

Entry Checklist

STS-116 Flight Supplement

**Mission Operations Directorate
Flight Design and Dynamics Division**

**Final, Rev A
October 18, 2006**

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas



ENTRY C/L, STS-116 FLT SUPPL

FINAL, REV A (Oct 18, 2006)

PCN-1 (Nov 8, 2006) Sheet 1 of 1

List of Implemented Change Requests (482s):

ENT-861

Incorporate the following:

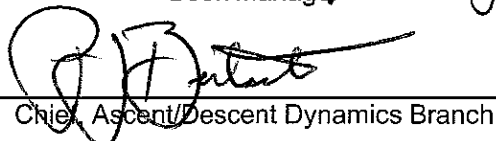
1. Replace FS xi and FS xii
2. Replace FS 5-19 and FS 5-20

Prepared by:


Book Manager

Lead, Entry GPO

Approved by:


Chief, Ascent/Descent Dynamics Branch

Encl: 4 pages

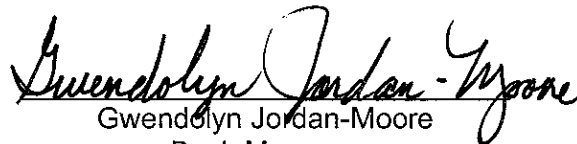
File this PCN immediately behind the front cover as a permanent record

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**ENTRY CHECKLIST
STS-116 FLIGHT SUPPLEMENT**

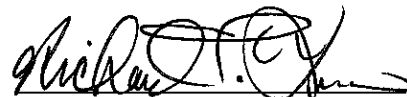
FINAL, REVISION A
October 18, 2006

PREPARED BY:


Gwendolyn Jordan-Moore
Book Manager

APPROVED BY:


Tom G. Schmidt
Lead Entry GPO


P. J. Bertsch
Chief, Ascent/Descent
Dynamics Branch

This document is under the configuration control of the Crew Procedures Control Board (CPCB). All proposed changes must be submitted on FDF Workflow Crew Procedure Change Request (CR) to DO3/FDF Manager.

Additional distribution of this book, for official use only, may be requested in writing to DO3/PMO Administrator. The request must include justification and requester's name, organization, position, and phone number. Contractor requests are made through the NASA or DOD organization supported. Deletions, reduction in quantity, or change of address may be submitted to DO3/FDF Management Office, 281-244-1184.

Incorporates the following:	
482#:	ENT-847 ENT-849 ENT-858

AREAS OF TECHNICAL RESPONSIBILITY

Book Manager	DM43/G. Jordan-Moore	281-483-1261
Deorbit Burn to Entry Interface	DM43/J. Patterson	281-483-1987
Contingency Procedures and Entry Interface thru Rollout	DM43/J. Patterson	281-483-1987

NOTE

This Flight Supplement must be integrated into the generic Entry Checklist to have a complete document for flight. Insert the Flight Supplement (FS) pages in the proper numerical order in the generic Entry Checklist by using the List of Effective Pages (LOEP) which provides the sequence for merging pages to create a complete Entry Checklist

