

# **Orbiter Displays Reference Guide**

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**Space Shuttle Orbiter  
Displays and Controls  
(CRT, HUD, DDU & MEDS)**

**OI-27**

**October 1998**

 **BOEING**

## **General Information**

This Avionics Displays Reference Guide is for information only as it pertains to CRT, HUD, DDU and MEDS displays. The guide was developed as a quick-reference tool for personnel supporting tests involving Orbiter displays. It provides the CRT displays documented in the Level C Functional Subsystem Software Requirements (FSSR) Display and Controls Specification, STS 83-0020, with an effectivity of OI-27 and subs. This guide also provides CRT SM mission reconfigurable displays documented in JSC-19590 Level C Flight Software Requirements document.

This guide reflects the incorporation of approved Software Change Requests (SCR's) listed in the March 1998 CR 98012 - Flight Software Release Baseline Specification OI-27. For detailed information, refer to the above-mentioned documents. For information regarding the distribution of this reference guide, contact Dave Chermanski at 407-861-4655, Tom Fowler at 407-861-4658 or Pete Wilson at 407-861-4656.

## **How To Use This Guide**

The CRT and HUD displays are listed in alphabetical order by title. The CRT displays are shown with their OPS availability and type. The tables on the next four pages will provide assistance in locating a specific CRT, HUD and DDU display quickly, including CRT displays related to Initial Program Load (IPL). There are also tables provided in descending order according to hierarchy of OPS, SPEC and DISP for the CRT displays.





## Backup Flight Software (BFS) Displays

Display	GNC				SM	Page
	0	1	3	6		
Ascent Traj 1		X				26D
Ascent Traj 2		X				27A
ATO Traj 2		X				27A
BFS Memory	X	X	X	X	X	2A
Cryo Pallet					X	3A
Entry Traj 1			X			5A
Entry Traj 2			X			5C
Entry Traj 3			X			6A
Entry Traj 4			X			6C
Entry Traj 5			X			7A
Fault	X	X	X	X	X	8B
GNC SYS SUMM 1		X	X	X		9B
GNC SYS SUMM 2		X	X	X		9D
GPS Status		X	X	X		11B
Horiz Sit (single string or no GPS)		X	X	X		12A
Horiz Sit (3 string GPS)		X	X	X		12B
Override		X	X	X		16C
Launch Traj 1		X				26D
Payload Bay Doors					X	17A
RTLS Trajectory				X		20C
SM SYS SUMM 1					X	22B
SM SYS SUMM 2					X	22D
TAL Traj 2		X				27A
Thermal					X	24C
Vertical Sit 1			X	X		25B
Vertical Sit 2			X	X		25C

## IPL and DEU Displays

Display	Page
XXXXIPL Menu No. 1	26B
GPCIPL Menu No. 2	11A
DEU Stand-Alone Self-Test	4A

## Head Up Displays

Display	Page
HUD Display Format 1 After WOW	14A
HUD Display Format 1 Pre-WOW	14B
HUD VU OPS 8Low	14C
HUD VU OPS 9 Low	14D

## Dedicated Display Unit (DDU) Displays

Display	Page
Attitude Direction Indicator (ADI)	28A
Alpha Mach Indicator (AMI)	28B
Altitude/Vertical Velocity Indicator (AVVI)	28C
Horizontal Situation Indicator (HSI)	29A
Remote Manipulator System (RMS) Rate Meter	29B
Surface Position Indicator (SPI)	29C
MEDS Attitude Direction Indicator (ADI)	30A
MEDS Alpha Mach Indicator (AMI)	30B
MEDS Altitude/Vertical Velocity Indicator (AVVI)	31A
MEDS Horizontal Situation Indicator (HSI)	31B
MEDS Surface Position Indicator (SPI)	31C



### OPS Displays

OPS	Display	PASS	BFS	GNC	SM	PL	Page
0001	GPC Memory	X		X			10B
0001	BFS Memory		X	X			2A
0001	Thermal		X		X		24C
1011	XXXXXX Trajectory	X		X			27B
1011	XXXXXX Trajectory 1		X	X			26D
1021	XXXXXX Trajectory	X		X			27B
1021	XXXXXX Trajectory 1		X	X			26D
1031	XXXXXX Trajectory	X		X			27B
1031	XXXXXX Trajectory 2		X	X			27A
1041	XXXXX MNVR YYYYY	X	X	X			26C
1051	XXXXX MNVR YYYYY	X	X	X			26C
1061	XXXXX MNVR YYYYY	X	X	X			26C
2011	Antenna	X			X		1B
2011	Universal Pointing	X		X			25A
2021	Payload Bay Doors	X	X		X		17A
2021	XXXXX MNVR YYYYY	X	X	X			26C
3011	XXXXX MNVR YYYYY	X	X	X			26C
3021	XXXXX MNVR YYYYY	X	X	X			26C
3031	XXXXX MNVR YYYYY	X	X	X			26C
3041	Entry Traj 1	X		X			5B
3041	Entry Traj 1		X	X			5A
3041	Entry Traj 2	X		X			5D
3041	Entry Traj 2		X	X			5C
3041	Entry Traj 3	X		X			6B
3041	Entry Traj 3		X	X			6A
3041	Entry Traj 4	X		X			6D
3041	Entry Traj 4		X	X			6C
3041	Entry Traj 5	X		X			7B
3041	Entry Traj 5		X	X			7A
3051	Vertical Sit 1	X	X	X			25B
3051	Vertical Sit 2	X	X	X			25C
4011	Antenna	X			X		1B
6011	XXXXXX Trajectory	X		X			27B
6011	RTLS Traj 2		X	X			20C
6021	Vertical Sit 1	X	X	X			25B
6021	Vertical Sit 1 GRTLS	X		X			25D
6031	Vertical Sit 1	X	X	X			25B
6031	Vertical Sit 2	X	X	X			25C
6031	Vertical Sit 2 GRTLS	X		X			26A
8011	FCS/DED Display Checkout	X		X			8D
9011	Mass Memory R/W	X			X	X	15D
9011	GPC Memory	X			X		10B

### Vehicle Utility (VU) Displays

Display	GNC									SM				PL	Page
	0	1	2	3	6	8	9	0	2	4	9				
Actuator Control						X									1A
Controllers (RM)						X									2C
FCS/DED Display Checkout						X									8D
DEU Stand-Alone Self-Test															4A
GND IMU CNTL/MON							X								10A
GPC/BTU I/F							X								10C
GTS Display							X					X			11D
Manual Controls							X								15C
Mass Memory R/W									X	X		X			15D
NWS Check						X									16A
RCS/RGA/ADTA Test							X								19C
RGA/ADTA/RCS (On-Orbit)						X									20A
Sensor Test (3 TACAN)						X									21B
Sensor Test (3 GPS)						X									21C
SL Memory Dump												X			21D
Switches						X									23D
Switches/Surface Feedback						X									24A
TCS Control							X								24B

### System Level Displays

Display	GNC									SM				PL	Page
	0	1	2	3	6	8	9	0	2	4	9				
DPS Utility	X	X	X	X	X	X	X	X	X	X	X	X			4C
Fault	X	X	X	X	X	X	X	X	X	X	X	X			8C
GPC Memory	X	X	X	X	X	X	X	X	X	X	X	X			10B
GPC Bus Status	X	X	X	X	X	X	X	X	X	X	X	X			10D
Time	X		X			X	X		X	X	X	X			24D

## SPEC and DISP Displays

SPEC	Display	PFS	BFS	GNC	SM	PL	Page
001	DPS Utility	X		X	X	X	4C
002	Time	X		X	X	X	24D
006	GPC/Bus Status	X		X	X	X	10D
018	GNC SYS SUMM 1	X		X			9C
018	GNC SYS SUMM 1		X	X			9B
019	GNC SYS SUMM 2	X	X	X			9D
020	DAP Configuration	X		X			3D
021	IMU Align	X		X			15B
022	Star Tracker/COAS Control	X		X			23C
023	RCS	X		X			19B
025	RM Orbit	X		X			20B
033	Relative Navigation	X		X			19D
034	Orbit Targeting	X		X			16B
040	Sensor Test (3 TACAN)	X		X			21B
040	Sensor Test (3 GPS)	X		X			21C
041	RGA/ADTA/RCS	X		X			20A
042	Switches/Surface Feedback	X		X			24A
043	Controllers (RM)	X		X			2C
044	Switches	X		X			23D
045	NWS Check	X		X			16A
050	Horiz Sit (single string/no GPS)		X	X			12A
050	Horiz Sit (3 string GPS)		X	X			12B
050	Horiz Sit (in-left/3 TACAN)	X		X			12C
050	Horiz Sit (in-right/3 TACAN)	X		X			12D
050	Horiz Sit (out-left/3 TACAN)	X		X			13A
050	Horiz Sit (out-right/3 TACAN)	X		X			13B
050	Horiz Sit (right/3 GPS)	X		X			13C
051	Override	X		X			16D
051	BFS Override		X	X			16C
053	Controls	X		X			2D
055	GPS Status		X				11B
060	SM Table Maintenance	X			X		23B
062	PCMMU/Payload COMM	X			X		17B
063	Payload Bay Doors	X	X		X		17A
064	SM Ground Checkout	X		X			22A
066	Environment	X			X		7C
067	Electric	X			X		4D
068	Cryo System	X			X		3C
069	Fuel Cells	X			X		9A
076	COMM/RCDR	X			X		2B
077	EVA-MMU/FSS	X		X	X		7D
078	SM SYS SUMM 1	X			X		22D
078	SM SYS SUMM 1		X		X		22B
079	SM SYS SUMM 2	X			X		23A
079	SM SYS SUMM 2		X		X		22C
085	Mass Memory R/W	X			X	X	15D
086	APU/HYD	X			X		1D
087	HYD Thermal	X			X		15A
088	APU/ENVIRON Thermal	X			X		1C
089	PRPLT Thermal	X			X		19A
090	PCS Control	X				X	17C
094	PDRS Control	X			X		17D
095	PDRS Override	X			X		18B
096	PDRS Faults	X			X		18A
097	PL Retention	X			X		18D
099	Fault	X		X	X	X	8C
099	Fault		X	X	X	X	8B
100	GTS Display	X		X		X	11D
101	Sensor Self-Test (3 TACAN)	X		X			20D
101	Sensor Self-Test (3 GPS)	X		X			21A
102	RCS/RGA/ADTA Test	X		X			19C
104	Gnd IMU Control/Monitor	X		X			10A
105	TCS Control	X		X			24B
106	Manual Controls	X		X			15C
111	SL Memory Dump	X				X	21D
112	GPC/BTU I/F	X		X			10C
113	Actuator Control	X		X			1A
167	Docking Status	X			X		4B
168	CRYO Pallet	X			X		3A
168	CRYO Pallet		X		X		3B
169	PDRS Control	X			X		17D
177	External Airlock	X			X		8A

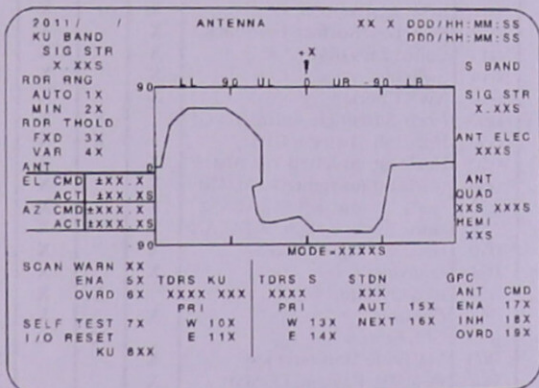


PASS  
GNC OPS 9  
SPEC 113

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

[A] Actuator Control

PASS  
SM OPS  
201, 401



[B] Antenna

PASS  
SM OPS 2  
SPEC 088

XXXX/XXX/888		APU/ENVIRON THERM	XX X	DDD/HH:MM:SS		
FREQN LOOP	1	2	H2O LOOP	1	2	
ACCUM QTY	XXXXS	XXXXS	PUMP OUT P	XXXXS	XXXXS	
FREQN FLOW	XXXXS	XXXXS	OUT T	XXXXS	XXXXS	
PL HX FLOW	XXXXS	XXXXS	AP	XXXXS	XXXXS	
AFT CP FLOW	XXXXS	XXXXS	ICH FLOW	XXXXS	XXXXS	
RAD IN T	XXXXS	XXXXS	OUT T	XXXXS	XXXXS	
RAD OUT T	XXXXS	XXXXS	CAB HX IN T	XXXXS	XXXXS	
EVAP OUT T	XXXXS	XXXXS	ACCUM QTY	XXXXS	XXXXS	
EVAP TEMP	DOCT	N0Z	APU FUEL	1	2	3
HI LOAD	INBD	XXXXS	TK SURF	±XXXXS	±XXXXS	±XXXXS
OUTBD	XXXXS	XXXXS	TK HTR	±XXXXS	±XXXXS	±XXXXS
TOPPING	FWD	XXXXS	TEST LN 1	±XXXXS	±XXXXS	±XXXXS
AFT	XXXXS		TEST LN 2	±XXXXS	±XXXXS	±XXXXS
L	XXXXS	XXXXS	FEED LN	±XXXXS	±XXXXS	±XXXXS
R	XXXXS	XXXXS	PUMP IN	±XXXXS	±XXXXS	±XXXXS
EVAP FDLN	T	A	DRN LN 1	±XXXXS	±XXXXS	±XXXXS
FWD	XXXXS	XXXXS	DRN LN 2	±XXXXS	±XXXXS	±XXXXS
MID 1	XXXXS	XXXXS	OUT	±XXXXS	±XXXXS	±XXXXS
MID 2	XXXXS	XXXXS	BYP LN	±XXXXS	±XXXXS	±XXXXS
AFT	XXXXS	XXXXS	GG SPLY LN	XXXXS	XXXXS	XXXXS
TOPPING	XXXXS	XXXXS	H2O IN	INJ+XXXXS	+XXXXS	+XXXXS
ACCUM	XXXXS	XXXXS				(XX)
HI LOAD	XXXXS	XXXXS				

