEN LITE ON	FC5382
33-008	MLFC	MHFC	026 PV5 VENT 02 TKS (R032) - ON - NORMALIZE	KC7578
	MHFC		026 SC TNKS VT LITE ON	FC5163
33-009	MLFC	MHFC	SC - HV1 LV6 OP/CL (R041) - OFF	KC7570
	MHFC		H2 LV6 CLOSED LITE ON	FC5381
33-010	MLFC	MHFC	SC - HV2 LV8 OP/CL (R041) - OFF	KC7572
	MHFC		H2 LV8 CLOSED LITE ON	FC5385
33-011	MLFC	MPWR	STOP H2 CYRO MODES (R073) - ON - NORMALIZE	KC7472
	MHFC	026 S C	TNKS VT LITE OFF	FC5163

34-000 LO2 DETANKING

34-001 MLFC MACE VERIFY/PERFORM 02 AUTO DETANK ADAP PROGRAM IF/C0102 HAS BEEN INSERTED INTO COMPUTER WITH INSERT 7-+0000802 ON C124

MHFC VERIFY 02 PV10 CLOSED LITE ON FC5979

34-002 MLFC MHFC 02 AUTO DETANK (C052) - ON

MHFC 3300102301 IS INSERTED

34-003 MLFC MONITOR CRT (P11-24) DURING 02 DETANKING. A VENT I/P DISPLAY MAY APPEAR BRIEFLY FOLLOWED BY A BRIEF VENT COMPLETE. FOLLOWING THIS 02 AUTO DETANK PURGE I/P WILL APPEAR. A PROGRAM TIME DELAY OF 10 MINUTES IS ALLOWED FOR DETANKING AND INERT GAS PURGE

WHEN 02 TK1 AND 02 TK2 QUANTITY READINGS (P11-15) HAVE BEEN STABILIZED AT LOW VALUES FOR A MINIMUM OF 5 MINUTES DURING THE PURGE I/P CYCLE, MLFC MAY TERMINATE DETANKING PRIOR TO AUTOMATIC PROGRAM EXIT BY SENDING 02 AUTO DETANK DE-ACT ON C052 WITH INSERT 330 0102 300

34-004 MLFC MHFC VERIFY THE FOLLOWING

02 LV5 OPEN LITE ON	FC5408
02 LV6 OPEN LITE ON	FC5410
02 LV7 OPEN LITE ON	FC5412
02 LV8 OPEN LITE ON	FC5414
032 SC TNKS VT LITE OFF	FC5164

NOTE

WHEN CRT (P11-24) READS 02 AUTO DETANK - PROGRAM COMPLETE PERFORM THE FOLLOWING

34-005	MLFC	MHFC	VERIFY THE FOLLOWING 02 LV5 CLOSED LITE ON 02 LV6 CLOSED LITE ON 02 LV7 CLOSED LITE ON 02 LV8 CLOSED LITE ON 032 SC TNKS VT LITE OFF	 FC5409 FC5411 FC5413 FC5415 FC5164
			NOTE CONTINUE TO MONITOR 02 T1 AND T2 PRESSURES (P11-22) AND QUANTITIES (P11-20) PERIODICALLY IF PRESSURE BUILDUP IS NOTED PERFORM THE FOLLOWING AS REQD TO VENT DOWN PRESSURE	 SF0037 SF0038 SF0032 SF0033
34-006	MLFC	MHFC	SC OV1 LV6 OP/CL (R040) - ON	KC7593
	MHFC		02 LV6 OPEN LITE ON	FC5410
34-007	MLFC	MHFC	SC - OV2 LV8 OP/CL (R040) - ON	FC7596
	MHFC		02 LV8 OPEN LITE ON	FC5414
34-008	MLFC	MHFC	032 PV5 VENT 02 TKS (R032) - ON - NORMALIZE	KC7579
	MHFC		032 SC TNKS VT LITE ON	FC5164
34-009	MLFC	MHFC	SC - OV1 LV6 OP/CL (R040) - OFF	KC7593
	MHFC		02 LV6 CLOSED LITE ON	FC5411
34-010	MLFC	MHFC	SC - OV2 LV8 OP/CL (R040) - OFF	KC7596
	MHFC		02 LV8 CLOSED LITE ON	FC5415
34-011	MLFC	MPWR	STOP 02 CYRO MODES (R069) - ON - NORMALIZE	KC7485
	MHFC		032 SC TNKS VT LITE OFF	FC5164

34-012 MLFC SCO2 PANEL 22
QTY AMPL
AC1 (CB44) - OPEN
AC2 (CB90) - OPEN
TIME

34-013 MLFC MACE REMOVE ADAP PROGRAMS IF/0101 AND IF/0102 BY INSERTING 7--0000801 AND 7--0000802 ON C124.

222 34-014 MLFC MTPE LO2 AND LH2 DETANKING COMPLETE. PROCFEDING WITH FUEL CELL DEACTIVATION.

35-000 FUEL CELL DEACTIVATION

224	35-001	MLFC	MHFC	FC1 ON MN BUS A LITE ON	SC2120
				FC1 ON MN BUS B LITE OFF	SC2125
				FC2 ON MN BUS A LITE ON	SC2121
				FC2 ON MN BUS B LITE ON	SC2126
				FC3 ON MN BUS A LITE OFF	SC2122
				FC3 ON MN BUS B LITE ON	SC2127
				H2 LV9 OPEN LITE ON	FC5386
				H2 LV18 OPEN LITE ON	FC6015
				02 LV9 OPEN LITE ON	FC5416
				02 LV18 OPEN LITE ON	FC6002
				N2 LV20 OPEN LITE ON	FC6006
	35-002	MLFC		GH2 SUPPLY PRESSURE IS 260 +/- 25 PSIG ON CRT (PG. 12-21)	FC6022
				GO2 SUPPLY PRESSURE IS 935 - 950 PSIG ON CRT (PG. 12-21)	FC5989
				GN2 SUPPLY PRESSURE IS 100 +/- 10 PSIG ON CRT (PG. 12-23)	FC5990
	35-003	MLFC	MPWR	INCREASE S/C BUS A AND BUS B POWER SUPPLY VOLTAGE TO APPROX 32 VDC BUT DO NOT EXCEED 30.5 VDC AT S/C MN BUS A AND BUS B	
	35-004	MLFC	MPWR	PS A BATT ENABLE - ON (R100)	KC7695
				PS B BATT ENABLE - ON (R101)	KC7699
			MPWR	PS A BAT ENABLE LITE ON	GC5126
				PS B BAT ENABLE LITE ON	GC5130

NOTE

ADJUST PS A AND B AS REQ'D DURING THE PERFORMANCE OF THE NEXT 3 STEPS.

	35-005	MLFC	MPWR	FC1 BUS A ON/OFF - OFF (R102)	KC7301
			MHFC	FC1 ON MN BUS A LITE OFF	SC2120
	35-006	MLFC	MPWR	FC2 BUS A ON/OFF - OFF (R103)	KC7305
				FC2 BUS B ON/OFF - OFF (R103)	KC7307
			MHFC	FC2 ON MN BUS A LITE OFF	SC2121
				FC2 ON MN BUS B LITE OFF	SC2126

35-007	MLFC	MPWR	FC3 BUS B ON/OFF - OFF (R103)	KC7311
	MHFC		FC3 ON MN BUS B LITE OFF	SC2127
35-008	MLFC		VERIFY ZERO CURRENT ON CRT (P13-11) ONLY IF FC SKIN TEMP IS ABOVE 400 DEG. F	
			F.C. NO. 1	SC2113
			F.C. NO. 2	SC2114
			F.C. NO. 3	SC2115
	MHFC		FC H2 HTR ON LITE ON	SC2075
35-009	MLFC	MPWR	REMOVE ANY EXISTING LOADS (A14-074) ON MN BUS A AND B IN TEN AMP STEPS ADJUSTING PS A AND B AS REQUIRED.	
35-010	MLFC	MPWR	PS A DC ON - OFF (R100)	KC7698
	MEPS		PS A DC OUTPUT LITE OFF	GC5124
35-011	MLFC	MPWR	PS A GND PWR FILTER - ON (C076)	KC7768
	MPWR		220 2113 111 IS INSERTED	
35-012	MLFC	MPWR	PS A DC ON - ON (R100)	KC7698
	MEPS		PS A DC OUTPUT LITE ON	GC5124
35-013	MLFC	MPWR	PS A BAT RESET - ON (R067)	KC7696
35-014	MLFC	MPWR	PS B DC ON - OFF (R101)	KC7702
	MPWR		PS B OUTPUT ON LITE OFF	GC5128
35-015	MLFC	MPWR	PS B GND PWR FILTER - ON (C076)	KC7769
	MPWR		220 2113 121 IS INSERTED	
35-016	MLFC	MPWR	PS B DC ON - ON (R101)	KC7702
	MPWR		PS B OUTPUT ON LITE ON	GC5128
35-017	MLFC	MPWR	PS B BAT RESET - ON (R067)	KC7700

35-018 MLFC

ADJUST THE HEATER VOLTAGES AS REQUIRED TO MAINTAIN 55 +/- 2 VAC IN ALL ZONES FOR F/C 1, F/C 2, AND F/C 3 AT A14-052. RECORD READINGS..