ENTRY CHECKLIST
STS-116 FLIGHT SUPPLEMENT

LIST OF EFFECTIVE PAGES

FINAL	01/09/04
REV A	10/18/06
PCN-1	11/08/06

Sign Off	* generic	3-7	generic
ii.....	* generic	3-8.....	generic
Sign Off	* 116/FIN A	3-9.....	generic
FS iv	* 116/FIN A	3-10.....	generic
v	* generic	3-11.....	generic
vi.....	* generic	3-12.....	generic
vii.....	* generic	3-13.....	generic
viii.....	* generic	3-14.....	generic
ix.....	* generic	3-15.....	generic
x	* generic	3-16.....	generic
FS xi.....	* 116/FIN A,1	3-17.....	generic
FS xii.....	* 116/FIN A,1	3-18.....	generic
FS xiii.....	* 116/FIN A	3-19.....	generic
FS xiv.....	* 116/FIN A	3-20.....	generic
xv.....	generic	3-21.....	generic
xvi.....	generic	3-22.....	generic
1-1 (3 pgs).....	† generic	3-23.....	generic
1-2 (3 pgs).....	† generic	3-24.....	generic
2-1	generic	3-25.....	generic
2-2 (6 pgs).....	† generic	3-26.....	generic
2-3 (6 pgs).....	† generic	3-27.....	generic
2-4	generic	3-28.....	generic
FS 2-5	116/FIN A	FS 3-29	116/FIN A
FS 2-6	116/FIN A	FS 3-30	116/FIN A
FS 3-1	116/FIN A	3-31.....	generic
FS 3-2	116/FIN A	3-32.....	generic
FS 3-3	116/FIN A	FS 3-33	116/FIN A
FS 3-4	116/FIN A	FS 3-34	116/FIN A
3-5.....	generic	3-35.....	generic
3-6.....	generic	3-36.....	generic

* – Omit from flight book
† – Extra pages in crew copy only

3-37.....	generic	5-16.....	generic
3-38.....	generic	5-17.....	generic
3-39.....	generic	5-18.....	generic
3-40.....	generic	FS 5-19.....	116/FIN A,1
3-41.....	generic	FS 5-20.....	116/FIN A
3-42.....	generic	5-21.....	generic
3-43.....	generic	5-22.....	generic
3-44.....	generic	5-23.....	generic
4-1.....	generic	5-24.....	generic
4-2.....	generic	6-1.....	generic
4-3.....	generic	6-2.....	generic
4-4.....	generic	6-3.....	generic
4-5.....	generic	6-4.....	generic
4-6.....	generic	7-1.....*	generic
FS 4-7.....	116/FIN A	7-2.....*	generic
FS 4-8.....	116/FIN A	8-1.....*	generic
4-9.....	generic	CC 8-2.....*	generic
4-10.....	generic	CC 8-3.....*	generic
FS 4-11.....	116/FIN A	CC 8-4.....*	generic
FS 4-12.....	116/FIN A	CC 8-5.....*	generic
4-13.....	generic	CC 8-6.....*	generic
4-14.....	generic	CC 8-7.....*	generic
4-15.....	generic	CC 8-8.....*	generic
4-16.....	generic	CC 8-9.....*	generic
5-1.....	generic	CC 8-10.....*	generic
5-2.....	generic	CC 8-11.....*	generic
5-3.....	generic	CC 8-12.....*	generic
5-4.....	generic	CC 8-13.....*	generic
5-5.....	generic	CC 8-14.....*	generic
5-6.....	generic	CC 8-15.....*	generic
5-7.....	generic	CC 8-16.....*	generic
5-8.....	generic	CC 8-17.....*	generic
5-9.....	generic	CC 8-18.....*	generic
5-10.....	generic	CC 8-19.....*	generic
5-11.....	generic	8-20.....*	generic
5-12.....	generic	CC 8-21.....*	generic
5-13.....	generic	CC 8-22.....*	generic
5-14.....	generic	FS CC 8-23.....*	116/FIN A
5-15.....	generic	FS CC 8-24.....*	116/FIN A

* – Omit from flight book

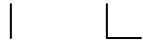
ENTRY CUE CARDS

<u>Title</u>	<u>Ref. Page</u>	<u>Card No.</u>
DEORBIT BURN FLIGHT		
RULES (Front).....	CC 8-2	generic
(Back).....	CC 8-3	generic
DEORBIT BURN (RCS)		
(Front)	CC 8-4	generic
(Back).....	CC 8-6	generic
DEORBIT BURN (2 ENG)		
(Front)	CC 8-8	generic
DEORBIT BURN (1 ENG)		
(Back).....	CC 8-10	generic
UNBALANCED PRPLT		
DEORBIT BURN		
(Front)	CC 8-12	generic
DEORBIT BURN (MIXED		
XFEED) (Back).....	CC 8-14	generic
ENTRY MANEUVERS		
(Front)	CC 8-16	generic
(Back).....	CC 8-17	generic
ENTRY NO-GO CHECKLIST		
(Front)	CC 8-18	generic
ADTA MGMT (Back)	CC 8-19	generic
ENTRY CONTROL		
(Front)	CC 8-21	generic
(Back).....	CC 8-22	generic
DEORBIT BURN MONITOR		
(Front)	FS CC 8-23	ENT-2a/116/A,O,D,E/A
OMS FAILURES (Back)....	FS CC 8-24	ENT-2b/116/A,O,D,E/A



