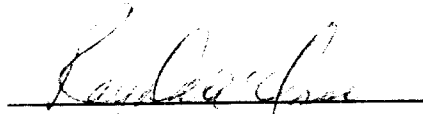


# SMS Systems Instructor Handbook



Robert Williams  
Head, Orbiter Systems Section



Renato D. Dell'Osso  
Chief, Systems Training Branch

**Mission Operations Directorate  
Training Division  
Flight Training Branch**

**July 1985**

**Patrick G. Yarbrough**

# Section 1: SMS Systems Instructor Overview

After assignment to a training team the SMS systems instructor is responsible for flight crew training for all phases of flight. Specifically the systems instructor is responsible for:

- Researching and preparing material for conducting crew briefings concerning systems procedures
- Writing simulation scripts to achieve specific training objectives
- Evaluating the success of crew training and noting problems
- Participating as a member of an SMS training team for nonintegrated simulations and support of a simulation control area (SCA) team for integrated simulations.
- Supporting new personnel during on job training (OJT) periods.

After being certified, a systems instructor will possess an intimate working knowledge of the following Orbiter systems:

- Electrical power system (EPS)
- Environmental control and life support systems (ECLSS)

- Auxiliary power unit/hydraulic (APU/HYD)
- Mechanical (MECH)
- Caution and Warning (C&W)
- Communications (COMM) Note: nonintegrated only
- Instrumentation (INST) Note: nonintegrated only

## Section 2: Definitions

Before we get started into the handbook, it might be helpful to list some definitions of the more common words used at the SMS.

AB term	abnormal termination; an unplanned termination of a simulation
assigned crew	a crew that has been selected to fly a specific mission
auto switch reset	does the same as a reset, except it will configure all switches in the software in their proper position (the actual hardware will not move)
back room	staff support room for the Mission Operations Control Room (MOCR); mission planning support room, (MPSR)
call-sign alphabet	Alpha, Bravo, Charlie, Delta, Echo, Foxtrot, Golf, Hotel, India, Juliet, Kilo, Lima, Mike, November, Oscar, Papa, Quebec, Romeo, Sierra, Tango, Uniform, Victor, Whiskey, X-ray, Yankee, Zulu

consumables

substances that are used during a mission that are not replenishable, i.e. O<sub>2</sub>, H<sub>2</sub> and auxiliary power unit (APU) fuel

“dancing” DI

oscillating input continuously switching positions

data base

storage of all terms used in a simulation

data store

starting point for specific flight objectives, i.e. payload deploys, 200K entries, and any other desired starting point for which a reset point does not exist

delta reset

allows corrections to initial load, such as accumulator quantity or cryo usage; it will be used in a reset to give proper indications of consumables

DI

discrete input

D/O

deorbit

dummy loads	a simulated load placed on a bus to give proper indications during a simulation	frame job transgression	failure of computer to process required tasks in allotted time
EECOM	front room position responding to thermal, life support, and electrical Orbiter systems	freeze	action taken by the instructor or operator to hold the simulation at that instant; restartable
EECOM monitor	the systems person responsible for training EECOM and RMU flight controllers	front room	Mission Operations Control Room (MOCR); also called Flight Control Room (FCR)
EI	entry interface	GMT	Greenwich mean time, Zulu time
engineering mode	operational mode which allows any change to be done, i.e. look and enters	host	the main computer that supports the simulation
FB	fixed base, training station that has no motion capability	integrated sim	a joint simulation between building. 5 and the MOCR, these simulations are intended to be as real as possible
flight rules	a set of guidelines (rules) that define failure modes and dictate the appropriate responses to them	L/O	lift off
flight software	the package of Orbiter onboard software used for the flight	load/SMS "funny"	a particular quirk that has been noted to happen without any explanation
flight specific procedures	in effect for a particular flight; these procedures may change from flight to flight depending on crew size, payloads, etc.	look and enters (L/E)	all parameters in the model are given IDs, (mnemonics) the action to change a parameter is called a look and enter



MB	motion base, training station that has the capability of movement for training the crew to motion clues	PSO	parallel switch override, using the light pen the instructor can override the switch position to a new desired position
MET	mission elapsed time	purple cursor	indication of inability to transmit cursor
MSID code	parameter number measure stimulus identification	reload	action taken by the operator to reinitialize a sim, this procedure has the operator remove software and <i>reload</i> the software back into the system
NSP	network signal processor, formats data to be downlinked from the Orbiter to ground	reset	an initialization by the SMS operator to return the simulator to point in time in the flight; all parameters are set to the proper value for that point; a reset will not reconfigure switches out positioncontinuance
NSS	network simulation system, responsible for the simulation of network command and data flow during simulations	reset point	predefined starting point for simulation runs, 4 such points are assigned to each load; T - 25, T + 1HR, D/O-4HR and EI
<b>u</b> operator	person responsible for the simulator, initializing runs and resets; responsible for hardware problems	RMU	front room position responding to remote manipulation, mechanical, upper stage
PIR/DR	problem incident report/discrepancy report, unacceptable behavior of the software of a load, a report is written up by the instructor against the problem		
POCC	Payload Operation Control Center		

run	start-up of the simulation and its continuance	TMBU	table maintenance block update, sends to the GPC stimulus for various software programs
safestore	operation where data is saved at intervals, so if the system goes down there exists a point of return without having to completely start over	training load	Shuttle simulator software developed for training
SCA	simulation control area; where instructor and SIM SUP direct training of flight controllers	training mode	operational mode where instructors can only change values on interactive Aydin pages
SSR	simulation software requirement, request for new capabilities in the SMS	training script	a document developed through a team effort to place the Orbiter in a condition such that a desired procedure is carried out; these scripts are used during a session as the guideline for training
stand alone sim	a simulation in which only the instructor station is used for training; feedback from the sim is given at all times	visual/DIG	digital image generator, simulation of visual cues for use by the crew
step-ahead	action taken by the operator to move through the timeline quickly to a desired point in the mission		
TIG	time to ignition		
TM	telemetry, data that is downlinked		

## Section 3: SMS Systems Instructor Responsibilities

An SMS systems instructor should be proficient in the operation of the console components: Aydın keyboard, visuals and graphics displays, and hardcopy machines. The efficiency of the instructor will increase as more time is spent working with this equipment.

The SMS systems instructor should be familiar with communication loop discipline, which means using correct call signs and keeping the discussion on a professional plane. When addressing the crew, call to person and then identify yourself. For example, say "PLT systems." This tells the pilot that the systems instructor wishes to communicate with him. Also, during integrated sims the SMS instructor should use care when communicating with the crew and do so only if instructed by the EECOM monitor.

The instructor should have knowledge of vehicle and flight specific mission rules that involve Orbiter systems. When working with an assigned crew the SMS systems instructor should understand all flight rules for that mission.

Instructors will be familiar with all flight data file books.

Systems instructors will support the crew in flight data file procedures clarification. Whenever there is a question that can not be readily answered, the systems instructor will take responsibility in researching the correct solution.

The systems instructor will be proficient in the activation of malfunctions according to the script or through real time coordination with the lead. The systems instructor should be capable of calling up a specific malfunction within a limited time frame. The ability to follow the crew actions by monitoring the displays and crew conversation helps the instructor in pointing out mistakes made by the crew.

The systems instructor will actively take part in the crew debriefing following a SMS session. The instructor having followed the crews actions will be capable of pointing out missed and improperly completed procedures. During an integrated debriefing the systems instructor will support the EECOM monitor during debriefing of the flight controllers.

Systems instructors are responsible for attending team meetings to plan training and to write scripts. If the instructor cannot make it to the meeting or training session, it will be his/her responsibility to find a replacement. In the event a replacement is necessary, both the team lead and systems SMS group lead should be notified in advance.

Reporting model peculiarities, improvements, and problems to the systems group is both necessary and beneficial to all systems instructors. Such reports are extremely helpful in keeping the instructor staff aware of model peculiarities.

SMS instructor will author PIRs on things that happen or do not happen due to load errors or software problems. PIRs should be written as soon as possible after they occur.

2

# Section 4: Aydin Displays

The displays listed below are the Aydin pages that are used by the SMS systems instructor. Each one will be presented in the following pages. More complex displays will include a brief explanation of their parameters. Displays that cover more than one subject will be presented only once.

Aydin pages are used primarily for monitoring the health of the Orbiter systems, during a malfunction and during nominal flight. There are some pages used to massage data to simulate conditions desired by the training team. For example, ERLD, is used to cold soak the radiators by manipulation of parameter temperatures.

## Aydin Pages Orbiter System Monitor Displays

APU	S310, S311, HASM, CONS
HYD	S305, S306, S307, S308, HPSM
ATMOS	S400, EGSS, EPHX
Fans	S400, EABY, EPHX
H <sub>2</sub> O Loops	S401, EWLS
Freon Loops	S401, EAV2, EFEF
RADS	ERLD
RADS Deploy	HBR1
FES	EFTE
NH <sub>3</sub> BLR	S402, EFAB
H <sub>2</sub> O TKS	S402, EAV1, EAPW, CONS
PLBDs	S300, HBD1, HBD2, HBR1
FUEL CELLS	S405, DFC1, DFC2, DFC3, DFSM, DGDF
CRYOs	S405, S406, DGOA, DGDF
EPS	S407, DDDD, DLDL, DDLS
C&W	S415, S430 - 437
VENTS	S300, EAV3
ET DOORS	S300
LNDG GEARS	FG01
BRAKES/NWS	S301

S310  
 A05 NIGHT MET 024:57:59 RUN SGMT 080:02:02:16 UP APU OPS 1 OF 2 S310

RESET POINT 11

APU OPS 1

	FUEL TANKS			VALVES			PC	GAS GEN/TURB			
	1	2	3	1	2	3		1	2	3	
N2 P	223.7	220.1	221.6	ISO	CL	CL	CL	0.	0.	0.	
N2 T	59.0	59.4	59.1	PRI				T BED	552.	558.	566.
FUEL P	223.7	220.1	221.6	CNTL	OP	OP	OP	P FUEL	224.	220.	222.
FUEL T	59.0	59.4	59.1	SEC				TURB SPEED %	0.	0.	0.
FUEL %	78.	78.	78.	CNTL	CL	CL	CL	EXH GAS T (EGT)	43.	43.	43.
GAGE %	92.	92.	92.	N2	CL	CL	CL	HTR A	ON	ON	ON
FUEL MASS RATE	274.	272.	272.	WTR BLR BY	OFF	OFF	OFF	HTR B	OFF	OFF	OFF
\$/SEC	0.000	0.000	0.000	PASS	CL	CL	CL				
XDCRS P-A	223.7	220.1	221.6								
XDCRS T-A	59.0	59.4	59.1								
	LUBE OIL/GEAR BOX			CONTROLLER			MISCELLANEOUS				
	1	2	3	1	2	3	1	2	3		
OUTLET OIL P	25.	25.	25.	ON/OFF	OFF	OFF	OFF	FREEZE T	OFF	OFF	OFF
OUTLET OIL T	62.	62.	60.	READY	OFF	OFF	OFF	TNK LINE HTR	OFF	OFF	OFF
INLET OIL P	25.	25.	25.	AUTO S/D	OFF	OFF	OFF	L/O LINE HTR	OFF	OFF	OFF
INLET OIL T	62.	62.	60.	START	OFF	OFF	OFF	HYD READY	OFF	OFF	OFF
N2 P	234.	235.	238.	START OVRD	OFF	OFF	OFF	SPEED S/D			
N2 MASS	.007	.007	.007	NORM	*	*	*	CTCH BTL P	14.3	14.3	14.3
GEAR BOX BRG T	173.	178.	185.	HIGH				CTCH BTL MASS	0.00	0.00	0.00
OIL MASS	5.2	5.2	5.2	PWR SW	OFF	OFF	OFF	E G T C1W			
GEAR BOX P	25.	25.	25.	PWR L/O T C1W	OFF	OFF	OFF				

10

S311

S311

1509

A05 NIGHT MET 024:58:16 RUN SGMT 080:02:02:33

PU OPS 2 OF 2

S311

RESET POINT 11

APU OPS 2

FUEL PUMP/VALVE COOLING

	APU 1		APU 2		APU 3	
FPB T	106.		109.		114.	
FPO T	101.		104.		110.	
PRI VLV	CL	SW A OFF	CL		CL	
SEC VLV	CL	SW B OFF	CL		CL	
PRI LN T	75.	HTR A B	75.	HTR A B	74.	HTR A B
SEC LN T	74.	HTR A B	75.	HTR A B	75.	HTR A B
PRI TANK	VLV CL PR 44.	H2O 14.0	GN2 .24000 T	74.	HTR A B	
SEC TANK	CL	45.	21.0	.22000	74.	A B

GAS GEN/INJ COOLING

GGB T	553.	ST/OV OFF	559.	ST/OV OFF	565.	ST/OV OFF
INJ T	553.	TMR 0.	559.	TMR 0.	565.	TMR 0.
VLV	CL		CL		CL	
LINE T	75.	HTR A B	75.	HTR A B	75.	HTR A B
TANK		PR 90.	H2O 6.0	GN2 .06843 T	74.	HTR A B

ALL TEMPS DEG F

ALL PRESS PSIA

11

# HASM

HASM

1509

AOS NIGHT MET 024:58:43 RUN SGMT 080:02:03:00 UP PU SUMMARY

HASM

## APU SUMMARY

RESET POINT 11

	APU NO. 1	APU NO. 2	APU NO. 3
FUEL TANK TEMP	58.867	59.309	58.917
FUEL TANK PRESS	223.641	220.062	221.508
FUEL TANK MASS	274.000	272.000	272.000
FUEL TANK FLOW	0.000	0.000	0.000
OUT OF FUEL			
FUEL TANK VALVE	CLOSED	CLOSED	CLOSED
FUEL PUMP OUT P	223.641	220.062	221.508
FUEL PUMP FLOW	0.000	0.000	0.000
FUEL CONT VLV 1	OPEN	OPEN	OPEN
FUEL CONT VLV 2	CLOSED	CLOSED	CLOSED
GAS GEN PRESS	.000	.000	.000
GAS GEN TEMP	554.226	560.287	562.076
GAS GEN OUT TEMP	0.000	0.000	0.000
TURBINE POWER	0.000	0.000	0.000
GEAR BOX LOST P	0.000	0.000	0.000
RPM	0.0	0.0	0.0
RPM PERCENT	0.000	0.000	0.000
FUEL CONSUMED	0.000	0.000	0.000
EXHAUST GAS TEMP	41.917	41.917	41.917
EXHAUST GAS PRESS	.000	.000	.000
GEAR BOX PRESS	25.325	25.313	25.217
LOP FLOW	0.000	0.000	0.000
LOP OUT PRESS	25.325	25.313	25.217
LUBE OIL MASS	5.200	5.200	5.200
GEAR BOX OUT TEMP	174.668	179.095	186.793
LUBE OIL OUT TEMP	61.590	61.343	59.362
BEARING TEMP	174.829	179.256	186.956

21



CONS

CONS

1509

AOS NIGHT MET 024:59:00 RUN SGMT 080:02:03:17 FUEL CELL APU/HYD. CONS

ECLSS/FUEL CONS APU/HYD

LBS MASS	SYS 1	SYS 2	LOS MASS	SYS 1	SYS 2	SYS 3
H2O ACCUM	.814	.995	FUEL TK F	274.0	272.0	272.0
FR ACCUM	49.01	48.55	FUEL TK H	2.610	2.600	2.620
FR ACCUM GN2	.620	.520	APU GN2	.007	.007	.007
NH3 TANKS	49.41	49.41	APU OIL	5.20	5.20	5.20
	1-1	1-2	2-1	2-2		
N2 TANK GAS	66.0	66.0	66.0	66.0	HYD RES	287.6 226.2 235.9
	EMER O2 = 0.0				HYD GN2	.436 .436 .436
OABTR	O2 = 40.5	O2 = .4			N2B H2O	111.00 111.00 111.00
	N2 = 134.5	H2O = 1.4			N2B GN2	.128 .128 .128
	FC CRYO H2					
90.98	91.00	90.64	0.00	0.00		
	FC CRYO O2					
778.0	778.0	772.0	0.0	0.0		
	POT H2O TANKS					
H2O	A	B	C			
	103.7	87.9	157.0			
	D	E	F			
	157.0	0.0	0.0			
	WASTE H2O = 9.					

13

S305

S305

1509

A05 NIGHT MET 024:59:17 RUN SGMT 080:02:03:34 UP S305 HYDRAULICS 1-4

HYDRAULICS ( 1 OF 4 )

SS = HP

PWR SECT	HYD SYS		
	1	2	3
MN PUMP DEPRESS	OFF	OFF	OFF
SUP PRESS A PSIA	75.	75.	75.
SUP PRESS B PSIA	74.	75.	75.
MN PUMP RPM	0.	0.	0.
RSVR QTY %	59.	58.	56.
RSVR PRESS PSIA	75.	75.	75.
RSVR TEMP	64.	65.	67.
RSVR HYD LBM	32.	31.	30.
ACCUM GN2 P PSIA	2992.	3000.	3011.
FREON HX			
HYD FLUID OUT T	102.	102.	102.
HYD T CNTL VLV	OP	OP	OP
CIRC PUMP	OFF	OFF	OFF
CIRC PUMP P PSIA	75.	75.	75.
PRESS LN TEMP	102.	102.	102.
RETURN LN TEMP	64.	65.	67.
APU OIL TEMP	61.	61.	59.

ALL TEMPS DEG F

LG TEMP	HYD SYS		
	1	2	3
LG ISOL VLV	CL	CL	CL
LG UP CIRC VLV	CL		
MID FUS RET LN T	54.		
BK SW VLV LN T			
LH INBD T			53.
LH OTBD T		53.	
RH INBD T	53.		
RH OTBD T			53.

LG DEPLOY	
ARM RELAYS	RESET
DN RELAYS	RESET
UP/CIRC VLV	CL
ISOL VLV 1	CL
ISOL VLV 2	CL
ISOL VLV 3	CL
CONTR VLV	CL
DUMP VLV	CL

H

S305

1509

AOS NIGHT MET 024:59:42 RUN SGMT 000:02:03:59

S306 HYDRAULICS 2-4

HYDRAULICS ( 2 OF 4 )

MAIN ENGINES

	CTR ENG		TVC ACTUATORS		RIGHT ENG	
	P	Y	LEFT ENG P	Y	P	Y
ENGINE POS DEG	0.0	0.0	0.0	0.0	0.0	0.0
ENGINE POS RATE DEG/SEC	0.0	0.0	0.0	0.0	0.0	0.0
ACTUATOR SW VLV						
ACTIVE HYD SYS	*1	*3	*2	*1	*3	*2
SECONDARY SYS	3	1	1	2	2	3

HYD SYS  
1 2 3

MPS TVC ISOL VLV	CL		
CTR ENG	CL		
LEFT ENG		CL	
RIGHT ENG			CL

ENG CONTR ISOL VLV	CL		
CTR ENG	CL		
LEFT ENG		CL	
RIGHT ENG			CL

HYD SYS  
1 2 3

CONTR PRESS LN TEMP (DEG F)			
CTR ENG	53.		
LEFT ENG		53.	
RIGHT ENG			53.

CONTR RTN LN TEMP (DEG F)			
CTR ENG	53.		
LEFT ENG		53.	
RIGHT ENG			53.

15

S305

1509

AOS NIGHT MET 024:59:54 RUN SGM T 000:02:04:11 S307 HYDRAULICS 3-4

HYDRAULICS ( 3 OF 4 )

ELEVONS

	LOTBD	LINBD	RINBD	ROTBD
ACTR HTR	OFF	OFF	OFF	OFF
ACTR T DEG F	53.	53.	53.	53.
SW VLV SYS 1 RTN T	53.			
SW VLV SYS 3 RTN T		53.		
SW VLV SYS 2 RTN T			53.	
SW VLV SYS 3 RTN T				53.
SW VLV STATUS				
ACTIVE SYS	*3	*2	*3	*2
1 ST STDBY SYS	1	1	1	1
2 ND STDBY SYS	2	3	2	3
ELEVON POS DEG	0.	0.	0.	0.
ELEVON RT DEG/SEC	0.	0.	0.	0.

RUD/SPDBRK

PDU HTR	OFF
PDU T DEG F	53.
SW VLV SYS 1 RTN T	53.
SW VLV STATUS	
ACTIVE HYD SYS	*1
1 ST STDBY SYS	2
2 ND STDBY SYS	3
RUDDER POS DEG	0.0
RUDDER RATE DEG/SEC	0.0
SPOBRK POS DEG	.1
SPOBRK RATE DEG/SEC	0.0

BODY FLAP

BF PDU HTR	OFF
BF PDU T DEG F	54.
CIRC VLV STATUS	
HYD SYS 1	OP
HYD SYS 2	OP
HYD SYS 3	OP
BODY FLAP POS DEG	0.0
BODY FLAP RATE D/SEC	0.0

91

S305

IS09

ADS NIGHT MET 025:00:24 RUN SGMT 030:02:04:41

S308 HYDRAULICS 4-4

## HYDRAULICS ( 4 OF 4 )

WATER BOILER	HYD SYS		
	1	2	3
BLR OK			
APU HYD READY	OFF	OFF	OFF
BLR CNTLR	OFF	OFF	OFF
BLR VENT TEMPS			
VENT TEMP NO 1	7.	7.	7.
VENT TEMP NO 2	0.	0.	0.
BLR GN2 SUPPLY VLV	OFF	OFF	OFF
BLR HYD BYPASS VLV	OP	OP	OP
BLR CNTLR PWR HTR	OFF	OFF	OFF
BLR HEATERS			
BLR TEMP NO 1	54.	54.	54.
BLR TEMP NO 2	0.	0.	0.
BLR H2O TANK TEMP	54.	55.	52.
BLR QTY PER CENT	78.	78.	78.
BLR GN2 REG OUT P PSIA	25.	25.	25.
BLR GN2 TANK TEMP	54.	55.	52.
BLR GN2 TANK P PSIA	2514.	2518.	2504.
BLR H2O LB M	111.	111.	111.

ALL TEMPS DEG F

17

# HPSM

5400

1509

AOS NIGHT MET 025:00:46 RUN SGMT 080:02:05:03

HPSM HPS PERF SUM

## HPS PERFORMANCE SUMMARY

SYS	1	2	3
HPVRSP	59.288040	57.531586	56.469299
HPPRES	74.7735	74.9905	75.2488
HPTRES	64.2480	65.2773	67.2366
HPFFHE	0.000000	0.000000	0.000000
HPTFHO	101.0866	101.0866	101.0866
LHPMNP	0	0	0
LHPMPP	1	1	1
LHPCPO	0	0	0
LHPCPR	1	1	1
HPDPMN	0.0000	0.0000	0.0000
HPHMPR	14.0000	14.0000	14.0000
HPWSUP	0.0000	0.0000	0.0000
HPPSUP	74.7737	74.9907	75.2490
HPTSUP	101.0866	101.0866	101.0866
HPPACO	2990.9385	2999.6211	3009.9521
HPPACG	2990.9385	2999.6211	3009.9521
HPTACO	62.3501	63.3038	65.2089
HPTACG	522.3486	523.3022	525.2073
HALOOT	60.9242	60.6808	58.7233
HPTABO	60.9242	60.6808	58.7233
HPTRET	64.1183	65.0694	66.9065
HPFWBR	0.000000	0.000000	0.000000
HPTWBI	64.1183	65.0694	66.9065
HPTWBO	64.1183	65.0694	66.9065
HPLWBW	.0000	.0000	.0000
HPLWTH	111.0000	111.0000	111.0000
HPLGTK	.6383	.6383	.6383
HPPWTG	24.6718	24.7152	24.5810
HPPGTK	2513.5806	2518.4771	2503.8677
HPTWBW	51.6428	51.6428	51.6428
HPTWTG	513.8435	514.8286	511.8738
HPTGTK	513.8506	514.8354	511.8811

81

## HPSM: Parameter Definitions

HPVRSP	Res. oil quantity - percent
HPPRES	Res oil press - psia
HPTRES	Res oil temp - deg F
HPFFHE	Freon heat exchanger oil flow rate lb/s
HPTFHO	Freon heat exchanger oil outlet temp deg F
LHPMNP	Main pump running
LHPMOP	Main pump at full press
LHPCPO	Circ pump powered on
LHPCPR	Circ pmp thermal cutoff closed
HPDPMN	Main pump delta press. psid
HPHMPR	Fast loop MN pump power needed
HPWSUP	Flow rate to services - GPM
HPPSUP	HPS system supply press psia
HPTSUP	HPS system supply temp - deg f
HPPACO	Accum oil press - psia
HPPACG	Accum gas press - psia
HPTACO	Accum. oil temp. deg F
HPTACG	Accum. gas temp. deg R
HALOOT	Lube oil outlet temp - deg F
HPTABO	Water BLR. APU oil outlet temp. deg F
HPTRET	Oil return from services temp. deg F
HPFWBR	Water BLR HPS oil flow rate lb/s
HPTWBI	Water BLR, HPS oil inlet temp. deg F
HPTWBO	Water BLR, HPS oil outlet temp. deg F
HPLWBW	Water BLR water mass - lbm
HPLWTW	HYD H <sub>2</sub> O boiler (H <sub>2</sub> O) lbm
HPLGTK	HYD H <sub>2</sub> O boiler (GN <sub>2</sub> ) lbm
HPPWTG	Wat BLR water tank gas press - psia
HPPGTK	Wat BLR gas tank press - psia
HPTWBW	Wat BIR water boiling temp deg R

HPTWTG  
HPTGTK

Wat BIR water tank gas temp. deg R  
Wat BIR gas tank temp deg R

19

EGSS

1509

A05 NIGHT MET 025:00:59 RUN SGMT 080:02:05:16 UP CABIN ATM. CONTROL S400

ECL55

CABIN ATMOSPHERE CONTROL

	EYE 1	EYE 2	1	2	3
O2 P (300 PSI)-PSIA	885.	885.	*AV BAY DELT P IN H2O	3.12	3.15 4.09
O2 FLOW RATE-LB/HR	0.0	0.0	*AV BAY FAN A	OFF	ON OFF
CAB REG IN P-PSIA	206.	100.	*AV BAY FAN B	ON	OFF ON
N2 TK MANF P-PSIA	2805.	2805.			
N2 TK ISOL VLV	OP	OP			
			*IMU FAN A	FAN	SPEED
N2 REG IN VLV	OP	OP	*IMU FAN B	OFF	ABNORMAL
N2 P (400 PSI)-PSIG	400.	400.	*IMU FAN C	ON	ABNORMAL
N2 P (200 PSI)-PSIG	206.	206.			
N2 FLOW RATE-LB/HR	0.	0.			
N2 TK-1 T-DEG F	67.	67.	*H2O SEP 1		
N2 TK-2 T-DEG F	67.	67.	*H2O SEP 2		
			*CAB HUM-1/2		NORM
H2O TK REG IN VLV	OP	CL			47.
H2O TK REG P-PSIG	19.0	17.1	*CAB FAN A		OFF
H2O TK ISOL VLV	OP	OP	*CAB FAN B		ON
PRO2 MODE SEL	ON	ON	*CAB AIR DELTA P IN H2O		6.382
N2 CONT PWR	OFF	OFF	*CAB TEMP DEG F		73.
N2 CONT VLV	OP	CL			
			*AIRLOCK/CAB DELTA P-PSIG		.14
CAB PRO2-PSIA	3.08	3.08			
O2 XOVR VLV	OP	OP			
O2 SUP VLV	OP	OP			
CAB TEMP CONTR	ON	OFF			
			*CAB PRESS REL A		OP
N2 CONTROLLER	NORM		*CAB PRESS REL B		OP
AUX O2 TK P-PSIA	0.		*CAB PRESS-PSIA		14.94
AUX O2 ISOL VLV			*CAB P CHG RATE-PSI/MIN		.00
AUX O2 P (400 PSI)-PSIA	0.		*CAB PRO2-MMHG		1.16
AUX O2 P (300 PSI)-PSIA	0.		*H2O TK ALT PRESS VLV		
AUX O2 TANK T-DEG F	0.				

02



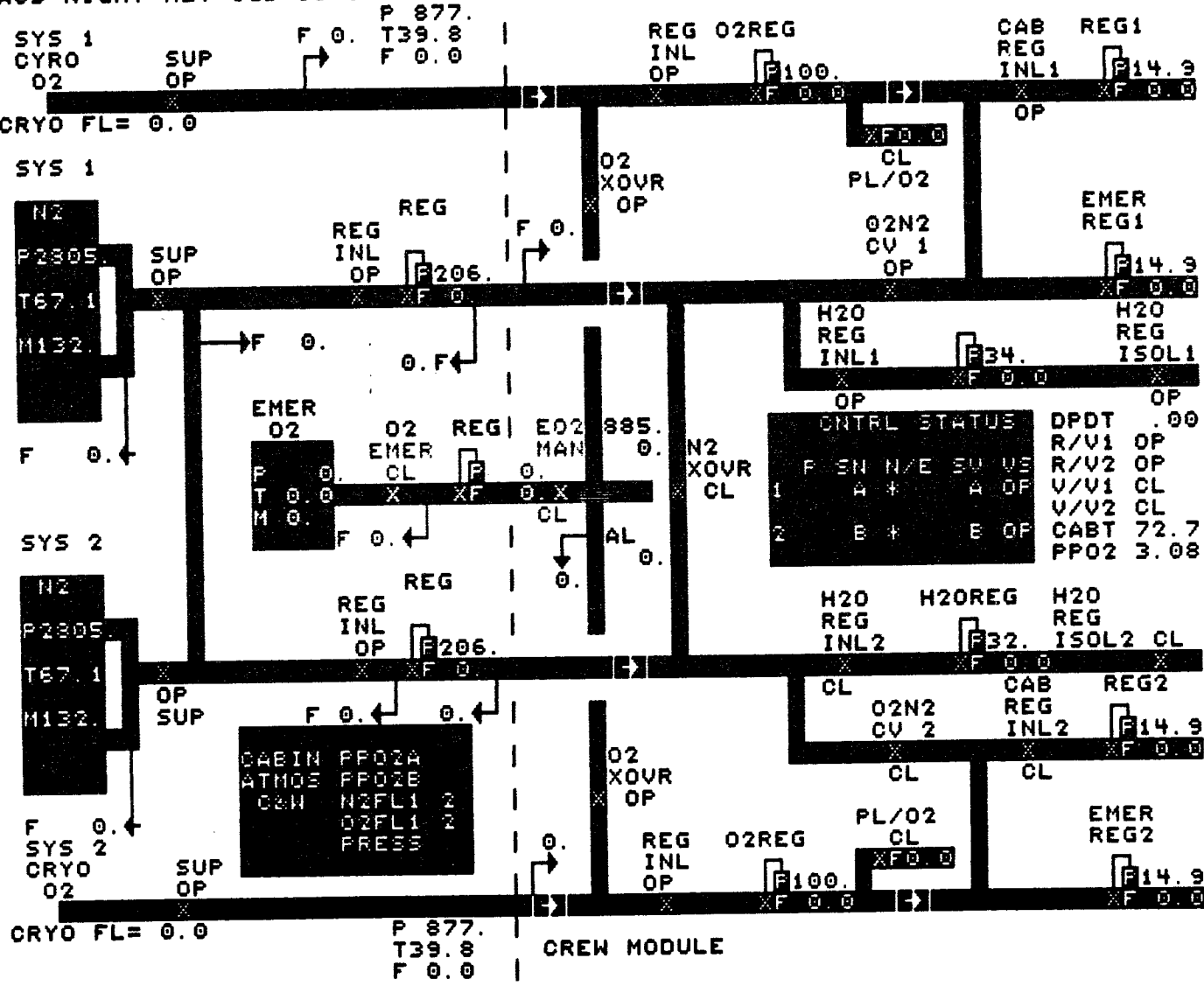
# EGSS

EPHX

1509

AOS NIGHT MET 025:01:14 RUN SGMT 000:02:05:31

GSS SCHEMATIC EGSS



21

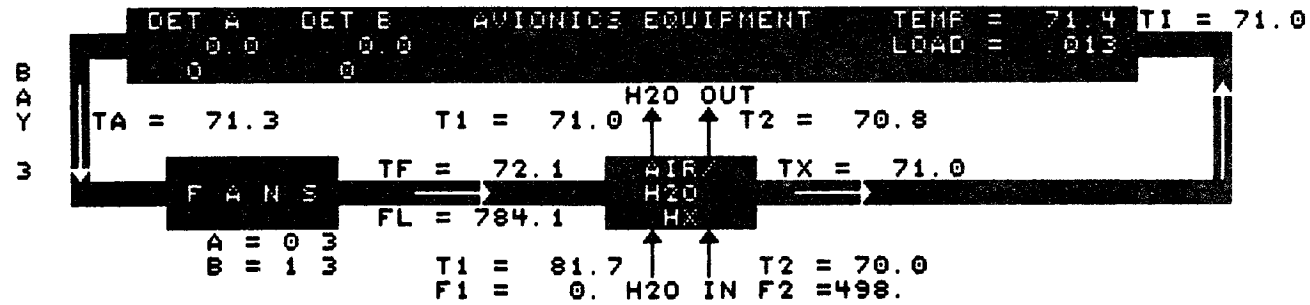
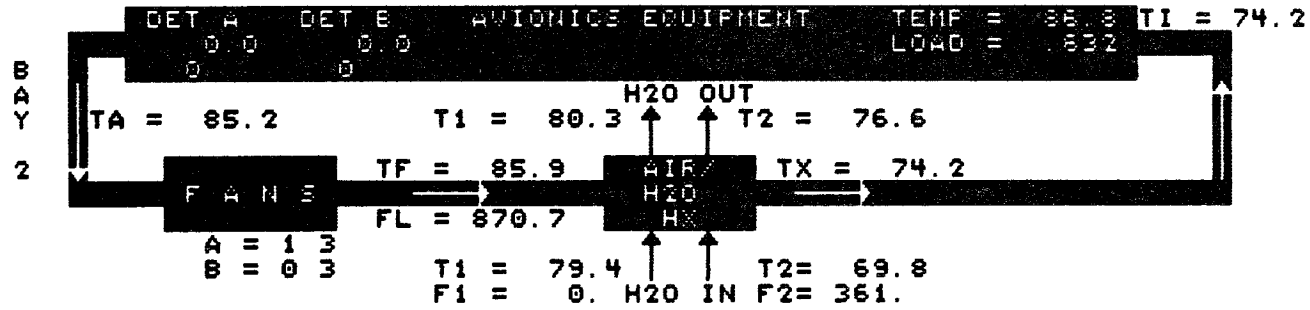
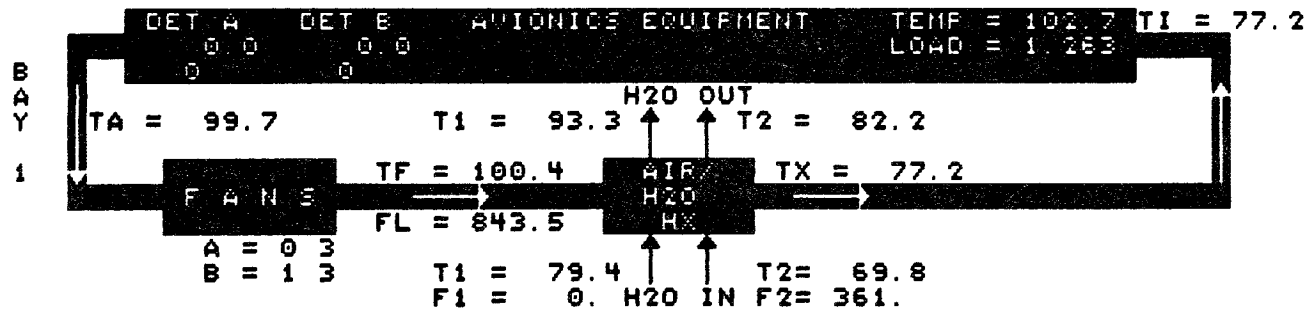
EABY

S401

I509

AOS NIGHT MET 025:02:13 RUN SGMT 080:02:06:30 UP AVIONICS BAYS

EABY

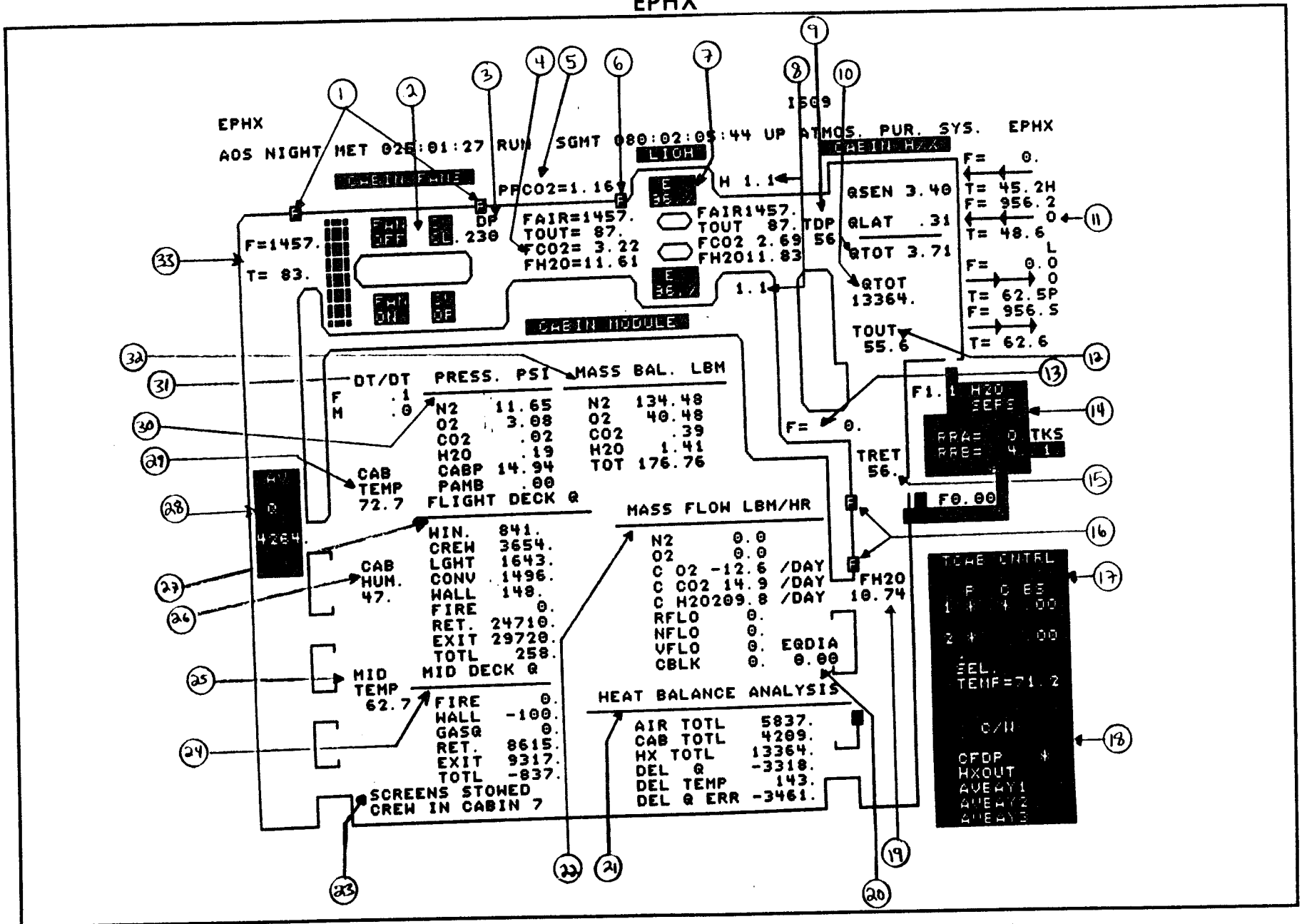


C

22

# EPHX

22



## EPHX Parameter Definitions

The parameters numbered on the display are discussed below.

- 1) Pressure sensors that measure the delta P displayed in item 3.
- 2) Cabin fan status indicators. Only one fan is used at a time. The control valves show either open or closed.
- 3) Delta P across the cabin fans (psi).
- 4) Air flow (lbm/hr), out temp, CO<sub>2</sub> and H<sub>2</sub>O flows (lbm/hr) as measured before and after passing by the sensor in item 6.
- 6) CO<sub>2</sub> pressure sensor.
- 7) LiOH cannister removal percent degradation.
- 8) LiOH cannisters elapsed time (hours).
- 9) Cabin heat exchanger inlet dew point temp.
- 10) Total heat transferred across HX. Summation of sensible and latent heat flows. The top QTOT is in BTU/sec; the bottom is in BTU/hr.
- 11) The two H<sub>2</sub>O loops' flows and temps, in and out of the cabin HX.
- 12) HX out temperature.

- 13) Flow of air bypassing HX as controlled by temp controller and bypass valve.
- 14) H<sub>2</sub>O separators (all values in lbm/hr). Primary and secondary water separator removal rates, flow into and out of the water separator, and flow to the water storage tanks are shown.
- 15) Temp of air returning from HX.
- 16) O<sub>2</sub> partial pressure sensors.
- 17) Cabin temp controller 1 and 2 status. Asterisks under the 'P' denote power availability and under the 'C' denote control bus availability thus showing which, if either, controller is selected. The 'BS' column displays the bias when a temp controller drift malfunction is entered.
- 18) The C/W box displays asterisks by any out of limit parameter.
- 19) Water vapor mass flow (lbm/hr).
- 20) Equivalent diameter of hole in cabin (in). May either be entered as malf or calculated by SMS when a leak rate is entered.
- 21) All values in BTU/hr. Del Q = air total + cabin total - HX total. Del Q err = Del Q - Del T.
- 22) Mass of N<sub>2</sub> and O<sub>2</sub> added to cabin, oxygen consumption and CO<sub>2</sub> production in lbs per day, water vapor added to cabin air, cabin relief valve,

HE  
24

negative relief valve, vent, and cabin leak flow rates.

23) Sun screen status = 'stowed' or 'installed'.

24) Middeck heat flows (BTU/hr). FIRE = fire heat input. WALL = free air heat load. GASQ = cabin vent heat + relief valve heat + GSS gas delivered heat + cabin leak heat. RET. = active cooling heat load returning. EXIT = active cooling heat load exiting.

25) Middeck temp.

26) Percent humidity in cabin.

27) Flight deck heat flows (BTU/hr). WIN = earth heat input + sky sink and cabin/window heat load. CREW = crew heat input. LGHT = crew station lights heat input. CONV = convective heat load. See item 24.

28) Avionics (crew station) heat generation (BTU/hr).

29) Cabin temp.

30) N<sub>2</sub>, O<sub>2</sub>, CO<sub>2</sub>, H<sub>2</sub>O, cabin, and static atmospheric pressures.

31) Rate of change of cabin temp (F/min) and cabin wall nodes temp.

32) Mass balances (lbs).

33) Cabin fans total air flow rate and exit temp.

25

EWLS

1509

AOS NIGHT MET 025:02:23 RUN SGMT 000:02:06:40 UP

S401

ECLSS  
WATER LOOPS

FREON LOOPS

S401

	OA	OB	OC
CB LOOP 1 H2O PMP A	CL	CL	CL
CB LOOP 1 H2O PMP B	CL	CL	CL
CB LOOP 2 H2O PMP	CL	CL	CL
LOOP 1 H2O PMP A	OFF		
LOOP 1 H2O PMP B	OFF		
LOOP 2 H2O PMP	ON		

	OA	OB	OC
CB FREON PMP 1A	CL	CL	CL
CB FREON PMP 2A	CL	CL	CL
CB FREON PMP 1B	CL	CL	CL
CB FREON PMP 2B	CL	CL	CL

LOOP 1 PMP A	ON
LOOP 1 PMP B	OFF
LOOP 2 PMP A	ON
LOOP 2 PMP B	OFF

LOOP 1    LOOP 2

PMP IN P PSIA	0.	39.
PMP OUT P PSIA	24.	64.
PMP OUT T DEG F	79.	70.
ACCUM QTY %	45.	55.
BYP VLV POSIT %	38.	38.

BYP CONT MODE	MAN	MAN
WFI IN T DEG F	73.	87.
WFI OUT T DEG F	45.	49.

CAB HX IN T DEG F	45.	49.
CAB HX OUT T DEG F	63.	63.
AV BAYS IN T DEG F	79.	70.
AV BAY 1 OUT T DEG F	94.	92.
AV BAY 2 OUT T DEG F	93.	90.
AV BAY 3 OUT T DEG F	84.	81.
LOOP FLOW LB/HR	0.	1219.

FCL 1    FCL 2

ACCUM QTY %	60.	59.
PMP IN P PSIA	129.	108.
WFI IN T DEG F	46.	46.
WFI FLOW LB/HR	2124.	2124.
C/P NET FLOW LB/HR	277.	277.
P/L HX FLOW LB/HR	250.	250.
HT SINK OUT T DEG F	46.	46.
RAD IN T DEG F	106.	99.
RAD OUT T DEG F	46.	45.
RAD BYPASS VLV	RAD	RAD
RAD BYP CNTLR SEL	A	A
RAD CNTLR OUT TEMP SEL	NORM	
RAD BYP VLV CMD		
FLOW PROP VLV POSIT		

EVAPS

EVAP PRI A GPC  
EVAP PRI B GPC  
EVAP SEC GPC

EVAP PRI A CMD ON  
EVAP PRI B CMD ON  
EVAP SEC CMD ON

TOPPING DUCT PORT T    155.  
HI LOAD DUCT TEMP    246.

TOPPING DUCT STRBD T    155.

92

# EWLS

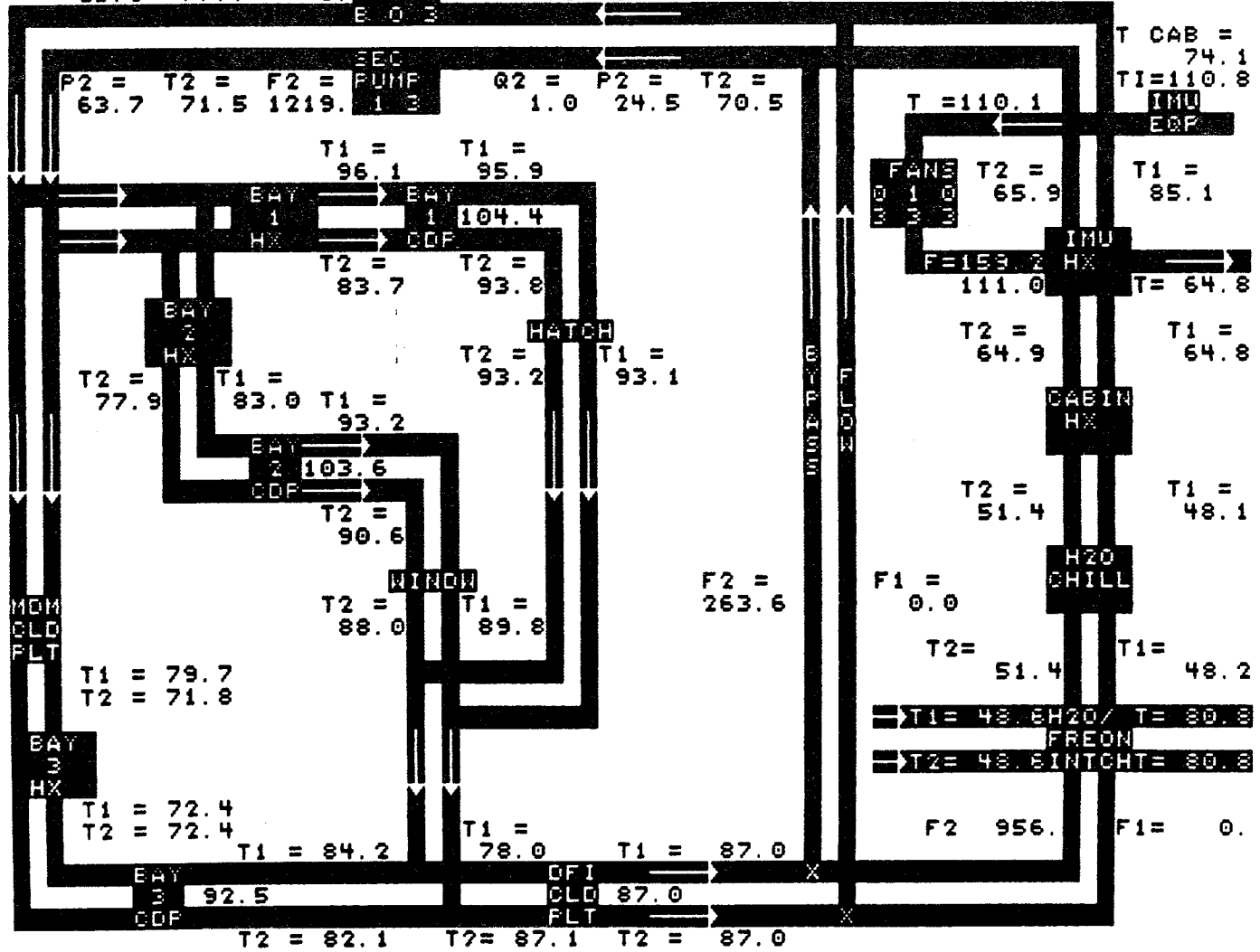
EWLS

IS09

AOS DAY MET 025:53:55 RUN SGMT 080:02:58:12 H2O LOOP SYSTEM EWLS

P1 = T1 = F1 = PUMP Q1 = P1 = T1 =  
 23.9 77.7 0.4 0.8 23.9 77.6

P2 = T2 = F2 = PUMP Q2 = P2 = T2 =  
 63.7 71.5 1219.1 3 1.0 24.5 70.5



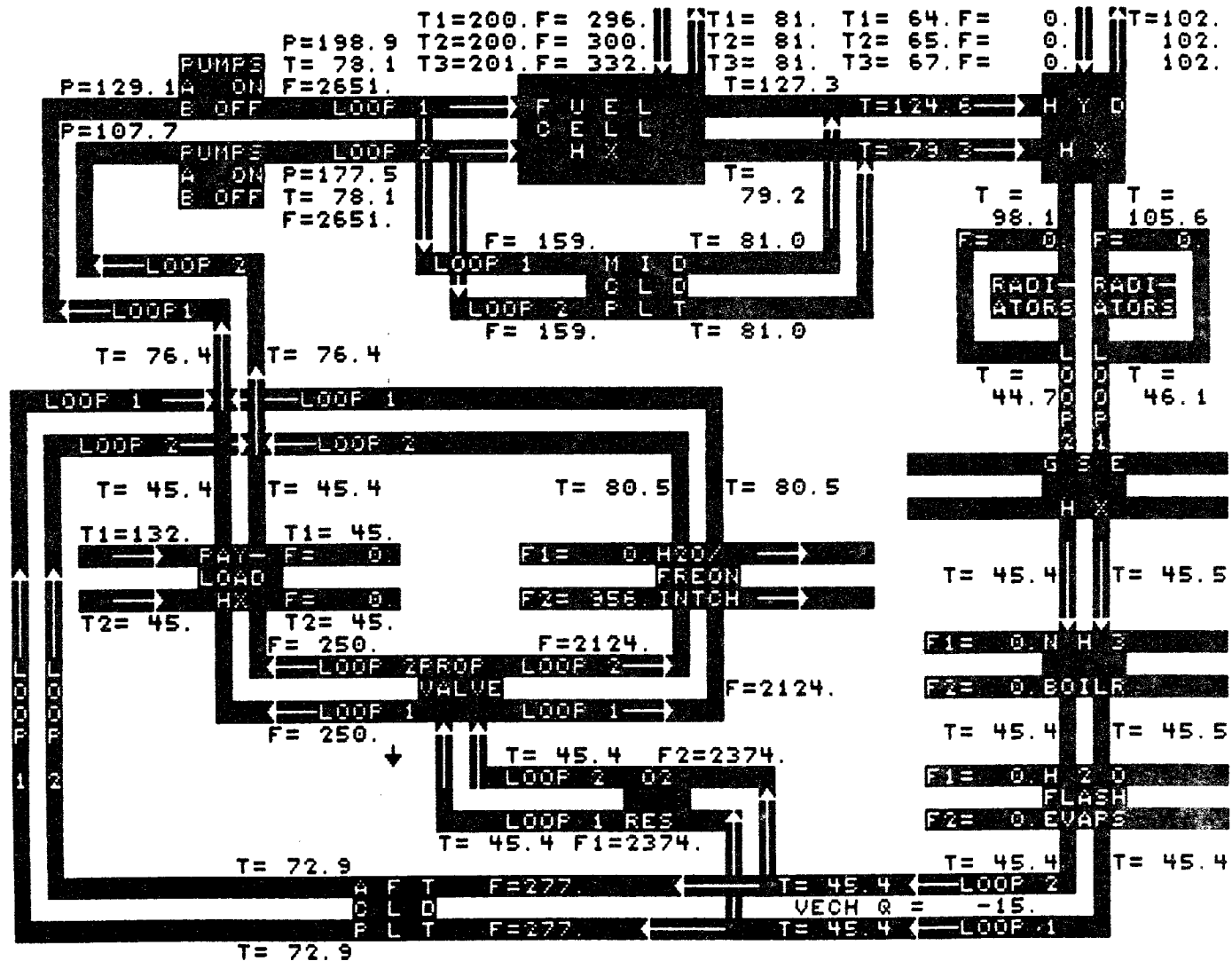
27

# EAV2

I-5

1502

AOS NIGHT MET 024:57:00 RUN SGMT 000:02:01:17 FLS OVERVIEW EAV2



22



EFEF

EFEF

1509

AOS NIGHT MET 025:02:54 RUN SGMT 080:02:07:11 FREON LOOP  
 FREON COOLANT LOOP SUBSYSTEM

EFEF

FLS MALFUNCTION

EFMAL(1)= 0.000  
 EFMAL(2)= 0.000  
 EFMCB(1)= 0.000  
 EFMCB(2)= 0.000  
 EFMD = 0.000  
 EFMEB(1)= 0.000  
 EFMEB(2)= 0.000  
 EFMRS(1)= 0.000  
 EFMRS(2)= 0.000  
 EFMSB(1)= 0.000  
 EFMSB(2)= 0.000  
 EFMTB(1)= 0.000  
 EFMTB(2)= 0.000  
 EFMTL(1)= 0.000  
 EFMTL(2)= 0.000  
 EFMET = 0.000  
 MEFAC = 0  
 MEFCC = 0  
 MEFGL(1)= 0  
 MEFGL(2)= 0  
 MEFPA(1)= 0  
 MEFPA(2)= 0  
 MEFPB(1)= 0  
 MEFPB(2)= 0

POWER LOADS

EFAC1T = 367.00  
 EFAC2T = 0.00  
 EFAC3T = 367.00  
 EFDCAT = 0.00  
 EFDCBT = 0.00  
 EFDCCT = 0.00

COMPONENT STATUS

LEFPA(1) = 1  
 LEFPA(2) = 1  
 LEFPB(1) = 0  
 LEFPB(2) = 0  
 LEFACP(1)= 0  
 LEFACP(2)= 0  
 LEFACS(1)= 0  
 LEFACS(2)= 0  
 LEFIV(1) = 0  
 LEFIV(2) = 0  
 LEFPAG = 0  
 LEFPBG = 0  
 LEFPAO = 0  
 LEFPBO = 0  
 LEFSG = 0  
 LEFSO = 0  
 LEFEVP(1)= 0  
 LEFEVP(2)= 0  
 LEFENA = 0  
 LEFDTH(1)= 0  
 LEFDTH(2)= 0  
 LEFDA(1) = 1  
 LEFDA(2) = 1  
 LEFDB(1) = 0  
 LEFDB(2) = 0  
 LEFDHA = 1  
 LEFDHB = 0  
 LEFNA(1) = 0  
 LEFNA(2) = 0  
 LEFNB(1) = 0  
 LEFNB(2) = 0  
 LEFPRV(1)= 1  
 LEFPRV(2)= 1  
 LEFSC1 = 1  
 LEFSC2 = 1  
 LEFSC3 = 0  
 LEFCTS(1)= 0  
 LEFCTS(2)= 0

ACCUMULATOR VARIABLES

EFKFA(1) = 49.066  
 EFKFA(2) = 48.583  
 EFKGA(1) = .620  
 EFKGA(2) = .520  
 EFVOL(1) = 993.970  
 EFVOL(2) = 984.188  
 EFGVOL(1)= 1684.429  
 EFGVOL(2)= 1694.212  
 LEFCV(1) = 0  
 LEFCV(2) = 0

PUMP VARIABLES

EFPIN(1) = 129.222  
 EFPIN(2) = 107.754  
 EFD(1) = 69.793  
 EFD(2) = 69.793  
 EFNRP(1)= 2000.000  
 EFNRP(2)= 2000.000  
 EFRPM(1) = 2000.000  
 EFRPM(2) = 2000.000  
 EFWP(1) = .736  
 EFWP(2) = .736  
 EFQPM(1)= 2.424  
 EFQPM(2)= 2.424  
 EFTPMP(1)= 537.788  
 EFTPMP(2)= 537.788  
 EFTM(1) = 536.109  
 EFTM(2) = 536.108

29

## EFEF Parameter definitions

### FLS Malfunction

EFMAL (1)	MALF - accumulator leak, loop 1 (lb/sec)
EFMAL (2)	MALF - accumulator leak, loop 2 (lb/sec)
EFMCB (1)	MALF - NH3 CNTRL bias system A
EFMCB (2)	MALF - NH3 CNTRL bias system B
EFMD	MALF - topping flash evap degradation BTU/HR FT <sup>2</sup> OR
EFMEB (1)	MALF - flash evap PRI A CNTRL bias
EFMEB (2)	MALF - flash evap SEC A CNTRL bias
EFMRS (1)	MALF - FLOR rest at pump inlet filter LPI psia/LBSEC
EFMRS (2)	MALF - FLOR rest at pump inlet filter LP2
EFMSB (6)	EVAP out T SNSR biases - hi load/top - PRI A, B, sec (deg R)
EFMSB (6)	EVAP out T SNSR biases - hi load/top - PRI A, B, sec (deg R)
EFMTB (1)	MALF - NH3 SYS A boiler freon to SNSBIAS DGR
EFMTB (2)	MALF - NH3 SYS B boiler freon to SNSBIAS DGR
EFMTL (1) (2)	MALF - ammonia tank leak TK 142 (lb/sec)
MEFCC	MALF NH3 SYS A IV fails to open PRIGPC
MEFGL (1)	MALF accumulator gas leak loop 1
MEFGL (2)	MALF accumulator gas leak loop 2
MEFPA (1)	MALF freon pump A degraded loop 1
MEFPA (2)	MALF freon pump A degraded loop 2
MEFPB (1)	MALF freon pump B degraded loop 1
MEFPB (2)	MALF freon pump B degraded loop 2

### Power Loads

EFAC1T	AC bus 1 power load (watts)
EFAC2T	AC bus 2 power load (watts)
EFAC3T	AC bus 3 power load (watts)
EFDCAT	DC bus A power load (watts)
EFDCBT	DC bus B power load (watts)
EFDCCT	DC bus C power load (watts)

### Component Status

LEFPA (1)	Pump A status L1
LEFPA (2)	Pump A status L2
LEFPB (1)	Pump B status L1
LEFPB (2)	Pump B status L2
LEFACP (1)	Logic NH3 CNTRL A PRI/GPC
LEFACP (2)	Logic NH3 CNTRL A PRI/GPC
LEFACS (1)	Logic NH3 CNTRL A sec/on
LEFACS (2)	Logic NH3 CNTRL A sec/on
LEFIV (1)	Ammonia cont isolation valve status
LEFIV (2)	Ammonia cont isolation valve status
LEFPAG	Logic evap PRI A GPC
LEFPBG	Logic evap PRI B GPC
LEFPAO	Logic evap PRI A on
LEFPBO	Logic evap PRI B on
LEFEVP (2)	Logic evap isolation valve
LEFENA	Logic hi load evap enable
LEFDTH (1)	Logic top evap duct heater thermostat
LEFPTH (2)	Logic top evap duct heater thermostat
LEFDA (1)	Logic top evap duct heater auto A
LEFDA (2)	Logic top evap duct heater auto A
LEFDB (1)	Logic top evap duct heater auto B
LEFDB (2)	Logic top evap duct heater auto B
LEFDHA	Logic hi load duct heater A
LEFDHB	Logic hi load duct heater B

30

LEFNA (1) Logic top evap NOEE heater auto A  
 LEFNA (2) Logic top evap NOEE heater auto A  
 LEFNB (1) Logic top evap NOEE heater auto B  
 LEFNB (2) Logic top evap NOEE heater auto B  
 LEFPRV (1) Flow prop valve logical - intchgr - loop 1  
 LEFPRV (2) Flow prop valve logical - intchgr - loop 2  
 LEFSC1 Logic signal cond  
 LEFSC2 Logic signal cond  
 LEFSC3 Logic signal cond  
 LEFCTS (1) NH<sub>3</sub> secondary controller on/off indicator  
 LEFCTS (2) NH<sub>3</sub> secondary controller on/off indicator

EFNRPM (2) Nominal pump rpm  
 EFRPM (1) Pump RPM loop 1 (freon) (rpm)  
 EFRPM (2) Pump RPM loop 2 (freon) (rpm)  
 EFWP (1) Pump flow rate freon loop 1 (lb/sec)  
 EFWP (2) Pump flow rate freon loop 2 (lb/sec)  
 EFQPMP (1) Heat added by pump (DGR/lb)  
 EFQPMP (2) Heat added by pump (DGR/lb)  
 EFTPMP (1) Freon temp from pump loop 1 (deg R)  
 EFTPMP (2) Freon temp from pump loop 2 (deg R)  
 EFTM (1) Freon merge temp into pump loop 1 (deg)  
 EFTM (2) Freon merge temp into pump loop 2 (deg)

Accumulator Variables

EKFFA (1) Accumulator content - freon mass - loop 1 (lb)  
 EKFFA (2) Accumulator content - freon mass - loop 2 (lb)  
 EFKGA (1) Accumulator content - GN2 mass - loop 1 (lb)  
 EFKGA (2) Accumulator content - GN2 mass - loop 2 (lb)  
 EFVOL (1) Accumulator VPL occupied by freon (ft<sup>3</sup>)  
 EFVOL (2) Accumulator VPL occupied by freon (ft<sup>3</sup>)  
 EFGVOL (1) Accumulator volume occupied by GNZ (ft<sup>3</sup>)  
 EFGVOL (2) Accumulator volume occupied by GNZ (ft<sup>3</sup>)  
 LEFCV (1) Logic pump cavitation  
 LEFCV (2) Logic pump cavitation

Pump Variables

EFPIN (1) (2) Pump inlet pressure loop 1 & 2 (psia)  
 EFNRPM (1) Pump inlet pressure loop 1 & 2 (rpm)

31

## ERLD

HBR1

1509

AOS NIGHT MET 025:03:12 RUN SGMT 080:02:07:29

SPACE RADIATORS ERLD

## FLOW CNTL ASSM

	LEFT	RIGHT
1-CNTLR SELECTED	A	A
2-CNTLR POW/STS	ON	ON
3-BYP VLV MODE	AUTO	AUTO
4-FREON IN T. F	107.	99.
5-BYP VLV STATUS	RAD	RAD
6-BYP VLV POS.	0.00	0.00
7-FLW CNTL VLV S	ON	ON
8-FLW CNTL VLV P	1.00	1.00
9-PAN 1 OUT T F	47.	45.
10-MIXED RET T F	47.	45.
11-BYP FLW LBM/H	0.	0.
12-START UP TIME	100.	100.
13-THERMAL FRONT	123.	123.

