

# Ascent Pocket Checklist

**Mission Operations Directorate  
Operations Division**

**Generic, Rev N  
October 18, 2006**

**NOTE**

For STS-116 and subsequent flights

AESP: MM101

APCL: MM104

OPCL: MM106

EPCL: MM301

AESP: MM304

National Aeronautics and  
Space Administration

Lyndon B. Johnson Space Center  
Houston, Texas



*United Space Alliance*



ASCENT POCKET CHECKLIST

GENERIC, Rev N (Oct 18, 2006)

## PCN-6 (Oct 4, 2007) Sheet 1 of 1

List of Implemented Change Requests (482s):

MULTI-1808

**NOTE**

For STS-120 and subsequent flights

Incorporate the following:

1. Replace v thru viii
2. Replace B3-3 and B3-4

Prepared by:

Nancy Ellen Linn  
Publication Manager

Approved by:

Timberly Johnson  
Manager, Shuttle Procedures Management

Accepted by:

Michael E. Skour  
FDF Manager

Encl: 6 pages

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ASCENT POCKET CHECKLIST

GENERIC, Rev N (Oct 18, 2006)

## PCN-5 (Sept 25, 2007) Sheet 1 of 1

List of Implemented Change Requests (482s):

MULTI-1803            APCL-0262A  
MULTI-1805

**NOTE**

For STS-120 and subsequent flights

Incorporate the following:

1. Replace v thru viii
2. Replace 3-3 and 3-4 with A3-3 thru B3-4 (4 pages)
3. Replace 4-11 and 4-12  
Delete TEMP 4-11 and TEMP 4-12
4. Replace 7-5 and 7-6 with A7-5 thru B7-6 (4 pages)  
Replace 7-9 and 7-10 with A7-9 thru B7-10 (4 pages)

Prepared by: May Ellen Bruce  
Publication Manager

Approved by: Emilia P. Johnson  
Manager, Shuttle Procedures Management

Accepted by: Michael J. Staw  
FDF Manager

Encl: 18 pages

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ASCENT POCKET CHECKLIST

GENERIC, Rev N (Oct 18, 2006)

## PCN-4 (July 10, 2007) Sheet 1 of 1

List of Implemented Change Requests (482s):

MULTI-1738A(R)      APCL-0261  
MULTI-1785  
MULTI-1786  
MULTI-1797

**NOTE**

For STS-118 and subsequent flights

R – Remainder

Incorporate the following:

1. Replace v thru viii
2. Replace B4-1 and B4-2, 4-17 thru B4-20 (6 pages)
3. Replace 5-7 and 5-8
4. Replace 7-1 and 7-2
5. Replace B10-7 thru B10-12

Prepared by: May Ellen Bruce  
Publication Manager

Approved by: Kimberly Johnson  
Manager, Shuttle Procedures Management

Accepted by: Michael T. Holt  
FDF Manager

Encl: 22 pages

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ASCENT POCKET CHECKLIST

GENERIC, Rev N (Oct 18, 2006)

## PCN-3 (Feb 16, 2007) Sheet 1 of 1

List of Implemented Change Requests (482s):

MULTI-1779  
MULTI-1780  
MULTI-1782**NOTE**

For STS-117 and subsequent flights

Incorporate the following:

1. Replace v and vi, ix and x
2. Replace 3-1 thru 3-4
3. After A4-6, add A4-7 and A4-8  
Replace 4-7 and 4-8 with B4-7 and B4-8  
Replace B4-19 and B4-20

Prepared by:

Mary Ellen Luce  
Publication Manager

Approved by:

Kimberly Johnson  
Manager, Shuttle Procedures Management

Accepted by:

Michael E. Shaw  
FDF Manager

Encl: 14 pages

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ASCENT POCKET CHECKLIST

GENERIC, Rev N (Oct 18, 2006)

## PCN-2 (Feb 7, 2007) Sheet 1 of 1

List of Implemented Change Requests (482s):

MULTI-1756                      APCL-0260  
MULTI-1764A  
MULTI-1769  
MULTI-1774  
MULTI-1778

**NOTE**

For STS-117 and subsequent flights

Incorporate the following:

1. Replace v thru xii
2. Replace 4-11 thru 4-20 (12 pages) with 4-11 thru 4-22 (16 pages)
3. Replace A10-33 and A10-34, A10-39 and A10-40
4. Replace B10-33 and B10-34, B10-39 and B10-40

Prepared by: May Ellen Lruu  
Publication Manager

Approved by: Kimberly Johnson  
Manager, Shuttle Procedures Management

Accepted by: Michael E. Shaw  
FDF Manager

Encl: 32 pages

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ASCENT POCKET CHECKLIST

GENERIC, Rev N (Oct 18, 2006)

## PCN-1 (Nov 10, 2006) Sheet 1 of 1

List of Implemented Change Requests (482s):

APCL-0259

MULTI-1759A

**NOTE**

For STS-116 and subsequent flights

Incorporate the following:

1. Replace v thru xii
2. Replace 1-3 and 1-4  
After 1-4, add 1-5 and 1-6
3. Replace 4-15 and 4-16
4. Replace 7-5 and 7-6
5. Replace A10-21 and A10-22

Prepared by: Mary Ellen S. McE  
Publication Manager

Approved by: Laura Laughlin for  
Manager, Shuttle Procedures Management

Accepted by: M. Noel T. St  
FDF Manager

Encl: 18 pages

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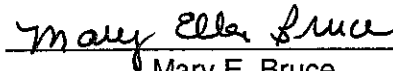
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**ASCENT POCKET CHECKLIST**

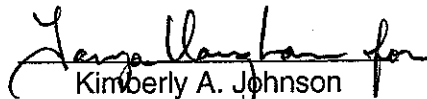
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October 18, 2006

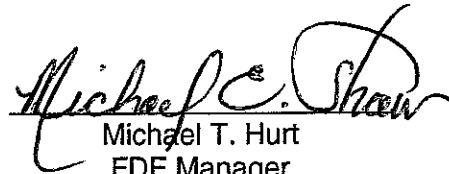
PREPARED BY:

  
\_\_\_\_\_  
Mary E. Bruce  
Publication Manager

APPROVED BY:

ACCEPTED BY:

  
\_\_\_\_\_  
Kimberly A. Johnson  
Manager, Shuttle  
Procedures Management

  
\_\_\_\_\_  
Michael T. Hurt  
FDF Manager

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.

APCL/ALL/GEN N

Incorporates the following:			
482#:	MULTI-1755	MULTI-1767	APCL-0254A
	MULTI-1763	MULTI-1768	APCL-0255A
	MULTI-1765		APCL-0257
	MULTI-1766		APCL-0258

AREAS OF TECHNICAL RESPONSIBILITY

Publication Manager	DO352/M. Bruce	281-483-6083
Alternate	DO352/C. Pierce	281-483-6087
APU/HYD	DF5/J. Jason	281-483-7575
COMM	DF2/J. McKinnie	281-483-0792
DPS	DF3/J. McDonald	281-483-0793
ECLS	DF8/D. Fasbender	281-483-7857
EPS	DF7/M. Friant	281-483-0682
GNC	DF6/D. Gruber	281-483-0709
OMS/RCS	DF6/T. Campa	281-244-1002
MPS	DF5/M. Patel	281-244-0083
PWRDN	DF7/M. Friant	281-483-0682



## NOTES

1. The pocket checklists contain contingency procedures to safe a system and continue the flight. As a rule, these procedures do not troubleshoot a malfunction to determine its cause.
2. The pocket checklist is generally constrained to include only those procedures that can and must be performed within 5 minutes. All procedures should be completed promptly and in the step sequence noted. For longer or less time-critical procedures during the orbit phase, the Flight Data File Malfunction Procedures (MAL) book is available.
3. The Ascent Pocket Checklist alone includes the TROUBLESHOOT notation, alerting the crew to the malfunction procedure which may be required later at a less flight-critical time.
4. The absence of a procedure implies no immediate action required.
5. The Ascent Pocket Checklist is unstowed post ET SEP (MM104) and is stowed post OMS-2 (MM106). When a Powered Flight cue card action requires follow-up action, the symbol '⇒' addresses the entry point in the pocket checklist procedure. Additionally, the '◆' icon indicates one should √MCC and if no comm continue with the procedure.
6. Steps are numbered sequentially to facilitate reference for orbiter/ground communications and for procedural cross-reference.
7. Applicable procedures from the A/E SYS book (i.e., Sections A1 thru E9) are placed before the APU/HYD section in the flight copies of this book.
8. Applicable procedures from the PL PWR book (i.e., Section 1) are placed at the end of the flight copies of this book.



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ASCENT POCKET CHECKLIST

**LIST OF EFFECTIVE PAGES**

GENERIC	04/07/87	PCN-4	07/10/07
REV N	10/18/06	PCN-5	09/25/07
PCN-1	11/10/06	PCN-6	10/04/07
PCN-2	02/07/07		
PCN-3	02/16/07		

Sign Off .....	*	ALL/GEN N	3-9.....	ALL/GEN N
ii.....	*	ALL/GEN N	3-10.....	ALL/GEN N
iii.....	*	ALL/GEN N	A4-1 .....	3,4/GEN N
iv.....	*	ALL/GEN N	A4-2 .....	ALL/GEN N
v .....	*	ALL/GEN N,6	B4-1 .....	5/GEN N,4
vi.....	*	ALL/GEN N,6	B4-2 .....	ALL/GEN N
vii.....	*	ALL/GEN N,6	4-3.....	ALL/GEN N
viii.....	*	ALL/GEN N,6	4-4.....	ALL/GEN N
ix.....	*	ALL/GEN N,3	A4-5 .....	ALL/GEN N
x .....	*	ALL/GEN N,2	A4-6 .....	3,4/GEN N
xi.....	*	ALL/GEN N,2	A4-7 .....	3,4/GEN N,3
xii.....	*	ALL/GEN N	A4-8 .....	ALL/GEN N,3
1-1 .....		ALL/GEN N	B4-5 .....	ALL/GEN N
1-2.....		ALL/GEN N	B4-6 .....	5/GEN N
1-3.....		ALL/GEN N,1	B4-7 .....	5/GEN N,3
1-4.....		ALL/GEN N,1	B4-8 .....	ALL/GEN N,3
1-5.....		ALL/GEN N,1	4-9.....	ALL/GEN N
1-6.....		ALL/GEN N,1	4-10.....	ALL/GEN N
2-1 .....		ALL/GEN N	4-11.....	ALL/GEN N,5
2-2.....		ALL/GEN N	4-12.....	ALL/GEN N
2-3.....		ALL/GEN N	4-13.....	ALL/GEN N
2-4.....		ALL/GEN N	4-14.....	ALL/GEN N,2
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3-5.....		ALL/GEN N	B4-19 .....	ALL/GEN N,4
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3-7.....		ALL/GEN N	4-21.....	ALL/GEN N,2
3-8.....		ALL/GEN N	4-22.....	ALL/GEN N,2

\* – Omit from flight book

5-1.....	ALL/GEN N	6-3.....	ALL/GEN N
5-2.....	ALL/GEN N	6-4.....	ALL/GEN N
5-3.....	ALL/GEN N	6-5.....	ALL/GEN N
5-4.....	ALL/GEN N	6-6.....	ALL/GEN N
5-5.....	ALL/GEN N	7-1.....	ALL/GEN N
5-6.....	ALL/GEN N	7-2.....	ALL/GEN N,4
5-7.....	ALL/GEN N,4	7-3.....	ALL/GEN N
5-8.....	ALL/GEN N	7-4.....	ALL/GEN N
5-9.....	ALL/GEN N	A7-5.....	ALL/GEN N,5
5-10.....	ALL/GEN N	A7-6.....	OI-30/GEN N,5
5-11.....	ALL/GEN N	B7-5.....	ALL/GEN N,5
5-12.....	ALL/GEN N	B7-6.....	OI-32/GEN N,5
5-13.....	ALL/GEN N	7-7.....	ALL/GEN N
5-14.....	ALL/GEN N	7-8.....	ALL/GEN N
5-15.....	ALL/GEN N	A7-9.....	ALL/GEN N,5
5-16.....	ALL/GEN N	A7-10.....	OI-30/GEN N,5
5-17.....	ALL/GEN N	B7-9.....	ALL/GEN N,5
5-18.....	ALL/GEN N	B7-10.....	OI-32/GEN N,5
5-19.....	ALL/GEN N	7-11.....	ALL/GEN N
5-20.....	ALL/GEN N	7-12.....	ALL/GEN N
5-21.....	ALL/GEN N	7-13.....	ALL/GEN N
5-22.....	ALL/GEN N	7-14.....	ALL/GEN N
5-23.....	ALL/GEN N	8-1.....	ALL/GEN N
5-24.....	ALL/GEN N	8-2.....	ALL/GEN N
5-25.....	ALL/GEN N	8-3.....	ALL/GEN N
5-26.....	ALL/GEN N	8-4.....	ALL/GEN N
5-27.....	ALL/GEN N	8-5.....	ALL/GEN N
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5-29.....	ALL/GEN N	8-7.....	ALL/GEN N
5-30.....	ALL/GEN N	8-8.....	ALL/GEN N
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5-33.....	ALL/GEN N	9-3.....	ALL/GEN N
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5-35.....	ALL/GEN N	A10-1.....	ALL/GEN N
5-36.....	ALL/GEN N	A10-2.....	ALL/GEN N
5-37.....	ALL/GEN N	A10-3.....	ALL/GEN N
5-38.....	ALL/GEN N	A10-4.....	ALL/GEN N
5-39.....	ALL/GEN N	A10-5.....	ALL/GEN N
5-40.....	ALL/GEN N	A10-6.....	ALL/GEN N
6-1.....	ALL/GEN N	A10-7.....	3,4/GEN N
6-2.....	ALL/GEN N	A10-8.....	ALL/GEN N

A10-9 .....	ALL/GEN N	B10-3 .....	ALL/GEN N
A10-10 .....	3,4/GEN N	B10-4 .....	ALL/GEN N
A10-11 .....	3,4/GEN N	B10-5 .....	ALL/GEN N
A10-12 .....	3,4/GEN N	B10-6 .....	ALL/GEN N
A10-13 .....	3,4/GEN N	B10-7 .....	5/GEN N,4
A10-14 .....	ALL/GEN N	B10-8 .....	ALL/GEN N,4
A10-15 .....	ALL/GEN N	B10-9 .....	ALL/GEN N,4
A10-16 .....	3,4/GEN N	B10-10 .....	5/GEN N,4
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A10-18 .....	ALL/GEN N	B10-12 .....	5/GEN N,4
A10-19 .....	3,4/GEN N	B10-13 .....	5/GEN N
A10-20 .....	3,4/GEN N	B10-14 .....	ALL/GEN N
A10-21 .....	ALL/GEN N	B10-15 .....	ALL/GEN N
A10-22 .....	3,4/GEN N,1	B10-16 .....	5/GEN N
A10-23 .....	ALL/GEN N	B10-17 .....	5/GEN N
A10-24 .....	ALL/GEN N	B10-18 .....	ALL/GEN N
A10-25 .....	ALL/GEN N	B10-19 .....	5/GEN N
A10-26 .....	ALL/GEN N	B10-20 .....	5/GEN N
A10-27 .....	ALL/GEN N	B10-21 .....	ALL/GEN N
A10-28 .....	ALL/GEN N	B10-22 .....	5/GEN N
A10-29 .....	3,4/GEN N	B10-23 .....	ALL/GEN N
A10-30 .....	ALL/GEN N	B10-24 .....	ALL/GEN N
A10-31 .....	3,4/GEN N	B10-25 .....	ALL/GEN N
A10-32 .....	3,4/GEN N	B10-26 .....	ALL/GEN N
A10-33 .....	3,4/GEN N	B10-27 .....	ALL/GEN N
A10-34 .....	3,4/GEN N,2	B10-28 .....	ALL/GEN N
A10-35 .....	ALL/GEN N	B10-29 .....	5/GEN N
A10-36 .....	ALL/GEN N	B10-30 .....	ALL/GEN N
A10-37 .....	3,4/GEN N	B10-31 .....	5/GEN N
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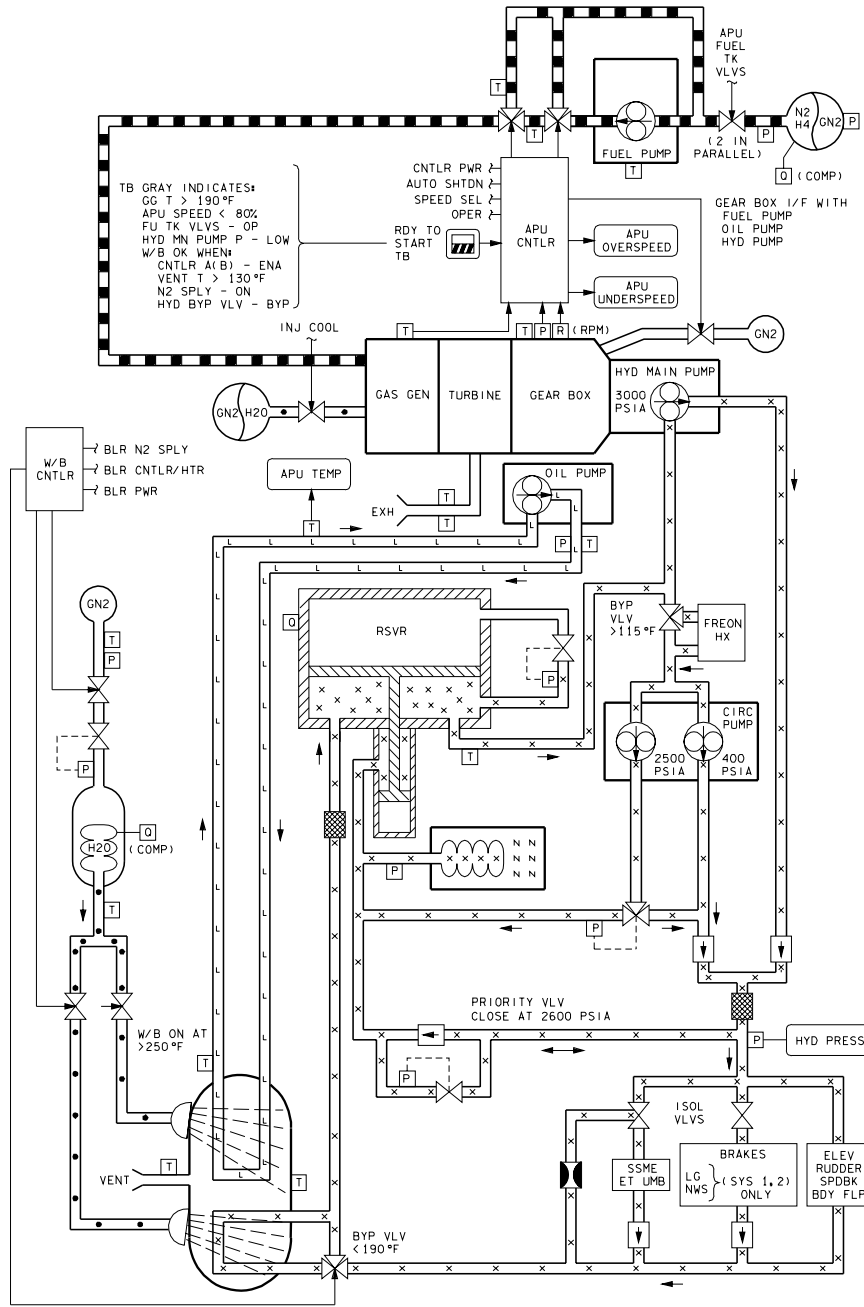
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2 COOLING/AV BAY 2 FIRE .....	10-10
3 COOLING/AV BAY 3 FIRE .....	10-13
CAB PRESS (MINOR PWRDN) .....	10-16
(MAJOR PWRDN) .....	10-17
2 H2O LOOPS (POST OMS-2) .....	10-21
1 FREON LOOP .....	10-29
HI LOAD EVAP .....	10-33
2 FREON LOOPS (POST OMS-2) .....	10-35
FES/1 FC .....	10-39
2nd FC .....	10-43

APU/HYD

APU/  
HYD



DATE 07/22/05  
480330101, SCH: 2

APU/  
HYD

### APU SHUTDN

APU OPER – OFF  
FU TK VLV – CL  
√Shutdn (HYD PRESS < 200)

Report APU F7 lts  
APU CNTLR PWR – OFF

- ⇒ √AUTO SHTDN (three) – ENA  
√SPEED SEL (two) – NORM

### APU SPD HI

**BFS, SM SYS SUMM 2**

- ⇒ If SPEED % exceeds 111:  
Go to APU SHUTDN

### APU OVERSPEED/UNDERSPEED

**BFS, SM SYS SUMM 2**

If SPEED % exceeds 129 or if APU has shut down:  
Go to APU SHUTDN

### APU OIL OVERTEMP

**BFS, SM SYS SUMM 2**

1. BLR CNTLR/HTR – B  
√N2 SPLY – ON

- ⇒ If APU OIL OUT TEMP > 305 and OIL IN TEMP incr:

2. Perform APU SHUTDN

If AOA:

At M = 7:

3. Go to APU COOLDOWN (A/E SYS, PLT WND FB,  
APU/HYD)

### APU PUMP LEAK P

**BFS, SM SYS SUMM 2**

1. √MCC

If not AOA:

2. Go to APU SHUTDN >>

If AOA and two good APUs:

3. Perform APU SHUTDN, then:

At M = 7:

4. Go to APU COOLDOWN (A/E SYS, PLT WND FB,  
APU/HYD)

### APU RESTART

- ◆ 1. √APU AUTO SHTDN – ENA  
2. HYD MN PUMP PRESS – LO  
3. APU CNTLR PWR – ON  
4. OPER – INJ COOL (start watch)  
If after 1.5 min, APU TEMP INJ not decr:  
5. HYD MN PUMP PRESS – NORM  
Go to APU SHUTDN >>

At 3.5 min:

6. APU FU TK VLV – OP  
OPER – START/RUN  
HYD MN PUMP PRESS – NORM

If restart unsuccessful:

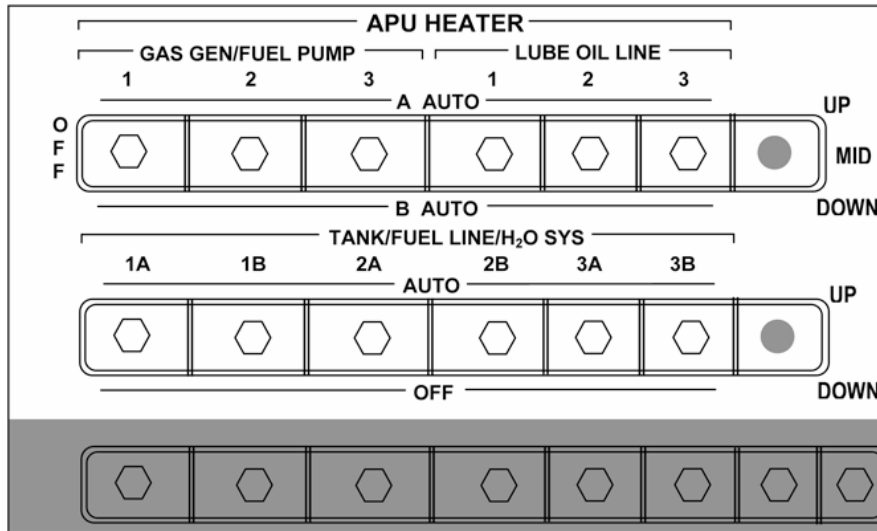
7. Go to APU SHUTDN >>

8. √BLR N2 SPLY – ON  
√PWR – ON  
√CNTLR/HTR – A(B)

**SM0 THRM APU**

**BFS, SM 0 THERMAL**

AFF TEMP	STATUS	ACTION
APU GG/FU PMP HTR 1(2,3)	↑	A12 √(Aff) APU HTR GAS GEN/FU PUMP – OFF >>
	↓	A12 (Aff) APU HTR GAS GEN/FU PUMP – A AUTO >>
	H, L, M	No action >>
APU TK/FU LN HTR 1(2,3)	↑	A12 √(Aff) APU HTR TK/FU LN/H2O SYS (two) – OFF >>
	↓	A12 (Aff) APU HTR TK/FU LN/H2O SYS (two) – AUTO >>
	H, L, M	No action >>
APU PUMP/VLV 1(2,3)	↑	If APU was running and now shut dn, do not attempt restart until aff temp cool
	↓, H, L, M	No action >>



## HYD PRESS (LOW)

GNC 51 OVERRIDE  
BFS, SM SYS SUMM 2

⇒ 1. √APU SPEED SEL (three) – NORM

If not AOA:

2. √APU AUTO SHTDN (three) – ENA  
Go to APU SHUTDN >>

If AOA:

3. Compare 'PRL SYS X' status and aff HYD PRESS  
(HYD/APU) meter and CRT):

PRL SYS	HYD PRESS	ACTION
↓	both meter and CRT P < 300	Perform APU SHUTDN
blank	either meter or CRT P > 2600	No action reqd >>
'?'	ACUM P > 2800	No action reqd >>

4. If aff APU running: (Aff) HYD MN PUMP PRESS – LO

If two good APU/HYD remain:

5. √APU AUTO SHTDN (three) – ENA

At  $\bar{q} = 1$ :

6. HYD MN PUMP PRESS (two) – NORM

At TAEM:

7. APU SPEED SEL (two) – HI >>

If only one good APU/HYD remains:

8. √APU AUTO SHTDN (one) – INH

HYD MN PUMP PRESS (one) – LO

At  $\bar{q} = 1$ :

9. HYD MN PUMP PRESS (one) – NORM

APU SPEED SEL (one) – HI

On MCC call:

10. (Degraded) HYD MN PUMP PRESS – NORM

### HYD RSVR QTY (LOW)

BFS, SM SYS SUMM 2

- ⇒ 1. (Aff) HYD MPS/TVC ISOL VLV SYS – CL (hold 5 sec, tb-CL)  
√BK ISOL VLV – CL (hold 5 sec, tb-CL)  
If HYD sys 1 leaking:  
√LG EXTND ISO VLV – CL (hold 5 sec, tb-CL)  
If qty still decr:  
2. If AOA:  
    (Aff) HYD MN PUMP PRESS – LO  
    If qty decr within 3 min:  
        Go to APU SHUTDN >>  
If not AOA:  
    Go to APU SHUTDN

### HYD RSVR T

BFS, SM SYS SUMM 2

1. BLR CNTLR/HTR – B(A)  
If HYD RSVR T > 250:  
2. HYD MN PUMP PRESS – LO  
If HYD RSVR T > 268 and incr:  
3. Perform APU SHUTDN  
If AOA:  
    At M = 7:  
4. Go to APU COOLDOWN (A/E SYS, PLT WND  
FB, APU/HYD)

