

CRT Reference Summary

**Space Shuttle Orbiter
Displays and Controls**

OI-25

**Contract NAS9-19000
IRD No. SE-1778T9B
WBS 2.1.1.3**

OCTOBER 1995

STS 85-0260K

 **Rockwell** *Aerospace*

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This CRT Reference Summary is for information only. It provides the CRT displays documented in the Level C Functional Subsystem Software Requirements Display and Controls Specification, STS 83-0020J dated June 16, 1994, effectivity OI-25 and subs. CRT SM mission reconfigurable displays documented in JSC-19590-XXX Level C Flight Software Requirements document (where XXX represents the number of the specific OPS Flight).

This document reflects the incorporation of approved CRs listed in the Oct 1995 CR Implementation Baselines through OI-25. For detailed information, reference the above documents. For information pertaining to distribution, contact Jim Cox at (310) 922-5128 or Jeff Knight at (310) 922-0769.

DISPLAY LOCATION

To aid in locating a display, two tables of contents are provide. Table A lists displays in alphabetical order. Table B lists displays according to subsystems and in descending order to hierarchy OPS, SPEC and DISP. In addition, three IPL-related displays are listed separately under "Special Display", and four HUD displays are listed under "Head-Up Displays".

Table of Contents – A

ALPHABETICAL

Display	PFS	BFS	GNC							SM			PL 9	Page
			0	1	2	3	6	8	9	0	2	4		
ACTUATOR CONTROL	X							X						26A
ANTENNA	X									X	X			10A
APU/ENVIRON THERMAL	X									X				14D
APU/HYDRAULIC	X									X				14B
BFS MEMORY		X	X	X	X	X			X					28A
BFS OVERRIDE		X	X	X	X									30D
BUS/BTU STATUS	X							X				X		25B
COMM/RCDR	X									X				13B
CONTROLLERS (RM)	X						X							23B
CONTROLS	X		X	X	X									8A
CRYO SYSTEM	X									X				12D
DAP CONFIGURATION	X			X										5A
DEU STAND-ALONE S/T														26C
DOCKING STATUS	X									X				15D
DPS UTILITY	X		X	X	X	X	X	X	X	X	X	X		18D
ELECTRIC	X									X				12C
ENTRY TRAJ 1	X	X		X										2D,29A
ENTRY TRAJ 2	X	X		X										3A,29B
ENTRY TRAJ 3	X	X		X										3B,29C
ENTRY TRAJ 4	X	X		X										3C,29D
ENTRY TRAJ 5	X	X		X										3D,30A
ENVIRONMENT	X									X				12B
EVA/MMU/FSS	X									X	X			13C
FAULT	X	X	X	X	X	X	X	X	X	X	X	X		19B,31A
FCS/DED DIS C/O	X						X							22A
FUEL CELLS	X									X				13A
GNC SYS SUMM 1	X	X	X	X	X	X								8B,31B
GNC SYS SUMM 2	X	X	X	X	X									8C
GND IMU CNTL/MONITOR	X							X						24D
GPC/BTU INTERFACE	X							X						25D
GPC/BUS STATUS	X		X	X	X	X	X	X	X	X	X	X		19C
GPC MEMORY	X		X	X	X	X	X	X	X	X	X	X		18C
GPS STATUS		X	X	X										32B
GTS DISPLAY	X							X				X		24A
HORIZ SIT (IN-RIGHT)	X		X	X										6D
HORIZ SIT (IN-LEFT)	X		X	X										7A
HORIZ SIT (OUT-RIGHT)	X		X	X										7B
HORIZ SIT (OUT-LEFT)	X		X	X										7C
HORIZONTAL SIT		X	X	X										30C
HUD	X													34A,35A
HYDRAULIC THERMAL	X									X				14C
IMU ALIGN	X		X	X										5B
MANUAL CONTROLS	X							X						26B
MASS MEMORY R/W	X									X	X	X		22B
MENU NO.1 XXXXIPL														18A
MENU NO. 2 GPC IPL														18B
NWS CHECK	X						X							23D
ORBIT TARGETING	X		X											6C
OVERRIDE	X		X	X										7D
PCMMU/PL COMM	X							X		X	X			11A
PCS CONTROL	X									X	X			11C
PDRS CONTROL	X									X	X			11D
PDRS OVERRIDE	X									X	X			12A
PDRS FAULTS	X									X				15B
PDRS STATUS	X									X				16B
PL BAY DOORS	X	X							X	X	X			10B
PL RETENTION	X									X	X			15C
PRPLT THERMAL	X									X				15A
RCS	X		X	X	X	X	X							5D
RCS/RGA/ADTA TEST (P/F)	X							X						24C
RGA/ADTA/RCS ON-ORBIT	X						X							22D
REL NAV	X		X											6B
RM ORBIT	X		X											6A

Table of Contents — A

ALPHABETICAL

Display	PFS	BFS	GNC						SM			PL 9	Page	
			0	1	2	3	6	8	9	0	2			4
RTLS TRAJ 2		X					X							30B
SENSOR TEST (ON-ORBIT)	X						X							22C
SENSOR SELF-TEST (P/F)	X							X						24B
SL MEMORY DUMP	X											X		25C
SM CRYO PALLET	X	X							X	*	*			15A,32A
SM GROUND CHECKOUT	X								X	X				11B
SM SYS SUMM 1	X	X							X	*	*			13D,31C
SM SYS SUMM 2	X	X							X	*	*			14A,31D
SM TABLE MAINTENANCE	X								X					10C
STAR TRK/COAS CNTL	X			X	X									5C
SWITCHES	X						X							23C
SWITCH/SURF FDBK (RM)	X						X							23A
TCS CONTROL	X							X						25A
THERMAL		X							X					28B
TIME	X		X	X			X	X	X	X		X		19A
UNIV POINTING	X			X										2C
VERT SIT 1	X	X			X	X								4A,4C
VERT SIT 2	X	X			X	X								4B,4D
XXXXX MNVR YYYYY	X	X	X	*	X									2B
XXXXXX TRAJ	X		X		X									2A
XXXXXX TRAJ 1 (ASCENT)		X	X											28C
XXXXXX TRAJ 2 (ASCENT)		X	X											28D

* = INDICATES PFS ONLY AVAILABILITY

Table of Contents — B

“OPS DISPLAYS”

OPS No.	Display	PFS	BFS	GNC	SM	PL	Page
0001	GPC MEMORY	X		X			18C
0001	BFS MEMORY		X	X			28A
0001	THERMAL		X		X		28B
1011	XXXXXX TRAJ	X		X			2A
1011	XXXXXX TRAJ 1		X	X			28C
1021	XXXXXX TRAJ	X		X			2A
1021	XXXXXX TRAJ 1		X	X			28C
1031	XXXXXX TRAJ	X		X			2A
1031	XXXXXX TRAJ 2		X	X			28D
1041	XXXXX MNVR YYYYY	X	X	X			2B
1051	XXXXX MNVR YYYYY	X	X	X			2B
1061	XXXXX MNVR YYYYY	X	X	X			2B
2011	ANTENNA	X			X		10A
2011	UNIV PTG	X		X			2C
2021	PL BAY DOORS	X	X		X		10B
2021	XXXXX MNVR YYYYY	X	X	X			2B
3011	XXXXX MNVR YYYYY	X	X	X			2B
3021	XXXXX MNVR YYYYY	X	X	X			2B
3031	XXXXX MNVR YYYYY	X	X	X			2B
3041	ENTRY TRAJ 1	X		X			2D
3041	ENTRY TRAJ 1		X	X			29A
3041	ENTRY TRAJ 2	X		X			3A
3041	ENTRY TRAJ 2		X	X			29B
3041	ENTRY TRAJ 3	X		X			3B
3041	ENTRY TRAJ 3		X	X			29C
3041	ENTRY TRAJ 4	X		X			3C
3041	ENTRY TRAJ 4		X	X			29D
3041	ENTRY TRAJ 5	X		X			3D
3041	ENTRY TRAJ 5		X	X			30A
3051	VERT SIT 1	X	X	X			4A
3051	VERT SIT 2	X	X	X			4B
4011	ANTENNA	X			X		10A
6011	XXXXXX TRAJ	X		X			2A
6011	RTLS TRAJ 2		X	X			30B
6021	VERT SIT 1	X	X	X			4A
6021	VERT SIT 1 (GRTLS)	X		X			4C
6031	VERT SIT 1	X	X	X			4A
6031	VERT SIT 2	X	X	X			4B
6031	VERT SIT 2 (GRTLS)	X		X			4D
8011	FCS/DED DIS C/O	X		X			22A
9011	MASS MEMORY R/W	X			X	X	22B
9011	GPC MEMORY	X		X			18C

SPECIAL DISPLAYS

Display	Page
XXXXIPL MENU NO. 1	18A
GPCIPL MENU NO. 2	18B
DEU STAND-ALONE SELF-TEST	26C

HEAD UP DISPLAYS

Display	Page
FORMAT 1 PRE-WOW	34A
FORMAT 1 AFTER WOW	34B
OPS 8 LOW	34C
OPS 9 LOW	35A

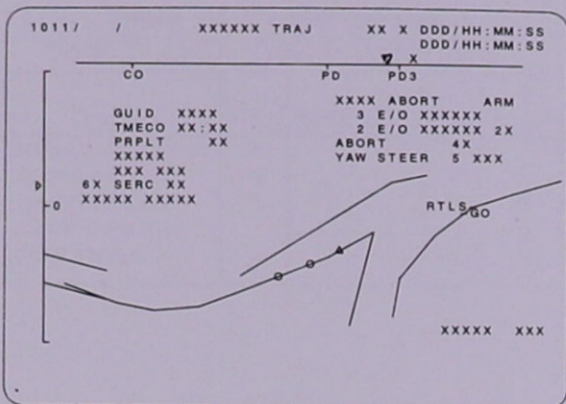
Table of Contents - B
"SPEC" AND "DISP" DISPLAYS

Spec No.	Display	PFS	BFS	GNC	SM	PL	Page
001	DPS UTILITY	X		X	X	X	18D
002	TIME	X		X	X	X	19A
006	GPC/BUS STATUS	X		X	X	X	19C
018	GNC SYS SUMM 1	X		X			8B
018	GNC SYS SUMM 1		X	X			31B
019	GNC SYS SUMM 2	X	X	X			8C
020	DAP CONFIG	X		X			5A
021	IMU ALIGN	X		X			5B
022	S TRK/COAS CNTL	X		X			5C
023	RCS	X		X			5D
025	RM ORBIT	X		X			6A
033	REL NAV	X		X			6B
034	ORBIT TGT	X		X			6C
040	SENSOR TEST	X		X			22C
041	RG/ADTA/RCS	X		X			22D
042	SWITCH/SURF	X		X			23A
043	CONTROLLERS	X		X			23B
044	SWITCHES	X		X			23C
045	NWS CHECK	X		X			23D
050	HORIZ SIT (IN-RIGHT)	X		X			6D
050	HORIZ SIT (IN-LEFT)	X		X			7A
050	HORIZ SIT (OUT RIGHT)	X		X			7B
050	HORIZ SIT (OUT-LEFT)	X		X			7C
050	HORIZ SIT		X	X			30C
051	OVERRIDE	X		X			7A
051	BFS OVERRIDE		X	X			30D
053	CONTROLS	X		X			8A
055	GPS STATUS		X				32D
060	SM TABLE MAINT	X			X		10C
062	PCMMU/PL COMM	X			X		11A
063	PL BAY DOORS	X	X		X		10B
064	SM GROUND CHECKOUT	X		X			11B
066	ENVIRONMENT	X			X		12B
067	ELECTRIC	X			X		12C
068	CRYO SYSTEM	X			X		12D
069	FUEL CELLS	X			X		13A
076	COMM/RCDR	X			X		13B
077	EVA-MMU/FSS	X		X	X		13C
078	SM SYS SUMM 1	X	X		X		31C
079	SM SYS SUMM 2	X			X		14A
079	SM SYS SUMM 2		X		X		31D
085	MASS MEMORY RW	X			X		22B
086	APU/HYD	X			X	X	14B
087	HYD THERMAL	X			X		14C
088	APU/ENVIRON THERM	X			X		14D
089	PRPLT THERMAL	X			X		15A
090	PCS CONTROL	X			X		11C
094	PDRS CONTOL	X				X	11D
095	PDRS OVERRIDE	X			X		12A
096	PDRS FAULTS	X			X		15B
097	PL RETENTION	X			X		15C
099	FAULT	X			X		19B
099	FAULT	X		X	X	X	31A
100	GTS DISPLAY		X	X	X	X	24A
101	SENSOR SELF-TEST	X		X		X	24B
102	RCS/RGS/ADTA TEST	X		X			24C
104	GND IMU CNTL/MON	X		X			24D
105	TCS CONTROL	X		X			25A
106	MANUAL CONTROLS	X		X			26B
110	BUS/BTU STATUS	X		X			26B
111	SL MEMORY DUMP	X		X		X	25B
112	GPC/BTU I/F	X		X		X	25C
				X			25D

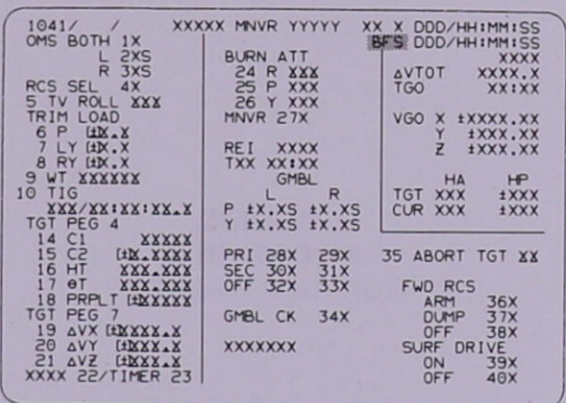
Table of Contents – B
“SPEC” AND “DISP” DISPLAYS

Spec No.	Display	PFS	BFS	GNC	SM	PL	Page
113	ACTUATOR CONTROL	X		X			26A
167	DOCKING STATUS	X			X		15D
168	SM CRYO PALLET	X			X		15A
168	SM CRYO PALLET		X	X			32A
169	PDRS STATUS	X			X		16B

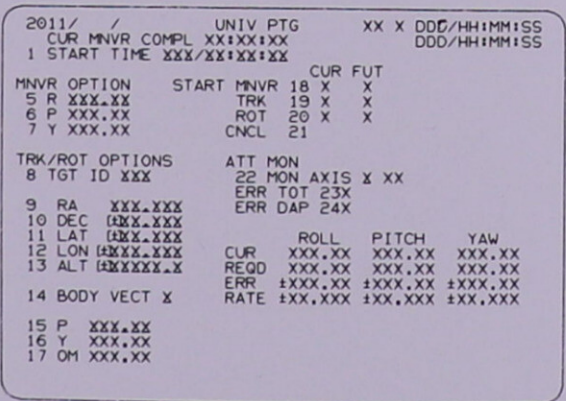
**GUIDANCE,
NAVIGATION &
CONTROL (GN&C)**



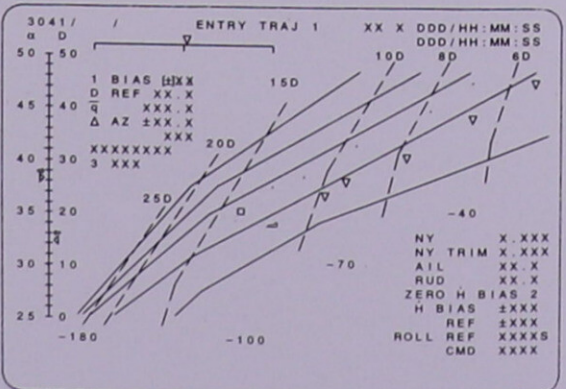
XXXXXX TRAJECTORY



XXXXXX MNVR YYYYYY (PFS/BFS)

