

# Orbit Operations Checklist

## STS-125 Flight Supplement

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**Mission Operations Directorate  
Operations Division**

**Final  
July 18, 2008**

National Aeronautics and  
Space Administration

**Lyndon B. Johnson Space Center**  
Houston, Texas





ORBIT OPERATIONS, STS-125 Flt Suppl

FINAL (July 18, 2008)

## PCN-3 (April 17, 2009) Sheet 1 of 1

List of Implemented Change Requests (482s):

ORB OPS FS-00131 PL OPS-01809  
ORB OPS FS-00134

Incorporate the following:

1. Replace FS iii and FS iv
2. Replace section 2 (FS 2-1 thru FS 2-4)
3. Replace FS 4-3 and FS 4-4
4. Replace FS 6-5 thru FS 6-10 (6 pages)

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Encl: 14 pages

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<b>ORBIT OPERATIONS, STS-125 Flt Suppl</b>	<b>FINAL (July 18, 2008)</b>
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**PCN-2 (Dec 15, 2008) Sheet 1 of 1**

List of Implemented Change Requests (482s):

ORB OPS\_FS-0100    ORB OPS\_FS-0109    MULTI-1829  
ORB OPS\_FS-0101    ORB OPS\_FS-0110

Incorporate the following:

- 1. Replace FS iii and FS iv
- 2. Replace section 2 (FS 2-1 thru FS 2-4)
- 3. Replace section 4 (FS 4-1 thru FS 4-4)
- 4. Replace section 5 (FS 5-1 and FS 5-2)
- 5. Replace FS CC 8-3 thru FS CC 8-6 (4 pages)

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Encl: 16 pages

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**ORBIT OPERATIONS, STS-125 Flt Suppl****FINAL (July 18, 2008)****PCN-1 (Sept 12, 2008) Sheet 1 of 1**

List of Implemented Change Requests (482s):

ORB OPS\_FS-0086A    ORB OPS\_FS-0093  
ORB OPS\_FS-0091    ORB OPS\_FS-0095  
ORB OPS\_FS-0092


Incorporate the following:

1. Replace FS iii thru FS vi
2. Replace section 2 (FS 2-1 thru FS 2-4)
3. Replace FS 4-1 and FS 4-2
4. Replace FS 8-1 thru FS CC 8-4 (4 pages)  
Replace FS CC 8-11 and FS 8-12

Prepared by:

  
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Encl: 16 pages

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MISSION OPERATIONS DIRECTORATE

**ORBIT OPERATIONS CHECKLIST  
STS-125 FLIGHT SUPPLEMENT**

FINAL  
July 18, 2008


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Incorporates the following:		
482#:	ORB OPS FS-0079	ORB OPS FS-0086
	ORB OPS FS-0085	ORB OPS FS-0087
		ORB OPS FS-0088
		ORB OPS-2314

AREAS OF TECHNICAL RESPONSIBILITY

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Alternate Publication Manager	DO3/L. Giles	281-244-9068
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PTG	DO4/K. Lawson	281-244-1222
DAP TABLES	DS6/J. Helms	281-244-6504
REBOOST/DAP	DS6/J. Helms	281-244-6504
SDBI	SK/S. Irwin	281-483-5089
WLES	DO5/R. Carroll	281-244-0914
FRED	DX4/R. Tomaro	281-483-3810

CUE CARDS:

ORBITER CO2 ABSORBER REPLACEMENT	DS4/R. Hinterlang	281-483-9398
ORBIT BURN MONITOR	DS6/S. Stewart	281-483-5377
DAP TABLES	DS6/J. Helms	281-244-6504
MIDODRINE PILL INGESTION	Lockheed Martin/P. Watters	281-218-3331

ORBIT OPERATIONS CHECKLIST  
 STS-125 FLIGHT SUPPLEMENT

**LIST OF EFFECTIVE PAGES**

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 PCN-2 12/15/08  
 PCN-3 04/17/09

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FS iv .....	*	125/FIN 2	FS 6-4 .....	125/FIN
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\* – Omit from flight book

ORBIT OPS CUE CARDS

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ORBIT BURN MONITOR (Front).....	FS CC 8-5	ORB OPS-31a/125/O/B
OMS FAILURES (Back).....	FS CC 8-6	ORB OPS-31b/125/O/A
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(Back/Bottom).....	FS CC 8-10	ORB OPS-41bb/125/O/C
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COMM/INST

LOAD PCMMU FORMAT..... FS 1-2  
PDI DECOM FORMAT ..... FS 1-4

**COMM/  
INST**

FS 1-1

ORB OPS/125/FIN

COMM/  
INST

## LOAD PCMMU FORMAT

- C3 1. √OI PCMMU FORMAT – GPC  
SM 62 PCMMU/PL COMM
- CRT 2. FORMAT:  
SEL FXD – ITEM 1 EXEC (\*)  
SEL ID – ITEM 3 +X X X EXEC
3. √SM COMM BUF – RDY  
LOAD – ITEM 4 EXEC  
√LOAD, ITEM 4 – RUN,CPLT
- If LOAD – CPLT:  
Repeat steps 2 and 3 for second ID
- \* If LOAD – FAIL and ERR MSG – 'I/O ERR MMU 1(2)': \*
  - \* Go to 5.2a, 'I/O ERR MMU 1(2)' (MAL, \*  
\* DPS) >> \*
  - \* If LOAD – FAIL and a first load attempt: \*
  - \* Repeat steps 1 and 2 for failed ID \*
  - \* If LOAD – FAIL and a subsequent load \*
  - \* attempt: \*
  - \* √MCC \*
  - \* OI PCMMU PWR – 2(1) \*
  - \* √ERR MSG – 'I/O ERR PCM' \*
  - C3 \* I/O RESET PCM – ITEM 5 EXEC (\*) \*
  - CRT \* Repeat steps 2 and 3 \*
4. When final LOAD – CPLT:  
SEL PGM – ITEM 2 EXEC (\*)



DNLIST COMPATIBILITY	PHASE	FORMAT ID 64/128	CONFIG NO.
G1,G3,BFS	(ASCENT)	102/FXD	–
G3,BFS	(ENTRY)	102/164	–
G2,G8,S2	ORBIT/ORBIT BURN/FCS C/O	103/161	–
G2,S2,OPS 0	OPS 0	– /163	–
G2,S2,P9	MMU C/O	– /163	–
G9	Prelaunch PL C/O	103/180	758
G2,G8,S2	INSPECTION	103/192	763
G2,G8,S2	RNDZ/BERTH/UNBERTH (PRIME)	103/206	768
G2,G8,S2	RNDZ/BERTH/UNDOCK (B/U)	103/185	761
G2,G8,S2	BERTHED, RNS OFF (PRIME)	103/179	757
G2,G8,S2	BERTHED, RNS OFF (B/U)	103/203	765
G2,G8,S2	BERTHED, HST 4.8Kbps DATA (PRIME)	103/184	760
G2,G8,S2	BERTHED, HST 4.8Kbps DATA (B/U)	103/205	767
G2,G8,S2	BERTHED, HST INV T (PRIME)	103/199	780
G2,G8,S2	BERTHED, HST INV T (B/U)	103/212	781
G2,G8,S2	BERTHED, HST T & M (PRIME)	103/183	759
G2,G8,S2	BERTHED, HST T & M (B/U)	103/204	766

NOTE

LDR TFL may affect PCMMU BITE. If PCMMU or SM 2 GPC switched since last TFL, ID 64 and 128 will not reflect current state

## LOAD PDI DECOM FORMAT

### SM 62 PCMMU/PL COMM

1. PDI:

CRT      √I/O RESET – ITEM 8 (\*)  
          SEL DECOM – ITEM 9 +X EXEC  
          SEL FMT – ITEM 10 +X X X EXEC  
          LOAD – ITEM 11 EXEC

If LOAD – CPLT:  
          SEL INPUT – ITEM 12 +X EXEC  
          LOAD – ITEM 13 EXEC  
          Repeat step 1 for additional DECOMs/FPM

\* If LOAD – FAIL and ERR MSG – 'I/O ERR \*  
\* MMU 1(2)': \*  
\* Go to 5.2a, 'I/O ERR MMU 1(2)' (MAL, \*  
\* DPS) >> \*  
\* \*  
\* If LOAD – FAIL and a first load attempt: \*  
\* Repeat step 1 \*  
\* \*  
\* If LOAD – FAIL and a subsequent load \*  
\* attempt: \*  
\* \*  
\* NOTE \*  
\* Power cycling PDI will cause PDI \*  
\* to lose DFLs previously loaded \*  
\* \*  
\* √MCC \*  
A1L \* S-BD PL CNTL – PNL \*  
\* PL DATA INTLVR PWR – OFF,ON \*  
\* √ERR MSG – 'S62 BCE BYP PL' \*  
\* √'S62 BCE BYP PDI' \*  
\* S-BD PL CNTL – CMD \*  
\* \*  
\* PCM: \*  
CRT \* I/O RESET PCM – ITEM 5 EXEC (\*) \*  
\* PDI: \*  
\* I/O RESET – ITEM 8 EXEC (\*) \*  
\* Repeat step 1 for all of config (XXX) \*

