

Entry Checklist

STS-125 Flight Supplement

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

**Final
March 7, 2008**

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas



ENTRY C/L, STS-125 FLT SUPPL

FINAL (March 7, 2008)

PCN-1 (Apr 16, 2008) Sheet 1 of 1

List of Implemented Change Requests (482s):

MULTI-1816

Incorporate the following:

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

Prepared by:


Book Manager
Lead, Entry GPO *SH*

Approved by:


Chief, Ascent/Descent Dynamics Branch

Encl: 10 pages

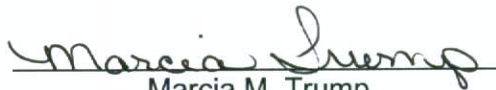
File this PCN immediately behind the front cover as a permanent record

MISSION OPERATIONS DIRECTORATE

**ENTRY CHECKLIST
STS-125 FLIGHT SUPPLEMENT**

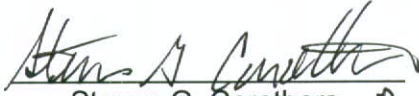
FINAL
March 7, 2008

PREPARED BY:



Marcia M. Trump
Book Manager

APPROVED BY:



Steven G. Carothers *P.*
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-125 FLIGHT SUPPLEMENT

LIST OF EFFECTIVE PAGES

FINAL 03/07/08
PCN-1 04/16/08

| | | | |
|------------------|-------------|---------------|---------|
| Sign Off | * generic | FS 3-8 | 125/FIN |
| ii..... | * generic | 3-9..... | generic |
| Sign Off | * 125/FIN | 3-10..... | generic |
| FS iv | * 125/FIN | 3-11 | generic |
| v | * generic | 3-12..... | generic |
| vi..... | * generic | 3-13..... | generic |
| vii..... | * generic | 3-14..... | generic |
| viii..... | * generic | FS 3-15 | 125/FIN |
| ix..... | * generic | FS 3-16 | 125/FIN |
| x | * generic | FS 3-17 | 125/FIN |
| FS xi..... | * 125/FIN 1 | FS 3-18 | 125/FIN |
| FS xii..... | * 125/FIN 1 | 3-19..... | generic |
| FS xiii | * 125/FIN 1 | 3-20..... | generic |
| FS xiv | * 125/FIN | 3-21 | generic |
| xv..... | generic | 3-22..... | generic |
| xvi..... | generic | 3-23..... | generic |
| 1-1 (3 pgs)..... | † generic | 3-24..... | generic |
| 1-2 (3 pgs)..... | † generic | 3-25..... | generic |
| 2-1 | generic | 3-26..... | generic |
| 2-2 (6 pgs)..... | † generic | 3-27 | generic |
| 2-3 (6 pgs)..... | † generic | 3-28..... | generic |
| 2-4 | generic | FS 3-29 | 125/FIN |
| FS 2-5 | 125/FIN | FS 3-30 | 125/FIN |
| FS 2-6 | 125/FIN | 3-31 | generic |
| FS 3-1 | 125/FIN | 3-32..... | generic |
| FS 3-2 | 125/FIN | FS 3-33 | 125/FIN |
| FS 3-3 | 125/FIN | FS 3-34 | 125/FIN |
| FS 3-4 | 125/FIN | 3-35..... | generic |
| 3-5..... | generic | 3-36..... | generic |
| 3-6..... | generic | 3-37..... | generic |
| FS 3-7 | 125/FIN | 3-38..... | generic |