## PANEL OPERATION (14) EIGHT

15 PLBD STATUS	OPEN	OPEN
16 EXPOSED AREA	593.	593.
17-AFT INLET T F	107.	99.
18-AFT PANEL T F	60.	58.
19-AFT OUTLT T F	72.	69.
20-FILM COEFF.	400.	400.
21-OVERALL UA	941.	941.
22-DELTA TEMP LM	25.	22.
23-X-FERD @ BTUH	23251.	20394.
24-FOR INLET T F	72.	69.
25-FOR PANEL T F	38.	37.
26-FOR OUTLT T F	47.	45.
27-FILM COEFF.	400.	400.
28-OVERALL UA	941.	941.
29-DELTA TEMP LM	18.	17.
30-X-FERD @ BTUH	15992.	45.

RADIATOR FLOW LOOP	ONE	TWO
31-LBM/HR	2651.	2651.

RADIATION  
BAL. BTU/HR

	LEFT	RIGHT
SUN FOR U	0.	0.
SUN FOR L	0.	0.
SUN AFT F	0.	0.
SUN AFT K	0.	0.
ALB FOR U	0.	0.
ALB FOR L	0.	0.
ALB AFT F	0.	0.
ALB AFT K	0.	0.
EMT FOR U	1503.	1502.
EMT FOR L	0.	0.
EMT AFT F	834.	834.
EMT AFT K	834.	834.

PLB TO F	0.	0.
PLB TO A	0.	0.

TOTAL INC XXXXX XXXXX

DEEP SP F20127	19800.
DEEP SP A15172	15071.
TOTAL REJ32127.	31702.

FREON -F	17373.	15992.
FREON -A	23251.	20394.
TOTAL	40624.	36386.

BALANCE (31) -8497. -4684.

PANEL DT/DT	
DEG F PER MIN	
FOR	.063 .041
AFT	.08 .04

## PROPERTIES

VIRGIN (41) VIRGIN	
>> .80/.08 ***/.08	

## ORIENTATION

SHUTTLE LOOK ANGLES	SUN	EARTH
---------------------	-----	-------

AZIMUTH (0 TO 360)	198.	353.
ELEVATION (90 TO -90)	60.	90.

UNIT VECTORS	LEFT	RIGHT
X-BODY	-.48	.01
Y-BODY	-.15	-.00
Z-BODY	-.86	-1.00

PLBD DEPL	180.	180.
RAD DEPL	0.	0.-44

EARTH SHAPE FACTOR	
DEPL PAN U	.810 .809
DEPL PAN L	.026 .026
FIXED PAN	.810 .809

## ENVIRONMENT

PLB TEMP F	24.-46
PLD TEMP F	XXXX-47
DAY/NIGHT	NIGHT
PLB SEES SUN	FALSE-48
PLB SEES EARTH	TRUE-49
PLB SEES ALBDO	FALSE-50
PLB SEES SPACE	FALSE-51

32

## ERLD Parameter Definitions

1. Controller selected: This field will display which radiator controller is selected, "A", "B", or "OFF", and corresponds to the rad controller switches on L1.
2. Controller powered status: This field indicates when the controller selected in field (1) is powered.
3. Bypass valve mode: This field will indicate what control mode the radiator bypass valve is operating under. The indication will be "AUTO", "MAN", or a blank. AUTO indicates the flow control assembly is in control of the bypass valve. The bypass valve will respond to startup sequences and under temperature bypasses when reading auto. The "MAN" indicates the bypass valve has power but can only be moved by the crew through the manual select switches on L1.
4. Freon inlet temperature: This field displays the immediate freon inlet temperatures to the radiator flow control assembly. The temperature is displayed in degrees Fahrenheit.
5. Bypass valve status: This field will display the bypass valve status. The indication will be "RAD", "BYP", or "TRNS". RAD indicates the bypass valve is in the full radiator flow position. BYP indicates all fluid will be bypassed around the radiators. TRNS indicates the valve is neither full rad or full bypass. This indication is the actual status of the bypass valve, independent of power.
6. Bypass valve position: This field displays the actual bypass valve position. The range is 1.0 to 0.0. A 1.0 indicates full bypass, a 0.0 indicates full radiator flow. This field is interactive.
7. Flow control valve status: This field indicates whether the flow control valve is powered and ready to respond to controller commands. The indication will be on or off.
8. Flow control valve position: This field displays the actual flow control valve position. The range is 1.0 to 0.0. A 1.0 indicates full radiator flow and a 0.0 indicates full bypass flow. This field is interactive. (° F)
9. Panel one out temperature: This field displays the actual (not dependent on power) panel 1 out temperature in degrees Fahrenheit. The field is interactive but should be changed in degrees Rankine.
10. Mixed return temperature: This field displays the actual mixed return temperature from the radiators. (° F)
11. Radiator bypass flow: The field displays the freon flow bypassing the radiators. (lbm/hr)

33

34

- 12. Start-up timer: This field displays the start-up timer. When the radiator controllers are cycled from off to A or B and are powered, the controller will issue the following commands:

Timer	Command
0 - 5 secs	Bypass vlv to full bypass.
5 - 83 secs	Flow control vlv to full bypass.
83 - 88 secs	Bypass vlv to full rad flow.
88 -	Flow control valve modulated to control mixed return temp to 38°F.

- 13. Thermal front position: This field displays the position of the thermal front upon initial activation of radiator flow. If the radiators are bypassed the average temperature of the freon in the panels, can differ significantly from the return line temp. If the radiator fluid is cooler than the return line temp an undertemp bypass can occur at the end of a start-up sequence. The reading is the distance in feet from the outlet of radiator panel one. The flow control assembly is simulated as being 74.5 feet away.

### Panel (PANL) Operation

The three radiator panels plus kit panel (if installed) per payload bay door are simulated as two bulk panels per door. The freon loops enter the aft panels first and exit the forward deployable panels. The "forward" labeled panels on page ERLD consist of the two real world deployable panels. The "aft" labeled panels consist of the remaining fixed panel and fixed kit panel if installed.

- 14. Panel operation status: This field displays the number of panels installed, either "six" or "eight." The kit panels may be removed or installed by transmitting over the "PANL" in blue to the left.
- 15. Payload bay door status: This field will indicate "OPEN" or "CLSD" for a gross payload bay door status. The payload bay doors are considered open when they are 22 percent open.
- 16. Radiator panels exposed area: This field will display the radiator panels total exposed area in square feet.
- 17. Aft panel inlet temperature: This field displays the temperature of freon entering the ft panels. (°F)
- 18. Aft panel average bulk temperature: This field displays the aft panels average structural surface temperature in degrees Fahrenheit. This field is interactive but should be changed in degrees Rankine.
- 19. Aft panel outlet temperature: This field displays the temperature of freon exiting the aft panels in degrees Fahrenheit.
- 20. Freon tubing to freon film coefficient: This field displays the freon film coefficient in BTU/hr-Ft<sup>2</sup>-°R.
- 21. Freon to aft radiator panels overall UA: This field displays the freon to panel overall heat transfer coefficient in BTU/hr - °R.
- 22. Freon to aft radiator panels log-mean temperature differential: This field displays the log-mean

- temperature differential between the freon and the aft panels. The UA in item 21 is multiplied by the log-mean temperature differential to yield the heat transferred from the freon to the aft panels. (°F)
23. Freon to aft radiator panels transferred heat: This field displays the transferred heat as discussed in item (22) (BTU/hr.)
  24. Forward panel inlet temperature: This field displays the temperature of freon entering the forward panels. (°F)
  25. Forward panel average bulk temperature. This field displays the forward panels average structural surface temperature in degrees Fahrenheit. This field is interactive but should be changed in degrees Rankine.
  26. Forward panel outlet temperature: This field displays the temperature of freon exiting the forward panels in degrees Fahrenheit.
  27. Freon tubing to freon film coefficient: This field displays the freon film coefficient in BTU/hr-Ft<sup>2</sup> - °R.
  28. Freon to forward radiator panels overall UA: This field displays the freon to panel overall heat transfer coefficient in BTU/hr - °R.
  29. Freon to forward radiator panels log-mean temperature differential: This field display the log-mean temperature differential between the freon and the forward panels. The UA in item 29 is multiplied by the log-mean temperature differential to

yield the heat transferred from the freon to the forward panels. (°F)

30. Freon to forward radiator panels transferred heat: This field displays the transferred heat as discussed in item (29) (BTU/hr).
31. Radiator freon flow rates: (lbm/hr)

### Panels Radiation Balance

The incident radiation for each panel is displayed as follows:

FOR U = Forward panels upper surface  
 FOR L = Forward panels lower surface  
 AFT F = Aft fixed panel  
 AFT K = Aft kit fixed panel  
 F = Forward panels total  
 A = Aft panels total

32. Solar incident radiation: (BTU/hr)
33. Albedo (Earth reflected radiation): (BTU/hr)
34. Earth emitted radiation: (BTU/hr)
35. Payload bay radiation to panels: (BTU/hr) Positive indicates from panels to payload bay.
36. Total incident on panels radiation: BTU/hr
37. Deep space rejected radiation: BTU/HR Positive indicates from panels to deep space. TOTAL REJECTED is shown per door.

- 38. Heat transferred from freon to panels: (BTU/hr) A positive indicates freon to panels.
- 39. Panel resultant heat balance: BTU/hr A positive value indicates the panels are heating up. A negative value indicates the panels are cooling.
- 40. Panel temperature change rate: The panel's temperature change rates are displayed in degrees Fahrenheit per hour.
- 41. Radiator panel properties: The indication here will be "VIRGIN" if no degradation malfunctions are entered otherwise "DEGRADED". The "emissivity/-absorptivity" of the panels is displayed below the description.

## ORIENTATION

- 42. Shuttle look angles: The Shuttle to Sun and center of Earth look angles are displayed here. (degrees)

The azimuth is taken from 0 - 360°  
 0 being the positive body X - axis (in front of nose)  
 90 being the positive body Y - axis (off right wing)  
 180 being the negative body X - axis (in back of tail)  
 270 being the negative body Y - axis (off left wing)

The elevation is taken from -90° to +90°  
 +90° being directly underneath  
 + value below wings level  
 0 level with wings

- value above wings level
- 90° directly above Shuttle

- 43. Shuttle to Sun/Earth body unit vectors
- 44. Payload bay door and radiator deployed positions: The payload bay door position is from 0 to 180°, 0 degrees indicates closed, 180 indicates full open. Forward radiator panels deployed position ranges from 0 to 30°. 0 degrees being stowed and 30° being fully deployed.
- 45. Earth shape factor: This field displays the panel to Earth shape factors. This value ranges from 0.0 for deep space viewing to 0.87 for full Earth viewing.
- 46. Payload bay average temperature: (°F)
- 47. Payload average temperature: Not available until installation of mod 21905R0 (°F).
- 48. Orbital Shuttle day/night

### Note:

All of the following are not available until installation of MOD 21905R0.

- 49. Payload bay sees Sun: The indication will be true if any part of the payload bay is illuminated by the Sun.
- 50. Payload bay sees Earth: The indication will be true if 60 percent of the Earth disc faces the payload bay.



51. Payload bay sees deep space: The indication will be true if 30 percent of deep space viewable area can be seen by the payload bay.

37

# HBR1

HBR1

1509

AOS NIGHT MET 025:03:45 RUN SGMT 080:02:08:02 UP HBR1 RADIATOR PANELS

## L A T C H E S

STARBOARD	REL CMD	LAT CMD	TIMER 0-46	TALK BACK	TELEMETRY REL	LCH
1-6 3 7	0 0	0 0	46.0	L 0	525 1 0	528 0 0
7-12 4 8	0 0	0 0	46.0	R 1	1 1	0 0

## PORT

1-6 1 5	0 0	0 0	46.0	L 0	0 0	0 0
7-12 1 6	0 0	0 0	46.0	R 0	0 0	0 0

## P A N E L S

	DEP	STO	0-74		DEP	STO
STBD 2 4	0 0	0 0	0.0	S 1 D 0	500 0 0	505 1 1
PORT 1 3	0 0	0 0	0.0	S 0 D 0	0 0	0 0

HBPLML  
0.  
0.  
0.  
0.

38

EFTE

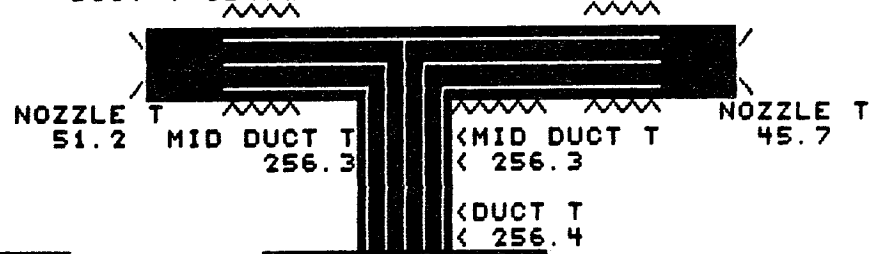
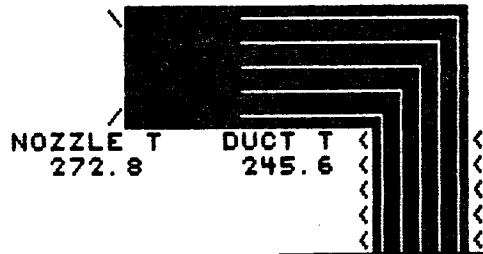
S402

I509

AOS NIGHT MET 025:04:02 RUN

SGMT 080:02:08:19  
DUCT T 154.2

TWO EVAPORATORS EFTE  
DUCT T 154.3



T1 = 45.8

F1 = 2851

F2 = 2851

T2 = 45.7

HI LOAD

TOPPING

EVAP

EVAP

LAT 0 = 0

LAT 0 = 0

CONTROL SHUTDOWN

F = 0.0

F = 0.0

F = 0.0

F = 0.0

H2O SUPPLY A

H2O SUPPLY B

PRI A CNTLR  
STATUS OFF \*\*\*\*\*  
T MID 45.8\*SHUTDOWN  
T OUT 45.8\*  
P BIAS 0.00\*  
TM BIAS 0.0\*  
TO BIAS 0.0\*T OUT 45.8  
POSTN 0.000\*

PRI B CNTLR  
STATUS OFF \*\*\*\*\*  
T MID 45.8\*SHUTDOWN  
T OUT 45.8\*  
P BIAS 0.00\*  
TM BIAS 0.0\*  
TO BIAS 0.0\*T OUT 45.8  
POSTN 0.000\*

SEC CNTLR  
STATUS OFF \*\*\*\*\*  
T MID 45.8  
T OUT 45.8  
P BIAS 0.00  
TM BIAS 0.0  
TO BIAS 0.0  
POSTN 0.000

39

EFAB

1509

AOS NIGHT MET 025:04:15 RUN SGMT 080:02:08:32 UP

S402

ECLSS

S402

POT/WASTE H2O

AMMONIA SYSTEM

POT H2O TK A QTY %	62.
POT H2O TK B QTY %	52.
POT H2O TK C QTY %	93.
POT H2O TK D QTY %	93.
POT H2O TK E QTY %	0.
POT H2O TK F QTY %	0.
POT H2O TK W QTY %	5.
POT H2O DUMP NOZ T DEG F	27.
POT H2O DUMP NOZ HTR	OFF
BAC DELTA P PSID	.5

	SYS A	SYS B
NH3 IN T DEG F	8.	8.
NH3 TANK T DEG F	8.	8.
NH3 TANK P PSIA	228.	228.
SWITCH POSITION	OFF	OFF
NH3 TANK ISOL VLV	CL	CL
PRI FLOW CONTR	OFF	OFF
SEC FLOW CONTR	OFF	OFF
PRI FLOW CONT VLV %	100.	100.
SEC FLOW CONT VLV %	100.	100.

OH

EFAB

EFAB

1509

AOS NIGHT MET 025:04:30 RUN SGMT 080:02:08:47

AMMONIA BOILER

EFAB

FLS

TI	505.89
TO	505.89
W	.7363
TI	505.76
TO	505.76
W	.7363

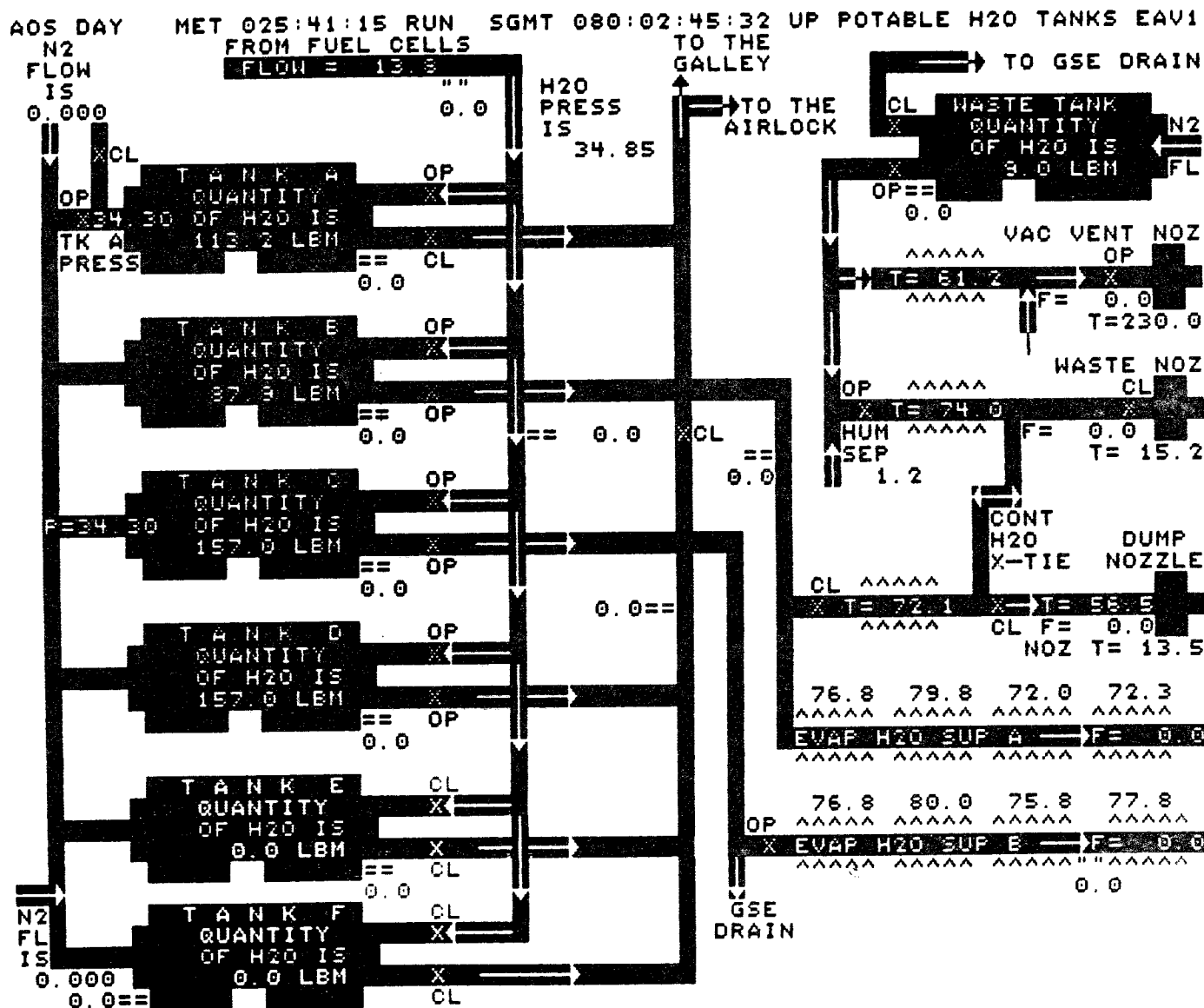
LAT	0	0.000
LAT	0	0.000

14

DNTL VLV POS	1.0000	1.0000
NHS W	0.0000	0.0000
NHS LEAK W	0.00000	0.00000
NHS MASS	49.405	49.405
TANK TEMP	467.936	467.936
HEL PRESS	192.450	192.450
NHS VAP PRESS	35.880	35.880
TANK PRESS	228.330	228.330
10 SEC TIMER	0	0
	TNK 1	TNK 2

EAV1

1509



22

EAPW

EAMD

1509

AOS NIGHT MET 025:04:50 RUN SGMT 030:02:09:15 POTABLE WATER EAPW

VALVE STATUS

LEAINO(1) = 1 LEAOTO(1) = 0 LEALTP = 0 LEAOIO = 0  
 LEAINO(2) = 1 LEAOTO(2) = 1 LEADIO = 0 LEASCO = 1  
 LEAINO(3) = 1 LEAOTO(3) = 1 LEADPO = 0

TANK STATUS

LEACL1 = 0 EAPN2 = 33.98 EAQTY1 = 104.9 EAXMAL = 0.00  
 LEACL2 = 0 EAXMN2 = 1.52 EAQTY2 = 87.9  
 LEACL3 = 0 EAPH20 = 34.45 EAQTY3 = 157.0

DOWNSTREAM STATUS

EADEND = .0000 EADUMP = .0000 EAWMF = .0566  
 EADEMP = .0000 EAEVP(1) = .0000 EAVLUP = .0566  
 EADEMS = .0000 EAEVP(2) = .0000 EAVLDW = .1133  
 EADEMT = .0000 EATOTF = .0000 EANUMO = 0.0

HEATER/FREEZE STATUS

LEAHTA = 0 LEAFRN = 1 LEAFRP = 0 LEANOZ = 0  
 LEAHTB = 0 LEAFRD = 0 LEAFRS = 0 LEADMP = 0  
 EATNOZ = 26.8 EAT1EV = 78.0  
 EATDMP = 79.6 EAT2EV = 78.0

TALKBACK STATUS

NEAINA = 1 NEAINB = 1 NEAINC = 1 NEADIS = 0 NEAOIS = 0  
 NEAIAC = 0 NEAIBC = 0 NEAICC = 0 NEADIC = 1 NEAOIC = 1  
 NEAOTA = 0 NEAOTB = 1 NEAOTC = 1 NEADMP = 0 NEASEC = 1  
 NEAOAC = 1 NEAOBC = 0 NEAOCC = 0 NEADMC = 0 NEASEC = 0

TANK D PARAMETERS

LEAINO(4) = 1 LEAOTO(4) = 1 EAQTY4 = 157.0

C

43

## EAPW Parameter Definitions

LEAINO (1,2,3)	Potable H <sub>2</sub> O inlet valve open discrete
LEAOTO (1,2,3)	Potable H <sub>2</sub> O outlet valve close discrete
LEALTP	Alternate pressurant valve status
LEADIO	Potable H <sub>2</sub> O dump isolation valve open
LEADPO	Potable H <sub>2</sub> O dump valve open
LEAOIO	Potable H <sub>2</sub> O outlet isolation valve open
LEASCO	Potable H <sub>2</sub> O SEC evaporator valve open
LEACL 1,2,3	NO flow into tank A,B,C
EAPN2	N <sub>2</sub> gas press. – H <sub>2</sub> O tanks – psia
EAXMN2	Mass of GSS supplied nitrogen in tanks lbm
EAPH2O	H <sub>2</sub> O Press into tanks – psia
EAQTY (1,2,3)	Quantity of H <sub>2</sub> O in tank A,B,C
EAXMAL	Mass of alternative pressurant added – lbm/sec
EADEMD	H <sub>2</sub> O flow demand from dump nozzle PRI flash evap – lbm/sec
EADEMP	H <sub>2</sub> O flow demand from dump nozzle SEC flash evap – lbm/sec
EADEMS	H <sub>2</sub> O flow demand total SEC flash evap – lbm/sec
EADEMT	H <sub>2</sub> O flow demand total
EADUMP	Flow supplied to dump nozzle – lbm/sec
EAEV (1,2)	Flow available to flash evap.
EATOTF	Total flow to all recipients – lbm/sec
EAWMF	Water mass flow rates exiting a tank – lbm/sec

EAVLUP	Available flow upstream of isol. valve – lbm/sec
EAVLDW	Available flow downstream of Isol. valve – lbm/sec
EANUMO	Number of tanks expelling H <sub>2</sub> O
LEAHTA	Dump nozzle heater A status
LEAHTB	Dump nozzle heater B status
EATNOZ	Nozzle temp. – deg F
EATDMP	Dump line temp – deg F
LEAFRN	Dump nozzle frozen
LEAFRD	Dump line frozen
LEAFRP	Primary flash evap. line frozen
LEAFRS	Sec flash evap line frozen
LEANOZ	Dump nozzle heater on
LEADMP	Dump line heater on
NEAINA	Tk A in vlv. status
NEAIAC	Tk A in closed
NEAOTA	Tk A out vlv status
NEAOAC	Tk A out vlv closed
NEAINB	Tk B in vlv. status
NEAIBC	Tk B in closed
NEAOTB	Tk B out vlv status
NEAOBC	Tk B out vlv closed
NEAINC	Tk C in vlv. status
NEAICC	Tk C in closed
NEAOTC	Tk C out vlv status
NEAOCC	Tk C out vlv closed
NEADIS	Dump isol vlv status
NEADIC	Dump isol vlv closed
NEADMP	Dump vlv status
NEADMC	Dump vlv closed
NEADIS	Dump isol vlv status
NEADIC	Dump isol vlv closed
NEASEC	Sec flash evap vlv status



NEASEC  
LEAINO  
LEAOTO  
EAQTY4

Sec flash evap vlv closed  
Potable H<sub>2</sub>O inlet valve open discrete  
Potable H<sub>2</sub>O outlet valve close discrete  
H<sub>2</sub>O tank quantity lbm

45

# EAMD

EAMD

1509

AOS NIGHT MET 025:05:15 RUN SGMT 080:02:09:32 UP PNL310/730/86BMID EAMD

## SUPPLY WATER TANKS CONTROL

	CIRCUIT BREAKER	SWITCH	
	*-INLET-#	*-OUTLET-#	*-INLET-#
TANK D	( )	( )	VLV STATUS <input type="checkbox"/> CL <input type="checkbox"/>
TANK WASTE	( )	<input checked="" type="checkbox"/>	SWITCH <input type="checkbox"/> <input type="checkbox"/>
TANK A	( )	( )	VLV STATUS <input type="checkbox"/> CL <input type="checkbox"/>
TANK B	( )	( )	SWITCH <input type="checkbox"/> <input type="checkbox"/>
TANK C	( )	( )	
WASTE H2O DUMP ISOL VLV	( )		*-----AFT POD VLV LOGIC-----#
WASTE H2O DUMP VLV/NOZ HT	<input checked="" type="checkbox"/>		GP 1/3 GP 1/2 GP 2/3
SUPPLY H2O DUMP VLV/NZ HT	( )		<input checked="" type="checkbox"/> OFF <input checked="" type="checkbox"/> OFF <input checked="" type="checkbox"/> OFF
B SUPPLY ISOL VLV	( )		
			GALLEY SUPPLY ( )
			H2O LINE HT A ( )
			H2O LINE HT B <input checked="" type="checkbox"/>
			XOVER VLV ( )

### M C A LOGIC SWITCH

FWD1 MID1 MID3 AFT1	FWD2 MID1 MID2 AFT2 MID3 MID4	FWD3 MID2 AFT3 MID4
*-----MN A-----#	*-----MN B-----#	*-----MN C-----#
<input checked="" type="checkbox"/> ON <input checked="" type="checkbox"/> ON <input checked="" type="checkbox"/> ON	<input checked="" type="checkbox"/> ON <input checked="" type="checkbox"/> ON <input checked="" type="checkbox"/> ON	<input checked="" type="checkbox"/> ON <input checked="" type="checkbox"/> ON <input checked="" type="checkbox"/> ON
OFF OFF OFF OFF	OFF OFF OFF OFF	OFF OFF OFF OFF

### M C A POWER CIRCUIT BREAKER

*-----AC1 30-----#	*-----AC2 30-----#	*-----AC3 30-----#
( ) ( ) ( ) ( )	( ) ( ) ( ) ( ) ( ) ( )	( ) ( ) ( ) ( )
*-----A C 1-----#	*-----A C 2-----#	*-----A C 3-----#
OA OB OC	OA OB OC	OA OB OC
OMS KIT VLV	OMS KIT VLV	
<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	
FWD RCS VLV	FWD RCS VLV	FWD RCS VLV
( ) ( ) ( )	( ) ( ) ( )	( ) ( ) ( )
AFT POD VLV GP1	AFT POD VLV GP2	AFT POD VLV GP3
( ) ( ) ( )	( ) ( ) ( )	( ) ( ) ( )

94

S300

1509

AOS NIGHT MET 025:06:05 RUN SGMT 080:02:10:22 UP S300 VENT, DOORS & S300 RADIATORS

ACTIVE VENTS SYS

	LH	RH
1/2	OP	OP
3	OP	OP
4/7	OP	OP
5	OP	OP
6	OP	OP
8/9	OP	OP

ET UMB DOORS SYS - PANEL R2

MODE GPC				
CL LATCHES	FWD	STO	AFT	STO
SWITCH GND				
FLAG STO				
DOORS	LH	CL	RH	CL
SWITCHES		OFF		OFF
FLAGS		CL		CL
LATCHES	LH	LAT	RH	LAT
SWITCHES		OFF		OFF
FLAGS		LAT		LAT

P/L BAY DOORS SYS & RADIATOR PANELS - PANEL R13

AC PWR OFF  
 AUTO MODE  
 C/L LATCH 5-8 OP  
                   9-12 OP  
                   1-4 OP  
                   13-16 OP  
 R FWD BLKHD LCH OP  
 RDY TO LCH SWC OFF  
 R AFT BLKHD LCH OP  
 RDY TO LCH SWC OFF  
 R DOOR POS 180. DEG  
  
 L FWD BLKHD LCH OP  
 RDY TO LCH SWC OFF  
 L AFT BLKHD LCH OP  
 RDY TO LCH SWC OFF  
 L DOOR POS 180. DEG  
  
 CLOSE PREP  
  
 PL BAY DOORS SWCH STP  
 FLAG BP

PL BAY MECH PWR OFF  
  
 STBD LATCH REL  
 RADIATOR STO  
  
 PORT LATCH  
 RADIATOR

47

# HBD1

HBD1

1509

AOS NIGHT MET 025:06:39 RUN SGMT 080:02:10:56 UP HBD1 DOORS

	RELEASE OPEN	LATCH CLOSE	POSITION TIMER	CLOSE TM	DOORS	OPEN TM
CENTERLINE						
			0→34 34.0	1 2	1 2	
1→4	0	0	34.0	0 0	1 1	
5→8	0	0	34.0	0 0	1 1	
9→12	0	0	34.0	0 0	0 0	
13→16	0	0	34.0	0 0	0 0	
BULKHEAD						
			0→48 48.0	0 0	0 0	
R. FRONT	0	0	48.0	0 0	0 1	
R. AFT	0	0	48.0	0 0	0 0	
L. FRONT	0	0	48.0	0 0	1 1	
L. AFT	0	0	48.0	0 0	0 0	
DOORS						
			0→180 180.0			
RIGHT	0	0	180.0			
LEFT	0	0	180.0			

SPEED	R	L	DOOR
	0.000	0.000	IN
MOMENTS	0.	0.	TRANSIT
TORQUE	0.		

LOADS

HBPBDL(1)	0.
(2)	0.
(3)	0.
(4)	0.

84

HBD2

1509

HBD2

AOS NIGHT MET 025:06:57 RUN SGMT 080:02:11:14 UP HBD2 DOOR INPUTS

CENTERLINE		RELEASE	LATCH	HBCLLT (34)
1 - 4	0 OR 0	0 OR 0	34.0	
5 - 8	0 0	0 0	34.0	
9 -12	0 0	0 0	34.0	
13-16	0 0	0 0	34.0	

BULKHEAD		OPEN	CLOSE	HBBLT (48)
R.F.	0 OR 0	0 OR 0	48.0	
R.A.	0 0	0 0	48.0	
L.F.	0 0	0 0	48.0	
L.A.	0 0	0 0	48.0	

DOOR		OPEN	CLOSE	HBDOPOS (180)
RIGHT	0 OR 0	0 OR 0	180.0	
LEFT	0 0	0 0	180.0	

INTERACTIVE CONTROL

LAB79D 0  
 LABDEX 0

bH

DFC1

IS09

AOS NIGHT MET 025:07:17 RUN SGMT 000:02:11:34 UP FCP

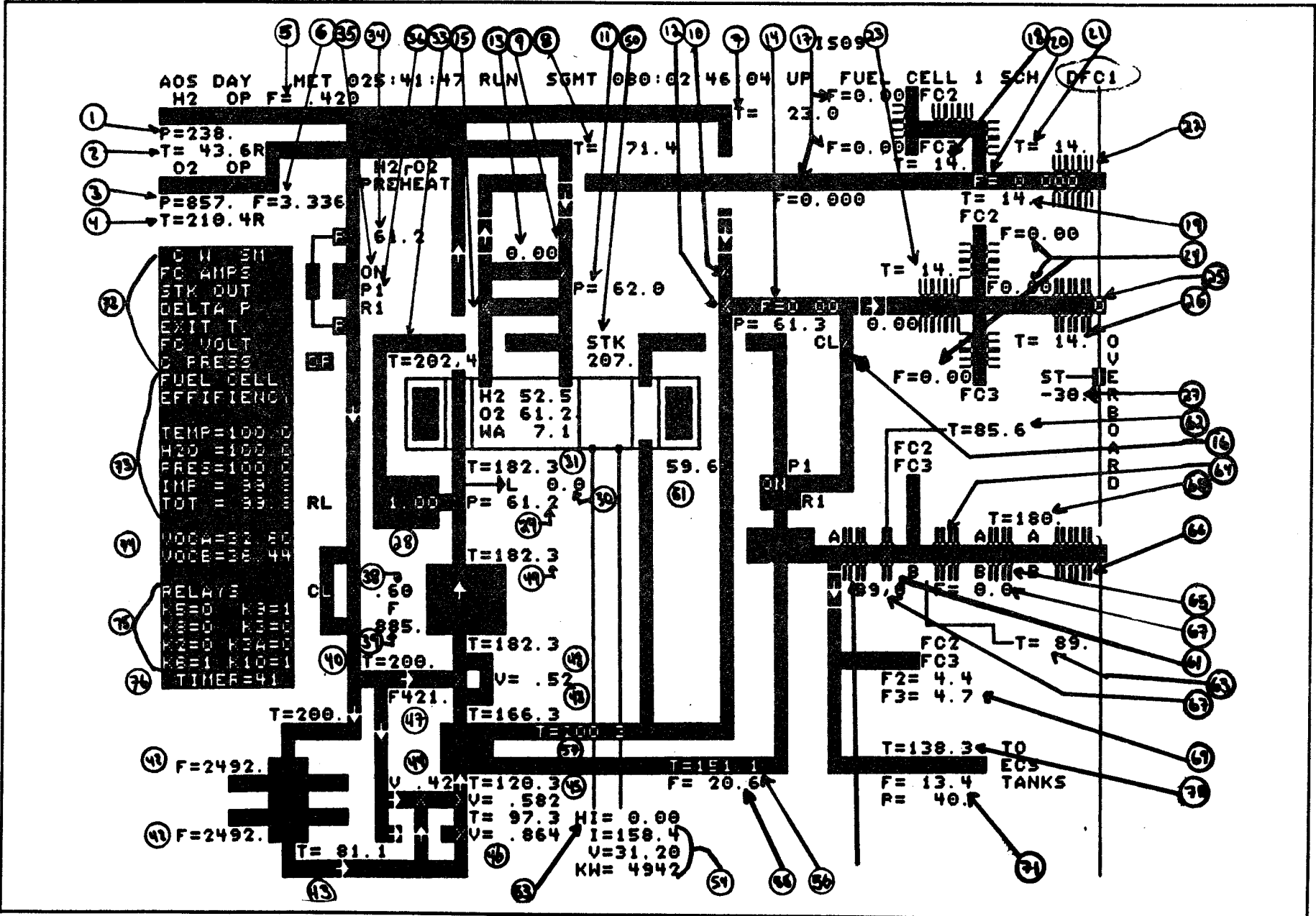
S405

## FUEL CELL

FUEL CELL	1	2	3
REACT VAL H2/O2	OP	OP	OP
FLOW RATE H2/O2	.5 3.7	.5 3.8	.5 4.1
AMPS	174.	182.	194.
VOLTS	31.0	30.9	30.8
STACK TEMP	203.	204.	204.
COOL RETURN T	80.	80.	80.
COND EXIT T	151.	150.	151.
COOLANT PRESS	61.1	61.1	61.0
COOLANT DELTA P	ON	ON	ON
H2O LINE T	139.	139.	140.
H2O RELIEF VAL T	87.	87.	87.
PH	OFF	OFF	OFF
H2 MOTOR TEMP	175.0	175.0	175.0
H2O RELIEF NOZ T B	179.		
H2O RELIEF NOZ T A	179.		
O2 VENT LN T	35.		
H2 VENT LN T 1	35.		
H2 VENT LN T 2	35.		
GPC AUTO PURGE ON			
DELTA VOLTAGE MON	SUB1 18.	21.	21.
	2 18.	22.	13.
	3 16.	20.	20.
SUBSTACK SELECT	3		

50

51



## DFC 1, 2, 3 Parameter Definitions

- 52
1. H<sub>2</sub> pressure as measured by a sensor in the cryogenic tank assembly.
  2. H<sub>2</sub> temperature in Rankine measured in tank assembly.
  3. O<sub>2</sub> pressure as measured by a sensor in the cryogenic tank assembly.
  4. O<sub>2</sub> temperature measured in tank assembly.
  - F 5. H<sub>2</sub> flow measured as it leaves the preheater. It should increase by approximately 0.6 lbm/hr for each fuel cell while that fuel cell is being purged.
  - F 6. O<sub>2</sub> flow. During purge, it should increase by 2.2 lbm/hr. Flow measured as it leaves the preheater. It should increase by approximately 0.6 lbm/hr. for each fuel cell while that fuel cell is being purged.
  - S 7. Temperature of H<sub>2</sub> after passing through preheater.
  - S 8. Temperature of O<sub>2</sub> after passing through preheater.
  9. First stage of integrated dual gas module. The valve drops O<sub>2</sub> pressure down to 135-150 psia.
  10. Valve in H<sub>2</sub> system that is analogous to the valve in item 9.
  11. O<sub>2</sub> pressure controlling the second valve in the gas module to regulate the O<sub>2</sub> pressure to a range of 62-65 psia.
  12. H<sub>2</sub> pressure. In the real vehicle, this pressure should be regulated by its valve to 4.5-6.0 below the O<sub>2</sub> pressure at the corresponding point in the O<sub>2</sub> gas module.
  - S 13. O<sub>2</sub> flow rate and 69 psia crack valve.
  - S 14. H<sub>2</sub> flow rate and 67 psia crack valve.
  15. Purge valve opened at least every 8 hours to allow increased flows so H<sub>2</sub> and O<sub>2</sub> can pick up accumulated contaminants and blow them overboard through purge lines and vents. Opened sequentially one fuel cell at a time after crew or GPC verifies that temperature constraints in purge lines are satisfied.
  16. Valve functions analogous to item 15 description.
  - S 17. Fuel cell O<sub>2</sub> purge line flow rates from FC1, 2, and 3, respectively.
  18. FC2 and 3 O<sub>2</sub> vent purge line temperature measured before joining with FC1's purge line.



53

- F 19. FC O<sub>2</sub> purge line temperature after O<sub>2</sub> from FC1, 2, and 3 mix. Thermostatically controls purge line heaters.
- S 20. Flow rate after O<sub>2</sub> from F1, 2, and 3 mix.
- 21. FC O<sub>2</sub> vent port temperature.
- 22. O<sub>2</sub> purge heaters. These are turned on as the first step in the purging sequence to prevent any condensate from freezing and thus blocking the lines. They are controlled manually by the crew or automatically by the GPC and are left on for 55 minutes after last FC purge valve is closed to ensure that the lines are completely evacuated.
- 23. FC H<sub>2</sub> purge vent line temperature.
- S 24. Flow rates from FCs 1, 2, and 3, respectively.
- S 25. Flow rate of H<sub>2</sub> overboard.
- F 26. FC H<sub>2</sub> vent line temperature.
- F 27. Aluminum skin temperature.
- 28. Percentage ( ÷ 100) of coolant in accumulator. The accumulator maintains an equalized pressure between the O<sub>2</sub> and the FC coolant.
- F 29. FC coolant pressure.
- 30. Leak rate entered into display by instructor.
- 31. FC coolant inlet temperature.
- S 32. H<sub>2</sub>, O<sub>2</sub>, and H<sub>2</sub>O partial pressures.
- F 33. FC coolant stack out temperature.
- 34. Pressure of coolant entering coolant pump.
- 35. Coolant pump status indicator (on or off).
- 36. Power and relay status indicators. "0" = off, "1" = on. (In load 403A, these indications are reversed such that the "P" actually denotes relay status and vice versa.)
- 37. Bypass valve status indicator.
- 38. Percentage ( ÷ 100) open of flow control valve. "1" = full open.
- S 39. Flow rate through flow control valve.
- 40. Temperature that thermostatically controls flow control valve.
- S 41. Temperature of coolant entering ATCS/FC heat exchanger.
- 42. Flow rates of freon through freon coolant loops.
- F 43. FC coolant return temperature.
- 44. Hot premixing value and percentage open.

57

- S 45. Coolant temperature into condenser. Coolant temperature out is also shown.
- 46. Cold pre-mixing valve, its temperature, and percentage ( $\div 100$ ) open.
- S 47. Rate of flow of coolant entering pre-mixing area.
- 48. Stack inlet temp and percentage ( $\div 100$ ) open of value it thermostatically controls.
- S 49. Temperature measured after passing by sustaining and start-up heaters.
- 50. Simulator-computed stack temperature.
- 51.  $H_2 + H_2O$  pressure in stack. (summed).
- S 52. Temperature of  $H_2$ /water vapor exhaust mixture before entering condenser where temperature is reduced below water's boiling point so that the water condenses.
- 52. Internal amps. Current being used in sustaining and start-up heaters.
- 54. Current, voltage, and power levels from fuel cell.
- S 55. Flow rate leaving condenser.
- F 56. Condenser exit temperature.
- 57.  $H_2$  pump status indicator.
- 58. Power and relay status indicators. "0" = off, "1" = on.
- 59.  $H_2O$  line heater.
- S 60. Flow rate through  $H_2O$  line.
- 61.  $H_2O$  relief valve and heaters.
- F 62.  $H_2O$  relief valve temperature.
- F 63.  $H_2O$  relief line temperature.
- 64.  $H_2O$  vent line heaters.
- 65. Barrel heaters.
- 66. Nozzle heaters.
- S 67. Flow rate through  $H_2O$  relief line.
- F 68.  $H_2O$  relief nozzle temperature.
- 69. Flow rates of potable  $H_2O$  from FC 2 and 3 before joining with FC 1's.
- 70. FCP/ECLSS water interface temperature.
- 71. FC 1, 2, and 3 combined flow rate and pressure of potable water.
- 72. Caution and warning and SM alerts. When an out-of-limits condition is detected in FC amps, stack out temp, coolant pump delta pressure, condenser exit temp, FC volts, or coolant pressure, the entire background field turns

blue and asterisks appear to the right of all the parameters except delta pressure. For delta pressure, the "DP" next to "C Press" goes reverse field.

73. Fuel cell efficiency calculations. These start at 100.0 percent every time the simulator is reset. From there, the simulator computes the percentages using FC performance curves impurity, measurements, and other FC parameters. This section gives a general description of a fuel cells overall performance.

74. Open circuit voltages under two different conditions, A and B. This is the voltage that would be present if the FC were taken off line under one of the two conditions. "A" = high current (when the sustaining and start-up heaters are on). "B" = low current.

75. Status of relays within the FC. "0" = off, "1" = on.

76. Start-up 30 second timer. Continues timing up to 45 seconds.

55

DFSM

DFSM

1509

AOS NIGHT MET 025:07:39 RUN SGMT 080:02:11:56 UP

DFSM

FCP SUMMARY

	(1)	(2)	(3)		
DFWHD	.44	.46	.51		
DFWOD	3.49	3.64	4.01		
DFPCOL	61.17	61.13	61.04		
DFWCPM	.249641	.269774	.273960		
DFTSTK	208.29	209.50	210.55		
DFTSKO	203.07	203.46	204.12		
DFTCC1	121.77	123.26	122.82		
DFTCC3	165.95	165.70	165.83		
DFTCH1	200.84	201.69	201.86		
DFTCH3	150.88	150.91	150.73		
OFTECS	80.42	80.42	80.42		
DFHWAT	3.93492	4.09754	4.51909		
DFPH20	7.016	7.210	7.380		
DFPPW0	4.090	4.093	4.073		
DFWCND	4.14632	4.40000	4.62174		
DFVOCA	32.603	32.622	32.638		
DFVOCB	36.448	36.468	36.486		
DFBUS	0.00	0.00	0.00		
DFESLD	6.72	6.72	6.72		
DFACLD	280.00	280.00	280.00		
DFTWLA	138.70	138.97	139.74		
DFPWLA	39.54	39.47	39.28		
DFWHLA	4.15	4.40	4.62		
DFTWRV	87.22	87.22	87.22		
DFWHRV	0.00	0.00	0.00		
DFTWVL	73.76				
DFWWVT	0.00				
DFTWVN	177.34				
DFWPHL	0.000000			DFTENB	16.89
DFWVTH	0.000000			DFTEON	29.00
DFWPOL	0.000000			DFTEWN	29.00
DFWVTO	0.000000				

56

## DFSM Parameter Definitions

DFWHD Hydrogen flow – lb/hr  
 DFWOD Oxygen flow – lb/hr  
 DFPCOL Coolant accum press. – psia  
 DFWCPM Flow through coolant pump  
 DFTSTK Stack temperature – deg F  
 DFTSK0 Coolant stack outlet temp – deg F  
 DFTCC1 Temperature of coolant into condenser – deg F  
 DFTCC3 Temperature of coolant from condenser – deg F  
 DFTCH1 Temperature of hydrogen into condenser – deg F  
 DFTCH3 Temperature of hydrogen from condenser – deg F  
 DFTECS Temperature of coolant from ECLSS – deg F  
 DFWWAT Rate of water production lbm/hr  
 DFPH2O Partial press of H<sub>2</sub>O in stack psia  
 DFPPWO Partial press of H<sub>2</sub>O from condenser psia  
 DFVOCA FCP OPN CKT volts, HI current – volts  
 DFBUS FCP loads to MID PCA buses A, B, C – watts  
 DFESLD FCP loads to AC buses 1, 2, 3 – watts  
 DFTWLA Temperature of product water lines – deg F  
 DFPWLA Press of separate water lines – psia  
 DFWWLA Flow rate through water lines – lbm/hr  
 DFTWRV Temperature of water relief valves – deg F  
 DFWWRV Flow through water relief vlvs – lbm/hr  
 DFTWVL Temperature of water vent line – deg F  
 DFWWVT Flow through common vent line lbm/hr  
 DFTWVN Temperature of water vent nozzle – deg F  
 DFWPHL H<sub>2</sub> flow common purge lbm/hr

DFWVTH H<sub>2</sub> vent flow lbm/hr  
 DFWPOL O<sub>2</sub> flow common purge lbm/hr  
 DFWVTO O<sub>2</sub> vent flow lbm/hr  
 DFTENB Mid fuselage bay temperature – deg F  
 PFTECW Oxygen vent ENVER temperature deg F  
 DFTEN Water nozzle environment temperature deg F

57

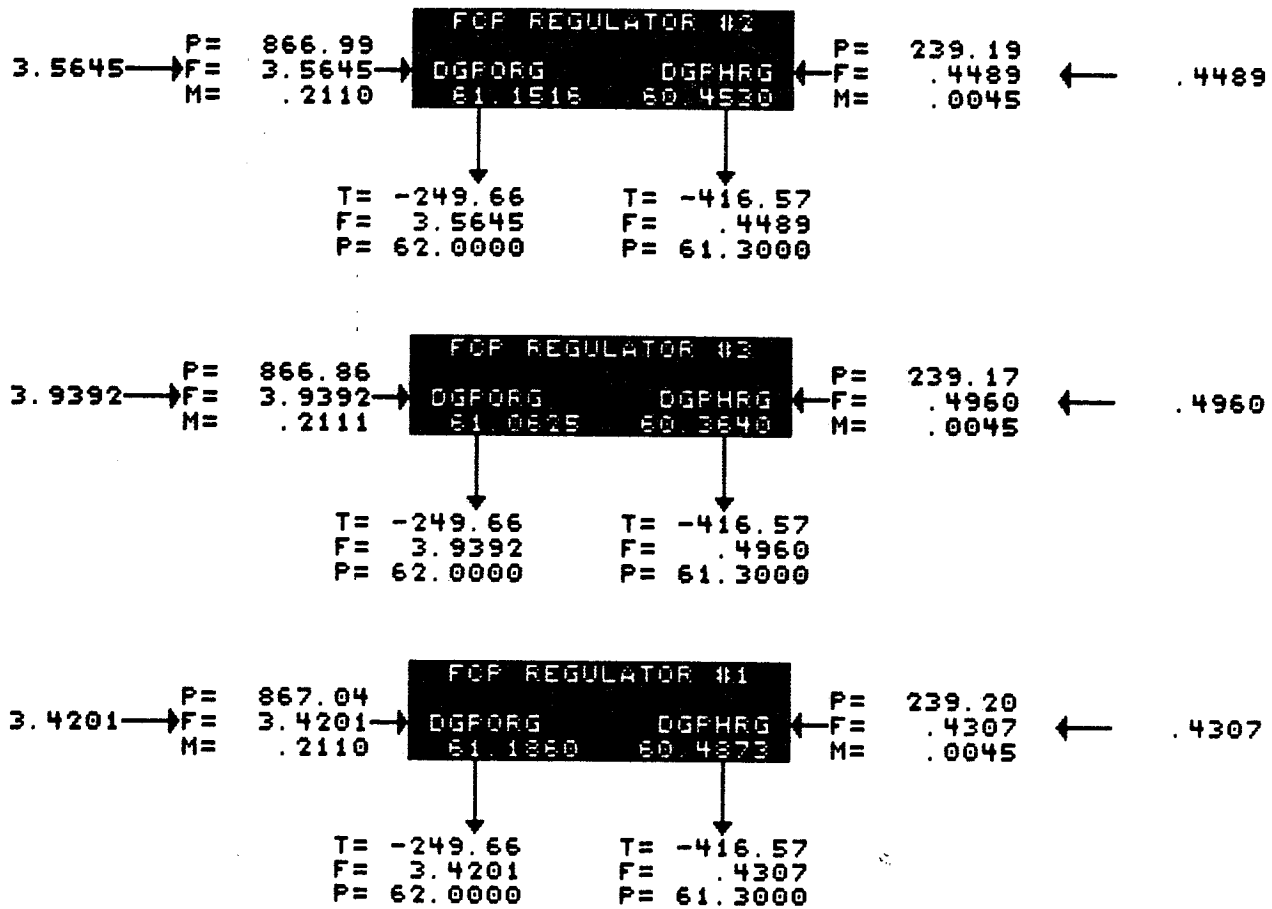
DGDF

DGDF

1509

AOS NIGHT MET 025:07:52 RUN SGMT 080:02:12:09 PRSD - FCP FACES DGDF

PRSD - FUEL CELL INTERFACES



58

DGOA

IS09

AOS NIGHT MET 025:08:52 RUN SGMT 080:02:13:09

CRYO SYSTEM INFO 3408

CRYO

RITE

CRYO

1

2

3

4

1

TANK S

02 TK QTY	96.	96.	95.	0.	0.
02 TK PRESS	851.	850.	854.	0.	0.
02 TK TEMP	-250.	-250.	-250.	0.	0.
02 TK HTR A1	OFF	OFF	OFF	OFF	OFF
02 TK HTR B1	OFF	OFF	OFF	OFF	OFF
02 TK HTR A SW	AUTO	AUTO	AUTO	OFF	OFF
02 TK HTR B SW	AUTO	AUTO	AUTO	OFF	OFF
02 HTR ASSM 1 TEMP	-250.	-250.	-224.	0.	0.
02 HTR ASSM 2 TEMP	-250.	-250.	-224.	0.	0.

