


# **Orbiter Displays Reference Guide**

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

**OI-28**

**October 1999**

 **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-28 and subs. This guide also provides CRT System Management (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 July 1999 CR 98021 - Flight Software Release Baseline Specification OI-28. For detailed information, refer to the above-mentioned documents. For information regarding the distribution of this reference guide, contact Dave Chermanski (407-861-4655), Tom Fowler (407-861-4658) or Pete Wilson (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	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	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	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		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

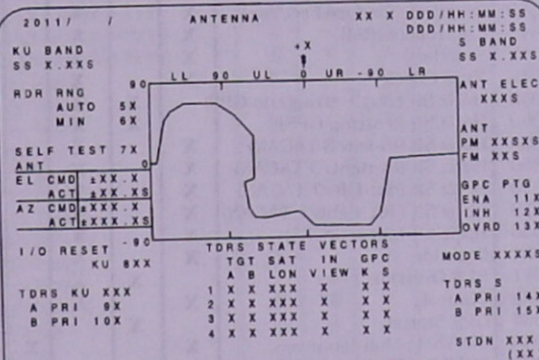


PASS  
GNC OPS 9  
SPEC 113

XXXX/113 / MONITOR		ACTUATOR CONTROL				XX X	DDD/HH:MM:SS
CMD	POS	ACT	A	B	C	D	ACTUATOR GIMBALING
±XX.XX	±XX.XX	SB	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	R7SB MAT 35X
±XX.XX	+XX.XX	RPA	13X				R/9B 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	LPA	17X	2	FERY	24 X	NOP OMS 40X
±XX.XX	±XX.XX	LPS	18X	3	RAIN	25 X	SRB S/S LIM 41X
±XX.XX	±XX.XX	LVA	19X	4	GRAV	26 X	EL POS LIM 42X
±XX.XX	±XX.XX	LVS	20X	5	NULL	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/088		APU/ENVIRON THERM		XX X	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	OUT T	XXXX	XXXX	
AFT CP FLOW	XXXX	XXXX	ΔP	XXXX	XXXX	
RAD IN T	XXXX	XXXX	ICH FLOW	XXXX	XXXX	
RAD OUT T	XXXX	XXXX	OUT T	XXXX	XXXX	
EVAP OUT T	XXXX	XXXX	CAB HX IN T	XXXX	XXXX	
EVAP TEMP	DUCT	NOZ	ACCUM QTY	XXXX	XXXX	
HI LOAD INBD	XXXX		APU FUEL	1	2	3
OUTBD	XXXX	XXXX	TK SURF	±XXXX	±XXXX	±XXXX
TOPPING FWD	XXXX		TK HTR	±XXXX	±XXXX	±XXXX
AFT	XXXX		TEST LN 1	±XXXX	±XXXX	±XXXX
L	XXXX	XXXX	TEST LN 2	±XXXX	±XXXX	±XXXX
R	XXXX	XXXX	FEED LN	±XXXX	±XXXX	±XXXX
EVAP FDLN T	A	B	PUMP IN	±XXXX	±XXXX	±XXXX
FWD	XXXX	XXXX	DRN LN 1	±XXXX	±XXXX	±XXXX
MID 1	XXXX	XXXX	DRN LN 2	±XXXX	±XXXX	±XXXX
MID 2	XXXX	XXXX	OUT	±XXXX	±XXXX	±XXXX
AFT	XXXX	XXXX	BYP LN	±XXXX	±XXXX	±XXXX
TOPPING	XXXX	XXXX	GG SPLY LN	XXXX	XXXX	XXXX
ACCUM	XXXX	XXXX				
HI LOAD	XXXX	XXXX	H2O LN INJ	±XXXX	±XXXX	±XXXX

[C] APU/ENVIRON Thermal

PASS  
SM OPS 2  
SPEC 086

XXXX/XXX/086		APU/HYD			XX X	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
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
OUT	A	XXXX	XXXX	XXXX				
TK	VLV	A	XXXX	XXXX				
A	B	XXXX	XXXX	XXXX				
OIL	B	XXXX	XXXX	XXXX	W/B	1	2	3
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	T	XXXX	XXXX
N2	P	XXXX	XXXX	XXXX	REG	P	XXXX	XXXX
BRG	T	XXXX	XXXX	XXXX	BYP	VLV	XXXX	XXXX
GG	BED	T	XXXX	XXXX	VENT	T	±XXXX	±XXXX
PUMP	VLV	T	XXXX	XXXX	TANK	T	±XXXX	±XXXX
PMP	T	XXXX	XXXX	XXXX	BLR	T	±XXXX	±XXXX
VLV	T	XXXX	XXXX	XXXX				

[D] APU/HYD

0001 / / BFS MEMORY XX X ODD/HH:MM:SS  
BFS ODD/HH:MM:SS

READ/WRITE  
DATA 1X BIT SET 3X SEQ 10 5  
CODE 2X BIT RST 4X WRITE 6  
7 ENG UNITS XXX HEX 8X  
ADD 10 DESIRED ACTUAL  
9 XXXXX 10 XXXX ±XXXXXXXXXX  
11 XXXXX 12 XXXX ±XXXXXXXXXX  
13 XXXXX 14 XXXX ±XXXXXXXXXX  
15 XXXXX 16 XXXX ±XXXXXXXXXX  
17 XXXXX 18 XXXX ±XXXXXXXXXX  
19 XXXXX 20 XXXX ±XXXXXXXXXX

BFS  
All OPS  
SPEC 000

MEMORY DUMP  
21 START 10 XXXXX  
22 NUMBER WDS XXXXX  
23 WDS/FRAME XXX  
DUMP 24

LAUNCH BUS 1 26X TFL ENA  
2 27X 29X  
OFF 28X

PASS/BFS XFER ENA 25X

BFS TIME UPDATES UPDATE 38 MISSION TIME  
30 GMT A HXXX/XX:XX:XX-XXX GMT 39X  
34 MET A HXXX/XX:XX:XX.XXX MET 40X

[A] BFS Memory

XXXX/XXX/076 COMM/RCDR XX X ODD/HH:MM:SS  
S-BAND PM ODD/HH:MM:SS

XPND XXXXS KU-BAND  
MODE XXXXS PA TEMP ±XXXX  
FREQ XXS GMBL TEMP A ±XXXX  
PREAMP XXXXS B ±XXXX  
PWR AMPL GYRO TEMP ±XXXX  
OPER XXXXS PWR OUT XXS  
STBY XXXXS FR SYNC XXXS  
PWR OUT 1 XXXXS MODE XXXXS  
2 XXXXS TV CAM OVRTEMP XXXS  
TEMP 1 XXXXS GCIL CONFIG XXXS  
2 XXXXS RECORDERS

PASS  
SM OPS 2  
SPEC 076

NSP OPS 1 OPS 2 PL  
BIT/FR SYNC 1 XXXS XXXS MODE 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 XXXS XXXS XXXS  
UL DATA XXS TEMP XXXS XXXS XXXS  
CODING XMIT XXXS BITE XXS XXS XXS  
RCV XXXS RCDR INPUT XXXXS  
BITE 1 XXXXS COMSEC BITE 1 XXXXS  
2 XXXXS 2 XXXXS (XX)

[B] COMM/RCDR

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

T	X	Y	Z	DES	R	P	Y	DES
1	X	X	X	1X	1	X	X	X
L2	X	X	X	2X	L2	X	X	X
THC	3	X	X	3X	3	X	X	X
1	X	X	X	4X	1	X	X	X
A2	X	X	X	5X	R2	X	X	X
3	X	X	X	6X	3	X	X	X
1	X	X	X	7X	1	X	X	X
L2	X	X	X	8X	A2	X	X	X
3	X	X	X	9X	3	X	X	X
SPD	1	X	X	10X	L1	X	X	X
BK	R2	X	X	11X	RHC	2	X	X
3	X	X	X	12X	TRIM	R1	X	X
1	X	X	X	13X	2	X	X	X
L2	X	X	X	14X	L1	X	X	X
3	X	X	X	15X	PNL	2	X	X
RUD	1	X	X	16X	TRIM	R1	X	X
PED	R2	X	X	17X	2	X	X	X
3	X	X	X	18X				

PASS  
GNC OPS 8  
SPEC 043

[C] Controllers (RM)

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

SEC ACT CK AERO PORT STAT SSME PORT STAT

CHI 1X L OB 1 5 5 5 5 1 2 3 4  
2 2X 18 2 5 5 5 5 L P 5 5 5 5  
3 3X R 18 3 5 5 5 5 Y 5 5 5 5  
4 4X OB 4 5 5 5 5 C P 5 5 5 5  
START 5X RUD 5 5 5 5 5 R P 5 5 5 5  
STOP 6X SPD BRK 6 5 5 5 5 Y 5 5 5 5