### HYD ACCUM P (LOW)

BFS, SM SYS SUMM 2

HYD CIRC PUMP – ON  
If aff APU running:  
HYD MN PUMP PRESS – NORM

### W/B QTY (LOW)

BFS, SM SYS SUMM 2

- ⇒ 1. BLR CNTLR/HTR – B  
2. √N2 SPLY – ON  
If W/B QTY = 0 >>  
Monitor W/B QTY for 2 min, then:  
If W/B QTY change > 3:  
3. Go to APU SHUTDN



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**COMM**

**COMMUNICATIONS**



2-1

APCL/ALL/GEN N

COMM

### ICOM LOST

1. (Aff) AUD CNTL sel – sel alt
- If still no ICOM AUDIO:
2. AUD CTR – 2

### COMM LOST (mult pnls)

#### NOTE

Perform comm checks with MCC after each step

- ⇒
1. AUD CTR – 2
  - If all ICOM and A/G failed (check three ATUs):
  - R14:A,F 2. ✓cb AUD CTR (two) – cl
  3. Go to step 11 (both AUD CTRs failed)
  - C3 4. S-BD PM CNTL – PNL,CMD
  5. BFS, GNC 51 OVERRIDE  
 Config for TDRS,STDN, or SGLS per COMM COVER (ASC):  
 TDRS – ITEM 46 EXEC (\*)  
 STDN-HI – ITEM 47 EXEC (\*)  
 SGLS – ITEM 49 EXEC (\*)  
 If \* not next to selected config:
  - A1 6. Config for STDN,SGLS, or TDRS per COMM COVER (ASC)
- |                     | STDN/SGLS    | TDRS      |
|---------------------|--------------|-----------|
| S-BD PM MODE sel    | STDN LO/SGLS | TDRS DATA |
| NSP DATA RATE (two) | HI           | HI        |
| NSP CODING (two)    | OFF          | ON        |
- C3 7. S-BD PM CNTL – PNL,CMD to effect reconfig

Cont next page

8. Sel best ant, F9 meter > 300 (if TDRS, reorient veh and try diff ant); if no joy, return to GPC

NOTE

When selecting between DC Amps and Signal Strength posns, expect fluctuations which will dampen out within 1 min

A1L

9. Attempt UHF PRI,ALT and G (say freq) per COMM COVER (ASC) (30 sec reqd for site reconfig)
10. Bypass encryption (1 min reqd for MCC reconfig):  
NSP ENCRYPTION MODE – SEL  
SEL – BYP
11. Confirm U/L CMD capability:  
Cue MCC with: ITEM 88 +8 8 8 8 8 8  
Check flashing U/L on PASS display  
Ack with: ITEM 99 +9 9 9 9 9 9  
Check abort light cycling ON/OFF (MCC ack)  
Check no flashing U/L
12. If U/L CMD confirmed: Go to MAL, COMM, SSR-1, LOSS OF ALL VOICE COMM >>
13. If still no comm and no U/L CMD, perform MAL, COMM, 2.3a, NO S-BD COMM: TDRS as time permits, then:
  14. Confirm GPS functioning properly:  
BFS, GNC 55 GPS STATUS  
√STAT = BLANK or BATT  
√MODE = INS  
√DG FAIL = BLANK  
√P 1σ ≤ 650 (can be > 650 for no more than 5 min)

- \* If GPS not functioning properly for 5 min, \*
- \* complete all ASC C/L actions, then \*
- \* perform REV 2 Deorb: LAUNCH DAY \*
- \* DEORBIT PREP (ORBIT 2) (CONT \*
- \* DEORB, LAUNCH DAY (ORBIT 2)), and \*
- \* as time permits once in OPS 3, perform \*
- \* GPS TROUBLE-SHOOTING (ENT PKT, \*
- \* GNC) \*
- \* \*

NOTE

- \* If GPS recovered with troubleshooting, \*
- \* return to step 15, following page, to \*
- \* determine Deorbit opportunity \*

Cont next page

15. If GPS functioning properly for 10 min, complete all ASC C/L actions, then perform desired First Day PLS Deorbit considering weather forecasts, lighting conditions, and deorbit capability using PGSC-generated deorbit targets. Navigation accuracy will be maintained with automatic GPS updates once in OPS 2 or OPS 3

If REV 2 Deorb: LAUNCH DAY DEORBIT PREP (ORBIT 2) (CONT DEORB, LAUNCH DAY (ORBIT 2)) >>

If REV 3 Deorb: LAUNCH DAY DEORBIT PREP (ORBIT 3) (CONT DEORB, LAUNCH DAY (ORBIT 3)) >>

If REV 5 or 6 Deorb: ORBIT 5/6 DEORBIT (POST INSERT, ORBIT 5/6 D/O) >>

If REV 7 Deorb: POST INSERTION PROCEDURES (POST INSERT, POST INSERTION), then DEORB, NOMINAL DEORBIT PREP PROCEDURES

Delta entry:

Add 'GPS INCORPORATION (ENT PKT, GNC)' at TIG -2:00 hours



**DPS**

**DATA PROCESSING SYSTEM**



**DUAL DPS DISPLAY COMMANDERS/DK XMTR 1(2,3)**

1. BFC CRT SEL – aff IDP
- If reqd to clean up display:
2. (Aff) IDP/CRT PWR – OFF,ON

**PASS DISPLAY FAIL**

1. MDU PWR – OFF,ON; if recovered >>
  2. GPC/CRT – same GPC/aff IDP; if recovered >>
  3. BFC CRT SEL – aff IDP; if both IDPs OK go to step 9
  4. – orig posn
  5. Report MDU symptoms
- If MCC GO for pwr cycle:
6. IDP/CRT PWR – OFF,ON; if recovered >>
- If MDU blank or autonomous:
7. Set other MDU on same IDP to DPS Mode; if recovered >>
  8. Return other MDU to nominal config
  9. Deassign aff IDP from PASS
  10. GPC/CRT 04 EXEC
  11. In PASS: GPC/CRT 44 EXEC

**BFS DISPLAY FAIL**

1. If IDP4(CRT4): IDP/CRT4 PWR – OFF >>
  2. MDU PWR – OFF,ON; if recovered >>
  3. BFC CRT SEL – unaff IDP; if both IDPs OK >>
  4. – orig posn
  5. BFC CRT DISPLAY – OFF,ON; if recovered >>
  6. In PASS: GPC/CRT 5/X for aff IDP; if recovered >>
  7. Report MDU symptoms
- If MCC GO for pwr cycle:
8. IDP/CRT PWR – OFF,ON; if recovered >>
- If MDU blank or autonomous:
9. Set other MDU on same IDP to DPS Mode; if recovered >>
  10. Return other MDU to nominal config
  11. BFC CRT SEL – unaff IDP
  12. Deassign aff IDP from PASS
  13. GPC/CRT 04 EXEC
  14. In PASS: GPC/CRT 44 EXEC

**FLT INST DISPLAY ANOMALY**

1. DATA BUS sel alt FC BUS(s); if recovered >>
2. PORT SELECT aff MDU; if recovered >>
3. MDU PWR – OFF,ON

**SUBSYS STATUS DISPLAY ANOMALY**

1. PORT SELECT aff MDU; if recovered >>
2. MDU PWR – OFF,ON

**BCE STRG X** (no 'MDM OUTPUT' msg)

If IMU:

1. **GNC 51 OVERRIDE**  
Aff IMU(s) – desel
2. I/O RESET
3. If recovered: IMU – resel >>
4. **GNC 1 DPS UTILITY**  
Aff String – port mode
5. If recovered: Go to step 9
6. (Aff) MDM FF – OFF,ON
7. I/O RESET; if recovered: Go to step 9
8. **GNC 1 DPS UTILITY**  
Orig ports – resel
9. BFS I/O RESET
10. If IMU recovered:  
**GNC 51 OVERRIDE**  
Aff IMU(s) – resel >>

If 'BCE STRG 3 NSP':

11. I/O RESET; if recovered >>
- If msg repeats and LOS/no comm:  
12. Go to COMM LOST, step 4 (COMM), 2-2 >>

If any other BCE BYP:

13. I/O RESET; if recovered: BFS I/O RESET >>
14. **GNC 1 DPS UTILITY**  
Aff String – port mode
15. BFS I/O RESET; if recovered or if GPS >>
16. (Aff) MDM FA/FF – OFF,ON
17. I/O RESET; if recovered:  
**BFS, GNC 51 OVERRIDE**  
If reqd: aff SURF feedback  
RGA or AA – resel >>
18. **GNC 1 DPS UTILITY**  
Orig ports – resel
19. BFS I/O RESET; if recovered >>

If msg repeats and is 'BCE STRG B/C/D':

20. If 'BCE STRG 1D(4D)': L(R) OMS – sel SEC GMBL
21. If 'BCE STRG B':  
**BFS, GNC 51 OVERRIDE**  
Aff AA – desel
22. If 'BCE STRG D':  
**BFS, GNC 51 OVERRIDE**  
Aff SURF feedback, RGA – desel
23. If 'BCE STRG 2C': Go to MPS VACUUM INERT  
(MPS), 9-3

**OI-30** | APCL/ALL/GEN N,5

**DISPLAY FAIL/ANOMALIES** A3-3

**BCE STRG X**

## MULT DATA PATH LOSS (non-Recov)

### NOTE

If LRU data path loss due to GPC prob and not MDM,  
BFS will pick up MDM(s)/LRU(s) when engaged

FAILURE	TYPE	ACTIONS
GPC/FF any combo	I/O or B	No impact
GPC/FA 1,2	I/O	Preburn (TVC): L OMS ENG – OFF
GPC/FA 1,3 or 2,4	I/O	Preburn (IGN): R OMS ENG – OFF
GPC/FA 1,4 or 2,3	I/O	Preburn (IGN): L OMS ENG – OFF
GPC/FA 3,4	I/O	Preburn (TVC): R OMS ENG – OFF

### BFS GPC FAIL

1. GPC MODE – STBY,HALT
  - ◆     OUTPUT – TERM
  - ⇒     MODE – STBY,RUN
- If BFS can drive an IDP:
2. PRO to OPS 302; load TGTs (PEG 7)
  3. GPC OUTPUT – B/U >>
- If SM only:
4. GPC MODE – STBY, then go to step 6
  5. GPC MODE – HALT
  6. If no comm: sel best S-BD PM ANT

**OI-30**

A3-4

APCL/OI-30/GEN N,5



**BCE STRG X** (no 'MDM OUTPUT' msg)

If IMU:

1. **GNC 51 OVERRIDE**  
Aff IMU(s) – desel
2. I/O RESET
3. If recovered: IMU – resel >>
4. **GNC 1 DPS UTILITY**  
Aff String – port mode
5. If recovered: Go to step 9
6. (Aff) MDM FF – OFF,ON
7. I/O RESET; if recovered: Go to step 9
8. **GNC 1 DPS UTILITY**  
Orig ports – resel
9. BFS I/O RESET
10. If IMU recovered:  
**GNC 51 OVERRIDE**  
Aff IMU(s) – resel >>

If 'BCE STRG 3 NSP':

11. I/O RESET; if recovered >>
- If msg repeats and LOS/no comm:  
12. Go to COMM LOST, step 4 (**COMM**), 2-2 >>

If any other BCE BYP:

13. I/O RESET; if recovered: BFS I/O RESET >>
14. **GNC 1 DPS UTILITY**  
Aff String – port mode
15. BFS I/O RESET; if recovered or if GPS >>
16. (Aff) MDM FA/FF – OFF,ON
17. I/O RESET; if recovered:  
**BFS, GNC 51 OVERRIDE**  
If reqd: aff SURF feedback  
RGA or AA – resel >>
18. **GNC 1 DPS UTILITY**  
Orig ports – resel
19. BFS I/O RESET; if recovered >>

If msg repeats and is 'BCE STRG B/C/D':

20. If 'BCE STRG 1D(4D)': L(R) OMS – sel SEC GMBL
21. If 'BCE STRG B':  
**BFS, GNC 51 OVERRIDE**  
Aff AA – desel
22. If 'BCE STRG D':  
**BFS, GNC 51 OVERRIDE**  
Aff SURF feedback, RGA – desel
23. If 'BCE STRG 2C': Go to MPS VACUUM INERT  
(MPS), 9-3

**OI-32** | APCL/ALL/GEN N,5

**DISPLAY FAIL/ANOMALIES** B3-3

**BCE STRG X**

## MULT DATA PATH LOSS (non-Recov)

### NOTE

If LRU data path loss due to GPC prob and not MDM,  
BFS will pick up MDM(s)/LRU(s) when engaged

FAILURE	TYPE	ACTIONS
GPC/FF any combo	I/O or B	No impact
GPC/FA 1,2	I/O	Preburn (TVC): L OMS ENG – OFF
GPC/FA 1,3 or 2,4	I/O	Preburn (IGN): R OMS ENG – OFF
GPC/FA 1,4 or 2,3	I/O	Preburn (IGN): L OMS ENG – OFF
GPC/FA 3,4	I/O	Preburn (TVC): R OMS ENG – OFF

### BFS GPC FAIL

1. GPC MODE – STBY,HALT
  - ◆        OUTPUT – TERM
  - ⇒        MODE – STBY
- If BFS cannot drive an IDP:
2. GPC MODE – HALT, then go to step 10
  3. PRO to OPS 106
  4. BFS, OPS 000 PRO
  5. PRO to OPS 302; load TGTs (PEG 7)
- If BFS in desired MM (302):
6. GPC MODE – RUN
  7. OUTPUT – B/U
  8. Advise MCC BFS in BACKUP >>
  9. ✓GPC MODE – STBY (BFS is SM only)
  10. If no comm: sel best S-BD PM ANT

# OI-32

B3-4

APCL/OI-32/GEN N,6

### PASS GPC (1st FAIL)

- ⇒ 1. (Aff) GPC PWR – OFF
- ◆ 2. MPS PRPLT DUMP B/U LH2 VLV – OP
- If String 1(4) and performing burn in OPS 1:
- If GPC failed post-ET SEP:
3. MDM FF1(4) – OFF, ON
  4. **GNC 51 OVERRIDE**  
Aff IMU – desel
  5. L(R) OMS GMBL – sel SEC
6. √MULT DATA PATH LOSS, then:
7. Reassign IDPs as reqd
- If AOA, at MM301 trans:
8. (All) FCS CH – AUTO
  9. Reassign aff string to highest # GPC

### PASS GPC (2nd FAIL)

- ⇒ 1. (Aff) GPC PWR – OFF
- If String 1(4) and performing burn in OPS 1:
- If GPC failed post-ET SEP:
2. MDM FF1(4) – OFF, ON
  3. **GNC 51 OVERRIDE**  
Aff IMU – desel
  4. L(R) OMS GMBL – sel SEC
5. √MULT DATA PATH LOSS, then:
6. Reassign IDPs as reqd
  7. On MCC call: Restriring 1 and 3 to one GPC, 2 and 4 to other
  8. If restrig OK, all FCS CH – AUTO
  9. BFS I/O RESET

### PASS GPC BITE

- If cyclic GPC BITE on single PASS GPC:
1. Go to PASS GPC (1st FAIL) >>
- For Post Insertion:
2. Consider (aff) GPC failed

APCL/ALL/GEN N

**MULT DATA PATH LOSS**  
**BFS GPC FAIL**

3-5

**PASS GPC (1st)**  
**PASS GPC (2nd)/BITE**

## SUMWORD ICC

### NOTE

If only one GPC annun message, prob is at that GPC annun message

- ⇒ If AOA:
1. Prior to OPS 3 transition, config NBAT, then:  
(Aff) GPC PWR – OFF
- If Uphill:
2. Consider (aff) GPC failed in Post Insertion

## FA MDM I/O ERROR

1. I/O RESET; if recovered: Go to step 18
- ⇒ 2. MPS PRPLT DUMP B/U LH2 VLV – OP
3. If MDM FA1(4): L(R) OMS – sel SEC GMBL  
If no BFS 'BCE STRG X PASS' (MDM prob):
  4. **GNC 1 DPS UTILITY**  
Aff String – port mode
  5. If recovered: Go to step 18  
If OMS not burning and MCC GO for pwr cycle:
    6. MDM FA – OFF,ON
    7. I/O RESET
    8. If recovered: Go to step 18
    9. **GNC 1 DPS UTILITY**  
Orig ports – reset
    10. If recovered: Go to step 18
  - If not recovered:
    11. **BFS, GNC 51 OVERRIDE**  
Aff SURF feedback, RGA – desel
    12. BFS I/O RESET
    13. √MULT DATA PATH LOSS >>
- If BFS 'BCE STRG X PASS' (GPC prob):
  14. √MULT DATA PATH LOSS  
On MCC call:
    15. Restrung to swap aff String with String 4  
(if MDM FA4, swap Strings 3 and 4)
  - If GPC fails during restrung:
    16. (Aff) GPC PWR – OFF
    17. Restrung, assigning failed GPC string to highest # GPC
18. BFS I/O RESET
19. (All good) FCS CH – AUTO

## FF MDM I/O ERROR

1. I/O RESET; if recovered, BFS I/O RESET >>
- ⇒ If no BFS 'BCE STRG X PASS' (MDM prob):
  2. **GNC 1 DPS UTILITY**  
Aff String – port mode
  3. BFS I/O RESET; if recovered >>  
If MCC GO for pwr cycle:
    4. (Aff) MDM FF – OFF,ON
    5. I/O RESET; if recovered >>
    6. **GNC 1 DPS UTILITY**  
Orig ports – resel
    7. BFS I/O RESET; if recovered >>
  8. **GNC 51 OVERRIDE**  
Aff IMU – desel
  9. If MDM FF 1(4): L(R) OMS – sel SEC GMBL
  10. Go to step 11
- If BFS 'BCE STRG X PASS' (GPC prob):
  11. √MULT DATA PATH LOSS, then:
- If no BFS 'BCE STRG X PASS' (MDM prob):
  12. MDM FF1(2): CDR(PLT) disp sws – green dot
  13. **BFS, GNC 51 OVERRIDE**  
Aff AA – desel >>
- If BFS 'BCE STRG X PASS' (GPC prob):
  - On MCC call:
    14. Restrung to swap aff String with String 4 (if MDM FF4, swap Strings 3 and 4)
  - If GPC fails during restrung:
    15. (Aff) GPC PWR – OFF
    16. Restrung, assigning failed GPC string to highest # GPC
  17. BFS I/O RESET

APCL/ALL/GEN N

## **FF(FA) MDM OUTPUT**

**FAULT**

(Take action only if annun by entire set)

If single 'MDM OUTPUT':

| 1. Go to FF(FA) MDM I/O ERROR >>

If both MDM FF and MDM FA annun:

2. I/O RESET

3. If reqd: BFS I/O RESET

If msgs repeat:

4. Go to PASS GPC (1st FAIL) >>

5. If reqd: (Aff) FCS CH – ORIDE,AUTO

## **PL MDM I/O ERROR**

1. BFS I/O RESET; if recovered >>

⇒ 2. **GNC 1 DPS UTILITY**

PL1/2 – port mode

3. BFS I/O RESET; if recovered >>

If I/O Error PL for other PL MDM (GPC prob):

| 4. Repeat steps 2,3 if reqd to recover second PL MDM

If I/O Error PL repeats for same MDM and MCC GO for pwr cycle:

5. (Aff) MDM PL – OFF,ON

6. BFS I/O RESET; if recovered >>

If PL2 lost and no comm at AOS:

7. Sel best S-BD ANT

## **PCM I/O ERROR**

**BFS, SM SYS SUMM 1(2)**

◆ 1. OI PCMMU PWR – 2(1)

**BFS GPC IPL (on MCC Call)**

NOTE

√MCC for reapplication of GMEMs as reqd

- MO42F Perform hardware dump:
1. GPC OUTPUT 5 – TERM  
MEM DUMP sel – 5  
MODE 5 – STBY
- After 8 min:
2. GPC MODE 5 – HALT  
OUTPUT 5 – NORM  
MEM DUMP sel – OFF
  3. IPL SOURCE – MMU 1
  4. GPC PWR 5 – OFF, ON  
IPL 5 pb – push (tb-IPL, then bp within 2 min)
- When tb – bp:
5. BFC CRT DISP – ON  
SEL – 3+1 (expect big 'X', POLL FAIL)  
IDP3 – LOAD  
GPC MODE 5 – STBY (tb remains bp; expect CAM)  
Verify GPC IPL MENU displayed (within 2 min)
- On IPL MENU:
6. Press MSG RESET to cycle thru MSGS STILL IN LIST
  7. Load BFS software – ITEM 2 EXEC (\*)
- When 'BSL ... LOADED' appears (within 2 min):
8. MSG RESET pb – push
- When 'KSC ... SET MMU SEL SW TO OFF' appears (within 2 min):
9. IPL SOURCE – OFF
  10. MSG RESET pb – push  
(repeat until 'MSG STILL IN LIST' = 0)
  11. √GPC MODE 5 tb – RUN (BFS MEMORY appears within 15 sec):
  12. GPC MODE 5 – RUN
  13. Go to BFS GPC FAIL, step 2

**ASC/AOA TRANSITION RESTRING**

	<ol style="list-style-type: none"> <li>1. Config MC1(3) NBAT as reqd</li> <li>2. √<u>G53</u> aff SURF FDBK – desel (*)</li> <li>3. ASAP, (aff) GPC(s) – STBY, HALT</li> </ol>
ASC	<ol style="list-style-type: none"> <li>4. OPS Mode Recall: OPS XXX PRO</li> <li>5. BFS I/O RESET</li> </ol>
AOA	<ol style="list-style-type: none"> <li>6. OPS 301 PRO</li> <li>7. BFS, OPS 301 PRO</li> </ol>



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## EQUIPMENT COOLING MATRIX

AIR-COOLED		WATER-COOLED	
FORCED	FREE-FLOW		
AV BAY 1		AV BAY 1	
GPC 1,4 ① MLS RF & DECODER 1  AV BAY FAN A,B	BFC 1 (ENGAGE) CICU AA 1,4 TACAN 1 PROXIMITY SW INVERTER DIST & CNTL BRK CNTL 1 SMOKE DET A,B CURRENT SNSR ADTA 1,3	AC INV 1A,1B,1C LCA(FWD) 1 PCA(FWD) 1 MCA(FWD) 1  MDM PL1,OF1, FF1,LF1 DSC OF1 ACCU 1,2 PWR SUPPLY/BATT CHARGER	MMU 1 RJDF 1A,1B P/L RECORDER  PCMMU 1 PDI RADAR ALT 1
AV BAY 2		AV BAY 2	
GPC 2,5 ① MLS RF & DECODER 2,3  AV BAY FAN A,B	BFC 2,3 (ENGAGE) AA 2,3 TACAN 2 PROXIMITY SW INVERTER DIST & CNTL BRK CNTL 2 SMOKE DET A,B CURRENT SNSRS ADTA 2,4	AC INV 2A,2B,2C LCA(FWD) 2 PCA(FWD) 2 MCA(FWD) 2 MDM PL2,OF2, FF2,FF4 DSC OF2 PL INTEROG 1,2	MMU 2 RJDF 2A,2B PCMMU 2 S-BD PL RF COAX SW OPS RECORDER 1,2 RADAR ALT 2 PSP 1,2
AV BAY 3A		AV BAY 3A	
GPC 3 ① AV BAY FAN A,B  C/W LIMIT MODULE SSOR ②	S-BAND EQUIP: FM MLTPLXR QUAD ANT SW ASSEMBLY FM SIG PRCSR SW BEAM ANT CNTL ASSY FM RF SWITCH TACAN 3 CURRENT SNSR INVERTER DIST & CNTL SMOKE DET A,B	AC INV 3A,3B,3C LCA(FWD) 3 PCA(FWD) 3 MCA(FWD) 3  MDM FF3,OF3 DSC OF3 NSP 1,2  S-BAND PA 1,2; PRE-AMP 1,2; XPNDR 1,2; FM XMTR 1,2	EBIA (BYPASS SWITCH) COMSEC 1,2,3 UHF EVA XCVR KU-BND EA 1,2  GCIL
		AV BAY 3B	
		MTU KU-BAND SIGNAL PROCESSOR HUD ELECT 1,2    GPS 2	

ECLS

10/13/04

- ① GPC INSTALLATION REFERS TO CPU/IOP/MEMORY UNIT.
- ② IF FLOWN.

Cont next page

# OV103,104

A4-1

APCL/3,4/GEN N

**EQUIPMENT COOLING MATRIX (Continued)**

AIR-COOLED		WATER-COOLED
FORCED	FREE-FLOW	
CABIN		ECLSS EQUIPMENT BAY
MDUs (eleven)  CAB FAN A,B IMU 1,2,3 IMU FANS ③ TV MONITORS RCU VSU MCIU IDP 1,2,3,4  MADS RCDR MS & PS STATION	MTRS/LTS/IND C/W ANNUN SPKR UNITS ATUs CAMCORDER COLOR PRINTER PGSC VTR CSA CAB TEMP CNTLR A,B WMS HUMIDITY SEP SMOKE DET: L,R FLT DECK CABIN ADC 1A,1B,2A,2B MCM HUD PDU L,R DDU 1,2,3	WATER PUMP 1A,1B SEC
		FLIGHT DECK MDM OF4

ECLS

FREON-COOLED			
AFT COLDPLATES			MIDBODY
BAY 4	BAY 5	BAY 6	
LCA-1 PCA-1,4 MCA-1 MDM FA1 OA1 APU CNTLR 1 ATVC ELECT 1 EIU 1 MPS ULL P SC1 ASA 1 RGA 1 RJDA 1 MEC 1  DSC OA1 DBIA 1	LCA-2 PCA-2,5 MCA-2 MDM FA2 OA2 APU CNTLR 2 ATVC ELECT 2 EIU 2 MPS ULL P SC2 ASA 2 RGA 2  MEC 2  DSC OA2 DBIA 2 PT SNSR	LCA-3 PCA-3,6 MCA-3 MDM FA3,4 OA3 APU CNTLR 3 ATVC ELECT 3,4 EIU 3 MPS ULL P SC3 ASA 3,4 RGA 3,4 RJDA 2 MPS DP SC  DSC OA3	PCA(MID) 1,2,3 MCA(MID) 1,2,3,4 MDM PM1 RMA 1,2 FEA 1,2 SGSC H2/O2 CRYO HTR 1A,1B,2A,2B FCL 1 PMP A,B 2 PMP A,B FUEL CELLS 1,2,3 MN DA 1,2,3 MIDBODY PIC CNTLR DSC OM1,OM2,OM3

10/13/04

- ③ IMU FANS ARE LOCATED IN AVIONICS BAY 1 BUT CIRCULATE CABIN AIR RATHER THAN FLOW FROM AVIONICS BAY 1 THROUGH THE IMUs FOR COOLING.