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

| | | | |
|--------------|-----------|------------------|-----------|
| 3-39..... | generic | 5-22..... | generic |
| 3-40..... | generic | 5-23..... | generic |
| 3-41..... | generic | 5-24..... | generic |
| 3-42..... | generic | 6-1..... | generic |
| 3-43..... | generic | 6-2..... | generic |
| 3-44..... | generic | 6-3..... | generic |
| 4-1..... | generic | 6-4..... | generic |
| 4-2..... | generic | 7-1.....* | generic |
| 4-3..... | generic | 7-2.....* | generic |
| 4-4..... | generic | FS 8-1.....* | 125/FIN |
| FS 4-5..... | 125/FIN 1 | FS CC 8-2.....* | 125/FIN |
| FS 4-6..... | 125/FIN | FS CC 8-3.....* | 125/FIN |
| FS 4-7..... | 125/FIN 1 | FS CC 8-4.....* | 125/FIN |
| FS 4-8..... | 125/FIN | CC 8-5.....* | generic |
| FS 4-9..... | 125/FIN | CC 8-6.....* | generic |
| FS 4-10..... | 125/FIN | CC 8-7.....* | generic |
| 4-11..... | generic | CC 8-8.....* | generic |
| 4-12..... | 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 | FS CC 8-17.....* | 125/FIN 1 |
| 5-9..... | generic | FS CC 8-18.....* | 125/FIN |
| 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.....* | 125/FIN |
| 5-15..... | generic | FS CC 8-24.....* | 125/FIN |
| 5-16..... | generic | | |
| 5-17..... | generic | | |
| 5-18..... | generic | | |
| FS 5-19..... | 125/FIN | | |
| FS 5-20..... | 125/FIN | | |
| 5-21..... | 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/125/D/A |
| (Back)..... | FS CC 8-3 | ENT-1b/125/D/A |
| 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/125/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/125/A,O,D,E/A |
| OMS FAILURES (Back).... | FS CC 8-24 | ENT-2b/125/A,O,D,E/A |



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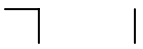


OMS/
RCS ΔV

OMS/RCS ΔV

FS 2-5

ENT/125/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 | 3270 | 252 | 209 | 7:20 |
| 40 | 2870 | 197 | 164 | 5:44 |
| 38 | 2790 | 186 | 155 | 5:24 |
| 36 | 2710 | 175 | 146 | 5:05 |
| 34 | 2630 | 164 | 137 | 4:46 |
| 32 | 2550 | 153 | 128 | 4:27 |
| 30 | 2470 | 142 | 118 | 4:08 |
| 28 | 2390 | 131 | 109 | 3:48 |
| 26 | 2310 | 120 | 100 | 3:29 |
| 24 | 2230 | 108 | 91 | 3:10 |
| 22 | 2150 | 97 | 82 | 2:51 |
| 20 | 2070 | 86 | 73 | 2:32 |
| 18 | 1990 | 75 | 63 | 2:13 |
| 16 | 1910 | 64 | 54 | 1:53 |
| 14 | 1830 | 53 | 44 | 1:33 |
| 12 | 1750 | 41 | 35 | 1:13 |
| 10 | 1670 | 30 | 25 | 0:54 |
| 8 | 1590 | 19 | 16 | 0:34 |
| 6 | 1510 | 8 | 6 | 0:14 |
| 5 | 1470 | 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 237,968 lb



DEORBIT BURN

DEORBIT
BURN



FS 3-1

ENT/125/FIN

**STS-125 LANDING SITE TABLE
(28.45° to 49.9° 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 | BANJUL INT'L | BYD 32 BYD 14 | BJ 76 ■ | YF 78 ■ | - - | 11820 11820 | 1000 1000 |
| 6 | BERMUDA | BDA 30 BDA 12 | BDA 86 ■ | BDA 86 ■ | - - | 9210 9210 | 0 0 |
| 7 | AMILCAR CABRAL | AML 01 AML 19 | CVS 100 ■ | CVS 100 ■ | - - | 9350 9350 | 0 0 |
| 8 | LAS PALMAS | GDV 03L GDV 21R | TGN 103 | LPC 97 ■ | - - | 9670 9670 | 0 0 |
| 9 | LAJES | LAJ 15 LAJ 33 | TRM 109 | LAJ 45 | - - | 10870 10870 | 970 990 |
| 10 | BEJA | BEJ 01L BEJ 19R | MOJ 37 | BEJ 105 | - - | 10820 10820 | 0 900 |
| 11 | ISTRES AB | FMI 33 FMI 15 | ◆ FMI 16 | NIM 53 | ◆6 - | 11300 12300 | 3960 0 |
| 12 | WILMINGTON INT'L | ILM 06 ILM 24 | ILM 117 | DIW 107 ■ | - - | 7500 7500 | 0 0 |
| 13 | *MORON AB | MRN 20 MRN 02 | MRN 100 | AOG 23 | ◆6 - | 11730 11730 | 1000 1000 |
| 14 | CHERRY POINT | NKT 32L NKT 23R | EWN 83 ■ | NCA 101 | - - | 7110 7100 | 800 880 |
| 15 | MATAVERI INT'L | EIP 10 EIP 28 | IPA 118 ■ | IPA 118 ■ | - - | 10390 10390 | 0 0 |