H2 TK QTY	94.	94.	94.	0.	0.
H2 TK PRESS	223.	223.	238.	0.	0.
H2 TK TEMP	-417.	-417.	-417.	0.	0.
H2 TK HTR A	OFF	OFF	OFF	OFF	OFF
H2 TK HTR B	OFF	OFF	OFF	OFF	OFF
H2 TK HTR A SW	AUTO	AUTO	AUTO	OFF	AUTO
H2 TK HTR B SW	AUTO	AUTO	AUTO	OFF	AUTO

MANF

1

2

02 MANF VAL	OP	OP
02 MANF PRESS	854.	854.
H2 MANF VAL	OP	OP
H2 MANF PRESS	238.	238.

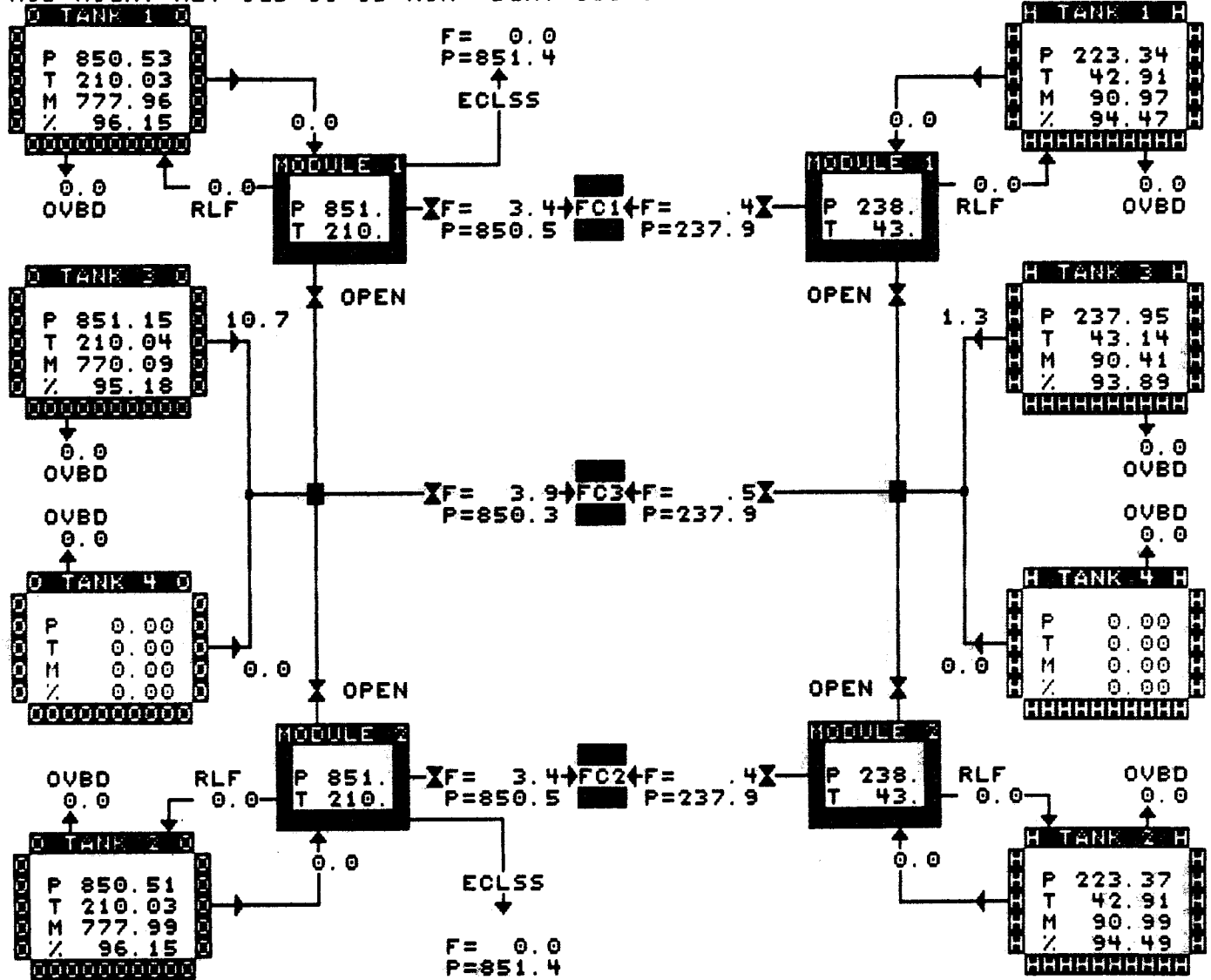
59

DGOA

S407

IS09

ADS NIGHT MET 025:09:05 RUN SGMT 080:02:13:22 UP PRSD OVERALL DGOA



09



EAV1

1509

AOS DAY MET 025:43:12 RUN SGMT 080:02:47:29

EPDC

S407

EPDC

	A	B	C
FC VOLTS	31.21	31.17	31.24
MN VOLTS	31.12	31.09	31.16
FPCA VOLTS	30.75	30.73	30.76
APCA VOLTS 1-3	30.90	30.81	30.75
APCA VOLTS 4-6	30.90	30.82	30.75
CONT AB V	29.55	29.55	29.55
CONT BC V	29.56	29.56	29.56
CONT CA V	29.56	29.56	29.56
ESS VOLTS	29.90	29.87	29.94
FC AMPS	157.63	160.74	155.18
MID AMPS	22.84	35.33	13.05
FWD AMPS	64.59	46.87	82.16
AFT AMPS 1-3	.89	1.50	1.87
AFT AMPS 4-6	29.69	23.52	21.49
AC BUS 1 V	117.00	117.00	117.00
AC BUS 1 AMPS	2.38	2.48	2.50
AC BUS 2 V	117.00	117.00	117.00
AC BUS 2 AMPS	4.57	4.28	3.53
AC BUS 3 V	117.00	117.00	117.00
AC BUS 3 AMPS	2.41	2.63	2.50
PAYLOAD AMPS			
PRI	10.93		
MNB	0.00	AC1	AC2
AUX A	0.00		AC3
AUX B	0.00	F1	L17
AFT B	0.00		A15
AFT C	0.00	M052J	M013R

61

DDDD

DLDL

IS09

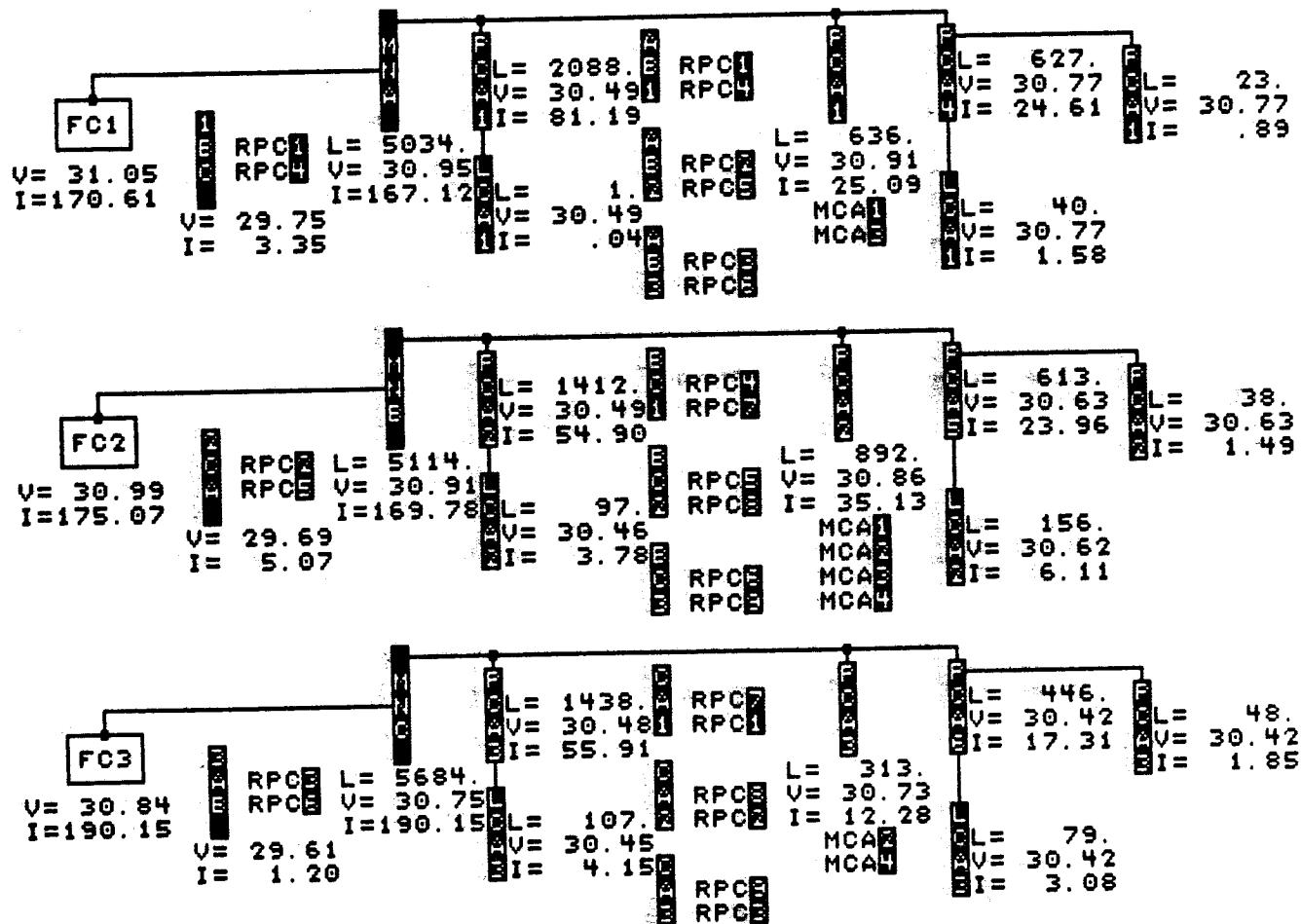
AOS NIGHT MET 025:09:27 RUN SGMT 080:02:13:44 UP DC POWER  
RED=OFF

DDDD

DC POWER

GREEN=ON

FUEL CELL    ESSENTIAL BUS    MAIN BUS    FORWARD BUS    CONTROL BUS    MID BUS    AFT BUS



62

DLDL

1509

AOS NIGHT MET 025:09:41 RUN SGMT 080:02:13:58 UP

DLDL

RED=OFF

GREEN=ON

### DC PANEL POWER

PANEL 13

14

15

16

IL= 48.47	IL= 54.08	IL= 25.00	IL= 134.19	IL= 288.29	IL= 127.07
IV= 29.39	IV= 29.18	IV= 29.36	IV= 30.87	IV= 30.71	IV= 30.67
II= 1.82	II= 2.01	II= .94	II= 5.28	II= 11.29	II= 4.97

\*\*\*\*\*

### AC POWER

AC PHASE	1	2	3	4	5	6	7	8	9
LOAD	279.0	289.7	292.6	534.5	502.5	412.4	281.7	308.4	290.1
VOLTAGE	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0	117.0
CURRENT	2.4	2.5	2.5	4.6	4.3	3.5	2.4	2.6	2.5

### INVERTER

DC LOAD	414.7	428.6	432.4	748.7	706.9	589.1	418.2	453.1	429.2
DC CURRENT	16.04	16.58	16.73	28.84	27.24	22.74	16.17	17.51	16.59

NUMBER OF AC PHASES AVAILABLE TO THE MCA'S

	MCA1	MCA2	MCA3		MCA1	MCA2	MCA3		MCA1	MCA2	MCA3
FORWARD	3	3	3		1	2	2		3	3	3
				MID	2	3	3				
					3	3	3		AFT		
					1	3	3				
					2	3	3				
					3	0	0				
					0	0	0				

63

## DLDL Parameter Definitions

The following is a list of the mnemonics found on display DLDL with the description of each.

LDLBSA Main DC bus power available  
 LDLIBC Essential bus power available  
 LDLSAB RCS/OMS sub-bus power available  
 LDLFMA Forward motor control assembly power available  
 LDL MIA Mid-motor control assembly 1-bus A power available

M3A 3-bus A  
 M1B 1-bus B  
 M2B 2-bus B  
 M3B 3-bus B  
 M4B 4-bus B  
 M2C 2-bus C  
 M4C 4-bus C

LDLFPA Forward power control assembly power available  
 LDLFLA Forward load control assembly power available  
 LDLLHA Left C&DP power available  
 LDLAMA Aft motor control assembly power available  
 LDLAPA Aft power control assembly power available  
 LDLALA Aft load control assembly power available  
 LDLRHA Right hand C&DP power available  
 LDL10A AC phase power available  
 KDL130 AC power available (to all or any phases of bus)  
 KDLF30 Forward motor control assembly AC30 power available

KDLA30 Aft motor control assembly AC 30 power available  
 KDLM11 Mid-motor control assembly 1-AC bus 30 power available

M31 3-AC bus1 30  
 M12 1-AC bus2 30  
 M22 2-AC bus2 30  
 M32 3-AC bus2 30  
 M42 4-AC bus2 30  
 M23 2-AC bus3 30  
 M43 4-AC bus3 30

DDL10A AC phase load  
 DDV10A AC bus voltage  
 DDI10A AC phase current  
 DDCAC1 DC load to inverters

1 = power available to a given assembly.

0 = power not available.

3(2,1) = power available to 3(2,1) phases.

DDL5

DDL5 1509  
 EAQHT -.5000000000  
 LOS NIGHT MET 001:09:23 RUN SGMT 078:02:42:23 ELEC ANALYSIS DDL5

LOAD SHARING

EXCELER

FWD FGA

A	419.97	AB	112.900	BC	238.200	AC	178.300	ABC	1998.000
B	880.86	A	36.408	B	133.839	A	70.273	A	744.042
C	1211.54	B	76.492	C	104.361	C	108.027	B	749.955
		DV	.009	DV	-.068	DV	-.059	C	504.002

RPT FGA 4-8

A	1163.01	AB	63.700	BC	63.700	AC	127.400
B	1025.19	A	45.916	B	63.700	A	127.400
C	968.07	B	17.784	C	.000	C	.000
		DV	-.029	DV	.225	DV	.197

ODDFPA  
 (1)-1500.00  
 (2)-1500.00  
 (3)-1500.00

ESS BUS

DEAD BAND	.03	1BC	80.190	2CA	100.800	3AB	64.720
		1	75.236	A	0.000	A	0.000
		B	0.000	2	100.799	B	0.000
		C	4.953	C	0.000	3	64.719

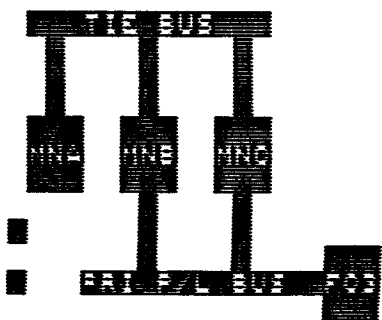
FC/MAIN BUS PARAMETERS

	FC 1	FC 2	FC 3
VOLTAGE	31.50	31.65	31.62
CURRENT	137.22	124.83	128.48
OPEN CIRCUIT VOLTAGE	32.65	32.65	32.65
INTERNAL CONDUCTANCE	120.05	125.75	125.04

TIE BUS

VOLTAGE	0.00
TOTAL CURRENT	0.00
CONDUCTANCE	0.00

- CONNECTED (GOOD) ■
- NOT CONNECTED ■
- FC TO MN GOOD ■
- MN ISOLATED ■



65

EAV1

1509

AOS DAY MET 025:42:27 RUN SGMT 080:02:46:44 UP S415 C/W STATUS

STATUS

CKT	PWR	SELF	-----ALARM-----				SWITCHES	OUT-OF-LIMIT	
BRKR	SUPPLY	TEST	C/W	BKUP	SM	FIRE	DP/DT		
A	CLSD	GOOD	GOOD	OFF	OFF	OFF	OFF	OFF	MODE-NORM
B	OPEN	GOOD	GOOD	OFF	OFF	OFF	OFF	OFF	DP/DT-PAY
	ANN	GOOD							

ANNUNCIATOR PANEL

O2 PRESS	H2 PRESS	FUEL CELL REAC	FUEL CELL STACK TEMP	FUEL CELL PUMP
CABIN ATM	O2 HEATER TEMP	MAIN BUS UNDER VOLT	AC VOLTAGE	AC OVERLOAD
FREON LOOP	AV BAY / CABIN AIR	IMU	FWD RCS	RCS JET
H2O LOOP	RGA/ACCEL	AIR DATA	LEFT RCS	RIGHT RCS
---	LEFT RHC	RIGHT/AFT RHC	LEFT OMS	RIGHT OMS
PAYLOAD WARNING	GPC	FCS SATURATION	OMS KIT	OMS TVC
PAYLOAD CAUTION	PRIMARY C/W	FCS CHANNEL	MPS	---
BACKUP C/W ALARM	APU TEMP	APU OVERSPEED	APU UNDERSPEED	HYD PRESS

99

+305

IS09

05 DAY MET 191:22:52 RUN SGMT 037:12:22:52 UP S430 C/W PARM. 000-015

CHANNEL	PARAMETER	RANGE	VALUE	LO LIM	HI LIM	INH
000	O2 TANK 1 PSIA	515→1015	828.	540.	985.	INH
001	O2 TK 1 HTR 1 TEMP	-425→475	-175.	405.8	349.	INH
002	FC 1 O2 REACT VLV	OPEN/CLS	OPEN	0V	LL	INH
003	MAIN A VOLTAGE	0→40	29.79	26.40	.8	INH
004	CABIN PSIA	0→20	15.00	13.8	15.2	INH
005	GPC 1	NRM/FAIL	FAIL	HL	5V	INH
006	FWD RCS OX TK PSIA	0→400	260.	200.	312.	INH
007	L OMS OX TK PSIA	0→400	255.	232.	284.	INH
008	APU 1 EGT	0→1500	1166.	HL	1260.	INH
009	MPS 1 HE TANK PSIA	0→5000	274.	1150.	LL	INH
010	O2 TANK 2 PSIA	515→1050	828.	540.	985.	INH
011	O2 TK 1 HTR 2 TEMP	-425→475	-175.	HL	349.	INH
012	FC 1 H2 REACT VLV	OPEN/CLS	OPEN	0V	LL	INH
013	MAIN B VOLTAGE	0→40	29.9	26.40	LL	INH
014	O2 REG 1 FLOW #/HR	0→5	0.00	HL	5.	INH

VALUE = GREEN    PARAMETER IN TOLERANCE  
 VALUE = RED     PARAMETER OUT-OF-TOLERANCE

67

+305

1509

05 DAY

MET 191:23:17 RUN SGMT 037:12:23:17

S431 C/W PARM. 015-029

CHANNEL	PARAMETER	RANGE	VALUE	LO LIM	HI LIM	INH
015	GPC 2	NRM/FAIL	FAIL	HL	5V	INH
016	FWD RCS FU TK PSIA	0→400	260.	200.	312.	INH
017	L OMS FU TK PSIA	0→400	256.	232.	284.	INH
018	APU 2 EGT	0→1500	1155.	HL	1260.	INH
019	MPS 2 HE TANK PSIA	0→5000	253.	1150.	LL	<del>INH</del>
020	O2 TANK 3 PSIA	515→1050	827.	540.	985.	INH
021	O2 TK 2 HTR 1 TEMP	-425→475	-175.	HL	349.	INH
022	FC 2 O2 REACT VLV	OPEN/CLS	OPEN	0V	LL	INH
023	MAIN C VOLTAGE	0→40	29.8	26.40	LL	INH
024	O2 REG 2 FLOW #/HR	0→5	0.00	HL	5.	INH
025	GPC 3	NRM/FAIL	FAIL	HL	5V	INH
026	FWD RCS LEAK	NRM/LEAK	NORM	HL	5V	INH
027	LEFT OMS ENG	NRM/FAIL	NORM	HL	5V	INH
028	APU 3 EGT	0→1500	1167.	HL	1260.	INH
029	MPS 3 HE TANK PSIA	0→5000	254.	1150.	LL	<del>INH</del>

VALUE = GREEN    PARAMETER IN TOLERANCE  
 VALUE = RED      PARAMETER OUT-OF-TOLERANCE



+305

1509

05 DAY MET 191:23:48 RUN SGMT 037:12:23:48 UP 5432 C/W PARM. 030-044

CHANNEL	PARAMETER	RANGE	VALUE	LO LIM	HI LIM	INH
030	O2 TANK 4 PSIA	515→1015	827.	540.	985.	INH
031	O2 TK 2 HTR 2 TEMP	-425→475	-175.	HL	349.	INH
032	FC 2 H2 REACT VLV	OPEN/CLS	OPEN	0V	LL	INH
033	AC 1 VOLTAGE	NRM/FAIL	NORM	HL	28V	INH
034	PP02 A PSIA	0→5	3.17	2.9	3.4	INH
035	GPC 4	NRM/FAIL	FAIL	HL	5V	INH
036	L RCS 0X TK PSIA	0→400	260.	200.	312.	INH
037	R OMS 0X TK PSIA	0→400	255.	232.	284.	INH
038	APU 1 LUBE OIL TMP	0→500	251.	HL	290.	INH
039	MPS 1 HE REG PSIA	0→1000	408.	680.	810.	<del>INH</del>
040	O2 KIT PRESS	(TBD)		HL	28V	INH
041	O2 TK 3 HTR 1 TEMP	-425→475	-183.	HL	349.	INH
042	FC 3 O2 REACT VLV	OPEN/CLS	OPEN	0V	LL	INH
043	AC 2 VOLTAGE	NRM/FAIL	NORM	HL	28V	INH
044	PP02 B PSIA	0→5	3.17	2.9	3.4	INH

VALUE = GREEN    PARAMETER IN TOLERANCE  
 VALUE = RED     PARAMETER OUT-OF-TOLERANCE

69

+305

1509

05 DAY MET 191:24:10 RUN SGMT 037:12:24:10 UP S433 C/W PARM. 045-059

CHANNEL	PARAMETER	RANGE	VALUE	LO LIM	HI LIM	INH
045	GPC 5	NRM/FAIL	NORM	HL	5V	INH
046	L RCS FU TK PSIA	0→400	260.	200.	312.	INH
047	R OMS FU TK PSIA	0→400	256.	232.	284.	INH
048	APU 2 LUBE OIL TEM	0→500	251.	HL	290.	INH
049	MPS 2 HE REG PSIA	0→1000	0.	680.	810.	<del>INH</del>
050	H2 TANK 1 PSIA	0→400	218.	153.	294.	INH
051	02 TK 3 HTR 2 TEMP	-425→475	-183.	HL	349.	INH
052	FC 3 H2 REACT VLV	OPEN/CLS	OPEN	0V	LL	INH
053	AC 3 VOLTAGE	NRM/FAIL	NORM	HL	28V	INH
054	N2 REG 1 FLOW #/HR	0→5	0.00	HL	5.	INH
055	PAYLOAD WARNING A	(TED)		HL	5V	INH
056	LEFT RCS LEAK	NRM/LEAK	NORM	HL	5V	INH
057	RIGHT OMS ENG	NRM/FAIL	NORM	HL	5V	INH
058	APU 3 LUBE OIL TEM	0→500	251.	HL	290.	INH
059	MPS 3 HE REG PSIA	0→1000	406.	680.	810.	<del>INH</del>

VALUE = GREEN      PARAMETER IN TOLERANCE  
 VALUE = RED        PARAMETER OUT-OF-TOLERANCE

+305

1509

35 DAY

MET 191:24:30 FRZ SGMT 037:12:24:30

S434 C/W PARM. 060-074

CHANNEL	PARAMETER	RANGE	VALUE	LO LIM	HI LIM	INH
060	H2 TANK 2 PSIA	145→305	216.	153.	294.	INH
061	O2 TK 4 HTR 1 TEMP	-425→475	-183.	HL	349.	INH
062	FC 1 STACK TEMP	-75→300	207.	173.	244.0	INH
063	AC 1 OVERLOAD	OL/NORM	NORM	HL	28V	INH
064	N2 REG 2 FLOW #/HR	0→5	0.00	HL	5.	INH
065	PAYLOAD WARNING B	(TBD)		HL	5V	<del>INH</del>
066	R RCS OX TK PSIA	0→400	260.	200.	312.	INH
067	OMS TVC	NRM/FAIL	NORM	HL	5V	INH
068	APU 1 OVERSPEED	NORM/HI	NORM	HL	28V	INH
069	LO2 ENG MANIF PSIA	0→300	15.	HL	249.	INH
070	H2 TANK 3 PSIA	145→305	228.	153.	294.	INH
071	O2 TK 4 HTR 2 TEMP	-425→475	-183.	HL	349.	INH
072	FC 2 STACK TEMP	-75→300	206.	173.	244.	INH
073	AC 2 OVERLOAD	OL/NORM	NORM	HL	28V	INH
074	CABIN FANS IN. H2O	0→8	6.37	2.8	7.0	INH

VALUE = GREEN      PARAMETER IN TOLERANCE  
 VALUE = RED        PARAMETER OUT-OF-TOLERANCE

71

+305

1509

35 DAY MET 191:24:30 FRZ SGMT 037:12:24:30

S435 C/W PARM. 075-089

CHANNEL	PARAMETER	RANGE	VALUE	LO LIM	HI LIM	INH
075	PAYLOAD WARNING C	(TBD)		HL	5.	<del>INH</del>
076	R RCS FU TK PSIA	0→400	260.	200.	312.	INH
077	OMS KIT OX TK PSIA	0→400	0.	232.	284.	<del>INH</del>
078	APU 2 OVERSPEED	NORM/HI	NORM	HL	28V	INH
079	LH2 ENG MANIF PSIA	0→100	15.	0.	60.	INH
080	H2 TANK 4 PSIA	145→305	228.	153.	294.	INH
081	O2 KIT HTR TEMP	(TBD)		HL	28V	INH
082	FC 3 STACK TEMP	-75→300	208.	173.	244.	INH
083	AC 3 OVERLOAD	OL/NORM	NORM	HL	28V	INH
084	AV BAY 1 AIR OUT T	45→145	109.	HL	130.0	INH
085	PAYLOAD WARNING D	(TBD)		HL	5V	<del>INH</del>
086	RIGHT RCS LEAK	NRM/LEAK	NORM	HL	5V	INH
087	OMS KIT FU TK PSIA	0→400	0.	232.	284.	<del>INH</del>
088	APU 3 OVERSPEED	NORM/HI	NORM	HL	28V	INH
089	SPARE			HL	5V	INH

VALUE = GREEN      PARAMETER IN TOLERANCE  
 VALUE = RED        PARAMETER OUT-OF-TOLERANCE

4305

1509

05 DAY MET 191:24:30 FRZ SGMT 037:12:24:30

5436 C/W PARM. 090-104

CHANNEL	PARAMETER	RANGE	VALUE	LO LIM	HI LIM	INH
090	H2 KIT PSIA	(TBD)		HL	28V	INH
091	AIR DATA DILEMMA	NO/YES	NO	HL	5V	INH
092	FC 1 COOLING PUMP	ON/OFF	ON	OV	LL	INH
093	RG/ACCELEROMETER	NRM/FAIL	NORM	HL	5V	INH
094	AV BAY 2 AIR OUT T	45→145	109.0	HL	130.	INH
095	PAYLOAD WARNING E	(TBD)		HL	5V	<del>INH</del>
096	RCS JET	NRM/FAIL	NORM	HL	5V	INH
097	PAYLOAD CAUTION	(TBD)		HL	5V	INH
098	APU 1 UNDERSPEED	NORM/LO	NORM	HL	28V	INH
099	HYD SYS 1 PSIA	0→4000	3088.	2760.	LL	INH
100	LEFT RHC	NRM/FAIL	NORM	HL	5V	INH
101	FCS SATURATION	NORM/SAT	NORM	HL	5V	INH
102	FC 2 COOLING PUMP	ON/OFF	ON	OV	LL	INH
103	IMU	NRM/FAIL	NORM	HL	5V	INH
104	AV BAY 3 AIR OUT T	45→145	92.3	HL	130.	INH

VALUE = GREEN  
VALUE = RED

PARAMETER IN TOLERANCE  
PARAMETER OUT-OF-TOLERANCE

1305

1509

05 DAY MET 191:22:31 RUN SGMT 037:12:22:31 5437 C/W PARM. 105-119

CHANNEL	PARAMETER	RANGE	VALUE	LO LIM	HI LIM	INH
105	H2O LOOP 1 PMP PSIA	0→150	23.5	19.	79.	INH
106	FCL 1 ICH FLOW #/HR	0→2600	2145.	1200.	LL	INH
107	FCL 1 EVAP OUT TEMP	20→100	38.2	32.	66.	INH
108	APU 2 UNDERSPEED	NORM/LOW	NORM	HL	28V	INH
109	HYD SYS 2 PSIA	0→4000	3088.	2760.	LL	INH
110	RIGHT/AFT RHC	NRM/FAIL	NORM	HL	5V	INH
111	FCS CHANNEL BYPASS	NORM/BYP	NORM	HL	5V	INH
112	FC 3 COOLING PUMP	ON/OFF	ON	0V	LL	INH
113	SPARE			HL	5V	INH
114	CABIN HX AIR OUT T	45→145	49.0	HL	145.	INH
115	H2O LOOP 2 PMP PSIA	0→150	63.6	45.	81.	INH
116	FCL 2 ICH FLOW #/HR	0→2600	2151.	1200.	LL	INH
117	FCL 2 EVAP OUT TEMP	20→100	38.2	32.	66.	INH
118	APU 3 UNDERSPEED	NORM/LOW	NORM	HL	28V	INH
119	HYD SYS 3 PSIA	0→4000	3088.	2750.	LL	INH

VALUE = GREEN      PARAMETER IN TOLERANCE  
 VALUE = RED        PARAMETER OUT-OF-TOLERANCE

74

# EAV3

EAV3

1509

AOS NIGHT MET 025:10:33 RUN SGMT 080:02:14:50 UP VENT DOOR POSITNS EAV3

VENTS	ACTUATORS	OPEN		CLOSE		PURGE		PGE 2		REAVNT
		1	2	1	2	1	2	1	2	
LEFT	1+2	1	1	0	0	0	0			8
RIGHT	1+2	1	1	0	0	0	0			8
LEFT	3	1	0	0	0					8
RIGHT	3	0	0	0	0					8
LEFT	4+7	1	0	0	0					8
RIGHT	4+7	1	1	0	0					8
LEFT	5	1	1	0	0					8
RIGHT	5	0	0	0	0					8
LEFT	6	1	1	0	0	0	0	0	0	8
RIGHT	6	0	0	0	0	0	0	0	0	8
LEFT	8+9	1	1	0	0	0	0			8
RIGHT	8+9	1	1	0	0	0	0			8

K16 (P1) SW POSN    L    R  
 ACT 1            0    0  
 ACT 2            0    0

K13 (P2) SW POSN    L    R  
 ACT 1            0    0  
 ACT 2            0    0

75

S301

1509

AOS NIGHT MET 025:11:38 RUN SGMT 080:02:15:55

S301



DEPLOY PBIS

ARM OFF  
DOWN OFF

FAIL LIGHTS

ANTI-SKID OFF  
NWS OFF

SWITCHES

ANTI-SKID OFF  
NWS OFF

BRAKE MNA OFF  
BRAKE MNB OFF  
BRAKE MNC OFF

R/CIR VLV CLD

CIRC BRKERS

LG SNSR 1 CLD  
LG SNSR 2 CLD

NWS CLD

ARMDN RST OPN

NLG LMG RMG

UPLOCK UP UP UP  
DOWNLOCK NO NO NO

FLAGS CDR UP UP UP  
FLAGS PLT UP UP UP

WONG/WOW NO NO NO

GD SPD EN YES

NWS BOX DIR GPC OFF

LG HYDRAULIC VALVES

ISOLAT VLV SYS 1 CL  
ISOLAT VLV SYS 2 CL  
ISOLAT VLV SYS 3 CL

RE/CIR VLV SYS 1 CL

RDT SO VLV SYS 1 OP

CONTL VLV SYS 1 CL

DUMP R VLV SYS 1 CL

ANTI-SKID CONTROL CIRCUITS

LEFT O/B CIR A FAIL RIGHT O/B CIR A FAIL  
LEFT O/B CIR B FAIL RIGHT O/B CIR B FAIL

LEFT I/B CIR A FAIL RIGHT I/B CIR A FAIL  
LEFT I/B CIR B FAIL RIGHT I/B CIR B FAIL

MECHANICAL ACTIVATORS

ELEVONS

LEFT O/B .4 DEG RIGHT O/B .4 DEG  
LEFT I/B .3 DEG RIGHT I/B .3 DEG

RUDDER 0.0 DEG BODY FLAP 0.0 DEG

SPEED/BRK .1 DEG

76



# Section 5: Orbiter Panel Menus

Also available are displays of the different Orbiter panels. A listing of the panel menu and the panels follow. It is important for the instructor to be familiar with the locations of switches and able to call up pages quickly.

77

100

100

12 NIGHT NET 000 00 00 FLY 88MT 179 00 00 00

100-100 000 00 00

LFT STATION PANEL MENU

MODEM1- PANEL MENU

LEFT

CENTER

RIGHT

■ PR10 L9  
 ■ P10A L10  
 ■ P10B L10  
 ■ P14A L11  
 ■ PL12 L11  
 ■ PL12 L12  
 L13  
 L14  
 L15  
 L16  
 ■ P0001 W001  
 ■ P0002 W02

■ PA1A A1  
 ■ PA1B A1  
 ■ PA1C A1  
 ■ PA1D A1  
 ■ PA02 A2  
 ■ PA02 A4  
 A6  
 ■ PA06 A6  
 L14  
 ■ PA3A A7  
 ■ PA3B A7  
 L16  
 ■ P0001 A00  
 ■ P0002 A00  
 A10  
 A10  
 ■ PA11 A11  
 ■ PA12 A12  
 ■ PA13 A13  
 ■ PA14 A14  
 ■ PA15 A15

■ PR10 R10  
 P12A R12  
 P12B R12  
 P13A R13  
 P13B R13  
 R14  
 P15A R15  
 P15B R15  
 R16  
 R17  
 R18

■ TM01 M01  
 ■ TM02 M02  
 ■ TM03 M03  
 ■ TM04 M04  
 ■ TM05 M05/M05SH  
 ■ TM06 M06  
 ■ TM07 M07  
 ■ TM08 M08  
 ■ TM09 M09  
 ■ TM10 M04/M05/M06  
 ■ TM11 M01/M02/M03 L17

SL

1004

1518

LOS NIGHT MET 300 08:41 RUN SBHT RTE 11 00 41 LP FLL STL 07- 1908

FLIGHT STATION CENTER PANEL MENU

FORWARD

CENTER

OVERHEAD

. FF01 F1  
 . FF01 F2  
 . FF01 F3  
 F4  
 F5  
 — . FF06 F6  
 . FF7A F7  
 . FF7B F7  
 — . FF08 F8  
 . FF09 F9

. PC2A C2  
 . PC2A C3  
 . PC2B C3  
 C4  
 C5  
 C6  
 C7

. P001 01  
 . P002 02  
 . P002 03  
 C4  
 . P005 05  
 . P06A 06  
 . P06B 06  
 . P07A 07  
 . P07B 07  
 . P08A 08  
 . P08B 08  
 . P08C 08  
 . P08E 08

C10  
 C11  
 C12  
 . P013 C13  
 . P014 C14  
 . P015 C15  
 . P016 C16  
 . P013 C17  
 C18  
 . P013 C19  
 C20

79

100- 1818  
 JOB RIGHT NET 001 01 10 PL1 8000 07E 01 01 01 PLT 07L SIDE PANEL 0001

FLIGHT STATION SIDE PANEL MENU

LEFT

□	PL1A	L1
□	PL1B	L1
□	PL1C	L1
□	PL2A	L2
□	PL2B	L2
		L3
□	PL4A	L4
□	PL4B	L4
□	PL4C	L4
•	PF01	L5
		L6
		L7
		L8

RIGHT

□	PR01	R1
□	PR02	R1
□	PR03	R1
□	PR04	R1
		R2
		R3
		R4
•	PF01	R5
		R6
		R7
		R8
		R9

08

## Section 6: Orbiter CRT Displays and Communication Loops

The final two capabilities which enable monitoring the crew progress through malfunction procedures and through the communication loop are crew CRTs.

The crew CRTs can be monitored by rotating the dial switch at the instructor station and monitoring the display. Hardcopies of the CRT can be obtained by pressing the button to the right of the CRT. The following pages are the crew CRTs that should be familiar to systems instructors.

18

```

1 2 3 4 5
12345678901234567890123456789012345678901
*
1 X021/063/ PL BAY DOORS XX X DDD/HH:MM:SS
2 DDD/HH:MM:SS
3 AC POWER ON 1X
4 OFF 2X PBD SM-XXXX
5 AUTO MODE SEL 3X MICRO-SM STAT
6 LATS DOORS
7 CENTER LATCHES MAN OP/CL AUTO CCOO CARRO
8 SEL SEQ ABAB ABC
9 5- 8 4X XXS X XXXX
10 9-12 5X XXS X XXXX
11 1- 4 6X XXS X XXXX
12 13-16 7X XXS X XXXX
13 STBD
14 FWD LATCHES 8X XXS X XXXX XXXX
15 AFT LATCHES 9X XXS X XXXX XXXX
16 DOOR 10X XXXS X
17 PORT
18 FWD LATCHES 11X XXS X XXXX XXXX
19 AFT LATCHES 12X XXS X XXXX XXXX
20 DOOR 13X XXXS X
1 OPEN 15X
2 PBD SM BYPASS 14X STOP 16X
3 CLOSE 17X
4
5 (XX)
6

```

The PL BAY DOORS display is an SM operational sequence (OPS X021) available in SM OPS 2, 4, and BFS OPS 0 as SPEC 063, which allows the crew to monitor and control payload doors and associated latches opening/closing. Termination of this OPS mode or SPEC (in BFS) with panel R13 switch or item 16 not in the STOP mode will result in an ILLEGAL ENTRY message.

28

```

1 2 3 4 5
12345678901234567890123456789012345678901
*
1 XXXX/XXX/066 ENVIRONMENT XX X DDD/HH:MM:SS
2 DDD/HH:MM:SS
3 CABIN
4 4P/4T X XXS CABIN P XX.XS AV BAY 1 2 3
5 PPO2 AIRLK P XX.XS TEMP XXXXS XXXXS XXXXS
6 A X.XXS FAN AP X.XXS FAN AP X.XXS X.XXS X.XXS
7 B X.XXS HX OUT T XXXS
8 C X.XXS CABIN T XXXS
9 PPO2 XX.XS H2O
10 1 2 SUPPLY
11 O2 FLOW X.XS X.XS QTY A XXXS PRESS XXXS
12 REG P XXXS XXXS B XXXS DHP LN T XXXS
13 N2 FLOW X.XS X.XS C XXXS NO2 T A XXXS
14 REG P XXXS XXXS D XXXS B XXXS
15 O2/N2 CHTL VLV XXXS XXXS
16 H2O TK H2 P XXXS XXXS
17 H2 QTY XXXS XXXS
18 EMER O2 QTY XXXS WASTE
19 REG P XXXS QTY 1 XXXS PRESS XXXS
20 DHP LN T XXXS
1 A B C AP NO2 T A XXXS
2 IMU FAN XS IS XS X.XS B XXXS
3 HUMID SEP XS XS VAC VT NO2 T XXXS
4
5 (XX)
6

```

The ENVIRONMENT display is an SM display (DISP 66) available in OPS 2, which provides data on cabin atmosphere, avionics bay thermal status, and water system characteristics.

83

1 2 3 4 5  
12345678901234567890123456789012345678901

```

1 XXXX/XXX/067 ELECTRIC XX X DDD/MM:MM:SS
2 DDD/MM:MM:SS
3
4 DC 1/A 2/B 3/C AC 1 2 3
5 VOLT FC XX.XS XX.XS XX.XS V A XXXS XXXS XXXS
6 MN XX.XS XX.XS XX.XS B XXXS XXXS XXXS
7 PCA FWD XX.XS XX.XS XX.XS C XXXS XXXS XXXS
8 AFT XX.XS XX.XS XX.XS AMP A XX.XS XX.XS XX.XS
9 CNTL AB XX.XS XX.XS XX.XS B XX.XS XX.XS XX.XS
10 BC XX.XS XX.XS XX.XS C XX.XS XX.XS XX.XS
11 CA XX.XS XX.XS XX.XS OVLD XXS XXS XXS
12 ESS XX.XS XX.XS XX.XS O/U V XXS XXS XXS
13
14 AMPS FC XXXS XXXS XXXS PAYLOAD DC AMPS
15 FWD XXXS XXXS XXXS AFT B XXX.XS
16 MID XXXS XXXS XXXS C XXX.XS
17 AFT ±XXXS ±XXXS ±XXXS
18
19 TOTAL AMPS XXXXS
20 KW XXX.XS
21
22
23
24
25
26 (XX)
  
```

The ELECTRIC display is an SM display (DISP 67) available in OPS 2, which provides data on electrical power distribution and control.

1 2 3 4 5  
12345678901234567890123456789012345678901

```

1 XXXX/XXX/068 CRYO SYSTEM XX X DDD/MM:MM:SS
2 DDD/MM:MM:SS
3
4 TK
5 O2 1 2 3 4 5
6 P XXXXS XXXXS XXXXS XXXXS XXXXS
7 TK P XXXXS XXXXS XXXXS XXXXS XXXXS
8 QTY XXXS XXXS XXXS XXXS XXXS
9 T ±XXXS ±XXXS ±XXXS ±XXXS ±XXXS
10 HTR T 1 ±XXXS ±XXXS ±XXXS ±XXXS ±XXXS
11 2 ±XXXS ±XXXS ±XXXS ±XXXS ±XXXS
12 HTR 1A S S S S S
13 CUR 1B S S S S S
14 SNR 2A S S S S S
15 2B S S S S S
16 MANF P XXXXS XXXXS
17 VLV XXS XXS
18
19 H2
20 P XXXS XXXS XXXS XXXS XXXS
21 TK P XXXS XXXS XXXS XXXS XXXS
22 QTY XXXS XXXS XXXS XXXS XXXS
23 T ±XXXS ±XXXS ±XXXS ±XXXS ±XXXS
24 HTR T ±XXXS ±XXXS ±XXXS ±XXXS ±XXXS
25 MANF P XXXS XXXS
26 VLV XXS XXS
27
28
29
30 (XX)
  
```

The CRYO SYSTEM display is an SM display (DISP 68), available in OPS 2, which provides detailed status information on the cryogenic (CRYO) subsystems.

	1	2	3	4	5
1	XXXX/XXX/069	FUEL CELLS	XX X	DDD/HH:MM:SS	
2				DDD/HH:MM:SS	
3		FC			
4		1	2	3	
5	VOLTS	XX.XS	XX.XS	XX.XS	H2O RLF LINE T XXXS
6	AMPS	XXXX	XXXX	XXXX	NOZ T A XXXS
7					B XXXS
8	FLOW O2	XX.XS	XX.XS	XX.XS	PURGE LN O2 T XXXS
9	M2	X.XS	X.XS	X.XS	M2 T1 XXXS
10	REAC O2	XXS	XXS	XXS	T2 XXXS
1	H2	XXS	XXS	XXS	
2					
3	STACK T	±XXXX	±XXXX	±XXXX	
4	EXIT T	XXXX	XXXX	XXXX	
5	COOL T	XXXX	XXXX	XXXX	
6	P	XXXX	XXXX	XXXX	
7	PUMP	XXS	XXS	XXS	
8					FC
9	H2O LN T	XXXX	XXXX	XXXX	PH 1 XXS 2 XXS 3 XXS
20	VLV T	XXXX	XXXX	XXXX	ΔV SS1 XXXS XXXS XXXS
1					SS2 XXXS XXXS XXXS
2					SS3 XXXS XXXS XXXS
3					
4					
5					(XX)
6					

The FUEL CELLS display is an SM display (DISP 69), available in OPS 2, which provides detailed status information on the fuel cell subsystem.

	1	2	3	4	5
1	XXXX/XXX/079	SM SYS SUMM 2	XX X	DDD/HH:MM:SS	
2				DDD/HH:MM:SS	
3		CRYO TK	1	2	3
4	H2 PRESS	XXXX	XXXX	XXXX	XXXX
5	O2 PRESS	XXXX	XXXX	XXXX	XXXX
6	HTR T1	±XXXX	±XXXX	±XXXX	±XXXX
7	T2	±XXXX	±XXXX	±XXXX	±XXXX
8					
9	APU	1	2	3	HYD 1 2 3
10	TEMP EGT	XXXX	XXXX	XXXX	PRESS XXXS XXXS XXXS
1	B/U EGT	XXXX	XXXX	XXXX	RSVR T XXXS XXXS XXXS
2	OIL IN	XXXX	XXXX	XXXX	QTY XXXS XXXS XXXS
3	OUT	XXXX	XXXX	XXXX	
4	SPEED W	XXXX	XXXX	XXXX	W/B
5	FUEL QTY	XXXX	XXXX	XXXX	H2O QTY XXXS XXXS XXXS
6	PMP LK P	XXS	XXS	XXS	BYP VLV XXXS XXXS XXXS
7	OIL OUT P	XXXX	XXXX	XXXX	
8					THERM CNTL 1 2
9	AV BAY				H2O PUMP P XXXS XXXS
20	TEMP	XXXX	XXXX	XXXX	FREON FLOW XXXS XXXS
1	FAN ΔP	X.XXS	X.XXS	X.XXS	EVAP OUT T XXXS XXXS
2					
3					
4					
5					(XX)
6					

The SM SYS SUMM 2 display is an SM display (DISP 79), available in SM OPS 2 and 4, which provides summary data on cryogenics, auxiliary power units, hydraulics, water boilers, thermal control, and avionics cooling.

HS



85

	1	2	3	4	5						
	12345678901	2345678901	2345678901	2345678901	2345678901						
1	XXX/XXX/086		APU/HYD	XX X	DDD/HH:MM:SS						
2					DDD/HH:MM:SS						
3	APU	1	2	3	HYD 1 2 3						
4	B/U	EGT	XXXXXX	XXXXXX	B/U P	XXXXX XXXXS XXXXS					
5	EGT	XXXXXX	XXXXXX	XXXXXX	RSVR T	XXXX XXXS XXXS					
6	SPEED	X	XXXX	XXXX	XXXX	QTY	XXXX	XXXX	XXXX		
7	FUEL	QTY	XXXX	XXXX	XXXX	ACCUM P	XXXXX	XXXXX	XXXXX		
8	TK	P	XXXX	XXXX	XXXX	W/B					
9	OUT	P	XXXX	XXXX	XXXX	H2O QTY	XXXX	XXXX	XXXX		
10	VLV	A	XXS	XXS	XXS	N2 P	XXXXX	XXXXX	XXXXX		
1	B	XXS	XXS	XXS	T	XXXX	XXXX	XXXX			
2	OIL	T	XXXX	XXXX	XXXX	REG P	XXXX	XXXX	XXXX		
3	OUT	T	XXXX	XXXX	XXXX	BYP VLV	XXXX	XXXX	XXXX		
4	OUT	P	XXXX	XXXX	XXXX	VENT T	±XXXX	±XXXX	±XXXX		
5	GBX	P	XXXX	XXXX	XXXX	TANK T	±XXXX	±XXXX	±XXXX		
6	42	P	XXXX	XXXX	XXXX	BLR T	±XXXX	±XXXX	±XXXX		
7	BRG	T	XXXX	XXXX	XXXX						
8	GG	BED	T	XXXX	XXXX	XXXX					
9					SW VLV	PR	S1	S2			
20	PUMP/VLV	COOL			ELEV	L	OB	3XS	1XS	2XS	
1	PMP	T	XXXX	XXXX	XXXX		1B	2XS	1XS	3XS	
2	VLV	T	XXXX	XXXX	XXXX		R	1B	3XS	1XS	2XS
3							OB	2XS	1XS	3XS	
4							RUO/SPDBK	1XS	2XS	3XS	
5										(XX)	
6											

The APU/HYD display is an SM display (DISP 86) available in OPS 2 which provides data on the Auxiliary Power Unit (APU), and Hydraulic (HYD) subsystems.

	1	2	3	4	5						
	12345678901	2345678901	2345678901	2345678901	2345678901						
1	XXX/XXX/087		HYD THERMAL	XX X	DDD/HH:MM:SS						
2					DDD/HH:MM:SS						
3					CIRC PUMP CONTROL						
4	HYD	1	2	3	LINE TEMPS 1 2 3						
5	CIRC PMP	P	XXXX	XXXX	XXXX	ELEVON	LOB	±XXXX	±XXXX	±XXXX	
6	PMP	BDY	T	±XXXX	±XXXX	±XXXX	LIB	±XXXX	±XXXX	±XXXX	
7	RSVR	T	±XXXX	±XXXX	±XXXX		RIB	±XXXX	±XXXX	±XXXX	
8	ACCUM	P	±XXXX	±XXXX	±XXXX		ROB	±XXXX	±XXXX	±XXXX	
9	HX	IN	T	±XXXX	±XXXX	±XXXX	RD/SB	PDU	±XXXX	±XXXX	±XXXX
10	OUT	T	±XXXX	±XXXX	±XXXX			FUS	±XXXX	±XXXX	±XXXX
1					BDYFLP	PDU	±XXXX	±XXXX	±XXXX		
2						FUS	±XXXX	±XXXX	±XXXX		
3					L BRAKE	WHL		±XXXX	±XXXX		
4						FUS		±XXXX	±XXXX		
5					R BRAKE	WHL	±XXXX	±XXXX	±XXXX		
6						FUS	±XXXX	±XXXX	±XXXX		
7					NLG	UPLK	±XXXX				
8						MFUS	1	±XXXX			
9						MFUS	2	±XXXX			
20					LMG	UPLK	±XXXX				
1					RMG	UPLK	±XXXX				
2						FUS	±XXXX				
3											
4											
5											
6									(XX)		

The HYD THERMAL display is an SM display (DISP 87), available in SM OPS 2, which provides data on the hydraulic system.

	1	2	3	4	5
	12345678901	2345678901	2345678901	2345678901	2345678901
1	XXXX/XXX/088	APU/ENVIRON	THERM	XX X	DDD/HH:MM:SS
2	FREON LOOP	1	2		DDD/HH:MM:SS
3	ACCUM QTY	XXXX	XXXX	H2O LOOP	1
4	FREON FLOW	XXXXX	XXXXX	PUMP OUT P	XXXXX XXXXS
5	PL HX FLOW	XXXXX	XXXXX	OUT T	XXXXX XXXXS
6	AFT CP FLOW	XXXX	XXXX	AP	XXXXX XXXXS
7	RAD IN T	XXXX	XXXX	ICM FLOW	XXXXX XXXXS
8	RAD OUT T	XXXX	XXXX	OUT T	XXXXX XXXXS
9	EVAP OUT T	XXXX	XXXX	CAB HX IN T	XXXXX XXXXS
10				ACCUM QTY	XXXXX XXXXS
1	EVAP TEMP	DUCT	NOZ		
2	HI LOAD	INBD	XXXX	APU FUEL T	1
3		OUTBD	XXXX	TK SURF	XXXXX XXXXS
4	TOPPING	FWD	XXXX	TK HTR	XXXXX XXXXS
5		AFT	XXXX	TK VLV	XXXXX XXXXS
6		L	XXXX	TEST LN	XXXXX XXXXS
7		R	XXXX	FEED IN	XXXXX XXXXS
8	EVAP FDLN T	A	B	PUMP LN	XXXXX XXXXS
9		FWD	XXXX	DRN LN	XXXXX XXXXS
20		MID 1	XXXX	OUT	XXXXX XXXXS
1		MID 2	XXXX	BYP LN	XXXXX XXXXS
2		AFT	XXXX	H2O LN PRI	XXXXX XXXXS
3		TOPPING	XXXX	SEC	XXXXX XXXXS
4		HI LOAD	XXXX	INJ	XXXXX XXXXS
5					(XX)
6					

The APU/ENVIRON THERM display is an SM display (DISP 88), available in OPS 2, which provides data on auxiliary power units and the active thermal control system.

98

	1	2	3	4	5
	12345678901	2345678901	2345678901	2345678901	2345678901
1	0001/	/	THERMAL	XX X	DDD/HH:MM:SS
2				BFS	DDD/HH:MM:SS
3	HYD SYS TEMP	BDYFLP	RD/SB	L OB	L IB R IB R OB
4		ACTR	XXXX	XXXX	XXXX XXXXS
5		PRIME	XXXX	XXXX	XXXX XXXXS
6		STBY 1	XXXX	XXXX	XXXX XXXXS
7		STBY 2	XXXX	XXXX	XXXX XXXXS
8					
9	HTR TEMP	L/A	R/B	FREON LOOP	1
10	PRPLT			ACCUM QTY	XXXX
1	POD	SSSSSSS	SSSSSSS	RAD IN T	XXXX
2	ONS CRSFD	SSSSSSS			
3	EVAP			H2O	
4	HI LOAD	SS		SUPPLY P	XXXX
5	TOP DUCT	SS			
6		NOZ	S		
7	FDLN	SSSS	SSSS		
8					
9	HYD BLR/HTR	S	S	S	
20	APU				
1	GG/FU PMP HTR	SSSS	SSSS	SSSS	
2	TK/FU LN HTR	SSSSSSSSS	SSSSSSSSS	SSSSSSSSS	
3	PUMP/VLV COOL	SS	SS	SS	
4					
5					(XX)
6					

The THERMAL display is a BFS display (OPS/0001) which provides the crew data on the hydraulic system, heater status, and freon/water loop parameters.

87

	1	2	3	4	5
	123456789012345678901234567890123456789012345678901				
1	XXXX/XXX/078	SM SYS SUMM 1	XX X	DDD/HH:MM:SS	
2				BFS	DDD/HH:MM:SS
3	EMERGENCY				
4	SNOKE	1/A	2/B	DC VOLTS	1/A 2/B 3/C
5	AV BAY 1	XX.XS	XX.XS	FC	XX.XS XX.XS XX.XS
6		2	XX.XS XX.XS	MAIN	XX.XS XX.XS XX.XS
7		3	XX.XS XX.XS	CNTL AB	XX.XS XX.XS XX.XS
8	GP/DT	±.XXS		BC	XX.XS XX.XS XX.XS
9	BU	±.XXS!		CA	XX.XS XX.XS XX.XS
10	CABIN				
1	PRESS	XX.XS		AC	XX.XS XX.XS XX.XS
2	PPO2	X.XXS	X.XXS	VOLT 0A	XXXX XXXS XXXS
3	FAN AP	X.XXS		0B	XXXX XXXS XXXS
4	HX OUT T	XXXX		0C	XXXX XXXS XXXS
5	O2 FLOW	XX.XS	XX.XS	AMPS 0A	XX.XS XX.XS XX.XS
6	N2 FLOW	XX.XS	XX.XS	0B	XX.XS XX.XS XX.XS
7				0C	XX.XS XX.XS XX.XS
8	1MU FAN	AXS	BXS	CXS	FUEL CELL
9	AV FC1	FC2	FC3	AMPS	XXXX XXXS XXXS
20	SS1	XXXX	XXXX	XXXX	REAC VLV
1	SS2	XXXX	XXXX	XXXX	STACK T
2	SS3	XXXX	XXXX	XXXX	EXIT T
3	TOTAL AMPS	XXXXS			COOL P
4		KW	XIS		PUMP
5					XXS
6					XXS
					(XX)

The SM SYS SUMM 1 display is an SM display (DISP 78) available in SM OPS 2 and 4, and in BFS OPS 0, which provides summary data on emergency, atmospheric (cabin), and electrical power distribution and generation parameters.