**OV103,104**

A4-2

APCL/ALL/GEN N

## EQUIPMENT COOLING MATRIX

AIR-COOLED		WATER-COOLED	
FORCED	FREE-FLOW		
AV BAY 1		AV BAY 1	
GPC 1,4 ① MLS RF & DECODER 1  MIDDECK PL ② AV BAY FAN A,B	BFC 1 (ENGAGE) CICU AA 1,4 PROXIMITY SW GPS 1 INVERTER DIST & CNTL BRK CNTL 1 SMOKE DET A,B CURRENT SNSR ADTA 1,3	AC INV 1A,1B,1C LCA(FWD) 1 PCA(FWD) 1 MCA(FWD) 1  MDM PL1,OF1, FF1,LF1 DSC OF1 ACCU 1,2 PWR SUPPLY/BATT CHARGER	MMU 1 RJDF 1A,1B P/L RECORDER  PCMMU 1 PDI RADAR ALT 1
AV BAY 2		AV BAY 2	
GPC 2,5 ① MLS RF & DECODER 2,3  MIDDECK PL ② AV BAY FAN A,B	BFC 2,3 (ENGAGE) AA 2,3 PROXIMITY SW INVERTER DIST & CNTL BRK CNTL 2 SMOKE DET A,B CURRENT SNSRS ADTA 2,4	AC INV 2A,2B,2C LCA(FWD) 2 PCA(FWD) 2 MCA(FWD) 2 MDM PL2,OF2, FF2,FF4 DSC OF2 PL INTEROG 1,2	MMU 2 RJDF 2A,2B PCMMU 2 S-BD PL RF COAX SW OPS RECORDER 1,2 RADAR ALT 2 PSP 1,2
AV BAY 3A		AV BAY 3A	
GPC 3 ① AV BAY FAN A,B  C/W LIMIT MODULE SSOR ②	S-BAND EQUIP: FM MLTPLXR QUAD ANT SW ASSEMBLY FM SIG PRCSR SW BEAM ANT CNTL ASSY FM RF SWITCH GPS 3 CURRENT SNSR INVERTER DIST & CNTL SMOKE DET A,B	AC INV 3A,3B,3C LCA(FWD) 3 PCA(FWD) 3 MCA(FWD) 3  MDM FF3,OF3 DSC OF3 NSP 1,2  S-BAND PA 1,2; PRE-AMP 1,2; XPNDR 1,2; FM XMTR 1,2	EBIA (BYPASS SWITCH) COMSEC 1,2,3 UHF EVA XCVR KU-BND EA 1,2  GCIL
		AV BAY 3B	
		MTU KU-BAND SIGNAL PROCESSOR HUD ELECT 1,2    GPS 2	

07/10/07

- ① GPC INSTALLATION REFERS TO CPU/IOP/MEMORY UNIT.
- ② IF FLOWN.

**ECLS**

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B4-1

# OV105

APCL/5/GEN N,4

**EQUIPMENT COOLING MATRIX (Continued)**

AIR-COOLED		WATER-COOLED
FORCED	FREE-FLOW	
CABIN		ECLSS EQUIPMENT BAY
MDUs (eleven)  CAB FAN A,B IMU 1,2,3 IMU FANS ③ TV MONITORS RCU VSU MCIU IDP 1,2,3,4  MADS RCDR MS & PS STATION	MTRS/LTS/IND C/W ANNUN SPKR UNITS ATUs CAMCORDER COLOR PRINTER PGSC VTR CSA CAB TEMP CNTLR A,B WMS HUMIDITY SEP SMOKE DET: L,R FLT DECK CABIN ADC 1A,1B,2A,2B MCM HUD PDU L,R DDU 1,2,3	WATER PUMP 1A,1B SEC
		FLIGHT DECK MDM OF4

**ECLS**

FREON-COOLED			
AFT COLDPLATES			MIDBODY
BAY 4	BAY 5	BAY 6	
LCA-1 PCA-1,4 MCA-1 MDM FA1 OA1 APU CNTLR 1 ATVC ELECT 1 EIU 1 MPS ULL P SC1 ASA 1 RGA 1 RJDA 1 MEC 1  DSC OA1 DBIA 1	LCA-2 PCA-2,5 MCA-2 MDM FA2 OA2 APU CNTLR 2 ATVC ELECT 2 EIU 2 MPS ULL P SC2 ASA 2 RGA 2  MEC 2  DSC OA2 DBIA 2 PT SNSR	LCA-3 PCA-3,6 MCA-3 MDM FA3,4 OA3 APU CNTLR 3 ATVC ELECT 3,4 EIU 3 MPS ULL P SC3 ASA 3,4 RGA 3,4 RJDA 2 MPS DP SC  DSC OA3	PCA(MID) 1,2,3 MCA(MID) 1,2,3,4 MDM PM1 RMA 1,2 FEA 1,2 SGSC H2/O2 CRYO HTR 1A,1B,2A,2B FCL 1 PMP A,B 2 PMP A,B FUEL CELLS 1,2,3 MN DA 1,2,3 MIDBODY PIC CNTLR DSC OM1,OM2,OM3

10/13/04

- ③ IMU FANS ARE LOCATED IN AVIONICS BAY 1 BUT CIRCULATE CABIN AIR RATHER THAN FLOW FROM AVIONICS BAY 1 THROUGH THE IMUs FOR COOLING.

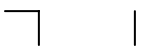
**OV105**

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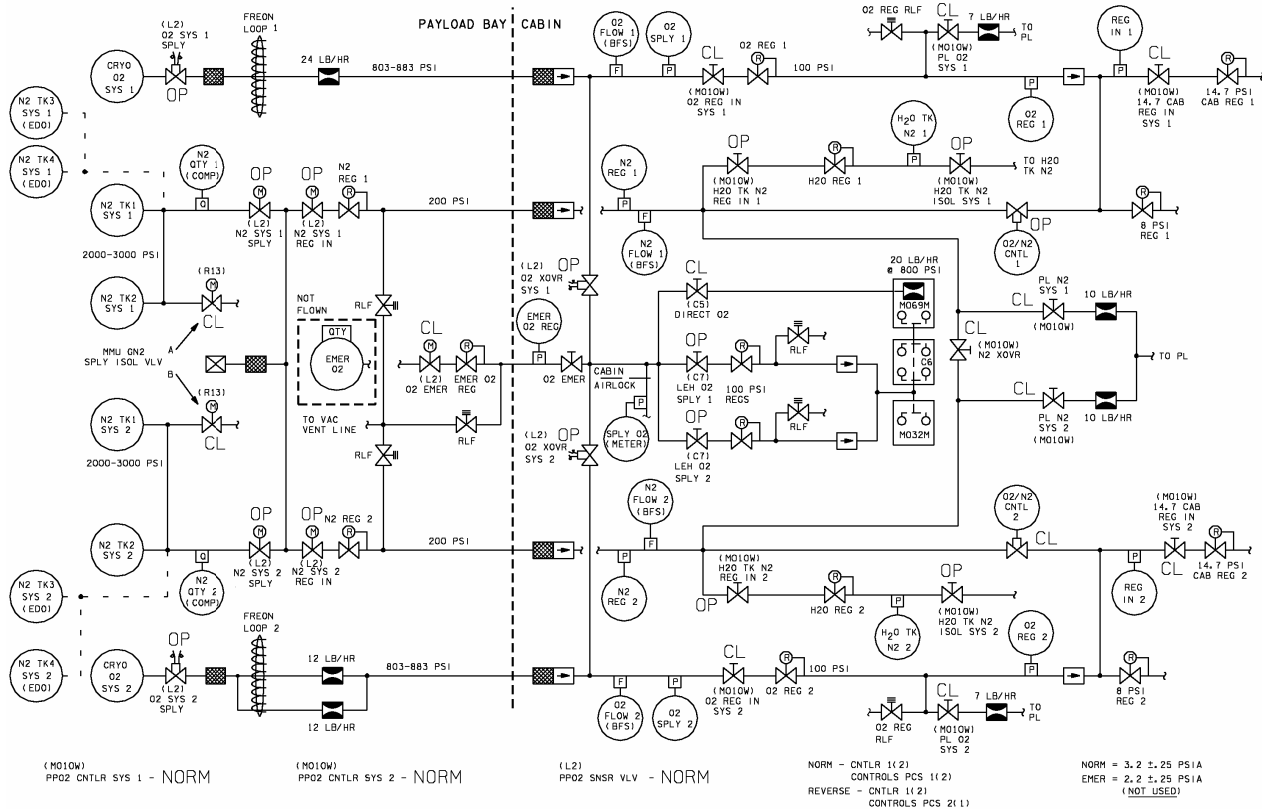
APCL/ALL/GEN N



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### PRESSURE CONTROL SYSTEM ASCENT/ENTRY



**CAB PRESS HIGH****BFS, SM SYS SUMM 1**

(14.7 REGS Closed)

1. If incr: LES O2 – OFF, open visor

If still incr:

2. N2 SYS 1,2 REG INLET (two) – CL (tb-CL)

3. O2 SYS 1,2 SPLY (two) – CL (tb-CL)

⇒ TROUBLESHOOT: MAL, ECLS, CABIN PRES ↑↓, 6.2b **1****FREON FLOW LOW****BFS, SM 0 THERMAL****BFS, SM SYS SUMM 2**

1. Switch pumps in aff loop(s)

If flow still low:

2. (Aff) RAD BYP VLV MAN SEL – RAD FLOW (hold 5 sec)

⇒ If flow still low in both loops, and pre OMS 2:

3. Go to LOSS OF 2 FREON LOOPS (AOA) (SYS AOA, 2 FREON LOOPS (AOA)), TIME CRITICAL PROCEDURES >>

If flow still low in both loops and post OMS 2:

4. Go to LOSS OF 2 FREON LOOPS (POST OMS-2) (PWRDN), 10-35, TIME CRITICAL PROCEDURES >>

If flow still low in one loop:

If RAD OUT T in good loop not incr in 3-5 min &gt;&gt;

If RAD OUT T in good loop incr in 3-5 min:

5. (Aff) FREON PUMP LOOP – OFF

If FREON LOOP 1(2) deactivated:

6. O2 SYS 1(2) SPLY – CL (tb-CL)

7. √(In good loop) FLOW PROP VLV LOOP – ICH

If EVAP OUT T not ~39 degF and stable:

8. FLASH EVAP CNTLR PRI A(B) – OFF

SEC – ON (HI LOAD ENA)

**OV103,104**

Cont next page

APCL/ALL/GEN N

**PCS SCHEMATIC  
EQUIP COOL (4-1)**

A4-5

**CAB PRESS HIGH  
FREON FLOW LOW**

- When EVAP OUT T stable:
9. FLASH EVAP CNTLR SEC – OFF  
PRI A(B) – ON
  10. Go to LOSS OF 1 FREON LOOP (PWRDN), 10-29  
TROUBLESHOOT: MAL, ECLS, FREON FLOW LOW, 6.4b [1]

## **H2O LOOP PRESS LOW(HIGH)**

**BFS, SM SYS SUMM 1**

- ⇒ 1. Switch to Loop 1  
If press high in Loop 1:  
| 2. Go to step 4  
If press < 45 psia in Loop 1:  
3. cb AC1 H2O LOOP PUMP 1A/2 (three) – cl  
Switch pumps  
If press still < 45 psia and CABIN HX OUT T incr:  
4. H2O PUMP LOOP 1 – OFF  
If press was high in Loop 2:  
| 5. Go to step 8  
If press was low in Loop 2:  
6. √cb AC1 H2O LOOP PUMP 1A/2 (three) – cl  
H2O PUMP LOOP 2 – GPC  
If CABIN HX OUT T not decr:  
7. H2O PUMP LOOP 2 – OFF  
8. MSTR MADS PWR – OFF  
9. Use only one IDP/CRT with two MDUs  
10. TACAN MODE sel (three) – OFF  
11. √MLS (three) – OFF  
12. HUM SEP A(B) – OFF  
13. RDR ALTM (two) – OFF

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# **OV103,104**

A4-6

APCL/3,4/GEN N



If both H2O loops lost and pre OMS 2:

14. Go to LOSS OF 2 H2O LOOPS (AOA) (SYS AOA, 2 H2O LOOPS (AOA)), TIME CRITICAL PROCEDURES >>

If both H2O loops lost and post OMS 2:

15. Go to LOSS OF 2 H2O LOOPS (POST OMS-2) (PWRDN), 10-21, TIME CRITICAL PROCEDURES

### **AV BAY TEMP HIGH**

**BFS, SM SYS SUMM 2**

- ⇒ 1. (Aff) AV BAY FAN A,B (two) – ON

If temp not decr:

2. Switch H2O loops

If temp not decr:

3. H2O LOOP 1(2) BYP MAN – DECR (hold 40 sec)

If temp still incr:

4. Go to LOSS OF AV BAY COOLING/AV BAY FIRE (PWRDN), 10-7/10-10/10-13

TROUBLESHOOT: MAL, ECLS, AV BAY TEMP, 6.1b **1**

### **AV BAY FAN ΔP**

**BFS, SM SYS SUMM 2**

- ⇒ If AV Bay 1 aff:

1. AV BAY 1 FAN A – ON
2. AV BAY 1 FAN B – OFF

If AV Bay 2 aff:

3. AV BAY 2 FAN B – ON
4. AV BAY 2 FAN A – OFF

If AV Bay 3 aff:

5. AV BAY 3 FAN A – ON
6. AV BAY 3 FAN B – OFF

If FAN ΔP still high(low) and AV BAY TEMP decr, airflow is lost:

7. Go to LOSS OF AV BAY COOLING/AV BAY FIRE (PWRDN), 10-7/10-10/10-13

TROUBLESHOOT: MAL, ECLS, AV BAY FAN ΔP, 6.1c **1**

# **OV103,104**

APCL/3,4/GEN N,3

**H2O LOOP P**

A4-7

**AV BAY TEMP/HIGH  
AV BAY FAN ΔP**

## CAB FAN FAIL

BFS, SM SYS SUMM 1

- ⇒ 1. Switch fans  
If no CAB FAN airflow:  
2. Go to LOSS OF 2 CAB FANS (PWRDN), 10-2  
TROUBLESHOOT: MAL, ECLS, CABIN FAN ΔP, 6.1a 1

## EMER PLBD OPENING

- R13L 1. PL BAY DR SYS (two) – ENA  
CRTX X: BFS, SM 63 PL BAY DOORS
2. AC POWER ON – ITEM 1 EXEC (\*)  
AUTO MODE SEL – ITEM 3 EXEC (\*)  
PBD SW BYPASS – ITEM 14 EXEC (\*)  
OPEN – ITEM 15 EXEC (\*)
3. √CENTER LATCHES 5-8,9-12 (two) – blank,OP (~20 sec)  
√1-4,13-16 (two) – blank,OP (~20 sec)  
√STBD FWD,AFT LATCHES (two) – blank,OP (~30 sec)  
√DOOR – RDY,blank,OP (~63 sec)  
√PORT FWD,AFT LATCHES (two) – blank,OP (~30 sec)  
√DOOR – RDY,blank,OP (~63 sec)
4. STOP – ITEM 16 EXEC (\*)  
PBD SW BYPASS – ITEM 14 EXEC (no \*)  
AC POWER OFF – ITEM 2 EXEC (\*)
- R13L 5. PL BAY DR SYS (two) – DSBL  
L1 6. RAD CNTLR LOOP (two) – AUTO A  
Wait 10 sec:  
RAD BYP VLV MODE (two) – AUTO

### NOTE

Do not perform RAD ACT in POST INSERTION

# OV103,104

A4-8

APCL/ALL/GEN N,3

**CAB PRESS HIGH****BFS, SM SYS SUMM 1**

(14.7 REGS Closed)

1. If incr: LES O2 – OFF, open visor

If still incr:

2. N2 SYS 1,2 REG INLET (two) – CL (tb-CL)

3. O2 SYS 1,2 SPLY (two) – CL (tb-CL)

⇒ TROUBLESHOOT: MAL, ECLS, CABIN PRES ↑↓, 6.2b **1****FREON FLOW LOW****BFS, SM 0 THERMAL****BFS, SM SYS SUMM 2**

1. Switch pumps in aff loop(s)

If flow still low:

2. (Aff) RAD BYP VLV MAN SEL – RAD FLOW (hold 5 sec)

⇒ If flow still low in both loops, and pre OMS 2:

3. Go to LOSS OF 2 FREON LOOPS (AOA) (SYS AOA, 2 FREON LOOPS (AOA)), TIME CRITICAL PROCEDURES >>

If flow still low in both loops and post OMS 2:

4. Go to LOSS OF 2 FREON LOOPS (POST OMS-2) (PWRDN), 10-35, TIME CRITICAL PROCEDURES >>

If flow still low in one loop:

If RAD OUT T in good loop not incr in 3-5 min &gt;&gt;

If RAD OUT T in good loop incr in 3-5 min:

5. (Aff) FREON PUMP LOOP – OFF

If FREON LOOP 1(2) deactivated:

6. O2 SYS 1(2) SPLY – CL (tb-CL)

7. √(In good loop) FLOW PROP VLV LOOP – ICH

If EVAP OUT T not ~39 degF and stable:

8. FLASH EVAP CNTLR PRI A(B) – OFF

SEC – ON (HI LOAD ENA)

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APCL/ALL/GEN N

**PCS SCHEMATIC  
EQUIP COOL (4-1)**

B4-5

**CAB PRESS HIGH  
FREON FLOW LOW**

When EVAP OUT T stable:

9. FLASH EVAP CNTLR SEC – OFF  
PRI A(B) – ON
10. Go to LOSS OF 1 FREON LOOP (PWRDN), 10-29  
TROUBLESHOOT: MAL, ECLS, FREON FLOW LOW, 6.4b [1]

## H2O LOOP PRESS LOW(HIGH)

BFS, SM SYS SUMM 1

- ⇒ 1. Switch to Loop 1  
If press high in Loop 1:  
| 2. Go to step 4  
If press < 45 psia in Loop 1:  
3. cb AC1 H2O LOOP PUMP 1A/2 (three) – cl  
Switch pumps  
If press still < 45 psia and CABIN HX OUT T incr:  
4. H2O PUMP LOOP 1 – OFF  
If press was high in Loop 2:  
| 5. Go to step 8  
If press was low in Loop 2:  
6. √cb AC1 H2O LOOP PUMP 1A/2 (three) – cl  
H2O PUMP LOOP 2 – GPC  
If CABIN HX OUT T not decr:  
7. H2O PUMP LOOP 2 – OFF  
8. MSTR MADS PWR – OFF  
9. Use only one IDP/CRT with two MDUs  
10. √MLS (three) – OFF  
11. HUM SEP A(B) – OFF  
12. RDR ALTM (two) – OFF

Cont next page

B4-6

# OV105

APCL/5/GEN N

If both H2O loops lost and pre OMS 2:

13. Go to LOSS OF 2 H2O LOOPS (AOA) (SYS AOA, 2 H2O LOOPS (AOA)), TIME CRITICAL PROCEDURES >>

If both H2O loops lost and post OMS 2:

14. Go to LOSS OF 2 H2O LOOPS (POST OMS-2) (PWRDN), 10-21, TIME CRITICAL PROCEDURES

### **AV BAY TEMP HIGH**

**BFS, SM SYS SUMM 2**

- ⇒ 1. (Aff) AV BAY FAN A,B (two) – ON

If temp not decr:

2. Switch H2O loops

If temp not decr:

3. H2O LOOP 1(2) BYP MAN – DECR (hold 40 sec)

If temp still incr:

4. Go to LOSS OF AV BAY COOLING/AV BAY FIRE (PWRDN), 10-7/10-10/10-13

TROUBLESHOOT: MAL, ECLS, AV BAY TEMP, 6.1b **1**

### **AV BAY FAN ΔP**

**BFS, SM SYS SUMM 2**

- ⇒ If AV Bay 1 aff:

1. AV BAY 1 FAN A – ON
2. AV BAY 1 FAN B – OFF

If AV Bay 2 aff:

3. AV BAY 2 FAN B – ON
4. AV BAY 2 FAN A – OFF

If AV Bay 3 aff:

5. AV BAY 3 FAN A – ON
6. AV BAY 3 FAN B – OFF

If FAN ΔP still high(low) and AV BAY TEMP decr, airflow is lost:

7. Go to LOSS OF AV BAY COOLING/AV BAY FIRE (PWRDN), 10-7/10-10/10-13

TROUBLESHOOT: MAL, ECLS, AV BAY FAN ΔP, 6.1c **1**

# **OV105**

APCL/5/GEN N,3

**H2O LOOP P**

B4-7

**AV BAY TEMP/HIGH  
AV BAY FAN ΔP**

## CAB FAN FAIL

BFS, SM SYS SUMM 1

- ⇒ 1. Switch fans  
If no CAB FAN airflow:  
2. Go to LOSS OF 2 CAB FANS (PWRDN), 10-2  
TROUBLESHOOT: MAL, ECLS, CABIN FAN ΔP, 6.1a 1

## EMER PLBD OPENING

- R13L 1. PL BAY DR SYS (two) – ENA  
CRTX X: BFS, SM 63 PL BAY DOORS
2. AC POWER ON – ITEM 1 EXEC (\*)  
AUTO MODE SEL – ITEM 3 EXEC (\*)  
PBD SW BYPASS – ITEM 14 EXEC (\*)  
OPEN – ITEM 15 EXEC (\*)
3. √CENTER LATCHES 5-8,9-12 (two) – blank,OP (~20 sec)  
√1-4,13-16 (two) – blank,OP (~20 sec)  
√STBD FWD,AFT LATCHES (two) – blank,OP (~30 sec)  
√DOOR – RDY,blank,OP (~63 sec)  
√PORT FWD,AFT LATCHES (two) – blank,OP (~30 sec)  
√DOOR – RDY,blank,OP (~63 sec)
4. STOP – ITEM 16 EXEC (\*)  
PBD SW BYPASS – ITEM 14 EXEC (no \*)  
AC POWER OFF – ITEM 2 EXEC (\*)
- R13L 5. PL BAY DR SYS (two) – DSBL  
L1 6. RAD CNTLR LOOP (two) – AUTO A  
Wait 10 sec:  
RAD BYP VLV MODE (two) – AUTO

### NOTE

Do not perform RAD ACT in POST INSERTION

**OV105**

B4-8

APCL/ALL/GEN N,3

## IMU FAN FAIL

BFS, SM SYS SUMM 1

- ⇒ 1. Switch fans  
If AOA and no fans:
2. IMU 1 – OFF
  3. **GNC 51 OVERRIDE**  
IMU 1 – desel
  4. Perform OMS/RCS POST BURN RECONFIG (ASC, POST D/O BURN), then:
  5. IMU 1 – ON
  6. **GNC 21 IMU ALIGN**, wait for OPER \* (~4 min), then:  
I/O RESET
  7. Align IMU 1,3, using IMU/IMU option with IMU 2 as REF  
When align complete:
  8. **GNC 51 OVERRIDE**  
IMU 1 – sel
- If no fans:  
After MM201 trans:
9. IMU 1,2 – OFF
  10. **GNC 21 IMU ALIGN**  
IMU 1,2 – desel
  11. Perform IMU CONTINGENCY COOLING (IFM, PROCEDURES G THRU L), then:
  12. IMU 1,2 – ON
  13. **GNC 21 IMU ALIGN**, wait for OPER \* (~4 min), then:  
I/O RESET
  14. Align IMU 1,2 using IMU/IMU option with IMU 3 as REF  
When align complete:
  15. IMU 1,2 – sel

APCL/ALL/GEN N

**CAB FAN FAIL**  
**EMER PLBD OPENING**

4-9

**IMU FAN FAIL**

## EVAP OUT T HIGH

BFS, SM SYS SUMM 2

If temp high in only one loop (snsr failed) >>

1. FLASH EVAP CNTLR PRI A(B) – OFF  
B(A) – ON (wait 30 sec)

If EVAP OUT T decr (FES PRI A lost) >>

If EVAP OUT T not decr:

2. FLASH EVAP CNTLR PRI B(A) – OFF  
SEC – ON (Hi Load ena)  
(wait 30 sec)

If EVAP OUT T decr (Topping Evap lost):

3. TOP EVAP HTR DUCT sel – A/B >>

If EVAP OUT T not decr:

4. HI LOAD EVAP – OFF (Topping Evap ena)
5. MSTR MADS PWR – OFF (wait 30 sec)

If EVAP OUT T decr (Hi Load Evap lost):

6. HI LOAD DUCT HTR sel – A/B
7. Go to LOSS OF HI LOAD EVAP (PWRDN), 10-33 >>

If EVAP OUT T not decr (FES lost):

8. TOP EVAP HTR NOZ (two) – OFF  
DUCT sel – OFF
9. HI LOAD DUCT HTR sel – OFF
10. √RAD BYP VLV MODE (two) – MAN  
MAN SEL (two) – RAD FLOW (hold 5 sec)

⇒ If HI LOAD EVAP only lost:

11. Go to LOSS OF HI LOAD EVAP (PWRDN), 10-33 >>

If total FES lost:

12. FLASH EVAP CNTLR SEC – OFF
13. Perform EMER PLBD OPENING, then:
14. Go to LOSS OF FES/1 FC (PWRDN), 10-39



## EVAP OUT T LOW

1. If temp low in only one loop (snsr failed) >>
  2. FREON PUMP LOOP 1,2 (two) – OFF
  3. H2O PUMP LOOP 1 (two) – ON,B
  4. FLOW PROP VLV LOOP 1,2 (two) – PL HX (tb-PL)
  5. O2 SYS 1,2 SPLY (two) – CL (tb-CL)
  6. √RAD BYP VLV MODE (two) – MAN
  7.       √MAN SEL (two) – BYP (tb-BYP ~3 sec)
  8. FLASH EVAP CNTLR PRI A,B,SEC (three) – OFF
  - ◆ 9. FREON PUMP LOOP 1,2 (two) – B  
NH3 CNTLR A,B (two) – SEC/ON
- Wait 3 min, then if any Freon Loop off:
10. FREON PUMP LOOP 1,2 (two) – B
- When EVAP OUT T > 55 for at least 2 min (NH3 depleted):
11. FLASH EVAP CNTLR PRI B – ON
  12. O2 SYS 1,2 SPLY (two) – OP (tb-OP)
  13. NH3 CNTLR A,B (two) – OFF

APCL/ALL/GEN N,5

EVAP OUT T HIGH

4-11

EVAP OUT T LOW

## FREON LEAK

BFS, SM 0 THERMAL

If accum qty < 12% and decr:

1. FREON ISOL MODE – MAN
2. (Aff) FREON ISOL LOOP 1(2) – ISOL (hold for 5 sec)
- ⇒◆ 3. (Aff) FREON PUMP LOOP 1(2) – OFF
4. O2 SYS 1(2) SPLY – CL (tb-CL)
5. √(In good loop) FLOW PROP VLV LOOP – ICH (tb-ICH)