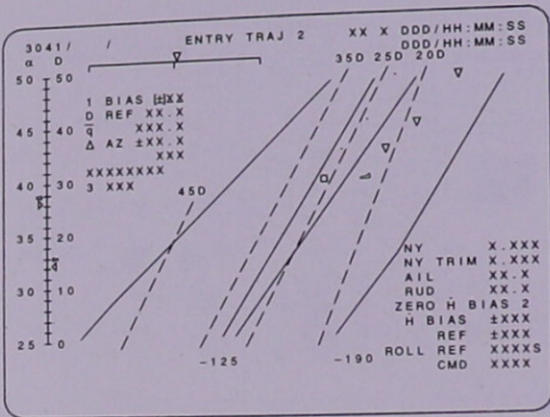


UNIVERSAL POINTING



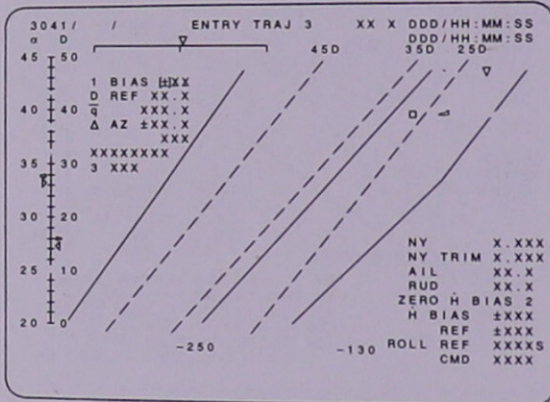
ENTRY TRAJECTORY 1

A



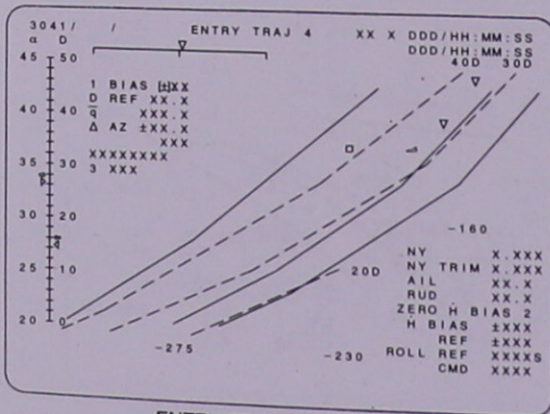
ENTRY TRAJECTORY 2

B



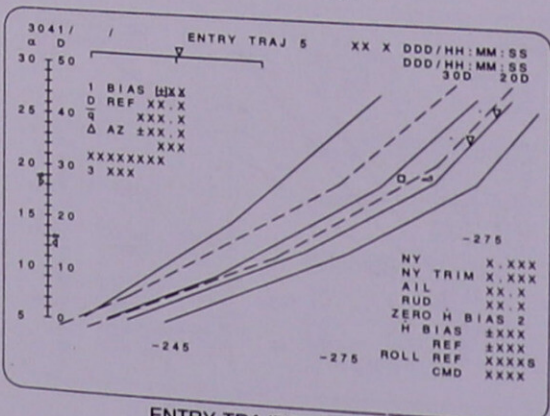
ENTRY TRAJECTORY 3

C

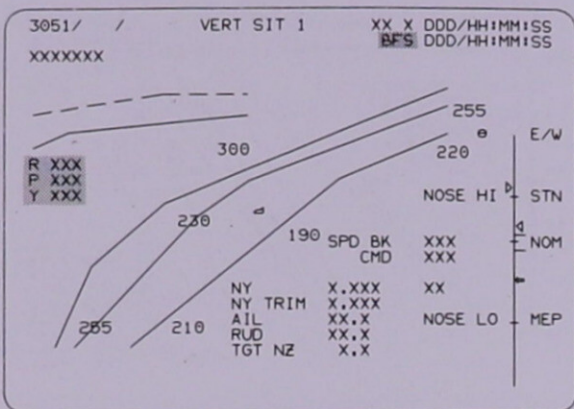


ENTRY TRAJECTORY 4

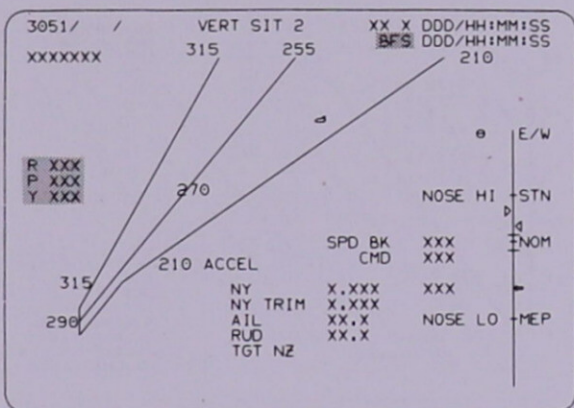
D



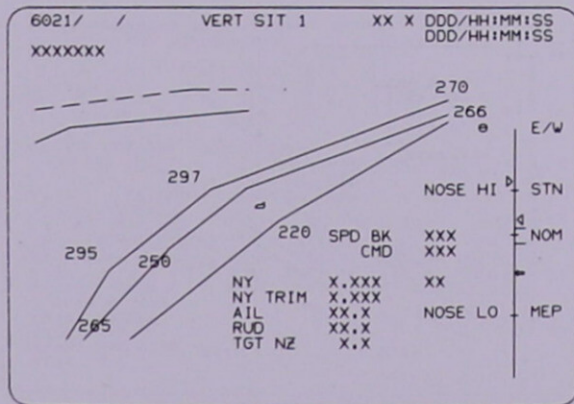
ENTRY TRAJECTORY 5



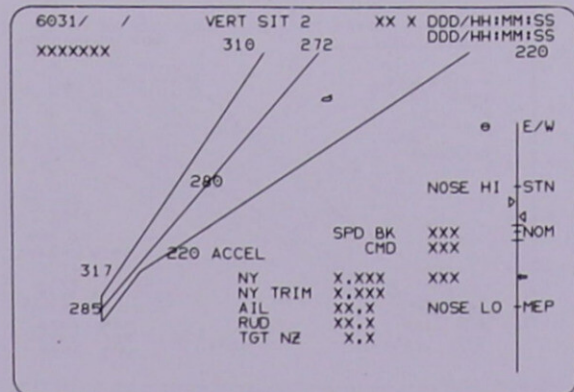
VERTICAL SITUATION 1 (PFS/BFS)



VERTICAL SITUATION 2 (PFS/BFS)



VERTICAL SITUATION 1 GRTLs



VERTICAL SITUATION 2 GRTLs

XXXX/020/ DAP CONFIG XX X DDD/HH:MM:SS
DDD/HH:MM:SS

XXX	1	XXXXXX	2	XXXXXX	PRI	DAP EDIT
ROT RATE	10	X_XXXX	30	X_XXXX	50	X_XXXX 3 DAP AX
ATT DB	11	XX_XX	31	XX_XX	51	XX_XX 4 DAP BXX
RATE DB	12	X_XX	32	X_XX	52	X_XX 5 XXXX
ROT PLS	13	X_XX	33	X_XX	53	X_XX
COMP	14	_XXX	34	_XXX	54	_XXX
P OPTION	15	XXXX	35	XXXX	55	XXXX
Y OPTION	16	XXXX	36	XXXX	56	XXXX
TRAN PLS	17	X_XX	37	X_XX	57	X_XX
XXX					ALT	
RATE DB	18	X_XXX	38	X_XXX	58	X_XXX
JET OPT	19	XXXX	39	XXXX	59	XXXX
# JETS	20	X	40	X	60	X
ON TIME	21	X_XX	41	X_XX	61	X_XX
DELAY	22	XX_XX	42	XX_XX	62	XX_XX
XXXX					VERN	
ROT RATE	23	X_XXXX	43	X_XXXX	63	X_XXXX
ATT DB	24	XX_XXX	44	XX_XXX	64	XX_XXX
RATE DB	25	_XXX	45	_XXX	65	_XXX
ROT PLS	26	X_XXX	46	X_XXX	66	X_XXX
COMP	27	_XX	47	_XX	67	_XX
CNTL ACC	28	X	48	X	68	X

NOTCH FLTR ENA 6X
INERTIAS
7 IX X_XXX
8 IY X_XXX
9 IZ X_XXX

DIGITAL AUTOPILOT CONFIGURATION

XXXX/021/ IMU ALIGN XX X DDD/HH:MM:SS
DDD/HH:MM:SS

IMU	1S	2S	3S	ALIGN	XXX
STAT	XXXX	XXXX	XXXX	IMU 1	10X STAR ALIGN 13X
TEMP	XX	XX	XX	2	11X 14 IMU/IMU X
STBY	21X	22X	23X	3	12X MATRIX 15X
OPER	4X	5X	6X		
DES	7X	8X	9X		

EXEC 16X
TERM 17

ACC

	1	2	3	IMU BITE MASK
X	±X.XX	±X.XX	±X.XX	1 XXXX 24X
Y	±X.XX	±X.XX	±X.XX	2 XXXX 25X
Z	±X.XX	±X.XX	±X.XX	3 XXXX 26X

ANG

	1	2	3	NAV ΔV THRESH
X	XXX.XX	XXX.XX	XXX.XX	18 XXXXXXX
Y	XXX.XX	XXX.XX	XXX.XX	
Z	XXX.XX	XXX.XX	XXX.XX	
ΔX	±XXX.XX	±XXX.XX	±XXX.XX	
ΔY	±XXX.XX	±XXX.XX	±XXX.XX	
ΔZ	±XXX.XX	±XXX.XX	±XXX.XX	MM READ 19X

IMU ALIGNMENT

XXXX/022/ S TRK/COAS CNTL XX X DDD/HH:MM:SS
DDD/HH:MM:SS

S TRK CNTL	-Y	-Z	S TABLE	1	2	3
SELF-TEST	1X	2X	TRK ID	XXX	XXX	XXX
STAR TRK	3X	4X	Δ MIN	XXX	XXX	XXX
TGT TRK	5X	6X	ANG DIF	XXX.X	XXX.X	XXX.X
BREAK TRK	7	8	ERR	XX.XX	XX.XX	XX.XX
TERM/IDLE	9X	10X	SEL	17X	18X	19X
			S TABLE CLR	20		

S TRK REQD ID -Y -Z COAS REQD ID 21 XXX
TRK ID 11 XXX 12 XXX ΔDEG X ±X.X
S PRES X X Y ±X.X
ΔANG ±X.XX ±X.XX SIGHT MODE 22X
THOLD 13 X 14 X ACCEPT 23
SHUTTER XX XX CAL MODE 24X
MAN OP 15X 16X DES 25X
STATUS XXXXXXXXXX XXXXXXXXXX POS +X 26X -Z 27X
XXXX XXXX ΔBIAS X.XX X.XX
UPDATE 28 29

STAR TRACKER/COAS CONTROL

XXXX/023/ RCS XX X DDD/HH:MM:SS
DDD/HH:MM:SS

RCS FWD 1X	PRI	JET	OMS PRESS ENA
L 2X	4	FAIL LIM X	L OMS 5X
R 3X			R OMS 6X
			OFF 7X
JET FAIL	DES	JET	PTY
XXX	XXX	8X	9X
XX	XXX	10X	11X
Y XX	XXX	12X	13X
XX	XXX	14X	15X
XXU	XXX	16X	17X
XU	XXX	18X	19X
Z XU	XXX	20X	21X
XXX	XXX	22X	23X
XD	XXX	24X	25X
2D	XXX	26X	27X
XD	XXX	28X	29X
XXX	XXX	30X	31X
X XX	XXX	32X	33X
XX	XXX	34X	35X
X5X	XXX	36X	37X
V 5X	XXX	38X	39X

OXID/FU
HE P XXXX5 XXXX5
PRPLT TK P XXXX XXXX
T XXXX XXXX
QTY XXXX XXXX
MANF P 1 XXXX XXXX
2 XXXX XXXX
3 XXXX XXXX
4 XXXX XXXX
MANF VLVS STAT OVRD
1 XXS 40
2 XXS 41
3 XXS 42
4 XXS 43
5 XXS 44
XFEED P XXXX XXXX
JET RESET 45

REACTION CONTROL SYSTEM

XXXX/025/ RM ORBIT XX X DDD/HH:MM:SS
DDD/HH:MM:SS

THC	TX	TY	TZ	DES	RHC	R	P	Y	DES
L 1	XS	XS	XS	1X	L 1	XXXS	XXXS	XXXS	7X
2	XS	XS	XS	2X	2	XXXS	XXXS	XXXS	8X
3	XS	XS	XS	3X	3	XXXS	XXXS	XXXS	9X
A 1	XS	XS	XS	4X	R 1	XXXS	XXXS	XXXS	10X
2	XS	XS	XS	5X	2	XXXS	XXXS	XXXS	11X
3	XS	XS	XS	6X	3	XXXS	XXXS	XXXS	12X
					A 1	XXXS	XXXS	XXXS	13X
					2	XXXS	XXXS	XXXS	14X
					3	XXXS	XXXS	XXXS	15X

SW RM INH 16X

REDUNDANCY MGMT ORBIT

XXXX/033/ REL NAV XX X DDD/HH:MM:SS
DDD/HH:MM:SS

RNDZ NAV	ENA 1X	SV UPDATE	AVG G ON	5X
KU ANT	ENA 2X	POS XX.XX	ΔVX	±XX.XX
MEAS	ENA 3X	VEL XX.XX	ΔVY	±XX.XX
	NAV		ΔVZ	±XX.XX
SV SEL	4 XXXX	RR XXXX	ΔVTOT	XXX.XX
RNG	XXXX.XXX	RNG	±XXXX.XXS	RESET COMPNT 6
R	±XXXX.XX	R	±XXXX.XXS	TOT 7
e	XXX.XX	EL	±XXX.XS	SV TRANSFER
Y	±XX.XX	AZ	±XXX.XS	FLTR MINUS PROP
Y	±XXX.X	ωP	±XX.XS	POS XX.XX
NODE	XX:XX:XX	ωR	±XX.XS	VEL XX.XX
				FLTR TO PROP 8X
S TRK	12X	RR	13X	PROP TO FLTR 9X
STAT	XXXXXXXXXX	OFFSET	X ±X.X	ORB TO TGT 10X
	XXX	Y	±X.X	TGT TO ORB 11X
SLOW RATE	15X			EDIT OVRD
COVAR REINIT	16X	MARK HIST		AUT INH FOR
		RESID RATIO ACPT REJ		17X 18X 19X
RNG	±XX.XX	X.X XXX XXS		20X 21X 22X
R	±XX.XX	X.X XXX XXS		23X 24X 25X
V/EL/Y	±X.XX	X.X XXX XXS		
H/AZ/X	±X.XX	X.X XXX XXS		

RELATIVE NAVIGATION

XXXX/034/ ORBIT TGT XX X DDD/HH:MM:SS
DDD/HH:MM:SS

MNVR	TIG	ΔVX	ΔVY	ΔVZ	ΔVT
XX X X/XX:XX:XX		±XXX.X	±XX.X	±XX.X	±XXX.X
					PRED MATCH= XXXXXXXX
INPUTS					CONTROLS
1 TGT NO	XX				T2 TO T1 25
2 T1 TIG	X/YX:XX:XX				XXXX 26
6 EL	XX.XX				COMPUTE T1 28X
7 ΔX/DNRNG	(±)XXX.XX				COMPUTE T2 29X
8 ΔY	(±)XXX.XX				
9 ΔZ/ΔH	(±)XXX.XX				
10 ΔX	(±)XXX.XX				
11 ΔY	(±)XXX.XX				
12 ΔZ	(±)XXX.XX				
13 T2 TIG	X/YX:XX:XX				ORBITER STATE
17 ΔT	(±)XXX.X				XXX/XX:XX:XX.XXX
18 ΔX	(±)XX.XX				X ±XXXX.XXX
19 ΔY	(±)XXX.XX				Y ±XXXX.XXX
20 ΔZ	(±)XXX.XX				Z ±XXXX.XXX
21 BASE TIME	X/YX:XX:XX				VX ±XX.XXXXXX
					VY ±XX.XXXXXX
					VZ ±XX.XXXXXX