[C] APU/ENVIRON Thermal

PASS  
SM OPS 2  
SPEC 086

XXXX/XXX/886		APU/HYD	XX X	DDD/HH:MM:SS					
APU	EGT	1	2	3	HYD	1	2	3	
B/U	EGT	XXXXS	XXXXS	XXXXS	B/U	P	XXXXS	XXXXS	XXXXS
SPEED	*	XXXXS	XXXXS	XXXXS	RSVR	T	XXXXS	XXXXS	XXXXS
FUEL	QTY	XXXXS	XXXXS	XXXXS	P	XXXXS	XXXXS	XXXXS	
TK	P	XXXXS	XXXXS	XXXXS	ACCUM	P	XXXXS	XXXXS	XXXXS
OUT	P	XXXXS	XXXXS	XXXXS					
TK	VLV	A	XXS	XXS	XXS				
A	T	XXXXS	XXXXS	XXXXS					
B	T	XXXXS	XXXXS	XXXXS					
OIL	B	T	XXXXS	XXXXS	XXXXS	W/B	1	2	3
OUT	T	XXXXS	XXXXS	XXXXS	CNTLR		XXX	XXX	XXX
OUT	P	XXXXS	XXXXS	XXXXS	H2O	QTY	XXXXS	XXXXS	XXXXS
GBX	P	XXXXS	XXXXS	XXXXS	N2	P	XXXXS	XXXXS	XXXXS
N2	P	XXXXS	XXXXS	XXXXS	REG	P	XXXXS	XXXXS	XXXXS
BRG	T	XXXXS	XXXXS	XXXXS	BYP	VLV	XXXXS	XXXXS	XXXXS
GG	BED	T	XXXXS	XXXXS	VENT	T	±XXXXS	±XXXXS	±XXXXS
PUMP/VLV					TANK	T	±XXXXS	±XXXXS	±XXXXS
PHP	T	XXXXS	XXXXS	XXXXS	BLR	T	±XXXXS	±XXXXS	±XXXXS
VLV	T	XXXXS	XXXXS	XXXXS					(XX)

[D] APU/HYD

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 XXX HEX 8X					
ADD ID	DESIRED	ACTUAL			
9 XXXX	10 XXXX	±XXXXXXXXXX			
11 XXXX	12 XXXX	±XXXXXXXXXX			
13 XXXX	14 XXXX	±XXXXXXXXXX			
15 XXXX	16 XXXX	±XXXXXXXXXX			
17 XXXX	18 XXXX	±XXXXXXXXXX			
19 XXXX	20 XXXX	±XXXXXXXXXX			
MEMORY DUMP		LAUNCH BUS 1 26X TFL ENA			
21 START ID	XXXX	2 27X		29X	
22 NUMBER WDS	XXXXX	OFF 28X			
23 WDS/FRAME	XX	PASS/BFS XFER ENA 25X			
DUMP 24					
BFS TIME UPDATES		UPDATE 38	MISSION TIME		
30 GMT Δ	±XXXX/XX:XX:XX	GMT 39X			
34 MET Δ	±XXXX/XX:XX:XX	MET 40X			

BFS  
All OPS  
SPEC 000

### [A] BFS Memory

XXXX/XXX/0/6		COMM/RCDR		XX X DDD/HH:MM:SS	
S-BAND PM				DDD/HH:MM:SS	
XPNU	XXXX	KU-BAND	±XXXX		
MODE	XXXX	PA TEMP	A ±XXXX		
FREQ	XXS	GMBL TEMP	B ±XXXX		
PREAMP	XXXX	GYRO TEMP	±XXXX		
PWR AMPL	XXXX	PWR OUT	XXS		
OPER	XXXX	FR SYNC	XXXX		
STBY	XXXX	MODE	XXXX		
PWR OUT 1	XXXX	TV CAM OVRTEMP	XXXX		
2	XXXX	GCIL CONFIG	XXXX		
TEMP 1	XXXX	RECORDERS	XXXX		
2	XXXX	OPS 1	OPS 2	FL	
NSP	XXXX	MODE	XXXX	XXXX	XXXX
BIT/FR SYNC 1	XXXX	TRK	XXS	XXS	XXS
2	XXXX	DIR	XXXX	XXXX	XXXX
FAIL SAFF	XXXX	TAPE	XXXX	XXXX	XXXX
DATA XMIT	XXS	TAPE	XXXX	XXXX	XXXX
RCV	XXS	TEMP	XXXX	XXXX	XXXX
UL DATA	XXS	BITE	XXS	XXS	XXS
CODING XMIT	XXXX	RCDR INPUT	XXXX		
NCV	XXXX	COMSEC BITE 1	XXXX		
BIIE 1	XXXX	2	XXXX		
2	XXXX				

PASS  
SM OPS 2  
SPEC 076

### [B] COMM/RCDR

XXXX/043/		CONTROLLERS		XX X DDD/HH:MM:SS	
				DDD/HH:MM:SS	
	T X I Y T Z DES		R P Y DES		
	1 XXXX 1X		1 XXXX XXXX XXXX	2 3X	
	L 2 XXXX 2X		L 2 XXXX XXXX XXXX	2 4X	
THC	3 XXXX 3X	BDY FLP	3 XXXX XXXX XXXX	2 5X	
	1 XXXX 4X	UP/DN DES	1 XXXX XXXX XXXX	2 6X	
	A 2 XXXX 5X	L 1 XXXX 19X	RHC	1 2 XXXX XXXX XXXX	2 7X
	3 XXXX 6X	SW 2 XXXX 20X		3 XXXX XXXX XXXX	2 8X
	1 XXXX 7X	R 1 XXXX 21X		1 XXXX XXXX XXXX	2 9X
	L 2 XXXX 8X	2 XXXX 22X		A 2 XXXX XXXX XXXX	3 0X
	3 XXXX 9X			3 XXXX XXXX XXXX	3 1X
SPD	1 XXXX 10X		L 1	XS	XS 3 2X
DK	R 2 XXXX 11X		RHC	2	XS XS 3 3X
	3 XXXX 12X		TRIM	R 1	XS XS 3 4X
	1 XXXX 13X			2	XS XS 3 5X
	L 2 XXXX 14X		L 1	XS	XS XS 3 6X
RUD	3 XXXX 15X		PNL	2	XS XS XS 3 7X
PED	1 XXXX 16X		TRIM	R 1	XS XS XS 3 8X
	R 2 XXXX 17X			2	XS XS XS 3 9X
	3 XXXX 18X				

PASS  
GNC OPS 8  
SPEC 043

### [C] Controllers (RM)

XXXX/053/		CONTROLS		XX X DDD/HH:MM:SS	
				DDD/HH:MM:SS	
SEC ACT OK	AERO PORT STAT	SSME PORT STAT			
	1 2 3 4	1 2 3 4			
CH 1 1X	L OB 1 5 6 6 6	L 0 5 5 5 5			
2 2X	R 1 2 5 5 5 5	Y 5 5 5 5			
3 3X	R 1 3 5 5 5 5	C P 5 5 5 5			
4 4X	OB 4 5 5 5 5	Y 5 5 5 5			
START 5X	RUD 5 5 5 5 5	R P 5 5 5 5			
STOP 6X	BPD BRK 6 5 5 5 5	Y 5 5 5 5			
NEG STIM	ACT/CH				
FNA 7X	8 BYPASS XX				
	9 RESET XX				
LRU	AA RGA SURF FDBK				
	DES DES DES				
1	10X 5 14X 5 18X 5				
2	11X 5 15X 5 19X 5				
3	12X 5 16X 5 20X 5				
4	13X 5 17X 5 21X 5				

PASS  
GNC OPS  
1, 3, 6  
SPEC 053

### [D] Controls



BFS  
SM All OPS  
SPEC 168

```

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

PALLETT 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
  
```

[A] CRYO Pallet (BFS)

PASS  
SM OPS 2  
SPEC 168

```

XXXX/XXX/168          CRYO PALLET          XX X DDD/HHMM:SS
DDD/HHMM:SS

P O2          TK      6      7      8      9
TK P          XXXXS XXXXS XXXXS XXXXS
QTY          XXXXS XXXXS XXXXS XXXXS
T            ±XXXS ±XXXS ±XXXS ±XXXS
HTR T 1      ±XXXS ±XXXS ±XXXS ±XXXS
           2      ±XXXS ±XXXS ±XXXS ±XXXS
HTR 1A      ±XXXS ±XXXS ±XXXS ±XXXS
CUR 1B      ±XXXS ±XXXS ±XXXS ±XXXS
SNSR 2A     ±XXXS ±XXXS ±XXXS ±XXXS
           2B     ±XXXS ±XXXS ±XXXS ±XXXS

PALLETT
STBD A      ±XXXS
STBD B      ±XXXS
PORT A      ±XXXS
PORT B      ±XXXS

PALLET VOLTS
PPC1 MNA    XX.XS
PPC2 MNB    XX.XS

P H2          XXXS XXXS XXXS XXXS
TK P          XXXS XXXS XXXS XXXS
QTY          XXXS XXXS XXXS XXXS
T            ±XXXS ±XXXS ±XXXS ±XXXS
HTR T        ±XXXS ±XXXS ±XXXS ±XXXS
  
```

(XX)

[B] CRYO Pallet (PASS)

PASS  
SM OPS 2  
SPEC 068

```

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

P O2          TK      1      2      3      4      5
TK P          XXXXS XXXXS XXXXS XXXXS XXXXS
QTY          XXXXS XXXXS XXXXS XXXXS XXXXS
T            ±XXXS ±XXXS ±XXXS ±XXXS ±XXXS
HTR T 1      ±XXXS ±XXXS ±XXXS ±XXXS ±XXXS
           2      ±XXXS ±XXXS ±XXXS ±XXXS ±XXXS
HTR 1A      ±XXXS ±XXXS ±XXXS ±XXXS ±XXXS
CUR 1B      ±XXXS ±XXXS ±XXXS ±XXXS ±XXXS
SNSR 2A     ±XXXS ±XXXS ±XXXS ±XXXS ±XXXS
           2B     ±XXXS ±XXXS ±XXXS ±XXXS ±XXXS
MANF P       XXXXS XXXXS XXXXS XXXXS XXXXS
VLV          XXS XXS

P H2          XXXS XXXS XXXS XXXS XXXS
TK P          XXXS XXXS XXXS XXXS XXXS
QTY          XXXS XXXS XXXS XXXS XXXS
T            ±XXXS ±XXXS ±XXXS ±XXXS ±XXXS
HTR T        ±XXXS ±XXXS ±XXXS ±XXXS ±XXXS
MANF P       XXXS XXXS XXXS XXXS XXXS
VLV          XXS XXS
  
```

(XX)

[C] CRYO System

PASS  
GNC OPS 2  
SPEC 020

```

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

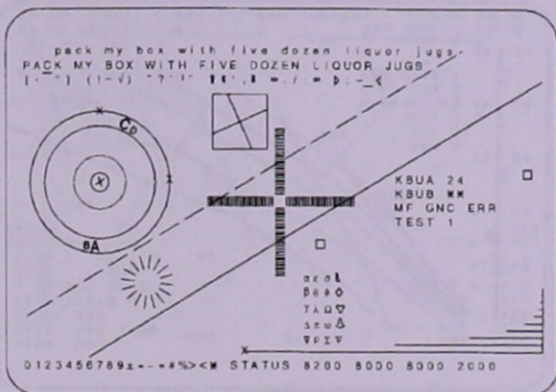
PRI          DAP EDIT
ROT RATE 10 X-XXXX 30 X-XXXX 60 X-XXXX 3 DAP AXX
ATT DB   11 XX-XX 31 XX-XX 61 XX-XX 4 DAP BXX
RATE DB  12 X-XX 32 X-XX 62 X-XX 5 XXXX
ROT PLS  13 X-XX 33 X-XX 63 X-XX
COMP     14 -XXX 34 -XXX 64 -XXX
P OPTION 15 XXXX 35 XXXX 65 XXXX
Y OPTION 16 XXXX 36 XXXX 66 XXXX
TRAN PLS 17 X-XX 37 X-XX 67 X-XX

XXX
RATE DB  18 X-XXX 38 X-XXX 68 X-XXX
JET OPT  19 XXXX 39 XXXX 69 XXXX
# JFTS   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

XXX
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 -XXX 47 -XXX 67 -XXX
CNTL ACC 28 X 48 X 68 X

VERN
XJR'S ROT
ENA 6X
ENA 7X
  
```

[D] DAP Configuration



GPC IPL  
Menu

[A] DEU Stand-Alone Self-Test

XXXX/XXX/167		DOCKING STATUS		XX X	DDD/HH:MM:SS
RNG ALIGN	XXX	CNTL PNL PWR	X/X/X	RING DR BUS	X/X
CONTACT	XXX	HIR/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	XXX	XXX	XXX
RING	XXX XXX XXX	CAP LAT T	XXX	XXX	XXX
BASE	XXX XXX XXX	BALL DR T	XXX	XXX	XXX
RDY TO HOOK	XXX	HOOK DR T	XXX	XXX	
HOOK1 DRV CMD	XXX	RING DR T	XXX		
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 CMPLT	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 ΔP		XX.XXS	
				(XX)	

PASS  
SM OPS 2  
SPEC 167

[B] Docking Status

XXXX/001/		DPS UTILITY		XX X	DDD/HH:MM:SS
MMU ASSIGN		PORT ASSIGN			DDD/HH:MM:SS
1 2		PRI SEC		UL CNTL	
GNC 1X 2X		STRING 1 15X 16X		AUTO 35X	
SM 3X 4X		2 17X 18X		ENA 36X	
PL 5X 6X		3 19X 20X		INH 37X	
OPS 0 7X 8X		4 21X 22X			
		PL 1/2 23X 24X		IPL SOURCE SW	
MMU STATUS				MASK 38X	
1 XXX		VAR PARAM ID LIST			
2 XXX		25 XXXX		G3 ARCHIVE	
MMU SOURCE/BUS		26 XXXX		LOAD 48X	
GPC/MMU 9X		27 XXXX		RETRIEVE 49X	
MMU/MMU 10X		28 XXXX			
GPC/LDB 11X		29 XXXX		GROUND OPS	
CKPT RETRY		30 XXXX		GSE POLL ENA 50X	
ENA 12X		31 XXXX		SM GSE INH 51X	
		32 XXXX		SM C/O ENA 52X	
RTC		33 XXXX		GNC C/O ENA 53X	
13 XXXX XXXX		34 XXXX		BFC C/O ENA 54X	
CMD 14				ALT PL9 TB 55X	