If EVAP OUT T not 39 degF and stable:

6. FLASH EVAP CNTLR PRI A(B) – OFF  
SEC – ON (HI LOAD – ENA)

When EVAP OUT T stable:

7. FLASH EVAP CNTLR SEC – OFF  
PRI A(B) – ON
8. Go to LOSS OF 1 FREON LOOP (PWRDN), 10-29

## CAB PPO2 ABNORMAL

BFS, SM SYS SUMM 1

(14.7 REGS Closed)

If PPO2 ≤ 2.70:

1. Check tabs, close visor, LES O2 – ON

If PPO2 ≥ 3.60:

2. LES O2 – OFF, open visor
3. O2 SYS 1,2 SPLY (two) – CL (tb-CL)

TROUBLESHOOT: MAL, ECLS, PPO2 ↑↓, 6.2c 1



**CABIN DEPRESS FOR CRACKED WINDOW PANE** (10.2 PSIA Cabin Depress)

BFS, SM SYS SUMM 1 |

NOTE

If broken glass free in cab, crew should perform CABIN DEPRESS FOR HAZARDOUS ATMOSPHERE and should remain on LES O2 (visors down) to prevent ingestion of glass. Expect possible Klaxon during depress

- |         |     |  |
|---------|-----|--|
| ML86B:A | 1.  | cb MNA H2O LINE HTR A – cl   |
| :B      |     | VAC VENT ISOL VLV – cl   |
|         |     | MNB VAC VENT NOZ HTR – cl  |
| ML31C   | 2.  | √VAC VENT ISOL BUS SEL – MNA   |
|         |     | VLV CNTL – OP (tb-OP)  |
|         |     | NOZ HTR – ON   |
| Middeck | 3.  | CAB PURGE ISOL vlv – 0   |
| Floor   |     | vlv – MAX  |
| R1      | 4.  | O2 TK 1,2,3 HTRS A,B (six) – AUTO  |
| C5      |     | Using DIRECT O2:   |
|         | 5.  | Maintain PPO2 > 2.2 and O2 conc < 29%  |
| Inner   | 6.  | Remove INNER HATCH cap (two)   |
| Hatch   | 7.  | Equal vlv (two) – EMER   |
|         | 8.  | Open INNER HATCH   |
| AW82B   | 9.  | AIRLK DEPRESS vlv cap – vent, remove and stow  |
|         | 10. | AIRLK DEPRESS vlv – 5  |
|         |     | When CAB PRESS = 10.2:   |
| AW82B   | 11. | AIRLK DEPRESS vlv – CL   |
| ML31C   | 12. | VAC VENT ISOL VLV CNTL – CL (tb-CL)  |
|         |     | NOZ HTR – OFF  |
| Middeck | 13. | CAB PURGE ISOL vlv – CL  |
| Floor   |     | vlv – 0  |
|         | 14. | Go to LAUNCH DAY DEORBIT PREP (ORBIT 2(3))<br>(CONT DEORB, <u>LAUNCH DAY ORBIT 2(3)</u> ) >> |

**CABIN DEPRESS FOR HAZARDOUS  
ATMOSPHERE** (8.0 PSIA Cabin Depress)

**BFS, SM SYS SUMM 1**

**NOTE**

Expect possible Klaxon during depress. Procedure for fire, haz spill, internal O2 leak, or cracked window pane with glass in cabin

- 1. √LES O2 – ON, close visor
- R1 2. O2 TK 1,2,3 HTRS A,B (six) – AUTO
- ML86B:A 3. cb MNA H2O LINE HTR A – cl
- :B VAC VENT ISOL VLV – cl
- MNB VAC VENT NOZ HTR – cl
- ML31C 4. √VAC VENT ISOL BUS SEL – MNA
- VLV CNTL – OP (tb-OP)
- NOZ HTR – ON
- Middeck 5. CAB PURGE ISOL vlv – 0
- Floor vlv – MAX
- Inner 6. Remove INNER HATCH cap (two)
- Hatch 7. Equal vlv (two) – EMER
- 8. Open INNER HATCH
- L1 9. H2O LOOP 2 BYP MAN – DECR (30 sec)
- If broken glass in cab, tox spill, or fire:
- 10. Go to MAL, ECLS FRP-3, FIRE/HAZ SPILL O2 CONTROL >>
- If Unisolable O2 Leak:
- 11. Go to MAL, ECLS FRP-4, O2 LEAK CONTROL >>

**SMO THRM EVAP**

**BFS, SM 0 THERMAL**

	AFF TEMP	STATUS	ACTION
H T R	EVAP HI LOAD	↑	L1 HI LOAD DUCT HTR sel – B >>
		↓	L1 HI LOAD DUCT HTR sel – A/B >>
		H, L, M	No action >>
T E M P	EVAP TOP DUCT	↑	L1 TOP EVAP HTR DUCT sel – B >>
		↓	L1 TOP EVAP HTR DUCT sel – A/B >>
		H, L, M	No action >>
	EVAP TOP NOZ L(R)	↑ or ↓	L1 (Aff) TOP EVAP HTR NOZ – B AUTO >>
		H, L, M	No action >>
		↑ or ↓	L2 (Aff) FLASH EVAP FDLN HTR SPLY – 2 >>
H, L, M	No action >>		

APCL/ALL/GEN N,2

**CABIN DEPRESS  
SMO THRM EVAP**

4-15

**FULL-UP FES** (Over)  
**POST-FIRE CLEANUP** (4-18)  
**FIRE/SMOKE** (4-20)

## FULL-UP FES FLUSHING

### NOTE

Use proc on MCC call only. Duct temps only available in OPS 2. This proc assumes both HI LOAD and Topper cores in operation (FULL-UP FES)

- L1 1. FLASH EVAP CNTLR PRI A,B,SEC (three) – OFF

### HI LOAD CORE FLUSH

2. √HI LOAD DUCT HTR sel – A/B
3. √HI LOAD EVAP – ENA
4. FLASH EVAP CNTLR SEC – ON  
Wait 30 sec  
FLASH EVAP CNTLR SEC – OFF  
Wait 30 sec
5. Repeat step 4 two additional times (three total), then:  
FLASH EVAP CNTLR SEC – ON
6. Proceed on MCC call (wait minimum 7 min, then proceed when EVAP OUTs stable at 62 and HI LOAD DUCT temps > 170 degF)

\* While waiting, if MCC reports HI LOAD DUCT \*  
\* temps < 40, Hi Load flush not successful. If \*  
\* Topping Core Flush to be performed, proceed \*  
\* to step 7; otherwise, proceed to POST- \*  
\* FLUSH FES CNTLR SELECTION \*

### TOPPER CORE FLUSH

7. √TOP EVAP HTR DUCT sel – A/B
8. HI LOAD EVAP – OFF
9. FLASH EVAP CNTLR SEC – ON  
Wait 30 sec  
FLASH EVAP CNTLR SEC – OFF  
Wait 30 sec
10. Repeat step 9 two additional times (three total), then:  
FLASH EVAP CNTLR SEC – ON
11. Proceed on MCC call (wait minimum 7 min, then proceed when EVAP OUTs stable at 62 and TOP FWD(AFT) DUCT temps > 120 degF)

\* While waiting, if MCC reports TOP \*  
\* FWD(AFT) DUCT temps < 40, Topper \*  
\* Flush not successful. Proceed to \*  
\* POST-FLUSH FES CNTLR \*  
\* SELECTION \*

Cont next page

POST-FLUSH FES CNTLR SELECTION

If both Topper and HI LOAD core flushes successful:

12. FLASH EVAP CNTLR SEC – OFF  
HI LOAD EVAP – ENA  
FLASH EVAP CNTLR PRI B – ON (GPC)  
After 2.5 min, verify EVAP OUT temps ~39

If Topper flush not successful:

13. FLASH EVAP CNTLR SEC – OFF  
HI LOAD EVAP – ENA  
FLASH EVAP CNTLR SEC – ON

If HI LOAD flush not successful:

14. √FLASH EVAP CNTLR SEC – ON  
HI LOAD EVAP – OFF  
Perform LOSS OF HI LOAD EVAP (PWRDN), 10-33

## POST-FIRE CABIN CLEANUP (Cab and Av Bay Fires)

Continue from FIRE/SMOKE Cue Card:

### NOTE

This proc is to be performed  
simo by three crewmembers

- CM1** 1. If Av Bay fire: Post OMS-1, perform LOSS OF AV BAY 1(2,3) COOLING/AV BAY 1(2,3) FIRE (PWRDN), 10-7/10-10/10-13
- 

- CM2** L1 2.  $\sqrt$ CAB FAN A(B) – ON  
3. Unstow CSA-CP  
4. MODE pb – press, hold until 'RELEASE' displayed; wait ~1 min for nominal display  
5. Sampling Pump sw – ON  
6. Monitor cab atmosphere in vicinity of fire and report results to MCC  
If HCN > 1.8, HCL > 2.0, or CO > 18 ppm:  
LiOH Box 7. If HCL < 5 ppm, install ATCO and one fresh LiOH canister  
8. If HCL > 5 ppm, install two fresh LiOH canisters  
ML86B:B 9. cb MNA,MNB WCS CNTLR (two) – cl  
MA73C:E AC1,2 WCS FAN SEP 1,2 (six) – cl  
WCS 10. FAN SEP SEL sw – 1  
If Av Bay 1 Fire:  
11. HOSE BLOCK to SEP 2  
12. FAN SEP SEL sw – 2  
13. MODE – COMMODE/MANUAL/EMU  
14. COMMODE CNTL – PULL UP  
– PUSH FWD  
15. Go to MAL, ECLS FRP-2, POST-FIRE CABIN CLEANUP CONTINUATION
- 

- CM3** If Av Bay fire, set up for Av Bay purge:  
16. Obtain from Cont Hose & Cable Kit (Window Shade Bag):  
Free Fluid Nozzle  
20-ft Y/Y Hose  
Gray Tape  
17. Connect Free Fluid Nozzle to Y/Y Hose  
18. Insert tip of Free Fluid Nozzle into fire port of Av Bay  
WCS 19. Secure nozzle and hose with Gray Tape  
20. Mate free end of Y/Y Hose to Vacuum Vent QD

Cont next page



- ML86B:A  
:B
- ML31C
21. VAC VLV – OP
  22. cb MNA(MNB) H2O LINE HTR A(B) – cl  
MNA,MNB VAC VENT ISOL VLV (two) – cl  
MNB VAC VENT NOZ HTR – cl
  23. √VAC VENT ISOL VLV BUS SEL – MNA  
NOZ HTR – ON  
ISOL VLV CNTL – OP (tb-OP)
  24. Report to MCC: “Av Bay purge is initiated”

**OV103,104**

A4-19

APCL/ALL/GEN N,4

## FIRE/SMOKE

SM SYS SUMM 1

If **VISUAL SMOKE/FIRE**, or  
two SMOKE DETN It on, or  
two CONC > 2, or  
one SMOKE DETN It on and  
other CONC > 2:

1. Go to step 6

If single Av Bay SMOKE DETN A(B) It and assoc CONC > 2:

2. SMOKE DETN CKT TEST – B(A) (25 sec)

If SMOKE DETN B(A) test good (It on):

3. SMOKE DETN CKT TEST – OFF

4. SNSR – RESET >>

If SMOKE DETN B(A) test bad (no It):

5. Go to step 6

If none of above >>

6. Check tabs, visors – CL  
LES O2 – ON

If **AV BAY FIRE**:

7. FIRE SUPPR – ARM

pb – DISCH (push until lit)

8. If Ascent: AV BAY FAN (two) – OFF

9. If FIRE in Bay:

1: TACAN 1, MLS 1 – OFF

2: TACAN 2, MLS 2,3 – OFF

3: TACAN 3 – OFF

If **CABIN FIRE**:

10. CAB FAN A,B (two) – OFF (max 20 min)

11. Locate source (see matrix, facing page)

12. Unpwr source of smoke

If smoke persists or source cannot be unpwr:

**WARNING**

Discharge is propulsive

13. Discharge handheld FIRE EXTGHR

If Ascent:

14. Post MECO, go to POST-FIRE CABIN CLEANUP (ASC PKT,  
ECLS) >>

If Entry and prior to TIG:

15. Go to ECLS FRP-3, FIRE/HAZ SPILL O2 CONTROL, step 3  
(MAL)

Cont next page

# OV103,104

A4-20

APCL/3,4/GEN N,4

- ML86B:A  
:B
- ML31C
21. VAC VLV – OP
  22. cb MNA(MNB) H2O LINE HTR A(B) – cl  
MNA,MNB VAC VENT ISOL VLV (two) – cl  
MNB VAC VENT NOZ HTR – cl
  23. √VAC VENT ISOL VLV BUS SEL – MNA  
NOZ HTR – ON  
ISOL VLV CNTL – OP (tb-OP)
  24. Report to MCC: “Av Bay purge is initiated”

**OV105**

B4-19

APCL/ALL/GEN N,4

## FIRE/SMOKE

SM SYS SUMM 1

If **VISUAL SMOKE/FIRE**, or  
two SMOKE DETN It on, or  
two CONC > 2, or  
one SMOKE DETN It on and  
other CONC > 2:

1. Go to step 6

If single Av Bay SMOKE DETN A(B) It and assoc CONC > 2:

2. SMOKE DETN CKT TEST – B(A) (25 sec)

If SMOKE DETN B(A) test good (It on):

3. SMOKE DETN CKT TEST – OFF

4. SNSR – RESET >>

If SMOKE DETN B(A) test bad (no It):

5. Go to step 6

If none of above >>

6. Check tabs, visors – CL  
LES O2 – ON

If **AV BAY FIRE**:

7. FIRE SUPPR – ARM

pb – DISCH (push until lit)

8. If Ascent: AV BAY FAN (two) – OFF

9. If FIRE in Bay:

1: GPS 1, MLS 1 – OFF

2: MLS 2,3 – OFF

3: GPS 3 – OFF

If **CABIN FIRE**:

10. CAB FAN A,B (two) – OFF (max 20 min)

11. Locate source (see matrix, facing page)

12. Unpwr source of smoke

If smoke persists or source cannot be unpwr:

**WARNING**

Discharge is propulsive

13. Discharge handheld FIRE EXTGHR

If Ascent:

14. Post MECO, go to POST-FIRE CABIN CLEANUP (ASC PKT,  
ECLS) >>

If Entry and prior to TIG:

15. Go to ECLS FRP-3, FIRE/HAZ SPILL O2 CONTROL, step 3  
(MAL)

Cont next page

B4-20

# OV105

APCL/5/GEN N,4

ALARM SEQUENCE	SOURCE AREA
<p style="text-align: center;">L(R) FLT DK</p> <p style="text-align: center;">or</p> <p>L(R) FLT DK → CABIN</p>	<p style="text-align: center;">PS(MS), L(R) CONSOLE</p>
<p>L(R) FLT DK ↔ R FLT DK</p>	<p style="text-align: center;">AFT FLT DK, MIDDECK</p>
<p style="text-align: center;">CABIN</p> <p style="text-align: center;">or</p> <p>CABIN → L FLT DK</p> <p style="text-align: center;">↕</p> <p>CABIN → R FLT DK</p>	<p style="text-align: center;">FWD FLT DK, WCS, LEB</p>



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# ELECTRICAL POWER SYSTEM

EPS



5-1

APCL/ALL/GEN N

**MN BUS UNDERVOLTS  
FC VOLTS**

**BFS, SM SYS SUMM 1**

If MN VOLTS < 26.4, FC VOLTS < 26.6, FC AMPS > 480 (2 of 3)  
(short or degraded FC):

1. MSTR MADS PWR – OFF

If aff FC/MN BUS tied:

2. Untie buses

If short eliminated and MN bus not pwr'd after untie:

3. Go to aff MN BUS LOSS ACTION (MN bus or tie bus short) >>

If short eliminated and all MN buses pwr'd after untie (tie bus short) >>

If short not eliminated, then:

⇒

If aff FC/MN BUS connected to PL PRI BUS:

: 4. PL PRI (three) – OFF (tb-OFF)

: If short eliminated (pri PL short):

: If a MN bus not pwr'd:

: 5. Perform BUS TIE (Cue Card), then:

L 6. Go to PL PWRDN >>

7. (Aff) ESS BUS SOURCE FC – OFF  
FC/MN BUS – OFF (tb-OFF)

If aff FC VOLTS < 32 (FC short):

8. (Aff) FC REAC VLV – CL (tb-CL)

9. Go to FC SHUTDN (Cue Card) (do not stop FC until COOL P < 15 and STACK T < 243) >>

If FC VOLTS ≥ 32 (bus short):

**CAUTION**

Do not bus tie to shorted bus

**EPS**

10. Go to aff MN BUS LOSS ACTION >>

If MN VOLTS < 26.4 and FC VOLTS > 32 and FC AMPS < 20  
(FC disconnect, check APUs):

11. MSTR MADS PWR – OFF

If PL PRI BUS pwr lost due to FC disconnect:

12. PL PRI (three) – OFF (tb-OFF)

13. (Aff) FC/MN BUS – ON (tb-ON)

If PL PRI disconnected in step 12:

14. Perform PL PWRDN, then:

Cont next page



If FC3 aff:

15. PL PRI FC3 – ON (tb-ON)  
MNC – ON (tb-ON)

If first FC prob:

16. Perform BUS TIE (Cue Card), then:

If aff FC VOLTS still > 32:

17. Go to FC SHUTDN (Cue Card) >>
18. (Aff) AC BUS SNSR – OFF,AUTO TRIP
19. GNC I/O RESET

If second FC failure and aff MN BUS not recovered:

20. PL PRI (three) – OFF (tb-OFF)
21. Go to 2nd FC SHUTDN

APCL/ALL/GEN N

**MN BUS UNDERVOLTS/  
FC VOLTS**

5-3

**AC VOLTS (LOW or HIGH)**

**BFS, SM SYS SUMM 1**

- ⇒ 1. If AC OVERLOAD F7 light or 'SM1 AC OVLD' msg: Go to AC OVERLOAD >>

If single  $\Phi$  AC VOLTS > 123 or between 10 and 110 (confirm with : F9 meter):

- : 2. (Aff) cb AC CONTR – cl
- : INV/AC BUS – OFF (tb-OFF)
- : INV PWR – OFF (tb-OFF)
- : cb AC CONTR – op

: If other  $\Phi$  AC VOLTS < 110 or AC AMPS > 14:

- : 3. Go to step 6
- : If other  $\Phi$  AC AMPS > 10:
  - : : 4. Isolate shorted  $\Phi$ : Open all aff AC1(2,3)
  - : : three- $\Phi$  ganged cbs and all aff AC1(2,3)
  - : :  $\Phi$ A(B,C) single- $\Phi$  cbs as follows:

~ ~

Cont next page

5-4

APCL/ALL/GEN N

total number of cbs to √ open

BUS	L4	MA73C
AC1 3Φ	1	5
ΦA	16	5
ΦB	16	4
ΦC	13	5
AC2 3Φ	0	9
ΦA	15	5
ΦB	16	4
ΦC	14	5
AC3 3Φ	1	7
ΦA	15	3
ΦB	16	3
ΦC	13	3

- L 5. Go to aff BUS LOSS ACTION >>  
 If multi Φ AC VOLTS < 110:  
 : If any AC AMPS > 14 (unannun OVLD):  
 : 6. (Aff) cb AC CONTR (three) – cl  
 :     INV/AC BUS – OFF (tb-OFF)  
 :     INV PWR – OFF (tb-OFF)  
 :     cb AC CONTR (three) – op  
 : 7. Go to aff BUS LOSS ACTION >>  
 : If (aff) INV/AC BUS tb – ON (FPC bus loss):  
 L 8. Go to aff BUS LOSS ACTION >>  
 If all AC VOLTS between 110 and 123:  
 9. Go to MAL, EPS, AC VOLTS 1(2,3) ↓↑, 7.5a [6]

APCL/ALL/GEN N

**AC VOLTS (LOW or HIGH)** 5-5

**AC OVERLOAD**

**BFS, SM SYS SUMM 1**

If AC VOLTS < 110 or AC AMPS > 14 (OVLD):

: If single Φ:

- : : 1. (Aff) cb AC CONTR – cl
- : :     INV/AC BUS – OFF (tb-OFF)
- : :     INV PWR – OFF (tb-OFF)
- : :     cb AC CONTR – op

: If other Φ AC VOLTS < 110 or AC AMPS > 14:

- : : 2. Go to step 5
- ⇒ : : 3. Isolate shorted Φ: Open all aff AC1(2,3) three-Φ ganged
- : :     cbs and all aff AC1(2,3) ΦA(B,C) single-Φ cbs as noted
- : :     below:

total number of cbs to √ open

BUS	L4	MA73C
AC1 3Φ	1	5
ΦA	16	5
ΦB	16	4
ΦC	13	5
AC2 3Φ	0	9
ΦA	15	5
ΦB	16	4
ΦC	14	5
AC3 3Φ	1	7
ΦA	15	3
ΦB	16	3
ΦC	13	3

Cont next page

```

~ ~
: :
: L 4. Go to aff BUS LOSS ACTION >>
: If multi  $\Phi$  (bus short):
: 5. (Aff) cb AC CONTR (three) – cl
:     INV/AC BUS – OFF (tb-OFF)
:     INV PWR – OFF (tb-OFF)
:     cb AC CONTR (three) – op
L 6. Go to aff BUS LOSS ACTION >>
If AC VOLTS between 110 and 123 and AC AMPS < 14:
7.  $\sqrt{}$ AC BUS SNSR – MON
   Do not take snsr – AUTO
8. Go to MAL, EPS, AC OVLD 1(2,3) ↓, 7.5b 6

```

APCL/ALL/GEN N,4

**AC OVERLOAD**  
**ESS BUS V LOW** (5-9)

---

**3 $\Phi$  AC MTRS** (5-8)  
**5-7 CNTL BUS V LOW/RPC** (5-10)

---

### 3Φ AC MOTORS STOPPED

(No AC VOLTS Alarm: Φ Shift)

**WARNING**

If no FC Coolant Pump within 9 min, go to aff  
AC BUS (2 or 3Φs) BUS LOSS ACTION

1. Determine aff AC BUS:  
FC1 and FREON PUMP 2B: AC1  
FC2 and FREON PUMP 1B: AC2  
FC3 and CAB FAN A: AC3
2. (Aff) FC – STOP  
If AC3 aff:
  3. AV BAY 3 FAN B – OFF  
A – ON  
CAB FAN A – OFFIsolate aff ΦB(ΦC,ΦA):
  4. (Aff) cb AC CONTR – cl  
INV/AC BUS – OFF (tb-OFF)If AC1(2,3) aff and AV BAY FAN 3(2,3) ΔP ≥ 0.5:
  5. Go to step 12 (bad Φ isolated)
  6. (Aff) INV/AC BUS – ON (tb-ON)  
cb AC CONTR – op
  7. Repeat from step 4 for aff ΦC(ΦA), then:  
Drop aff AC bus (three Φs):
    8. (Aff) cb AC CONTR (three) – cl
    9. INV/AC BUS – OFF (tb-OFF)
    10. INV PWR – OFF (tb-OFF)
    11. Go to aff AC BUS (2 or 3Φs) BUS LOSS ACTION >>Bad Φ isolated:
  12. (Aff) INV PWR – OFF (tb-OFF)  
cb AC CONTR – op  
FC – START (10 sec or ΔP tb-gray)
  13. If AC3 aff: CAB FAN B – ON
  14. Go to aff Φ BUS LOSS ACTION

## ESS BUS VOLTS LOW

If verified by F9 voltmeter:

	1BC	2CA	3AB
If aff cb op	MNA CONTR (pnl O15:B)	MNB CONTR (pnl O16:B)	MNC CONTR (pnl O14:B)
1. (Aff) cb – op	MNA CONTR (pnl O13:A)	MNB CONTR (pnl O13:C)	MNC CONTR (pnl O13:E)
2. (Aff) cb – cl	MNA CONTR (pnl O15:B)	MNB CONTR (pnl O16:B)	MNC CONTR (pnl O14:B)

3. Perform FC SHUTDN (Cue Card)  
[FC/MN BUS A(B,C) and MN BUS TIE A(B,C) tbs lost]
4. Go to aff BUS LOSS ACTION (ESS)

**CNTL BUS V LOW/CNTL BUS RPC** BFS, SM SYS SUMM 1

**WARNING**  
 If VISIBLE FIRE/SMOKE AT ANY TIME, cb CNTL BUS AB1/2/3(BC1/2/3,CA1/2/3) – op (pnl R14:B)

**NOTE**

CNTL BUS PWR sws must be held continuously in the RESET posn to unpwr bus(es)

1. Identify BUS (√BUS LOSS ID)  
 If BC2:
  2. Perform COMM LOST, steps 4 and 5 (COMM), 2-2, then:
    - ⇒ If critical (per MCC):
      - ◆ 3. Go to CNTL BUS V LOW/CNTL BUS RPC, step 2 (ORB PKT, EPS) >>
- ◆ If one CNTL BUS RPC tripped (\*):  
 Aff CNTL BUS:

**AB1(2,3)**

	Tripped RPC (*)	Action (for RESET, hold w/sw reten device)
4.	<b>A</b>	R1 CNTL BUS PWR MNB – RESET R14:B cb CNTL BUS AB1/2/3 – op
5.	<b>B</b>	R1 CNTL BUS PWR MNA – RESET R14:B cb CNTL BUS AB1/2/3 – op

**BC1(2,3)**

	Tripped RPC (*)	Action (for RESET, hold w/sw reten device)
6.	<b>B</b>	R1 CNTL BUS PWR MNC – RESET R14:B cb CNTL BUS BC1/2/3 – op
7.	<b>C</b>	R1 CNTL BUS PWR MNB – RESET R14:B cb CNTL BUS BC1/2/3 – op



**CA1(2,3)**

Tripped RPC (*)	Action (for RESET, hold w/sw reten device)
8. <b>C</b>	R1 CNTL BUS PWR MNA – RESET R14:B cb CNTL BUS CA1/2/3 – op
9. <b>A</b>	R1 CNTL BUS PWR MNC – RESET R14:B cb CNTL BUS CA1/2/3 – op

◆ If no CNTL BUS RPC tripped (no \*):

aff CNTL BUS	Panel R1 action (hold w/sw reten device)
10. <b>AB1(2,3)</b>	CNTL BUS PWR MNA,MNB (two) – RESET
11. <b>BC1(2,3)</b>	CNTL BUS PWR MNB,MNC (two) – RESET
12. <b>CA1(2,3)</b>	CNTL BUS PWR MNA,MNC (two) – RESET

For all CNTL V < 25.0:

13. Perform BUS LOSS ACTION (CNTL), then:

If AOA >>

14. Perform CONTROL BUS PWRDN (IFM, PROCEDURES A THRU F)  
for shorted bus, then:

15. If reqd, back out of BUS LOSS ACTION for regained buses,  
then:

If pwr reqd (<3 sec) for crit function:

16. Hold crit function sw

For tripped RPC:

R1 17. CNTL BUS PWR MNA(MNB,MNC) – RESET (1 sec),  
then dn

## FC COOLANT PUMP ΔP LOW

BFS, SM SYS SUMM 1

- If other 3Φ AC motors aff, and AC VOLTS OK:
1. Go to 3Φ AC MOTORS STOPPED >>
- ⇒ O14  
(O15,O16)
2. √(Aff) FC CNTLR – ON  
FC – START (10 sec or ΔP tb-gray)
- If FC EXIT T > 164 and not decr or  
RDY tb – bp (30 sec after START) or  
L4:C (aff) FC PUMPS cb(s) – op:
3. Go to FC SHUTDN (Cue Card) >>
- If FC EXIT T norm, RDY tb – gray, no MCC in 5 min:
4. Note AC1(2,3) AMPS, then FC – STOP
- O14  
(O15,O16)
- If AMPS decr:
- If decr 0.7-0.9 amp/Φ:
5. FC – START (hold 30 sec if ΔP tb-bp)
- O14  
(O15,O16)
6. If AMPS incr 0.7-0.9 amp/Φ >>
7. Go to FC SHUTDN (Cue Card)

## FC REACTANT VLV CLOSED

BFS, SM SYS SUMM 1

1. FC REAC VLV (three) – OP (tb-OP or hold 1 sec max)
2. Perform BUS TIE (Cue Card), then:  
If no joy on REAC open:
- C3
3. √cb FC REAC VLV CL ENA (three) – op
- R1
4. FC REAC VLV (three) – OP (tb-OP or hold 10 sec)
- If aff FC COOL P < 50 (ALERT):
5. Go to FC SHUTDN (Cue Card)

## FC COOL P

BFS, SM SYS SUMM 1

1. Perform BUS TIE (Cue Card), then:  
⇒ If COOL P > 75, incr, and not 100 (H),  
or FC COOL PUMP =  $\Delta P$  (intermittent),  
or FC STACK/EXIT TEMP unstable:
  2. Go to FC SAFING >>
- If COOL P < 50:
  3. Go to FC SHUTDN (Cue Card) >>
4. Two min after bus ties: Record  $\Delta$ AMPS between aff and tied FC, and monitor for 20 min
- If change in  $\Delta$ AMPS > 12:
  5. Go to FC SHUTDN (Cue Card)

### TROUBLESHOOT:

Post Insert: If COOL P ↓, do not press SPLY H2O TKA until MCC GO. Vent TKs B,C,D before TKA fills.  
MAL, EPS, FUEL CELL COOL P ↑↓, 7.3e 1

APCL/ALL/GEN N

FC COOL PUMP  $\Delta$ P LOW  
FC REAC VLV CLOSED

5-13

FC COOL P

## FC STACK T

BFS, SM SYS SUMM 1

1. MSTR MADS PWR – OFF
- If FC STACK TEMP > 243 degF and incr:
2. If 2nd FC: Go to 2nd FC SHUTDN >>
  3. PL PRI (three) – OFF
- If aff FC amps < 190 or > 360:
4. Go to MN BUS UNDERVOLTS/FC VOLTS, step 7 >>
- ◆ 5. Perform BUS TIE (Cue Card), then:
6. ESS BUS SOURCE FC – OFF
  7. FC/MN BUS – OFF
- If aff FC VOLTS < 32 or FC STACK TEMP not decr:
8. (Aff) FC REAC VLV – CL
  9. After COOL P < 15 and FC STACK TEMP < 243 degF:  
FC – STOP
  10. √PWRDN

### TROUBLESHOOT:

MAL, EPS, FC STACK T 1(2,3) ↑↓, 7.1b 1

## FC EXIT T

BFS, SM SYS SUMM 1

1. MSTR MADS PWR – OFF
  2. Perform BUS TIE (Cue Card), then:
- ⇒ If EXIT T > 164 and incr:
3. Go to FC SHUTDN (Cue Card) >>
- If EXIT T < 131 and decr and no comm:
4. Go to FC SHUTDN (Cue Card)

TROUBLESHOOT: MAL, EPS, FUEL CELL EXIT T ↑↓, 7.3d 1

### FC pH 1(2,3)

BFS, SM SYS SUMM 1

- ⇒ 1. Perform BUS TIE (Cue Card), then:  
If aff FC SS 1(2,3)  $\Delta V > 150$ :  
| 2. Go to FC SAFING >>  
If aff FC SS 1(2,3)  $\Delta V < 150$ :  
3. FLASH EVAP CNTLR PRI A – OFF  
B – ON  
SEC (two) – B SPLY, OFF  
SPLY H2O TKA INLET – CL (tb-CL)  
TKB INLET – CL (tb-CL)  
TKC OUTLET – CL (tb-CL)  
TKD INLET – CL (tb-CL)  
4. Two min after bus tie: Record  $\Delta$ AMPS between aff and tied FC; monitor for 20 min  
If no comm:  
| If change in  $\Delta$ AMPS  $> 12$  or FC SS 1(2,3)  $\Delta V \geq 150$ :  
| | 5. Go to FC SAFING >>  
| If change in  $\Delta$ AMPS  $\leq 12$  and FC SS 1(2,3)  $\Delta V < 150$ :  
| | 6. Remain bus tied to monitor FC performance  
If comm avail:  
7.  $\sqrt{MCC}$

TROUBLESHOOT: MAL, EPS, FC/H2O LINE pH HIGH, 7.3a 1

### FC DELTA V 1(2,3)

BFS, SM SYS SUMM 1

1. Perform BUS TIE (Cue Card), then:  
If aff FC pH  $\downarrow$  or FC  $\Delta V$  incr:  
| 2. Go to FC SAFING >>  
If no aff FC pH  $\downarrow$  and FC  $\Delta V$  not incr:  
3. Two min after bus tie: Record  $\Delta$ AMPS between aff and tied FC; monitor for 20 min  
If change in  $\Delta$ AMPS  $> 12$  or FC  $\Delta V$  incr:  
| 4. Go to FC SAFING >>  
If change in  $\Delta$ AMPS  $\leq 12$  and FC  $\Delta V$  not incr:  
5. Remain bus tied to monitor FC performance

TROUBLESHOOT:

If FC pH  $\downarrow$ : MAL, EPS, FC/H2O LINE pH HIGH, 7.3a 1

APCL/ALL/GEN N

FC STACK T/FC EXIT T

5-15

FC pH/FC DELTA V

## FC SHUTDN (1st)

**WARNING**  
If FC Coolant Pump lost,  
Emergency FC use OK for 9 min

1. MSTR MADS PWR – OFF
2. If not tied: Perform BUS TIE (Cue Card), then:  
If ORB (not deorb prep), kW > 18:  
    MN BUS TIE (three) – ON
3. ESS BUS SOURCE FC – OFF  
    FC/MN BUS – OFF (tb-OFF)  
    FC – STOP (COOL PUMP  $\Delta$ P tb-bp or 1 sec)
4. FC REAC VLV – CL (tb-CL)
5. Go to LOSS OF FES/1 FC (PWRDN), 10-39

## 2nd FC SHUTDN

**BFS, SM SYS SUMM 1**

**WARNING**  
If FC Coolant Pump lost,  
Emergency FC use OK for 6 min

1. MSTR MADS PWR – OFF
2. If aff FC pwr one MN bus: Go to step 5
3. MN BUS TIE (three) – OFF (tb-OFF)
4. Perform BUS TIE (Cue Card) to good FC/BUS, then:  
(Aff) ESS BUS SOURCE FC – OFF  
    FC/MN BUS – OFF (tb-OFF)  
    FC – STOP (COOL PUMP  $\Delta$ P tb-bp or 1 sec)
6. FC REAC VLV – CL (tb-CL)
7. Go to LOSS OF 2nd FC (PWRDN), 10-43

**BUS TIE** (do not tie bus short, check APUs)

If MN Volts > 20: Bus Tie >>

If MN Volts < 20 (do not BUS TIE Pre MECO for 1st FC):

1. (Aff) AC BUS SNSR – OFF
2. cb AC CONTR (three) – cl
3. (Aff) INV/AC BUS – OFF (tb-OFF)
4. (Aff) INV PWR – OFF (tb-OFF)
5. If MNC(B) dn: CAB FAN A(B) – OFF
6. Bus Tie
7. (Aff) INV PWR – ON (tb-ON)
- ◆ 8. (Aff) INV/AC BUS – ON (tb-ON)
9. cb AC CONTR (three) – op
10. GNC I/O RESET

Post MECO:

11. (Aff) AC BUS SNSR – AUTO TRIP
12. If pwr dn not reqd: √CAB FAN A(B) – ON

**FC SAFING**

**BFS, SM SYS SUMM 1**

If FC already SHUTDN:

1. √FC1(2,3) REAC – CL (O2,H2 tb-CL)
  2. FC1(2,3) – START (10 sec or ΔP tb-gray)
  3. FC/MN BUS A(B,C) – ON (tb-ON)
- When FC1(2,3) COOL P decr to < 15 or FC1(2,3) AMPS ≤ 0:
4. FC/MN BUS A(B,C) – OFF (tb-OFF)
- When FC1(2,3) COOL P < 15, then:
5. FC1(2,3) – STOP (ΔP tb-bp or 1 sec) >>

If FC not SHUTDN:

- : 6. MSTR MADS PWR – OFF
- : If not already tied:
- : 7. Perform BUS TIE (Cue Card), then:
- : 8. FC1(2,3) REAC – CL (O2,H2 tb-CL)
- : If either FC REAC tb still OP:

- C3 : 9. cb FC1(2,3) REAC VLV CL ENA – cl
- : 10. FC REAC VLV 1(2,3) – CL

- : If no joy:
- R1 : 11. Install sw reten device FC REAC sw
- : When FC1(2,3) COOL P decr to < 15 or FC1(2,3) AMPS ≤ 0:
- : 12. ESS BUS SOURCE FC1(2,3) – OFF
- : 13. FC/MN BUS A(B,C) – OFF (tb-OFF)
- : When FC1(2,3) COOL P < 15, then:

- L 14. FC1(2,3) – STOP (ΔP tb-bp or 1 sec)
15. Go to LOSS OF FES/1 FC (2nd FC) (PWRDN),  
10-39/10-43

APCL/ALL/GEN N

**FC SHUTDN (1st)**  
**2nd FC SHUTDN**

5-17

**BUS TIE/FC SAFING**  
**CRYO O2(H2) (5-18)**

**CRYO O2(H2) PRESS/  
TEMP HIGH**

**BFS, SM SYS SUMM 2**

(Aff) O2(H2) TK HTRS (two) – OFF

For O2(H2) PRESS,

go to MAL, EPS, CRYO O2(H2) PRES, TK P ↓↑, 7.6b **1** >>

For H2 TEMP HIGH, go to MAL, EPS, H2 HTR T, 7.6f **1** >>

For O2 TEMP HIGH, go to MAL, EPS, O2 HTR T, 7.6l **1**

**CRYO O2(H2) LEAK**

**BFS, SM SYS SUMM 2**

1. Use meter if CRT data OSL

If multiple TK Ps low:

2. O2(H2) MANF VLV TK1,TK2 (two) – CL  
TK1,TK2,TK3 HTRS (six) – AUTO

If either MANF VLV fails to close:

3. Hold sw in CLOSE posn (install sw reten device  
if reqd), then:

⇒

If TK 1 and 2 P decr slowly (HTR logic fail):

4. O2(H2) MANF VLV TK1,TK2 (two) – OP  
5. Go to MAL, EPS, CRYO O2(H2) PRES, TK P ↓↑,  
7.6b **1** >>

6. Perform aff BUS TIE (Cue Card), then:

If O2(H2) TK1(2) aff (open unaff manf):

7. O2(H2) MANF VLV TK2(1) – OP

If O2 TK1(2) aff:

8. O2 SYS 1(2) SPLY – CL, then:

If O2 TK 1(2) P now incr (PCS leak):

9. O2 MANF VLV TK1,TK2 (two) – OP >>

10. Perform aff FC SHUTDN (Cue Card), then:

If aff TK P not decr (FC leak):

11. O2(H2) MANF VLV TK1,TK2 (two) – OP (ASAP if  
FC3) >>

If aff TK P/MANF P decr (MANF leak):

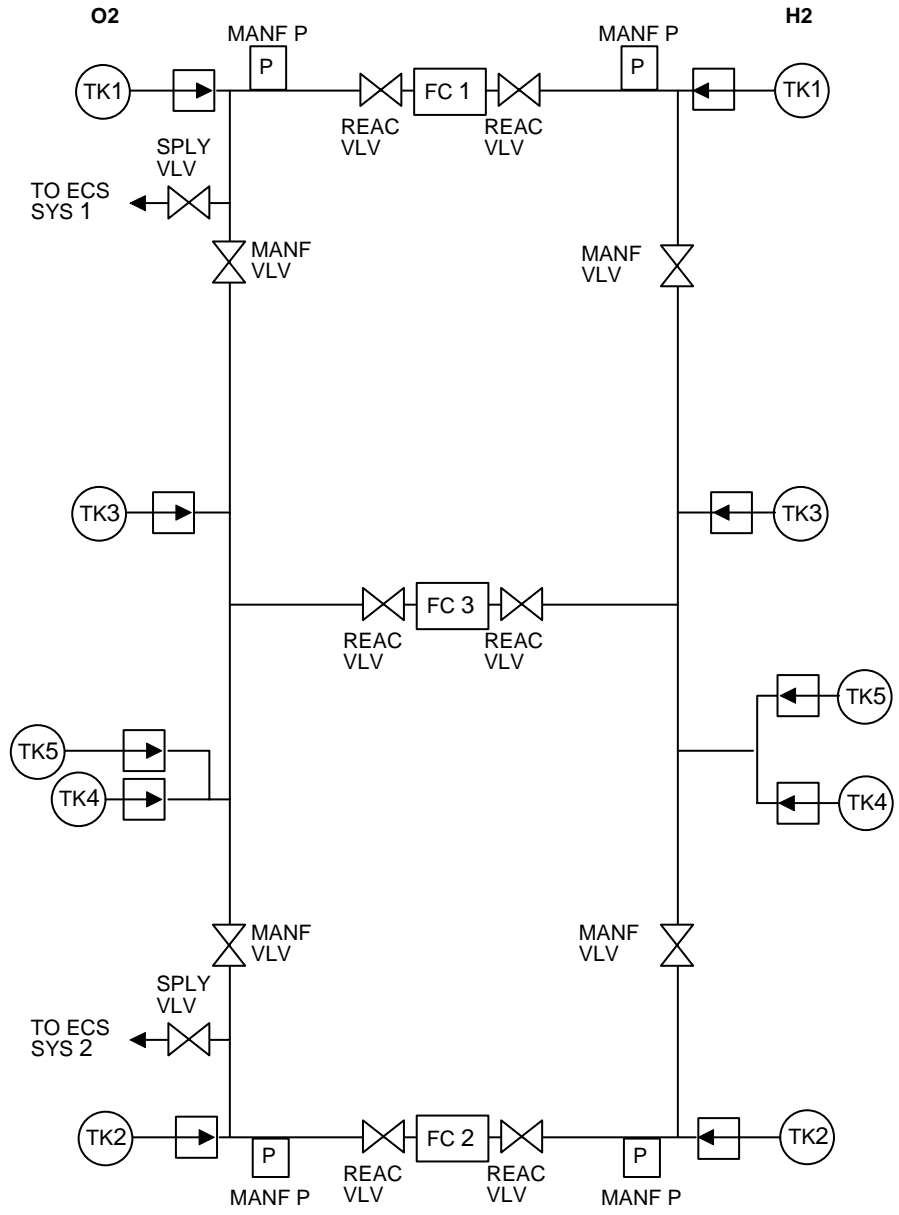
12. (Aff) TK HTRS A(B) (two) – OFF >>

If only one TK P low (TK leak, xdcr, or cntlr fail):

13. (Aff) TK HTRS A(B) (two) – OFF



# CRYO



O2/H2 HTR LOSS											
BUS LOSS	PAIRED					PAIRED					
	TK1		TK2		TK3		TK4		TK5		
	A	B	A	B	A	B	A	B	A	B	
MNA DA1	A/M		AUTO	A/M	A/M	AUTO	A/M	AUTO	A/M	A/M	
MNB DA2											
MNC DA3	AUTO	A/M	A/M	A/M				A/M	A/M	AUTO	A/M
CNTL AB1		MAN			MAN						
		A/M			A/M						
CNTL BC1			MAN					MAN			MAN
			A/M					A/M			A/M
CNTL BC2				MAN							
CNTL BC3											
CNTL CA1	MAN						MAN			MAN	
	A/M						A/M			A/M	
CNTL CA2				A/M							
CNTL CA3											
ESS 1BC	*	*	AUTO	AUTO	*	*	AUTO	AUTO			
			*	*							
ESS 2CA	AUTO	AUTO			AUTO	AUTO	*	*	AUTO	AUTO	
ESS 3AB											

\* IF TK IS PAIRED WITH A FAILED TK(S), AUTO CAPABILITY IN THIS TK IS LOST. AUTO CAPABILITY IN THIS TK CAN BE REGAINED BY TAKING FAILED TK(S) HTR SWITCHES OUT OF AUTO. TK1 PAIRED WITH TK2, AND TK3 PAIRED WITH TK4.

A/M = AUTO AND MANUAL CAPABILITY LOST

03/27/03

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APCL/ALL/GEN N

MAIN DC BUS LOSS ID TABLE

BUS		MAIN A												MAIN B						MAIN C					
		* FPC1		MPC1		APC4		* FPC2		MPC2	APC5		* FPC3		MPC3		APC6								
		F L C 1	F M C 1	M M C 1	M M C 3	A P C 1	A L C 1	A M C 1	F L C 2	F M C 2	M M C 2	A P C 2	A L C 2	F L C 3	F M C 3	M M C 2	M M C 4	A P C 3	A L C 3						
C/W	AC VOLTAGE (AC X Lost)	1						2					3												
	APU TEMP (~2 min if APU X ON & BLR/CNTRLR A sel)					3	3				1	1					2	2							
	APU TEMP (~2 min if APU X ON & BLR/CNTRLR B sel)					1	1				2	2					3	3							
	FREON LOOP (If cooling by FES X only)					B	B										A	A							
	H2O LOOP (If Pump X Active)		1A						1B																
	OMS TVC (During OMS PRI GMBL)					L	L										R	R							
	OMS TVC (During OMS SEC GMBL)					R	R				L	L													
	RCS JET (When Jet Commanded)		•						•					•											
DISP 67	DC AMPS XY = 0 (X: Fwd,Mid,Aft) (Y: A,B,C)	FA		MA		AA		FB		MB	AB		FC		MC		AC								
	DC V PCA XY = 0 (X: Fwd,Aft) (Y: A,B,C)	FA	FA			AA	AA	FB	FB		AB	AB	FC	FC			AC	AC							
	CNTL BUS RPC X = ** (X: A,B,C)	A						B					C												
PLB LTS	PLB,FLOODS (Fwd,Mid,Aft Port,Stbd,Bkhd,Docking)			FP						FB					MS										
				AS						FS					AP										
				D						MP															
S-BAND	SYS X ORB voice & PL PSP msg (X: 1,2)							1					2												
P A N E L S	L2 ATM O2 SYS X SPLY tb - CL			1						2															
	F6/F8 LANDING GEAR X tb - bp (X: L,R,NOSE)							LN					RN												
	F7 CRT X Blanks	1						2					3,4												
	O1 H2O PUMP OUT P X = 20 (Pump Loss)		1A						1B																
	O7 AFT X RCS He P Y tb - bp (X: Both,L,R) (Y: A,B)					BA	BA				RB	RB					LB	LB							
	AFT L,R RCS MANF ISOL 5 tb - bp																•	•							
	O8 FWD RCS He P X tb - bp		A						B																
	FWD RCS TK ISOL X tb - bp (X: 1/2,3/4/5)			3										1											
	FWD RCS MANF ISOL X tb - bp			1					2					5	4										
	R4 HYD BK ISOL VLV X tb - OP					1	1				2	2					3	3							
	LG EXTD ISO VLV tb - OP					•	•																		
	R13L RAD CNTL X tb - bp (X: PORT,STBD)			PS	S	P									PS	P	S								
	A8U RMS EE (except DERIGID) tbs - bp, MA LT - ON			•																					
	A8L X RMS DPY/STO tb - bp (X: PORT,STBD)			P						P					P										
	X RMS RETEN LAT tb - bp (X: PORT,STBD)			P	P					P	P				P	P									
	PORT RMS R-F-L X tb - bp (X: FWD,MID,AFT)			M	M					F	F				A	A									

\* For MNA(B,C) FPC 1(2,3) many other indications are present, most of which are associated with the resultant AC1(2,3) loads. Only the additional indications that positively identify the FPC bus loss are listed.

DATE 07/29/05

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APCL/ALL/GEN N

MAIN DC BUS LOSS ID TABLE

INDICATION		MAIN A				MAIN B			MAIN C		
		O 1 4	O 1 4 A 8	R 1 4	M L 8 6 B	O 1 5	R 1 4	M L 8 6 B	O 1 6	R 1 4	M L 8 6 B
C/W	CABIN ATM	•				•					
LIGHTS	FLOODS (L Seat,R Seat, CTR Cnsl, MS,OS,PS)			PS		LC	OS		RC	MS	
	Floods (L,R Ovhd Cnsl)	L				R					
	MIDDECK FLOODS X (X: 1,2,3,4,5,6,7,8)				18			26			34
	WMC FLOOD				•						57
COMM	All Voice via AUDIO CTR 2									•	
	ATU			MS			MD			PS	
	PS,MS,MD,AL									AL	
	UHF SPLX PWR AMP			•							
TIMERS	X MISSION TIMER (X: Fwd,Aft)	F				A					
	X EVENT TIMER (X: Fwd,Aft)	A				F					
FWD	MDUs			MFD2			CDR2			CDR1	
AFT	MDU			PLT1			MFD1			PLT2	
L2	CAB RELIEF X tb - bp					A			B		
	ATM N2 SYS X SPLY, REG INLET tb - bp	1				2					
O1	CAB dP/dT = 0.45					•					
	CAB PRESS = 0 psia	•									
	PPO2 SNSR X = 0 psia	A				BC					
O3	RCS/OMS PRPLT QTY Disp Blanks								•		
R11L	SPLY H2O TK X INLET tb - bp				A			B			C
	SPLY H2O TK X OUTLET tb - bp				B			C			A
	SPLY H2O DUMP ISOL, B SPLY ISOL VLV tb - bp							•			
	SPLY H2O DUMP, XOVR, GALLEY SPLY VLV tb - bp										•
A8U	RMS EE (6), SAFING, S/W STOP tb - bp, BRAKES tb - OFF		•								
ML31C	WASTE H2O TK X VLV tb - bp				1						
	WASTE H2O DUMP ISOL VLV tb - bp				•						
	SPLY H2O TK D X tb - bp (X: INLET,OUTLET)				O			I			

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APCL/ALL/GEN N

DATE 12/09/03

ESS DC BUS LOSS ID TABLE

BUS		ESS1BC						ESS2CA					ESS3AB					
		D A 1	FP & LC 1	M P C 1	F D	O 13 R 14	M L 86 B	D A 2	FP & LC 2	M P C 2	F D	O 13 R 14	D A 3	FP & LC 3	M P C 3	F D	O 13	M L 86 B
INDICATION																		
C/W	MA, but no F7 C/W Lts	•				•												
	O2 PRESS						•	•			•	•						•
	H2 PRESS						•	•			•	•						•
	FC REAC			•				•				•		•				
	FC PUMP			•	•			•	•	•			•	•	•			
	PRIMARY C/W (Cannot be Reset)							•				•						
	BACKUP C/W (Cannot be Reset)							•				•						
F9 METER	Aff ESS VOLTS OFF Scale Lo	•			•		•			•		•			•			
SM1	Aff DC VOLTS ESS = 0	•					•					•						
COMM	All Voice via AUDIO CTR 1						•					•						
	X ATU,CCU,MIC (X: Cdr,Plt)	C				C		P			P							
LIGHTS LOST	F7 C/W MATRIX	•				•												
	MA BULBS 2 of 4 per MA (except Lamp Test)	•				•		•			•							
	GPC STATUS LTS											•				•		
P A N E L S	X GLARESHIELD FLOOD (X: L,R)	L				L		R			R							
	O2	O2,H2 TK X QTY = 0% (X: 1,2,3,4)	24			2	4	1			1	3					3	
	R1	FC/MN BUS X tb - OFF	A					B				C						
		PL PRI MNC tb - OFF										•						
		INV PWR X tb - OFF (Inv OK)		1					2				3					
		INV/AC BUS X tb - OFF (Bus OK)	1				1		2			2	3				3	
		O2,H2 MANF VLV TK X tb - CL	1		1				2	2								
		FC X REAC tb - CL	1		1				2	2			3		3			
		FC X RDY tb - bp	1		1	1			2	2	2		3		3	3		
		FC X COOL PUMP ΔP tb - bp	1		1	1			2	2	2		3		3	3		
A12	FC3 STRUCT RTN tb - OFF											•						

DATE 05/23/00

5-23

APCL/ALL/GEN N

5-24

APCL/ALL/GEN N

**CNTL AB1**

C/W – APU TEMP (~2 min if APU 1 ON and BLR/CNTRLR 1B sel)  
MDU CRT 1 Blanks  
C/W – FREON LOOP if FES active (Pri B GPC)

**CNTL AB2**

C/W – APU TEMP (~2 min if APU 1 ON and BLR/CNTRLR 1B sel)  
L HUD lost  
C/W – FREON LOOP if FES active (Pri B ON)

**CNTL AB3**

C/W – APU TEMP (~2 min if APU 1(3) ON and BLR/CNTRLR  
1A(3A) sel)  
(O8) – FWD RCS TK ISOL 3/4/5 (tb-bp)  
MANF ISOL 1 (tb-bp)  
(L1) – FLOW PROP VLV LOOP 1 (tb-bp)

**CNTL CA1**

C/W – APU TEMP (~2 min if APU 3 ON and BLR/CNTRLR 3B sel)  
MDU CRT 3 Blanks  
C/W – FREON LOOP if FES active (Pri A GPC)  
C/W – H2O LOOP (if LOOP 2 GPC)

**CNTL CA2**

C/W – APU TEMP (~2 min if APU 3 ON and BLR/CNTRLR 3B sel)  
MDU CRT 4 Blanks  
C/W – FREON LOOP if FES active (Pri A ON)

