

Entry Checklist

STS-121 Flight Supplement

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

**Final
May 2, 2005**

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas



ENTRY C/L, STS-121 FLT SUPPL

FINAL (May 2, 2005)


PCN-2 (Apr 24, 2006) Sheet 1 of 1

List of Implemented Change Requests (482s):

ENT-846 MULTI-1743
ENT-849
ENT-850

Incorporate the following:

1. Replace FS xi thru FS xiv
2. Replace FS 3-29 & FS 3-30, FS 3-33 & FS 3-34
3. Replace FS CC 8-23 & FS CC 8-24

Prepared by: 
Book Manager


Lead, Entry GPO

Approved by: 
Chief, Ascent/Descent Dynamics Branch

Encl: 11 pages

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

ENTRY C/L, STS-121 FLT SUPPL

FINAL (May 2, 2005)

PCN-1 (Aug 10, 2005) Sheet 1 of 1

List of Implemented Change Requests (482s):

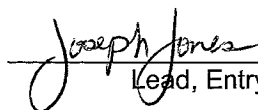
ENT-839

Incorporate the following:

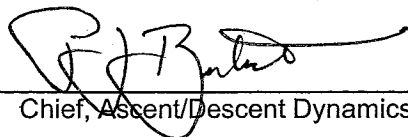
- 1. Replace FS xi & FS xii
- 2. Replace FS 3-33 & FS 3-34

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

JSC-48020-121

MISSION OPERATIONS DIRECTORATE

**ENTRY CHECKLIST
STS-121 FLIGHT SUPPLEMENT**

FINAL
May 2, 2005

PREPARED BY:

Marcia M. Trump
Book Manager

APPROVED BY:

Joe H. Jones
Lead Entry GPO

Gregory T. Oliver
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 must be requested in writing to DO3/FDF Manager. 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.

ENT/121/FIN

Incorporates the following:
482#: None – Establishes baseline

AREAS OF TECHNICAL RESPONSIBILITY

Book Manager	DM43/M. Trump	281-483-8029
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-121 FLIGHT SUPPLEMENT

LIST OF EFFECTIVE PAGES

FINAL	05/02/05
PCN-1	08/10/05
PCN-2	04/24/06

Sign Off *	generic	3-7.....	generic
ii..... *	generic	3-8.....	generic
Sign Off *	121/FIN	3-9.....	generic
FS iv *	121/FIN	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 *	121/FIN 2	3-17.....	generic
FS xii *	121/FIN 2	3-18.....	generic
FS xiii..... *	121/FIN 2	3-19.....	generic
FS xiv..... *	121/FIN	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.....	121/FIN	FS 3-29.....	121/FIN 2
FS 2-6.....	121/FIN	FS 3-30.....	121/FIN
FS 3-1.....	121/FIN	3-31.....	generic
FS 3-2.....	121/FIN	3-32.....	generic
FS 3-3.....	121/FIN	FS 3-33.....	121/FIN 2
FS 3-4.....	121/FIN	FS 3-34.....	121/FIN 2
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.....	121/FIN
3-41.....	generic	FS 5-20.....	121/FIN
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.....	121/FIN	7-2.....*	generic
FS 4-8.....	121/FIN	8-1.....*	generic
4-9.....	generic	CC 8-2.....*	generic
4-10.....	generic	CC 8-3.....*	generic
FS 4-11.....	121/FIN	CC 8-4.....*	generic
FS 4-12.....	121/FIN	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	CC 8-20.....*	generic
5-12.....	generic	CC 8-21.....*	generic
5-13.....	generic	CC 8-22.....*	generic
5-14.....	generic	FS CC 8-23.....*	121/FIN 2
5-15.....	generic	FS CC 8-24.....*	121/FIN

* – 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
Mach α		
(Front)	CC 8-20	generic
(Back)	CC 8-20	generic
Entry Control		
(Front)	CC 8-21	generic
(Back)	CC 8-22	generic
Deorbit Burn Monitor		
(Front)	FS CC 8-23	ENT-2a/121/A,O,D,E/B I
OMS Failures (Back)	FS CC 8-24	ENT-2b/121/A,O,D,E/A