	1	2	3	4	5
	123456789012345678901234567890123456789012345678901				
1	XXXX/XXX/079	SM SYS SUMM 2	XX X	DDD/HH:MM:SS	
2				BFS	DDD/HH:MM:SS
3					
4	CRYO TK 1 2 3 4 5				
5	N2 PRESS	XXXX	XXXX	XXXX	XXXX
6	O2 PRESS	XXXXS	XXXXS	XXXXS	XXXXS
7	HTR T1	±XXXXS	±XXXXS	±XXXXS	±XXXXS
8		T2	±XXXXS	±XXXXS	±XXXXS
9	APU 1 2 3			HYD 1 2 3	
10	TEMP EGT	XXXXS	XXXXS	XXXXS	PRESS
1	B/U EGT	XXXXS	XXXXS	XXXXS	ACUM P
2	OIL IN	XXXX	XXXX	XXXX	RSVR T
3	OUT	XXXX	XXXX	XXXX	QTY
4	GG BED	XXXX	XXXX	XXXX	
5	INJ	XXXXS	XXXXS	XXXXS	W/B
6	SPEED X	XXXX	XXXX	XXXX	H2O QTY
7	FUEL QTY	XXXX	XXXX	XXXX	BYP VLV
8	PMP LK P	XXS	XXS	XXS	
9	OIL OUT P	XXXX	XXXX	XXXX	
20	FU TK VLV	XXXX	XXXX	XXXX	
1				1	2
2	AV BAY			H2O PUMP P	XXXX
3	TEMP	XXXX	XXXX	FREON FLOW	XXXXS
4	FAN AP	X.XXS	X.XXS	EVAP OUT T	XXXX
5					
6					
					(XX)

The SM SYS SUMM 2 display is an SM display (DISP 79), available in BFS SM OPS 0, which provides the crew summary level data on cryogenics, auxiliary power units, hydraulics, water boilers, thermal control, and avionics cooling.

# Section 7: Malfunction Pages

Currently there are 47 pages of malfunctions primarily used by the SMS instructor. These pages cover 11 subjects of systems malfunctions. The following pages include the systems menu pages followed by all of the malfunction pages.

22

1589

LOS DAY MET 062:05:13 RUN SGMT 029:15:05:13 MALFUNCTION PAGE MALF  
NAVDP CNTRL PROPL SYSTM AUDIO

FS  MEN4  FF  FB

A980 A981 A982 A983 A984  
MENU FOR CATEGORY 4 - SYSTEMS 10F2 DISPLAYS

SET NAME	DESCRIPTION
APU1	APU MALF
APU2	APU MALF
APU3	APU MALF
APU4	LNDG & BRAKING/APU MALF
CRY1	PRSD
CRY2	PRSD MALF
CRY3	PRSD MALF
CRY4	PRSD MALF
CM01	C & W MALF
CM02	C & W INPUTS
CM03	C & W INPUTS
CM04	C & W INPUTS
CM05	C & W ON DISCRETE
CM06	C & W ON DISCRETE
CM07	C & W ON DISCRETE
CM08	C & W OFF DISCRETE
CM09	C & W OFF DISCRETE
CM10	C & W OFF DISCRETE
ES01	APS MALF
ES02	GSS MALF
ES03	AV BAYS
ES04	WATER LOOP
ES05	FREON RAD'S
ES06	FREON LOOPS
ES07	ACS MALF
EP01	EPDC MALF
EP02	EPDC MALF
EP03	EPDC MALF
EP04	EPDC MALF
EP05	EPDC MALF
EP06	EPDC MALF
EP07	EPDC MALF
FOP1	FUEL CELLS
FOP2	FUEL CELLS
HYD1	HYD MALF
HYD2	HYD MALF
HYD3	HYD MALF
HYD4	HYD MALF
INST	HEAS PROCSR & ET UMB MALF
MEC1	MEC MALF

68

1589

LOS DAY MET 092:05:26 RUN SGMT 029:15:05:26 UP MALFUNCTION PAGE HALF  
NAVDP CNTRL PROPL SYSTM AUDIO

FS  MEN4  FF  FE

A999  A991  A992  A993  A994

MENU FOR CATEGORY 4 - SYSTEMS

20F2 DISPLAYS

SET NAME

DESCRIPTION

MEC2	MEC HALF
MEC3	MEC HALF
MEC4	MEC HALF
MEC5	MEC HALF
PLB0	PAYLOAD BAY DOORS
PLB1	PAYLOAD BAY DOORS
VENT	VENTS

ab

APU1

1509

LOG DAY NET 000:30:19 FRZ SGMT 222:13:13:19 UP MALFUNCTION PAGE HALF  
NAVOP CNTRL PROPL SYSTM AUDIO

FE APU1 FF FE

.A000 .A001 .A002 .A003 .A004

APU1	APU MALF	TYPE	UNITS	RANGE	DESCRIPTION	10F2	DISPLAYS
	MALF ID						VALUE
APU1	MHAASD(1)	4MD	NONE	0/1	SPURIOUS SHUTDN SGNL APU1	1	
APU1	MHAASD(2)	4MD	NONE	0/1	SPURIOUS SHUTDN SGNL APU2	1	
APU1	MHAASD(3)	4MD	NONE	0/1	SPURIOUS SHUTDN SGNL APU3	1	
APU1	HAMCLF(1)	4MV	PERCENT	0^40	APU CTRL SPD TOLERANCES-1		0.0
APU1	HAMCLF(2)	4MV	PERCENT	0^40	APU CTRL SPD TOLERANCES-2		0.0
APU1	HAMCLF(3)	4MV	PERCENT	0^40	APU CTRL SPD TOLERANCES-3		0.0
APU1	MHAFLA(1)	4MD	NONE	0/1	FUEL LINE HTR A FL-APU-1	1	
APU1	MHAFLA(2)	4MD	NONE	0/1	FUEL LINE HTR A FL-APU-2	1	
APU1	MHAFLA(3)	4MD	NONE	0/1	FUEL LINE HTR A FL-APU-3	1	
APU1	HAMFLL(1)	4MV	LBM/SEC	0^1	FUEL LINE LEAK APU-1		0.01
APU1	HAMFLL(2)	4MV	LBM/SEC	0^1	FUEL LINE LEAK APU-2		0.01
APU1	HAMFLL(3)	4MV	LBM/SEC	0^1	FUEL LINE LEAK APU-3		0.01
APU1	HAMFPS(1)	4MV	PERCENT	0^100	FUEL TK PRESS SENSOR FL-1		50.0
APU1	HAMFPS(2)	4MV	PERCENT	0^100	FUEL TK PRESS SENSOR FL-2		50.0
APU1	HAMFPS(3)	4MV	PERCENT	0^100	FUEL TK PRESS SENSOR FL-3		50.0
APU1	HAMFTL(1)	4MV	M/S-PSID	0^1	FUEL TANK LEAK APU 1		0.001
APU1	HAMFTL(2)	4MV	M/S-PSID	0^1	FUEL TANK LEAK APU 2		0.001
APU1	HAMFTL(3)	4MV	M/S-PSID	0^1	FUEL TANK LEAK APU 3		0.001
APU1	HAMFTF(1)	4MV	PERCENT	0^100	FU TK PRESS GAGE XDCR FL1		45.0
APU1	HAMFTF(2)	4MV	PERCENT	0^100	FU TK PRESS GAGE XDCR FL2		45.0
APU1	HAMFTF(3)	4MV	PERCENT	0^100	FU TK PRESS GAGE XDCR FL3		45.0
APU1	HAMFTT(1)	4MV	PERCENT	0^100	FU TK TEMP SENSOR FL APU1		50.0
APU1	HAMFTT(2)	4MV	PERCENT	0^100	FU TK TEMP SENSOR FL APU2		50.0
APU1	HAMFTT(3)	4MV	PERCENT	0^100	FU TK TEMP SENSOR FL APU3		50.0
APU1	MHAFTV(1)	4MD	NONE	0/1	FUEL TNK ISO VLV FL APU 1	1	
APU1	MHAFTV(2)	4MD	NONE	0/1	FUEL TNK ISO VLV FL APU 2	1	
APU1	MHAFTV(3)	4MD	NONE	0/1	FUEL TNK ISO VLV FL APU 3	1	
APU1	MHAFV1(1)	4MD	NONE	0/1	FUEL CNTRL VLV 1 FL APU 1	1	
APU1	MHAFV1(2)	4MD	NONE	0/1	FUEL CNTRL VLV 1 FL APU 2	1	
APU1	MHAFV1(3)	4MD	NONE	0/1	FUEL CNTRL VLV 1 FL APU 3	1	
APU1	MHAFV2(1)	4MD	NONE	0/1	FUEL CNTRL VLV 2 FL APU 1	1	
APU1	MHAFV2(2)	4MD	NONE	0/1	FUEL CNTRL VLV 2 FL APU 2	1	
APU1	MHAFV2(3)	4MD	NONE	0/1	FUEL CNTRL VLV 2 FL APU 3	1	
APU1	HAMGBF(1)	4MV	PERCENT	0^500	GEARBX FROTN INCREE APU 1		100.0
APU1	HAMGBF(2)	4MV	PERCENT	0^500	GEARBX FROTN INCREE APU 2		100.0
APU1	HAMGBF(3)	4MV	PERCENT	0^500	GEARBX FROTN INCREE APU 3		100.0
APU1	MHAGEN(1)	4MD	NONE	0/1	GAS GEN LEAK APU 1	1	
APU1	MHAGEN(2)	4MD	NONE	0/1	GAS GEN LEAK APU 2	1	
APU1	MHAGEN(3)	4MD	NONE	0/1	GAS GEN LEAK APU 3	1	
APU1	MHABFL(2)	4MD	NONE	0/1	APU2 TK/FU LN HTR2B FL ON	1	

91

APU1

1989

05 DAY MET 000:30:19 FRZ SGMT 222:13:13:19 UP MALFUNCTION PAGE MALF  
NAVDF CNTRL PROPL SYSTEM AUDIO

FE  APU1  FF  FB

. A000 . A001 . A002 . A003 . A004

APU1	APU MALF	TYPE	UNITS	RANGE	DESCRIPTION	20F2	DISPLAYS
MALF ID							VALUE
APU1 HTMSPA(5)	4MV NONE			-100^100	SFA POS/NEG RUNAWAY FAIL	1	1
APU1 MHAIUA(1)	4MD			0/1	APU FU PMP VLV A CL		1
APU1 MHAIUA(2)	4MD			0/1	APU FU PMP VLV A CL		1
APU1 MHAIUA(3)	4MD			0/1	APU FU PMP VLV A CL		1
APU1 MHAIUB(1)	4MD			0/1	APU FU PMP VLV B CL		1
APU1 MHAIUB(2)	4MD			0/1	APU FU PMP VLV B CL		1
APU1 MHAIUB(3)	4MD			0/1	APU FU PMP VLV B CL		1
APU1 MHACU1(1)	4MD			0/1	APU 1 PRI H20 VLV CL		1
APU1 MHACU1(2)	4MD			0/1	APU 2 PRI H20 VLV CL		1
APU1 MHACU1(3)	4MD			0/1	APU 3 PRI H20 VLV CL		1
APU1 MHACU2(1)	4MD			0/1	APU 1 SEC H20 VLV CL		1
APU1 MHACU2(2)	4MD			0/1	APU 2 SEC H20 VLV CL		1
APU1 MHACU2(3)	4MD			0/1	APU 3 SEC H20 VLV CL		1
APU1 MHACU3(1)	4MD			0/1	APU 1 PRI H20 VLV OP		1
APU1 MHACU3(2)	4MD			0/1	APU 2 PRI H20 VLV OP		1
APU1 MHACU3(3)	4MD			0/1	APU 3 PRI H20 VLV OP		1
APU1 MHACU4(1)	4MD			0/1	APU 1 SEC H20 VLV OP		1
APU1 MHACU4(2)	4MD			0/1	APU 2 SEC H20 VLV OP		1
APU1 MHACU4(3)	4MD			0/1	APU 3 SEC H20 VLV OP		1
APU1 HAMGGT(1)	4MV			0/1	APU 1 GG TEMP FAIL		220.
APU1 HAMGGT(2)	4MV			0/1	APU 2 GG TEMP FAIL		220.
APU1 HAMGGT(3)	4MV			0/1	APU 3 GG TEMP FAIL		220.

92



APU1

1509

LOS DAY NET 000:30:19 FRZ SGMT 222:13:13:19 UP MALFUNCTION PAGE MALF  
NAVDP CNTRL PROPL SYSTM AUDIO

FS APU1 FF FE

.A000 .A001 .A002 .A003 .A004

APU2	APU MALF	TYPE	UNITS	RANGE	DESCRIPTION	10F1	DISPLAYS
MALF ID							VALUE
APU2	MHAGGA(1)	4MD	NONE	0/1	GAS GEN HTR A FAIL-APU-1		1
APU2	MHAGGA(2)	4MD	NONE	0/1	GAS GEN HTR A FAIL-APU-2		1
APU2	MHAGGA(3)	4MD	NONE	0/1	GAS GEN HTR A FAIL-APU-3		1
APU2	HAMGN2(1)	4MV	M/S-PSID	0^1	APU GEARBOX GN2 LK-APU-1		1E-5
APU2	HAMGN2(2)	4MV	M/S-PSID	0^1	APU GEARBOX GN2 LK-APU-2		1E-5
APU2	HAMGN2(3)	4MV	M/S-PSID	0^1	APU GEARBOX GN2 LK-APU-3		1E-5
APU2	HAMHEL(1)	4MV	M/S-PSID	0^1	APU FUEL TK ULL LK-APU-1		1E-5
APU2	HAMHEL(2)	4MV	M/S-PSID	0^1	APU FUEL TK ULL LK-APU-2		1E-5
APU2	HAMHEL(3)	4MV	M/S-PSID	0^1	APU FUEL TK ULL LK-APU-3		1E-5
APU2	HAML0L(1)	4MV	LBM/SEC	0^1	APU LUBE OIL LN LK-APU-1		0.01
APU2	HAML0L(2)	4MV	LBM/SEC	0^1	APU LUBE OIL LN LK-APU-2		0.01
APU2	HAML0L(3)	4MV	LBM/SEC	0^1	APU LUBE OIL LN LK-APU-3		0.01
APU2	HAML0P(1)	4MV	PERCENT	1^100	APU L/O PMP DEGRADATION-1		50.0
APU2	HAML0P(2)	4MV	PERCENT	1^100	APU L/O PMP DEGRADATION-2		50.0
APU2	HAML0P(3)	4MV	PERCENT	1^100	APU L/O PMP DEGRADATION-3		50.0
APU2	HAM0LH(1)	4MV	PERCENT	130^130	APU OVSPD LIMIT FAILURE-1		140.0
APU2	HAM0LH(2)	4MV	PERCENT	130^130	APU OVSPD LIMIT FAILURE-2		140.0
APU2	HAM0LH(3)	4MV	PERCENT	130^130	APU OVSPD LIMIT FAILURE-3		140.0
APU2	HAM0LN(1)	4MV	PERCENT	0^80	APU UNSPD LIMIT FAILURE-1		70.0
APU2	HAM0LN(2)	4MV	PERCENT	0^80	APU UNSPD LIMIT FAILURE-2		70.0
APU2	HAM0LN(3)	4MV	PERCENT	0^80	APU UNSPD LIMIT FAILURE-3		70.0
APU2	HAM0TY(1)	4MV	PERCENT	0^100	APU QUANT GAGE FAILURE-1		25.0
APU2	HAM0TY(2)	4MV	PERCENT	0^100	APU QUANT GAGE FAILURE-2		25.0
APU2	HAM0TY(3)	4MV	PERCENT	0^100	APU QUANT GAGE FAILURE-3		25.0
APU2	HAMSFD(1)	4MV	PERCENT	0^200	APU NOR SPD CTL LOGIC FL1		132.0
APU2	HAMSFD(2)	4MV	PERCENT	0^200	APU NOR SPD CTL LOGIC FL2		132.0
APU2	HAMSFD(3)	4MV	PERCENT	0^200	APU NOR SPD CTL LOGIC FL3		132.0
APU2	MHATKA(1)	4MD	NONE	0/1	APU FUEL TANK HTR A FL-1		1
APU2	MHATKA(2)	4MD	NONE	0/1	APU FUEL TANK HTR A FL-2		1
APU2	MHATKA(3)	4MD	NONE	0/1	APU FUEL TANK HTR A FL-3		1
APU2	MHARDY(1)	4MD	NONE	0/1	RDY ST FLG FL BRBRPOLE 1		1
APU2	MHARDY(2)	4MD	NONE	0/1	RDY ST FLG FL BRBRPOLE 2		1
APU2	MHARDY(3)	4MD	NONE	0/1	RDY ST FLG FL BRBRPOLE 3		1
APU2	HAM0DH(1)	4MV	LBM/SEC	0^1	CASE DRN HYDRZINE LK APU1		0.05
APU2	HAM0DH(2)	4MV	LBM/SEC	0^1	CASE DRN HYDRZINE LK APU2		0.05
APU2	HAM0DH(3)	4MV	LBM/SEC	0^1	CASE DRN HYDRZINE LK APU3		0.05
APU2	HAM0DL(1)	4MV	LBM/SEC	0^1	CASE DRN LUBE OIL LK APU1		0.01
APU2	HAM0DL(2)	4MV	LBM/SEC	0^1	CASE DRN LUBE OIL LK APU2		0.01
APU2	HAM0DL(3)	4MV	LBM/SEC	0^1	CASE DRN LUBE OIL LK APU3		0.01
APU2	MHAFLB(2)	4MD	NONE	0/1	APU2 TK/FU LN HTR2B FL OF		1

93

[APU1

1989

LOG DAY MET 000:30:19 FRZ SGM 222:13:13:19 MALFUNCTION PAGE MALF  
NAVDF CNTRL PROPL SYSTM AUDIO

FS [APU1] [FF] [FE]

.A000 .A001 .A002 .A003 .A004

APU3	MALF ID	APU MALF	TYPE	UNITS	RANGE	DESCRIPTION	10F1	DISPLAYS	VALUE
APU3	MHASCV(1)	4MD NONE	4MD	NONE	0/1	APU1 SHUTOFF VLV FL OPEN			1
APU3	MHASCV(2)	4MD NONE	4MD	NONE	0/1	APU2 SHUTOFF VLV FL OPEN			1
APU3	MHASCV(3)	4MD NONE	4MD	NONE	0/1	APU3 SHUTOFF VLV FL OPEN			1
APU3	MHAGGF(1)	4MD NONE	4MD	NONE	0/1	APU1 GAS GEN OFF CMD FLS			1
APU3	MHAGGF(2)	4MD NONE	4MD	NONE	0/1	APU2 GAS GEN OFF CMD FLS			1
APU3	MHAGGF(3)	4MD NONE	4MD	NONE	0/1	APU3 GAS GEN OFF CMD FLS			1
APU3	MHAGGT(1)	4MD NONE	4MD	NONE	0/1	APU1 GAS GEN TEMP SNR FL			1
APU3	MHAGGT(2)	4MD NONE	4MD	NONE	0/1	APU2 GAS GEN TEMP SNR FL			1
APU3	MHAGGT(3)	4MD NONE	4MD	NONE	0/1	APU3 GAS GEN TEMP SNR FL			1
APU3	MHATIM(1)	4MD NONE	4MD	NONE	0/1	APU1 9.5 SEC TIMER FLS ON			1
APU3	MHATIM(2)	4MD NONE	4MD	NONE	0/1	APU2 9.5 SEC TIMER FLS ON			1
APU3	MHATIM(3)	4MD NONE	4MD	NONE	0/1	APU3 9.5 SEC TIMER FLS ON			1
APU3	MHAUDR(1)	4MD NONE	4MD	NONE	0/1	APU1 LT 80% SIGNAL FLS OFF			1
APU3	MHAUDR(2)	4MD NONE	4MD	NONE	0/1	APU2 LT 80% SIGNAL FLS OFF			1
APU3	MHAUDR(3)	4MD NONE	4MD	NONE	0/1	APU3 LT 80% SIGNAL FLS OFF			1
APU3	MHACSF(1)	4MD NONE	4MD	NONE	0/1	APU1 CNTRL SWITCH FL OFF			1
APU3	MHACSF(2)	4MD NONE	4MD	NONE	0/1	APU2 CNTRL SWITCH FL OFF			1
APU3	MHACSF(3)	4MD NONE	4MD	NONE	0/1	APU3 CNTRL SWITCH FL OFF			1
APU3	MHASRN(1)	4MD NONE	4MD	NONE	0/1	APU1 CNTL SW FL IN ST/RUN			1
APU3	MHASRN(2)	4MD NONE	4MD	NONE	0/1	APU2 CNTL SW FL IN ST/RUN			1
APU3	MHASRN(3)	4MD NONE	4MD	NONE	0/1	APU3 CNTL SW FL IN ST/RUN			1
APU3	MHAASE(1)	4MD NONE	4MD	NONE	0/1	APU1 AUTO S/D SW FL-ENABL			1
APU3	MHAASE(2)	4MD NONE	4MD	NONE	0/1	APU2 AUTO S/D SW FL-ENABL			1
APU3	MHAASE(3)	4MD NONE	4MD	NONE	0/1	APU3 AUTO S/D SW FL-ENABL			1
APU3	HAMEGT(1)	4MV ERCENT	4MV	ERCENT	-100^100	APU1 EGT SENSOR BIAS			25.0
APU3	HAMEGT(2)	4MV ERCENT	4MV	ERCENT	-100^100	APU2 EGT SENSOR BIAS			25.0
APU3	HAMEGT(3)	4MV ERCENT	4MV	ERCENT	-100^100	APU3 EGT SENSOR BIAS			25.0
APU3	HAMBEN2(1)	4MV /S-PSID	4MV	/S-PSID	0^1	APU1 GRBX GN2 BOTTLE LEAK			.01
APU3	HAMBEN2(2)	4MV /S-PSID	4MV	/S-PSID	0^1	APU2 GRBX GN2 BOTTLE LEAK			.01
APU3	HAMBEN2(3)	4MV /S-PSID	4MV	/S-PSID	0^1	APU3 GRBX GN2 BOTTLE LEAK			.01
APU3	MHANCV(1)	4MD NONE	4MD	NONE	0/1	GG1 H2O VLV FLS PRES STAT			1
APU3	MHANCV(2)	4MD NONE	4MD	NONE	0/1	GG2 H2O VLV FLS PRES STAT			1
APU3	MHANCV(3)	4MD NONE	4MD	NONE	0/1	GG3 H2O VLV FLS PRES STAT			1
APU3	MHANTA(1)	4D NONE	4D	NONE	0/1	APU GG H2O TK HTRA FLS ON			1
APU3	HAMWLT(1)	4MV DEG F	4MV	DEG F	-300^300	GG1 H2O LN THERM SW A BIA			-10.0
APU3	HAMWLT(2)	4MV DEG F	4MV	DEG F	-300^300	GG2 H2O LN THERM SW A BIA			20.0
APU3	HAMWLT(3)	4MV DEG F	4MV	DEG F	-300^300	GG3 H2O LN THERM SW A BIA			40.0
APU3	HAMTNW(1)	4V -4#M/SEC	4V	-4#M/SEC	0^10	GG H2O TK GN2 LEAK			5.0
APU3	HAMTNW(1)	4V -2#M/SEC	4V	-2#M/SEC	0^10	GG H2O TK H2O LEAK			1.0
APU3	HAMWTT(1)	4V DEG F	4V	DEG F	-300^300	GG H2O TK TEMP SNR BIAS			50.0

h6

APU1

1509

LOS DAY NET 000:30:19 DTST 5GMT 222:13:13:19 MALFUNCTION PAGE MALF  
NAVDP CNTRL PROFL SYSTM AUDIO

FS  APU1  FF  FE

.A000 .A001 .A002 .A003 .A004

APU4	MALF ID	TYPE	UNITS	RANGE	DESCRIPTION	10F1	DISPLAYS	VALUE
APU4	MHLNWS(1)	40	NONE	0/1	NWS NO-OP FAIL			1
APU4	KMHLNB(1)	40	NONE	-1^1	NWS CMD BIAS			1
APU4	KMHLNC(1)	40	NONE	0/1	CONT VALVE SOLNO FAIL			1
APU4	KMHLTB(1)	4MV	NONE	0/1	CDR NOSE GEAR FLAG FAIL			1
APU4	KMHLTB(2)	4MV	NONE	0/1	CDR LEFT GEAR FLAG FAIL			1
APU4	KMHLTB(3)	4MV	NONE	0/1	CDR RIGHT GEAR FLAG FAIL			1
APU4	KMHLTP(1)	4MV	NONE	0/1	PLT NOSE GEAR FLAG FAIL			1
APU4	KMHLTP(2)	4MV	NONE	0/1	PLT LEFT GEAR FLAG FAIL			1
APU4	KMHLTP(3)	4MV	NONE	0/1	PLT RIGHT GEAR FLAG FAIL			1
APU4	KMHLAS(1)	4MV	NONE	0/1	ANTISKID BOX A,LOB FAIL			1
APU4	KMHLAS(2)	4MV	NONE	0/1	ANTISKID BOX B,LOB FAIL			1
APU4	KMHLAS(3)	4MV	NONE	0/1	ANTISKID BOX A,LIB FAIL			1
APU4	KMHLAS(4)	4MV	NONE	0/1	ANTISKID BOX B,LIB FAIL			1
APU4	KMHLAS(5)	4MV	NONE	0/1	ANTISKID BOX A,RIB FAIL			1
APU4	KMHLAS(6)	4MV	NONE	0/1	ANTISKID BOX B,RIB FAIL			1
APU4	KMHLAS(7)	4MV	NONE	0/1	ANTISKID BOX A,ROB FAIL			1
APU4	KMHLAS(8)	4MV	NONE	0/1	ANTISKID BOX B,ROB FAIL			1
APU4	KMHLNS(1)	40	NONE	0/1	NOSEWHEEL STEERING FAIL			1
APU4	KMHLP1(1)	40	NONE	0/1	PROX SENSOR FAIL LEFT UP			1
APU4	KMHLP2(1)	40	NONE	0/1	PROX SENSOR FAIL LEFT DN			1
APU4	KMHLP3(1)	40	NONE	0/1	PROX SENSOR FAIL RGT UP			1
APU4	KMHLP4(1)	40	NONE	0/1	PROX SENSOR FAIL RGT DN			1
APU4	KMHLP5(1)	40	NONE	0/1	PROX SENSOR FAIL NOSE UP			1
APU4	KMHLP6(1)	40	NONE	0/1	PROX SENSOR FAIL NOSE DN			1
APU4	HAMWTP(1)	40	PSIA	-200^200	GG H20 TK PRESS SNR BIAS			50.0
APU4	HAMTWM(1)	4MV	-2#M/SEC	0^10	FU PMP PRI H20 TK H20 LK			1.0
APU4	HAMTWM(2)	4MV	-2#M/SEC	0^10	FU PMP SEC H20 TK H20 LK			1.0
APU4	HAMTMN(1)	4MV	-3#M/SEC	0^10	FU PMP PRI H20 TK GN2 LK			5.0
APU4	HAMTMN(2)	4MV	-3#M/SEC	0^10	FU PMP SEC H20 TK GN2 LK			5.0
APU4	MHAWTK(1)	4MD	NONE	0/1	FP PRI H20 TK HTR FLS ON			1
APU4	MHAWTK(2)	4MD	NONE	0/1	FP SEC H20 TK HTR FLS ON			1
APU4	HAMFFT(1)	4MV	DEG F	-100^100	FU PMP1 COOL THERM SW BIA			-10.0
APU4	HAMFFT(2)	4MV	DEG F	-100^100	FU PMP2 COOL THERM SW BIA			20.0
APU4	HAMFFT(3)	4MV	DEG F	-100^100	FU PMP3 COOL THERM SW BIA			-15.0

5b

APU1

1509

LOG DAY MET 000:30:19 DTST SGMT 222:13:13:19 MALFUNCTION PAGE HALF

FS APU1 FF FE

NAVDF CNTRL PROPL SYSTM AUDIO

A000 A001 A002 A003 A004

CRY1	HALF ID	FRSD	TYPE	UNITS	RANGE	DESCRIPTION	10F1	DISPLAYS
								VALUE
CRY1	DGMOLR(1)		4MV	%	0^100	O2 LINE RESTRICTED		00.00
CRY1	DGMOLR(2)		4MV	%	0^100	O2 LINE RESTRICTED		00.00
CRY1	DGMHLR(1)		4MV	%	0^100	H2 LINE RESTRICTED		00.00
CRY1	DGMHLR(2)		4MV	%	0^100	H2 LINE RESTRICTED		00.00
CRY1	DGMOTH(1)		4MV	NONE	0^10	O2 REACT TNK LOSSES	VACUUM	00.00
CRY1	DGMOTH(2)		4MV	NONE	0^10	O2 REACT TNK LOSSES	VACUUM	00.00
CRY1	DGMOTH(3)		4MV	NONE	0^10	O2 REACT TNK LOSSES	VACUUM	00.00
CRY1	DGMOTH(4)		4MV	NONE	0^10	O2 REACT TNK LOSSES	VACUUM	00.00
CRY1	DGMHTH(1)		4MV	NONE	0^10	H2 REACT TNK LOSSES	VACUUM	00.00
CRY1	DGMHTH(2)		4MV	NONE	0^10	H2 REACT TNK LOSSES	VACUUM	00.00
CRY1	DGMHTH(3)		4MV	NONE	0^10	H2 REACT TNK LOSSES	VACUUM	00.00
CRY1	DGMHTH(4)		4MV	NONE	0^10	H2 REACT TNK LOSSES	VACUUM	00.00
CRY1	DGMHHL(1)		4MV	LB/HR	0^75	H2 LINE LEAK		00.00
CRY1	DGMHHL(2)		4MV	LB/HR	0^75	H2 LINE LEAK		00.00
CRY1	DGMHHL(3)		4MV	LB/HR	0^75	H2 LINE LEAK		00.00
CRY1	DGMOWL(1)		4MV	LB/HR	0^75	O2 LINE LEAK		00.00
CRY1	DGMOWL(2)		4MV	LB/HR	0^75	O2 LINE LEAK		00.00
CRY1	DGMOWL(3)		4MV	LB/HR	0^75	O2 LINE LEAK		00.00
CRY1	DGMFRP(1)		4MV	PSIA	1-22^5	FC REACT PRESS REG	FAILS	00.00
CRY1	DGMFRP(2)		4MV	PSIA	1-22^5	FC REACT PRESS REG	FAILS	00.00
CRY1	DGMFRP(3)		4MV	PSIA	1-22^5	FC REACT PRESS REG	FAILS	00.00
CRY1	DGMH1L(1)		4V	LB/HR	0^75	H2 LK BTN TK1 VLV&	FCCELL1	00.00
CRY1	DGM01L(1)		4V	LB/HR	0^75	O2 LK BTN TK1 VLV&	FCCELL1	00.00
CRY1	DGMH2L(1)		4V	LB/HR	0^75	H2 LK BTN TK1 VLV&	FCCELL2	00.00
CRY1	DGM02L(1)		4V	LB/HR	0^75	O2 LK BTN TK1 VLV&	FCCELL2	00.00
CRY1	DGMHML(1)		4V	LB/HR	0^75	H2 LK BTN XFD VLV&	FCCELL3	00.00
CRY1	DGMOML(1)		4V	LB/HR	0^75	O2 LK BTN XFD VLV&	FCCELL3	00.00
CRY1	DGMHTL(1)		4MV	LB/HR	0^200	LEAK IN H2 TANK		00.00
CRY1	DGMHTL(2)		4MV	LB/HR	0^200	LEAK IN H2 TANK		00.00
CRY1	DGMHTL(3)		4MV	LB/HR	0^200	LEAK IN H2 TANK		00.00
CRY1	DGMHTL(4)		4MV	LB/HR	0^200	LEAK IN H2 TANK		00.00
CRY1	DGMHK1(1)		4V	#/HR	0-200	H2 TK 5 TANK LEAK		00.00
CRY1	DGMOTL(1)		4MV	LB/HR	0^800	LEAK IN O2 TANK		00.00
CRY1	DGMOTL(2)		4MV	LB/HR	0^800	LEAK IN O2 TANK		00.00
CRY1	DGMOTL(3)		4MV	LB/HR	0^800	LEAK IN O2 TANK		00.00
CRY1	DGMOK1(1)		4V	#/HR	0-800	O2 TK 5 TANK LEAK		00.00
CRY1	DGMOTL(4)		4MV	LB/HR	0^800	LEAK IN O2 TANK		00.00

96

APU1

1309

LOS DAY NET 000:30:19 DTST SGMT 222:13:13:19 MALFUNCTION PAGE MALF  
FS APU1 FF FB NAVDF CNTRL PROPL SYSTM AUDIO

CRY2		PRES MALF		A000	A001	A002	A003	A004	10F1	DISPLAYS
MALF ID	TYPE	UNITS	RANGE	DESCRIPTION				VALUE		
CRY2 DGMOPFS(1)	4MV	PSIA	-600^600	02	TANK	PRESS	SENSOR	FAIL	0.0	
CRY2 DGMOPFS(2)	4MV	PSIA	-600^600	02	TANK	PRESS	SENSOR	FAIL	0.0	
CRY2 DGMOPFS(3)	4MV	PSIA	-600^600	02	TANK	PRESS	SENSOR	FAIL	0.0	
CRY2 DGMOPFS(4)	4MV	PSIA	-600^600	02	TANK	PRESS	SENSOR	FAIL	0.0	
CRY2 DGMHPS(1)	4MV	PSIA	-200^200	H2	TANK	PRESS	SENSOR	FAIL	0.0	
CRY2 DGMHPS(2)	4MV	PSIA	-200^200	H2	TANK	PRESS	SENSOR	FAIL	0.0	
CRY2 DGMHPS(3)	4MV	PSIA	-200^200	H2	TANK	PRESS	SENSOR	FAIL	0.0	
CRY2 DGMHPS(4)	4MV	PSIA	-200^200	H2	TANK	PRESS	SENSOR	FAIL	0.0	
CRY2 DGMOHS(1)	4MV	F	-800^800	02	HEATER	SENSOR	FAIL		0.0	
CRY2 DGMOHS(2)	4MV	F	-800^800	02	HEATER	SENSOR	FAIL		0.0	
CRY2 DGMOHS(3)	4MV	F	-800^800	02	HEATER	SENSOR	FAIL		0.0	
CRY2 DGMOHS(4)	4MV	F	-800^800	02	HEATER	SENSOR	FAIL		0.0	
CRY2 DGM00(1)	4MV	%	-100^100	02	QUANTITY	SENSOR	FAIL		0.0	
CRY2 DGM00(2)	4MV	%	-100^100	02	QUANTITY	SENSOR	FAIL		0.0	
CRY2 DGM00(3)	4MV	%	-100^100	02	QUANTITY	SENSOR	FAIL		0.0	
CRY2 DGM00(4)	4MV	%	-100^100	02	QUANTITY	SENSOR	FAIL		0.0	
CRY2 DGMH0(1)	4MV	%	-100^100	H2	QUANTITY	SENSOR	FAIL		0.0	
CRY2 DGMH0(2)	4MV	%	-100^100	H2	QUANTITY	SENSOR	FAIL		0.0	
CRY2 DGMH0(3)	4MV	%	-100^100	H2	QUANTITY	SENSOR	FAIL		0.0	
CRY2 DGMH0(4)	4MV	%	-100^100	H2	QUANTITY	SENSOR	FAIL		0.0	
CRY2 MDGRTO(1)	4MD	NONE	0/1	02	RCNT	TB	FAILED	TO OPEN	1	
CRY2 MDGRTO(2)	4MD	NONE	0/1	02	RCNT	TB	FAILED	TO OPEN	1	
CRY2 MDGRTO(3)	4MD	NONE	0/1	02	RCNT	TB	FAILED	TO OPEN	1	
CRY2 MDGRTE(1)	4MD	NONE	0/1	H2	RCNT	TB	FAILED	TO OPEN	1	
CRY2 MDGRTE(2)	4MD	NONE	0/1	H2	RCNT	TB	FAILED	TO OPEN	1	
CRY2 MDGRTE(3)	4MD	NONE	0/1	H2	RCNT	TB	FAILED	TO OPEN	1	
CRY2 MDGRTK(1)	4MD	NONE	0/1	H2	RCNT	TB	FAILED	TO CLOSE	1	
CRY2 MDGRTK(2)	4MD	NONE	0/1	H2	RCNT	TB	FAILED	TO CLOSE	1	
CRY2 MDGRTK(3)	4MD	NONE	0/1	H2	RCNT	TB	FAILED	TO CLOSE	1	
CRY2 MDGRTO(1)	4MD	NONE	0/1	02	RCNT	TB	FAILED	TO CLOS	1	
CRY2 MDGRTO(2)	4MD	NONE	0/1	02	RCNT	TB	FAILED	TO CLOS	1	
CRY2 MDGRTO(3)	4MD	NONE	0/1	02	RCNT	TB	FAILED	TO CLOS	1	
CRY2 MDGOM1(1)	4MD	NONE	0/1	02	MAN	ISO	VLV	FAILED	OPN	1
CRY2 MDGOM1(2)	4MD	NONE	0/1	02	MAN	ISO	VLV	FAILED	OPN	1
CRY2 MDGOM2(1)	4MD	NONE	0/1	02	MAN	ISO	VLV	FAILED	CLS	1
CRY2 MDGOM2(2)	4MD	NONE	0/1	02	MAN	ISO	VLV	FAILED	CLS	1
CRY2 DGMOPC(1)	4MV	PSIA	-600^600	02	HTR	CNTRL	PRESS	FAIL	0.0	
CRY2 DGMOPC(2)	4MV	PSIA	-600^600	02	HTR	CNTRL	PRESS	FAIL	0.0	
CRY2 DGMOPC(3)	4MV	PSIA	-600^600	02	HTR	CNTRL	PRESS	FAIL	0.0	
CRY2 DGMOPC(4)	4MV	PSIA	-600^600	02	HTR	CNTRL	PRESS	FAIL	0.0	

97

AFU1

1509

LOG DAY MET 000:30:19 DTST SGMT 222:13:13:19 MALFUNCTION PAGE MALF

FS AFU1 FF FE

NAVDF CNTRL PROPL SYSTEM AUDIO

CRY3	MALF ID	FRSD	MALF	TYPE	UNITS	RANGE	DESCRIPTION	10F2	DISPLAYS	VALUE
CRYW	DGMHPC(1)	4MV	PSIA			-600^600 H2	HTR CNTLR PRESS FAIL			0.00
CRYW	DGMHPC(2)	4MV	PSIA			-600^600 H2	HTR CNTLR PRESS FAIL			0.00
CRYW	DGMHPC(3)	4MV	PSIA			-600^600 H2	HTR CNTLR PRESS FAIL			0.00
CRYW	DGMHPC(4)	4MV	PSIA			-600^600 H2	HTR CNTLR PRESS FAIL			0.00
CRYW	MDGHTH(1)	4MD	NONE			0/1 H2	TANK HEATER A FAILS			1
CRYW	MDGHTH(2)	4MD	NONE			0/1 H2	TANK HEATER A FAILS			1
CRYW	MDGHTH(3)	4MD	NONE			0/1 H2	TANK HEATER A FAILS			1
CRYW	MDGHTH(4)	4MD	NONE			0/1 H2	TANK HEATER A FAILS			1
CRYW	MDGOTH(1)	4MD	NONE			0/1 O2	TANK HEATER A FAILS			1
CRYW	MDGOTH(2)	4MD	NONE			0/1 O2	TANK HEATER A FAILS			1
CRYW	MDGOTH(3)	4MD	NONE			0/1 O2	TANK HEATER A FAILS			1
CRYW	MDGOTH(4)	4MD	NONE			0/1 O2	TANK HEATER A FAILS			1
CRYW	MDGSW0(1)	4D	NONE			0/1	CYRO PRESS/PTY IND SW FAIL			1
CRYW	MDGHH1(1)	4MD	NONE			0/1 H2	TK PRESS CNTLR FAIL ON			1
CRYW	MDGHH1(2)	4MD	NONE			0/1 H2	TK PRESS CNTLR FAIL ON			1
CRYW	MDGHH1(3)	4MD	NONE			0/1 H2	TK PRESS CNTLR FAIL ON			1
CRYW	MDGHH1(4)	4MD	NONE			0/1 H2	TK PRESS CNTLR FAIL ON			1
CRYW	MDGHH0(1)	4MD	NONE			0/1 H2	TK PRESS CNTLR FAIL OFF			1
CRYW	MDGHH0(2)	4MD	NONE			0/1 H2	TK PRESS CNTLR FAIL OFF			1
CRYW	MDGHH0(3)	4MD	NONE			0/1 H2	TK PRESS CNTLR FAIL OFF			1
CRYW	MDGHH0(4)	4MD	NONE			0/1 H2	TK PRESS CNTLR FAIL OFF			1
CRYW	MDGHO1(1)	4MD	NONE			0/1 O2	HTR A AUTO SWTH FAIL ON			1
CRYW	MDGHO1(2)	4MD	NONE			0/1 O2	HTR A AUTO SWTH FAIL ON			1
CRYW	MDGHO1(3)	4MD	NONE			0/1 O2	HTR A AUTO SWTH FAIL ON			1
CRYW	MDGHO1(4)	4MD	NONE			0/1 O2	HTR A AUTO SWTH FAIL ON			1
CRYW	MDGH1H(1)	4MD	NONE			0/1 H2	HTR A MAN SWTH FAIL OFF			1
CRYW	MDGH1H(2)	4MD	NONE			0/1 H2	HTR A MAN SWTH FAIL OFF			1
CRYW	MDGH1H(3)	4MD	NONE			0/1 H2	HTR A MAN SWTH FAIL OFF			1
CRYW	MDGH1H(4)	4MD	NONE			0/1 H2	HTR A MAN SWTH FAIL OFF			1
CRYW	MDGH2H(1)	4MD	NONE			0/1 H2	HTR B MAN SWTH FAIL OFF			1
CRYW	MDGH2H(2)	4MD	NONE			0/1 H2	HTR B MAN SWTH FAIL OFF			1
CRYW	MDGH2H(3)	4MD	NONE			0/1 H2	HTR B MAN SWTH FAIL OFF			1
CRYW	MDGH2H(4)	4MD	NONE			0/1 H2	HTR B MAN SWTH FAIL OFF			1
CRYW	MDGH10(1)	4MD	NONE			0/1 O2	HTR A MAN SWTH FAIL OFF			1
CRYW	MDGH10(2)	4MD	NONE			0/1 O2	HTR A MAN SWTH FAIL OFF			1
CRYW	MDGH10(3)	4MD	NONE			0/1 O2	HTR A MAN SWTH FAIL OFF			1
CRYW	MDGH10(4)	4MD	NONE			0/1 O2	HTR A MAN SWTH FAIL OFF			1
CRYW	MDGH20(1)	4MD	NONE			0/1 O2	HTR B MAN SWTH FAIL OFF			1
CRYW	MDGH20(2)	4MD	NONE			0/1 O2	HTR B MAN SWTH FAIL OFF			1
CRYW	MDGH20(3)	4MD	NONE			0/1 O2	HTR B MAN SWTH FAIL OFF			1

98

[APU1

1509

LOS DAY MET 000:30:19 DTST SGMT 222:13:13:19 MALFUNCTION PAGE MALF  
NAVDF CNTRL PROPL SYSTM AUDIO

FS [APU1] [FF] [FB]

CRY3	MALF ID	PRSD MALF TYPE	UNITS	RANGE	DESCRIPTION	20F2	DISPLAYS	VALUE
[CRY3	MDGH20(4)	4MD	NONE	0/1	02 HTR B MAN SWTH FAIL OFF		1	

bb

[APU1

1909

LOS DAY MET 000:30:19 DTST SGMT 222:13:13:19 MALFUNCTION PAGE MALF  
NAVDF CNTRL PROPL SYSTM AUDIO

FS [APU1] [FF] [FB]

.A000 .A001 .A002 .A003 .A004

CRY3	MALF ID	PRSD MALF	TYPE	UNITS	RANGE	DESCRIPTION	20F2 DISPLAYS	VALUE
[CRY3	MDGH20(4)	4MD NONE			0/1 02	HTR B MAN SWTH FAIL OFF		1

001



APU1

1508

LOS DAY NET 000:30:19 DTST SGMT 222:13:13:19 MALFUNCTION PAGE HALF  
NAUOP CNTRL PROPL SYSTM AUDIO

FE APU1 FF FE

.A000 .A001 .A002 .A003 .A004

CRY4	MALF ID	PRSD MALF TYPE UNITS	RANGE	DESCRIPTION	10F1	DISPLAYS VALUE
CRY4	MDGGOHO(1)	4MD NONE	0/1	02 TK PRESS CNTLR FAIL OFF		1
CRY4	MDGGOHO(2)	4MD NONE	0/1	02 TK PRESS CNTLR FAIL OFF		1
CRY4	MDGGOHO(3)	4MD NONE	0/1	02 TK PRESS CNTLR FAIL OFF		1
CRY4	MDGGOHO(4)	4MD NONE	0/1	02 TK PRESS CNTLR FAIL OFF		1
CRY4	MDGGOH1(1)	4MD NONE	0/1	02 TK PRESS CNTLR FAIL ON		1
CRY4	MDGGOH1(2)	4MD NONE	0/1	02 TK PRESS CNTLR FAIL ON		1
CRY4	MDGGOH1(3)	4MD NONE	0/1	02 TK PRESS CNTLR FAIL ON		1
CRY4	MDGGOH1(4)	4MD NONE	0/1	02 TK PRESS CNTLR FAIL ON		1
CRY4	MDGGOHM(1)	4D NONE	0/1	02 HEATER METER FAIL		1
CRY4	MDGGOFC(1)	4MD NONE	0/1	02 FUEL CELL VALVE FAILS		1
CRY4	MDGGOFC(2)	4MD NONE	0/1	02 FUEL CELL VALVE FAILS		1
CRY4	MDGGOFC(3)	4MD NONE	0/1	02 FUEL CELL VALVE FAILS		1
CRY4	MDGGOFL(1)	4MD NONE	0/1	02 RCTNT VLV1 FAIL LST POS		1
CRY4	MDGGOFL(2)	4MD NONE	0/1	02 RCTNT VLV2 FAIL LST POS		1
CRY4	MDGGOFL(3)	4MD NONE	0/1	02 RCTNT VLV3 FAIL LST POS		1
CRY4	MDGO1M(1)	4D NONE	0/1	02 ISO VLV-1 FAIL LAST POS		1
CRY4	MDGO2M(1)	4D NONE	0/1	02 ISO VLV-2 FAIL LAST POS		1
CRY4	MDGH1M(1)	4D NONE	0/1	H2 ISO VLV-1 FAIL LAST POS		1
CRY4	MDGH2M(1)	4D NONE	0/1	H2 ISO VLV-2 FAIL LAST POS		1
CRY4	DFMH2E(1)	4MV NONE	0^100	FCP1 H2 IMPURITIES		20
CRY4	DFMH2E(2)	4MV NONE	0^100	FCP2 H2 IMPURITIES		20
CRY4	DFMH2E(3)	4MV NONE	0^100	FCP3 H2 IMPURITIES		20
CRY4	DFMO2E(1)	4MV NONE	0^100	FCP1 O2 IMPURITIES		20
CRY4	DFMO2E(2)	4MV NONE	0^100	FCP2 O2 IMPURITIES		20
CRY4	DFMO2E(3)	4MV NONE	0^100	FCP3 O2 IMPURITIES		20

101

AFU1

1509

LOS DAY NET 000:30:19 FRZ SGMT 222:13:13:19 MALFUNCTION PAGE MALF  
NAVOP CNTRL PROFL SYSTM AUDIO

FS AFU1 FF FB

.A000 .A001 .A002 .A003 .A004

CWG1	MALF ID	C & W MALF	TYPE	UNITS	RANGE	DESCRIPTION	10F1	DISPLAYS VALUE
CWG1	MCWSTF(1)		4MD	NONE	0/1	C&W SELF TEST A FAIL OFF		1
CWG1	MCWSTF(2)		4MD	NONE	0/1	C&W SELF-TEST B FAIL OFF		1
CWG1	MCWSTN(1)		4MD	NONE	0/1	C&W SELF TEST A FAIL ON		1
CWG1	MCWSTN(2)		4MD	NONE	0/1	C&W SELF-TEST B FAIL ON		1
CWG1	MCWANF(1)		4D	NONE	0/1	C&W/EU OUTPUT FAIL OFF		1
CWG1	MCWLF2(1)		4D	NONE	0/1	MASTER ALARM LIGHT FAIL		1
CWG1	MCWLF4(1)		4D	NONE	0/1	MASTER ALARM LIGHT FAIL		1
CWG1	MCWTRD(1)		4D	NONE	0/1	PARAM STAT TRIPPED FAIL		1
CWG1	MCWIRD(1)		4D	NONE	0/1	PARAM STAT INHIBIT FAIL		1
CWG1	MCWLT(1)		4D	NONE	0/1	LAMP TEST SWITCH FAIL		1
CWG1	MCWANO(1)		4D	NONE	0/1	C&W/EU OUTPUT FAIL ON		1
CWG1	MCWPSA(1)		4D	NONE	0/1	CWE UNIT 28 VDC PWR FAIL		1
CWG1	MCWPSB(1)		4D	NONE	0/1	CWE UNIT 28 VDC PWR FAIL		1
CWG1	MCWANN(1)		4D	NONE	0/1	CWE UNIT 28 VDC PWR FAIL		1
CWG1	MCWMAF(1)		4D	NONE	0/1	MASTER ALARM FAIL OFF		1
CWG1	MCWMAO(1)		4D	NONE	0/1	MASTER ALARM FAIL ON		1
CWG1	MCWSMA(1)		4D	NONE	0/1	TONE GENERATOR FAILURE		1
CWG1	MCWXON(1)		4D	NONE	0/1	TONE GENERATOR FAILURE		1
CWG1	MCWSRA(1)		4D	NONE	0/1	SIREN TONE A FAILURE		1
CWG1	MCWSRB(1)		4D	NONE	0/1	SIREN TONE B FAILURE		1
CWG1	MCWTON(1)		4D	NONE	0/1	TONE GENERATOR FAILURE		1
CWG1	MCWMRA(1)		4D	NONE	0/1	RECALL SWITCH FAILURE		1
CWG1	MCWMRB(1)		4D	NONE	0/1	RECALL SWITCH FAILURE		1
CWG1	MCWMCA(1)		4D	NONE	0/1	CLEAR SWITCH FAILURE		1
CWG1	MCWMCB(1)		4D	NONE	0/1	CLEAR SWITCH FAILURE		1
CWG1	MCWRCD(1)		4D	NONE	0/1	MAINTAINCE RECORDER FAIL		1
CWG1	MCWS(1)		4MD	NONE	0/1	CH SELECT INT SW FAIL		1
CWG1	MCWS(2)		4MD	NONE	0/1	CH SELECT INT SW FAIL		1
CWG1	MCWS(3)		4MD	NONE	0/1	CH SELECT INT SW FAIL		1
CWG1	MCWS(4)		4MD	NONE	0/1	CH SELECT INT SW FAIL		1
CWG1	MCWS0(1)		4MD	NONE	0/1	CH SELECT TENS SW FAIL		1
CWG1	MCWS0(2)		4MD	NONE	0/1	CH SELECT TENS SW FAIL		1
CWG1	MCWS0(3)		4MD	NONE	0/1	CH SELECT TENS SW FAIL		1
CWG1	MCWS0(4)		4MD	NONE	0/1	CH SELECT TENS SW FAIL		1
CWG1	MCWS00(1)		4MD	NONE	0/1	CH SELECT HUNDS SW FAIL		1
CWG1	MCWIOF(1)		4D	NONE	0/1	ENABLE SELECT SWITCH FAIL		1
CWG1	MCWION(1)		4D	NONE	0/1	INHIBIT SELECT SW FAILURE		1
CWG1	MCWLB2(1)		4D	NONE	0/1	RNG SAF LT B FAILS ON		1

102

AFU1

1509

JOE DAY MET 000:30:19 FRZ SGNT 222:13:13:19 UP MALFUNCTION PAGE MALF  
NAVDF CNTRL PROPL SYSTM AUDIO

FE  APU1  FF  FE

.A000 .A001 .A002 .A003 .A004

CH02	MALF ID	C & W	INPUTS	TYPE	UNITS	RANGE	DESCRIPTION	10F1	DISPLAYS	VALUE
CH02	MCWINP(1)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(2)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(3)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(4)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(5)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(6)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(7)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(8)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(9)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(10)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(11)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(12)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(13)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(14)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(15)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(16)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(17)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(18)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(19)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(20)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(21)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(22)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(23)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(24)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(25)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(26)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(27)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(28)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(29)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(30)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(31)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(32)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(33)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(34)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(35)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(36)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(37)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(38)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(39)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	
CH02	MCWINP(40)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1	

103

[APU1

1309

LOS DAY NET 000:30:19 REST 3GMT 222:13:13:19 MALFUNCTION PAGE HALF  
NAVDF CNTRL PROFL SYSTM AUDIO

FE [APU1] [FF] [FB]

.A000 .A001 .A002 .A003 .A004

CH03	MALF ID	C & W	INPUTS	TYPE	UNITS	RANGE	DESCRIPTION	10F1	DISPLAYS
									VALUE
CH03	MCWINP(41)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(42)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(43)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(44)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(45)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(46)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(47)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(48)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(49)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(50)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(51)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(52)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(53)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(54)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(55)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(56)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(57)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(58)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(59)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(60)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(61)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(62)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(63)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(64)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(65)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(66)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(67)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(68)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(69)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(70)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(71)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(72)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(73)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(74)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(75)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(76)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(77)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(78)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(79)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1
CH03	MCWINP(80A)	4MD	NONE			0/1	C&W/EU ANALOG INPUT	FAIL	1

101

APU1

LOG DAY MET 000:30:19 REST SGMT 222:13:13:19 MALFUNCTION PAGE MALF  
 NAVOP CNTRL PROPL SYSTM AUDIO

FS APU1 FF FE

.A000 .A001 .A002 .A003 .A004

CH04	MALF ID	C & W	INPUTS	UNITS	RANGE	DESCRIPTION	10F1	DISPLAYS
		TYPE					VALUE	
CH04	MOWINP(081)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(082)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(083)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(084)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(085)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(086)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(087)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(088)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(089)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(090)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(091)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(092)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(093)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(094)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(095)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(096)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(097)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(098)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(099)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(100)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(101)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(102)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(103)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(104)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(105)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(106)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(107)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(108)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(109)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(110)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(111)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(112)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(113)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(114)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(115)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(116)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(117)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(118)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(119)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1
CH04	MOWINP(120)	4MD	NONE		0/1	C&W/EU ANALOG INPUT	FAIL	1

105

APU1

1509

LOS DAY NET 000:30:19 REST SGHT 222:13:13:19 MALFUNCTION PAGE HALF  
NAUOP CNTRL PROPL SYSTEM AUDIO

FS  APU1  FF  FE

A000 A001 A002 A003 A004

CH05	MALF ID	C & H	ON	DISCRETE	A000	A001	A002	A003	A004	10F1	DISPLAYS	VALUE
		TYPE	UNITS	RANGE								
CH05	MCW00N(1)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(2)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(3)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(4)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(5)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(6)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(7)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(8)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(9)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(10)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(11)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(12)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(13)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(14)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(15)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(16)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(17)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(18)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(19)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(20)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(21)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(22)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(23)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(24)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(25)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(26)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(27)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(28)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(29)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(30)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(31)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(32)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(33)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(34)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(35)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(36)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(37)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(38)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(39)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1
CH05	MCW00N(40)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	ON				1

106

[AFU1

1509

LOS DAY MET 000:30:19 REST 5GHT 222:13:13:19 MALFUNCTION PAGE MALF  
NAVDF CNTRL PROPL SYSTM AUDIO

FS [AFU1] [FF] [FE]