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OMS/
RCS ΔV

OMS/RCS ΔV

FS 2-5

ENT/116/FIN A



OMS He PRESS/ Δ V/BURN TIME

**OMS/
RCS Δ V**

OMS% GAGE	OMS He Press *	OMS Δ V	RCS Δ V	RCS BURN MIN:SEC
50	3280	255	210	7:20
40	2880	199	165	5:44
38	2800	188	156	5:24
36	2720	177	147	5:05
34	2640	166	137	4:46
32	2560	154	128	4:27
30	2480	143	119	4:08
28	2400	132	110	3:49
26	2320	121	101	3:29
24	2240	109	91	3:10
22	2160	98	82	2:51
20	2080	87	73	2:32
18	2000	76	64	2:13
16	1920	64	54	1:53
14	1840	53	45	1:33
12	1760	42	35	1:13
10	1680	30	26	0:54
8	1600	19	16	0:34
6	1520	8	6	0:14
5	1480	2	2	0:04

* He pressure not valid until 1 hr after last burn

ΔV CAPABILITY	
ARCS Δ V fps =	$\boxed{0.8} \times [L\% + R\% - \text{AFT QTY } 1]$
FRCS Δ V fps =	$\boxed{0.9} \times \text{FRCS } \%$
OMS Δ V fps =	$\boxed{5.6} \times \text{OMS } \%$

NOTE: Uses assumed vehicle weight of 236,897 lb



DEORBIT BURN

DEORBIT
BURN



FS 3-1

ENT/116/FIN A

**STS-116 LANDING SITE TABLE
(50° to 63.5° INCLINATION)**

**DEORBIT
BURN**

S I T E	LOCATION	RWY	TACANS		MLS CH	LG	+ OVR RUN
				ITEM 5			
1	KSC	KSC 15 KSC 33	TTS 59Y	OMN 73	8 6	15000 15000	1000 1000
2	BEN GUERIR	BEN 36 BEN 18	MAK 80 ■	CBA 116 ■	- -	13720 13220	0 1000
3	MORON AB	MRN 20 MRN 02	MRN 100	AOG 23	◆6 -	11730 11730	1000 1000
4	ZARAGOZA	ZZA 30L ZZA 12R	ZZA 64	ZAR 77 ■	◆6 -	12200 12200	1000 1010
5	MYRTLE BEACH	MYR 36 MYR 18	ILM 117	FLO 99	- -	9500 9500	1000 1000
6	WILMINGTON	ILM 06 ILM 24	ILM 117	DIW 107 ■	- -	7500 7500	0 0
7	CHERRY POINT	NKT 32L NKT 23R	EWN 83 ■	NCA 101	- -	7110 7100	800 880
8	OCEANA NAS	NTU 32R NTU 23L	NFE 19Y	NGU 48	- -	7500 11500	0 0
9	WALLOPS	WAL 28 WAL 04	SBY 49	SWL 71	- -	7510 8750	0 0
10	DOVER AFB	DOV 32 DOV 19	SIE 95	CYN 81	- -	12400 9100	0 0
11	ATLANTIC CITY	ACY 31 ACY 13	CYN 81	SIE 95	- -	9500 9500	0 0
12	BEN GUERIR	BEN 36 BEN 18	MAK 80 ■	CBA 116 ■	- -	13720 13220	0 1000
13	*MORON AB	MRN 20 MRN 02	MRN 100	AOG 23	◆6 -	11730 11730	1000 1000
14	*ZARAGOZA	ZZA 30L ZZA 12R	ZZA 64	ZAR 77 ■	◆6 -	12200 12200	1000 1010
15	GABRESKI	FOK 06 FOK 24	HTO 83	GON45Y ■	- -	8500 8500	1000 1000