NEG STIM ACT/CH  
ENA 7X B BYPASS XX  
B RESET XX

LRU AA RGA SURF FDBK  
DES 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	
		PALLET TK	6	7	8	9	
H2	PRESS	XXXX	XXXX	XXXX	XXXX		
	TK P	XXXX	XXXX	XXXX	XXXX		
O2	PRESS	XXXX	XXXX	XXXX	XXXX		
	TK P	XXXX	XXXX	XXXX	XXXX		
HTR	T1	±XXXX	±XXXX	±XXXX	±XXXX		
	T2	±XXXX	±XXXX	±XXXX	±XXXX		

**[A] CRYO Pallet (BFS)**

**PASS**  
SM OPS 2  
SPEC 168

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

(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	
		TK						
P	O2	XXXX	XXXX	XXXX	XXXX	XXXX		
	TK P	XXXX	XXXX	XXXX	XXXX	XXXX		
	QTY	XXXX	XXXX	XXXX	XXXX	XXXX		
	T	±XXXX	±XXXX	±XXXX	±XXXX	±XXXX		
HTR	T 1	±XXXX	±XXXX	±XXXX	±XXXX	±XXXX		
	T 2	±XXXX	±XXXX	±XXXX	±XXXX	±XXXX		
HTR	1A							
	1B					4/5S		
	2A							
	2B					4/5S		
MANF	P	XXXX	XXXX					
	VLV	XXS	XXS					
H2	P	XXXX	XXXX	XXXX	XXXX	XXXX		
	TK P	XXXX	XXXX	XXXX	XXXX	XXXX		
	QTY	XXXX	XXXX	XXXX	XXXX	XXXX		
	T	±XXXX	±XXXX	±XXXX	±XXXX	±XXXX		
	HTR T	±XXXX	±XXXX	±XXXX	±XXXX	±XXXX		
	MANF P	XXXX	XXXX					
	VLV	XXS	XXS					

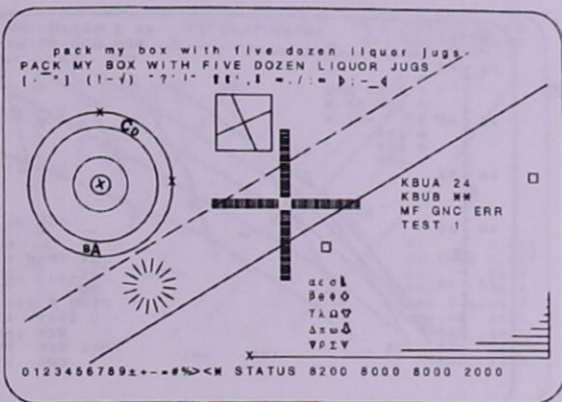
(XX)

**[C] CRYO System**

**PASS**  
GNC OPS 2  
SPEC 020

XXXX/020/		DAP CONFIG			XX X DDD/HH:MM:SS	
					DDD/HH:MM:SS	
					DAP EDIT	
	XXX	1 XXXXXX	2 XXXXXX	PR1		
ROT RATE	10	X-XXXX	30 X-XXXX	50 X-XXXX	3 DAP	AXX
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	XJETS ROT	
JET OPT	19	XXXX	39 XXXX	59 XXXX	ENA 7X	
# JETS	20	X	40 X	60 X		
ON TIME	21	X-XX	41 X-XX	61 X-XX	REBOOST	
DELAY	22	XX-XX	42 XX-XX	62 XX-XX	6 CFG X	
	XXXX			VERN	9 INTVL	
ROT RATE	23	X-XXXX	43 X-XXXX	63 X-XXXX	XXX-XX	
ATT DB	24	XX-XX	44 XX-XX	64 XX-XX		
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		

**[D] DAP Configuration**



[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	
CONTACT XXX		HTR/DCU PWR X/X/X	
CAPTURE XXX		APDS PWR X/X/X	
DAMPING XXX		CNTL CMD PWR XXX	
		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 CMLPT 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	
(XX)			

PASS  
SM OPS 2  
SPEC 167

[B] Docking Status

XXXX/001/		DPS UTILITY XX X DDD/HH:MM:SS	
		DDD/HH:MM:SS	
MMU ASSIGN		PORT ASSIGN	
1 2		PRI SEC	
GNC 1X 2X		16X 16X	
SM 3X 4X		2 17X 18X	
PL 5X 6X		3 19X 20X	
OPS 0 7X 8X		4 21X 22X	
		PL 1/2 23X 24X	
MMU STATUS		IPL SOURCE SW	
1 XXX		MASK 38X	
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	
RTC		34 XXXX	
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	

PASS  
All OPS  
SPEC 001

[C] DPS Utility

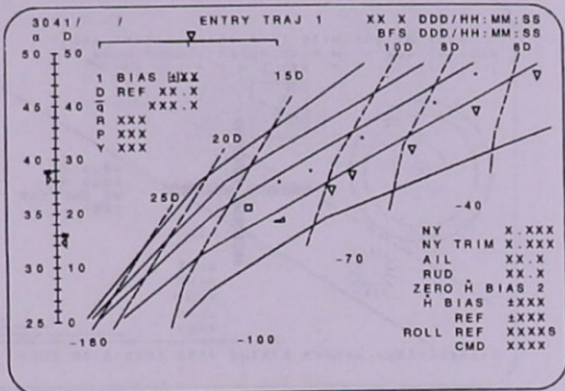
XXXX/XXX/067		ELECTRIC XX X DDD/HH:MM:SS	
		DDD/HH:MM:SS	
DC 1/A 2/B 3/C		AC 1 2 3	
VOLT FC XX.XS XX.XS XX.XS		V ♂A XXXS XXXS XXXS	
MN XX.XS XX.XS XX.XS		♂B XXXS XXXS XXXS	
PCA FWD XX.XS XX.XS XX.XS		♂C XXXS XXXS XXXS	
AFT XX.XS XX.XS XX.XS		♂A XX.XS XX.XS XX.XS	
ESS XX.XS XX.XS XX.XS		♂B XX.XS XX.XS XX.XS	
		♂C XX.XS XX.XS XX.XS	
CNTL 1XXX.XSXXX.XSXXX.XSXXX		OVLD XXS XXS XXS	
2XXX.XSXXX.XSXXX.XSXXX		O/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			
KW XXX.XS			
(XX)			

PASS  
SM OPS 2  
SPEC 067

[D] Electric

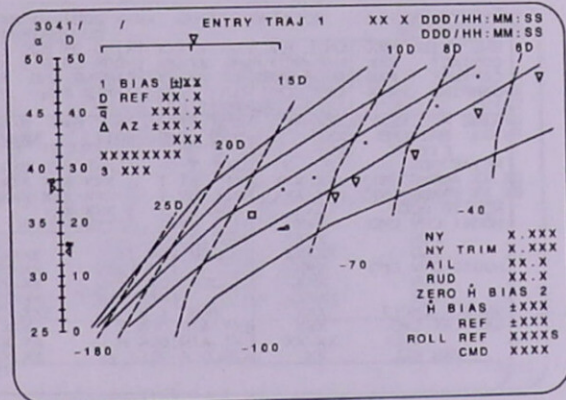


BFS  
GNC OPS  
304



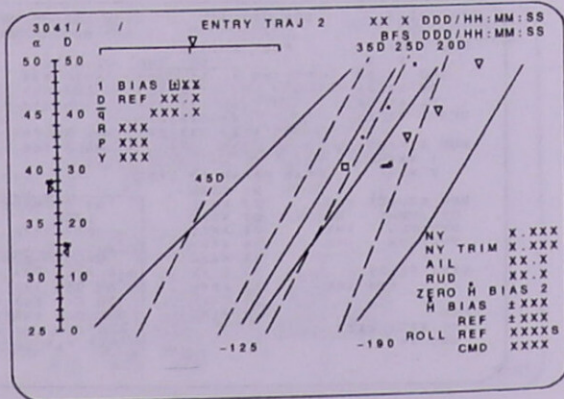
[A] Entry Traj 1 (BFS)

PASS  
GNC OPS  
304



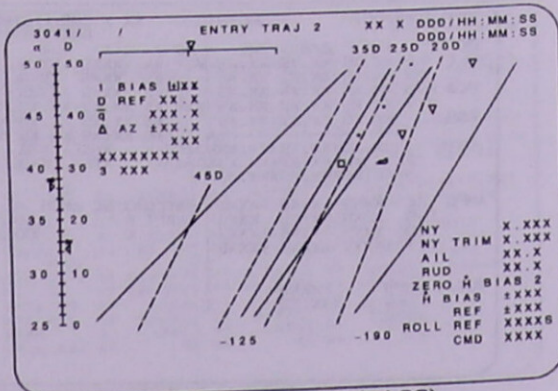
[B] Entry Traj 1 (PASS)