.A000 .A001 .A002 .A003 .A004

CH06	MALF ID	C & W ON	DISCRETE	10F1	DISPLAYS	
CH06	MALF ID	TYPE	UNITS	RANGE	DESCRIPTION	VALUE
CH06	MCWDON(41)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(42)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(43)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(44)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(45)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(46)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(47)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(48)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(49)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(50)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(51)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(52)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(53)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(54)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(55)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(56)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(57)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(58)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(59)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(60)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(61)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(62)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(63)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(64)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(65)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(66)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(67)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(68)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(69)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(70)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(71)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(72)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(73)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(74)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(75)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(76)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(77)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(78)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(79)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1
CH06	MCWDON(80A)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON	1

107

APU1

1509

LOS DAY MET 000:30:19 REST SGHT 222:13:13:19 MALFUNCTION PAGE MALF  
NAVDF CNTRL PROPL SYSTM AUDIO

FS

APU1

FF

FE

A000 A001 A002 A003 A004

CH07	MALF ID	C & W	ON	DISCRETE	10F1	DISPLAYS	VALUE
		TYPE	UNITS	RANGE	DESCRIPTION		
CH07	MCWDON(81)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(82)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(83)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(84)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(85)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(86)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(87)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(88)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(89)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(90)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(91)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(92)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(93)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(94)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(95)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(96)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(97)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(98)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(99)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(100)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(101)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(102)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(103)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(104)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(105)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(106)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(107)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(108)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(109)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(110)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(111)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(112)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(113)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(114)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(115)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(116)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(117)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(118)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(119)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1
CH07	MCWDON(120)	4MD	NONE	0/1	C&W/EU DISCRETE FAIL ON		1

108



APU1

1509

LOS DAY NET -00:02:00 FRZ SGMT 222:12:40:59 UP MALFUNCTION PAGE MALF  
NAVDF CNTRL PROFL SYSTM AUDIO

FS APU1 FF FB

CH08	MALF ID	C & W OFF	DISCRETE	A000	A001	A002	A003	A004	10F1	DISPLAYS
CH08	MALF ID	TYPE	UNITS	RANGE						VALUE
CH08	MCWDOF(1)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(2)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(3)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(4)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(5)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(6)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(7)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(8)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(9)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(10)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(11)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(12)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(13)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(14)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(15)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(16)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(17)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(18)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(19)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(20)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(21)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(22)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(23)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(24)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(25)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(26)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(27)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(28)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(29)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(30)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(31)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(32)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(33)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(34)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(35)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(36)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(37)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(38)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(39)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH08	MCWDOF(40)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1

109

APU1

1505

LOS DAY NET -00:02:00 FRZ SGMT 222:12:40:59 UP MALFUNCTION PAGE HALF  
NAVOP CNTRL PROFL SYSTM AUDIO

FE  APU1  FF  FE

CH09	MALF ID	C & W OFF	DISCRETE	A000	A001	A002	A003	A004	10F1	DISPLAYS
		TYPE	UNITS	RANGE						VALUE
CH09	MCWDOF(41)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(42)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(43)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(44)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(45)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(46)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(47)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(48)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(49)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(50)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(51)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(52)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(53)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(54)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(55)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(56)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(57)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(58)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(59)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(60)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(61)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(62)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(63)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(64)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(65)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(66)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(67)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(68)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(69)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(70)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(71)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(72)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(73)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(74)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(75)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(76)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(77)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(78)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(79)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1
CH09	MCWDOF(80A)	4MD	NONE	0/1	C&W/EU	DISCRETE	FAIL	OFF		1

110

CH09

1509

LOG DAY MET -00:02:00 FRZ SGMT 222:12:49:59 UP MALFUNCTION PAGE MALF  
NAUOP CNTRL PROPL SYSTM AUDIO

FS CH09 FF FE

A000 A001 A002 A003 A004

CH10	MALF ID	C & H OFF	DISCRETE	RANGE	DESCRIPTION	10F1	DISPLAYS	VALUE
CH10	MCWDOF(81)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(82)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(83)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(84)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(85)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(86)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(87)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(88)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(89)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(90)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(91)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(92)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(93)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(94)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(95)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(96)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(97)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(98)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(99)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(100)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(101)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(102)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(103)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(104)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(105)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(106)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(107)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(108)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(109)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(110)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(111)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(112)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(113)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(114)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(115)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(116)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(117)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(118)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(119)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1
CH10	MCWDOF(120)	4MD NONE	0/1	C&W/EU	DISCRETE FAIL OFF			1

111

ON10 1 1888  
 HAGEN(2)  
 -OF DAY MET 000:15:04 RUN SGMT 222:12:58:04 UP MALFUNCTION PAGE MALF  
 NAVDP ONTRL PROPL SYSTM AUDIO

FS ON10 FF FB

A000 A001 A002 A003 A004

EOB1	MALF ID	TYPE	UNITS	RANGE	DESCRIPTION	10F2	DISPLAYS
						VALUE	VALUE
000001	EFMCFD(1)	4V	%	0. ^100.	CABIN FAN #1 DEGRADES	0.0	
000001	MEPCV1(1)	4D	NONE	0/1	CAB FAN 2 CK VLV FAIL OPEN	1	
000001	MEPCV2(1)	4D	NONE	0/1	CAB FAN 2 CK VLV FAIL CLOS	1	
000001	MEPCFO(1)	4MD	NONE	0/1	CABIN FAN 1 FAILED OFF	1	
000001	MEPCFO(2)	4MD	NONE	0/1	CABIN FAN 2 FAILED OFF	1	
000001	EFMCFB(1)	4V	%	0. ^100.	FAN CIRCULATION DECREASE	0.0	
000001	EFMASE(1)	4V	SID	-.2/.2	CABIN PSID SENSOR BIAS	0.00	
000001	EFMCHX(1)	4V	%	0. ^100.	HEAT XFR CAP DECREASE	0.00	
000001	EFMTSB(1)	4V	F	-100. ^100.	CABIN BULK TEMP SENSR FAIL	0.00	
000001	EFMTCD(1)	4MV	NONE	-.7/.7	PRI CAB TEMP CONTROL FAIL	0.00	
000001	EFMTCD(2)	4MV	NONE	-.7/.7	SEC CAB TEMP CONTROL FAIL	0.00	
000001	EFMCO2(1)	4MV	%	0. ^100.	CO2 CARTRIDGE DEGRADE	0.00	
000001	EFMCO2(2)	4MV	%	0. ^100.	CO2 CARTRIDGE DEGRADE	0.00	
000001	EFMH20(1)	4V	%	0. ^100.	CABIN HUMIDITY INCREASE	0.00	
000001	EFMCD3(1)	4MV	%	0. ^100.	PPCO2 SENSOR OUTPUT FAILS	0.00	
000001	EFMCL(1)	4V	BS/HR	0. ^150.	CABIN AIR LEAK OVERBOARD	0.00	
000001	EFMDIA(1)	4V	NCHES	0. ^1.5	CAB AIR LEAK EQUIV. DIA.	0.00	5
000001	EFMALL(1)	4V	BS/HR	0. ^75.	AIRLOCK LEAK OVERBOARD	0.00	5
000001	EFMCPPE(1)	4MV	ONE	-.000 ^ .15	CONTROL POINT 1 EMISSIVITY	0.00	
000001	EFMCPPE(2)	4MV	ONE	-.000 ^ .15	CONTROL POINT 2 EMISSIVITY	0.00	
000001	EFMCPPE(3)	4MV	ONE	-.000 ^ .15	CONTROL POINT 3 EMISSIVITY	0.00	
000001	EFMCPPE(4)	4MV	ONE	-.000 ^ .15	CONTROL POINT 4 EMISSIVITY	0.00	
000001	EFMCPPE(5)	4MV	ONE	-.000 ^ .15	CONTROL POINT 5 EMISSIVITY	0.00	
000001	EFMCPPE(6)	4MV	ONE	-.000 ^ .15	CONTROL POINT 6 EMISSIVITY	0.00	
000001	EFMCPPE(7)	4MV	ONE	-.000 ^ .15	CONTROL POINT 7 EMISSIVITY	0.00	
000001	EFMCPPE(8)	4MV	ONE	-.000 ^ .15	CONTROL POINT 8 EMISSIVITY	0.00	
000001	EFMLRH(1)	4MV	ONE	-.000 ^ .00	CP 1 LAM/REF HEATING RATIO	0.00	
000001	EFMLRH(2)	4MV	ONE	-.000 ^ .00	CP 2 LAM/REF HEATING RATIO	0.00	
000001	EFMLRH(3)	4MV	ONE	-.000 ^ .00	CP 3 LAM/REF HEATING RATIO	0.00	
000001	EFMLRH(4)	4MV	ONE	-.000 ^ .00	CP 4 LAM/REF HEATING RATIO	0.00	
000001	EFMLRH(5)	4MV	ONE	-.000 ^ .00	CP 5 LAM/REF HEATING RATIO	0.00	
000001	EFMLRH(6)	4MV	ONE	-.000 ^ .00	CP 6 LAM/REF HEATING RATIO	0.00	
000001	EFMLRH(7)	4MV	ONE	-.000 ^ .00	CP 7 LAM/REF HEATING RATIO	0.00	
000001	EFMLRH(8)	4MV	ONE	-.000 ^ .00	CP 8 LAM/REF HEATING RATIO	0.00	
000001	EFMTRN(1)	4MV	ONE	-.000 ^ .00	CP 1 TRANS. REYNOLDS NO.	0.00	
000001	EFMTRN(2)	4MV	ONE	-.000 ^ .00	CP 2 TRANS. REYNOLDS NO.	0.00	
000001	EFMTRN(3)	4MV	ONE	-.000 ^ .00	CP 3 TRANS. REYNOLDS NO.	0.00	
000001	EFMTRN(4)	4MV	ONE	-.000 ^ .00	CP 4 TRANS. REYNOLDS NO.	0.00	
000001	EFMTRN(5)	4MV	ONE	-.000 ^ .00	CP 5 TRANS. REYNOLDS NO.	0.00	
000001	EFMTRN(6)	4MV	ONE	-.000 ^ .00	CP 6 TRANS. REYNOLDS NO.	0.00	

112

DN10

1509

CHAGEN(3)

LOG DAY NET 000:15:27 RUN

SGMT 222:12:58:27

MALFUNCTION PAGE HALP

NAVDF CNTRL PROPL SYSTEM AUDIO

FS

DN10

FF

FB

.A000 .A001 .A002 .A003 .A004

ECS1	HALF ID	APS HALF	TYPE	UNITS	RANGE	DESCRIPTION	20F2	DISPLAYS	VALUE
ECS1	EPMTRN(7)	4MV ONE			-.80^-.80 CP 7	TRANS. REYNOLDS NO.			0.0
ECS1	EPMTRN(8)	4MV ONE			-.80^-.80 CP 8	TRANS. REYNOLDS NO.			0.0

113



1589

CH10  
THAGEN(3)  
LOS DAY MET 000:16:16<sup>1</sup> RUN SGMT 222:12:53:16 UP MALFUNCTION PAGE MALF  
NAVDF CNTRL PROPL SYSTEM AUDIO

FS  CH10  FF  FB

.A000 .A001 .A002 .A003 .A004  
20F2 DISPLAYS

ECB2	MALF ID	GSS MALF TYPE	UNITS	RANGE	DESCRIPTION	20F2	DISPLAYS	VALUE
JECB2	EGMWRB(2)	4MV NONE		10^-10	H2O TNK N2 REGS BIAS	SYS2		3.0

115

10N10  
 1HAGEN(3)  
 409 DAY

NET 000:16:52 RUN

1309  
 SGHT 222:12:59:52 UP MALFUNCTION PAGE HALF  
 NAVDP CNTRL PROPL SYSTM AUDIO

FS CH10 FF FE

.A000 .A001 .A002 .A003 .A004

ECSS	HALF ID	AV BAYS	TYPE	UNITS	RANGE	DESCRIPTION	10F1	DISPLAYS	VALUE
EC00000	EAM0GA(1)	4MV	%	0	1.0	AV BAY 1 FAN A DEGRADED			0.0
EC00000	EAM0GA(2)	4MV	%	0	1.0	AV BAY 2 FAN A DEGRADED			0.0
EC00000	EAM0GA(3)	4MV	%	0	1.0	AV BAY 3 FAN A DEGRADED			0.0
EC00000	EAM0GB(1)	4MV	%	0	1.0	AV BAY 1 FAN B DEGRADED			0.0
EC00000	EAM0GB(2)	4MV	%	0	1.0	AV BAY 2 FAN B DEGRADED			0.0
EC00000	EAM0GB(3)	4MV	%	0	1.0	AV BAY 3 FAN B DEGRADED			0.0
EC00000	MEAFBY(1)	4MD	NONE	0	/1	AV BAY 1 FIRE			1
EC00000	MEAFBY(2)	4MD	NONE	0	/1	AV BAY 2 FIRE			1
EC00000	MEAFBY(3)	4MD	NONE	0	/1	AV BAY 3 FIRE			1
EC00000	MEAFLS(1)	4MD	NONE	0	/1	FALSE SMOKE ALARM-BAY 1			1
EC00000	MEAFLS(2)	4MD	NONE	0	/1	FALSE SMOKE ALARM-BAY 2			1
EC00000	MEAFLS(3)	4MD	NONE	0	/1	FALSE SMOKE ALARM-BAY 3			1
EC00000	MEADTA(1)	4MD	NONE	0	/1	AV BAY 1 SMK DET A FAILURE			1
EC00000	MEADTA(2)	4MD	NONE	0	/1	AV BAY 2 SMK DET A FAILURE			1
EC00000	MEADTA(3)	4MD	NONE	0	/1	AV BAY 3 SMK DET A FAILURE			1
EC00000	MEADTB(1)	4MD	NONE	0	/1	AV BAY 1 SMK DET B FAILURE			1
EC00000	MEADTB(2)	4MD	NONE	0	/1	AV BAY 2 SMK DET B FAILURE			1
EC00000	MEADTB(3)	4MD	NONE	0	/1	AV BAY 3 SMK DET B FAILURE			1
EC00000	MEALMA(1)	4MD	NONE	0	/1	AV BAY 1 LAMP A FAILURE			1
EC00000	MEALMA(2)	4MD	NONE	0	/1	AV BAY 2 LAMP A FAILURE			1
EC00000	MEALMA(3)	4MD	NONE	0	/1	AV BAY 3 LAMP A FAILURE			1
EC00000	MEALMB(1)	4MD	NONE	0	/1	AV BAY 1 LAMP B FAILURE			1
EC00000	MEALMB(2)	4MD	NONE	0	/1	AV BAY 2 LAMP B FAILURE			1
EC00000	MEALMB(3)	4MD	NONE	0	/1	AV BAY 3 LAMP B FAILURE			1
EC00000	MEALMS(1)	4MD	NONE	0	/1	AV BAY 1 FIRE SUP LMP FAIL			1
EC00000	MEALMS(2)	4MD	NONE	0	/1	AV BAY 2 FIRE SUP LMP FAIL			1
EC00000	MEALMS(3)	4MD	NONE	0	/1	AV BAY 3 FIRE SUP LMP FAIL			1
EC00000	EAMABW(1)	4MV	%	-100	^100	AV BAY 1 FAN AP SENSER BIAS			10
EC00000	EAMABW(2)	4MV	%	-100	^100	AV BAY 2 FAN AP SENSER BIAS			10-
EC00000	EAMABW(3)	4MV	%	-100	^100	AV BAY 3 FAN AP SENSER BIAS			10
EC00000	EAMFOL(1)	4V	LB/H	0	^200	LEAK INLET LN-DS OF H2 SEP			0
EC00000	EAMFOL(1)	4V	LB/H	0	^200	LEAK INLET LN-BET TK B & C			0
EC00000	EAMOFF(1)	4V	LB/H		^200	LEAK SPLY LN-BET X0&IS0			0
EC00000	EAMFES(1)	4V	LB/H	0	^200	LEAK SPLY LN-DS OF B SP VL			0
EC00000	EAMXIS(1)	4V	LB/H	0	^200	LEAK SPLY LN-XO TO B SP VL			0

911



0010  
HAGEN(3)

1509

1  
-05 DAY NET 000:17:17 RUN SGMT 222:13:00:17 MALFUNCTION PAGE HALF  
NAVDF CNTRL PROFL SYSTEM AUDIO

FS  0010  FF  FB

A000  A001  A002  A003  A004

EC84	HALF ID	TYPE	UNITS	RANGE		DESCRIPTION	10F1	DISPLAYS
EC84	ENMLEK(1)	4MV	BM/SEC	0.0-7	PRI	H2O LOOP LEAK		0.0
EC84	ENMLEK(2)	4MV	BM/SEC	0.0-7	SEC	H2O LOOP LEAK		0.0
EC84	ENMQSR(1)	4V	%	0.0-1	PRI	H2O LOOP ACCM SNS FAIL		0.0
EC84	MEWBEL(1)	4D	NONE	0/1	SEC	H2O LOOP ACC BELL STCK	1	
EC84	ENMDGA(1)	4V	%	0.0-1	PRI	H2O LOOP PMP A FAIL		0.0
EC84	ENMDGB(1)	4V	%	0.0-1	PRI	H2O LOOP PMP B FAIL		0.0
EC84	ENMDGS(1)	4V	%	0.0-1	SEC	H2O LOOP PMP FAIL		0.0
EC84	ENMAFL(1)	4MV	%	-1.0-1	PRI	WLS BYPASS CONT FAIL		0.0
EC84	ENMAFL(2)	4MV	%	-1.0-1	SEC	WLS BYPASS CONT FAIL		0.0
EC84	MEWAUT(1)	4MD	NONE	0/1	PRI	WLS BYPASS VLAVE FAIL	1	
EC84	MEWAUT(2)	4MD	NONE	0/1	SEC	WLS BYPASS VLAVE FAIL	1	
EC84	ENMATP(1)	4MV	F	-20.0-20.0	PRI	WLS BYPS TEMP SNS FAIL		0.0
EC84	ENMATP(2)	4MV	F	-20.0-20.0	SEC	WLS BYPS TEMP SNS FAIL		0.0
EC84	ENMFR(1)	4V	HR/BTU	0.0-1		H2O/FREON INTCHGR DEGRADES		0.0
EC84	ENMDGF(1)	4V	%	0.0-1	IMU	H/X FAN 1 FLOW DECREAS		0.0
EC84	ENMFIL(1)	4V	%	0.0-1	IMU	H/X FILTER BLOCKAGE		0.0
EC84	MEWIFS(1)	4MD	NONE	0/1	IMU	FAN 1 SPEED INSTRMNTN	1	
EC84	MEWIFS(2)	4MD	NONE	0/1	IMU	FAN 2 SPEED INSTRMNTN	1	
EC84	MEWIFS(3)	4MD	NONE	0/1	IMU	FAN 3 SPEED INSTRMNTN	1	

117

CH10 1309  
 (HAGEN(3) 1  
 LOS DAY MET 000:20:17 FRZ SGMT 222:13:03:17 MALFUNCTION PAGE HALF  
 NAVDP CNTRL PROPL SYSTM AUDIO

FS CH10 FF FB

ECSS	MALF ID	TYPE	UNITS	RANGE	DESCRIPTION	10F1	DISPLAYS
							VALUE
ECSS	ERMCB(1)	4MV	OR	-10.0^10	PRI FLS RAD FLOW CONT ASS		4.0
ECSS	ERMCB(2)	4MV	OR	-10.0^10	SEC FLS RAD FLOW CONT ASS		4.0
ECSS	ERMDC(1)	4MV	R-CENT	0^1.0	PRI FLS RADIATOR DEGRADED		0.25
ECSS	ERMDC(2)	4MV	R-CENT	0^1.0	SEC FLS RADIATOR DEGRADED		0.25
ECSS	ERMSB(1)	4MV	OR	-1.5^10	PRI FLS RAD CONT ASS BYPAS		3.0
ECSS	ERMSB(2)	4MV	OR	-1.5^10	SEC FLS RAD CONT ASS BYPA		2.5
ECSS	MERBVS(1)	4MD	NONE	0/1	PRI FLS RAD BYPASS VALVE		1
ECSS	EFMSB(1)	4MV	NONE	-8.0^4.0	PRI A FLSH EVAP CNTR BIAS		0.0
ECSS	EFMSB(2)	4MV	NONE	-8.0^4.0	SEC FLSH EVAP CNTR BIAS		0.0
ECSS	EFMSB(1)	4MV	DGR	-10.0^4.5	HILOAD EVAP OUT T BIAS-PRIA		0.0
ECSS	EFMSB(2)	4MV	DGR	-10.0^4.5	HILOAD EVAP OUT T BIAS-PRIB		0.0
ECSS	EFMSB(3)	4MV	DGR	-10.0^4.5	HILOAD EVAP OUT T BIAS-SEC		0.0
ECSS	EFMSB(4)	4MV	DGR	-10.0^4.5	TOP EVAP OUT TMP BIAS-PRIA		0.0
ECSS	EFMSB(5)	4MV	DGR	-10.0^4.5	TOP EVAP OUT TMP BIAS-PRIB		0.0
ECSS	EFMSB(6)	4MV	DGR	-10.0^4.5	TOP EVAP OUT TEMP BIAS-SEC		0.0
ECSS	EFMD(1)	4V	TU/HR	-100.0^0.	TOPPING EVAP DEGRADATION		0.0
ECSS	MEFPWR(1)	4MD	NONE	0/1	EVAP PRI A POWER SPLY FAIL		1
ECSS	MEFPWR(2)	4MD	NONE	0/1	EVAP PRI B POWER SPLY FAIL		1
ECSS	MEFPWR(3)	4MD	NONE	0/1	EVAP SEC POWER SUPPLY FAIL		1
ECSS	MEFGFC(1)	4MD	NONE	0/1	EVAP PRI A GPC SIGNAL FAIL		1
ECSS	MEFGFC(2)	4MD	NONE	0/1	EVAP PRI B GPC SIGNAL FAIL		1
ECSS	MEFGFC(3)	4MD	NONE	0/1	EVAP SEC GPC SIGNAL FAIL		1

811

CH10  
 HAGEN(3)  
 JOB DAY

MET 000:20:17 FRZ

1  
 SGMT 222:13:03:17 UP MALFUNCTION PAGE MALF  
 NAVOP CNTRL PROPL SYSTM AUDIO

FE  CH10  FF  FE

.A000 .A001 .A002 .A003 .A004

ECSS	MALF ID	TYPE	UNITS	RANGE	DESCRIPTION	10F1	DISPLAYS	VALUE
	MEFACC(1)	4D	NONE	0/1	PRI NH3 CNTR A FAIL-MAIN A		1	
	MEFACC(2)	4D	NONE	0/1	NH3 SYS A ISOL VLV FL-GPC		1	
	EFMAL(1)	4MV	M/SEC	0.0^10.0	LOOP1 FREON LEAK			00.00
	EFMAL(2)	4MV	M/SEC	0.0^10.0	LOOP2 FREON LEAK			00.00
	EFMFA(1)	4MV	NONE	0.0^1.0	LOOP1 FREON PUMP A DEGRAD			00.00
	EFMFA(2)	4MV	NONE	0.0^1.0	LOOP2 FREON PUMP A DEGRAD			00.00
	EFMFB(1)	4MV	NONE	0.0^1.0	LOOP1 FREON PUMP B DEGRAD			00.00
	EFMFB(2)	4MV	NONE	0.0^1.0	LOOP1 FREON PUMP B DEGRAD			00.00
	EFMRS(1)	4MV	/LB/SC	0.0/E-9.5	LOOP1 FREON FLOW RESTRICT			00.00
	EFMRS(2)	4MV	/LB/SC	0.0/E-9.5	LOOP2 FREON FLOW RESTRICT			00.00
	EFMCS(1)	4MV	NONE	-10.0^0.0	NH3 SYSA CONTROLLER BIAS			00.00
	EFMCS(2)	4MV	NONE	-10.0^0.0	NH3 SYSB CONTROLLER BIAS			00.00
	EFMTB(1)	4MV	DGR	-10.0^1.5	NH3 SYSA BOILR OUT TMP BIA			00.00
	EFMTB(2)	4MV	DGR	-10.0^1.5	NH3 SYSB BOILR OUT TMP BIA			00.00
	EFMTL(1)	4MV	M/SEC	.01^1.0	AMMONIA TANK 1 LEAK			00.00
	EFMTL(2)	4MV	M/SEC	.01^1.0	AMMONIA TANK 2 LEAK			00.00
	EFMET(1)	4V	OLTS	-1.25^1.25	FREON FLOW METER BIAS			00.00
	MEFGL(1)	4MD	PSIA	.001^1.025	LOOP1 FREON LP ACUM GS LK			00.00
	MEFGL(2)	4MD	PSIA	.001^1.025	LOOP2 FREON LP ACUM GS LK			00.00
	EFMEOT(1)	4MV	%	-1.0^1.0	FCL1 EVP OUT TEMP SSR BIAS			00.00
	EFMEOT(2)	4MV	%	-1.0^1.0	FCL2 EVP OUT TEMP SSR BIAS			00.00
	EFMPHF(1)	4MV	%	-1.0^1.0	FCL1 PAYLD HX FLO SSR BIAS			00.00
	EFMPHF(2)	4MV	%	-1.0^1.0	FCL2 PAYLD HX FLO SSR BIAS			00.00
	EFMAOP(1)	4MV	%	-1.0^1.0	FCL1 ACCUM QTY SENSOR BIAS			00.00
	EFMAOP(2)	4MV	%	-1.0^1.0	FCL2 ACCUM QTY SENSOR BIAS			00.00
	EFMINP(1)	4MV	/IN2	0^500	FCL1 PUMP IN PRES SSR BIAS			250
	EFMINP(2)	4MV	/IN2	0^500	FCL2 PUMP IN PRES SSR BIAS			250
	EFMWFL(1)	4MV	/HR	0^1.0	FCL1 FREON-H2O INTCHG LEAK			1.0
	EFMWFL(2)	4MV	/HR	0^1.0	FCL2 FREON-H2O INTCHG LEAK			1.0
	EFMIFS(1)	4MV	%	-1.0^1.0	FCL1 INTCHG FLOW SNSR BIAS			250
	EFMIFS(2)	4MV	%	-1.0^1.0	FCL2 INTCHG FLOW SNSR BIAS			250

119

CH10  
THAGEN(3)  
LOS DAY

MET 000:20:17 FRZ

1999

SGMT 222:13:03:17 UP MALFUNCTION PAGE MALF  
NAVDF CNTRL PROPL SYSTM AUDIO

FS

CH10

FF

FB

.A000 .A001 .A002 .A003 .A004

EO57	MALF ID	TYPE	UNITS	RANGE	DESCRIPTION	10F2	DISPLAYS
EC097	MEAINO(01)	4MD	NONE	0/1	POT H2O TK A INLET VLV MAL		1
EC097	MEAINO(02)	4MD	NONE	0/1	POT H2O TK B INLET VLV MAL		1
EC097	MEAINO(03)	4MD	NONE	0/1	POT H2O TK C INLET VLV MAL		1
EC097	MEAINO(04)	4MD	NONE	0/1	POT H2O TK D INLET VLV MAL		1
EC097	MEAINO(05)	4MD	NONE	0/1	POT H2O TK W INLET VLV MAL		1
EC097	MEAOTO(01)	4MD	NONE	0/1	POT H2O TK A OUTLET VLV MA		1
EC097	MEAOTO(02)	4MD	NONE	0/1	POT H2O TK B OUTLET VLV MA		1
EC097	MEAOTO(03)	4MD	NONE	0/1	POT H2O TK C OUTLET VLV MA		1
EC097	MEAOTO(04)	4MD	NONE	0/1	POT H2O TK D OUTLET VLV MA		1
EC097	MEAOTO(05)	4MD	NONE	0/1	POT H2O TK W OUTLET VLV MA		1
EC097	MEADIO(01)	4D	NONE	0/1	SPLY H2O DUMP ISO VLV MALF		1
EC097	MEADPO(01)	4D	NONE	0/1	SPLY H2O DUMP VLV MALF		1
EC097	MEANOZ(01)	4D	NONE	0/1	SPLY H2O DUMP NOZ HTR MALF		1
EC097	MEAOIO(01)	4D	NONE	0/1	SPLY H2O XOVER VLV MALF		1
EC097	MEAWNH(01)	4D	NONE	0/1	WASTE H2O DUMP NOZ HTR MAL		1
EC097	MEAVNH(01)	4D	NONE	0/1	VAC VENT DUMP NOZ HTR MALF		1
EC097	MEAWDP(01)	4D	NONE	0/1	WASTE H2O DUMP VLV MALF		1
EC097	MEAWDI(01)	4D	NONE	0/1	WASTE H2O DUMP ISO MALF		1
EC097	MEAVIC(01)	4D	NONE	0/1	VAC VENT DUMP VLV CTRL MAL		1
EC097	EAMQTY(01)	4MV	%	-100^100	POT TK A QUANTITY BIAS MAL		0
EC097	EAMQTY(02)	4MV	%	-100^100	POT TK B QUANTITY BIAS MAL		0
EC097	EAMQTY(03)	4MV	%	-100^100	POT TK C QUANTITY BIAS MAL		0
EC097	EAMQTY(04)	4MV	%	-100^100	POT TK D QUANTITY BIAS MAL		0
EC097	EAMQTY(05)	4MV	%	-100^100	POT TK E QUANTITY BIAS MAL		0
EC097	EAMQTY(06)	4MV	%	-100^100	POT TK F QUANTITY BIAS MAL		0
EC097	EAMQTY(07)	4MV	%	-100^100	POT TK W QUANTITY BIAS MAL		0
EC097	EAMWPT(01)	4V	PSIA	-60^60	H2O TK PRS TDCR BIAS MALF		0
EC097	MEATER(01)	4MD	NONE	0/1	POT TK A BELLOW RUPTURE		1
EC097	MEATER(02)	4MD	NONE	0/1	POT TK B BELLOW RUPTURE		1
EC097	MEATER(03)	4MD	NONE	0/1	POT TK C BELLOW RUPTURE		1
EC097	MEATER(04)	4MD	NONE	0/1	POT TK D BELLOW RUPTURE		1
EC097	MEATER(05)	4MD	NONE	0/1	POT TK E BELLOW RUPTURE		1
EC097	MEATER(06)	4MD	NONE	0/1	POT TK F BELLOW RUPTURE		1
EC097	MEATER(07)	4MD	NONE	0/1	POT TK W BELLOW RUPTURE		1
EC097	EAMTKL(01)	4MV	LB/H	0^100	POT TK A LEAK MALF		0
EC097	EAMTKL(02)	4MV	LB/H	0^100	POT TK B LEAK MALF		0
EC097	EAMTKL(03)	4MV	LB/H	0^100	POT TK C LEAK MALF		0
EC097	EAMTKL(04)	4MV	LB/H	0^100	POT TK D LEAK MALF		0
EC097	EAMTKL(05)	4MV	LB/H	0^100	POT TK E LEAK MALF		0
EC097	EAMTKL(06)	4MV	LB/H	0^100	POT TK F LEAK MALF		0

120

```

E057
10FCPN(2)
LOS DAY NET 000:28:45 RUN SGMT 222:13:11:45 MALFUNCTION PAGE MALF
FS E057 FF FB NAMOP CNTRL PROPL SYSTM AUDIO
.A000 .A001 .A002 .A003 .A004
E057 ACS MALF 20F2 DISPLAYS
MALF ID TYPE UNITS RANGE DESCRIPTION VALUE
E057 EAMTKL(7) 4MV LB/H 0^168 POT TK W LEAK MALF 0

```

121

EDS7  
 DFCFN(2)  
 LOS DAY

NET 000:29:12 RUN

SGNT 222:13:12:12 UP MALFUNCTION PAGE HALF  
 NAVDF CNTRL PROPL SYSTM AUDIO

1988

FS ECS7 FF FB

.A000 .A001 .A002 .A003 .A004

EPF01	MALF ID	TYPE	UNITS	RANGE	DESCRIPTION	10F1	DISPLAYS
							VALUE
EPF01	DDMBSSA(1)	4MV	WATTS	0^25K	MAIN DC BUS SHORT		0.0
EPF01	DDMBSSA(2)	4MV	WATTS	0^25K	MAIN DC BUS SHORT		0.0
EPF01	DDMBSSA(3)	4MV	WATTS	0^25K	MAIN DC BUS SHORT		0.0
EPF01	DDMACS(1)	4MV	WATTS	0^2K	AC BUS SHORT		0.0
EPF01	DDMACS(2)	4MV	WATTS	0^2K	AC BUS SHORT		0.0
EPF01	DDMACS(3)	4MV	WATTS	0^2K	AC BUS SHORT		0.0
EPF01	DDMACS(4)	4MV	WATTS	0^2K	AC BUS SHORT		0.0
EPF01	DDMACS(5)	4MV	WATTS	0^2K	AC BUS SHORT		0.0
EPF01	DDMACS(6)	4MV	WATTS	0^2K	AC BUS SHORT		0.0
EPF01	DDMACS(7)	4MV	WATTS	0^2K	AC BUS SHORT		0.0
EPF01	DDMACS(8)	4MV	WATTS	0^2K	AC BUS SHORT		0.0
EPF01	DDMACS(9)	4MV	WATTS	0^2K	AC BUS SHORT		0.0
EPF01	MDLRC1(1)	4MD	NONE	0/1	MN DC-ESS BUS RPC FAIL		1
EPF01	MDLRC1(2)	4MD	NONE	0/1	MN DC-ESS BUS RPC FAIL		1
EPF01	MDLRC1(3)	4MD	NONE	0/1	MN DC-ESS BUS RPC FAIL		1
EPF01	MDLRC1(3)	4MD	NONE	0/1	MN DC-ESS BUS RPC FAIL		1
EPF01	MDLTBC(1)	4MD	NONE	0/1	DC BUS TIE MTR SWCH FAIL		1
EPF01	MDLTBC(2)	4MD	NONE	0/1	DC BUS TIE MTR SWCH FAIL		1
EPF01	MDLTBC(3)	4MD	NONE	0/1	DC BUS TIE MTR SWCH FAIL		1
EPF01	MDCAMP(1)	4D	NONE	0/1	AC VOLTMETER FAIL		1
EPF01	MDCVMP(1)	4D	NONE	0/1	DC VOLTMETER FAIL		1
EPF01	MDCIMP(1)	4D	NONE	0/1	DC AMMETER FAIL		1
EPF01	DCMACB(1)	4V	VOLTS	0^40	AC VOLTMETER BIAS		0.0
EPF01	DCMVMB(1)	4V	VOLTS	0^25	DC VOLTMETER BIAS		0.0
EPF01	DCMAMB(1)	4V	AMPS	0^500	DC AMMETER BIAS		0.0
EPF01	MDCTBA(1)	4MD	NONE	0/1	FC TO MN DC BUS TB FAIL		1
EPF01	MDCTBA(2)	4MD	NONE	0/1	FC TO MN DC BUS TB FAIL		1
EPF01	MDCTBA(3)	4MD	NONE	0/1	FC TO MN DC BUS TB FAIL		1
EPF01	MDDIF1(1)	4MD	NONE	0/1	AC INVERTER FAILURE		1
EPF01	MDDIF1(2)	4MD	NONE	0/1	AC INVERTER FAILURE		1
EPF01	MDDIF1(3)	4MD	NONE	0/1	AC INVERTER FAILURE		1
EPF01	MDDIF1(4)	4MD	NONE	0/1	AC INVERTER FAILURE		1
EPF01	MDDIF1(5)	4MD	NONE	0/1	AC INVERTER FAILURE		1
EPF01	MDDIF1(6)	4MD	NONE	0/1	AC INVERTER FAILURE		1
EPF01	MDDIF1(7)	4MD	NONE	0/1	AC INVERTER FAILURE		1
EPF01	MDDIF1(8)	4MD	NONE	0/1	AC INVERTER FAILURE		1
EPF01	MDDIF1(9)	4MD	NONE	0/1	AC INVERTER FAILURE		1
EPF01	MDLFFZ(1)	4MD	NONE	0/1	MN DC BUS-FWD PCA FUSE		1
EPF01	MDLFFZ(2)	4MD	NONE	0/1	MN DC BUS-FWD PCA FUSE		1
EPF01	MDLFFZ(3)	4MD	NONE	0/1	MN DC BUS-FWD PCA FUSE		1

122

EC057  
 10FC0PM(2)

MET 000:29:57 RUN

SGMT 222:13:12:57  
 NAVDP CNTRL PROPL

ISSB

HALF PAGE HALF  
 SYSTEM AUDIO

FE EC057 FF FE

A000 A001 A002 A003 A004

EF02	HALF ID	EPDC TYPE	HALF UNITS	RANGE	DESCRIPTION	10F2	DISPLAYS
EF002	MDLOU1(1)	4MD	NONE	0/1	O/U VOLTAGE SENSOR	FAIL	1
EF002	MDLOU1(2)	4MD	NONE	0/1	O/U VOLTAGE SENSOR	FAIL	1
EF002	MDLOU1(3)	4MD	NONE	0/1	O/U VOLTAGE SENSOR	FAIL	1
EF002	MDLOU1(4)	4MD	NONE	0/1	O/U VOLTAGE SENSOR	FAIL	1
EF002	MDLOU1(5)	4MD	NONE	0/1	O/U VOLTAGE SENSOR	FAIL	1
EF002	MDLOU1(6)	4MD	NONE	0/1	O/U VOLTAGE SENSOR	FAIL	1
EF002	MDLOU1(7)	4MD	NONE	0/1	O/U VOLTAGE SENSOR	FAIL	1
EF002	MDLOU1(8)	4MD	NONE	0/1	O/U VOLTAGE SENSOR	FAIL	1
EF002	MDLOU1(9)	4MD	NONE	0/1	O/U VOLTAGE SENSOR	FAIL	1
EF002	MDLOU1(10)	4MD	NONE	0/1	O/U VOLTAGE SENSOR	FAIL	1
EF002	MDLOU1(11)	4MD	NONE	0/1	O/U VOLTAGE SENSOR	FAIL	1
EF002	MDLOU1(12)	4MD	NONE	0/1	O/U VOLTAGE SENSOR	FAIL	1
EF002	MDLOU1(13)	4MD	NONE	0/1	O/U VOLTAGE SENSOR	FAIL	1
EF002	MDLOU1(14)	4MD	NONE	0/1	O/U VOLTAGE SENSOR	FAIL	1
EF002	MDLOU1(15)	4MD	NONE	0/1	O/U VOLTAGE SENSOR	FAIL	1
EF002	MDLOU1(16)	4MD	NONE	0/1	O/U VOLTAGE SENSOR	FAIL	1
EF002	MDLOU1(17)	4MD	NONE	0/1	O/U VOLTAGE SENSOR	FAIL	1
EF002	MDLOU1(18)	4MD	NONE	0/1	O/U VOLTAGE SENSOR	FAIL	1
EF002	MDLOU1(19)	4MD	NONE	0/1	O/U VOLTAGE SENSOR	FAIL	1
EF002	MDLOU1(20)	4MD	NONE	0/1	O/U VOLTAGE SENSOR	FAIL	1
EF002	MDLOU1(21)	4MD	NONE	0/1	O/U VOLTAGE SENSOR	FAIL	1
EF002	MDLOU1(22)	4MD	NONE	0/1	O/U VOLTAGE SENSOR	FAIL	1
EF002	MDLOU1(23)	4MD	NONE	0/1	O/U VOLTAGE SENSOR	FAIL	1
EF002	MDLOU1(24)	4MD	NONE	0/1	O/U VOLTAGE SENSOR	FAIL	1
EF002	MDLOU1(25)	4MD	NONE	0/1	O/U VOLTAGE SENSOR	FAIL	1
EF002	MDLOU1(26)	4MD	NONE	0/1	O/U VOLTAGE SENSOR	FAIL	1
EF002	MDLOU1(27)	4MD	NONE	0/1	O/U VOLTAGE SENSOR	FAIL	1
EF002	MDLOU1(28)	4MD	NONE	0/1	O/U VOLTAGE SENSOR	FAIL	1
EF002	MDLOU1(29)	4MD	NONE	0/1	O/U VOLTAGE SENSOR	FAIL	1
EF002	MDLOU1(30)	4MD	NONE	0/1	O/U VOLTAGE SENSOR	FAIL	1
EF002	DCMFC0(1)	4MV	AMPS	0^500	FC CURRENT SENSOR	BIAS	0.00
EF002	DCMFC0(2)	4MV	AMPS	0^500	FC CURRENT SENSOR	BIAS	0.00
EF002	DCMFC0(3)	4MV	AMPS	0^500	FC CURRENT SENSOR	BIAS	0.00
EF002	DDM10A(1)	4MV	VOLTS	0^117	INVERTER VOLTAGE	FAILURE	0.00
EF002	DDM10A(2)	4MV	VOLTS	0^117	INVERTER VOLTAGE	FAILURE	0.00
EF002	DDM10A(3)	4MV	VOLTS	0^117	INVERTER VOLTAGE	FAILURE	0.00
EF002	DDM10A(4)	4MV	VOLTS	0^117	INVERTER VOLTAGE	FAILURE	0.00
EF002	DDM10A(5)	4MV	VOLTS	0^117	INVERTER VOLTAGE	FAILURE	0.00
EF002	DDM10A(6)	4MV	VOLTS	0^117	INVERTER VOLTAGE	FAILURE	0.00
EF002	DDM10A(7)	4MV	VOLTS	0^117	INVERTER VOLTAGE	FAILURE	0.00
EF002	DDM10A(8)	4MV	VOLTS	0^117	INVERTER VOLTAGE	FAILURE	0.00
EF002	DDM10A(9)	4MV	VOLTS	0^117	INVERTER VOLTAGE	FAILURE	0.00
EF002	DDM10A(10)	4MV	VOLTS	0^117	INVERTER VOLTAGE	FAILURE	0.00
EF002	MDLR1N(1)	4MD	NONE	0/1	DC BUS-INVERTER	RELAY/ON	1
EF002	MDLR1N(2)	4MD	NONE	0/1	DC BUS-INVERTER	RELAY/ON	1
EF002	MDLR1N(3)	4MD	NONE	0/1	DC BUS-INVERTER	RELAY/ON	1
EF002	MDLR1N(4)	4MD	NONE	0/1	DC BUS-INVERTER	RELAY/ON	1
EF002	MDLR1N(5)	4MD	NONE	0/1	DC BUS-INVERTER	RELAY/ON	1
EF002	MDLR1N(6)	4MD	NONE	0/1	DC BUS-INVERTER	RELAY/ON	1
EF002	MDLR1N(7)	4MD	NONE	0/1	DC BUS-INVERTER	RELAY/ON	1
EF002	MDLR1N(8)	4MD	NONE	0/1	DC BUS-INVERTER	RELAY/ON	1
EF002	MDLR1N(9)	4MD	NONE	0/1	DC BUS-INVERTER	RELAY/ON	1
EF002	MDLR1N(10)	4MD	NONE	0/1	DC BUS-INVERTER	RELAY/ON	1
EF002	MDCBS1(1)	4MD	NONE	0/1	MN BUS-VOLTMTR	FUSE FAIL	1

123

12037

1309

DDFORM(2)

LOS DAY MET 000:30:58 RUN

SGMT 222:13:13:58 UP MALFUNCTION PAGE HALF  
NAVDP ONTRL PROFL SYSTM AUDIO

FE  E057  FF  FE

A000  A001  A002  A003  A004

EP52	HALF ID	EPDC	HALF	TYPE	UNITS	RANGE	DESCRIPTION	20F2	DISPLAYS	VALUE
EP52	MDCBS1(2)	4MD	NONE			0/1	MN BUS-VOLTMTR FUSE FAIL			1
EP52	MDCBS1(3)	4MD	NONE			0/1	MN BUS-VOLTMTR FUSE FAIL			1
EP52	MOLINV(1)	4MD				0/1	INVERTER FUSE TO FPCA			1
EP52	MOLINV(2)	4MD				0/1	INVERTER FUSE TO FPCA			1
EP52	MOLINV(3)	4MD				0/1	INVERTER FUSE TO FPCA			1
EP52	MOLINV(4)	4MD				0/1	INVERTER FUSE TO FPCA			1
EP52	MOLINV(5)	4MD				0/1	INVERTER FUSE TO FPCA			1
EP52	MOLINV(6)	4MD				0/1	INVERTER FUSE TO FPCA			1
EP52	MOLINV(7)	4MD				0/1	INVERTER FUSE TO FPCA			1
EP52	MOLINV(8)	4MD				0/1	INVERTER FUSE TO FPCA			1
EP52	MOLINV(9)	4MD				0/1	INVERTER FUSE TO FPCA			1

124



LOG  
 107007  
 107007  
 LOG DAY

NET 000:32:12 RUN

SGMT 222:13:15:12 UP MALFUNCTION PAGE HALF  
 NAVOP CNTRL PROPL SYSTM AUDIO

1998

FS E057 FF FE

.A000 .A001 .A002 .A003 .A004

EF53	MALF ID	EFDC MALF TYPE	UNITS	RANGE	DESCRIPTION	10F2	DISPLAYS VALUE
FF9999	MOLR1F(1)	4MD	NONE	0/1	DC BUS-INVERTR RELAY/OFF		1
FF9999	MOLR1F(2)	4MD	NONE	0/1	DC BUS-INVERTR RELAY/OFF		1
FF9999	MOLR1F(3)	4MD	NONE	0/1	DC BUS-INVERTR RELAY/OFF		1
FF9999	MOLR1F(4)	4MD	NONE	0/1	DC BUS-INVERTR RELAY/OFF		1
FF9999	MOLR1F(5)	4MD	NONE	0/1	DC BUS-INVERTR RELAY/OFF		1
FF9999	MOLR1F(6)	4MD	NONE	0/1	DC BUS-INVERTR RELAY/OFF		1
FF9999	MOLR1F(7)	4MD	NONE	0/1	DC BUS-INVERTR RELAY/OFF		1
FF9999	MOLR1F(8)	4MD	NONE	0/1	DC BUS-INVERTR RELAY/OFF		1
FF9999	MOLR1F(9)	4MD	NONE	0/1	DC BUS-INVERTR RELAY/OFF		1
FF9999	MOLC1F(1)	4MD	NONE	0/1	INVERTR-AC BUS RELAY/OFF		1
FF9999	MOLC1F(2)	4MD	NONE	0/1	INVERTR-AC BUS RELAY/OFF		1
FF9999	MOLC1F(3)	4MD	NONE	0/1	INVERTR-AC BUS RELAY/OFF		1
FF9999	MOLC1F(4)	4MD	NONE	0/1	INVERTR-AC BUS RELAY/OFF		1
FF9999	MOLC1F(5)	4MD	NONE	0/1	INVERTR-AC BUS RELAY/OFF		1
FF9999	MOLC1F(6)	4MD	NONE	0/1	INVERTR-AC BUS RELAY/OFF		1
FF9999	MOLC1F(7)	4MD	NONE	0/1	INVERTR-AC BUS RELAY/OFF		1
FF9999	MOLC1F(8)	4MD	NONE	0/1	INVERTR-AC BUS RELAY/OFF		1
FF9999	MOLC1F(9)	4MD	NONE	0/1	INVERTR-AC BUS RELAY/OFF		1
FF9999	MOLC1N(1)	4MD	NONE	0/1	INVERTR-AC BUS RELAY/ON		1
FF9999	MOLC1N(2)	4MD	NONE	0/1	INVERTR-AC BUS RELAY/ON		1
FF9999	MOLC1N(3)	4MD	NONE	0/1	INVERTR-AC BUS RELAY/ON		1
FF9999	MOLC1N(4)	4MD	NONE	0/1	INVERTR-AC BUS RELAY/ON		1
FF9999	MOLC1N(5)	4MD	NONE	0/1	INVERTR-AC BUS RELAY/ON		1
FF9999	MOLC1N(6)	4MD	NONE	0/1	INVERTR-AC BUS RELAY/ON		1
FF9999	MOLC1N(7)	4MD	NONE	0/1	INVERTR-AC BUS RELAY/ON		1
FF9999	MOLC1N(8)	4MD	NONE	0/1	INVERTR-AC BUS RELAY/ON		1
FF9999	MOLC1N(9)	4MD	NONE	0/1	INVERTR-AC BUS RELAY/ON		1
FF9999	MDCFC1(1)	4MD	NONE	0/1	FC/ULTMTR 1A FUSE FAIL		1
FF9999	MDCFC1(2)	4MD	NONE	0/1	FC/ULTMTR 1A FUSE FAIL		1
FF9999	MDCFC1(3)	4MD	NONE	0/1	FC/ULTMTR 1A FUSE FAIL		1
FF9999	MDLFCM(1)	4MD	NONE	0/1	FC-MN BUS MTR SWT FAIL		1
FF9999	MDLFCM(2)	4MD	NONE	0/1	FC-MN BUS MTR SWT FAIL		1
FF9999	MDLFCM(3)	4MD	NONE	0/1	FC-MN BUS MTR SWT FAIL		1
FF9999	MDC10A(1)	4MD	NONE	0/1	AC BUS/ULTMTR 1A FUSE		1
FF9999	MDC10A(2)	4MD	NONE	0/1	AC BUS/ULTMTR 1A FUSE		1
FF9999	MDC10A(3)	4MD	NONE	0/1	AC BUS/ULTMTR 1A FUSE		1
FF9999	MDC10A(4)	4MD	NONE	0/1	AC BUS/ULTMTR 1A FUSE		1
FF9999	MDC10A(5)	4MD	NONE	0/1	AC BUS/ULTMTR 1A FUSE		1
FF9999	MDC10A(6)	4MD	NONE	0/1	AC BUS/ULTMTR 1A FUSE		1
FF9999	MDC10A(7)	4MD	NONE	0/1	AC BUS/ULTMTR 1A FUSE		1

125

ECB7  
0700(2)

1509

LOS DAY MET 000:32:58 RUN SGMT 222:13:15:58 UP MALFUNCTION PAGE MALF  
NAVDP CNTRL PROPL SYSTM AUDIO

FS ECB7 FF FB

.A000 .A001 .A002 .A003 .A004

EPSS	MALF ID	EPDC MALF TYPE	UNITS	RANGE	DESCRIPTION	20F2	DISPLAYS	VALUE
LEPSS	MDC10A(8)	4MD	NONE	0/1	AC BUS/ULTMTR 1A FUSE			1
LEPSS	MDC10A(9)	4MD	NONE	0/1	AC BUS/ULTMTR 1A FUSE			1

126



1402

1809

LOS NIGHT MET 000:50:48 RUN SGMT 222:13:33:48 UP MALFUNCTION PAGE MALF  
NAVDF CNTRL PROPL SYSTM AUDIO

FS  EPS4  FF  FB

.A000 .A001 .A002 .A003 .A004

EP34	EPDC MALF			20F2 DISPLAYS	
MALF ID	TYPE	UNITS	RANGE	DESCRIPTION	VALUE
EP34 MDLAMA(3)	4MD	NONE	0/1	AFT MCA RPC FAIL/OPEN	1

128

1202

1303

120 NIGHT MET 000:51:12 RUN SGMT 222:13:34:12 UP MALFUNCTION PAGE MALF  
NAVDP CNTRL PROFL SYSTM AUDIO

FE EP54 FF FE

.A000 .A001 .A002 .A003 .A004

EP55	MALF ID	TYPE	UNITS	RANGE	DESCRIPTION	10F1	DISPLAYS VALUE
FF	DDM1BC(1)	4MV	WATTS	0^1K	ESSENTIAL BUS 1 BC SHORT		0.0
FF	DDM1BC(2)	4MV	WATTS	0^1K	ESSENTIAL BUS 2 CA SHORT		0.0
FF	DDM1BC(3)	4MV	WATTS	0^1K	ESSENTIAL BUS 3 AB SHORT		0.0
FF	DDMFPA(1)	4MV	WATTS	0^20K	FWD PWR CONTROL ASSY SHOR		0.0
FF	DDMFPA(2)	4MV	WATTS	0^20K	FWD PWR CONTROL ASSY SHOR		0.0
FF	DDMFPA(3)	4MV	WATTS	0^20K	FWD PWR CONTROL ASSY SHOR		0.0
FF	DDMMPA(1)	4MV	WATTS	0^5K	MID PWR CONTROL ASSY SHOR		0.0
FF	DDMMPA(2)	4MV	WATTS	0^5K	MID PWR CONTROL ASSY SHOR		0.0
FF	DDMMPA(3)	4MV	WATTS	0^5K	MID PWR CONTROL ASSY SHOR		0.0
FF	DDMAPA(1)	4MV	WATTS	0^7K	AFT PWR CONTROL ASSY SHOR		0.0
FF	DDMAPA(2)	4MV	WATTS	0^7K	AFT PWR CONTROL ASSY SHOR		0.0
FF	DDMAPA(3)	4MV	WATTS	0^7K	AFT PWR CONTROL ASSY SHOR		0.0
FF	DDMAPA(4)	4MV	WATTS	0^15K	AFT PWR CONTROL ASSY SHOR		0.0
FF	DDMAPA(5)	4MV	WATTS	0^15K	AFT PWR CONTROL ASSY SHOR		0.0
FF	DDMAPA(6)	4MV	WATTS	0^15K	AFT PWR CONTROL ASSY SHOR		0.0
FF	DDMAB1(1)	4MV	WATTS	0^200	CONTROL BUS AB 1 SHORT		0.0
FF	DDMAB1(2)	4MV	WATTS	0^200	CONTROL BUS AB 2 SHORT		0.0
FF	DDMAB1(3)	4MV	WATTS	0^200	CONTROL BUS AB 3 SHORT		0.0
FF	DDMBC1(1)	4MV	WATTS	0^200	CONTROL BUS BC 1 SHORT		0.0
FF	DDMBC1(2)	4MV	WATTS	0^200	CONTROL BUS BC 2 SHORT		0.0
FF	DDMBC1(3)	4MV	WATTS	0^200	CONTROL BUS BC 3 SHORT		0.0
FF	DDMCA1(1)	4MV	WATTS	0^200	CONTROL BUS CA 1 SHORT		0.0
FF	DDMCA1(2)	4MV	WATTS	0^200	CONTROL BUS CA 2 SHORT		0.0
FF	DDMCA1(3)	4MV	WATTS	0^200	CONTROL BUS CA 3 SHORT		0.0
FF	DDMFLA(1)	4MV	WATTS	0^2K	FWD LCA BUS SHORT		0.0
FF	DDMFLA(2)	4MV	WATTS	0^2K	FWD LCA BUS SHORT		0.0
FF	DDMFLA(3)	4MV	WATTS	0^2K	FWD LCA BUS SHORT		0.0
FF	DDMALA(1)	4MV	WATTS	0^4K	AFT LCA BUS SHORT		0.0
FF	DDMALA(2)	4MV	WATTS	0^4K	AFT LCA BUS SHORT		0.0
FF	DDMALA(3)	4MV	WATTS	0^4K	AFT LCA BUS SHORT		0.0
FF	DDCTAN(1)	4MD	NONE	0/1	INVRTR-AC BUS TLKBACK/ON		1
FF	DDCTAN(2)	4MD	NONE	0/1	INVRTR-AC BUS TLKBACK/ON		1
FF	DDCTAN(3)	4MD	NONE	0/1	INVRTR-AC BUS TLKBACK/ON		1
FF	DDCTAF(1)	4MD	NONE	0/1	INVRTR-AC BUS TLKBACK/OFF		1
FF	DDCTAF(2)	4MD	NONE	0/1	INVRTR-AC BUS TLKBACK/OFF		1
FF	DDCTAF(3)	4MD	NONE	0/1	INVRTR-AC BUS TLKBACK/OFF		1
FF	DDCTIN(1)	4MD	NONE	0/1	INVERTR PWR TALKBACK/ON		1
FF	DDCTIN(2)	4MD	NONE	0/1	INVERTR PWR TALKBACK/ON		1
FF	DDCTIN(3)	4MD	NONE	0/1	INVERTR PWR TALKBACK/ON		1