**CNTL CA3**

C/W – APU TEMP (~2 min if APU 2(3) ON and BLR/CNTRLR 2A(3A) sel)  
(O8) – FWD RCS TK ISOL 1/2 (tb-bp)  
MANF ISOL 3 (tb-bp)  
4 (tb-bp)  
(L1) – RAD BYP VLV MAN SEL 1 (tb-bp)  
FLOW PROP VLV LOOP 2 (tb-bp)

**CNTL BC1**

C/W – APU TEMP (~2 min if APU 2 ON and BLR/CNTRLR 2B sel)  
(L1) – RAD BYP VLV MAN SEL 2 (tb-bp)  
S-BD SYS 1 Comm  
PL SYS 1  
R HUD lost

**CNTL BC2**

C/W – APU TEMP (~2 min if APU 2 ON and BLR/CNTRLR 2B sel)  
MDU CRT 2 Blanks  
C/W – H2O LOOP (if Pump 1B ON)  
S-BD SYS 2 Comm  
PL SYS 2

**CNTL BC3**

C/W – APU TEMP (~2 min if APU 1(2) ON and BLR/CNTRLR  
1A(2A) sel)  
(O8) – FWD RCS MANF ISOL 2 (tb-bp)  
C/W – H2O LOOP (if Pump 1B ON)

**NOTE**

If CNTL Bus Loss suspected, check **SM1** DC V CNTL for confirming cue

12/09/03

**BUS LOSS ACTION**

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O14 .....	5-28	ESS 1BC DA1	
R14.....	5-28	(Entire Bus)	
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FPC3 .....	5-34	(Entire Bus)	
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R14.....	5-34		

**AC1/  
MNA**

**NOTE**

Loss of electrical sub-buses difficult for crew to determine. MCC will pass this sub-bus loss data to crew, as well as reqd actions as noted in ASC PKT C/L. All pwr'd flight major bus loss actions (including RTLS) will be performed only via Ascent Systems Cue Cards

APCL/ALL/GEN N

**BUS LOSS ID (5-21)**

5-25

**BUS LOSS ACTION**

AC1/  
MNA

### AC1 (2 or 3ΦS)

**WARNING**  
FC1 will be lost within 9 min

- ⇒ C3      1.    MSTR MADS PWR – OFF  
          If no MNA bus short:  
          2.    Perform BUS TIE (Cue Card), then:  
          If no MNA bus tie:  
          3.    Go to MNA DA1 >>  
          If MNA bus tie performed:  
R2            4.    BLR CNTLR/HTR 3 – B  
                 5.    Perform FC1 SHUTDN (Cue Card),  
                 then:  
L1            6.    AV BAY 3 FAN A – ON  
                              B – OFF  
                 FREON PUMP LOOP 2 – A

### AC1 ΦA

- ⇒ L1      FREON PUMP LOOP 2 – A

### AC1 ΦB

- ⇒ L1      1.    FREON PUMP LOOP 2 – A  
O8        2.    LTG PNL NUMERIC sel – OFF  
OMS/MP5 3.    Use He PRESS for L,R OMS Qty est

### AC1 ΦC

- ⇒ R2      1.    BLR CNTLR/HTR 3 – B  
L1        2.    FREON PUMP LOOP 2 – A



**MNA DA1** (Entire Bus) (Includes AC1)

NOTE

Loss of UHF SPLX Hi Pwr Xmit

- ⇒ R2     ♦ 1.    MPS PRPLT DUMP B/U LH2 VLV – OP  
         2.    BLR CNTLR/HTR 3 – B  
C3       3.    MSTR MADS PWR – OFF  
R1       4.    AC BUS SNSR 1 – OFF  
         5.    Perform FC1 SHUTDN (Cue Card), then:  
L1       6.    √AV BAY 1 FAN B – ON  
                 3 FAN A – ON  
                         B – OFF  
                 FREON PUMP LOOP 2 – A  
                 TOP EVAP HTR NOZ L – B AUTO  
                         DUCT sel – B  
                 HI LOAD DUCT HTR sel – B  
L2       7.    O2/N2 CNTLR VLV SYS 2 – OP  
         8.    XXXXXX MNVR YYYYYY  
                 L OMS – sel SEC GMBL  
         9.    NWS – 2  
OMS/MPS 10.    Use He PRESS for L,R OMS Qty est  
O6       11.    ANNUN BUS SEL ACA 1 – MNB  
R11L    12.    MS AUD CNTL sel – PS  
R1       13.    √O2,H2 MANF VLV TK1,TK2 (four) – OP  
                 TK2 HTRS B (two) – AUTO  
         14.    BFS G51  
                 AA1 – desel  
         When BUS LOSS ACTION complete:  
         15.    Go to LOSS OF FES/1 FC (PWRDN),  
                 10-39

**AC2/  
MNB**

**MNA FPC1**

Go to AC1 (2 or 3Φs)

**MNA FLC1**

GNC 23 RCS

RCS FWD MANF VLVS 1 OVRD – ITEM 40  
EXEC (CL)

**MNA MPC1**

- L1       TOP EVAP HTR DUCT sel – B  
         HI LOAD DUCT HTR sel – B



## AC2 (2 or 3Φs)

**WARNING**  
FC2 will be lost within 9 min

- ⇒ C3      1.    MSTR MADS PWR – OFF  
          If no MNB bus short:  
          2.    Perform BUS TIE (Cue Card), then:  
          If no MNB bus tie:  
          3.    Go to MNB DA2 >>  
          If MNB bus tie performed:  
R2            4.    BLR CNTLR/HTR 1 – B  
L1            5.    Perform FC2 SHUTDN (Cue Card), then:  
          6.    HUM SEP A – ON  
                    B – OFF  
                    IMU FAN A – ON  
                    B – OFF  
                    AV BAY 1 FAN A – ON  
                            B – OFF  
                            2 FAN A – OFF  
                                    B – ON  
                    FREON PUMP LOOP 1 – A  
O17:C        7.    SIG CONDR FREON A – AC3

### AC2 ΦA

- ⇒ R2      1.    BLR CNTLR/HTR 1 – B  
L1      2.    FREON PUMP LOOP 1 – A

### AC2 ΦB

- ⇒ O17:C    1.    SIG CONDR FREON A – AC3  
L1      2.    FREON PUMP LOOP 1 – A

### AC2 ΦC

- ⇒ L1      FREON PUMP LOOP 1 – A

**MNB DA2** (Entire Bus) (Includes AC2)

**CAUTION**  
Do not sw S-BD PM CNTL to PNL  
if subs Fault Msg – 'BCE STRG 3  
NSP' or loss of comm

- ⇒ R2     ♦ 1.    MPS PRPLT DUMP B/U LH2 VLV – OP  
                 2.    BLR CNTLR/HTR 1 – B  
C3            3.    MSTR MADS PWR – OFF  
R1            4.    AC BUS SNSR 2 – OFF  
                 5.    Perform FC2 SHUTDN (Cue Card), then:  
L1            6.    HUM SEP A – ON  
                              B – OFF  
                              IMU FAN A – ON  
                              B – OFF  
                              AV BAY 1 FAN A – ON  
  B – OFF  
  2 FAN A – OFF  
  B – ON  
                              FREON PUMP LOOP 1 – A  
                              TOP EVAP HTR NOZ R – B AUTO  
O6            7.    ANNUN BUS SEL ACA 2/3 – MNC  
O17:C        8.    SIG CONDR FREON A – AC3  
R1            9.    √O<sub>2</sub>,H<sub>2</sub> MANF VLV TK1,TK2 (four) – OP  
  TK1 HTRS B (two) – AUTO  
                 10.    BFS G51  
  AA2, RGA 2 – desel  
When BUS LOSS ACTION complete:  
                 11.    Go to LOSS OF FES/1 FC (PWRDN),  
  10-39

## MNB FPC2

**CAUTION**  
Do not sw S-BD PM CNTL to PNL  
if subs Fault Msg – ‘BCE STRG 3  
NSP’ or loss of comm

Go to AC2 (2 or 3Φs)

## MNB FLC2

**CAUTION**  
Do not sw S-BD PM CNTL to PNL  
if subs Fault Msg – ‘BCE STRG 3  
NSP’ or loss of comm

**GNC 23 RCS**  
RCS FWD MANF VLVS 2 OVRD – ITEM 41  
EXEC (CL)

**AC3/  
MNC**

## MNB APC5

- ⇒ R2     ♦ 1.    MPS PRPLT DUMP B/U LH2 VLV – OP  
                 2.    BLR CNTLR/HTR 1 – B  
L1           3.    TOP EVAP HTR NOZ R – B AUTO  
                 4.    **BFS G51**  
                 RGA 2 – desel

## MNB ALC2

- ⇒ R2     ♦ 1.    MPS PRPLT DUMP B/U LH2 VLV – OP  
                 2.    BLR CNTLR/HTR 1 – B  
L1           3.    TOP EVAP HTR NOZ R – B AUTO

## MNB O15

- O6           1.    ANNUN BUS SEL ACA 2/3 – MNC  
F6,F8       2.    RDR ALTM – 1  
                 3.    HSI SEL SOURCE – not MLS 2  
                 4.    **BFS G51**  
                 AA2 – desel

**AC3 (2 or 3Φs)**

**WARNING**  
FC3 will be lost within 9 min

**AC3/  
MNC**

- ⇒ C3      1.    MSTR MADS PWR – OFF  
          If no MNC bus short:  
          2.    Perform BUS TIE (Cue Card), then:  
          If no MNC bus tie:  
          3.    Go to MNC DA3 >>  
          If MNC bus tie performed:  
R2      4.    BLR CNTLR/HTR 2 – B  
L1      5.    Perform FC3 SHUTDN (Cue Card), then:  
          6.    CAB FAN B – ON  
                  A – OFF  
          7.    √AV BAY 3 FAN B – ON  
          8.    H2O PUMP LOOP 1 – ON  
                  2 – OFF  
O17:C    9.    SIG CONDR FREON B – AC2

**AC3 ΦA**

- ⇒ R2      1.    BLR CNTLR/HTR 2 – B  
L1      2.    H2O PUMP LOOP 1 – ON  
                  2 – OFF

**AC3 ΦB**

- ⇒ L1      1.    H2O PUMP LOOP 1 – ON  
                  2 – OFF  
O17:C    2.    SIG CONDR FREON B – AC2

**AC3 ΦC**

- ⇒ L1      H2O PUMP LOOP 1 – ON  
                  2 – OFF

**MNC DA3** (Entire Bus) (Includes AC3)

NOTE  
PS AUDIO lost

- |                |     |  |
|----------------|-----|--|
| L1             | 1.  | FLASH EVAP CNTLR PRI A – OFF<br>B – ON                                   |
| ⇒ R2           | 2.  | BLR CNTLR/HTR 2 – B  |
| C3             | 3.  | MSTR MADS PWR – OFF<br>√AUD CTR – 1                                      |
| R1             | 4.  | AC BUS SNSR 3 – OFF  |
|                | 5.  | Perform <u>FC3 SHUTDN</u> (Cue Card), then:                              |
| L1             | 6.  | CAB FAN B – ON<br>A – OFF  |
|                | 7.  | H2O PUMP LOOP 1 – ON<br>2 – OFF<br>√AV BAY 2 FAN A – ON<br>√3 FAN B – ON |
| O17:C          | 8.  | SIG CONDR FREON B – AC2  |
|                | 9.  | <u>XXXXXX MNVR YYYY</u><br>R OMS – sel SEC GMBL                          |
| C3             | 10. | S-BD PM CNTL – PNL,CMD   |
|                | 11. | <u>BFS, GNC 51 OVERRIDE</u><br>TDRS – ITEM 46 EXEC (*)                   |
| R1             | 12. | √O2,H2 MANF VLV TK1,TK2 (four) – OP<br>TK3 HTRS A,B (four) – AUTO        |
| <u>OMS/MPS</u> | 13. | Use He PRESS for L,R OMS Qty est   |
|                | 14. | <u>BFS, GNC 51 OVERRIDE</u><br>RGA 3 – desel                             |
- When BUS LOSS ACTION complete:
15. Go to LOSS OF FES/1 FC (PWRDN), 10-39

**CNTL**

CNTL

### MNC FPC3

- C3
1. S-BD PM CNTL – PNL,CMD
  2. BFS, GNC 51 OVERRIDE  
TDRS – ITEM 46 EXEC (\*)
  3. Go to AC3 (2 or 3Φs)

### MNC FLC3

- C3
1. S-BD PM CNTL – PNL,CMD
  2. BFS, GNC 51 OVERRIDE  
TDRS – ITEM 46 EXEC (\*)
  3. GNC 23 RCS  
RCS FWD MANF VLVS 4 OVRD – ITEM  
43 EXEC (CL)

### MNC MPC3

BFS, GNC 51 OVERRIDE  
RGA 3 – desel

### MNC APC6

- ⇒ R2
- L1
1. BLR CNTLR/HTR 2 – B
  2. FLASH EVAP CNTLR PRI A – OFF  
B – ON
  3. XXXXX MNVR YYYYY  
R OMS – sel SEC GMBL

### MNC APC3

XXXXX MNVR YYYYY  
R OMS – sel SEC GMBL

### MNC ALC3

- ⇒ R2
- L1
1. BLR CNTLR/HTR 2 – B
  2. FLASH EVAP CNTLR PRI A – OFF  
B – ON

### MNC O16

- OMS/MPS
- F6,F8
1. Use He PRESS for L,R OMS Qty est
  2. HSI SEL SOURCE – not MLS 3

### MNC R14

NOTE  
PS AUDIO lost

- C3
- √AUD CTR – 1





### CNTL BC1

⇒

<b>CAUTION</b> Do not sw S-BD PM CNTL to PNL if subs Fault Msg – ‘BCE STRG 3 NSP’ or loss of comm
--

- L1 1. TOP EVAP HTR NOZ L – B AUTO
- 2. BFS, GNC 51 OVERRIDE  
RGA 2 – desel
- R1 3. √O<sub>2</sub>,H<sub>2</sub> MANF VLV TK1,TK2 (four) – OP

### CNTL BC2

- C3 1. S-BD PM CNTL – PNL,CMD
- 2. BFS, GNC 51 OVERRIDE  
TDRS – ITEM 46 EXEC (\*)
- 3. GNC 23 RCS  
RCS FWD MANF VLVS 2 OVRD – ITEM  
41 EXEC (CL)
- ⇒ R1 4. √O<sub>2</sub>,H<sub>2</sub> MANF VLV TK1,TK2 (four) – OP  
TK2 HTRS B (two) – AUTO
- If AOA:
- L1 5. NH3 CNTLR B – OFF  
A – PRI/GPC

### CNTL BC3

- ⇒ R2 1. BLR CNTLR/HTR 1,2 (two) – B
- L1 2. TOP EVAP HTR NOZ R – B AUTO
- Do not perform next step if BC1,2,3 unpwr:
- 3. GNC 51 OVERRIDE  
RCS RM MANF CL OVRD – ITEM 41  
EXEC



**ESS 1BC DA1 (Entire Bus)**

NOTE

Pri C/W Sys and Matrix lost  
(B/U C/W Tone remains). GPC 1,4  
lost if pwr cycled OFF or ON

- ⇒ O5      1. L AUD CNTL sel – R (CDR can't talk)  
2. Perform FC1 SHUTDOWN (Cue Card), then:  
If add'l ltg reqd:  
C3      3. EMER LTG – ON/OFF  
R1      4. √O2,H2 MANF VLV TK2 (two) – OP  
TK1 HTRS B (two) – AUTO  
TK2 HTRS A,B (four) – OFF

**ESS 1BC MPC1**

Go to FC1 SHUTDOWN (Cue Card)

**ESS 1BC FD**

NOTE

GPC 1,4 lost if pwr cycled OFF or ON

Go to FC1 SHUTDOWN (Cue Card)

**ESS 1BC O13&R14**

NOTE

Pri C/W Sys and Matrix lost  
(B/U C/W Tone remains)

**ESS**

- ⇒ O5      1. L AUD CNTL sel – R (CDR can't talk)  
If add'l ltg reqd:  
C3      2. EMER LTG – ON/OFF  
R1      3. √O2,H2 MANF VLV TK1,TK2 (four) – OP  
TK1 HTRS B (two) – AUTO  
TK2 HTRS A,B (four) – OFF

**ESS 2CA DA2 (Entire Bus)**

NOTE

C/W B PWR SPLY lost (Pri C/W remains). FAULT SUMM MSGs must be reset to avoid C/W Tone masking. GPC 2,5 lost if pwr cycled OFF or ON

- C3  
O9  
⇒
1. AUD CTR – 2
  2. R AUD CNTL sel – L (PLT can't talk)
  3. Perform FC2 SHUTDN (Cue Card), then:  
If add'l Itg reqd:
- C3  
R1
4. EMER LTG – ON/OFF
  5. √O<sub>2</sub>,H<sub>2</sub> MANF VLV TK1 (two) – OP  
TK1 HTRS A,B (four) – OFF  
TK2 HTRS B (two) – AUTO

**ESS 2CA MPC2**

Go to FC2 SHUTDN (Cue Card)

**ESS 2CA FD**

NOTE

GPC 2,5 lost if pwr cycled OFF or ON

Go to FC2 SHUTDN (Cue Card)

**ESS 2CA O13&R14**

NOTE

C/W B PWR SPLY lost (Pri C/W remains). FAULT SUMM MSG must be reset to avoid C/W Tone masking

- C3  
O9  
⇒
1. AUD CTR – 2
  2. R AUD CNTL sel – L (PLT can't talk)
- C3  
R1
3. EMER LTG – ON/OFF
  4. √O<sub>2</sub>,H<sub>2</sub> MANF VLV TK1,TK2 (four) – OP  
TK1 HTRS A,B (four) – OFF  
TK2 HTRS B (two) – AUTO

**ESS 3AB DA3 (Entire Bus)**

NOTE

BFS engage capability lost.  
Computer Status Matrix lost. GPC 3  
lost if pwr cycled OFF or ON

- ⇒ R1            1. √O<sub>2</sub>,H<sub>2</sub> MANF VLV TK<sub>1,2</sub> (four) – OP  
                  2. Perform FC3 SHUTDN (Cue Card), then:  
O6              3. GPC OUTPUT 5 – TERM

**ESS 3AB MPC3**

Go to FC3 SHUTDN (Cue Card)

**ESS 3AB FD**

NOTE

GPC 3 lost if pwr cycled OFF or  
ON. BFS engage capability lost

Go to FC3 SHUTDN (Cue Card)

**ESS 3AB O13**

NOTE

Computer Status Matrix lost

**ESS 3AB ML86B**

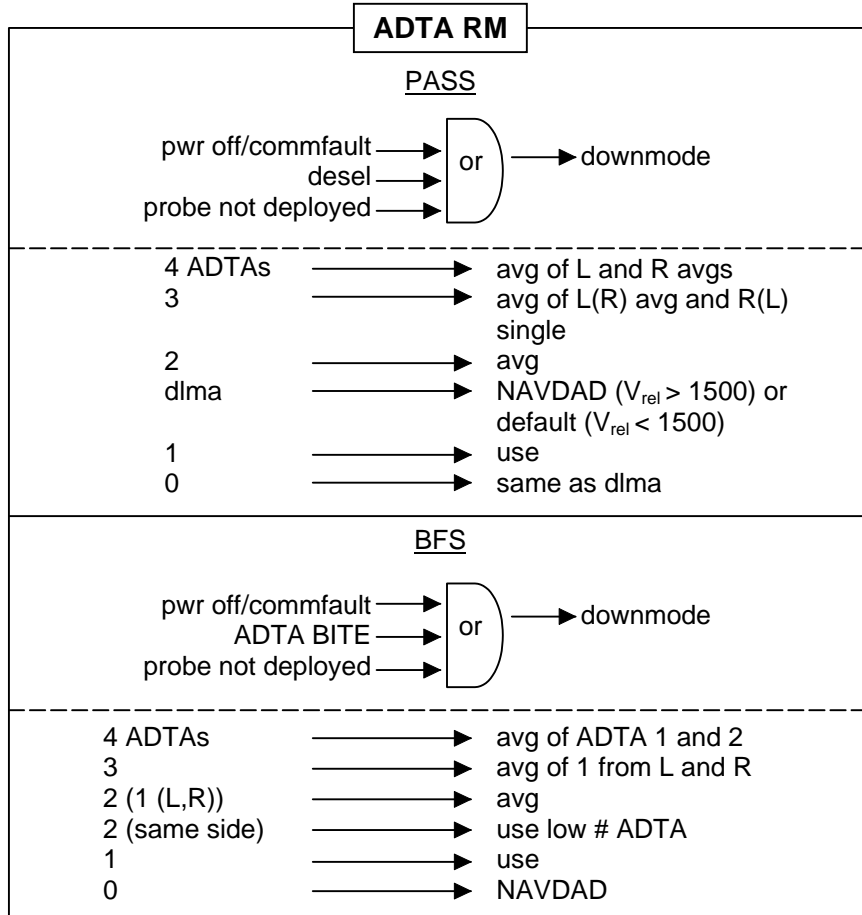
- R1            √O<sub>2</sub>,H<sub>2</sub> MANF VLV TK<sub>1,2</sub> (four) – OP

**GUIDANCE, NAVIGATION, AND  
CONTROL**

**GNC**

## DISPLAY SW L(R)

1. L(R) disp sws – green dot



GNC

### NOTE

When BFS engaged, if failed ADTA candidate for selection, pull ADTA cb, or stow applicable probe



**RM FAIL IMU, RGA, AA**

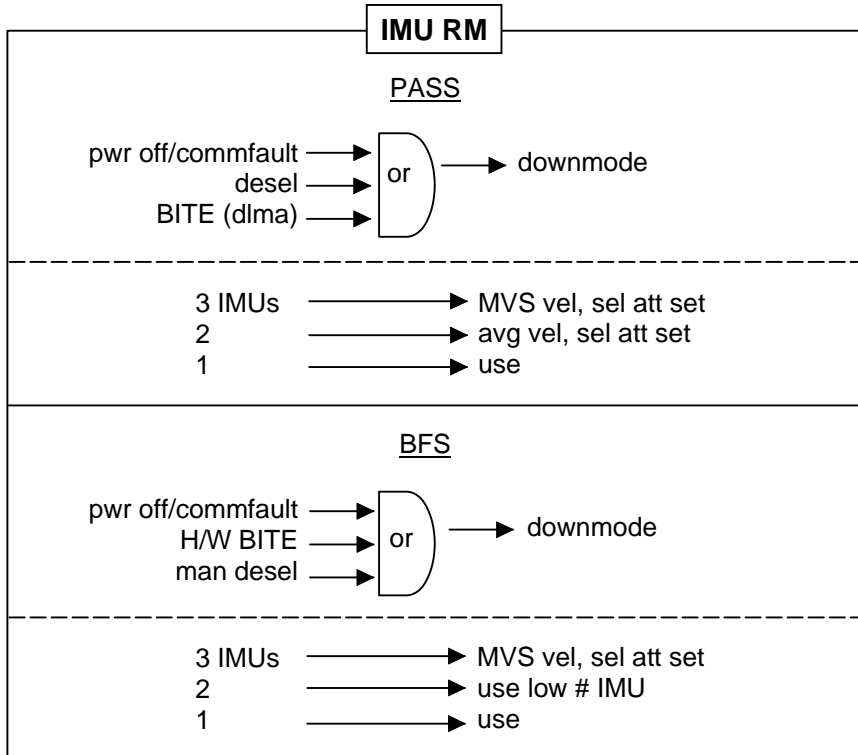
**BFS, GNC 51 OVERRIDE**

Aff LRU – desel

**RM DLMA IMU**

**GNC 51 OVERRIDE**  
**BFS, GNC 51 OVERRIDE**

1. √MCC, bad IMU – desel (PASS and BFS) >>
2. If no MCC: Desel lower # IMU with '?' (PASS)

