

Entry Checklist

STS-120 Flight Supplement

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

**Final
March 27, 2007**

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas



ENTRY C/L, STS-120 FLT SUPPL

FINAL (March 27, 2007)

PCN-2 (Sept 14, 2007) Sheet 1 of 1

List of Implemented Change Requests (482s):

ENT-FS-0006

Incorporate the following:

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

Prepared by:


Book ManagerDoyle W. Hensley 9/14/2007
Lead, Entry GPO

Approved by:


Chief, Ascent/Descent Dynamics Branch

Encl: 8 pages

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

ENTRY C/L, STS-120 FLT SUPPL	FINAL (March 27, 2007)
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PCN-1 (Aug 8, 2007) Sheet 1 of 1

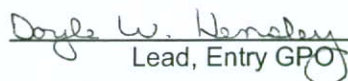
List of Implemented Change Requests (482s):

ENT-FS-0004 MULTI-1799

Incorporate the following:

1. Replace FS xi thru FS xiv
2. Replace FS 3-15 thru FS 3-18
3. Replace FS 4-5 thru FS 4-10
4. Replace FS 8-1 thru FS CC 8-4, FS CC 8-17 & FS CC 8-18

Prepared by:


Book Manager
Lead, Entry GPO

Approved by:


Chief, Ascent/Descent Dynamics Branch

Encl: 20 pages

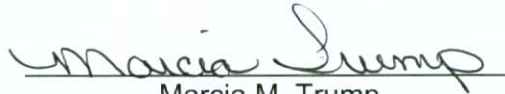
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MISSION OPERATIONS DIRECTORATE

**ENTRY CHECKLIST
STS-120 FLIGHT SUPPLEMENT**

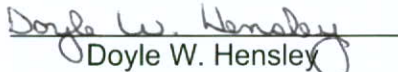

FINAL
March 27, 2007

PREPARED BY:



Marcia M. Trump
Book Manager

APPROVED BY:


Doyle W. Hensley
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 via 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#: NONE – Establishes baseline

AREAS OF TECHNICAL RESPONSIBILITY

Book Manager	DM43/M. Trump	281-483-8029
Deorbit Burn to Entry Interface	DM43/G. Pogue	281-483-8067
Contingency Procedures and Entry Interface thru Rollout	DM43/G. Pogue	281-483-8067

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-120 FLIGHT SUPPLEMENT

LIST OF EFFECTIVE PAGES

FINAL 03/27/07
PCN-1 08/08/07
PCN-2 09/14/07

Sign Off	* generic	FS 3-7	120/FIN
ii.....	* generic	FS 3-8	120/FIN
Sign Off	* 120/FIN	3-9.....	generic
FS iv	* 120/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	FS 3-15	120/FIN
x	* generic	FS 3-16	120/FIN 1
FS xi.....	* 120/FIN 2	FS 3-17	120/FIN 1
FS xii.....	* 120/FIN 2	FS 3-18	120/FIN
FS xiii.....	* 120/FIN 2	3-19.....	generic
FS xiv	* 120/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	120/FIN	FS 3-29	120/FIN 2
FS 2-6	120/FIN	FS 3-30	120/FIN
FS 3-1	120/FIN	3-31.....	generic
FS 3-2	120/FIN	3-32.....	generic
FS 3-3	120/FIN	FS 3-33	120/FIN
FS 3-4	120/FIN	FS 3-34	120/FIN
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	FS 5-19	120/FIN
3-38.....	generic	FS 5-20	120/FIN
3-39.....	generic	5-21.....	generic
3-40.....	generic	5-22.....	generic
3-41.....	generic	5-23.....	generic
3-42.....	generic	5-24.....	generic
3-43.....	generic	6-1.....	generic
3-44.....	generic	6-2.....	generic
4-1.....	generic	6-3.....	generic
4-2.....	generic	6-4.....	generic
4-3.....	generic	7-1.....*	generic
4-4.....	generic	7-2.....*	generic
FS 4-5	120/FIN 1	FS 8-1	* 120/FIN
FS 4-6	120/FIN	FS CC 8-2.....*	120/FIN 1
FS 4-7	120/FIN 1	FS CC 8-3.....*	120/FIN 1
FS 4-8	120/FIN	FS CC 8-4.....*	120/FIN
FS 4-9	120/FIN 1	CC 8-5.....*	generic
FS 4-10	120/FIN	CC 8-6.....*	generic
4-11.....	generic	CC 8-7.....*	generic
4-12.....	generic	CC 8-8.....*	generic
5-1.....	generic	CC 8-9.....*	generic
5-2.....	generic	CC 8-10.....*	generic
5-3.....	generic	CC 8-11.....*	generic
5-4.....	generic	CC 8-12.....*	generic
5-5.....	generic	CC 8-13.....*	generic
5-6.....	generic	CC 8-14.....*	generic
5-7.....	generic	CC 8-15.....*	generic
5-8.....	generic	CC 8-16.....*	generic
5-9.....	generic	FS CC 8-17	* 120/FIN 1
5-10.....	generic	FS CC 8-18	* 120/FIN
5-11.....	generic	CC 8-19.....*	generic
5-12.....	generic	8-20.....*	generic
5-13.....	generic	CC 8-21.....*	generic
5-14.....	generic	CC 8-22.....*	generic
5-15.....	generic	FS CC 8-23	* 120/FIN 2
5-16.....	generic	FS CC 8-24	* 120/FIN
5-17.....	generic		
5-18.....	generic		