◆ Available for TAL Only

■ DME

* LO XRNG TAL Site

Length after displaced threshold

**STS-125 LANDING SITE TABLE
(28.45° to 49.9° INCLINATION)**

| S I T E | LOCATION | RWY | TACANS | | MLS CH | LG | + OVR RUN |
|------------------|--------------|--------------------|----------|-----------|-----------|----------------|-----------------|
| | | | | ITEM 5 | | | |
| 16 | MONROVIA | LRB 04 LRB 22 | ROB 85 ■ | ROB 85 ■ | - - | 9300 9300 | 0 0 |
| 17 | NDJILI INT'L | KIN 24 KIN 06 | KSA 97 ■ | BZ 78 ■ | - - | 14920 14920 | 0 0 |
| 18 | HOEDSPRUIT | AHS 18 AHS 36 | HSV 87 | NSV 109 ■ | - - | 13100 13100 | 980 1740 |
| 19 | TAMANRASSET | AAT 02 AAT 20 | TMS 72 ■ | TMS 72 ■ | - - | 11310 11310 | 0 0 |
| 20 | SOUDA | GSA 29 GSA 11 | PLH 93 ■ | RKL 20 | - - | 10490 10490 | 0 0 |
| 21 | KING KHALID | KKI 15R KKI 33L | RIY 92 | KIA 80 | - - | 13300 13300 | 0 0 |
| 22 | DIEGO GARCIA | JDG 31 JDG 13 | NKW 57 | NKW 57 | - - | 12000 12000 | 950 950 |
| 23 | PEARCE | PEA 18L PEA 36R | PEA 75 | PH 84 ■ | - - | 7500 7500 | 0 0 |
| 24 | TINDAL RAAF | PTN 14 PTN 32 | TDL 70 | TDL 70 | - - | 8500 8500 | 0 0 |
| 25 | AMBERLEY | AMB 15 AMB 33 | AMB 94 | BN 79 ■ | - - | 9500 9500 | 0 0 |
| 26 | YOKOTA AB | JTY 36 JTY 18 | SHT 19 | NJA 98 | - - | 11000 11000 | 1000 1000 |
| 27 | ANDERSEN AFB | GUA 06L GUA 24R | UAM 54 | UNZ 105 | - - | 10560 10560 | 1050 1000 |
| 28 | WAKE ISLAND | WAK 28 WAK 10 | AWK 82 | AWK 82 | - - | 9360 9360 | 0 0 |
| 29 | HONOLULU | HNL 08R HNL 26L | HNL 95 | NGF 93 | - - | 11500 11500 | 0 0 |
| 30 | HAO ATOLL | HAO 12 HAO 30 | HAO 85 ■ | HAO 85 ■ | - - | 10390 10390 | 0 0 |