FUEL CELL 1

ZONE 1	VAC -----	AMPS -----	GC5000 GC5009
ZONE 2	VAC -----	AMPS -----	GC5001 GC5010
ZONE 3	VAC -----	AMPS -----	GC5002 GC5011

FUEL CELL 2

ZONE 1	VAC -----	AMPS -----	GC5003 GC5012
ZONE 2	VAC -----	AMPS -----	GC5004 GC5013
ZONE 3	VAC -----	AMPS -----	GC5005 GC5014

FUEL CELL 3

ZONE 1	VAC -----	AMPS -----	GC5006 GC5015
ZONE 2	VAC -----	AMPS -----	GC5007 GC5016
ZONE 3	VAC -----	AMPS -----	GC5008 GC5017

35-019 MLFC

FC GN2 PRESSURE ----- PSIG (P12-23) FC5990 100 +/- 10

35-020 MLFC MHFC

FC1 N2 FILL OP/CL - ON (R033)	KC7051
FC2 N2 FILL OP/CL - ON (R034)	KC7052
FC3 N2 FILL OP/CL - ON (R035)	KC7053
FC1 02 PURGE ON/OFF - ON (R037)	KC7315
FC1 H2 PURGE ON/OFF - ON (R037)	KC7318

MHFC

FC1 02 PURGE LITE ON	SC2133
FC1 H2 PURGE LITE ON	SC2130

35-021	MLFC	MHFC	FC2 02 PURGE ON/OFF - ON (R038)	KC7316
			FC2 H2 PURGE ON/OFF - ON (R038)	KC7319
		MHFC	FC2 02 PURGE LITE ON	SC2134
			FC2 H2 PURGE LITE ON	SC2131
35-022	MLFC	MHFC	FC3 02 PURGE ON/OFF - ON (R039)	KC7317
			FC3 H2 PURGE ON/OFF - ON (R039)	FC7320
		MHFC	FC3 02 PURGE LITE ON	SC2135
			FC3 H2 PURGE LITE ON	SC2132
			RECORD TIME	

NOTE

AFTER 10 MINUTES, INITIATE THE FOLLOWING..

35-023	MLFC	MHFC	FC1 02 PURGE ON/OFF - OFF (R037)	KC7318
		MHFC	FC1 02 PURGE LITE OFF	SC2133
35-024	MLFC	MHFC	FC2 02 PURGE ON/OFF - OFF (R038)	KC7319
		MHFC	FC2 02 PURGE LITE OFF	SC2134
35-025	MLFC	MHFC	FC3 02 PURGE ON/OFF - OFF (R039)	KC7320
		MHFC	FC3 02 PURGE LITE OFF	SC2135
			RECORD TIME	

35-025

NOTE

1. MAINTAIN HYDROGEN DRY OUT PURGE FOR A MINIMUM OF 7.5 HOURS. FUEL CELL STACK TEMPERATURE SHALL NOT EXCEED 500 DEG. F. DURING THIS PERIOD.
2. TEMPERATURE CORRECTION MAY BE ACCOMPLISHED BY MANUAL ADJUSTMENT OF HEATER ZONE VOLTAGES.
3. AFTER 7.5 HOURS MINIMUM, INITIATE THE FOLLOWING..

35-026	MLFC	MHFC	FC1 H2 PURGE ON/OFF - OFF (R037)	KC7315
	MLFC		FC1 H2 PURGE LITE OFF	SC2130
35-027	MLFC	MHFC	FC2 H2 PURGE ON/OFF - OFF (R038)	KC7316
	MHFC		FC2 H2 PURGE LITE OFF	SC2131
35-028	MLFC	MHFC	FC3 H2 PURGE ON/OFF - OFF (R039)	KC7317
	MHFC		FC3 H2 PURGE LITE OFF	SC2132

RECORD TIME

NOTE

FUEL CELL CALIBRATIONS MAY BE PERFORMED AT THE CONCLUSION OF THE PURGE CYCLE AT THE DISCRETION OF THE MLFC AS FOLLOWS..

	35-029	MLFC	MTPE	REQUEST MEPS ISOLATE MAIN BUS B FOR FUEL CELL CALIBRATION.	
224	35-030	MLFC	MHFC	INCREASE THE REAL TIME RECORDERS 5, 6 AND 7 SPEED TO 5 MM/SEC.	
	35-031	MLFC	MHFC	FC1, 2, 3 H2 HTR ON/OFF - OFF (R032)	KC7603
		MHFC		FC H2 HTR ON LITE - OFF	SC2076
	35-032	MLFC	MPWR	FC 1 BUS B ON/OFF - ON (R102)	KC7302
		MHFC		FC1 ON MN BUS B LITE ON	SC2125
	35-033	MLFC		VERIFY NO LOADS EXIST ON FC1 (13-11)	

NOTE

CALIBRATE FUEL CELLS AT A STACK TEMPERATURE READING OF NOT LESS THAN (380 DEGREES F.)

	35-034	MLFC		RECORD FC 1 STACK TEMPERATURE DEG, F. -----	SC2085
	35-035	MLFC		RECORD OPEN CIRCUIT VOLTAGE VDC ----- TIME -----	SC2116
	35-036	MLFC	MPWR	FUEL CELL CAL ON - ON (R102)	KC7088
				NORMALIZE	KC7089
					KC7090
					KC7091
					KC7092

35-037 MLFC		RECORD THE FOLLOWING FOR FC1 (P13-11,12) 10 AMP LOAD VDC _____ AMPS _____ 20 AMP LOAD VDC _____ AMPS _____ 30 AMP LOAD VDC _____ AMPS _____ 40 AMP LOAD VDC _____ AMPS _____ 50 AMP LOAD VDC _____ AMPS _____	SC2113 SC2116
35-038 MLFC	MPWR	FC 1 BUS B ON/OFF - OFF (R102)	KC7303
35-039 MHFC		FC 1 ON MN BUS B LITE OFF	SC2125
35-040 MLFC	MPWR	VERIFY LOAD HAS BEEN REMOVED FROM MAIN BUS B.	
35-041 MLFC	MPWR	FC2 BUS B ON/OFF - ON (R103)	KC7306
35-042 MHFC		FC2 ON MN BUS B LITE ON	SC2126
35-043 MLFC		VERIFY NO LOAD EXISTS ON FC2 (P13-11)	SC2114

NOTE

CALIBRATE FUEL CELL 2 AT A STACK TEMPERATURE READING OF NOT LESS THAN 380 DEGREES F.

35-044		MHFC	RECORD STACK TEMPERATURE DEG.F. _____	SC2085
			RECORD OPEN CIRCUIT VOLTAGE VDC TIME _____ _____	SC2117
35-045	MLFC	MPWR	FUEL CELL CAL ON - ON (R102)	KC7088
			NORMALIZE	KC7089 KC7090 KC7091 KC7092
35-046	MLFC		RECORD THE FOLLOWING FOR FC2 (P13-11,12)	SC2114 SC2117
			10 AMP LOAD VDC AMPS _____ _____	
			20 AMP LOAD VDC AMPS _____ _____	
			30 AMP LOAD VDC AMPS _____ _____	
			40 AMP LOAD VDC AMPS _____ _____	
			50 AMP LOAD VDC AMPS _____ _____	
35-047	MLFC	MPWR	FC2 BUS B ON/OFF - OFF (R103)	KC7307
	MHFC		FC2 ON MN BUS B LITE OFF	SC2126
35-048	MLFC	MPWR	VERIFY LOAD HAS BEEN REMOVED FROM MAIN BUS B.	
35-049	MLFC	MPWR	FC3 BUS B ON/OFF - ON (R103)	KC7310
	MHFC		FC3 ON MN BUS B LITE ON	SC2127
35-050	MLFC		VERIFY NO LOADS EXIST ON FC3 (P13-11)	

35-050

NOTE

CALIBRATE FUEL CELL NO. 3 AT A STACK TEMPERATURE READING OF NOT LESS THAN 380 DEG. F.

35-051 MLFC — RECORD FC3 STACK TEMPERATURE DEG. F. _____ — SC2086

35-052 MLFC — RECORD OPEN CIRCUIT VOLTAGE

VDC	TIME
_____	_____

35-053 MLFC MPWR — FUEL CELL CAL ON - ON (R102) NORMALIZE — KC7088 KC7089 KC7090 KC7091 KC7092

35-054 MLFC — RECORD THE FOLLOWING FOR FC3 (P13-11,12) — SC2115 SC2118

10 AMP LOAD

VDC	AMPS
_____	_____

20 AMP LOAD

VDC	AMPS
_____	_____

30 AMP LOAD

VDC	AMPS
_____	_____

40 AMP LOAD

VDC	AMPS
_____	_____

50 AMP LOAD

VDC	AMPS
_____	_____

35-055 MLFC MPWR — FC3 BUS B ON/OFF - OFF (R103) — KC7311

MHFC — FC3 ON MN BUS B LITE OFF — SC2127

35-056 MLFC MHFC ASSURE REAL TIME RECORDERS SPEED AT 1 MM/SEC.

222 35-057 MLFC MTPE FUEL CELL CALIBRATION COMPLETE. PROCEEDING WITH COOL DOWN. POWER MAY BE REAPPLIED TO BUS B

COOL DOWN CYCLE

35-058 MLFC MHFC FC1, 2, 3 GSE HTR ON/OFF - ON (R036) KC7000 KC7001 KC7002

RECORD TIME _____ DATE _____

NOTE

WHEN EACH FC INDICATES AN APPROX 5 AMP LOAD RECORD TEMP AND PERFORM THE FOLLOWING..