CONFIG	DECOM	FMT	INPUT	USE
763 INSPECTION  (PRIME) TFL 192	1 2 3 4 5-FPM	10 - 28 31 505	1(2) - 4 3	HST (A) - RNS SSV (OUTRATE-3) H-H-H *
768 RNDZ/BERTH/ UNBERTH  (PRIME) TFL 206	1 2 3 4 5-FPM	- - 28 19 510	- - 4 1(2)	- - RNS HST (T) L-H-H *
761 RNDZ/BERTH/ UNBERTH  (BACKUP) TFL 185	1 2 3 4 5-FPM	9 27 - - 501	1(2) 4 - -	HST (T) RNS - - L-H-H *
757 BERTHED RNS OFF  (PRIME) TFL 179	1 2 3 4 5-FPM	9 - 2 - 502	1(2) - 3 -	HST (T) - SSV (OUTRATE-1) - L-H-H *
765 BERTHED RNS OFF  (BACKUP) TFL 203	1 2 3 4 5-FPM	- 3 - 19 509	- 3 - 1(2)	- SSV (OUTRATE-1) - HST (T) L-H-H *
760 BERTHED HST 4.8Kbps  (PRIME) TFL 184	1 2 3 4 5-FPM	30 1 6 7 504	3 1(2) 1(2) 1(2)	SSV (OUTRATE-3) HST (M) HST (D) HST (A) H-H-H *
767 BERTHED HST 4.8Kbps  (BACKUP) TFL 205	1 2 3 4 5-FPM	11 16 17 31 505	1(2) 1(2) 1(2) 3	HST (M) HST (D) HST (A) SSV (OUTRATE-3) H-H-H *

\*OI-GNC-SM, Orbiter Downlist Data Rates (High or Low)

Cont next page

FS 1-5

ORB OPS/125/FIN

CONFIG	DECOM	FMT	INPUT	USE
780	1	8	1(2)	HST (INV T)
BERTHED	2	-	-	-
INV T	3	-	-	-
	4	7	1(2)	HST (A)
(PRIME)	5-FPM	503		H-L-H *
TFL 199				
781	1	-	-	-
BERTHED	2	18	1(2)	HST (INV T)
INV T	3	17	1(2)	HST (A)
	4	-	-	-
(BACKUP)	5-FPM	508		H-L-H *
TFL 212				
759	1	9	1(2)	HST (T)
BERTHED	2	1	1(2)	HST (M)
HST T & M	3	-	-	-
	4	-	-	-
(PRIME)	5-FPM	501		L-H-H *
TFL 183				
766	1	11	1(2)	HST (M)
BERTHED	2	-	-	-
HST T & M	3	-	-	-
	4	19	1(2)	HST (T)
(BACKUP)	5-FPM	507		L-H-H *
TFL 204				

\*OI-GNC-SM, Orbiter Downlist Data Rates (High or Low)

PTG

STAR PAIRS PAD ..... FS 2-2  
PAIRS..... FS 2-3

**PTG**

FS 2-1

ORB OPS/125/FIN

PTG

STAR PAIRS PAD										
STAR PAIR	SEP ANGLE	ATTITUDE SET 1					ATTITUDE SET 2			
		DUAL S TRK		SINGLE S TRK			DUAL S TRK		SINGLE S TRK	
				-Z	-Y				-Z	-Y
A	82.0	-Y:51 R+ 288 -Z:43 P+ 175 Y+ 3	R+ 203 P+ 178 Y+ 17	-Z:51	R+ 12 P+ 188 Y+ 358	-Y:43	R+ 345 P+ 3 Y+ 342	-Z:51	R+ 259 P+ 354 Y+ 352	-Y:51 R+ 71 P+ 15 Y+ 350
B	90.0	-Y:54 R+ 219 -Z:86 P+ 57 Y+ 296	R+ 158 P+ 87 Y+ 301	-Z:54	R+ 312 P+ 61 Y+ 281	-Y:86	R+ 17 P+ 275 Y+ 61	-Z:86	R+ 317 P+ 244 Y+ 62	-Y:54 R+ 88 P+ 293 Y+ 74
C	83.6	-Y:57 R+ 153 -Z:97 P+ 20 Y+ 318	R+ 75 P+ 30 Y+ 306	-Z:57	R+ 206 P+ 339 Y+ 303	-Y:97	R+ 109 P+ 213 Y+ 60	-Z:97	R+ 162 P+ 50 Y+ 27	-Y:57 R+ 222 P+ 179 Y+ 59
D	85.7	-Y:81 R+ 154 -Z:70 P+ 308 Y+ 37	R+ 64 P+ 317 Y+ 24	-Z:81	R+ 248 P+ 293 Y+ 29	-Y:70	R+ 120 P+ 134 Y+ 340	-Z:70	R+ 33 P+ 133 Y+ 325	-Y:81 R+ 200 P+ 119 Y+ 343

STAR PAIRS PAD

FS 2-2

ORB OPS/125/FIN 3

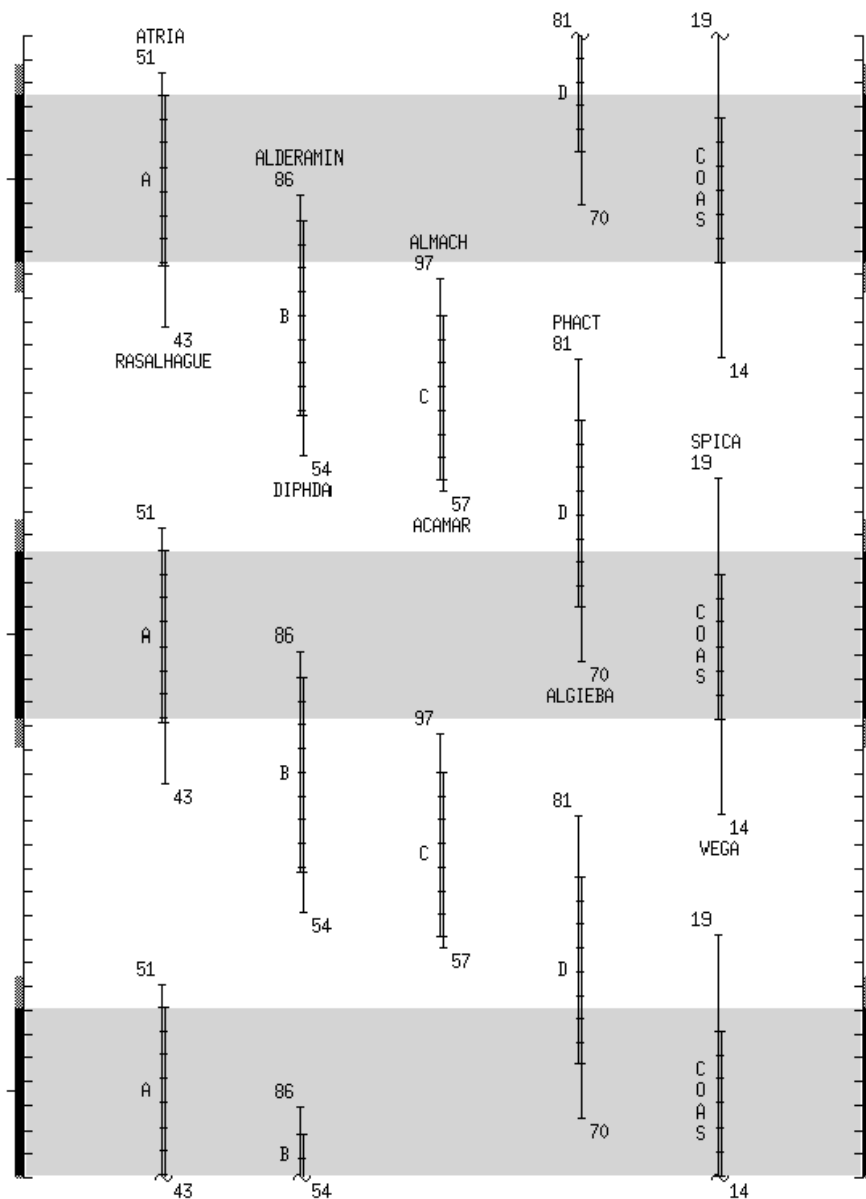
PAIR		COAS ALIGN ATTITUDE 1	ANG SEP	COAS ALIGN ATTITUDE 2
COAS	+X HUD	19 R+ 305 P+ 170 Y+ 335	NOSE UP 87.8	14 R+ 37 P+ 288 Y+ 311
	-Z COAS	19 R+ 212 P+ 284 Y+ 311		14 R+ 234 P+ 347 Y+ 18

SINGLE S TRK MIN MNVR OPT  
TGT ID = 11-110 NAV STAR #

	-Z S TRK	-Y S TRK
BV	5	4
P	87.7	✓ 0
Y	358	✓ 280.57

MET Applicable Post OMS2 to Nominal EOM  
Liftoff Date: 05/12/09  
Liftoff GMT: 132/17:31:12

# STAR PAIRS



MET Applicable: Post OMS2 to Nominal EDM  
 Liftoff Date: 05/12/09  
 Liftoff GMT: 132/17:31:12



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DAP TABLES

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B CONFIGURATIONS.....	FS 3-6

**DAP  
TABLES**

## DAP TABLES

### DAP OVERVIEW

DAP	Purpose	DAP	Purpose
A1	Nominal	B1	OMS & RCS Burns (ORB OPS)
A2	PTC	B2	Loss of VERN (Tail Only)
A3	GG	B3	Loss of VERN (All)
A4	Pre/Post Deploy	B4	
A5	Loss of VERN (All)	B5	COAS/HUD CAL
A6	Loss of VERN (Tail Only)	B6	
A7	Rendezvous	B7	Rendezvous
A8	Terminal Phase	B8	Terminal Phase
A9	PROX OPS/Flyaround	B9	Flyaround
A10	HST Berthed	B10	Normal HST Berthed
A11	Not used	B11	Slow HST Berthed
A12	Not used	B12	Slow HST RMS
A13	Not used	B13	Not used
A14	Orbiter alone SRMS/OBSS Ops	B14	VRCS Reboost
A15	HST RMS	B15	HST Release

