

# Entry Checklist

## Mission Operations Directorate Flight Design and Dynamics Division

Generic, Rev E  
May 5, 1995

**NOTE**

For STS-70 and subsequent flights

**REPRINT**

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National Aeronautics and  
Space Administration

Lyndon B. Johnson Space Center  
Houston, Texas





MISSION OPERATIONS DIRECTORATE

**ENTRY CHECKLIST**

GENERIC, REVISION E

May 5, 1995

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APPROVED BY:

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Lead Entry GPO

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ENT/ALL/GEN E

|                             |   |
|-----------------------------|---|
| Incorporates the following: |   |
| 482#:                       | ENT-658A      MULTI-1137A<br>ENT-666<br>ENT-669 |

AREAS OF TECHNICAL RESPONSIBILITY

|  |                   |          |
|--|-------------------|----------|
| Book Manager                                 | DM43/M. Trump     | 483-8029 |
| Deorbit Burn to Entry Interface              | DM43/J. Patterson | 483-1987 |
| Entry Interface thru Rollout<br>Post Landing | DM43/J. Patterson | 483-1987 |

Replace this page with page(s) from Flight Supplement

Replace this page with page(s) from Flight Supplement

## NOTES

1. The Wheels Stop/Egress Switch List, section 7, gives the vehicle configuration at these discrete times. If switch position difference exists between wheels stop and crew egress, egress position will be boxed beside wheels stop position. Section 7 contains switch configuration only for panels that are reconfigured during crew execution of procedures in sections 3, 4, and 5. Refer to DEORBIT PREP, section 3, for egress configuration for remaining panels.
2. This checklist is an all-vehicle book and is not complete for a specified flight without a Flight Supplement. To obtain complete checklist, incorporate Flight Supplement for specific flight of interest using instructions in Flight Supplement List of Effective Pages.
3. Entry related cue cards are contained in this document. Cue cards are listed in Entry Cue Card Config section. Some cue cards are printed in the body of checklist for MS use and also in the Entry Cue Card Config section for reference of crop marks and fabrication instructions.
4. Velcro placement, size, and shape of cue cards are controlled by Cue Card Book Manager.
5. Vehicle configuration or procedural steps that are applicable to a specific vehicle are indicated by xxx.

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ENTRY CHECKLIST

**LIST OF EFFECTIVE PAGES**

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| GENERIC | 02/01/88 | PCN-12 | 06/09/97 |
| REV E   | 05/05/95 | PCN-13 | 11/03/97 |
| PCN-1   | 05/15/95 | PCN-14 | 03/24/98 |
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| PCN-4   | 09/29/95 | PCN-17 | 11/12/98 |
| PCN-5   | 11/15/95 | PCN-18 | 03/30/99 |
| PCN-6   | 03/29/96 | PCN-19 | 02/11/00 |
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| PCN-10  | 11/08/96 | PCN-23 | 01/07/02 |
| PCN-11  | 01/31/97 |        |          |

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- \* - Omit from flight book
- Δ - Replace with page from Flight Supplement
- † - Extra pages in crew copy only

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## ENTRY CUE CARDS

| <u>Title</u>                  | <u>Ref. Page</u> | <u>Card No.</u> |
|-------------------------------|------------------|-----------------|
| Deorbit Burn Flight Rules     |                  |                 |
| (Front) .....                 | CC 8-2           | ENT-1a/D/I      |
| (Back) .....                  | CC 8-3           | ENT-1b/D/I      |
| Deorbit Burn (RCS)            |                  |                 |
| (Front) (Top) .....           | CC 8-4           | ENT-3a/D/J      |
| (Front) (Bottom) .....        | CC 8-5           | ENT-3aa/D/J     |
| (Back) (Top) .....            | CC 8-6           | ENT-3b/D/C      |
| (Back) (Bottom) .....         | CC 8-7           | ENT-3bb/D/C     |
| Deorbit Burn (2 Eng)          |                  |                 |
| (Front) (Top) .....           | CC 8-8           | ENT-4a/D/J      |
| (Front) (Bottom) .....        | CC 8-9           | ENT-4aa/D/H     |
| Deorbit Burn (1 Eng)          |                  |                 |
| (Back) (Top) .....            | CC 8-10          | ENT-4b/D/H      |
| (Back) (Bottom) .....         | CC 8-11          | ENT-4bb/D/I     |
| Unbalanced Prplt Deorbit Burn |                  |                 |
| (Front) (Top) .....           | CC 8-12          | ENT-5a/D/K      |
| (Front) (Bottom) .....        | CC 8-13          | ENT-5aa/D/L     |
| Deorbit Burn (Mixed Xfeed)    |                  |                 |
| (Back) (Top) .....            | CC 8-14          | ENT-5b/D/H      |
| (Back) (Bottom) .....         | CC 8-15          | ENT-5bb/D/H     |
| Entry Maneuvers               |                  |                 |
| (Front) .....                 | CC 8-16          | ENT-6a/E/L      |
| (Back) .....                  | CC 8-17          | ENT-6b/E/P      |
| Entry NO-GO Checklist         |                  |                 |
| (Front) .....                 | CC 8-18          | ENT-7a/E/I      |
| ADTA Mgmt (Back) .....        | CC 8-19          | ENT-7b/E/M      |
| Mach $\alpha$                 |                  |                 |
| (Front) .....                 | CC 8-20          | ENT-8a/A,E/C    |
| (Back) .....                  | CC 8-20          | ENT-8b/A,E/B    |
| Deorbit Burn Monitor          |                  |                 |
| (Front) .....                 | see flt suppl    | flt suppl       |
| OMS Failures (Back) .....     | see flt suppl    | flt suppl       |
| Entry Control (Front) .....   | CC 8-21          | ENT-10a/A,E/A   |
| (Back) .....                  | CC 8-22          | ENT-10b/A,E/A   |

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### DEORBIT MNVR PAD

OMS BOTH 1

L 2

R 3

RCS SEL 4

TV ROLL 5

TRIM LOAD

P 6  ( )  .

LY 7  ( )  .

RY 8  ( )  .

WT 9

TIG 10   /   :   :   .

TGT PEG 4

C1 14

C2 15  ( )  .

HT 16    .

⊖T 17    .

PRPLT 18  ( )

BURN ATT

R 24

P 25

Y 26

REI

TXX   :

ΔVTOT    .

TGO   :

VGO X  ( )   .

VGO Y  ( )   .

VGO Z  ( )   .

HA    HP

TGT    ( )

1-1

ENT/ALL/GENE

NOTES

RCS I'CNCT:

- L OMS → RCS
- R OMS → RCS
- NONE

**MNVR  
PADS**

**MNVR  
PADS**

**DEORBIT MNVR PAD**

OMS BOTH 1

L 2

R 3

RCS SEL 4

TV ROLL 5

**TRIM LOAD**

P 6 ( ) .

LY 7 ( ) .

RY 8 ( ) .

WT 9

TIG 10   /   :   :   .

**TGT PEG 4**

C1 14

C2 15 ( ) .

HT 16   .

⊖T 17   .

PRPLT 18 ( )

**BURN ATT**

R 24

P 25

Y 26

REI

TXX   :

ΔVTOT    .

TGO   :

VGO X ( )   .

VGO Y ( )   .

VGO Z ( )   .

HA

HP ( )

TGT

1-2

ENT/ALL/GENE

NOTES

**RCS I'CNCT:**

- L OMS → RCS
- R OMS → RCS
- NONE

PRPLT/  
DEL PADS

OMS PRPLT AND DEL PADS

2-1

ENT/ALL/GEN E

PRPLT/  
DEL PADS

BURN CARD

OMS PRPLT PAD

|  |   |
|--|---|
| <p>DEORBIT<br/>BURN<br/>(1 ENG)</p>              | <p>OMS XFEED RETURN at <math>\Delta VTOT</math> = <input type="text"/><input type="text"/><input type="text"/><br/>         or <input type="text"/> <input type="text"/><input type="text"/> at <input type="text"/><input type="text"/><input type="text"/> %</p>  |
| <p>DEORBIT<br/>BURN<br/>(RCS)</p>                | <p>RCS I'CNCT TK SW at <math>\Delta VTOT</math> = <input type="text"/><input type="text"/><input type="text"/><br/>         OMS PRPLT LOW: <math>\Delta VTOT</math> = <input type="text"/><input type="text"/><input type="text"/></p>  |
| <p>UNBALANCED<br/>PRPLT<br/>DEORBIT<br/>BURN</p> | <p>INITIAL CONFIG: <input type="checkbox"/> TK ISOLs - CL<br/>         While feeding 2 OMS from 1 POD:<br/>         OMS PRPLT FAIL:<br/>         Secure <input type="checkbox"/> OMS<br/>         Secure <input type="checkbox"/> OMS<br/>         Interconnect <input type="checkbox"/> OMS to RCS<br/>         THC + X for <input type="text"/> : <input type="text"/><input type="text"/><br/>         If <input type="checkbox"/> (XFEED) ENG '↓'<br/>         When <input type="checkbox"/> OMS QTY:<br/>         5%: <input type="checkbox"/> OMS TK ISOL (two) - OP<br/>         4%: <input type="checkbox"/> OMS TK ISOL (two) - CL<br/>         If <input type="checkbox"/> (STRAIGHT FEED) ENG '↓'<br/>         OMS ENG FAIL:<br/>         At <math>\Delta VTOT</math> = <input type="text"/><input type="text"/><input type="text"/><br/>         or <input type="text"/> <input type="text"/><input type="text"/> at <input type="text"/><input type="text"/><input type="text"/> %<br/> <input type="checkbox"/> TK ISOL (two) - OP<br/> <input type="checkbox"/> TK ISOL (two) - CL<br/>         Return to 2 ENG, 2 POD FLOW:<br/>         At <math>\Delta VTOT</math> = <input type="text"/><input type="text"/><input type="text"/> <input type="checkbox"/> TK ISOLs - OP<br/>         OMS ENG FAIL: (XFEED CUE)<br/>         OMS QTY <input type="text"/><input type="text"/> %L or <input type="text"/><input type="text"/> %R</p> |
| <p>DEORBIT<br/>BURN<br/>(MIXED<br/>XFEED)</p>    | <p>FEED FROM GOOD POD:<br/>         At <math>\Delta VTOT</math> = <input type="text"/><input type="text"/><input type="text"/><br/>         or <input type="text"/> <input type="text"/><input type="text"/> at <input type="text"/><input type="text"/><input type="text"/> %<br/> <input type="checkbox"/> OMS He PRESS (two) - OP<br/>         TK ISOL (two) - OP<br/>         XFEED (two) - OP<br/>         Secure <input type="checkbox"/> OMS<br/>         OMS PRPLT LOW:<br/>         AFT RCS RECONFIG at <math>\Delta VTOT</math> = <input type="text"/><input type="text"/><input type="text"/><br/>         OMS ENG FAIL:<br/> <input type="checkbox"/> OMS He PRESS (two) - OP<br/>         TK ISOL (two) - OP<br/> <input type="checkbox"/> OMS XFEED (two) - CL</p>  |

### DEL PAD

|  |  |                               |                               |
|--|--|-------------------------------|-------------------------------|
| <u>PRE-DEORBIT</u>                                       |  |                               |                               |
| APU START: SINGLE APU START, ATTEMPT                     |  | <input type="checkbox"/>      | APU(s)                        |
| APU START SEQUENCE                                       |  | <input type="checkbox"/>      | THEN <input type="checkbox"/> |
| <u>DEORBIT</u>   |  |                               |                               |
| BURN CUE CARD:   |  |                               |                               |
| OMS TIG SLIP – NO EXEC > TIG +                           |  | <input type="checkbox"/>      | :                             |
| RCS DOWNMODING   |  | <input type="checkbox"/>      | :                             |
| STOP/CONTINUE CUES: L OMS FAIL HP                        |  | <input type="checkbox"/>      |                               |
| R OMS FAIL HP  |  | <input type="checkbox"/>      |                               |
| OMS ENG FAIL XFEED QTY CUE                               |  | %L <input type="checkbox"/>   | %R <input type="checkbox"/>   |
| ENGINE FAIL HP   |  | <input type="checkbox"/>      |                               |
| SAFE HP  |  | <input type="checkbox"/>      |                               |
| TOT AFT QTY 1 (%)  |  | <input type="checkbox"/>      |                               |
| TOT AFT QTY 2 (%)  |  | <input type="checkbox"/>      |                               |
| PREBANK/FLIP HP  |  | <input type="checkbox"/>      |                               |
| AFT HP   |  | <input type="checkbox"/>      |                               |
| B/U SITE   |  | <input type="checkbox"/>      |                               |
| FRCS: DUMP TO % (USE TIME AS CUE)                        |  | <input type="checkbox"/>      | OX <input type="checkbox"/>   |
|  |  | <input type="checkbox"/>      | FU <input type="checkbox"/>   |
| <u>ENTRY/LANDING</u>                                     |  |                               |                               |
| EI-5 MM303 INRTL ATT                                     |  | R <input type="checkbox"/>    | P <input type="checkbox"/>    |
| MM304 PREBANK (ENT MNVR Cue Card)                        |  | <input type="checkbox"/>      | L <input type="checkbox"/>    |
|  |  | <input type="checkbox"/>      | R <input type="checkbox"/>    |
| ALTM SET   |  | <input type="checkbox"/>      | .                             |
| CLG INIT   |  | <input type="checkbox"/>      | :                             |
| EXPECTED AIL TRIM  |  | <input type="checkbox"/>      | L <input type="checkbox"/>    |
|  |  | <input type="checkbox"/>      | R <input type="checkbox"/>    |
| VREL 1ST REVERSAL  |  | <input type="checkbox"/>      | .                             |
| XCG AT TD  |  | <input type="checkbox"/>      | .                             |
| LAND SITE  |  | <input type="checkbox"/>      |                               |
| RWY  |  | <input type="checkbox"/>      |                               |
|  |  | 50K                           | /                             |
|  |  | 38K                           | /                             |
| <input type="checkbox"/> L <input type="checkbox"/> OVHD |  | <input type="checkbox"/>      | deg <input type="checkbox"/>  |
|  |  | 28K                           | /                             |
| <input type="checkbox"/> R <input type="checkbox"/> STRT |  | <input type="checkbox"/>      | TAC                           |
|  |  | 20K                           | /                             |
| ΔT MACH .95 TO HAC                                       |  | MAX Nz                        | Nz LIMIT                      |
| <input type="checkbox"/>                                 |  | <input type="checkbox"/>      | <input type="checkbox"/>      |
|  |  | 12K                           | /                             |
| <input type="checkbox"/>                                 |  | <input type="checkbox"/>      | <input type="checkbox"/>      |
|  |  | 7K                            | /                             |
| AIMPOINT   |  | SPEEDBRAKE                    | 3K                            |
| <input type="checkbox"/> NOM                             |  | <input type="checkbox"/> NOM  | <input type="checkbox"/>      |
|  |  | % @ 3K                        | 1K                            |
| <input type="checkbox"/> CLOSE-IN                        |  | <input type="checkbox"/> S.F. |                               |
|  |  | SURFACE                       | /                             |
| <u>REMARKS:</u>  |  |                               |                               |

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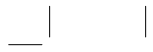
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2-5

ENT/ALL/GEN E,6

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3-2

ENT/ALL/GEN E

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|                              |                         |
|------------------------------|-------------------------|
| 1: GNC DEORB MNVR COAST      | 2: GNC DEORB MNVR COAST |
| 3: BFS, GNC DEORB MNVR COAST |                         |

TIG-46

**B FINAL DEORB UPDATE/UPLINK**

MCC UPDATE:  
 DEL PAD  
 OMS PRPLT PAD  
 MCC UPLINK:  
 PASS SV  
 BFS SV  
 PASS TGT  
 BFS TGT  
 BFS IMU GYRO/ACCEL

C **G50** ✓LAND SITE per DEL PAD  
 SET TACAN tw

C CRT1 On MCC GO:  
 LOAD – ITEM 22 EXEC  
 TIMER – ITEM 23 EXEC

CRT1,3 ✓PASS & BFS TGTs per MNVR PAD:  
 BURN ATT  
 ΔVTOT  
 TGO  
 HA HP

**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 |
|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| <b>N Desc</b> | 23  | 23  | 23  | 23  | 22  | 24  | 24  | 24  | 22  | 23  | 23  | 23  |
| <b>S Asc</b>  | 24  | 24  | 22  | 23  | 23  | 23  | 23  | 23  | 23  | 23  | 22  | 24  |
| <b>N Asc</b>  | 22  |     |     |     |     |     |     |     |     |     |     |     |
| <b>S Desc</b> | 22  |     |     |     |     |     |     |     |     |     |     |     |

|                              |                         |
|------------------------------|-------------------------|
| 1: GNC DEORB MNVR COAST      | 2: GNC DEORB MNVR COAST |
| 3: BFS, GNC DEORB MNVR COAST |                         |

**C OMS TVC GMBL CHECK**

(Perform during S-band AOS)  
 CRT1 SECONDARY CHECK  
 Perform SEC L,R then PRI L,R GMBL CK

\* If down arrow(s) or Ms: \*  
 \* Select good GMBL \*

MS LES Pressure Integrity Check

**P APU PRE-START**

(Perform during S-band AOS)  
 R4 ✓HYD BRAKE ISOL VLV (three) tb – CL  
 ✓LG EXTEND ISOL VLV tb – CL

\* If tb not CL: \*  
 \* R2 (Aff) HYD CIRC PUMP – ON \*  
 \* R4 (Aff) ISOL VLV – CL \*  
 \* Hold 5 sec, ✓tb – CL \*  
 \* R2 HYD CIRC PUMP – OFF \*

R2 BLR N2 SPLY (three) – ON  
 ✓PWR (three) – ON  
 ✓CNTLR/HTR (three) – B  
 ✓APU AUTO SHUTDN (three) – ENA  
 CNTLR PWR (three) – ON  
 HYD MN PUMP PRESS (three) – LO  
 ✓APU SPEED SEL (three) – NORM  
 ✓OPER (three) – OFF  
 ✓FUEL TK VLV (three) – CL  
 ✓cb FUEL TK VLV ENABLE (six) – CL

|                       |
|-----------------------|
| 3: BFS, SM SYS SUMM 2 |
|-----------------------|

P R2 APU FUEL TK VLV (three) – OP  
 ✓APU/HYD RDY tb (three) – gray  
 APU FUEL TK VLV (three) – CL

|                     |
|---------------------|
| 2: GNC 50 HORIZ SIT |
|---------------------|

|                          |
|--------------------------|
| 3: BFS, GNC 50 HORIZ SIT |
|--------------------------|

|                          |                     |
|--------------------------|---------------------|
| 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<br>(or CLSE) | ✓8  | NOM<br>(or CLSE) | ✓8  |
| 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 \*

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 lbs:
  - 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 lbs:
  - ✓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



|                              |                         |
|------------------------------|-------------------------|
| 1: GNC DEORB MNVR COAST      | 2: GNC DEORB MNVR COAST |
| 3: BFS, GNC DEORB MNVR COAST |                         |

**P OMS BURN PREP**

CRT2 OMS ENG TRIMS

2 ENG BURN:

✓TRIM LOAD per MNVR PAD or:  
L,R – ITEM 6 +0.0 –5.7 +5.7 EXEC

**1 ENG BURN:**

✓TRIM LOAD per MNVR PAD or:

P – ITEM 6 +0.0 EXEC

Good eng Y,

LY – ITEM 7 +5.2 EXEC

RY – ITEM 8 –5.2 EXEC

XFEED: Failed engine prop to  
good engine

**RCS DEORBIT OR RCS**

**He/PRPLT TK FAIL**

Do not terminate OMS/RCS  
Interconnect

O7 AFT L,R RCS

He PRESS (four) – OP (tb–OP)

TK ISOL (six) – GPC (tb–OP)

XFEED (four) – GPC (tb–CL)

✓MSTR RCS XFEED – OFF

O8 L,R OMS

✓He PRESS/VAP ISOL (four) – CL

✓TK ISOL (four) – OP (tb–OP)

✓XFEED (four) – CL (tb–CL)

FWD RCS

He PRESS (two) – OP (tb–OP)



|                              |                    |
|------------------------------|--------------------|
| 1: GNC DEORB MNVR COAST      | 2: GNC 51 OVERRIDE |
| 3: BFS, GNC DEORB MNVR COAST |                    |

|                         |
|-------------------------|
| 2: GNC DEORB MNVR COAST |
|-------------------------|

**B DEORB UPDATE/UPLINK** (if reqd)

MCC UPDATE:  
 DEL PAD  
 OMS PRPLT PAD

MCC UPLINK:  
 PASS,BFS SV  
 PASS,BFS TGT

C G50 ✓LAND SITE per DEL PAD  
 MS1/MS2 SET TACAN tw  
 SEAT INGRESS

On MCC GO:

CRT1 LOAD – ITEM 22 EXEC  
 TIMER – ITEM 23 EXEC

CRT1,3 ✓PASS & BFS TGTs per MNVR PAD:  
 BURN ATT  
 ΔVTOT  
 TGO  
 HA HP

C CRT1 GNC, OPS 302 PRO

|                              |                    |
|------------------------------|--------------------|
| 1: GNC DEORB MNVR COAST      | 2: GNC 51 OVERRIDE |
| 3: BFS, GNC DEORB MNVR COAST |                    |

**MCC/CREW GO/NO-GO FOR DEORBIT BURN**

|     |      |                               |   |
|-----|------|-------------------------------|---|
| *   |      | <b>IF NO-GO FOR DEORBIT</b>   | * |
| * P | R2   | <b>BURN:</b>                  | * |
| *   |      | HYD MN PUMP PRESS (three) – * | * |
| * C | CRT1 | NORM                          | * |
|     |      | GNC, OPS 301 PRO              |   |

**IF 1 ORBIT DELAY:**  
 Go to section 6, 1-ORB LATE

|                             |                        |
|-----------------------------|------------------------|
| 1: GNC DEORB MNVR EXEC      | 2: GNC DEORB MNVR EXEC |
| 3: BFS, GNC DEORB MNVR EXEC |                        |

```

. . . . .
: IF 24-HR EXTENSION :
: P O7 AFT L,R RCS :
: He PRESS A (two) - GPC (tb-OP) :
: B (two) - CL (tb-CL) :
: TK ISOL (six) - OP (tb-OP) :
: XFEED (four) - CL (tb-CL) :
: O8 FWD RCS :
: He PRESS A - GPC (tb-OP) :
: B - CL (tb-CL) :
: C6 Unstow ORB PKT C/L :
: Terminate Deorbit Procedures, :
: go to DEORB PREP, D/O PREP :
: BACKOUT :
. . . . .