* – Omit from flight book

ENTRY CUE CARDS

<u>Title</u>	<u>Ref. Page</u>	<u>Card No.</u>
DEORBIT BURN FLIGHT		
RULES (Front).....	FS CC 8-2	ENT-1a/120/D/B
(Back).....	FS CC 8-3	ENT-1b/120/D/B
DEORBIT BURN (RCS)		
(Front)	FS CC 8-4	ENT-3a/D/L
(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).....	FS CC 8-17	ENT-6b/120/E/B
ENTRY NO-GO CHECKLIST		
(Front)	FS CC 8-18	ENT-7a/E/K
EMERGENCY EGRESS		
(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/120/A,O,D,E/B
OMS FAILURES (Back)	FS CC 8-24	ENT-2b/120/A,O,D,E/A



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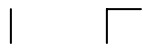


OMS/
RCS ΔV

OMS/RCS ΔV

FS 2-5

ENT/120/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	3280	281	233	7:18
40	2880	220	183	5:42
38	2800	208	173	5:23
36	2720	195	163	5:04
34	2640	183	152	4:45
32	2560	171	142	4:26
30	2480	158	132	4:07
28	2400	146	122	3:48
26	2320	133	112	3:28
24	2240	121	101	3:09
22	2160	109	91	2:50
20	2080	96	81	2:31
18	2000	84	71	2:12
16	1920	71	60	1:52
14	1840	59	50	1:33
12	1760	46	39	1:13
10	1680	34	28	0:54
8	1600	21	18	0:34
6	1520	9	7	0:14
5	1480	2	2	0:04

* He pressure not valid until 1 hr after last burn

ΔV CAPABILITY	
ARCS Δ V fps =	$\boxed{0.9} \times [L\% + R\% - \text{AFT QTY } 1]$
FRCS Δ V fps =	$\boxed{1.0} \times \text{FRCS } \%$
OMS Δ V fps =	$\boxed{6.1} \times \text{OMS } \%$

NOTE: Uses assumed vehicle weight of 213,925 lb



DEORBIT BURN

DEORBIT
BURN



FS 3-1

ENT/120/FIN

**STS-120 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	COF 97	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	NGU 48	ORF 116	- -	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
* LO XRNG TAL Site

■ DME
Length after displaced threshold

**STS-120 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	STEPHEENVILLE	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-120 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 -	- TDL 70	-	9500	0
					-	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

1: GNC DEORB MNVR COAST	2: GNC 50 HORIZ SIT
3: BFS, GNC 50 HORIZ SIT	

HORIZ SIT CONFIG

ALTM – ITEM 9 +

		.		
--	--	---	--	--

	<u>PASS ITEM</u>	<u>BFS ITEM</u>	
PTI	INH	√1	
LAND SITE (DEL PAD)		√41	√41
RWY (DEL PAD)		√3	√3
		√4	√4
TACAN (DEL PAD)		√5	√5
RA	blank	√46	
TAEM TGT			
G&N	OVHD	√6	blank
HSI	blank		blank
XEP	NEP	√7	NEP √7
AIM (DEL PAD)	NOM	√8	NOM √8
	(or CLSE)		or (CLSE)
SPDBK	NOM	√39	
TAC	INH	√20	INH √20
GPS	INH	√43	INH √43
DRAG H	AUT	√22	AUT √22
ADTA H	INH	√26	INH √26
ADTA TO G&C	INH	√29	AUT √28
DES any failed TACANs		√	√
TAC	DELTA	√35	
AIF_G	INH	√48	

- * If BFS engaged: *
- * Set BFS HSD ITEMS to PASS config *

G51 SEL ATMOSPHERE:
 incl ≤ 50° ITEM 22 EXEC
 incl > 50° SEL ITEM NR (table)

Hemi	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
N Desc	23	23	23	23	22	24	24	24	22	23	23	23
S Asc	24	24	22	23	23	23	23	23	23	23	22	24
N Asc	22											
S Desc	22											

1: GNC DEORB MNVR COAST | 2: GNC 50 HORIZ SIT

3: GNC 51 OVERRIDE

- √ELEVON AUTO – ITEM 17 (*)
- √SSME REPOS – ITEM 19 (ENA)
- √WRAP MODE – ITEM 45 (ENA)
- If PLB holding > 10K lb:
 - FILTER ALT – ITEM 21 EXEC (*)