CNTL ACC	Purpose
0	Nominal
1	Orbiter alone SRMS/OBSS Ops
2	HST Berthed
3	HST Capture/Release
4	RMS EXT Park
5	RMS Hover
6	Not used
7	Not used
8	Not used
9	Not used

DAPs for mated operations are based on analysis from GNC, PDRS, and C. S. Draper Labs

FS 3-2

ORB OPS/125/FIN

## UNIV PTG

TGT ID = 1 Orbiting Vehicle = 2 Earth Center = 3 Earth Target Input LAT ( $\pm 90$ ) LON ( $\pm 180$ , + = East) ALT (-3444.0 to 20000.0 nm) = 4 Sun Center = 5 Celestial Target Input RA (0-359.99) DEC ( $\pm 90$ ) = 11-110 Nav Stars
BODY VECTOR = 1 +X* = 2 -X* = 3 -Z* = 4 -Y Star Tracker* = 5 Selectable Input P (0-359.99) Y (270-359.99, 0-90) *Input OM $\rightarrow$ OM (0-359.99)
MON AXIS = 1 +X = 2 -X

FS 3-3

ORB OPS/125/FIN

**STS-125 DAP A CONFIGURATIONS**

**STS-125 DAP A1 – A8 CONFIGURATIONS**

	ITEM #	A1	A2	A3	A4	A5	A6	A7	A8
<b>PRI</b>									
ROT RATE	10 (50)	0.2000	0.4000	0.2000	0.5000	0.2000	0.2000	0.2000	0.0500
ATT DB	11 (51)	5.00	1.00	0.30	3.00	5.00	5.00	2.00	2.00
RATE DB	12 (52)	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
ROT PLS	13 (53)	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
COMP	14 (54)	.000	.000	.000	.000	.000	.000	.000	.000
P OPTION	15 (55)	ALL	ALL	ALL	ALL	ALL	TAIL	ALL	ALL
Y OPTION	16 (56)	ALL	ALL	TAIL	ALL	ALL	TAIL	ALL	ALL
TRAN PLS	17 (57)	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
<b>ALT</b>									
RATE DB	18 (58)	0.200	0.200	0.070	0.200	0.070	0.070	0.100	0.100
JET OPT	19 (59)	ALL	ALL	ALL	ALL	ALL	TAIL	ALL	ALL
# JETS	20 (60)	2	2	1	2	1	1	2	2
ON TIME	21 (61)	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
DELAY	22 (62)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>VERN</b>									
ROT RATE	23 (63)	0.2000	0.4000	0.0080	0.2000	0.0500	0.0500	0.0160	0.0500
ATT DB	24 (64)	1.000	1.000	0.070	1.000	1.000	1.000	1.000	1.000
RATE DB	25 (65)	.020	.020	.010	.020	.020	.020	.020	.020
ROT PLS	26 (66)	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.050
COMP	27 (67)	.000	.000	.000	.000	.000	.000	.000	.000
CNTL ACC	28 (68)	0	0	0	0	0	0	0	0
PURPOSE		NOMINAL	PTC	GG	PRE/POST DEPLOY	LOSS OF VERN (ALL)	LOSS OF VERN (TAIL ONLY)	RNDZ	TERMINAL PHASE

***BOLD/ITALIC*** indicates change from I-Load.

FS 3-4

ORB OPS/125/FIN

**STS-125 DAP A9 – A15 CONFIGURATIONS**

	ITEM #	A9	A10	A11	A12	A13	A14	A15
<b>PRI</b>								
ROT RATE	10 (50)	0.2000	0.1000				0.2000	0.1000
ATT DB	11 (51)	1.00	3.00				5.00	5.00
RATE DB	12 (52)	0.10	0.20				0.20	0.20
ROT PLS	13 (53)	0.100	0.040				0.100	0.040
COMP	14 (54)	.000	.000				.000	.000
P OPTION	15 (55)	TAIL	ALL				TAIL	TAIL
Y OPTION	16 (56)	TAIL	ALL				TAIL	TAIL
TRAN PLS	17 (57)	0.050	0.050				0.100	0.050
<b>ALT</b>								
RATE DB	18 (58)	0.100	0.100				0.200	0.100
JET OPT	19 (59)	TAIL	TAIL				TAIL	TAIL
# JETS	20 (60)	2	2				1	2
ON TIME	21 (61)	0.08	0.08				0.08	0.08
DELAY	22 (62)	0.00	12.70				6.00	7.50
<b>VERN</b>								
ROT RATE	23 (63)	0.2000	0.1000				0.2000	0.1000
ATT DB	24 (64)	1.000	1.000				3.000	2.000
RATE DB	25 (65)	.020	.020				.200	.050
ROT PLS	26 (66)	0.050	0.005				0.010	0.005
COMP	27 (67)	.000	.000				.000	.000
CNTL ACC	28 (68)	0	2				1	3(4,5)
PURPOSE		PROX/OPS FLYAROUND	HST BERTHED				ORBITER ALONE SRMS/OBSS	HST RMS

**BOLD/ITALIC** indicates change from I-Load.

FS 3-5

ORB OPS/125/FIN

## STS-125 DAP B CONFIGURATIONS

### STS-125 DAP B1 – B8 CONFIGURATIONS

	ITEM #	B1	B2	B3	B4	B5	B6	B7	B8
<b>PRI</b>									
ROT RATE	30 (50)	0.5000	0.2000	0.2000	0.2000	0.2000	0.5000	0.5000	0.0500
ATT DB	31 (51)	3.00	3.00	3.00	0.30	3.00	3.00	2.00	2.00
RATE DB	32 (52)	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
ROT PLS	33 (53)	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040
COMP	34 (54)	.000	.000	.000	.000	.000	.000	.000	.000
P OPTION	35 (55)	ALL	TAIL	ALL	TAIL	TAIL	ALL	ALL	ALL
Y OPTION	36 (56)	ALL	TAIL	ALL	TAIL	TAIL	ALL	ALL	ALL
TRAN PLS	37 (57)	0.100	0.020	0.020	0.020	0.020	0.020	0.050	0.050
<b>ALT</b>									
RATE DB	38 (58)	0.200	0.070	0.070	0.100	0.200	0.200	0.100	0.100
JET OPT	39 (59)	ALL	TAIL	ALL	ALL	ALL	ALL	ALL	ALL
# JETS	40 (60)	2	1	1	2	2	2	2	2
ON TIME	41 (61)	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
DELAY	42 (62)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>VERN</b>									
ROT RATE	43 (63)	0.2000	0.2000	0.2000	0.0080	0.0160	0.2000	0.2000	0.0500
ATT DB	44 (64)	1.000	1.000	1.000	0.100	0.033	1.000	1.000	1.000
RATE DB	45 (65)	.020	.020	.020	.010	.020	.020	.020	.020
ROT PLS	46 (66)	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.020
COMP	47 (67)	.000	.000	.000	.000	.000	.000	.000	.000
CNTL ACC	48 (68)	0	0	0	0	0	0	0	0
PURPOSE		OMS & RCS BURNS (ORB OPS)	LOSS OF VERN (TAIL ONLY)	LOSS OF VERN (ALL)		COAS/HUD CAL		RNDZ	TERMINAL PHASE

**BOLD/ITALIC** indicates change from I-Load.

FS 3-6

ORB OPS/125/FIN

**STS-125 DAP B9 – B15 CONFIGURATIONS**

	ITEM #	B9	B10	B11	B12	B13	B14	B15
<b>PRI</b>								
ROT RATE	30 (50)	0.2000	0.1000	0.0500	0.0500		0.1000	0.0500
ATT DB	31 (51)	1.00	5.00	10.00	5.00		10.00	2.00
RATE DB	32 (52)	0.10	0.20	0.20	0.20		0.20	0.20
ROT PLS	33 (53)	0.040	0.040	0.040	0.040		0.040	0.040
COMP	34 (54)	.000	.000	.000	.000		.000	.000
P OPTION	35 (55)	TAIL	TAIL	TAIL	TAIL		TAIL	TAIL
Y OPTION	36 (56)	TAIL	TAIL	TAIL	TAIL		TAIL	TAIL
TRAN PLS	37 (57)	0.010	0.010	0.050	0.050		0.010	0.010
<b>ALT</b>								
RATE DB	38 (58)	0.100	0.100	0.100	0.100		0.070	0.100
JET OPT	39 (59)	TAIL	TAIL	TAIL	TAIL		TAIL	TAIL
# JETS	40 (60)	2	2	2	2		2	2
ON TIME	41 (61)	0.08	0.08	0.08	0.08		0.08	0.08
DELAY	42 (62)	0.00	12.70	12.70	7.50		12.70	7.50
<b>VERN</b>								
ROT RATE	43 (63)	0.2000	0.2000	0.0160	0.0400		0.1000	0.0240
ATT DB	44 (64)	1.000	3.000	1.000	2.000		5.000	0.500
RATE DB	45 (65)	.020	.020	.020	.050		.400	.030
ROT PLS	46 (66)	0.020	0.005	0.005	0.005		0.040	0.005
COMP	47 (67)	.000	.000	.000	.000		.000	.000
CNTL ACC	48 (68)	0	2	2	3(4,5)		2	3
PURPOSE		FLYAROUND	NORMAL HST BERTHED	SLOW HST BERTHED	SLOW HST RMS		VRCS REBOOST/ ORBIT CONJUC	HST RELEASE