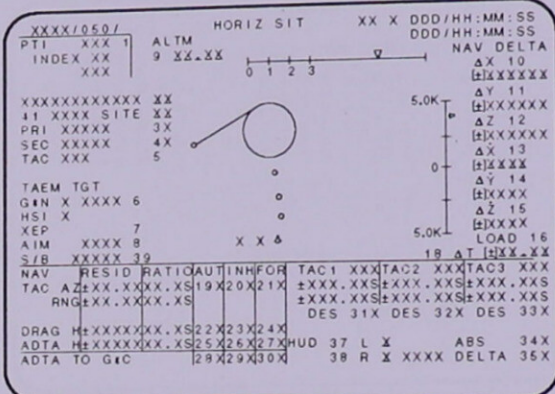
ORBIT TARGETING

XXXX/050/ HORIZ SIT XX X DDD/HH:MM:SS
DDD/HH:MM:SS

PTI	XXX	ALTM	9 XX.XX	NAV DELTA
INDEX XX				ΔX 10
XXX				(±)XXXXXX
XXXXXXXXXXXX	XX			ΔY 11
41 XXXX SITE	XX			(±)XXXXXX
PRI	XXXX			ΔZ 12
SEC	XXXX			(±)XXXXXX
TAC	XXX			ΔX 13
				(±)XXX
TAEM TGT				ΔY 14
G#N X	XXXX			(±)XXXX
HSI X				ΔZ 15
XEP	7			(±)XXXX
AIM	XXXX			LOAD 16
S/B	XXXX			18 AT (±)XX.XX
NAV	RESID RATIO ACPT INH FOR			
TAC	AZ ±XX.XXX.XS	19X	20X	21X
	RNG ±XX.XXX.XS			
DRAG	H ±XXXXXX.XS	22X	23X	24X
ADTA	H ±XXXXXX.XS	25X	26X	27X
ADTA TO G#C		28X	29X	30X
				HUD 37 L X ABS 34X
				38 R ± XXXX DELTA 35X

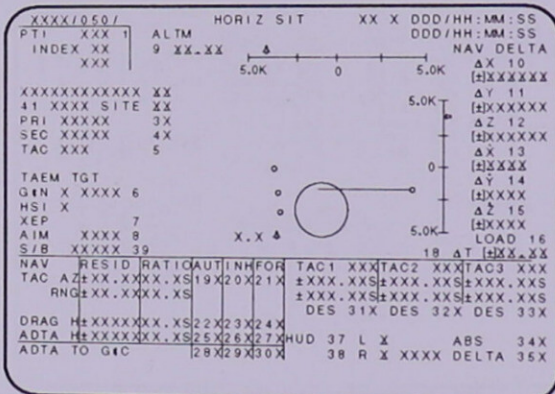
HORIZONTAL SITUATION (IN-RIGHT)

A



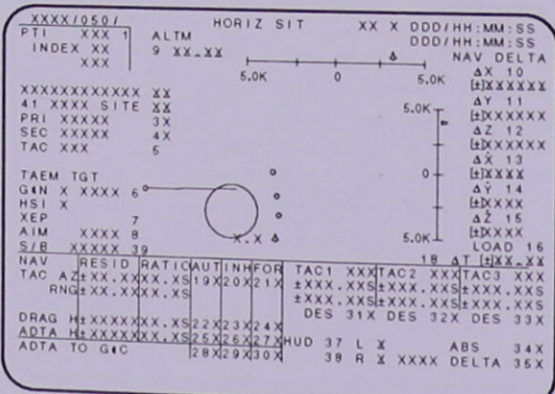
HORIZONTAL SITUATION (IN-LEFT)

B



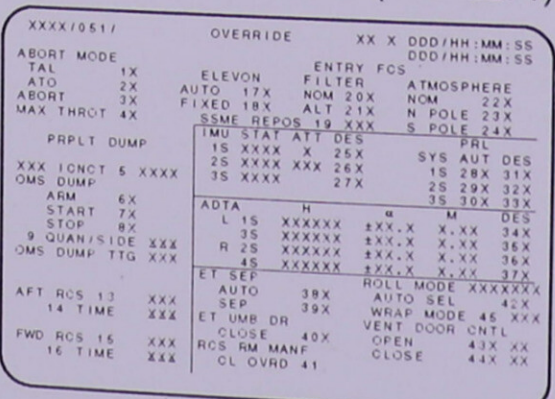
HORIZONTAL SITUATION (OUT-RIGHT)

C



HORIZONTAL SITUATION (OUT-LEFT)

D



OVERRIDE

XXXX/053/ CONTROLS XX X DDD/HH:MM:SS
DDD/HH:MM:SS

SEC	ACT	CK	AERO	PORT	STAT	SSME	PORT	STAT
					1 2 3 4			1 2 3 4
CH1	1X		L	OB	1 S S S S	L	P	S S S S
2	2X			IB	2 S S S S		Y	S S S S
3	3X		R	IB	3 S S S S	C	P	S S S S
4	4X			OB	4 S S S S		Y	S S S S
START	5X			RUD	5 S S S S	R	P	S S S S
STOP	6X		SPD	BRK	6 S S S S		Y	S S S S

NEG	STIM	ACT/CH
ENA	7X	8 BYPASS XX
		9 RESET XX

LRU	AA	RGA	SURF	FDBK
	DES	DES	DES	
1	10X S	14X S	18X S	
2	11X S	15X S	19X S	
3	12X S	16X S	20X S	
4	13X S	17X S	21X S	

A

CONTROLS

XXXX/XXX/018 GNC SYS SUMM 1 XX X DDD/HH:MM:SS
DDD/HH:MM:SS

RCS	JET	ISOL	SURF	POS	MOM	DPS	1	2	3	4	5	
MANF	FAIL	VLV	L	OB	XXX.XS	XXS	GPC	S	S	S	S	
F1	XXX	XXS	L	IB	XXX.XS	XXS		S	S	S	S	
2	XXX	XXS	R	IB	XXX.XS	XXS	MDM	FF	S	S	S	
3	XXX	XXS		OB	XXX.XS	XXS		FA	S	S	S	
4	XXX	XXS	AIL		XXX.X							
5	XXX	XXS	RUD		XXX.X							
L1	XXX	XXS	SPD	BRK	XXX.X		FCS	CH	1	2	3	4
2	XXX	XXS	BDY	FLP	XXX.X			S	S	S	S	
3	XXX	XXS			XXXXXX							
4	XXX	XXS										
5	XXX	XXS										
R1	XXX	XXS					NAV	1	2	3	4	
2	XXX	XXS						IMU	S	S	S	
3	XXX	XXS	CNTLR	1	2	3		ACC	S	S	S	S
4	XXX	XXS	RHC	L	S	S		RGA	S	S	S	S
5	XXX	XXS		R	S	S		TAC	S	S	S	
				A	S	S		MLS	S	S	S	
			THC	L	S	S		ADTA	S	S	S	S
				A	S	S						
			SBTC	L	S	S						
				R	S	S						

B

GNC SYSTEM SUMMARY 1

XXXX/XXX/019 GNC SYS SUMM 2 XX X DDD/HH:MM:SS
BFS DDD/HH:MM:SS

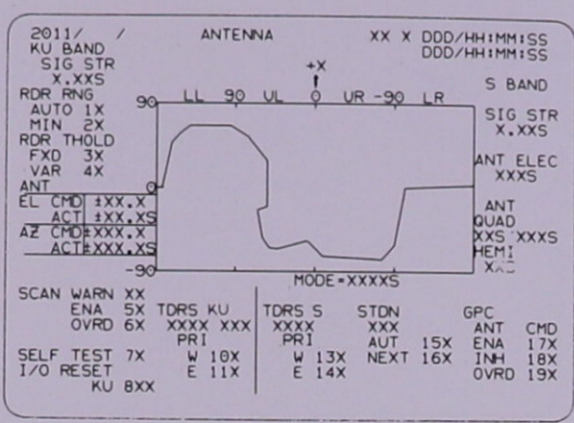
OMS	AFT	QTY	L	R	OMS	L	R			
			OXID	XX.XS	XX.XS	TK	P	HE	XXXXS	XXXXS
			FU	XX.XS	XX.XS			OXID	XXXXS	XXXXS
			FU	INJ	T	XXXXS	XXXXS	FU	XXXXS	XXXXS
RCS	OXID	FU	JET	ISOL	N2	TK	P	XXXXS	XXXXS	
FLD	HE	XXXXS	XXXXS	XXXXS	REG	P	XXXXS	XXXXS	XXXXS	
	TK	P	XXXXS	XXXXS	P	VLV	XXS	XXS		
	QTY	XXXXS	XXXXS		ENG	IN	P			
MANF	1	P	XXXXS	XXXXS	OXID	XXXXS	XXXXS			
	2	P	XXXXS	XXXXS	FU	XXXXS	XXXXS			
	3	P	XXXXS	XXXXS	VLV	1	XXXXS	XXXXS		
	4	P	XXXXS	XXXXS	2	XXXXS	XXXXS			
	5		XXXX	XXXX						
AFT	HE	XXXXS	XXXXS		OXID	FU	FAIL	VLV		
L	TK	P	XXXXS	XXXXS	R	TK	P	XXXXS	XXXXS	
	QTY	XXXXS	XXXXS		QTY	XXXXS	XXXXS			
MANF	1	P	XXXXS	XXXXS	1	P	XXXXS	XXXXS	XXXXS	
	2	P	XXXXS	XXXXS	2	P	XXXXS	XXXXS	XXXXS	
	3	P	XXXXS	XXXXS	3	P	XXXXS	XXXXS	XXXXS	
	4	P	XXXXS	XXXXS	4	P	XXXXS	XXXXS	XXXXS	
	5		XXXX	XXXX	5		XXXX	XXXX	XXXXS	

C

GNC SYSTEM SUMMARY 2 (PFS/BFS)

**SYSTEMS
MANAGEMENT
(SM)**

A



ANTENNA

B

2021/ / PL BAY DOORS XX X DDD/HH:MM:SS
 BFS DDD/HH:MM:SS

AC POWER ON 1X
 OFF 2X PBD SW-XXXXS
 AUTO MODE SEL 3X

	MAN			OP/CL		AUTO		MICRO-SW STAT	
	SEL					SEQ		LATS	DOORS
CENTER LATCHES								CCOO	CRRRO
5-8	4X	XXS	X	XXXX	ABC			ABAB	ABC
9-12	5X	XXS	X	XXXX					
1-4	6X	XXS	X	XXXX					
13-16	7X	XXS	X	XXXX					
STBD									
FWD LATCHES	8X	XXS	X	XXXX	XXXXX				
AFT LATCHES	9X	XXS	X	XXXX	XXXXX				
DOOR	10X	XXXX	X						
PORT									
FWD LATCHES	11X	XXS	X	XXXX	XXXXX				
AFT LATCHES	12X	XXS	X	XXXX	XXXXX				
DOOR	13X	XXXX	X						

PBD SW BYPASS 14X OPEN 15X
 STOP 16X
 CLOSE 17X

PAYLOAD BAY DOORS (PFS/BFS)

C

XXXX/060/ SM TABLE MAINT XX X DDD/HH:MM:SS
 SM COM BUFF XXX DDD/HH:MM:SS
 PARAM XXXXXX

1 ID XXXXXXXX
 VALUE= XXXXXXXXXXXX

LIMITS			
ALERT		BACKUP C&W	
LOW	HI	LOW	HI
2X XXXXXXXX	3 XXXXXXXX	11 XXXXXXXX	12 XXXXXXXX
4X XXXXXXXX	5 XXXXXXXX		
6X XXXXXXXX	7 XXXXXXXX		

8 FILTER XX
 ENA 9X
 INH 10X

13 FILTER XX
 ENA 14X
 INH 15X

CONSTANT
 16 ID XXXXXXXX
 17 VALUE= XXXXXXXXXXXXXXXX

CHECKPT XXX/XX:XX:XX FDA
 INITIATE 18 ENA 19X
 STATUS XXXX XXXX INH 20X

SM TABLE MAINTENANCE

A

```

XXXX/062/          PCMMU/PL COMM  XX X DDD/HH:MM:SS
SM COM BUFF XXX
PCMMU
BITE WORD XXXX
FMT
SEL FXD   1XS
      PGM   2XS
PGM ID 64 XXX
      128 XXX
3 SEL ID XXX
      LOAD 4 XXXX

I/O RESET
      PCM 5XX

PSP          PL INTRG
I/O RESET   1 CHANNEL XXXS
      PSP1 6XX 2 CHANNEL XXXS
      PSP2 7XX PHASE LOCK XXXS
SYNC        BIT XXXS          ERR ±XXS
      FRAME XXXS XMIT PWR XX.XXS
      LOAD XXXX XXXX PL SIG STR X.XXS

PDI
I/O RESET 8XX
BITE WORD XXXXS
9 SEL DECOM X
10 SEL FMT XXX
      LOAD 11 XXXX
12 SEL INPUT X
      LOAD 13
DECOM INPUT FMT
1 X XXXS
2 X XXXS
3 X XXXS
4 X XXXS
5-FPM XXX
DECOM ENA ENA
      FDA 1 14X 3 16X
      2 15X 4 17X
18 TFL GPC SEL X
DOWNLIST
19 SEL FMT ID XX
  
```

PCMMU/PAYLOAD COMMUNICATION

B

```

XXXX/064/          SM GROUND CHECKOUT XX X DDD/HH:MM:SS
XXXXXXXXXXXXXXXXXX
                      ENA INH   PROCESS INH/ENA
FDA                   2X 3X
PL ANNUN              4X X     S P O/P 15 X
SM ANNUN              5X X

DOWNLIST
6 SEL FMT XX
LOAD 7X

RMS TOOLS
SOFT STOP/REACH
TURNAROUND 8X
REINSTALL 9X
SINGULARITY 10X
JOINT
RATE LIMIT 11X
12 JOINT SEL X
13 ATTEN LIM XX
14 ARM SELECT XXX

OPS ACTIVATE 1X
  
```

SM GROUND CHECKOUT

C

```

XXXX/090/          PCS CONTROL    XX X DDD/HH:MM:SS
                      DDD/HH:MM:SS
1 SET XX XXXXXX      SEQ STAT NAME GMT
                      XXXX XXXX XXXXXX XXX/XX:XX:XX
2 SEQ XXXX XXXXXX    XXXX XXXX XXXXXX XXX/XX:XX:XX
3 GMT XX/XX:XX:XX    XXXX XXXX XXXXXX XXX/XX:XX:XX
7 HOLD STEP XX      XXXX XXXX XXXXXX XXX/XX:XX:XX

ENA 8 HOLD 9X
TERM 10 RESUME 11
TERM ALL 12
CLEAR TEXT 13

SEQ UPDATE
14 STEP XX
15 DELAY XX:XX

CURRENT XXX
ERROR XXX/X

SEQ STEP TEXT
XXXX XXX XXXXXXXXXXXXXXXX
XXXX XXX XXXXXXXXXXXXXXXX
XXXX XXX XXXXXXXXXXXXXXXX
XXXX XXX XXXXXXXXXXXXXXXX
XXXX XXX XXXXXXXXXXXXXXXX
XXXX XXX XXXXXXXXXXXXXXXX
XXXX XXX XXXXXXXXXXXXXXXX
XXXX XXX XXXXXXXXXXXXXXXX
XXXX XXX XXXXXXXXXXXXXXXX
XXXX XXX XXXXXXXXXXXXXXXX
  
```

PCS CONTROL

D

```

XXXX/094/          PDRS CONTROL  XX X DDD/HH:MM:SS
                      DDD/HH:MM:SS
RMS SEL: XXXX      RMS PWR XXX          ENA INH
PORT 1X
STBD 2X            I/O ON 5X          SOFT STOP 7X 8X
3 PL ID XX        OFF 6X           AUTO BRAKE 9X 10X
4 END EFF X      POHS CNTL 28X 29X

          AUTO MODES
          1          2          3          4          17 START PT XXX
          13 XX    14 XX    15 XX    16 XX    LAST PT XXX

END POS          OPR CMD MODES / POR REF
18 X [±]XXX     21 P [±]XX     24 PL INIT ID XX
19 Y [±]XXX     22 Y [±]XX
20 Z [±]XXX     23 R [±]XX     CMD CK 25 XXXX

RMS STO/DPLY    POR DISPLAY 30 XXX
SHLD X X X X

ORB LD CMD REF
RMS LAT/REL/RDY NORM FLY-CAMR FLY-PL
AFT X X X X X  31X 32X 33X
MID X X X X X
FWD X X X X X

26 WR RANGE X
AUTO BRAKE CK 27X
  
```

PDRS CONTROL

XXXX/095/XXX PDRS OVERRIDE XX X DDD/HH:MM:SS
 XXXXXXXXXXXXXXXXXXXX DDD/HH:MM:SS

MODE SW OVRD 1X	JNT SW OVRD 17X	RATE SW OVRD 26X
MODE SEL IND	JOINT SEL	VERNIER 27X
ORB UNL 2X X	SH YAW 18X	COARSE 28X
SINGLE 3X X	SH PITCH 19X	
END EFF 4X X	EL PITCH 20X	AUTO SW OVRD 29X
ORB LD 5X X	WR PITCH 21X	PROCEED 30
PL 6X X	WR YAW 22X	STOP 31
OPR CMD 7X X	WR ROLL 23X	
AUTO 1 8X X	EE TEMP 24X	HC AXIS CHG 32X
AUTO 2 9X X	CRIT TEMP 25X	THC 33X
AUTO 3 10X X		RHC 34X
AUTO 4 11X X		
TEST 12X X		
ENTER 13		