129

CAGE

1808

LOS NIGHT NET 000:51:40 RUN

SCMT 222:13:34:40 OF MALFUNCTION PAGE MALF  
NAVDOP CNTRL PROPL SYSTM AUDIO

FS EP54 FF FB

.A000 .A001 .A002 .A003 .A004

EP55	EPDC MALF	TYPE	UNITS	RANGE	DESCRIPTION	10F1	DISPLAYS	VALUE
000000	MOLAPP(1)	4MD	NONE	0/1	AFT P0A 1 FUSE FAIL		1	
000000	MOLAPP(2)	4MD	NONE	0/1	AFT P0A 2 FUSE FAIL		1	
000000	MOLAPP(3)	4MD	NONE	0/1	AFT P0A 3 FUSE FAIL		1	
000000	MOLAPP(4)	4MD	NONE	0/1	AFT P0A 4 FUSE FAIL		1	
000000	MOLAPP(5)	4MD	NONE	0/1	AFT P0A 5 FUSE FAIL		1	
000000	MOLAPP(6)	4MD	NONE	0/1	AFT P0A 6 FUSE FAIL		1	
000000	MOLMPF(1)	4MD	NONE	0/1	MID P0A 1 FUSE FAIL		1	
000000	MOLMPF(2)	4MD	NONE	0/1	MID P0A 2 FUSE FAIL		1	
000000	MOLMPF(3)	4MD	NONE	0/1	MID P0A 3 FUSE FAIL		1	
000000	MOLESS(1)	4MD	NONE	0/1	FUSE F/C TO ESS 180		1	
000000	MOLESS(2)	4MD	NONE	0/1	FUSE F/C TO ESS 20A		1	
000000	MOLESS(3)	4MD	NONE	0/1	FUSE F/C TO ESS 3AB		1	
000000	MOLRO1(1)	4MD	NONE	0/1	ESS BUS RFO C FAIL		1	
000000	MOLRO1(2)	4MD	NONE	0/1	ESS BUS RFO A FAIL		1	
000000	MOLALF(1)	4MD	NONE	0/1	AFT L0A 1 FUSE FAIL		1	
000000	MOLALF(2)	4MD	NONE	0/1	AFT L0A 2 FUSE FAIL		1	
000000	MOLALF(3)	4MD	NONE	0/1	AFT L0A 3 FUSE FAIL		1	
000000	MOLF1F(1)	4MD	NONE	0/1	FWD L0A 1 FUSE FAIL		1	
000000	MOLF1F(2)	4MD	NONE	0/1	FWD L0A 2 FUSE FAIL		1	
000000	MOLF1F(3)	4MD	NONE	0/1	FWD L0A 3 FUSE FAIL		1	
000000	MOLO13(1)	4MD	NONE	0/1	PNL 013 180 FUSE FAIL		1	
000000	MOLO13(2)	4MD	NONE	0/1	PNL 013 20A FUSE FAIL		1	
000000	MOLO13(3)	4MD	NONE	0/1	PNL 013 3AB FUSE FAIL		1	
000000	MOLO14(1)	4D	NONE	0/1	PNL 014 FUSE FAIL		1	
000000	MOLO15(1)	4D	NONE	0/1	PNL 015 FUSE FAIL		1	
000000	MOLO16(1)	4D	NONE	0/1	PNL 016 FUSE FAIL		1	
000000	DDMO13(1)	4MV	ATTS	00. ^S000.	PNL 013 180 BUS SHORT		00	
000000	DDMO13(2)	4MV	ATTS	00. ^S000.	PNL 013 20A BUS SHORT		00	
000000	DDMO13(3)	4MV	ATTS	00. ^S000.	PNL 013 3AB BUS SHORT		00	
000000	DDMO14(1)	4D	ATTS	00. ^S000.	PNL 014 BUS SHORT		00	
000000	DDMO15(1)	4D	ATTS	00. ^S000.	PNL 015 BUS SHORT		00	
000000	DDMO16(1)	4D	ATTS	00. ^S000.	PNL 016 BUS SHORT		00	
000000	DDMPFF(1)	4MV	ATTS	00. ^S000.	P/L FOR 1 SHORT		00	
000000	DDMPFF(2)	4MV	ATTS	00. ^S000.	P/L FOR 2 SHORT		00	
000000	DDMPFF(3)	4MV	ATTS	00. ^S000.	P/L FOR 3 SHORT		00	
000000	DDMPFF(4)	4MV	ATTS	00. ^S000.	P/L FOR 4 SHORT		00	
000000	MOLPFF(1)	4MD	NONE	0/1	P/L FOR 1 FUSE FAIL		1	
000000	MOLPFF(2)	4MD	NONE	0/1	P/L FOR 2 FUSE FAIL		1	
000000	MOLPFF(3)	4MD	NONE	0/1	P/L FOR 3 FUSE FAIL		1	
000000	MOLPFF(4)	4MD	NONE	0/1	P/L FOR 4 FUSE FAIL		1	

130

1402

1509

LOS NIGHT NET 000:52:08 RUN

SGMT 222:13:35:08 UP MALFUNCTION PAGE MALF  
NAVDF CNTRL PROPL SYSTM AUDIO

FB EPS4 FF FE

A000 A001 A002 A003 A004

EP37	MALF ID	EPDC	MALF	TYPE	UNITS	RANGE	DESCRIPTION	10F1	DISPLAYS	VALUE
EP37	MOLAB1(1)	4MD	NONE			0/1	MNC-AB1 FUSE FAIL			1
EP37	MOLAB1(2)	4MD	NONE			0/1	MNC-AB2 FUSE FAIL			1
EP37	MOLAB1(3)	4MD	NONE			0/1	MNC-AB3 FUSE FAIL			1
EP37	MOLBC1(1)	4MD	NONE			0/1	MNA-BC1 FUSE FAIL			1
EP37	MOLBC1(2)	4MD	NONE			0/1	MNA-BC2 FUSE FAIL			1
EP37	MOLBC1(3)	4MD	NONE			0/1	MNA-BC3 FUSE FAIL			1
EP37	MOLCA1(1)	4MD	NONE			0/1	MNB-CA1 FUSE FAIL			1
EP37	MOLCA1(2)	4MD	NONE			0/1	MNB-CA2 FUSE FAIL			1
EP37	MOLCA1(3)	4MD	NONE			0/1	MNB-CA3 FUSE FAIL			1
EP37	DDMFC9(1)	4MV	NONE			0/1	FC 1 CURRENT SNR FAIL			1
EP37	DDMFC9(2)	4MV	NONE			0/1	FC 2 CURRENT SNR FAIL			1
EP37	DDMFC9(3)	4MV	NONE			0/1	FC 3 CURRENT SNR FAIL			1

131

1302

1303

LOG NIGHT NET 000:52:38 RUN

SGHT 222:13:35:38 UP MALFUNCTION PAGE MALF  
NAVDP CNTRL PROPL SYSTM AUDIO

FB

EP34

FF

FB

A000 A001 A002 A003 A004

FCP1	MALF ID	FUEL CELLS	TYPE	UNITS	RANGE	DESCRIPTION	10F1	DISPLAYS	VALUE
FCP1	MDFSSSF(1)	4MD	NONE		0/1	FCP1 START/STOP SWITCH		1	
FCP1	MDFSSSF(2)	4MD	NONE		0/1	FCP2 START/STOP SWITCH		1	
FCP1	MDFSSSF(3)	4MD	NONE		0/1	FCP3 START/STOP SWITCH		1	
FCP1	MDFK30(1)	4MD	NONE		0/1	FCP1 ECU MALFUNCTION		1	
FCP1	MDFK30(2)	4MD	NONE		0/1	FCP2 ECU MALFUNCTION		1	
FCP1	MDFK30(3)	4MD	NONE		0/1	FCP3 ECU MALFUNCTION		1	
FCP1	MDFSTH(1)	4MD	NONE		0/1	FCP1 START HEATER FAILUR		1	
FCP1	MDFSTH(2)	4MD	NONE		0/1	FCP2 START HEATER FAILUR		1	
FCP1	MDFSTH(3)	4MD	NONE		0/1	FCP3 START HEATER FAILUR		1	
FCP1	MDFSUH(1)	4MD	NONE		0/1	FCP1 SUSTAINING HTR FAIL		1	
FCP1	MDFSUH(2)	4MD	NONE		0/1	FCP2 SUSTAINING HTR FAIL		1	
FCP1	MDFSUH(3)	4MD	NONE		0/1	FCP3 SUSTAINING HTR FAIL		1	
FCP1	MDFEPH(1)	4MD	NONE		0/1	FCP1 END PLATE HTR FAIL		1	
FCP1	MDFEPH(2)	4MD	NONE		0/1	FCP2 END PLATE HTR FAIL		1	
FCP1	MDFEPH(3)	4MD	NONE		0/1	FCP3 END PLATE HTR FAIL		1	
FCP1	MDFCBV(1)	4MD	NONE		0/1	FCP1 BYPASS VALVE FAIL		1	
FCP1	MDFCBV(2)	4MD	NONE		0/1	FCP2 BYPASS VALVE FAIL		1	
FCP1	MDFCBV(3)	4MD	NONE		0/1	FCP3 BYPASS VALVE FAIL		1	
FCP1	MDFHPM(1)	4MD	NONE		0/1	FCP1 HYDROGEN PUMP FAIL		1	
FCP1	MDFHPM(2)	4MD	NONE		0/1	FCP2 HYDROGEN PUMP FAIL		1	
FCP1	MDFHPM(3)	4MD	NONE		0/1	FCP3 HYDROGEN PUMP FAIL		1	
FCP1	MDFCFM(1)	4MD	NONE		0/1	FCP1 COOLANT PUMP FAIL		1	
FCP1	MDFCFM(2)	4MD	NONE		0/1	FCP2 COOLANT PUMP FAIL		1	
FCP1	MDFCFM(3)	4MD	NONE		0/1	FCP3 COOLANT PUMP FAIL		1	
FCP1	DFMCLK(1)	4MV	LB/SEC		0^0.01	FCP1 COOLANT LEAK		0.002	
FCP1	DFMCLK(2)	4MV	LB/SEC		0^0.01	FCP2 COOLANT LEAK		0.002	
FCP1	DFMCLK(3)	4MV	LB/SEC		0^0.01	FCP3 COOLANT LEAK		0.002	
FCP1	MDFWRV(1)	4MD	NONE		0/1	FCP1 WATER RELIEF VALVE		1	
FCP1	MDFWRV(2)	4MD	NONE		0/1	FCP2 WATER RELIEF VALVE		1	
FCP1	MDFWRV(3)	4MD	NONE		0/1	FCP3 WATER RELIEF VALVE		1	
FCP1	MDFHPV(1)	4MD	NONE		0/1	FCP1 HYDROGEN PURGE VALV		1	
FCP1	MDFHPV(2)	4MD	NONE		0/1	FCP2 HYDROGEN PURGE VALV		1	
FCP1	MDFHPV(3)	4MD	NONE		0/1	FCP3 HYDROGEN PURGE VALV		1	
FCP1	MDFOPV(1)	4MD	NONE		0/1	FCP1 OXYGEN PURGE VALVE		1	
FCP1	MDFOPV(2)	4MD	NONE		0/1	FCP2 OXYGEN PURGE VALVE		1	
FCP1	MDFOPV(3)	4MD	NONE		0/1	FCP3 OXYGEN PURGE VALVE		1	
FCP1	MDFPSC(1)	4MD	NONE		0/1	FCP1 DELTA P SENSOR CLSD		1	
FCP1	MDFPSC(2)	4MD	NONE		0/1	FCP2 DELTA P SENSOR CLSD		1	
FCP1	MDFPSC(3)	4MD	NONE		0/1	FCP3 DELTA P SENSOR CLSD		1	

132



CAVE

1809

LOS NIGHT MET 000:53:48 RUN EGMT 222:13:36:48 UP MALFUNCTION PAGE HALF  
NAUOP CNTRL PROPL SYSTM AUDIO

FS [EP34] [FF] [FE]

.A000 .A001 .A002 .A003 .A004

FCP2	MALF ID	FUEL CELLS	TYPE	UNITS	RANGE	DESCRIPTION	10F2	DISPLAYS
							VALUE	VALUE
FCP2	MDFFS0(1)	4MD	NONE		0/1	FCP1 DELTA P SENSOR OPEN		1
FCP2	MDFFS0(2)	4MD	NONE		0/1	FCP2 DELTA P SENSOR OPEN		1
FCP2	MDFFS0(3)	4MD	NONE		0/1	FCP3 DELTA P SENSOR OPEN		1
FCP2	MDFRY0(1)	4MD	NONE		0/1	FCP1 READY T/B ON		1
FCP2	MDFRY0(2)	4MD	NONE		0/1	FCP2 READY T/B ON		1
FCP2	MDFRY0(3)	4MD	NONE		0/1	FCP3 READY T/B ON		1
FCP2	MDFRY0(1)	4MD	NONE		0/1	FCP1 READY T/B OFF		1
FCP2	MDFRY0(2)	4MD	NONE		0/1	FCP2 READY T/B OFF		1
FCP2	MDFRY0(3)	4MD	NONE		0/1	FCP3 READY T/B OFF		1
FCP2	MDFFFC(1)	4MD	NONE		0/1	FCP1 DELTA P T/B ON		1
FCP2	MDFFFC(2)	4MD	NONE		0/1	FCP2 DELTA P T/B ON		1
FCP2	MDFFFC(3)	4MD	NONE		0/1	FCP3 DELTA P T/B ON		1
FCP2	MDFFFC(1)	4MD	NONE		0/1	FCP1 DELTA P T/B OFF		1
FCP2	MDFFFC(2)	4MD	NONE		0/1	FCP2 DELTA P T/B OFF		1
FCP2	MDFFFC(3)	4MD	NONE		0/1	FCP3 DELTA P T/B OFF		1
FCP2	MDFFHH(1)	4MD	NONE		0/1	FCP1 PH SENSOR		1
FCP2	MDFFHH(2)	4MD	NONE		0/1	FCP2 PH SENSOR		1
FCP2	MDFFHH(3)	4MD	NONE		0/1	FCP3 PH SENSOR		1
FCP2	MDFTMF(1)	4D	NONE		0/1	FCP TEMPERATURE METER		1
FCP2	MDFNVA(1)	4D	NONE		0/1	FCP WATER VENT HEATER		1
FCP2	MDFHPH(1)	4D	NONE		0/1	O2/H2 PURGE HTRS FL 'ON'		1
FCP2	MDFOPH(1)	4D	NONE		0/1	O2/H2 PURGE HTRS FL 'GPC'		1
FCP2	DFMISH(1)	4MV	AMPS		0^100	FCP1 INTERNAL SHORT		0.0
FCP2	MDFDV1(3)	4MD	NONE		0/1	F/C 1 DVM TEST FAIL		0.0
FCP2	MDFDV1(1)	4MD	NONE		0/1	F/C 1 DVM FAIL 1A		0.0
FCP2	MDFDV1(2)	4MD	NONE		0/1	F/C 1 DVM FAIL 1B		0.0
FCP2	DFMISH(2)	4MV	AMPS		0^100	FCP2 INTERNAL SHORT		0.0
FCP2	MDFDV2(3)	4MD	NONE		0/1	F/C 2 DVM TEST FAIL		0.0
FCP2	MDFDV2(1)	4MD	NONE		0/1	F/C 2 DVM FAIL 2A		0.0
FCP2	MDF	000:4E			0/1	F/C 2 DVM FAIL 2B		0.0
FCP2	DFMISH(3)	4MV	AMPS		0^100	FCP3 INTERNAL SHORT		0.0
FCP2	MDFDV3(3)	4MD	NONE		0/1	F/C 3 DVM TEST FAIL		0.0
FCP2	MDFDV3(1)	4MD	NONE		0/1	F/C 3 DVM FAIL 3A		0.0
FCP2	MDFDV3(2)	4MD	NONE		0/1	F/C 3 DVM FAIL 3B		0.0
FCP2	DFMOFL(1)	4MV	NONE		0^1.0	FCP1 OXYGEN PURGE LEAK		0.0
FCP2	DFMDM1(3)	4MV	MV/HR		0-5000	F/C 1 DVM RATE FAIL		0.0
FCP2	DFMDM1(1)	4MV	MV/HR		0-5000	F/C 1 DVM RATE 1A		0.0
FCP2	DFMDM1(2)	4MV	MV/HR		0-5000	F/C 1 DVM RATE 1B		0.0
FCP2	DFMDM2(3)	4MV	MV/HR		0-5000	F/C 2 DVM RATE FAIL		0.0
FCP2	DFMOFL(2)	4MV	NONE		0^1.0	FCP2 OXYGEN URGE LEAK		0.0

133

1400

1808

.05 NIGHT MET 000:55:32 RUN

SGMT 222:13:38:32 UP MALFUNCTION PAGE HALF  
NAVDP ONTRL PROPL SYSTEM AUDIO

FS EPS4

FF

FB

A000 A001 A002 A003 A004

FCP2	MALF ID	FUEL CELLS	TYPE	UNITS	RANGE	DESCRIPTION	20F2	DISPLAYS
								VALUE
FCP2	DFMOM2(1)		4MV	MV/HR	0-10000	F/C 2 OVM RATE 2A		0
FCP2	DFMOM2(2)		4MV	MV/HR	0-10000	F/C 2 OVM RATE 2B		0
FCP2	DFMOM3(3)		4MV	MV/HR	0-10000	F/C 3 OVM RATE 3A		0
FCP2	DFMOPL(3)		4MV	NONE	0-1.0	F/C 3 OVM RATE FAIL		0
FCP2	DFMOM3(1)		4MV	MV/HR	0-10000	FCP3 OXYGEN PURGE LEAK		0
FCP2	DFMOM3(2)		4MV	MV/HR	0-10000	F/C 3 OVM RATE 3A		0
FCP2	DFMHPL(1)		4MV	NONE	0-1.0	F/C 3 OVM RATE 3B		0
FCP2	DFMHPL(2)		4MV	NONE	0-1.0	FCP1 HYDROGEN PURGE LEAK		0
FCP2	DFMHPL(3)		4MV	NONE	0-1.0	FCP2 HYDROGEN PURGE LEAK		0
FCP2	DFMTSO(1)		4MV	EGG	0-5000	FCP3 HYDROGEN PURGE LEAK		0
FCP2	DFMTSO(2)		4MV	EGG	0-5000	FCP1 COOL OUT TEMP SENSOR		0
FCP2	DFMTSO(3)		4MV	EGG	0-5000	FCP2 COOL OUT TEMP SENSOR		0
FCP2	DFMUPB(1)		4MV	EGG	0-5000	FCP3 COOL OUT TEMP SENSOR		0
FCP2	DFMUPB(2)		4MV	EGG	0-5000	FCP1 FLOW CONTROL VALVE		0
FCP2	DFMUPB(3)		4MV	EGG	0-5000	FCP2 FLOW CONTROL VALVE		0
FCP2	DFMUSB(1)		4MV	EGG	0-5000	FCP3 FLOW CONTROL VALVE		0
FCP2	DFMUSB(2)		4MV	EGG	0-5000	FCP1 STACK MIX VALVE		0
FCP2	DFMUSB(3)		4MV	EGG	0-5000	FCP2 STACK MIX VALVE		0
FCP2	DFMUSB(3)		4MV	EGG	0-5000	FCP3 STACK MIX VALVE		0

134

1402

1509

105 NIGHT MET 000:55:53 RUN SGMT 222:13:38:53 UP MALFUNCTION PAGE MALF  
NAVOP CNTRL PROFIL SYSTM AUDIO

75 EPE4 FF FB

.A000 .A001 .A002 .A003 .A004

HYD1	MALF ID	HYD MALF TYPE	UNITS	RANGE	DESCRIPTION	10F1	DISPLAYS	VALUE
HYD1	HPMNOP(1)	4MV	PCT	0^1.	CIRC PUMP FLOW DECREASE	.		.000
HYD1	HPMNOP(2)	4MV	PCT	0^1.	CIRC PUMP FLOW DECREASE	.		.000
HYD1	HPMNOP(3)	4MV	PCT	0^1.	CIRC PUMP FLOW DECREASE	.		.000
HYD1	MHPOPFG(1)	4MD	NONE	0/1	CIRCULATION PMP NO GFC CMD	1		1
HYD1	MHPOPFG(2)	4MD	NONE	0/1	CIRCULATION PMP NO GFC CMD	1		1
HYD1	MHPOPFG(3)	4MD	NONE	0/1	CIRCULATION PMP NO GFC CMD	1		1
HYD1	MHFDEF(1)	4MD	NONE	0/1	MAIN PMP DEPR SOLNOID FAIL	1		1
HYD1	MHFDEF(2)	4MD	NONE	0/1	MAIN PMP DEPR SOLNOID FAIL	1		1
HYD1	MHFDEF(3)	4MD	NONE	0/1	MAIN PMP DEPR SOLNOID FAIL	1		1
HYD1	HPMPFR(1)	4MV	PCT	0^1.	MAIN PMP MAX FLOW DECREASE	.		.000
HYD1	HPMPFR(2)	4MV	PCT	0^1.	MAIN PMP MAX FLOW DECREASE	.		.000
HYD1	HPMPFR(3)	4MV	PCT	0^1.	MAIN PMP MAX FLOW DECREASE	.		.000
HYD1	MHFNBV(1)	4MD	NONE	0/1	WATER BLR CONT VALVE FAIL	1		1
HYD1	MHFNBV(2)	4MD	NONE	0/1	WATER BLR CONT VALVE FAIL	1		1
HYD1	MHFNBV(3)	4MD	NONE	0/1	WATER BLR CONT VALVE FAIL	1		1
HYD1	MHFFHV(1)	4MD	NONE	0/1	FREON/HEAT EXCH VALVE FAIL	1		1
HYD1	MHFFHV(2)	4MD	NONE	0/1	FREON/HEAT EXCH VALVE FAIL	1		1
HYD1	MHFFHV(3)	4MD	NONE	0/1	FREON/HEAT EXCH VALVE FAIL	1		1
HYD1	HPMORL(1)	4MV	BM/SEC	0. ^10.	HYDRAULIC RESERVOIR LEAK	1.		1.
HYD1	HPMORL(2)	4MV	BM/SEC	0. ^10.	HYDRAULIC RESERVOIR LEAK	1.		1.
HYD1	HPMORL(3)	4MV	BM/SEC	0. ^10.	HYDRAULIC RESERVOIR LEAK	1.		1.
HYD1	HPMACG(1)	4MV	BM/SEC	0. ^1.	ACCUMULATOR GAS LEAK	.		.000
HYD1	HPMACG(2)	4MV	BM/SEC	0. ^1.	ACCUMULATOR GAS LEAK	.		.000
HYD1	HPMACG(3)	4MV	BM/SEC	0. ^1.	ACCUMULATOR GAS LEAK	.		.000
HYD1	HPMACO(1)	4MV	T3/SEC	0. ^1.000	ACCM FRI VLV-HYD LOOP LEAK	.		.0010
HYD1	HPMACO(2)	4MV	T3/SEC	0. ^1.000	ACCM FRI VLV-HYD LOOP LEAK	.		.0010
HYD1	HPMACO(3)	4MV	T3/SEC	0. ^1.000	ACCM FRI VLV-HYD LOOP LEAK	.		.0010
HYD1	HPMSRV(1)	4MV	PERCENT	0^100.	RESERVOIR QUAN SENSOR FAIL	99.		99.
HYD1	HPMSRV(2)	4MV	PERCENT	0^100.	RESERVOIR QUAN SENSOR FAIL	99.		99.
HYD1	HPMSRV(3)	4MV	PERCENT	0^100.	RESERVOIR QUAN SENSOR FAIL	99.		99.
HYD1	HPMSRP(1)	4MV	PSIA	0^30000.	HYD PRES SENSOR A FAIL	15000.		15000.
HYD1	HPMSRP(2)	4MV	PSIA	0^30000.	HYD PRES SENSOR A FAIL	15000.		15000.
HYD1	HPMSRP(3)	4MV	PSIA	0^30000.	HYD PRES SENSOR A FAIL	15000.		15000.
HYD1	HPMSRT(1)	4MV	DEG F	0^3000.	RESERVOIR TEMP SENSOR FAIL	1500.		1500.
HYD1	HPMSRT(2)	4MV	DEG F	0^3000.	RESERVOIR TEMP SENSOR FAIL	1500.		1500.
HYD1	HPMSRT(3)	4MV	DEG F	0^3000.	RESERVOIR TEMP SENSOR FAIL	1500.		1500.
HYD1	HPMSAG(1)	4MV	PSIA	0^30000.	ACCUM GNE PRES SENSOR FAIL	15000.		15000.
HYD1	HPMSAG(2)	4MV	PSIA	0^30000.	ACCUM GNE PRES SENSOR FAIL	15000.		15000.
HYD1	HPMSAG(3)	4MV	PSIA	0^30000.	ACCUM GNE PRES SENSOR FAIL	15000.		15000.
HYD1	HPMSPT(1)	4MV	DEG F	0^3000.	HYD LINE TEMP SENSOR FAIL	1500.		1500.

135

1102

1509

105 NIGHT NET 000:56:23 RUN

SGMT 222:13:39:23

MALFUNCTION PAGE HALF

FS

EP54

FF

FB

NAVDP CNTRL PROFL

SYSTM AUDIO

.A000 .A001 .A002 .A003 .A004

HYD2	MALF ID	TYPE	UNITS	RANGE	DESCRIPTION	10F1	DISPLAYS	VALUE
HYD2	HPMSPT(2)	4MV	DEGF	0^3000.	HYD LINE TEMP SENSOR	FAIL	1500.	
HYD2	HPMSPT(3)	4MV	DEGF	0^3000.	HYD LINE TEMP SENSOR	FAIL	1500.	
HYD2	HPMSRL(1)	4MV	DEGF	0^3000.	HYD RET LINE TEMP SNS	FAIL	1500.	
HYD2	HPMSRL(2)	4MV	DEGF	0^3000.	HYD RET LINE TEMP SNS	FAIL	1500.	
HYD2	HPMSRL(3)	4MV	DEGF	0^3000.	HYD RET LINE TEMP SNS	FAIL	1500.	
HYD2	HPMSFT(1)	4MV	DEGF	0^3000.	FREON HYD RET TEM SNS	FAIL	1500.	
HYD2	HPMSFT(2)	4MV	DEGF	0^3000.	FREON HYD RET TEM SNS	FAIL	1500.	
HYD2	HPMSFT(3)	4MV	DEGF	0^3000.	FREON HYD RET TEM SNS	FAIL	1500.	
HYD2	HPMSWT(1)	4MV	DEGF	0^3000.	BOILER WATER TEMP SNS	FAIL	1500.	
HYD2	HPMSWT(2)	4MV	DEGF	0^3000.	BOILER WATER TEMP SNS	FAIL	1500.	
HYD2	HPMSWT(3)	4MV	DEGF	0^3000.	BOILER WATER TEMP SNS	FAIL	1500.	
HYD2	HPMSMF(1)	4V	DEGF	0^3000.	MID FUS RET TMP A SNS	FAIL	1500.	
HYD2	HPMSOP(1)	4MV	PSIA	1^30000.	CIRC PUMP PRES SENSER	FAIL	15000.	
HYD2	HPMSOP(2)	4MV	PSIA	1^30000.	CIRC PUMP PRES SENSER	FAIL	15000.	
HYD2	HPMSOP(3)	4MV	PSIA	1^30000.	CIRC PUMP PRES SENSER	FAIL	15000.	
HYD2	MHPLIV(1)	4MD	NONE	0/1	SYS 1 LND GR ISO VALV	FAIL	1	
HYD2	MHPLRC(1)	4D	NONE	0/1	SYS 1 LOGR RETCIR VLV	FAIL	1	
HYD2	HPMSRO(1)	4V	DEGF	0^3000.	RH OUT ELEV TEMP SENS	FAIL	150.	
HYD2	HPMSIR(1)	4V	DEGF	0^3000.	LH IN ELEV TEMP SENS	FAIL	150.	
HYD2	HPMSOL(1)	4V	DEGF	0^3000.	RH IN ELEV TEMP SENS	FAIL	150.	
HYD2	MHPELA(4)	4MD	NONE	0/1	LH OUT ELEV TEMP SENS	FAIL	1500.	
HYD2	HPMSRS(1)	4V	DEGF	0^3000.	RH OUT ELEV HEAT THRM	FAIL	1	
HYD2	MHPRSA(1)	4D	NONE	0/1	RUD SPOBK TEMP A SENS	FAIL	150.	
HYD2	MHPBFO(1)	4MD	NONE	0/1	RES THERMOSTAT A STUCK	FAIL	1	
HYD2	MHPBFA(1)	4D	NONE	0/1	BODY FLAP CIRC VLV 1	FAIL	1	
HYD2	MHPMEI(1)	4MD	NONE	0/1	BODY FLAP HEAT A THRM	FAIL	1	
HYD2	MHPMEI(2)	4MD	NONE	0/1	SSME HYD SHTOFF VLV 1	FAIL	1	
HYD2	MHPMEI(3)	4MD	NONE	0/1	SSME HYD SHTOFF VLV 2	FAIL	1	
HYD2	HPMSOT(1)	4MV	DEGF	0^3000.	SSME HYD SHTOFF VLV 3	FAIL	1	
HYD2	HPMSOT(2)	4MV	DEGF	0^3000.	CIRC PMP OUT TEMP SNS	FAIL	150.	
HYD2	HPMSOT(3)	4MV	DEGF	0^3000.	CIRC PMP OUT TEMP SNS	FAIL	1500.	
HYD2	HPMSAP(1)	4MV	PSIA	1^30000.	CIRC PMP OUT TEMP SNS	FAIL	1500.	
HYD2	HPMSAP(2)	4MV	PSIA	1^30000.	PRES CONT VLV ACC SNS	FAIL	15000.	
HYD2	HPMSAP(3)	4MV	PSIA	1^30000.	PRES CONT VLV ACC SNS	FAIL	15000.	
HYD2	HPMPBT(1)	4MV	DEGF	0^3000.	PRES CONT VLV ACC SNS	FAIL	15000.	
HYD2	HPMPBT(2)	4MV	DEGF	0^3000.	HYD PMP BODY TEMP SNS	FAIL	1500.	
HYD2	HPMPBT(3)	4MV	DEGF	0^3000.	HYD PMP BODY TEMP SNS	FAIL	1500.	
HYD2	HPMOBT(1)	4MV	DEGF	0^3000.	HYD PMP BODY TEMP SNS	FAIL	1500.	
HYD2	HPMOBT(2)	4MV	DEGF	0^3000.	CIR PMP BODY TEMP SNS	FAIL	1500.	
HYD2	HPMOBT(3)	4MV	DEGF	0^3000.	CIR PMP BODY TEMP SNS	FAIL	1500.	

136

1401

1888

108 NIGHT NET 000:57:18 RUN

SGMT 222:13:40:18 UP MALFUNCTION PAGE 0-1LF  
NAVOP CNTRL PROFL SYSTM AUDIO

FB

EF84

FF

FE

.A000 .A001 .A002 .A003 .A004

HYD3		HYD MALF			DESCRIPTION							10F1	DISPLAYS
MALF ID	TYPE	UNITS	RANGE									VALUE	
HYD0W	HPM0BT(3)	4MV	DEGF	0^0000.	CIR	PMF	BODY	TEMP	SNS	FAIL		1500.	
HYD0W	HPM0AT(1)	4MV	DEGF	0^0000.	HYD	SYS	ACOM	TEMP	SNS	FAIL		1500.	
HYD0W	HPM0AT(2)	4MV	DEGF	0^0000.	HYD	SYS	ACOM	TEMP	SNS	FAIL		1500.	
HYD0W	HPM0AT(3)	4MV	DEGF	0^0000.	HYD	SYS	ACOM	TEMP	SNS	FAIL		1500.	
HYD0W	HPM0RP(1)	4MV	PSIA	.1^100.	HYD	RES	FLUID	PRS	SNS	FAIL		500.	
HYD0W	HPM0RP(2)	4MV	PSIA	.1^100.	HYD	RES	FLUID	PRS	SNS	FAIL		500.	
HYD0W	HPM0RP(3)	4MV	PSIA	.1^100.	HYD	RES	FLUID	PRS	SNS	FAIL		500.	
HYD0W	HPM0TFP(1)	4MV	PSIA	.1^30000.	HYD	SYS	FILT	FRES	SNS	FAIL		15000.	
HYD0W	HPM0TFP(2)	4MV	PSIA	.1^30000.	HYD	SYS	FILT	FRES	SNS	FAIL		15000.	
HYD0W	HPM0TFP(3)	4MV	PSIA	.1^30000.	HYD	SYS	FILT	FRES	SNS	FAIL		15000.	
HYD0W	MHFBVH(1)	4MD	NONE	0/1	BOIL	VENT	HEAT	THERM		FAIL		1	
HYD0W	MHFBVH(2)	4MD	NONE	0/1	BOIL	VENT	HEAT	THERM		FAIL		1	
HYD0W	MHFBVH(3)	4MD	NONE	0/1	BOIL	VENT	HEAT	THERM		FAIL		1	
HYD0W	HPMSWP(1)	4MV	PSIA	.1^30000.	BOIL	TANK	FRES	SENS		FAIL		15000.	
HYD0W	HPMSWP(2)	4MV	PSIA	.1^30000.	BOIL	TANK	FRES	SENS		FAIL		15000.	
HYD0W	HPMSWP(3)	4MV	PSIA	.1^30000.	BOIL	TANK	FRES	SENS		FAIL		15000.	
HYD0W	HPMSBO(1)	4MV	DEGF	1^3000.	BOIL	HYD	OUT	TEMP	SNS	FAIL		1500.	
HYD0W	HPMSBO(2)	4MV	DEGF	1^3000.	BOIL	HYD	OUT	TEMP	SNS	FAIL		1500.	
HYD0W	HPMSBO(3)	4MV	DEGF	1^3000.	BOIL	HYD	OUT	TEMP	SNS	FAIL		1500.	
HYD0W	MHFBGV(1)	4MD	NONE	0/1	BOIL	GN2	REG	VALVE		FAIL		1	
HYD0W	MHFBGV(2)	4MD	NONE	0/1	BOIL	GN2	REG	VALVE		FAIL		1	
HYD0W	MHFBGV(3)	4MD	NONE	0/1	BOIL	GN2	REG	VALVE		FAIL		1	
HYD0W	HPMSBG(1)	4MV	PSIA	.1^30000.	BOIL	GN2	TANK	PRS	SNS	FAIL		15000.	
HYD0W	HPMSBG(2)	4MV	PSIA	.1^30000.	BOIL	GN2	TANK	PRS	SNS	FAIL		15000.	
HYD0W	HPMSBG(3)	4MV	PSIA	.1^30000.	BOIL	GN2	TANK	PRS	SNS	FAIL		15000.	
HYD0W	MHPLIG(1)	4MD	NONE	0/1	LNOGR	ISOL	VLV	NO	GFC	CMD		1	
HYD0W	MHPLIG(2)	4MD	NONE	0/1	LNOGR	ISOL	VLV	NO	GFC	CMD		1	
HYD0W	MHPLIG(3)	4MD	NONE	0/1	LNOGR	ISOL	VLV	NO	GFC	CMD		1	
HYD0W	MHPLIT(1)	4MD	NONE	0/1	HYD	LOGR	ISO	VLV	TKBK	FAIL		1	
HYD0W	MHPLIT(2)	4MD	NONE	0/1	HYD	LOGR	ISO	VLV	TKBK	FAIL		1	
HYD0W	MHPLIT(3)	4MD	NONE	0/1	HYD	LOGR	ISO	VLV	TKBK	FAIL		1	
HYD0W	MHFMET(1)	4MD	NONE	0/1	HYD	MPS	ENG	ISO	VLV	FAIL		1	
HYD0W	MHFMET(2)	4MD	NONE	0/1	HYD	MPS	ENG	ISO	VLV	FAIL		1	
HYD0W	MHFMET(3)	4MD	NONE	0/1	HYD	MPS	ENG	ISO	VLV	FAIL		1	
HYD0W	HPM0MT(1)	4MV	NONE	.1^100.	HYD	QUAN	GAGE		FAILURE			15000.	
HYD0W	HPM0MT(2)	4MV	NONE	.1^100.	HYD	QUAN	GAGE		FAILURE			15000.	
HYD0W	HPM0MT(3)	4MV	NONE	.1^100.	HYD	QUAN	GAGE		FAILURE			15000.	
HYD0W	HPM0PHT(1)	4MV	PSIA	.1^30000.	HYD	FRES	GAGE		FAILURE			15000.	
HYD0W	HPM0PHT(2)	4MV	PSIA	.1^30000.	HYD	FRES	GAGE		FAILURE			15000.	
HYD0W	HPM0PHT(3)	4MV	PSIA	.1^30000.	HYD	FRES	GAGE		FAILURE			15000.	

137

1400

1508

08 NIGHT NET 000:57:47 RUN

SGMT 222:13:40:47

HALF MalfUNCTION PAGE HALF

FS

EP84

FF

FB

NAVOP CNTL PROFL SYSTM AUDIO

.A000 .A001 .A002 .A003 .A004

HYD4	HALF ID	HYD HALF	TYPE	UNITS	RANGE	DESCRIPTION	10F1	DISPLAYS	VALUE
HYD4	HPMS99(1)	4MV PSIA	4MV	PSIA	0^30000	HYD PRES SENSOR B FAIL			1500.
HYD4	HPMS99(2)	4MV PSIA	4MV	PSIA	0^30000	HYD PRES SENSOR B FAIL			1500.
HYD4	HPMS99(3)	4MV PSIA	4MV	PSIA	0^30000	HYD PRES SENSOR B FAIL			1500.
HYD4	MHPBGA(1)	4MD NONE	4MD	NONE	0/1	WAT ELR A CONT VALVE FAIL			1
HYD4	MHPBGA(2)	4MD NONE	4MD	NONE	0/1	WAT ELR A CONT VALVE FAIL			1
HYD4	MHPBGA(3)	4MD NONE	4MD	NONE	0/1	WAT ELR A CONT VALVE FAIL			1
HYD4	MHPLIV(2)	4MD NONE	4MD	NONE	0/1	SYS 2 LND GR ISO VALV FAIL			1
HYD4	MHPLIV(3)	4MD NONE	4MD	NONE	0/1	SYS 3 LND GR ISO VALV FAIL			1

138

0402

1508

05 NIGHT NET 000:58:11 RUN SGMT 222:13:41:11 MALFUNCTION PAGE HALF  
NAVDP CNTRL PROFL SYSTEM AUDIO

FS  EP64  FF  FB  A000  A001  A002  A003  A004

INET	MALF ID	MEAS PROC	TYPE	UNITS	RANGE	U	V	W	X	Y	Z	DESCRIPTION	10F1	DISPLAYS	VALUE
INST	MCIMD1(1)		40	NONE	0/1	MDM	POWER	FAILURE	-	OF1					1
INST	MCIMD2(1)		40	NONE	0/1	MDM	POWER	FAILURE	-	OF2					1
INST	MCIMD3(1)		40	NONE	0/1	MDM	POWER	FAILURE	-	OF3					1
INST	MCIMD4(1)		40	NONE	0/1	MDM	POWER	FAILURE	-	OF4					1
INST	MCIMD5(1)		40	NONE	0/1	MDM	POWER	FAILURE	-	OA1					1
INST	MCIMD6(1)		40	NONE	0/1	MDM	POWER	FAILURE	-	OA2					1
INST	MCIMD7(1)		40	NONE	0/1	MDM	POWER	FAILURE	-	OA3					1
INST	MCIMD8(1)		40	NONE	0/1	MDM	POWER	FAILURE	-	OC2					1
INST	MCIOF1(1)		400	NONE	0/1	DSC	POWER	FAILURE	-	OF1					1
INST	MCIOF2(1)		400	NONE	0/1	DSC	POWER	FAILURE	-	OF2					1
INST	MCIOF3(1)		400	NONE	0/1	DSC	POWER	FAILURE	-	OF3					1
INST	MCIOF4(1)		400	NONE	0/1	DSC	POWER	FAILURE	-	OF4					1
INST	MCIOA1(1)		400	NONE	0/1	DSC	POWER	FAILURE	-	OA1					1
INST	MCIOA2(1)		400	NONE	0/1	DSC	POWER	FAILURE	-	OA2					1
INST	MCIOA3(1)		400	NONE	0/1	DSC	POWER	FAILURE	-	OA3					1
INST	MCIOM1(1)		40	NONE	0/1	DSC	POWER	FAILURE	-	OM1					1
INST	MCIOM2(1)		40	NONE	0/1	DSC	POWER	FAILURE	-	OM2					1
INST	MCIOR1(1)		40	NONE	0/1	DSC	POWER	FAILURE	-	OR1					1
INST	MCIOR2(1)		40	NONE	0/1	DSC	POWER	FAILURE	-	OR2					1
INST	MCIOL1(1)		40	NONE	0/1	DSC	POWER	FAILURE	-	OL1					1
INST	MCIOL2(1)		40	NONE	0/1	DSC	POWER	FAILURE	-	OL2					1
INST	MHU01(1)		40	NONE	0/1	ET	VMB	DR	CL	TB	PRE	POS	FL		1
INST	MHU02(1)		40	NONE	0/1	ET	VMB	DR	CL	TB	BP	POS	FL		1
INST	MHU03(1)		4MD	NONE	0/1	ET	VMB	DR	TB	FL	OP/C	FRE	L	R	1
INST	MHU03(2)		4MD	NONE	0/1	ET	VMB	DR	TB	FL	OP/C	FRE	L	R	1
INST	MHU04(1)		4MD	NONE	0/1	ET	VMB	DR	TB	FL	OP/C	EP	L	R	1
INST	MHU04(2)		4MD	NONE	0/1	ET	VMB	DR	TB	FL	OP/C	EP	L	R	1
INST	MHU05(1)		4MD	NONE	0/1	ET	VMB	DR	TB	LCH/REL	FRE	L	R		1
INST	MHU05(2)		4MD	NONE	0/1	ET	VMB	DR	TB	LCA/REL	FRE	L	R		1
INST	MHU06(1)		4MD	NONE	0/1	ET	VMB	DR	TB	LCH/REL	EP	L	R		1
INST	MHU06(2)		4MD	NONE	0/1	ET	VMB	DR	TB	LCH/REL	EP	L	R		1

139

1-01

1909

08 NIGHT NET 000:59:31 RUN

SGMT 222:13:42:31  
NAVDF CNTRL PROPL

MALFUNCTION PAGE MALF  
SYSTM AUDIO

FS

EP34

FF

FB

A000 A001 A002 A003 A004

MEC1	MALF ID	MEC MALF TYPE	UNITS	RANGE	DESCRIPTION	10F1	DISPLAYS VALUE
MEC1	MAFACF(1)	4MD NONE		0/1	MEC ARM COMMAND FAIL	MALF 1	1
MEC1	MAFACF(2)	4MD NONE		0/1	MEC ARM COMMAND FAIL	MALF 1	1
MEC1	MAFACF(3)	4MD NONE		0/1	MEC ARM COMMAND FAIL	MALF 1	1
MEC1	MAFACF(4)	4MD NONE		0/1	MEC ARM COMMAND FAIL	MALF 1	1
MEC1	MAFACF(5)	4MD NONE		0/1	MEC ARM COMMAND FAIL	MALF 1	1
MEC1	MAFACF(6)	4MD NONE		0/1	MEC ARM COMMAND FAIL	MALF 1	1
MEC1	MAFACF(7)	4MD NONE		0/1	MEC ARM COMMAND FAIL	MALF 1	1
MEC1	MAFACF(8)	4MD NONE		0/1	MEC ARM COMMAND FAIL	MALF 1	1
MEC1	MAFACF(9)	4MD NONE		0/1	MEC ARM COMMAND FAIL	MALF 1	1
MEC1	MAFACF(10)	4MD NONE		0/1	MEC ARM COMMAND FAIL	MALF 1	1
MEC1	MAFACF(11)	4MD NONE		0/1	MEC ARM COMMAND FAIL	MALF 1	1
MEC1	MAFACF(12)	4MD NONE		0/1	MEC ARM COMMAND FAIL	MALF 1	1
MEC1	MAFACF(13)	4MD NONE		0/1	MEC ARM COMMAND FAIL	MALF 1	1
MEC1	MAFACF(14)	4MD NONE		0/1	MEC ARM COMMAND FAIL	MALF 1	1
MEC1	MAFACF(15)	4MD NONE		0/1	MEC ARM COMMAND FAIL	MALF 1	1
MEC1	MAFACF(16)	4MD NONE		0/1	MEC ARM COMMAND FAIL	MALF 1	1
MEC1	MAFFCF(1)	4MD NONE		0/1	MEC FIRE COM FAIL	MALF 1	1
MEC1	MAFFCF(2)	4MD NONE		0/1	MEC FIRE COM FAIL	MALF 2	1
MEC1	MAFFCF(3)	4MD NONE		0/1	MEC FIRE COM FAIL	MALF 3	1
MEC1	MAFFCF(4)	4MD NONE		0/1	MEC FIRE COM FAIL	MALF 4	1
MEC1	MAFFCF(5)	4MD NONE		0/1	MEC FIRE COM FAIL	MALF 5	1
MEC1	MAFFCF(6)	4MD NONE		0/1	MEC FIRE COM FAIL	MALF 6	1
MEC1	MAFFCF(7)	4MD NONE		0/1	MEC FIRE COM FAIL	MALF 7	1
MEC1	MAFFCF(8)	4MD NONE		0/1	MEC FIRE COM FAIL	MALF 8	1
MEC1	MAFFCF(9)	4MD NONE		0/1	MEC FIRE COM FAIL	MALF 9	1
MEC1	MAFFCF(10)	4MD NONE		0/1	MEC FIRE COM FAIL	MALF 10	1
MEC1	MAFFCF(11)	4MD NONE		0/1	MEC FIRE COM FAIL	MALF 11	1
MEC1	MAFFCF(12)	4MD NONE		0/1	MEC FIRE COM FAIL	MALF 12	1
MEC1	MAFFCF(13)	4MD NONE		0/1	MEC FIRE COM FAIL	MALF 13	1
MEC1	MAFFCF(14)	4MD NONE		0/1	MEC FIRE COM FAIL	MALF 14	1
MEC1	MAFFCF(15)	4MD NONE		0/1	MEC FIRE COM FAIL	MALF 15	1
MEC1	MAFFCF(16)	4MD NONE		0/1	MEC FIRE COM FAIL	MALF 16	1
MEC1	MAFFCDF(1)	4MD NONE		0/1	MEC CRIT COM DATA FAIL	1	1
MEC1	MAFFCDF(2)	4MD NONE		0/1	MEC CRIT COM DATA FAIL	2	1
MEC1	MAFL11(1)	4MD NONE		0/1	MEC LOSM 1 MALF	1	1
MEC1	MAFL11(2)	4MD NONE		0/1	MEC LOSM 1 MALF	2	1
MEC1	MAFL12(1)	4MD NONE		0/1	MEC LOSM 2 MALF	1	1
MEC1	MAFL12(2)	4MD NONE		0/1	MEC LOSM 2 MALF	2	1

140



CAV2

1509

LOS NIGHT MET 001:00:03 RUN

SGNT 222:13:43:03  
NAVOP ONTRL PROFL

HALF FUNCTION PAGE HALF  
SYSTEM AUDIO

FS

EPS4

FF

FB

A000 A001 A002 A003 A004

10F1 DISPLAYS  
VALUE

MEC2	MALF ID	MEC TYPE	MALF UNITS	RANGE	DESCRIPTION	10F1	DISPLAYS	VALUE
MEC02	MAFBWS1(01)	4MD	NONE	0/1	MEC BWSR BIT FAIL MALF	1		1
MEC02	MAFBWS1(02)	4MD	NONE	0/1	MEC BWSR BIT FAIL MALF	2		1
MEC02	MAFBWS1(03)	4MD	NONE	0/1	MEC BWSR BIT FAIL MALF	3		1
MEC02	MAFBWS1(04)	4MD	NONE	0/1	MEC BWSR BIT FAIL MALF	4		1
MEC02	MAFBWS1(05)	4MD	NONE	0/1	MEC BWSR BIT FAIL MALF	5		1
MEC02	MAFBWS1(06)	4MD	NONE	0/1	MEC BWSR BIT FAIL MALF	6		1
MEC02	MAFBWS1(07)	4MD	NONE	0/1	MEC BWSR BIT FAIL MALF	7		1
MEC02	MAFBWS1(08)	4MD	NONE	0/1	MEC BWSR BIT FAIL MALF	8		1
MEC02	MAFBWS1(09)	4MD	NONE	0/1	MEC BWSR BIT FAIL MALF	9		1
MEC02	MAFBWS1(10)	4MD	NONE	0/1	MEC BWSR BIT FAIL MALF	10		1
MEC02	MAFBWS1(11)	4MD	NONE	0/1	MEC BWSR BIT FAIL MALF	11		1
MEC02	MAFBWS1(12)	4MD	NONE	0/1	MEC BWSR BIT FAIL MALF	12		1
MEC02	MAFBWS1(13)	4MD	NONE	0/1	MEC BWSR BIT FAIL MALF	13		1
MEC02	MAFBWS1(14)	4MD	NONE	0/1	MEC BWSR BIT FAIL MALF	14		1
MEC02	MAFBWS1(15)	4MD	NONE	0/1	MEC BWSR BIT FAIL MALF	15		1
MEC02	MAFBWS1(16)	4MD	NONE	0/1	MEC BWSR BIT FAIL MALF	16		1
MEC02	MAFBWS1(17)	4MD	NONE	0/1	MEC BWSR BIT FAIL MALF	17		1
MEC02	MAFBWS1(18)	4MD	NONE	0/1	MEC BWSR BIT FAIL MALF	18		1
MEC02	MAFBWS1(19)	4MD	NONE	0/1	MEC BWSR BIT FAIL MALF	19		1
MEC02	MAFBWS1(20)	4MD	NONE	0/1	MEC BWSR BIT FAIL MALF	20		1
MEC02	MAFBWS1(21)	4MD	NONE	0/1	MEC BWSR BIT FAIL MALF	21		1
MEC02	MAFBWS1(22)	4MD	NONE	0/1	MEC BWSR BIT FAIL MALF	22		1
MEC02	MAFBWS1(23)	4MD	NONE	0/1	MEC BWSR BIT FAIL MALF	23		1
MEC02	MAFBWS1(24)	4MD	NONE	0/1	MEC BWSR BIT FAIL MALF	24		1
MEC02	MAFBWS1(25)	4MD	NONE	0/1	MEC BWSR BIT FAIL MALF	25		1
MEC02	MAFBWS1(26)	4MD	NONE	0/1	MEC BWSR BIT FAIL MALF	26		1
MEC02	MAFBWS1(27)	4MD	NONE	0/1	MEC BWSR BIT FAIL MALF	27		1
MEC02	MAFBWS1(28)	4MD	NONE	0/1	MEC BWSR BIT FAIL MALF	28		1
MEC02	MAFBWS1(29)	4MD	NONE	0/1	MEC BWSR BIT FAIL MALF	29		1
MEC02	MAFBWS1(30)	4MD	NONE	0/1	MEC BWSR BIT FAIL MALF	30		1
MEC02	MAFBWS1(31)	4MD	NONE	0/1	MEC BWSR BIT FAIL MALF	31		1
MEC02	MAFBWS1(32)	4MD	NONE	0/1	MEC BWSR BIT FAIL MALF	32		1
MEC02	MAFNOCF(1)	4MD	NONE	0/1	MEC NON-CRIT COMM FAIL	1		1
MEC02	MAFNOCF(2)	4MD	NONE	0/1	MEC NON-CRIT COMM FAIL	2		1
MEC02	MAFOUT(1)	4MD	NONE	0/1	MEC OUTPUT PIC SGNL FL	1		1
MEC02	MAFOUT(2)	4MD	NONE	0/1	MEC OUTPUT PIC SGNL FL	2		1
MEC02	MAFP11(1)	4MD	NONE	0/1	MEC POWER SUPPLY 1 MALF	1		1
MEC02	MAFP11(2)	4MD	NONE	0/1	MEC POWER SUPPLY 1 MALF	2		1
MEC02	MAFP12(1)	4MD	NONE	0/1	MEC POWER SUPPLY 2 MALF	1		1
MEC02	MAFP12(2)	4MD	NONE	0/1	MEC POWER SUPPLY 2 MALF	2		1

141

0400

1509

03 NIGHT NET 001:01:02 RUN SGMT 222:13:44:02 UP MALFUNCTION PAGE HALF

PS EPS4 FF FB

A000 A001 A002 A003 A004

MEC3	HALF ID	MEC HALF	TYPE UNITS	RANGE	DESCRIPTION	10F1	DISPLAYS	VALUE
MEC00	AFMCOV1(01)	4MV	OLTS	0.041	MEC PIC CAPACIT VLT VAR 1			0.00
MEC00	AFMCOV1(02)	4MV	OLTS	0.041	MEC PIC CAPACIT VLT VAR 2			0.00
MEC00	AFMCOV1(03)	4MV	OLTS	0.041	MEC PIC CAPACIT VLT VAR 3			0.00
MEC00	AFMCOV1(04)	4MV	OLTS	0.041	MEC PIC CAPACIT VLT VAR 4			0.00
MEC00	AFMCOV1(05)	4MV	OLTS	0.041	MEC PIC CAPACIT VLT VAR 5			0.00
MEC00	AFMCOV1(06)	4MV	OLTS	0.041	MEC PIC CAPACIT VLT VAR 6			0.00
MEC00	AFMCOV1(07)	4MV	OLTS	0.041	MEC PIC CAPACIT VLT VAR 7			0.00
MEC00	AFMCOV1(08)	4MV	OLTS	0.041	MEC PIC CAPACIT VLT VAR 8			0.00
MEC00	AFMCOV1(09)	4MV	OLTS	0.041	MEC PIC CAPACIT VLT VAR 9			0.00
MEC00	AFMCOV1(10)	4MV	OLTS	0.041	MEC PIC CAPACIT VLT VAR 1			0.00
MEC00	AFMCOV1(11)	4MV	OLTS	0.041	MEC PIC CAPACIT VLT VAR 1			0.00
MEC00	AFMCOV1(12)	4MV	OLTS	0.041	MEC PIC CAPACIT VLT VAR 1			0.00
MEC00	AFMCOV1(13)	4MV	OLTS	0.041	MEC PIC CAPACIT VLT VAR 1			0.00
MEC00	AFMCOV1(14)	4MV	OLTS	0.041	MEC PIC CAPACIT VLT VAR 1			0.00
MEC00	AFMCOV1(15)	4MV	OLTS	0.041	MEC PIC CAPACIT VLT VAR 1			0.00
MEC00	AFMCOV1(16)	4MV	OLTS	0.041	MEC PIC CAPACIT VLT VAR 1			0.00
MEC00	AFMCOV1(17)	4MV	OLTS	0.041	MEC PIC CAPACIT VLT VAR 1			0.00
MEC00	AFMCOV1(18)	4MV	OLTS	0.041	MEC PIC CAPACIT VLT VAR 1			0.00
MEC00	AFMCOV1(19)	4MV	OLTS	0.041	MEC PIC CAPACIT VLT VAR 1			0.00
MEC00	AFMCOV1(20)	4MV	OLTS	0.041	MEC PIC CAPACIT VLT VAR 2			0.00
MEC00	AFMCOV1(21)	4MV	OLTS	0.041	MEC PIC CAPACIT VLT VAR 2			0.00
MEC00	AFMCOV1(22)	4MV	OLTS	0.041	MEC PIC CAPACIT VLT VAR 2			0.00
MEC00	MAFRTM(1)	4MD	ONE	0/1	MEC LOAD/RES TEST MEAS F1		1	
MEC00	MAFRTM(2)	4MD	ONE	0/1	MEC LOAD/RES TEST MEAS F2		1	
MEC00	MAFRTS(1)	4MD	ONE	0/1	MEC LOAD/RES TEST RSET F1		1	
MEC00	MAFRTS(2)	4MD	ONE	0/1	MEC LOAD/RES TEST RSET F2		1	