**BOLD/ITALIC** indicates change from I-Load.

FS 3-7

ORB OPS/125/FIN



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REBOOST/DAP

AUTO REBOOST.....	FS 4-2
ATTITUDE REFERENCE.....	FS 4-3
RATE DAMPING.....	FS 4-3

**REBOOST/  
DAP**

FS 4-1

ORB OPS/125/FIN

## AUTO REBOOST

1. √In Reboost Attitude

2. If PRCS required:

√MCC

DAP: FREE

O14:F, RJDA 1A L2/R2 DRIVER – OFF

O15:F, RJD MANF L5/F5/R5 DRIVER – OFF

O16:F, Pri RJD LOGIC (eight) – ON

√MCC for GO to power up Vern and Pri Drivers

RJD MANF L5/F5/R5 DRIVER – ON

Pri RJD DRIVER (eight) – ON

Wait 5 seconds, DAP: AUTO

3. Select Reboost Configuration

GNC 20 DAP CONFIG

REBOOST CFG – ITEM 8 +\_ EXEC

If Reboost Config 1 or 2:

| INTVL – ITEM 9 +512 EXEC

If Reboost Config 3:

INTVL – ITEM 9 +200 EXEC

4. Set up Future Reboost

GNC UNIV PTG

DURATION – ITEM 27 +\_+ +\_+ +\_+ EXEC

START TIME – ITEM 1 +\_+ +\_+ +\_+ EXEC

RBST – ITEM 25 EXEC (FUT – \*)

5. Select appropriate Reboost Rotation DAP

C3 DAP: B14/AUTO/VERN(ALT, LO Z)

### NOTE

Reboost can be aborted with  
an item 26 on UNIV PTG or by  
selecting FREE on the DAP

Cont next page

FS 4-2

ORB OPS/125/FIN 2

REBOOST/  
DAP

## 6. Post Reboost Configuration

C3                    DAP: A10(B11)/AUTO/VERN(ALT)  
                           If Group B(C) PWRDN:  
 O14:F,                Pri RJD LOGIC,DRIVER (sixteen) – OFF  
 O15:F,                RJDA 1A L2/R2 DRIVER – ON  
 O16:F

Return to FLIGHT PLAN Attitude

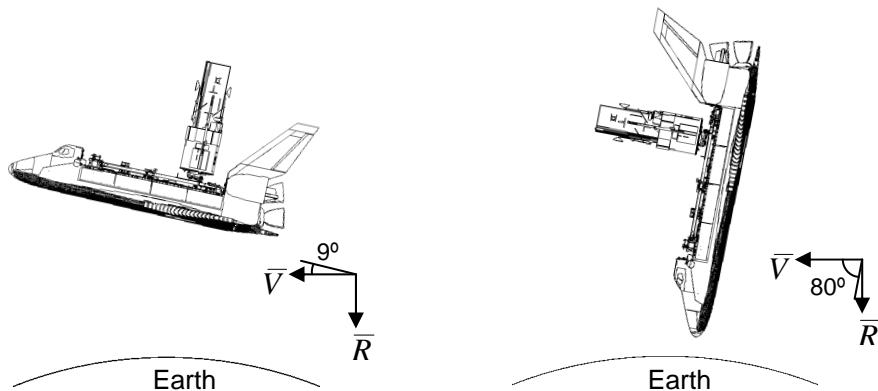
### AUTO REBOOST ATTITUDE REFERENCE

+X REBOOST CONFIGURATION:

VRCS REBOOST CONFIGURATION:

Nose Up, Config 1, 2

Nose Down, Config 3



### REBOOST CONFIGS

Config 1: +X PRCS, PRCS Attitude Hold  
 Config 2: +X PRCS, PRCS Attitude Hold  
 Config 3: -Z VRCS, VRCS Attitude Hold

### RATE DAMPING

RATE DAMPING	LVLH(INRTL), when rates are below rate deadband and jet activity stopped, FREE > 2 sec, AUTO
RATE > 0.20	LVLH(INRTL) 6 min max FREE, LVLH(INRTL)



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SHORT DURATION BIOASTRONAUTICS  
INVESTIGATION (SDBI)

SDBI 1634, SLEEP-WAKE ACTIGRAPHY .....	FS 5-2
DON ACTIWATCH .....	FS 5-2
DOFF ACTIWATCH .....	FS 5-2

**SDBI**

FS 5-1

ORB OPS/125/FIN

**SDBI 1634, SLEEP-WAKE ACTIGRAPHY**

- MA16D A. DON ACTIWATCH (ASAP after entry into orbit)  
1. Unstow: Actiwatch  
SLEEP LOGBOOK

NOTE

Actiwatch should be worn on top of non-dominant wrist outside of clothing. Face of Actiwatch should remain uncovered at all times.

If necessary to remove Actiwatch, record doff/don time in SLEEP LOGBOOK

2. Don Actiwatch on non-dominant arm and wear continuously throughout mission
3. Deploy SLEEP LOGBOOK and record required information daily (within 15 min after waking)

B. DOFF ACTIWATCH

NOTE

If mission length extended, continue to wear Actiwatch and complete SLEEP LOGBOOK as timeline permits

- On final day of orbit:
- MA16D 1. Remove Actiwatch, stow in locker
- √MCC 2. Recover SLEEP LOGBOOK, stow in locker

SDBI

WING LEADING EDGE SENSORS (WLES) PROCEDURES

WLES ACTIVATION AND CHECKOUT.....	FS 6-2
DEACTIVATION AND TEARDOWN.....	FS 6-10
LAPTOP RECEIVER UNIT (LRU) R&R.....	FS 6-12
CONFIGURE WLES DATA FILE BACKUP PATH.....	FS 6-14
WLES RNDZ TOOLS CHECKOUT PREP.....	FS 6-15
RNDZ/DEPLOY RECOVERY .....	FS 6-15
DISABLE WLES FILE BACKUP .....	FS 6-16
ENABLE WLES FILE BACKUP .....	FS 6-16

**WLE  
SENSORS**

## WLES ACTIVATION AND CHECKOUT

### 1. UNSTOW EQUIPMENT

#### NOTE

A31p laptops may already be unstowed as part of orbiter laptop network setup

ML60E	Unstow:
	Laptop Receiver Units (2)
	Cabin Relay Units (2):
	CRU A (S/N 2432)
	CRU B (S/N 2496)
	STS7 A31p laptop (WLES)
	STS6 A31p laptop (RPOP2)

### 2. SETUP WLES RELAY UNITS

#### CAUTION

Cross-connecting CRU A to MICRO WIS SYSTEM B (and vice versa) will prevent WLES ops, though step 8 would still show good comm

#### NOTE

Green patch on Cabin Relay Unit is antenna and must face into cabin

## WLE SENSORS

A6	Unstow coiled WLE SYSTEM A cable
A13	Connect plug PNL A13 SYSTEM A to jack MICRO WIS SYSTEM A J7 (see fig 6-1)
CRU A	Connect plug CABIN RELAY UNIT to J1 on CRU S/N 2432
STBD OVHD	Secure CRU A to STBD side of aft cabin with Velcro (see fig 6-2)
A9	Unstow coiled WLE SYSTEM B cable
A13	Connect plug PNL A13 SYSTEM B to jack MICRO WIS SYSTEM B J8 (see fig 6-1)
CRU B	Connect plug CABIN RELAY UNIT to J1 on CRU S/N 2496
PORT OVHD	Secure CRU B to PORT side of aft cabin with Velcro (see fig 6-3)

Cont next page



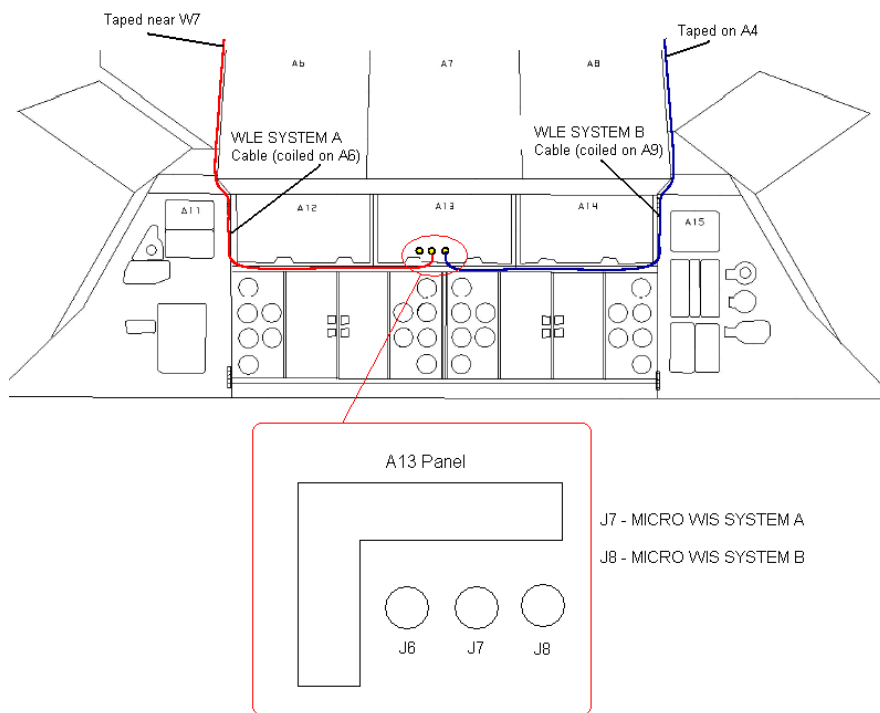


Figure 6-1.- A13 panel.