FC1 TEMP _____ TIME _____

FC2 TEMP _____ TIME _____

FC3 TEMP _____ TIME _____

35-059 MLFC MHFC FC123 H2 HTR ON/OFF - OFF (R032) KC7603

MHFC FC H2 HTR ON LITE OFF SC2076

35-060 MLFC INITIATE THE FOLLOWING WHEN THE FUEL CELL 1, FUEL CELL 2, AND FUEL CELL 3 SKIN TEMPERATURE MEASUREMENTS HAVE DECREASED TO (360 +/- 10 DEGREES F.)

35-061 MLFC

RECORD SKIN TEMPERATURE AND TIME READINGS..

FC1 TEMP _____ TIME _____

FC2 TEMP _____ TIME _____

FC3 TEMP _____ TIME _____

35-062 MLFC MHFC

FC1 N2 GAS REG OP/CL - ON (R033)	KC7463	
FC2 N2 GAS REG OP/CL - ON (R034)	KC7464	
FC3 N2 GAS REG OP/CL - ON (R035)	KC7465	

35-063 MLFC

FC1 N2 REG (P13-2) _____	PSIA	SC2060	49-56
FC2 N2 REG (P13-2) _____	PSIA	SC2061	49-56
FC3 N2 REG (P13-2) _____	PSIA	SC2062	49-56
FC1 02 REG (P13-3) _____	PSIA	SC2066	55 +/- 3
FC2 02 REG (P13-3) _____	PSIA	SC2067	55 +/- 3
FC3 02 REG (P13-3) _____	PSIA		55 +/- 3
FC1 H2 REG (P13-4) _____	PSIA	SC2069	55 +/- 3
FC2 H2 REG (P13-4) _____	PSIA		55 +/- 3
FC3 H2 REG (P13-4) _____	PSIA	SC2071	55 +/- 3

NOTE

WHEN FC1, 2 OR 3 INDICATES 300 DEG. F. RECORD DATE AND TIME.

FC1 TIME _____ DATE _____

FC2 TIME _____ DATE _____

FC3 TIME _____ DATE _____

35-063

NOTE

INITIATE THE FOLLOWING, WHEN THE FUEL CELL 1, 2 AND 3 STACK TEMPERATURE DECREASE TO A READING OF 220 +/- 5 DEG. F. EXECUTE THE FOLLOWING.
RECORD TIME
FC1

FC2

FC3

35-064 MLFC SPLT PANEL 22
FC1 PUMP - OFF
FC2 PUMP - OFF
FC3 PUMP - OFF

FUEL CELL 1
CIR AND SEP MOTORS (CB64) - OPEN
FUEL CELL 2
CIR AND SEP MOTORS (CB83) - OPEN
FUEL CELL 3
CIR AND SEP MOTORS (CB87) - OPEN

NOTE

CONTINUE TO MONITOR THE FUEL CELL STACK TEMPERATURES. WHEN ALL FUEL CELLS REACH 155 DEG. F. MAX EXECUTE THE FOLLOWING SEQUENCES..

RECORD TIME
---

222 35-065 MLFC MTPE PROCEEDING WITH FUEL CELL DEPRESSURIZATION.

35-065 FUEL CELL DEPRESSURIZATION

224 35-066 MLFC MHFC FC NO. 1 GAS REG OP/CL - OFF KC7463
(R033)
FC NO. 2 GAS REG OP/CL - OFF KC7464
(R034)
FC NO. 3 GAS REG OP/CL - OFF KC7465
(R035)

35-067 MLFC VERIFY FUEL CELL REGULATED PRESSURES ON CRT..

N2 (49 TO 56 PSIA) (PG. 13, LN. 2)
02 (63 +/- 4 PSIA) (PG. 13, LN. 3)
H2 (60.5 +/- 4 PSIA) (PG. 13, LN. 4)

35-068 MLFC RECORD REGULATED PRESSURES..

F/C 1		F/C 2		F/C 3	
N2 _____	PSIA	N2 _____	PSIA	N2 _____	PSIA
02 _____	PSIA	02 _____	PSIA	02 _____	PSIA
H2 _____	PSIA	H2 _____	PSIA	H2 _____	PSIA

35-069 MLFC SOMD S14-132 (GN2 K-BOTTLE SUPPLY TO FDS)
K-BOTTLE SUPPLY VALVE - CLOSED
VALVE G35MV101 - CLOSED

35-070 MLFC SOMD S14-132
VALVE G35MV506 - CLOSED

35-071 MLFC N2 LV21 - OPEN (C060) KC7588
3+21-00-00 IS INSERTED

MHFC N2 LV21 CLOSED LITE OFF FC5919

35-072 MLFC VERIFY GN2 SUPPLY PRESSURE IS DECREASING ON CRT (P12-22) FC5990

35-073 MLFC SOMD S14-132 (GN2 K-BOTTLE SUPPLY TO FDS)
VERIFY GAGE G35PG10- INDICATES PRESSURE DECREASE

35-073

NOTE

WHEN GN2 PRESSURE REACHES 50 +/- 5 PSIG. PERFORM THE FOLLOWING..

35-074	MLFC	N2 LV21 - CLOSED (C060) 3-21-00-00 IS INSERTED	KC7588
	MHFC	N2 LV21 CLOSED LITE ON	FC5919
35-075	MLFC	FC1 N2 FILL OP/CL - OFF (R033)	KC7051
	MHFC	FC2 N2 FILL OP/CL - OFF (R034)	KC7052
		FC3 N2 FILL OP/CL - OFF (R035)	KC7053

NOTE

WAIT 15 MINUTES BEFORE PROCEEDING. SOMD MONITOR G35P66 DURING THIS PERIOD FOR PRESSURE DECAY. NO LEAKAGE ALLOWABLE.

35-076	MLFC	FC1 N2 FILL OP/CL - ON (R033)	KC7051
	MHFC	FC2 N2 FILL OP/CL - ON (R034)	KC7052
		FC3 N3 FILL OP/CL - ON (R035)	KC7053
35-077	MLFC	FC1 N2 GAS REG OP/CL - ON (R033)	KC7463
	MHFC	FC2 N2 GAS REG OP/CL - ON (R034)	KC7464
		FC3 N2 GAS REG OP/CL - ON (R035)	KC7465

NOTE

WHEN FC N2 REGULATED PRESSURES ON FUEL CELL HAVING LOWEST N2 PRESSURE IS DECREASED 1 TO 2 PSI PERFORM THE FOLLOWING..

35-078 MLFC MHFC FC1 N2 GAS REG OP/CL - OFF (R033) KC7463
FC2 N2 GAS REG OP/CL - OFF (R034) KC7464
FC3 N2 GAS REG OP/CL - OFF (R035) KC7465

NOTE

WAIT 15 MINUTES BEFORE FURTHER FUEL CELL DEPRESSURIZATION OPEN AND CLOSE FC N2 REGULATOR VALVES AS REQ'D

35-079 MLFC MHFC VERIFY THE FOLLOWING..
N2 LV20 OPEN LITE ON FC6006
N2 LV19 CLOSED LITE ON FC6003

35-080 MLFC N2 LV23 - OPEN (C060) KC7346
3+23-00-00 IS INSERTED

MHFC N2 LV23 CLOSED LITE OFF FC5434

35-081 MLFC SOMD S14-132
VALVE G35MV3 - OPEN SLOWLY (AS DIRECTED BY MLFC)

NOTE

MONITOR ALL FUEL CELL REGULATED N2 PRESSURES ON CRT (P13-2) PRESSURES SHALL DECREASE AT RATE OF 4 PSI PER HOUR. MAXIMUM RATE IS TO BE MAINTAINED UNTIL FC GN2 PRESSURES READ 18 +/- 3 PSIA. N2 LV23 AND G35MV3 MAY BE OPENED OR CLOSED AS REQ'D TO MAINTAIN RATE OF DEPRESS.

35-082 MLFC WHEN ALL FUEL CELLS REACH A N2 REGULATED PRESSURE OF 28 +/- 2 PSIA ON CRT (PG. 13, 2) PERFORM THE FOLLOWING..

35-083	MLFC	SC01	PANEL 18 FC1 REACTANTS SW - OFF - CENTER	
		SC01	VERIFY BARBERPOLE	
35-084	MLFC	SC01	PANEL 18 FC2 REACTANTS SW - OFF - CENTER	
		SC01	VERIFY BARBERPOLE	
35-085	MLFC	SC01	PANEL 18 FC3 REACTANTS SW - OFF - CENTER	
		SC01	VERIFY BARBERPOLE	
35-086	MLFC	MHFC	FC1 02 PURGE ON/OFF - ON (R037)	KC7315
			FC1 H2 PURGE ON/OFF - ON (R037)	KC7318
35-087	MLFC	MHFC	FC2 02 PURGE ON/OFF - ON (R038)	KC7316
			FC2 H2 PURGE ON/OFF - ON (R038)	KC7319
35-088	MLFC	MHFC	FC3 02 PURGE ON/OFF - ON (R039)	KC7320
			FC3 H2 PURGE ON/OFF - ON (R039)	KC7317

NOTE

THE FOLLOWING LIGHTS MAY COME ON..