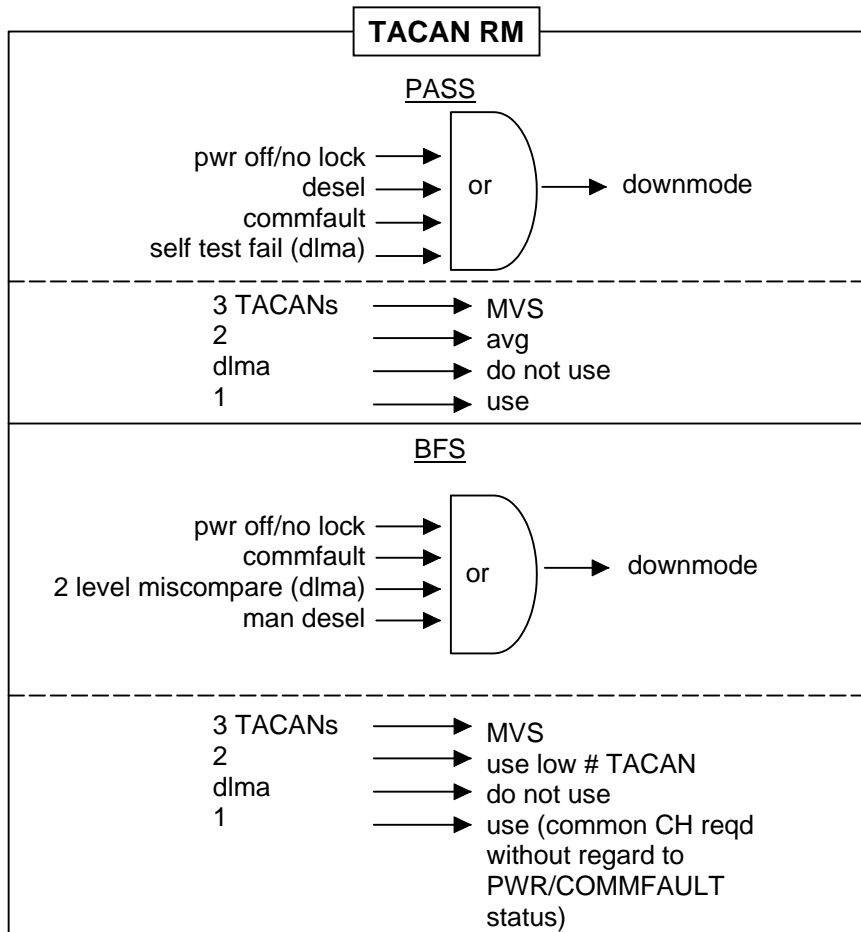


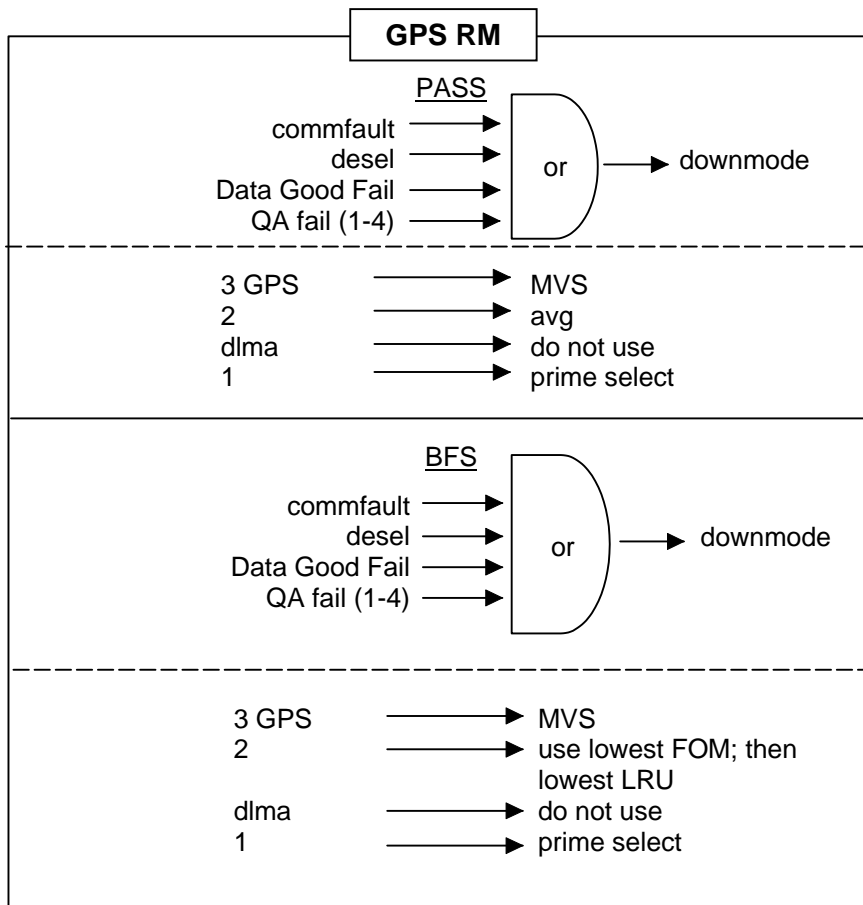
APCL/ALL/GEN N

**DISPLAY SW L(R)**

6-3

**RM FAIL IMU, RGA, AA**  
**RM DLMA IMU**





APCL/ALL/GEN N

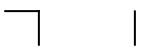
**TACAN RM**

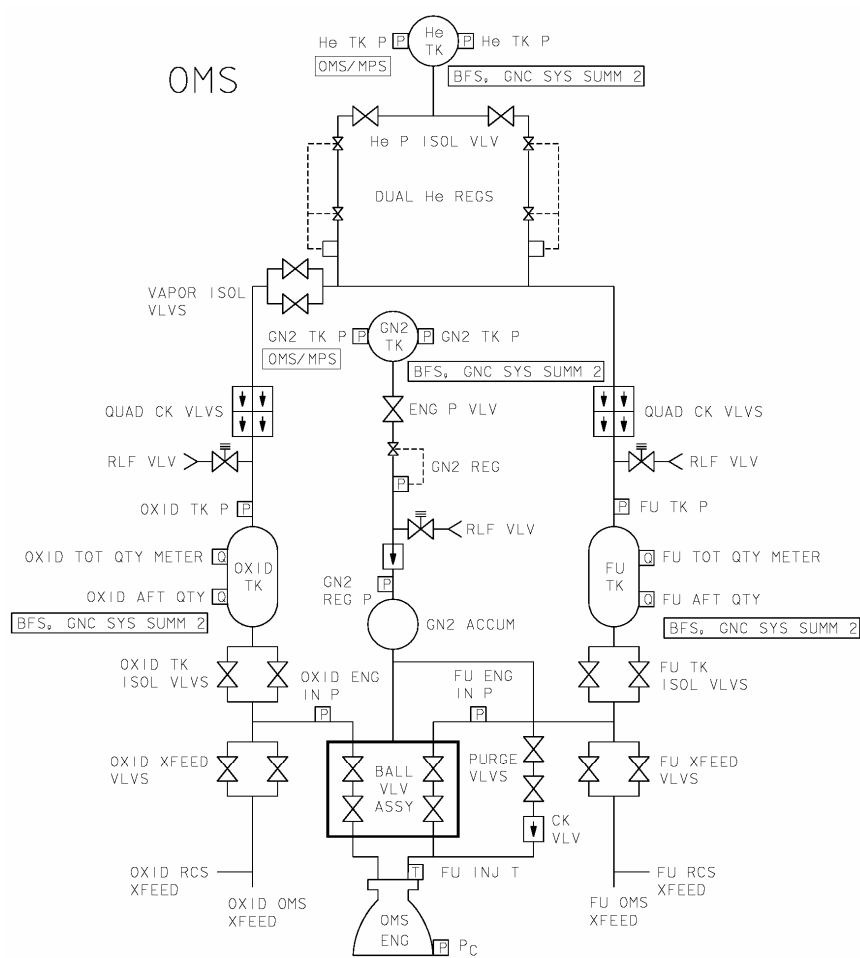
6-5

**GPS RM**



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DATE 06/17/98

48033A701, SCH 1

OMS

**OMS N2 TK P LOW**

**BFS, GNC SYS SUMM 2**

- 1.  $\sqrt{N2}$  TK P < 1200 or decr (OMS/MPS) and SPEC)
- If preburn:
  - 2. (Aff) OMS ENG – ARM
  - 3. If OMS N2 REG P decr: (Aff) OMS ENG – OFF
  - 4.  $\sqrt{MCC}$  for use of OMS ENG

**OMS N2 REG P LOW**

**BFS, GNC SYS SUMM 2**

- 1.  $\sqrt{N2}$  TK P decr (OMS/MPS) and SPEC)
- If preburn:
  - 2. (Aff) OMS ENG – OFF
  - 3.  $\sqrt{MCC}$  for use of OMS ENG

NOTE

N2 REG P > 299 allows one OMS ENG start

**OMS N2 REG P HIGH**

**BFS, GNC SYS SUMM 2**

- 1.  $\sqrt{N2}$  TK P decr (OMS/MPS) and SPEC)
- 2. (Aff) OMS ENG – ARM

**OMS TK P (FU and OX) HIGH**

**BFS, GNC SYS SUMM 2**

(Aff) OMS He PRESS/VAP ISOL (two) – CL, then cycle to maintain TK P 234-288

**OMS TK P (FU or OX) LOW**

**BFS, GNC SYS SUMM 2**

- If sys not secured and corresp ENG IN P disagrees:
  - 1. When time permits: Go to MAL, OMS, L(R) OMS TK P, 11.1a 29 >>

⇒ If OMS 1 reqd:

NOTE

Do not open OMS XFDs for OMS-1

- 2. At TIG-2: (aff) He PRESS (two) – OP  
OMS ENG (two) – ARM/PRESS
- If FU IN P < 216 or OX < 151 prior to ign:
  - 3. Go to OMS SECURE >>
- 4. At TIG-15 sec: RCS +X to TIG+1 sec
- 5. Post Burn: Continue with step 6

OMS

Cont next page

If pre-OMS 2:

6. Perform OMS SECURE, then:

If corresp ENG IN P decr (OMS inlet line leak):

7. OMS 2 burn single ENG, good Pod

8. ENG cut off when  $\geq$  MIN Hp >>

If OMS TK P decr (prop tk leak), dump ASAP:

9. LOAD  $\Delta$ VY =  $\boxed{-600}$ , TIG in ~4 min

10.  $\sqrt$ ENG/TRIM CONFIG, LOAD TGTS, MNVR

11. (Good) OMS ENG – OFF

12. (Aff) OMS ENG – ARM/PRESS

At TIG-2:

13. FLT CNTLR PWR (two) – ON

14. (Aff) OMS He PRESS/VAP ISOL (two) – OP  
TK ISOL (two) – OP (tb-OP)

If FU IN P < 216 or OX IN P < 151 prior to ign:

15. Go to OMS SECURE >>

At TIG-15 sec:

16. RCS +X to TIG+1 sec

17. Burn to depletion (OMS  $\downarrow$ )

Postburn:

18. (Aff) OMS ENG – OFF

19. FLT CNTLR PWR (two) – OFF

20. Perform OMS SECURE, then:

21. Cut off OMS 2 when  $\geq$  MIN Hp >>

If post-OMS 2:

22. Perform OMS SECURE, then:

If OMS ENG IN P decr (OMS inlet line leak):

23.  $\sqrt$ MCC

If OMS TK P decr (prop tk leak):

24. Go to LEAKING OMS PRPLT/He BURN  
(ORB PKT, OMS)

APCL/ALL/GEN N

**OMS N2 TK/REG P**  
**OMS TK P HIGH/LOW**

7-3

**OMS He TK P LOW**

**BFS, GNC SYS SUMM 2**

1.  $\sqrt{\text{He TK P}} < 1500$  or decr (OMS/MPS) and SPEC)

⇒ OMS-1 reqd	Blowdown Dump complete or He Tk P < 640	2. OMS ENG (two) – ARM/PRESS 3. XFEED from (good) OMS
	Blowdown Dump not complete	4. XFEED from (leaking) OMS 5. Delta to OMS He TK P LOW (Cue Card, OMS 1 BURN MONITOR): Replace existing text with “When He TK P < 640 or QTY ≤ 5%, XFEED from (good) OMS”
Blowdown Dump not complete and He Tk P > 640		6. XFEED from (leaking) OMS
Good comm		7. $\sqrt{\text{MCC}}$ for TGTS 8. $\sqrt{\text{ENG/TRIM CONFIG, LOAD TGTS, MNVR}}$
Early In-plane Burn		9. OMS ENG (two) – ARM/PRESS When He TK P < 640: 10. OMS ENG (two) – OFF
OMS 2 Burn		11. Delta to OMS He TK P LOW (Cue Card, OMS 2 BURN MONITOR): Delete “or QTY ≤ 41” >>
No comm or OOP Burn		12. LOAD $\Delta\text{VY} = -500$ , TIG in ~4 min 13. $\sqrt{\text{ENG/TRIM CONFIG, LOAD TGTS, MNVR}}$ 14. OMS ENG (two) – ARM/PRESS When He TK P < 640 or QTY < 41%: 15. OMS ENG (two) – OFF
Blowdown Dump complete or He Tk P < 640 (OMS 2 Config)		16. (Leaking) OMS TK ISOL (two) – CL 17. (Good) OMS TK ISOL (two) – OP 18. L,R OMS XFEED (four) – OP If no comm: 19. Cut off OMS 2 when $\geq \text{MIN Hp}$



**XFEED: L OMS PRPLT to R OMS ENG**

1. √L OMS TK ISOL (two) – OP (tb-OP)
2. R OMS TK ISOL (two) – CL (tb-CL)
3. L,R OMS XFEED (four) – OP (tb-OP)

**XFEED: R OMS PRPLT to L OMS ENG**

1. √R OMS TK ISOL (two) – OP (tb-OP)
2. L OMS TK ISOL (two) – CL (tb-CL)
3. L,R OMS XFEED (four) – OP (tb-OP)

**XFEED RETURN: OMS to OMS (N/A during I'CNCT)**

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

**OMS SECURE**

(Aff) OMS ENG – OFF  
XFEED (two) – CL (tb-CL)  
TK ISOL (two) – CL (tb-CL)  
He PRESS/VAP ISOL (two) – CL

**L(R) OMS GIMBAL**

GNC XXXXX MNVR EXEC

If first failure:

1. Aff gimbal – sel SEC GMBL (twice) >>

If second failure:

2. Go to OMS GMBL, appropriate BURN MONITOR (Cue Card)

**SM0 THRM PRPLT**

BFS, SM 0 THERMAL

AFF TEMP		STATUS	ACTION
H T R	PRPLT POD L(R)	↑	A14 √(Aff) RCS/OMS HTR POD – OFF >>
		↓, H, L, M	No action >>
T E M P	PRPLT OMS CRSFD	↑	A14 RCS/OMS HTR OMS CRSFD LN – B OFF >>
		↓, H, L, M	No action >>

**OI-30 |**

APCL/ALL/GEN N,5

**OMS He TK P LOW  
OMS XFEEDS**

A7-5

**OMS SECURE/GIMBAL  
SM0 THRM PRPLT**

## DEORBIT MIXED XFD BURN PREP

### NOTE

Do not use MSTR RCS XFEED sw

1. L,R OMS TK ISOL (four) – CL (tb-CL)  
     XFEED (four) – CL (tb-CL)  
     He ISOL (four) – CL
2. AFT L,R RCS XFEED (four) – CL (tb-CL)  
    √MSTR RCS XFEED – OFF
3. Set up GPC vlvs **SPEC 0** **GPC MEMORY**  
    √HEX 27\*

BIT RST – ITEM 23 EXEC  
 Config ADD ID/DESIRED Addresses

ADD ID	DESIRED
28 03 D A F	29
30 03 E 3 5	31
32 03 E A 7	33
34 03 F 0 5	35

} From  
Tables 1-8

4. WRITE – ITEM 25 EXEC  
    BIT SET – ITEM 22 EXEC

ADD ID	DESIRED
28 03 D B 3	29
30 03 E 3 9	31
32 03 E A B	33
34 03 F 0 9	35

} From  
Tables 1-8

5. WRITE – ITEM 25 EXEC  
    Perform RECONFIG:  
       L,R OMS TK ISOL (four) – GPC  
       XFEED (four) – GPC  
       (verify tb config from table)  
       OMS BURN will be SE or +XRCS  
       (ck tables for ENG)
6. During AOS: confirm vlv config w/MCC
7. Perform POST OMS 1 BURN PROCEDURES (ASC, POST OMS 1)  
    EXCEPT:  
       DO NOT RECONFIG OMS VLVS  
       For deorbit burn:  
         TGT AOA  
         PRPLT = 0 (ITEM 18 +0)  
       Use AOA DEORBIT MIXED XFD BURN, 7-7, for  
       DEORBIT BURN

# OI-30

**XFEED: L OMS PRPLT to R OMS ENG**

1. √L OMS TK ISOL (two) – OP (tb-OP)
2. R OMS TK ISOL (two) – CL (tb-CL)
3. L,R OMS XFEED (four) – OP (tb-OP)

**XFEED: R OMS PRPLT to L OMS ENG**

1. √R OMS TK ISOL (two) – OP (tb-OP)
2. L OMS TK ISOL (two) – CL (tb-CL)
3. L,R OMS XFEED (four) – OP (tb-OP)

**XFEED RETURN: OMS to OMS (N/A during I'CNCT)**

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

**OMS SECURE**

(Aff) OMS ENG – OFF  
XFEED (two) – CL (tb-CL)  
TK ISOL (two) – CL (tb-CL)  
He PRESS/VAP ISOL (two) – CL

**L(R) OMS GIMBAL**

GNC XXXXX MNVR EXEC

If first failure:

1. Aff gimbal – sel SEC GMBL (twice) >>

If second failure:

2. Go to OMS GMBL, appropriate BURN MONITOR (Cue Card)

**SMO THRM PRPLT**

BFS, SM 0 THERMAL

AFF TEMP		STATUS	ACTION
H T R	PRPLT POD L(R)	↑	A14 √(Aff) RCS/OMS HTR POD – OFF >>
		↓, H, L, M	No action >>
T E M P	PRPLT OMS CRSFD	↑	A14 RCS/OMS HTR OMS CRSFD LN – B OFF >>
		↓, H, L, M	No action >>

**OI-32 |**

APCL/ALL/GEN N,5

**OMS He TK P LOW  
OMS XFEEDS**

B7-5

**OMS SECURE/GIMBAL  
SMO THRM PRPLT**

## DEORBIT MIXED XFD BURN PREP

### NOTE

Do not use MSTR RCS XFEED sw

1. L,R OMS TK ISOL (four) – CL (tb-CL)  
     XFEED (four) – CL (tb-CL)  
     He ISOL (four) – CL
2. AFT L,R RCS XFEED (four) – CL (tb-CL)  
    √MSTR RCS XFEED – OFF
3. Set up GPC vlvs **SPEC 0** **GPC MEMORY**  
    √HEX 27\*

BIT RST – ITEM 23 EXEC  
 Config ADD ID/DESIRED Addresses

ADD ID	DESIRED
28 03 D 8 3	29
30 03 E 0 9	31
32 03 E D 9	33
34 03 E 7 B	35

} From  
Tables 1-8

4. WRITE – ITEM 25 EXEC  
    BIT SET – ITEM 22 EXEC

ADD ID	DESIRED
28 03 D 8 7	29
30 03 E 0 D	31
32 03 E D D	33
34 03 E 7 F	35

} From  
Tables 1-8

5. WRITE – ITEM 25 EXEC  
    Perform RECONFIG:  
       L,R OMS TK ISOL (four) – GPC  
       XFEED (four) – GPC  
       (verify tb config from table)  
       OMS BURN will be SE or +XRCS  
       (ck tables for ENG)
6. During AOS: confirm vlv config w/MCC
7. Perform POST OMS 1 BURN PROCEDURES (ASC, POST OMS 1)  
    EXCEPT:  
       DO NOT RECONFIG OMS VLVS  
       For deorbit burn:  
         TGT AOA  
         PRPLT = 0 (ITEM 18 +0)  
       Use AOA DEORBIT MIXED XFD BURN, 7-7, for  
       DEORBIT BURN

# OI-32

**AOA DEORBIT MIXED XFD BURN**

- √MM302      √OMS L(R) or RCS
- Enter TGO + 10 sec
- √L,R OMS TK ISOL (four) – GPC
- √XFEED (four) – GPC
- Verify tb config from table
- √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: P +0.4, LY +5.2, RY -5.2
- TIG-2      (Good) OMS ENG – ARM/PRESS
- :15 EXEC
- :15 If OMS AFT QTY < 11%, THC +X to OMS IGN + 1 sec
- :00 TIG      Start watch (check Pc, ΔVTOT, ENG VLVs)

If RCS BURN INITIATION:

- Man Repress L,R OMS > L,R RCS TK Ps
- L,R RCS XFEED (four) – OP
- TK ISOL (six) – CL
- TIG- :00 THC +X
- Maintain PITCH ATT ERR ± 3°

**OMS PRPLT LOW**

AFT RCS RECONFIG at ΔVTOT = 

--	--	--

RCS COMPLETION

APCL/ALL/GEN N

**D/O MXD BURN PREP**  
**OMS UPHILL MXD XFD (7-10) 7-7**

**AOA D/O MXD BURN**  
**TABLES 1-8 (7-12)**

* <b>OMS PRPLT FAIL:</b>	*
* OMS ENG – OFF	*
* ITEM 18 +0 EXEC	*
* Secure L,R OMS	*
* √ADI – LVLH, center needles	*
* RCS COMPLETION	*
* <b>OMS ENG FAIL:</b>	*
* OMS ENG – OFF	*
* Man Repress L,R OMS > L,R RCS TK Ps	*
* L,R RCS XFEED (four) – OP	*
* TK ISOL (six) – CL	*
* √ADI – LVLH, center needles	*
* THC +X	*
* (check lowest OMS % vs RCS Burn Time)	*
* AFT RCS RECONFIG	*
* RCS COMPLETION	*
* <b>RCS +X JET FAIL OFF:</b>	*
* ITEM 18 +0 EXEC	*
* <span style="border: 1px solid black; padding: 0 2px;">G23</span> resel jet	*

\* **RCS COMPLETION:** \*

\* If DIRECT INSERTION: \*

\* THC +X to  $\Delta VTOT = 0$  or TOT AFT QTY 1    % \*

\* At AFT QTY 1 if CUR  $\Delta VTOT$ :   
 \* THC +X to FLIP  $\Delta V$  or   
 \* TOT AFT QTY 2   % then   
 \* FRCS COMPLETION \*

\* FLIP    -----   
 \*  $\Delta V$  FRCS COMPLETION \*

\* AFT    -----   
 \*  $\Delta V$  THC +X to TGT  $\Delta V$  \*

\* TGT    -----   
 \*  $\Delta V$  \*

\* If w/OMS 1: \*

\* THC +X to TGT HP or TOT AFT QTY 1    % \*

\* At AFT QTY 1 if CUR HP:   
 \* THC +X to FLIP HP or   
 \* TOT AFT QTY 2   % then   
 \* FRCS COMPLETION \*

\* FLIP    -----   
 \* HP FRCS COMPLETION \*

\* AFT    -----   
 \* HP THC +X to TGT HP \*

\* TGT    -----   
 \* HP \*

\* **FRCS COMPLETION:** \*

\* MNVR to -X Att (pitch up at 3°/sec to VGOz = +1/4  $\Delta VTOT$ )   
 \* THC -X to  $\Delta VTOT = 0$  or FRCS depletion (JETS FAIL OFF) \*

CUTOFF VGOx = 0, RELEASE THC   
 + :02 OMS ENG(s) – OFF (If < 3 IMU, at  :   )   
 \* AFT RCS RECONFIG if I'CNCT \*   
 TRIM X,Z residuals < 2 fps (< 0.5 fps if shallow)

## OMS-1/OMS-2 UPHILL MIXED XFD

### NOTE

Do not use MSTR RCS XFEED sw

1. If OMS-1: Perform AOA-S (ASC, OMS TGTS), then:
2. L,R OMS TK ISOL (four) – CL (tb-CL)  
XFEED (four) – CL (tb-CL)
3. AFT L,R RCS XFEED (four) – CL (tb-CL)  
√MSTR RCS XFEED – OFF
4. Set up GPC vlvs SPEC 0  
√HEX 27\*  
BIT RST – ITEM 23 EXEC  
Config ADD ID/DESIRED Addresses

	ADD ID	DESIRED	
28	0 3 D A F	29	} From Tables 1-8
30	0 3 E 3 5	31	
32	0 3 E A 7	33	
34	0 3 F 0 5	35	

5. WRITE – ITEM 25 EXEC  
BIT SET – ITEM 22 EXEC

	ADD ID	DESIRED	
28	0 3 D B 3	29	} From Tables 1-8
30	0 3 E 3 9	31	
32	0 3 E A B	33	
34	0 3 F 0 9	35	

6. WRITE – ITEM 25 EXEC  
Perform RECONFIG:  
L,R OMS TK ISOL (four) – GPC  
XFEED (four) – GPC  
(verify tb config from table)  
BURN will be SE or +XRCS (ck tables for ENG)
7. During AOS: confirm vlv config, TGT w/MCC

Cont next page

A7-10

# OI-30 |

APCL/OI-30/GEN N,5





**OMS-1/OMS-2 UPHILL MIXED XFD**

NOTE

Do not use MSTR RCS XFEED sw

1. If OMS-1: Perform AOA-S (ASC, OMS TGTS), then:
2. L,R OMS TK ISOL (four) – CL (tb-CL)  
XFEED (four) – CL (tb-CL)
3. AFT L,R RCS XFEED (four) – CL (tb-CL)  
√MSTR RCS XFEED – OFF
4. Set up GPC vlvs SPEC 0  
√HEX 27\*  
BIT RST – ITEM 23 EXEC  
Config ADD ID/DESIRED Addresses

ADD ID	DESIRED
28 03 D 8 3	29
30 03 E 0 9	31
32 03 E D 9	33
34 03 E 7 B	35

} From  
Tables 1-8

5. WRITE – ITEM 25 EXEC  
BIT SET – ITEM 22 EXEC

ADD ID	DESIRED
28 03 D 8 7	29
30 03 E 0 D	31
32 03 E D D	33
34 03 E 7 F	35

} From  
Tables 1-8

6. WRITE – ITEM 25 EXEC  
Perform RECONFIG:  
L,R OMS TK ISOL (four) – GPC  
XFEED (four) – GPC  
(verify tb config from table)  
BURN will be SE or +XRCS (ck tables for ENG)
7. During AOS: confirm vlv config, TGT w/MCC

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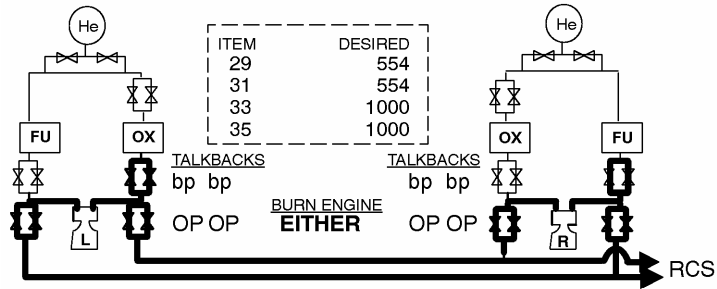
B7-10

**OI-32**

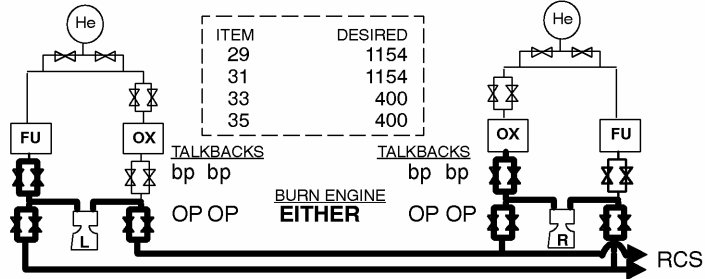
APCL/OI-32/GEN N,5

8. If OMS ENG burn:  
 OMS L or R  
 TRIM: P +0.0, LY +5.2, RY -5.2  
 L(R) OMS ENG – ARM/PRESS (other OMS ENG – OFF)  
 TIG -:15 EXEC  
 Man Repress from L and R OMS He TKs (240 < TK P < 250)
- If +XRCS burn:  
 ✓(Good) OMS TK P > RCS TK P  
 OMS ENG – OFF  
 L,R RCS XFEED (four) – OP  
 TK ISOL (six) – CL  
 THC +X (check OMS % vs RCS burn time)  
 Man Repress from L and R OMS He TKs (240 < TK P < 250)
9. POST BURN, OMS He VAP ISOL (four) – CL
10. If OMS-1: Perform POST OMS 1 BURN PROCEDURES  
 (ASC, POST OMS 1) EXCEPT:  
 DO NOT RECONFIG OMS VLVs  
 For OMS-2 TGTS, PRPLT = 0 (ITEM 18 +0)  
 Use AOA DEORBIT MIXED XFD BURN (for OMS-2 BURN)

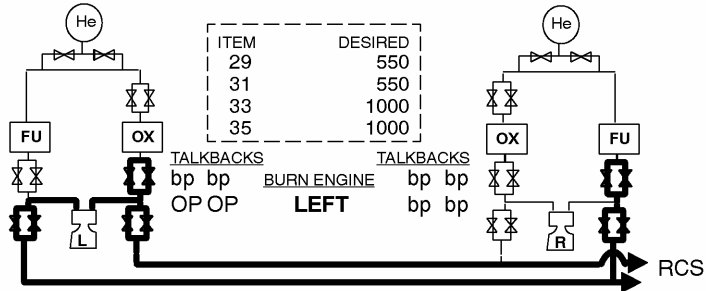
**TABLE 1  
L OMS FU TK AND R OMS OX TK FAILED**