■ DME
Length after displaced threshold

**STS-125 LANDING SITE TABLE
(28.45° to 49.9° INCLINATION)**

| SITE | LOCATION | RWY | TACANS | | MLS CH | LG | + OVR RUN |
|------|---------------|--------------------|----------|----------|-----------|----------------|-----------------|
| | | | | ITEM 5 | | | |
| 31 | ASCENSION | HAW 13 HAW 31 | ASI 59 | ASI 59 | - - | 9520 9520 | 0 0 |
| 32 | ESENBOGA | ESN 03R ESN 21L | BAG 78 ■ | BUK 90 ■ | - - | 11800 11800 | 0 0 |
| 33 | NASSAU | YNN 14 YNN 32 | NCZ 74Y | ZQA 74 ■ | - - | 10520 10520 | 0 0 |
| 34 | SKID STRIP | PMR 13 PMR 31 | TTS 59Y | COF 97 | - - | 9500 9500 | 0 0 |
| 35 | ORLANDO INT'L | MCO 18R MCO 36L | TTS 59Y | COF 97 | - - | 11500 12000 | 700 200 |
| 36 | CECIL FIELD | NZC 18L NZC 36R | CRG 92 | SGJ 31 ■ | - - | 12000 12000 | 0 0 |
| 37 | MACDILL AFB | MCF 04 MCF 22 | PIE 111 | MCF 47 | - - | 10920 10920 | 0 0 |
| 38 | CHINA LAKE | NID 03 NID 21 | NID 53 | EDW 111 | - - | 9490 9490 | 0 0 |
| 39 | VANDENBERG | VBG 12 VBG 30 | VBG 59Y | MQO 71 | - - | 14500 14500 | 0 0 |
| 40 | EDW TEMP | EDT 22R EDT 04L | EDW 111 | LHS 21 | 8 6 | 12000 12000 | 1000 1000 |
| 41 | NORTHROP | NOR 17 NOR 23 | SNG 121Y | HMN 92 | 6 6 | 15000 15000 | Lkbd Lkbd |
| 42 | NORTHROP | NOR 05 NOR 35 | SNG 121Y | HMN 92 | - - | 15000 15000 | Lkbd Lkbd |
| 43 | EDWARDS AFB | EDW 15 EDW 33 | EDW 111 | LHS 21 | - - | 16300 16300 | Lkbd Lkbd |
| 44 | EDWARDS AFB | EDW 18L EDW 18L | EDW 111 | LHS 21 | - - | 15000 15000 | Lkbd Lkbd |
| 45 | EDWARDS AFB | EDW 22 EDW 04 | EDW 111 | LHS 21 | 8/† 6 | 15010 14010 | 0 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/125/FIN



DEORBIT BURN FLIGHT RULES
ONE-ORBIT LATE AVAILABLE ENT-1a/125/D/A

**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/125/D/A

| 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="width: 20px; text-align: center;">L</td> <td style="width: 20px; text-align: center;">R</td> </tr> <tr> <td style="text-align: center;">230</td> <td style="text-align: center;">230</td> </tr> <tr> <td style="text-align: center;">\leq</td> <td style="text-align: center;">212</td> </tr> </table> or No FU IN P | L | R | 230 | 230 | \leq | 212 | | OMS ENG FAIL ----- OMS PRPLT FAIL |
| L | R | | | | | | | |
| 230 | 230 | | | | | | | |
| \leq | 212 | | | | | | | |
| 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 | ABOVE SAFE HP \Rightarrow <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 20px; height: 15px;"></td> <td style="width: 20px; height: 15px;"></td> </tr> </table> ----- BELOW SAFE HP \Rightarrow | | | 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/125/A,O,D,E/A