◆ Available for TAL Only

■ DME

* LO XRNG TAL Site

Length after displaced threshold

**STS-116 LANDING SITE TABLE
(50° to 63.5° INCLINATION)**

S I T E	LOCATION	RWY	TACANS		MLS CH	LG	+ OVR RUN
				ITEM 5			
16	OTIS ANGB	FMH 32	BOS 74	PVD 103	-	9000	0
		FMH 23			-	7500	0
17	PEASE INT'L	PSM 34	ENE 118	BOS 74	-	10020	0
		PSM 16			-	10020	0
18	HALIFAX INT'L	YHZ 23	UAW 38	YHZ 98 ■	-	8800	0
		YHZ 32			-	7700	0
19	STEPHENVILLE	YJT 09	YJT 78	YDF 80 ■	-	9500	0
		YJT 27			-	9500	0
20	ST JOHNS INT'L	YYT 29	UYT 23	YYT 82 ■	-	8500	0
		YYT 11			-	8500	0
21	GANDER INT'L	YQX 21	YQX 74	IQX 32 ■	-	9700	0
		YQX 31			-	8900	0
22	GOOSE BAY	YYR 26	UYR 40	YYR 120 ■	-	10550	0
		YYR 34			-	9080	0
23	LAJES	LAJ 15	TRM 109	LAJ 45	-	10870	970
		LAJ 33			-	10870	990
24	BEJA	BEJ 01L	MOJ 37	BEJ 105	-	10820	0
		BEJ 19R			-	10820	900
25	KEFLAVIK	IKF 20	KEF 57	HL 44 ■	-	9520	0
		IKF 29			-	9560	0
26	SHANNON	INN 06	SHA 80 ■	CRN 37 ■	-	9540	0
		INN 24			-	9540	0
27	FAIRFORD	FFA 27	FFA 81	BZN 56	-	9490	990
		FFA 09			-	9490	970
28	KOLN-BONN	KBO 14L	GIX 18	DOR 23Y ■	-	12020	0
		KBO 32R			-	12020	0
29	ISTRES AB	FMI 33	◆FMI 16	NIM 53	◆6	11300	3960
		FMI 15			-	12300	0
30	ESENBOGA	ESN 03R	BAG 78 ■	BUK 90 ■	-	11800	0
		ESN 21L			-	11800	0

◆ Available for TAL Only

■ DME

Length after displaced threshold

**STS-116 LANDING SITE TABLE
(50° to 63.5° INCLINATION)**

S I T E	LOCATION	RWY	TACANS		MLS CH	LG	+ OVR RUN
				ITEM 5			
31	KING KHALID	KKI 15R KKI 33L	RIY 92	KIA 80	-	13300	0
					-	13300	0
32	DIEGO GARCIA	JDG 31 JDG 13	NKW 57	NKW 57	-	12000	950
					-	12000	950
33	AMBERLEY TINDAL RAAF	AMB 15 PTN 14	AMB 94	-	-	9500	0
			-	TDL 70	-	8500	0
34	YOKOTA AB	JTY 36 JTY 18	SHT 19	NJA 98	-	11000	1000
					-	11000	1000
35	ANDERSEN AFB	GUA 06L GUA 24R	UAM 54	UNZ 100	-	10560	1050
					-	10560	1000
36	WAKE ISLAND	WAK 28 WAK 10	AWK 82	AWK 82	-	9360	0
					-	9360	0
37	HONOLULU	HNL 08R HNL 26L	HNL 95	NGF 93	-	11500	0
					-	11500	0
38	ELMENDORF	EDF 24 EDF 06	EDF 81	BGQ 72	-	9500	0
					-	9500	0
39	HAO ATOLL	HAO 12 HAO 30	HAO 85 ■	HAO 85 ■	-	10390	0
					-	10390	0
40	RIO GALLEGOS	AWG 25 AWG 07	GAL 114 ■	GAL 114 ■	-	10900	0
					-	10900	0
41	ASCENSION	HAW 13 HAW 31	ASI 59	ASI 59	-	9520	0
					-	9520	0
42	NORTHROP	NOR 17 NOR 23	SNG 121Y	HMN 92	6	15000	Lkbd
					6	15000	Lkbd
43	NORTHROP	NOR 05 NOR 35	SNG 121Y	HMN 92	-	15000	Lkbd
					-	15000	Lkbd
44	EDWARDS AFB	EDW 15 EDW 18L	EDW 111	LHS 21	-	16300	Lkbd
					-	15000	Lkbd
45	EDWARDS AFB	EDW 22 EDW 04	EDW 111	LHS 21	8/†	15010	0
					6	14010	1800