This Page Intentionally Blank





OMS/
RCS ΔV

OMS/RCS ΔV

FS 2-5

ENT/121/FIN



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	3430	251	208	7:20
40	3030	196	163	5:44
38	2950	185	154	5:25
36	2870	174	145	5:05
34	2790	163	136	4:46
32	2710	152	127	4:27
30	2630	141	118	4:08
28	2550	130	109	3:49
26	2470	119	100	3:29
24	2390	108	91	3:10
22	2310	97	81	2:51
20	2230	86	72	2:32
18	2150	75	63	2:13
16	2070	63	54	1:53
14	1990	52	44	1:33
12	1910	41	35	1:13
10	1830	30	25	0:54
8	1750	19	16	0:34
6	1670	8	6	0:14
5	1630	2	2	0:04

* He pressure not valid until 1 hr after last burn

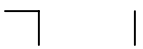
ΔV CAPABILITY	
ARCS Δ V fps =	$\boxed{0.8} \times [L\% + R\% - \text{AFT QTY } 1]$
FRCS Δ V fps =	$\boxed{0.9} \times \text{FRCS } \%$
OMS Δ V fps =	$\boxed{5.5} \times \text{OMS } \%$

NOTE: Uses assumed vehicle weight of 239,043 lb



DEORBIT BURN

DEORBIT
BURN



FS 3-1

ENT/121/FIN

**STS-121 LANDING SITE TABLE
(50° to 63.5° INCLINATION)**

**DEORBIT
BURN**

SITE	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	◆BEN 108	MAK 80 ■	◆6 -	13720 12720	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	ZZA 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	DQO 87	- -	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	◆BEN 108	MAK 80 ■	◆6 -	13720 12720	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	ZZA 77 ■	◆6 -	12200 12200	1000 1010
15	GABRESKI	FOK 06 FOK 24	HTO 83	TMU 45Y ■	- -	8500 8500	1000 1000

◆ Available for TAL Only

* LO XRNG TAL Site

■ DME

Length after displaced threshold

**STS-121 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 24	UAW 38	YHZ 98 ■	-	8800	0
		YHZ 33			-	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	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-121 LANDING SITE TABLE
(50° to 63.5° INCLINATION)**

SITE	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; border-collapse: collapse; text-align: center;"> <tr><td style="padding: 2px;">L</td><td style="padding: 2px;">R</td></tr> <tr><td style="padding: 2px;">225</td><td style="padding: 2px;">220</td></tr> <tr><td style="padding: 2px;">205</td><td style="padding: 2px;">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: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td></tr> </table>			STOP BURN: Oms Eng(s) – OFF >>				
GPC SET SPLIT or 2 MN BUSES BELOW SAFE HP \Rightarrow	IMU DLMA: After C/O: $\sqrt{\text{timer}}$ <table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"> <tr><td style="padding: 2px;">G21</td></tr> </table> 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	G21					
G21							
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/121/A,O,D,E/B