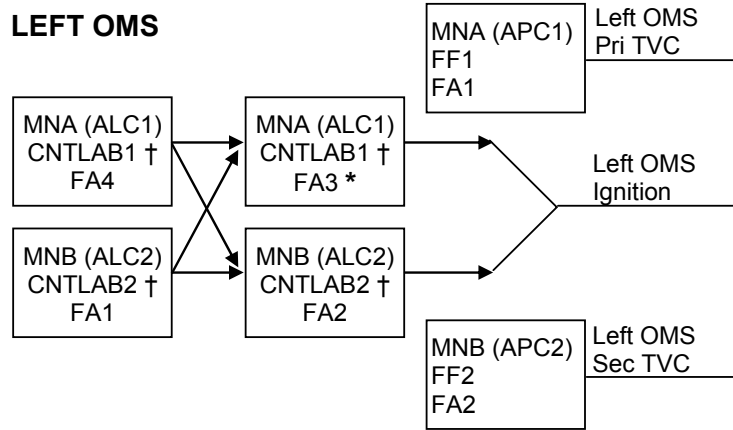
MS ONLY

FS 3-29

ENT/125/FIN

OMS FAILURES

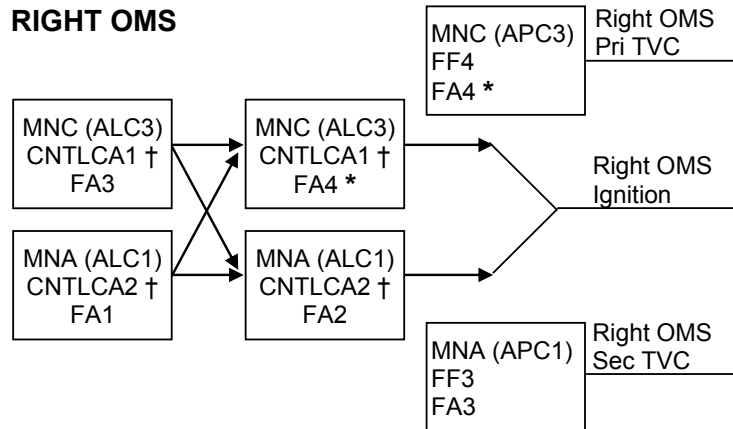
LEFT OMS



† 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/125/A,O,D,E/A

MS ONLY

FS 3-30

ENT/125/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 = 302 NM) * | | | | | | | | | | | |
| * EDW * | | | | | | | | | | | |
| Δ HP | 0 | 3 | 7 | 10 | REDES. | 11 | 12 | (13) | REDES. | | |
| PREBANK | 0 | 75 | 110 | 135 | NOR ELS | 145 | 160 | 180 | KSC | | |
| * NOR * | | | | | | IF NOR NOGO | | | | | |
| * <u>G50</u> ITEM 41 +4 1, \sqrt RWY 17 SET TACAN tw (three) 121Y * | | | | | | | | | | | |
| Δ HP | | | | 8 | 9 | 11 | 13 | 14 | 15 | (16) | REDES. |
| PREBANK | | | | 95 | 105 | 120 | 140 | 150 | 165 | 180 | KSC |
| * KSC * | | | | | | | | | | | |
| * <u>G50</u> ITEM 41 +0 1, \sqrt RWY 15 SET TACAN tw (three) 59Y * | | | | | | | | | | | |
| Δ HP | | | | | 14 | 17 | 18 | 19 | 20 | (21) | |
| PREBANK | | | | | 100 | 130 | 140 | 155 | 170 | 180 | |
| * PREBANK TABLE KSC (HA = 302 NM) * | | | | | | | | | | | |
| * KSC * | | | | | | | | | | | |
| Δ HP | 0 | 2 | 4 | 6 | 8 | 10 | 12 | (13) | REDES. | | |
| PREBANK | 0 | 55 | 90 | 105 | 120 | 130 | 155 | 175 | BDA | | |
| * BDA * | | | | | | | | | | | |
| * <u>G50</u> ITEM 41 +0 6, \sqrt RWY 30 SET TACAN tw (three) 86X * | | | | | | | | | | | |
| Δ HP | | | | | | | 14 | 16 | (18) | RED. | |
| PREBANK | | | | | | | 125 | 150 | 180 | AML | |
| * AML * | | | | | | | | | | | |
| * <u>G50</u> ITEM 41 +0 Z, \sqrt RWY 01 SET TACAN tw (three) 100X * | | | | | | | | | | | |
| Δ HP | | | | | | | | | 19 | 22 | |
| PREBANK | | | | | | | | | 115 | 180 | |

125 oct

| | |
|------------------------|------------------------|
| 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 MAX N _z <input type="text"/> . <input type="text"/> √NWS – 1 Lock Inertia Reels |
| 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 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 |
| V < 120 KGS or 5K' remaining | 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/125/E/B
(Partial)

MS ONLY

FS 4-5

ENT/125/FIN 1



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MS ONLY

FS 4-6

ENT/125/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 | |

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/125/E/B
(Partial)

ENTRY
MISC

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MS ONLY

FS 4-8

ENT/125/FIN

ENTRY ALPHA

| VR | α ref | R | H | Href | Rref |
|----|--------------|------|-----|------|------|
| 25 | HI 40 LO | 4321 | 400 | | |
| 24 | HI 40 LO | 2741 | 247 | -43 | R85 |
| 23 | 43 40 37 | 2235 | 238 | -60 | 74 |
| 22 | 43 40 37 | 1863 | 232 | -78 | 68 |
| 21 | 43 40 37 | 1564 | 225 | -99 | L63 |
| 20 | 43 40 37 | 1331 | 220 | -115 | 61 |
| 19 | 43 40 37 | 1145 | 212 | -136 | 62 |
| 18 | 43 40 37 | 996 | 205 | -158 | 62 |
| 17 | 43 40 37 | 871 | 199 | -176 | 63 |
| 16 | 43 40 37 | 773 | 192 | -186 | 64 |