142

0001

1908

LOS NIGHT NET 001:01:34 RUN

SGMT 222:13:44:34 UP MALFUNCTION PAGE MALF  
NAUDF CNTRL PROPL SYSTM AUDIO

FS

EP34

FF

FB

.A000 .A001 .A002 .A003 .A004

MEC04	MALF ID	MEC MALF TYPE UNITS	RANGE	DESCRIPTION	10F1	DISPLAYS VALUE
MEC04	MAFFPI1001	4MD NONE	0/1	MEC PIC FAIL MALF 1		1
MEC04	MAFFPI1002	4MD NONE	0/1	MEC PIC FAIL MALF 2		1
MEC04	MAFFPI1003	4MD NONE	0/1	MEC PIC FAIL MALF 3		1
MEC04	MAFFPI1004	4MD NONE	0/1	MEC PIC FAIL MALF 4		1
MEC04	MAFFPI1005	4MD NONE	0/1	MEC PIC FAIL MALF 5		1
MEC04	MAFFPI1006	4MD NONE	0/1	MEC PIC FAIL MALF 6		1
MEC04	MAFFPI1007	4MD NONE	0/1	MEC PIC FAIL MALF 7		1
MEC04	MAFFPI1008	4MD NONE	0/1	MEC PIC FAIL MALF 8		1
MEC04	MAFFPI1009	4MD NONE	0/1	MEC PIC FAIL MALF 9		1
MEC04	MAFFPI1010	4MD NONE	0/1	MEC PIC FAIL MALF 10		1
MEC04	MAFFPI1011	4MD NONE	0/1	MEC PIC FAIL MALF 11		1
MEC04	MAFFPI1012	4MD NONE	0/1	MEC PIC FAIL MALF 12		1
MEC04	MAFFPI1013	4MD NONE	0/1	MEC PIC FAIL MALF 13		1
MEC04	MAFFPI1014	4MD NONE	0/1	MEC PIC FAIL MALF 14		1
MEC04	MAFFPI1015	4MD NONE	0/1	MEC PIC FAIL MALF 15		1
MEC04	MAFFPI1016	4MD NONE	0/1	MEC PIC FAIL MALF 16		1
MEC04	MAFFPI1017	4MD NONE	0/1	MEC PIC FAIL MALF 17		1
MEC04	MAFFPI1018	4MD NONE	0/1	MEC PIC FAIL MALF 18		1
MEC04	MAFFPI1019	4MD NONE	0/1	MEC PIC FAIL MALF 19		1
MEC04	MAFFPI1020	4MD NONE	0/1	MEC PIC FAIL MALF 20		1
MEC04	MAFFPI1021	4MD NONE	0/1	MEC PIC FAIL MALF 21		1
MEC04	MAFFPI1022	4MD NONE	0/1	MEC PIC FAIL MALF 22		1
MEC04	MAFFPI1023	4MD NONE	0/1	MEC PIC FAIL MALF 23		1
MEC04	MAFFPI1024	4MD NONE	0/1	MEC PIC FAIL MALF 24		1
MEC04	MAFFPI1025	4MD NONE	0/1	MEC PIC FAIL MALF 25		1
MEC04	MAFFPI1026	4MD NONE	0/1	MEC PIC FAIL MALF 26		1
MEC04	MAFFPI1027	4MD NONE	0/1	MEC PIC FAIL MALF 27		1
MEC04	MAFFPI1028	4MD NONE	0/1	MEC PIC FAIL MALF 28		1
MEC04	MAFFPI1029	4MD NONE	0/1	MEC PIC FAIL MALF 29		1
MEC04	MAFFPI1030	4MD NONE	0/1	MEC PIC FAIL MALF 30		1
MEC04	MAFFPI1031	4MD NONE	0/1	MEC PIC FAIL MALF 31		1
MEC04	MAFFPI1032	4MD NONE	0/1	MEC PIC FAIL MALF 32		1
MEC04	MAFFPI1033	4MD NONE	0/1	MEC PIC FAIL MALF 33		1
MEC04	MAFFPI1034	4MD NONE	0/1	MEC PIC FAIL MALF 34		1
MEC04	MAFFPI1035	4MD NONE	0/1	MEC PIC FAIL MALF 35		1
MEC04	MAFFPI1036	4MD NONE	0/1	MEC PIC FAIL MALF 36		1
MEC04	MAFFPI1037	4MD NONE	0/1	MEC PIC FAIL MALF 37		1
MEC04	MAFFPI1038	4MD NONE	0/1	MEC PIC FAIL MALF 38		1
MEC04	MAFFPI1039	4MD NONE	0/1	MEC PIC FAIL MALF 39		1
MEC04	MAFFPI1040	4MD NONE	0/1	MEC PIC FAIL MALF 40		1

143

1202

1309

JOB NIGHT NET 001:02:00 RUN SGMT 222:13:45:00 UP MALFUNCTION PAGE MALF  
NAVDF CNTRL PROFL SYSTEM AUDIO

FE EP34 FF FE

• A000 • A001 • A002 • A003 • A004

MECS	MALF ID	MEC MALF	TYPE	UNITS	RANGE	DESCRIPTION	10F1	DISPLAYS	VALUE
MECS	MAFFI1(041)	4MD ONE			0/1	MEC PIC FAIL MALF 41			1
MECS	MAFFI1(042)	4MD ONE			0/1	MEC PIC FAIL MALF 42			1
MECS	MAFFI1(043)	4MD ONE			0/1	MEC PIC FAIL MALF 43			1
MECS	MAFFI1(044)	4MD ONE			0/1	MEC PIC FAIL MALF 44			1
MECS	MAFFI1(045)	4MD ONE			0/1	MEC PIC FAIL MALF 45			1
MECS	MAFFI1(046)	4MD ONE			0/1	MEC PIC FAIL MALF 46			1
MECS	MAFFI1(047)	4MD ONE			0/1	MEC PIC FAIL MALF 47			1
MECS	MAFFI1(048)	4MD ONE			0/1	MEC PIC FAIL MALF 48			1
MECS	MAFFI1(049)	4MD ONE			0/1	MEC PIC FAIL MALF 49			1
MECS	MAFFI1(050)	4MD ONE			0/1	MEC PIC FAIL MALF 50			1
MECS	MAFFI1(051)	4MD ONE			0/1	MEC PIC FAIL MALF 51			1
MECS	MAFFI1(052)	4MD ONE			0/1	MEC PIC FAIL MALF 52			1
MECS	MAFFI1(053)	4MD ONE			0/1	MEC PIC FAIL MALF 53			1
MECS	MAFFI1(054)	4MD ONE			0/1	MEC PIC FAIL MALF 54			1
MECS	MAFFI1(055)	4MD ONE			0/1	MEC PIC FAIL MALF 55			1
MECS	MAFFI1(056)	4MD ONE			0/1	MEC PIC FAIL MALF 56			1
MECS	MAFFI1(057)	4MD ONE			0/1	MEC PIC FAIL MALF 57			1
MECS	MAFFI1(058)	4MD ONE			0/1	MEC PIC FAIL MALF 58			1
MECS	MAFFI1(059)	4MD ONE			0/1	MEC PIC FAIL MALF 59			1
MECS	MAFFI1(060)	4MD ONE			0/1	MEC PIC FAIL MALF 60			1
MECS	MAFFI1(061)	4MD ONE			0/1	MEC PIC FAIL MALF 61			1
MECS	MAFFI1(062)	4MD ONE			0/1	MEC PIC FAIL MALF 62			1
MECS	MAFFI1(063)	4MD ONE			0/1	MEC PIC FAIL MALF 63			1
MECS	MAFFI1(064)	4MD ONE			0/1	MEC PIC FAIL MALF 64			1
MECS	MAFFI1(065)	4MD ONE			0/1	MEC PIC FAIL MALF 65			1
MECS	MAFFI1(066)	4MD ONE			0/1	MEC PIC FAIL MALF 66			1
MECS	MAFFI1(067)	4MD ONE			0/1	MEC PIC FAIL MALF 67			1
MECS	MAFFI1(068)	4MD ONE			0/1	MEC PIC FAIL MALF 68			1

144

1440

1508

03 NIGHT NET 001:02:26 RUN SGMT 222:13:45:26 UP MALFUNCTION PAGE HALF  
NAVDP CNTRL PROPL SYSTM AUDIO

FE  EPS4  FF  FE

.A000 .A001 .A002 .A003 .A004

FLED	MALF ID	PAYLOAD TYPE	UNITS	BAY DOORS RANGE	DESCRIPTION	10F1	DISPLAYS	VALUE
L	MHBELR(1)	4MD	NONE	0/1	R FWD BHD LCH WON'T REL			1
L	MHBELR(2)	4MD	NONE	0/1	R AFT BHD LCH WON'T REL			1
L	MHBELR(3)	4MD	NONE	0/1	L FWD BHD LCH WON'T REL			1
L	MHBELR(4)	4MD	NONE	0/1	L AFT BHD LCH WON'T REL			1
L	MHBELL(1)	4MD	NONE	0/1	R FWD BHD LCH WON'T LATCH			1
L	MHBELL(2)	4MD	NONE	0/1	R AFT BHD LCH WON'T LATCH			1
L	MHBELL(3)	4MD	NONE	0/1	L FWD BHD LCH WON'T LATCH			1
L	MHBELL(4)	4MD	NONE	0/1	L AFT BHD LCH WON'T LATCH			1
L	MHBCLR(1)	4MD	NONE	0/1	R FWD C/L OPN V37K3W80	00	00	1
L	MHBCLR(2)	4MD	NONE	0/1	R AFT C/L OPN V37K3W80	00	00	1
L	MHBCLR(3)	4MD	NONE	0/1	L FWD C/L OPN V37K3W409	00	00	1
L	MHBCLR(4)	4MD	NONE	0/1	L AFT C/L OPN V37K3W415	00	00	1
L	MHBCLL(1)	4MD	NONE	0/1	R FWD C/L CLS V37K3W88	00	00	1
L	MHBCLL(2)	4MD	NONE	0/1	R AFT C/L CLS V37K3W88	00	00	1
L	MHBCLL(3)	4MD	NONE	0/1	L FWD C/L CLS V37K3W401	00	00	1
L	MHBCLL(4)	4MD	NONE	0/1	L AFT C/L CLS V37K3W411	00	00	1
L	MHBRS(1)	4MD	NONE	0/1	L RAD STO STATUS TO GPC	00	00	1
L	MHBRS(2)	4MD	NONE	0/1	R RAD STO STATUS TO GPC	00	00	1
L	MHBRRFP(1)	4MD	NONE	0/1	L RAD TB FAILS PRESENT PO			1
L	MHBRRFP(2)	4MD	NONE	0/1	R RAD TB FAILS PRESENT PO			1
L	MHBRLP(1)	4MD	NONE	0/1	L RAD LCH TB FAILS PRESEN			1
L	MHBRLP(2)	4MD	NONE	0/1	R RAD LCH TB FAILS PRESEN			1
L	MHBRLR(1)	4MD	NONE	0/1	L RAD LCH 1-0 REL 2 FAILS			1
L	MHBRLR(2)	4MD	NONE	0/1	R RAD LCH 4-0 REL 2 FAILS			1
L	MHBRLR(3)	4MD	NONE	0/1	L RAD LCH 1-0 REL 2 FAILS			1
L	MHBRLR(4)	4MD	NONE	0/1	R RAD LCH 4-0 REL 2 FAILS			1
L	MHBRLB(1)	4MD	NONE	0/1	L RAD LCH TB FAILS BARBER			1
L	MHBRLB(2)	4MD	NONE	0/1	R RAD LCH TB FAILS BARBER			1
L	MHBRRFP(1)	4MD	NONE	0/1	L RAD TB FAILS BARBERFOLE			1
L	MHBRRFP(2)	4MD	NONE	0/1	R RAD TB FAILS BARBERFOLE			1

145

1402

1509

LOS NIGHT NET 001:02:47 RUN

SGMT 222:13:45:47

MALFUNCTION PAGE HALF

FB

EP34

FF

FB

NAVPD CNTRL PROPL SYSTM AUDIO

.A000 .A001 .A002 .A003 .A004

FLB1	PAYLOAD	BAY	DOORS	10F1	DISPLAYS	
MALF ID	TYPE	UNITS	RANGE	DESCRIPTION	VALUE	
FLB1	HBMJAM(1)	4MV	DEGR	0/180	RIGHT BAY DOOR JAMMED	.00000
FLB1	HBMJAM(2)	4MV	DEGR	0/180	LEFT BAY DOOR JAMMED	.00000
FLB1	MHBEDM(1)	4MD	NONE	0/1	RIGHT BAY DOOR MOTOR 1	1
FLB1	MHBEDM(2)	4MD	NONE	0/1	LEFT BAY DOOR MOTOR 1	1
FLB1	MHBCLJ(1)	4MD	NONE	0/1	C/L GRP 1-4 JAMMED	1
FLB1	MHBCLJ(2)	4MD	NONE	0/1	C/L GRP 5-8 JAMMED	1
FLB1	MHBCLJ(3)	4MD	NONE	0/1	C/L GRP 9-12 JAMMED	1
FLB1	MHBCLJ(4)	4MD	NONE	0/1	C/L GRP 13-16 JAMMED	1
FLB1	MHBCLM(1)	4MD	NONE	0/1	C/L GRP 1-4 MOTOR 1	1
FLB1	MHBCLM(2)	4MD	NONE	0/1	C/L GRP 5-8 MOTOR 1	1
FLB1	MHBCLM(3)	4MD	NONE	0/1	C/L GRP 9-12 MOTOR 1	1
FLB1	MHBCLM(4)	4MD	NONE	0/1	C/L GRP 12-15 MOTOR 1	1
FLB1	MHEBLJ(1)	4MD	NONE	0/1	R FWD BHD LCH JAMMED	1
FLB1	MHEBLJ(2)	4MD	NONE	0/1	R AFT BHD LCH JAMMED	1
FLB1	MHEBLJ(3)	4MD	NONE	0/1	L FWD BHD LCH JAMMED	1
FLB1	MHEBLJ(4)	4MD	NONE	0/1	L AFT BHD LCH JAMMED	1
FLB1	MHEBLM(1)	4MD	NONE	0/1	R FWD BHD LCH MOTOR 1	1
FLB1	MHEBLM(2)	4MD	NONE	0/1	R AFT BHD LCH MOTOR 1	1
FLB1	MHEBLM(3)	4MD	NONE	0/1	L FWD BHD LCH MOTOR 1	1
FLB1	MHEBLM(4)	4MD	NONE	0/1	L AFT BHD LCH MOTOR 1	1
FLB1	MHEDM2(1)	4MD	NONE	0/1	RIGHT BAY DOOR MOTOR 2	1
FLB1	MHEDM2(2)	4MD	NONE	0/1	LEFT BAY DOOR MOTOR 2	1
FLB1	MHEBM2(1)	4MD	NONE	0/1	C/L GRP 1-4 MOTOR 2	1
FLB1	MHEBM2(2)	4MD	NONE	0/1	C/L GRP 5-8 MOTOR 2	1
FLB1	MHEBM2(3)	4MD	NONE	0/1	C/L GRP 9-12 MOTOR 2	1
FLB1	MHEBM2(4)	4MD	NONE	0/1	C/L GRP 12-15 MOTOR 2	1
FLB1	MHEBM2(1)	4MD	NONE	0/1	R FWD BHD LCH MOTOR 2	1
FLB1	MHEBM2(2)	4MD	NONE	0/1	R AFT BHD LCH MOTOR 2	1
FLB1	MHEBM2(3)	4MD	NONE	0/1	L FWD BHD LCH MOTOR 2	1
FLB1	MHEBM2(4)	4MD	NONE	0/1	L AFT BHD LCH MOTOR 2	1

146

1200

1509

LOS NIGHT MET 001:03:44 RUN

SGMT 222:13:48:44 UP MALFUNCTION PAGE HALF  
NAVDF CNTRL PROPL SYSTEM AUDIO

FS EP34 FF FE

A000 A001 A002 A003 A004

VENT	HALF ID	VENTS	TYPE	UNITS	RANGE	DESCRIPTION	10F1	DISPLAYS	VALUE	
VENT	MEAUNT(1)	4MD	NONE		0/1	L VENT	122	ACT 1	FAILED	1
VENT	MEAUNT(7)	4MD	NONE		0/1	L VENT	122	ACT 2	FAILED	1
VENT	MEAUNT(13)	4MD	NONE		0/1	R VENT	122	ACT 1	FAILED	1
VENT	MEAUNT(19)	4MD	NONE		0/1	R VENT	122	ACT 2	FAILED	1
VENT	MEAUNT(2)	4MD	NONE		0/1	L VENT	00000	ACT 1	FAILED	1
VENT	MEAUNT(8)	4MD	NONE		0/1	L VENT	00000	ACT 2	FAILED	1
VENT	MEAUNT(14)	4MD	NONE		0/1	R VENT	00000	ACT 1	FAILED	1
VENT	MEAUNT(20)	4MD	NONE		0/1	R VENT	00000	ACT 2	FAILED	1
VENT	MEAUNT(3)	4MD	NONE		0/1	L VENT	00000	ACT 1	FAILED	1
VENT	MEAUNT(9)	4MD	NONE		0/1	L VENT	00000	ACT 2	FAILED	1
VENT	MEAUNT(15)	4MD	NONE		0/1	R VENT	00000	ACT 1	FAILED	1
VENT	MEAUNT(21)	4MD	NONE		0/1	R VENT	00000	ACT 2	FAILED	1
VENT	MEAUNT(4)	4MD	NONE		0/1	L VENT	44877	ACT 1	FAILED	1
VENT	MEAUNT(10)	4MD	NONE		0/1	L VENT	44877	ACT 2	FAILED	1
VENT	MEAUNT(16)	4MD	NONE		0/1	R VENT	44877	ACT 1	FAILED	1
VENT	MEAUNT(22)	4MD	NONE		0/1	R VENT	44877	ACT 2	FAILED	1
VENT	MEAUNT(5)	4MD	NONE		0/1	L VENT	00000	ACT 1	FAILED	1
VENT	MEAUNT(11)	4MD	NONE		0/1	L VENT	00000	ACT 2	FAILED	1
VENT	MEAUNT(17)	4MD	NONE		0/1	R VENT	00000	ACT 1	FAILED	1
VENT	MEAUNT(23)	4MD	NONE		0/1	R VENT	00000	ACT 2	FAILED	1
VENT	MEAUNT(6)	4MD	NONE		0/1	L VENT	00000	ACT 1	FAILED	1
VENT	MEAUNT(12)	4MD	NONE		0/1	L VENT	00000	ACT 2	FAILED	1
VENT	MEAUNT(18)	4MD	NONE		0/1	R VENT	00000	ACT 1	FAILED	1
VENT	MEAUNT(24)	4MD	NONE		0/1	R VENT	00000	ACT 2	FAILED	1
VENT	MEAGFC(1)	4MD	NONE		0/1	R VENT	122	1 GPC	OF=0	1
VENT	MEAGFC(2)	4MD	NONE		0/1	R VENT	000	1 GPC	OF=0	1
VENT	MEAGFC(3)	4MD	NONE		0/1	L VENT	122	2 GPC	CL=1	1
VENT	MEAGFC(4)	4MD	NONE		0/1	L VENT	000	2 GPC	CL=1	1

147

0202

1309

05 NIGHT NET 001:04:13 RUN

SGMT 222:12:47:13

HALF FUNCTION PAGE

HALF

FS

EPS4

FF

FB

NAVDF CNTRL PROFL

SYSTEM AUDIO

.A000 .A001 .A002 .A003 .A004

COM1

AUDIO MALF

10F1 DISPLAYS

	MALF ID	TYPE	UNITS	RANGE	DESCRIPTION	10F1	DISPLAYS	VALUE
COM1	M00A00(1)	SMD	NONE	0/1	CDR ATU XMIT-RCV FAIL			1
COM1	M00A00(2)	SMD	NONE	0/1	PLT ATU XMIT-RCV FAIL			1
COM1	M00A00(3)	SMD	NONE	0/1	O/S ATU XMIT-RCV FAIL			1
COM1	M00A00(4)	SMD	NONE	0/1	M/S ATU XMIT-RCV FAIL			1
COM1	M00A00(5)	SMD	NONE	0/1	P/S ATU XMIT-RCV FAIL			1
COM1	M00C01(1)	SMD	NONE	0/1	CDR ATU VOX OPEN FAIL			1
COM1	M00C01(2)	SMD	NONE	0/1	PLT ATU VOX OPEN FAIL			1
COM1	M00C01(3)	SMD	NONE	0/1	O/S ATU VOX OPEN FAIL			1
COM1	M00C01(4)	SMD	NONE	0/1	M/S ATU VOX OPEN FAIL			1
COM1	M00C01(5)	SMD	NONE	0/1	P/S ATU VOX OPEN FAIL			1
COM1	M00C02(1)	SMD	NONE	0/1	CDR ATU VOX CLOSE FAIL			1
COM1	M00C02(2)	SMD	NONE	0/1	PLT ATU VOX CLOSE FAIL			1
COM1	M00C02(3)	SMD	NONE	0/1	O/S ATU VOX CLOSE FAIL			1
COM1	M00C02(4)	SMD	NONE	0/1	M/S ATU VOX CLOSE FAIL			1
COM1	M00C02(5)	SMD	NONE	0/1	P/S ATU VOX CLOSE FAIL			1
COM1	M00C03(1)	SMD	NONE	0/1	CDR ATU FTT OPEN FAIL			1
COM1	M00C03(2)	SMD	NONE	0/1	PLT ATU FTT OPEN FAIL			1
COM1	M00C03(3)	SMD	NONE	0/1	O/S ATU FTT OPEN FAIL			1
COM1	M00C03(4)	SMD	NONE	0/1	M/S ATU FTT OPEN FAIL			1
COM1	M00C03(5)	SMD	NONE	0/1	P/S ATU FTT OPEN FAIL			1
COM1	M00C04(1)	SMD	NONE	0/1	CDR ATU FTT CLOSE FAIL			1
COM1	M00C04(2)	SMD	NONE	0/1	PLT ATU FTT CLOSE FAIL			1
COM1	M00C04(3)	SMD	NONE	0/1	O/S ATU FTT CLOSE FAIL			1
COM1	M00C04(4)	SMD	NONE	0/1	M/S ATU FTT CLOSE FAIL			1
COM1	M00C04(5)	SMD	NONE	0/1	P/S ATU FTT CLOSE FAIL			1
COM1	M00C05(1)	SMD	NONE	0/1	CDR ATU A/G1 XMIT FAIL			1
COM1	M00C05(2)	SMD	NONE	0/1	PLT ATU A/G1 XMIT FAIL			1
COM1	M00C05(3)	SMD	NONE	0/1	O/S ATU A/G1 XMIT FAIL			1
COM1	M00C05(4)	SMD	NONE	0/1	M/S ATU A/G1 XMIT FAIL			1
COM1	M00C05(5)	SMD	NONE	0/1	P/S ATU A/G1 XMIT FAIL			1
COM1	M00C06(1)	SMD	NONE	0/1	CDR ATU A/G2 XMIT FAIL			1
COM1	M00C06(2)	SMD	NONE	0/1	PLT ATU A/G2 XMIT FAIL			1
COM1	M00C06(3)	SMD	NONE	0/1	O/S ATU A/G2 XMIT FAIL			1
COM1	M00C06(4)	SMD	NONE	0/1	M/S ATU A/G2 XMIT FAIL			1
COM1	M00C06(5)	SMD	NONE	0/1	P/S ATU A/G2 XMIT FAIL			1

8h1



1401

1509

LOS NIGHT NET 001:04:38 RUN SGMT 222:13:47:38 UP MALFUNCTION PAGE MALF  
NAVDF CNTRL PROPL SYSTM AUDIO

FE  EP34  FF  FB

A000 A001 A002 A003 A004

COM2	MALF ID	PCMMU, MTU, FLT REX	TYPE	UNITS	RANGE	DESCRIPTION	10FS	DISPLAYS	VALUE
COM2	MCFML1(1)	SD	NONE		0/1	PCM MU #1 POWER FAILURE		1	
COM2	MCFML2(1)	SD	NONE		0/1	PCM MU #2 POWER FAILURE		1	
COM2	MCOVF1(1)	SD	NONE		0/1	MTU OSCILLATOR FAIL PRI		1	
COM2	MCOVF2(1)	SD	NONE		0/1	MTU OSCILLATOR FAIL SEC		1	
COM2	CVMOFT(1)	SMV	MSEC	3.125	^1000	MTU OSCILLATOR DRIFT PRI		3.125	
COM2	CVMOFT(2)	SMV	MSEC	3.125	^1000	MTU OSCILLATOR DRIFT SEC		3.125	
COM2	MCOVPR1(1)	SD	NONE		0/1	MTU OSCIL SEL SW FAILOSC1		1	
COM2	MCOVSEC(1)	SD	NONE		0/1	MTU OSCIL SEL SW FAILOSC2		1	
COM2	MCOVAUT(1)	SD	NONE		0/1	MTU OSCIL SEL SW FAILAUTO		1	
COM2	MCLEOT(1)	SD	NONE		0/1	FALSE END OF TAPE SIGNAL		0	
COM2	MCLREV(1)	SD	NONE		0/1	PASS 2 REVERSE RLY FAIL		0	
COM2	MCLF30(1)	SD	NONE		0/1	PASS COMMAND TRACK LOSS		0	
COM2	MCLMST(1)	SD	NONE		0/1	MCM SAMPLE TIMER FAIL		0	
COM2	MCLRPM(1)	SD	NONE		0/1	MADE RCOR MCM POWER FAIL		0	
COM2	MCLWBC(1)	SD	NONE		0/1	WB/ACIP PCM MCM CMD FAIL		0	
COM2	MCLWSS(1)	SD	NONE		0/1	RCOR 3 3/4 DRIVE FAIL		0	
COM2	MCLWM1(1)	SD	NONE		0/1	WIDEBAND MUX 1 FAILURE		0	
COM2	MCLWM2(1)	SD	NONE		0/1	WIDEBAND MUX 2 FAILURE		0	
COM2	MCLWM3(1)	SD	NONE		0/1	WIDEBAND MUX 3 FAILURE		0	
COM2	MCLWM4(1)	SD	NONE		0/1	WIDEBAND MUX 4 FAILURE		0	
COM2	MCLFMB(1)	SD	NONE		0/1	MADE PCM FAIL		0	
COM2	MCLRCO(1)	SD	NONE		0/1	RCOR RECORDING TLM FAIL		0	
COM2	MCLSTE(1)	SD	NONE		0/1	RCOR TROUBLE BITE FAIL		0	
COM2	MCFMBL(1)	SMO	NONE		0/1	OPW RCOR#1 CMD BIT 1 LOW		0	
COM2	MCFMBL(4)	SMO	NONE		0/1	OPW RCOR#1 CMD BIT 2 LOW		0	
COM2	MCFMBL(7)	SMO	NONE		0/1	OPW RCOR#1 CMD BIT 3 LOW		0	
COM2	MCFMBL(10)	SMO	NONE		0/1	OPW RCOR#1 CMD BIT 4 LOW		0	
COM2	MCFMBL(13)	SMO	NONE		0/1	OPW RCOR#1 CMD BIT 5 LOW		0	
COM2	MCFMBL(16)	SMO	NONE		0/1	OPW RCOR#1 CMD BIT 6 LOW		0	
COM2	MCFMBL(19)	SMO	NONE		0/1	OPW RCOR#1 CMD BIT 7 LOW		0	
COM2	MCFMBL(22)	SMO	NONE		0/1	OPW RCOR#1 CMD BIT 8 LOW		0	
COM2	MCFMBL(25)	SMO	NONE		0/1	OPW RCOR#1 CMD BIT 9 LOW		0	
COM2	MCFMBL(28)	SMO	NONE		0/1	OPW RCOR#1 CMD BIT10 LOW		0	
COM2	MCFMBL(31)	SMO	NONE		0/1	OPW RCOR#1 CMD BIT11 LOW		0	
COM2	MCFMBL(34)	SMO	NONE		0/1	OPW RCOR#1 CMD BIT12 LOW		0	
COM2	MCFMBL(37)	SMO	NONE		0/1	OPW RCOR#1 CMD BIT13 LOW		0	
COM2	MCFMBL(40)	SMO	NONE		0/1	OPW RCOR#1 CMD BIT14 LOW		0	
COM2	MCFMBL(43)	SMO	NONE		0/1	OPW RCOR#1 CMD BIT15 LOW		0	
COM2	MCFMBL(46)	SMO	NONE		0/1	OPW RCOR#1 CMD BIT16 LOW		0	
COM2	MCFMBL(49)	SMO	NONE		0/1	OPW RCOR#1 CMD BIT17 LOW		0	
COM2	MCFMBL(52)	SMO	NONE		0/1	OPW RCOR#1 CMD BIT18 LOW		0	
COM2	MCFMBL(55)	SMO	NONE		0/1	OPW RCOR#1 CMD BIT19 LOW		0	
COM2	MCFMBL(58)	SMO	NONE		0/1	OPW RCOR#1 CMD BIT20 LOW		0	
COM2	MCFMBL(61)	SMO	NONE		0/1	OPW RCOR#1 CMD BIT 1HIGH		0	

bhl

1802

1808

.03 NIGHT MET 001:04:54 RUN SGMT 222:13:47:54 UP MALFUNCTION PAGE HALF  
NAVDF CNTRL PROPL SYSTM AUDIO

FB EPS4 FF FB

COM2	POMMU,NTU,FLT,REX	A000	A001	A002	A003	A004	20FS	DISPLAYS
MALF ID	TYPE UNITS	RANGE	DESCRIPTION				VALUE	
COM2 MCFMBH(4)	SMD NONE	0/1	OF0 RCDR#1	CMD BIT	2HIGH	0		
COM2 MCFMBH(7)	SMD NONE	0/1	OF0 RCDR#1	CMD BIT	3HIGH	0		
COM2 MCFMBH(10)	SMD NONE	0/1	OF0 RCDR#1	CMD BIT	4HIGH	0		
COM2 MCFMBH(13)	SMD NONE	0/1	OF0 RCDR#1	CMD BIT	5HIGH	0		
COM2 MCFMBH(16)	SMD NONE	0/1	OF0 RCDR#1	CMD BIT	6HIGH	0		
COM2 MCFMBH(19)	SMD NONE	0/1	OF0 RCDR#1	CMD BIT	7HIGH	0		
COM2 MCFMBH(22)	SMD NONE	0/1	OF0 RCDR#1	CMD BIT	8HIGH	0		
COM2 MCFMBH(25)	SMD NONE	0/1	OF0 RCDR#1	CMD BIT	9HIGH	0		
COM2 MCFMBH(28)	SMD NONE	0/1	OF0 RCDR#1	CMD BIT	10HIGH	0		
COM2 MCFMBH(31)	SMD NONE	0/1	OF0 RCDR#1	CMD BIT	11HIGH	0		
COM2 MCFMBH(34)	SMD NONE	0/1	OF0 RCDR#1	CMD BIT	12HIGH	0		
COM2 MCFMBH(37)	SMD NONE	0/1	OF0 RCDR#1	CMD BIT	13HIGH	0		
COM2 MCFMBH(40)	SMD NONE	0/1	OF0 RCDR#1	CMD BIT	14HIGH	0		
COM2 MCFMBH(43)	SMD NONE	0/1	OF0 RCDR#1	CMD BIT	15HIGH	0		
COM2 MCFMBH(46)	SMD NONE	0/1	OF0 RCDR#1	CMD BIT	16HIGH	0		
COM2 MCFMEL(2)	SMD NONE	0/1	OF0 RCDR#2	CMD BIT	1 LOW	0		
COM2 MCFMEL(5)	SMD NONE	0/1	OF0 RCDR#2	CMD BIT	2 LOW	0		
COM2 MCFMEL(8)	SMD NONE	0/1	OF0 RCDR#2	CMD BIT	3 LOW	0		
COM2 MCFMEL(11)	SMD NONE	0/1	OF0 RCDR#2	CMD BIT	4 LOW	0		
COM2 MCFMEL(14)	SMD NONE	0/1	OF0 RCDR#2	CMD BIT	5 LOW	0		
COM2 MCFMEL(17)	SMD NONE	0/1	OF0 RCDR#2	CMD BIT	6 LOW	0		
COM2 MCFMEL(20)	SMD NONE	0/1	OF0 RCDR#2	CMD BIT	7 LOW	0		
COM2 MCFMEL(23)	SMD NONE	0/1	OF0 RCDR#2	CMD BIT	8 LOW	0		
COM2 MCFMEL(26)	SMD NONE	0/1	OF0 RCDR#2	CMD BIT	9 LOW	0		
COM2 MCFMEL(29)	SMD NONE	0/1	OF0 RCDR#2	CMD BIT	10 LOW	0		
COM2 MCFMEL(32)	SMD NONE	0/1	OF0 RCDR#2	CMD BIT	11 LOW	0		
COM2 MCFMEL(35)	SMD NONE	0/1	OF0 RCDR#2	CMD BIT	12 LOW	0		
COM2 MCFMEL(38)	SMD NONE	0/1	OF0 RCDR#2	CMD BIT	13 LOW	0		
COM2 MCFMEL(41)	SMD NONE	0/1	OF0 RCDR#2	CMD BIT	14 LOW	0		
COM2 MCFMEL(44)	SMD NONE	0/1	OF0 RCDR#2	CMD BIT	15 LOW	0		
COM2 MCFMEL(47)	SMD NONE	0/1	OF0 RCDR#2	CMD BIT	16 LOW	0		
COM2 MCFMBH(2)	SMD NONE	0/1	OF0 RCDR#2	CMD BIT	1HIGH	0		
COM2 MCFMBH(5)	SMD NONE	0/1	OF0 RCDR#2	CMD BIT	2HIGH	0		
COM2 MCFMBH(8)	SMD NONE	0/1	OF0 RCDR#2	CMD BIT	3HIGH	0		
COM2 MCFMBH(11)	SMD NONE	0/1	OF0 RCDR#2	CMD BIT	4HIGH	0		
COM2 MCFMBH(14)	SMD NONE	0/1	OF0 RCDR#2	CMD BIT	5HIGH	0		
COM2 MCFMBH(17)	SMD NONE	0/1	OF0 RCDR#2	CMD BIT	6HIGH	0		
COM2 MCFMBH(20)	SMD NONE	0/1	OF0 RCDR#2	CMD BIT	7HIGH	0		
COM2 MCFMBH(23)	SMD NONE	0/1	OF0 RCDR#2	CMD BIT	8HIGH	0		
COM2 MCFMBH(26)	SMD NONE	0/1	OF0 RCDR#2	CMD BIT	9HIGH	0		

150

2402

1509

LOS NIGHT NET 001:05:20 RUN SGMT 222:13:48:20 UP MALFUNCTION PAGE MALF  
NAVOP CNTRL PROPL SYSTM AUDIO

FS EP34 FF FE

COM2	MALF ID	PCMMU, MTU, FLT REX	TYPE	UNITS	RANGE	DESCRIPTION	30F3	DISPLAYS
								VALUE
COM2	MCFMEH(29)		SMD	NONE	0/1	OFS RCDR#2 CMD BIT10HIGH		0
COM2	MCFMEH(32)		SMD	NONE	0/1	OFS RCDR#2 CMD BIT11HIGH		0
COM2	MCFMEH(35)		SMD	NONE	0/1	OFS RCDR#2 CMD BIT12HIGH		0
COM2	MCFMEH(38)		SMD	NONE	0/1	OFS RCDR#2 CMD BIT13HIGH		0
COM2	MCFMEH(41)		SMD	NONE	0/1	OFS RCDR#2 CMD BIT14HIGH		0
COM2	MCFMEH(44)		SMD	NONE	0/1	OFS RCDR#2 CMD BIT15HIGH		0
COM2	MCFMEH(47)		SMD	NONE	0/1	OFS RCDR#2 CMD BIT16HIGH		0

151

1102

1809

LOS NIGHT MET 001:05:34 RUN EGMT 222:13:48:34 UP MALFUNCTION PAGE MALF  
NAVDP CNTRL PROFL SYSTEM AUDIO

FE  EPS4  FF  FE

.A000 .A001 .A002 .A003 .A004

COM3	MALF ID	NSP	MALF	UNITS	RANGE	DESCRIPTION	10F2	DISPLAYS
		TYPE						VALUE
COM3	MONSP1(1)	SD	NONE		0/1	NSP 1 POWER FAILURE		1
COM3	MONSP2(1)	SD	NONE		0/1	NSP 2 POWER FAILURE		1
COM3	MOND11(1)	SD	NONE		0/1	LS STAT ID FR NSP1 TO DE1		1
COM3	MOND12(1)	SD	NONE		0/1	LS STAT ID FR NSP1 TO DE2		1
COM3	MOND21(1)	SD	NONE		0/1	LS STAT ID FR NSP2 TO DE1		1
COM3	MOND22(1)	SD	NONE		0/1	LS STAT ID FR NSP2 TO DE2		1
COM3	MONR11(1)	SD	NONE		0/1	LS NSP1 OUT TO ML RECORD1		1
COM3	MONR21(1)	SD	NONE		0/1	LS NSP2 OUT TO ML RECORD1		1
COM3	MONR12(1)	SD	NONE		0/1	LS NSP1 OUT TO ML RECORD2		1
COM3	MONR22(1)	SD	NONE		0/1	LS NSP2 OUT TO ML RECORD2		1
COM3	MCN11H(1)	SD	NONE		0/1	NSP1 LS 128KBPS FR PCMMU1		1
COM3	MCN21H(1)	SD	NONE		0/1	NSP1 LS 128KBPS FR PCMMU2		1
COM3	MCN12H(1)	SD	NONE		0/1	NSP2 LS 128KBPS FR PCMMU1		1
COM3	MCN22H(1)	SD	NONE		0/1	NSP2 LS 128KBPS FR PCMMU2		1
COM3	MCN11L(1)	SD	NONE		0/1	NSP1 LS 64KBPS FR PCMMU1		1
COM3	MCN21L(1)	SD	NONE		0/1	NSP1 LS 64KBPS FR PCMMU2		1
COM3	MCN12L(1)	SD	NONE		0/1	NSP2 LS 64KBPS FR PCMMU1		1
COM3	MCN22L(1)	SD	NONE		0/1	NSP2 LS 64KBPS FR PCMMU2		1
COM3	MCNS11(1)	SD	NONE		0/1	NSP1 TO SBND ASSY 1 FAIL		1
COM3	MCNS21(1)	SD	NONE		0/1	NSP2 TO SBND ASSY 1 FAIL		1
COM3	MCNS12(1)	SD	NONE		0/1	NSP1 TO SBND ASSY 2 FAIL		1
COM3	MCNS22(1)	SD	NONE		0/1	NSP2 TO SBND ASSY 2 FAIL		1
COM3	MCNU11(1)	SD	NONE		0/1	SBND ASSY 1 TO NSP1 FAIL		1
COM3	MCNU12(1)	SD	NONE		0/1	SBND ASSY 1 TO NSP2 FAIL		1
COM3	MCNU21(1)	SD	NONE		0/1	SBND ASSY 2 TO NSP1 FAIL		1
COM3	MCNU22(1)	SD	NONE		0/1	SBND ASSY 2 TO NSP2 FAIL		1
COM3	MCNA11(1)	SD	NONE		0/1	NSP1 A/D CONV LS-A/G 1		1
COM3	MCNA21(1)	SD	NONE		0/1	NSP2 A/D CONV LS-A/G 1		1
COM3	MCNA12(1)	SD	NONE		0/1	NSP1 A/D CONV LS-A/G 2		1
COM3	MCNA22(1)	SD	NONE		0/1	NSP2 A/D CONV LS-A/G 2		1
COM3	MCNG11(1)	SD	NONE		0/1	NSP1 D/A CONV LS-A/G 1		1
COM3	MCNG21(1)	SD	NONE		0/1	NSP2 D/A CONV LS-A/G 1		1
COM3	MCNG12(1)	SD	NONE		0/1	NSP1 D/A CONV LS-A/G 2		1
COM3	MCNG22(1)	SD	NONE		0/1	NSP2 D/A CONV LS-A/G 2		1
COM3	MON2FS(1)	SD	NONE		0 1	COMSEC 2 FRAME SYNC FAIL		0
COM3	MON1RB(1)	SD	NONE		0 1	COMSEC 1 RFC-B FAIL		0
COM3	MON1RD(1)	SD	NONE		0 1	COMSEC 1 RCDR ENCR FAIL		0
COM3	MON1TE(1)	SD	NONE		0 1	COMSEC 1 XMIT ENCR FAIL		0
COM3	MON1RE(1)	SD	NONE		0 1	COMSEC 1 RECV ENCR FAIL		0
COM3	MON1RA(1)	SD	NONE		0 1	COMSEC 1 RFC-A FAIL		0

152

LA02

1509

LOS NIGHT NET 001:05:48 RUN SGMT 222:13:48:48 UP MALFUNCTION PAGE MALF  
NAVDF CNTRL PROPL SYSTM AUDIO

FS  EPS4  FF  FB

A000  A001  A002  A003  A004

COMB	MALF ID	NEP TYPE	MALF UNITS	RANGE	DESCRIPTION	20F2	DISPLAYS VALUE
COMB	MCN2TE(1)	SD	NONE	0 1	COMSEC 2 XMIT ENCR FAIL	0	0
COMB	MCN2RE(1)	SD	NONE	0 1	COMSEC 2 RECV ENCR FAIL	0	0
COMB	MCN2RB(1)	SD	NONE	0 1	COMSEC 2 RPC-B FAIL	0	0
COMB	MCN2RA(1)	SD	NONE	0 1	COMSEC 2 RPC-A FAIL	0	0
COMB	MCN2PF(1)	SD	NONE	0 1	COMSEC 2 POWER FAIL	0	0
COMB	MCN1FF(1)	SD	NONE	0 1	COMSEC 1 POWER FAIL	0	0
COMB	MCN1FS(1)	SD	NONE	0 1	COMSEC 1 FRAME SYNC FAIL	0	0
COMB	MCN2RD(1)	SD	NONE	0 1	COMSEC 2 RCOR ENCR FAIL	0	0

153

1202

1988

LOS NIGHT NET 001:06:11 RUN

SGMT 222:13:49:11

MALFUNCTION PAGE HALF

FE

EP34

FF

FE

NAVDP

CONTRL

PROPL

SYSTEM

AUDIO

.A000

.A001

.A002

.A003

.A004

COM4

S-BAND

10F3

DISPLAYS

	MALF ID	TYPE	UNITS	RANGE	DESCRIPTION	VALUE
COM4	MOST1F(1)	SD	NONE	0/1	ASSEMBLY1 TRANS FAIL OFF	1
COM4	MOST2F(1)	SD	NONE	0/1	ASSEMBLY2 TRANS FAIL OFF	1
COM4	MOSR1F(1)	SD	NONE	0/1	ASSEMBLY1 RECEIVE FAIL OFF	1
COM4	MOSR2F(1)	SD	NONE	0/1	ASSEMBLY2 RECEIVE FAIL OFF	1
COM4	MOSR1N(1)	SD	NONE	0/1	ASSEMBLY1 RANGING INHIBIT	1
COM4	MOSR2N(1)	SD	NONE	0/1	ASSEMBLY2 RANGING INHIBIT	1
COM4	MOSPFF(1)	SD	NONE	0/1	NO.1 POWER AMP FAILURE	1
COM4	MOSPSP(1)	SD	NONE	0/1	NO.2 POWER AMP FAILURE	1
COM4	MOS1HF(1)	SD	NONE	0/1	PREAMP RCV HI FREQ FAIL	1
COM4	MOS2HF(1)	SD	NONE	0/1	PREAMP XMIT HI FREQ FAIL	1
COM4	MOS1LF(1)	SD	NONE	0/1	PREAMP RCV LO FREQ FAIL	1
COM4	MOS2LF(1)	SD	NONE	0/1	PREAMP XMIT LO FREQ FAIL	1
COM4	MOSLLF(1)	SD	NONE	0/1	ANTENNA FAIL LOW LEFT QUAD	1
COM4	MOSLLA(1)	SD	NONE	0/1	LWR LFT AFT PM ANT FAIL	0
COM4	MOSLRF(1)	SD	NONE	0/1	ANTENNA FAIL LOW RIGHT QUAD	1
COM4	MOSLRA(1)	SD	NONE	0/1	LWR RGT AFT PM ANT FAIL	0
COM4	MOSULF(1)	SD	NONE	0/1	ANTENNA FAIL UP LEFT QUAD	1
COM4	MOSULA(1)	SD	NONE	0/1	UPR LFT AFT PM ANT FAIL	0
COM4	MOSURF(1)	SD	NONE	0/1	ANTENNA FAIL UP RIGHT QUAD	1
COM4	MOSURA(1)	SD	NONE	0/1	UPR RGT AFT PM ANT FAIL	0
COM4	MOSUHF(1)	SD	NONE	0/1	ANTENNA FAIL UPPER HEMI	1
COM4	MOSLHF(1)	SD	NONE	0/1	ANTENNA FAIL LOWER HEMI	1
COM4	MOSFT1(1)	SD	NONE	0/1	FM TRANS #1 FAIL	1
COM4	MOSFT2(1)	SD	NONE	0/1	FM TRANS #2 FAIL	1
COM4	MOSPML(1)	SD	NONE	0/1	DATA LOSS PRI FM SIG PROC	1
COM4	MOSAML(1)	SD	NONE	0/1	DATA LOSS SEC FM SIG PROC	1
COM4	MOSTVP(1)	SD	NONE	0/1	TV OUTPUT LOSS PRI FM PROC	1
COM4	MOSTVS(1)	SD	NONE	0/1	TV OUTPUT LOSS SEC FM PROC	1
COM4	MOS1HT(1)	SD	NONE	0/1	TPLX XMT1 HI FREQ FL S-L	
COM4	MOS1LT(1)	SD	NONE	0/1	TPLX XMT1 LO FREQ FL S-L	
COM4	MOS2HT(1)	SD	NONE	0/1	TPLX XMT2 HI FREQ FL S-L	
COM4	MOS2LT(1)	SD	NONE	0/1	TPLX XMT2 LO FREQ FL S-L	
COM4	MOS1HR(1)	SD	NONE	0/1	TPLX RCV1 HI FREQ FL S-L	
COM4	MCURPA(1)	SD	NONE	0/1	UHF RCV AUDIO PWR AMP FAIL	1
COM4	MOS1XR(1)	SD	NONE	0/1	TPLX RCV1 LO FREQ FL S-L	
COM4	MCURAA(1)	SD	NONE	0/1	UHF RCV AUDIO AMP FAIL	1
COM4	MCUGRF(1)	SD	NONE	0/1	UHF GUARD RCV FAIL	1
COM4	MOS2HR(1)	SD	NONE	0/1	TPLX RCV2 HI FREQ FL S-L	
COM4	MOS2XR(1)	SD	NONE	0/1	TPLX RCV2 LO FREQ FL S-L	
COM4	MCU1RF(1)	SD	NONE	0/1	UHF 298.5 RCV FAIL	1

154

1203

1503

LOS NIGHT NET 001:06:27 RUN

SGMT 222:13:43:27  
NAVDP CNTRL PROPL

HALF PAGE HALF  
SYSTEM AUDIO

FS

EP34

FF

FB

A000 A001 A002 A003 A004

COM4	HALF ID	S-BAND TYPE	UNITS	RANGE	DESCRIPTION	ZOF3	DISPLAYS	VALUE
COM4	MCU2RF(1)	SD	NONE	0/1	UHF 259.7 RCV FAIL			1
COM4	MCS1GH(1)	SD	NONE	0/1	TPLX RCV1 HI FREQ FL SGL			
COM4	MCS1GL(1)	SD	NONE	0/1	TPLX RCV1 LO FREQ FL SGL			
COM4	MCUGTF(1)	SD	NONE	0/1	UHF GUARD XMIT FAIL			1
COM4	MCU1TF(1)	SD	NONE	0/1	UHF 298.6 XMIT FAIL			1
COM4	MCS2GH(1)	SD	NONE	0/1	TPLX RCV1 HI FREQ FL SGL			
COM4	MCS2GL(1)	SD	NONE	0/1	TPLX RCV1 LO FREQ FL SGL			
COM4	MCU2TF(1)	SD	NONE	0/1	UHF 259.7 XMIT FAIL			1
COM4	MCUAMP(1)	SD	NONE	0/1	UHF POWERAMP FAIL			1
COM4	MCSACF(1)	SMD	NONE	0/1	ANT SWT ELC 1 GCIL CMD F			
COM4	CUMXTP(1)	SU	WATTS	0^20	HALF PWR OUTPUT UHF XMITTR			0.0
COM4	MCSACF(2)	SMD	NONE	0/1	ANT SWT ELC 2 GCIL CMD F			
COM4	MCSALE(1)	SMD	NONE	0/1	ANT ELC LOGIC PWR 1 FAIL			
COM4	MCSALE(2)	SMD	NONE	0/1	ANT ELC LOGIC PWR 2 FAIL			
COM4	MCSAFE(1)	SMD	NONE	0/1	FM ANT ELC LOGIC 1 FAIL			
COM4	MCSAFE(2)	SMD	NONE	0/1	FM ANT ELC LOGIC 2 FAIL			
COM4	MCS1Z2(1)	SD	NONE	0/1	FM 1 LWR HEMI ANT SEL FL			
COM4	MCS2Z2(1)	SD	NONE	0/1	FM 2 LWR HEMI ANT SEL FL			
COM4	MCS1Z1(1)	SD	NONE	0/1	FM 1 UPR HEMI ANT SEL FL			
COM4	MCS2Z1(1)	SD	NONE	0/1	FM 2 UPR HEMI ANT SEL FL			
COM4	MCS1LR(1)	SD	NONE	0/1	FM 1 ANT LR QUAD FAIL			
COM4	MCS2LR(1)	SD	NONE	0/1	FM 2 ANT LR QUAD FAIL			
COM4	MCS1UL(1)	SD	NONE	0/1	FM 1 ANT UL QUAD FAIL			
COM4	MCS2UL(1)	SD	NONE	0/1	FM 2 ANT UL QUAD FAIL			
COM4	MCS1UR(1)	SD	NONE	0/1	FM 1 ANT UR QUAD FAIL			
COM4	MCS2UR(1)	SD	NONE	0/1	FM 2 ANT UR QUAD FAIL			
COM4	MCS1LL(1)	SD	NONE	0/1	FM 1 ANT LL QUAD FAIL			
COM4	MCS2LL(1)	SD	NONE	0/1	FM 2 ANT LL QUAD FAIL			
COM4	MCS011(1)	SD	NONE	0/1	RF DIODE SWT XPND1-PA1 F			
COM4	MCS012(1)	SD	NONE	0/1	RF DIODE SWT XPND1-PA2 F			
COM4	MCS022(1)	SD	NONE	0/1	RF DIODE SWT XPND2-PA1 F			
COM4	MCS021(1)	SD	NONE	0/1	RF DIODE SWT XPND2-PA1 F			
COM4	MCS0AR1(1)	SD	NONE	0/1	PA 1 UNDERVOLT PULSE FAI			
COM4	MCS0AR2(1)	SD	NONE	0/1	PA 2 UNDERVOLT PULSE FAI			
COM4	MCSA1A(1)	SD	NONE	0/1	PREAMP 1 LOGIC 1A FAIL			
COM4	MCSA1B(1)	SD	NONE	0/1	PREAMP 1 LOGIC 1B FAIL			
COM4	MCSB1A(1)	SD	NONE	0/1	PREAMP 2 LOGIC 1A FAIL			
COM4	MCSB1B(1)	SD	NONE	0/1	PREAMP 2 LOGIC 1B FAIL			
COM4	MCS1XP(1)	SD	NONE	0/1	XPNDR 1 PWR SPLY CONV FL			
COM4	MCS2XP(1)	SD	NONE	0/1	XPNDR 2 PWR SPLY CONV FL			

SSJ

1AV2

1509

LOS NIGHT NET 001:06:42 RUN SGMT 222:13:49:42 UP MALFUNCTION PAGE HALF

FS  EPS4  FF  FE

NAUDF CNTRL PROPL SYSTM AUDIO

.A000 .A001 .A002 .A003 .A004

COM4	MALF ID	S-BAND	TYPE	UNITS	RANGE	DESCRIPTION	30F3	DISPLAYS	VALUE
COM4	CSMRF1(1)	SU	NONE		0/150	PWR AMP 1 OUTPUT DEGRADE			
COM4	CSMRF2(1)	SU	NONE		0/150	PWR AMP 2 OUTPUT DEGRADE			

156



CA02

1509

LOS NIGHT NET 001:07:02 RUN SGHT 222:13:59:02 UP MALFUNCTION PAGE HALF  
NAVDF CNTRL PROPL SYSTM AUDIO

FS

EP34

FF

FB

A000 A001 A002 A003 A004

COMS	HALF	ID	COMM/AUDIO	HALF	1/2	TYPE	UNITS	RANGE	DESCRIPTION	10F1	DISPLAYS
											VALUE
COMS	M000	07(1)	SMD	NONE				0/1	CDR PG CIRCUIT CLOSE	FAIL	1
COMS	M000	07(2)	SMD	NONE				0/1	PLT PG CIRCUIT CLOSE	FAIL	1
COMS	M000	07(3)	SMD	NONE				0/1	OS PG CIRCUIT CLOSE	FAIL	1
COMS	M000	07(4)	SMD	NONE				0/1	MS PG CIRCUIT CLOSE	FAIL	1
COMS	M000	07(5)	SMD	NONE				0/1	PS PG CIRCUIT CLOSE	FAIL	1
COMS	M000	08(1)	SMD	NONE				0/1	CDR PG CIRCUIT OPEN	FAIL	1
COMS	M000	08(2)	SMD	NONE				0/1	PLT PG CIRCUIT OPEN	FAIL	1
COMS	M000	08(3)	SMD	NONE				0/1	OS PG CIRCUIT OPEN	FAIL	1
COMS	M000	08(4)	SMD	NONE				0/1	MS PG CIRCUIT OPEN	FAIL	1
COMS	M000	08(5)	SMD	NONE				0/1	PS PG CIRCUIT OPEN	FAIL	1
COMS	M000	09(1)	SMD	NONE				0/1	CDR FR1 A/G1 RCV CCT	FAIL	1
COMS	M000	09(2)	SMD	NONE				0/1	PLT FR1 A/G1 RCV CCT	FAIL	1
COMS	M000	09(3)	SMD	NONE				0/1	OS FR1 A/G1 RCV CCT	FAIL	1
COMS	M000	09(4)	SMD	NONE				0/1	MS FR1 A/G1 RCV CCT	FAIL	1
COMS	M000	09(5)	SMD	NONE				0/1	PS FR1 A/G1 RCV CCT	FAIL	1
COMS	M000	10(1)	SMD	NONE				0/1	CDR FR1 A/G2 RCV CCT	FAIL	1
COMS	M000	10(2)	SMD	NONE				0/1	PLT FR1 A/G2 RCV CCT	FAIL	1
COMS	M000	10(3)	SMD	NONE				0/1	OS FR1 A/G2 RCV CCT	FAIL	1
COMS	M000	10(4)	SMD	NONE				0/1	MS FR1 A/G2 RCV CCT	FAIL	1
COMS	M000	10(5)	SMD	NONE				0/1	PS FR1 A/G2 RCV CCT	FAIL	1
COMS	M000	11(1)	SMD	NONE				0/1	CDR A/A XMIT CIRCUIT	FAIL	1
COMS	M000	11(2)	SMD	NONE				0/1	PLT A/A XMIT CIRCUIT	FAIL	1
COMS	M000	11(3)	SMD	NONE				0/1	OS A/A XMIT CIRCUIT	FAIL	1
COMS	M000	11(4)	SMD	NONE				0/1	MS A/A XMIT CIRCUIT	FAIL	1
COMS	M000	11(5)	SMD	NONE				0/1	PS A/A XMIT CIRCUIT	FAIL	1
COMS	M000	12(1)	SMD	NONE				0/1	CDR FR1 A/A CIRCUIT	FAIL	1
COMS	M000	12(2)	SMD	NONE				0/1	PLT FR1 A/A CIRCUIT	FAIL	1
COMS	M000	12(3)	SMD	NONE				0/1	OS FR1 A/A CIRCUIT	FAIL	1
COMS	M000	12(4)	SMD	NONE				0/1	MS FR1 A/A CIRCUIT	FAIL	1
COMS	M000	12(5)	SMD	NONE				0/1	PS FR1 A/A CIRCUIT	FAIL	1
COMS	M000	13(1)	SMD	NONE				0/1	CDR ICOM A XMIT CCT	FAIL	1
COMS	M000	13(2)	SMD	NONE				0/1	PLT ICOM A XMIT CCT	FAIL	1
COMS	M000	13(3)	SMD	NONE				0/1	OS ICOM A XMIT CCT	FAIL	1
COMS	M000	13(4)	SMD	NONE				0/1	MS ICOM A XMIT CCT	FAIL	1
COMS	M000	13(5)	SMD	NONE				0/1	PS ICOM A XMIT CCT	FAIL	1
COMS	M000	14(1)	SMD	NONE				0/1	CDR FR1 ICOM A RCV CT	FAL	1
COMS	M000	14(2)	SMD	NONE				0/1	PLT FR1 ICOM A RCV CT	FAL	1
COMS	M000	14(3)	SMD	NONE				0/1	OS FR1 ICOM A RCV CT	FAIL	1
COMS	M000	14(4)	SMD	NONE				0/1	MS FR1 ICOM A RCV CT	FAIL	1
COMS	M000	14(5)	SMD	NONE				0/1	PS FR1 ICOM A RCV CT	FAIL	1