3: BFS, GNC 51 OVERRIDE

- √ELEVON AUTO – ITEM 17 (*)
- √SSME REPOS – ITEM 19 (ENA)
- √WRAP MODE – ITEM 45 (ENA)
- If PLB holding > 10K lb:
 - √FILTER ALT – ITEM 21 (*)

- * DES any failed/comm faulted *
- * IMU, RGA, AA, or SURF feedback *

2: GNC DEORB MNVR COAST

3: BFS, GNC DEORB MNVR COAST

- √BFS GMBL sel config same as PASS GMBL sel config

DEORBIT BURN CARDS

**BURN
CARDS**

MS ONLY

FS 3-15

ENT/120/FIN

DEORBIT BURN FLIGHT RULES
ONE-ORBIT LATE AVAILABLE ENT-1a/120/D/B

**BURN
CARDS**

FAILURE	PRE TIG		POST TIG
	Delay (max)		Stop Burn, > Safe HP
	One Orbit	One Day	
APU/HYD			
1 No APU operating .....	... X ...	.....
DPS			
2 RDNT fail, Split.....	.....	...X...	.....X
3 1 GPC.....	... X ...	.....
4 BFS .....	.....	...X...	
5 GPC BITE (Multiple GPCs) .....	.....	...X...	
ECLS			
6 2 Av Bay Fans in Bay 3.....	... X ...	.....
7 2 Av Bay Fans in Bay 1 or 2.....	.....	...X...	
ELEC			
8 H2 Manf or TK leak (not in depleted tk(s)).....	... X ...	.....
9 2 MN Buses.....	.....	...X...	.....X
10 CNTL CA1 (No BFS Engage in GPC 3/5).....	.....	...X...	
11 Multi Φ AC BUS (unshorted) .....	... X ...	.....
GNC			
12 1 MLS (if reqd), IMU, or TACAN (C-band not avail).....	... X ...	.....
13 IMU Dilemma.....	.....	...X...	.....X
14 RHC Dilemma .....	... X ...	.....
15 2 IMUs (Not targeting EDW/NOR) .....	.....	...X...	
16 2 ADTAs (Winds>80kts or Dynamic Wx) .....	... X ...	.....
HOOK VELCRO			HOOK VELCRO
17 2 FCS Channels (same surface) (Not targeting NOR/EDW) .....	... X ...	.....
18 2 AAs, RGAs (Not targeting EDW/NOR) .....	... X ...	.....
OMS			
19 Prplt Tank.....	... X ...	.....	.....X ①
20 Ignition (neither eng ignites).....	... X ...	.....
21 Both OMS Eng fail.....	.....	.....	.....X ②
22 Prplt Lk after LAST LOS.....	perigee adjust		
AFT RCS			
23 2 jets, same direction, same pod .....	... X ...	.....
24 Prplt Lk after LAST LOS.....	... X ...	.....
25 1 AFT RCS PROP TK fail .....	... X ...	.....
COMM			
26 MCC GO for DEORBIT not rcvd .....	.....	...X...	

① Stop Burn > OMS PRPLT FAIL HP (Ref: DEL PAD/BURN Card)
 ② Stop Burn > OMS ENG FAIL HP (Ref: DEL PAD/BURN Card)

DEORBIT BURN FLIGHT RULES
ONE-ORBIT LATE NOT AVAILABLE ENT-1b/120/D/B

FAILURE	PRE TIG	POST TIG
	Delay (max)	Stop Burn, > Safe HP
	One Day	
APU/HYD		
1 No APU operating .....	..... X	
DPS		
2 RDNT fail, Split.....	..... X .....	.....X
3 1 GPC.....	..... X	
4 BFS .....	..... X	
5 GPC BITE (Multiple GPCs).....	..... X	
ECLS		
6 2 Av Bay Fans in Bay 3.....	..... X	
7 2 Av Bay Fans in Bay 1 or 2.....	..... X	
ELEC		
8 H2 Manf or TK leak (not in depleted tk(s) .....	..... X	
9 2 MN Buses.....	..... X .....	.....X
10 CNTL CA1 (No BFS Engage in GPC 3/5).....	..... X	
11 Multi Φ AC BUS (unshorted).....	..... X	
GNC		
12 1 MLS (if reqd), IMU, or TACAN (C-band not avail).....	..... X	
13 IMU Dilemma.....	..... X .....	.....X
14 RHC Dilemma .....	..... X	
15 2 IMUs (Not targeting EDW/NOR).....	..... X	
16 2 ADTAs (Winds>80kts or Dynamic Wx).....	..... X	
HOOK VELCRO		HOOK VELCRO
17 2 FCS Channels (same surface) (Not targeting NOR/EDW).....	..... X	
18 2 AAs, RGAs (Not targeting EDW/NOR).....	..... X	
OMS		
19 Prplt Tank.....	..... X .....	.....X ①
20 Ignition (neither eng ignites).....	..... X	
21 Both OMS Eng fail.....	..... X .....	.....X ②
22 Prplt Lk after LAST LOS.....	perigee adjust	
AFT RCS		
23 2 jets, same direction, same pod .....	..... X	
24 Prplt Lk after LAST LOS.....	..... X	
25 1 AFT RCS PROP TK fail .....	..... X	
COMM		
26 MCC GO for DEORBIT not rcvd .....	..... X	