LOADED RATE 14X
 STOWED OPS 15X
 SIN/DIR SW REASSIGN 16X

MCIU OVERRIDE
 SAFING CAN 35X
 TACH FAIL 36X
 SPA COMM 37X
 SPA +28V 38X

PDRS OVERRIDE

XXXX/XXX/066 ENVIRONMENT XX X DDD/HH:MM:SS
 DDD/HH:MM:SS

CABIN		AV BAY 1 2 3
dP/dT ±.XXS	CABIN P XX.XS	TEMP XXXXS XXXXS XXXXS
PP02	AIRLK P XX.XS	FAN ΔP X.XXS X.XXS X.XXS
A X.XXS	FAN ΔP X.XXS	SUPPLY H2O
B X.XXS	HX OUT T XXXS	QTY A XXXS PRESS XXXS
C X.XXS	CABIN T XXXS	B XXXS DMP LN T XXXS
PPC02 XX.XS		C XXXS NOZ T A XXXS
		D XXXS B XXXS
		WASTE H2O
02 FLOW X.XS X.XS		QTY 1 XXXS PRESS XXXS
REG P XXXS XXXS		DMP LN T XXXS
N2 FLOW X.XS X.XS		NOZ T A XXXS
REG P XXXS XXXS		B XXXS
02/N2 CNTL VLV XXS XXS		VAC VT NOZ T XXXS
H2O TK N2 P XXXS XXXS		
N2 QTY XXXS XXXS		CO2 CNTLR 1XS 2XS
EMER 02 QTY XXXS		FILTER ΔP X.XXS
REG P XXXXS		PPC02 XX.XS
		TEMP XXX.XS
		BED A PRESS XX.XS XX.XS
IMU FAN A B C ΔP		B PRESS XX.XS XX.XS
HUMID SEP XS XS XS X.XS		ΔP X.XXS X.XXS
		VAC PRESS X.XS

FIGURE 6.1-1. JSC-19590

XXXX/XXX/067 ELECTRIC XX X DDD/HH:MM:SS
 DDD/HH:MM:SS

DC	1/A	2/B	3/C	AC	1	2	3
VOLT FC	XX.XS	XX.XS	XX.XS	V	ΔA XXXS	XXXS	XXXS
MN	XX.XS	XX.XS	XX.XS		ΔB XXXS	XXXS	XXXS
PCA FWD	XX.XS	XX.XS	XX.XS		ΔC XXXS	XXXS	XXXS
AFT	XX.XS	XX.XS	XX.XS	AMP	ΔA XX.XS	XX.XS	XX.XS
ESS	XX.XS	XX.XS	XX.XS		ΔB XX.XS	XX.XS	XX.XS
	A	B	C		ΔC XX.XS	XX.XS	XX.XS
CNTL	1XXX.XS	XXX.XS	XXX.XS	OVLD	XXS	XXS	XXS
	2XXX.XS	XXX.XS	XXX.XS	Q/U V	XXS	XXS	XXS
	3XXX.XS	XXX.XS	XXX.XS				
AMPS FC	XXXS	XXXS	XXXS	PAYLOAD DC AMPS			
FWD	XXXS	XXXS	XXXS	AFT B		XXX.XS	
MID	XXXS	XXXS	XXXS	C		XXX.XS	
AFT	±XXXS	±XXXS	±XXXS				
TOTAL AMPS		XXXS					
KW		XXX.XS					

FIGURE 6.2-1. JSC-19590

XXXX/XXX/068 CRYO SYSTEM XX X DDD/HH:MM:SS
 DDD/HH:MM:SS

	TK				
02	1	2	3	4	5
P	XXXXS	XXXXS	XXXXS	XXXXS	XXXXS
TK P	XXXXS	XXXXS	XXXXS	XXXXS	XXXXS
QTY	XXXXS	XXXXS	XXXXS	XXXXS	XXXXS
T	±XXXXS	±XXXXS	±XXXXS	±XXXXS	±XXXXS
HTR T 1	±XXXXS	±XXXXS	±XXXXS	±XXXXS	±XXXXS
2	±XXXXS	±XXXXS	±XXXXS	±XXXXS	±XXXXS
HTR 1A	S	S	S	S	S
1B	S	S	S	4/5S	S
SNSR 2A	S	S	S	S	S
2B	S	S	S	4/5S	S
MANF P	XXXXS	XXXXS			
VLV	XXS	XXS			
H2					
P	XXXXS	XXXXS	XXXXS	XXXXS	XXXXS
TK P	XXXXS	XXXXS	XXXXS	XXXXS	XXXXS
QTY	XXXXS	XXXXS	XXXXS	XXXXS	XXXXS
T	±XXXXS	±XXXXS	±XXXXS	±XXXXS	±XXXXS
HTR T	±XXXXS	±XXXXS	±XXXXS	±XXXXS	±XXXXS
MANF P	XXXXS	XXXXS			
VLV	XXS	XXS			

FIGURE 6.3-1. JSC-19590

A

XXXX/XXX/069		FUEL CELLS			XX X DDD/HH:MM:SS		DDD/HH:MM:SS	
		FC						
		1	2	3				
VOLTS		XX.XS	XX.XS	XX.XS	H2O RLF	LINE T	XXXX	
AMPS		XXXS	XXXS	XXXS		NOZ T A	XXXX	
FLOW O2		XX.XS	XX.XS	XX.XS		HTR SW B	XXXX	
H2		X.XS	X.XS	X.XS	PURGE LN	O2 T	XXXX	
REAC O2		XXS	XXS	XXS		H2 T1	XXXX	
H2		XXS	XXS	XXS		T2	XXXX	
					H2O LINE	PH	XXS	
STACK T		±XXXS	±XXXS	±XXXS				
EXIT T		XXXS	XXXS	XXXS				
COOL T		XXXS	XXXS	XXXS				
P		XXXS	XXXS	XXXS				
PUMP		XXS	XXS	XXS	PH	1	XXS	XXS
H2 PUMP		X.XS	X.XS	X.XS	ΔV	SS1	XXXS	XXXS
READY		XXXS	XXXS	XXXS		SS2	XXXS	XXXS
						SS3	XXXS	XXXS
H2O					ΔAMPS	1	±XXXS	±XXXS
PRI LN T		XXXS	XXXS	XXXS		2	±XXXS	±XXXS
VLV T		XXXS	XXXS	XXXS		3	±XXXS	±XXXS
ALT LN T		XXXS	XXXS	XXXS				

FIGURE 6.4-1. JSC-19590

B

XXXX/XXX/076		COMM/RCDR		XX X DDD/HH:MM:SS		DDD/HH:MM:SS	
S-BAND PM							
XPND		XXXS	KU-BAND				
MODE		XXXXS	PA TEMP		±XXXS		
FREQ		XXS	GMBL TEMP	A	±XXXS		
PREAMP		XXXS		B	±XXXS		
PWR AMPL			GYRO TEMP		±XXXS		
OPER		XXXS	PWR OUT		XXS		
STBY		XXXS	FR SYNC		XXXS		
PWR OUT 1		XXXS	MODE		XXXXS		
2		XXXS	TV CAM OVRTEMP		XXXXS		XXXXS
TEMP 1		XXXS	GCIL CONFIG				XXXXS
2		XXXS	RECORDERS				
NSP			OPS 1	OPS 2	PL		
BIT/FR SYNC 1	XXXS	XXXS	XXXXS	XXXXS	XXXXS		
2	XXXS	XXXS	TRK	XXS	XXS	XXS	
FAIL SAFE		XXXS	DIR	XXXS	XXXS	XXXS	
DATA XMIT		XXS	*TAPE	XXXS	XXXS	XXXS	
RCV		XXS	TAPE	XXXX	XXXX	XXXX	
UL DATA		XXS	TEMP	XXXS	XXXS	XXXS	
CODING XMIT		XXXS	BITE	XXS	XXS	XXS	
RCV		XXXS	RCDR INPUT		XXXXS		
BITE 1	XXXXS	XXXXS	COMSEC BITE 1	XXXXS			
2	XXXXS	XXXXS	2	XXXXS			

FIGURE 6.5-1. JSC-19590

C

XXXX/XXX/077		EVA-MMU/FSS		XX X DDD/HH:MM:SS		DDD/HH:MM:SS	
MMU/FSS							
TEMPS		PORT	STBD				
TOGGLE VLV FSS L		±XXXS	±XXXS				
R		±XXXS	±XXXS				
MMU L		±XXXS	±XXXS				
R		±XXXS	±XXXS				
GN2 TANK BARREL L		±XXXS	±XXXS				
R		±XXXS	±XXXS				
CNTL ELECT ASSY		±XXXS	±XXXS				

FIGURE 6.6-1. JSC-19590

D

XXXX/XXX/078		SM SYS SUMM 1			XX X DDD/HH:MM:SS		DDD/HH:MM:SS	
SMOKE	1/A	2/B	DC	VOLTS	1/A	2/B	3/C	
CABIN	XX.XS		FC	XX.XS	XX.XS	XX.XS	XX.XS	
L/R FD	XX.XS	XX.XS	MAIN	XX.XS	XX.XS	XX.XS	XX.XS	
AV BAY 1	XX.XS	XX.XS	ESS	XX.XS	XX.XS	XX.XS	XX.XS	
2	XX.XS	XX.XS						
3	XX.XS	XX.XS	CNTL 1	XXX.XS	XXX.XS	XXX.XS	XXX.XS	
CABIN			2	XXX.XS	XXX.XS	XXX.XS	XXX.XS	
PRESS	XX.XS		3	XXX.XS	XXX.XS	XXX.XS	XXX.XS	
dP/dT-EQ	±.XXS±X.XXXS	AC						
O2 CONC	XXX.XS	VOLT	⊕A	XXXS	XXXS	XXXS		
PP02	X.XXS	⊕B	XXXS	XXXS	XXXS	XXXS		
FAN ΔP	X.XXS	⊕C	XXXS	XXXS	XXXS	XXXS		
HX OUT T	XXXS	AMPS	⊕A	XX.XS	XX.XS	XX.XS		
O2 FLOW	XX.XS	⊕B	XX.XS	XX.XS	XX.XS	XX.XS		
N2 FLOW	XX.XS	⊕C	XX.XS	XX.XS	XX.XS	XX.XS		
IMU FAN	ΔXS	FUEL CELL						
ΔV FC1	FC2	FC3	AMPS	XXXS	XXXS	XXXS		
SS1	XXXS	XXXS	REAC VLV	XX	XX	XX		
SS2	XXXS	XXXS	STACK T	±XXXS	±XXXS	±XXXS		
SS3	XXXS	XXXS	EXIT T	XXXS	XXXS	XXXS		
TOTAL AMPS	XXXS	COOL P	XXXS	XXXS	XXXS	XXXS		
KW	XXS	PUMP	XXS	XXS	XXS	XXS		

FIGURE 6.7-1. JSC-19590

XXXX/XXX/079		SM SYS SUMM 2					XX X DDD/HH:MM:SS	
		DDD/HH:MM:SS						
CRYO TK	1	2	3	4	5	MANF1	MANF2	
H2 PRESS	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	
O2 PRESS	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	
HTR T1	±XXXX	±XXXX	±XXXX	±XXXX	±XXXX			
T2	±XXXX	±XXXX	±XXXX	±XXXX	±XXXX			

APU		1	2	3	HYD		1	2	3
TEMP EGT	XXXX	XXXX	XXXX	XXXX	PRESS	XXXX	XXXX	XXXX	XXXX
B/U EGT	XXXX	XXXX	XXXX	XXXX	RSVR T	XXXX	XXXX	XXXX	XXXX
OIL IN	XXXX	XXXX	XXXX		P	XXXX	XXXX	XXXX	
OUT	XXXX	XXXX	XXXX		QTY	XXXX	XXXX	XXXX	
SPEED *	XXXX	XXXX	XXXX		W/B				
FUEL QTY	XXXX	XXXX	XXXX		H2O QTY	XXXX	XXXX	XXXX	
PMP LK P	XXS	XXS	XXS		BYP VLV	XXXX	XXXX	XXXX	
OIL OUT P	XXXX	XXXX	XXXX						

AV BAY					THERM CNTL		1	2
TEMP	XXXX	XXXX	XXXX		H2O PUMP P	XXXX	XXXX	XXXX
FAN ΔP	X.XXS	X.XXS	X.XXS		FREON FLOW	XXXX	XXXX	XXXX
					EVAP OUT T	XXXX	XXXX	

A

FIGURE 6.8-1. JSC-19590

XXXX/XXX/086		APU/HYD			XX X DDD/HH:MM:SS		
		DDD/HH:MM:SS			DDD/HH:MM:SS		
APU	1	2	3	HYD	1	2	3
B/U EGT	XXXX	XXXX	XXXX	B/U P	XXXX	XXXX	XXXX
EGT	XXXX	XXXX	XXXX	RSVR T	XXXX	XXXX	XXXX
SPEED *	XXXX	XXXX	XXXX	P	XXXX	XXXX	XXXX
FUEL QTY	XXXX	XXXX	XXXX	QTY	XXXX	XXXX	XXXX
TK P	XXXX	XXXX	XXXX	ACCUM P	XXXX	XXXX	XXXX
OUT P	XXXX	XXXX	XXXX				
TK VLV A	XXS	XXS	XXS				
A T	XXXX	XXXX	XXXX				
B	XXS	XXS	XXS				
B T	XXXX	XXXX	XXXX	W/B	1	2	3
OIL T	XXXX	XXXX	XXXX				
OUT T	XXXX	XXXX	XXXX	CNTLR	XXX	XXX	XXX
OUT P	XXXX	XXXX	XXXX	H2O QTY	XXXX	XXXX	XXXX
GBX P	XXXX	XXXX	XXXX	N2 P	XXXX	XXXX	XXXX
N2 P	XXXX	XXXX	XXXX	T	XXXX	XXXX	XXXX
BRG T	XXXX	XXXX	XXXX	REG P	XXXX	XXXX	XXXX
GG BED T	XXXX	XXXX	XXXX	BYP VLV	XXXX	XXXX	XXXX
PUMP/VLV				VENT T	±XXXX	±XXXX	±XXXX
PMP T	XXXX	XXXX	XXXX	TANK T	±XXXX	±XXXX	±XXXX
VLV T	XXXX	XXXX	XXXX	BLR T	±XXXX	±XXXX	±XXXX

B

FIGURE 6.9-1. JSC-19590

XXXX/XXX/087		HYD THERMAL			XX X DDD/HH:MM:SS		
		DDD/HH:MM:SS			DDD/HH:MM:SS		
HYD	1	2	3	CIRC PUMP CONTROL	1	2	3
CIRC PMP P	XXXX	XXXX	XXXX	LINE TEMPS	1	2	3
PMP BDY T	±XXXX	±XXXX	±XXXX	ELEVON	LOB±XXXX	±XXXX	±XXXX
RSVR T	±XXXX	±XXXX	±XXXX		LIB±XXXX	±XXXX	±XXXX
ACCUM P	±XXXX	±XXXX	±XXXX		RIB±XXXX	±XXXX	±XXXX
HX IN T	±XXXX	±XXXX	±XXXX	RD/SB	ROB±XXXX	±XXXX	±XXXX
OUT T	±XXXX	±XXXX	±XXXX		PDU±XXXX	±XXXX	±XXXX
				BODYFLP	FUS±XXXX	±XXXX	±XXXX
SW VLV PR	S1	S2			PDU±XXXX	±XXXX	±XXXX
ELEV L OB	3XS	1XS	2XS	L BRAKE WHL	FUS±XXXX	±XXXX	±XXXX
IB	2XS	1XS	3XS			±XXXX	±XXXX
R IB	3XS	1XS	2XS	R BRAKE WHL	±XXXX	±XXXX	±XXXX
OB	2XS	1XS	3XS			±XXXX	±XXXX
RUD/SPDBK	1XS	2XS	3XS	NG	UPLK±XXXX		
					MFUS 1±XXXX		
TIRE PRESS					MFUS 2±XXXX		
MG LEFT				MG L	UPLK±XXXX		
IB XXXS	XXXX	XXXX	XXXX	MG R	UPLK±XXXX		
OB XXXS	XXXX	XXXX	XXXX		FUS±XXXX		
NG XXXS	XXXX	XXXX	XXXX				