```

TIG-20> **MNVR TO DEORBIT BURN ATT**

```

C C3 ✓DAP: AUTO
B F6/F8 ✓ADI ATT (two) - INRTL
      ✓ERR (two) - MED
      ✓RATE (two) - MED
C MNVR to BURN ATT
  (✓ADI ATT with CRT BURN ATT)
B Copy last DEL PAD and OMS PRPLT PAD
  data on DEORBIT BURN Cue Cards
F6/F8 ✓DEORBIT BURN and DEORBIT BURN
      MONITOR Cue Cards installed
A14 RCS/OMS HTR
     FWD RCS - OFF
     L POD (two) - A OFF,B OFF
     R POD (two) - A OFF,B OFF
     OMS CRSFD LINES (two) -
     A AUTO,B AUTO
     FWD RCS JET 5 (one) - OFF
     AFT RCS JET 5 (one) - OFF

```

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

TIG-5> P **SINGLE APU START** (Attempt one APU)

R2 APU FUEL TK VLV – OP  
OPER – START/RUN

MDU ✓HYD PRESS ind – LO green

- \* If no start, shut down APU \*
- \* (ENT PKT, APU/HYD) \*
- \* Do not execute Deorbit Burn \*

R2 ✓HYD CIRC PUMP (three) – OFF

3: BFS, GNC SYS SUMM 2

C ✓BURN ATT ± 5°

B Go to DEORBIT BURN (Cue Card)

**MEDS |**

A3-13

ENT/MEDS/GEN E,15

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

TIG-5> P **SINGLE APU START** (Attempt two APUs)

R2 APU FUEL TK VLV – OP  
 OPER – START/RUN

MDU ✓HYD PRESS ind – LO green

- \* If no start: \*
- \* APU OPER – OFF \*
- \* Start another APU \*
- \* \*
- \* If second APU starts, \*
- \* shut down unstarted APU \*
- \* (ENT PKT, APU/HYD) >> \*
- \* If neither starts, \*
- \* • Do not start third APU \*
- \* • Do not execute Deorbit Burn \*
- \* • Shut down unstarted APUs \*
- \* (ENT PKT, APU/HYD) >> \*

R2 ✓HYD CIRC PUMP (three) – OFF

|                        |
|------------------------|
| 3: BFS, GNC SYS SUMM 2 |
|------------------------|

C ✓BURN ATT ± 5°

B Go to DEORBIT BURN Cue Card

**MEDS |**

A3-14 ENT/MEDS/GEN E,15

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

TIG-5> P **SINGLE APU START** (Attempt one APU)

R2 APU FUEL TK VLV – OP  
OPER – START/RUN

F8 ✓HYD PRESS ind – LO green

\* If no start, shut down APU \*  
\* (ENT PKT, APU/HYD) \*  
\* Do not execute Deorbit Burn \*

R2 ✓HYD CIRC PUMP (three) – OFF

3: BFS, GNC SYS SUMM 2

C ✓BURN ATT  $\pm 5^\circ$

B Go to DEORBIT BURN (Cue Card)

**NOM |**

B3-13

ENT/NOM/GEN E,15

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

TIG-5> P **SINGLE APU START** (Attempt two APUs)

R2 APU FUEL TK VLV – OP  
OPER – START/RUN

F8 ✓HYD PRESS ind – LO green

\* If no start: \*

\* APU OPER – OFF \*

\* Start another APU \*

\* \*

\* If second APU starts, \*

\* shut down unstarted APU \*

\* (ENT PKT, APU/HYD) >> \*

\* If neither starts, \*

\* • Do not start third APU \*

\* • Do not execute Deorbit Burn \*

\* • Shut down unstarted APUs \*

\* (ENT PKT, APU/HYD) >> \*

R2 ✓HYD CIRC PUMP (three) – OFF

|                        |
|------------------------|
| 3: BFS, GNC SYS SUMM 2 |
|------------------------|

C ✓BURN ATT ± 5°

B Go to DEORBIT BURN (Cue Card)

**NOM |**

B3-14

ENT/NOM/GEN E,15





**DEORBIT BURN CARDS**

**BURN  
CARDS**



MS ONLY

3-15

ENT/ALL/GEN E



TOP

**DEORBIT BURN FLIGHT RULES**  
**ONE-ORBIT LATE AVAILABLE** ENT-1a/D/I

**BURN CARDS**

| FAILURE  | PRE TIG        |         | POST TIG             |
|--|----------------|---------|----------------------|
|  | Delay (max)    |         | Stop Burn, > Safe HP |
|  | One Orbit      | One Day |                      |
| <b>APU/HYD</b>   |                |         |                      |
| 1 No APU operating .....                                   | X              |         |                      |
| <b>LDG/DECEL</b>   |                |         |                      |
| 2 NWS (KSC) .....  | X              |         |                      |
| <b>DPS</b>   |                |         |                      |
| 3 RDNT fail, Split .....                                   |                | X       | X                    |
| 4 1 GPC .....  | X              |         |                      |
| 5 BFS .....  |                | X       |                      |
| 6 GPC BITE (Multiple GPCs) .....                           |                | X       |                      |
| <b>ECLS</b>  |                |         |                      |
| 7 2 Av Bay Fans in Bay 3 .....                             | X              |         |                      |
| 8 2 Av Bay Fans in Bay 1 or 2 .....                        |                | X       |                      |
| <b>ELEC</b>  |                |         |                      |
| 9 H2 Manf or TK leak (not in depleted tk(s) .....          | X              |         |                      |
| 10 2 MN Buses .....  |                | X       | X                    |
| 11 CNTL CA1 (No BFS Engage in GPC 3/5) .....               |                | X       |                      |
| 12 Multi Φ AC BUS (unshorted) .....                        | X              |         |                      |
| <b>GNC</b>   |                |         |                      |
| 13 1 MLS (if reqd), IMU, or TACAN (C-band not avail) ..... | X              |         |                      |
| 14 IMU Dilemma .....                                       |                | X       | X                    |
| 15 RHC Dilemma .....                                       | X              |         |                      |
| 16 2 IMUs .....  |                | X       |                      |
| 17 3 ADTAs .....   | X              |         |                      |
| <b>HOOK VELCRO</b>   |                |         | <b>HOOK VELCRO</b>   |
| 18 2 ADTAs, AAs, RGAs, FCS (LKBD not avail) .....          | X              |         |                      |
| <b>OMS</b>   |                |         |                      |
| 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 |         |                      |
| <b>AFT RCS</b>   |                |         |                      |
| 23 2 jets, same direction, same pod .....                  | X              |         |                      |
| 24 Prplt Lk after LAST LOS .....                           | X              |         |                      |
| 25 1 AFT RCS PROP TK fail .....                            | X              |         |                      |
| <b>COMM</b>  |                |         |                      |
| 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/D/I**

| FAILURE  | PRE TIG        | POST TIG             |
|--|----------------|----------------------|
|  | Delay (max)    | Stop Burn, > Safe HP |
|  | One Day        |                      |
| <b>APU/HYD</b>   |                |                      |
| 1 No APU operating .....                                   | X              |                      |
| <b>LDG/DECEL</b>   |                |                      |
| 2 NWS (KSC) .....  | X              |                      |
| <b>DPS</b>   |                |                      |
| 3 RDNT fail, Split .....                                   | X              | X                    |
| 4 1 GPC .....  |                |                      |
| 5 BFS .....  | X              |                      |
| 6 GPC BITE (Multiple GPCs) .....                           | X              |                      |
| <b>ECLS</b>  |                |                      |
| 7 2 Av Bay Fans in Bay 3 .....                             |                |                      |
| 8 2 Av Bay Fans in Bay 1 or 2 .....                        | X              |                      |
| <b>ELEC</b>  |                |                      |
| 9 H2 Manf or TK leak (not in depleted tk(s) _____) .....   | X              |                      |
| 10 2 MN Buses .....  | X              | X                    |
| 11 CNTL CA1 (No BFS Engage in GPC 3/5) .....               | X              |                      |
| 12 Multi ΦAC BUS (unshorted) .....                         |                |                      |
| <b>GNC</b>   |                |                      |
| 13 1 MLS (if reqd), IMU, or TACAN (C-band not avail) ..... | X              |                      |
| 14 IMU Dilemma .....                                       | X              | X                    |
| 15 RHC Dilemma .....                                       | X              |                      |
| 16 2 IMUs .....  | X              |                      |
| 17 3 ADTAs .....   |                |                      |
| 18 2 ADTAs, AAs, RGAs, FCS (LKBD not avail) .....          | X              |                      |
| <b>OMS</b>   |                |                      |
| 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 |                      |
| <b>AFT RCS</b>   |                |                      |
| 23 2 jets, same direction, same pod .....                  | X              |                      |
| 24 Prplt Lk after LAST LOS .....                           | X              |                      |
| 25 1 AFT RCS PROP TK FAIL .....                            | X              |                      |
| <b>COMM</b>  |                |                      |
| 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 (2 ENG)

- ✓MM302    ✓OMS BOTH
- Enter TGO + 5 sec
- ✓TRIM per MNVR PAD or P +0.0, LY -5.7, RY +5.7
- L,R OMS He PRESS/VAP ISOL A (two) - GPC
- B (two) - OP
- ✓DAP - AUTO(PASS)/DISC
- ADI - LVLH(REF)/HI/MED
- FLT CNTLR PWR (two) - ON

TIG-2    OMS ENG (two) - ARM/PRESS  
 - :15 EXEC (NO EXEC > TIG +  :  )  
 - :15 If OMS AFT QTY < 11%, THC +X to OMS IGN + 1 sec  
 :00 TIG    Start watch (✓Pc, ΔVTOT, ENG VLVs)

If no OMS ignition: APU's - SHUT DN

\* **OMS PRPLT FAIL:** \*

\* Failed OMS ENG - OFF \*  
 \* STOP BURN: \*  
 \*                    Good OMS ENG - OFF \*  
 \*                    APU's - SHUT DN \*  
 \*                    Secure aff OMS \*  
 \* 

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 \*  
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 \* \* \* \* \*

\* CONTINUE BURN: \*  
 \* ITEM 18 +Q EXEC \*  
 \* When good OMS QTY: \*  
 \*                    5%: L,R OMS XFEED (four) - OP \*  
 \*                    4%: Good OMS TK ISOL (two) - CL \*  
 \*                    If OMS Pc < 80 or OMS TEMP, \*  
 \*                    OMS ENG - OFF \*  
 \*                    ✓ADI - LVLH, center needles \*  
 \*                    RCS COMPLETION \*  
 \* \* \* \* \*

\* **OMS ENG FAIL:** \*

\* Failed OMS ENG - OFF \*  
 \* OMS XFEED at 1/2 ΔVTOT at fail 

|  |  |  |
|--|--|--|
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 \*  
 \*                    or OMS QTY 

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 %L or 

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|--|--|

 %R \*  
 \* \* \* \* \*

\* **2nd OMS FAIL (ENG or PRPLT):** \*

\* Failed OMS ENG - OFF \*  
 \* If PRPLT FAIL: \*  
 \*                    Secure aff OMS \*  
 \*                    ITEM 18 +Q EXEC \*  
 \*                    Both                    Either \*  
 \*                    ENG FAIL                PRPLT FAIL \*  
 \*                    HP                        (SAFE) HP    STOP BURN: \*  
 \*                    

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 APU's - SHUT DN \*  
 \* ----- \*  
 \* \* \* \* \*

\* CONTINUE BURN: \*  
 \* ✓ADI - LVLH, center needles \*  
 \* Interconnect good OMS to RCS \*  
 \*                    THC +X (✓OMS% vs RCS Burn Time) \*  
 \*                    RCS ICNCT TK SW (N/A PRPLT FAIL) \*  
 \*                    THC +X (✓OMS% vs RCS Burn Time) \*  
 \*                    AFT RCS RECONFIG \*  
 \*                    RCS COMPLETION \*  
 \* \* \* \* \*

ENT-4a/D/J

\* **RCS COMPLETION:** \*  
 \* THC +X to TGT HP or TOT AFT QTY 1    % \*  
 \* \*  
 \* At AFT QTY 1 THC +X to PREBANK/FLIP HP or \*  
 \* if CUR HP: TOT AFT QTY 2   % then \*  
 \* PREBANK/FRCS COMPLETION \*  
 \* PREBANK/FLIP   ----- \*  
 \* HP PREBANK/FRCS COMPLETION \*  
 \* \*  
 \* AFT   ----- \*  
 \* HP THC +X to TGT HP \*  
 \* \*  
 \* TGT   ----- \*  
 \* HP \*  
 \* \*  
 \* **FRCS COMPLETION (if applicable):** \*  
 \* MNVR to -X Att (pitch up at 3°/sec to VGOz = +1/4 ΔVTOT) \*  
 \* THC -X to TGT HP or FRCS depletion (JETS FAIL OFF) \*

CUTOFF  
 + :02 OMS ENG(s) - OFF (If < 3 IMU, at  :   )  
 \* AFT RCS RECONFIG if INTERCONNECT \*  
 Trim X,Z residuals < 2 fps (< 0.5 fps if shallow)

ENT-4aa/D/H



```

* RCS COMPLETION:
*   THC +X to TGT HP or TOT AFT QTY 1    %
*
*   At AFT QTY 1      THC +X to PREBANK/FLIP HP or
*   if CUR HP:      TOT AFT QTY 2   % then
*                   PREBANK/FRCS COMPLETION
*
*   PREBANK/FLIP   -----
*   HP                                     PREBANK/FRCS COMPLETION
*
*   AFT   -----
*   HP                                     THC +X to TGT HP
*
*   TGT   -----
*   HP
*
* FRCS COMPLETION (if applicable):
*   MNVR to -X Att (pitch up at 3°/sec to VGOz = +1/4 ΔVTOT)
*   THC -X to TGT HP or FRCS depletion (JETS FAIL OFF)

```

```

CUTOFF
+ :02 OMS ENG - OFF (If < 3 IMU, at  :   )
      * AFT RCS RECONFIG if INTERCONNECT *
      Trim X,Z residuals < 2 fps (< 0.5 fps if shallow)

```

ENT-4bb/D/I

## DEORBIT BURN (RCS)

- ✓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  APU's - SHUT DN *
HP  ----- *
* *
* CONTINUE BURN: *
* ITEM 18 +0 EXEC *
*  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  APU's - SHUT DN *
HP  ----- *
* *
* CONTINUE BURN: *
* ITEM 18 +0 EXEC *
*  Resel jets *
  
```

ENT-3a/D/J



```

* RCS COMPLETION:
*   THC +X to TGT HP or TOT AFT QTY 1    %
*
*   At AFT QTY 1      THC +X to PREBANK/FLIP HP or
*   if CUR HP:      TOT AFT QTY 2    % then
*                   PREBANK/FRCS COMPLETION
*
*   PREBANK/FLIP   -----
*   HP          PREBANK/FRCS COMPLETION
*
*   AFT   -----
*   HP          THC +X to TGT HP
*
*   TGT   -----
*   HP
*
* FRCS COMPLETION (if applicable):
*   MNVR to -X Att (pitch up at 3°/sec to VGOz = +1/4 ΔVTOT)
*   THC -X to TGT HP or FRCS depletion (JETS FAIL OFF)

```

```

CUTOFF VGOx = 0, release THC
AFT RCS RECONFIG
Trim Inplane X,Z residuals < 2 fps (< 0.5 if shallow)

```

ENT-3aa/D/J

**UNBALANCED  
PRPLT  
DEORBIT  
BURN**

- ✓MM302    ✓OMS BOTH
- Enter TGO + 5 sec
- ✓TRIM per MNVR PAD or P + 0.0, LY -5.7, RY +5.7
- ✓DAP - AUTO(PASS)/DISC
- ADI - LVLH(REF)/HI/MED
- FLT CNTLR PWR (two) - ON
- Feed 2 ENG from 1 POD
- L,R OMS He PRESS/VAP ISOL A (two) - GPC
- B (two) - OP
- OMS TK ISOL (two) - CL (tb-CL)
- L,R OMS XFEED (four) - OP (tb-OP)

TIG-2 OMS ENG (two) - ARM/PRESS  
 - :15 EXEC (NO EXEC > TIG +  :  )  
 - :15 If OMS AFT QTY < 11%, THC +X to OMS IGN + 1 sec  
 :00 TIG Start watch (✓Pc, ΔVTOT, ENG VLVs)

If no OMS ignition: APUs - SHUT DN

\* While feeding 2 OMS from 1 POD:

**OMS PRPLT FAIL:**

Failed OMS ENG(s) - OFF  
 STOP BURN:  
 APUs - SHUT DN  
 Secure  OMS

SAFE    
 HP

CONTINUE BURN:  
 ITEM 18 +0 EXEC  
 If Both ENGs ↓:  
 Secure  OMS  
 ✓ADI - LVLH, center needles  
 Interconnect  OMS to RCS  
 THC +X for  :   
 AFT RCS RECONFIG  
 RCS COMPLETION

If  (XFEED) ENG ↓:  
 When  OMS QTY:  
 5%:  OMS TK ISOL (two) - OP  
 4%:  OMS TK ISOL (two) - CL  
 If OMS Pc < 80 or OMS TEMP,  
 OMS ENG - OFF  
 ✓ADI - LVLH, center needles  
 RCS COMPLETION

If  (STRAIGHT FEED) ENG ↓:  
 OMS ENG FAIL

**OMS ENG FAIL (CONTINUE BURN):**

Failed OMS ENG - OFF  
 at ΔVTOT =     
 or    at  %  
 TK ISOL(two) - OP  
 TK ISOL(two) - CL

Return to 2 ENG, 2 POD FLOW at ΔVTOT:

OMS TK ISOL (two) - OP (tb-OP)  
 L,R OMS XFEED (four) - CL (tb-CL)

ENT-5a/D/K