157

12001

1569

LOS NIGHT NET 001:07:16 RUN SGMT 222:13:50:16 UP MALFUNCTION PAGE HALF

NAVDP CNTRL PROPL SYSTM AUDIO

FS EP34 FF FB

COMM	HALF ID	TYPE	UNITS	RANGE	DESCRIPTION	10F2	DISPLAYS
COMM6	MC00015(1)	SMD	NONE	0/1	CDR ICOM B XMIT CCT FAIL		1
COMM6	MC00015(2)	SMD	NONE	0/1	PLT ICOM B XMIT CCT FAIL		1
COMM6	MC00015(3)	SMD	NONE	0/1	OS ICOM B XMIT CCT FAIL		1
COMM6	MC00015(4)	SMD	NONE	0/1	MS ICOM B XMIT CCT FAIL		1
COMM6	MC00015(5)	SMD	NONE	0/1	FS ICOM B XMIT CCT FAIL		1
COMM6	MC00016(1)	SMD	NONE	0/1	CDR PR1 ICOM B RCV CT FAL		1
COMM6	MC00016(2)	SMD	NONE	0/1	PLT PR1 ICOM B RCV CT FAL		1
COMM6	MC00016(3)	SMD	NONE	0/1	OS PR1 ICOM B RCV CT FAL		1
COMM6	MC00016(4)	SMD	NONE	0/1	MS PR1 ICOM B RCV CT FAL		1
COMM6	MC00016(5)	SMD	NONE	0/1	FS PR1 ICOM B RCV CT FAL		1
COMM6	MC00017(1)	SMD	NONE	0/1	OS SMU XMIT FAILURE		1
COMM6	MC00017(2)	SMD	NONE	0/1	OS SMU RCV FAILURE		1
COMM6	MC00018(1)	SMD	NONE	0/1	AUDIO CTR 1 A/A T/R FAIL		1
COMM6	MC00018(2)	SMD	NONE	0/1	AUDIO CTR 2 A/A T/R FAIL		1
COMM6	MC00019(1)	SMD	NONE	0/1	AUDIO CTR 1 A/G1 T/R FAIL		1
COMM6	MC00019(2)	SMD	NONE	0/1	AUDIO CTR 2 A/G1 T/R FAIL		1
COMM6	MC00020(1)	SMD	NONE	0/1	AUDIO CTR 1 A/G2 T/R FAIL		1
COMM6	MC00020(2)	SMD	NONE	0/1	AUDIO CTR 2 A/G2 T/R FAIL		1
COMM6	MCOACC(1)	SMD	NONE	0/1	ACCU PRI PWR CIRCUIT FAIL		1
COMM6	MCOACC(2)	SMD	NONE	0/1	ACCU SEC PWR CIRCUIT FAIL		1
COMM6	MCOMIA(1)	SD			MD ICOM A XMIT FAIL		
COMM6	MCOMRA(1)	SD			MD ICOM A RCV FAIL		
COMM6	MCOMRB(1)	SD			MD ICOM B RCV FAIL		
COMM6	MCOMIB(1)	SD			MD ICOM A XMIT FAIL		
COMM6	MCOMXB(1)	SD			MD ICOM B XMIT CCT FAIL		
COMM6	MCOMR2(1)	SD			MD A/G 2 RCV CCT FAIL		
COMM6	MCOMR1(1)	SD			MD A/G 1 RCV CCT FAIL		
COMM6	MCOMAR(1)	SD			MD A/A RCV CCT FAIL		
COMM6	MCOMOP(1)	SD			MD PTT OPEN FAIL		
COMM6	MCOMCP(1)	SD			MD PTT CLOSE FAIL		
COMM6	MCOMP0(1)	SD			MD PAGE CCT CLOSE FAIL		
COMM6	MCOMP0(1)	SD			MD PAGE CCT OPEN FAIL		
COMM6	MCOMRS(1)	SD			MD SMU RCV FAIL		
COMM6	MCOMCV(1)	SD			MD VOX CLOSE FAIL		
COMM6	MCOMOV(1)	SD			MD VOX OPEN FAIL		
COMM6	MCOMXS(1)	SD			MD SMU XMIT FAIL		
COMM6	MCOMAA(1)	SD			MD A/A CIRCUIT FAIL		
COMM6	MCGPD2(1)	SD			PA 2 CMD DRVR FAIL		
COMM6	MCGPD1(1)	SD			PA 1 CMD DRVR FAIL		
COMM6	MCGTS1(1)	SD			XPDR 1 STDN LO SGLS FAI		

158

1442

1509

LOS NIGHT MET 001:07:28 RUN SGMT 222:13:50:28 MALFUNCTION PAGE MALF

FS EPS4 FF FE

.A000 .A001 .A002 .A003 .A004

COMM	MALF ID	TYPE	UNITS	RANGE	DESCRIPTION	20F2	DISPLAYS	VALUE
COMM8	MCGTS2(1)	SD			XPNDR 2 STON LO SGLS FAI			
COMM8	MCGTL2(1)	SD			XPNDR 2 STON LO SEL FAIL			
COMM8	MCGTL1(1)	SD			XPNDR 1 STON LO SEL FAIL			
COMM8	MCGTSH(1)	SD			XPNDR 1 STON HI TORS FAI			
COMM8	MCGTSS(1)	SD			XPNDR 2 STON HI TORS FAI			

159

2402

1509

LOS NIGHT MET 001:07:45 RUN SGMT 222:13:50:45 UP MALFUNCTION PAGE HALF  
NAVEP CNTRL PROPL SYSTM AUDIO

FS EPS4 FF FE

.A000 .A001 .A002 .A003 .A004

COM7	MALF ID	CCTV MALF	TYPE	UNITS	RANGE	DESCRIPTION	10F1	DISPLAYS	VALUE
COM7	MH0001(1)	1	SD	NONE	0/1	FWD BAY CAM ZOOM DRV FAIL		1	
COM7	MH0002(1)	1	SD	NONE	0/1	KEEL CAM ZOOM DRIVER FAIL		1	
COM7	MH0003(1)	1	SD	NONE	0/1	AFT BAY CAM ZOOM DRV FAIL		1	
COM7	MH0004(1)	1	SD	NONE	0/1	RMS STE/WST CAM ZO DRV FL		1	
COM7	MH0005(1)	1	SD	NONE	0/1	RMS STE/ELB CAM ZO DRV FL		1	
COM7	MH0006(1)	1	SD	NONE	0/1	RMS PRT/WST CAM ZO DRV FL		1	
COM7	MH0007(1)	1	SD	NONE	0/1	RMS PRT/ELB CAM ZO DRV FL		1	
COM7	MH0008(1)	1	SD	NONE	0/1	FWD BAY CAM IRIS DRV FAIL		1	
COM7	MH0009(1)	1	SD	NONE	0/1	KEEL CAM IRIS DRIVER FAIL		1	
COM7	MH0010(1)	1	SD	NONE	0/1	AFT BAY CAM IRIS DRV FAIL		1	
COM7	MH0011(1)	1	SD	NONE	0/1	RMS STE/WST CM IRS DR FAL		1	
COM7	MH0012(1)	1	SD	NONE	0/1	RMS STE/ELB CM IRS DR FAL		1	
COM7	MH0013(1)	1	SD	NONE	0/1	RMS PRT/WST CM IRS DR FAL		1	
COM7	MH0014(1)	1	SD	NONE	0/1	RMS PRT/ELB CM IRS DR FAL		1	
COM7	MH0015(1)	1	SD	NONE	0/1	MONITOR NUMBER ONE FAIL		1	
COM7	MH0016(1)	1	SD	NONE	0/1	MONITOR NUMBER TWO FAIL		1	
COM7	MH0017(1)	1	SD	NONE	0/1	FWD BAY CAMERA VIDEO FAIL		1	
COM7	MH0018(1)	1	SD	NONE	0/1	KEEL CAMERA VIDEO FAIL		1	
COM7	MH0019(1)	1	SD	NONE	0/1	AFT BAY CAMERA VIDEO FAIL		1	
COM7	MH0020(1)	1	SD	NONE	0/1	RMS STE/WST CAM VIDO FAIL		1	
COM7	MH0021(1)	1	SD	NONE	0/1	RMS STE/ELB CAM VIDO FAIL		1	
COM7	MH0022(1)	1	SD	NONE	0/1	RMS PRT/WST CAM VIDO FAIL		1	
COM7	MH0023(1)	1	SD	NONE	0/1	RMS PRT/ELB CAM VIDO FAIL		1	
COM7	MH0024(1)	1	SD	NONE	0/1	FWD BAY CAM PAN DRIV FAIL		1	
COM7	MH0025(1)	1	SD	NONE	0/1	AFT BAY CAM PAN DRIV FAIL		1	
COM7	MH0026(1)	1	SD	NONE	0/1	RMS STE/ELB CAM PAN DR FL		1	
COM7	MH0027(1)	1	SD	NONE	0/1	RMS PRT/ELB CAM PAN DR FL		1	
COM7	MH0028(1)	1	SD	NONE	0/1	FWD BAY CAM TILT DRV FAIL		1	
COM7	MH0029(1)	1	SD	NONE	0/1	AFT BAY CAM TILT DRV FAIL		1	
COM7	MH0030(1)	1	SD	NONE	0/1	RMS STE/ELB CAM TIL DV FL		1	
COM7	MH0031(1)	1	SD	NONE	0/1	RMS PRT/ELB CAM TIL DV FL		1	

169

1402

1809

LOS NIGHT MET 001:08:04 RUN SGMT 222:13:51:04 MALFUNCTION PAGE MALF  
NAVOP CNTRL PROPL SYSTM AUDIO

FS  EP54  FF  FE

.A000 .A001 .A002 .A003 .A004

COMS	MALF ID	TYPE	UNITS	RANGE	DESCRIPTION	10F1	DISPLAYS	VALUE
COMS	MH0032(1)	SD	NONE	0/1	SYNC A MALFUNCTION			1
COMS	MH0033(1)	SD	NONE	0/1	SYNC B MALFUNCTION			1
COMS	MH0034(1)	SD	NONE	0/1	DOWNLINK VIDEO MALF.			1
COMS	MH0035(1)	SD	NONE	0/1	UPLINK COMMAND MALF.			1
COMS	MH0036(1)	SD	NONE	0/1	MONITOR-1 CROSS-HAIR MALF			1
COMS	MH0037(1)	SD	NONE	0/1	MONITOR-2 CROSS-HAIR MALF			1
COMS	MH0038(1)	SD	NONE	0/1	MON-1 ALPHA-NUMERIC MALF			1
COMS	MH0039(1)	SD	NONE	0/1	MON-2 ALPHA-NUMERIC MALF			1
COMS	MH0040(1)	SD	NONE	0/1	DOWNLINK (CHIP-1) MALF			1
COMS	MH0041(1)	SD	NONE	0/1	DOWNLINK (CHIP-2) MALF			1
COMS	MH0042(1)	SD	NONE	0/1	DOWNLINK (CHIP-3) MALF			1
COMS	MH0043(1)	SD	NONE	0/1	DOWNLINK (CHIP-4) MALF			1
COMS	MH0044(1)	SD	NONE	0/1	DOWNLINK (CHIP-5) MALF			1
COMS	MHCHOT(1)	SMD	NONE	0/1	STB/WST CAM OUT-OF-TEMP			1
COMS	MHCHOT(2)	SMD	NONE	0/1	STB/ELB CAM OUT-OF-TEMP			1
COMS	MHCHOT(3)	SMD	NONE	0/1	PRT/WST CAM OUT-OF-TEMP			1
COMS	MHCHOT(4)	SMD	NONE	0/1	PRT/ELB CAM OUT-OF-TEMP			1
COMS	MHCHOT(5)	SMD	NONE	0/1	FWD BAY CAM OUT-OF-TEMP			1
COMS	MHCHOT(6)	SMD	NONE	0/1	AFT BAY CAM OUT-OF-TEMP			1
COMS	MHCHOT(7)	SMD	NONE	0/1	KEEL BAY CAM OUT-OF-TEMP			1

191

DAU2

1509

LOS NIGHT MET 001:08:24 RUN

SGMT 222:13:51:24

HALF

NAVDF

CNTRL

PROPL

SYSTEM

AUDIO

HALF

FS

EPS4

FF

FB

COM9

KU-BAND MALFUNCTIONS

A000

A001

A002

A003

A004

10FS DISPLAYS

COM9	HALF ID	TYPE	UNITS	RANGE	DESCRIPTION	10FS	DISPLAYS	VALUE
COM9	CKMBMF(1)	SMV	PCT	0..100.	PCT BOOM DEPLOYED			50.
COM9	CKMBMF(2)	SMV	PCT	0..100.	PCT BOOM STOWED			50.
COM9	MCKBMF(1)	SMD	NONE	0/1	BOOM MOTOR 1 FAILURE			1
COM9	MCKBMF(2)	SMD	NONE	0/1	BOOM MOTOR 2 FAILURE			1
COM9	MCKSAF(1)	SD	NONE	0/1	STOW ALIGNMENT FAILURE			1
COM9	CKMPO(1)	SV	PCT	0..100.	PCT POWER OUTPUT REDUCED			50.
COM9	MCKPO(1)	SD	NONE	0/1	TRANSMITTER OUTPUT FAIL			1
COM9	MCKTTF(1)	SD	NONE		TARGET TRANSPONDER FAIL			1
COM9	MCKBSE(1)	SD	NONE	0/1	SIG PROC BIT SYN ERR			1
COM9	MCKFSE(1)	SD	NONE	0/1	SIG PROC FRAME SYN ERR			1
COM9	MCKGDF(1)	SMD	NONE	0/1	ALPHA GIMBAL DR FAIL			1
COM9	MCKGDF(2)	SMD	NONE	0/1	BETA GIMBAL DR FAIL			1
COM9	MCKAF(1)	SMD	NONE	0/1	AZ TRACK RANDOM ERROR			1
COM9	MCKAF(2)	SMD	NONE	0/1	EL TRACK RANDOM ERROR			1
COM9	CKMWAN(1)	SV	DEGREES	0/20	WANDER VECTOR MALFUNCTION			5
COM9	MCKARF(1)	SMD	NONE	0/1	AZ RATE RANDOM ERROR			1
COM9	MCKARF(2)	SMD	NONE	0/1	EL RATE RANDOM ERROR			1
COM9	MCKRRF(1)	SD	NONE	0/1	RANGE RTE TRK RNDM ERR			1
COM9	CKMRNG(1)	SV	FEET	+/-10000	RADAR RANGE BIAS			0
COM9	MCKREE(1)	SD	NONE	0^1	GPC RNG EST 10 PCT ERR			0
COM9	MCKJET(1)	SD	NONE	0/1	ANT JETTISON FAILURE			1
COM9	MCKSF(1)	SD	NONE	0/1	SEARCH FAILURE			1
COM9	MCKD(1)	SD	NONE	0/1	DETECTION FAILURE			1
COM9	MCKTE(1)	SD	NONE	0/1	TRACKING ERROR			1
COM9	MCKPE(1)	SD	NONE	0/1	ANT POINTING ERROR			1
COM9	MCKST(1)	SMD	NONE	0/1	SLF-TEST 1 FROM CHECK			1
COM9	MCKST(2)	SMD	NONE	0/1	SLF-TEST 2 EA-2 POWER			1
COM9	MCKST(3)	SMD	NONE	0/1	SLF-TEST 3 ANT POSITION			1
COM9	MCKST(4)	SMD	NONE	0/1	SLF-TEST 4 ANT SERVO			1
COM9	MCKST(5)	SMD	NONE	0/1	SLF-TEST 5 TRANS POWER			1
COM9	MCKST(6)	SMD	NONE	0/1	SLF-TEST 6 RNG/RNG RTE			1
COM9	MCKST(7)	SMD	NONE	0/1	SLF-TEST 7 ANGLE TRACK			1
COM9	MCKST(8)	SMD	NONE	0/1	SLF-TEST 8 RADAR SENSIT.			1
COM9	MCKST(9)	SMD	NONE	0/1	SLF-TEST 9 QUIESCENT			1
COM9	MCKSW(1)	SMD	NONE	0/1	SLEW AZ SW FAIL			1
COM9	MCKSW(2)	SMD	NONE	0/1	SLEW EL SW FAIL			1
COM9	MCKSW(3)	SMD	NONE	0/1	SLEW RATE SW TO SLOW			1
COM9	MCKSW(4)	SMD	NONE	0/1	ANT MODE SW TO MANUAL			1
COM9	MCKSW(5)	SMD	NONE	0/1	SEARCH INITIATE FAIL			1
COM9	MCKSW(6)	SMD	NONE	0/1	PWR SW HALF POS ON			1

162

2402

1209

LOS NIGHT NET 001:11:59 RUN 3GNT 222:13:54:59 UP MALFUNCTION PAGE MALF  
NAVDP CNTRL PROPL SYSTM AUDIO

FS  EP84  FF  FE

.A000 .A001 .A002 .A003 .A004  
40F5 DISPLAYS

COMS	MALF ID	TYPE	UNITS	RANGE	DESCRIPTION	VALUE
COM9	MCK91F(15)	SMD	NONE	0/1	MALF RADAR ANGLE DATA GO	1
COM9	MCK91F(16)	SMD	NONE	0/1	SET RADAR ANGLE DATA GO	1
COM9	MCK91F(17)	SMD	NONE	0/1	MALF RADAR ANG RT OTA GO	1
COM9	MCK91F(18)	SMD	NONE	0/1	SET RADAR ANG RT OTA GO	1
COM9	MCK91F(19)	SMD	NONE	0/1	MALF RADAR SLF-TST PROG	1
COM9	MCK91F(20)	SMD	NONE	0/1	SET RADAR SLF-TST PROG	1
COM9	MCK91F(21)	SMD	NONE	0/1	MALF KU A/B SELECT	1
COM9	MCK91F(22)	SMD	NONE	0/1	SET KU A/B SELECT	1
COM9	MCK91F(23)	SMD	NONE	0/1	MALF RADAR THRHLD VAR/FX	1
COM9	MCK91F(24)	SMD	NONE	0/1	SET RADAR THRHLD VAR/FX	1
COM9	MCK91F(25)	SMD	NONE	0/1	MALF OBSCURATION OVERRIDE	1
COM9	MCK91F(26)	SMD	NONE	0/1	SET OBSCURATION OVERRIDE	1
COM9	MCK92F(1)	SMD	NONE	0/1	MALF SEARCH	1
COM9	MCK92F(2)	SMD	NONE	0/1	SET SEARCH	1
COM9	MCK92F(3)	SMD	NONE	0/1	MALF DETECT	1
COM9	MCK92F(4)	SMD	NONE	0/1	SET DETECT	1
COM9	MCK92F(5)	SMD	NONE	0/1	MALF TRACK	1
COM9	MCK92F(6)	SMD	NONE	0/1	SET TRACK	1
COM9	MCK92F(7)	SMD	NONE	0/1	MALF OPERATE	1
COM9	MCK92F(8)	SMD	NONE	0/1	SET OPERATE	1
COM9	MCK92F(9)	SMD	NONE	0/1	MALF TST STAT EA-1	1
COM9	MCK92F(10)	SMD	NONE	0/1	SET TST STAT EA-1	1
COM9	MCK92F(11)	SMD	NONE	0/1	MALF TST STAT DA	1
COM9	MCK92F(12)	SMD	NONE	0/1	SET TST STAT DA	1
COM9	MCK92F(13)	SMD	NONE	0/1	MALF TST STAT EA-2	1
COM9	MCK92F(14)	SMD	NONE	0/1	SET TST STAT EA-2	1
COM9	MCK92F(15)	SMD	NONE	0/1	MALF TST STAT SYSTEM	1
COM9	MCK92F(16)	SMD	NONE	0/1	SET TST STAT SYSTEM	1
COM9	MCK92F(17)	SMD	NONE	0/1	MALF TORS WEST	1
COM9	MCK92F(18)	SMD	NONE	0/1	SET TORS WEST	1
COM9	MCK92F(19)	SMD	NONE	0/1	MALF TORS EAST	1
COM9	MCK92F(20)	SMD	NONE	0/1	SET TORS EAST	1
COM9	MCK92F(21)	SMD	NONE	0/1	MALF FRWD LINK FRM SYN	1
COM9	MCK92F(22)	SMD	NONE	0/1	SET FRWD LINK FRM SYN	1
COM9	MCK92F(23)	SMD	NONE	0/1	MALF DATA PRESENT	1
COM9	MCK92F(24)	SMD	NONE	0/1	SET DATA PRESENT	1
COM9	MCK92F(25)	SMD	NONE	0/1	MALF SCAN WARNING LIMIT	1
COM9	MCK92F(26)	SMD	NONE	0/1	SET SCAN WARNING LIMIT	1
COM9	MCK92F(27)	SMD	NONE	0/1	MALF RANGE DATA GOOD	1
COM9	MCK92F(28)	SMD	NONE	0/1	SET RANGE DATA GOOD	1

163

# Section 8: TLM Malfunction Monitor Pages (A005-009)

Also available are pages A005-9, called "TLM MALF Monitor." These pages provide the SMS instructor the ability to manipulate "telemetry" problems. A few ground rules will follow, as well as a copy of the A005 page.

1. Never enter an MSID on any A005 series page that is currently being displayed on that or any *other* A005 series page. It will bring down the load every time. So, before entering an MSID, even just to view it (it does not have to be activated), page through the other A005 series of pages (A005 thru A009) to see if that MSID is being displayed.
2. Refer to item 1: The malf page does *not* act on the letter portion of an MSID, so it would read V58P0115A (Hyd main pmp press B) the *same* as V58P0115C (Hyd main pmp press B, MDM output) and the load would crash because the same MSID was entered twice.

Further, only MSIDs ending in an "A", such as C58P0115A, will be acted upon and have their TLM output changed when the malf is activated. To avoid getting into possible problems with A005 not reading alpha-numerics, only enter MSIDs ending in "A".

3. The pages come up slowly (12 to 20 seconds), and they always come up initialized to the "Offset" (bias) mode.

This also means if a malf was previously activated in the "static" mode and then the page was dropped, when the page is recalled the "S" will toggle to an "0" and the TLM output will change accordingly. It also means if you activate a malf in static mode and while you still have it displayed someone else calls up that same page on another display (interactive or not), your "S" malf will toggle to an "0" and the TLM output will change. Note - your *original* display will *not* change to an "0", but the "faulted" value *will* reflect the new mode.

4. To display an MSID, enter the entire 9 character MSID in the light blue interactive field just to the right of the green square; the unfaulted TLM output will be displayed under the unfaulted column. The offset or static value to be used is entered in the interactive field one line below the MSID. (The white 0 one below and one space to the right of the MSID does nothing except provide something for the cursor to display in the home position when no value is entered). In the past placing the cursor over the "0" or "S" under the green box and transmitting would cause the 0 or S to automatically toggle to the opposite state. Now you must use the "Enter"



function to enter the desired mode. Place the cursor over the green box and transmit to activate the malf; the MSID will backlight, the faulted value will appear in its column and the insertion time is displayed. To deactivate the malf, place the cursor over the green box again and transmit. The clear function does not work, and any MSIDs displayed are retained through a reset, even though activated malfs are deactivated. To clear all MSIDs requires a reload. The units column is currently not used.

- 165
5. A005 does *not* change the sensor; it alters the TLM data as it goes into the PCMMU. This means that onboard meters and equipment that use data that have *not* been through the PCMMU will not be affected by A005. However, if the GPCs use the data for an onboard comp, A005 will affect the comp since the GPCs get their data via the PCMMUs.

This can cause confusion when the data stream splits prior to going to the PCMMU, with one leg going to a meter or a controller, and the other to the PCMMU. Check out situations like this prior to an integrated sim.

1985

1985

AGE DAY NET 024:28:19 RUN SGMT 243:13:05:19

TLM HALF MONITOR AGE5  
PAGE 1/5

CLEAR

MEAS. ID	MEASUREMENT DESCRIPTION	INSERTION TIME(NET)	UNITS
0 HALF VALUE	UNFAULTED	FAULTED	
XXXXXXXXXX 0 XXXX.XXX X	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX YYYY.YYY	YYY:YY:YY.Y YYYY.YYY	YYYYYYYY
XXXXXXXXXX 0 XXXX.XXX X	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX YYYY.YYY	YYY:YY:YY.Y YYYY.YYY	YYYYYYYY
XXXXXXXXXX 0 XXXX.XXX X	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX YYYY.YYY	YYY:YY:YY.Y YYYY.YYY	YYYYYYYY
XXXXXXXXXX 0 XXXX.XXX X	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX YYYY.YYY	YYY:YY:YY.Y YYYY.YYY	YYYYYYYY
XXXXXXXXXX 0 XXXX.XXX X	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX YYYY.YYY	YYY:YY:YY.Y YYYY.YYY	YYYYYYYY

991

## Section 9: Look and Enters

Look and enter operations are used by the instructor to monitor model parameters and alter parameters to properly simulate a desired scenario. For example, dummy loads, ODDFDA 1, 2, 3, should be used whenever electrical malfunctions are to be implemented. Look and enters are modified by the operator at the request of the instructor. A complete list of look and enters would be too lengthy to present in this handbook; therefore, a short list has been provided on the following pages.

When you want to know the value of a particular "look and enter" (parameters such as propellant quantities, vehicle weight, or center of gravity, whose values can be changed by the SMS operator to initialize a training session), type the name of the parameter on the top line of the interactive screen and depress this key. The parameter's current value will then appear on the second line of the screen.

167

## Commonly Used Look and Enters

<u>MNEMONIC</u>	<u>DESCRIPTION</u>	<u>MAXIMUM</u>	<u>MINIMUM</u>
CKSNRP	Detection threshold for ku-band radar	24.8	15.0
CSTMR(K)	Power amp warmup time	180K R.P.	140
DDRCAC(K)	Resets ac load, watts		
DDRCAP(K)	Resets aft PCA load, watts		
DDRCFP(K)	Resets fwd PCA load, watts		
DDRCMN(K)	Reset main dc load, watts		
DDRCMP(K)	Reset mid PCA load, watts		
DFTSTK(K)	Stack temperature		
DGHTW(K)	H <sub>2</sub> quantity, cryo tank	92.0	0.0
DGOTW(K)	O <sub>2</sub> quantity, cryo tank	778.5	0.0
DGOTP(K)	O <sub>2</sub> tank pressure	1015	
DGHTP(K)	H <sub>2</sub> tank pressure		
DFPH20(K)	Partial pressure of H <sub>2</sub> O in stack, psia	8.0	
DFUIMO(K)	Stk oxy impurity buildup value	1.5	0.1
DFUIMH(K)	Stk hyd impurity buildup value	1.5	0.1
EACONA(K)	AV bay smoke alarm	15	0

168

<u>MNEMONIC</u>	<u>DESCRIPTION</u>	<u>MAXIMUM</u>	<u>MINIMUM</u>
EACONL	Left flight deck smoke alarm	15	0
EACONM	Middeck smoke alarm	15	0
EALOAD(K)	Total avionics bay heat load	none	
EAOHT(K)	Total av bay heat loads, btu/sec	3.0	-3.0
EAQTYK	H <sub>2</sub> O Quantity (K = 1-4 for TKS A-D)	168.3	3.3
EAQTYW	Waste tank H <sub>2</sub> O quantity		
EAXMN2	N <sub>2</sub> pressure for H <sub>2</sub> O tanks		
EFDHLD(K)	AV bay temperatures	none	+4.0
EFKFA(K)	Freon loop accum qty		
EFKGA(K)	Freon loop accum GN2	1.0	0.0
EFKNH3(K)	NH <sub>3</sub> tank qty	48	0.0
EFQAFT(K)	Heat loads		
EFQEPE	Elec pwr equipm generated heat		
EGALLB	Airlock depress & repress		
EGNTLB	N <sub>2</sub> tank qty		
EGNTTK(K)	N <sub>2</sub> tank gas temp; degrees F.		
EGOTLB	Aux O <sub>2</sub> tank qty	66	0.0

169

<u>MNEMONIC</u>	<u>DESCRIPTION</u>	<u>MAXIMUM</u>	<u>MINIMUM</u>
EGTNTW(K)	N <sub>2</sub> tank wall temp; degrees F.		
EPASS	Cab HX bypass fraction		
EPCABT	Cabin temperature		
EPCDLB	Cabin CO <sub>2</sub> mass		
EPLQBF	Percent C/S light heat load	1.0	0.0
EPLULB(K)	Uncontaminated LIOH (K = 1, 2)	14.0	0
EPN2LB	Cabin N <sub>2</sub> mass		
EPO2LB	Cabin O <sub>2</sub> mass		
EPTIME(K)	Time on LIOH canister (K = 1, 2)	43,200	0
EPTMID	Middeck air temp	100	40
ERBPOS(K)	FCL1 byp vlv pos, rad (K = 1, 2)	1.0	0.0
ERPOS(K)	FCL <sub>2</sub> flow cntl vlv pos (K = 1, 2)	1.0	0.0
EWACQT(K)	H <sub>2</sub> O coolant loop accum qty (K = 1, 2)	1.81	0.0
EWBYVL(K)	Bypass valve position, percent (K = 1, 2)	1.0	0.0
EWLOAD(K)	Total AV bay cold plate heat LD, btu/sec	3.0	-3.0
FMWETD	E.T. dry weight		
FTTIME	Time constant, freeze only	no limit	no limit

170

<u>MNEMONIC</u>	<u>DESCRIPTION</u>	<u>MAXIMUM</u>	<u>MINIMUM</u>
HAFLT(K)	Fuel line temp	100°	40°
HAFPCT(K)	Fuel pump case temp	90°	80°
HAFTKM(K)	APU fuel TK qty, lbm (K = 1, 2, 3)	350	
HAGBOT(K)	Lube oil temp out of gear box	90°	80°
HAGGT(K)	Gas generator chamber temp	500°	250°
HAHEM(K)	APU fuel TK HE qty, lbm (K = 1, 2, 3)	1.889	
HALOOT(K)	Lube oil outlet temp	100°	50°
HALORT(K)	Lube oil return temp	100°	50°
HAMTMN(K)	APU fuel pump H <sub>2</sub> O TK, GN2 leak, lbm/sec	20.0	0.0
HANTMA	APU fuel pump PRI H <sub>2</sub> O TK, GN2 mass, lbm	.2218	0.0
HANTMB	APU fuel pump sec H <sub>2</sub> O TK, GN2 mass, lbm	.2218	0.0
HAWPS(K)	APU gas gen H <sub>2</sub> O flow, lbm/sec	.005742	0.0
HAWTTA	APU fuel pump PRI H <sub>2</sub> O TK, temp deg F	160	0.0
HAWTTB	APU fuel pump sec H <sub>2</sub> O TK, temp deg F	160	0.0
HATKOT(K)	Fuel tank outlet temp	100°	40°
HBDPS(K)	PBD position, RAD	3.14159	0
HPLSYS(K)	Hyd res, FHS sys oil mas, lbm	205	1.0

171

<u>MNEMONIC</u>	<u>DESCRIPTION</u>	<u>MAXIMUM</u>	<u>MINIMUM</u>
HPLACG(K)	Hyd accum gas (GN2), lbm	.43565	
HPLGTK(K)	Hyd H <sub>2</sub> O boiler (GN2), lbm	.778095	
HPLWTW(K)	Hyd H <sub>2</sub> O boiler (H <sub>2</sub> O), lbm	.140	
HPTWTW(3)	Wat BLR wat TNK wat temp		
HRDT2S(K)	Limit control of IECM RTL envelope	.16 ft.	
sJPRMIC(K)	RCS manf isol close switch	1	0
JPRMIN(K)	RCS manf isol open switch	1	0
KDGSEL	Select the # of functional cryo tanks	4	1
KEAVNT(I)	Vent door positions:		

(Note: vent doors are commanded by GPC's;  
exercise caution in redefining these values)

17a

<u>(I)</u>	<u>VENT GROUP</u>	<u>VALUE VS. VENT POSITION</u>	<u>PERMISSIBLE VALUES</u>
1	LH - 1,2		0, 4, 8
2	LH - 8,9		0, 4, 8
3	LH - 3		0, 8
4	LH - 4,7		0, 8
5	LH - 5	0 = close	0, 8
6	LH - 6	3 = purge 1 (10°)	0, 3, 5, 8
7	RH - 1,2	4 = purge 1 (10° - 20°)	0, 4, 8
8	RH - 8,9	5 - purge 2 (25°)	0, 4, 8
9	RH - 3	8 = open	0, 8



<u>MNEMONIC</u>	<u>DESCRIPTION</u>	<u>MAXIMUM</u>	<u>MINIMUM</u>
(I)	<u>VENT GROUP</u> <u>VALUE VS. VENT POSITION</u>	<u>PERMISSIBLE VALUES</u>	
10	RH - 4, 7	0, 8	
11	RH - 5	0, 8	
12	RH - 6	0, 3, 5, 8	
KEPMEN	Sets the no. of crewmembers on board to control the amount of oxygen used, etc.	1.7	
KMPRHA(3)	RCS malfunction	+ 1	- 1
KOCGTS(K)	Payload recorder speeds	120	6
KOSSBF(1)	Constants: Corrects the coefficient in the net body flap command equation	Value =	- 3
KOSSBF(2)		"	+ 2
KOSSBF(3)		"	- 2
KOSSBF(4)		"	+ 3
KOSSBF(5)		"	- 3
KOSSBF(6)		"	+ 2
KPCEWM(K)	Engine status word failure mask		
KWLT(3)	Reflects proper OCE timer operation	30	1
KWLT(5)	Slow door opening mechanism for OCE	24	
KWLT(8)	Simulates additional SMIRR filter wheel spin-up times	34	
KWLT(9)	Simulates additional SMIRR detector cool-down times	120	
KWLT(10)	Simulates slow SMIRR cover operation	84	

173

<u>MNEMONIC</u>	<u>DESCRIPTION</u>	<u>MAXIMUM</u>	<u>MINIMUM</u>
KWLT(16)	Simulates a failure to SMIRR auto data-take timer	1800	
KWLT(18)	Reflects the 30 minute maps warmup time	Value = 3600	
KWLTA(1)	OEX RCDR output adjustment		
KWLTL(1)	OEX RCDR tape controller limit		
LCWFFY(K)	Annun light failed on table (malfunction <u>MCWANO</u> must be entered first)		
LCWNF&(K)	Annun light failed off table (malfunction <u>MCWANF</u> must be entered first)		
LDLGS1(K)	GSE discrete for umbilical disconnect		0
LEF001	Lift off boolean; used to turn on/off GSE cooling, postlanding	1 = off	0 = on
LHCTLM(8)	MCC downlink & ALC - peak, (causes alert tone for CCTV camera overtemp)	1	0
MCWINN	Channel inhibit switch fail on	1	0
MCFMBH(K)	Payload recorder malfunctions	1	0
MCFMBL(K)	Payload recorder malfunctions	1	0
MEALDK	Flight deck fire, left avionics	1	0
MEAMDK	Middeck fire	1	0

174

175

<u>MNEMONIC</u>	<u>DESCRIPTION</u>	<u>MAXIMUM</u>	<u>MINIMUM</u>
MPSHFL(K)	SRB APU/HYD FL LK		
MSFTBU	MDM OMS BK-UP ACT CMD fail		
MSFTPR	MDM OMS PRI ACT CMD fail		
OCWINP(K)	Analog input failure constant: C/W analog channel		
ODFIMH	H <sub>2</sub> buildup rate		
ODFIMO	O <sub>2</sub> buildup rate		
ODDACD(K)	AC dummy load, watts		
ODDAPA(K)	Aft PCA dummy load, watts		
ODDAP1(K)	Aft PCA line resistance, watts		
ODDBSA(K)	MN DC dummy load, watts		
ODDFPDA(K)	Fwd PCA dummy load, watts		
ODDFTH1	Constant: sustaining HTR off temp	Value = 400	
ODDFTH2	Constant: sustaining HTR on temp	Value = 350	
ODDFP1(K)	Fwd PCA line resistance, watts		
ODDLRN(K)	FC to MN bus line resistance, watts		
ODDMPA(K)	MN PCA dummy load, watts		
ODDMP1(K)	MN bus to mid PCA		

176

<u>MNEMONIC</u>	<u>DESCRIPTION</u>	<u>MAXIMUM</u>	<u>MINIMUM</u>
OEATKE	H <sub>2</sub> O tank equalization		
OEFD(K)	Freon loop N <sub>2</sub> leak rate	0.001	1E-6
OEFDL	Topping evap duct heater fail	622°	460°R
OEFLDH	Duct htr failure for topping evap	715°	460°R
OEFTL	Top evap NOZ htr turn on temp	505	500
OEFWGS	Flow rate of GSE freon, lb/sec	1.35	.8
EOPACP	Cabin temp stabiliation	0.27	
OEPFAL	Cabin fan A load (watts) on ac bus	3000	0
OEPFBL	Cabin fan B load (watts) on AC bus	13000	0
OEPRV2	Cab relief valve flow const 2	Value = 0.875	
OERFCF(K)	Fast rate, percent, rad flow cont vlv <u>set lerres - 1 frist</u>	.001875	0.0
OERFCS(K)	Slow rate, percent, rad flow cont vlv <u>set lerres - 1 first</u>	.0002	0.0
OHAGTL(K)	Gas generator thermostat low	299°	
OHATLH	APU thermostat control valve shift	90°	55°
OHATLL	Hetaer on APU lube oil line	65°	0°
OHPACW	Circ pump windings		

177

<u>MNEMONIC</u>	<u>DESCRIPTION</u>	<u>MAXIMUM</u>	<u>MINIMUM</u>
OHPBCA	Circ pump case body temp		
OHPBCH	Circ pump case body heating body factor		
OHPCE	Circ pump EFF		
OHPCPH	Circ pump power		
OHPGPS	Circ pump stalled delta pressure		
OHPCWH	Circ pump stalled windings temp increase		
OHPHSV	H <sub>2</sub> O boiler thermostat CTL vlv shift	90°	0°
OHPHWB	H <sub>2</sub> O boiler thermostat clt vlv shift	90°	50°
OHPPCD	Circ pump mon low press out		
OHPCH	Circ pump nom high press out		
OHPPCP	Circ pump power		
OHPRCW	Circ pump windings temp		
OHPRHS(K)	RSB heating thermostat high	200	
OHPWCH	Circ pump nom high flow rate		
OHPWCL	Circ pump nom low flow rate		
OPMACC(K)	Chamber coolant vlv pos	1.0	0
OMPAFP(K)	Eng fuel pre O <sub>2</sub> vlv pos	1.0	0

<u>MNEMONIC</u>	<u>DESCRIPTION</u>	<u>MAXIMUM</u>	<u>MINIMUM</u>
OPMAMF(K)	Main fuel vlv pos	1.0	0
OPMAOP(K)	OX preburner OX vlv pos	1.0	0
OPMHAC	Residual leak flow constant		
OPMHRB(K)	MPS ISP matching		
OPMHRV(K)	Eng He relief vlv flow rate	.005	0.0
OPMHST(K)	MPSHE reg press shift	1000.0	0.0
OPMIAW(K)	Efficiency nozzle leak		
OPMOTO	Eng high OX turb efficiency malf degrad factor; units = 0.01 × P.C.	4.0	0.1
OPMWRB(K)	MPS performance	30.033505	N/A
OPMXII	Driver, eng start, throttle setting factor. Units: 0.01 × PC	1.0015938	N/A
OPOR2T	ARCS heater efficiency		
OPOC2T	ARCS heater efficiency		
OPOF3T	FRCS heater efficiency		
OSVALM(K)	Used to reset OMS TVC hardstops		
PCMDP1(K)	P.C. sensors, malf bias, psia	+ 300	- 300
PCMDP2(K)			

178

<u>MNEMONIC</u>	<u>DESCRIPTION</u>	<u>MAXIMUM</u>	<u>MINIMUM</u>
PCMDP3(K)			
PCMDP4(K)			
PMLHTK(K) K = 1-4	MPS & PNEU He tank mass, lbm	K = 1-3----3.0 K = 4-----10.8	0.0 0.0
PMLOTK** PMLPTK(1)** PMLPTR(1)**	Eng. E.T. OX tank mass, lbm E.T. prop. tank mass, OX E.T. nominal prop. mass, OX		Note: these 3 terms must all be set to the same value
PMLFTK** PMLPTK(2)** PMLPTR(2)**	Eng. E.T. FU tank mass, lbm E.T. prop. tank mass, FU E.T. nominal prop. mass, FU		Note: these 3 therns must all be set to the same value.
	(See also FMWETD**)		
	<u>**These terms may only be set in freeze with D.C.R. selected prior to reset</u>		
179 PMNHTK(K)	MPS He supply tank leak (IN*LBM**.5)	1.0	0
POHETW(K)*	OMS He bottle mass, lbm		
POHFUW(K)*	OMS mass fuel ullage, lbm		
POHHFW(K)*	Fuel ullage He mass, lbm		
POHHOW(K)*	OX ullage He mass, lbm		
POHOXW(K)*	Mass OX ullage, lbm		
PONROW(K)*	N <sub>2</sub> mass in upper manifold, lbm		
PONVOW(K)*	N <sub>32</sub> mass in lower manifold, lbm	0.0177	0.0

081

<u>MNEMONIC</u>	<u>DESCRIPTION</u>	<u>MAXIMUM</u>	<u>MINIMUM</u>
POTFAR(K)	FU aft register contents, percent		
POTFTR(K)*	FU total register contents, percent		
POTFUW(K)*	Fuel mass, lbm		
POTN2W(K)*	N <sub>2</sub> mass in N <sub>2</sub> bottle, lbs		
POTOTR(K)*	OX total register contents, percent		
POTOXW(K)	OX mass, lbs		
PRHETM(K)	RCS He mass, OX side		
K = 1-6	(1) FWD	4.16	0.0
	(2) LT	4.16	0
	(3) RT	4.16	0
	RCS HE mass, FU side		
	(4) FWD	4.16	0
	(5) LT	4.16	0
	(6) FT	4.16	0
PRHEUM(K)	RCS He ullage mass, OX TK		
K = 1-6	(1) FWD	4.16	0
	(2) LT	4.16	0
	(3) RT	4.16	0
	RCS HE ullage mass, FU TK		
	(4) FWD	4.16	0
	(5) LT	4.16	0
	(6) FT	4.16	0
PRTKM(K)	RCS qty, OX, lbm		
K = 1-6	(1) FWD	1526.0	0
	(2) LT	1547.0	0
	(3) RT	1547.0	0

\*For all POSSSS, K = 1 for OMS, K + 2 for right



181

<u>MNEMONIC</u>	<u>DESCRIPTION</u>	<u>MAXIMUM</u>	<u>MINIMUM</u>
	RCS qty, FU, lbm		
	(4) FWD	951.0	0
	(5) LT	968.0	0
	(6) FT	968.0	0
PRMFMW(K)	RCS FU manif line LK, lbm/sec	1.0	0.0
PRMHEP(K)	RCS He TK press sensor bias, percent	0.0	1.0
PRMHET(K)	RCS He TK temp sensor bias, percent	0.0	1.0
PRMHTL(K)	RCS He TK leakrate, percent		
PRMTAD(K)	RCS jet thrust degradation, percent	0.0	1.0
PRMTKL(K)	RCS prop tank leak rate lbm/sec	0.4	0.0
PRM2AP(K)	RCS He secondary reg-lega, fails to pressure, psia	300	0.0
PRM2BI(K)	RCS He secondary reg-legb, fails to pressure, psia	3000	0.0
PRTHRT(K)	RCS injector temperature	Value = 20	
WLRIN(3)	Payload bay malf enable	Value = 85.2	
WMACM	Pallet accumulator quantity loading at K.S.C., lbm		
WMDPCS	OFT pallet cold plate delta P		
PWRSET(K)	Setting FSS mechanisms to proper positions	100	0

181

CKSNRP	Detection threshold for ku band radar	24.8	15.0
CSTMR(K)	Power amp warmup time	180K R.P.	140
DDRCAC(K)	Resets ac load, watts		
DDRCAP(K)	Resets aft PCA load, watts		
DDRCFP(K)	Resets fwd PCA laod, watts		
DDRCMN(K)	Reset main dc load, watts		
DDRCMP(K)	Reset mid PCA load, watts		
DFTSTK(K)	Stack temperature		
DGHTW(K)	H <sub>2</sub> quantity, cryo tank	92.0	0.0
DGOTW(K)	O <sub>2</sub> quantity, cryo tank	778.5	0.0
DGOTP(K)	O <sub>2</sub> tank pressure	1015	
DGHTP(K)	H <sub>2</sub> tank pressure		
DFPH20(K)	Partial pressure of H <sub>2</sub> O in stack, psia	8.0	
DFUIMO(K)	Stk oxy impurity buildup value	1.5	0.1
DFUIMH(K)	Stk hyd impurity buildup value	1.5	0.1
EACONA(K)	AV bay smoke alarm	15	0

<u>MNEMONIC</u>	<u>DESCRIPTION</u>	<u>MAXIMUM</u>	<u>MINIMUM</u>
EACONL	Left flight deck smoke alarm	15	0
EACONM	Middeck smoke alarm	15	0
EALOAD(K)	Total avionics bay heat load	none	
EAOHT(K)	Total av bay heat loads, btu/sec	3.0	- 3.0
EAQTYK	H <sub>2</sub> O Quantity (K = 1-4 for TKS A-D)	168.3	3.3
EAQTYW	Waste tank H <sub>2</sub> O quantity		
EAXMN2	N <sub>2</sub> pressure for H <sub>2</sub> O tanks		
EFDHLD(K)	AV bay temperatures	none	+ 4.0
EFKFA(K)	Freon loop accum qty		
EFKGA(K)	Freon loop accum GN2	1.0	0.0
EKFNH3(K)	NH <sub>3</sub> tank qty	48	0.0
EFQAFT(K)	Heat loads		
EFQEPE	Elec pwr equipm generated heat		
EGALLB	Airlock depress & repress		
EGNTLB	N <sub>2</sub> tank qty		
EGNTTK(K)	N <sub>2</sub> tank gas temp; degrees F.		
EGOTLB	Aux O <sub>2</sub> tank qty	66	0.0

183

<u>MNEMONIC</u>	<u>DESCRIPTION</u>	<u>MAXIMUM</u>	<u>MINIMUM</u>
EGTNTW(K)	N <sub>2</sub> tank wall temp; degrees F.		
EPASS	Cab HX bypass fraction		
EPCABT	Cabin temperature		
EPCDLB	Cabin CO <sub>2</sub> mass		
EPLQBF	Percent C/S light heat load	1.0	0.0
EPLULB(K)	Uncontaminated LIOH (K = 1, 2)	14.0	0
EPN2LB	Cabin N <sub>2</sub> mass		
EPO2LB	Cabin O <sub>2</sub> mass		
EPTIME(K)	Time on LIOH canister (K = 1, 2)	43,200	0
EPTMID	Middeck air temp	100	40
ERBPOS(K)	FCL1 byp vlv pos, rad (K = 1, 2)	1.0	0.0
ERPOS(K)	FCL <sub>2</sub> flow cntl vlv pos (K = 1, 2)	1.0	0.0
EWACQT(K)	H <sub>2</sub> O coolant loop accum qty (K = 1, 2)	1.81	0.0
EWBYVL(K)	Bypass valve position, percent (K = 1, 2)	1.0	0.0
EWLOAD(K)	Total AV bay cold plate heat LD, btu/sec	3.0	- 3.0
FMWETD	E.T. dry weight		
FTTIME	Time constant, freeze only	no limit	no limit

181

181  
55

<u>MNEMONIC</u>	<u>DESCRIPTION</u>	<u>MAXIMUM</u>	<u>MINIMUM</u>
HAFLT(K)	Fuel line temp	100°	40°
HAFPCT(K)	Fuel pump case temp	90°	80°
HAFTKM(K)	APU fuel TK qty, lbm (K = 1, 2, 3)	350	
HAGBOT(K)	Lube oil temp out of gear box	90°	80°
HAGGT(K)	Gas generator chamber temp	500°	250°
HAHEM(K)	APU fuel TK HE qty, lbm (K = 1, 2, 3)	1.889	
HALOOT(K)	Lube oil outlet temp	100°	50°
HALORT(K)	Lube oil return temp	100°	50°
HAMTMN(K)	APU fuel pump H <sub>2</sub> O TK, GN2 leak, lbm/sec	20.0	0.0
HANTMA	APU fuel pump PRI H <sub>2</sub> O TK, GN2 mass, lbm	.2218	0.0
HANTMB	APU fuel pump sec H <sub>2</sub> O TK, GN2 mass, lbm	.2218	0.0
HAWPS(K)	APU gas gen H <sub>2</sub> O flow, lbm/sec	.005742	0.0
HAWTTA	APU fuel pump PRI H <sub>2</sub> O TK, temp deg F	160	0.0
HAWTTB	APU fuel pump sec H <sub>2</sub> O TK, temp deg F	160	0.0
HATKOT(K)	Fuel tank outlet temp	100°	40°
HBDPS(K)	PBD position, RAD	3.14159	0
HPLSYS(K)	Hyd res, FHS sys oil mas, lbm	205	1.0

<u>MNEMONIC</u>	<u>DESCRIPTION</u>	<u>MAXIMUM</u>	<u>MINIMUM</u>
HPLACG(K)	Hyd accum gas (GN2), lbm	.43565	
HPLGTK(K)	Hyd H <sub>2</sub> O boiler (GN2), lbm	.778095	
HPLWTW(K)	Hyd H <sub>2</sub> O boiler (H <sub>2</sub> O), lbm	.140	
HPTWTW(3)	Wat BLR wat TNK wat temp		
HRDT2S(K)	Limit control of IECM RTL envelope	.16 ft.	
sJPRMIC(K)	RCS manf isol close switch	1	0
JPRMIN(K)	RCS manf isol open switch	1	0
KDGSEL	Select the # of functional cryo tanks	4	1
KEAVNT(I)	Vent door positions:		

(Note: vent doors are commanded by GPC's;  
exercise caution in redefining these values)

<u>(I)</u>	<u>VENT GROUP</u>	<u>VALUE VS. VENT POSITION</u>	<u>PERMISSIBLE VALUES</u>
1	LH - 1,2		0, 4, 8
2	LH - 8,9		0, 4, 8
3	LH - 3		0, 8
4	LH - 4, 7		0, 8
5	LH - 5	0 = close	0, 8
6	LH - 6	3 = purge 1 (10°)	0, 3, 5, 8
7	RH - 1, 2	4 = purge 1 (10° - 20°)	0, 4, 8
8	RH - 8, 9	5 - purge 2 (25°)	0, 4, 8
9	RH - 3	8 = open	0, 8

18C

187

<u>MNEMONIC</u>	<u>DESCRIPTION</u>	<u>MAXIMUM</u>	<u>MINIMUM</u>
(I)	<u>VENT GROUP</u> <u>VALUE VS. VENT POSITION</u>	<u>PERMISSIBLE VALUES</u>	
10	RH - 4, 7	0, 8	
11	RH - 5	0, 8	
12	RH - 6	0, 3, 5, 8	
KEPMEN	Sets the no. of crewmembers on board to control the amount of oxygen used, etc.	1.7	
KMPRHA(3)	RCS malfunction	+ 1	- 1
KOCGTS(K)	Payload recorder speeds	120	6
KOSSBF(1)	Constants: Corrects the coefficient in the net body flap command equation	Value =	- 3
KOSSBF(2)		"	+ 2
KOSSBF(3)		"	- 2
KOSSBF(4)		"	+ 3
KOSSBF(5)		"	- 3
KOSSBF(6)		"	+ 2
KPCEWM(K)	Engine status word failure mask		
KWLT(3)	Reflects proper OCE timer operation	30	1
KWLT(5)	Slow door opening mechanism for OCE	24	
KWLT(8)	Simulates additional SMIRR filter wheel spin-up times	34	
KWLT(9)	Simulates additional SMIRR detector cool-down times	120	
KWLT(10)	Simulates slow SMIRR cover operation	84	

<u>MNEMONIC</u>	<u>DESCRIPTION</u>	<u>MAXIMUM</u>	<u>MINIMUM</u>
KWLT(16)	Simulates a failure to SMIRR auto data-take timer	1800	
KWLT(18)	Reflects the 30 minute maps warmup time	Value = 3600	
KWLTA(1)	OEX RCDR output adjustment		
KWLTL(1)	OEX RCDR tape controller limit		
LCWFFY(K)	Annun light failed on table (malf <u>MCWANO</u> must be entered first)		
LCWNF&(K)	Annun light failed off table (malf <u>MCWANF</u> must be entered first)		
LDLGS1(K)	GSE discrete for umbilical disconnect		0
LEF001	Lift off boolean; used to turn on/off GSE cooling, postlanding	1 = off	0 = on
LHCTLM(8)	MCC downlink & ALC - peak, (causes alert tone for CCTV camera overtemp)	1	0
MCWINN	Channel inhibit switch fail on	1	0
MCFMBH(K)	Payload recorder malfs	1	0
MCFMBL(K)	Payload recorder amlfs	1	0
MEALDK	Flight deck fire, left avionics	1	0
MEAMDK	Middeck fire	1	0

281



<u>MNEMONIC</u>	<u>DESCRIPTION</u>	<u>MAXIMUM</u>	<u>MINIMUM</u>
MPSHFL(K)	SRB APU/HYD FL LK		
MSFTBU	MDM OMS BK-UP ACT CMD fail		
MSFTPR	MDM OMS PRI ACT CMD fail		
OCWINP(K)	Analog input failure constant: C/W analog channel		
ODFIMH	H <sub>2</sub> buildup rate		
ODFIMO	O <sub>2</sub> buildup rate		
ODDACD(K)	AC dummy load, watts		
ODDAPA(K)	Aft PCA dummy load, watts		
ODDAP1(K)	Aft PCA line resistance, watts		
ODDBSA(K)	MN DC dummy load, watts		
ODDFPDA(K)	Fwd PCA dummy load, watts		
ODDFTH1	Constant: sustaining HTR off temp	Value = 400	
ODDFTH2	Constant: sustaining HTR on temp	Value = 350	
ODDFP1(K)	Fwd PCA line resistance, watts		
ODDLRN(K)	FC to MN bus line resistance, watts		
ODDMPA(K)	MN PCA dummy load, watts		
ODDMP1(K)	MN bus to mid PCA		

189

190  
061

<u>MNEMONIC</u>	<u>DESCRIPTION</u>	<u>MAXIMUM</u>	<u>MINIMUM</u>
OEATKE	H <sub>2</sub> O tank equalization		
OEFDK(K)	Freon loop N <sub>2</sub> leak rate	0.001	1E-6
OEFDTL	Topping evap duct heater fail	622°	460°R
OEFLDH	Duct htr failure for topping evap	715°	460°R
OEFNLT	Top evap NOZ htr turn on temp	505	500
OEFWGS	Flow rate of GSE freon, lb/sec	1.35	.8
EOPACP	Cabin temp stabiliation	0.27	
OEPFAL	Cabin fan A load (watts) on ac bus	3000	0
OEPFBL	Cabin fan B load (watts) on AC bus	13000	0
OEPRV2	Cab relief value flow const 2	Value = 0.875	
OERFCF(K)	Fast rate, percent, rad flow cont vlv <u>set lerres - 1 frist</u>	.001875	0.0
OERFCS(K)	Slow rate, percent, rad flow cont vlv <u>set lerres - 1 first</u>	.0002	0.0
OHAGTL(K)	Gas generator thermostat low	299°	
OHATLH	APU thermostat control valve shift	90°	55°
OHATLL	Hetaer on APU lube oil line	65°	0°
OHACW	Circ pump windings		

<u>MNEMONIC</u>	<u>DESCRIPTION</u>	<u>MAXIMUM</u>	<u>MINIMUM</u>
OHPBCA	Circ pump case body temp		
OHPBCH	Circ pump case body heating body factor		
OHPCE	Circ pump EFF		
OHPCPH	Circ pump power		
OHPPCS	Circ pump stalled delta pressure		
OHPCWH	Circ pump stalled windings temp increase		
OHPHSV	H <sub>2</sub> O boiler thermostat CTL vlv shift	90°	0°
OHPHWB	H <sub>2</sub> O Boiler thermostat clt vlv shift	90°	50°
191 OHPPCD	Circ pump mon low press out		
OHPCH	Circ pump nom high press out		
OHPPCP	Circ pump power		
OHPRCW	Circ pump windings temp		
OHPRHS(K)	RSB heating thermostat high	200	
OHPWCH	Circ pump nom high flow rate		
OHPWCL	Circ pump nom low flow rate		

# Appendix A: Abbreviations and Acronyms

A	aft	FB	fixed base
AB	abnormal termination	FC	fuel cell
APU	auxiliary power unit	FCP	fuel cell power
APU/HYD	auxiliary power unit/hydraulic	FCR	Flight Control Room
ATCS	active thermal control subsystem	FES	flash evaporator system
ATMOS	atmosphere	FOR	forward
BLR	boiler	GMT	Greenwich mean time
BYP	bypass	GPC	general purpose computer
C&W	caution and warning	HPS	hydraulic power system
C/W	caution and warning	HYD	hydraulic
CLSD	closed	HX	heat exchanger
COMM	communications	INST	instrumentation
CNTRL	controller	L/E	look and enters
CRT	cathode ray tube	LNDG	landing
CRYO	cryogenic	L/O	lift off
DDL	data downlink	Malf	malfunction
DI	discrete input	MB	motion base
DIG	digital image generation	MDM	multiplexer/demultiplexer
D/O	deorbit	MECH	mechanical
ECLSS	environmental control and life support systems	MET	mission elapsed time
EECOM	electrical, environmental, and communications	MN	main
EI	entry interface	MSID	measurement stimulation identification
EPS	electrical power system	NSP	network signal processor
ET	external tank	NSS	network simulation system
F	forward	NWS	nose wheel steering

OJT	on job training
PANL	panel
PCMMU	pulse code modulation master unit
PIR/DR	problem incident report/discrepancy report
PLBD	payload bay door
PLT	pilot
PSO	parallel switch override
RADS	radiators
RES	reserve
RMU	remote manipulator system, mechanical, and upperstage
SCA	simulation control area
SM	systems management
SMS	Shuttle Mission Simulator
SSR	simulation software requirement
Temp	temperature
TIG	time to ignition
TKS	tanks
TLM	telemetry
TMBU	table maintenance block update
TRNS	transition
UA	microampere
vlv	valve

193  
END