C

FIGURE 6.10-1. JSC-19590

XXXX/XXX/088		APU/ENVIRON THERM			XX X DDD/HH:MM:SS		
		DDD/HH:MM:SS			DDD/HH:MM:SS		
FREON LOOP	1	2		H2O LOOP	1	2	
ACCUM QTY	XXXX	XXXX		PUMP OUT P	XXXX	XXXX	
FREON FLOW	XXXX	XXXX		OUT T	XXXX	XXXX	
PL HX FLOW	XXXX	XXXX		ΔP	XXXX	XXXX	
AFT CP FLOW	XXXX	XXXX		ICH FLOW	XXXX	XXXX	
RAD IN T	XXXX	XXXX		OUT T	XXXX	XXXX	
RAD OUT T	XXXX	XXXX		CAB HX IN T	XXXX	XXXX	
EVAP OUT T	XXXX	XXXX		ACCUM QTY	XXXX	XXXX	
EVAP TEMP	DUCT	NOZ		APU FUEL T	1	2	3
HI LOAD INBD	XXXX			TK SURF	±XXXX	±XXXX	±XXXX
OUTBD	XXXX	XXXX		TK HTR	±XXXX	±XXXX	±XXXX
TOPPING FWD	XXXX			TEST LN 1	±XXXX	±XXXX	±XXXX
AFT	XXXX			TEST LN 2	±XXXX	±XXXX	±XXXX
L	XXXX	XXXX		FEED LN	±XXXX	±XXXX	±XXXX
R	XXXX	XXXX		PUMP IN	±XXXX	±XXXX	±XXXX
EVAP FDLN T	A	B		DRN LN 1	±XXXX	±XXXX	±XXXX
FWD	XXXX	XXXX		DRN LN 2	±XXXX	±XXXX	±XXXX
MID 1	XXXX	XXXX		OUT	±XXXX	±XXXX	±XXXX
MID 2	XXXX	XXXX		BYP LN	±XXXX	±XXXX	±XXXX
AFT	XXXX	XXXX		GG SPLY LN	XXXX	XXXX	XXXX
TOPPING	XXXX	XXXX					
ACCUM	XXXX	XXXX					
HI LOAD	XXXX	XXXX		H2O LN INJ	±XXXX	±XXXX	±XXXX

D

FIGURE 6.11-1. JSC-19590

A

XXXX/XXX/089		PRPLT THERMAL		XX X		DDD/HH:MM:SS	
POD		L	R			DDD/HH:MM:SS	
OMS TK	OX	XXXX	XXXX				
	FU	XXXX	XXXX	OMS CRSFD	L	R	C
ENG I/F	OX	XXXX	XXXX	XFD	OX	XXXX	XXXX
	FU	XXXX	XXXX	GMBL	LN	XXXX	XXXX
	OX	VLV	XXXX	DRN	OX	XXXX	XXXX
	FU	INJ	XXXX				
WEB KEEL	1	XXXX	XXXX			FU	OX
	2	XXXX	XXXX	BLD AFT FUS	XXXX	XXXX	
Y	OB	XXXX	XXXX	PL BAY	XXXX	XXXX	
	UP	XXXX	XXXX	OX QD		XXXX	
OX DRN PNL	1	XXXX	XXXX				
	2	XXXX	XXXX	FWD RCS	FU	OX	
ENG COVER	XXXX	XXXX		LINE	T1	XXXX	XXXX
SERV PNL	XXXX	XXXX			T2	XXXX	XXXX
GSE SERV PNL	XXXX	XXXX					
TEST HE/OX	1	XXXX	XXXX	AFT RCS	L	R	
	2	XXXX	XXXX	MANF 1	OX	XXXX	XXXX
				DRN PNL	1	XXXX	XXXX
					2	XXXX	XXXX
				VERN PNL	1	XXXX	XXXX
					2	XXXX	XXXX

FIGURE 6.12-1. JSC-19590

B

XXXX/XXX/096		PDRS FAULTS		XX X		DDD/HH:MM:SS	
						DDD/HH:MM:SS	
ABE: - OLD	/	NEW		SY	SP	EP	WP
JPC BITE	/			X	X	X	X
MDA BITE	/	MDA O/C		X	X	X	X
SPA CMTR	/	SPA CMTR		X	X	X	X
TACH	/	TACH PLL		X	X	X	X
	/	TACH TCO		X	X	X	X
	/	CPU		X	X	X	X
	/	MDA DMND		X	X	X	X
	/	A/D CONV		X	X	X	X
	/	BRAKE		X	X	X	X
	/	POS ENC		X	X	X	X
	/	DIR DRV		X	X	X	X
	/	B/U RELAY		X	X	X	X
SPA +28V	/			X	X	X	X
CONTR ERROR				X	X	X	X
CKCRT - POS				X	X	X	X
REACH LIMIT				X	X	X	X
CKCRT - SPA:		SY	SP	EP	WP	WY	WR
BITE TEST		XXXX	XXXX	XXXX	XXXX	XXXX	XXXX

FIGURE 6.13-1. JSC-19590

C

XXXX/XXX/097		PL RETENTION		XX X		DDD/HH:MM:SS	
						DDD/HH:MM:SS	
		LATCH 1	LATCH 2	LATCH 3	LATCH 4	LATCH 5	
		AB/AB	AB/AB	AB/AB	AB/AB	AB/AB	
PL SEL 1							
RDY-FOR-LAT		XX	XX	XX	XX	XX	
LAT/REL		XX/XX	XX/XX	XX/XX	XX/XX	XX/XX	
PL SEL 2							
RDY-FOR-LAT		XX	XX	XX	XX	XX	
LAT/REL		XX/XX	XX/XX	XX/XX	XX/XX	XX/XX	
PL SEL 3							
RDY-FOR-LAT		XX	XX	XX	XX	XX	
LAT/REL		XX/XX	XX/XX	XX/XX	XX/XX	XX/XX	

FIGURE 6.14-1. JSC-19590

D

XXXX/XXX/167		DOCKING STATUS		XX X		DDD/HH:MM:SS	
						DDD/HH:MM:SS	
RNG ALIGN	XXX	CNTL PNL	PWR X/X/X	RING DR BUS	X/X		
CONTACT	XXX	HTR/DCU	PWR X/X/X	HOOK DR BUS	X/X		
CAPTURE	XXX	APDS	PWR X/X/X	DAMPER BUS	X/X		
DAMPING	XXX	CNTL CMD	PWR XXX	FIXER BUS	X/X		
		APDS	CIRC PROT XXX				
RING POS	XXXX/XXX/XXX	HOOK PYRO	LOGIC PWR X/X/X				
DRV CMD	xxx	PYRO	CIRC PROT				XXX/XXX
FIXERS	xxx						
PETAL POS	1 2 3	BASE T					
RING	xxx xxx xxx	CAP LAT T					
BASE	xxx xxx xxx	BALL DR T					
RDY TO HOOK	xxx	HOOK DR T					
HOOK1 DRV CMD	xxx	RING DR T					
POS	xxx	VESTIBULE					
IND	xx/xx	DEP VLV 1					xx/xx
HOOK2 DRV CMD	xxx	ISOL VLV 1					xx/xx
POS	xxx	DEP VLV 2					xx/xx
IND	xx/xx	ISOL VLV 2					xx/xx
UNDOCK CMLT	xxx	TEMP 1/2					xxx/xxx
CAP LAT CMD	xxx	EXT AIRLOCK T					xxx
IND	xx/xx	EXT AIRLOCK P					xx.XXS
MAN REL	xx	AIRLOCK-VEST AP					xx.XXS

FIGURE 6.17-1. JSC-19590

XXXX/XXX/168		CRYO PALLET				XX X	DDD/HH:MM:SS	
		TK				DDD/HH:MM:SS		
		6	7	8	9			
P	O2	XXXXS	XXXXS	XXXXS	XXXXS	PALLET T		
TK P		XXXXS	XXXXS	XXXXS	XXXXS	STBD A	±XXXS	
QTY		XXXXS	XXXXS	XXXXS	XXXXS	STBD B	±XXXS	
T		±XXXXS	±XXXXS	±XXXXS	±XXXXS	PORT A	±XXXS	
HTR T	1	±XXXXS	±XXXXS	±XXXXS	±XXXXS	PORT B	±XXXS	
	2	±XXXXS	±XXXXS	±XXXXS	±XXXXS			
HTR	1A	XXXXS	XXXXS	XXXXS	XXXXS	PALLET VOLTS		
CUR	1B	XXXXS	XXXXS	XXXXS	XXXXS	PPC1 MNA	XX.XS	
SNSR	2A	XXXXS	XXXXS	XXXXS	XXXXS	PPC2 MNB	XX.XS	
	2B	XXXXS	XXXXS	XXXXS	XXXXS			
H2								
P		XXXXS	XXXXS	XXXXS	XXXXS			
TK P		XXXXS	XXXXS	XXXXS	XXXXS			
QTY		XXXXS	XXXXS	XXXXS	XXXXS			
T		±XXXXS	±XXXXS	±XXXXS	±XXXXS			
HTR T		±XXXXS	±XXXXS	±XXXXS	±XXXXS			

A

FIGURE 6.18-1 JSC-19590

XXXX/XXX/169		PDRS STATUS		XX X	DDD/HH:MM:SS	
				DDD/HH:MM:SS		
RMS SEL: XXXX						
		X/P	Y/Y	Z/R		
POSITION		±XXXXXS	±XXXXXS	±XXXXXS		
ATTITUDE		±XXX.XS	±XXX.XS	±XXX.XS		
TRANS RATES	ACT	±XX.XXS	±XX.XXS	±XX.XXS		
	CMD	±XX.XX	±XX.XX	±XX.XX		
ROT RATES	ACT	±XX.XXS	±XX.XXS	±XX.XXS		
	CMD	±XX.XX	±XX.XX	±XX.XX		
JOINT ANGLES				END EFFECTOR		
SY	SP	EP	RIGID CLOSE CAPTURE			
±XXX.XXS	±XXX.XXS	±XXX.XXS	X	X	X	
WP	WY	WR	DERIG OPEN EXTEND			
±XXX.XXS	±XXX.XXS	±XXX.XXS	X	X	X	

B

FIGURE 6.19-1. JSC-19590

SYSTEM LEVEL

```

XXXXXXXXX IPL MENU (1) XX X DDD/HH:MM:SS
PASS1 1X PASS5 9X DDD/HH:MM:SS
BFS1 2X BFS5 10X STP/PURGE CYC CNT XXXXX
PASS2 3X PASS6 11X ERROR/MSG CODE XXX
BFS2 4X BFS6 12X ERROR/MSG CODE CNT XXXX
PASS3 5X PASS7 13X TOTAL ERR/MSG CNT XXXX
BFS3 6X BFS7 14X MSGS STILL IN LIST XXX
PASS4 7X PASS8 15X
BFS4 8X BFS8 16X
MCDS BITE
MODE XXXX
BSR1 XXXX
BSR2 XXXX
SWSW XXXX

17 DEU FORMAT LOAD X

START GPC SELF TEST 18X
STOP GPC SELF TEST 19X
START DEU SELF TEST 20X
STOP STP ON ERROR 24X
CONTINUE STP ON ERR 25X
INHIBIT CKPT LOAD 26X

```

A

```

XXXXXXXXXXXXXXXXXX
27 OPTION X
START 28X
STOP 29X

```

IPL MENU NO. 1 (PFS/BFS)

```

GPC IPL MENU (2) XX X DDD/HH:MM:SS
17 DEU FORMAT LOAD X STP/PURGE CYC CNT XXXXX
START GPC SELF TEST 18X ERROR/MSG CODE XXX
STOP GPC SELF TEST 19X ERROR/MSG CODE CNT XXXX
START DEU SELF TEST 20X TOTAL ERR/MSG CNT XXXX
STOP STP ON ERROR 24X MSGS STILL IN LIST XXX
CONTINUE STP ON ERR 25X
INHIBIT CKPT LOAD 26X
MCDS BITE
MODE XXXX
BSR1 XXXX
BSR2 XXXX
SWSW XXXX

OLD PSW XXXX XXXX XXXX XXXX
REGISTER 0-3 XXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXX XXXXXXXXXXXX
SET 0 4-7 XXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXX XXXXXXXXXXXX

REGISTER 0-3 XXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXX XXXXXXXXXXXX
SET 1 4-7 XXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXX XXXXXXXXXXXX

FLOATING 0-3 XXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXX XXXXXXXXXXXX
PT REGS 4-7 XXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXX XXXXXXXXXXXX
MAJ=XXXXX MIN=XX SCHEDWRD=XXXXXXXXX CLOCK1=XXXXX

```

B

GPCIPL MENU NO. 2

```

0001/ / GPC MEMORY XX X DDD/HH:MM:SS
MEM/BUS CONFIG READ/WRITE XXX DDD/HH:MM:SS
1 CONFIG XX(XX) DATA 20X BIT SET 22X SEQ ID 24
2 GPC X X X X X CODE 21X BIT RST 23X WRITE 25
STRING 1 7 X 26 ENG UNITS XX HEX 27X
2 8 X ADD ID DESIRED ACTUAL
3 9 X 28 XXXXX 29 XXXX ±XXXXXXXXXXXX
4 10 X 30 XXXXX 31 XXXX ±XXXXXXXXXXXX
PL 1/2 11 X 32 XXXXX 33 XXXX ±XXXXXXXXXXXX
34 XXXXX 35 XXXX ±XXXXXXXXXXXX
36 XXXXX 37 XXXX ±XXXXXXXXXXXX
38 XXXXX 39 XXXX ±XXXXXXXXXXXX
CRT 1 12 X
2 13 X
3 14 X
4 15 X
LAUNCH 1 16 X
2 17 X
MM 1 18 X
2 19 X
44 DOWNLIST GPC X
OPS 0 ENA 49 X
ERR LOG RESET 48
STORE MC=XX
45 CONFIG XX
46 GPC X
STORE 47
MM AREA
PL 52 X
GNC 53 X
SM 54 X

```

C

GPC MEMORY

```

XXXX/001/ DPS UTILITY XX X DDD/HH:MM:SS
MMU ASSIGN PORT ASSIGN DDD/HH:MM:SS
1 2
GNC 1X 2X STRING 1 PRI SEC UL CNTL
SM 3X 4X 2 17X 18X AUTO 35X
PL 5X 6X 3 19X 20X ENA 36X
OPS 0 7X 8X 4 21X 22X INH 37X
PL 1/2 23X 24X IPL SOURCE SW
MMU STATUS MASK 38X
1 XXX
2 XXX
VAR PARAM ID LIST
MMU SOURCE/BUS 25 XXXX
GPC/MMU 9X 26 XXXX
MMU/MMU 10X 27 XXXX
GPC/LDB 11X 28 XXXX
29 XXXX
30 XXXX
CKPT RETRV 31 XXXX
ENA 12X 32 XXXX
33 XXXX
34 XXXX
RTC
13 XXXX XXXX
CMD 14
G3 ARCHIVE
LOAD 48X
RETRIEVE 49X
GROUND OPS
GSE POLL ENA 50X
SM GSE INH 51X
SM C/O ENA 52X
GNC C/O ENA 53X
BFC C/O ENA 54X
ALT PL9 TB 55X

```

D

DPS UTILITY

XXXX/002/ TIME XX X DDD/HH:MM:SS
 DDD/HH:MM:SS
 MISSION TIME TONE
 GMT 1X 3 XX:XX:XX MSN T
 MET 2X 6 XX:XX:XX
 CRT TIMER
 9 SET (HXX:XX:XX 20 [HXX:XX:XX CRT T
 START 12 STOP 13
 14 START AT XX:XX:XX MSN T 23 DURATION XX
 17 COUNT TO XX:XX:XX MSN T

A

MTU
 24 GMT Δ [HXX/XX:XX:XX.XXX
 28 MET Δ [HXXX/XX:XX:XX.XXX
 UPDATE 32 MET RESET 33

GPC TIME	GMT	TRY	GPC
MTU ACCUM 1	XXX/XX:XX:XX.XXXS	34	1 XX
2	XXX/XX:XX:XX.XXXS	35	2 XX
3	XXX/XX:XX:XX.XXXS	36	3 XX
GPC	XXX/XX:XX:XX.XXXS	37	4 XX
			5 XX