① Stop Burn > OMS PRPLT FAIL HP (Ref: DEL PAD/BURN Card)
 ② Stop Burn > OMS ENG FAIL HP (Ref: DEL PAD/BURN Card)

DEORBIT BURN MONITOR

OMS TEMP* FU IN P \geq <table border="1" style="display: inline-table; vertical-align: middle;"> <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 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/120/A,O,D,E/B

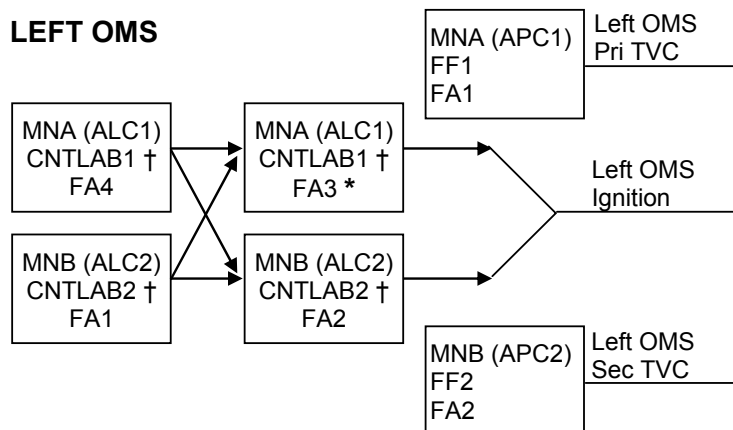
MS ONLY

FS 3-29

ENT/120/FIN 2

OMS FAILURES

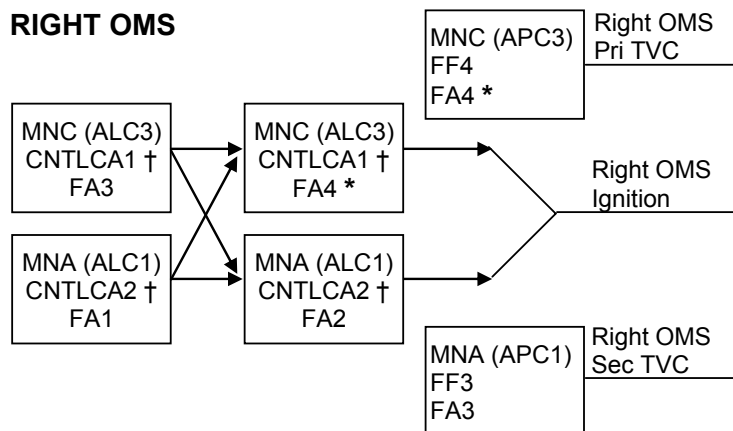
LEFT OMS



† 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) 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/120/A,O,D,E/A

MS ONLY

FS 3-30

ENT/120/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	4	8	12	REDES.	13	14	(15)	REDES.
* PREBANK	0	85	105	125	NOR ELS	140	155	180	YR
* NOR					IF NOR NOGO				
* <u>G50</u> ITEM 41+ 4 2, \sqrt RWY 17 SET TACAN tw (three) 121Y *									
* Δ HP		10	12	13	14	16	18	(19)	REDES.
* PREBANK		105	110	115	125	140	170	180	YR
* YR *									
* <u>G50</u> ITEM 41+ 2 2, \sqrt RWY 26 SET TACAN tw (three) 040X *									
* Δ HP					16	18	20	24	(26) 28
* PREBANK					75	85	95	125	145 180
* PREBANK TABLE KSC (HA = 187 NM) *									
* KSC *									
* Δ HP	0	3	5	7	9	11	13	(16)	REDES.
* PREBANK	0	70	90	105	110	120	135	180	YQX
* YQX *									
* <u>G50</u> ITEM 41+ 2 1, \sqrt RWY 21 SET TACAN tw (three) 074X *									
* Δ HP							17	22	(25) RED.
* PREBANK							100	135	170 INN
* INN *									
* <u>G50</u> ITEM 41+ 2 6, \sqrt RWY 06 SET TACAN tw (three) 080X *									
* Δ HP								26	28
* PREBANK								135	180