```

* OMS PRPLT FAIL:
* Failed OMS ENG - OFF
*
* L OMS R OMS
* FAIL HP FAIL HP
*
* [ ] [ ] [ ] [ ] [ ] [ ]
* -----
*
* STOP BURN:
* Good OMS ENG - OFF
* APU's - SHUT DN
* Secure aff OMS
*
* CONTINUE BURN:
* ITEM 18 +Q EXEC
* When good OMS QTY:
* 5%: L,R OMS XFEED (four) - OP
* 4%: Good OMS TK ISOL (two) - CL
* If OMS Pc < 80 or OMS TEMP,
* OMS ENG - OFF
* ✓ADI - LVLH, center needles
* RCS COMPLETION
*
* OMS ENG FAIL:
* Failed OMS ENG - OFF
* OMS XFEED at 1/2 ΔVTOT at fail [ ] [ ] [ ]
* or OMS QTY [ ] [ ] %L or [ ] [ ] %R
*
* 2nd OMS FAIL (ENG or PRPLT):
* Failed OMS ENG - OFF
* If PRPLT FAIL:
* Secure aff OMS
* ITEM 18 +Q EXEC
*
* Both Either
* ENG FAIL PRPLT FAIL
* HP (SAFE) HP
*
* [ ] [ ] [ ] [ ] [ ] [ ]
* -----
*
* STOP BURN:
* APU's - SHUT DN
*
* CONTINUE BURN:
* ✓ADI - LVLH, center needles
* Interconnect Good OMS to RCS
* THC +X (✓OMS% vs RCS Burn Time)
* RCS I'CNCT TK SW (N/A PRPLT FAIL)
* THC +X (✓OMS% vs RCS Burn Time)
* AFT RCS RECONFIG
* RCS COMPLETION
*
* RCS COMPLETION:
* THC +X to TGT HP or TOT AFT QTY 1 [ ] [ ] [ ] %
*
* At AFT QTY 1
* if CUR HP:
*
* PREBANK/FLIP HP [ ] [ ]
* -----
* PREBANK/FRCS COMPLETION
*
* AFT HP [ ] [ ]
* -----
* THC +X to TGT HP
*
* TGT HP [ ] [ ]
* -----
*
* FRCS COMPLETION (if applicable):
* MNVR to -X Att (pitch up at 3°/sec to VGOz = +1/4 ΔVTOT)
* THC -X to TGT HP or FRCS depletion (JETS FAIL OFF)
*
* CUTOFF
* + :02 OMS ENG(s) - OFF (If < 3 IMU, at [ ] : [ ] [ ] )
* * AFT RCS RECONFIG if INTERCONNECT *
* Trim X,Z residuals < 2 fps (< 0.5 fps if shallow)

```

ENT-5aa/D/L

## DEORBIT BURN (MIXED XFEED)

- ✓MM302 ✓OMS L(R) or RCS  
Enter TGO + 10 sec
  - ✓L,R OMS TK ISOL (four) – GPC  
    ✓XFEED (four) – GPC
  - ✓tb config from table (OMS SSR-1)
  - ✓DAP – AUTO(PASS)/DISC  
    ADI – LVLH(REF)/HI/MED  
    FLT CNTLR PWR (two) – ON
- Man repress to maintain good OMS Tk Ps > 234 psi (simo)

- If OMS BURN INITIATION:
- ✓TRIM per MNVR PAD or: P +0.0, LY +5.2, RY -5.2
- TIG-2: Good OMS ENG – ARM/PRESS
- :15 EXEC (No EXEC > TIG +  :  )
  - :15 If OMS AFT QTY < 11%, THC +X to OMS IGN + 1 sec
  - :00 TIG Start watch (✓Pc, ΔVTOT, ENG VLVs)  
    \* If no OMS ignition, APUs – SHUT DN \*
- If RCS BURN INITIATION:
- Man repress L,R OMS > L,R RCS TK Ps
  - L,R RCS XFEED (four) – OP
  - TK ISOL (six) – CL
- :00 THC +X (No Deorbit > TIG +  :  )  
Maintain PITCH ATT ERR ± 3°

### FEED FROM GOOD POD:

- at ΔVTOT =    )
- or    at   %
- OMS He PRESS/VAP ISOL (two) – OP
  - TK ISOL (two) – OP (tb-OP)
  - XFEED (two) – OP (tb-OP)
  - SECURE  OMS

- **OMS PRPLT LOW**
- AFT RCS RECONFIG at ΔVTOT =    )
- RCS COMPLETION

ENT-5b/D/H

```

* OMS PRPLT FAIL: *
* OMS ENG - OFF *
* *
* STOP BURN: *
* APU(s) - SHUT DN *
* Secure L,R OMS *
SAFE   ----- *
HP   *
* *
* CONTINUE BURN: *
* Secure L,R OMS *
* ITEM 18 +Q EXEC *
* ✓ADI - LVLH, center needles *
* RCS COMPLETION *
* *
* OMS ENG FAIL: *
* OMS ENG - OFF *
* *
* STOP BURN: *
* APU(s) - SHUT DN *
ENG    ----- *
FAIL    *
HP    *
* *
* CONTINUE BURN: *
* Man repress L,R OMS > L,R RCS TK Ps *
* FEED FROM GOOD POD: *
*  OMS HE PRESS/VAP ISOL *
* (two) - OP *
* TK ISOL (two) - OP *
*  OMS XFEED (two) - CL *
* L,R RCS XFEED (four) - OP *
* TK ISOL (six) - CL *
* ✓ADI - LVLH, center needles *
* THC +X (✓Lowest OMS % vs *
* RCS Burn Time) *
* AFT RCS RECONFIG *
* RCS COMPLETION *
* *
* RCS +X JET FAIL OFF: *
* *
* STOP BURN: *
* APU(s) - SHUT DN *
SAFE    ----- *
HP    *
* *
* CONTINUE BURN: *
* ITEM 18 +Q EXEC *
*  Resel jet *
* *
* RCS COMPLETION: *
* THC +X to TGT HP or TOT AFT QTY 1    % *
* *
* At AFT QTY 1 THC +X to PREBANK/FLIP HP or *
* if CUR HP: TOT AFT QTY 2   % then *
* PREBANK/FRCS COMPLETION *
PREBANK/FLIP   ----- *
HP   PREBANK/FRCS COMPLETION *
* *
* AFT   ----- *
* HP   THC +X to TGT HP *
* *
* TGT   ----- *
* HP   *
* *
* FRCS COMPLETION (if applicable): *
* MNVR to -X Att (pitch up at 3°/sec to VGOz = +1/4 ΔVTOT) *
* THC -X to TGT HP or FRCS depletion (JETS FAIL OFF) *
* *
CUTOFF VGOx = 0, Release THC
+ :02 OMS ENG(s) - OFF (If < 3 IMU, at  :   )
* AFT RCS RECONFIG if INTERCONNECT *
Trim X,Z residuals < 2 fps (< 0.5 fps if shallow)

```

ENT-5bb/D/H

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MS ONLY

3–28

ENT/ALL/GEN E

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

- \* **If no OMS IGNITION at TIG:** \*
- \* OMS ENG (two) – OFF \*
- \* ✓APU – SHUT DN \*
- \* C3 MSTR MADS PWR – OFF \*
- \* O8 L,R OMS \*
- \* He PRESS/VAP ISOL (four) – CL \*
- \* ✓XFEED (four) – CL \*
- \* GNC, OPS 301 PRO \*
- \* F6,F8 FLT CNTLR PWR (two) – OFF \*
- \* C3 ✓DAP: AUTO \*
- \* ✓MCC at next AOS \*
- \* **If burn terminated with HP > SAFE HP:** \*
- \* ✓OMS ENG (two) – OFF \*
- \* ✓APU – SHUT DN \*
- \* C3 MSTR MADS PWR – OFF \*
- \* OPS 301 PRO \*
- \* If I'CNCT: \*
- \* DAP: INRTL/PULSE \*
- \* O8 L, R OMS \*
- \* He PRESS/VAP ISOL (four) – CL \*
- \* ✓XFEED (four) – CL \*
- \* O7 AFT L,R RCS \*
- \* He PRESS A (two) – GPC (tb-OP) \*
- \* B (two) – CL (tb-CL) \*
- \* TK ISOL (six) – OP (tb-OP) \*
- \* XFEED (four) – CL (tb-CL) \*
- \* O8 FWD RCS \*
- \* He PRESS A – GPC (tb-OP) \*
- \* B – CL (tb-CL) \*
- \* F6,F8 FLT CNTLR PWR (two) – OFF \*
- \* C3 ✓DAP: AUTO \*
- \* ✓MCC at next AOS on DEORBIT DELAY \*
- \* of 24 hr \*

**POST  
BURN**

# MEDS |

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

MS Stow Flight Deck SpOC

B F6,F8 FLT CNTLR PWR (two) – OFF  
C3 ✓DAP: AUTO

**OMS/RCS POST BURN RECONFIG**

P O7 AFT L,R RCS  
✓He PRESS (four) – OP (tb-OP)  
✓TK ISOL (six) – GPC (tb-OP)  
✓XFEED (four) – GPC (tb-CL)

O8 L,R OMS  
He PRESS/VAP ISOL (four) – CL  
✓TK ISOL (four) – OP (tb-OP)

\* If OMS PRPLT FAIL, \*  
\* ✓Aff TK ISOL (two) – CL \*

XFEED (four) – CL (tb-CL)

O3 RCS/OMS PRESS sel – RCS as reqd  
PRPLT QTY sel – RCS as reqd

POST  
BURN

**MEDS** |

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

```

*           If no OMS IGNITION at TIG:           *
*           OMS ENG (two) – OFF                     *
*           ✓APU – SHUT DN                           *
* C3        MSTR MADS PWR – OFF                       *
* O8        L,R OMS                                   *
*           He PRESS/VAP ISOL (four) – CL           *
*           ✓XFEED (four) – CL                       *
*           GNC, OPS 301 PRO                          *
* F7,F8     FLT CNTLR PWR (two) – OFF                *
* C3        ✓DAP: AUTO                               *
*           ✓MCC at next AOS                         *
*
*           If burn terminated with HP > SAFE HP: *
*           ✓OMS ENG (two) – OFF                     *
*           ✓APU – SHUT DN                           *
* C3        MSTR MADS PWR – OFF                       *
*           OPS 301 PRO                              *
*           If I'CNCT:                               *
*           DAP: INRTL/PULSE                         *
* O8        L, R OMS                                 *
*           He PRESS/VAP ISOL (four) – CL           *
*           ✓XFEED (four) – CL                       *
* O7        AFT L,R RCS                              *
*           He PRESS A (two) – GPC (tb-OP)          *
*           B (two) – CL (tb-CL)                    *
*           TK ISOL (six) – OP (tb-OP)              *
*           XFEED (four) – CL (tb-CL)               *
* O8        FWD RCS                                  *
*           He PRESS A – GPC (tb-OP)                *
*           B – CL (tb-CL)                          *
* F7,F8     FLT CNTLR PWR (two) – OFF                *
* C3        ✓DAP: AUTO                               *
*           ✓MCC at next AOS on DEORBIT DELAY      *
*           of 24 hr                                *

```

**POST  
BURN**

**NOM |**

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

MS Stow Flight Deck SpOC

B F7,F8 FLT CNTLR PWR (two) – OFF  
C3 ✓DAP: AUTO

**OMS/RCS POST BURN RECONFIG**

P O7 AFT L,R RCS  
✓He PRESS (four) – OP (tb-OP)  
✓TK ISOL (six) – GPC (tb-OP)  
✓XFEED (four) – GPC (tb-CL)

O8 L,R OMS  
He PRESS/VAP ISOL (four) – CL  
✓TK ISOL (four) – OP (tb-OP)

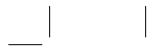
\* If OMS PRPLT FAIL, \*  
\* ✓Aff TK ISOL (two) – CL \*

XFEED (four) – CL (tb-CL)

O3 RCS/OMS PRESS sel – RCS as reqd  
PRPLT QTY sel – RCS as reqd

POST  
BURN

**NOM |**



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|                          |                        |
|--------------------------|------------------------|
| 1: GNC 53 ENTRY CONTROLS | 2: BFS, GNC SYS SUMM 2 |
| 3: GNC DEORB MNVR COAST  |                        |

EI-20 C **SECONDARY ACTUATOR CHECK**  
(if not previously performed and time permits)

NOTE

If port does not bypass during check, bypass affected port after check:

SEC ACT BYPASS – ITEM 8 +X X EXEC

If affected port still does not bypass:

SEC ACT RESET – ITEM 9 +X X EXEC

- R2 1. HYD MN PUMP PRESS (one) – NORM
- CRT3 2. SURF DRIVE ON, ITEM 39 EXEC (\*)  
Wait at least 5 sec
- MDU ✓SPI: Stop drive test when elevon posns within +12° to -27°  
SURF DRIVE OFF, ITEM 40 EXEC (\*)
- CRT1 3. ✓POS STIM ENA, ITEM 7 – (no \*)
- C3 4. ✓FCS CH 1,2,3,4 – AUTO
- CRT1 5. SEC ACT CK, CH 1 – ITEM 1 EXEC (\*)  
START – ITEM 5 EXEC (\*)
- 6. ✓All CH 1 PORTS BYPASS, '↓'  
STOP – ITEM 6 EXEC (\*)
- C3 7. FCS CH 1 – ORIDE
- CRT1 ✓All CH 1 PORTS RESET, no '↓'  
FCS CH 1 – AUTO
- 8. Repeat steps 5 thru 7 for CH 2,3,4

**MEDS** |





|                          |                        |
|--------------------------|------------------------|
| 1: GNC 53 ENTRY CONTROLS | 2: BFS, GNC SYS SUMM 2 |
| 3: GNC DEORB MNVR COAST  |                        |

EI-20 C **SECONDARY ACTUATOR CHECK**  
(if not previously performed and time permits)

NOTE

If port does not bypass during check, bypass affected port after check:

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If affected port still does not bypass:

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- R2 1. HYD MN PUMP PRESS (one) – NORM
- CRT3 2. SURF DRIVE ON, ITEM 39 EXEC (\*)  
Wait at least 5 sec
- F7 ✓SPI: Stop drive test when elevon posns  
within +12° to -27°  
SURF DRIVE OFF, ITEM 40 EXEC (\*)
- CRT1 3. ✓POS STIM ENA, ITEM 7 – (no \*)
- C3 4. ✓FCS CH 1,2,3,4 – AUTO
- CRT1 5. SEC ACT CK, CH 1 – ITEM 1 EXEC (\*)  
START – ITEM 5 EXEC (\*)
- 6. ✓All CH 1 PORTS BYPASS, '↓'  
STOP – ITEM 6 EXEC (\*)
- C3 7. FCS CH 1 – ORIDE
- CRT1 ✓All CH 1 PORTS RESET, no '↓'  
FCS CH 1 – AUTO
- 8. Repeat steps 5 thru 7 for CH 2,3,4

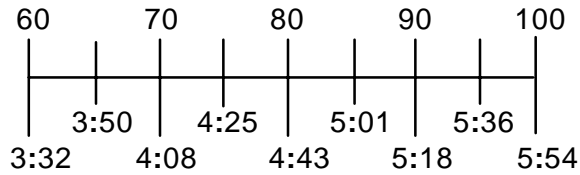
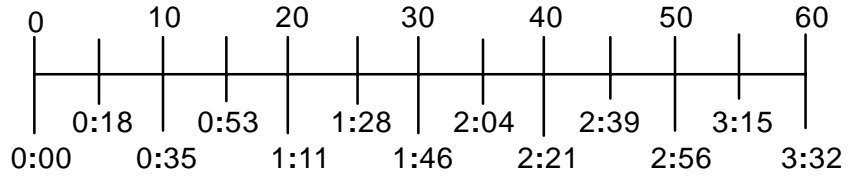
**NOM I**



|                        |                         |
|------------------------|-------------------------|
| 1: GNC 23 RCS          | 2: GNC DEORB MNVR COAST |
| 3: BFS, GNC SYS SUMM 2 |                         |

TWO JET DUMP:

F RCS PRPLT TO BE DUMPED (%)



TIME FROM DUMP INITIATION (M:S)

NOTE

During dump disregard FRCS qty

CRT2 FWD RCS ARM – ITEM 36 EXEC  
DUMP – ITEM 37 EXEC  
(Start watch)

When dump time achieved:  
FWD RCS OFF – ITEM 38 EXEC

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

### ENTRY SW CHECK

- C L2    ✓CAB RELIEF A,B – ENA (tb–ENA)
- ✓ANTISKID        – ON
- ✓NWS                – 1
- ✓ENTRY MODE      – AUTO

3: GNC 51 OVERRIDE

✓ROLL MODE – AUTO

- B L2/C3 ✓SPD BK – Full Fwd

- P C3    ✓SRB SEP – AUTO
- ✓ET SEP – AUTO

- B F6/F8 ✓AIR DATA – NAV
- ADI ERR – MED
- RATE – MED

✓HSI SEL MODE – ENTRY

- C F6                    ✓SOURCE (two) – NAV, 1
- P F8                    ✓SOURCE (two) – NAV, 2

- B F3    ✓TRIM RHC/PNL (two) – INH
- ✓PNL (two) – ON

Exercise BRAKE PEDALS

|                         |                         |
|-------------------------|-------------------------|
| 1: GNC DEORB MNVR COAST | 2: GNC DEORB MNVR COAST |
| 3: BFS, GNC SYS SUMM 2  |                         |

NOTE

If NAVAIDS OFF due to PKT C/L  
PWRDN, switch ON per PWRDN  
procedure

- |    |    |   |
|----|----|---|
| C  | F6 | ✓RADAR ALTM – 1   |
| P  | F8 | – 2   |
| O8 |    | ✓RADAR ALTM (two) – ON<br>✓MLS (three) – ON (PASS)<br>✓MLS CH (three), FS 3–2 |
| O7 |    | ✓TACAN MODE (three) – GPC<br>✓ANT SEL (three) – AUTO                          |
|    |    | ✓TACAN CH (three), FS 3–2   |

**MEDS |**

A3–39

ENT/MEDS/GEN E,15

|                         |                         |
|-------------------------|-------------------------|
| 1: GNC DEORB MNVR COAST | 2: GNC DEORB MNVR COAST |
| 3: BFS, GNC SYS SUMM 2  |                         |

EI-13      **REMAINING APUs START**

- \* If an APU failed to start at TIG-5, \*
- \* start remaining good APU only \*

R2      APU FUEL TK VLV (two) – OP  
 ✓APU/HYD RDY tb (two) – gray

- \* If tb – bp, attempt normal start \*

MDU      APU OPER (two) – START/RUN  
 ✓HYD PRESS ind (two) – LO green

R2      ✓RDY tb (two) – bp

- \* If OIL OUT P < 25 and OIL OUT \*
- \* TEMP not increasing after APU \*
- \* start or no start: \*
- \* Shut down APU (ENT PKT, \*
- \* APU/HYD) \*

**MEDS |**

|                         |                         |
|-------------------------|-------------------------|
| 1: GNC DEORB MNVR COAST | 2: GNC DEORB MNVR COAST |
| 3: BFS, GNC SYS SUMM 2  |                         |

NOTE

If NAVAIDS OFF due to PKT C/L  
PWRDN, switch ON per PWRDN  
procedure

- |    |    |   |
|----|----|---|
| C  | F7 | ✓RADAR ALTM – 1   |
| P  | F8 | – 2   |
| O8 |    | ✓RADAR ALTM (two) – ON<br>✓MLS (three) – ON (PASS)<br>✓MLS CH (three), FS 3–2 |
| O7 |    | ✓TACAN MODE (three) – GPC<br>✓ANT SEL (three) – AUTO                          |
|    |    | ✓TACAN CH (three), FS 3–2   |

**NOM |**

B3–39

ENT/NOM/GEN E,15

|                         |                         |
|-------------------------|-------------------------|
| 1: GNC DEORB MNVR COAST | 2: GNC DEORB MNVR COAST |
| 3: BFS, GNC SYS SUMM 2  |                         |

EI-13      **REMAINING APUs START**

- \* If an APU failed to start at TIG-5, \*
- \* start remaining good APU only \*

R2      APU FUEL TK VLV (two) – OP  
 ✓APU/HYD RDY tb (two) – gray

- \* If tb – bp, attempt normal start \*

F8      APU OPER (two) – START/RUN  
 ✓HYD PRESS ind (two) – LO green  
 R2      ✓RDY tb (two) – bp

- \* If OIL OUT P < 25 and OIL OUT \*
- \* TEMP not increasing after APU \*
- \* start or no start: \*
- \* Shut down APU (ENT PKT, \*
- \* APU/HYD) \*

**NOM |**

B3-40

ENT/NOM/GEN E,15





|                         |                         |
|-------------------------|-------------------------|
| 1: GNC DEORB MNVR COAST | 2: GNC DEORB MNVR COAST |
| 3: BFS, SM 0 THERMAL    |                         |

```

* EI-11>P  HYD FLUID THERMAL CONDITIONING      *
*          (MCC CALL)                          *
*          CRT2  SURF DRIVE ON – ITEM 39 EXEC    *
*                   Start TIMER                  *
*          SPI   Observe AEROSURFACES CYCLING   *
*                   ELEV      U33 to D18 deg     *
*                   RUD       R5 to L5 deg       *
*                   SPDBK     15 to 10%         *
*                   BDY FLP   93.6 to 3.5%      *
*          CRT2  When SURF DRIVE ON (5 min),    *
*                   SURF DRIVE OFF – ITEM 40 EXEC *

```

**BURN REPORT** (from FS 3–33)

B           Stow DEORBIT BURN and DEORBIT  
              BURN MONITOR Cue Cards  
              ✓ENTRY Cue Cards installed

```

*          If 8 psi cabin entry,                *
* ALL     ✓Tabs/Visor – CL/LES O2 – ON *

```

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

**G SUIT INFLATION**

ALL Load – 1.5 (three turns CW if reqd)

\* **FCS CH CONFIG** \*

\*  
\* If less than four PASS GPCs, config FCS \*  
\* CHs so that each GPC cmds equal \*  
\* number of CHs (see table) \*  
\*

**GNC 53 CONTROLS**

Config SURF FBK (see table)

| AVAILABLE |         | FCH CH CONFIG |       |     | SURF FDBK |       |
|-----------|---------|---------------|-------|-----|-----------|-------|
| GPCs      | FCS CHs | AUTO          | ORIDE | OFF | SEL       | DESEL |
| 3         | 4       | 3             |       | 1   | 3         | 1 *   |
|           | 3       | 3             |       | 1   | 3         | 1 *   |
|           | 2       |               | 2     | 2   | 2         | 2     |
| 2         | 4       |               | 4     |     | 4         |       |
|           | 3       |               | 2     | 2   | 2         | 2     |
|           | 2       |               | 2     | 2   | 2         | 2     |

\* \* If CH 4 – OFF, do not desel PASS SURF FDBK \*

**MEDS |**

1: GNC DEORB MNVR COAST | 2: GNC DEORB MNVR COAST  
3: BFS, GNC DEORB MNVR COAST

B F6,F8 FLT CNTLR PWR (two) – ON

EI-7 MS2 O19 If Mini-Cam Entry video reqd:  
V10 TV PWR – ON  
PWR – ON  
DISPLAY pb – Toggle to display tape  
count  
REC pb (two) – Press to begin  
recording  
✓LCD displays RED DOT

EI-6 Go to ENTRY MANEUVERS (Cue Card)

**MEDS**

A3-44

ENT/MEDS/GEN E,22

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

**G SUIT INFLATION**

ALL Load – 1.5 (three turns CW if reqd)

\* **FCS CH CONFIG** \*

\*  
\* If less than four PASS GPCs, config FCS \*  
\* CHs so that each GPC cmds equal \*  
\* number of CHs (see table) \*  
\*

**GNC 53 CONTROLS**

Config SURF FBK (see table)

| AVAILABLE |         | FCH CH CONFIG |       |     | SURF FDBK |       |
|-----------|---------|---------------|-------|-----|-----------|-------|
| GPCs      | FCS CHs | AUTO          | ORIDE | OFF | SEL       | DESEL |
| 3         | 4       | 3             |       | 1   | 3         | 1 *   |
|           | 3       | 3             |       | 1   | 3         | 1 *   |
|           | 2       |               | 2     | 2   | 2         | 2     |
| 2         | 4       |               | 4     |     | 4         |       |
|           | 3       |               | 2     | 2   | 2         | 2     |
|           | 2       |               | 2     | 2   | 2         | 2     |

\* \* If CH 4 – OFF, do not desel PASS SURF FDBK \*

**NOM |**

|                              |                         |
|------------------------------|-------------------------|
| 1: GNC DEORB MNVR COAST      | 2: GNC DEORB MNVR COAST |
| 3: BFS, GNC DEORB MNVR COAST |                         |

B F7,F8 FLT CNTLR PWR (two) – ON

EI-7 MS2 O19 V10 If Mini-Cam Entry video reqd:  
TV PWR – ON  
PWR – ON  
DISPLAY pb – Toggle to display tape count  
REC pb (two) – Press to begin recording  
✓LCD displays RED DOT

EI-6 Go to ENTRY MANEUVERS (Cue Card)

**NOM**

B3-44

ENT/NOM/GEN E,22

— | |

| | —

**ENTRY CUE CARDS**

— | |

MS ONLY

4-1

ENT/ALL/GEN E

| | —

**ENT CUE  
CARDS**



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**ENT CUE  
CARDS**

MS ONLY

4-2

ENT/ALL/GEN E,7





## ENTRY NO-GO CHECKLIST

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

ENT-7a/E/I

MS ONLY

4-3

ENT/ALL/GEN E,7

| FLIGHT CONDITIONS  | MANEUVER   |
|--|--|
| EI-5   | ✓LVLH ATT<br>GNC, OPS 304 PRO<br>* If PREBANK, R/Y – CSS *<br>* Roll at 1°/sec to <input type="text"/> <input type="text"/> <input type="text"/> *<br>* Maintain PREBANK ± 5° *<br>If previous OMS OX TK or He TK or RCS OX TK leak: <input type="text"/> G51 VENT DOORS – OP<br>PTI – ENA at EI-5 when applicable |
| $\bar{q} = 1$  | (AOA) HYD MN PUMP PRESS (three) – NORM   |
| 'Guidance Box' @<br>$\bar{q} \sim 8$<br>or<br>D $\sim 3$ | CLOSED LOOP GUIDANCE ____:____:____<br>* If PREBANK: P,R/Y – AUTO *<br>Begin AIL trim monitoring   |
| D = 11   | ✓DRAG H (FORCE if editing)   |
| V = 19K  | ✓MPS/TVC ISOL VLV – CL   |
| V = 15K  | ✓NAVAIDS (I/O RESET if reqd)<br>* If ELS: UHF MODE – G T/R *   |
| V = 12K  | RAD BYP VLV MODE (two) – AUTO<br>CNTLR LOOP (two) – AUTO B(A)  |
| V = 10K  | ✓SPDBK to 81%  |
| $\Delta A_z = 10.5^\circ$                                | FIRST ROLL REVERSAL <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>   |

ENT-6a/E/L

| FLIGHT CONDITIONS                            | MANEUVER   |
|--|--|
| V = 7K                                       | ✓TACAN status  |
| V = 5K                                       | ADTA PROBES – DEPLOY (✓HEAT)<br>Begin AIL and RUD trim monitoring                                |
| M = 2.7                                      | ✓APUs<br>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 = 0.9                                      | P, R/Y – CSS as reqd<br>✓SPDBK CMD vs POS<br>✓R FLT CNTLR – ON<br>✓NWS – 1<br>Lock Inertia Reels |
| M = 0.7                                      | ✓LG EXTEND ISOL VLV – OP   |
| h = 15K                                      | ✓MLS   |
| h = 10K                                      | ✓A/L, TABS/VISORS – CL/LES O2 – ON (KSC)   |
| MAIN GEAR TD                                 | ✓SPDBK – 100%  |
| DEROT INIT                                   | DRAG CHUTE pb (two) – ARM,DPY (simo)   |
| NOSE GEAR TD                                 | SRB SEP – MAN/AUTO and depress pb<br>✓Auto Load Relief<br>✓HYD BRAKE ISOL VLV (three) – OP       |
|  |  |
| V = 60 KGS                                   | DRAG CHUTE JETT pb – JETT  |
| STOP   | Go to ENT C/L, <u>POST LANDING PROCEDURES</u>  |

ENT-6b/E/P  
(Partial)

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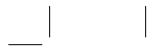
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4–6

ENT/ALL/GEN E

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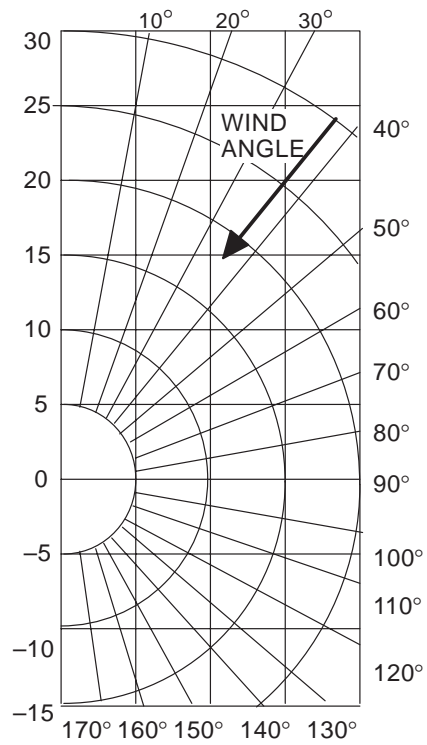
4–8

ENT/ALL/GEN E

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**ORBITER XWIND LIMITS**



Enter chart using  
max Gust Velocity

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

ENT-6b/E/N  
(Partial)

ENTRY  
MISC

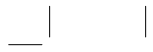
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4-10

ENT/ALL/GEN E,13





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## ENTRY CONTROL

### ARCS QTY (L + R) < 10%

|                                  |  |
|----------------------------------|--|
| ARCS QTY = 0 & JETS FAIL OFF     | 1. ENTRY MODE – NO Y JET (R/Y CSS; expect sluggish control)                                |
| q ≥ 20 & M > 6                   | 2. <b>G51</b> ELEVON FIXED – ITEM 18 EXEC (*)  |
| CONTROL PROBLEMS* & ARCS QTY > 0 | 3. ENTRY MODE – AUTO<br>When control regained:<br>4. ENTRY MODE – NO Y JET<br>5. ✓AIL trim |
| M < 6 & ARCS QTY > 0             | 6. ENTRY MODE – AUTO   |
| M < 5                            | 7. TRIM/RHC PNL – ENA<br>8. TRIM ROLL – away from AIL trim (to < 1)                        |

\*Region of least margin: M 12–8

### AIL TRIM ≥ 3°

|                       |   |    |    |    |     |    |     |   |   |    |    |    |    |    |    |
|-----------------------|---|----|----|----|-----|----|-----|---|---|----|----|----|----|----|----|
| TAL                   | 1. <b>G51</b> WRAP MODE – ITEM 45 EXEC (ACT)  |    |    |    |     |    |     |   |   |    |    |    |    |    |    |
| AIL trim = 5          | 2. BF – MAN<br>3. BF – UP (to 0%)   |    |    |    |     |    |     |   |   |    |    |    |    |    |    |
| NO Y JET              | 4. Perform roll reversals at 3°/s (expect sluggish control)   |    |    |    |     |    |     |   |   |    |    |    |    |    |    |
| M < 13 & AIL trim = 5 | 5. P – CSS<br>6. Fly α per schedule:<br><table style="margin-left: 40px; border-collapse: collapse;"> <tr> <td style="border-right: 1px solid black; padding: 0 5px;">M</td> <td style="border-right: 1px solid black; padding: 0 5px;">12</td> <td style="border-right: 1px solid black; padding: 0 5px;">11</td> <td style="border-right: 1px solid black; padding: 0 5px;">10</td> <td style="border-right: 1px solid black; padding: 0 5px;">9</td> <td style="border-right: 1px solid black; padding: 0 5px;">8–6</td> <td style="padding: 0 5px;">5</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 0 5px;">α</td> <td style="border-right: 1px solid black; padding: 0 5px;">37</td> <td style="border-right: 1px solid black; padding: 0 5px;">36</td> <td style="border-right: 1px solid black; padding: 0 5px;">35</td> <td style="border-right: 1px solid black; padding: 0 5px;">33</td> <td style="border-right: 1px solid black; padding: 0 5px;">30</td> <td style="padding: 0 5px;">26</td> </tr> </table> | M  | 12 | 11 | 10  | 9  | 8–6 | 5 | α | 37 | 36 | 35 | 33 | 30 | 26 |
| M                     | 12  | 11 | 10 | 9  | 8–6 | 5  |     |   |   |    |    |    |    |    |    |
| α                     | 37  | 36 | 35 | 33 | 30  | 26 |     |   |   |    |    |    |    |    |    |
| M < 5                 | 7. TRIM/RHC PNL – ENA<br>8. TRIM ROLL – away from AIL trim (to < 1)<br>9. P – AUTO  |    |    |    |     |    |     |   |   |    |    |    |    |    |    |
| M < 2                 | 10. BF – AUTO   |    |    |    |     |    |     |   |   |    |    |    |    |    |    |

ENT–10a/A,E/A

### HIGH–FREQ OSC OR SURF/JET CYCLE

|                        |  |
|------------------------|--|
| Returning PL > 10K lbs | 1. <b>G51</b> ✓FILTER ALT – ITEM 21 (*)  |
|                        | 2. P, R/Y – CSS                          |
| Osc/Cycle continues    | 3. ENTRY MODE – LO GAIN                  |
| Osc/Cycle stops        | 4. ENTRY MODE – AUTO<br>5. P, R/Y – AUTO |

ENT–10b/A,E/A

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MS ONLY

4–14

ENT/ALL/GEN E,15

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| | —

V = 6K **NO COMM TACAN MGMT**

|           |              |   |  |                                |
|-----------|--------------|---|--|--------------------------------|
| RATIO < 1 | RATIO > 1    |   | ONE TACAN LOCKED                                       | NO LOCK                        |
| AUTO      | TROUBLESHOOT |   | BELOW V = 5.5K<br>DESELECT MISSING TACANS, then - AUTO | BELOW V = 5.5K<br>TOGGLE TACAN |
|           | IF BAD TACAN | IF BAD NAV STATE                            |  |                                |
|           | AUTO         | If 1st acq - FORCE<br>IF NOT - ZERO Δ STATE |  |                                |

**ADTA MGMT**

|         |                   |             |                  |                                   |  |
|---------|-------------------|-------------|------------------|-----------------------------------|--|
|         | NAV               |             |                  | G&C                               |  |
|         | RATIO < 1         | RATIO > 1   |                  | Two or more good ADTAs            |  |
|         |                   | IF BAD ADTA | IF BAD NAV STATE |                                   |  |
| COMM OK | MCC: AUTO or INH* | MCC: INH    | MCC: FORCE       | Evaluate h,α,M<br>MCC: AUTO (G&C) |  |
| NO COMM | AUTO              | TACAN OK    | NO TACAN         |                                   | Evaluate h,α,M<br>If reasonable:<br>AUTO (G&C) |
|         |                   |             | ADTA ERRATIC     | ADTA STEADY                       |  |
|         |                   | INH         | AUTO             | FORCE                             |  |

\*(If ADTA H will degrade NAV state)

**NAV DELTA PAD**

|       |     |     |  |  |  |  |
|-------|-----|-----|--|--|--|--|
| ΔX 10 | ( ) |     |  |  |  |  |
| ΔY 11 | ( ) |     |  |  |  |  |
| ΔZ 12 | ( ) |     |  |  |  |  |
| ΔX 13 |     | ( ) |  |  |  |  |
| ΔY 14 |     | ( ) |  |  |  |  |
| ΔZ 15 |     | ( ) |  |  |  |  |

For Δ STATE UPDATES (on MCC call):  
P, R/Y - CSS  
DRAG H, TACAN, ADTA - INH  
On MCC call, back to AUTO

— | |

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MS ONLY

4–16

ENT/ALL/GEN E

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**POST  
LDG**

## **POST LANDING PROCEDURES**

5-1

ENT/ALL/GEN E

POST  
LDG

- \* **LOSS OF COMM** \*
- \* In event of loss of comm (day or night), the following \*
- \* signals will be utilized to indicate onboard status to \*
- \* convoy: \*
- \* \*
- \* NOTE \*
- \* Before declaring loss of comm, attempt to contact \*
- \* convoy on 259.7 using PRC-112 radio channel A \*
- \* \*
- \* Crew should continue signals until acknowledged by \*
- \* convoy \*
- \* From Crew (with spotlight stowed in A16) \*
- \* Crew OK Circular motion \*
- \* OMS/RCS & Hatch safed Circular motion \*
- \* APU shutdn Circular motion \*
- \* Crew needs assistance; \*
- \* will open/blow hatch Vertical motion \*
- \* Crew needs assistance; \*
- \* will not open/blow hatch Horizontal motion \*
- \* From Convoy \*
- \* Convoy will acknowledge crew signals with sequence of \*
- \* three flashes of headlights on convoy vehicle \*
- \* Continuous flashing – Emer pwrdsn and egress \*
- \* \*\*\*\*\* \*
- \* **EXPEDITED PWRDSN** \*
- \* Accomplish for: \*
- \* • Loss of all comm, including hand signals, with \*
- \* convoy elements \*
- \* • Loss of telemetry and onboard systems monitoring \*
- \* visibility \*
- \* • Fuel leak (OMS, RCS, or APU) if: \*
- \* – Nonisolatable, or \*
- \* – Leak occurs during RTLS, TAL, AOA, or \*
- \* POST D/O TIG \*
- \* • Fire Suppression Bottle discharged during entry for \*
- \* confirmed or suspected fire \*
- \* As time permits: \*
- \* RCS,OMS SAFING (RJDs), 5-4 \*
- \* GPC DEACT \*
- \* O6 GPC MODE 1,2,3,4,5 (five) – STBY (tb-bp) \*
- \* – HALT \*
- \* ET UMBILICAL DOOR OPENING, 5-5 (RTLS/TAL only) \* |
- \* 'MODE 5' POST LANDING EGRESS Cue Card (CDR or \*
- \* MCC call) or EMER PWRDSN Cue Card \*



|                        |                   |
|------------------------|-------------------|
| 1: GNC VERT SIT 2      | 2: GNC SYS SUMM 1 |
| 3: BFS, GNC VERT SIT 2 |                   |

### POST LANDING

WARNING  
 APUs OFF ASAP for APU  
 Hydrazine, OMS, RCS (FWD or  
 AFT), or MPS propellant leak

- 00:00
- C After orbiter stops:  
 Report, "WHEELS STOP"  
 Establish COMM with NCC
  - L2 SPD BK – MAN, full fwd  
 NWS – OFF
  - P If RTLS or TAL abort:  
 Perform ET UMBILICAL DOOR  
 OPENING, 5–5
  - R2 ✓APU AUTO SHUTDN (three) – ENA  
 ✓SPEED SEL (three) – NORM
  - R1 ✓AC BUS SNSR (three) – AUTO
  - C F6 FLT CNTLR PWR – OFF
  - B F3 HUD PWR (two) – OFF
  - P C3 If ELS:  
 MSTR MADS(OEX) PWR – OFF  
 (OEX for OV102)  
 DoD ELS, MCC call DoD OSC on  
 NCC

NOTE  
 MCC will report "GO/NO-GO  
 TO DOFF SUITS" (post safety  
 assessment)

## MEDS

A5-3 ENT/MEDS/GEN E,20

|                        |                   |
|------------------------|-------------------|
| 1: GNC VERT SIT 2      | 2: GNC SYS SUMM 1 |
| 3: BFS, GNC VERT SIT 2 |                   |

**CDR**

NOTE

CDR activities are now on even numbered pages and PLT activities on odd numbered pages

**RCS, OMS SAFING (RJDs)**

C3        ✓OMS ENG (two)        – OFF  
O14:F     RJD DRIVER (nine)       – OFF  
O15:F        LOGIC (eight)        – OFF  
O16:F     OMS ENG VLV (two)       – OFF

C,P,MS

**DRAG CHUTE SAFING**

(Not performed if ELS)

O15:E     cb MNB DRAG CHUTE SYS 2 – op  
O16:E     cb MNC DRAG CHUTE SYS 1 – op  
F2,F3,    ✓DRAG CHUTE PBI lts (six) – off  
F4

**DEACT AIR DATA PROBE HTRS**

C3        ✓AIR DATA PROBE (two) – DPY

C,P,MS

**LANDING GEAR SAFING**

(Not performed if ELS)

R14:F     cb ESS 1BC LDG GEAR ARM/DN  
RESET – cl

NOTE

SM0 TIRE PRESS msgs occur when LG ARM/DN RESET performed

A12        LG ARM/DN RESET – RESET  
F6,F8     ✓LDG GEAR pb (four) – lt off  
A12        LG ARM/DN RESET – dn  
R14:F     cb ESS 1BC LDG GEAR ARM/DN  
RESET – op

Ck with MS3. Report to MCC: “RJDs OFF, SIDE HATCH, DRAG CHUTE, AND LANDING GEAR SAFED” (MCC report to NCC)

**MEDS I**

|                        |                   |
|------------------------|-------------------|
| 1: GNC VERT SIT 2      | 2: GNC SYS SUMM 1 |
| 3: BFS, GNC VERT SIT 2 |                   |

**POST LANDING**

|   |
|---|
| <p><u>WARNING</u><br/> APUs OFF ASAP for APU<br/> Hydrazine, OMS, RCS (FWD or<br/> AFT), or MPS propellant leak</p> |
|---|

- 00:00
- C      After orbiter stops:  
Report, "WHEELS STOP"  
Establish COMM with NCC
  
  - L2     SPD BK – MAN, full fwd  
NWS – OFF
  
  - P      If RTLS or TAL abort:  
Perform ET UMBILICAL DOOR  
OPENING, 5-5
  
  - R2     ✓APU AUTO SHUTDN (three) – ENA  
          ✓SPEED SEL (three)        – NORM
  
  - R1     ✓AC BUS SNSR (three) – AUTO
  
  - C F7    FLT CNTLR PWR – OFF
  
  - B F3    HUD PWR (two) – OFF
  
  - P C3    If ELS:  
MSTR MADS(OEX) PWR – OFF  
(OEX for OV102)  
DoD ELS, MCC call DoD OSC on  
NCC

NOTE  
MCC will report "GO/NO-GO  
TO DOFF SUITS" (post safety  
assessment)

**NOM**

|                        |                   |
|------------------------|-------------------|
| 1: GNC VERT SIT 2      | 2: GNC SYS SUMM 1 |
| 3: BFS, GNC VERT SIT 2 |                   |

**CDR**

NOTE

CDR activities are now on even numbered pages and PLT activities on odd numbered pages

**RCS, OMS SAFING (RJDs)**

C3        ✓OMS ENG (two)        – OFF  
O14:F     RJD DRIVER (nine)       – OFF  
O15:F     LOGIC (eight)        – OFF  
O16:F     OMS ENG VLV (two)       – OFF

C,P,MS

**DRAG CHUTE SAFING**

(Not performed if ELS)

O15:E     cb MNB DRAG CHUTE SYS 2 – op  
O16:E     cb MNC DRAG CHUTE SYS 1 – op  
F2,F3,    ✓DRAG CHUTE PBI lts (six) – off  
F4

**DEACT AIR DATA PROBE HTRS**

C3        ✓AIR DATA PROBE (two) – DPY

C,P,MS

**LANDING GEAR SAFING**

(Not performed if ELS)

R14:F     cb ESS 1BC LDG GEAR ARM/DN  
RESET – cl

NOTE

SM0 TIRE PRESS msgs occur when LG ARM/DN RESET performed

A12       LG ARM/DN RESET – RESET  
F6,F8     ✓LDG GEAR pb (four) – lt off  
A12       LG ARM/DN RESET – dn  
R14:F     cb ESS 1BC LDG GEAR ARM/DN  
RESET – op

Ck with MS3. Report to MCC: “RJDs OFF, SIDE HATCH, DRAG CHUTE, AND LANDING GEAR SAFED” (MCC report to NCC)

**NOM**

|                   |                   |
|-------------------|-------------------|
| 1: GNC VERT SIT 2 | 2: GNC SYS SUMM 1 |
|-------------------|-------------------|

|                        |
|------------------------|
| 3: BFS, GNC VERT SIT 2 |
|------------------------|

**PLT ET UMBILICAL DOOR OPENING**

Report to MCC, "ET UMBILICAL DOORS ARE COMING OPEN"

- R2 ET UMB DR  
 MODE - GPC/MAN  
 R LAT - REL (tb-bp, REL ~6 sec)  
 - OFF  
 DR - OP (tb-bp)  
 Wait 12 sec, R DR - OFF (tb-bp)  
 L LAT - REL (tb-bp, REL ~6 sec)  
 - OFF  
 DR - OP (tb-bp)  
 Wait 12 sec, L DR - OFF (tb-bp)  
 MODE - GPC

**HYDRAULIC LOAD TEST (ON MCC CALL)**

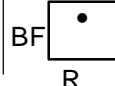
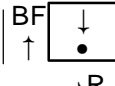
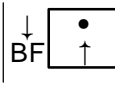
NOTE

Minimum of two operating hyd systems is reqd for this test

- F4 BDY FLP pb - MAN  
 F8 ✓FLT CNTLR PWR - ON

NOTE

If only two systems are operating, do not depressurize either hyd pump

- R2 HYD MN PUMP PRESS 1 - LO (MA)  
 C3 Run Full Load Test:  
 BDY FLP - TRAIL  
 RHC - Forward ctr  
 Rudder full left  
 When set, do following simo:  
 BDY FLP - UP (to ≤ 6%)  
 RHC - move to aft ctr  
 Rudder full right  
 RHC - release  
 Rudder - neutral  
 BDY FLP - reset to TRAIL
- SETUP:  
 > 
- LOAD TEST:  
 > 
- R2 HYD MN PUMP  
 PRESS 1 - NORM  
 3 - LO (MA)
- RELEASE:  
 > 
- C3 Repeat Load Test  
 R2 HYD MN PUMP PRESS 3 - NORM

|                        |                   |
|------------------------|-------------------|
| 1: GNC VERT SIT 2      | 2: GNC SYS SUMM 1 |
| 3: BFS, GNC VERT SIT 2 |                   |

**CDR**

MCC Report GO/NO-GO for DPS transition

**DPS TRANSITION – GNC 9 (If PASS)**

NOTE

Do not perform any keyboard item entries or switch throws 10 sec before and after moding PASS GPCs to RUN or making OPS transition requests.

MCC will call for BFS to be taken from RUN to STBY for OPS Recorder dumping and PL monitoring as reqd

✓BFC CRT DISP – ON

CRT3 BFS, GNC, OPS 000 PRO

|                        |
|------------------------|
| 3: BFS, GNC BFS MEMORY |
|------------------------|

|                     |
|---------------------|
| 1: GNC 0 GPC MEMORY |
|---------------------|

Verify:

| CONFIG GPC | 9 | 12340 |
|------------|---|-------|
| STR 1      | 1 | 1     |
|            | 2 | 2     |
|            | 3 | 3     |
|            | 4 | 4     |
| PL 1/2     | 1 | 1     |
|            | 2 | 2     |
|            | 3 | 3     |
|            | 4 | 0     |
| L          | 1 | 1     |
|            | 2 | 2     |
|            | 3 | 3     |
|            | 4 | 0     |
| MM         | 1 | 1     |
|            | 2 | 2     |

CRT1 GNC, OPS 901 PRO

|                        |                   |
|------------------------|-------------------|
| 1: GNC VERT SIT 2      | 2: GNC SYS SUMM 1 |
| 3: BFS, GNC VERT SIT 2 |                   |

**PLT SET BODY FLAP (Prior to OPS 9)**

- F4 BODY FLAP pb – MAN
- C3 BODY FLAP – DOWN (100%)

**PLT SSME REPOSITIONING (If PASS, OPS 9, and GO from MCC)**

2: GNC 105 TCS CONTROL

- R4 HYD MPS/TVC ISOL VLV SYS (three) – OP
- Hold 5 sec, ✓tb – OP

- \* If less than two HYD MPS/TVC \*
- \* ISOL VLVs open, ✓MCC \*

- CRT2 CLEAR MSG – ITEM 8 EXEC
- SELECT ID – ITEM 1 +0 2 EXEC
- ✓NAME VFB 84 (~60 sec)
- MM READ – ITEM 2 EXEC
- ✓‘AI MODE 1(0,3) COMPLETE’ msg (~2.5 min)
- ✓‘VFB 84 – COMPLETE’ msg

- \* If any ‘AI MODE X FAILED RETEST’ msg: \*
- \* ✓MCC, report ECP ERROR \*
- \* To terminate: CANCEL – ITEM 5 EXEC \*

Go to APU/HYD SHUTDN >>

**PLT SPDBK REPOSITIONING (KSC only, ON MCC GO)**

- R4 ✓HYD MPS/TVC ISOL VLV SYS (three) – CL

2: GNC 113 ACTUATOR CONTROL

- CRT2 AI MODE 1 MDM – ITEM 23 EXEC (\*)
- ✓ACTUATOR GIMBALING STATUS – RUN, CPLT
- SB – ITEM 1 EXEC (\*)
- RATE – ITEM 29 +1 EXEC
- FIN POS – ITEM 30 +8 EXEC
- ✓START 31 – → ←
- START – ITEM 31 EXEC (\*→ ←)
- ✓STATUS – RUN, CPLT (~30 sec)

- \* If STATUS – STOP or BUSY: \*
- \* ✓MCC, (To terminate: ITEM 32 EXEC) \*

Go to APU/HYD SHUTDN >>





|                      |               |
|----------------------|---------------|
| 1: AS DESIRED        | 2: AS DESIRED |
| 3: BFS, SM SYS SUM 2 |               |

**PLT            APU/HYD SHUTDN**

✓SSME REPOS complete (if PASS)

- R4    HYD MPS/TVC ISOL VLVS (1,2,3; 5 sec interval) – CL (hold each 5 sec) ✓tb – cl
- R2    BLR PWR (three) – OFF  
       N2 SPLY (three) – OFF  
       APU OPER  
       (1,2,3; 5 sec interval) – OFF (MA)  
       APU FUEL TK VLV (three) – CL  
       ✓Shutdn (Hyd Press)  
       CNTLR PWR (three) – OFF

- MCC    Report to MCC, “APU/HYD SHUTDOWN”  
       Report to Convoy 1, “SSME  
       REPOSITIONING COMPLETE AND  
       APU/HYD SHUTDOWN”  
       Report, “GO/NO-GO FOR VENT DOOR  
       PURGE POSITIONING”

**POST LANDING MPS RECONFIG  
 (After APU/HYD shutdn + 1 min)**

- R2    MPS He ISOL (six)                    – CL  
       I'CNCT L                                – OUT OP  
       PNEU L ENG He XOVR                – CL

**NOTE**

Expect multiple MAs for MPS  
 He P as regs bleed down

|               |               |
|---------------|---------------|
| 1: AS DESIRED | 2: AS DESIRED |
| 3: AS DESIRED |               |

**C,MS**

**C PCS DEACTIVATION**

L2 O2 SYS 1,2 SPLY (two) – CL (tb–CL)  
 ✓EMER tb – bp

**MS GPS PWDN**

A13 (A12 for OV102)  
 \* If landing not at KSC, EDW, or NOR: \*  
 \* GPS ENCRYPT – ZEROIZE \*  
 \* Wait one second \*  
 \* GPS ENCRYPT – NORMAL \*

GPS PWR – OFF  
 PRE AMPL UPPER – OFF  
 LOWER – OFF

MCC Report, “GO/NO–GO FOR EXTENDED PWR UP”

NOTE

If GO for EXTENDED PWR UP, go to EXTEND PWR UP tab, 5–14.

If NO–GO for EXTEND PWR UP tab, go to GPC DEACT (below)

**C GPC DEACT**

(Perform after RCS/OMS VALVE TEST completed by PLT)

O6 GPC MODE 1,2,3,4,5 (five) – STBY  
 (tb–bp)  
 – HALT

Inform MS to proceed with POST LANDING PAYLOAD ACTIVITIES (if reqd), FS 5–19

|               |                        |
|---------------|------------------------|
| 1: AS DESIRED | 2: GNC 105 TCS CONTROL |
| 3: AS DESIRED |                        |

**PLT VENT DOOR PURGE POSITIONING (PASS)**

(on MCC GO, not performed if ELS)

- CRT2 CLEAR MSG – ITEM 8 EXEC
- SELECT ID – ITEM 1 +0 3 EXEC
- ✓NAME 'VFB89' (~60 sec)
- MM READ – ITEM 2 EXEC
- After 'VFB89 – ENTERING 30 MIN DELAY' msg, CANCEL – ITEM 5 EXEC

**RCS, OMS VALVE TEST**

Pause 1 sec between each line

- O7 ✓MSTR RCS XFEED – OFF
- O8 L,R OMS He PRESS/VAP ISOL (four) – CL, GPC
- L OMS XFEED (two) – OP (tb-OP), then – CL (tb-CL)
- R OMS XFEED (two) – OP (tb-OP), then – CL (tb-CL), GPC
- L,R OMS TK ISOL (four) – CL (tb-CL), then – OP (tb-OP), GPC
- L OMS XFEED (two) – OP (tb-OP), GPC
- FWD RCS
- He PRESS (two) – CL (tb-CL), GPC
- TK ISOL (two) – CL (tb-CL), then – OP (tb-OP), GPC
- MANF ISOL (five) – CL (tb-CL) then – OP (tb-OP), GPC
- O7 L,R RCS
- He PRESS (four) – CL (tb-CL), GPC
- MANF ISOL (ten) – CL (tb-CL), then – OP (tb-OP), GPC
- TK ISOL (six) – CL (tb-CL)
- XFEED (four) – OP (tb-OP), then – CL (tb-CL), GPC
- TK ISOL (six) – OP (tb-OP), GPC

|        |        |
|--------|--------|
| 1: OFF | 2: OFF |
| 3: OFF |        |

**C,MS,PS HATCH OPENING (Convoy)**

**SEAT EGRESS**

C,MS,PS Pull G SUIT controller clip (if inflated)  
Lap Belt and Chute – Release  
Egress seat (Helmet reqd if ELS)  
MS,PS Unstow 'Return to Houston' Bags (except ELS)

**HATCH OPENING (ELS)**

ALL ✓Tabs/Visor – CL  
Green Apple – PULL  
MS Open Hatch/Deploy Slide per decal  
C Give PLT GO for VEHICLE PWRDN

**C,MS,PS ORBITER UNAIDED EGRESS**

Egress orbiter  
Hand carry Landing Site Data book  
(if ELS) (reference ELS POST  
LANDING Procedures)

|        |        |
|--------|--------|
| 1: OFF | 2: OFF |
| 3: OFF |        |

**PLT**

NOTE

If GO for EXTENDED PWR UP,  
go to SYS DEACT FOR  
EXTENDED PWR UP, 5-15.

If NO-GO for EXTEND PWR UP  
tab, continue ops

**HATCH OPENING (ELS)**

Before hatch opening:  
✓ Tabs/Visor – CL

Green Apple – PULL

**EXTEND  
PWR UP**

**VEHICLE PWRDN (on GO from CDR)**

NOTE

All vehicle lighting and  
orbiter O2 will be lost at  
pwrdn

R1 MN BUS TIE (three) – OFF  
FC/MN BUS (three) – OFF  
ESS BUS SOURCE FC (three) – OFF

**EGRESS**

Pull G SUIT controller clip (if inflated)  
Egress seat, orbiter  
(Helmet reqd if ELS)

**MCC TO KSC HANDOVER (at crew egress)**

**MEDS|**



|                     |               |
|---------------------|---------------|
| 1: GNC 0 GPC MEMORY | 2: AS DESIRED |
| 3: AS DESIRED       |               |

**PLT            SYS DEACT FOR EXTENDED PWR UP**

|       |                       |       |  |
|-------|-----------------------|-------|--|
| F8    | FLT CNTLR PWR         | - OFF |  |
| F3    | TRIM RHC              | - INH |  |
|       | ✓PNL                  | - OFF |  |
| R4    | HYD BRAKE HTR (three) | - OFF |  |
| O8    | LTG (five)            | - OFF |  |
| O17:A | ATVC (four)           | - OFF |  |

**MEDS**

A5-15

ENT/MEDS/GEN E,15





|        |        |
|--------|--------|
| 1: OFF | 2: OFF |
| 3: OFF |        |

**PLT**

NOTE

If GO for EXTENDED PWR UP,  
go to SYS DEACT FOR  
EXTENDED PWR UP, 5-15.

If NO-GO for EXTEND PWR UP  
tab, continue ops

**HATCH OPENING (ELS)**

Before hatch opening:  
✓ Tabs/Visor – CL

Green Apple – PULL

**EXTEND  
PWR UP**

**VEHICLE PWRDN (on GO from CDR)**

NOTE

All vehicle lighting and  
orbiter O2 will be lost at  
pwrdn

R1 MN BUS TIE (three) – OFF  
FC/MN BUS (three) – OFF  
ESS BUS SOURCE FC (three) – OFF

**EGRESS**

Pull G SUIT controller clip (if inflated)  
Egress seat, orbiter  
(Helmet reqd if ELS)

**MCC TO KSC HANDOVER (at crew egress)**

**NOM |**



|                     |               |
|---------------------|---------------|
| 1: GNC 0 GPC MEMORY | 2: AS DESIRED |
| 3: AS DESIRED       |               |

**PLT            SYS DEACT FOR EXTENDED PWR UP**

|       |                       |       |
|-------|-----------------------|-------|
| F8    | INST PWR              | - OFF |
|       | FLT CNTLR PWR         | - OFF |
| F3    | TRIM RHC              | - INH |
|       | ✓PNL                  | - OFF |
| R4    | HYD BRAKE HTR (three) | - OFF |
| O8    | LTG (five)            | - OFF |
| O17:A | ATVC (four)           | - OFF |

**NOM |**



|               |        |
|---------------|--------|
| 1: AS DESIRED | 2: OFF |
| 3: AS DESIRED |        |

**PLT**

**EGRESS**

(When desired after ground support personnel establishes comm at PS station)

R6            R COMM PWR – OFF  
                 Pull G SUIT controller clip (if inflated)  
                 Egress seat, orbiter

**MCC TO KSC HANDOVER**

(At crew egress or GSE cooling activation, whichever occurs later)

**MS EXT  
PWR UP**

|               |        |
|---------------|--------|
| 1: AS DESIRED | 2: OFF |
| 3: AS DESIRED |        |

MS EXT  
PWR UP

**MS MS SYS DEACT FOR EXTENDED PWR UP**

MS1 Perform POST LANDING PAYLOAD ACTIVITIES  
(if reqd), FS 5–19

MS2 **LRU DEACTIVATION**  
(After APU/HYD SHUTDN)

- O14,O15,
- O16 BRAKES (three) – OFF
- cb GPS PRE AMPL (four) – OP
- (OV103,105 only)
- GPS 2 PRE AMPL UPPER – op
- LOWER – op
- (OV104 only)
- RGA (four) – OFF
- IMU (three) – OFF
- ASA (four) – OFF
- cb ADTA (four) – op
- cb/sw ACCEL (four) – op/OFF
- cb DDU (six) – op
- MNA NWS – op
- MNB NWS – op
- O7 TACAN MODE (three) – OFF
- O8 RADAR ALTM (two) – OFF
- MLS (three) – OFF
- C L1 IMU FAN (three) – OFF

**APU HEATER DEACTIVATION**  
(After APU/HYD SHUTDN)

- A12 APU HTR
- TK/FU LINE H2O SYS (six) – OFF
- GAS GEN/FUEL PUMP (three) – OFF
- LUBE OIL LINE (three) – OFF

**RCS/OMS HEATERS PWRDN**

- A14 OMS CRSFD LINE A,B (two) – OFF
- If reqd, install and lock PL Bay Window Shades
- MS2 Inform CDR, “POST LDG PROCEDURE COMPLETE”

— | |

| | —

Replace this page with page(s) from Flight Supplement

— | |

| | —

— | |

| | —

Replace this page with page(s) from Flight Supplement

5-20

ENT/ALL/GEN E

— | |

| | —



|               |        |
|---------------|--------|
| 1: AS DESIRED | 2: OFF |
| 3: AS DESIRED |        |

ASP      **INTEGRATED POST LANDING PROCEDURES  
FOR EXTENDED PWR UP**

ASP 1      A15      Connect Comm (PS)  
PS Comm CCU PWR – ON

ASP 1      Comm ck with MCC

ASP to MCC      Report when “CREW READY TO  
EGRESS”

ASP to MCC      Report “POST LANDING PROCEDURE  
COMPLETE”

**ASP EXT  
PWR UP**



|               |        |
|---------------|--------|
| 1: AS DESIRED | 2: OFF |
| 3: AS DESIRED |        |

**CDR NH3 DEACT**

(On MCC call if Cooling Cart ready)

- L1
1. NH3 CNTLR A(B) – OFF
  2. RAD OUT TEMP – NORM

```

*           After NH3 TERMINATION:           *
*           If EVAP OUT TEMP alarm and       *
* O1        FREON EVAP OUT TEMP < 32 degF:  *
* L1        1. FREON PUMP LOOP 1,2          *
*           (two) – OFF (ASAP)              *
*           2. H2O PUMP LOOP 1 – ON         *
*           3. If present, activate PL H2O  *
*           LOOP                            *
*           ✓MCC for steps                   *
*           If no comm:                     *
* O1        4. Go to to VEHICLE PWRDN,     *
*           5-13 >>                          *
*           5. ✓MCC                          *
*           If EVAP OUT TEMP alarm and       *
*           FREON EVAP OUT TEMP > 65 degF  *
*           for 5 min:                       *
*           6. Go to POST LANDING LOSS     *
*           OF COOLING, 5-24                *

```

|               |        |
|---------------|--------|
| 1: AS DESIRED | 2: OFF |
| 3: AS DESIRED |        |

**POST LANDING LOSS OF COOLING (NH3 FAILED OR DEPLETED)**

- |        |    |   |
|--------|----|---|
| C      | L1 | 1. NH3 CNTLR A,B (two) – OFF  |
|        |    | 2. ✓RAD BYP VLV MAN SEL (two) – RAD FLOW (tb–RAD, 3 sec)  |
|        |    | 3. ✓RAD CNTLR OUT TEMP – NORM   |
| C,P,MS |    | 4. ✓Complete post landing procedures thru <u>ENT C/L, 5–18 &amp; FS 5–19 ASAP</u><br>Assume GO for <u>EXTENDED PWR UP</u> |
| B      | C3 | 5. ✓BFC CRT SEL – 3+1<br>CRT DISP – ON  |

|                       |
|-----------------------|
| 3: BFS, SM SYS SUMM 2 |
|-----------------------|

- |   |      |   |
|---|------|---|
|   |      | Terminate monitoring if ground cooling established (Convoy commander call) >>                                     |
|   | CRT3 | 6. Monitor AV BAY TEMP (three)<br>When AV BAY TEMP 1 or 2 > 113 or AV BAY TEMP 3 > 107 or no temperature insight: |
| P |      | 7. Go to to VEHICLE PWRDN, 5–13 >>  |
| A |      | 8. Crew egress if not already complete  |

## 1-ORBIT LATE DEORBIT PROCEDURES

Refer to DEORBIT BURN FLIGHT RULES  
Cue Card for failures that require 1-orbit  
delay

1-ORB  
LATE

|                              |                         |
|------------------------------|-------------------------|
| 1: GNC DEORB MNVR COAST      | 2: GNC DEORB MNVR COAST |
| 3: BFS, GNC DEORB MNVR COAST |                         |

### 1-ORBIT LATE DEORBIT PROCEDURES

TRANS B  
DAP

These procedures assume:

1. All DEORB PREP completed
2. DEORBIT BURN completed up to but not including SINGLE APU START, 3-13. If activities are not complete, then do them during troubleshooting time

C CRT1 GNC, OPS 301 PRO

R2 ✓HYD MN PUMP PRESS (three) – NORM

B A14 RCS/OMS HTR  
 FWD RCS – A AUTO  
 L POD (two) – A AUTO, B OFF  
 R POD (two) – A AUTO, B OFF  
 OMS CRSFD LINES (two) –  
 A AUTO, B OFF  
 FWD RCS JET 5 (one) – AUTO  
 AFT RCS JET 5 (one) – AUTO

### H2O TANK CONFIG

R11L SPLY H2O TKC INLET – OP (tb-OP)  
 OUTLET – OP (tb-OP)

TIG-1:10> **IMU/IMU ALIGN**

Perform IMU/IMU alignment using best IMU as reference. ✓MCC for reference IMU

**1: GNC 21 IMU ALIGN**

C CRT1 IMU/IMU – ITEM 14 + \_\_\_ EXEC  
 ALIGN IMU 1(2,3) –  
 ITEM 10(11,12) EXEC (\*)  
 If no comm, EXEC – ITEM 16 EXEC (\*)  
 Rcd MET \_\_\_/\_\_\_:\_\_\_  
 ✓EXEC, ITEM 16 – (no \*) (4-6 min)

1-ORB  
LATE

1: GNC DEORB MNVR EXEC | 2: GNC DEORB MNVR EXEC  
3: BFS, GNC DEORB MNVR EXEC

C MCC UPDATE:  
DEL PAD  
PRPLT PAD  
MCC UPLINK:  
PASS TGT  
BFS TGT

CRT2 GNC, OPS 302 PRO

ALL **FLUID LOADING: 1-ORBIT LATE**

Approx 1 hr prior to new TIG, drink 8 fluid oz water plus take 2 salt tablets every 15 min for total of 16 fluid oz water and 4 salt tablets per crewmember

**FINAL DEORB UPDATE/UPLINK**

C MCC UPDATE:  
DEL PAD  
PRPLT PAD  
MCC UPLINK:  
PASS SV  
BFS SV  
PASS TGT  
BFS TGT  
BFS IMU GYRO/ACCEL

**G50** ✓LAND SITE as reqd  
SET TACAN tw

On MCC GO:

CRT1 LOAD - ITEM 22 EXEC  
ST CRT TMR - ITEM 23 EXEC  
CRT1,3 ✓PASS & BFS TGTS per MNVR PAD:  
BURN ATT  
ΔVTOT  
TGO  
HA HP

1: GNC DEORB MNVR EXEC | 2: GNC DEORB MNVR EXEC

3: BFS, GNC DEORB MNVR EXEC

· · · · ·  
· **IF WAVEOFF** ·  
· Go to IF NO-GO FOR ·  
· DEORBIT BURN, 3-11 ·  
· · · · ·

TIG-15>B A14 RCS/OMS HTR  
FWD RCS - OFF  
L POD (two) - A OFF,B OFF  
R POD (two) - A OFF,B OFF  
OMS CRSFD LINES (two) -  
A AUTO,B AUTO  
FWD RCS JET 5 (one) - OFF  
AFT RCS JET 5 (one) - OFF

TIG-10> **MNVR TO 1-ORBIT LATE DEORBIT ATT**

C3 ✓DAP: AUTO  
B F6,F8 ✓ADI ATT (two) - INRTL  
✓ERR (two) - MED  
✓RATE (two) - MED  
C MNVR to BURN ATT  
(✓ADI ATT with CRT BURN ATT)  
B Copy last DEL PAD and OMS PRPLT PAD  
data on DEORBIT BURN Cue Cards

F6/F8 ✓DEORBIT BURN and DEORBIT BURN  
MONITOR Cue Cards installed

3: BFS, SM SYS SUMM 2

R2 HYD MN PUMP PRESS (three) - LO

Return to DEORBIT BURN Cue Cards and  
SINGLE APU START, 3-13



## SWITCH LIST AT WHEELS STOP EGRESS

### LEFT SEAT

L5 ..... 7-2  
 L1 ..... 7-2  
 L2 ..... 7-2

F2 ..... 7-2  
 F3 ..... 7-2  
 F6 ..... 7-2  
 F7 ..... 7-3

C2 ..... 7-3  
 C3 ..... 7-3

O6 ..... 7-3  
 O7 ..... 7-4  
 O14 ..... 7-4  
 O15 ..... 7-5

### RIGHT SEAT

O16 ..... 7-6  
 O17 ..... 7-6  
 O8 ..... 7-6

### RIGHT SEAT

F4 ..... 7-6  
 F8 ..... 7-6

R1 ..... 7-7  
 R2 ..... 7-7  
 R4 ..... 7-7  
 R6 ..... 7-8

R7 ..... 7-8  
 R10 ..... 7-8  
 R15 ..... 7-8

### AFT

A11 ..... 7-9  
 A12 ..... 7-9  
 A13 ..... 7-9  
 A14 ..... 7-9  
 A15 ..... 7-9

### MIDDECK – FWD

MO39M ..... 7-10  
 MO42F ..... 7-10

### NOTES

- This section contains switch configuration at egress for panels that are reconfigured in this checklist for 'EXTEND PWR UP' option. Refer to DEORBIT PREP, section 3, for egress configuration of remaining panels subsequent to scheduled Deorbit Prep switch verification checks
- \_ \_ \_ \_ \_ denotes physical break in panel structure
- Switch list at WHEELS STOP EGRESS

NOT FLOWN

7-1

ENT/ALL/GEN E

SW LIST

# SW LIST

## LEFT SEAT SWITCH LIST AT WHEELS STOP **EGRESS**

NOT FLOWN

7-2

ENT/ALL/GENE

- L5 L COMM PWR - ON  OFF
- 
- L1 All switches per DEORB PREP except:  
 IMU FAN B - ON  OFF  
 H2O PUMP LOOP 1 (two) - OFF, B  ON, B  
 RAD CNTLR LOOP 1,2 (two) - AUTO B  
     BYP VLV MAN SEL 1 - ctr (tb-RAD)  
     SEL 2 - ctr (tb-RAD or BYP)  
     MODE 1 - AUTO  
     MODE 2 - AUTO or MAN  
 NH3 CNTLR A(B) - OFF  PRI/GPC or SEC/ON or OFF
- 
- L2 ANTISKID - ON  OFF  
 NWS - 1  OFF  
 BDY FLP - AUTO/OFF  
 ENTRY MODE - AUTO  
 TRIM R,P,Y (three) - ctr  
 SBTC - as reqd  full forward  
 O2 SYS 1,2 SPLY (two) - ctr (tb-OP)  
     ctr (tb-CL)  
 N2 SYS 1,2 (four) - ctr (tb-OP)
- 
- F2 All pb lts - as reqd  lt off

- F3 L HUD PWR - ON  OFF  
 TRIM RHC/PNL - as reqd  INH  
     PNL - as reqd  OFF  
 R HUD PWR - ON  OFF  
 TRIM RHC/PNL - as reqd  INH  
     PNL - as reqd  OFF  
 DRAG CHUTE ARM 1/ARM 2 pb - as reqd  lt off  
     DPY 1/DPY 2 pb - as reqd  lt off  
     JETT 1/JETT 2 pb - as reqd  lt off
- 
- F6 INST PWR - FLT/MPS  OFF  
 DATA BUS - 3  
 AIR DATA - NAV  
 ADI ATT - LVLH  
     ERR - as reqd  
     RATE - as reqd  
 LDG GEAR ARM pb - ARM/lt on  lt off  
     DN pb - DN/lt on  lt off  
     tb (three) - DN  
 HSI SEL MODE - ENTRY  
     SOURCE (two) - NAV,1  
 BFC DISENGAGE - dn  
 ABORT MODE - OFF  
     pb - lt off

NOT FLOWN

7-3

ENT/ALL/GENE

LEFT SEAT SWITCH LIST AT WHEELS STOP **EGRESS**

F7 FLT CNTLR PWR - ON  OFF  
RADAR ALTM - 1

C2 CRT PWR (1,3) - ON  
2 PWR - ON  OFF  
1,2,3 MAJ FUNC (three) - GNC  
L CRT SEL - as reqd  
R CRT SEL - as reqd  
EVENT TIMER MODE - as reqd  
CNTL - ctr  
TIMER SET tw (four) - as reqd  
TIMER - ctr

C3 OMS ENG (two) - OFF  
BFC CRT DISP - ON  
SEL - 3+1  
FCS CH (four) - AUTO  
BDY FLP - AUTO/OFF  
AIR DATA PROBE STOW (two) - INH  
OV102 MN ENG VIB SHUTDN - INH  
MN ENG LIMIT SHUTDN - AUTO  
TRIM R,P,Y (three) - ctr  
SBTC - full forward  
DAP - lts off  
SRB SEP - MAN/AUTO  
ET SEP - MAN  
AUD CTR - 1

C3 OI PCMMU PWR - 1  
FORMAT - GPC  
S-BD PM CNTL - CMD  
ANT - GPC  
AIR DATA PROBE (two) - DPY  
UPLK - ENA  
OV103,4 MSTR MADS PWR - ON  OFF  
OV102 MSTR OEX PWR - ON  OFF  
C/W MEM - ctr  
MODE - NORM  
OV102 PL SAFING (five) - SAFE  
OV103,4 RTG PUMP - PRI  
OV103 PL SAFING (2,3,4,5) - SAFE  
OV104 RTG SHORT PRI(SEC) ENA - DSBL  
OV104 RTG SHORT PRI(SEC) SHORT - OFF  
EMER LTG - FF/ON (as reqd)

O6 LTG PNL (two) - BRT, as reqd  OFF  
INST (two) - BRT, as reqd  OFF  
L GLRSHLD FLOOD (two) - BRT, as reqd  OFF  
L SEAT/CTR CNSL FLOOD (two) - BRT, as reqd  OFF  
STAR TRK DR CNTL (two) - OFF (tb-CL)  
PWR (two) - OFF  
UHF XMIT FREQ - 259.7  
SPLX PWR AMP - ON  
SQUELCH - ON  
MODE sel - SPLX

NOT FLOWN

7-4

ENT/ALL/GEN E,23

### LEFT SEAT SWITCH LIST AT WHEELS STOP **EGRESS**

O6 ANNUN LAMP TEST - ctr  
 BUS SEL ACA 1 - MNA  
 ACA 2/3 - MNB  
 INTEN (two) - VAR, as reqd  
 MTU - AUTO  
 DEU (four) - dn  
 MDM PL1,PL2 (two) - ON  
 PL3 - OFF  
 FA1,2,3,4 (four) - ON  
 FF1,2,3,4 (four) - ON  
 GPC PWR 1,5 - ON  
 2,3,4 - ON **OFF**  
 OUTPUT 1 - NORM (tb-gray)  
 2,3,4 - NORM (tb-gray) **bp**  
 5 - BACKUP (tb-bp)  
 IPL SOURCE - OFF  
 GPC MODE 1,5 - RUN (tb-RUN)  
 2,3,4 - RUN (tb-RUN)  
**HALT (tb-bp)**

---

O7 TACAN 1,2,3 MODE (three) - GPC **OFF**  
 ANT SEL (three) - AUTO  
 CH tw (three) - 111X  
 (if Edw landing)  
 AFT L RCS He PRESS (two) - OP (tb-OP)  
**GPC (tb-CL)**  
 TK ISOL (three) - GPC (tb-OP)

O7 AFT L RCS MANF ISOL 1,2,3,4 (four) - OP  
 (tb-OP)  
**GPC (tb-OP)**  
 5 - GPC (tb-OP)  
 XFEED (two) - GPC (tb-CL)  
 MSTR RCS XFEED - OFF  
 AFT R RCS He PRESS (two) - OP (tb-OP)  
**GPC (tb-CL)**  
 TK ISOL (three) - GPC (tb-OP)  
 MANF ISOL 1,2,3,4 (four) - OP  
 (tb-OP)  
**GPC (tb-OP)**  
 5 - GPC (tb-OP)  
 XFEED (two) - GPC (tb-CL)

---

O14:A BRAKES MNA - ON **OFF**  
 RGA 1 - ON **OFF**  
 IMU 1 - ON **OFF**  
 FC1 CNTLR - ON

O14:C All cbs closed except:  
 :D OV102,3,5 cb MNA TACAN 1 - op  
 OV104 GPS 1 PRE AMPL UPPER - op  
 OV104 GPS 1 PRE AMPL LOWER - op  
 cb MNA GPS PRE AMPL (two) - op  
 CAB VENT - op  
 VENT ISOL - op **op**  
 :E ADTA 1 - cl **op**  
 ACCEL 1 - cl **op**  
 DDU L - cl **op**  
 AFT - op **op**  
 NWS - cl

NOT FLOWN

**LEFT SEAT SWITCH LIST AT WHEELS STOP EGRESS**

O14:F MMU 1 - ON OFF  
RJD (six) - ON OFF  
L OMS ENG VLV - ON OFF  
ASA 1 - ON

---

O15:A BRAKES MNB - ON OFF  
RGA (two) - ON OFF  
IMU 2 - ON OFF  
FC2 CNTLR - ON  
:D cb MNB NWS - clop  
All cbs closed except:  
:C OV104 GPS 2 PRE AMPL UPPER - op  
:D OV104 GPS 2 PRE AMPL LOWER - op  
:C OV102,3 cb MNB TACAN 2 - op  
:E cb MNB ADTA 2 - clop  
ACCEL 2 - clop  
DRAG CHUTE SYS 2 - clop  
DDU (two) - clop  
:F MMU 2 - ON  
RJD (four) - ON OFF  
ASA 2 - ON OFF  
ACCEL 4 - ON OFF

---

7-5

ENT/ALL/GEN E,19

NOT FLOWN

7-6

ENT/ALL/GEN E,19

**RIGHT SEAT SWITCH LIST AT WHEELS STOP EGRESS**

O16:A BRAKES MNC - ON  OFF  
 RGA 3 - ON  OFF  
 IMU 3 - ON  OFF  
 FC3 CNTLR - ON  
 All cbs closed except:  
 :C OV102 cb MNC TACAN 3 - op  
 :D OV104 GPS 3 PRE AMPL UPPER - op  
 :D OV104 GPS 3 PRE AMPL LOWER - op  
 cb MNC GPS PRE AMPL (two) - op  
 O2 EMER - op  
 :E ADTA (two) - cl  op  
 DDU R - cl  op  
 AFT - op  
 DRAG CHUTE SYS 1 - cl  op  
 :F RJD (six) - ON  OFF  
 R OMS ENG VLV - ON  OFF  
 ASA 3,4 (two) - ON  OFF  
 ACCEL 3 - ON  OFF  
 RJD L5/F5/R5 DRIVER - OFF

---

O17:A ATVC (four) - ON  OFF  
 :B EIU (three) - OFF  
 :C SIG CONDR FREON A - AC2  
 B - AC3  
 OL 1/2 - ON  
 OR 1/2 - ON  
 :D SIG CONDR OA 1/2/3 - ON  
 MDM OA 1/2/3 - ON  
 MEC (two) - OFF

---

O8 RADAR ALTM (two) - ON  OFF

O8 MLS (three) - ON  OFF  
 MLS CH tw (three) - as reqd  
 R SEAT/CTR CNSL FLOOD (two) - as reqd  
 LTG PNL R - BRT  OFF  
 R OVHD - BRT  OFF  
 R INST - BRT  OFF  
 NUMERIC - BRT  OFF  
 R GLRSHLD FLOOD - OFF  
 OMS KIT He PRESS/VAP ISOL (two) - CL  
 TK ISOL (two) - CL (tb-bp)  
 L OMS He PRESS/VAP ISOL (two) - CL  GPC  
 TK ISOL (two) - OP (tb-OP)  GPC (tb-OP)  
 XFEED (two) - CL (tb-CL)  GPC (tb-OP)  
 R OMS He PRESS/VAP ISOL (two) - CL  GPC  
 TK ISOL (two) - OP (tb-OP)  GPC (tb-OP)  
 XFEED (two) - CL (tb-CL)  GPC (tb-CL)  
 FWD RCS He PRESS (two) - OP (tb-OP)  
 GPC (tb-CL)  
 TK ISOL (two) - OP (tb-OP)  GPC (tb-OP)  
 MANF ISOL 1,2,3,4 - OP (tb-OP)  
 GPC (tb-OP)  
 5 - GPC (tb-OP)  
 ANNUN LAMP TEST - ctr

---

F4 All pb lts - as reqd

---

F8 INST PWR - ON  OFF  
 DATA BUS - 4  
 AIR DATA - NAV  
 ADI ATT - LVLH  
 ERR - as reqd

NOT FLOWN

**RIGHT SEAT SWITCH LIST AT WHEELS STOP EGRESS**

F8 ADI RATE - as reqd  
 LDG GEAR ARM pb - ARM/lt ON lt OFF  
           DN pb - DN/lt ON lt OFF  
           tb (three) - DN  
 HSI SEL MODE - ENTRY  
           SOURCE (two) - MLS, 2  
 FLT CNTLR PWR - ON OFF  
 RADAR ALTM - 2  
 APU sel (two) - FUEL, 1

R2 HYD CIRC PUMP (three) - OFF  
 APU FUEL TK VLV (three) - OP CL  
 cb APU FU TK VLV ENA (six) - cl  
 ET UMB DR MODE - GPC  
           CTRLINE LAT - GND (tb-STO)  
           L DR - OFF (tb-CL) tb-bp  
           L LAT - OFF (tb-LAT) tb-REL  
           R DR - OFF (tb-CL) tb-bp  
           R LAT - OFF (tb-LAT) tb-REL

R1 All switches and cbs per DEORB PREP except:  
 PL PRI MNC - as reqd per FS 5-19

R4 HYD BRAKE HTR (three) - AUTO OFF  
           ISOL VLV 1,2,3 - GPC (tb-OP)  
           MPS/TVC ISOL VLV (three) - ctr (tb-CL) ctr (tb-OP)  
 LG/NWS HYD SYS - AUTO 1/2  
 LG/EXTEND ISOL VLV - GPC (tb-op)  
 MPS ENG CNTLR HTR (three) - OFF  
           MANF PRESS (two) - GPC  
           FILL/DRAIN LO2 OUTBD - GND  
                           INBD - GND  
           LH2 OUTBD - GND  
                           INBD - GND  
           H2 PRESS LINE VENT - GND  
           LO2 PREVLV (three) - GPC  
           LH2 PREVLV (three) - GPC  
           FDLN RLF ISOL (two) - GPC

7-7

R2 MPS PRPLT DUMP SEQ (two) - GPC  
           ENG PWR (six) - OFF  
           He ISOL (six) - GPC  
           PNEU L ENG He XOVR - GPC  
                   He ISOL - GPC  
           He I'CONNECT (three) - GPC  
           LH2 ULL PRESS - AUTO  
           APU/HYD RDY tb (three) - bp  
           APU OPER (three) - START/RUN OFF  
           SPEED SEL (three) - NORM  
           HYD MN PUMP PRESS (three) - NORM  
           APU CNTLR PWR (three) - ON OFF  
           AUTO SHUTDN (three) - ENA  
           BLR CNTLR/HTR (three) - B  
           PWR (three) - ON OFF  
           N2 SPLY (three) - ON OFF

ENT/ALL/GEN E, 20

NOT FLOWN

### RIGHT SEAT SWITCH LIST AT WHEELS STOP EGRESS

R6 R COMM PWR – ON

---

R7 (NOTE: Pnl may be deleted if spacelab not flown)  
All switches per DEORB PREP except:  
Powered spacelab config:  
SS INV – ctr (lt on)  
AC/DC PWR – ctr (lt on)  
AV FAN ON 1 – ctr (lt on)  
H2O LOOP PUMP 1 – ctr (lt on)  
Unpowered spacelab config same as above except lts off:

---

7-8

R10 MS AUD PWR – AUD/TONE  
A/G (two) – T/R  
A/A – T/R  
ICOM (two) A – T/R  
B – T/R  
VOX SENS – as reqd  
PAGE – dn  
VOL tw (five) – as reqd  
XMIT/ICOM MODE – PTT/PTT

---

ENT/ALL/GENE

All cbs closed except:  
R15:C cb MNB KU ELEC – op  
ANT HTR – op  
CABLE HTR – op  
MNC KU SIG PROC – op  
:D MNB CCTV ADU – op  
:F ESS 1BC LDG GEAR ARM/DN RESET – op CL

---



NOT FLOWN

### AFT FLIGHT DECK SWITCH LIST AT WHEELS STOP **EGRESS**

A11 MS COMM CCU PWR - ON

A14 PYRO (twelve) - SAFE  
RMS LAT - SAFE

A12 APU HTR GAS GEN/FUEL PUMP (three) - B AUTO   
LUBE OIL LINE (three) - B AUTO   
TK/FU LINE H2O SYS 1A,2A,3A - OFF  
1B,2B,3B - AUTO

A15 PS COMM CCU PWR - ON   
DC UTIL PWR MNC - as reqd  
AC UTIL PWR AC3 - OFF

LG ARM/DN RESET - dn  
FC3 STRUCT RTN - ctr (tb-ON)  
HYD HTR (eight) - OFF  
CIRC PUMP PWR 1 - MNA  
2 - MNB  
3 - MNC

7-9

A13 OS AUD MSTR SPKR VOL - as reqd  
SPKR PWR - OFF

A14 RCS/OMS HTR FWD RCS - OFF  
L POD (two) - OFF  
R POD (two) - OFF  
OMS KIT - OFF  
CRSFD LINES (two) - A AUTO   
- B AUTO   
FWD RCS JET 1,2,3,4 (four) - AUTO  
5 - OFF  
AFT RCS JET 1,2,3,4 (four) - AUTO  
5 - OFF

ENT/ALL/GENE

NOT FLOWN

**MIDDECK - FORWARD SWITCH LIST AT WHEELS STOP EGRESS**

---

MO39M MIDDECK COMM CCU PWR - ON OFF

---

MO42F MIDDECK SPKR AUD PWR - OFF  
A/G (two) - T/R  
A/A - T/R  
ICOM (two) - T/R  
VOX SENS - as reqd  
MSTR SPKR VOL - as reqd  
PAGE - dn  
VOL tw (five) - as reqd  
XMIT/ICOM MODE - PTT/VOX  
TONES - ACCU/BYP  
SPKR PWR - OFF

7-10 GPC MEM DUMP - OFF  
BYP TONE VOL - as reqd

---

ENT/ALL/GEN E

CUE CARD  
CONFIG

## ENTRY CUE CARD CONFIG

FAB USE ONLY

8-1

ENT/ALL/GEN E

**DEORBIT BURN FLIGHT RULES  
ONE-ORBIT LATE AVAILABLE** ENT-1a/D/I

|                    | FAILURE   | PRE TIG            |         | POST TIG             |
|--------------------|---|--------------------|---------|----------------------|
|                    |   | Delay (max)        |         | Stop Burn, > Safe HP |
|                    |   | One Orbit          | One Day |                      |
| <b>APU/HYD</b>     |   |                    |         |                      |
| 1                  | No APU operating .....                                  | X                  |         |                      |
| <b>LDG/DECEL</b>   |   |                    |         |                      |
| 2                  | NWS (KSC) .....   | X                  |         |                      |
| <b>DPS</b>         |   |                    |         |                      |
| 3                  | RDNT fail, Split .....                                  |                    | X       | X                    |
| 4                  | 1 GPC .....   | X                  |         |                      |
| 5                  | BFS .....   |                    | X       |                      |
| 6                  | GPC BITE (Multiple GPCs) .....                          |                    | X       |                      |
| <b>ECLS</b>        |   |                    |         |                      |
| 7                  | 2 Av Bay Fans in Bay 3 .....                            | X                  |         |                      |
| 8                  | 2 Av Bay Fans in Bay 1 or 2 .....                       |                    | X       |                      |
| <b>ELEC</b>        |   |                    |         |                      |
| 9                  | H2 Manf or TK leak (not in depleted tk(s) .....         | X                  |         |                      |
| 10                 | 2 MN Buses .....  |                    | X       | X                    |
| 11                 | CNTL CA1 (No BFS Engage in GPC 3/5) .....               |                    | X       |                      |
| 12                 | Multi Φ AC BUS (unshorted) .....                        | X                  |         |                      |
| <b>GNC</b>         |   |                    |         |                      |
| 13                 | 1 MLS (if reqd), IMU, or TACAN (C-band not avail) ..... | X                  |         |                      |
| 14                 | IMU Dilemma .....                                       |                    | X       | X                    |
| 15                 | RHC Dilemma .....                                       | X                  |         |                      |
| 16                 | 2 IMUs .....  |                    | X       |                      |
| 17                 | 3 ADTAs .....   | X                  |         |                      |
| <b>HOOK VELCRO</b> |   | <b>HOOK VELCRO</b> |         |                      |
| 18                 | 2 ADTAs, AAs, RGAs, FCS (LKBD not avail) .....          | X                  |         |                      |
| <b>OMS</b>         |   |                    |         |                      |
| 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     |         |                      |
| <b>AFT RCS</b>     |   |                    |         |                      |
| 23                 | 2 jets, same direction, same pod .....                  | X                  |         |                      |
| 24                 | Prplt Lk after LAST LOS .....                           | X                  |         |                      |
| 25                 | 1 AFT RCS PROP TK fail .....                            | X                  |         |                      |
| <b>COMM</b>        |   |                    |         |                      |
| 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/D/I

|                    | FAILURE   | PRE TIG        | POST TIG             |
|--------------------|---|----------------|----------------------|
|                    |   | Delay (max)    | Stop Burn, > Safe HP |
|                    |   | One Day        |                      |
| 1                  | <b>APU/HYD</b><br>No APU operating .....                              | X              |                      |
| 2                  | <b>LDG/DECEL</b><br>NWS (KSC) .....                                   | X              |                      |
| 3                  | <b>DPS</b><br>RDNT fail, Split .....                                  | X              | X                    |
| 4                  | 1 GPC .....   |                |                      |
| 5                  | BFS .....   | X              |                      |
| 6                  | GPC BITE (Multiple GPCs) .....  | X              |                      |
| 7                  | <b>ECLS</b><br>2 Av Bay Fans in Bay 3 .....                           |                |                      |
| 8                  | 2 Av Bay Fans in Bay 1 or 2 .....                                     | X              |                      |
| 9                  | <b>ELEC</b><br>H2 Manf or TK leak (not in depleted tk(s) .....        | X              |                      |
| 10                 | 2 MN Buses .....  | X              | X                    |
| 11                 | CNTL CA1 (No BFS Engage in GPC 3/5) .....                             | X              |                      |
| 12                 | Multi ΦAC BUS (unshorted) .....                                       |                |                      |
| 13                 | <b>GNC</b><br>1 MLS (if reqd), IMU, or TACAN (C-band not avail) ..... | X              |                      |
| 14                 | IMU Dilemma .....   | X              | X                    |
| 15                 | RHC Dilemma .....   | X              |                      |
| 16                 | 2 IMUs .....  | X              |                      |
| 17                 | 3 ADTAs .....   |                |                      |
| <b>HOOK VELCRO</b> |   |                |                      |
| 18                 | 2 ADTAs, AAs, RGAs, FCS (LKBD not avail) .....                        | X              |                      |
| 19                 | <b>OMS</b><br>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 |                      |
| 23                 | <b>AFT RCS</b><br>2 jets, same direction, same pod .....              | X              |                      |
| 24                 | Prplt Lk after LAST LOS .....   | X              |                      |
| 25                 | 1 AFT RCS PROP TK FAIL .....  | X              |                      |
| 26                 | <b>COMM</b><br>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  
HINGED AT BOTTOM OF  
'DEORBIT BURN (RCS)'  
HINGE

```

* RCS COMPLETION: *
*   THC +X to TGT HP or TOT AFT QTY 1    % *
* * *
*   At AFT QTY 1      THC +X to PREBANK/FLIP HP or *
*   if CUR HP:      TOT AFT QTY 2   % then *
*                   PREBANK/FRCS COMPLETION *
* * *
*   PREBANK/FLIP   ----- *
*   HP          PREBANK/FRCS COMPLETION *
* * *
*   AFT   ----- *
*   HP          THC +X to TGT HP *
* * *
*   TGT   ----- *
*   HP *
* * *
* FRCS COMPLETION (if applicable): *
*   MNVR to -X Att (pitch up at 3°/sec to VGOz = +1/4 ΔVTOT) *
*   THC -X to TGT HP or FRCS depletion (JETS FAIL OFF) *

```

CUTOFF VGOx = 0, release THC  
AFT RCS RECONFIG  
Trim Inplane X,Z residuals < 2 fps (< 0.5 if shallow)

ENT-3aa/D/J

(reduced copy)

FAB USE ONLY

CC 8-5

ENT/ALL/GEN E,22

TOP  
BACK OF 'DEORBIT BURN (RCS)'

HOOK  
VELCRO

HOOK  
VELCRO

ENT-3b/D/C

HINGE

(reduced copy)

FAB USE ONLY

CC 8-6

ENT/ALL/GEN E



TOP  
HINGED AT BOTTOM OF  
BACK OF 'DEORBIT BURN (RCS)'



ENT-3bb/D/C

(reduced copy)

FAB USE ONLY

CC 8-7

ENT/ALL/GEN E

TOP

|                |                                 |                |
|----------------|---------------------------------|----------------|
| HOOK<br>VELCRO | <b>DEORBIT<br/>BURN (2 ENG)</b> | HOOK<br>VELCRO |
|----------------|---------------------------------|----------------|

- ✓MM302    ✓OMS BOTH
- Enter TGO + 5 sec
- ✓TRIM per MNVR PAD or P +0.0, LY -5.7, RY +5.7
- L,R OMS He PRESS/VAP ISOL A (two) - GPC
- B (two) - OP
- ✓DAP - AUTO(PASS)/DISC
- ADI - LVLH(REF)/HI/MED
- FLT CNTLR PWR (two) - ON

TIG-2    OMS ENG (two) - ARM/PRESS

- :15 EXEC (NO EXEC > TIG +  :  )
- :15 If OMS AFT QTY < 11%, THC +X to OMS IGN + 1 sec
- :00 TIG    Start watch (✓Pc, ΔVTOT, ENG VLVs)

If no OMS ignition: APU's - SHUT DN

**\* OMS PRPLT FAIL:**    \*

Failed OMS ENG - OFF    \*

STOP BURN:    \*

|                      |                      |                    |
|----------------------|----------------------|--------------------|
| L OMS                | R OMS                | Good OMS ENG - OFF |
| FAIL HP              | FAIL HP              | APUs - SHUT DN     |
| <input type="text"/> | <input type="text"/> | Secure aff OMS     |

-----

CONTINUE BURN:    \*

ITEM 18 +0 EXEC    \*

When good OMS QTY:    \*

- 5%: L,R OMS XFEED (four) - OP
- 4%: Good OMS TK ISOL (two) - CL
- If OMS Pc < 80 or OMS TEMP,
- OMS ENG - OFF
- ✓ADI - LVLH, center needles
- RCS COMPLETION    \*

**\* OMS ENG FAIL:**    \*

Failed OMS ENG - OFF    \*

OMS XFEED at 1/2 ΔVTOT at fail

or OMS QTY  %L or  %R    \*

**\* 2nd OMS FAIL (ENG or PRPLT):**    \*

Failed OMS ENG - OFF    \*

If PRPLT FAIL:    \*

Secure aff OMS    \*

ITEM 18 +0 EXEC    \*

|                      |                      |                |
|----------------------|----------------------|----------------|
| Both                 | Either               | STOP BURN:     |
| ENG FAIL             | PRPLT FAIL           | APUs - SHUT DN |
| HP                   | (SAFE) HP            | -----          |
| <input type="text"/> | <input type="text"/> |                |

-----

CONTINUE BURN:    \*

- ✓ADI - LVLH, center needles
- Interconnect good OMS to RCS
- THC +X (✓OMS% vs RCS Burn Time)
- RCS I'CNCT TK SW (N/A PRPLT FAIL)
- THC +X (✓OMS% vs RCS Burn Time)
- AFT RCS RECONFIG
- RCS COMPLETION    \*

ENT-4a/D/J

HINGE

(reduced copy)

FAB USE ONLY

CC 8-8

ENT/ALL/GEN E,21

TOP  
HINGED AT BOTTOM OF  
'DEORBIT BURN (2 ENG)  
HINGE

|   |  |   |  |
|---|--|---|--|
| * | <b>RCS COMPLETION:</b>   | * |  |
| * | THC +X to TGT HP or TOT AFT QTY 1 <input style="width: 20px;" type="text"/> <input style="width: 20px;" type="text"/> %                    | * |  |
| * |  | * |  |
| * | THC +X to PREBANK/FLIP HP or   | * |  |
| * | At AFT QTY 1                      TOT AFT QTY 2 <input style="width: 20px;" type="text"/> <input style="width: 20px;" type="text"/> % then | * |  |
| * | if CUR HP:                      PREBANK/FRCS COMPLETION  | * |  |
| * |  | * |  |
| * | PREBANK/FLIP <input style="width: 20px;" type="text"/> <input style="width: 20px;" type="text"/> -----                                     | * |  |
| * | HP    PREBANK/FRCS COMPLETION  | * |  |
| * |  | * |  |
| * | AFT <input style="width: 20px;" type="text"/> <input style="width: 20px;" type="text"/> -----  | * |  |
| * | HP    THC +X to TGT HP   | * |  |
| * |  | * |  |
| * | TGT <input style="width: 20px;" type="text"/> <input style="width: 20px;" type="text"/> -----  | * |  |
| * | HP   | * |  |
| * |  | * |  |
| * | <b>FRCS COMPLETION (if applicable):</b>  | * |  |
| * | MNVR to -X Att (pitch up at 3°/sec to VGOz = +1/4 ΔVTOT)   | * |  |
| * | THC -X to TGT HP or FRCS depletion (JETS FAIL OFF)   | * |  |

CUTOFF  
+ :02 OMS ENG(s) - OFF (If < 3 IMU, at  :  )  
\* AFT RCS RECONFIG if INTERCONNECT \*  
Trim X,Z residuals < 2 fps (< 0.5 fps if shallow)

ENT-4aa/D/H

(reduced copy)

TOP  
BACK OF 'DEORBIT BURN (2 ENG)'

|                        |                                 |                        |
|------------------------|---------------------------------|------------------------|
| <b>HOOK<br/>VELCRO</b> | <b>DEORBIT<br/>BURN (1 ENG)</b> | <b>HOOK<br/>VELCRO</b> |
|------------------------|---------------------------------|------------------------|

✓MM302    ✓OMS L or R  
 ✓OMS BURN CONFIG (L or R XFEED)  
 Enter TGO + 10 sec  
 ✓TRIM per MNVR PAD or P +0.0, LY +5.2, RY -5.2  
 L,R OMS He PRESS/VAP ISOL A (two) - OP  
 ..... Wait 2 sec ..... B (two) - OP  
 ✓DAP - AUTO(PASS)/DISC  
 ADI - LVLH(REF)/HI/MED  
 FLT CNTLR PWR (two) - ON  
 TIG-2 Good OMS ENG - ARM/PRESS  :   )  
 - :15 EXEC (NO EXEC > TIG +  :   )  
 - :15 If OMS AFT QTY < 11%, THC +X to OMS IGN + 1 sec  
 :00 TIG Start watch (✓Pc, ΔVTOT, ENG VLVs)  
 \* If no OMS ignition: APUs - SHUT DN \*  
  
 OMS XFEED RETURN at ΔVTOT =     
 or    at   %  
 L,R OMS TK ISOL (four) - OP  
 XFEED (four) - CL

**\* OMS PRPLT FAIL:**

\* OMS ENG - OFF \*  
 \* \* \* \* \*  
 \* STOP BURN: \*  
 \* APUs - SHUT DN \*  
 \* Secure aff OMS \*  
 \* SAFE   ..... \*  
 \* HP   \*  
 \* CONTINUE BURN: \*  
 \* Secure aff OMS \*  
 \* ITEM 18 +0 EXEC \*  
 \* ✓ADI - LVLH, center needles \*  
 \* Interconnect good OMS to RCS \*  
 \* THC +X(✓OMS% vs RCS Burn Time) \*  
 \* AFT RCS RECONFIG \*  
 \* RCS COMPLETION \*

**\* OMS ENG FAIL:**

\* OMS ENG - OFF \*  
 \* \* \* \* \*  
 \* STOP BURN: \*  
 \* APUs - SHUT DN \*  
 \* ENG FAIL   ..... \*  
 \* HP   \*  
 \* CONTINUE BURN: \*  
 \* ✓ADI - LVLH, center needles \*  
 \* Interconnect OMS to RCS \*  
 \* THC +X(✓OMS% vs RCS Burn Time) \*  
 \* RCS I'CNCT TK SW \*  
 \* THC +X (✓OMS% vs RCS Burn Time) \*  
 \* AFT RCS RECONFIG \*  
 \* RCS COMPLETION \*

**\* RCS +X JET FAIL OFF:**

\* STOP BURN: \*  
 \* APUs - SHUT DN \*  
 \* SAFE   ..... \*  
 \* HP   \*  
 \* CONTINUE BURN: \*  
 \* ITEM 18 +0 EXEC \*  
 \* G23 Resel jets \*

ENT-4b/D/H

HINGE  
(reduced copy)

FAB USE ONLY

CC 8-10

ENT/ALL/GEN E

TOP  
HINGED AT BOTTOM OF  
'DEORBIT BURN (1 ENG)'  
HINGE

```

* RCS COMPLETION: *
*   THC +X to TGT HP or TOT AFT QTY 1    % *
* * * * *
*   At AFT QTY 1           THC +X to PREBANK/FLIP HP or *
*   if CUR HP:           TOT AFT QTY 2   % then *
*                       PREBANK/FRCS COMPLETION *
* * * * *
*   PREBANK/FLIP   ----- *
*   HP           PREBANK/FRCS COMPLETION *
* * * * *
*   AFT   ----- *
*   HP           THC +X to TGT HP *
* * * * *
*   TGT   ----- *
*   HP *
* * * * *
* FRCS COMPLETION (if applicable): *
*   MNVR to -X Att (pitch up at 3°/sec to VGOz = +1/4 ΔVTOT) *
*   THC -X to TGT HP or FRCS depletion (JETS FAIL OFF) *

```

```

CUTOFF
+ :02 OMS ENG - OFF (If < 3 IMU, at  :   )
      * AFT RCS RECONFIG if INTERCONNECT *
      Trim X,Z residuals < 2 fps (< 0.5 fps if shallow)

```

ENT-4bb/D/I

(reduced copy)



TOP  
HINGED AT BOTTOM OF 'UNBALANCED PRPLT DEORBIT BURN'  
HINGE

```

* OMS PRPLT FAIL:
* Failed OMS ENG - OFF
*
*      L OMS      R OMS      STOP BURN:
*      FAIL HP    FAIL HP    Good OMS ENG - OFF
*      [ ][ ][ ]  [ ][ ][ ]  APU's - SHUT DN
*                               Secure aff OMS
*-----
*                               CONTINUE BURN:
*                               ITEM 18 +Q EXEC
*                               When good OMS QTY:
*                               5%: L,R OMS XFEED (four) - OP
*                               4%: Good OMS TK ISOL (two) - CL
*                               If OMS Pc < 80 or OMS TEMP,
*                               OMS ENG - OFF
*                               ✓ADI - LVLH, center needles
*                               RCS COMPLETION
*
* OMS ENG FAIL:
* Failed OMS ENG - OFF
* OMS XFEED at 1/2 ΔVTOT at fail [ ][ ][ ]
* or OMS QTY [ ][ ][ ] %L or [ ][ ][ ] %R
*
* 2nd OMS FAIL (ENG or PRPLT):
* Failed OMS ENG - OFF
* If PRPLT FAIL:
*   Secure aff OMS
*   ITEM 18 +Q EXEC
*
*   Both      Either
*   ENG FAIL  PRPLT FAIL
*   HP        (SAFE) HP
*   [ ][ ][ ] [ ][ ][ ]
*
*                               STOP BURN:
*                               APU's - SHUT DN
*-----
*                               CONTINUE BURN:
*                               ✓ADI - LVLH, center needles
*                               Interconnect Good OMS to RCS
*                               THC +X (✓OMS% vs RCS Burn Time)
*                               RCS I'CNCT TK SW (N/A PRPLT FAIL)
*                               THC +X (✓OMS% vs RCS Burn Time)
*                               AFT RCS RECONFIG
*                               RCS COMPLETION
*
* RCS COMPLETION:
* THC +X to TGT HP or TOT AFT QTY 1 [ ][ ][ ][ ] %
*
*                               THC +X to PREBANK/FLIP HP or
* At AFT QTY 1      TOT AFT QTY 2 [ ][ ][ ][ ] % then
* if CUR HP:      PREBANK/FRCS COMPLETION
*
* PREBANK/FLIP HP [ ][ ][ ] PREBANK/FRCS COMPLETION
*-----
* AFT HP [ ][ ][ ] THC +X to TGT HP
*-----
* TGT HP [ ][ ][ ]
*
* FRCS COMPLETION (if applicable):
* MNVR to -X Att (pitch up at 3°/sec to VGOz = +1/4 ΔVTOT)
* THC -X to TGT HP or FRCS depletion (JETS FAIL OFF)
*
* CUTOFF
* + :02 OMS ENG(s) - OFF (If < 3 IMU, at [ ][ ] : [ ][ ][ ] )
*       * AFT RCS RECONFIG if INTERCONNECT *
*       Trim X,Z residuals < 2 fps (< 0.5 fps if shallow)

```

ENT-5aa/D/L

(reduced copy)

FAB USE ONLY

CC 8-13

ENT/ALL/GEN E,22

TOP  
BACK OF 'UNBALANCED PRPLT DEORBIT BURN'



- ✓ MM302 ✓ OMS L(R) or RCS
- Enter TGO + 10 sec
- ✓ L,R OMS TK ISOL (four) - GPC
- ✓ XFEED (four) - GPC
- ✓ tb config from table (OMS SSR-1)
- ✓ DAP - AUTO(PASS)/DISC
- ADI - LVLH(REF)/HI/MED
- FLT CNTLR PWR (two) - ON
- Man repress to maintain good OMS Tk Ps > 234 psi (simo)
- If OMS BURN INITIATION:
- ✓ TRIM per MNVR PAD or: P +0.0, LY +5.2, RY -5.2
- Good OMS ENG - ARM/PRESS
- TIG-2: EXEC (No EXEC > TIG +  :  )
- :15 If OMS AFT QTY < 11%, THC +X to OMS IGN + 1 sec
- :15 TIG Start watch (✓ Pc, ΔVTOT, ENG VLVs)
- :00 \* If no OMS ignition, APUs - SHUT DN \*
- If RCS BURN INITIATION:
- Man repress L,R OMS > L,R RCS TK Ps
- L,R RCS XFEED (four) - OP
- TK ISOL (six) - CL
- :00 THC +X (No Deorbit > TIG +  :  )
- Maintain PITCH ATT ERR ± 3°

FEEED FROM GOOD POD:  
at ΔVTOT =

or    at   %

OMS He PRESS/VAP ISOL (two) - OP

TK ISOL (two) - OP (tb-OP)

XFEED (two) - OP (tb-OP)

SECURE  OMS

**OMS PRPLT LOW**

AFT RCS RECONFIG at ΔVTOT =

RCS COMPLETION

----- ENT-5b/D/H -----  
HINGE

(reduced copy)

FAB USE ONLY

CC 8-14

ENT/ALL/GEN E



TOP  
 Hinged at bottom of 'DEORBIT BURN (MIXED XFEED)'  
 HINGE

```

* OMS PRPLT FAIL:
* OMS ENG - OFF
*
* STOP BURN:
* APU(s) - SHUT DN
* Secure L,R OMS
*
SAFE  
HP 
-----
* CONTINUE BURN:
* Secure L,R OMS
* ITEM 18 +0 EXEC
* ✓ADI - LVLH, center needles
* RCS COMPLETION
*
* OMS ENG FAIL:
* OMS ENG - OFF
*
* STOP BURN:
* APU(s) - SHUT DN
*
ENG   
FAIL  
HP 
-----
* CONTINUE BURN:
* Man repress L,R OMS > L,R RCS TK Ps
* FEED FROM GOOD POD:
*  OMS HE PRESS/VAP ISOL
* (two) - OP
* TK ISOL (two) - OP
*  OMS XFEED (two) - CL
* L,R RCS XFEED (four) - OP
* TK ISOL (six) - CL
* ✓ADI - LVLH, center needles
* THC +X (✓Lowest OMS % vs
* RCS Burn Time)
* AFT RCS RECONFIG
* RCS COMPLETION
*
* RCS +X JET FAIL OFF:
*
* STOP BURN:
* APU(s) - SHUT DN
*
SAFE   
HP 
-----
* CONTINUE BURN:
* ITEM 18 +0 EXEC
*  Resel jet
*
* RCS COMPLETION:
* THC +X to TGT HP or TOT AFT QTY 1    %
*
* At AFT QTY 1 if CUR HP:
* THC +X to PREBANK/FLIP HP or
* TOT AFT QTY 2   % then
* PREBANK/FRCS COMPLETION
*
PREBANK/FLIP  
HP  PREBANK/FRCS COMPLETION
-----
* AFT  
HP  THC +X to TGT HP
-----
* TGT  
HP 
*
* FRCS COMPLETION (if applicable):
* MNVR to -X Att (pitch up at 3°/sec to VGOz = +1/4 ΔVTOT)
* THC -X to TGT HP or FRCS depletion (JETS FAIL OFF)
*
CUTOFF VGOx = 0, Release THC
+ :02 OMS ENG(s) - OFF (If < 3 IMU, at  :   )
* AFT RCS RECONFIG if INTERCONNECT *
Trim X,Z residuals < 2 fps (< 0.5 fps if shallow)

```

ENT-5bb/D/H

(reduced copy)

FAB USE ONLY

CC 8-16

ENT/ALL/GEN E,14

(reduced copy)

TOP

**ENTRY MANEUVERS**

| FLIGHT CONDITIONS                               | MANEUVER  |
|---|---|
| EI-5  | ✓LVLH ATT<br>GNC, OPS 304 PRO<br>* If PREBANK, R/Y – CSS *<br>* Roll at 1°/sec to <input type="text"/> *<br>* Maintain PREBANK ± 5° *<br>If previous OMS OX TK or He TK or RCS OX TK leak: [G51] VENT DOORS – OP<br>PTI – ENA at EI-5 when applicable |
| $\bar{q} = 1$                                   | (AOA) HYD MN PUMP PRESS (three) – NORM  |
| 'Guidance Box' @ $\bar{q} \sim 8$ or D $\sim 3$ | CLOSED LOOP GUIDANCE ____:____:____<br>* If PREBANK: P,R/Y – AUTO *<br>Begin AIL trim monitoring  |
| D = 11  | ✓DRAG H (FORCE if editing)  |
| V = 19K   | ✓MPS/TVC ISOL VLV – CL  |
| V = 15K   | ✓NAVAIDS (I/O RESET if reqd)<br>* If ELS: UHF MODE – G T/R *  |
| V = 12K   | RAD BYP VLV MODE (two) – AUTO<br>CNTLR LOOP (two) – AUTO B(A)   |
| V = 10K   | ✓SPDBK to 81%   |
| $\Delta Az = 10.5^\circ$                        | FIRST ROLL REVERSAL <input type="text"/>  |

PILE VELCRO

PILE VELCRO

PILE VELCRO

PILE VELCRO

ENT-6a/E/L

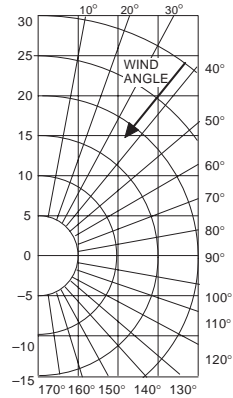
TOP  
BACK OF 'ENTRY MANEUVERS'

HOOK  
VELCRO

| FLIGHT CONDITIONS                            | MANEUVER  |
|--|---|
| V = 7K                                       | ✓TACAN status   |
| V = 5K                                       | ADTA PROBES – DEPLOY (✓HEAT)<br>Begin AIL and RUD trim monitoring   |
| M = 2.7                                      | ✓APUs<br>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 = 0.9                                      | P, R/Y – CSS as reqd<br>✓SPDBK CMD vs POS<br>✓R FLT CNTLR – ON<br>✓NWS – 1<br>Lock Inertia Reels<br>MAX Nz <input type="text"/> <input type="text"/> <input type="text"/> |
| M = 0.7                                      | ✓LG EXTEND ISOL VLV – OP  |
| h = 15K                                      | ✓MLS  |
| h = 10K                                      | ✓A/L, TABS/VISORS – CL/LES O2 – ON (KSC)  |
| MAIN GEAR TD                                 | ✓SPDBK – 100%   |
| DEROT INIT                                   | DRAG CHUTE pb (two) – ARM,DPY (simo)  |
| NOSE GEAR TD                                 | SRB SEP – MAN/AUTO and depress pb<br>✓Auto Load Relief<br>✓HYD BRAKE ISOL VLV (three) – OP  |
|  |   |
| V = 60 KGS                                   | DRAG CHUTE JETT pb – JETT   |
| STOP   | Go to ENT CL, POST LANDING PROCEDURES   |

HOOK  
VELCRO

ORBITER XWIND LIMITS



| Enter chart using max Gust Velocity |   |
|-------------------------------------|---|
| 50K                                 | / |
| 38K                                 | / |
| 28K                                 | / |
| 20K                                 | / |
| 12K                                 | / |
| 7K                                  | / |
| 3K                                  | / |
| 1K                                  | / |
| SURF                                | / |

HOOK  
VELCRO

HOOK  
VELCRO

ENT-6b/E/P

(reduced copy)

FAB USE ONLY

CC 8-17

ENT/ALL/GEN E,21

FAB USE ONLY

CC 8-18

ENT/ALL/GEN E,7

(reduced copy)

HOOK  
VELCRO

HOOK  
VELCRO

HOOK  
VELCRO

HOOK  
VELCRO

TOP

HOOK  
VELCRO

HOOK  
VELCRO

HOOK  
VELCRO

HOOK  
VELCRO

ENTRY NO-GO CHECKLIST

| FAILURE OF:                  | AERO<br>PTI DTD | AUTO<br>FCS<br>MODE | XWIND<br>DTC<br>① |
|------------------------------|-----------------|---------------------|-------------------|
| APU/HYD: 1 APU               |                 |                     | X                 |
| 2 APUs                       | X               |                     | X                 |
| DISPLAYS: 2 ADIs             | X               |                     | X                 |
| CDR HUD                      |                 |                     | X ②               |
| <b>CONTROLLERS:</b>          |                 |                     |                   |
| RHC: 1L                      |                 |                     | X                 |
| 2L & 2R                      | X               |                     | X                 |
| RPTA: 2L or 2R               |                 |                     | X                 |
| GNC: 2 AAs (LAT)             | X               |                     | X                 |
| 2 AAs (NORM)                 | X (M < 2.5)     | X ③                 | X                 |
| 2 RGAs                       | X               |                     | X                 |
| 2 R DDU PWR SPly             |                 |                     | X                 |
| 2 IMU (or 1 IMU + BITE)      | X               |                     | X                 |
| 2 ADTAs                      |                 |                     | X                 |
| ADTA NOT INCORP              |                 |                     | X (M < 2)         |
| OR DLMA                      |                 | X (M < 2)           |                   |
| MLS NOT INCORP               |                 | X (< 8k ft)         |                   |
| 2 FCS CH (same surface)      | X               |                     | X                 |
| DES: 1 GPC (not restrung)    |                 |                     | X ④               |
| 2 GPC (restrung)             | X               |                     | X                 |
| 2 GPC (not restrung)         | X               | X ③                 | X                 |
| 1 FF                         |                 |                     | X ④               |
| 2 FF                         | X               | X ③                 | X                 |
| 2 FA                         | X               |                     | X                 |
| RCS: LEAK (AFT - during ENT) | X               |                     | X                 |
| 2 YAW JETs (same side)       | X               |                     | X                 |
| MIN RCS QTY                  | X               |                     | X                 |
| TRIM: Ail > ± 2.0 deg        | X               |                     | X                 |
| <b>DOWNMODE:</b>             |                 |                     |                   |
| FCS problem                  | X               | X                   | X                 |
| AOA                          | X               |                     | X                 |
| PLB: PLBD Latch Gang         | X               |                     | X                 |
| <b>LDG/DECEL:</b>            |                 |                     |                   |
| Tire Leak                    |                 |                     | X                 |
| HYD BRAKE ISOL VLV           |                 |                     | X                 |
| < 100% Brakes                |                 |                     | X                 |
| NWS                          |                 |                     | X                 |
| <b>ENERGY - OFF NOMINAL:</b> |                 |                     |                   |
| Roll Ref Alert               | X               |                     | X                 |
| Above Upper Traj Line        | X               |                     | X                 |
| MCC GCA, or VEL & PSN        |                 |                     | X                 |
| update                       | X               | X                   | X                 |
| No A/L by BKfl               |                 |                     | X                 |
| DATA: OPS RECORDERS          | X (LOS)         |                     | X                 |
| <b>XWIND:</b>                |                 |                     |                   |
| < 10 Knots Peak              |                 |                     | X                 |
| > 15 Knots Peak              |                 |                     | X                 |
| > 10 Knots Gust              |                 |                     | X                 |
| <b>GROUND SYSTEMS:</b>       |                 |                     |                   |
| 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

| TIME<br>to Ei<br>(min) | LVLH<br>PITCH<br>(deg) |
|------------------------|------------------------|
| 20                     | 339                    |
|                        | 343                    |
|                        | 347                    |
|                        | 351                    |
|                        | 355                    |
| 15                     | 359                    |
|                        | 3                      |
|                        | 7                      |
|                        | 11                     |
|                        | 15                     |
| 10                     | 19                     |
|                        | 23                     |
|                        | 27                     |
|                        | 31                     |
|                        | 35                     |
| 5                      | 39                     |

ENT-7a/E/I

FAB USE ONLY

CC 8-19

ENT/ALL/GEN E,7

(reduced copy)

TOP  
BACK OF 'ENTRY NO-GO CHECKLIST'

HOOK  
VELCRO

**BAILOUT  
MODE 8**

REPORT POSITION  
MACH < .95, OPS 305/603  
SB - AUTO, BF - AUTO  
FLY 185-195KEAS,  $\phi$  - 0°  
ABORT MODE - ATO  
ABORT PBI - PUSH  
P, R/Y - AUTO  
FLT CNTLR PWR (two) - OFF

**-50K FT**  
TABS - RELEASE  
VISOR - CLOSE/LOCK  
LES O2 - ON  
GREEN APPLE - PULL

**-40K FT**  
MS3 - VENT CABIN  
CDR,PLT SEATS - LOWER  
KNEEBOARDS - REMOVE  
COOLING - DISCONNECT  
RESTRAINT - RELEASE  
D-RING - UNCOVER

**-30K FT**  
MS3 - JETTISON HATCH  
COMM - DISCONNECT  
(G-SUIT CLIP - PULL)  
LES O2 - DISCONNECT  
EGRESS SEAT  
POLE - DEPLOY  
D-RING - HOOK UP  
BAILOUT

HOOK  
VELCRO

**POST LANDING  
MODE 5**

TABS - RELEASE  
VISOR - CLOSE/LOCK  
LES O2 - ON  
GREEN APPLE - PULL  
KNEEBOARDS - REMOVE  
COOLING - DISCONNECT  
RESTRAINT - RELEASE  
PARACHUTE (four) -  
RELEASE  
COMM - DISCONNECT  
(G-SUIT CLIP - PULL)  
LES O2 - DISCONNECT  
PLT - PWR DOWN  
EGRESS SEAT  
SLIDE/ESCAPE PANEL

HOOK  
VELCRO

**ADTA MGMT**

|         |                   | NAV          |                  | G&C  |
|---------|-------------------|--------------|------------------|--|
|         |                   | RATIO > 1    |                  | Two or more good ADTAs                         |
|         |                   | IF BAD ADTA  | IF BAD NAV STATE |  |
| COMM OK | MCC: AUTO or INH* | MCC: INH     | MCC: FORCE       | Evaluate h,α,M<br>MCC:<br>AUTO (G&C)           |
| NO COMM | AUTO              | TACAN OK     | NO TACAN         | Evaluate h,α,M<br>If reasonable:<br>AUTO (G&C) |
|         |                   | ADTA ERRATIC | ADTA STEADY      |  |
|         |                   | INH          | FORCE            |  |

\*(If ADTA H will degrade NAV state)

**NO COMM TACAN MGMT**  
V = 6K

| RATIO < 1 | RATIO > 1                                   | ONE TACAN LOCKED                     | NO LOCK        |
|-----------|---|--------------------------------------|----------------|
| AUTO      | TROUBLESHOOT                                | BELOW V = 5.5K                       | BELOW V = 5.5K |
|           | IF BAD TACAN                                | DESELECT MISSING TACANS, then - AUTO | TOGGLE TACAN   |
|           | AUTO  |                                      |                |
|           | IF 1st acq - FORCE<br>IF NOT - ZERO Δ STATE |                                      |                |

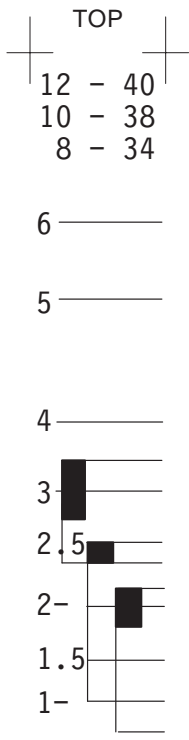
**NAV DELTA PAD**

|       |     |  |  |  |  |  |  |
|-------|-----|--|--|--|--|--|--|
| ΔX 10 | ( ) |  |  |  |  |  |  |
| ΔY 11 | ( ) |  |  |  |  |  |  |
| ΔZ 12 | ( ) |  |  |  |  |  |  |
| ΔX 13 | ( ) |  |  |  |  |  |  |
| ΔY 14 | ( ) |  |  |  |  |  |  |
| ΔZ 15 | ( ) |  |  |  |  |  |  |

For Δ STATE UPDATES (on MCC call):  
P, R/Y - CSS  
DRAG H, TACAN, ADTA - INH  
On MCC call, back to AUTO

HOOK  
VELCRO

ENT-7b/E/M



Align  
with  
0 →

■ MAX L/D  
MACH/α

ENT/8a/  
A,E/C

TOP BACK



ENT/8b/  
A,E/B



TOP

**ENTRY CONTROL**

**ARCS QTY (L + R) < 10%**

|                                  |  |
|----------------------------------|--|
| ARCS QTY = 0 & JETS FAIL OFF     | 1. ENTRY MODE – NO Y JET (R/Y CSS; expect sluggish control)  |
| $\bar{q} \geq 20$ & $M > 6$      | 2. <b>G51</b> ELEVON FIXED – ITEM 18 EXEC (*)  |
| CONTROL PROBLEMS* & ARCS QTY > 0 | 3. ENTRY MODE – AUTO<br>When control regained:<br>4. ENTRY MODE – NO Y JET<br>5. $\checkmark$ AIL trim |
| $M < 6$ & ARCS QTY > 0           | 6. ENTRY MODE – AUTO   |
| $M < 5$                          | 7. TRIM/RHC PNL – ENA<br>8. TRIM ROLL – away from AIL trim (to < 1)                                    |

\*Region of least margin: M 12–8

**AIL TRIM  $\geq 3^\circ$**

|                         |  |    |    |    |     |    |     |   |          |    |    |    |    |    |    |
|-------------------------|--|----|----|----|-----|----|-----|---|----------|----|----|----|----|----|----|
| TAL                     | 1. <b>G51</b> WRAP MODE – ITEM 45 EXEC (ACT)   |    |    |    |     |    |     |   |          |    |    |    |    |    |    |
| AIL trim = 5            | 2. BF – MAN<br>3. BF – UP (to 0%)  |    |    |    |     |    |     |   |          |    |    |    |    |    |    |
| NO Y JET                | 4. Perform roll reversals at 3°/s (expect sluggish control)  |    |    |    |     |    |     |   |          |    |    |    |    |    |    |
| $M < 13$ & AIL trim = 5 | 5. P – CSS<br>6. Fly $\alpha$ per schedule:<br><table border="1" style="margin-left: 40px;"> <tr> <td>M</td> <td>12</td> <td>11</td> <td>10</td> <td>9</td> <td>8–6</td> <td>5</td> </tr> <tr> <td><math>\alpha</math></td> <td>37</td> <td>36</td> <td>35</td> <td>33</td> <td>30</td> <td>26</td> </tr> </table> | M  | 12 | 11 | 10  | 9  | 8–6 | 5 | $\alpha$ | 37 | 36 | 35 | 33 | 30 | 26 |
| M                       | 12   | 11 | 10 | 9  | 8–6 | 5  |     |   |          |    |    |    |    |    |    |
| $\alpha$                | 37   | 36 | 35 | 33 | 30  | 26 |     |   |          |    |    |    |    |    |    |
| $M < 5$                 | 7. TRIM/RHC PNL – ENA<br>8. TRIM ROLL – away from AIL trim (to < 1)<br>9. P – AUTO   |    |    |    |     |    |     |   |          |    |    |    |    |    |    |
| $M < 2$                 | 10. BF – AUTO  |    |    |    |     |    |     |   |          |    |    |    |    |    |    |

(Continued on back for 'HIGH-FREQ OSC OR SURF/JET CYCLE')

ENT–10a/A,E/A

FAB USE ONLY

CC 8–21

ENT/ALL/GEN E,13

(reduced copy)

HOOK VELCRO

HOOK VELCRO

HOOK VELCRO

HOOK VELCRO

FAB USE ONLY

CC 8-22

ENT/ALL/GEN E,13

(reduced copy)

TOP  
BACK OF 'ENTRY CONTROL'

HOOK  
VELCRO

HOOK  
VELCRO

**HIGH-FREQ OSC OR SURF/JET CYCLE**

|                           |  |
|---------------------------|--|
| Returning PL<br>> 10K lbs | 1. <input type="checkbox"/> FILTER ALT – ITEM 21 (*) |
|                           | 2. P, R/Y – CSS                                      |
| Osc/Cycle continues       | 3. ENTRY MODE – LO GAIN                              |
| Osc/Cycle<br>stops        | 4. ENTRY MODE – AUTO<br>5. P, R/Y – AUTO             |

HOOK  
VELCRO

HOOK  
VELCRO

ENT-10b/A,E/A



— | |

| | —

Replace this page with page(s) from Flight Supplement

FAB USE ONLY

8-23

ENT/ALL/GEN E

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Replace this page with page(s) from Flight Supplement

FAB USE ONLY

8-24

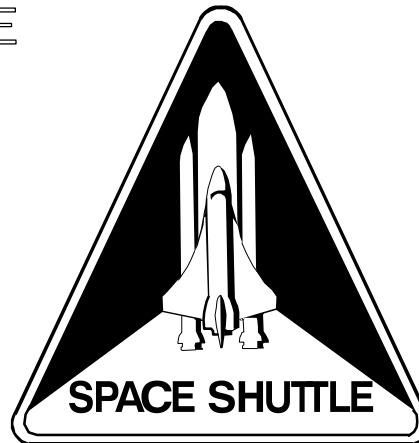
ENT/ALL/GEN E

— | |

| | —

Space Shuttle Program  
FLIGHT DATA FILE

JSC-48019  
GENERIC, REV E



**ENTRY  
CHECKLIST**

**ALL**

Flight Cover (trim bottom to expose tabs)