BFS  
GNC OPS  
304

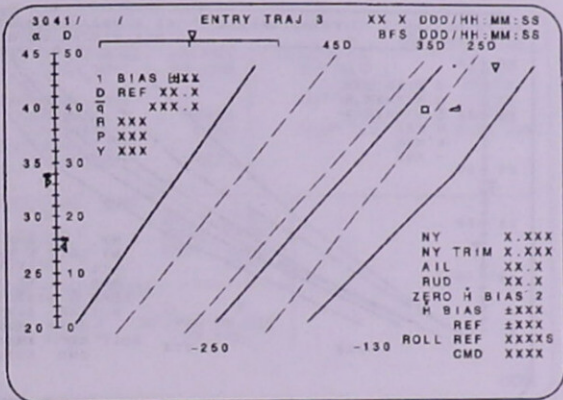


[C] Entry Traj 2 (BFS)

PASS  
GNC OPS  
304

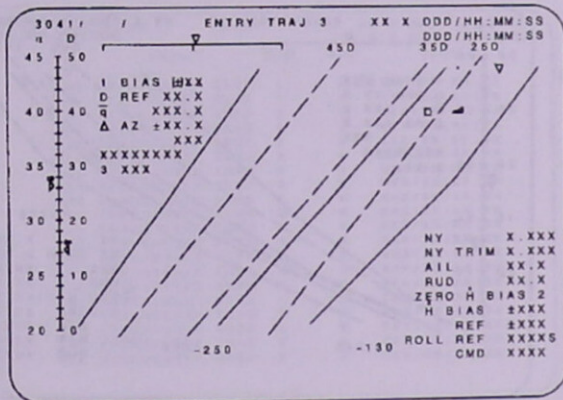


[D] Entry Traj 2 (PASS)



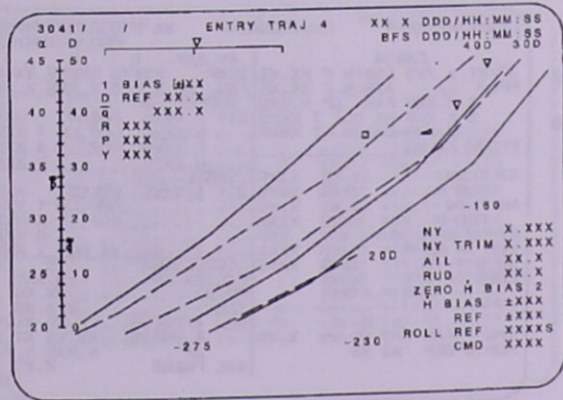
BFS  
 GNC OPS  
 304

[A] Entry Traj 3 (BFS)



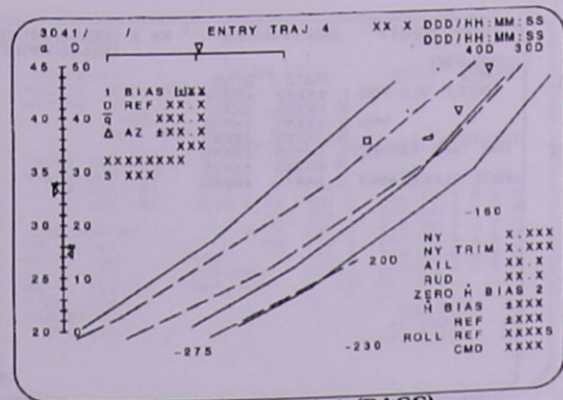
PASS  
 GNC OPS  
 304

[B] Entry Traj 3 (PASS)



BFS  
 GNC OPS  
 304

[C] Entry Traj 4 (BFS)

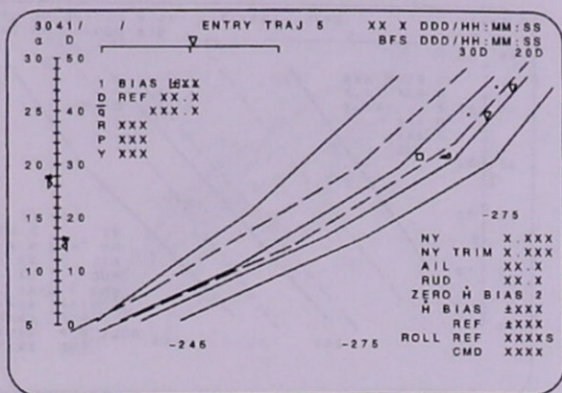


PASS  
 GNC OPS  
 304

[D] Entry Traj 4 (PASS)

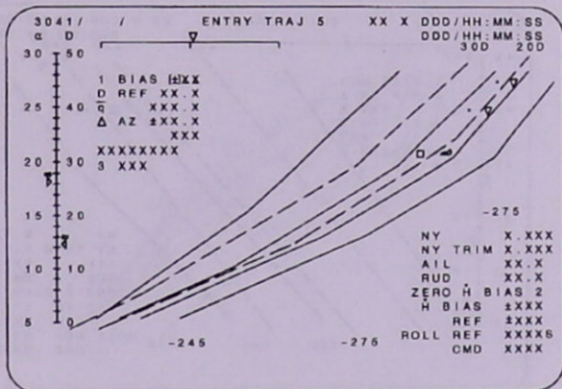


BFS  
GNC OPS  
304



[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
ΔP/ΔT ±.XXX	CABIN P XX.XS	TEMP	XXXXX	XXXXX XXXXS
PP02	AIRLK P XX.XS	FAN ΔP	X.XXS	X.XXS
A X.XXS	FAN ΔP X.XXS	SUPPLY H2O		
B X.XXS	HX OUT T XXXS	QTY A	XXXX	PRESS XXXS
C X.XXS	CABIN T XXXS	B	XXXX	DMP LN T XXXS
PPC02 XX.XS		C	XXXX	NOZ T A XXXS
		D	XXXX	B XXXS
		WASTE H2O		
O2 FLOW	X.XS X.XS	QTY I	XXXX	PRESS XXXS
REG P	XXXX XXXS			DMP LN T XXXS
N2 FLOW	X.XS X.XS			NOZ T A XXXS
REG P	XXXX XXXS			B XXXS
O2/N2 CNTL VLV	XXS XXS	VAC VT NOZ T XXXS		
H2O TK N2 P	XXXX XXXS	C02 CNTLR 1XS 2XS		
N2 QTY	XXXX XXXS	FILTER ΔP	X.XXS	
EMER O2 QTY	XXXX XXXS	PPC02	XX.XS	
REG P	XXXXX	TEMP	XXX.XS	
IMU FAN	A B C ΔP	BED A	PRESS	XX.XS XX.XS
HUMID SEP	XS XS XS X.XS	B	PRESS	XX.XS XX.XS
		ΔP		X.XXS X.XS
		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	PORT	STBD
TEMPS	L ±XXXX	±XXXX
TOGGLE VLV FSS	R ±XXXX	±XXXX
	L ±XXXX	±XXXX
MMU	R ±XXXX	±XXXX
	L ±XXXX	±XXXX
GN2 TANK BARREL	R ±XXXX	±XXXX
	L ±XXXX	±XXXX
CNTL ELECT ASSY	±XXXX	±XXXX

(XX)

[D] EVA-MMU/FSS







```

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           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
B| HDW   XXXX     XXXX     XXXX   TERM/IDLE 27X
I| S/W   XX      XX      XX      DATA 20X BIT GET 22X SEQ ID 24
TBSTAT  XX      XX      XX      CODE 21X BIT RST 23X WRITE 25
                                     26 ENG UNITS XXXX HEX 27X
PWR ON   X       X       X       ADD ID   DESIRED   ACTUAL
I/O      5       5       5       28 XXXXX 29 XXXX ±XXXXXXXXXXXX
STBY     10X    11X    12X    30 XXXXX 31 XXXX ±XXXXXXXXXXXX
OPER     13X    14X    15X    32 XXXXX 33 XXXX ±XXXXXXXXXXXX
                                     34 XXXXX 35 XXXX ±XXXXXXXXXXXX
                                     36 XXXXX 37 XXXX ±XXXXXXXXXXXX
                                     38 XXXXX 39 XXXX ±XXXXXXXXXXXX
                                     MEMORY DUMP
                                     40 START ID XXXXX 45 CONFIG XX
                                     41 NO WORDS XXXXXX 46 GPC X
                                     42 WDS/FRAME XXX 47 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