† MSBLS Jr. Ch 8 - Requires Uplink

■ DME

Length after displaced threshold

DEORBIT BURN MONITOR

OMS TEMP* FU IN P \geq <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; text-align: center;">L</td><td style="width: 20px; text-align: center;">R</td></tr><tr><td style="text-align: center;">225</td><td style="text-align: center;">220</td></tr><tr><td style="text-align: center;">205</td><td style="text-align: center;">204</td></tr></table> or No FU IN P	L	R	225	220	205	204	OMS ENG FAIL OMS PRPLT FAIL
L	R						
225	220						
205	204						
OMS PC* & OMS ↓ (BFS: $\sqrt{\text{accel}}$) ENG VLV 1 or 2 < 70 or OX IN P > 227 OX IN P \leq 227 or No OX IN P	OMS ENG FAIL OMS PRPLT FAIL						
OMS OX/FU TK P ($\sqrt{\text{ENG IN P}}$) OX/FU LOW OX & FU HIGH	He PRESS/VAP ISOL (two) – OP If aff TK P not incr: He PRESS/VAP ISOL (two) – CL At PC < 72 or OMS TEMP: OMS PRPLT FAIL He PRESS/VAP ISOL (two) – CL Cycle He A(B) to maintain TK P 234-284						
OMS GMBL PRI fail SEC fail	L(R) OMS GMBL – SEC (twice) If high RCS usage: OMS ENG FAIL						
GPC 1(4) & Burning OMS aff SEC GMBL lost 2 FAs lost	aff GPC PWR – OFF If SEC GMBL avail: aff MDM FF 1(4) – OFF, ON L(R) OMS GMBL – SEC (twice) If high RCS usage: OMS ENG FAIL $\sqrt{\text{MAN SHUTDN}}$						
I/O ERROR FA 1(4) 2 FAs lost	L(R) OMS GMBL – SEC I/O RESET (if recov: BFS I/O RESET) If high RCS usage: OMS ENG FAIL $\sqrt{\text{MAN SHUTDN}}$						
BCE STRG D 1(4)	I/O RESET (if recov: >>) If high RCS usage: L(R) OMS GMBL – SEC (twice)						
RM DLMA IMU or GPC SET SPLIT or 2 MN BUSES	STOP BURN: OMS ENG(s) – OFF >> IMU DLMA: After C/O: $\sqrt{\text{timer}}$ G21 If any IMU ACC > 0.03: aff IMU – desel I'cnct OMS to RCS ($\sqrt{\text{RCS Burn Time}}$) THC +X to TGT HP (EOM) or 3.5 x timer at C/O (AOA) SET SPLIT: Go to "GPC" above						
I/O ERROR PCM	OI PCMMU PWR – 2(1)						