35-089	MLFC	MHFC	FC NO. 1 H2 PURGE LITE ON	SC2130
			FC NO. 1 02 PURGE LITE ON	SC2133
			FC NO. 2 H2 PURGE LITE ON	SC2131
			FC NO. 2 02 PURGE LITE ON	SC2134
			FC NO. 3 H2 PURGE LITE ON	SC2132
			FC NO. 3 02 PURGE LITE ON	SC2135
35-090	MLFC		VERIFY THAT FUEL CELL REACTANT PRESSURES STABILIZE AT APPROXIMATELY AMBIENT ON CRT (PG. 13, LN. 3 AND 4)	

35-091 MLFC SOMD S14-132 (G02 K-BOTTLE SUPPLY TO FDS)
K-BOTTLE SUPPLY VALVE - CLOSED
VALVE G35MV100 - CLOSED

35-092 MLFC SHFD S14-132 (GH2 K-BOTTLE SUPPLY TO FDS)
K-BOTTLE SUPPLY VALVE - CLOSED
VALVE G36MV100 - CLOSED

35-093 MLFC MPWR STOP 026 FC MODES - ON (R074) KC7280
NORMALIZE

MHFC FC H2 PORT F LITE OFF FC5951

35-094 MLFC MPWR STOP 032 FC MODES - ON (R070) KC7250
NORMALIZE

MHFC FC 02 PORT F LITE OFF FC5955

35-095 MLFC 02 LV9 - CLOSED (C060) KC7597
02 LV12 - OPEN KC7585
3+12-09-00 IS INSERTED

MHFC 02 LV9 CLOSED LITE ON FC5417
02 LV12 OPEN LITE ON FC5977

35-096 MLFC H2 LV9 - CLOSED (C060) KC7573
H2 LV12 - OPEN KC7564
5+12-09-00 IS INSERTED

MHFC H2 LV9 CLOSED LITE ON FC5387
H2 LV12 OPEN LITE ON FC6008

NOTE

WHEN FC G02 PRESS (P12-22) FC5464
READS 20 PSIG OR LESS
PERFORM THE FOLLOWING

35-097 MLFC 02 LV12 - CLOSED (C060) KC7585
3-12-00-00 IS INSERTED

MHFC 02 LV12 CLOSED LITE ON FC5978

NOTE

WHEN FC GH2 PRESS (P12-22) FC5461
READS 20 PSIG OR LESS
PERFORM THE FOLLOWING

35-098	MLFC		H2 LV12 - CLOSED (C060) 5-12-00-00 IS INSERTED	KC7564
	MHFC		H2 LV12 CLOSED LITE ON	FC6009
35-099	MLFC	MPWR	GN2 PORT E FC PRG - ON (R074) NORMALIZE	KC7466
	MHFC		FC N2 PORT E LITE ON	FC5950
35-100	MLFC	MPWR	GN2 PORT E FC PRG - ON (R070) NORMALIZE	KC7477
	MHFC		FC N2 PORT E LITE ON	FC5954
35-101	MLFC		WHEN FC GO2 AND FC GH2 PRESS ON CRT INDICATE 100 +/- 10 PSIG (PG. 12, LN. 22) PROCEED WITH THE FOLLOWING STEPS..	
35-102	MLFC	MPWR	STOP 026 FC MODES - ON (R074) NORMALIZE	KC7280
	MHFC		FC N2 PORT E LITE OFF	FC5950
35-103	MLFC		H2 LV12 - OPEN (C060) 5+12-00-00 IS INSERTED	KC7564
	MHFC		H2 LV12 OPEN LITE ON	FC6009
35-104	MLFC	MPWR	STOP 032 FC MODES - ON (R070) NORMALIZE	KC7250
	MHFC		FC N2 PORT E LITE OFF	FC5954
35-105	MLFC		O2 LV12 - OPEN (C060) 3+12-00-00 IS INSERTED	KC7585
	MHFC		O2 LV12 OPEN LITE ON	FC5977

NOTE

WHEN FC GH2 PRESS (P12-22) READS 20 PSIG OR LESS PERFORM THE FOLLOWING — FC5461

35-106	MLFC		H2 LV12 - CLOSED (C060) 5-12-00-00 IS INSERTED	KC7564
	MHFC		H2 LV12 CLOSED LITE ON	FC6009
35-107	MLFC	MPWR	GN2 PORT E FC PRG - ON (R074) NORMALIZE	KC7466
	MHFC		FC N2 PORT F LITE ON	FC5950
			NOTE	
			WHEN FC GO2 PRESS (P12-22) READS 20 PSIG OR LESS PERFORM THE FOLLOWING	FC5464
35-108	MLFC		02 LV12 - CLOSED (C060) 3-12-00-00 IS INSERTED	KC7585
	MHFC		02 LV12 CLOSED LITE ON	FC6000
35-109	MLFC	MPWR	GN2 PORT E FC PRG - ON (R070) NORMALIZE	KC7477
	MHFC		FC N2 PORT F LITE ON	FC5954
35-110	MLFC		WHEN FC GO2 AND FC GH2 PRESS ON CRT INDICATE 100 +/- 10 PSIG (P12-22) PROCEED WITH THE FOLLOWING SEQUENCES..	FC5464 FC5461
35-111	MLFC	MPWR	STOP 026 FC MODES - ON (R074) NORMALIZE	KC7280
	MHFC		FC N2 PORT F LITE OFF	FC5950
35-112	MLFC	MPWR	STOP 032 FC MODES - ON (R070) NORMALIZE	KC7250
	MHFC		FC N2 PORT F LITE OFF	FC5954
35-113	MLFC		H2 LV12 - OPEN (C060) 5+12-00-00 IS INSERTED	KC7564
	MHFC		H2 LV12 OPEN LITE ON	FC6008

35-114	MLFC		02 LV12 - OPEN (C060) 3+12-00-00 IS INSERTED	KC7585
	MHFC		02 LV12 OPEN LITE ON	FC5977
35-115	MLFC		WHEN FC 02 P(12-22) AND FC H2 (P12-22) PRESSURES INDICATES LESS THAN 20 PSIG PERFORM THE FOLLOWING..	FC5464 FC5461
35-116	MLFC		H2 LV12 - CLOSED (C060) 5-12-00-00 IS INSERTED	KC7564
	MHFC		H2 LV12 CLOSED LITE ON	FC6009
35-117	MLFC		02 LV12 - CLOSED (C060) 3-12-00-00 IS INSERTED	KC7585
	MHFC		02 LV12 CLOSED LITE ON	FC5978
35-118	MLFC	MPWR	GN2 PORT E FC PRG - ON (R074) NORMALIZE	KC7466
	MHFC		FC N2 PORT E LITE ON	FC5950
35-119	MLFC	MPWR	GN2 PORT E FC PRG - ON (R070) NORMALIZE	KC7477
	MHFC		FC N2 PORT E LITE ON	FC5954
35-120	MLFC	MPWR	STOP 026 FC MODES - ON (R074) NORMALIZE	KC7280
	MHFC		FC N2 PORT E LITE OFF	FC5950
35-121	MLFC	MPWR	STOP 032 FC MODES - ON (R070) NORMALIZE	KC7250
	MHFC		FC N2 PORT E LITE OFF	FC5954
35-122	MLFC		H2 LV12 - OPEN (C060) H2 LV17 - CLOSED (C060) 5+12-17-00 IS INSERTED	KC7564 KC7567
	MHFC		H2 LV12 OPEN LITE ON H2 LV17 CLOSED LITE ON	FC6008 FC6014

35-123	MLFC		02 LV12 - OPEN (C060) 02 LV17 - CLOSED (C060) 3+12-17-00 IS INSERTED	KC7585 KC7589
	MHFC		02 LV12 OPEN LITE ON 02 LV17 CLOSED LITE ON	FC5977 FC6001
			NOTE WHEN FC GO2 AND FC GH2 PRESS INDICATE LESS THAN 15 PSIG ON CRT (PG. 12, 22) INITIATE THE FOLLOWING..	
35-124	MLFC		02 LV12 - CLOSED (C060) 3-12-00-00 IS INSERTED	KC7585
	MHFC		02 LV12 CLOSED LITE ON	FC5978
35-125	MLFC		H2 LV12 - CLOSED (C060) 5-12-00-00 IS INSERTED	KC7564
	MHFC		H2 LV12 CLOSED LITE ON	FC6009
35-126	MLFC	MPWR	GN2 PORT F FC PRG - ON (R074) NORMALIZE	KC7466
	MHFC		FC N2 PORT F LITE ON	FC5950
35-127	MLFC	MPWR	GN2 PORT E FC PRG - ON (R070) NORMALIZE	KC7477
	MHFC		FC N2 PORT F LITE ON	FC5954
35-128	MLFC		H2 LV9 - OPEN (C060) 5+09-00-00 IS INSERTED	KC7573
	MHFC		H2 LV9 OPEN LITE ON	FC5386
35-129	MLFC		02 LV9 - OPEN (C060) 3+09-00-00 IS INSERTED	KC7597
	MHFC		02 LV9 OPEN LITE ON	FC5416
35-130	MLFC	SC01	PANEL 18 FC1 REACTANTS SW - ON - CENTER	
	SC01		VERIFY GRAY	