PASS  
All OPS  
SPEC 001

[C] DPS Utility

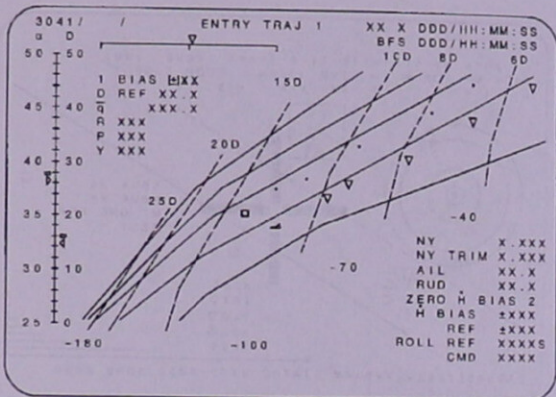
XXXX/XXX/067		ELECTRIC		XX X	DDD/HH:MM:SS
DC	1/A 2/B 3/C	AC	1 2 3		DDD/HH:MM:SS
VOLT FC	XX.XS XX.XS XX.XS	V	ΔA XXXS XXXS XXXS		
MN	XX.XS XX.XS XX.XS		ΔB XXXS XXXS XXXS		
PCA FWD	XX.XS XX.XS XX.XS		ΔC XXXS XXXS XXXS		
AFT	XX.XS XX.XS XX.XS	AMP	ΔA XX.XS XX.XS XX.XS		
ESS	XX.XS XX.XS XX.XS		ΔB XX.XS XX.XS XX.XS		
	A—B—C—A		ΔC XX.XS XX.XS XX.XS		
CNTL	1XXX.XSXXX.XSXXX.XSXXX	OVLD	XXS XXS XXS		
	2XXX.XSXXX.XSXXX.XSXXX	DO/U V	XXS XXS XXS		
	3XXX.XSXXX.XSXXX.XSXXX				
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	XXXXS				
KU	XXX.XS				

PASS  
SM OPS 2  
SPEC 067

[D] Electric

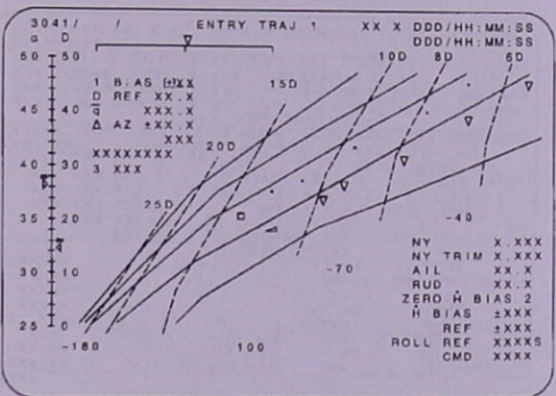


BFS  
GNC OPS  
304



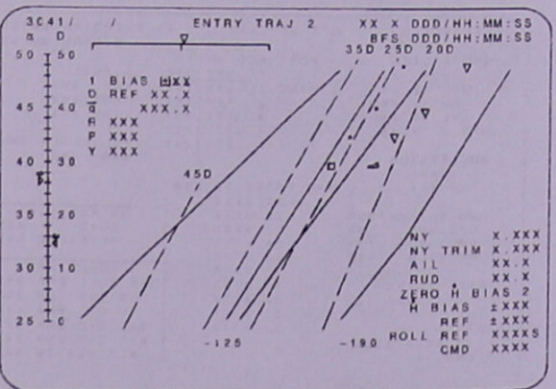
[A] Entry Traj 1 (BFS)

PASS  
GNC OPS  
304



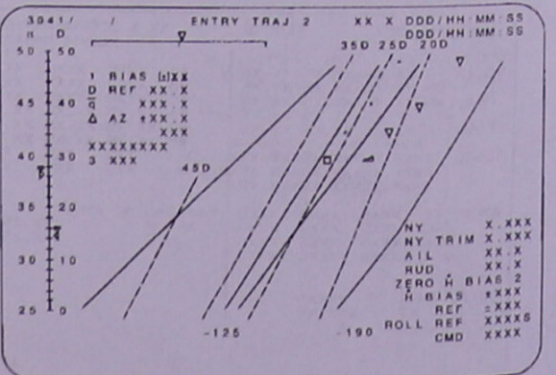
[B] Entry Traj 1 (PASS)

BFS  
GNC OPS  
304

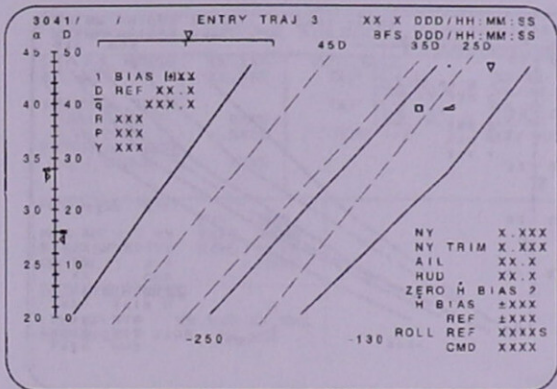


[C] Entry Traj 2 (BFS)

PASS  
GNC OPS  
304

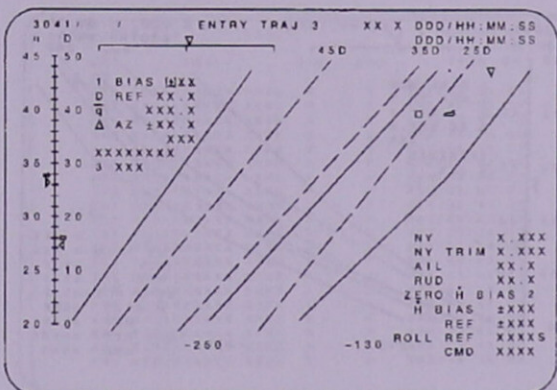


[D] Entry Traj 2 (PASS)



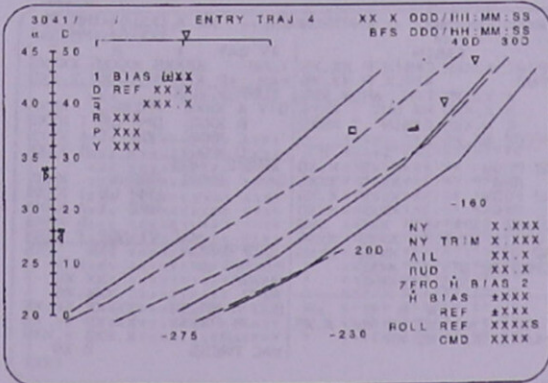
BFS  
 GNC OPS  
 304

[A] Entry Traj 3 (BFS)



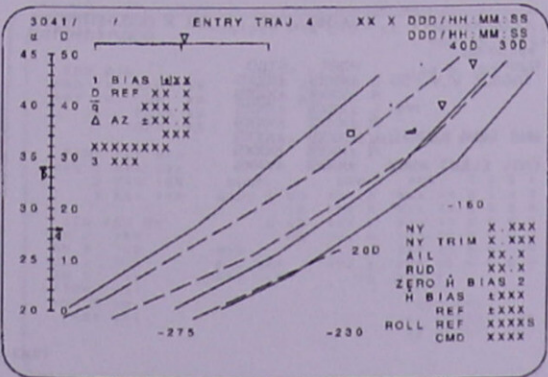
PASS  
 GNC OPS  
 304

[B] Entry Traj 3 (PASS)



BFS  
 GNC OPS  
 304

[C] Entry Traj 4 (BFS)

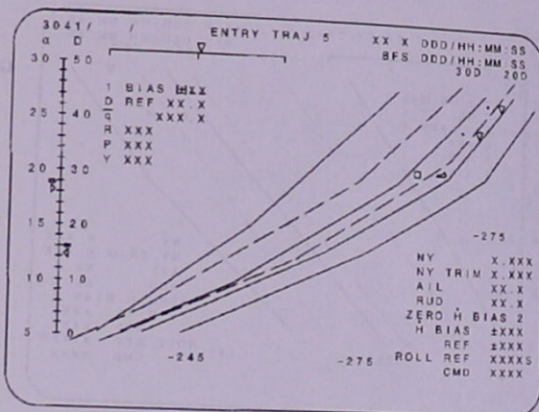


PASS  
 GNC OPS  
 304

[D] Entry Traj 4 (PASS)

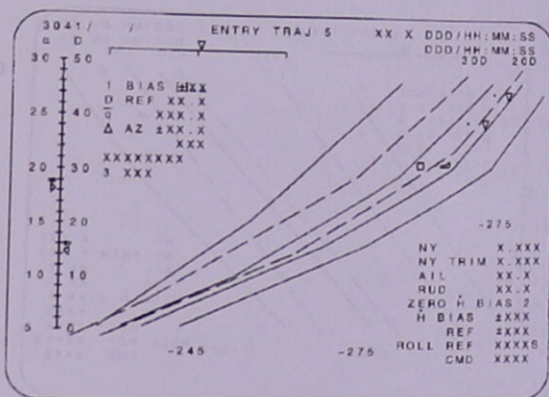


BFS  
GNC OPS  
304



[A] Entry Traj 5 (BFS)

PASS  
GNC OPS  
304



[B] Entry Traj 5 (PASS)

PASS  
SM OPS 2  
SPEC 066

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		XXXXX	XXXXX	XXXXX
PP02	AIRLK P XX.XS	FAN ΔP X.XXS		X.XXS	X.XXS	X.XXS
A X.XXS	FAN ΔP X.XXS	SUPPLY H2O				
B X.XXS	HX OUT T XXXS	QTY A	XXXX	PRESS	XXXX	
C X.XXS	CABIN T XXXS	B	XXXX	DMP LN T	XXXX	
PPC02 XX.XS		C	XXXX	NOZ T A	XXXX	
		D	XXXX	B	XXXX	
		WASTE H2O				
O2 FLOW X.XS X.XS		QTY 1	XXXX	PRESS	XXXX	
REG P XXXS XXXS		DMP LN 1		XXXX		
N2 FLOW X.XS X.XS		NOZ T A		XXXX		
REG P XXXS XXXS		B		XXXX		
O2/N2 CNTL VLV XXS XXS		VAC VT NOZ T XXXS				
H2O TK N2 P XXXS XXXS		CO2 CNTLR		1XS	2XS	
N2 QTY XXXS XXXS		FILTER ΔP		X.XXS		
EMER O2 QTY XXXS		PPC02		XX.XS		
REG P XXXXS		TEMP		XXX.XS		
		BED A PRESS		XX.XS	XX.XS	
IMU FAN A B C ΔP		B PRESS		XX.XS	XX.XS	
HUMID SCP XS XS XS X.XS		ΔP		X.XXS	X.XXS	
		VAC PRESS		X.XS		
		(XX)				

[C] Environment

PASS  
SM OPS  
2,4  
SPEC 077

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	±XXXX		±XXXX	
	R	±XXXX		±XXXX	
	MMU	L	±XXXX	±XXXX	
		R	±XXXX	±XXXX	
GN2 TANK BARREL	L	±XXXX		±XXXX	
	R	±XXXX		±XXXX	
CNTL ELECT ASSY		±XXXX		±XXXX	
		±XXXX		±XXXX	
		(XX)			

[D] EVA-MMU/FSS





PASS  
SM OPS 2  
SPEC 069

XXXX/XXX/069		FUEL CELLS			XX X DDD/HH:MM:SS		
		FC			DOD/HH:MM:SS		
		1	2	3			
VOLTS		XX.XS	XX.XS	XX.XS	H2O RLF	LINE T	XXXX
AMPS		XXXX	XXXX	XXXX		NOZ T A	XXXX
						B	XXXX
FLOW 02		XX.XS	XX.XS	XX.XS		HTR SW	XXXX
HP		X.XS	X.XS	X.XS	PURGE LN	02 T	XXXX
REAC 02		XXS	XXS	XXS		H2 T1	XXXX
H2		XXS	XXS	XXS		T2	XXXX
					H2O LINE	PH	XXS
STACK T		±XXXX	±XXXX	±XXXX			
EXIT T		XXXX	XXXX	XXXX			
COOL T		XXXX	XXXX	XXXX			
PUMP		XXXX	XXXX	XXXX			
H2 PUMP		XXS	XXS	XXS	PH	1	XXS
READY		X.XS	X.XS	X.XS	ΔV	2	XXS
		XXXX	XXXX	XXXX	SS1	3	XXS
					SS2		XXXX
					SS3		XXXX
H2O					ΔAMPS		±XXXX
PRI LN T		XXXX	XXXX	XXXX			±XXXX
VLV T		XXXX	XXXX	XXXX			±XXXX
ALT LN T		XXXX	XXXX	XXXX			±XXXX

(XX)

[A] Fuel Cells

BFS  
GNC OPS  
1, 3, 6  
SPEC 018  
or  
SYS SUMM  
key

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 S S S S
I B		XXX.XS	XXS		FA	S S S S
R IB		XXX.XS	XXS		PL	S S
OB		XXX.XS	XXS			
AIL		XXX.X			FCS CH	1 2 3 4
RUD		XXX.X				S S S S
SPD BRK		XXX.X				
BDY FLP		XXX.X				
MPS		L	C	R	NAV	1 2 3 4
HE TK P		XXXXS	XXXXS	XXXXS	IMU	S S S
REG P A		XXXXS	XXXXS	XXXXS	XXX	S S S
B		XXXXS	XXXXS	XXXXS	ADTA	S S S S
dP/dT		XXXX	XXXX	XXXX		
ULL P	LH2	XX.XS	XX.XS	XX.XS	MPS PNEU	HE P
	LO2	XX.XS	XX.XS	XX.XS	TK	XXXXS
					REG	XXXXS
					ACUM	XXXXS
GH2 OUT P		XXXXS	XXXXS	XXXXS	MANF P	LH2 XXXS
GO2 OUT T		XXXXS	XXXXS	XXXXS		LO2 XXXS

[B] GNC SYS SUMM 1 (BFS)