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FS 6-3

ORB OPS/125/FIN

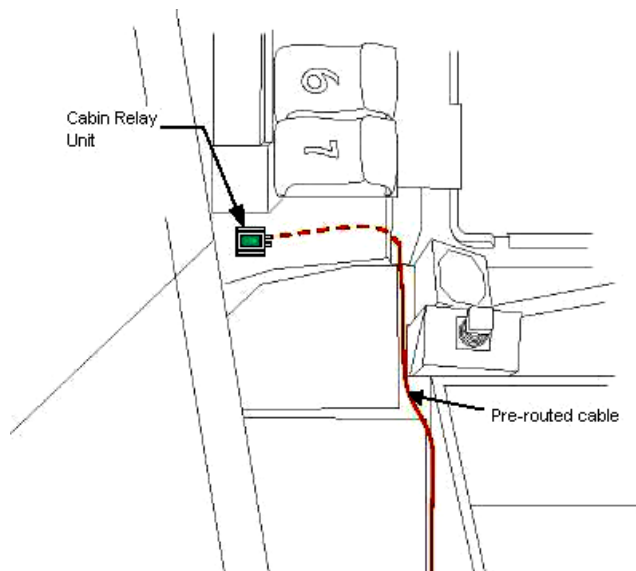


Figure 6-2.- Aft STBD location.

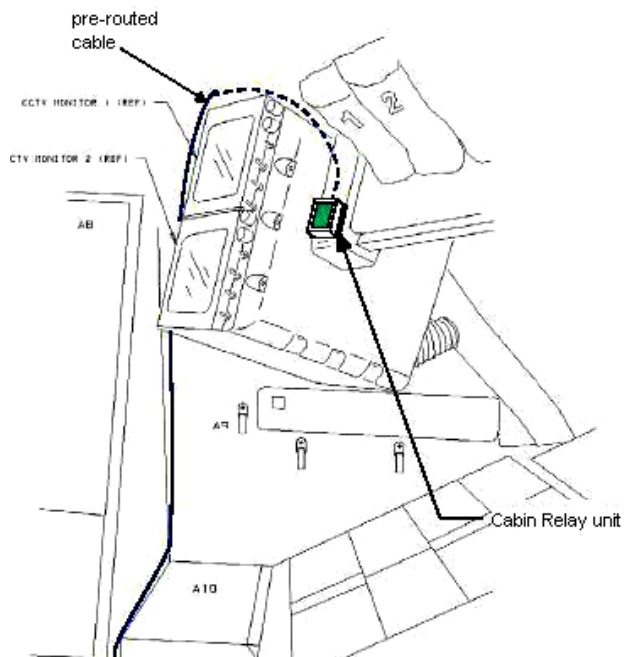


Figure 6-3.- Aft PORT location.

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FS 6-4

ORB OPS/125/FIN

NOTE

Laptops may be powered or unpowered.  
Laptops may be connected to network or standalone

A31p

3. SETUP PRIME WLES LAPTOP

Secure Laptop Receiver Unit to A31p with Velcro  
(see fig 6-4)

Connect Laptop Receiver Unit to A31p Serial port  
using thumbscrews (see fig 6-5)

Verify line of sight between Laptop Receiver Unit  
and both CRUs

Verify 5-in minimum distance between Laptop  
Receiver Unit and both CRUs

4. SETUP BACKUP WLES LAPTOP

NOTE

Single laptop ops are preferred over  
delays in activation. If problems with  
Backup Laptop occur, skip step 4

Secure Laptop Receiver Unit to A31p with Velcro  
(see fig 6-4)

Connect Laptop Receiver Unit to A31p Serial port  
using thumbscrews (see fig 6-5)

Verify line of sight between Laptop Receiver Unit  
and both CRUs

Verify 5-in minimum distance between Laptop  
Receiver Unit and both CRUs

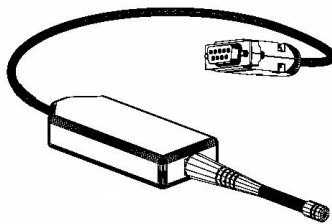


Figure 6-4.- Laptop Receiver Unit.

Cont next page

FS 6-5

ORB OPS/125/FIN



Figure 6-5.- A31p ports.

5. LAUNCH WLES SOFTWARE

Perform for both laptops:

If laptops are off, A31p pwr – On

Double-click the time in system tray (lower-right corner)

'Date and Time Properties'

'Time Zone'

Time zone – (GMT) Greenwich Mean Time

Click 'OK'

Double click 'Shuttle Apps'>'WLES'>'WLES'

'Backup Mode Selection'

If setting up one A31p, select 'Standard'

If setting up two A31p laptops:

For prime laptop, select 'Primary'

For backup laptop, select 'Secondary'

If 'EWBMTAU-WLEFlight' appears with message 'Run the current command:

XXXX\_AA\_BB\_SNYYYY.xml?':

Click 'Yes'

NOTE

The secondary laptop lid may be closed at this time, if no longer needed for other applications. The laptops are configured so that they do not enter 'standby' or 'hibernate' mode when the lids are closed. However, due to cooling concerns, fully closing the lid is not recommended

Cont next page

A31p

6. VERIFY LRU INSTALLATION

Use prime WLES laptop

'Enhanced Wideband MicroTAU – WLEFlight 3.0'

Click 'System Settings' (left side of display)

'Communications Settings'

√RF Receiver Port: 'COM 1'

Click 'Query Receiver'

Verify 'Receiver found on COM1' message appears

7. VERIFY DATA FILE BACKUP

Use prime WLES laptop

Verify 'Backup Directory:' set to:

'S:\Program Files\Invocon\EWBMTAU-WLEFlight'

- \* If 'Backup Directory' not set as above: \*
- \* 'System Settings' \*
- \* 'Directories' \*
- \* At the line 'Backup Directory' click \*
- \* 'Browse...' (right side of display) \*
- \* \*
- \* 'Browse for Folder' \*
- \* Navigate to WLES folder on RPOP2: \*
- \* 'My Computer'>'C on RPOP2 (S:)'> \*
- \* 'Program Files'>'Invocon'> \*
- \* 'EWBMTAU-WLEFlight' \*
- \* \*
- \* Click 'OK' \*

Verify 'Backup Interval' set to '30 minutes'

8. VERIFY COMM WITH RELAY UNITS

Use prime WLES laptop

'Main'

Click 'Unit List' (left side of display)

NOTE

Each Cabin Relay Unit is identified with a unique serial number; this number appears as 'Unit ID' in the software

√Cabin Relay Units Unit ID 2432 and 2496 (2) present on display in first column; scroll down as necessary

For each Cabin Relay Unit:

√Unit ID present

√Type: 'Relay-GL'

√Last Update: time is updating (every 5 to 15 sec)

- \* If one CRU time updates: \*
- \* | Continue procedure \*
- \* | Report off-nominal CRU status in step 10 \*
- \* | \*
- \* If neither CRU time updates after 2 min, \*
- \* contact MCC-H \*

√Via: 'RF'

√Mode: 'Idle'

9. INITIATE COMMANDING

Double click 'Shuttle Apps'>'WLES'>'WLES Data Folder'

Double click 'Shuttle Apps'>'WLES'>'WLES Cmd Folder'

Cont next page

FS 6-8

ORB OPS/125/FIN 3

NOTE

Deleting 'BLOCK.xml' file initiates command execution. Command files disappear from this folder as they are executed.

Files appearing in the 'Data' folder verifies two-way communication with the Sensor Units in the orbiter wing

'Command'

Delete file labeled 'BLOCK.xml'

At prompt "Are you sure you want to send 'Block.xml' to the Recycle Bin?", click 'Yes'

Wait 1 minute

Verify the first data file appears in the 'Data' folder

Close 'Command' and 'Data' folders

10. REPORT WLES STATUS

Notify MCC-H: "WLES setup complete"

If reporting off-nominal CRU status, include:

Unit ID

Type

Last Update (updating or static)

Via

Mode

NOTE

The laptop lid may be closed at this time, if no longer needed for other applications. The laptops are configured so that they do not enter 'standby' or 'hibernate' mode when the lids are closed. However, due to cooling concerns, fully closing the lid is not recommended

## WLES DEACTIVATION AND TEARDOWN

### 1. DEACTIVATE WLES LAPTOP

#### NOTE

MCC will configure WLES for entry by setting all sensor units to idle mode

#### **On MCC GO:**

A31p 'Enhanced Wideband MicroTAU – WLEFlight 3.0'

For each WLES A31p:

Click 'Exit'

At prompt 'Are you sure you want to exit?'

click 'Yes'

Click 'Start' > 'Turn Off Computer...' > 'Turn Off'

Disconnect Laptop Receiver Unit from A31p

Serial port

Remove Laptop Receiver Unit from Velcro on A31p

### 2. REMOVE WLES RELAY UNITS

Remove Cabin Relay Units (2) from aft cabin (see figs 6-6 and 6-7)

Disconnect Cabin Relay Units from pre-routed cables

Disconnect and coil cables, stow in launch location

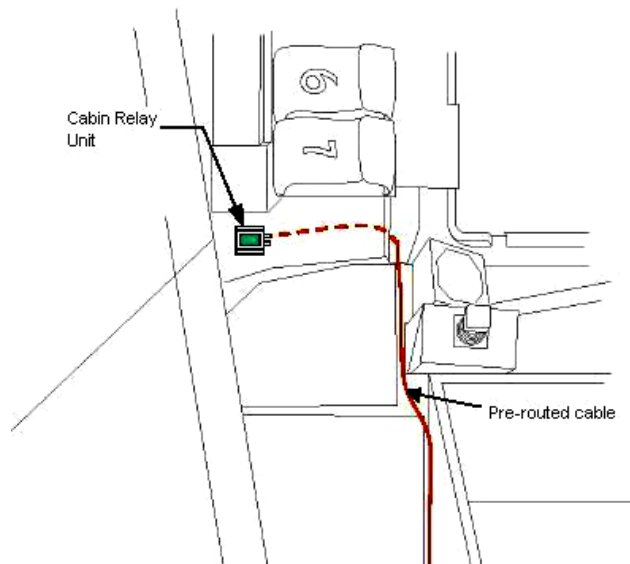


Figure 6-6.- Aft STBD location.