1200CFR1

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

FLIGHT CONDITIONS	MANEUVER			
V = 7K	G50 √TACAN and GPS, INCORPORATE * If ELS: UHF MODE – G T/R *			
V = 5K	ADTA PROBES – DEPLOY (√HEAT) Begin AIL and RUD trim monitoring			
M = 3.5	If previous OMS OX TK, He TK, or RCS OX TK leak: G51 VENT DOOR CNTL OPEN – ITEM 43 EXEC			
M = 2.7	√APUs HUD PWR (two) – ON			
* If M < 2.5; P CSS for ADTA to G&C incorp *				
M = 2.0	Ensure ADTA to G&C else √Theta limits			
M < 1.0	√R FLT CNTLR – ON P,R/Y – CSS as reqd √SPDBK CMD vs POS √NWS – 1 Lock Inertia Reels MAX Nz <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table>			
M = 0.7	√LG EXTD ISO VLV – OP			
h = 15K	√MLS			
h = 10K	√A/L (KSC – Tabs, Visors, Suit O2)			
h = 2K	LDG GEAR ARM pb – push (ARM It on)			
h = 300	LDG GEAR DN pb – push (DN It on)			
MAIN GEAR TD	√SPDBK – 100%			
V = 195 KEAS	DRAG CHUTE ARM, DPY pb (two) – push (simo) (All lts on)			
V = 185 KEAS	DEROTATE			
NOSE GEAR TD	SRB SEP – MAN/AUTO and depress pb √Auto Load Relief √HYD BK ISOL VLV (three) – OP			
MIDFIELD and V < 140 KGS	BRAKE as required (8-10 fps ² , -0.25 to -0.3G)			
* If 5K' remaining and V > 140 KGS – MAX BRAKING *				
V = 60 KGS	DRAG CHUTE JETT pb – push (JETT1, JETT2 It on)			
V = 40 KGS	BRAKE < 6 fps ² (-0.2G) (Antiskid cutout)			
WHEEL STOP	Go to ENT C/L, <u>POST LANDING PROCEDURES</u>			

ENT-6b/120/E/B
(Partial)



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MS ONLY

FS 4-6

ENT/120/FIN



DRAG CHUTE DEPLOY

MCC Call	Flight Condition
Early	Main Gear TD
NOMINAL	195 KEAS
Late	Post-Nose Gear TD Xwind DTO
Emergency Only	No Deploy Except CDR call
NO DEPLOY prior to MGTD > 230 KEAS < 80 KGS Xwind > 15 kts	

**ENTRY
MISC**

FAILED TIRE TECHNIQUE

Post-MGTD	P – AUTO
185 KEAS	Deploy drag chute
180 KEAS	√Auto derotation
NGTD	Max RHC roll away from failed tire

50K	/
38K	/
28K	/
20K	/
12K	/
7K	/
3K	/
1K	/
SURF	/

ENT-6b/120/E/B
(Partial)

MS ONLY

FS 4-7

ENT/120/FIN 1

ENTRY
MISC

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MS ONLY

FS 4-8

ENT/120/FIN

ENTRY ALPHA

VR	α_{ref}	R	H	Href	Rref
25	40	4416	400		
24	HI 40	LO 2600	247	-47	L79
23	43 40 37	2137	239	-64	69
22	43 40 37	1778	233	-84	63
21	43 40 37	1503	227	-107	61
20	43 40 37	1285	220	-124	60
19	43 40 37	1110	213	-148	60
18	43 40 37	974	209	-171	R60
17	43 40 37	860	200	-189	62
16	43 40 37	768	194	-198	64

KSC 15

MAX L/D	
M	α
3	17
2	15
1	12

ASC-14b/120/A,E/A

120 OCFR1 CY

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

15	43 40 37	685	187	-118	64
14	43 40 37	612	183	-127	62
13	43 40 37	544	180	-137	60
12	43 40 37	482	175	-153	59
11	42 39 36	425	170	-195	57
10	41 38 35	375	166	-173	L51
9	39 36 33	326	161	-207	44
8	37 34 31	277	153	-239	41
7	33 30 27	229	144	-267	40
6	30 27 24	184	132	-272	41
5	26 23 20	143	120	-274	43
4	22 19 18	107	107	-263	R38
3	19 16 15	74	91	-247	34
2.5	14	61	83	-255	
2	13	51	78	-253	
1.5	10	39	69	-308	
1	8	29	55	-258	

HOOK VELCRO

MS ONLY

FS 4-9

ENT/120/FIN 1



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MS ONLY

FS 4-10

ENT/120/FIN



1:	2:
3:	