PASS  
GNC OPS  
1, 2, 3, 6, 8  
SPEC 018  
or  
SYS SUMM  
key

XXXX/XXX/018		GNC SYS SUMM 1			XX X DDD/HH:MM:SS	
					DDD/HH:MM:SS	
		RCS	JETISOL		DPS	1 2 3 4 5
MANFFAILVLV					GPC	S S S S S
F1XXX	XXS	L OB	XXX.XS	XXS	MDM	FF S S S S
2XXX	XXS	I B	XXX.XS	XXS	FA	S S S S
3XXX	XXS	R IB	XXX.XS	XXS		
4XXX	XXS	OB	XXX.XS	XXS		
5XXX	XXS	AIL	XXX.X		FCS CH	1 2 3 4
L1XXX	XXS	HUD	XXX.X			S S S S
2XXX	XXS	SPD BRK	XXX.X			
3XXX	XXS	DDY FLP	XXX.X			
4XXX	XXS		XXXXXX			
5XXX	XXS				NAV	1 2 3 4
R1XXX	XXS				IMU	S S S
2XXX	XXS	CNTLR	1 2 3		ACC	S S S S
3XXX	XXS	RHC	L S S S		RGA	S S S S
4XXX	XXS		R S S S		XXX	S S S
5XXX	XXS		A S S S		MLS	S S S
		THC	L S S S		ADTA	S S S S
			A S S S			
		SBTC	L S S S			
			R S S S			

[C] GNC SYS SUMM 1 (PASS)

PASS  
GNC OPS  
2, 8  
BFS  
GNC OPS  
1, 3, 6  
SPEC 019  
or  
SYS SUMM  
key twice

XXXX/XXX/019		GNC SYS SUMM 2			XX X DDD/HH:MM:SS	
					BFS DDD/HH:MM:SS	
		OMS	AFT	QTY	L	R
		OXID	XX.XS	XX.XS		
		FU	XX.XS	XX.XS		
		FU	INJ T	XXXX	XXXX	
RCS					JETISOL	
FWD	HE P	XXXXX	XXXXX		FAIL	VLV
	TK P	XXXX	XXXX			
	QTY	XXXX	XXXX			
MANF	1 P	XXXX	XXXX	XXX	XXS	
	2 P	XXXX	XXXX	XXX	XXS	
	3 P	XXXX	XXXX	XXX	XXS	
	4 P	XXXX	XXXX	XXX	XXS	
	5			XXX	XXS	
AFT	HE P	XXXXX	XXXXX			
L	TK P	XXXX	XXXX			
	QTY	XXXX	XXXX			
MANF	1 P	XXXX	XXXX	XXX	XXS	
	2 P	XXXX	XXXX	XXX	XXS	
	3 P	XXXX	XXXX	XXX	XXS	
	4 P	XXXX	XXXX	XXX	XXS	
	5			XXX	XXS	

[D] GNC SYS SUMM 2 (PASS/BFS)

```

XXXX/104/      GND IMU CNTL/MON  XX X DDD/HH:MM:SS
                DDD/HH:MM:SS
IMU             1             2             3
X              1 XXX_XX      4 XXX_XX      7 XXX_XX      SEL IMU 1 16X
Y              2 XXX.XX      5 XXX.XX      8 XXX.XX
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
VRBS 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
TSTAT XX        XX        XX      28 MM WRITE 1
                READ 29X
PWR ON X        X        X      MM STATUS XXXX
I/O S          S          S
STBY 10X       11X      12X    30 SITE SEL 1
OPER 13X       14X      15X    ACTUAL XXX

```

PASS  
GNC OPS 9  
SPEC 104

[A] Ground IMU Control/Monitor

```

0001/ /      GPC MEMORY  XX X DDD/HH:MM:SS
                DDD/HH:MM:SS
MEM/RUS CONFIG READ/WRITE XXX
1 CONFIG XX(XX) DATA 20X BIT SHI 22X SEQ ID 24
2 GPC X X X X X CODE 21X BIT RST 23X WRITE 25
                28 ENG UNITS XXX HEX 27X
STRING 1 7 X ADD ID DESIRED ACTUAL
2 8 X 28 XXXX 29 XXXX ±XXXXXXXXXXXX
3 9 X 30 XXXXX 31 XXXX ±XXXXXXXXXXXX
4 10 X 32 XXXXX 33 XXXX ±XXXXXXXXXXXX
PL 1/2 11 X 34 XXXXX 35 XXXX ±XXXXXXXXXXXX
                36 XXXXX 37 XXXX ±XXXXXXXXXXXX
                38 XXXXX 39 XXXX ±XXXXXXXXXXXX
CHI 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
MEMORY DUMP MEMORY MC=XX
40 START ID XXXXX 45 CONFIG XX
41 NO WORDS XXXXX 46 GPC X
42 WDS/FRAME XXX STORE 47
DUMP 43
44 DOWNLIST GPC X MM AREA
OPS 0 ENA 49 X PL 52 X
ERR LOG RESET 48 GNC 53 X
SM 54 X
OPS 3 UPLK 50X
OPS 3 INIT 51

```

PASS  
All OPS  
SPEC 000

[B] GPC Memory

```

XXXX/112/      GPC/BTU I/F  XX X DDD/HH:MM:SS
                DDD/HH:MM:SS
BTU SELECTION TEST STATUS
FF1 1X PCMMU 12X XXXX MDM OUTPUT TEST
                MODULE XX
3 3X 2 14X DTU ITEM XX
4 4X MEC1 15X RDW XXXX ANALOG OUTPUTS
FA1 5X 2 16X BCE STAT RG 0 ±X.XX 1 ±X.XX
2 6X EIU1 17X XXXXXXXX 2 ±X.XX 3 ±X.XX
3 7X 2 18X 4 ±X.XX 5 ±X.XX
4 8X 3 19X PORT SEL 1 31X 8 ±X.XX 7 ±X.XX
PF1 9X DDU 20X 2 32X 8 ±X.XX 9 ±X.XX
2 10X MCIU 21X 10 ±X.XX 11 ±X.XX
                CMD 22X 12 ±X.XX 13 ±X.XX
                SRB 23X 14 ±X.XX 15 ±X.XX
ALL DES DISCRETE OUTPUTS
MDMS 11X ALL 24X CHANNEL 0 XXXXXX
                LEVEL 1 25X CHANNEL 1 XXXXXX
                LEVEL 2 26X CHANNEL 2 XXXXXX
TEST MDM OUTPUT 27X
CONTROL TFRMINATE 28
CONTINUF 29 BTU CYCLIC BITE 30X

```

PASS  
GNC OPS 9  
SPEC 112

[C] GPC BTU I/F

```

XXXX/XXX/006 GPC/BUS STATUS XX X DDD/HH:MM:SS
                DDD/HH:MM:SS
GPC 1S 2S 3S 4S 5S
MODE XXXX XXXX XXXX XXXX XXXX
OPS 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
                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

```

PASS  
All OPS  
SPEC 006

[D] GPC Bus Status



**GPC IPL**

```

GPCIPL MENU (2)XX X DDD/HH:MM:SS
                                DDD/HH:MM:SS
17 DEU FORMAT LOAD X          STP/PURGE CYC CNT XXXXX
                                ERROR/MSG CODE   XXX
START GPC SELF TEST 1&X      ERROR/MSG CODE CNT XXXX
STOP GPC SELF TEST 19X      TOTAL ERR/MSG CNT XXXX
START DEU SELF TEST 20X      MSGS STILL IN LIST XXX

                                MDCS BITE
                                MODE XXXX
                                BSR1 XXXX
                                BSR2 XXXX
                                SWSW XXXX

STOP STP ON ERROR            24X
CONTINUE STP ON ERROR       25X
INHIBIT CKPT LOAD           26X
OLD PSW XXXX XXXX XXXX XXXX
REGISTER 0-3 XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX
SET 0 4-7 XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX

REGISTER 0-3 XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX
SET 1 4-7 XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX

FLOATING 0-3 XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX
PT REGS 4-7 XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX
MAJ-XXXXX MIN-XX SCHEDWRD-XXXXXXX CLOCK1-XXXXX
    
```

**[A] GPCIPL Menu 2 (PASS/BFS)**

**BFS  
GNC OPS  
1, 3, 6**

**SPEC 055**

```

XXXX/055/          GPS STATUS          XX X DDD/HH:MM:SS
                                BFS DDD/HH:MM:SS
STAT   GPS1   GPS2   GPS3   LAT   LON   ALT
MODE   XXXX   XXXX   XXXX   XX.XXX XX.XXX XXX.X
GPS2   XX.XXX XX.XXX XXX.X
GPS3   XX.XXX XX.XXX XXX.X

DG FAIL S S S
DES RCVR 26X 27X 28X
P 1e XXXXXSXXXXXSXXXXXS
    
```

**[B] GPS Status (BFS)**

**PASS  
GNC OPS  
2, 3, 8, 9**

**SPEC 055**

```

XXXX/055/          GPS STATUS          XX X DDD/HH:MM:SS
                                DDD/HH:MM:SS
I/O 10 X GPS1S GPS2S GPS3S
STAT   XXXX   XXXX   XXXX   GPS MINUS NAV
MODE   XXXX   XXXX   XXXX   ΔH ±XXXXXX ΔH ±XXX.XX
S/TEST 11XS 12XS 13XS   ΔR ±XXXXXX ΔR ±XXX.XX
INIT   14X   15X   16X   ΔC ±XXXXXX ΔC ±XXX.XX
NAV    17X   18X   19X   X LAT X LON ALT
RESTART 20X 21X 22X   XX.XX XXX.XX XXX.XXXX
IMU    23 XX 24 XX 25 XX
GDOP   XX    XX    XX

DG FAIL S S S
DES RCVR 26X 27X 28X
QA OVRD 29XS 30XS 31XS
SF CAND X X X
QA1 P 1eXXXXXSXXXXXSXXXXXS
QA2 POS X.XXS X.XXS X.XXS
VEL X.XXS X.XXS X.XXS
QA3 POS X.XXS X.XXS X.XXS
VEL X.XXS X.XXS X.XXS
QA4 POS X.XXS X.XXS X.XXS
VEL X.XXS X.XXS X.XXS
XXX.X LAST SEL FIL UPDATE

GPS TO G&C 32X 33X 34X
GPS TO NAV 35X 36X 37X
METERING OVERRIDE 38X

SATELLITES
TRKD C1 C2 C3 C4 C5 C6
GPS1 XX XX XX XX XX XX
GPS2 XX XX XX XX XX XX
GPS3 XX XX XX XX XX XX

DES 43 XX XX XX XX
XX XX XX XX
    
```

**[C] GPS Status (PASS)**

**PASS  
GNC OPS 9  
PL OPS 9**

**SPEC 100**

```

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        CRIT MEC CMDS      ELEV LMT SEL
UF1 3X UF4 6X      ENA 25X          HORZ 27X
UF2 4X UF5 7X      INH 26X          VERT 28X
UF3 5X IFA 8X                                     OWPS 29X
9 FAIL GPC SEL X
TEST EXEC 10X
RSECT 11X

DL FORMAT          SL COMM          SSC          EXC
12 SEL XX         CH A ENA 30X     35X
LOAD 13X         B ENA 31X       36X
                                OSBL 32X       37X

GSE POLL ENA 14X   MDM TESTS
PASS/BFS XFER 15  RTRN CHW 33 XXXX 38 XXXX
                                RTRN MSG 34 XXXX 39 XXXX

RJD TOGGLER        COUPLER
ON 16X OFF 17X    STATE XXXX XXXX
ERR CD XX XX
    
```

**[D] GTS Display**

```

XXXX/050/    HORIZ SIT    XX X DDD/HH:MM:SS
                        BFS DDD/HH:MM:SS
                        NAV DELTA
                      ALT M   ΔX 10
                      9 XX_XX  [I]XXXXXXXXX
                                   ΔY 11
                                   [I]XXXXXXXXX
                                   ΔZ 12
                                   [I]XXXXXXXXX
                                   ΔX 13
                                   [I]XXXXX
                                   ΔY 14
                                   [I]XXXXX
                                   ΔZ 15
                                   [I]XXXXX
                                   LOAD 16
                                   18 AT [I]XX_XX
PASS/BFS SV  XFER 17X
NAV RESID RATIO ALI INH FOR TAC1 XXX TAC2 XXX TAC3 XXX
TAC AZ XX XXXX XS 19X20X21X ±XXX.XXS ±XXX.XXS ±XXX.XXS
RNG XX XXXX XS ±XXX.XXS ±XXX.XXS ±XXX.XXS
GPS ±XXXXXX XS 42X43X44X DES 31X DES 32X DES 33X
DRAG H±XXXXXX XS 22X23X24X GPS
ADTA H±XXXXXX XS 25X26X27X AZ ±XXX.XXS
ADTA TO G/C [28X29X30X] RNG XXXX.XXS

```

**[A] Horiz Sit (BFS)**  
[single string GPS or no GPS]

BFS  
GNC OPS  
1, 3, 6  
SPEC 050

```

XXXX/050/    HORIZ SIT    XX X DDD/HH:MM:SS
                        BFS DDD/HH:MM:SS
                        NAV DELTA
                      ALT M   ΔX 10
                      9 XX_XX  [I]XXXXXXXXX
                                   ΔY 11
                                   [I]XXXXXXXXX
                                   ΔZ 12
                                   [I]XXXXXXXXX
                                   ΔX 13
                                   [I]XXXXX
                                   ΔY 14
                                   [I]XXXXX
                                   ΔZ 15
                                   [I]XXXXX
                                   LOAD 16
                                   18 AT [I]XX_XX
PASS/BFS SV  XFER 17X
NAV RESID RATIO ALI INH FOR GPS 1 XXXX2 XXXX3 XXXX4
GPS P±XX.XXXX XS 42X43X44X VEL XX XX XX XX XX XX XX
V±XXX.XXX XS P 10 XXXXS XXXXS XXXXS
DRAG H±XXXXXX XS 22X23X24X DES 31XDES 32XDES 33X
ADTA H±XXXXXX XS 25X26X27X AZ XXX RNG ALT
ADTA TO G/C [28X29X30X] XXX XXXX X XXX.X