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FS 6-10

ORB OPS/125/FIN 3



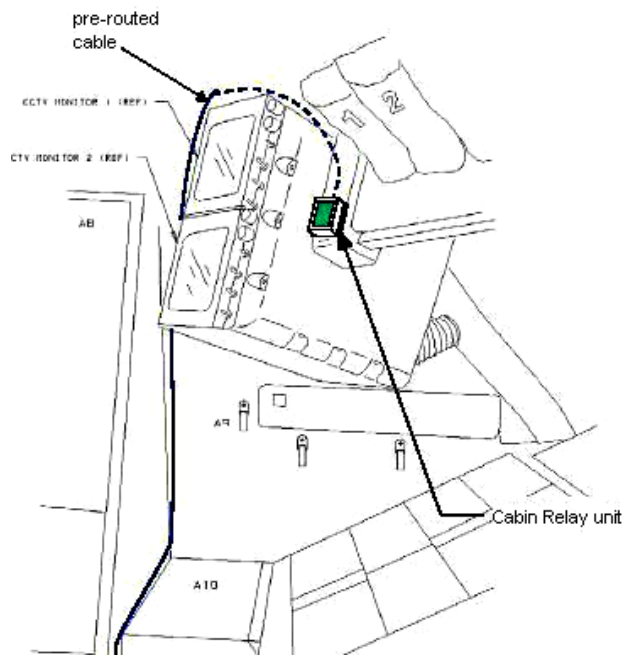


Figure 6-7.- Aft PORT location.

- ML60E
3. STOW EQUIPMENT  
 Stow:  
     Laptop Receiver Units (2)  
     Cabin Relay Units (2)  
 Notify MCC-H: "WLES Teardown Complete"

## WLES LAPTOP RECEIVER UNIT (LRU) R&R

- A31p 1. DISCONNECT BACKUP LRU FROM LAPTOP  
'Enhanced Wideband MicroTAU – WLEFlight 3.0'

Click 'Exit'  
At prompt 'Are you sure you want to exit?'  
click 'Yes'

Disconnect Backup LRU from Backup A31p Serial  
port (see fig 6-8)  
Remove Backup LRU from Velcro on Backup A31p  
(see fig 6-9)



Figure 6-8.- A31p ports.

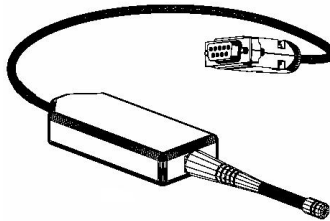


Figure 6-9.- Laptop Receiver Unit.

2. DISCONNECT PRIME LRU FROM LAPTOP  
Disconnect Prime LRU from Prime A31p Serial port  
(see fig 6-8)  
Remove LRU from Velcro on A31p

Cont next page

FS 6-12

ORB OPS/125/FIN

3. CONNECT BACKUP LRU

Connect Backup LRU to Prime WLES A31p Serial port  
Secure LRU to A31p with Velcro

A31p

4. VERIFY LRU INSTALLATION

Use prime WLES laptop

'Enhanced Wideband MicroTAU – WLEFlight 3.0'  
Click 'System Settings' (left side of display)

'Communications Settings'  
√RF Receiver Port: 'COM 1'

Click 'Query Receiver'  
Verify 'Receiver found on COM1' message appears

5. VERIFY COMM WITH RELAY UNITS

Click 'Unit List' (left side of display)

√Cabin Relay Units Unit ID 2432 and 2496 (2) present  
on display in first column; scroll down as necessary

For each Cabin Relay Unit:

- √Unit ID present
- √Type: 'Relay-GL'
- √Last Update: time is updating (every 5 to 15 sec)
- √Via: 'RF'
- √Mode: 'Idle'

If no time updates after 2 min, contact MCC-H

Notify MCC-H: "WLES LRU R&R complete", mark failed LRU as 'failed'

ML60E

6. STOW EQUIPMENT

Stow:  
Prime (failed) LRU

## CONFIGURE WLES DATA FILE BACKUP PATH

### NOTE

MCC will identify new backup WLES laptop to be used in place of RPOP2 (S:)

- A31p      Use prime WLES laptop
- 'Enhanced Wideband MicroTAU – WLEFlight 3.0'  
Click 'System Settings' (left side of display)
- 'Directories'  
At the line 'Backup Directory' click 'Browse...' (right side of display)
- 'Browse for Folder'  
Navigate to WLES folder on RPOP2:  
    'My Computer'>'C on RPOP2 (S:)'>'Program Files'>'Invocon'>'EWBMTAU-WLEFlight'
- Click 'OK'
- Verify 'Backup Directory:' set to:  
    'S:\Program Files\Invocon\EWBMTAU-WLEFlight'
- Verify 'Backup Interval' set to '30 minutes'
- Click 'Unit List' (left side of display)

## WLES RNDZ TOOLS CHECKOUT PREP

- A31p
1. DEACTIVATE BACKUP WLES LAPTOP  
On backup WLES laptop:  
    'Enhanced Wideband MicroTAU – WLEFlight 3.0'  
    Click 'Exit'  
    At prompt 'Are you sure you want to exit?'  
    click 'Yes'  
    Disconnect Laptop Receiver Unit from A31p  
    Serial port  
    Leave attached to laptop with Velcro on A31p
  2. DEACTIVATE WLES FILE BACKUP  
On prime WLES laptop:  
    'Enhanced Wideband MicroTAU – WLEFlight 3.0'  
    Click 'System Settings' (left side of display)  
  
    'Backup Mode Selection'  
    Click 'Standard'  
    Click 'Unit List' (left side of display)

## WLES RNDZ/DEPLOY RECOVERY

- A31p
1. RECOVER BACKUP WLES LAPTOP  
On backup WLES laptop:  
    Connect Laptop Receiver Unit to A31p Serial port  
    If laptop is off:  
        A31p pwr – On  
        At prompt select option 1 to start WLES  
    If laptop is on:  
        Double click 'Shuttle Apps'>'WLES'>'WLES'  
        'Backup Mode Selection'  
        Click 'Secondary'
  2. REACTIVATE WLES FILE BACKUP  
On prime WLES laptop:  
    'Enhanced Wideband MicroTAU – WLEFlight 3.0'  
    Click 'System Settings' (left side of display)  
  
    'Backup Mode Selection'  
    Click 'Primary'  
    Click 'Unit List' (left side of display)

┌ | | | ┐

**DISABLE WLES FILE BACKUP**

(SWITCH TO STANDARD MODE) |

A31p On prime WLES laptop:  
'Enhanced Wideband MicroTAU – WLEFlight 3.0'  
Click 'System Settings' (left side of display)

'Backup Mode Selection' |  
Click 'Standard'  
Click 'Unit List' (left side of display)

**ENABLE WLES FILE BACKUP**

(SWITCH TO PRIMARY MODE) |

A31p On prime WLES laptop:  
'Enhanced Wideband MicroTAU – WLEFlight 3.0'  
Click 'System Settings' (left side of display)

'Backup Mode Selection' |  
Click 'Primary'  
Click 'Unit List' (left side of display)

FRED

FRED SETUP ..... FS 7-2  
STOWAGE ..... FS 7-2

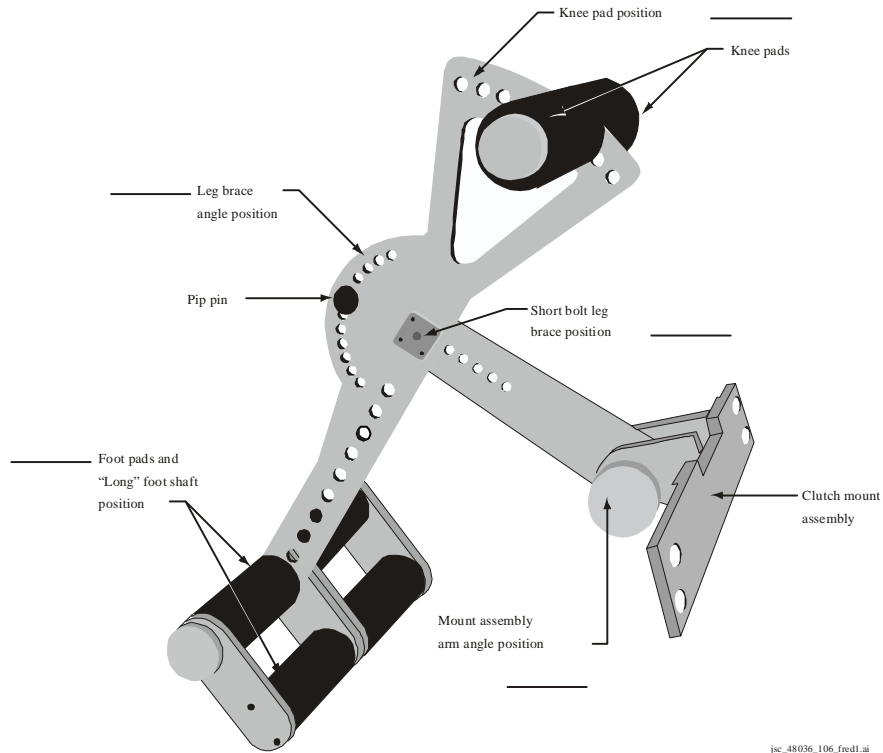
**FRED**

FS 7-1

ORB OPS/125/FIN

## FRED SETUP

1. Unstow FRED tray and FRED leg brace
- A8L 2. Attach clutch bracket mount assy below aft panel A8 with captive fasteners (four)
3. Assemble FRED as shown and adjust to desired position. Note positions