```

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/BUS CONFIG READ/WRITE XXX
1 CONFIG XX(XX) DATA 20X BIT GET 22X SEQ ID 24
2 GPC X X X X X CODE 21X BIT RST 23X WRITE 25
                26 ENG UNITS XXXX HEX 27X
STRING 1 | 7 X ADD ID   DESIRED   ACTUAL
          2 | 8 X 28 XXXXX 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
          CRT 1 | 12 X MEMORY DUMP
                | 2 13 X 40 START ID XXXXX 45 CONFIG XX
                | 3 14 X 41 NO WORDS XXXXXX 46 GPC X
                | 4 15 X 42 WDS/FRAME XXX 47 STORE 47
          LAUNCH 1 | 16 X DUMP 43
                | 2 17 X 44 DOWNLIST GPC X MM AREA
                | MM 1 | 18 X OPS 0 ENA 49 X PL 52 X
                | 2 19 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
FF 1X PCMMU 12X BTU ITEM XX MDM OUTPUT TEST
2 2X MMU1 13X STEP XXXXXX MODULE XX
3 3X 2 14X RW XXXX ANALOG OUTPUTS
4 4X MEC1 15X BCE STAT RG 0 ±X.XX 1 ±X.XX
FA1 5X 2 16X XXXXXXXX 2 ±X.XX 3 ±X.XX
2 6X EIU1 17X 4 ±X.XX 5 ±X.XX
3 7X 2 18X PORT SEL 1 31X 6 ±X.XX 7 ±X.XX
4 8X 3 19X 2 32X 8 ±X.XX 9 ±X.XX
PF1 6X DDU 20X 10 ±X.XX 11 ±X.XX
2 10X MCIU 21X 12 ±X.XX 13 ±X.XX
CMD 22X 14 ±X.XX 15 ±X.XX
SRB 23X
ALL DES DISCRETE OUTPUTS
MDMS 11X ALL 24X CHANNEL 0 XXXXXX
                CHANNEL 1 XXXXXX
                CHANNEL 2 XXXXXX
TEST LEVEL 1 25X
          LEVEL 2 26X
          MDM OUTPUT 27X
CONTROL TERMINATE 28
          CONTINUE 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
          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

```

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 18X      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

                                MODS 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 REQS 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          GPs1  XX.XXX XXX.XXX XXX.X
                                GPs2  XX.XXX XXX.XXX XXX.X
                                GPs3  XX.XXX XXX.XXX XXX.X

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

**[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 ΔR ±XXX.XX
S/TEST   11XS  12XS  13XS          ΔDR ±XXXXXX ΔOR ±XXX.XX
INIT      14X   15X   16X          ΔCR ±XXXXXX ΔCR ±XXX.XX
NAV       17X   18X   19X
RESTART  20X   21X   22X          X LAT   X LON   ALT
IMU      23 XX  24 XX  25 XX          XX.XX  XXX.XX  XXX.XXXX
GDOP     XX     XX     XX

DG FAIL   S      S      S          AUT INH FOR
DES RCVR  26X   27X   28X          GPS TO G&C S32X 33X 34X
QA OVDR  29XS  30XS  31XS          GPS TO NAV S35X 36X 37X
SF CAND   X      X      X          METERING OVERRIDE 38X
QA1 P 1eXXXXXS XXXXS XXXXS
QA2 POS  X.XXS X.XXS X.XXS          TRKD C1 C2 C3 C4 C5 C6
VEL      X.XXS X.XXS X.XXS          GPs1 XX XX XX XX XX XX
QA3 POS  X.XXS X.XXS X.XXS          GPs2 XX XX XX XX XX XX
VEL      X.XXS X.XXS X.XXS          GPs3 XX XX XX XX XX XX
1-2     2-3     3-1
QA4 POS  X.XXS X.XXS X.XXS          DES 43  XX  XX  XX  XX
VEL      X.XXS X.XXS X.XXS          XX  XX  XX  XX
XXX.X LAST SEL FIL UPDATE
    
```

**[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

GSL/RML TEST        CRIT MEC CMDS      ELEV LMT SEL
UF1 3X UF4 6X      ENA 25X
UF2 4X UF5 7X      INH 26X
UF3 5X IFA 8X
9 FAIL GPC SEL X
TEST EXEC 10X
RESET 11X          SL COMM      SSC      EXC
                                CH A ENA 30X 35X
                                B ENA 31X 36X
                                DSBL 32X 37X

DL FORMAT
12 SEL XX
LOAD 13X          MDM TESTS
GSE POLL ENA 14X RTRN CHW 33 XXXX 38 XXXX
                                RTRN MSG 34 XXXX 39 XXXX
                                COUPLER
PASS/BFS XFER 15 STATE XXXX XXXX
                                ERR CD XX XX

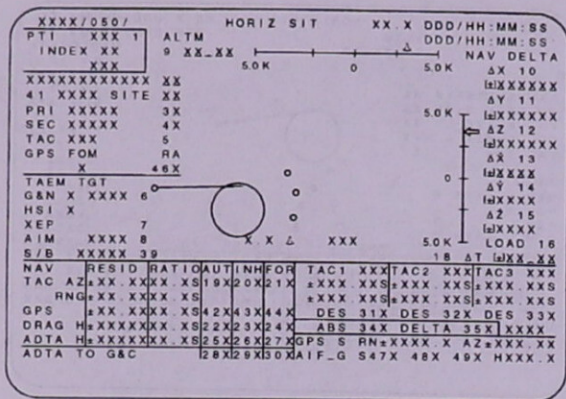
RJD TOGGLER
ON 16X OFF 17X
    
```

**[D] GTS Display**



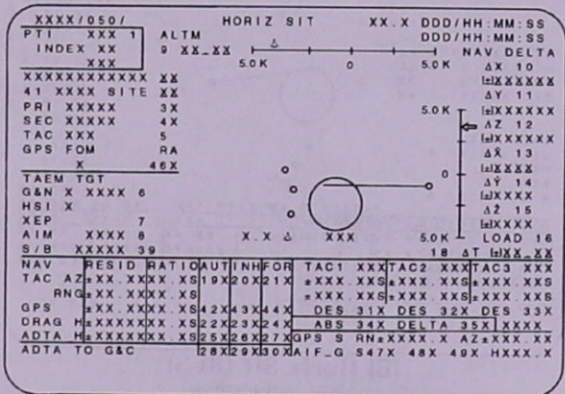


PASS  
GNC OPS  
1, 3, 6  
SPEC 050



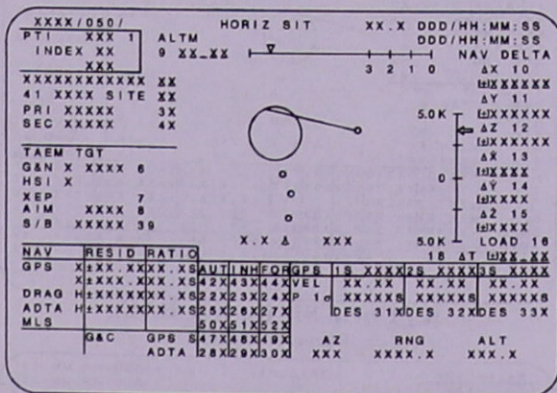
[A] Horiz Sit (out-left HAC)  
[three TACANs]

PASS  
GNC OPS  
1, 3, 6  
SPEC 050

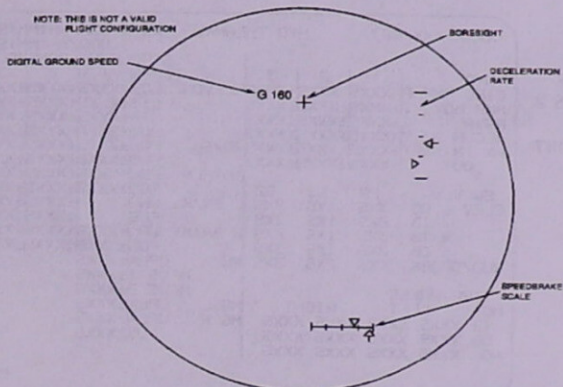


[B] Horiz Sit (out-right HAC)  
[three TACANs]

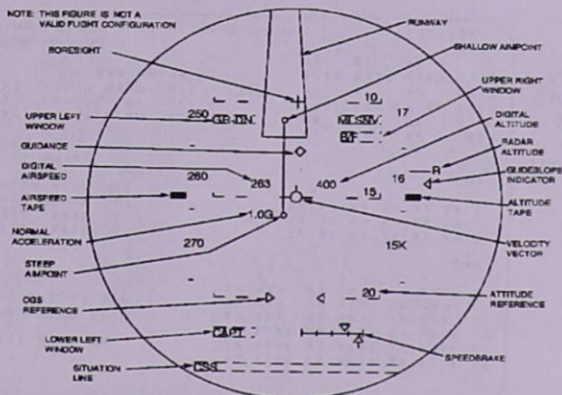
PASS  
GNC OPS  
1, 3, 6  
SPEC 050



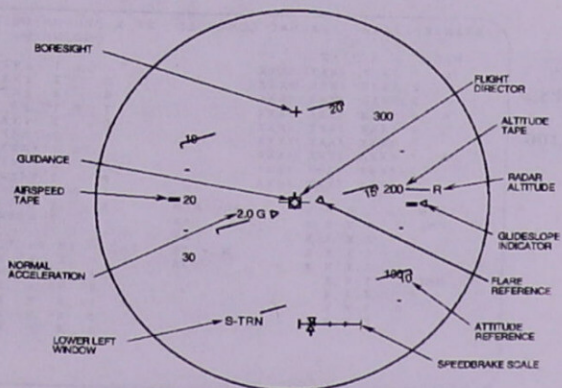
[C] Horiz Sit (right HAC)  
[three GPS receivers]



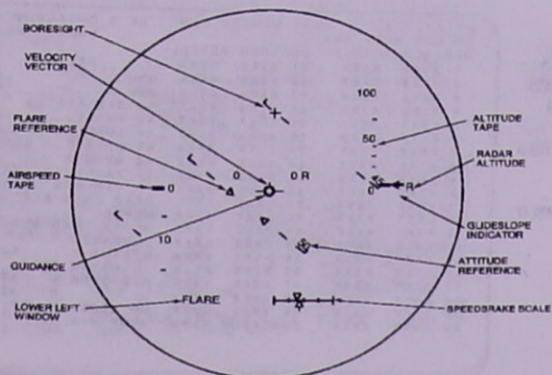
[A] HUD Display Format 1 After WOW



[B] HUD Display Format 1 Pre-WOW



[C] HUD VU OPS 8 Low



[D] HUD VU OPS 9 Low