35-131	MLFC	SC01	PANEL 18 FC2 REACTANTS SW - ON - CENTER	
		SC01	VERIFY GRAY	
35-132	MLFC	SC01	PANEL 18 FC3 REACTANTS SW - ON - CENTER	
		SC01	VERIFY GRAY	
35-133	MLFC		VERIFY THAT 02 AND H2 REACTANT FLOW IS INDICATED IN EACH FUEL CELL ON CRT (P13-9, 10) PURGE FOR 10 MINUTES MINIMUM, RECORD TIME ---	
35-134	MLFC		WHEN ALL FUEL CELL N2 REGULATED PRESSURES REACH 18 +/- 3 PSIA ON CRT (PG. 13, LN. 2) INITIATE THE FOLLOWING..	
35-135	MLFC	MHFC	FC1 N2 FILL OP/CL - OFF (R033)	KC7051
			FC2 N2 FILL OP/CL - OFF (R034)	KC7052
			FC3 N2 FILL OP/CL - OFF (R035)	KC7053
35-136	MLFC		N2 LV23 - CLOSED (C060)	KC7346
			N2 LV20 - CLOSED (C060)	KC7592
			3-20-23-00 IS INSERTED	
		MHFC	N2 LV23 CLOSED LITE ON	FC5434
			02 LV20 CLOSED LITE ON	FC6007
35-137	MLFC	SOMD	S14-132 VALVE G35MV3 - CLOSED	
35-138	MLFC	MHFC	FC1 02 PURGE ON/OFF - OFF (R037)	KC7315
			FC1 H2 PURGE ON/OFF - OFF (R037)	KC7318

35-139	MLFC	MHFC	FC2 02 PURGE ON/OFF - OFF (R038)	KC7316
			FC2 H2 PURGE ON/OFF - OFF (R038)	KC7319
35-140	MLFC	MHFC	FC3 02 PURGE ON/OFF - OFF (R039)	KC7317
			FC3 H2 PURGE ON/OFF - OFF (R039)	KC7320
			RECORD TIME	

35-141	MLFC	SC01	PANEL 18 FC1 REACTANTS SW - OFF - CENTER	
	SC01		VERIFY BARBERPOLE	
35-142	MLFC	SC01	PANEL 18 FC2 REACTANTS SW - OFF - CENTER	
	SC01		VERIFY BARBERPOLE	
35-143	MLFC	SC01	PANEL 18 FC3 REACTANTS SW - OFF - CENTER	
	SC01		VERIFY BARBERPOLE	
35-144	MLFC	MPWR	STOP 026 FC MODES - ON (R074) NORMALIZE	KC7280
	MHFC		FC N2 PORT E LITE OFF	FC5950
35-145	MLFC	MPWR	STOP 032 FC MODES - ON (R070) NORMALIZE	KC7250
	MHFC		FC N2 PORT E LITE OFF	FC5954
35-146	MLFC		H2 LV12 - OPEN (C060) 5+12-00-00 IS INSERTED	KC7564
	MHFC		H2 LV12 OPEN LITE ON	FC6008
35-147	MLFC		02 LV12 - OPEN (C060) 3+12-00-00 IS INSERTED	KC7585
	MHFC		02 LV12 OPEN LITE ON	FC5977

	35-147		NOTE	
			WHEN FC GO2 AND FC GH2 PRESSURES READ LESS THAN 10 PSIG ON CRT (P12-22) PERFORM THE FOLLOWING..	FC5464 FC5461
	35-148	MLFC	02 LV12 - CLOSED (C060)	KC7585
			02 LV9 - CLOSED (C060)	KC7597
			3-12-09-00 IS INSERTED	
		MHFC	02 LV12 CLOSED LITE ON	FC5978
			02 LV9 CLOSED LITE ON	FC5417
	35-149	MLFC	H2 LV12 - CLOSED (C060)	KC7564
			H2 LV9 - CLOSED (C060)	KC7573
			5-12-09-00 IS INSERTED	
		MHFC	H2 LV12 CLOSED LITE ON	FC6009
			H2 LV9 CLOSED LITE ON	FC5387
	35-150	MLFC SHFD	S14-132 GN2 PURGE VALVES (2) TO H2 VENTS - CLOSED	
			CLOSE GN2 MIXING VALVE ON 220 FT LEVEL OF LUT	
	35-151	MLFC SLHM	S14-026 GN2 PURGE VALVE TO H2 VENT - CLOSED	
222	35-152	MLFC MTPE	FUEL CELL DEACTIVATION COMPLETE. PROCEEDING WITH POWER DOWN.	

35-152 GSE POWERDOWN

NOTE

THIS SECTION TO BE ACCOMPLISHED IN WHOLE OR IN PART AT THE DIRECTION OF THE SYSTEM ENGINEER.

224	35-153	MLFC	SLOM	S14-032 FAC HE SUPPLY VALVE - CLOSED LOCAL/REMOTE SW - LOCAL CB1 - OPEN CB2 - OPEN
			SLOM	VERIFY MAIN POWER LITE OFF
	35-154	MLFC	SLHM	S14-026 FAC HE SUPPLY VALVE - CLOSED LOCAL/REMOTE SW - LOCAL CB1 - OPEN CB2 - OPEN
			SLHM	VERIFY MAIN POWER LITE OFF
	35-155	MLFC	PLHM	S14-066 VALVE MV1030 - CLOSED CLOSE TUBE TRAILER SUPPLY VALVE BACKOFF REG AT GH2 TUBE TRAILER TO BLEED DOWN LINE CB1 - OPEN CB2 - OPEN
			PLHM	MAIN POWER ON LITE OFF
	35-156	MLFC	PLMH	GH2 TUBE TRAILER SUPPLY TO S14-026. CLOSE TUBE TRAILER SUPPLY VALVE BACK-OFF REGULATOR TO BLEED DOWN LINE.

35-157	MLFC	PLOM	S14-065 VALVE MV1141 - CLOSED CLOSE TUBE TRAILER SUPPLY VALVE BACKOFF REG AT GO2 TUBE TRAILER TO BLEED DOWN LINE CB1 - OPEN CB2 - OPEN	
	MHFC		MAIN POWER ON LITE OFF	
35-158	MLFC	PLOM	GO2 TUBE TRAILER SUPPLY TO S14-032. CLOSE TUBE TRAILER SUPPLY VALVE BACK-OFF REGULATOR TO BLEED DOWN LINE	
35-159	MLFC	MHFC	H2 FDS INSTRM - OFF (R045) H2 FDS CONTRL COMMND - OFF (R043)	KC7577 KC7359
	MHFC		H2 STDBY LITE ON	GC5022
	SLHT		UNIT 1 MODE STANDBY LITE ON	
35-160	MLFC	SHFD	S14-132 (LH2 SUBCOOLER) CB1 - OPEN	
35-161	MLFC	SOMD	S14-132 VALVE G35MV507 - CLOSED FAC GN2 SUPPLY VALVE - CLOSED	
35-162	MLFC	SOMD	S14-132 (GN2 K-BOTTLE SUPPLY TO POD) K-BOTTLE SUPPLY VALVE CLOSED VALVE G35MV102 - CLOSED	
35-163	MLFC	SHFD	S14-132 FAC GHE SUPPLY TO POD'S - CLOSED FAC GN2 SUPPLY VALVE TO LH2 SUBCOOLER EJECTORS - CLOSED	
35-164	MLFC	SHFD	S14-132 (GHE K-BOTTLE SUPPLY TO POD'S) K-BOTTLE SUPPLY VALVE - CLOSED VALVE G36MV102 - CLOSED	

35-165	MLFC	SLHT	H2 FDSCU NO. 1 MODE SW - LOCAL VALVE POS POWER SW - OFF TRANSDUCER POWER SW - OFF MAIN POWER SW - OFF	
	SLHT		MAIN POWER ON LITE OFF VERIFY 28 VDC METER INDICATES ZERO (+/- 0.5 VDC) ELAPSED TIME METER STOPPED	
35-166	MLFC	SLHT	H2 FDSCU NO. 2 MODE SW - LOCAL MAIN POWER SW - OFF	
	SLHT		MAIN POWER ON LITE OFF VERIFY 28 VDC METER INDICATES ZERO (+/- 0.5 VDC) VERIFY ELAPSED TIME METER NOT OPERATING.	
35-167	MLFC	MHFC	02 FDS INSTRM - OFF (R045) 02 FDS CONTRL COMMND - OFF (R043)	KC7601 KC7357
	MHFC		02 STDBY LITE ON	GV5011
	SLOT		UNIT 1 MODE STANDBY LITE ON	
35-168	MLFC	SLOT	02 FDSCU NO. 1 MODE SW - LOCAL VALVE POS POWER SW - OFF TRANSDUCER POWER SW - OFF MAIN POWER SW - OFF	
	SLOT		MAIN POWER ON LITE OFF VERIFY 28 VDC METER INDICATES ZERO +/- 0.5 VDC VERIFY ELAPSED TIME METER NOT OPERATING.	

	35-169	MLFC	SLOT	02 FDSCU NO. 2 MODE SW - LOCAL MAIN POWER SW - OFF
			SLOT	MAIN POWER ON LITE OFF VERIFY 28 VDC METER INDICATES ZERO +/- 0.5 VDC VERIFY ELAPSED TIME METER NOT OPERATING
	35-170	MLFC	UFET	C14-590 JB5 SW - OFF JB6 SW - OFF MAIN POWER SW - OFF MAIN POWER CB - OFF
222	35-171	MLFC	MTPE	FC AND CRYO GSE POWER DOWN COMPLETE

35-171

END OF PROCEDURE 0033/0007A S/C - 017

SECTION III - TEST DATA SHEETS

INSTRUMENTATION DATA SHEETS

NOTE

ONLY ONE VALUE COLUMN NEED BE FILLED OUT.