## FRED STOWAGE

1. Disassemble FRED and set clutch bracket mount assy to #8 angle position
2. Stow FRED in locker tray cushion. Re-adjust clutch bracket mount assy as required
3. Stow leg brace

FRED



CUE CARD CONFIGURATION

CUE  
CARDS

LIOH CHANGEOUT(Front).....	FS CC 8-3
LIOH CANISTER STOWAGE LOCATIONS (Back)...	FS CC 8-4
ORBIT BURN MONITOR (Front) .....	FS CC 8-5
OMS FAILURES (Back) .....	FS CC 8-6
STS-125 DAP CONFIGURATIONS	
(Front/Top) .....	FS CC 8-7
(Front/Bottom) .....	FS CC 8-8
(Back/Top).....	FS CC 8-9
(Back/Bottom) .....	FS CC 8-10
WLES CONFIG AFTER PGSC REBOOT (Front) .....	FS CC 8-11

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FS 8-1

ORB OPS/125/FIN 1

CUE  
CARDS

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FS 8-2

ORB OPS/125/FIN

TOP

HOOK  
VELCRO

**LiOH CHANGEOUT**

(7 Crewmembers/Single Shift/FD 1-14)

FLIGHT DAY	POS A	POS B	CK CMPLT
LAUNCH	1	2	
PRE FD01	"	"	
POST FD02	3	4	
PRE FD02	5 *	6 *	
POST FD03	7	8	HST Grapple
PRE FD03	"	9	
POST FD04	10	11	EVA 1
PRE FD04	12 *	13 *	
POST FD05	14 *	15	EVA 2
PRE FD05	16	"	
POST FD06	17	18	EVA 3
PRE FD06	19 *	20 *	
POST FD07	21	22 *	EVA 4
PRE FD07	"	23	
POST FD08	24	25	EVA 5
PRE FD08	26	"	
POST FD09	27	28	HST Release
PRE FD09	29 *	30 *	
POST FD10	31	32	
PRE FD10	"	33	
POST FD11	34	35	
PRE FD11	36 *	37 *	
POST FD12	38	39	EOM
PRE FD12	40 *	41 *	
POST FD13	42	43	EOM+1
PRE FD13	44	"	
POST FD14	45	46	EOM+2

\*Re-bag and seal LiOH cans w/Gray Tape and stow  
(Locations of canisters on back)

ORB OPS-29a/nonRCRS/125/O/B

**NOTE**

This card is specifically used for the STS-125 mission  
with the orbiter conducting single shift operations with  
a crew size of 7

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FS CC 8-3

ORB OPS/125/FIN 1

TOP  
BACK OF 'LIOH CHANGEOUT'

HOOK  
VELCRO

### **LIOH CANISTER STOWAGE LOCATIONS**

#### ASCENT STOWAGE LOCATIONS

##### NOTE

Cans 47-78 are to be used  
in a contingency only

##### Orbiter:

MD52M (LiOH Box): Cans 1-31 \*

MF71C/E: Cans 32-40

Ext A/L Floor Bag: Cans 41-58

Volume D: Cans 59-78

\* 2 LiOH cans installed in LiOH slots  
A and B

#### LIOH CAN SWAP

Swap any 6 used Cans 1-29 from MD52M  
with Cans 41-46 from Ext A/L Floor Bag

#### ENTRY (EOM) STOWAGE LOCATIONS

##### Orbiter:

MD52M (LiOH Box): Any 23 used Cans  
1-29, Cans 41-46

MF71C/E: Cans 30-40 \*

Ext A/L Floor Bag: Any 6 used Cans  
from MD52M (LiOH  
Box), Cans 47-58

Volume D: Cans 59-78

\* 2 LiOH cans installed in LiOH slots  
A and B

ORB OPS-29b/nonRCRS/125/O/C

(reduced copy)

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FS CC 8-4

ORB OPS/125/FIN 2

TOP

HOOK  
VELCRO

HOOK  
VELCRO

**ORBIT BURN MONITOR**

<b>OMS TEMP*</b>	L R	
FU IN P ≥	230	230
≤	214	212
or No FU IN P		
		OMS ENG FAIL
		OMS PRPLT FAIL
<b>OMS PC* &amp; OMS ↓</b>		
ENG VLV 1 or 2 < 70		OMS ENG FAIL
or OX IN P > 227		
or OX IN P ≤ 227		OMS PRPLT FAIL
or No OX IN P		
<b>OMS OX/FU TK P (√ENG IN P)</b>		
OX/FU LOW		He PRESS/VAP ISOL (two) – OP
		If aff TK P not incr:
		OMS PRPLT FAIL
OX & FU HIGH		He PRESS/VAP ISOL (two) – CL
		Cycle He A(B) to maintain TK P 234-284
<b>OMS N2 REG P HIGH or LOW</b>		OMS ENG – ARM
<b>OMS N2 TK P LOW</b> (√[OMS/MPS])		At N2 TK P < 470:
		OMS ENG – ARM
<b>OMS GMBL</b>	PRI fail	L(R) OMS GMBL – SEC (twice)
	SEC fail	If high RCS usage: OMS ENG FAIL
<b>GPC</b>	<input type="checkbox"/> ( <input type="checkbox"/> ) & Burning OMS aff	aff GPC PWR – OFF
		If SEC GMBL avail:
		aff MDM FF 1(4) – OFF, ON
		L(R) OMS GMBL – SEC (twice)
	SEC GMBL lost	If high RCS usage: OMS ENG FAIL
	2 FAs lost	√MAN SHUTDN
<b>I/O ERROR FA</b>	1(4)	L(R) OMS GMBL – SEC
		♦ I/O RESET
		If high RCS usage: OMS ENG FAIL
	2 FAs lost	√MAN SHUTDN
<b>BCE STRG D</b>		I/O RESET (if recov: >>)
	1(4)	If high RCS usage:
		L(R) OMS GMBL – SEC (twice)
<b>GPC SET SPLIT</b>	Non-crit burn	STOP BURN: OMS ENG(s) – OFF
	Crit burn	Go to “GPC” above
<b>I/O ERROR PCM</b>		OI PCMMU PWR – 2(1)
<b>BCE BYP OA</b>		SM I/O RESET

\*If XFD, BLDN, or sensor fail, monitor ENG IN P for off-nominal performance

ORB OPS-31a/125/O/B

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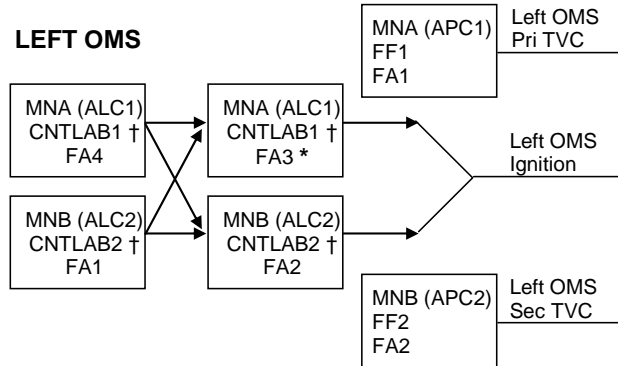
FS CC 8-5

ORB OPS/125/FIN 2

TOP  
BACK OF 'ORBIT BURN MONITOR'

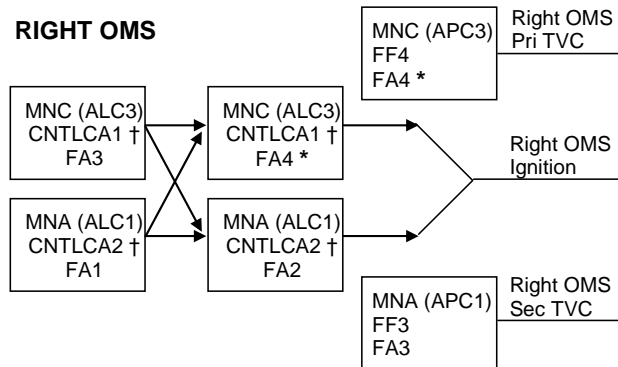


**LEFT OMS**



- † If CNTL AB1 or AB2 (CA1 or CA2) failed and ign path still exists at OMS fail, assume L(R) OMS ↓ is PRPLT FAIL
- \* If L(R) Pc failed high during burn or FA3(4) failed, at L(R) OMS fail, no guidance downmode after L(R) OMS ENG switch OFF (TGO slow, ADI needles in error, 6 ft/s underburn)

**RIGHT OMS**



If two FA MDMs lost		
MDMs	Preburn: ENG – OFF	During burn: MAN SHUTDN
1,2	LEFT (TVC)	BOTH
1,3	RIGHT (IGN)	LEFT
1,4	LEFT (IGN)	RIGHT
2,3	LEFT (IGN)	RIGHT
2,4	RIGHT (IGN)	LEFT
3,4	RIGHT (TVC)	BOTH

ORB OPS-31b/125/O/A

(reduced copy)

NOT FLOWN

FS CC 8-6

ORB OPS/125/FIN

NOT FLOWN

FS CC 8-7

ORB OPS/125/FIN

(reduced copy)