```

XXXX/048/      NWS CHECK      XX X DDD/HH:MM:SS
                                      DDD/HH:MM:SS
      HYD
      SYS PRESS
      SEL HIGH      ENABLE      CURRENT      POSITION
NWS1 XS      X5      A XS      XX.XXS      A XX.XXS
                                      B XS
NWS2 XS      X5      A XS      XX.XXS      B XX.XXS
                                      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
MNVN      TIG      ΔVX      ΔVY      ΔVZ      ΔVT
XX X X/XX:XX:XX ±XXX.X ±XX.X ±XX.X ±XXX.X
PRED MATCH- XXXXXXXX
INPUTS
1 TGT NO      XX
2 T1 TIG      X/XX:XX:XX
6 EL      XXX.XX
7 ΔX/DNRNG  [Δ]XXX.XX
8 ΔY      [Δ]XXX.XX
9 ΔZ/DH      [Δ]XXX.XX
10 ΔX      [Δ]XXX.XX
11 ΔY      [Δ]XXX.XX
12 ΔZ      [Δ]XXX.XX
13 T2 TIG      X/XX:XX:XX
17 AT      [Δ]XXXX.X
18 ΔX      [Δ]XXX.XX
19 ΔY      [Δ]XXX.XX
20 ΔZ      [Δ]XXX.XX
21 BASE TIME X/XX:XX:XX
CONTROLS
T2 TO T1      25
XXXX      28
COMPUTE T1 28X
COMPUTE T2 29X
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/051/      OVERRIDE      XX X DDD/HH:MM:SS
                                      BFB 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
THROT MAX 4X      SSME REPOS 19 XXX      S POLE 24X
      ABT 50X
      NOM 51X
PRPLT DUMP      IMU DES ATT      AA      RGA      SURF
XXX ICNCT 5 XXXX 1 25X X LRU DES DES DES
OMS DUMP      2 26X      1 31X 35X 39X
ARM      6X      3 27X      2 32X 36X 40X
START 7X      ET SEP      3 33X 37X 41X
STOP 8X      AUTO 28X
9 QUAN/SIDE XXX SEP 29X      ROLL MODE
OMS DUMP TTG XXX      WRAP MODE 45 XXX
AFT RCS 13 XXX      ET UMB DR      COMM XXXX
14 TIME XXX      CLOSE 30X      TDRS 48X
FWD RCS 15 XXX      VENT DOOR CNTL      STDN-HI 47X
16 TIME XXX      OPEN 43X XX      STDN-LO 48X
      CLOSE 44X XX      SGLS 49X

```

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
THROT MAX 4X      SSME REPOS 19 XXX      S POLE 24X
      ABT 50X
      NOM 51X
PRPLT DUMP      IMU STAT ATT DES      PRL
XXX ICNCT 5 XXXX 1S XXXX X 25X      SYS AUT DES
OMS DUMP      2S XXXX XXX 26X      1S 28X 31X
ARM      6X      3S XXXX 27X      2S 29X 32X
START 7X      ADTA      H      a      M      DES
STOP 8X      L 1S XXXXXX ±XX.X X.XX 34X
9 QUAN/SIDE XXX 3S XXXXXX ±XX.X X.XX 35X
OMS DUMP TTG XXX R 2S XXXXXX ±XX.X X.XX 36X
      4S XXXXXX ±XX.X X.XX 37X
AFT RCS 13 XXX      ET SEP      ROLL MODE XXXXXXXX
14 TIME XXX      AUTO 38X      AUTO SEL 42X
      SEP 39X      WRAP MODE 45 XXX
FWD RCS 15 XXX      ET UMB DR      VENT DOOR CNTL
16 TIME XXX      CLOSE 40X      OPEN 43X XX
      RCS RM MANF      CLOSE 44X XX
      CL OVRO 41

```

PASS  
GNC OPS  
1, 3, 6  
SPEC 051

### [D] Override (PASS)





XXXX/XXX/096		PDRS FAULTS						XX X	DDD/HH:MM:SS	
ABE I		SY	SP	EP	WP	WY	WR	DDD/HH:MM:SS		
MDA O/C	X	X	X	X	X	X	X	MCIU I		
SPA CMT	X	X	X	X	X	X	X	MADC X		
TACH PLL	X	X	X	X	X	X	X	MCPC X		
TACH TCO	X	X	X	X	X	X	X	ICF X		
CPU	X	X	X	X	X	X	X	ABE I		
MDA DMND	X	X	X	X	X	X	X	COMM X		
A/D CONV	X	X	X	X	X	X	X	CHECK CRT I		
BRAKE	X	X	X	X	X	X	X	DC/MCIU X		
POS ENC	X	X	X	X	X	X	X	EXT F5 X		
DIR DRV	X	X	X	X	X	X	X	EE FLAG X		
B/U RELAY	X	X	X	X	X	X	X	EEU X		
								EE CMDS X		
CONTR ERROR	X	X	X	X	X	X	X	HC X		
CKCRT - POS	X	X	X	X	X	X	X	MCIU HC X		
REACH LIMIT	X	X	X	X	X	X	X	TMP CKT X		
CKCRT - SPA I	SY	SP	EP	WP	WY	WR				
BITE TEST	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX				

PASS  
SM OPS 2  
SPEC 096

[A] PDRS Faults

XXXX/095/XXX		PDRS OVERRIDE						XX X	DDD/HH:MM:SS	
		XXXXXXXXXXXXXXXXXX						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	SH YAW	18X	COARSE	28X					
SINGLE	3X	SH PITCH	19X							
END EFF	4X	EL PITCH	20X	AUTO SW OVRD	29X					
ORB LD	5X	WR PITCH	21X	PROCEED	30					
PL	6X	WR YAW	22X	STOP	31					
OPR CMD	7X	WR ROLL	23X							
AUTO 1	8X	EE TEMP	24X	HC AXIS CHG	32X					
AUTO 2	9X	CRIT TEMP	25X	THC	33X					
AUTO 3	10X			RHC	34X					
AUTO 4	11X									
TEST	12X									
ENTER	13									
LOADED RATE	14X	MCIU OVERRIDE								
STOWED OPS	15X	SAFING CAN	35X							
SIN/DIR SW		ABE OVRD A	36X							
REASSIGN	16X	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		
RMS SEL I	XXXX						
POR REF SEL I	XXX						
		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		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

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			

PASS  
SM OPS 2  
SPEC 097

[D] PL Retention





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

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

DES	STAT	PS	PaC	PaU	PaL	T
A1	5X	XXXX	XX.XXXS	XX.XXXS	XX.XXXS	XXX.XXS
D3	6X	XXXX	XX.XXXS	XX.XXXS	XX.XXXS	XXX.XXS
T2	7X	XXXX	XX.XXXS	XX.XXXS	XX.XXXS	XXX.XXS
A4	8X	XXXX	XX.XXXS	XX.XXXS	XX.XXXS	XXX.XXS

PASS  
 GNC OPS 8

SPEC 041

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		

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

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
	2	XS	XS	XS	2X		2	XXXS	XXXS
	3	XS	XS	XS	3X		3	XXXS	XXXS