```

**[B] Horiz Sit (BFS)**  
[three string GPS]

BFS  
GNC OPS  
1, 3, 6  
SPEC 050

```

XXXX/050/    HORIZ SIT    XX X DDD/HH:MM:SS
                        DDD/HH:MM:SS
                        NAV DELTA
                      ALT M   ΔX 10
                      9 XX_XX  0 1 2 3 [I]XXXXXXXXX
                                   ΔY 11
                                   [I]XXXXXXXXX
                                   ΔZ 12
                                   [I]XXXXXXXXX
                                   ΔX 13
                                   [I]XXXXX
                                   ΔY 14
                                   [I]XXXXX
                                   ΔZ 15
                                   [I]XXXXX
                                   LOAD 16
                                   18 AT [I]XX_XX
PASS/BFS SV  XFER 17X
NAV RESID RATIO ALI INH FOR TAC1 XXX TAC2 XXX TAC3 XXX
TAC AZ XX XXXX XS 19X20X21X ±XXX.XXS ±XXX.XXS ±XXX.XXS
RNG XX XXXX XS ±XXX.XXS ±XXX.XXS ±XXX.XXS
GPS ±XX XXXX XS 42X43X44X DES 31X DES 32X DES 33X
DRAG H±XXXXXX XS 22X23X24X GPS 5 P±XXXX X AZ±XXX.X
ADTA H±XXXXXX XS 25X26X27X GPS 5 P±XXXX X AZ±XXX.X
ADTA TO G/C [28X29X30X] AIF G S47X 48X 49X HXXX.X
S/B XXXXX 39

```

**[C] Horiz Sit (in-left HAC)**  
[three TACANs]

PASS  
GNC OPS  
1, 3, 6  
SPEC 050

```

XXXX/050/    HORIZ SIT    XX X DDD/HH:MM:SS
                        DDD/HH:MM:SS
                        NAV DELTA
                      ALT M   ΔX 10
                      9 XX_XX  3 2 1 0 [I]XXXXXXXXX
                                   ΔY 11
                                   [I]XXXXXXXXX
                                   ΔZ 12
                                   [I]XXXXXXXXX
                                   ΔX 13
                                   [I]XXXXX
                                   ΔY 14
                                   [I]XXXXX
                                   ΔZ 15
                                   [I]XXXXX
                                   LOAD 16
                                   18 AT [I]XX_XX
PASS/BFS SV  XFER 17X
NAV RESID RATIO ALI INH FOR TAC1 XXX TAC2 XXX TAC3 XXX
TAC AZ XX XXXX XS 19X20X21X ±XXX.XXS ±XXX.XXS ±XXX.XXS
RNG XX XXXX XS ±XXX.XXS ±XXX.XXS ±XXX.XXS
GPS ±XX XXXX XS 42X43X44X DES 31X DES 32X DES 33X
DRAG H±XXXXXX XS 22X23X24X GPS 5 P±XXXX X AZ±XXX.X
ADTA H±XXXXXX XS 25X26X27X GPS 5 P±XXXX X AZ±XXX.X
ADTA TO G/C [28X29X30X] AIF G S47X 48X 49X HXXX.X
S/B XXXXX 39

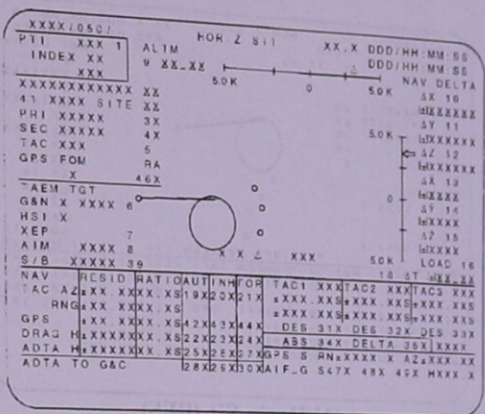
```

**[D] Horiz Sit (in-right HAC)**  
[three TACANs]

PASS  
GNC OPS  
1, 3, 6  
SPEC 050

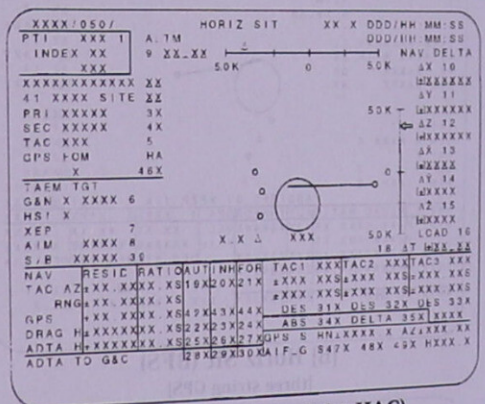


PASS  
GNC OPS  
1, 3, 6  
SPEC 050



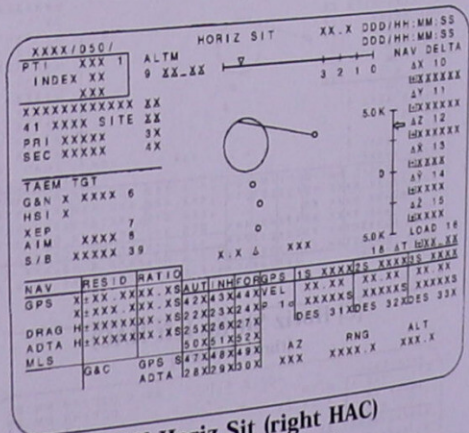
[A] Horiz Sit (out-left HAC)  
[three TACANs]

PASS  
GNC OPS  
1, 3, 6  
SPEC 050

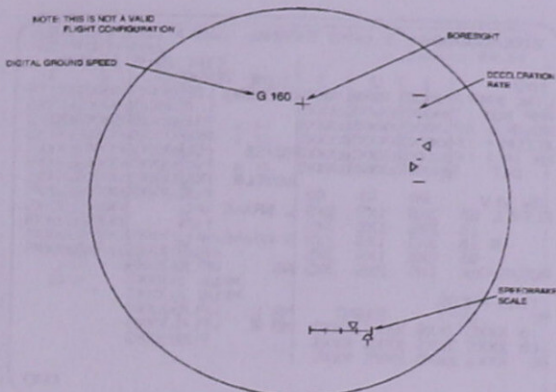


[B] Horiz Sit (out-right HAC)  
[three TACANs]

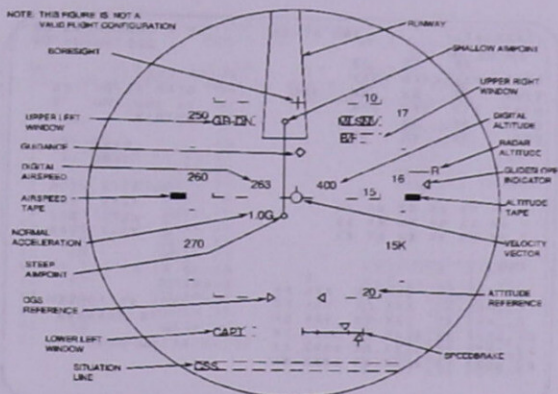
PASS  
GNC OPS  
1, 3, 6  
SPEC 050



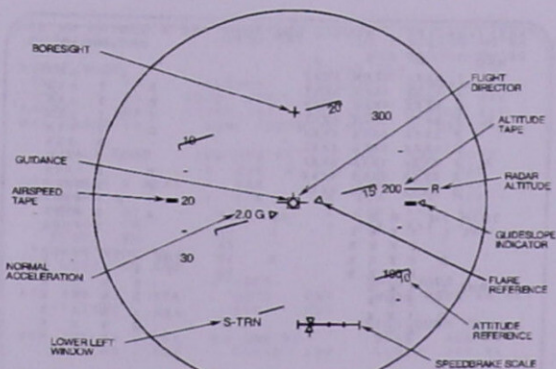
[C] Horiz Sit (right HAC)  
[three GPS receivers]



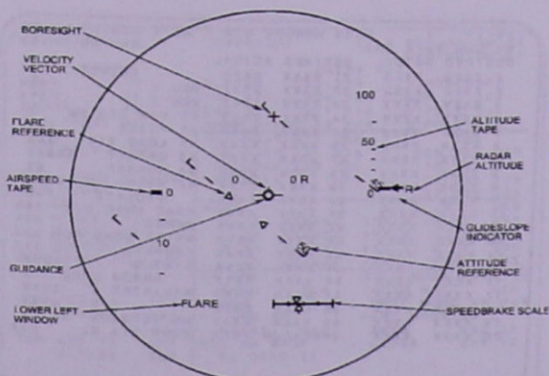
**[A] HUD Display Format 1 After WOW**



**[B] HUD Display Format 1 Pre-WOW**



**[C] HUD VU OPS 8 Low**



**[D] HUD VU OPS 9 Low**



PASS  
SM OPS 2  
SPEC 087

XXXX/XXX/087		HYD THERMAL			XX X DDD/HH:MM:SS DDD/HH:MM:SS		
		CIRC PUMP CONTROL			CIRC PUMP CONTROL		
		TEMP			TEMP		
HYD	1	2	3	LINE	1	2	3
CIRC PMP	±XXXX	±XXXX	±XXXX	ELEVON	LOB	±XXXX	±XXXX
PMP BDY	±XXXX	±XXXX	±XXXX		LIB	±XXXX	±XXXX
RSVR	±XXXX	±XXXX	±XXXX		RIB	±XXXX	±XXXX
ACCUM	±XXXX	±XXXX	±XXXX		ROB	±XXXX	±XXXX
HX IN	±XXXX	±XXXX	±XXXX	SRD/SB	PDU	±XXXX	±XXXX
OUT	±XXXX	±XXXX	±XXXX		FUS	±XXXX	±XXXX
				BDYFLP	FDL	±XXXX	±XXXX
SW VI V	PR	SI	S2		FUS	±XXXX	±XXXX
ELEV L OB	3XS	1XS	2XS	L BRAKE	WFL	±XXXX	±XXXX
IB	2XS	1XS	3XS		FUS	±XXXX	±XXXX
R IB	3XS	1XS	2XS	R BRAKE	WHL	±XXXX	±XXXX
OB	2XS	1XS	3XS		FUS	±XXXX	±XXXX
RUD/SPDBK	1XS	2XS	3XS	NG	UPLK	±XXXX	
					MFUS 1	±XXXX	
TIRE PRESS					MFUS 2	±XXXX	
LEFT		RIGHT		MG L	UPLK	±XXXX	
IB	±XXXX	±XXXX	±XXXX	MG R	UPLK	±XXXX	
OB	±XXXX	±XXXX	±XXXX		FUS	±XXXX	
NG	±XXXX	±XXXX	±XXXX				

(XX)

[A] HYD Thermal

PASS  
GNC OPS  
2, 3  
SPEC 021

XXXX/021/		IMU ALIGN			XX X DDD/HH:MM:SS DDD/HH:MM:SS		
		1S	2S	3S	ALIGN XXX		
STAT	XXXX	XXXX	XXXX	XXXX	IMU 1	10X	STAR ALIGN 13X
TEMP	XX	XX	XX	XX	IMU 2	11X	14 IMU/IMU 1
STBY	21X	22X	23X		IMU 3	12X	MATRIX 15X
OPER	4X	5X	6X				EXEC 16X
DES	7X	8X	9X				TERM 17
ACC							IMU BITE MASK
	1	2	3				1 XXXX 24X
X	±X.XX	±X.XX	±X.XX				2 XXXX 25X
Y	±X.XX	±X.XX	±X.XX				3 XXXX 26X
Z	±X.XX	±X.XX	±X.XX				
ANG							NAV ΔV THRESH
	1	2	3				16 ±XXXXXX
X	XXX.XX	XXX.XX	XXX.XX				MM READ 19X
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				

[B] IMU Alignment

PASS  
GNC OPS 9  
SPEC 106

XXXX/XXX/106		MANUAL CONTROLS			XX X DDD/HH:MM:SS DDD/HH:MM:SS			
		R	P	Y				
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	1	±XX	
	2	±XXX	±XXX	±XXX	C	2	±XX	
	3	±XXX	±XXX	±XXX		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		
	3	X	X	X	R	1X		
R	1	X	X	X		2X		
	2	X	X	X				
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			3	X X X	
	2	X	X		A	1	X X X	
	3	X	X			2	X X X	
						3	X X X	

[C] Manual Controls

PASS  
SM OPS  
2, 4  
PL OPS 9  
SPEC 085

9011/ /		MASS MEMORY R/W			XX X DDD/HH:MM:SS DDD/HH:MM:SS		
SM COM BUFF XXX		DESIRED	ACTUAL	DESIRED	ACTUAL	SELECT	
1	±XXXX	XXXX	21	±XXXX	XXXX	MMU 1	40X
2	±XXXX	XXXX	22	±XXXX	XXXX	MMU 2	41X
3	±XXXX	XXXX	23	±XXXX	XXXX	42 S/W SYSTEM	X
4	±XXXX	XXXX	24	±XXXX	XXXX	43 PHASE	±XX
5	±XXXX	XXXX	25	±XXXX	XXXX	44 LOAD BLK	±XX
6	±XXXX	XXXX	26	±XXXX	XXXX	45 OFFSFT	±XXXX
7	±XXXX	XXXX	27	±XXXX	XXXX	46 NUMBER	±X
8	±XXXX	XXXX	28	±XXXX	XXXX	47 PATCH ID	±XXXX
9	±XXXX	XXXX	29	±XXXX	XXXX	VIOLATE	±XX
10	±XXXX	XXXX	30	±XXXX	XXXX	READ LOAD BLK	48X
11	±XXXX	XXXX	31	±XXXX	XXXX	MERGE	49X
12	±XXXX	XXXX	32	±XXXX	XXXX	WRITE LOAD BLK	50X
13	±XXXX	XXXX	33	±XXXX	XXXX	COMPARE	51X
14	±XXXX	XXXX	34	±XXXX	XXXX	STATUS	±XXXX
15	±XXXX	XXXX	35	±XXXX	XXXX	ERROR CODE	X
16	±XXXX	XXXX	36	±XXXX	XXXX	REGISTER A	±XXXX
17	±XXXX	XXXX	37	±XXXX	XXXX	B	±XXXX
18	±XXXX	XXXX	38	±XXXX	XXXX	MM VERSION	±X.XX
19	±XXXX	XXXX	39	±XXXX	XXXX	DUMP VIA DL	52X
20	±XXXX	XXXX	CHECKSUM	±XXXX	XXXX		