MEAS. NO	RANGE	DECOM VALUE	CRT PG LN	CRT VALUE	CM METER	METER VALUE	REMARKS
CA0151A	0 +20		19 12L				
CA0152A	0 +20		19 12M				
CA0153A	0 +20		19 12R				
CA1502T	-260 +600		19 11L				
CA1505T	-260 +600		19 11M				
CA1509T	-260 +600		19 11R				
CA5811T	-109 +1000		9 01L				
CA5812T	-109 +1000		9 01M				
CA5813T	-109 +900		9 01R				
CA5814T	-109 +900		9 02L				
CA5815T	-109 +900		9 02M				
CA5816T	-109 +900		9 02R				
CA5817T	-109 +900		9 03L				
CA5818T	-109 +900		9 03M				

CA7822T	-109 +910	9 03R	
CC0175T	+32 +248	2 20L	
CC0176T	+32 +248	2 20M	
CC0177T	+32 +248	2 20R	
CC0178T	0 +250	9 05L	
CC0179T	0 +250	9 05R	
CC0191V	0 +40	1 16L	
CC0192V	0 +40	1 16M	
CC0193V	0 +40	1 16R	
CC0200V	0 +150	2 16L	M5 P18
CC0201V	0 +150	2 16M	M5 P18
CC0202V	0 +150	2 16R	M5 P18
CC0203V	0 +150	2 17L	M5 P18
CC0204V	0 +150	2 17M	M5 P18
CC0205V	0 +150	2 17R	M5 P18
CC0206V	0 +45	1 5L	M3 P18
CC0207V	0 +45	1 5R	M3 P18
CC0210V	0 +45	1 14L	M3 P18
CC0211V	0 +45	1 14M	M3 P18

CC0212V	0 +45	1 14R	M3 P18
CC0213F	+380 +420	2 19L	M6 P18
CC0217F	+380 +420	2 19R	M6 P18
CC0222C	0 +100	1 15L	M4 P18
CC0223C	0 +100	1 15M	M4 P18
CC0224C	0 +100	1 15R	M4 P18
CC0227V	0 +40	1 18L	M3 P18
CC0228V	0 +40	1 18R	M3 P18
CC0232V	0 +45	1 24	
CE0035P	0 +15	19 1	
CF0006P	+50 +1050	8 1	
CF0181T	0 +150	8 14L	
CF0245	-100 +200	9 15	
CF0481T	+40 +150	9 17	
CF0482T	+40 +150	9 18	
CF0483T	+40 +150	9 19	
CF0484T	+40 +150	9 20	
CF0549P	0 +2	9 21	
CF0550P	0 +50	9 22	

CH4100H		17 16L
CH4101H		
CH4102H		17 16M
CH4103H		
CH4104H		17 16R
CH4105H		
CR0001P	0 +5000	14 13L
CR0002P	0 +5000	14 13R
CR0003T	0 +300	14 14L
CR0004T	0 +300	14 14R
CR0005P	0 +400	14 15L
CR0006P	0 +400	14 15R
CR0011P	0 +400	14 16L
CR0012P	0 +400	14 16R
CR0514P	0 +250	9 06L
CR0518P	0 +250	9 06M
CR0520P	0 +250	9 06R
CR0525P	0 +250	9 04
CR2201T	-50 +250	9 07L

CR2202T	-50 +250	9 07M	
CR2203T	-50 +250	9 07R	
CR2204T	-50 +250	9 08L	
CR2205T	-50 +250	9 08M	
CR2206T	-50 +250	9 08R	
CS0100X	EVENT	9 12L	
CS0101X	EVENT	9 12R	
LS0090X	EVENT	9 10L	
LS0091X	EVENT	9 10R	
SA2360T	-100 +200	ACE METER A18A2A3M1	
SA2361T	-100 +200	ACE METER A18A2A3M2	
SR7125T	0 +500	16 21	
SR7137T	0 +500	16 22	
SA2366T	-100 +200	ACE METER A18A2A4M1	
SC2081T	+150 +250	13 5L	P18 M2
SC2082T	+150 +250	13 5M	P18 M2
SC2083T	+150 +250	13 5R	P18 M2
SC2084T	+80 +550	13 6L	P18 M2

SC2085T	+80 +550	13	6M	P18 M2
SC2086T	+80 +550	13	6R	P18 M2
SC2113C	0 +100	1	9L	P18 M4
SC2114C	0 +100	1	9M	P18 M4
SC2115C	0 +100	1	9R	P18 M4
SP0001P	0 +5000	14	10L	
SP0002T	-100 +200	14	11L	
SP0003P	0 +300	14	3P	P20 M2
SP0006P	0 +300	14	3L	P20 M2
SP0009P	0 +300	14	4R	
SP0010P	0 +300	14	4L	
SP0020T	0 +500	9	09L	
SP0050T	-250 +2500	9	09R	
SP0600P	0 +5000	14	10R	
SP0601P	0 +5000	14	11R	
SP0661P	0 +150			
SR5001P	0 +5000	14	17L	M3B P12

SR5002P	0 +5000	14 20L	M3B P12
SR5003P	0 +5000	14 17R	M3B P12
SR5004P	0 +5000	14 20R	M3B P12
SR5005T	-100 200	14 18L	
SR5007T	-100 200	14 18R	
SR5006	-100 200	14 21L	
SR5008T	-100 200	14 21R	
SR5065T	0 +300	14 23L	M3A P12
SR5066T	0 +300	14 24L	M3A P12
SR5067T	0 +300	14 23R	M3A P12
SR5068T	0 +300	14 24R	M3A P12
SR5729P	0 +400	14 19L	M2B P12
SR5776P	0 +400	14 22L	M2B P12
SR5817P	0 +400	14 19R	M2A P12
SR5830P	0 +400	14 22R	M2A P12
SS0120X	EVENT 400	9 11L	
SS0121X	EVENT 400	9 11R	

SCS DATA TABLES - PRECOUNT

TABLE I - PARTIAL POWER ON, SENSORS OFF, MONITOR MODE

DATE AND TIME

PARAMETER	PITCH	YAW	ROLL
R/G TM 024 (P17-2)			
R/G NULL 045 (P17-3)			
TOTAL ERROR 060 (P17-8)			
RATE ERROR 050 (P17-12)			

TABLE II - PARTIAL POWER ON, RATE GYROS ON, BACK-UP RATE OFF, MONITOR MODE

DATE AND TIME

PARAMETER	PITCH	YAW	ROLL
ROG TM 024 (P17-2)			
R/G NULL 045 (P17-3)			
TOTAL ERROR NULL 660 (P17-8)			
RATE ERROR 050 (P17-12)			

TABLE III - PARTIAL POWER ON, RATE GYROS ON, BMAGS OFF, BACKUP RATE OFF, MONITOR MODE

DATE AND TIME _____

PARAMETER	PITCH	YAW	ROLL
ATT INT SUM 067 (P18-6)			XXXX
ATT ERROR 070 (P17-7)			
ATT ERROR 075 (P17-5)			
ATT ERROR NULL 315 (P17-6)			

TABLE IV - PARTIAL POWER ON, RATE GYROS ON, BMAGS ON, BACKUP RATES OFF, MONITOR MODE

DATE AND TIME _____

PARAMETER	PITCH	YAW	ROLL
TOTAL ERROR 060 (P17-8)			
ATT ERROR 070 (P17-7)			
ATT ERROR NULL 315 (P17-6)			
ATT GYRO 075 (P17-5)			
ATT INT SUM 067 (P18-6)			XXXX

TABLE V - PARTIAL POWER ON, RATE GYROS ON, RMAGS ON, BACKUP RATES ON, MONITOR MODE

PARAMETER	DATE AND TIME PITCH	YAW	ROLL
RATE ERROR 050 (P17-12)			
ATT ERROR 070 (P17-7)			
R/G TM 024 (P17-2)			
ATT INT SUM 067 (P18-6)			XXXX

SCS DATA TABLES - COUNT

TABLE I - PARTIAL POWER ON, SENSORS OFF, MONITOR MODE

DATE AND TIME _____

PARAMETER	PITCH	YAW	ROLL
R/G TM 024 (P17-2)			
R/G NULL 045 (P17-3)	XXXX	XXXX	XXXX
TOTAL ERROR 060 (P17-8)	XXXX	XXXX	XXXX
RATE ERROR 050 (P17-12)			

TABLE II - PARTIAL POWER ON, RATE GYROS ON, BACK-UP RATE OFF, MONITOR MODE

DATE AND TIME _____

PARAMETER	PITCH	YAW	ROLL
R/G TM 024 (P17-2)			
R/G NULL 045 (P17-3)	XXXX	XXXX	XXXX
TOTAL ERROR NULL 660 (P17-8)	XXXX	XXXX	XXXX
RATE ERROR 050 (P17-12)			