POST LANDING PAYLOAD ACTIVITIES

N/A



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CUE CARD
CONFIG

ENTRY CUE CARD CONFIG

FAB USE ONLY

FS 8-1

ENT/120/FIN

DEORBIT BURN FLIGHT RULES
ONE-ORBIT LATE AVAILABLE ENT-1a/120/D/B

FAILURE	PRE TIG		POST TIG
	Delay (max)		Stop Burn, > Safe HP
	One Orbit	One Day	
APU/HYD			
1 No APU operating .....	... X ...	.....
DPS			
2 RDNT fail, Split.....	.....	...X...	.....X
3 1 GPC.....	... X ...	.....
4 BFS .....	.....	...X...	
5 GPC BITE (Multiple GPCs).....	.....	...X...	
ECLS			
6 2 Av Bay Fans in Bay 3.....	... X ...	.....
7 2 Av Bay Fans in Bay 1 or 2.....	.....	...X...	
ELEC			
8 H2 Manf or TK leak (not in depleted tk(s)).....	... X ...	.....
9 2 MN Buses.....	.....	...X...	.....X
10 CNTL CA1 (No BFS Engage in GPC 3/5).....	.....	...X...	
11 Multi Φ AC BUS (unshorted).....	... X ...	.....
GNC			
12 1 MLS (if reqd), IMU, or TACAN (C-band not avail).....	... X ...	.....
13 IMU Dilemma.....	.....	...X...	.....X
14 RHC Dilemma .....	... X ...	.....
15 2 IMUs (Not targeting EDW/NOR) .....	.....	...X...	
16 2 ADTAs (Winds>80kts or Dynamic Wx).....	... X ...	.....
HOOK VELCRO			HOOK VELCRO
17 2 FCS Channels (same surface) (Not targeting NOR/EDW) .....	... X ...	.....
18 2 AAs, RGAs (Not targeting EDW/NOR) .....	... X ...	.....
OMS			
19 Prplt Tank.....	... X ...	.....	.....X ①
20 Ignition (neither eng ignites).....	... X ...	.....
21 Both OMS Eng fail.....	.....	.....	.....X ②
22 Prplt Lk after LAST LOS.....	perigee adjust		
AFT RCS			
23 2 jets, same direction, same pod .....	... X ...	.....
24 Prplt Lk after LAST LOS.....	... X ...	.....
25 1 AFT RCS PROP TK fail .....	... X ...	.....
COMM			
26 MCC GO for DEORBIT not rcvd .....	.....	...X...	

① Stop Burn > OMS PRPLT FAIL HP (Ref: DEL PAD/BURN Card)

② Stop Burn > OMS ENG FAIL HP (Ref: DEL PAD/BURN Card)

(reduced copy)

TOP
BACK OF 'DEORBIT BURN FLIGHT RULES'

DEORBIT BURN FLIGHT RULES
ONE-ORBIT LATE NOT AVAILABLE ENT-1b/120/D/B

FAILURE	PRE TIG	POST TIG
	Delay (max)	Stop Burn, > Safe HP
	One Day	
APU/HYD		
1 No APU operating .....	..... X	
DPS		
2 RDNT fail, Split.....	..... X .....	.....X
3 1 GPC.....		
4 BFS .....	..... X	
5 GPC BITE (Multiple GPCs).....	..... X	
ECLS		
6 2 Av Bay Fans in Bay 3.....		
7 2 Av Bay Fans in Bay 1 or 2.....	..... X	
ELEC		
8 H2 Manf or TK leak (not in depleted tk(s).....)	..... X	
9 2 MN Buses.....	..... X .....	.....X
10 CNTL CA1 (No BFS Engage in GPC 3/5).....	..... X	
11 Multi Φ AC BUS (unshorted).....		
GNC		
12 1 MLS (if reqd), IMU, or TACAN (C-band not avail).....	..... X	
13 IMU Dilemma.....	..... X .....	.....X
14 RHC Dilemma .....	..... X	
15 2 IMUs (Not targeting EDW/NOR).....	..... X	
16 2 ADTAs (Winds>80kts or Dynamic Wx).....	..... X	
HOOK VELCRO		
17 2 FCS Channels (same surface) (Not targeting NOR/EDW).....	..... X	
18 2 AAs, RGAs (Not targeting EDW/NOR).....	..... X	
OMS		
19 Prplt Tank.....	..... X .....	.....X ①
20 Ignition (neither eng ignites).....	..... X	
21 Both OMS Eng fail.....		.....X ②
22 Prplt Lk after LAST LOS.....	perigee adjust	
AFT RCS		
23 2 jets, same direction, same pod .....	..... X	
24 Prplt Lk after LAST LOS.....	..... X	
25 1 AFT RCS PROP TK fail .....	..... X	
COMM		
26 MCC GO for DEORBIT not rcvd .....	..... X	

① Stop Burn > OMS PRPLT FAIL HP (Ref: DEL PAD/BURN Card)

② Stop Burn > OMS ENG FAIL HP (Ref: DEL PAD/BURN Card)

(reduced copy)

FAB USE ONLY

FS CC 8-3

ENT/120/FIN 1

TOP

HOOK
VELCRO

DEORBIT
BURN
(RCS)

HOOK
VELCRO

√MM302 √RCS SEL
√RCS BURN CONFIG (L OMS I'CNCT)
L,R OMS He PRESS/VAP ISOL A (two) – OP
..... Wait 2 sec B (two) – OP
√DAP – INRTL/DISC
ADI – LVLH(REF)/MED/MED
FLT CNTLR PWR (two) – ON

TIG THC +X (No Deorbit > TIG + :)
Maintain PITCH ATT ERR ± 3°
Monitor ΔVTOT:
RCS I'CNCT TK SW at ΔVTOT =
R OMS XFEED (two) – OP
L OMS XFEED (two) – CL