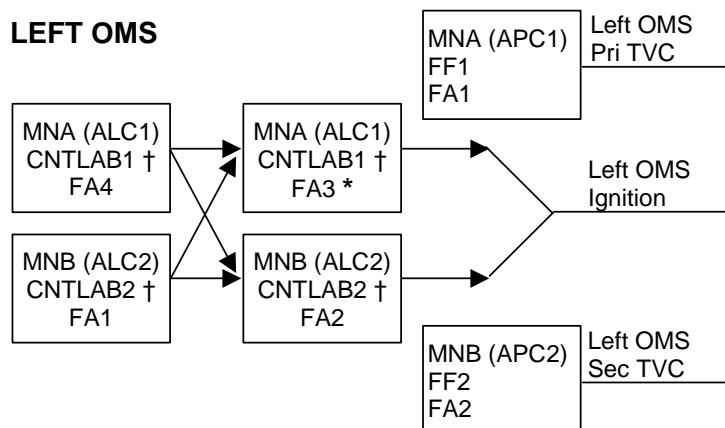
MS ONLY

FS 3-29

ENT/121/FIN 2

OMS FAILURES

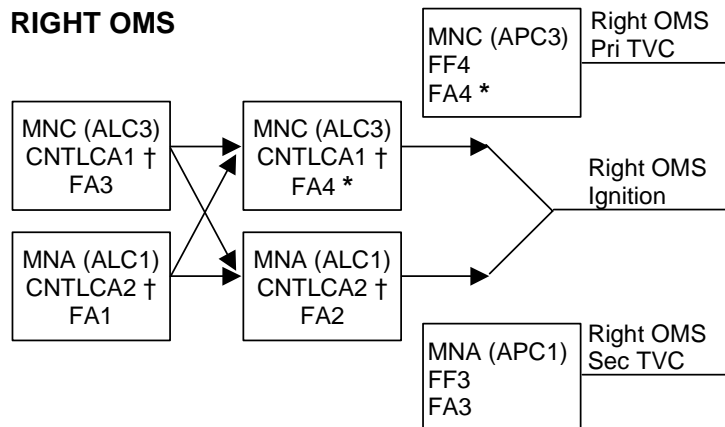
LEFT OMS



† 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) 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

ENT-2b/121/A,O,D,E/A

MS ONLY

FS 3-30

ENT/121/FIN

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 = 187 NM) **									
** EDW **									
Δ HP	0	3	6	10	REDES.	11	12	(13)	REDES.
PREBANK	0	65	95	110	NOR ELS	115	120	130	YR
NOR					NOR NOGO				
** <u>G50</u> ITEM 41+ <u>4 2</u> , \sqrt RWY 17 SET TACAN tw (three) 121Y **									
Δ HP		6	9	11	12	13	14	(15)	REDES.
PREBANK		90	105	115	120	125	135	145	YR
** YR **									
** <u>G50</u> ITEM 41+ <u>2 2</u> , \sqrt RWY 26 SET TACAN tw (three) 040X **									
Δ HP					14	16	20	24	(26) 28
PREBANK					55	75	95	125	145 180
**									
** PREBANK TABLE KSC (HA = 188 NM) **									
** KSC **									
Δ HP	0	2	4	6	8	10	12	(14)	REDES.
PREBANK	0	50	75	95	100	110	120	140	YQX
** YQX **									
** <u>G50</u> ITEM 41+ <u>2 1</u> , \sqrt RWY 21 SET TACAN tw (three) 074X **									
Δ HP							15	22	(25) RED.
PREBANK							90	135	170 INN
** INN **									
** <u>G50</u> ITEM 41+ <u>2 6</u> , \sqrt RWY 06 SET TACAN tw (three) 080X **									
Δ HP								26	28
PREBANK								135	180
**									

121 OCFR1

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



This Page Intentionally Blank



MS ONLY

FS 4-7

ENT/121/FIN





This Page Intentionally Blank



MS ONLY

FS 4-8

ENT/121/FIN



ENTRY ALPHA

VR	α_{ref}	R	H	H _{ref}	R _{ref}
25	40	4472	400		
24	HI 40 LO	2634	245	-46	R80
23	43 40 37	2158	237	-63	71
22	43 40 37	1801	231	-82	66
21	43 40 37	1522	225	-104	L63
20	43 40 37	1302	218	-121	60
19	43 40 37	1127	211	-142	61
18	43 40 37	978	205	-166	62
17	43 40 37	864	198	-184	63
16	43 40 37	766	191	-196	64

KSC 15

MAX L/D	
M	α
3	17
2	15
1	12

(121 OCFR1 CY)

ASC-14b/121/A,E/A

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

15	43 40 37	683	185	-119	64
14	43 40 37	615	181	-126	62
13	43 40 37	547	178	-136	59
12	43 40 37	481	173	-154	57
11	42 39 36	426	168	-195	R55
10	41 38 35	376	164	-174	46
9	39 36 33	327	158	-205	43
8	37 34 31	278	150	-237	40
7	33 30 27	230	141	-266	39
6	30 27 24	184	130	-272	40
5	26 23 20	141	117	-275	42
4	22 19 18	106	105	-263	L41
3	19 16 15	75	89	-248	40
2.5	14	61	82	-216	
2	12	49	76	-282	
1.5	9	37	65	-331	
1	8	28	51	-263	