KSC 15

| MAX L/D | |
|---------|----------|
| M | α |
| 3 | 17 |
| 2 | 15 |
| 1 | 12 |

(125 OCF CY)

HOOK
VELCRO

ASC-14b/125/A,E/A

HOOK
VELCRO

HOOK
VELCRO

| | | | | | |
|-----|----------|-----|-----|------|-----|
| 15 | 43 40 37 | 685 | 186 | -201 | 65 |
| 14 | 43 40 37 | 612 | 181 | -127 | 63 |
| 13 | 43 40 37 | 545 | 177 | -137 | 61 |
| 12 | 43 40 37 | 482 | 173 | -153 | 59 |
| 11 | 42 39 36 | 426 | 167 | -194 | R57 |
| 10 | 41 38 35 | 376 | 164 | -172 | 49 |
| 9 | 39 36 33 | 325 | 158 | -207 | 44 |
| 8 | 37 34 31 | 278 | 151 | -237 | 41 |
| 7 | 33 30 27 | 230 | 141 | -267 | 39 |
| 6 | 30 27 24 | 183 | 130 | -272 | 41 |
| 5 | 26 23 20 | 142 | 117 | -273 | 42 |
| 4 | 23 20 18 | 107 | 105 | -263 | L39 |
| 3 | 19 16 15 | 74 | 89 | -248 | 38 |
| 2.5 | 14 | 60 | 82 | -202 | |
| 2 | 12 | 49 | 76 | -285 | |
| 1.5 | 9 | 37 | 64 | -333 | |
| 1 | 8 | 28 | 50 | -262 | |

HOOK VELCRO

MS ONLY

FS 4-9

ENT/125/FIN



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MS ONLY

FS 4-10

ENT/125/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/125/FIN

DEORBIT BURN FLIGHT RULES
ONE-ORBIT LATE AVAILABLE ENT-1a/125/D/A

| 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/125/D/A

| 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/125/FIN

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 | * |
| * | | * |
| * | STOP BURN: | * |
| * | SAFE <input type="text"/> <input type="text"/> APU _s – SHUT DN | * |
| * | HP ----- | * |
| * | 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"/> <input type="text"/> APU _s – 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/125/FIN

TOP
BACK OF 'ENTRY MANEUVERS'

| | FLIGHT CONDITIONS | MANEUVER | DRAG CHUTE DEPLOY |
|------------------------------|--|---|---|
| HOOK VELCRO | V = 7K | [G50] √TACAN and GPS, INCORPORATE * If ELS: UHF MODE – G T/R * | MCC Call / Flight Condition Early / Main Gear TD |
| | V = 5K | ADTA PROBES – DEPLOY (√HEAT) Begin ALL and RUD trim monitoring | NOMINAL / 195 KEAS |
| | M = 3.5 | If previous OMS OX TK, He TK, or RCS OX TK leak: [G51] VENT DOOR CNTL OPEN – ITEM 43 EXEC | Late / Post-Nose Gear TD Xwind DTO |
| | M = 2.7 | √APUs HUD PWR (two) – ON | Emergency Only / No Deploy Except CDR call |
| | M = 2.0 | * If M < 2.5: P CSS for ADTA to G&C incorp * Ensure ADTA to G&C else √Theta limits | NO DEPLOY prior to MGTD > 230 KEAS < 80 KGS Xwind > 15 kts |
| | 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 | FAILED TIRE TECHNIQUE Post-MGTD P – AUTO 185 KEAS Deploy drag chute 180 KEAS √Auto derotation NGTD Max RHC roll away from failed tire |
| | 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) | 50K / / | |
| V = 185 KEAS | DEROTATE | 38K / / | |
| NOSE GEAR TD | SRB SEP – MAN/AUTO and depress pb √Auto Load Relief √HYD BK ISOL VLV (three) – OP | 28K / / | |
| V < 120 KGS or 5K' remaining | BRAKE as required (8-10 fps ² , -0.25 to -0.3G) * If 5K' remaining and V > 140 KGS – MAX BRAKING * | 20K / / | |
| V = 60 KGS | DRAG CHUTE JETT pb – push (JETT1, JETT2 It on) | 12K / / | |
| V = 40 KGS | BRAKE < 6 fps ² (-0.2G) (Antiskid cutout) | 7K / / | |
| WHEEL STOP | Go to ENT C/L, <u>POST LANDING PROCEDURES</u> | 3K / / | |
| | | 1K / / | |
| | | SURF / / | |