OMS PRPLT LOW
AFT RCS RECONFIG AT ΔVTOT =
RCS COMPLETION

*** OMS PRPLT FAIL (MULTIPLE JETS FAIL OFF):**

*	Secure aff OMS				*
*					*
*					*
*	SAFE	<input type="text"/>		STOP BURN:	*
*	HP			APUs – SHUT DN	*
*				-----	*
*				CONTINUE BURN:	*
*				ITEM 18 +0 EXEC	*
*				<input type="text"/> Resel jets	*
*				Interconnect good OMS to RCS	*
*				THC +X (√OMS% vs RCS Burn Time)	*
*				AFT RCS RECONFIG	*
*				RCS COMPLETION	*
*					*
*				RCS +X JET FAIL OFF:	*
*				STOP BURN:	*
*	SAFE	<input type="text"/>		APUs – SHUT DN	*
*	HP			-----	*
*				CONTINUE BURN:	*
*				ITEM 18 +0 EXEC	*
*				<input type="text"/> Resel jets	*
*					*

ENT-3a/D/L

HINGE

(reduced copy)

FAB USE ONLY

FS CC 8-4

ENT/120/FIN

TOP
BACK OF 'ENTRY MANEUVERS'

	FLIGHT CONDITIONS	MANEUVER	
HOOK VELCRO	V = 7K	[G50] √TACAN and GPS, INCORPORATE * If ELS: UHF MODE – G T/R *	HOOK VELCRO
	V = 5K	ADTA PROBES – DEPLOY (√HEAT) Begin ALL and RUD trim monitoring	
	M = 3.5	If previous OMS OX TK, He TK, or RCS OX TK leak: [G51] VENT DOOR CNTL OPEN – ITEM 43 EXEC	
	M = 2.7	√APUs HUD PWR (two) – ON * If M < 2.5: P CSS for ADTA to G&C incorp *	
	M = 2.0	Ensure ADTA to G&C else √Theta limits	
	M < 1.0	√R FLT CNTLR – ON P,R/Y – CSS as reqd √SPDBK CMD vs POS MAX Nz <input type="text"/> . <input type="text"/> √NWS – 1 Lock Inertia Reels	
	M = 0.7	√LG EXT ISO VLV – OP	
	h = 15K	√MLS	
	h = 10K	√AL (KSC – Tabs, Visors, Suit O2)	
	h = 2K	LDG GEAR ARM pb – push (ARM It on)	
	h = 300	LDG GEAR DN pb – push (DN It on)	
	MAIN GEAR TD	√SPDBK – 100%	
	V = 195 KEAS	DRAG CHUTE ARM, DPY pb (two) – push (simo) (All Its on)	
	V = 185 KEAS	DEROTATE	
	NOSE GEAR TD	SRB SEP – MAN/AUTO and depress pb √Auto Load Relief √HYD BK ISOL VLV (three) – OP	
MIDFIELD and V < 140 KGS	BRAKE as required (8-10 fps ² , -0.25 to -0.3G) * If 5K' remaining and V > 140 KGS – MAX BRAKING *		
V = 60 KGS	DRAG CHUTE JETT pb – push (JETT1, JETT2 It on)		
V = 40 KGS	BRAKE < 6 fps ² (-0.2G) (Antiskid cutout)		
WHEEL STOP	Go to ENT C/L, <u>POST LANDING PROCEDURES</u>		

DRAG CHUTE DEPLOY	
MCC Call	Flight Condition
Early	Main Gear TD
NOMINAL	195 KEAS
Late	Post-Nose Gear TD Xwind DTO
Emergency Only	No Deploy Except CDR call
NO DEPLOY prior to MGTD > 230 KEAS < 80 KGS Xwind > 15 kts	

FAILED TIRE TECHNIQUE	
Post-MGTD	P – AUTO
185 KEAS	Deploy drag chute
180 KEAS	√Auto derotation
NGTD	Max RHC roll away from failed tire

50K	/
38K	/
28K	/
20K	/
12K	/
7K	/
3K	/
1K	/
SURF	/

ENT-6b/120/E/B

(reduced copy)