A	1	XS	XS	XS	4X	R	1	XXXS	XXXS
	2	XS	XS	XS	5X		2	XXXS	XXXS
	3	XS	XS	XS	6X		3	XXXS	XXXS

A	1	XXXS	XXXS	XXXS	10X
	2	XXXS	XXXS	XXXS	11X
	3	XXXS	XXXS	XXXS	12X

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

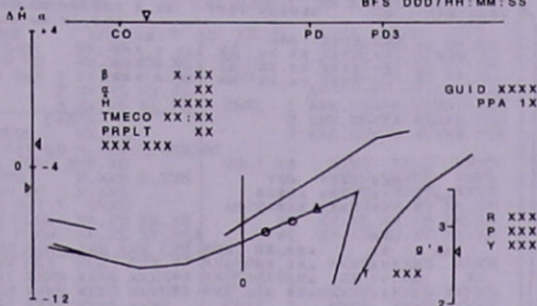
PASS  
 GNC OPS 2

SPEC 025

SW RM INH 16X

[B] RM Orbit

8011/ / RTLS TRAJ 2 XX X DDD/HH:MM:SS  
 BFS DDD/HH:MM:SS



BFS  
 GNC OPS  
 601

[C] RTLS Traj 2 (BFS)

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
L2	2X	XXXX	XX.XS	±X.XXS
S3	3X	XXXX	XX.XS	±X.XXS

ENA	STAT	RNG	AZ
T1	4X	XXXX	X.XS
A2	5X	XXXX	X.XS
C3	6X	XXXX	X.XS

ENA	STAT	ALT
R1	7X	XXXX
A2	8X	XXXX

ENA	Y	Z
A1	9X	±XX.XS
A2	10X	±XX.XS
3	11X	±XX.XS
4	12X	±XX.XS

TEST CONTROL:  
 START 13X  
 AUTO SEQ 14X  
 TERM 15X  
 INH ALL 16X

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

                                TEST CONTROL:
                                START      13X
                                AUTO SEQ   14X
                                TERM       15X
                                INH ALL 16X

  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

```

[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 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  XXXX
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 DDD/HH:MM:SS  
 DDD/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  
 8 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 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.X8		FC	XX.X8	XX.X8	XX.X8
L/R FD	XX.X8	XX.X8	MAIN	XX.X8	XX.X8	XX.X8
AV BAY 1	XX.X8	XX.X8	CNTL AB	XX.X8	XX.X8	XX.X8
2	XX.X8	XX.X8	BC	XX.X8	XX.X8	XX.X8
3	XX.X8	XX.X8	CA	XX.X8	XX.X8	XX.X8
CABIN			ESS	XX.X8	XX.X8	XX.X8
PRESS	XX.X8		AC			
dP/dT	±.XXX8		VOLT #A	XXXX	XXXX	XXXX
BU/EQ	±.XXX8	±.XXX8	#B	XXXX	XXXX	XXXX
PP02	X.XX8	X.XX8	#C	XXXX	XXXX	XXXX
FAN AP	X.XX8		AMPS #A	XX.X8	XX.X8	XX.X8
HX OUT T	XXX8		#B	XX.X8	XX.X8	XX.X8
O2 FLOW	X.X8	X.X8	#C	XX.X8	XX.X8	XX.X8
N2 FLOW	X.X8	X.X8	FUEL CELL PH	XXX8	XXX8	XXX8
IMU FAN AP	X.XX8		AMPS	XXXX	XXXX	XXXX
AV FC1	FC2	FC3	REAC VLV	XXX8	XXX8	XXX8
SS1	XXXX	XXXX	STACK T	±XXXX8	±XXXX8	±XXXX8
SS2	XXXX	XXXX	EXIT T	XXXX8	XXXX8	XXXX8
SS3	XXXX	XXXX	COOL P	XXXX8	XXXX8	XXXX8
TOTAL AMPS	XXXX8		PUMP	XXX8	XXX8	XXX8
KW	XX8					

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 DDD/HH:MM:SS  
 DDD/HH:MM:SS

SMOKE	1/A	2/B	DC VOLTS	1/A	2/B	3/C
CABIN	XX.X8		FC	XX.X8	XX.X8	XX.X8
L/R FD	XX.X8	XX.X8	MAIN	XX.X8	XX.X8	XX.X8
AV BAY 1	XX.X8	XX.X8	ESS	XX.X8	XX.X8	XX.X8
2	XX.X8	XX.X8	CNTL	A—B—C—A		
3	XX.X8	XX.X8	1	XXX.XSXXX.XSXXX.XSX		
CABIN			2	XXX.XSXXX.XSXXX.XSX		
PRESS	XX.X8		3	XXX.XSXXX.XSXXX.XSX		
dP/dT-EQ	±.XXX8	±.XXX8	VOLT #A	XXXX	XXXX	XXXX
O2 CONC	XXX.X8		#B	XXXX	XXXX	XXXX
PP02	X.XX8	X.XX8	#C	XXXX	XXXX	XXXX
FAN AP	X.XX8		AMPS #A	XX.X8	XX.X8	XX.X8
HX OUT T	XXX8		#B	XX.X8	XX.X8	XX.X8
O2 FLOW	XX.X8	XX.X8	#C	XX.X8	XX.X8	XX.X8
N2 FLOW	XX.X8	XX.X8	FUEL CELL			
IMU FAN	XX.X8	XX.X8	AMPS	XXXX	XXXX	XXXX
AV FC1	FC2	FC3	REAC VLV	XX	XX	XX
SS1	XXXX	XXXX	STACK T	±XXXX8	±XXXX8	±XXXX8
SS2	XXXX	XXXX	EXIT T	XXXX8	XXXX8	XXXX8
SS3	XXXX	XXXX	COOL P	XXXX8	XXXX8	XXXX8
TOTAL AMPS	XXXX8		PUMP	XXX8	XXX8	XXX8
KW	XX8					(XX)

PASS  
 SM OPS 2  
 SPEC 078  
 or  
 SYS SUMM  
 key

[C] SM SYS SUMM 1 (PASS)

XXXX/XXX/078 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	XXXX8	XXXX8	XXXX8	XXXX8	XXXX8	XXXX8	XXXX8
O2 PRESS	XXXX8	XXXX8	XXXX8	XXXX8	XXXX8	XXXX8	XXXX8
HTR T1	±XXXX8	±XXXX8	±XXXX8	±XXXX8	±XXXX8		
T2	±XXXX8	±XXXX8	±XXXX8	±XXXX8	±XXXX8		
APU	1	2	3	HYD	1	2	3
TEMP EQT	XXXX8	XXXX8	XXXX8	PRESS	XXXX8	XXXX8	XXXX8
B/U EQT	XXXX8	XXXX8	XXXX8	ACUM P	XXXX8	XXXX8	XXXX8
OIL IN	XXXX8	XXXX8	XXXX8	RSVR T	XXXX8	XXXX8	XXXX8
OUT	XXXX8	XXXX8	XXXX8	QTY	XXXX8	XXXX8	XXXX8
GG BED	XXXX8	XXXX8	XXXX8	W/B			
INJ	XXXX8	XXXX8	XXXX8	H2O QTY	XXXX8	XXXX8	XXXX8
SPEED %	XXXX8	XXXX8	XXXX8	BYP VLV	XXXX8	XXXX8	XXXX8
FUEL QTY	XXXX8	XXXX8	XXXX8				
PMP LK P	XX8	XX8	XX8	THERM CNTL	1	2	
OIL OUT P	XXXX8	XXXX8	XXXX8	H2O PUMP P	XXXX8	XXXX8	
FU TK VLV				FREON FLOW	XXXX8	XXXX8	
A T	XXXX8	XXXX8	XXXX8	EVAP OUT T	XXXX8	XXXX8	
B T	XXXX8	XXXX8	XXXX8				
AV BAY	1	2	3				
TEMP	XXXX8	XXXX8	XXXX8				
FAN AP	X.XX8	X.XX8	X.XX8				

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	XXXX	XXXX		
T2	±XXXX	±XXXX	±XXXX	±XXXX	±XXXX				
APU	1	2	3	HYD		1	2	3	
TEMP EGT	XXXX	XXXX	XXXX	PRESS	XXXX	XXXX	XXXX	XXXX	
B/U EGT	XXXX	XXXX	XXXX	RSVR T	XXXX	XXXX	XXXX	XXXX	
OIL IN	XXXX	XXXX	XXXX	P	XXXX	XXXX	XXXX	XXXX	
OUT	XXXX	XXXX	XXXX	QTY	XXXX	XXXX	XXXX	XXXX	
SPEED	XXXX	XXXX	XXXX	W/B					
FUEL QTY	XXXX	XXXX	XXXX	H2O QTY	XXXX	XXXX	XXXX	XXXX	
PMP LK P	XXS	XXS	XXS	BYP VLV	XXXX	XXXX	XXXX	XXXX	
OIL OUT P	XXXX	XXXX	XXXX	THERM CNTL		1	2		
AV BAY				H2O PUMP P		XXXX	XXXX	XXXX	
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	XXXXXXXX	LIMITS							
VALUE-	XXXXXXXXXX	ALERT					BACKUP CAW		
		LOW	HI			LOW	HI		
2X	XXXXXXXX	3	XXXXXXXX	11X	XXXXXXXX	12	XXXXXXXX	XX	
4X	XXXXXXXX	5	XXXXXXXX	XX					
6X	XXXXXXXX	7	XXXXXXXX	XX					
		8	FILTER XX			13	FILTER XX		
		9X	ENA			14X	ENA		
		10X	INH			15X	INH		
CONSTANT									
16 ID	XXXXXXXX								
17 VALUE-	XXXXXXXXXXXXXXXX								
CHECKPT	XXX/XX:XX:XX	FOA							
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			21	XXX		
REOD ID	11 XXX	12 XXX	REOD ID				±X.X		
TRK ID	XXX	XXX	ADEG X				±X.X		
S PRES	X	X	Y						
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	-Z 27X				
	XXXX	XXXX	ΔBIAS	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	X8	1X				
2	X5	X9	2X				
3	X5	X9	3X				
4	X5	X9	4X				

[D] Switches





PASS  
GNC OPS  
201