[D] Mass Memory R/W

```

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

      HYD
      SYS PRESS
      SEL HIGH  ENABLE  CURRENT  POSITION

NWS1 XS  XS      A XS  XX.XXS  A  XX.XXS
          B XS      B XS      B  XX.XXS
          C XS      C  XX.XXS

NWS2 XS  XS      A XS  XX.XXS
          B XS      B XS

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

```

PASS  
GNC OPS 8  
SPEC 045

[A] NWS Check

```

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= XXXXXXX

INPUTS                                CONTROLS
1 TGT NO          XX                T2 TO T1  25
2 T1 TIG  X/XX:XX XX                XXXX     28
8 EL             XXX-XX                COMPUTE T1 28X
7 ΔX/DNRNG  [X]XXX XX                COMPUTE T2 29X
8 ΔY          [X]XXX XX
9 ΔZ/DH       [X]XXX XX
10 ΔX         [X]XXX XX
11 ΔY         [X]XXX XX
12 ΔZ         [X]XXX XX
13 T2 TIG  X/XX:XX XX
17 ΔT         [X]XXX-XX
18 ΔX         [X]XXX-XX
19 ΔY         [X]XXX XX
20 ΔZ         [X]XXX XX
21 BASE TIME X/XX:XX:XX

ORBITER STATE
XXX/XX:XX XX.XXX
X ±XXXXX.XXX
Y ±XXXXX.XXX
Z ±XXXXX.XXX
VX ±XX XXXXXX
VY ±XX XXXXXX
VZ ±XX XXXXXX

```

PASS  
GNC OPS 2  
SPEC 034

[B] Orbit Targeting

```

XXXX/031/          OVERRIDE          XX X DDD/HH:MM:SS
                                     BFS DDD/HH:MM:SS

ABORT MODE          ENTRY FCS
TAL 1X             ELEVON FILTER ATMOSPHERE
ATO 2X             AUTO 17X NOM 20X NOM 22X
ABORT 3X           FIXED 18X ALT 21X N POLE 23X
MAX THROT 4X      SSME REPOS 19 XXX S POLE 24X

PRPLT DUMP          IMU DES ATT  AA  RGA SURF
1 25X X  LRU DES  DES  DES
XXX ICNCT 5 XXXX  2 26X  1 31X  35X 30X
OMS DUMP          3 27X  2 32X  36X 40X
ARM 6X           3 33X  37X 41X
START 7X        4 34X  38X 42X
STOP 8X
9 QUAN/SIDE XXX
OMS DUMP TTG XXX

ET SEP          ROLL MODE
AUTO 28X      WRAP MODE 45 XXX
SEP 29X
VENT DOOR CNTL
FWD RCS 15 XXX ET UMB DR  OPEN 43X XX
16 TIME XXX  CLOSE 30X  CLOSE 44X XX

```

BFS  
GNC OPS  
1, 3, 6  
SPEC 051

[C] Override (BFS)

```

XXXX/051/          OVERRIDE          XX X DDD/HH:MM:SS
                                     DDD/HH:MM:SS

ABORT MODE          ENTRY FCS
TAL 1X             ELEVON FILTER ATMOSPHERE
ATO 2X             AUTO 17X NOM 20X NOM 22X
ABORT 3X           FIXED 18X ALT 21X N POLE 23X
MAX THROT 4X      SSME REPOS 19 XXX S POLE 24X

PRPLT DUMP          IMU STAT ATT DES  PRL
16 XXXX X 25X  SYS AUT DES
25 XXXX XXX 25X  15 28X 31X
35 XXXX 27X  25 29X 32X
                   35 30X 33X

ADTA  H  G  M  DES
L 15 XXXXXX ±XX.X X.XX 34X
35 XXXXXX ±XX.X X.XX 35X
R 25 XXXXXX ±XX.X X.XX 36X
45 XXXXXX ±XX.X X.XX 37X

ET SEP          ROLL MODE XXXXXXX
AUTO 38X      AUTO SEL 42X
SEP 39X      WRAP MODE 45 XXX
FT UMB DR     VENT DOOR CNTL
CLOSE 40X    OPEN 43X XX
RCS RM MANF   CLOSE 44X XX
CL OVRD 41

```

PASS  
GNC OPS  
1, 3, 6  
SPEC 051

[D] Override (PASS)





XXXX/XXX/096 PDRS FAULTS XX X DDD/HH:MM:SS  
DDD/HH:MM:SS

	SY	SP	EP	WP	WY	WR	
ABE1 - OLD / NEW	X	X	X	X	X	X	MCIU:
JPC BITE /	X	X	X	X	X	X	MAJC X
MDA BITE / MDA O/C	X	X	X	X	X	X	MCPC X
SPA CMTR / SPA CMTR	X	X	X	X	X	X	ICF X
TACH / TACH PLL	X	X	X	X	X	X	
/ TACH TCO	X	X	X	X	X	X	
/ CPU	X	X	X	X	X	X	ABE:
/ MDA DMND	X	X	X	X	X	X	COMM X
/ A/D CONV	X	X	X	X	X	X	
/ BRAKE	X	X	X	X	X	X	CHECK CRT:
/ POS ENC	X	X	X	X	X	X	DC/MCIU X
/ DIR DRV	X	X	X	X	X	X	EXT FS X
/ B/U RELAY	X	X	X	X	X	X	EE FLAG X
							EEEEU X
SPA +28V /							EE CMDS X
							HC X
CONTR FRROR	X	X	X	X	X	X	MCIU HC X
CKCRT - POS	X	X	X	X	X	X	TMP CKT X
REACH LIMIT	X	X	X	X	X	X	

CKCRT - SPA: SY SP EP WP WY WR  
BITE TEST XXXX XXXX XXXX XXXX XXXX XXXX

(XX)

PASS  
SM OPS 2  
SPEC 096

[A] PDRS Faults

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 25X
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  
ABE OVRD A 36X  
ABE OVRD B 37X  
ABE OVRD C 38X

PASS  
SM OPS  
2, 4  
SPEC 095

[B] PDRS Override

XXXX/XXX/169 PDRS STATUS XX X DDD/HH:MM:SS  
DDD/HH:MM:SS

	X/P	Y/Y	Z/R
POHS POS REF	±XXXXXS	±XXXXXS	±XXXXXS
POHS ATT REF	±XXX.XS	±XXX.XS	±XXX.XS
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  
SY SP EP  
±XXX.XXS ±XXX.XXS ±XXX.XXS  
WP WY WR  
±XXX.XXS ±XXX.XXS ±XXX.XXS

END EFFECTOR  
RIGID CLOSE CAPTURE  
X X X  
DERIG OPEN EXTEND  
X X X

(XX)

PASS  
SM OPS 2  
SPEC 169

[C] PDRS Status

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

(XX)

PASS  
SM OPS 2  
SPEC 097

[D] PL Retention



PASS  
SM OPS 2  
SPEC 089

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	
ENG I/F	OX	XXXX	XXXX	OMS CRSFD L R C
	FU	XXXX	XXXX	OX XXXX XXXX XXXX
	OX VLV	XXXX	XXXX	GMBL LN XXXX XXXX
	FU INJ	XXXX	XXXX	DRN OX XXXX XXXX
WEB KEEL	1	XXXX	XXXX	FU OX
	2	XXXX	XXXX	BLD AFT FUS XXXX XXXX
Y	03	XXXX	XXXX	PL BAY XXXX XXXX
	UP	XXXX	XXXX	OX QD XXXX
OX DRN PNL	1	XXXX	XXXX	
	2	XXXX	XXXX	
ENG COVER	XXXX	XXXX		FWD RCS FU OX
SERV PNL	XXXX	XXXX		LINE T1 XXXX XXXX
GSE SERV PNL	XXXX	XXXX		T2 XXXX XXXX
TEST HE/OX	1	XXXX	XXXX	
	2	XXXX	XXXX	AFT RCS L R
				MANF 1 OX XXXX XXXX
				DRN PNL 1 XXXX XXXX
				2 XXXX XXXX
				VERN PNL 1 XXXX XXXX
				2 XXXX XXXX

(XX)

[A] PRPLT Thermal

PASS  
GNC OPS  
1, 2, 3,  
6, 8

SPEC 023

XXXX/023/	RCS	XX X	DDD/HH:MM:SS
RCS FWD 1X	PRJ	JET	OMS PRESS ENA
L 2X 4	FAIL	LIM X	L OMS 5X OMS=RCS QTY
R 3X			R OMS 6X L XX.XXS
			OFF 7X R XX.XXS
JET	FAIL	DES	JET
		INH	DES
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
XO	XXX	24X	25X
2D	XXX	26X	27X
XO	XXX	28X	29X
XXX	XXX	30X	31X
X XX	XXX	32X	33X
XX	XXX	34X	35X
XSA	XXX	36X	37X
V 5X	XXX	38X	39X

HE	P	OX ID	FU
PRPLT TK P	XXXX	XXXX	XXXX
T	XXXX	XXXX	XXXX
QTY	XXXX	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 RESPT	45		

[B] RCS

PASS  
GNC OPS 9  
SPEC 102

XXXX/102/	RCS/RGA/ADTA TEST	XX X	DDD/HH:MM:SS
RCS DRIVERS			DDD/HH:MM:SS
RJDF 1X	START TEST	4X	STAT XXXX
RJDA-A 2X	CONT	5X	JET XXX
-B 3X	TERM	6	STEP X
SENSORS			TEST CONTROL
ENA STAT	H	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
			INH ALL 19X
ENA STAT	PaC	PS	PaU
A1 11X XXXX	XX.XXS	XX.XXS	XX.XXS
D3 12X XXXX	XX.XXS	XX.XXS	XX.XXS
T2 13X XXXX	XX.XXS	XX.XXS	XX.XXS
A4 14X XXXX	XX.XXS	XX.XXS	XX.XXS

[C] RCS/RGA/ADTA Test

PASS  
GNC OPS 9  
SPEC 033

XXXX/033/	REL NAV	XX X	DDD/HH:MM:SS
RNDZ NAV	ENA 1X	SV UPDATE	DDD/HH:MM:SS
KU ANT	ENA 2X	POS XX XX	AVG G ON 5X
MEAS	ENA 3X	VEL XX XX	
NAV			GPS
SV SEL 4	XXXX	RR XXXX	STAT P 1e DES
RNG	XXXX.XXX	RNG XXXX.XXS	15 XXXX XXXX 31X
R	±XXXX.XX	R ±XXXX.XXS	25 XXXX XXXX 32X
0	XXX.XX	EL ±XXX.XS	35 XXXX XXXX 33X
Y	±XX.XX	AZ ±XXX.XS	SV TRANSFER
Y	±XXX.X	uP ±XX.XS	FLTR MINUS PROP
NODE	XX.XX.XX	uR ±XX.XS	POS XX.XX
			VEL XX.XX
			FLTR TO PROP 8X
			PROP TO FLTR 9X
			ORB TO TGT 19X
			TGT TO ORB 11X
			EDIT OVHD
S TRK 12X	RR 13X	COAS 14X	AUT INH FOR
STAT	XXXXXXXXXX	XXXX X ±X.X	17X 18X 19X
FLTR UPDATE	15 XXX	Y ±X.X	20X 21X 22X
COVAR REINIT	16X		23X 24X 25X
RNG	RESID	RATIO ACPT REJ	
R	±XX.XX	X.X XXX.XXS	
V/EL/Y	±X.XX	X.X XXX.XXS	
H/AZ/X	±X.XX	X.X XXX.XXS	
GPS X	±XXXX.XX	X.XS	
X	±XXXX.XX	X.XS	

[D] Relative Navigation

```

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

DES STAT      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

DES STAT      PS      PαC      PαU      PαL      T
A1 5X XXXX XX.XXS XX.XXS XX.XXS XX.XXS XXX.XXS
D3 6X XXXX XX.XXS XX.XXS XX.XXS XX.XXS XXX.XXS
T2 7X XXXX XX.XXS XX.XXS XX.XXS XX.XXS XXX.XXS
A4 8X XXXX XX.XXS 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

```

PASS  
GNC OPS 8  
SPEC 041

[A] RGA/ADTA/RCS (On-Orbit)

```

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

TMC TX TY TZ DES      RHC R      P      Y      DES
L 1 X5 X5 X5 1X      L 1 XXXX XXXX XXXX 7X
  2 X5 X5 X5 2X      2 XXXX XXXX XXXX 8X
  3 X5 X5 X5 3X      3 XXXX XXXX XXXX 9X

A 1 X5 X5 X5 4X      R 1 XXXX XXXX XXXX 10X
  2 X5 X5 X5 5X      2 XXXX XXXX XXXX 11X
  3 X5 X5 X5 6X      3 XXXX XXXX XXXX 12X

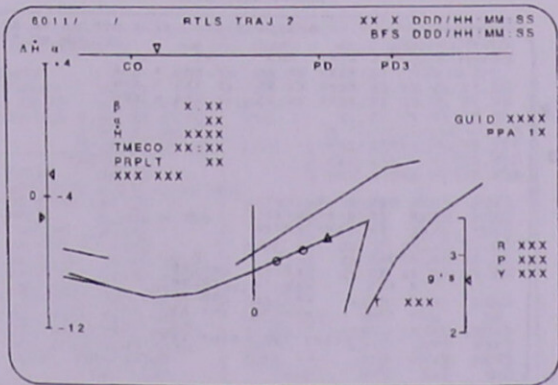
A 1 XXXX XXXX XXXX 13X
  2 XXXX XXXX XXXX 14X
  3 XXXX XXXX XXXX 15X

SW RM INH 16X

```

PASS  
GNC OPS 2  
SPEC 025

[B] RM Orbit



BFS  
GNC OPS 601

[C] RTLS Traj 2 (BFS)

```

XXXX/101/      SENSOR SELF-TEST XX X DDD/HH:MM:SS
                ODD/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

TEST CONTROL:
START 13X
AUTO SEQ 14X
TERM 15X

ENA STAT ALT
R1 7X XXXX XXXXS
A2 8X XXXX XXXXS

INH ALL 16X

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