FAB USE ONLY

FS CC 8-17

ENT/120/FIN 1

TOP

HOOK
VELCRO

HOOK
VELCRO

ENTRY NO-GO CHECKLIST

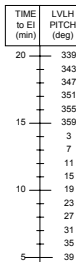
FAILURE OF:	AERO FTI DTO	AUTO FCS MODE	XWIND DTC ①
APU/HYD: 1 APU.....			X
2 APUs.....	X		X
DISPLAYS: 2 ADIs.....	X		
CDR HUD.....			X ②
CONTROLLERS:			
RHC: 1L.....			X
2L & 2R.....	X		X
RPTA: 2L or 2R.....	X		X
SNC: 2 AAs (LAT).....	X	X ③	X
2 RAs.....	X		X
2 AAs (NORM).....	X (M < 2.5)	X ③	X
2 R DDU PWR SPLY.....			X
2 IMU (or 1 IMU + BITE).....	X		X
2 ADTAs.....			X
ADTA NOT INCORP OR DLMA.....	X (M < 2)		X
MLS NOT INCORP.....	X (< 6K ft)		X
DPS: 2 FCS CH (same surface).....	X		X ④
1 GPC (not restrung).....			X ④
2 GPC (restrung).....	X	X ④	X ④
2 GPC (not restrung).....	X	X ④	X ④
1 FF.....	X	X ④	X
2 FF.....	X	X ④	X
2 FA.....	X	X	X
RCS: LEAK (AFT - during ENT).....	X		X
2 YAW JETs (same side).....	X		X
MIN RCS QTY.....	X		X
TRIM: All > ± 2.0 deg.....	X		X
DOWNMODE:			
FCS problem.....	X	X	X
ADA.....	X		X
PLB: PLBD Latch Gang.....	X		X
LDC/DECEL:			
Tire Leak.....			X
HYD BRAKE ISOL VLV.....			X
< 100% Brakes.....			X
NWS.....			X
ENERGY - OFF NOMINAL:			
Rot Ref Alert.....	X		X
Above Upper Traj Line.....	X		X
MCC GCA, or VEL & PSN update.....	X	X	X
No AL by 6K ft.....	X		X
DATA: SOLID STATE RECORDERS... X (LOS)			
XWIND:			
< 10 Knots Peak.....			X
> 15 Knots Peak.....			X
> 10 Knots Gust.....			X
GROUND SYSTEMS:			
No Runway Aim Point.....			X

HOOK
VELCRO

HOOK
VELCRO

HOOK
VELCRO

HOOK
VELCRO



- NOTES**
- ① Consider runway redesignation (M > 6) to avoid Xwind landing
 - ② GO if PAPI and BALL BAR available
 - ③ Pitch AUTO mode NO-GO for M < 2.5
 - ④ GO if only string 4 affected

ENT-7a/E/K

(reduced copy)

FAB USE ONLY

FS CC 8-18

ENT/120/FIN

TOP

HOOK
VELCRO

HOOK
VELCRO

**DEORBIT
BURN
MONITOR**

OMS TEMP* FU IN P	<table border="1"> <tr> <td></td> <td>L</td> <td>R</td> </tr> <tr> <td>≥</td> <td>225</td> <td>220</td> </tr> <tr> <td>≤</td> <td>205</td> <td>204</td> </tr> </table>		L	R	≥	225	220	≤	205	204	OMS ENG FAIL ----- OMS PRPLT FAIL
	L	R									
≥	225	220									
≤	205	204									
or No FU IN P											
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		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									
OX & FU HIGH		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	aff GPC PWR – OFF If SEC GMBL avail: aff MDM FF 1(4) – OFF,ON L(R) OMS GMBL – SEC (twice)									
SEC GMBL lost 2 FAs lost		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 <input type="checkbox"/> 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/120/A,O,D,E/B

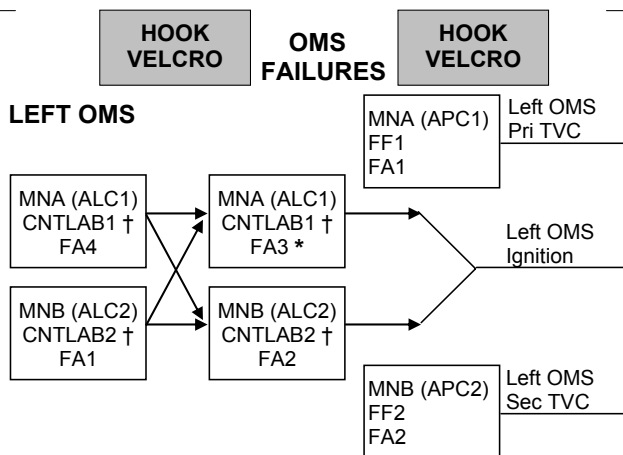
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FAB USE ONLY

FS CC 8-23

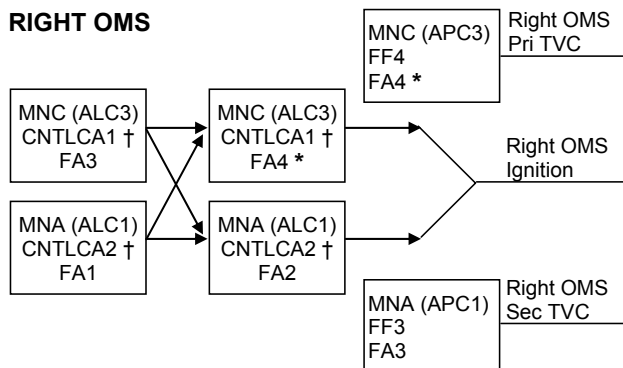
ENT/120/FIN 2

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) 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/120/A,O,D,E/A

(reduced copy)

FAB USE ONLY

FS CC 8-24

ENT/120/FIN

Space Shuttle Program
FLIGHT DATA FILE

JSC-48020-120
FINAL



ENTRY CHECKLIST

STS
120

Flight Cover (trim bottom to expose tabs)