```

2011 / / UNIV PTG XX X ODD/HH:MM:SS
CUR MNVR COMPL XX:XX:XX DDD/HH:MM:SS
1 START TIME XXX/XX:XX:XX
MNVR OPTION START MNVR 18 X X CUR FUT CUR FUT
5 R XXX.XX TRK 19 X X RBST 25 X X
6 P XXX.XX ROT 20 X X DURATION 27
7 Y XXX.XX CNCL 21 XX:XX:XX.XX

TRK/ROT OPTIONS ATT MON
8 TGT ID XXX 22 MON AXIS X XX
ERR TOT 23X
ERR DAP 24X

9 RA XXX.XXX ROLL PITCH YAW
10 DEC [XXX].XXX CUR XXX.XX XXX.XX XXX.XX
11 LAT [XXX].XXX REOD XXX.XX XXX.XX XXX.XX
12 LON [XXX].XXX ERR ±XXX.XX ±XXX.XX ±XXX.XX
13 ALT [XXXXXXXX].X RATE ±XX XXX ±XX.XXX ±XX.XXX

14 BODY VECT X

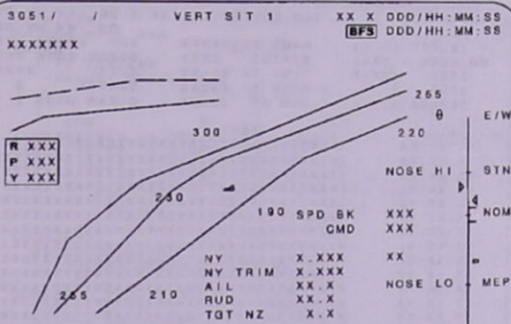
15 P XXX.XX
16 Y XXX.XX
17 OM XXX.XX

```

[A] Universal Pointing

PASS  
GNC OPS  
305

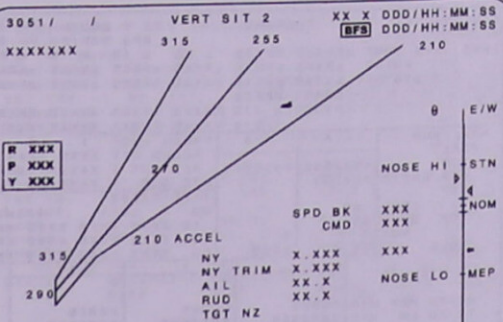
BFS  
GNC OPS  
305, 602,  
603



[B] Vertical Situation 1 (PASS/BFS)

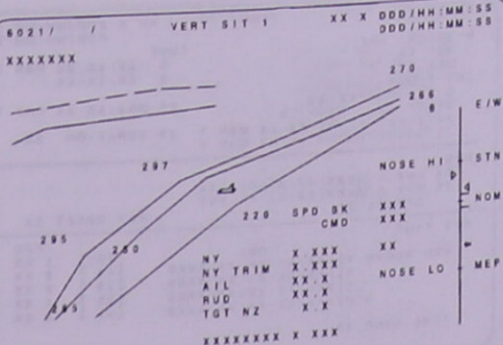
PASS  
GNC OPS  
305

BFS  
GNC OPS  
305, 603

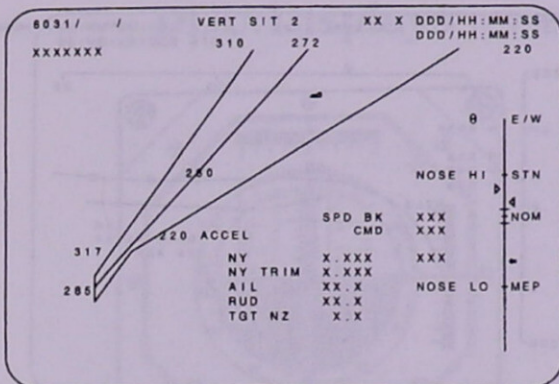


[C] Vertical Situation 2 (PASS/BFS)

PASS  
GNC OPS  
602, 603

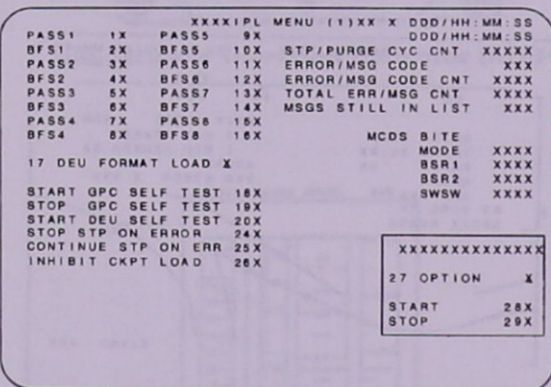


[D] Vertical Situation 1 GRTLS



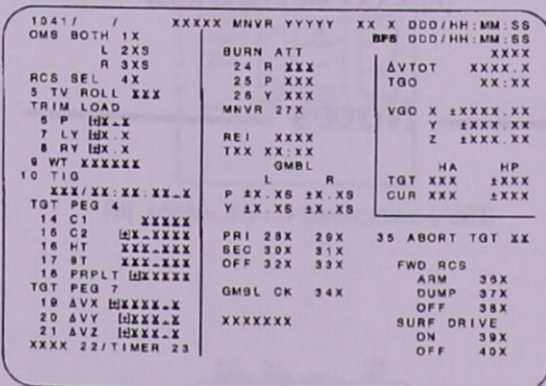
[A] Vertical Situation 2 GRTLS

PASS  
 GNC OPS  
 603



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

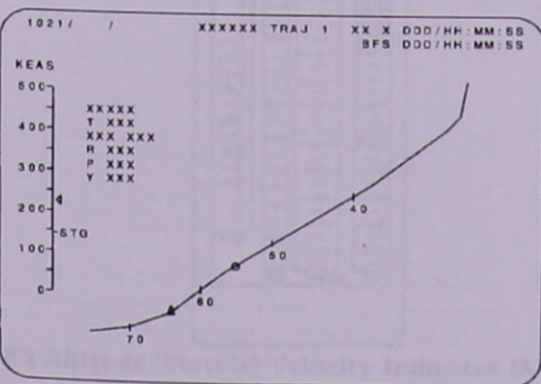
GPC IPL  
 where  
 XXXX =  
 GPC, BSL2



[C] XXXXX MNVR YYYYY

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

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



[D] XXXXX Traj 1 (BFS)