```

PASS  
GNC OPS 9  
SPEC 101

[D] Sensor Self-Test  
[three TACANS]



PASS  
GNC OPS 9  
SPEC 101

```

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  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

```

[A] Sensor Self-Test  
[three GPS receivers]

PASS  
GNC OPS 8  
SPEC 040

```

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

      DES  STAT  RNG      AZ      EL
MLS 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

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

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

      DES      Y      Z
AA  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

```

[B] Sensor Test (On-Orbit)  
[three TACANs]

PASS  
GNC OPS 8  
SPEC 040

```

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

      DES  STAT  RNG      AZ      EL
MLS 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

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

      DES      Y      Z
AA  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

```

[C] Sensor Test (On-Orbit)  
[three GPS receivers]

PASS  
PL OPS 9  
SPEC 111

```

XXXX/111/          SL MEMORY DUMP  XX X DDD/HH:MM:SS
SM COM BUFF XXXX                                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 ACO XXXXX
FAIL RHW XXXX
AW XXXXX
LAST ADD XXXX

```

[D] SL Memory Dump

XXXX/064/ SM GROUND CHECKOUT XX X ODD/HH:MM:SS  
 ODD/HH:MM:SS

XXXXXXXXXXXXXXXXXX  
 ENA INH PROCESS INH/ENA  
 FDA 2X 3X INH  
 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 ATTN LIM XX  
 14 ARM SELECT XXX

OPS ACTIVATE 1X

PASS  
 SM OPS  
 2, 4

SPEC 064

[A] SM Ground Checkout

XXXX/XXX/078 6M SYS SUMM 1 XX X ODD/HH:MM:SS  
 BFS ODD/HH:MM:SS

SMOKE 1/A 2/B  
 CABIN XX XS  
 L/R FD XX XS XX XS  
 AV BAY 1 XX XS XX XS  
 2 XX XS XX XS  
 3 XX XS XX XS

DC VOLTS 1/A 2/B 3/C  
 FC XX XS XX XS XX XS  
 MAIN XX XS XX XS XX XS  
 CNTL AB XX XS XX XS XX XS  
 BC XX XS XX XS XX XS  
 CA XX XS XX XS XX XS  
 ESS XX XS XX XS XX XS

CABIN  
 PRESS XX XS  
 dP/dT ±.XXS  
 BU/EO ±.XXS ±.XXS  
 PPO2 X.XXS X.XXS  
 FAN ΔP X.XXS  
 HX OUT T XXXS  
 O2 FLOW X XS X XS  
 N2 FLOW X XS X XS  
 IMU FAN ΔP X.XXS  
 AV FC1 FC2 FC3  
 SS1 XXXS XXXS XXXS  
 SS2 XXXS XXXS XXXS  
 SS3 XXXS XXXS XXXS  
 TOTAL AMPS XXXS  
 KW XXS

AC  
 VOLT #A XXXS XXXS XXXS  
 #B XXXS XXXS XXXS  
 #C XXXS XXXS XXXS  
 AMPS #A XX XS XX XS XX XS  
 #B XX XS XX XS XX XS  
 #C XX XS XX XS XX XS  
 FUEL CELL PH XXS XXS XXS  
 AMPS XXXS XXXS XXXS  
 REAC VLV XXS XXS XXS  
 STACK T ±XXXS ±XXXS ±XXXS  
 EXIT T XXXS XXXS XXXS  
 COOL P XXXS XXXS XXXS  
 PUMP XXS XXS XXS

BFS  
 SM All OPS  
 SPEC 078  
 or  
 SYS SUMM  
 key

[B] SM SYS SUMM 1 (BFS)

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

SMOKE 1/A 2/B  
 CABIN XX XS  
 L/R FD XX XS XX XS  
 AV BAY 1 XX XS XX XS  
 2 XX XS XX XS  
 3 XX XS XX XS

DC VOLTS 1/A 2/B 3/C  
 FC XX XS XX XS XX XS  
 MAIN XX XS XX XS XX XS  
 ESS XX XS XX XS XX XS  
 CNTL 1 XXX.XSXXX.XSXXX.XSX  
 2 XXX.XSXXX.XSXXX.XSX  
 3 XXX.XSXXX.XSXXX.XSX

CABIN  
 PRESS XX XS  
 dP/dT-EQ ±.XXS±X.XXSAC  
 O2 CONC XXX.XS  
 PPO2 X.XXS X.XXS  
 FAN ΔP X.XXS  
 HX OUT T XXXS  
 O2 FLOW XX XS XX XS  
 N2 FLOW XX XS XX XS  
 IMU FAN ΔP XS XS XS XS  
 AV FC1 FC2 FC3  
 SS1 XXXS XXXS XXXS  
 SS2 XXXS XXXS XXXS  
 SS3 XXXS XXXS XXXS  
 TOTAL AMPS XXXS  
 KW XXS

VOLT #A XXXS XXXS XXXS  
 #B XXXS XXXS XXXS  
 #C XXXS XXXS XXXS  
 AMPS #A XX XS XX XS XX XS  
 #B XX XS XX XS XX XS  
 #C XX XS XX XS XX XS  
 FUEL CELL  
 AMPS XXXS XXXS XXXS  
 REAC VLV XX XX XX  
 STACK T ±XXXS ±XXXS ±XXXS  
 EXIT T XXXS XXXS XXXS  
 COOL P XXXS XXXS XXXS  
 PUMP XXS XXS XXS  
 (XX)

PASS  
 SM OPS 2

SPEC 078  
 or  
 SYS SUMM  
 key

[C] SM SYS SUMM 1 (PASS)

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

CRYO TK 1 2 3 4 5  
 H2 PRESS XXXS XXXS XXXS XXXS XXXS  
 O2 PRESS XXXS XXXS XXXS XXXS XXXS  
 HTR T1 XXXS XXXS XXXS XXXS XXXS  
 T2 XXXS XXXS XXXS XXXS XXXS

MANF1 MANF2  
 XXXS XXXS  
 XXXS XXXS  
 XXXS XXXS  
 XXXS XXXS  
 XXXS XXXS

APU 1 2 3  
 TEMP EGT XXXS XXXS XXXS  
 B/U EGT XXXS XXXS XXXS  
 OIL IN XXXS XXXS XXXS  
 OIL OUT XXXS XXXS XXXS  
 GG BED XXXS XXXS XXXS  
 INJ XXXS XXXS XXXS  
 SPEED % XXXS XXXS XXXS  
 FUEL QTY XXXS XXXS XXXS  
 PMP LK P XXXS XXXS XXXS  
 OIL OUT P XXXS XXXS XXXS  
 FU TK VLV  
 A T XXXS XXXS XXXS  
 B T XXXS XXXS XXXS  
 AV BAY 1 2 3  
 TEMP XXXS XXXS XXXS  
 FAN ΔP X.XXS X.XXS X.XXS

HYD 1 2 3  
 PRESS XXXS XXXS XXXS  
 ACUM P XXXS XXXS XXXS  
 RSVR T XXXS XXXS XXXS  
 QTY XXXS XXXS XXXS  
 W/B  
 H2O QTY XXXS XXXS XXXS  
 RYP VLV XXXS XXXS XXXS  
 THERM CNTL 1 2  
 H2O PUMP P XXXS XXXS  
 FREON FLOW XXXS XXXS  
 EVAP OUT T XXXS XXXS

BFS  
 SM All OPS  
 SPEC 079  
 or  
 SYS SUMM  
 key twice

[D] SM SYS SUMM 2 (BFS)



PASS  
SM OPS 2  
  
SPEC 079  
or  
SYS SUMM  
key twice

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				
HTR T2	±XXXX	±XXXX	±XXXX	±XXXX	±XXXX				
APU	1	2	3	HYD	1	2	3		
TEMP EGT	XXXX	XXXX	XXXX	PRESS	XXXX	XXXX	XXXX		
B/U EGT	XXXX	XXXX	XXXX	RSVR T	XXXX	XXXX	XXXX		
OIL IN	XXXX	XXXX	XXXX	P	XXXX	XXXX	XXXX		
OIL 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	FREON FLOW	XXXX	XXXX	XXXX		
FAN ΔP	X.XXS	X.XXS	X.XXS	EVAP OUT T	XXXX	XXXX	XXXX		

[A] SM SYS SUMM 2 (PASS)

PASS  
SM OPS  
2, 4  
  
SPEC 060

XXXX/060/		SM TABLE MAINT		XX X	DDD/HH:MM:SS	
SM COM BUFF XXX					DDD/HH:MM:SS	
PARAM		XXXXXX				
1 ID XXXXXXX		VALUE= XXXXXXXXXXXXX				
		LIMITS				
ALERT		BACKUP C&W				
LOW	HI	LOW	HI			
2X	3	11X	12			
4X	5					
6X	7					
8 FILTER XX		13 FILTER XX				
ENA 9X		ENA 14X				
INH 10X		INH 15X				
CONSTANT						
16 ID XXXXXXX						
17 VALUE= XXXXXXXXXXXXXXXXX						
CHECKPT XXX/XX:XX:XX		FDA				
INITIATE 16		ENA 19X				
STATUS XXXX XXXX		INH 20X				

[B] SM Table Maintenance

PASS  
GNC OPS  
2, 3  
  
SPEC 022

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	-Y	-Z	COAS			
REDD ID	11 XXX	12 XXX	REDD ID	21	XXX	
TRK ID	XXX	XXX	Δ DEG X	±X.X		
S PRES	X	X	Y	±X.X		
Δ ANG	±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	-2.27X	
	XXXX	XXXX	Δ BIAS	X.XX	X.XX	
			UPDATE	28	29	

[C] Star Tracker/COAS Control

PASS  
GNC OPS 8  
  
SPEC 044

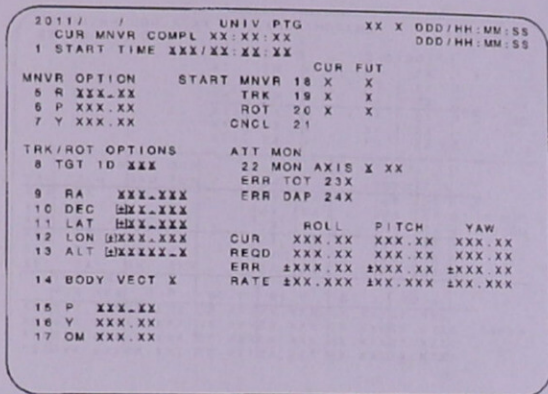
XXXX/044/		SWITCHES		XX X	DDD/HH:MM:SS	
					DDD/HH:MM:SS	
				ENTRY ROLL MODE		
				LOW	NO	
				GAIN	Y/J	DES
				1	X5	X5 1X
				2	X5	X5 2X
				3	X5	X5 3X
				4	X5	X5 4X

[D] Switches





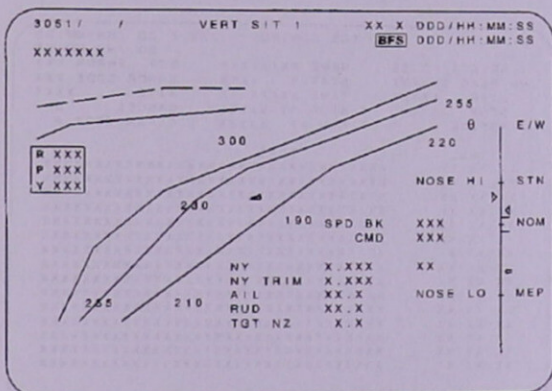
PASS  
GNC OPS  
201



[A] Universal Pointing

PASS  
GNC OPS  
305

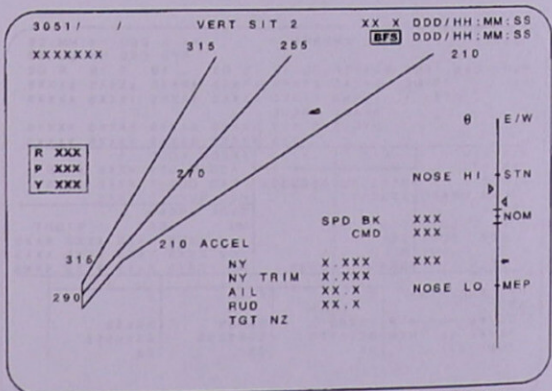
BFS  
GNC OPS  
305, 602,  
603



[B] Vertical Situation 1 (PASS/BFS)

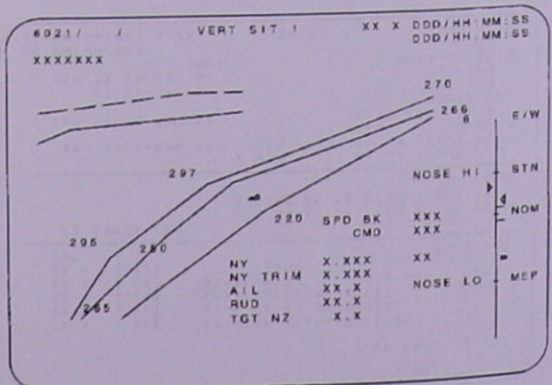
PASS  
GNC OPS  
305

BFS  
GNC OPS  
305, 603

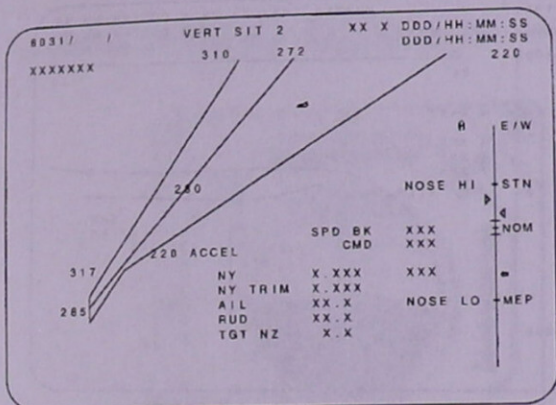


[C] Vertical Situation 2 (PASS/BFS)