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

ENT-2a/116/A,O,D,E/A

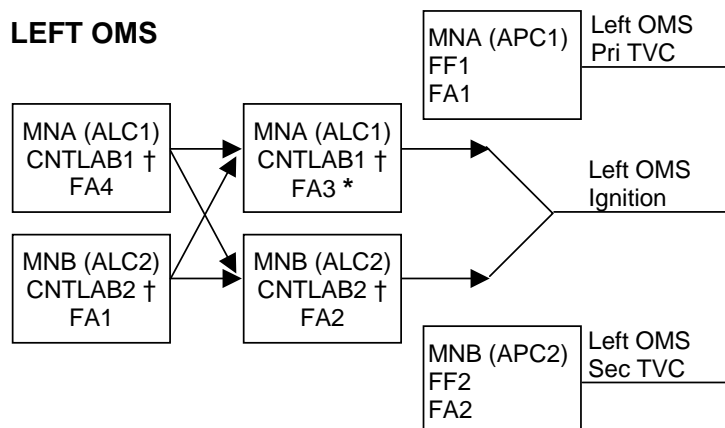
MS ONLY

FS 3-29

ENT/116/FIN A

OMS FAILURES

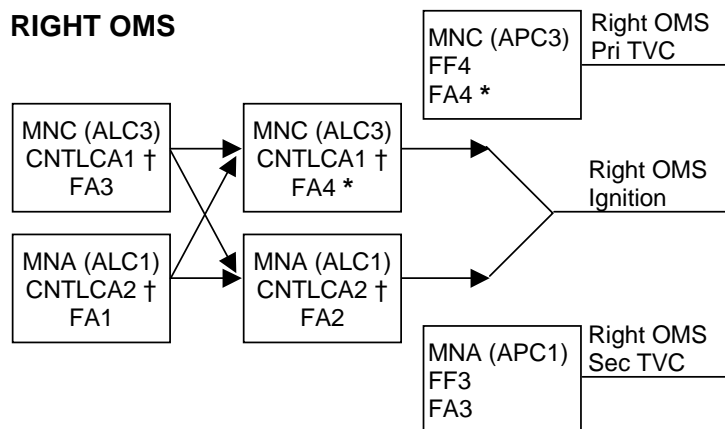
LEFT OMS



† 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) P_C 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

ENT-2b/116/A,O,D,E/A

MS ONLY

FS 3-30

ENT/116/FIN A

1: GNC DEORB MNVR EXEC	2: GNC DEORB MNVR EXEC
3: BFS, GNC SYS SUMM 2	

- * **UNDERBURN** *
- * Determine Δ HP (CUR HP – TGT HP) *
- * Record prebank on ENTRY MANEUVERS Cue Card *

* PREBANK TABLE EDW (HA = 186 NM) *									
* EDW *									
* Δ HP	0	4	7	10	REDES.	12	13	(14)	REDES.
* PREBANK	0	80	100	115	NOR ELS	125	135	140	YR
* NOR					IF NOR NOGO				
* G50 ITEM 41+4 2, \sqrt RWY 17 SET TACAN tw (three) 121Y									
* Δ HP		7	9	11	13	15	17	(18)	REDES.
* PREBANK		85	95	105	115	125	145	160	YR
* YR									
* G50 ITEM 41+2 2, \sqrt RWY 26 SET TACAN tw (three) 040X									
* Δ HP					15	17	20	24	(26) 28
* PREBANK					65	80	95	125	145 180
* PREBANK TABLE KSC (HA = 185 NM) *									
* KSC *									
* Δ HP	0	3	5	7	9	11	13	(15)	REDES.
* PREBANK	0	65	85	100	105	115	130	150	YQX
* YQX									
* G50 ITEM 41+2 1, \sqrt RWY 21 SET TACAN tw (three) 074X									
* Δ HP						16	22	(25)	RED.
* PREBANK						95	135	170	INN
* INN									
* G50 ITEM 41+2 6, \sqrt RWY 06 SET TACAN tw (three) 080X									
* Δ HP								26	28
* PREBANK								135	180

116OCFR4

1: GNC DEORB MNVR EXEC	2: GNC DEORB MNVR EXEC
3: BFS, GNC SYS SUMM 2	

C CRT1 **GNC, OPS 303 PRO**

1: GNC DEORB MNVR COAST	2: GNC DEORB MNVR COAST
-------------------------	-------------------------

C CRT1 √Uplinked INRTL EI-5 MM303 ATT with DEL PAD

- * If no deorbit TGT uplink, enter INRTL EI-5 *
- * MM303 ATT from DEL PAD *
- * R – ITEM 24 + _____ *
- * P – ITEM 25 + _____ *
- * Y – ITEM 26 + _____ *