ENT-6b/125/E/B

(reduced copy)

FAB USE ONLY

FS CC 8-17

ENT/125/FIN 1

TOP

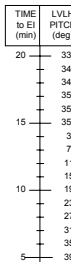
HOOK
VELCRO

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 |
| 2 AAs (LAT)..... | X | | X |
| SNC: 2 AAs (NORM)..... | X (M < 2.5) | X ③ | X |
| 2 RAs..... | | | 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) | | |
| MLS NOT INCORP..... | X (< 6K ft) | | |
| DPS: 2 FCS CH (same surface)..... | X | | X |
| 1 GPC (not restrung)..... | | | X ④ |
| 2 GPC (restrung)..... | X | X ⑤ | X |
| 2 GPC (not restrung)..... | X | X ⑥ | X |
| 1 FF..... | X | X ⑦ | X |
| 2 FF..... | X | X ⑧ | X |
| RCS: 2 FA..... | X | | X |
| LEAK (AFT - during ENT)..... | X | | |
| 2 YAW JETs (same side)..... | X | | |
| MIN RCS QTY..... | X | | |
| TRIM: All > ± 2.0 deg..... | X | | |
| DOWNMODE: | | | |
| FCS problem..... | X | X | X |
| ADA..... | X | | X |
| PLB: PLBD Latch Gang..... | X | | |
| LDC/DECEL: | | | |
| Tire Leak..... | | | X |
| HYD BRAKE ISOL VLV..... | | | X |
| < 100% Brakes..... | | | X |
| NWS..... | | | X |
| ENERGY - OFF NOMINAL: | | | |
| Rot Ref Alert..... | X | | |
| Above Upper Traj Line..... | X | | |
| MCC GCA, or VEL & PSN update..... | X | X | |
| No AL by 6K ft..... | 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 |

- 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



HOOK
VELCRO

HOOK
VELCRO

HOOK
VELCRO

HOOK
VELCRO

ENT-7a/E/K

(reduced copy)