TIME SYNC 38

TIME

XXXX/XXX/099 FAULT XX X DDD/HH:MM:SS
 DDD/HH:MM:SS

B

CRT ID	FAULT	C/W	GPC	TIME
XXX	XXXXXXXXXX	XXXX	X	XXXXX XXX/XX:XX:XX
XXX	XXXXXXXXXX	XXXX	X	XXXXX XXX/XX:XX:XX
XXX	XXXXXXXXXX	XXXX	X	XXXXX XXX/XX:XX:XX
XXX	XXXXXXXXXX	XXXX	X	XXXXX XXX/XX:XX:XX
XXX	XXXXXXXXXX	XXXX	X	XXXXX XXX/XX:XX:XX
XXX	XXXXXXXXXX	XXXX	X	XXXXX XXX/XX:XX:XX
XXX	XXXXXXXXXX	XXXX	X	XXXXX XXX/XX:XX:XX
XXX	XXXXXXXXXX	XXXX	X	XXXXX XXX/XX:XX:XX
XXX	XXXXXXXXXX	XXXX	X	XXXXX XXX/XX:XX:XX
XXX	XXXXXXXXXX	XXXX	X	XXXXX XXX/XX:XX:XX
XXX	XXXXXXXXXX	XXXX	X	XXXXX XXX/XX:XX:XX
XXX	XXXXXXXXXX	XXXX	X	XXXXX XXX/XX:XX:XX
XXX	XXXXXXXXXX	XXXX	X	XXXXX XXX/XX:XX:XX
XXX	XXXXXXXXXX	XXXX	X	XXXXX XXX/XX:XX:XX
XXX	XXXXXXXXXX	XXXX	X	XXXXX XXX/XX:XX:XX
XXX	XXXXXXXXXX	XXXX	X	XXXXX XXX/XX:XX:XX
XXX	XXXXXXXXXX	XXXX	X	XXXXX XXX/XX:XX:XX

FAULT

XXXX/XXX/006 GPC/BUS STATUS XX X DDD/HH:MM:SS
 DDD/HH:MM:SS

C

	GPC	1S	2S	3S	4S	5S
MODE	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX
OPS	XX	XX	XX	XX	XX	XX
STRING 1	FF	XS	XS	XS	XS	XS
	FA	XS	XS	XS	XS	XS
2	FF	XS	XS	XS	XS	XS
	FA	XS	XS	XS	XS	XS
3	FF	XS	XS	XS	XS	XS
	FA	XS	XS	XS	XS	XS
4	FF	XS	XS	XS	XS	XS
	FA	XS	XS	XS	XS	XS
PL 1		XS	XS	XS	XS	XS
2		XS	XS	XS	XS	XS
LAUNCH 1		XS	XS	XS	XS	XS
2		XS	XS	XS	XS	XS
CRT 1		XS	XS	XS	XS	XS
2		XS	XS	XS	XS	XS
3		XS	XS	XS	XS	XS
4		XS	XS	XS	XS	XS

GPC/BUS STATUS

VEHICLE UTILITY

8011/ / FCS/DED DIS C/O XX X DDD/HH:MM:SS
DDD/HH:MM:SS

DED DIS MODE LT AVG G ON 9X
FWD 1X HIGH 3X ON 7X
AFT 2X LOW 4X OFF 8X
FLAG 5X
OFF 6X

BODY FLP DES SURF DR START 10X STOP 11X
VLV 1 XXX 12X
2 XXX 13X
3 XXX 14X

SEC ACT CK SURF CMD POS 1 2 3 4
CH 1 15X R IB XXX.X XXX.XS S S S S
CH 2 16X R IB XXX.X XXX.XS S S S S
CH 3 17X OB XXX.X XXX.XS S S S S
CH 4 18X RUD XXX.X XXX.XS S S S S
STOP 19X SPD BRK XXX.X XXX.XS S S S S
POS STIM BDY FLP XX XXX.X

SEC ACT
21 BYPASS XX
22 RESET XX

FCS DEDICATED DISPLAY CHECKOUT

9011/ / MASS MEMORY R/W XX X DDD/HH:MM:SS
SM COM BUFF XXX DDD/HH:MM:SS

DESIRED	ACTUAL	DESIRED	ACTUAL	SELECT
1 XXXX	XXXX	21 XXXX	XXXX	
2 XXXX	XXXX	22 XXXX	XXXX	MMU 1 40X
3 XXXX	XXXX	23 XXXX	XXXX	MMU 2 41X
4 XXXX	XXXX	24 XXXX	XXXX	42 S/W SYSTEM X
5 XXXX	XXXX	25 XXXX	XXXX	43 PHASE XXX
6 XXXX	XXXX	26 XXXX	XXXX	44 LOAD BLK XXX
7 XXXX	XXXX	27 XXXX	XXXX	45 OFFSET XXXXX
8 XXXX	XXXX	28 XXXX	XXXX	46 NUMBER XX
9 XXXX	XXXX	29 XXXX	XXXX	47 PATCH ID XXXX
10 XXXX	XXXX	30 XXXX	XXXX	VIOLATE XXX
11 XXXX	XXXX	31 XXXX	XXXX	READ LOAD BLK 48X
12 XXXX	XXXX	32 XXXX	XXXX	MERGE 49X
13 XXXX	XXXX	33 XXXX	XXXX	WRITE LOAD BLK 50X
14 XXXX	XXXX	34 XXXX	XXXX	COMPARE 51X
15 XXXX	XXXX	35 XXXX	XXXX	STATUS XXXX
16 XXXX	XXXX	36 XXXX	XXXX	ERROR CODE X
17 XXXX	XXXX	37 XXXX	XXXX	REGISTER A XXXX
18 XXXX	XXXX	38 XXXX	XXXX	B XXXX
19 XXXX	XXXX	39 XXXX	XXXX	MM VERSION XX.XX
20 XXXX	XXXX	CHECKSUM XXXX		DUMP VIA DL 52X

MASS MEMORY READ/WRITE

XXXX/040/ SENSOR TEST XX X DDD/HH:MM:SS
DDD/HH:MM:SS

MLS	DES	STAT	RNG	AZ	EL
1	1X	XXXX	XX.XS	±X.XXS	X.XXS
2	2X	XXXX	XX.XS	±X.XXS	X.XXS
3	3X	XXXX	XX.XS	±X.XXS	X.XXS

TAC	DES	STAT	RNG	AZ
1	4X	XXXX	X.XS	XXX.XXS
2	5X	XXXX	X.XS	XXX.XXS
3	6X	XXXX	X.XS	XXX.XXS

RA	DES	STAT	ALT
1	7X	XXXX	XXXXXS
2	8X	XXXX	XXXXXS

AA	DES	Y	Z
1	9X	±XX.XS	±XX.XS
2	10X	±XX.XS	±XX.XS
3	11X	±XX.XS	±XX.XS
4	12X	±XX.XS	±XX.XS

START 13X STOP 14X

SENSOR TEST

XXXX/041/ RGA/ADTA/RCS XX X DDD/HH:MM:SS
DDD/HH:MM:SS

R	P	Y
R1 1X	XXXX	±XX.XS ±XX.XS ±XX.XS
G2 2X	XXXX	±XX.XS ±XX.XS ±XX.XS
A3 3X	XXXX	±XX.XS ±XX.XS ±XX.XS
4 4X	XXXX	±XX.XS ±XX.XS ±XX.XS

PS	P=C	P=U	P=L	T	
A1 5X	XXXX	XX.XXS	XX.XXS	XX.XXS	XXX.XXS
D3 6X	XXXX	XX.XXS	XX.XXS	XX.XXS	XXX.XXS
T2 7X	XXXX	XX.XXS	XX.XXS	XX.XXS	XXX.XXS
A4 8X	XXXX	XX.XXS	XX.XXS	XX.XXS	XXX.XXS

TEST HI 9X LOW 10X STOP 11X

RCS DRIVERS

RJDF	12X	TEST EXEC	15X	TEST XXXX
RJDA-A	13X	CONTINUE	16X	JET XXX
-B	14X	STOP	17	

RGA/ADTA/RCS

XXXX/042/ SWITCH/SURF XX X DDD/HH:MM:SS
DDD/HH:MM:SS

		ORIDE		DES			ORIDE		DES	
		1	2	1X	2X		3	4	1X	2X
FCS CH	1	X	S	X	1X	3	X	S	7X	
	2	X	S	X	2X		X	S	8X	
	3	X	S	X	3X		X	S	9X	
	2	X	S	X	4X	4	X	S	10X	
	3	X	S	X	5X		X	S	11X	
	3	X	S	X	6X		X	S	12X	

		P		R/Y		SPD BRK		BDY FLP		DES
		AUT	CSS	AUT	CSS	AUT	MAN	AUT		
FCS MODE	L	1	X	S	X	X	S	X	X	13X
		2	X	S	X	X	S	X	X	14X
		3	X	S	X	X	S	X	X	15X
	R	1	X	S	X	X	S	X	X	16X
		2	X	S	X	X	S	X	X	17X
		3	X	S	X	X	S	X	X	18X

	L OB		L IB		R IB		R OB		SPD BDY		DES	
	1	2	1	2	1	2	1	2	RUD	BRK		FLP
SURF	1	X	X	X	X	X	X	X	X	X	X	19X
	2	X	X	X	X	X	X	X	X	X	X	20X
	3	X	X	X	X	X	X	X	X	X	X	21X
	4	X	X	X	X	X	X	X	X	X	X	22X

A

RM SWITCHES/SURFACES FEEDBACK

XXXX/043/ CONTROLLERS XX X DDD/HH:MM:SS
DDD/HH:MM:SS

		I		T		Y		DES	
		1	2	1	2	1	2	1	2
THC	L	X	S	X	1X				
		X	S	X	2X				
		X	S	X	3X				
	L	X	S	X	4X				
		X	S	X	5X				
		X	S	X	6X				
SPD BK	1	X	X	X	7X				
		X	X	X	8X				
		X	X	X	9X				
	1	X	X	X	10X				
		X	X	X	11X				
		X	X	X	12X				
RUD	1	X	X	X	13X				
		X	X	X	14X				
		X	X	X	15X				
PED	1	X	X	X	16X				
		X	X	X	17X				
		X	X	X	18X				

		R		P		Y		DES	
		1	2	1	2	1	2	1	2
RHC	L	X	X	X	X	X	X	X	23X
		X	X	X	X	X	X	X	24X
		X	X	X	X	X	X	X	25X
	L	X	X	X	X	X	X	X	26X
		X	X	X	X	X	X	X	27X
		X	X	X	X	X	X	X	28X
RHC TRIM	1	X	X	X	X	X	X	X	29X
		X	X	X	X	X	X	X	30X
		X	X	X	X	X	X	X	31X
	L	X	S	X					32X
		X	S	X					33X
		X	S	X					34X
PNL TRIM	1	X	S	X					35X
		X	S	X					36X
		X	S	X					37X
	1	X	S	X					38X
		X	S	X					39X

B

RM CONTROLLERS

XXXX/044/ SWITCHES XX X DDD/HH:MM:SS
DDD/HH:MM:SS

		ENTRY		ROLL		MODE	
		LOW	NO	Y/J	DES		
		GAIN					
	1	X	S	X			1X
	2	X	S	X			2X
	3	X	S	X			3X
	4	X	S	X			4X

C

SWITCHES

XXXX/045/ NWS CHECK XX X DDD/HH:MM:SS
DDD/HH:MM:SS

		HYD PRESS		ENABLE	CURRENT	POSITION
		SEL	HIGH			
NWS1	X	X		A	X	XX,XXS
				B	X	XX,XXS
NWS2	X	X		A	X	XX,XXS
				B	X	XX,XXS

STIMULI		
ENABLE		
RIGHT TURN (+)	1X	
LEFT TURN (-)	2X	
STOP	3X	
	4X	

D

NWS CHECK

A

```

XXXX/100/          GTS DISPLAY          XX X DDD/HH:MM:SS
                      DDD/HH:MM:SS
HDA CONTROL          DED DISP
  ENA 1X  INH 2X      FWD 18X  AFT 19X  DRIVE 24X
  DES PMU 40X PL 41X  HIGH 20X  LOW 21X
                      FLAG 22X  OFF 23X
CSL/RML TEST
  UF1 3X  UF4 6X      CRIT MEC CMDS      ELEV LMT SEL
  UF2 4X  UF5 7X      ENA 25X             HORZ 27X
  UF3 5X  IFA 8X      INH 26X             VERT 28X
  9 FAIL GPC SEL X   STATE 29X
  TEST EXEC 10X      SL COMM          SSC          EXC
  RESET 11X          CH A ENA 30X       35X
                      B ENA 31X       36X
                      DSBL 32X       37X
DL FORMAT
  12 SEL XX
  LOAD 13X
MDM TESTS
  RTRN CHW 33 XXXX 38 XXXX
  RTRN MSG 34 XXXX 39 XXXX
GSE POLL ENA 14X
PASS/BFS XFER 15
RJD TOGGLER
  ON 16X  OFF 17X
COUPLER
  STATE XXXX XXXX
  ERR CD  XX   XX

```

GENERAL TEST SUPPORT

B

```

XXXX/101/          SENSOR SELF-TEST      XX X DDD/HH:MM:SS
                      DDD/HH:MM:SS
  ENA STAT  RNG      AZ      EL
M1  1X  XXXX  XX.XS  ±X.XXS  X.XXS
L2  2X  XXXX  XX.XS  ±X.XXS  X.XXS
S3  3X  XXXX  XX.XS  ±X.XXS  X.XXS
  ENA STAT  RNG      AZ
T1  4X  XXXX  X.XS   XXX.XXS
A2  5X  XXXX  X.XS   XXX.XXS
C3  6X  XXXX  X.XS   XXX.XXS
  ENA STAT  ALT
R1  7X  XXXX  XXXXS
A2  8X  XXXX  XXXXS
  ENA          Y          Z
A1  9X         ±XX.XS   ±XX.XS
A2 10X         ±XX.XS   ±XX.XS
  3 11X         ±XX.XS   ±XX.XS
  4 12X         ±XX.XS   ±XX.XS
TEST CONTROL:
  START 13X
  AUTO SEQ 14X
  TERM 15X
  INH ALL 16X

```

SENSOR SELF-TEST

C

```

XXXX/102/          RCS/RGA/ADTA TEST  XX X DDD/HH:MM:SS
                      DDD/HH:MM:SS
RCS DRIVERS
  RJDF 1X      START TEST 4X  STAT XXXX
  RJDA-A 2X    CONT 5X  JET XXX
  -B 3X      TERM 6  STEP X
SENSORS
  ENA STAT  R          P          Y
R1  7X  XXXX  ±XX.XS  ±XX.XS  ±XX.XS
G2  8X  XXXX  ±XX.XS  ±XX.XS  ±XX.XS
A3  9X  XXXX  ±XX.XS  ±XX.XS  ±XX.XS
  4 10X  XXXX  ±XX.XS  ±XX.XS  ±XX.XS
TEST CONTROL:
  HIGH START 15X
  LOW START 16X
  AUTO SEQ 17X
  TERM 18X
  INH ALL 19X
  ENA STAT  P=C      PS          P=U      P=L      TT
A1 11X  XXXX  XX.XXS  XX.XXS  XX.XXS  XX.XXS  XXX.XXS
D3 12X  XXXX  XX.XXS  XX.XXS  XX.XXS  XX.XXS  XXX.XXS
T2 13X  XXXX  XX.XXS  XX.XXS  XX.XXS  XX.XXS  XXX.XXS
A4 14X  XXXX  XX.XXS  XX.XXS  XX.XXS  XX.XXS  XXX.XXS