Mnvr to EI-5 ATT – ITEM 27 EXEC (*)	TIME to EI (min)	LVLH PITCH (deg)
	20	339
		343
		347
* If UNDERBURN or no *		351
* DEL PAD, manually *		355
* mnvr to LVLH R 001, *	15	359
* Y 358, P per table *		3
		7
		11
		15
	10	19
		23
		27
		31
		35
	5	39

C **OMS GMBL PWRDN (PASS ONLY)**

CRT1 Verify GMBL positions:

	<u>L</u>	<u>R</u>
P	+5.9	+5.9
Y	+6.4	-6.4

GMBL OFF – ITEM 32 EXEC
– ITEM 33 EXEC



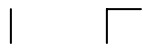
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MS ONLY

FS 4-7

ENT/116/FIN A





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MS ONLY

FS 4-8

ENT/116/FIN A



ENTRY ALPHA

VR	α_{ref}	R	H	Href	Rref
25	40	4464	400		
24	HI	40 LO 2647	246	-46	L79
23	43	40 37 2164	238	-63	68
22	43	40 37 1806	231	-82	62
21	43	40 37 1523	224	-104	60
20	43	40 37 1299	218	-121	58
19	43	40 37 1122	211	-144	59
18	43	40 37 978	204	-167	60
17	43	40 37 864	198	-185	R61
16	43	40 37 768	193	-195	61

KSC 15

MAX L/D	
M	α
3	17
2	15
1	12

116 OCFR4 CY

ASC-14b/116/A,E/B

HOOK VELCRO	HOOK VELCRO
----------------	----------------

15	43	40	37	686	185	-207	64
14	43	40	37	613	180	-126	62
13	43	40	37	546	176	-136	59
12	43	40	37	483	171	-152	58
11	42	39	36	425	166	-194	56
10	41	38	35	373	160	-173	51
9	39	36	33	325	155	-206	L44
8	37	34	31	277	149	-238	37
7	33	30	27	229	139	-266	36
6	30	27	24	184	128	-270	37
5	26	23	20	142	115	-272	39
4	22	19	18	104	101	-264	39
3	19	16	15	74	89	-247	R37
2.5	15			60	80	-271	
2	12			49	74	-283	
1.5	9			37	64	-333	
1	7			27	48	-267	

HOOK VELCRO

MS ONLY

FS 4-11

ENT/116/FIN A



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MS ONLY

FS 4-12

ENT/116/FIN A



1:	2:
3:	

POST LANDING PAYLOAD ACTIVITIES

NOTE

Switch throw to occur no earlier than crew egress in order to maintain crew comfort and is desired no later than 1 hr post landing to maintain Spacehab thermal requirements for early retrieval operations

L1 After crew egress and within 1 hr of wheelstop:
FLOW PROP VLV LOOP 1 – PL HX (tb-PL)