TABLE III - PARTIAL POWER ON, RATE GYROS ON, BMAGS OFF, BACK-UP RATE OFF, MONITOR MODE

DATE AND TIME

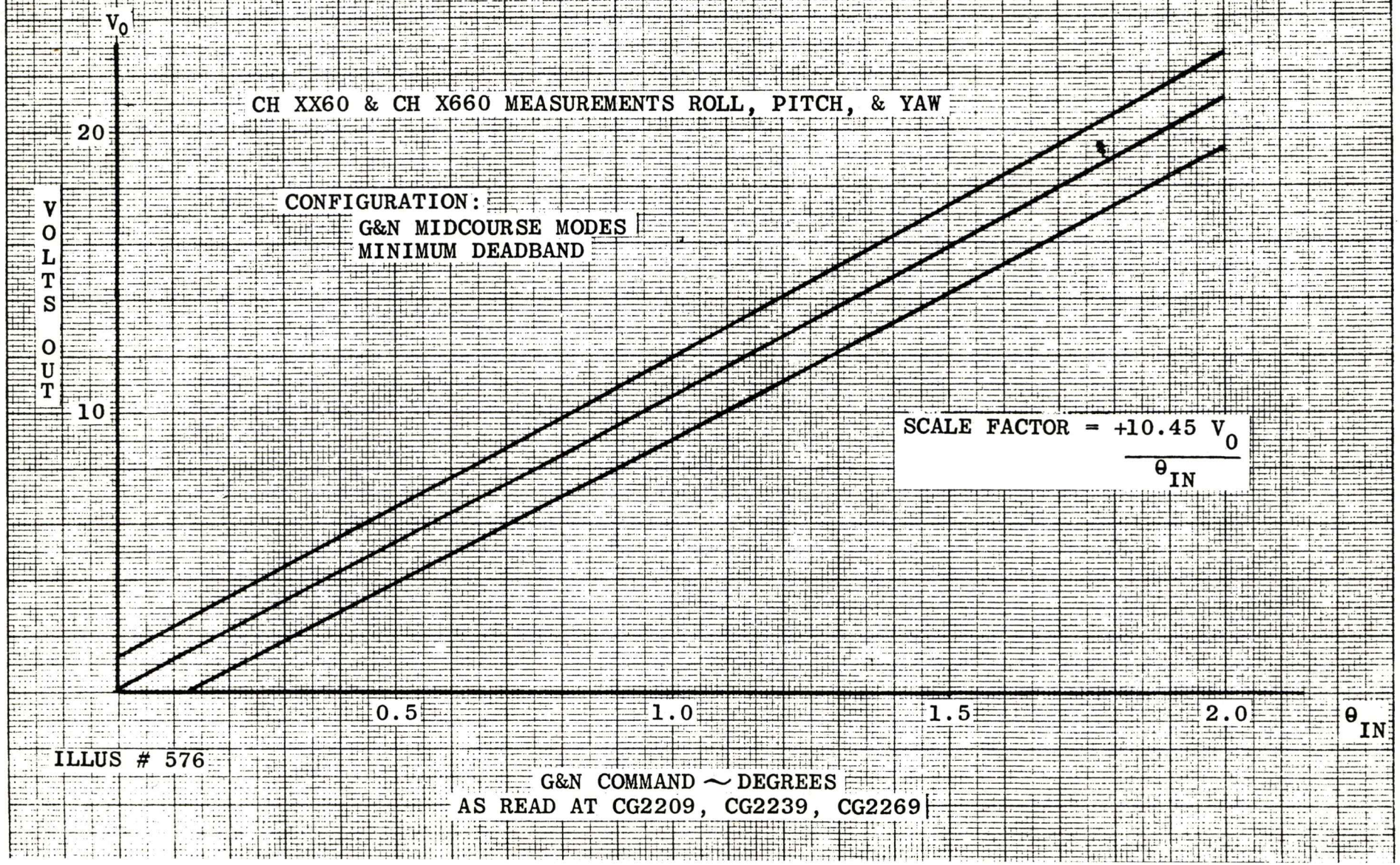
PARAMETER	PITCH	YAW	ROLL
ATT INT SUM 067 (P18-6)			
ATT ERROR 070 (P17-7)			
ATT ERROR 075 (P17-5)			
ATT ERROR NULL 315 (P17-6)			

TABLE IV - PARTIAL POWER ON, RATE GYROS ON, BMAGS ON, BACK-UP RATES OFF, MONITOR MODE

DATE AND TIME

PARAMETER	PITCH	YAW	ROLL
TOTAL ERROR 060 (P17-8)	XXXX	XXXX	XXXX
ATT ERROR 070 (P17-7)	XXXX	XXXX	
ATT ERROR NULL 315 (P17-6)	XXXX	XXXX	XXXX
ATT GYRO 075 (P17-5) ATT INT SUM 067 (P18-6)			XXXX

G-N/SCS CHART #1



ILLUS # 576

SECTION V

5.0 EMERGENCY PROCEDURES

THE FOLLOWING PROCEDURES WILL BE USED TO DIRECT EMERGENCY ACTIONS..

5.1 FIRE IN THE COMMAND MODULE

5.2 FIRE IN THE SERVICE MODULE

5.3 FIRE IN THE LUNAR MODULE

5.4 EMERGENCY SHUTDOWN (SC ON EXTERNAL POWER)

5.5 EMERGENCY SHUTDOWN (SC ON INTERNAL POWER)

THE DECISION TO IMPLEMENT THESE PROCEDURES IS THE RESPONSIBILITY OF THE TEST CONDUCTOR. IN THE EVENT OF AN EMERGENCY, THE TYPE OF EMERGENCY WILL BE ANNOUNCED OVER THE OIS AND THE PA SYSTEM.

ALL EMERGENCY ACTIONS WILL BE PERFORMED CONCURRENTLY EXCEPT AS NOTED FOR THAT PARTICULAR CONDITION

5.1 FIRE IN THE COMMAND MODULE

SC02
EXIT C/M TO WHITE ROOM
ASSIST IN FIRE FIGHTING

SC01
EXIT C/M TO WHITE ROOM
ASSIST SC02, ETC, EXIT C/M
REPORT ''C/M CLEAR'' TO SPAD
ASSIST IN FIRE FIGHTING

SPAD
VERIFY SC01 AND SC02 OUT OF C/M
DIRECT FIRE FIGHTING
SWITCH TO COMMAND OIS CHANNEL AND MAINTAIN
COMMUNICATION WITH CONTROL ROOM
DIRECT FOLLOW UP ACTIONS (EVACUATION,
SHUTDOWN OR RECOVERY)

MTPE
DIRECT SYSTEM MONITORING
DIRECT EMERGENCY SHUTDOWN
NOTIFY FIRE DEPT AND KSC SAFETY
ADIVSE P/L TO IMPLEMENT FOLLOW UP ACTIONS
IF SC ON EXTERNAL POWER, PERFORM SECTION 5.4
IF SC ON INTERNAL POWER, PERFORM SECTION 5.5

5.2 FIRE IN THE SERVICE MODULE

SC02 EXIT C/M TO UMBILICAL TOWER

SC01 ASSIST SC02, ETC, TO EXIT C/M
EXIT C/M TO UMBILICAL TOWER
REPORT ''C/M CLEAR'' TO SPAD
MONITOR OIS COMMAND CHANNEL FOR FURTHER DIRECTION

SPAD VERIFY SC01 AND SC02 OUT OF C/M
DIRECT FIRE FIGHTING
SWITCH TO OIS COMMAND CHANEL AND
MAINTAIN COMMUNICATIONS WITH CONTROL ROOM
DIRECT FOLLOW UP ACTIONS (EVACUATION,
SHUTDOWN OR RECOVERY)

MTPE DIRECT CONTROL ROOM MONITORING
DIRECT EMERGENCY SHUTDOWN
NOTIFY FIRE DEPT AND KSC SAFETY
ADVISE P/L TO IMPLEMENT FOLLOW UP ACTIONS
IF SC ON EXTERNAL POWER, PERFORM SECTION 5.4
IF SC ON INTERNAL POWER, PERFORM SECTION 5.5

5.3 FIRE IN THE LUNAR MODULE

SC02 EXIT C/M TO UMBILICAL TOWER

SC01 ASSIST SC02, ETC, TO EXIT C/M
EXIT C/M TO UMBILICAL TOWER
REPORT ''C/M CLEAR'' TO SPAD
MONITOR OIS COMMAND CHANNEL FOR FURTHER DIRECTION

SPAD VERIFY SC01 AND SC02 OUT OF C/M
DIRECT SERVICE STRUCTURE AND SWING-ARM EVACUATION
SWITCH TO OIS COMMAND CHANNEL AND MAINTAIN COMMUNICATIONS WITH CONTROL ROOM
DIRECT FOLLOW UP ACTIONS (RECOVERY, ETC) WHEN ADVISED FROM THE CONTROL ROOM

MTPE DIRECT CONTROL MONITORING
DIRECT EMERGENCY SHUTDOWN
NOTIFY FIRE DEPT AND KSC SAFETY
ADVISE P/L TO IMPLEMENT FOLLOW UP ACTIONS
IF SC ON EXTERNAL POWER PERFORM SECTION 5.4
IF SC ON INTERNAL POWER PERFORM SECTION 5.5

5.4 EMERGENCY SHUTDOWN (SC ON EXTERNAL POWER)

NOTE

ACCOMPLISH STEP (A) PRIOR TO ANY OTHER STEP.