```

RCS/RGA/ADTA TEST

D

```

XXXX/104/          GND IMU CNTL/MON  XX X DDD/HH:MM:SS
                      DDD/HH:MM:SS
IMU
  X 1 XXX.XX  4 XXX.XX  7 XXX.XX  SEL IMU 1 16X
  Y 2 XXX.XX  5 XXX.XX  8 XXX.XX  2 17X
  Z 3 XXX.XX  6 XXX.XX  9 XXX.XX  3 18X
  O XXX.XX  XXX.XX  XXX.XX  ATT DET 19X
  M XXX.XX  XXX.XX  XXX.XX  HNGR CAL A 20X
  I XXX.XX  XXX.XX  XXX.XX  B 21X
  IR XXX.XX  XXX.XX  XXX.XX  C 22X
  V X ±XX.XX  ±XX.XX  ±XX.XX  PREFLT CAL 23X
  Y ±XX.XX  ±XX.XX  ±XX.XX  GYROCOMP 24X
  Z ±XX.XX  ±XX.XX  ±XX.XX  XXXX XXXX
  VRSS XX.XX  XX.XX  XX.XX  INERTIAL 25X
  PLAT POS 26X
  TERM/IDLE 27X
  B HDW XXXX  XXXX  XXXX
  I S/W XX  XX  XX
  TESTAT XX  XX  XX
  28 MM WRITE X
  READ 29X
  MM STATUS XXXX
  PWR ON X X X
  I/O S S S
  STBY 10X 11X 12X 30 SITE SEL X
  OPER 13X 14X 15X ACTUAL XXXX

```

GROUND IMU CONTROL/MONITOR

```

XXXX/105/      TCS CONTROL      XX X DDD/HH:MM:SS
                                           DDD/HH:MM:SS
1 SELECT ID XX    NAME XXXXXXXX    ECP ERROR XXX
MM READ 2 XXXX   STATUS  XXXX      ERROR CODE XXX
STEP  XXXXX     TIME  XX:XX:XX    BITE  XXXX
STOP 3          4 STOP AT XXXXX   CANCEL 5
RESUME 6        7 RSM AT XXXXX   CLEAR MSGS 8

TIME                TEXT
XX:XX:XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XX:XX:XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XX:XX:XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XX:XX:XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XX:XX:XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XX:XX:XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XX:XX:XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XX:XX:XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XX:XX:XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XX:XX:XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XX:XX:XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XX:XX:XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XX:XX:XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XX:XX:XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XX:XX:XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XX:XX:XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XX:XX:XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
XX:XX:XX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

```

TCS CONTROL

```

XXXX/110/      BUS/BTU STATUS    XX X DDD/HH:MM:SS
                                           DDD/HH:MM:SS
MODE X  FF1P  X X X X  LF1P  X X X X  PMU    B T O P  X X X X
MC X    1S   X X X X  1S   X X X X  EIUIA  X X X X
MF XX   2P   X X X X  LA1P  X X X X  1B    X X X X
        3P   X X X X  1S   X X X X  1C    X X X X
CPU XX  4P   X X X X  PM1P  X X X X  1D    X X X X
        3S   X X X X  1S   X X X X  2A    X X X X
        4P   X X X X  LL1P  X X X X  2B    X X X X
PRI/SEC  FF4S  X X X X  1S   X X X X  2C    X X X X
PORTS   FA1P  X X X X  2P   X X X X  2D    X X X X
        1S   X X X X  2S   X X X X  3A    X X X X
        2S   X X X X  LR1P  X X X X  3B    X X X X
PRI 1X  3P   X X X X  1S   X X X X  3C    X X X X
SEC 2X  2S   X X X X  2P   X X X X  3D    X X X X
        3P   X X X X  2P   X X X X  EIUI3D X X X X
        3S   X X X X  2S   X X X X  MEC1A  X X X X
        4P   X X X X  MCIU  X X X X  1B    X X X X
        FA4S  X X X X  X X X X  1C    X X X X
        MMU1  X X X X  LDIUP  X X X X  1D    X X X X
        2    X X X X  S    X X X X  2A    X X X X
        DEU1  X X X X  PF1P  X X X X  2B    X X X X
        2    X X X X  1S   X X X X  2C    X X X X
        3    X X X X  2P   X X X X  MEC2D  X X X X
        4    X X X X  2S   X X X X

```

BUS/BTU STATUS

```

XXXX/111/      SL MEMORY DUMP    XX X DDD/HH:MM:SS
SM COM BUFF XXX           DDD/HH:MM:SS

SL COMP SEL
SS 1X
EXP 2X
SL COUPLER
SEL A 3X
   B 4X
5 START ADD  XXXX
6 LENGTH    XXXXX
DUMP 7 XXXX

WORDS ACQ  XXXXX
FAIL RHW  XXXX
AW XXXXX
LAST ADD  XXXX

```

SPACELAB MEMORY DUMP

```

XXXX/112/      GPC/BTU I/F      XX X DDD/HH:MM:SS
                                           DDD/HH:MM:SS

BTU SELECTION    TEST STATUS    MDM OUTPUT TEST
FF1 1X PCMMU 12X      XXXX     MODULE XX
2 2X MMU1 13X      BTU ITEM XX
3 3X 2 14X      STEP XXXXXX
4 4X MEC1 15X     RDW  XXXX
FA1 5X 2 16X     BCE STAT RG
2 6X EIUI 17X     XXXXXXXX
3 7X 2 18X
4 8X 3 19X  PORT SEL 1 31X
PF1 9X DDU 20X    2 32X
2 10X MCIU 21X
        CMD 22X
        SRB 23X

ALL DES
MDMS 11X ALL 24X

TEST LEVEL 1 25X
      LEVEL 2 26X
CONTROL MDM OUTPUT 27X
        TERMINATE 28
        CONTINUE  29

ANALOG OUTPUTS
0 ±X.XX 1 ±X.XX
2 ±X.XX 3 ±X.XX
4 ±X.XX 5 ±X.XX
6 ±X.XX 7 ±X.XX
8 ±X.XX 9 ±X.XX
10 ±X.XX 11 ±X.XX
12 ±X.XX 13 ±X.XX
14 ±X.XX 15 ±X.XX

DISCRETE OUTPUTS
CHANNEL 0 XXXXXX
CHANNEL 1 XXXXXX
CHANNEL 2 XXXXXX

BTU CYCLIC BITE 30X

```

GPC/BTU INTERFACE

A

XXXX/113/ MONITOR		ACTUATOR CONTROL				XX X	DDD/HH:MM:SS
CMD	POS	ACT	A	B	C	D	DDD/HH:MM:SS
±XX.XX	±XX.XX	SB	1X	S	S	S	ACTUATOR GIMBALING
±XX.XX	±XX.XX	RUD	2X	S	S	S	RATE 29 XX.XX DEG/SEC
±XX.XX	±XX.XX	LIE	3X	S	S	S	FIN POS 30 ±XX.XX DEG
±XX.XX	±XX.XX	RIE	4X	S	S	S	START 31XXX STOP 32X
±XX.XX	±XX.XX	LOE	5X	S	S	S	STATUS XXXX
±XX.XX	±XX.XX	ROE	6X	S	S	S	HYD PR ECP ERR XXX
±XX.XX	±XX.XX	1P	7X	S	S	S	1 XXXX BF MON 33X
±XX.XX	±XX.XX	1Y	8X	S	S	S	2 XXXX
±XX.XX	±XX.XX	2P	9X	S	S	S	3 XXXX
±XX.XX	±XX.XX	2Y	10X	S	S	S	AI SRB/NW 34X
±XX.XX	±XX.XX	3P	11X	S	S	S	ME ISO V
±XX.XX	±XX.XX	3Y	12X	S	S	S	1X 2X 3X FC LIM CHNG
±XX.XX	±XX.XX	RPA	13X				R/SB MAT 35X
±XX.XX	±XX.XX	RPS	14X				R/SB RFG/FRT 36X
±XX.XX	±XX.XX	RYA	15X	0	SAFE	22 X	MAT P 40MS 37X
±XX.XX	±XX.XX	RYS	16X	1	MDM	23 X	NOP CA RFG 38X
±XX.XX	±XX.XX	LPA	17X	2	FERY	24 X	NOP CA FRT 39X
±XX.XX	±XX.XX	LPS	18X	3	RAIN	25 X	NOP OMS 40X
±XX.XX	±XX.XX	LYA	19X	4	GRAV	26 X	SRB S/S LIM 41X
±XX.XX	±XX.XX	LYS	20X	5	NULL	27 X	EL POS LIM 42X
XX	±XX.XX	BF	21X	6	TURN	28 X	S/B POS LIM 43X
							R RATE .5 FCM 44X

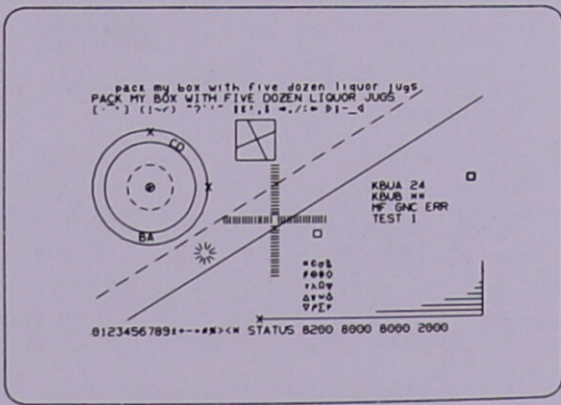
ACTUATOR CONTROL

B

XXXX/XXX/106		MANUAL CONTROLS				XX X	DDD/HH:MM:SS
RHC	R	P	Y				DDD/HH:MM:SS
L	1	±XXX	±XXX	±XXX			L 1 ±XX
	2	±XXX	±XXX	±XXX			S 2 ±XX
	3	±XXX	±XXX	±XXX			B 3 ±XX
R	1	±XXX	±XXX	±XXX			T R 1 ±XX
	2	±XXX	±XXX	±XXX			C 2 ±XX
	3	±XXX	±XXX	±XXX			L 3 ±XX
A	1	±XXX	±XXX	±XXX			L 1 ±XXX
	2	±XXX	±XXX	±XXX			R 2 ±XXX
	3	±XXX	±XXX	±XXX			P 3 ±XXX
							T R 1 ±XXX
							A 2 ±XXX
							3 ±XXX
TRIM SW	R	P	Y	BDY	FLP		
PNL	L	1	X	X	X	L	1X
		2	X	X	X		2X
	R	1	X	X	X	R	1X
		2	X	X	X		2X
RHC	L	1	X	X		THC	TX TY TZ
		2	X	X		L	1 X X X
		3	X	X			2 X X X
	R	1	X	X		A	1 X X X
		2	X	X			2 X X X
		3	X	X			3 X X X

MANUAL CONTROLS

C



DEU STAND-ALONE SELF TEST

**BACK-UP FLIGHT SYSTEM
(BFS)**

A

```

0001/ / BFS MEMORY XX X DDD/HH:MM:SS
BFS DDD/HH:MM:SS
READ/WRITE
DATA 1X BIT SET 3X SEQ ID 5
CODE 2X BIT RST 4X WRITE 6
7 ENG UNITS XXXX HEX 8X
ADD ID DESIRED ACTUAL
9 XXXXX 10 XXXX ±XXXXXXXXXXXX
11 XXXXX 12 XXXX ±XXXXXXXXXXXX
13 XXXXX 14 XXXX ±XXXXXXXXXXXX
15 XXXXX 16 XXXX ±XXXXXXXXXXXX
17 XXXXX 18 XXXX ±XXXXXXXXXXXX
19 XXXXX 20 XXXX ±XXXXXXXXXXXX

MEMORY DUMP
21 START ID XXXXX LAUNCH BUS 1 26X 1FL ENA
22 NUMBER WDS XXXXXX 2 27X 29X
23 WDS/FRAE XXX OFF 28X
DUMP 24 PASS/BFS XFER ENA 25X

BFS TIME UPDATES UPDATE 38 MISSION TIME
30 GMT Δ (HXXX/XX:XX:XX.XXX GMT 39X
34 MET Δ (HXXX/XX:XX:XX.XXX MET 40X
  
```

BFS MEMORY

B

```

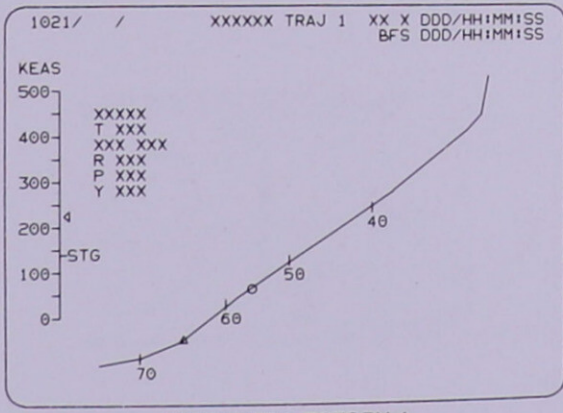
0001/ / THERMAL XX X DDD/HH:MM:SS
BFS DDD/HH:MM:SS
HYD SYS TEMP BODYFLP RD/SB L OB L IB R IB R OB
PRIME ±XXXX ±XXXX ±XXXX ±XXXX ±XXXX ±XXXX
STBY 1 ±XXXX ±XXXX ±XXXX ±XXXX ±XXXX ±XXXX
BRAKE PRESS
HYD SYS 1/3 XXXXX XXXXX XXXXX XXXXX
2/3 XXXXX XXXXX XXXXX XXXXX

HTR TEMP L/A R/B FREON LOOP 1 2
PRPLT ACCUM QTY XXXX XXXX
POD SSSSSSS SSSSSSS RAD OUT T XXXX XXXX
OMS CRSPD SSSSSSS H2O SUP P XXXX
EVAP TIRE PRESS
HI LOAD SSS MG LEFT RIGHT
TOP DUCT SS IB XXXX XXXX XXXX XXXX
NOZ S OB XXXX XXXX XXXX XXXX
FDLN SSSS SSSS NG XXXX XXXX XXXX XXXX

HYD BLR/HTR 1 2 3
APU S S S
GG/FU PMP HTR SSSSS SSSSS SSSSS
TK/FU LN HTR SSSSSSS SSSSSSS SSSSSSS
PUMP/VLV SS SS SS
  