This Page Intentionally Blank



MS ONLY

FS 4-12

ENT/121/FIN



1:	2:
3:	

POST LANDING PAYLOAD ACTIVITIES

Not required



This Page Intentionally Blank



TOP

HOOK
VELCRO
**DEORBIT
BURN
MONITOR**
HOOK
VELCRO

OMS TEMP* <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"></td> <td style="width: 25%; text-align: center;">L</td> <td style="width: 25%; text-align: center;">R</td> </tr> <tr> <td>FU IN P</td> <td style="text-align: center;">≥ 225</td> <td style="text-align: center;">220</td> </tr> <tr> <td></td> <td style="text-align: center;">≤ 205</td> <td style="text-align: center;">204</td> </tr> </table> or No FU IN P		L	R	FU IN P	≥ 225	220		≤ 205	204	OMS ENG FAIL ----- OMS PRPLT FAIL
	L	R								
FU IN P	≥ 225	220								
	≤ 205	204								
OMS PC* & OMS ↓ (BFS: √accel) ENG VLV 1 or 2 < 70 or OX IN P > 227 ----- OX IN P ≤ 227 or No OX IN P	OMS ENG FAIL ----- OMS PRPLT FAIL									
OMS OX/FU TK P (√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 ----- √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 ----- √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 ----- ABOVE SAFE HP ⇒ <input type="checkbox"/> <input type="checkbox"/> ----- BELOW SAFE HP ⇒	STOP BURN: OMS ENG(s) – OFF >> ----- IMU DLMA: After C/O: √timer G21 If any IMU ACC > 0.03: aff IMU – desel I'cnct OMS to RCS (√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/121/A,O,D,E/B

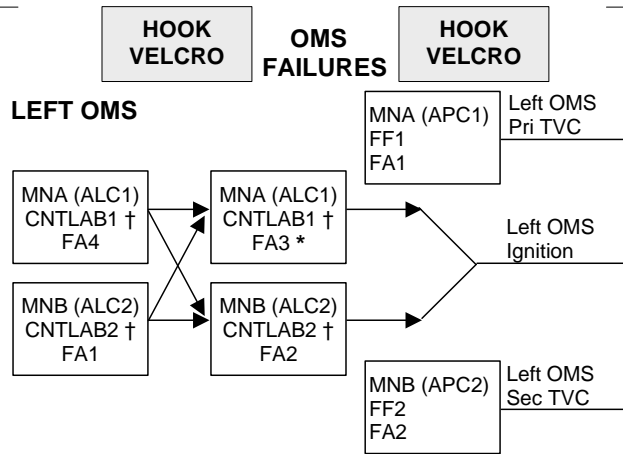
(reduced copy)

FAB USE ONLY

FS CC 8-23

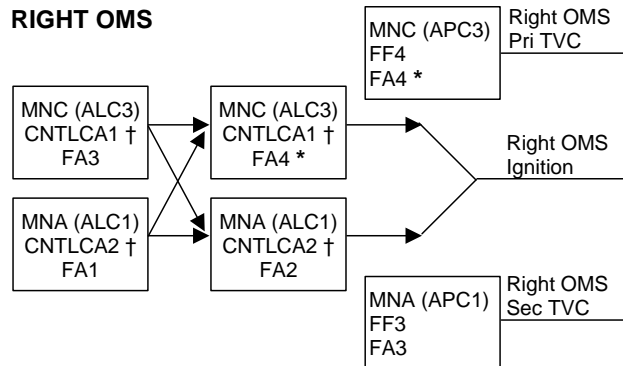
ENT/121/FIN 2

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) 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)



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/121/A,O,D,E/A

(reduced copy)

FAB USE ONLY

FS CC 8-24

ENT/121/FIN

Space Shuttle Program
FLIGHT DATA FILE

JSC-48020-121
FINAL, PCN-2



ENTRY CHECKLIST

STS
121

Flight Cover (trim bottom to expose tabs)