(A) SC02 PANEL 22
GUIDANCE AND NAVIGATION
IMU MNA (CB59) - OPEN
IMU MNB (CB58) - OPEN

PANEL C14A16
ALL BREAKERS OPEN

PANEL 25
FDS 2 BAT C (CB54) - OPEN

SC01 PANEL 8 (SCS CHANNEL SWITCHES)
A AND C ROLL, B AND D ROLL, PITCH
YAW - OFF

PANEL C14A15 (MCP PLATFORM)
ALL BREAKERS OPEN

MPWR PS A TO BUS A - OFF (R101) KC7024
PS B TO BUS B - OFF (R101) KC7034

MPWR S/M MTR SWITCH CLOSE - OFF KC7636
(R102)

CSTC CSM EMERGENCY POWER SWITCH - ON

MACE R112 = 1010 IS INSERTED
SYNC ACQUIRED

UFET C34-655 HI VOLTAGE PS
BAT BACKUP SW - OFF
PRESS AC INPUT OFF SW

SCET S23-114 (PTC)
PWR ON/OFF - OFF

NOTE

RE-ESTABLISH IMU HEATER POWER WITHIN 15 MINUTES IF POSSIBLE.

5.5 EMERGENCY SHUTDOWN (SC ON INTERNAL POWER)

SC01 - PANEL 18
FUEL CELL
MAIN BUS A
1 (S12) - OFF
2 (S13) - OFF
3 (S14) - OFF

MAIN BUS B
1 (S16) - OFF
2 (S17) - OFF
3 (S18) - OFF

SC02 - PANEL C14A16
ALL CIRCUIT BREAKERS - OPEN

SC02 - PANEL C14A15
ALL CIRCUIT BREAKERS - OPEN

SC02 - PANEL 25
EDS 2 BAT C (CB54) - OPEN

NOTE

WHEN CM ACCESS IS NOT AVAILABLE, DISREGARD SC01 AND SC02 CALLOUTS. MSTC TO ACQUIRE FUEL CELL PERSONNEL CONCURRENCE PRIOR TO DIRECTING THE FOLLOWING STEPS.

MSTC CSAT SM FC1 BUS AR DISC SW - ON
SM FC2 BUS AR DISC SW - ON
SM FC3 BUS AR DISC SW - ON

5.6 G AND N EMERGENCY PROCEDURE

THIS PROCEDURE MUST BE EXECUTED WITHIN 15 MINUTES ANYTIME THAT SPACECRAFT BUS POWER IS LOST AFTER T-49 HOURS.

5.6.1 SC01 PANEL 22
IMU MNA (CB59) OPEN
IMU MNB (CB58) OPEN
IMU HTR MNA (CB61) OPEN
IMU HTR MNB (CB60) OPEN

5.6.2 SC02 REMOVE SHORTING PLUG FROM J2 OF TRAY 7.

CONNECT CABLE (STOW 50 IN WHITE ROOM)
KSC - W150 TO J2 OF TRAY 7.

5.6.3 MEPS VERIFY NO BUS PWR RESTORED

5.6.4 SPAD PTC TO ON. TIME _____ Z

RECORD TEMP READING
_____ DEG.

RESET ALARM AND RECORD TIME _____ Z
WHEN TEMP REACHES _____
130 DEG F

5.7 LIQUID HYDROGEN SYSTEM

NOTE

IN EVENT OF A SERIOUS CGSS MALFUNCTION, UNLESS OTHERWISE DIRECTED BY THE SYSTEM ENGINEER, IMMEDIATELY ACCOMPLISH THE FOLLOWING..

5.7.1 MLFC MHFC H2 AUTO DETANK (C052) - ON

MHFC 3300101301 IS INSERTED

5.7.2 MLFC MONITOR CRT (P11-19) DURING H2 DETANK. A VENT 1/P DISPLAY MAY APPEAR BRIEFLY FOLLOWED BY A BRIEF VENT COMPLETE. FOLLOWING THIS H2 AUTO DETANK PURGE 1/P WILL APPEAR. A PROGRAM TIME DELAY OF 10 MINUTES IS ALLOWED FOR DETANKING AND INERT GAS PURGE. WHEN H2 TK 1 AND H2 TK 2 QUANTITY READING (P11-15) HAVE BEEN STABILIZED AT LOW VALUES FOR A MINIMUM OF 5 MINUTES DURING THE PURGE I/P CYCLE, MLFC MAY TERMINATE DETANKING PRIOR TO AUTOMATIC PROGRAM EXIT BY SENDING H2 AUTO DETANK DE-ACT ON C052 WITH INSEPT 330 0101 300.

5.7.3 MLFC MHFC VERIFY THE FOLLOWING

H2 LV5 OPEN LITE ON	FC5378
H2 LV6 OPEN LITE ON	FC5380
H2 LV7 OPEN LITE ON	FC5382
H2 LV8 OPEN LITE ON	FC5384
026 SC TNKS VT LITE ON	FC5163

NOTE

WHEN CRT (P11-19) READS H2 AUTO DETANK - PROGRAM COMPLETE PERFORM THE FOLLOWING

5.7.4 MLFC MHFC VERIFY THE FOLLOWING

H2 LV5 CLOSED LITE ON	FC5379
H2 LV6 CLOSED LITE ON	FC5381
H2 LV7 CLOSED LITE ON	FC5383
H2 LV8 CLOSED LITE ON	FC5385
026 SC TNKS VT LITE OFF	FC5163

NOTE

CONTINUE TO MONITOR H2 T1 AND T2 PRESSURES PERIODICALLY (P11-17). IF PRESSURE BUILD-UP IS NOTED PERFORM THE FOLLOWING AS REQD TO VENT DOWN PRESSURE — SF0039 SF0040

5.7.5	MLFC	MHFC	SC-HV1 LV6 OP/LC (R041) - ON	KC7570
		MHFC	H2 LV6 OPEN LITE ON	FC5380
5.7.6	MLFC	MHFC	SC-HV2 LV8 OP/CL (R041) - ON	KC7572
		MHFC	H2 LV8 OPEN LITE ON	FC5382
5.7.7	MLFC	MHFC	026 PV5 VENT O2 TKS (R032) - ON	KC7578
		MHFC	026 SC THKS VT LITE ON	FC5163
5.7.8	MLFC	MHFC	SC-HV1 LV6 OP/CL (R041) - OFF	KC7570
		MHFC	H2 LV6 CLOSED LITE ON	FC5381
5.7.9	MLFC	MHFC	SC-HV2 LV8 OP/CL (R041) - OFF	KC7572
5.7.10	MLFC	MPWR	STOP H2 CRYO MODES (R073) - ON	KC7472
		MHFC	026 SC TANKS VT LITE OFF	FC5163

5.8 LIQUID OXYGEN SYSTEM

5.8.1 MLFC MHFC 02 AUTO DETANK (C052) - ON

MHFC 3300102301 IS INSERTED

5.8.2 MLFC MONITOR CRT (P11-24) DURING 02 DETANKING. A VENT 1/P DISPLAY MAY APPEAR BRIEFLY FOLLOWED BY A BRIEF VENT COMPLETE. FOLLOWING THIS 02 AUTO DETANK PURGE 1/P WILL APPEAR A PROGRAM TIME DELAY OF 10 MINUTES IS ALLOWED FOR DETANKING AND INERT GAS PURGE
WHEN 02 TK 1 AND 02 TK 2 QUANTITY READING (P11-15) HAVE BEEN STABILIZED AT LOW VALUES FOR A MINUMUM OF 5 MINUTES DURING THE PURGE I/P CYCLE, MLFC MAY TERMINATE DETANKING PRIOR TO AUTOMATIC PROGRAM EXIT BY SENDING 02 AUTO DETANK DE-ACT ON C052 WITH INSERT 330 0102 300.

5.8.3 MLFC MHFC VERIFY THE FOLLOWING

02 LV5 OPEN LITE ON	FC5408
02 LV6 OPEN LITE ON	FC5410
02 LV7 OPEN LITE ON	FC5412
02 LV8 OPEN LITE ON	FC5414
032 SC TNKS VT LITE ON	FC5164

NOTE

WHEN CRT (P11-24) READS 02 AUTO DETANK - PROGRAM COMPLETE PERFORM THE FOLLOWING

5.8.4 MLFC MHFC VERIFY THE FOLLOWING

02 LV5 CLOSED LITE ON	FC5409
02 LV6 CLOSED LITE ON	FC5411
02 LV7 CLOSED LITE ON	FC5413
02 LV8 CLOSED LITE ON	FC5415
032 SC TNKS VT LITE OFF	FC5164

NOTE

CONTINUE TO MONITOR 02 T1 AND T2 PRESSURES PERIODICALLY (P11-22). IF PRESSURE BUILDUP IS NOTED PERFORM THE FOLLOWING AS REQD TO VENT DOWN PRESSURE — SE0037 SE0038

5.8.5	MLFC	MHFC	SC-0V1 LV6 OP/CL (R040) - ON	KC7593
		MHFC	02 LV6 OPEN LITE ON	EC5410
5.8.6	MLFC	MHFC	SC-0V2 LV8 OP/CL (R040) - ON	KC7596
		MHFC	02 LV8 OPEN LITE ON	EC5414
5.8.7	MLFC	MHFC	032 PV5 VENT 02 TKS (R037) - ON	KC7579
		MHFC	032 SC TNKS VT LITE ON	EC5164
5.8.8	MLFC	MHFC	SC-0V1 LV6 OP/CL (R040) - OFF	KC7593
		MHFC	02 LV6 CLOSED LITE ON	EC5411
5.8.9	MLFC	MHFC	SC-0V2 LV8 OP/CL (R040) - OFF	KC7596
		MHFC	02 LV8 CLOSED LITE ON	EC5415
5.8.10	MLFC	MPWR	STOP 02 CRYO MODES (R069) - ON	KC7485
		MHFC	032 SC TNKS VT LITE OFF	EC5164