TOP

PILE  
VELCRO

ORB OPS-41a/125/O/A

PILE  
VELCRO

**STS-125 DAP A1 – DAP A8 CONFIGURATIONS**

	ITEM #	A1	A2	A3	A4	A5	A6	A7	A8
<b>PRI</b>									
ROT RATE	10 (50)	0.2000	0.4000	0.2000	0.5000	0.2000	0.2000	0.2000	0.0500
ATT DB	11 (51)	5.00	1.00	0.30	3.00	5.00	5.00	2.00	2.00
RATE DB	12 (52)	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
ROT PLS	13 (53)	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
COMP	14 (54)	.000	.000	.000	.000	.000	.000	.000	.000
P OPTION	15 (55)	ALL	ALL	ALL	ALL	ALL	TAIL	ALL	ALL
Y OPTION	16 (56)	ALL	ALL	TAIL	ALL	ALL	TAIL	ALL	ALL
TRAN PLS	17 (57)	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
<b>ALT</b>									
RATE DB	18 (58)	0.200	0.200	0.070	0.200	0.070	0.070	0.100	0.100
JET OPT	19 (59)	ALL	ALL	ALL	ALL	ALL	TAIL	ALL	ALL
# JETS	20 (60)	2	2	1	2	1	1	2	2
ON TIME	21 (61)	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
DELAY	22 (62)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>VERN</b>									
ROT RATE	23 (63)	0.2000	0.4000	0.0080	0.2000	0.0500	0.0500	0.0160	0.0500
ATT DB	24 (64)	1.000	1.000	0.070	1.000	1.000	1.000	1.000	1.000
RATE DB	25 (65)	.020	.020	.010	.020	.020	.020	.020	.020
ROT PLS	26 (66)	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.050
COMP	27 (67)	.000	.000	.000	.000	.000	.000	.000	.000
CNTL ACC	28 (68)	0	0	0	0	0	0	0	0
PURPOSE		NOMINAL	PTC	GG	PRE/POST DEPLOY	LOSS OF VERN (ALL)	LOSS OF VERN (TAIL ONLY)	RNDZ	TERMINAL PHASE

**BOLD/ITALIC** indicates change from I-Load

HINGE

NOT FLOWN

FS CC 8-8

ORB OPS/125/FIN

(reduced copy)

TOP  
HINGED AT BOTTOM OF  
'STS-125 DAP A1 – A8 CONFIGURATIONS'  
HINGE

**STS-125 DAP B1 – DAP B8 CONFIGURATIONS**

	ITEM #	B1	B2	B3	B4	B5	B6	B7	B8
<b>PRI</b>									
ROT RATE	30 (50)	0.5000	0.2000	0.2000	0.2000	0.2000	0.5000	0.5000	0.0500
ATT DB	31 (51)	3.00	3.00	3.00	0.30	3.00	3.00	2.00	2.00
RATE DB	32 (52)	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
ROT PLS	33 (53)	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040
COMP	34 (54)	.000	.000	.000	.000	.000	.000	.000	.000
P OPTION	35 (55)	ALL	TAIL	ALL	TAIL	TAIL	ALL	ALL	ALL
Y OPTION	36 (56)	ALL	TAIL	ALL	TAIL	TAIL	ALL	ALL	ALL
TRAN PLS	37 (57)	0.100	0.020	0.020	0.020	0.020	0.020	0.050	0.050
<b>ALT</b>									
RATE DB	38 (58)	0.200	0.070	0.070	0.100	0.200	0.200	0.100	0.100
JET OPT	39 (59)	ALL	TAIL	ALL	ALL	ALL	ALL	ALL	ALL
# JETS	40 (60)	2	1	1	2	2	2	2	2
ON TIME	41 (61)	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
DELAY	42 (62)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>VERN</b>									
ROT RATE	43 (63)	0.2000	0.2000	0.2000	0.0080	0.0160	0.2000	0.2000	0.0500
ATT DB	44 (64)	1.000	1.000	1.000	0.100	0.033	1.000	1.000	1.000
RATE DB	45 (65)	.020	.020	.020	.010	.020	.020	.020	.020
ROT PLS	46 (66)	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.020
COMP	47 (67)	.000	.000	.000	.000	.000	.000	.000	.000
CNTL ACC	48 (68)	0	0	0	0	0	0	0	0
PURPOSE		OMS & RCS BURNS (ORB OPS)	LOSS OF VERN (TAIL ONLY)	LOSS OF VERN (ALL)		COAS/HUD CAL		RNDZ	TERMINAL PHASE

**BOLD/ITALIC** indicates change from I-Load.

HOOK  
VELCRO

ORB OPS-41aa/125/O/A

HOOK  
VELCRO



NOT FLOWN

FS CC 8-9

ORB OPS/125/FIN

(reduced copy)

TOP  
BACK OF 'STS-125 DAP A1 – A8 CONFIGURATIONS'

PILE  
VELCRO

ORB OPS-41b/125/O/C

PILE  
VELCRO

STS-125 DAP A9 – DAP A15 CONFIGURATIONS

PRI	ITEM #	A9	A10	A11	A12	A13	A14	A15
ROT RATE	10 (50)	0.2000	0.1000				0.2000	0.1000
ATT DB	11 (51)	1.00	3.00				5.00	5.00
RATE DB	12 (52)	0.10	0.20				0.20	0.20
ROT PLS	13 (53)	0.100	0.040				0.100	0.040
COMP	14 (54)	.000	.000				.000	.000
P OPTION	15 (55)	TAIL	ALL				TAIL	TAIL
Y OPTION	16 (56)	TAIL	ALL				TAIL	TAIL
TRAN PLS	17 (57)	0.050	0.050				0.100	0.050
<b>ALT</b>								
RATE DB	18 (58)	0.100	0.100				0.200	0.100
JET OPT	19 (59)	TAIL	TAIL				TAIL	TAIL
# JETS	20 (60)	2	2				1	2
ON TIME	21 (61)	0.08	0.08				0.08	0.08
DELAY	22 (62)	0.00	12.70				6.00	7.50
<b>VERN</b>								
ROT RATE	23 (63)	0.2000	0.1000				0.2000	0.1000
ATT DB	24 (64)	1.000	1.000				3.000	2.000
RATE DB	25 (65)	.020	.020				.200	.050
ROT PLS	26 (66)	0.050	0.005				0.010	0.005
COMP	27 (67)	.000	.000				.000	.000
CNTL ACC	28 (68)	0	2				1	3(4,5)
PURPOSE		PROX OPS FLYAROUND	HST BERTHED				ORBITER ALONE SRMS/OBSS	HST RMS

**BOLD/ITALIC** indicates change from I-Load.

HINGE

NOT FLOWN

FS CC 8-10

ORB OPS/125/FIN

(reduced copy)

TOP  
 BACK OF 'STS-125 DAP B1 – B8 CONFIGURATIONS'  
 HINGED AT BOTTOM OF 'STS-125 DAP A9 – A15 CONFIGURATIONS'  
 HINGE

**STS-125 DAP B9 – DAP B15 CONFIGURATIONS**

	ITEM #	B9	B10	B11	B12	B13	B14	B15
<b>PRI</b>								
ROT RATE	30 (50)	0.2000	0.1000	0.0500	0.0500		0.1000	0.0500
ATT DB	31 (51)	1.00	5.00	10.00	5.00		10.00	2.00
RATE DB	32 (52)	0.10	0.20	0.20	0.20		0.20	0.20
ROT PLS	33 (53)	0.040	0.040	0.040	0.040		0.040	0.040
COMP	34 (54)	.000	.000	.000	.000		.000	.000
P OPTION	35 (55)	TAIL	TAIL	TAIL	TAIL		TAIL	TAIL
Y OPTION	36 (56)	TAIL	TAIL	TAIL	TAIL		TAIL	TAIL
TRAN PLS	37 (57)	0.010	0.010	0.050	0.050		0.010	0.010
<b>ALT</b>								
RATE DB	38 (58)	0.100	0.100	0.100	0.100		0.070	0.100
JET OPT	39 (59)	TAIL	TAIL	TAIL	TAIL		TAIL	TAIL
# JETS	40 (60)	2	2	2	2		2	2
ON TIME	41 (61)	0.08	0.08	0.08	0.08		0.08	0.08
DELAY	42 (62)	0.00	12.70	12.70	7.50		12.70	7.50
<b>VERN</b>								
ROT RATE	43 (63)	0.2000	0.2000	0.0160	0.0400		0.1000	0.0240
ATT DB	44 (64)	1.000	3.000	1.000	2.000		5.000	0.500
RATE DB	45 (65)	.020	.020	.020	.050		.400	.030
ROT PLS	46 (66)	0.020	0.005	0.005	0.005		0.040	0.005
COMP	47 (67)	.000	.000	.000	.000		.000	.000
CNTL ACC	48 (68)	0	2	2	3(4,5)		2	3
PURPOSE		FLYAROUND	NORMAL HST BERTHED	SLOW HST BERTHED	SLOW HST RMS		VRCS REBOOST/ ORBIT CONJUC	HST RELEASE

**BOLD/ITALIC** indicates change from I-Load.

HOOK  
VELCRO

ORB OPS-41bb/125/O/C

HOOK  
VELCRO

TOP

## WLES CONFIG AFTER PGSC REBOOT

1. If window appears asking to launch WLES software:
  - Click '1' to launch WLES software
  - Else:
    - Double click 'Shuttle Apps'>'WLES'>'WLES'
2. ✓MCC for 'Backup Mode Selection'
3. If EWBMTAU - WLEFlight window appears:
  - 'Run current command XXXX\_YY\_ZZZZ.xml' –
  - Click 'Yes'

ORB OPS-47a/125/O/A

### FABRICATION NOTES

Fabricate on flight approved yellow Post-it

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FS CC 8-11

ORB OPS/125/FIN 1



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FS 8-12

ORB OPS/125/FIN



Space Shuttle Program  
FLIGHT DATA FILE

JSC-48036-125  
FINAL



# ORBIT OPS CHECKLIST

STS  
**125**

Flight Cover (trim bottom to expose tabs)