```

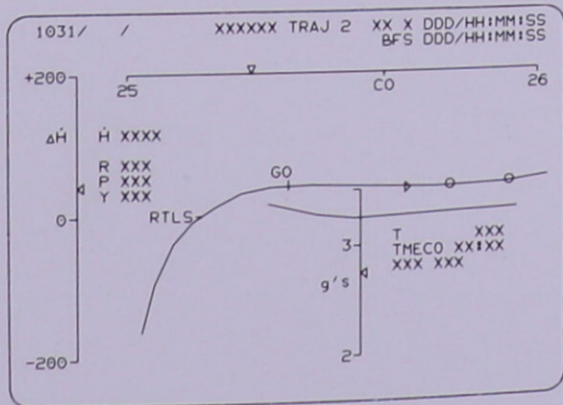
THERMAL

C



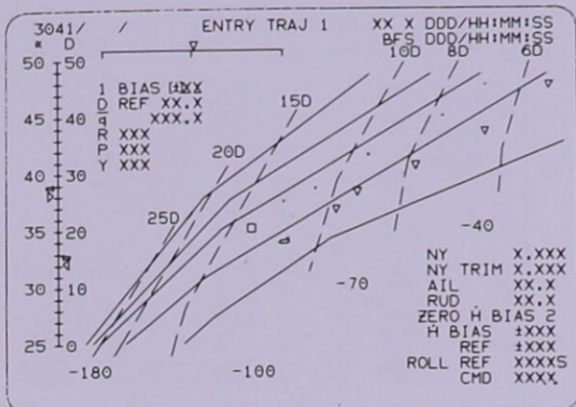
ASCENT TRAJECTORY 1

D



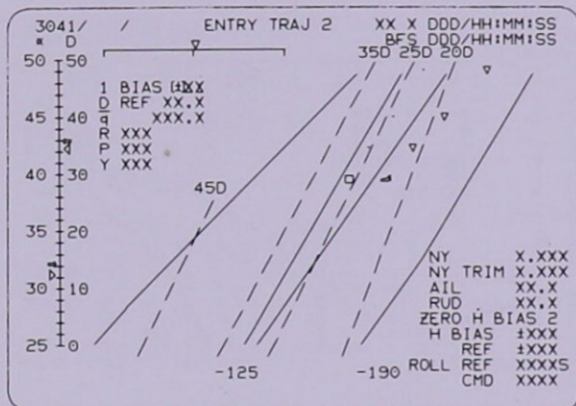
ASCENT TRAJECTORY 2

A



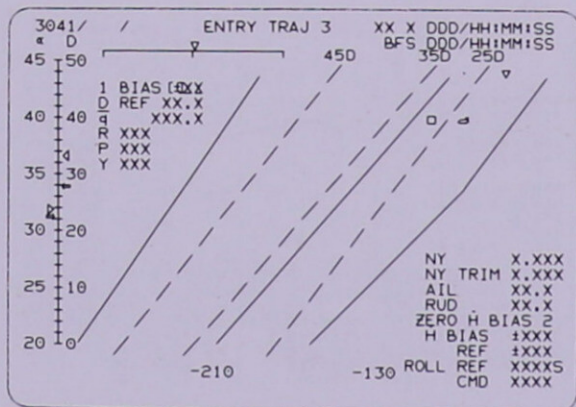
ENTRY TRAJECTORY 1

B



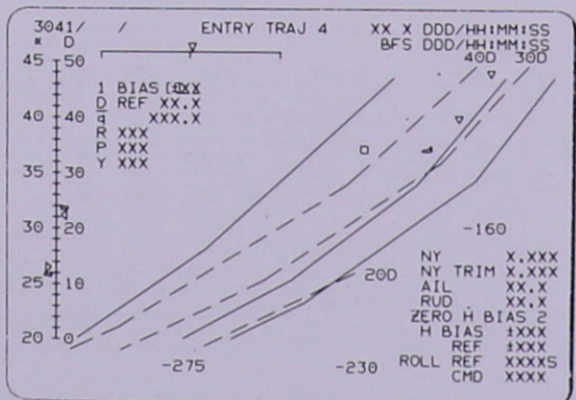
ENTRY TRAJECTORY 2

C



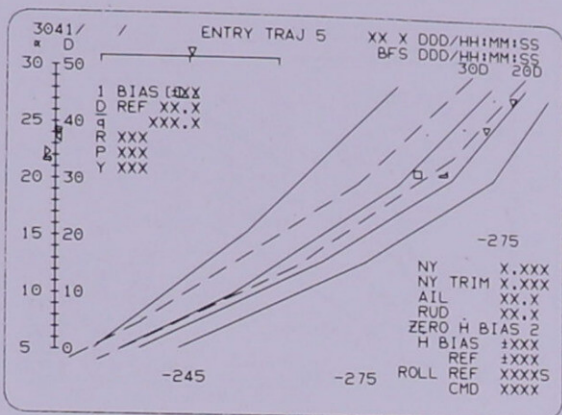
ENTRY TRAJECTORY 3

D

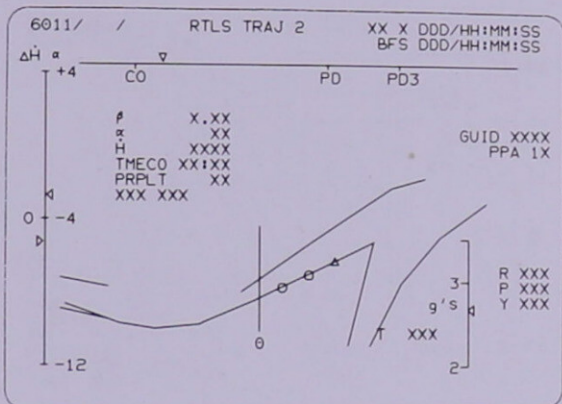


ENTRY TRAJECTORY 4

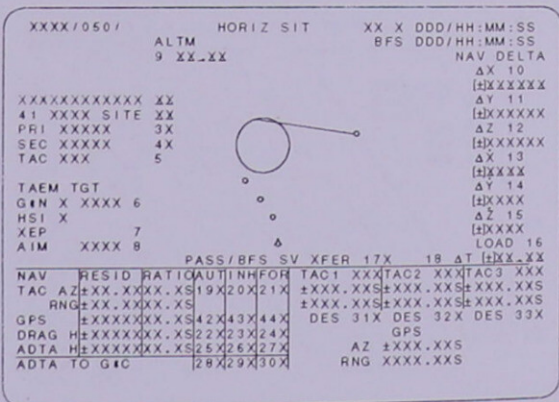
A



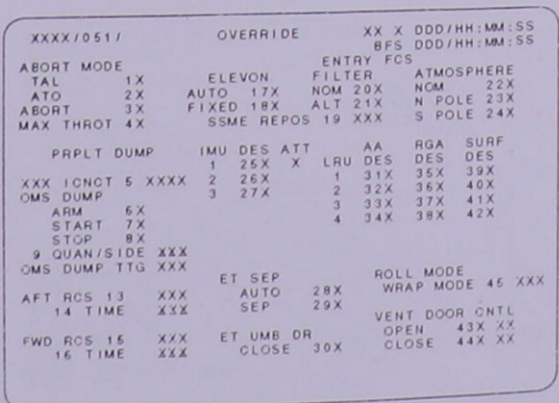
B



C



D



XXXX/XXX/099 FAULT XX X DDD/HH:MM:SS
BFS DDD/HH:MM:SS

CRT ID	FAULT	C/W	GPC	TIME
XXX	XXXXXXXXXX	XXXX	X	X XXX/XX:XX:XX
XXX	XXXXXXXXXX	XXXX	X	X XXX/XX:XX:XX
XXX	XXXXXXXXXX	XXXX	X	X XXX/XX:XX:XX
XXX	XXXXXXXXXX	XXXX	X	X XXX/XX:XX:XX
XXX	XXXXXXXXXX	XXXX	X	X XXX/XX:XX:XX
XXX	XXXXXXXXXX	XXXX	X	X XXX/XX:XX:XX
XXX	XXXXXXXXXX	XXXX	X	X XXX/XX:XX:XX
XXX	XXXXXXXXXX	XXXX	X	X XXX/XX:XX:XX
XXX	XXXXXXXXXX	XXXX	X	X XXX/XX:XX:XX
XXX	XXXXXXXXXX	XXXX	X	X XXX/XX:XX:XX
XXX	XXXXXXXXXX	XXXX	X	X XXX/XX:XX:XX
XXX	XXXXXXXXXX	XXXX	X	X XXX/XX:XX:XX
XXX	XXXXXXXXXX	XXXX	X	X XXX/XX:XX:XX
XXX	XXXXXXXXXX	XXXX	X	X XXX/XX:XX:XX
XXX	XXXXXXXXXX	XXXX	X	X XXX/XX:XX:XX
XXX	XXXXXXXXXX	XXXX	X	X XXX/XX:XX:XX
XXX	XXXXXXXXXX	XXXX	X	X XXX/XX:XX:XX
XXX	XXXXXXXXXX	XXXX	X	X XXX/XX:XX:XX
XXX	XXXXXXXXXX	XXXX	X	X XXX/XX:XX:XX
XXX	XXXXXXXXXX	XXXX	X	X XXX/XX:XX:XX
XXX	XXXXXXXXXX	XXXX	X	X XXX/XX:XX:XX

A

FAULT

XXXX/XXX/018 GNC SYS SUMM 1 XX X DDD/HH:MM:SS
BFS DDD/HH:MM:SS

SURF	POS	MOM	DPS	1	2	3	4
L	OB	XXX.XS.XXS	MDM	FF	SS	SS	SS
I	B	XXX.XS.XXS		FA	SS	SS	SS
R	I	B		PL	SS		
O	B	XXX.XS.XXS					

FCS	CH	1	2	3	4
		SS	SS	SS	SS

MPS	L	C	R	NAV	1	2	3	4
HE	TK	P	XXXXXS.XXSXS.XXSXS	IMU	SS	SS	SS	SS
REG	P	A	XXXXXS.XXSXS.XXSXS	TAC	SS	SS	SS	SS
		B	XXXXXS.XXSXS.XXSXS	ADTA	SS	SS	SS	SS
dP/dT			XXXXXS.XXSXS.XXSXS					

ULL	P	LH2	XX.XS	XX.XS	XX.XS	MPS	PNEU	HE	P
						TK	XXXXXS		
		LO2	XX.XS	XX.XS	XX.XS	REG	XXXXXS		
						ACUM	XXXXXS		
GH2	OUT	P	XXXXXS.XXSXS.XXSXS			MANF	P	LH2	XXXXXS
GO2	OUT	T	XXXXXS.XXSXS.XXSXS					LO2	XXXXXS

B

GNC SYSTEM SUMMARY 1

XXXX/XXX/078 SM SYS SUMM 1 XX X DDD/HH:MM:SS
BFS DDD/HH:MM:SS

SMOKE	1/A	2/B	DC VOLTS	1/A	2/B	3/C
CABIN	XX.XS		FC	XX.XS	XX.XS	XX.XS
L/R	FD	XX.XS XX.XS	MAIN	XX.XS	XX.XS	XX.XS
AV	BAY	1 XX.XS XX.XS	CNTL	AB	XX.XS XX.XS	XX.XS
		2 XX.XS XX.XS		BC	XX.XS XX.XS	XX.XS
		3 XX.XS XX.XS		CA	XX.XS XX.XS	XX.XS

CABIN	PRESS	XX.XS	AC	ESS	XX.XS	XX.XS	XX.XS	
dP/dT		±.XXS	VOLT	0A	XXXS	XXXS	XXXS	
BU/EQ		±.XXS ±.XXS		0B	XXXS	XXXS	XXXS	
PP02		X.XXS X.XXS		0C	XXXS	XXXS	XXXS	
FAN	ΔP	X.XXS	AMPS	0A	XX.XS	XX.XS	XX.XS	
HX	OUT	T XXXS		0B	XX.XS	XX.XS	XX.XS	
O2	FLOW	X.XS X.XS		0C	XX.XS	XX.XS	XX.XS	
N2	FLOW	X.XS X.XS	FUEL CELL	PH	XXS	XXS	XXS	
IMU	FAN	ΔP X.XXS	AMPS		XXXS	XXXS	XXXS	
ΔV	FC1	FC2	FC3	REAC	VLV	XXS	XXS	XXS
SS1	XXXS	XXXS	XXXS	STACK	T	±XXXS	±XXXS	±XXXS
SS2	XXXS	XXXS	XXXS	EXIT	T	XXXS	XXXS	XXXS
SS3	XXXS	XXXS	XXXS	COOL	P	XXXS	XXXS	XXXS
TOTAL	AMPS	XXXXS		PUMP		XXS	XXS	XXS
		KW	XXS					

C

SM SYSTEM SUMMARY 1

XXXX/XXX/079 SM SYS SUMM 2 XX X DDD/HH:MM:SS
BFS DDD/HH:MM:SS

CRYO	TK	1	2	3	4	5	MANF1	MANF2
H2	PRESS	XXXXS	XXXXS	XXXXS	XXXXS	XXXXS	XXXXS	XXXXS
O2	PRESS	XXXXS	XXXXS	XXXXS	XXXXS	XXXXS	XXXXS	XXXXS
HTR	T1	±XXXXS	±XXXXS	±XXXXS	±XXXXS	±XXXXS		
	T2	±XXXXS	±XXXXS	±XXXXS	±XXXXS	±XXXXS		

APU	1	2	3	HYD	1	2	3		
TEMP	EGT	XXXXXS	XXXXXS	XXXXXS	PRESS	XXXXXS	XXXXXS	XXXXXS	
B/U	EGT	XXXXXS	XXXXXS	XXXXXS	ACUM	P	XXXXXS	XXXXXS	
OIL	IN	XXXXS	XXXXS	XXXXS	RSVR	T	XXXXS	XXXXS	
	OUT	XXXXS	XXXXS	XXXXS					
GG	BED	XXXXS	XXXXS	XXXXS	QTY	XXXXS	XXXXS	XXXXS	
INJ		XXXXXS	XXXXXS	XXXXXS					
SPEED	%	XXXXS	XXXXS	XXXXS	W/B				
FUEL	QTY	XXXXS	XXXXS	XXXXS	H2O	QTY	XXXXS	XXXXS	
PMP	LK	P	XXS	XXS	BYP	VLV	XXXXS	XXXXS	
OIL	OUT	P	XXXXS	XXXXS					
FU	TK	VLV							
	A	T	XXXXS	XXXXS	XXXXS				
	B	T	XXXXS	XXXXS	XXXXS				
AV	BAY	1	2	3	THERM	CNTL	1	2	
TEMP		XXXXS	XXXXS	XXXXS	H2O	PUMP	P	XXXXS	XXXXS
FAN	ΔP	X.XXS	X.XXS	X.XXS	FREON	FLOW	XXXXXS	XXXXXS	
					EVAP	OUT	T	XXXXS	XXXXS

D

SM SYSTEM SUMMARY 2

A

```

XXXX/XXX/168      CRYO PALLET      XX X DDD/HH:MM:SS
                                      BFS DDD/HH:MM:SS

PALLET TK      6      7      8      9
H2 PRESS      XXXS   XXXS   XXXS   XXXS
TK P          XXXS   XXXS   XXXS   XXXS
O2 PRESS      XXXXS  XXXXS  XXXXS  XXXXS
TK P          XXXXS  XXXXS  XXXXS  XXXXS
HTR T1       ±XXXS  ±XXXS  ±XXXS  ±XXXS
T2           ±XXXS  ±XXXS  ±XXXS  ±XXXS
  
```

SM CRYO PALLET

B

```

XXXX/055/      GPS STATUS      XX X DDD/HH:MM:SS
                                      BFS DDD/HH:MM:SS

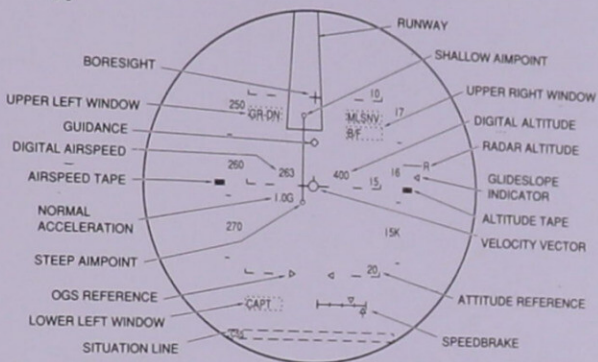
      GPS1
STAT   XXX
DES    1X
MODE   XXXX
FOM    XS

ALT    XXXXXXXX
LAT    XX.XX X
LON    XXX.XX X

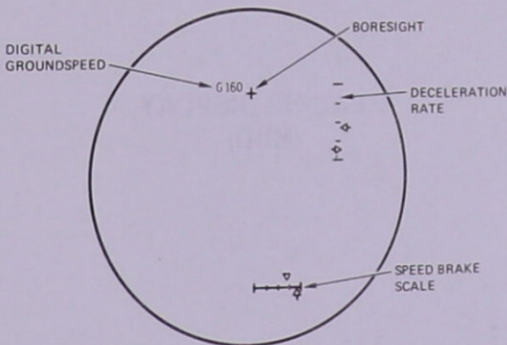
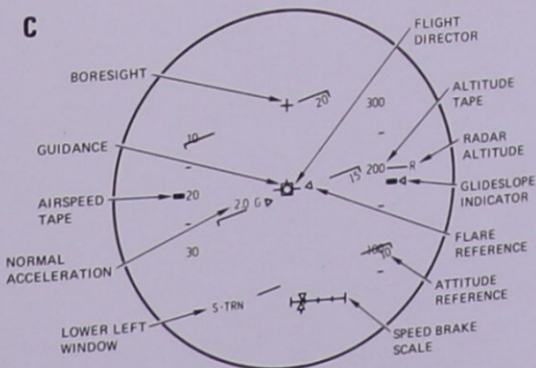
      CHANNEL STATE & SATELLITE NUMBER
      CH1    CH2    CH3    CH4    CH5
GPS1   X XX   X XX   X XX   X XX   X XX
  
```

GPS STATUS

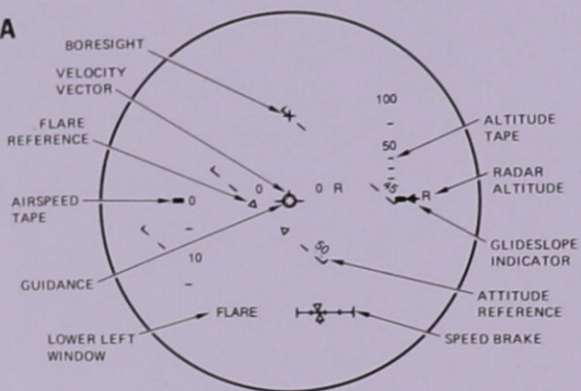
**HEAD-UP DISPLAY
(HUD)**

A**FORMAT 1 PRE-WOW**

NOTE: THIS FIGURE IS NOT A VALID FLIGHT CONFIGURATION

B**FORMAT 1 AFTER WOW****C****OPS 8 LOW**

A



OPS 9 LOW

NOTES:

