PCN-6 (June 12, 2009) Sheet 1 of 1

List of Implemented Change Requests (482s):
ENT-00880
ENT-00882

Incorporate the following:
1. Replace vii thru x
2. Replace 4-3 and 4-4
3. Replace 6-3 and 6-4
4. Replace CC 8-15 and CC 8-16

NOTE
For STS-128 and subsequent flights

Prepared by:  
Book Manager

Approved by:  
Chief, Ascent/Descent Dynamics Branch

Encl:  10 pages

File this PCN immediately behind the front cover as a permanent record
List of Implemented Change Requests (482s):
MULTI-1824 b
ENT-0869

Incorporate the following:
1. Replace vii thru x
2. Replace 3-5 and 3-6
3. Replace 4-3 and 4-4
4. Replace CC 8-15 and CC 8-16

NOTE
For STS-126 and subsequent flights

Prepared by: Judy B. Moore
Book Manager

Approved by: [Signature]
Chief, ascent/Descent Dynamics Branch

Encl: 10 pages

File this PCN immediately behind the front cover as a permanent record
List of Implemented Change Requests (482s):
MULTI-1809

Incorporate the following:
1. Replace vii and viii
2. Replace 3-11 and 3-12
3. Replace 5-17 and 5-18
4. Replace 6-1 thru 6-4

NOTE
For STS-122 and subsequent flights
List of Implemented Change Requests (482s):
MULTI-1803

Incorporate the following:
1. Replace vii and viii
2. Replace 5-7 and 5-8, 5-21 thru 5-24

NOTE
For STS-120 and subsequent flights

Prepared by: [Signature]  
Book Manager

Approved by: [Signature]  
Chief, Ascent/Descent Dynamics Branch

Encl: 8 pages

File this PCN immediately behind the front cover as a permanent record
List of Implemented Change Requests (482s):

ENT-867
MULTI-1788
MULTI-1799

Incorporate the following:

1. Replace v thru x

2. After 5-6, delete TEMP 5-7 and TEMP 5-8
   After 5-20, delete TEMP 5-21 and TEMP 5-22
   After 5-22, delete TEMP 5-23 and TEMP 5-24

3. Replace 6-1 and 6-2

NOTE
For STS-120 and subsequent flights

Prepared by: [Signature]
Book Manager

Approved by: [Signature]
Chief, Ascent/Descent Dynamics Branch

Encl: 8 pages

File this PCN immediately behind the front cover as a permanent record
List of Implemented Change Requests (482s):
ENT-865
ENT-866

Incorporate the following:
1. Replace v thru viii
2. Replace 5-7 and 5-8 with TEMP 5-7 thru 5-8 (4 pages)
   Replace 5-21 and 5-22 with TEMP 5-21 thru 5-22 (4 pages)
   Replace 5-23 and 5-24 with TEMP 5-23 thru 5-24 (4 pages)

NOTE
For STS-118 and subsequent flights

Prepared by:  
Allison McCagg  
Book Manager

Approved by:  
Michael K. Chen  
Chief, Ascent/Descent Dynamics Branch

Encl: 16 pages

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

ENTRY CHECKLIST

GENERIC, REVISION H
March 15, 2007

PREPARED BY:

Gwendolyne D. Jordan-Moore
Book Manager

APPROVED BY:

Lead Entry GPO

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

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

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

ENT/ALL/GEN H
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P – Partial

**AREAS OF TECHNICAL RESPONSIBILITY**

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| Entry Interface thru Rollout Post Landing | DM43/J. Patterson | 281-483-1987 |
Replace this page with page(s) from Flight Supplement
Replace this page with page(s) from Flight Supplement
NOTES

1. 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.

2. 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.

3. Velcro placement, size, and shape of cue cards are controlled by Book Manager.

4. Vehicle configuration or procedural steps that are applicable to a specific vehicle are indicated by [xxx].
**ENTRY CHECKLIST**

**LIST OF EFFECTIVE PAGES**

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* – Omit from flight book
Δ – Replace with page from Flight Supplement
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- Omit from flight book
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<td>8-1</td>
</tr>
<tr>
<td>1-1</td>
<td>ENT/AL/GEN H</td>
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<tr>
<td>OMS BOTH 1</td>
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<td>L 2</td>
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<tr>
<td>R 3</td>
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<tr>
<td>RCS SEL 4</td>
<td></td>
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<tr>
<td>TV ROLL 5</td>
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<tr>
<td>TRIM LOAD</td>
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<td>P 6</td>
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<tr>
<td>LY 7</td>
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<td>RY 8</td>
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<tr>
<td>WT 9</td>
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<tr>
<td>TGT PEG 4</td>
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<td>C1 14</td>
<td></td>
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<td>C2 15</td>
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<td>HT 16</td>
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<td>θT 17</td>
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<td>PRPLT 18</td>
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<thead>
<tr>
<th>DEORBIT MNVR PAD</th>
<th>BURN ATT</th>
<th>ΔVTOT</th>
<th>TGO</th>
</tr>
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<tbody>
<tr>
<td>R 24</td>
<td></td>
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<tr>
<td>P 25</td>
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<td>Y 26</td>
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<tr>
<th>RCS I'CNCT:</th>
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<tbody>
<tr>
<td>L OMS → RCS</td>
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<tr>
<td>R OMS → RCS</td>
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<thead>
<tr>
<th>MNVR PADS</th>
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### DEORBIT MNVR PAD

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<thead>
<tr>
<th>OMS BOTH 1</th>
<th>L 2</th>
<th>R 3</th>
<th>RCS SEL 4</th>
<th>TV ROLL 5</th>
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<tr>
<th>TRIM LOAD</th>
<th>P 6</th>
<th>LY 7</th>
<th>RY 8</th>
<th>WT 9</th>
<th>TIG 10</th>
<th>TGT PEG 4</th>
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<tr>
<th>TGT PEG 4</th>
<th>C1 14</th>
<th>C2 15</th>
<th>HT 16</th>
<th>βT 17</th>
<th>PRPLT 18</th>
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### BURN ATT

<table>
<thead>
<tr>
<th>R 24</th>
<th>P 25</th>
<th>Y 26</th>
<th>REI</th>
<th>TXX</th>
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### ΔVTOT

<table>
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<tr>
<th>VGO X</th>
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<th>VGO Z</th>
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### TGT

<table>
<thead>
<tr>
<th>HA</th>
<th>HP</th>
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</thead>
<tbody>
<tr>
<td>(  )</td>
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</tbody>
</table>

### RCS’CNCT:

- L OMS → RCS
- R OMS → RCS
- NONE
OMS PRPLT AND DEL PADS
<table>
<thead>
<tr>
<th>PRPLT/DELPADS</th>
<th>OMS PRPLT PAD</th>
</tr>
</thead>
</table>
| **OMS XFEED RETURN** at \( \Delta V_{TOT} = \) | |%
| or | |
| **DEORBIT BURN** | **OMS PRPLT LOW:** |%
| (1 ENG) | \( \Delta V_{TOT} = \) | |
| **RCS I’CNCT TK SW** at \( \Delta V_{TOT} = \) | |%
| **UNBALANCED PRPLT** | **TK ISOLs – CL** |
| DEORBIT BURN | INITIAL CONFIG: |%
| **RCS** | TK ISOL (two) – OP |
| **PRPLT/DEL PADS** | TK ISOL (two) – CL |
| **Secure OMS** | |%
| **OMS ENG FAIL:** | |
| **Secure OMS** | |%
| When \( \text{OMS QTY:} \) | |
| THC + X for | 5%: |%
| OMS TK ISOL (two) – OP |
| If \( \text{(XFEED) ENG \( \downarrow \)} \) | |%
| When \( \text{OMS QTY:} \) | 4%: |%
| OMS TK ISOL (two) – CL |
| Return to 2 ENG, 2 POD FLOW: | |%
| At \( \Delta V_{TOT} = \) | |
| **FEED FROM GOOD POD:** | |%
| **OMS ENG FAIL:** | |
| **OMS XFEED RETURN** at \( \Delta V_{TOT} = \) | |%
| or | |
| **DEORBIT BURN** | **OMS ENG FAIL:** |%
| (MIXED XFEED) | |%
| | TK ISOLs – OP |
| | OMS QTY \%L or \%R |
| | OMS He PRESS (two) – OP |
| | TK ISOL (two) – OP |
| | OMS XFEED (two) – CL |
**DEL PAD**

**PRE-DEORBIT**

APU START: SINGLE APU START, ATTEMPT □ APU(s)

APU START SEQUENCE □ THEN □

**DEORBIT**

BURN CUE CARD:
- OMS TIG SLIP – NO EXEC > TIG +
- RCS DOWNMODING

STOP/CONTINUE CUES: L OMS FAIL HP
- R OMS FAIL HP
- OMS ENG FAIL XFEED QTY CUE %L %R

ENG FAIL HP

SAFE HP

TOT AFT QTY 1 (%)

TOT AFT QTY 2 (%)

CAPTURE HP PB/FLIP HP AFT HP B/U SITE

FRCS: DUMP TO % (USE TIME AS CUE) OX FU

**ENTRY/LANDING**

EI - 5 MM303 INRTL ATT
- MM304 PREBANK (ENT MNVR Cue Card)

ALTM SET

CLG INIT

EXPECTED AIL TRIM

VREL 1ST REVERSAL

XCG AT TD

LAND SITE RWY deg MLS

L OVHD

R STRT TAC

ΔT MACH < 1 TO HAC MAX Nz Nz LIMIT

ΔT HAC INIT to H = 20K

AIMPOINT SPEEDBRAKE % @ 3K SURFACE

□ NOM □ NOM □ S.F.

□ CLOSE-IN □ S.F.

REMARKS:
(Replace with pages FS 3-1 thru FS 3-4)

3-2 ENT/ALL/GEN H
B DEORB UPDATE/UPLINK

1: GNC 50 HORIZ SIT
3: BFS, GNC 50 HORIZ SIT

CRT1,3 GPS INH – ITEM 43 EXEC

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

MCC UPDATE:
DEL PAD
OMS PRPLT PAD

MCC UPLINK:
PASS, BFS SV
PASS, BFS TGT
BFS IMU GYRO/ACCEL

C G50 LAND SITE per DEL PAD

On MCC GO:

C CRT1 LOAD – ITEM 22 EXEC
TIMER – ITEM 23 EXEC

CRT1,3 PASS & BFS TGTs per MNVR PAD:
BURN ATT
ΔVTOT
TGO
HA HP
1. GNC DEORB MNVR COAST  
2. GNC DEORB MNVR COAST  
3. BFS, GNC DEORB MNVR COAST

C  OMS TVC GMBL CHECK  
(Perform during AOS)

CRT1  SECONDARY CHECK  
Perform SEC L,R then PRI L,R GMBL CK  
* If down arrow(s) or Ms:  
* Select good GMBL  

MS  ACES PRESSURE INTEGRITY CHECK  
Dual Suit Controller, Dial-To-Test Knob – full cw

P  APU PRE-START  
(Perform during AOS)

R4  √HYD BK ISOL VLV (three) tb – CL  
√LG EXTD ISO 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  
√cb APU FU TK VLV ENA (six) – cl  
√APU FU TK VLV (three) – CL  
√AUTO SHTDN (three) – ENA  
√SPEED SEL (three) – NORM  
√OPER (three) – OFF  
HYD MN PUMP PRESS (three) – LO  
APU CNTLR PWR (three) – ON

3. BFS, SM SYS SUMM 2

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

2. GNC 50 HORIZ SIT

3. BFS, GNC 50 HORIZ SIT

3-6  ENT/ALL/GEN H,5
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)

MANF ISOL (eight) – OP (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)

MANF ISOL (four) – OP (tb-OP)

---

3-9  ENT/ALL/GEN H
1: GNC DEORB MNVR COAST  
2: GNC DEORB MNVR COAST  
3: BFS, GNC DEORB MNVR COAST

RCS BURN PREP  
DAP: INRTL/PULSE

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

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

DAP: AUTO/DISC

WARNING  
Eye and skin UV damage can occur in as little as 10 sec

Don Sunglasses

MS3  Remove and stow Side Hatch UV Filter and Locking Device, and Pyro Box Safing Pin

TIG-25  VENT DOOR CLOSE

NOTE  
VENT DOOR CLOSE must be performed prior to MM302 transition

2: GNC 51 OVERRIDE

P  CRT2  VENT DOOR CNTL CLOSE – ITEM 44  
EXEC (*), wait 1 min, then

C  CRT1  GNC, OPS 302 PRO

MS1/MS2  SEAT INGRESS
MCC/CREW GO/NO-GO FOR DEORBIT BURN

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

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

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)
MANF ISOL (eight) – GPC (tb-OP)
XFEED (four) – CL (tb-CL)

O8 FWD RCS
He PRESS A – GPC (tb-OP)
B – CL (tb-CL)
MANF ISOL (four) – GPC (tb-OP)

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 \(\sqrt{DAP}: \text{AUTO}\)
- CRT1 MNVR – ITEM 27 EXEC (*)(\(\sqrt{ADI \text{ ATT with CRT BURN ATT})\)}

**B**
- F6/F8 \(\sqrt{\text{ADI ATT (two) – INRTL}}\)
- \(\sqrt{\text{ERR (two) – MED}}\)
- \(\sqrt{\text{RATE (two) – MED}}\)

**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

**F6/F8**
- DEORBIT BURN and DEORBIT BURN MONITOR Cue Cards installed

**B**
- Copy last DEL PAD and OMS PRPLT PAD data on DEORBIT BURN Cue Cards
TIG-5  P  SINGLE APU START (Attempt one APU)

**WARNING**
Do not start APU while APU TEMP INJ > 437 or APU TEMP GG BED > 456

- If APU TEMP INJ > 437 or APU TEMP GG BED > 456:
  - Start any available APU within temperature limits

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

MDU  \( \checkmark \) HYD PRESS ind – LO green

- If no start:
  - Do not execute Deorbit Burn
  - Shut down APU
  - APU SHUTDN (ENT PKT, APU/HYD) >>

R2  \( \checkmark \) HYD CIRC PUMP (three) – OFF

3: BFS, GNC SYS SUMM 2

C  \( \checkmark \) BURN ATT ± 5°

B  Go to DEORBIT BURN (Cue Card)
SINGLE APU START (Attempt two APUs)

WARNING
Do not start APU while APU TEMP INJ > 437 or APU TEMP GG BED > 456

* If APU TEMP INJ > 437 or APU *
* TEMP GG BED > 456: *
*   ♦ Start any available APU *
*   within temperature limits *

R2 APU FU 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: *
*   APU SHUTDN (ENT PKT, *
*     APU/HYD) *
* If neither starts: *
*   ♦ Do not start third APU *
*   ♦ Do not execute Deorbit Burn *
*   ♦ Shut down unstarted APUs: *
*   ♦ APU SHUTDN (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)
Replace this page with page(s) from Flight Supplement

(Replace with pages FS 3-15 thru FS 3-18)

3-16 ENT/ALL/GEN H
* RCS COMPLETION:
  * THC +X to TGT HP or TOT AFT QTY 1 %
  * THC +X to CAPTURE HP or
  * At AFT QTY 1 TOT AFT QTY 2 % then
  * If CUR HP: PREBANK/FRCS COMPLETION
    to downrange site
  * CAPTURE PREBANK/FRCS COMPLETION
    to downrange site
  * PREBANK/FLIP PREBANK/FRCS COMPLETION
  * AFT THC +X to TGT HP
  * TGT
  *
* FRCS COMPLETION (if applicable):
  * MNVR to -X Att (pitch up at 3°/sec to VGOz = +1/4 \( \Delta V_{TOT} \))
  * 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/K
DEORBIT BURN (1 ENG)

√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

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, ∆VTOT, ENG VLVs)

* If no OMS ignition: APUs – SHUT DN *
OMS XFEED RETURN at ∆VTOT =...

or... ...
L,R OMS TK ISOL (four) – OP
XFEED (four) – CL

* OMS PRPLT FAIL: *
* STOP BURN: *
** APUs – SHUT DN **
** Secure aff OMS **

* 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: *
* STOP BURN: *
** APUs – 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 **
** THC +X(√OMS% vs RCS Burn Time) **
** AFT RCS RECONFIG **
** RCS COMPLETION **

* RCS +X JET FAIL OFF: *
* STOP BURN: *
** APUs – SHUT DN **

* CONTINUE BURN: *
** ITEM 18 +0 EXEC **
** G23 ReseJets **

ENT-4b/D/J

MS ONLY  3-20  ENT/ALL/GEN H
**RCS COMPLETION:**

- THC +X to TGT HP or TOT AFT QTY 1 \[ \_\_\_\_\_\_\_ \% \]
- THC +X to CAPTURE HP or TOT AFT QTY 2 \[ \_\_\_\_\_\_\_ \% \] then
- If CUR HP: PREBANK/FRCS COMPLETION to downrange site
- CAPTURE HP PREBANK/FRCS COMPLETION to downrange site
- 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/L

MS ONLY 3-21 ENT/ALL/GEN H
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 CNTRL PWR (two) – ON

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

OMS PRPLT LOW
AFT RCS RECONFIG AT △VTOT = □ □ □ □ □
RCS COMPLETION

* OMS PRPLT FAIL (MULTIPLE JETS FAIL OFF):
* Secure aff OMS
* STOP BURN:
* SAFE □ □
* HP APUs – SHUT DN
* CONTINUE BURN:
* ITEM 18 +0 EXEC
* [G23] 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 □ □
* HP APUs – SHUT DN
* CONTINUE BURN:
* ITEM 18 +0 EXEC
* [G23] Resel jets

ENT-3a/D/L
* RCS COMPLETION:
  * THC +X to TGT HP or TOT AFT QTY 1 \[\square\] %
  * THC +X to CAPTURE HP or
  * At AFT QTY 1 TOT AFT QTY 2 \[\square\] % then
  * If CUR HP: PREBANK/FRCS COMPLETION to downrange site
  * CAPTURE \[\square\] PREBANK/FRCS COMPLETION to downrange site
  * PREBANK/FLIP HP
  * 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 fps if shallow)
ENT-3aa/D/M
UNBALANCED PRPLT DEORBUT 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
LR OMS He PRESS/VAP ISOL A (two) – GPC
B (two) – OP
L,R OMS TK ISOL (two) – CL (tb-CL)
L,R OMS XFEED (four) – OP (tb-OP)

TIG-2:
- :15 EXEC (NO EXEC > TIG + )
- :15 If OMS AFT QTY < 11%, THC +X to OMS IGN + 1 sec
:00 TIG Start watch (√Pc, ∆VTOT, 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

** 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 ∆VTOT =
*** or at %
*** TK ISOL (two) – OP
*** TK ISOL (two) – CL

Return to 2 ENG, 2 POD FLOW at ∆VTOT:
- OMS TK ISOL (two) – OP (tb-OP)
- L,R OMS XFEED (four) – CL (tb-CL)

ENT-5a/D/M

MS ONLY 3-24 ENT/ALL/GEN H
**OMS PRPLT FAIL:**
- Failed OMS ENG – OFF

<table>
<thead>
<tr>
<th>L OMS FAIL HP</th>
<th>R OMS FAIL HP</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

**STOP BURN:**
- Good OMS ENG – OFF
- APUs – SHUT DN
- 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 P<sub>c</sub> < 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

<table>
<thead>
<tr>
<th>L OMS FAIL HP</th>
<th>R OMS ENG FAIL HP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

**STOP BURN:**
- APUs – SHUT DN
- √ADI – LVLH, center needles

**CONTINUE BURN:**
- 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 THC +X to CAPTURE HP or TOT AFT QTY 2
    - If CUR HP: then PREBANK/FRCS COMPLETION to downrange site
  - CAPTURE HP PREBANK/FRCS COMPLETION to downrange site
  - PREBANK/FLIP HP PREBANK/FRCS COMPLETION
  - AFT HP
  - TGT HP

**FRCS COMPLETION** (if applicable):
- MNVR to -X Att (pitch up at 3°/sec to VGO<sub>z</sub> = +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)
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/ME
- FLT CNTLR PWR (two) – ON

Man repress to maintain good OMS Tk Ps > 234 psi (sim)
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 (\( \Delta P_c \), \( \Delta V_{TOT} \), 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 \( \Delta V_{TOT} \) =
- 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 \( \Delta V_{TOT} \) =
RCS COMPLETION

ENT-5b/D/J

MS ONLY 3-26 ENT/ALL/GEN H
**OMS PRPLT FAIL:**

OMS ENG – OFF

STOP BURN:
APUs – SHUT DN
Secure L,R OMS

CONTINUE BURN:
Secure L,R OMS
ITEM 18 +0 EXEC
√ADI – LVLH, center needles
RCS COMPLETION

**OMS ENG FAIL:**

OMS ENG – OFF

ENG FAIL

STOP BURN:
APUs – SHUT DN

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:**

SAFE

STOP BURN:
APUs – SHUT DN

CONTINUE BURN:
ITEM 18 +0 EXEC
G23 Resel jet

**RCS COMPLETION:**

THC +X to TGT HP or TOT AFT QTY 1 %
At AFT QTY 1 THC +X to CAPTURE HP or TOT AFT QTY 2 %
If CUR HP: then PREBANK/FRCS COMPLETION
to downrange site

CAPTURE HP

PREBANK/FRCS COMPLETION to downrange site

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)
Replace this page with page(s) from Flight Supplement
Replace this page with page(s) from Flight Supplement
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
1: GNC DEORB MNVR EXEC  
2: GNC DEORB MNVR EXEC  
3: BFS, GNC SYS SUMM 2

MS Stow Flight Deck SpOC

L10 (VIP) √VIP PWR – ON (PWR LED – green)
(VTR) REC pb – press, hold
PLAY pb – press, simo
(√red dot displayed)
Install VIP, VTR covers

MS V10 V10 with hand-held minicam view:
Display pb – press
REC pb (two) – press simo
(√red dot displayed on LCD)

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
Replace this page with page(s) from Flight Supplement
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
EI-18  P  FORWARD RCS DUMP
(Use for off-nominal X cg entry)

Determine FWD RCS ‘DUMP TO %’ using lowest of Ox or Fu qty (calculator or DEL PAD)

FOUR JET DUMP:

F RCS PRPLT TO BE DUMPED (%)

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<thead>
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<td>20</td>
<td>30</td>
<td>40</td>
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<td>60</td>
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<td>0:00</td>
<td>0:09</td>
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<td>0:45</td>
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TIME FROM DUMP INITIATION (M:S)

NOTE
During dump, disregard FRCS qty
TWO JET DUMP:

F RCS PRPLT TO BE DUMPED (%)

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<thead>
<tr>
<th>Time</th>
<th>0:00</th>
<th>0:35</th>
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<th>1:46</th>
<th>2:04</th>
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<th>2:39</th>
<th>2:56</th>
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</tbody>
</table>

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
ENTRY SW CHECK

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

X:  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
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
√MLS (three) – ON (PASS)
√MLS CH (three), FS 3-2

If OV103, 104:

O7 √TACAN MODE (three) – GPC
√ANT SEL (three) – AUTO
√TACAN CH (three) per DEL PAD or FS 3-2
EI-13

REMAINING APUs START

WARNING

Do not start APU while APU TEMP INJ > 437 or APU TEMP GG BED > 456

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

* If remaining APU TEMP INJ > 437 or *
* APU TEMP GG BED > 456: *
* A12  (Aff) APU HTR GAS GEN/FU *
*       PUMP – OFF *
*       Start aff APU when within *
*       temperature limits *

R2  APU FU TK VLV (two) – OP
\APU/HYD RDY tb (two) – gray

* If tb – bp, attempt normal start *

APU OPER (two) – START/RUN

MDU \HYD PRESS ind (two) – LO green

R2  \APU/HYD RDY tb (two) – bp

* If APU OIL OUT P < 25 and APU *
*       TEMP OIL OUT not increasing *
*       after APU start or no start: *
*       Perform APU SHUTDN (ENT *
*       PKT, APU/HYD)
If two APUs operating:
- **Delete HYD FLUID THERMAL CONDITIONING**
- **Delay following until EI-6:**
  - R2 HYD MN PUMP PRESS (two) – NORM
  - MDU \( \sqrt{\text{PRESS ind (two) – HI green}} \)
  - **Perform SSME HYD REPRESS**
- **At TAEM:**
  - R2 APU SPEED SEL (two) – HI >>

If only one APU operating:
- **APU AUTO SHTDN (one) – INH**
- **Delete SSME HYD REPRESS and HYD FLUID THERMAL CONDITIONING**
- **Delay MM304 trans until EI-2:**
  - immediately prior to MM304 trans:
    - R2 HYD MN PUMP PRESS (one) – NORM
    - MDU \( \sqrt{\text{PRESS ind (one) – HI green}} \)
    - R2 APU SPEED SEL (one) – HI >>

**HYD MN PUMP PRESS (three) – NORM**
- MDU \( \sqrt{\text{PRESS ind (three) – HI green}} \)

**SSME HYD REPRESS**

R2 \( \sqrt{\text{HYD MN PUMP PRESS (three) – NORM}} \)
- **If HYD SYS 2 or SYS 1 failed,**
- **perform following steps using**
- **SYS 3 in place of failed system**

R4 HYD MPS/TVC ISOL VLV
- SYS 2 – OP (hold 5 sec, tb-OP) (MA possible)
  - Wait 10 sec
- SYS 2 – CL (hold 5 sec, tb-CL)

SYS 1 – OP (hold 5 sec, tb-OP) (MA possible)
- Wait 10 sec
- SYS 1 – CL (hold 5 sec, tb-CL)
EI-11> P

HYD FLUID THERMAL CONDITIONING *(MCC CALL)*

CRT2 SURF DRIVE ON – ITEM 39 EXEC
Start TIMER

MDU √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%

When SURF DRIVE ON (5 min),

CRT2 SURF DRIVE OFF – ITEM 40 EXEC

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
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)

<table>
<thead>
<tr>
<th>AVAILABLE GPCs</th>
<th>FCH CH CONFIG</th>
<th>SURF FBK</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AUTO ORIDE OFF</td>
<td></td>
</tr>
</tbody>
</table>

|       |               |          |          |
|-------|---------------|----------|
| 3     | 3 1           | 3 1      |
| 3     | 3 1           | 3 1      |
| 2     | 2 2           | 2 2      |
| 2     | 2 2           | 2 2      |

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

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

B  F6,F8  FLT CNTLR PWR (two) – ON

EI-6  Go to ENTRY MANEUVERS (Cue Card)
## ENTRY NO-GO CHECKLIST

<table>
<thead>
<tr>
<th>FAILURE OF:</th>
<th>AERO PTI DTO</th>
<th>AUTO FCS MODE</th>
<th>XWIND DTO</th>
</tr>
</thead>
<tbody>
<tr>
<td>APU/HYD:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 APU</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>2 APUs</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DISPLAYS:</td>
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</tr>
<tr>
<td>2 ADIs</td>
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<td></td>
</tr>
<tr>
<td>CDR HUD</td>
<td>X</td>
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<td></td>
</tr>
<tr>
<td>CONTROLLERS:</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>RHC: 1L</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>2L &amp; 2R</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>RPTA: 2L or 2R</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 AAs (LAT)</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GNC: 2 AAs (NORM)</td>
<td>X(M &lt; 2.5)</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>2 RGAas</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 FDDU PWR SPLY</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>2 IMU (1 IMU + BITE)</td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>2 ADTA as</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADTA NOT INCORP</td>
<td>X(M &lt; 2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OR DLMAs</td>
<td>X (&lt; 6K ft)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DPS: 2 FCS CH (same surface)</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 GPC (not restrung)</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 GPC (not restrung)</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>1 FF</td>
<td>X</td>
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<td>X</td>
</tr>
<tr>
<td>2 FF</td>
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</tr>
<tr>
<td>RCS: LEAK (AFT – during ENT)</td>
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</tr>
<tr>
<td>MIN RCS QTY</td>
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<td>TRIM:</td>
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<tr>
<td>All &gt; ± 2.0 deg</td>
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<td>DOWNMODE:</td>
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<tr>
<td>FCS problem</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AOA</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLB:</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>PLBD Latch Gang</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DGC/DECEL:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tire Leak</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>HYD BRAKE ISOL VLV</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 100% Brakes</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>NWS</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENERGY – OFF NOMINAL:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roll Ref Alert</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>Above Upper Traj Line</td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>MCC GCA, or VEL &amp; PSN update</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>No A/L by 6K ft</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>XWIND:</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>&lt; 10 Knots Peak</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 15 Knots Peak</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; 10 Knots Gust</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GROUND SYSTEMS:</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>No Runway Aim Point</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 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
### ENTRY MANEUVERS

<table>
<thead>
<tr>
<th>FLIGHT CONDITIONS</th>
<th>MANEUVER</th>
</tr>
</thead>
</table>
| EI-5              | \(\sqrt{LVLH\ ATT}\)  
GNC, OPS 304 PRO  
* If PREBANK, R/Y – CSS *  
* Roll at 1°/sec to *  
* 1 8 0 if HP \(\geq\) 46 (not AOA), else *  
* (from Prebank Table) *  
* Maintain PREBANK \(\pm 5°\) *  
If previous OMS OX TK, He TK, or RCS OX TK leak:  
180°  
VENT DOOR CNTL OPEN – ITEM 43 EXEC |  

If previous OMS OX TK, He TK, or RCS OX TK leak:  
180°  
VENT DOOR CNTL CLOSE – ITEM 44 EXEC |  

\(\varpi = 1\) (AOA)  
HYD MN PUMP PRESS (three) – NORM  

‘Guidance Box’ @  
\(\varpi \sim 8\) or  
\(D \sim 3\)  

CLOSED LOOP GUIDANCE \(\quad\):\(\quad\):\(\quad\)  
* If PREBANK: P,R/Y – AUTO *  
Begin AIL trim monitoring |  

\(V = 24\text{K}\)  
If previous OMS OX TK, He TK, or RCS OX TK leak:  
180°  
VENT DOOR CNTL OPEN – ITEM 43 EXEC |  

\(D = 11\) \(\sqrt{DRAG\ H}\)  
\(\Delta Z = 10.5°\) FIRST ROLL REVERSAL \(\quad\):\(\quad\):\(\quad\) (DEL PAD) |  

\(V = 19\text{K}\) \(\sqrt{HYD\ MPS/TVC\ ISOL\ VLV\ SYS}\) (three) – CL |  

\(V = 15\text{K}\) \(\sqrt{NAVAIDS}\) (I/O RESET if reqd) |  

\(V = 12\text{K}\) RAD BYP VLV MODE (two) – AUTO  
CNTLR LOOP (two) – AUTO B(A) |  

\(V = 10\text{K}\) \(\sqrt{SPDBK}\) to 81% |
Replace this page with page(s) from Flight Supplement
**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. \[G51\] ELEVON FIXED – ITEM 18 EXEC (*) |
| CONTROL PROBLEMS* & ARCS QTY > 0 | 3. ENTRY MODE – AUTO |
| When control regained: | 4. ENTRY MODE – NO Y JET |
| 5. \(\sqrt{\text{AIL trim}}\) | |

**M < 6 & ARCS QTY > 0**

| 6. ENTRY MODE – AUTO |

**M < 5**

| 7. TRIM/RHC PNL – ENA |
| 8. TRIM ROLL – away from AIL trim (to < 1) |

*Region of least margin: M 12-8*

**AIL TRIM ≥ 3°**

| TAL | 1. \[G51\] WRAP MODE – ITEM 45 EXEC (ACT) |
| AIL trim = 5 | 2. BF – MAN |
| 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 |
| 6. Fly \(\alpha\) per schedule: |
| \(\alpha\) | 12 | 11 | 10 | 9 | 8-6 | 5 |
| | 37 | 36 | 35 | 33 | 30 | 26 |

**M < 5**

| 7. TRIM/RHC PNL – ENA |
| 8. TRIM ROLL – away from AIL trim (to < 1) |
| 9. P – AUTO |

**M < 2**

| 10. BF – AUTO |

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

| Returning PL > 10K lb | 1. \[G51\] \(\sqrt{\text{FILTER ALT}}\) – ITEM 21 (*) |
| Osc/Cycle continues | 2. P, R/Y – CSS |

**Osc/Cycle stops**

| 3. ENTRY MODE – LO GAIN |
| 4. ENTRY MODE – AUTO |
| 5. P, R/Y – AUTO |

**ENT-10a/A,E/B**

**ENT-10b/A,E/B**

**ENT/ALL/GEN H**
POST LANDING PROCEDURES
**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 Mini Mag light stowed in ACES or Spotlight stowed in volume 3b)
  * 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 pwrdn and egress

**EXPEDITED PWRDN**

* 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

* If APU, OMS, RCS Fuel Leak:
  * APU OFF ASAP

* 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) then EMER PWRDN Cue Card

---

5-2 ENT/ALL/GEN H
POST LANDING

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

00:00 After orbiter stops:
C 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 SHTDN (three) – ENA
√SPEED SEL (three) – NORM

R1 √AC BUS SNSR (three) – AUTO

C F6 FLT CNTLR PWR – OFF

B F3 HUD PWR (two) – OFF

If ELS:
P C3 MSTR MADS PWR – OFF
DoD ELS, MCC call DoD OSC on NCC

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

5-3 ENT/ALL/GEN H
NOTE
CDR activities are now on even numbered pages and PLT activities on odd numbered pages.

RCS, OMS SAFING (RJDs)
C3 \(\sqrt{\text{OMS ENG (two)}}\) – OFF
O14:F \(\text{RJD DRIVER (nine)}\) – OFF
O15:F \(\text{LOGIC (eight)}\) – OFF
O16:F \(\text{OMS ENG VLV (two)}\) – OFF

DRAG CHUTE SAFING
(Not performed if ELS)
O15:E \(\text{cb MNB DRAG CHUTE SYS 2 – op}\)
O16:E \(\text{MNC DRAG CHUTE SYS 1 – op}\)
F2,F3, \(\sqrt{\text{DRAG CHUTE pb (six)}}\) – It off
F4

DEACT AIR DATA PROBE HTRS
C3 \(\sqrt{\text{AIR DATA PROBE (two)}}\) – DPY

LANDING GEAR SAFING
(Not performed if ELS)
R14:F \(\text{cb ESS 1BC LDG GEAR ARM/DN RESET – cl}\)

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

A12 \(\text{LG ARM/DN RESET – RESET}\)
F6,F8 \(\sqrt{\text{LDG GEAR pb (four)}}\) – It off
A12 \(\text{LG ARM/DN RESET – dn}\)
R14:F \(\text{cb ESS 1BC LDG GEAR ARM/DN RESET – op}\)

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

SETUP:
BDY FLP – TRAIL
RHC – Forward ctr
Rudder full left

LOAD TEST:
When set, do following simo:
BDY FLP – UP (to ≤ 6%)
RHC – move to aft ctr
Rudder full right

RELEASE:

R2 HYD MN PUMP PRESS 3 – NORM

C3 Repeat Load Test
R2 HYD MN PUMP PRESS 3 – NORM
CDR

MCC Report GO/NO-GO for DPS transition

DPS TRANSITION – GNC 9 (If PASS)

NOTE
No keyboard entries or sw throws 10 sec:
Before and after moding PASS GPCs to RUN
Before OPS transition or set expansion/contraction
requests until new OPS base page is displayed.

MCC will call for BFS to be taken from RUN to
STBY for Solid State 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

<table>
<thead>
<tr>
<th>Verify:</th>
<th>CONFIG GPC</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>STR</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>PL</td>
<td>1/2</td>
<td>1</td>
</tr>
<tr>
<td>CRT</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>2</td>
</tr>
<tr>
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<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

CRT1 GNC, OPS 901 PRO
PLT

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

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

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

**NOTE**

Do not resume GNC SPEC 105 until ‘VFB 84 – COMPLETE’ msg rcvd

**2: GNC 105 TCS CONTROL**

- **R4** HYD MPS/TVC ISOL VLV SYS (three) – OP
  - Hold 5 sec, \(\sqrt{b}\) – OP
    - * If less than two HYD MPS/TVC *
    - * ISOL VLVs open, \(\sqrt{MCC}\) *

**CRT2**

- **CLEAR MSG – ITEM 8 EXEC**
- **SELECT ID – ITEM 1 +0 2 EXEC**
  - \(\sqrt{NAME VFB 84}\) (~15 sec)
- **MM READ – ITEM 2 EXEC**
  - \(\sqrt{‘AI MODE 1(0,3) COMPLETE’}\) msg (~2.5 min)
  - \(\sqrt{‘VFB 84 – COMPLETE’}\) msg
    - * If any ‘AI MODE X FAILED RETEST’ msg: *
    - * \(\sqrt{MCC}\), report ECP ERROR *
    - * To terminate: CANCEL – ITEM 5 EXEC *

Go to APU/HYD SHUTDN >>

**SPDBK REPO (No SSME REPO, 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 (*)**
  - \(\sqrt{ACTUATOR GIMBALING STATUS – RUN, CPLT}\)
- **SB – ITEM 1 EXEC (*)**
- **RATE – ITEM 29 +1 EXEC**
- **FIN POS – ITEM 30 +8 EXEC**
  - \(\sqrt{START 31}\) – \(\rightarrow\) \(\leftarrow\)
- **START – ITEM 31 EXEC (\(\rightarrow\) \(\leftarrow\))**
  - \(\sqrt{STATUS – RUN, CPLT}\) (~30 sec)
    - * If STATUS – STOP or BUSY: *
    - * \(\sqrt{MCC}\), (To terminate: ITEM 32 EXEC) *

Go to APU/HYD SHUTDN >>

5-7 ENT/ALL/GEN H
1: AS DESIRED  
2: AS DESIRED  
3: AS DESIRED

### CDR

**RAD RECONFIG**

(On MCC call, unless no COMM)

<table>
<thead>
<tr>
<th>O1</th>
<th>When FREON EVAP OUT TEMP &gt; 40 degF:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>If RTLS/TAL/OA, go to NH3 RECONFIG, 5-22 &gt;&gt;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>L1</th>
<th>RAD OUT TEMP – HI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>H2O PUMP LOOP 1 – ON</td>
</tr>
<tr>
<td></td>
<td>Proceed to NH3 ACT</td>
</tr>
</tbody>
</table>

### NH3 ACT

<table>
<thead>
<tr>
<th>O1</th>
<th>When FREON EVAP OUT TEMP &gt; 55 degF, select one of the following as specified by MCC:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>NH3 CNTLR A</strong> – PRI/GPC ( )</td>
</tr>
<tr>
<td></td>
<td>– SEC/ON ( )</td>
</tr>
<tr>
<td></td>
<td><strong>NH3 CNTLR B</strong> – PRI/GPC ( )</td>
</tr>
<tr>
<td></td>
<td>– SEC/ON ( )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>*</th>
<th>During NH3 ops:</th>
</tr>
</thead>
<tbody>
<tr>
<td>*</td>
<td>If EVAP OUT TEMP alarm and</td>
</tr>
<tr>
<td>* O1</td>
<td>FREON EVAP OUT TEMP &lt; 32 degF:</td>
</tr>
<tr>
<td>* L1</td>
<td>1. FREON PUMP LOOP 1,2</td>
</tr>
<tr>
<td>*</td>
<td>(two) – OFF (ASAP)</td>
</tr>
<tr>
<td>*</td>
<td>2. √H2O PUMP LOOP 1 – ON</td>
</tr>
<tr>
<td>*</td>
<td>3. NH3 CNTLR A(B) – OFF</td>
</tr>
<tr>
<td>*</td>
<td>4. FLOW PROP VLV LOOP 1,2</td>
</tr>
<tr>
<td>*</td>
<td>(two) – PL HX (tb-PL)</td>
</tr>
<tr>
<td>*</td>
<td>5. FREON PUMP LOOP 1 – B</td>
</tr>
<tr>
<td>*</td>
<td>Wait 3 min, then:</td>
</tr>
<tr>
<td>*</td>
<td>6. FREON PUMP LOOP 2 – B</td>
</tr>
<tr>
<td>*</td>
<td>7. Go to NH3 RECONFIG, 5-22 &gt;&gt;</td>
</tr>
<tr>
<td>*</td>
<td>If EVAP OUT TEMP alarm and</td>
</tr>
<tr>
<td>* O1</td>
<td>FREON EVAP OUT TEMP &gt; 65 degF:</td>
</tr>
<tr>
<td>*</td>
<td>8. Go to NH3 RECONFIG, 5-22</td>
</tr>
</tbody>
</table>

5-8 ENT/ALL/GEN H,3
1: AS DESIRED
2: AS DESIRED
3: BFS, SM SYS SUM 2

PLT

APU/HYD SHUTDN

√SSME REPO complete (if PASS)

R4 HYD MPS/TVC ISOL VLV (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 FU TK VLV (three) – CL
    √Shutdn (HYD PRESS < 200)
    CNTLR PWR (three) – OFF

Report to MCC, “APU/HYD SHUTDOWN”

MCC

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

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

NOTE
Expect multiple MAs for MPS
He P as regs bleed down

R2 MPS He ISOL (six) – CL
    I’CNCT L – OUT OP
    PNEU L ENG He XOVR – CL
1: AS DESIRED
2: AS DESIRED
3: AS DESIRED

C,MS

PCS DEACTIVATION

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

MS

GPS PWRDN

* If landing not at KSC, EDW, or NOR *
* GPS ENCRYPT – ZEROIZE *
* Wait 1 sec *
* GPS ENCRYPT – NORMAL *

If OV103,4:
A13
GPS POWER – OFF
PRE AMPL UC – OFF
LC – OFF

If OV105:
O7
GPS POWER (three) – OFF
PRE AMPL UPPER (three) – OFF
LOWER (three) – OFF

MCC

Report, “GO/NO-GO FOR EXTENDED PWR UP”

If GO for EXTENDED PWR UP, go to
SYS DEACT FOR EXTENDED PWR UP, 5-14

5-10
ENT/ALL/GEN H
1: AS DESIRED  
2: GNC 105 TCS CONTROL  
3: AS DESIRED

PLT

VENT DOOR PURGE POSITIONING (PASS)
(on MCC GO, not performed if ELS)
(Do not perform during SYS DEACT FOR EXTENDED PWRUP)
CRT2 CLEAR MSG – ITEM 8 EXEC
SELECT ID – ITEM 1 +0 3 EXEC
\NAME ‘VFB89’ (~15 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),GPC 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

5-11 ENT/ALL/GEN H
1: AS DESIRED  2: AS DESIRED  3: AS DESIRED

C

**GPC DEACT (If NO-GO FOR EXTENDED PWR UP)**
(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: OFF  2: OFF  3: OFF

C,MS,PS  **HATCH OPENING (KSC,EDW,NOR)**

**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 (not KSC,EDW,NOR)**

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

If NO-GO for EXTENDED PWR UP, continue ops

HATCH OPENING (not KSC, EDW, NOR)

Before hatch opening:
√Tabs/Visor – CL

Green Apple – PULL

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 HANOVER (at crew egress)
1:  GNC 0 GPC MEMORY  
2:  AS DESIRED  
3:  AS DESIRED  

CDR 
SYS DEACT FOR EXTENDED PWR UP 
(Do not perform during VENT DOOR PURGE POSITION, SSME REPO, or SPDBK REPO sequence)  

NOTE  
No keyboard entries or sw throws 10 sec:  
Before and after moding PASS GPCs to RUN  
Before OPS transition or set expansion/contraction requests until new OPS base page is displayed  

1:  GNC 0 GPC MEMORY  

<table>
<thead>
<tr>
<th>CONFIG</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPC</td>
<td>10000</td>
</tr>
<tr>
<td>STR 1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>PL 1/2</td>
<td>1</td>
</tr>
<tr>
<td>CRT 1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>L 1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>MM 1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

CRT1 GNC, OPS 901 PRO  

GPC PWRDN  
O6 GPC MODE 2,3,4 (three) – STBY (tb-bp) – HALT  
CRT1 If no GPC failure,  
ERR LOG RESET – ITEM 48 EXEC  
O6 GPC PWR 2,3,4 (three) – OFF  
LTG (five) – OFF  
C2 IDP/CRT 2 PWR – OFF  
Inform MS2 to proceed with MS Sys Deact activities, 5-18  

5-14 ENT/ALL/GEN H
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 PNL – OFF
√RHC – INH
R4  HYD BK HTR (three) – OFF
O8  LTG (five) – OFF
O17:A ATVC (four) – OFF
1: AS DESIRED  2: OFF  3: AS DESIRED

C, MS, PS

C  L2  ANTISKID – OFF
NWS – OFF
C3  √FCS CH (four) – AUTO
F3  TRIM PNL – OFF
RHC – INH

IDP/CRT 4 PWRDN

MS  R12  IDP/CRT 4 PWR – OFF

EGRESS
(After MS Sys Deact complete, and ASP Comm check with MCC complete)

C  L5  L COMM PWR – OFF

C, MS, PS  Pull G SUIT controller clip (if inflated)
Egress seat

MS  A11, A15, COMM CCU PWR – OFF
MS, PS  MO39M

Unstow ‘Return to Houston’ Bags

C, MS, PS  Egress orbiter
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1: AS DESIRED</td>
<td>2: OFF</td>
</tr>
<tr>
<td>3: AS DESIRED</td>
<td></td>
</tr>
</tbody>
</table>

**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 HANOVER**

(At crew egress or GSE cooling activation, whichever occurs later)
1: AS DESIRED  2: OFF  3: AS DESIRED

**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
  - 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 (OV103,104 only)

- **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 LN/H2O SYS (six) – OFF
    - GAS GEN/FU PUMP (three) – OFF
    - LUBE OIL LN (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 LANDING PROCEDURE COMPLETE”
Replace this page with page(s) from Flight Supplement
Replace this page with page(s) from Flight Supplement
INTEGRATED POST LANDING PROCEDURES FOR EXTENDED PWR UP

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

ASP to MCC
Report when “CREW READY TO EGRESS”

Report “POST LANDING PROCEDURE COMPLETE”
1: AS DESIRED  2: OFF  
3: AS DESIRED

**CDR**

**SYS DEACT FOR EXTENDED PWR UP**

**NH3 RECONFIG**

(On MCC call; Cooling Cart not ready)

**L1**

1. NH3 CNTLR A(B) – OFF  
   If RTLS/TAL/OA:
   2. RAD BYP VLV LOOP 1,2 – RAD FLOW  
      Wait 1 min  
      H2O PUMP LOOP 1 – ON

**O1**

When FREON EVAP OUT TEMP > 55 degF, select one of the following as specified by MCC:

**L1**

3. NH3 CNTLR A – PRI/GPC (☐)  
   A – SEC/ON (☐)  
   B – PRI/GPC (☐)  
   B – SEC/ON (☐)

---

**During NH3 ops:**

* During NH3 ops:  
* 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. NH3 CNTLR A(B) – OFF  
    * 4. FLOW PROP VLV LOOP 1,2 (two) – PL HX (tb-PL)  
    * If no comm:  
      * 5. Go to VEHICLE PWRDN,  
        5-13 >>  
      * 6. MCC  
    * If EVAP OUT TEMP alarm and  
      * O1 FREON EVAP OUT TEMP > 65 degF: *  
      * 7. Go to POST LANDING LOSS OF COOLING, 5-24

---

5-22 ENT/ALL/GEN H,3
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:
   (two) – OFF (ASAP)
* L1  1. FREON PUMP LOOP 1,2
   2. H2O PUMP LOOP 1 – ON
   3. FLOW PROP VLV LOOP 1,2
      (two) – PL HX (tb-PL)
*  If no comm:
*    4. Go to VEHICLE PWRDN,
   5-13 >>
*  5. MCC
*  If EVAP OUT TEMP alarm and
* O1  FREON EVAP OUT TEMP > 65 degF
   for 5 min:
*    6. Go to POST LANDING LOSS
   OF COOLING, 5-24

5-23  ENT/ALL/GEN H,3
POST LANDING LOSS OFcooling (NH3
failed or depleted)

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
   ENT C/L, 5-18 & FS 5-19 ASAP
   Assume GO for EXTENDED PWR UP

B 5. √BFC CRT SEL – 3+1
   DISP – ON

3: BFS, SM SYS SUMM 2

Terminate monitoring if ground cooling
established (Convoy commander
call) >>

CRT3 6. Monitor AV BAY TEMP (three)
   When AV BAY TEMP 1 or 2 > 113 or
   AV BAY TEMP 3 > 107 or no
   temperature insight:

   7. Go to VEHICLE PWRDN,
      5-13 >>

   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-ORBIT LATE DEORBIT PROCEDURES

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 \sqrt{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

1: GNC 50 HORIZ SIT
3: BFS, GNC 50 HORIZ SIT

CRT1 \sqrt{GPS, INCORPORATE

TIG-1:10> IMU/IMU ALIGN
Perform IMU/IMU alignment using best IMU as reference. \sqrt{MCC for reference IMU

1: GNC 21 IMU ALIGN

C CRT1 REF IMU – ITEM 14 + \_ EXEC
\sqrt{TYPE, ITEM 15 – TORQUE
ALIGN IMU 1(2,3) –
ITEM 10(11,12) EXEC (*)
If no comm, EXEC – ITEM 16 EXEC (*)
Rcd MET \_/\:
\sqrt{EXEC, ITEM 16 – (no *) (4-6 min)
ALL FLUID LOADING: 1-ORBIT LATE

Begin Fluid Loading per individual prescription. Fluid Loading should be completed by EI.
For 1 rev waveoff, repeat half the protocol
For > 1 rev waveoff, repeat entire protocol

FINAL DEORB UPDATE/UPLINK

C
MCC UPDATE:
DEL PAD
OMS PRPLT PAD
MCC UPLINK:
PASS, BFS SV (if reqd)
PASS, BFS TGT

\LAND SITE as reqd

On MCC GO:
CRT1
LOAD – ITEM 22 EXEC
TIMER – ITEM 23 EXEC
CRT1,3
PASS & BFS TGTS per MNVR PAD:
BURN ATT
\VTOT
TGO
HA HP

6-3 ENT/ALL/GEN H,6
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) – AUTO, 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 CRT1 MNVR – ITEM 27 EXEC (*)
(\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

6-4 ENT/ALL/GEN H,4
SWITCH LIST AT WHEELS STOP **EGRESS**

Deleted
TOP
HINGED AT BOTTOM OF 'DEORBIT BURN (RCS')
HINGE

* RCS COMPLETION:
* THC +X to TGT HP or TOT AFT QTY 1 %
* THC +X to CAPTURE HP or TOT AFT QTY 2 % then
* At AFT QTY 1 TOT AFT QTY 2 %
* If CUR HP: PREBANK/FRCS COMPLETION to downrange site
* CAPTURE HP
* PREBANK/FLIP HP
* AFT HP
* TGT HP

* FRCS COMPLETION (if applicable):
* MNVR to -X Att (pitch up at 3°/sec to VGOz = +1/4 ∆VTOT)
* 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 fps if shallow)

(reduced copy)
FAB USE ONLY CC 8-5 ENT/ALL/GEN H
TOP
HINGED AT BOTTOM OF 'DEORBIT BURN (RCS)'
HINGE
Hinge

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 + Δ)
- :15 If OMS AFT QTY < 11%, THC +X to OMS IGN + 1 sec
00 TIG Start watch (√Pc, ∆VTOT, ENG VLVs)
If no OMS ignition: APUs – SHUT DN

* OMS PRPLT FAIL:
Failed OMS ENG – OFF
STOP BURN:
L OMS FAIL HP R OMS FAIL HP
Good OMS ENG – OFF APUs – SHUT DN
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 ENG FAIL HP Either PRPLT FAIL (SAFE) HP
STOP BURN: APUs – 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 RECONFG
RCS COMPLETION

ENT-4a/D/L

(reduced copy)
RCS COMPLETION:

- THC +X to TGT HP or TOT AFT QTY 1
- At AFT QTY 1 TOT AFT QTY 2
- If CUR HP: PREBANK/FRCS COMPLETION to downrange site
- CAPTURE HP
- PREBANK/FLIP HP
- AFT 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)
<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td><strong>TOP</strong></td>
<td><strong>DEORBIT BURN (2 ENG)</strong></td>
</tr>
<tr>
<td><strong>HOOK VELCRO</strong></td>
<td><strong>HOOK VELCRO</strong></td>
</tr>
<tr>
<td><strong>DEORBIT BURN (1 ENG)</strong></td>
<td></td>
</tr>
<tr>
<td>√MM302</td>
<td>√OMS L or R</td>
</tr>
<tr>
<td>√OMS BURN CONFIG (L or R XFEED)</td>
<td>Enter TGO + 10 sec</td>
</tr>
<tr>
<td>√TRIM per MNVR PAD or P +0.0, LY +5.2, RY -5.2</td>
<td>L,R OMS He PRESS/VAP ISOL A (two) – OP</td>
</tr>
<tr>
<td></td>
<td>Wait 2 sec B (two) – OP</td>
</tr>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>√DAP – AUTO(PASS)/DISC</td>
</tr>
<tr>
<td></td>
<td>ADI – LVLH(REF)Hi/MED</td>
</tr>
<tr>
<td></td>
<td>FLT CNTLR PWR (two) – ON</td>
</tr>
<tr>
<td><strong>TIG-2</strong></td>
<td>Good OMS ENG – ARM/PRESS</td>
</tr>
<tr>
<td>- :15 EXEC</td>
<td>(NO EXEC &gt; TIG + )</td>
</tr>
<tr>
<td>- :15</td>
<td>If OMS AFT QTY &lt; 11%, THC +X to OMS IGN + 1 sec</td>
</tr>
<tr>
<td>:00 TIG Start watch (∆VTOT, ENG VLVs)</td>
<td>* If no OMS ignition: APU – SHUT DN *</td>
</tr>
<tr>
<td></td>
<td>OMS XFEED RETURN at ∆VTOT =</td>
</tr>
<tr>
<td></td>
<td>or</td>
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<td></td>
<td>L,R OMS TK ISOL (four) – OP</td>
</tr>
<tr>
<td></td>
<td>XFEED (four) – CL</td>
</tr>
</tbody>
</table>

**OMS PRPLT FAIL:**

- STOP BURN: APUs – SHUT DN
- Secure aff OMS

**OMS ENG FAIL:**

- STOP BURN: APUs – SHUT DN

**RCS +X JET FAIL OFF:**

- STOP BURN: APUs – SHUT DN

<table>
<thead>
<tr>
<th>Task</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>Hinge</strong></td>
<td><strong>ENT-4b/D/J</strong></td>
</tr>
<tr>
<td><strong>DEORBIT BURN (2 ENG)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>HOOK VELCRO</strong></td>
<td></td>
</tr>
<tr>
<td><strong>DEORBIT BURN (1 ENG)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>HOOK VELCRO</strong></td>
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</tbody>
</table>

FAB USE ONLY CC 8-10 ENT/ALL/GEN H
TOP
HINGED AT BOTTOM OF 'DEORBIT BURN (1 ENG)'
HINGE

* RCS COMPLETION:
* THC +X to TGT HP or TOT AFT QTY 1
* THC +X to CAPTURE HP or TOT AFT QTY 2
* At AFT QTY 1 TOT AFT QTY 2
* If CUR HP: PREBANK/FRCS COMPLETION
* to downrange site
* CAPTURE
* PREBANK/FRCS COMPLETION
* PREBANK/FLIP
* PREBANK/FRCS COMPLETION
* AFT
* PREBANK/FRCS COMPLETION
* TGT
* HP
* THC +X to 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)

(reduced copy)

FAB USE ONLY
CC 8-11
ENT/ALL/GEN H
FAB USE ONLY

MM302

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 CNTRL 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)

OMS TK ISOL (four) – OP (tb-OP)

TIG-2:

OMS ENG (two) – ARMPRESS

EXEC (NO EXEC > TIG +)

If OMS AFT QTY < 11%, THC +X to OMS IGN + 1 sec

Start watch (Pc, VTOT, 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

CONTINUE BURN:

ITEM 18 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 ↓:

FAIL

OMS ENG FAIL (CONTINUE BURN):

Failed OMS ENG – OFF

at VTOT = %

or

TK ISOL (two) – OP

TK ISOL (two) – CL

Return to 2 ENG, 2 POD FLOW at VTOT:

OMS TK ISOL (two) – OP (tb-OP)

LR OMS XFEED (four) – CL (tb-CL)

SAFE

ENT-5a/D/M

(reduced copy)
OMS PRPLT FAIL:
Failed OMS ENG – OFF

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 P< < 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

2nd OMS FAIL (ENG or PRPLT): Failing
OMS ENG – OFF
If PRPLT FAIL: Secure aff OMS

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 RECONF
RCS COMPLETION

RCS COMPLETION:
THC +X to TGT HP or TOT AFT QTY 1
At AFT QTY 1 THC +X to CAPTURE HP or TOT AFT QTY 2
If CUR HP: then PREBANK/FRCS COMPLETION to downrange site

CAPTURE HP
PREBANK/FRCS COMPLETION to downrange site

PREBANK/FLIP

AFT

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 RECONF if INTERCONNECT
- Trim X,Z residuals < 2 fps (< 0.5 fps if shallow)

(rduced copy)
TOP BACK OF 'UNBALANCED PRPLT DEORBIT BURN'

HOOK VELCRO  DEORBIT BURN (MIXED XFEED)  HOOK VELCRO

√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/ME

FLT CNTLR PWR (two) – ON
Man repress to maintain good OMS Tk Ps > 234 psi (simo)

If OMS BURN INITIATION:

\text{TRIM per MNVR PAD or}: P +0.0, LY +5.2, RX -5.2

TIG-2:
Good OMS ENG – ARM/PRESS

\text{EXEC} (No EXEC > TIG + \text{ })

\text{- .15}  If OMS AFT QTY < 11\%, THC +X to OMS IGN + 1 sec

\text{- .00}  TIG Start watch (\text{PC}, \Delta VTOT, ENG VLVs)

\text{ }  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

\text{- .00}  THC +X (No Deorbit > TIG + \text{ })

Maintain PITCH ATT ERR ≤ 3°

FEED FROM GOOD POD:
at \Delta VTOT = \text{ }

or \text{ } at \%\%

\text{O\text{OMS HE PRESS/VAP ISOL (two) – OP}}
\text{TK ISOL (two) – OP (tb-OP)}
\text{XFEED (two) – OP (tb-OP)}

\text{SECURE OMS}

\text{OMS PRPLT LOW}
AFT RCS RECONFIG at \Delta VTOT = \text{ }

RCS COMPLETION

(\text{reduced copy})
OMS PRPLT FAIL:
OMS ENG – OFF
SAFE HP
CONTINUE BURN:
Secure L,R OMS
ITEM 18 +0 EXEC
√ ADI – LVLH, center needles
RCS COMPLETION

OMS ENG FAIL:
OMS ENG – OFF
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:
SAFE HP
CONTINUE BURN:
APUs – SHUT DN
ITEM 18 +0 EXEC
[02J] Resell jet

RCS COMPLETION:
THC +X to TGT HP or TOT AFT QTY 1 %
At AFT QTY 1 THC +X to CAPTURE HP or TOT AFT QTY 2 %
If CUR HP: then PREBANK/FRCS COMPLETION to downrange site
CAPTURE HP
PREBANK/FLIP HP
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)

TOP HINGED AT BOTTOM OF ‘DEORBIT BURN (MIXED XFEED)’ HINGE

ENT-5bb/D/K

(reduced copy)
### ENTRY MANEUVERS

<table>
<thead>
<tr>
<th>FLIGHT CONDITIONS</th>
<th>MANEUVER</th>
</tr>
</thead>
<tbody>
<tr>
<td>EL-5</td>
<td>LVLH ATT</td>
</tr>
<tr>
<td></td>
<td>GNC, OPS 304 PRO</td>
</tr>
<tr>
<td></td>
<td>* If PREBANK, R/Y – CSS</td>
</tr>
<tr>
<td></td>
<td>* Roll at 1/sec to</td>
</tr>
<tr>
<td></td>
<td>* T 0 0 if HP ≥ 46 (not AOA), else *</td>
</tr>
<tr>
<td></td>
<td>* (from Prebank Table) *</td>
</tr>
<tr>
<td></td>
<td>* Maintain PREBANK ±5° *</td>
</tr>
<tr>
<td></td>
<td>If previous OMS OX TK, He TK, or RCS OX TK leak:</td>
</tr>
<tr>
<td></td>
<td>GST VENT DOOR CNTL OPEN – ITEM 43 EXEC</td>
</tr>
<tr>
<td></td>
<td>GST VAO (if) When SB position – 0%</td>
</tr>
<tr>
<td></td>
<td>HYD MN PUMP PRESS (three) – LO</td>
</tr>
</tbody>
</table>

If PREBANK, R/Y – CSS

Roll at 1°/sec to

If HP ≥ 46 (not AOA), else

(From Prebank Table)

Maintain PREBANK ±5°

If previous OMS OX TK, He TK, or RCS OX TK leak:

VENT DOOR CNTL OPEN – ITEM 43 EXEC

VAO (if) When SB position – 0%

HYD MN PUMP PRESS (three) – LO

### Guidance Box

- Closed Loop Guidance: ___:___:___
- If PREBANK: P.R/Y – AUTO *
- Begin AIL trim monitoring

### Velocity

- V = 24K If previous OMS OX TK, He TK, or RCS OX TK leak:
  - GST VENT DOOR CNTL CLOSE – ITEM 44 EXEC

### Drag H

- D = 11

### Az

- ΔAz = 10.5° FIRST ROLL REVERSAL (DEL PAD)
- V = 19K HYD MPS/TVC ISOL VLV SYS (three) – CL
- V = 15K NAVIADS (VO RESET if reqd)
- V = 12K RAD BYP VLV MODE (two) – AUTO
- V = 10K SPDBK to 81%

---

(reduced copy)

FAB USE ONLY  CC 8-16  ENT/ALL/GEN H,6
ENT-7b/E/S

REPORT POSITION
MACH < 1.0
F, R, Y – CSS

OPS MODES PROG (if reqd)
88 – AUTO; 86 – AUTO

FLY 165-185 KEAS, q = 0°

ABORT MODE – ATO

ABORT R/B – PUSH
F, R, Y – AUTO

FLT ENTR LMB (bw) – OFF

BAILOUT

POST LANDING

MODE 5

TABS – RELEASE
VISOR – CLOSE/LOCK

SUIT O2 – ON

GREEN APPLE – PULL

ABORT MODE – ATO

ABORT PBI – PUSH

P, R, Y – AUTO

SUPT 02 – ON

GREEN APPLE – PULL

SUPT 01 – AUTO

SUPT 02 – AUTO

F97 – AUTO

FLY 185-195 KEAS,

Φ = 0°

ABORT MODE – ATO

ABORT PBI – PUSH

P, R, Y – AUTO

SUPT 02 – AUTO

FLY 185-195 KEAS,

Φ = 0°

ABORT MODE – AUTO

ABORT PBI – PUSH

P, R, Y – AUTO

SUPT 02 – AUTO

FLY 185-195 KEAS,

Φ = 0°

ABORT MODE – AUTO

ABORT PBI – PUSH

P, R, Y – AUTO

SUPT 02 – AUTO

FLY 185-195 KEAS,

Φ = 0°

ABORT MODE – AUTO

ABORT PBI – PUSH

P, R, Y – AUTO

SUPT 02 – AUTO

FLY 185-195 KEAS,

Φ = 0°

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ABORT PBI – PUSH

P, R, Y – AUTO

SUPT 02 – AUTO

FLY 185-195 KEAS,

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P, R, Y – AUTO

SUPT 02 – AUTO

FLY 185-195 KEAS,

Φ = 0°

ABORT MODE – AUTO

ABORT PBI – PUSH

P, R, Y – AUTO

SUPT 02 – AUTO

FLY 185-195 KEAS,
## ENTRY CONTROL

<table>
<thead>
<tr>
<th>ARCS QTY (L + R) &lt; 10 %</th>
<th>1. ENTRY MODE – NO Y JET</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(R/Y CSS; expect sluggish control)</td>
</tr>
<tr>
<td>S ≥ 20 &amp; M &gt; 6</td>
<td>2. [CGS] ELEVON FIXED – ITEM 18 EXEC (*)</td>
</tr>
<tr>
<td>CONTROL PROBLEMS* &amp;</td>
<td>3. ENTRY MODE – AUTO</td>
</tr>
<tr>
<td>ARCS QTY &gt; 0</td>
<td>When control regained:</td>
</tr>
<tr>
<td>M &lt; 6 &amp; ARCS QTY &gt; 0</td>
<td>4. ENTRY MODE – NO Y JET</td>
</tr>
<tr>
<td>M &lt; 5</td>
<td>5. AIL trim</td>
</tr>
<tr>
<td></td>
<td>6. ENTRY MODE – AUTO</td>
</tr>
<tr>
<td></td>
<td>7. TRIM/RHC PNL – ENA</td>
</tr>
<tr>
<td></td>
<td>8. TRIM ROLL – away from AIL trim (to &lt; 1)</td>
</tr>
</tbody>
</table>

*Region of least margin: M 12-8

### AIL TRIM ≥ 3°

<table>
<thead>
<tr>
<th>TAL</th>
<th>1. [CGS] WRAP MODE – ITEM 45 EXEC (ACT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIL trim = 5</td>
<td>2. BF – MAN</td>
</tr>
<tr>
<td></td>
<td>3. BF – UP (to 0%)</td>
</tr>
<tr>
<td>NO Y JET</td>
<td>4. Perform roll reversals at 3°/s (expect sluggish control)</td>
</tr>
<tr>
<td>M &lt; 13 &amp; AIL trim = 5</td>
<td>5. P – CSS</td>
</tr>
<tr>
<td></td>
<td>6. Fly $\alpha$ per schedule:</td>
</tr>
<tr>
<td></td>
<td>$\alpha$</td>
</tr>
<tr>
<td></td>
<td>13</td>
</tr>
<tr>
<td>M &lt; 5</td>
<td>7. TRIM/RHC PNL – ENA</td>
</tr>
<tr>
<td></td>
<td>8. TRIM ROLL – away from AIL trim (to &lt; 1)</td>
</tr>
<tr>
<td></td>
<td>9. P – AUTO</td>
</tr>
<tr>
<td>M &lt; 2</td>
<td>10. BF – AUTO</td>
</tr>
</tbody>
</table>

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

ENT-10a/A/E/B
### HIGH-FREQ OSC OR SURF/JET CYCLE

<table>
<thead>
<tr>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Returning PL &gt; 10K lb</td>
<td>1. GS1 - FILTER ALT – ITEM 21 (*)</td>
</tr>
<tr>
<td></td>
<td>2. P, R/Y – CSS</td>
</tr>
<tr>
<td>Osc/Cycle continues</td>
<td>3. ENTRY MODE – LG GAIN</td>
</tr>
<tr>
<td>Osc/Cycle stops</td>
<td>4. ENTRY MODE – AUTO</td>
</tr>
<tr>
<td></td>
<td>5. P, R/Y – AUTO</td>
</tr>
</tbody>
</table>