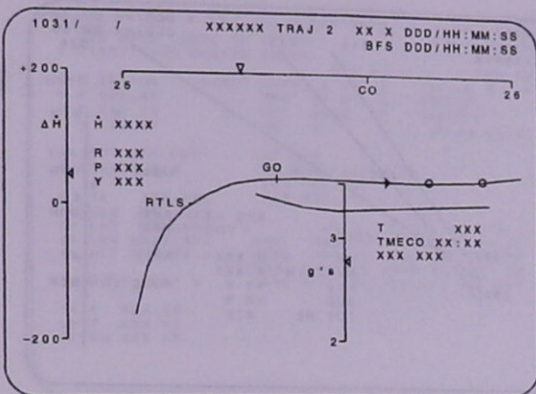
BFS  
 GNC OPS  
 101, 102

where  
 XXXXXX =  
 LAUNCH,  
 ASCENT,  
 RTLS, ATO



BFS  
 GNC OPS  
 103, 601

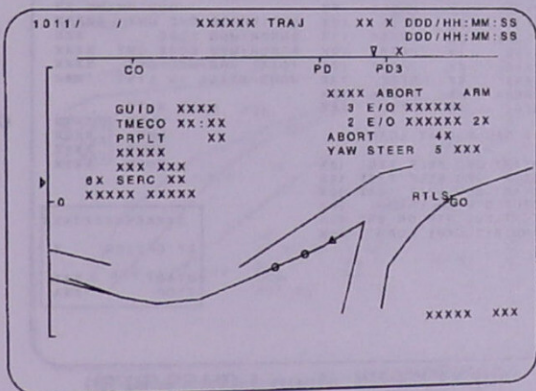
where  
 XXXXXX =  
 ASCENT,  
 ATO, TAL



[A] XXXXXX Traj 2 (BFS)

PASS  
 GNC OPS  
 101, 102,  
 103, 601

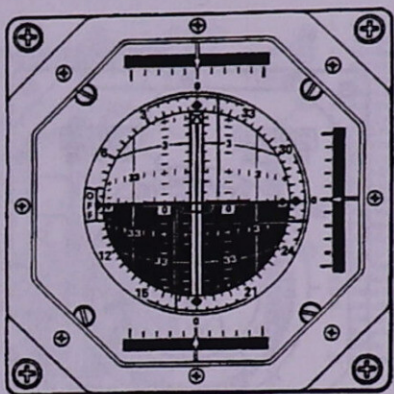
where  
 XXXXXX =  
 LAUNCH,  
 ASCENT,  
 TAL, ATO  
 RTLS



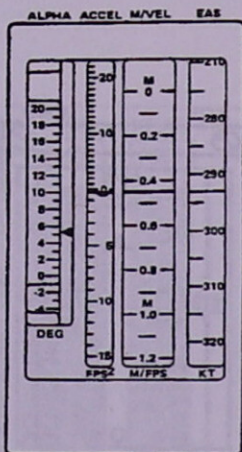
[B] XXXXXX Traj (PASS)

## Notes

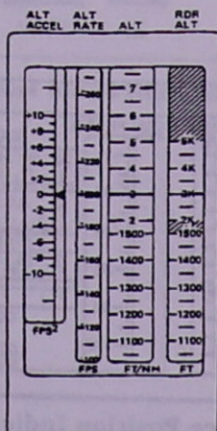
# — DDU Displays —



[A] Attitude Direction Indicator (ADI)



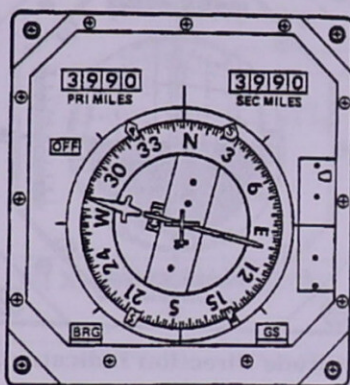
[B] Alpha Mach Indicator (AMI)



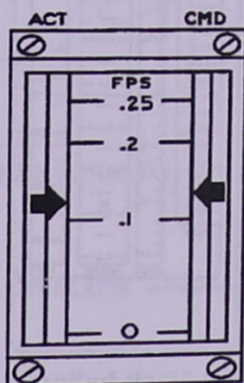
[C] Altitude/Vertical Velocity Indicator (AVVI)



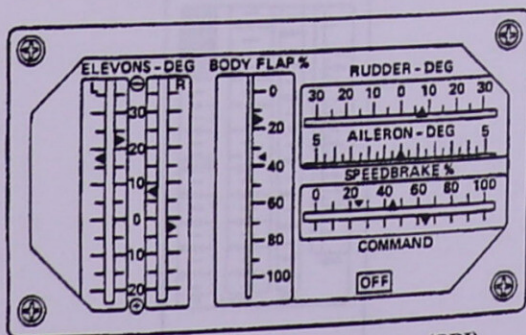
# DDU Displays



[A] Horizontal Situation Indicator (HSI)

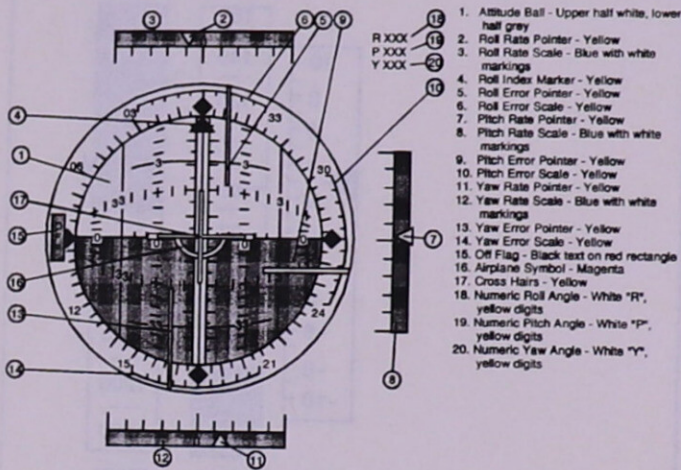


[B] RMS Rate Meter

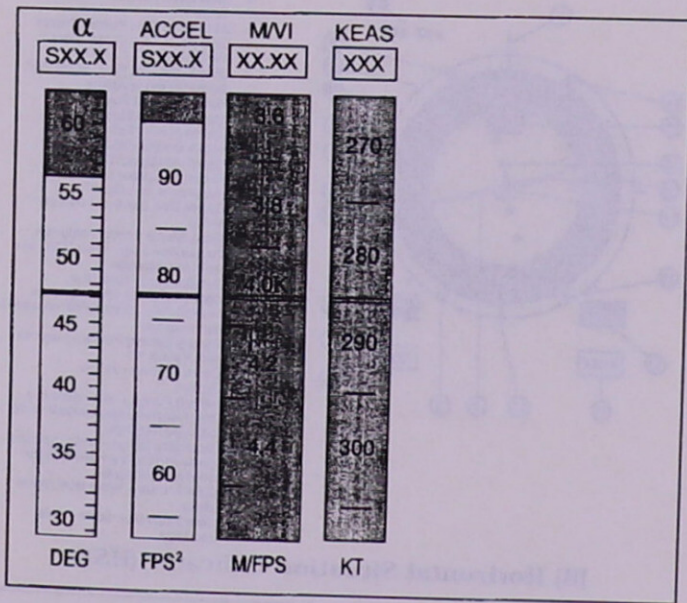


[C] Surface Position Indicator (SPI)

# MEDS DDU Displays

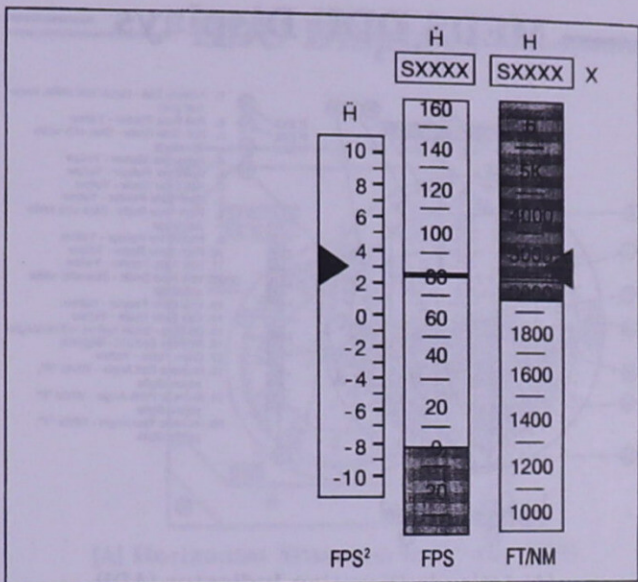


[A] Attitude Direction Indicator (ADI)

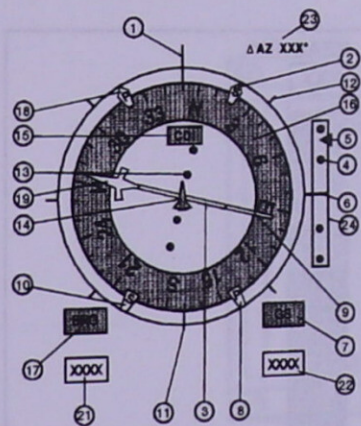


[B] Alpha Mach Indicator (AMI)



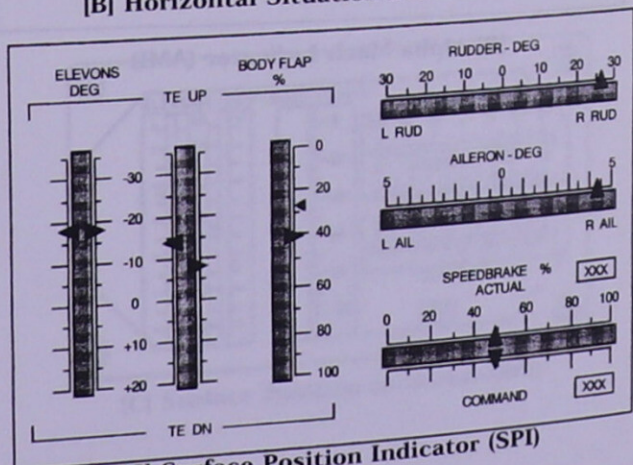


[A] Altitude/Vertical Velocity Indicator (AVVI)



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)

This reference guide was  
produced by the BNA Avionics/  
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