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TOP

HOOK
VELCRO
**DEORBIT
BURN
MONITOR**
HOOK
VELCRO

OMS TEMP* FU IN P \geq <table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"> <tr><td>L</td><td>R</td></tr> <tr><td>225</td><td>220</td></tr> <tr><td>205</td><td>204</td></tr> </table> or No FU IN P	L	R	225	220	205	204	OMS ENG FAIL OMS PRPLT FAIL
L	R						
225	220						
205	204						
OMS PC* & OMS ↓ (BFS: $\sqrt{\text{accel}}$) ENG VLV 1 or 2 < 70 or OX IN P > 227 OX IN P \leq 227 or No OX IN P	OMS ENG FAIL OMS PRPLT FAIL						
OMS OX/FU TK P ($\sqrt{\text{ENG IN P}}$) OX/FU LOW OX & FU HIGH	He PRESS/VAP ISOL (two) – OP If aff TK P not incr: He PRESS/VAP ISOL (two) – CL At PC < 72 or OMS TEMP: OMS PRPLT FAIL He PRESS/VAP ISOL (two) – CL Cycle He A(B) to maintain TK P 234-284						
OMS GMBL PRI fail SEC fail	L(R) OMS GMBL – SEC (twice) If high RCS usage: OMS ENG FAIL						
GPC 1(4) & Burning OMS aff SEC GMBL lost 2 FAs lost	aff GPC PWR – OFF If SEC GMBL avail: aff MDM FF 1(4) – OFF, ON L(R) OMS GMBL – SEC (twice) If high RCS usage: OMS ENG FAIL $\sqrt{\text{MAN SHUTDN}}$						
I/O ERROR FA 1(4) 2 FAs lost	L(R) OMS GMBL – SEC I/O RESET (if recov: BFS I/O RESET) If high RCS usage: OMS ENG FAIL $\sqrt{\text{MAN SHUTDN}}$						
BCE STRG D 1(4)	I/O RESET (if recov: >>) If high RCS usage: L(R) OMS GMBL – SEC (twice)						
RM DLMA IMU or ABOVE SAFE HP \Rightarrow <table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"> <tr><td style="width: 15px; height: 15px;"></td><td style="width: 15px; height: 15px;"></td></tr> </table>			STOP BURN: OMS ENG(s) – OFF >>				
GPC SET SPLIT or BELOW SAFE HP \Rightarrow	IMU DLMA: After C/O: $\sqrt{\text{timer G21}}$ If any IMU ACC > 0.03: aff IMU – desel I'cnct OMS to RCS ($\sqrt{\text{RCS Burn Time}}$) THC +X to TGT HP (EOM) or 3.5 x timer at C/O (AOA) SET SPLIT: Go to "GPC" above						
I/O ERROR PCM	OI PCMMU PWR – 2(1)						

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

ENT-2a/116/A,O,D,E/A

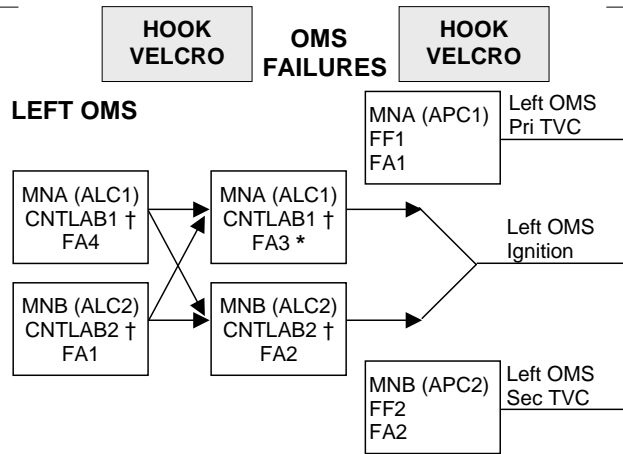
(reduced copy)

FAB USE ONLY

FS CC 8-23

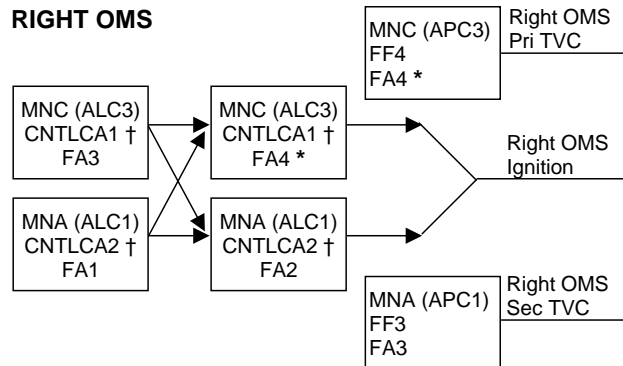
ENT/116/FIN A

TOP
BACK OF 'DEORBIT BURN MONITOR'



† 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) P_C 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)



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

ENT-2b/116/A,O,D,E/A

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ENT/116/FIN A

Space Shuttle Program
FLIGHT DATA FILE

JSC-48020-116
FINAL, REV A



ENTRY CHECKLIST

STS
116

Flight Cover (trim bottom to expose tabs)