PASS  
GNC OPS  
602, 603

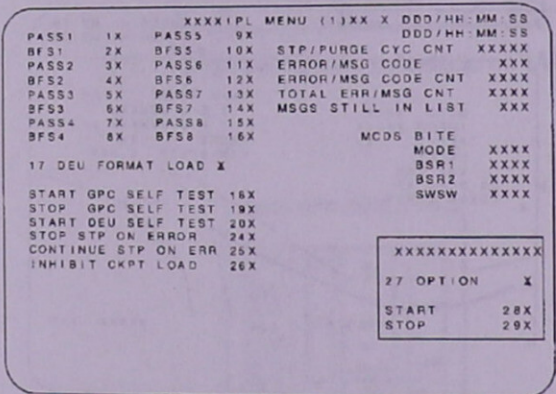


[D] Vertical Situation 1 GRTLS



PASS  
GNC OPS  
603

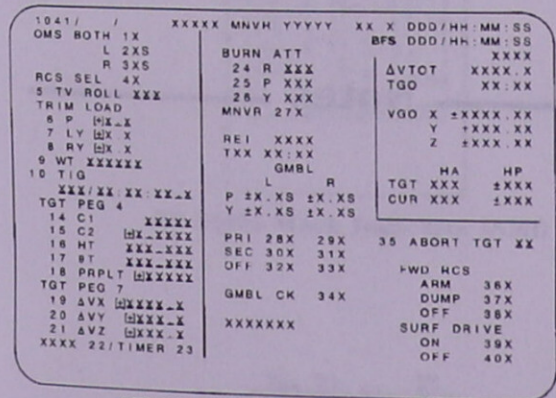
[A] Vertical Situation 2 GRTLS



GPC IPL

where  
XXXX =  
GPC, BSL2

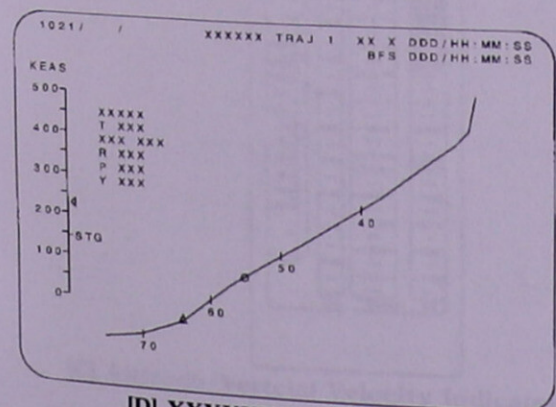
[B] XXXX IPL Menu 1 (PASS/BFS)



PASS  
GNC OPS  
104, 105,  
106, 202,  
301, 302,  
303

BFS  
GNC OPS  
104, 105,  
106, 301,  
302, 303

[C] XXXXX MNVR YYYYY



BFS  
GNC OPS  
101, 102

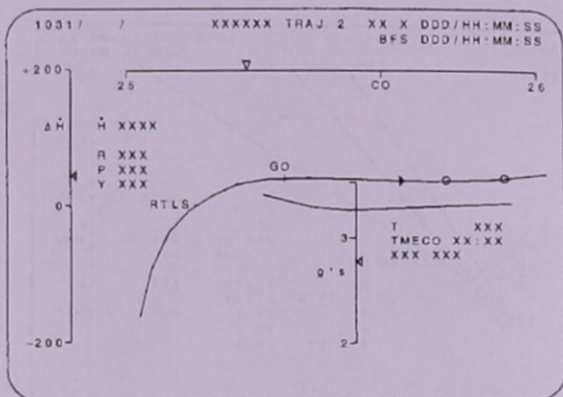
where  
XXXXXX =  
LAUNCH,  
ASCENT,  
RTLS, ATO

[D] XXXXX Traj 1 (BFS)



BFS  
GNC OPS  
103, 601

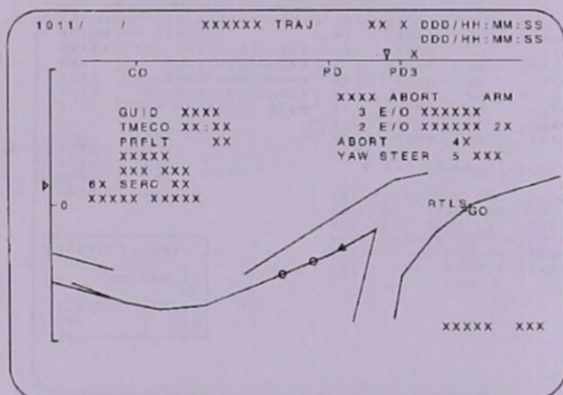
where  
XXXXXX =  
ASCENT,  
ATO, TAL



[A] XXXXXX Traj 2 (BFS)

PASS  
GNC OPS  
101, 102,  
103, 601

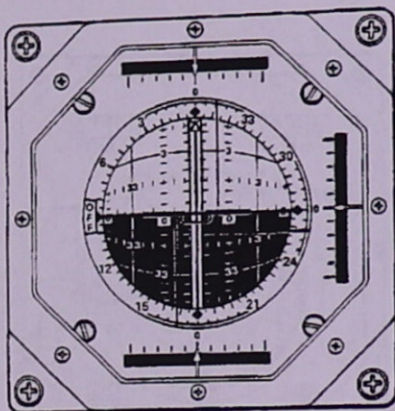
where  
XXXXXX =  
LAUNCH,  
ASCENT,  
TAL, ATO  
RTLS



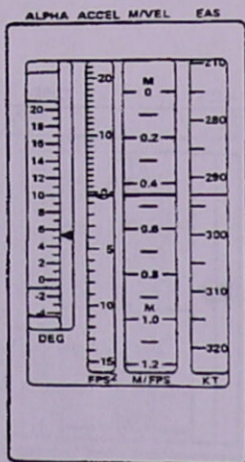
[B] XXXXXX Traj (PASS)

## Notes

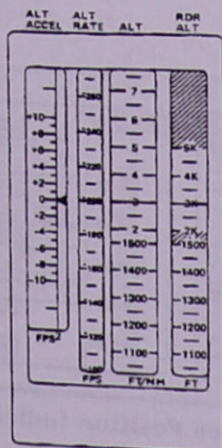
# DDU Displays



[A] Attitude Direction Indicator (ADI)



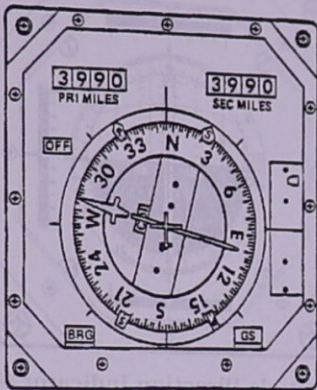
[B] Alpha Mach Indicator (AMI)



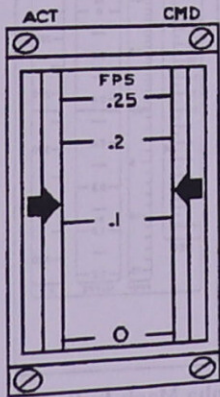
[C] Altitude/Vertical Velocity Indicator (AVVI)



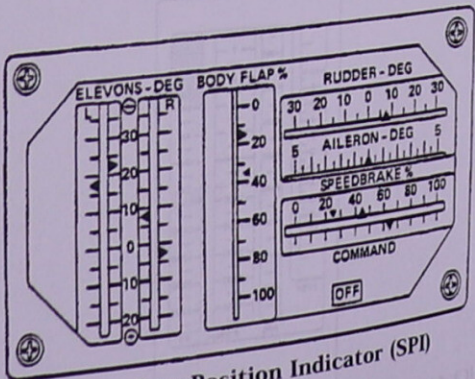
# DDU Displays



[A] Horizontal Situation Indicator (HSI)

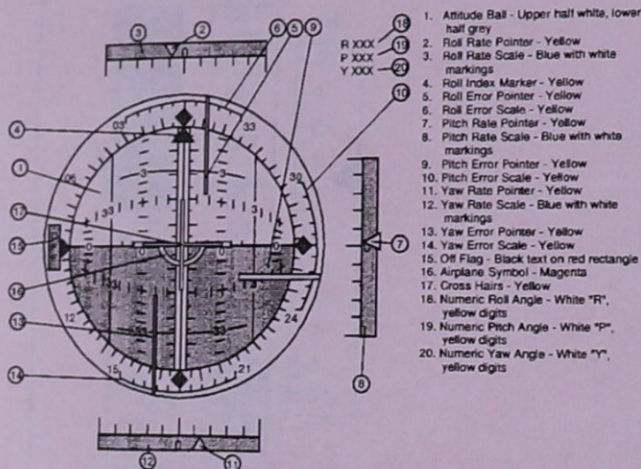


[B] RMS Rate Meter

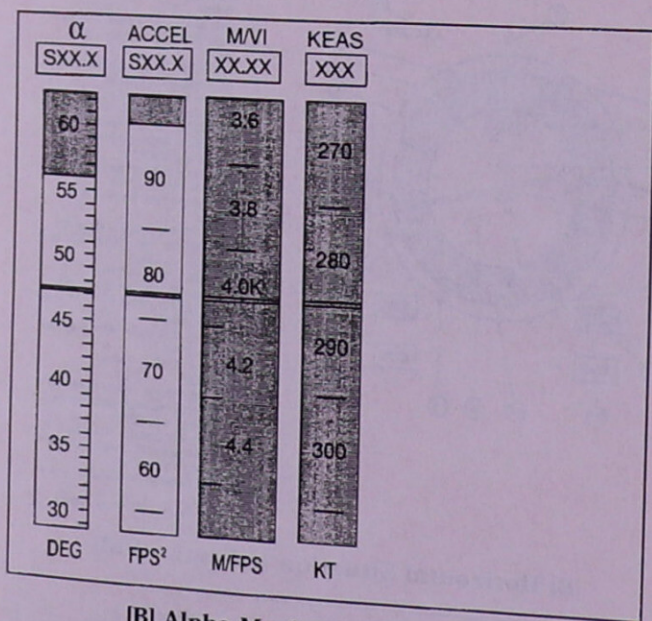


[C] Surface Position Indicator (SPI)

# MEDS DDU Displays

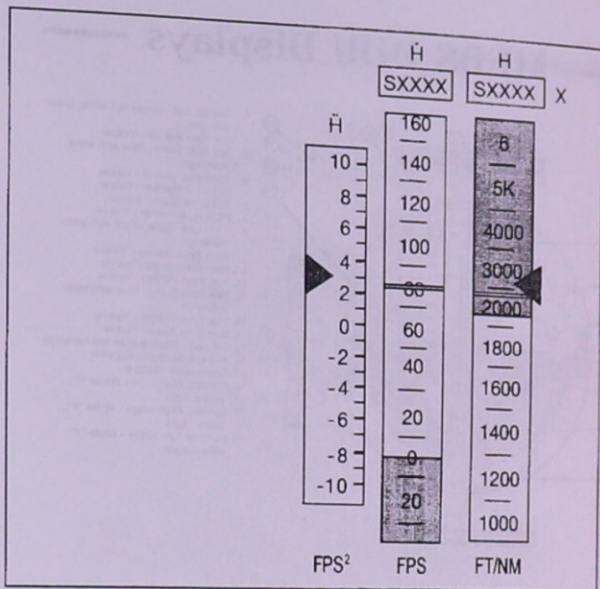


[A] Attitude Direction Indicator (ADI)

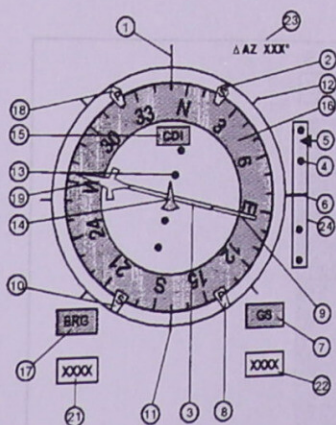


[B] Alpha Mach Indicator (AMI)



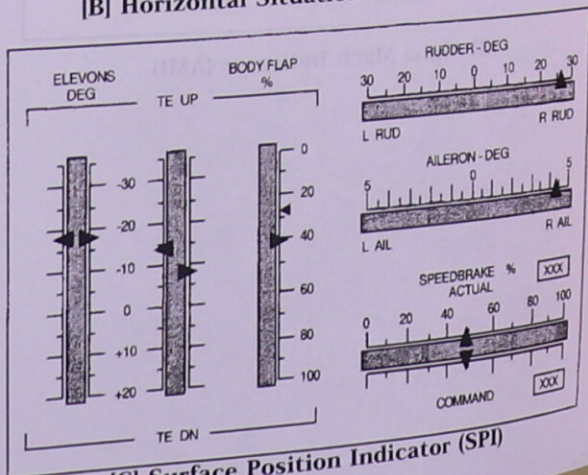


[A] Altitude/Vertical Velocity Indicator (AVVI)



1. Fixed Lubber Line - Cyan
2. Secondary Bearing Pointer - Green with black "S"
3. Course Deviation Bar - Yellow
4. Glide Slope Dev. Scale Dots (4) - White
5. Glide Slope Dev. Pointer - Yellow
6. Glide Slope Dev. Center Index - White
7. Glide Slope Dev. Flag - Black "GS" on a solid red rectangle
8. Primary Bearing Pointer Tail - Magenta with a black "P"
9. Course Pointer Tail - Yellow
10. Secondary Bearing Pointer Tail - Green with black "S"
11. Reciprocal Lubber Line - Cyan
12. Fixed Index (6) - Cyan
13. Course Dev. Bar Scale Dots (4) - White
14. Fixed Shuttle Symbol - Magenta
15. Course Dev. Flag - Black "CDI" on a solid red rectangle
16. Compass Card - Dark blue background with white markings
17. Bearing Flag - Black "BRG" on a solid red rectangle
18. Primary Bearing Pointer - Magenta with a black "P"
19. Course Pointer - Yellow
20. Deleted
21. Primary Range - White digits in a magenta rectangle (invalid indicator - solid red rectangle)
22. Secondary Range - White digits in a green rectangle (invalid indicator - solid red rectangle)
23. Delta Azimuth - White label, yellow digits
24. Glide Slope Dev. Scale - White rectangle

[B] Horizontal Situation Indicator (HSI)



[C] Surface Position Indicator (SPI)