FAB USE ONLY

FS CC 8-18

ENT/125/FIN

TOP

HOOK
VELCRO

HOOK
VELCRO

**DEORBIT
BURN
MONITOR**

| | | | | | | | | | | | |
|--|--|---|---|---|-----------|-----|-----|---|-----|-----|--|
| OMS TEMP* | <table border="1"> <tr> <td></td> <td>L</td> <td>R</td> </tr> <tr> <td>FU IN P ≥</td> <td>230</td> <td>230</td> </tr> <tr> <td>≤</td> <td>214</td> <td>212</td> </tr> </table> | | L | R | FU IN P ≥ | 230 | 230 | ≤ | 214 | 212 | <p>OMS ENG FAIL</p> <p>-----</p> <p>OMS PRPLT FAIL</p> |
| | L | R | | | | | | | | | |
| FU IN P ≥ | 230 | 230 | | | | | | | | | |
| ≤ | 214 | 212 | | | | | | | | | |
| or No FU IN P | | | | | | | | | | | |
| OMS PC* & OMS ↓ (BFS: √accel) | <p>ENG VLV 1 or 2 < 70</p> <p>or OX IN P > 227</p> <p>-----</p> <p>OX IN P ≤ 227</p> <p>or No OX IN P</p> | <p>OMS ENG FAIL</p> <p>-----</p> <p>OMS PRPLT FAIL</p> | | | | | | | | | |
| OMS OX/FU TK P (√ENG IN P) | OX/FU LOW | <p>He PRESS/VAP ISOL (two) – OP</p> <p>If aff TK P not incr:</p> <p>He PRESS/VAP ISOL (two) – CL</p> <p>At PC < 72 or OMS TEMP:</p> <p>OMS PRPLT FAIL</p> <p>-----</p> <p>OX & FU HIGH</p> <p>He PRESS/VAP ISOL (two) – CL</p> <p>Cycle He A(B) to maintain TK P 234-284</p> | | | | | | | | | |
| OMS GMBL | <p>PRI fail</p> <p>SEC fail</p> | <p>L(R) OMS GMBL – SEC (twice)</p> <p>If high RCS usage: OMS ENG FAIL</p> | | | | | | | | | |
| GPC | <p>1(4) &</p> <p>Burning OMS aff</p> <p>-----</p> <p>SEC GMBL lost</p> <p>2 FAs lost</p> | <p>aff GPC PWR – OFF</p> <p>If SEC GMBL avail:</p> <p>aff MDM FF 1(4) – OFF, ON</p> <p>L(R) OMS GMBL – SEC (twice)</p> <p>-----</p> <p>If high RCS usage: OMS ENG FAIL</p> <p>√MAN SHUTDN</p> | | | | | | | | | |
| I/O ERROR FA | 1(4) | <p>L(R) OMS GMBL – SEC</p> <p>I/O RESET (if recov: BFS I/O RESET)</p> <p>If high RCS usage: OMS ENG FAIL</p> <p>-----</p> <p>2 FAs lost</p> <p>√MAN SHUTDN</p> | | | | | | | | | |
| BCE STRG D | 1(4) | <p>I/O RESET (if recov: >>)</p> <p>-----</p> <p>If high RCS usage:</p> <p>L(R) OMS GMBL – SEC (twice)</p> | | | | | | | | | |
| RM DLMA IMU | <p>or ABOVE SAFE</p> <p>HP ⇒ <input type="checkbox"/> <input type="checkbox"/></p> | STOP BURN: OMS ENG(s) – OFF >> | | | | | | | | | |
| GPC SET SPLIT | <p>or BELOW SAFE</p> <p>HP ⇒</p> | | | | | | | | | | |
| 2 MN BUSES | | <p>IMU DLMA:</p> <p>After C/O: √timer <input type="checkbox"/> G21</p> <p>If any IMU ACC > 0.03: aff IMU – desel</p> <p>I'cnct OMS to RCS (√RCS Burn Time)</p> <p>THC +X to TGT HP (EOM) or</p> <p>3.5 x timer at C/O (AOA)</p> <p>SET SPLIT: Go to "GPC" above</p> | | | | | | | | | |
| 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/125/A,O,D,E/A

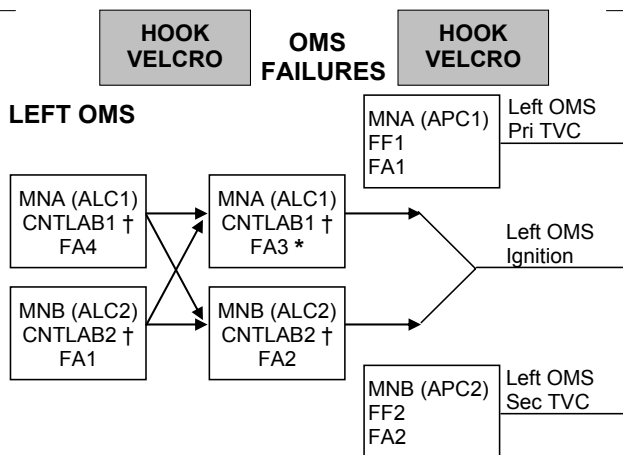
(reduced copy)

FAB USE ONLY

FS CC 8-23

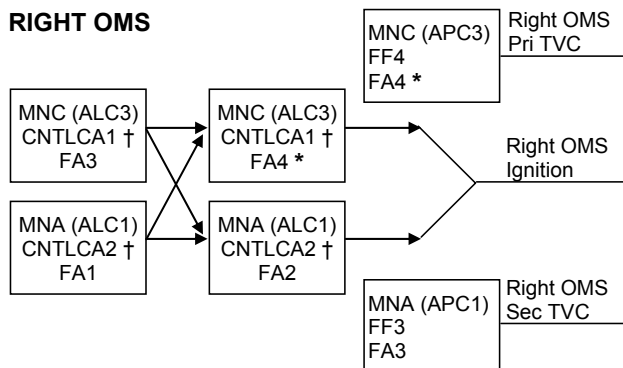
ENT/125/FIN

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/125/A,O,D,E/A

(reduced copy)

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FS CC 8-24

ENT/125/FIN

Space Shuttle Program
FLIGHT DATA FILE

JSC-48020-125
FINAL



ENTRY CHECKLIST

STS
125

Flight Cover (trim bottom to expose tabs)