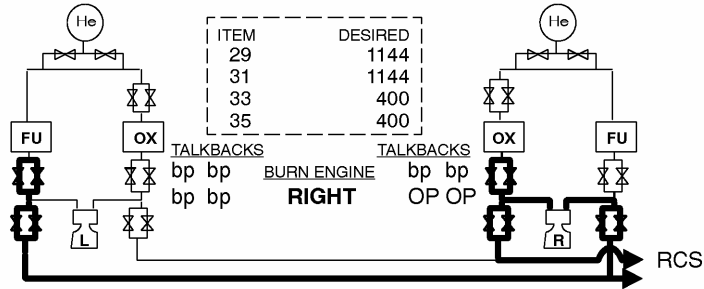
**TABLE 2  
L OMS OX TK AND R OMS FU TK FAILED**



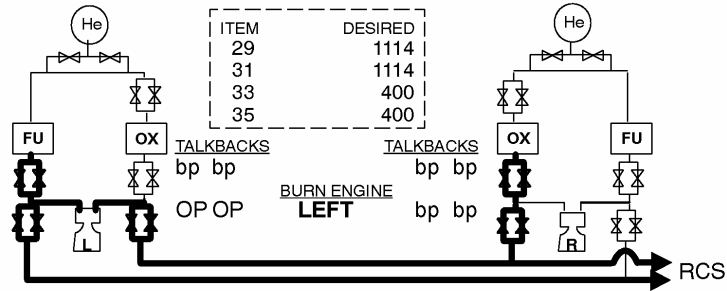
**TABLE 3  
L OMS FU TK AND R OMS OX INLET FAILED**



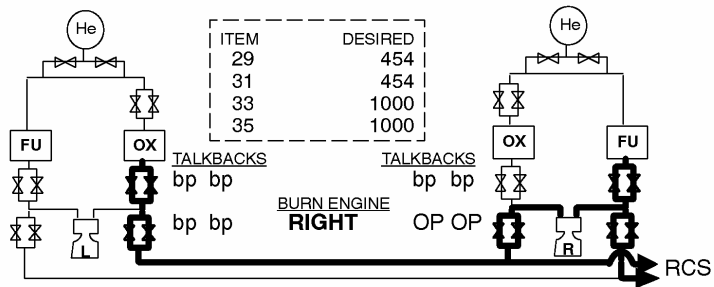
**TABLE 4  
L OMS OX INLET AND R OMS FU TK FAILED**



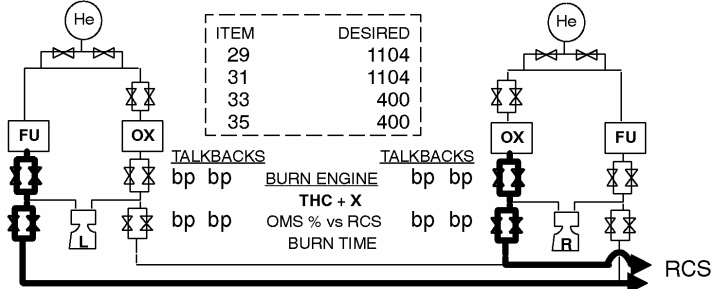
**TABLE 5  
L OMS OX TK AND R OMS FU INLET FAILED**



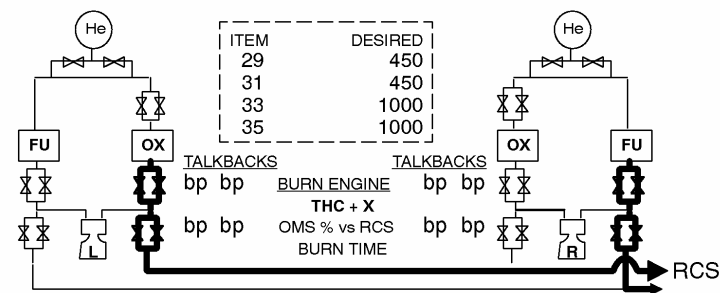
**TABLE 6  
L OMS FU INLET AND R OMS OX TK FAILED**



**TABLE 7  
L OMS OX INLET AND R OMS FU INLET FAILED**



**TABLE 8  
L OMS FU INLET AND R OMS OX INLET FAILED**

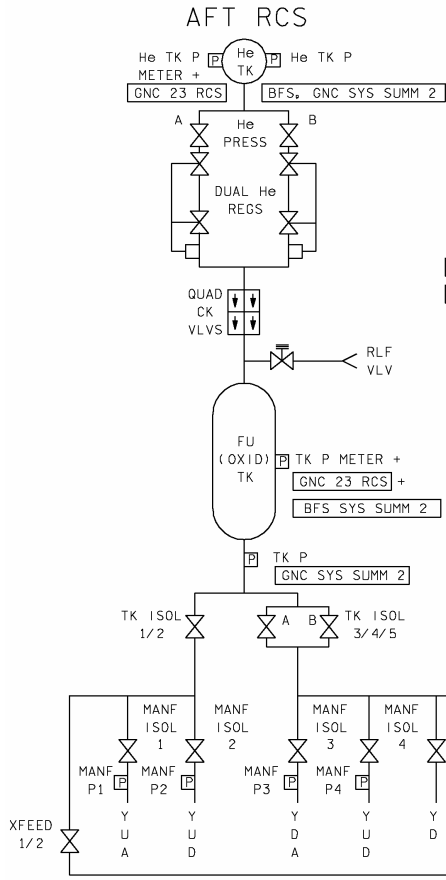




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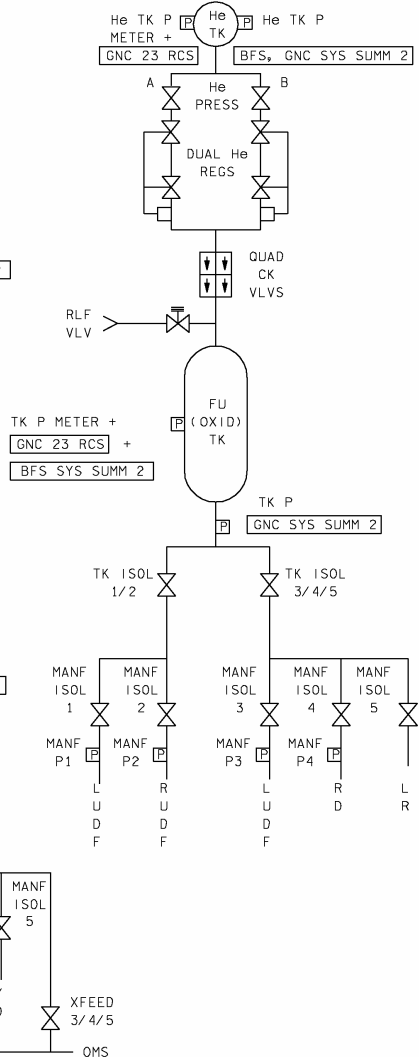


RCS



DATE 02/02/96

FWD RCS



480330801.SCH 2

RCS

**RCS SECURE (FWD,AFT)**

If normal config:

1. RCS MANF ISOL (five) – CL (tb-CL)  
XFEED (two) – CL (tb-CL)  
TK ISOL (all) – CL (tb-CL)  
He PRESS (two) – CL (tb-CL) >>

If (feeding) XFEED:

2. L,R RCS MANF ISOL (ten) – CL (tb-CL)  
(Receiving) XFEED (two) – CL (tb-CL)  
(Feeding) XFEED (two) – CL (tb-CL)  
TK ISOL (three) – CL (tb-CL)  
He PRESS (two) – CL (tb-CL) >>

If (receiving) XFEED or OMS/RCS I'CNCT:

3.  $\sqrt{\text{RCS}}$  TK ISOL (three) – CL (tb-CL)  
He PRESS (two) – CL (tb-CL)

**I'CNCT: L OMS to RCS**

1. L OMS He PRESS/VAP ISOL (two) – OP
2.  $\sqrt{\text{OMS}}$  TK P > RCS TK P and  $\Delta P < 50$
3. L OMS XFEED (two) – OP (tb-OP)
4. L,R RCS XFEED (four) – OP (tb-OP)  
TK ISOL (six) – CL (tb-CL)

**I'CNCT: R OMS to RCS**

1. R OMS He PRESS/VAP ISOL (two) – OP
2.  $\sqrt{\text{OMS}}$  TK P > RCS TK P and  $\Delta P < 50$
3. R OMS XFEED (two) – OP (tb-OP)
4. L,R RCS XFEED (four) – OP (tb-OP)  
TK ISOL (six) – CL (tb-CL)

**I'CNCT TK SWITCH**

1. L(R) OMS XFEED (two) – OP (tb-OP)  
He PRESS/VAP ISOL (two) – OP
2. R(L) OMS XFEED (two) – CL (tb-CL)  
He PRESS/VAP ISOL (two) – CL



**I'CNCT RETURN: OMS to RCS**

1.  $\sqrt{L(R)}$  OMS He PRESS/VAP ISOL (two) – OP
2.  $\sqrt{OMS TK P > RCS TK P \text{ and } \Delta P < 50}$
3. L,R RCS TK ISOL (six) – OP (tb-OP), GPC  
XFEED (four) – CL (tb-CL), GPC
4. OMS XFEED (four) – CL (tb-CL)  
He PRESS/VAP ISOL (four) – CL

APCL/ALL/GEN N

**RCS SECURE  
I'CNCT/TK SW**  
—

8-3

**I'CNCT RETURN**  
—

### **XFEED: R RCS to L RCS**

If AUTO XFEED:

1. L,R RCS TK ISOL (six) – GPC  
XFEED (four) – GPC
2. OMS XFEED (four) – CL (tb-CL)
3. MSTR RCS XFEED – FEED FROM R >>

If MANUAL XFEED:

4. L,R OMS XFEED (four) – CL (tb-CL)
5. RCS XFEED (four) – OP (tb-OP)
6. L RCS TK ISOL (three) – CL (tb-CL)  
He PRESS (two) – CL (tb-CL)
7. MSTR RCS XFEED – FEED FROM R

### **XFEED: L RCS to R RCS**

If AUTO XFEED:

1. L,R RCS TK ISOL (six) – GPC  
XFEED (four) – GPC
2. OMS XFEED (four) – CL (tb-CL)
3. MSTR RCS XFEED – FEED FROM L >>

If MANUAL XFEED:

4. L,R OMS XFEED (four) – CL (tb-CL)
5. RCS XFEED (four) – OP (tb-OP)
6. R RCS TK ISOL (three) – CL (tb-CL)  
He PRESS (two) – CL (tb-CL)
7. MSTR RCS XFEED – FEED FROM L

### **XFEED RETURN: RCS to RCS**

If AUTO XFEED:

1. L,R RCS TK ISOL (six) – GPC  
XFEED (four) – GPC
2. MSTR RCS XFEED – OFF >>

If MANUAL XFEED:

3. L,R RCS He PRESS (four) – OP (tb-OP)  
TK ISOL (six) – OP (tb-OP), GPC  
XFEED (four) – CL (tb-CL), GPC
4. MSTR RCS XFEED – OFF

**RCS TK P HIGH (FU or OX)**

**BFS, GNC SYS SUMM 2**

1. Check MANF P
2. (Aff) RCS He PRESS (two) – CL (tb-CL)
3. A – OP (tb-OP)

If He P decr:

4. (Aff) RCS He PRESS A – CL (tb-CL)
5. B – OP (tb-OP)

**RCS JET FAIL (LEAK)**

**GNC 23 RCS**

**BFS, GNC SYS SUMM 2**

If OX/FU Qty diverging:

- (Aff) RCS MANF ISOL – CL (tb-CL)

**RCS JET FAIL (ON)**

**GNC 23 RCS**

**BFS, GNC SYS SUMM 2**

1. (Aff) RCS MANF ISOL – CL (tb-CL)
- If MANF P > 130 and stable (false alarm):
2. (Aff) RCS MANF ISOL – OP (tb-OP)
  3. Aff jet DES INH (\*) (reprioritize)

**RCS JET FAIL (OFF)**

**GNC 23 RCS**

**BFS, GNC SYS SUMM 2**

If > 1 jet/pod/dir failed:

1. Resel jets
2. Aff jet DES INH (\*) (reprioritize)

**RM DLMA MANF**

**GNC 23 RCS**

1. Check CRT to determine aff MANF
- If (aff) MANF tb – OP or sw not thrown:
2. Ovrdr (aff) RCS MANF VLVs STAT – OP
  3. If (aff) MANF tb – bp: (aff) MANF – GPC

APCL/ALL/GEN N

**XFEED: RCS to RCS  
XFEED RETURN**

8-5

**RCS TK P HIGH  
RCS JET FAIL/RM DLMA**

## RCS LEAK ISOL

BFS, GNC SYS SUMM 2

1. If FU or OX TK P high, go to RCS TK P HIGH (FU or OX) >>

If FU or OX TK P normal:

2. Check FU(OX) He P (O3 meter and CRT) decr
3. DAP: INRTL/PULSE

When proc complete:

4. DAP: as reqd

### SECURE RCS

5. Perform aff RCS SECURE, then:

If aff RCS was receiving XFEED/I'CNCT when leak occurred:

6. Go to step 9

### √SINGLE MANF

If only one MANF P decr:

7. Return to normal config except leave aff MANF closed >>

### √PRPLT TK LEG (√TWO MANF P)

If MANF 1,2 or MANF 3,4 P decr:

8. Return to normal config except leave aff TK ISOL (1/2 or 3/4/5), aff MANFs, and corresp XFEED vlvs closed >>

### √He TK

9. Check He P(s)

If AFT decr:

| 10. I'CNCT from OMS, then open good MANFs >>

If FWD decr:

11. Return to normal config
12. When He P < 456: Go to RCS SECURE >>

Cont next page

√PRPLT TK

13. Check PRPLT TK P(s)

If AFT decr:

| 14. I'CNCT from OMS, then open aff MANFs >>

If FWD decr:

15. Leave FWD RCS secured >>

√He LEG

16. Open He PRESS A and B, check He P(s)

If AFT decr:

| 17. Close He PRESS A and B  
| I'CNCT from OMS, then open aff MANFs >>

If FWD decr:

18. Return to normal config except close He PRESS A and B.  
Cycle to maintain PRPLT TK P 200-245

When He TK P < 456:

19. Go to RCS SECURE >>

√XFEED LINES

If aff RCS was feeding XFEED when leak occurred:

20. GNC 23 RCS  
RCS L – ITEM 2 EXEC

If XFEED P decr or zero:

21. L,R RCS He PRESS (four) – OP (tb-OP)  
TK ISOL (six) – OP (tb-OP)  
MANF ISOL (ten) – OP (tb-OP)

22. MSTR RCS XFEED – OFF

23. Do not XFEED/I'CNCT >>

√RCS MANF ISOL 5

24. If leak not found above: Assume RCS MANF ISOL 5 leak

25. Return to normal config except leave (aff) RCS MANF ISOL 5 –  
GPC (tb-CL)

APCL/ALL/GEN N

**RCS LEAK ISOL**

8-7



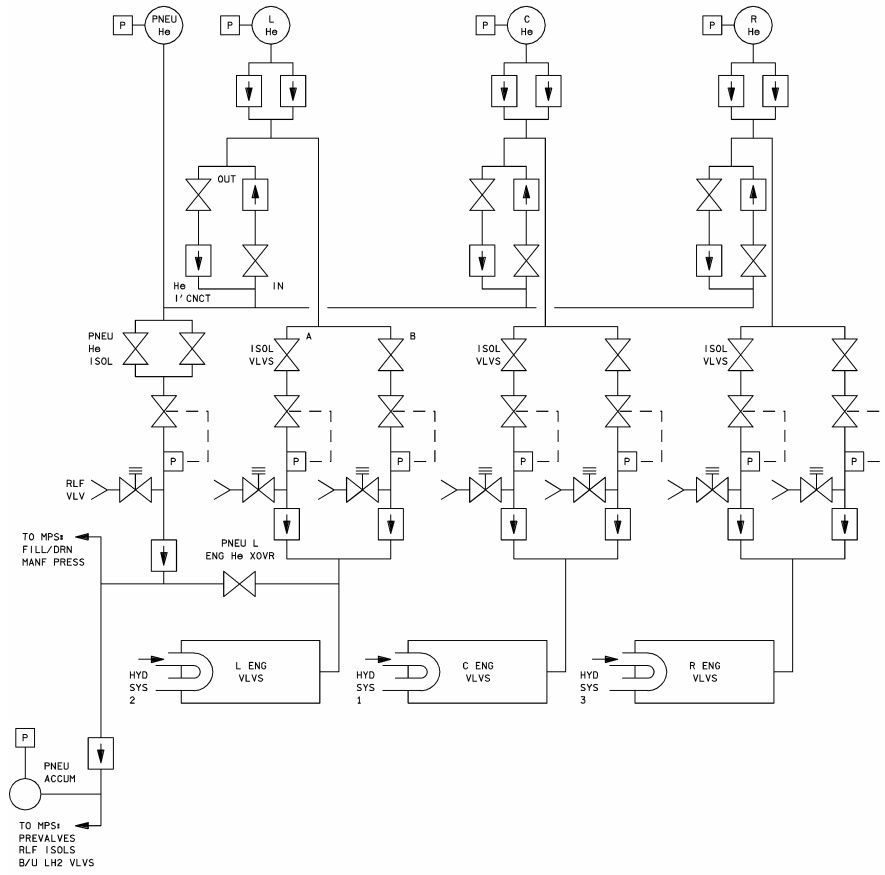
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# MPS He

MPS



03/27/03  
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## MPS He P (Post ET Sep)

If He TK P < 1150 and decr:

- ◆ 1. (Aff) MPS He ISOL (two) – CL
- If/when second He TK P < 1150:
- ◆ 2. MPS PNEU He ISOL – CL

## MPS VACUUM INERT

20 min after MPS dump complete:

If LO2 MANF P > 30 psia, √MCC

Otherwise, proceed with activation

### A. ACTIVATION

#### LO2 Inert

1. MPS FILL/DRAIN LO2 OUTBD – CL
2. INBD – CL
- Wait 15 sec, then:
3. MPS FILL/DRAIN LO2 OUTBD – OP
4. INBD – OP

#### LH2 Inert

5. MPS FILL/DRAIN LH2 OUTBD – CL
6. INBD – CL
- Wait 15 sec, then:
7. MPS FILL/DRAIN LH2 OUTBD – OP
8. INBD – OP

1 min after last FILL/DRAIN open or on MCC call, continue to termination:

### B. TERMINATION

#### LO2 Inert

1. MPS FILL/DRAIN LO2 OUTBD – CL
- Wait 15 sec, then:
2. MPS FILL/DRAIN LO2 OUTBD – GND
3. INBD – GND

#### LH2 Inert

4. MPS FILL/DRAIN LH2 OUTBD – CL
- Wait 15 sec, then:
5. MPS FILL/DRAIN LH2 OUTBD – GND
6. INBD – GND

## MPS LH2/O2 MANF

If LH2 MANF P > 65 psia:

- ◆ 1. MPS PNEU He ISOL – OP
- 2. PRPLT DUMP B/U LH2 VLV – OP
- 3. FILL/DRAIN LH2 OUTBD – OP  
INBD – OP

PWRDN

LOSS OF 2 CAB FANS .....	10-2
AV BAY 1 COOLING/AV BAY 1 FIRE .....	10-7
2 COOLING/AV BAY 2 FIRE .....	10-10
3 COOLING/AV BAY 3 FIRE .....	10-13
CAB PRESS (MINOR PWRDN) .....	10-16
(MAJOR PWRDN).....	10-17
2 H2O LOOPS (POST OMS-2) .....	10-21
1 FREON LOOP .....	10-29
HI LOAD EVAP .....	10-33
2 FREON LOOPS (POST OMS-2) .....	10-35
FES/1 FC .....	10-39
2nd FC .....	10-43

PWRDN

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A10-1

APCL/ALL/GEN N

## LOSS OF 2 CAB FANS

### NOTE

Cab press increase due to air heating  
may cause noisy CAB PRESS RELIEF  
vlv cycling

**PWRDN**

- |                   |     |  |
|-------------------|-----|--|
| C3                | 1.  | MSTR MADS PWR – OFF  |
|                   | 2.  | Minimize Itg   |
|                   | 3.  | Perform <u>PL PWRDN</u> , then:  |
| L1                | 4.  | √CAB FAN A,B (two) – OFF<br>TEMP CNTLR – OFF   |
|                   | 5.  | HUM SEP A,B (two) – OFF  |
| L4:L              | 6.  | Use only one FLT CNTLR PWR, PGSC   |
|                   | 7.  | cb ΦA CAB T CNTLR 1,2 (two) – op   |
|                   | 8.  | Cycle MDUs. If ON at loss of cooling, turn OFF<br>within 30 min. Allow 3 min OFF prior to each 1 min<br>ON (30 min max ON time). Save two MDUs that<br>interface with a single IDP for entry |
| O14:B             | 9.  | cb MNA EVENT TIMER AFT – op  |
| :C                | 10. | SMOKE DETN L/R FLT DK – op   |
| O15:B             | 11. | MNB OI H2O BYP LOOP 2 SNSR – op  |
|                   | 12. | MSN TIMER AFT – op   |
| O16:C             | 13. | MNC SMOKE DETN CAB – op  |
| L4:J              | 14. | √cb AC3 ΦA SIG CONDR HUM SEP – op  |
|                   |     | Post OMS-2:  |
| F6/F8             | 15. | √FLT CNTLR PWR (two) – OFF   |
| O14,O15,<br>O16:E | 16. | cb DDU L,R,AFT (six) – op  |
| W1-10             |     | Install Window Shades or mnvr to tail Sun att:<br>If in OPS 1:<br>  17. Manually mnvr to shade windows<br>If in OPS 3:<br>18. Obtain ATT data from MCC<br><u>XXXXX MNVR YYYYY</u>            |

Cont next page

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A10-2

APCL/ALL/GEN N

NOTE

If uncomfortable, doff LES. Use QDM as needed to provide respiratory cooling. If cab temp > 95 degF and no evaporative cooling is sensed, don LES, check tabs, close visor, LES O2 – ON.

Begin drinking H2O (one 8-oz container every 15 min with salt tablet in every other container) and continue thru entry

19. Continue with ASC, then LAUNCH DAY ORBIT 2(3) (CONT DEORB). Use DEORB PREP/ENTRY DELTAS PULLOUT PAGE, 10-5, for changes

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A10-3

APCL/ALL/GEN N

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A10-4

APCL/ALL/GEN N

DEORB PREP/ENTRY DELTAS PULLOUT PAGE

- A. Deltas to LAUNCH DAY ORBIT 2(3) (CONT DEORB)
1. Minimize use of IDPs, MDUs, FLT CNTLR PWR, DDU's; use one PGSC only if reqd
  2. Minimize Itg
  3. Minimize sun in cab (delay mnvr to burn att until TIG-15 if necessary)
- If orbit 2 deorb:
4. APU HTRS & DED DISP ENT CONFIG [3]
  5. Go to step 7
- If orbit 3 deorb:
6. ENT FWD FLT DECK CONFIG [10]
  7. In ENT SW LIST/VER, do not activate pwrdrn items

B. Deltas to DEORBIT BURN (ENT)

At TIG-25:

If time permits, set up for cab purge:

- |             |  |
|-------------|--|
| MO10W       | 1. 14.7 CAB REG INLET SYS 1,2 vlv (two) – OP             |
|             | 2. O2 REG INLET SYS 1 vlv – OP<br>√2 vlv – CL            |
| L2          | 3. O2/N2 CNTLR VLV SYS 1 – AUTO (O2/N2)<br>2 – OP (N2)   |
| Inner Hatch | 4. √O2 SYS 1,2 SPLY (two) – OP (tb-OP)                   |
|             | 5. Remove INNER HATCH Equal vlv cap (two)                |
|             | 6. √Equal vlv (two) – NORM                               |
|             | 7. Reinstall Equal vlv cap (two)                         |
|             | 8. Open INNER HATCH                                      |
| ML86B:B     | 9. cb MNA VAC VENT ISOL VLV – cl                         |
| ML31C       | 10. VAC VENT ISOL VLV BUS SEL – MNA<br>CNTL – OP (tb-OP) |
- NOZ HTR – ON

Cont next page

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**LOSS OF 2 CAB FANS  
D/O PULLOUT PAGE**

A10-5

APCL/ALL/GEN N

At TIG-20:

11. Initiate cab purge

<p><b>WARNING</b> Do not use WCS once constant cab purge has started (because of high N2 concentration)</p>
---

MO32M,  
MO69M,  
C6  
L2

12. LEH O2 1(2,...8) vlv – OP (as reqd)

13. O2 XOVR SYS 1 – CL  
√2 – OP

AW82B

14. AIRLK DEPRESS vlv cap – vent, remove  
vlv – 5

15. Close INNER HATCH

At TIG-15:

16. Mnvr to deorb burn att

At TIG-4:

17. Use two IDP/CRTs with four MDUs for deorb burn

O14,O15,  
O16:E  
F6,F8

18. cb DDU L,R (four) – cl, then:

19. L,R FLT CNTLR PWR (two) – ON

C. Deltas to POST BURN (ENT)

F6,F8  
O14,O15,  
O16:E

1. Use one IDP/CRT with two MDUs
2. L,R FLT CNTLR PWR (two) – OFF
3. cb DDU L,R (four) – op

D. Deltas to ENTRY MANEUVERS (Cue Card)

At EI:

O14,O15,  
O16:E  
F6

1. Use only two IDP/CRTs with four MDUs
2. cb DDU L,R (four) – cl
3. L FLT CNTLR PWR – ON

At Wheel Stop:

4. Open visor, LES O2 – OFF
5. Go to EXPEDITED PWRDN (ENT, POST LDG)



**LOSS OF AV BAY 1 COOLING/AV BAY 1 FIRE**

WARNING  
 There is no smoke detection or air cooling in AV BAY 1. Failure of any LRU still pwr'd in AV BAY 1 may be indicative of fire in progress

- O7 1. √TACAN 1 MODE sel – OFF
- L1 2. √AV BAY 1 FAN A,B (two) – OFF
- O6 3. GPC MODE 1,4 (two) – STBY (tb-bp)
  - HALT
  - STBY (tb-RUN)
  - HALT (tb-bp)

REASSIGN STRINGS TO GPCs 2,3 IN MC 1

- 4. GNC 0 GPC MEMORY  
 CONFIG – ITEM 1 +1 EXEC  
 Modify MC 1 per table ---->

CONFIG GPC	1	2	3	4
STR 1	3	2	3	2
PL 1/2	2	2	3	0
CRT 1	2	2	3	0
L 1	1	2	2	0
MM 1	2	2	3	0
2	2	2	3	0

NOTE  
 The following must be an OPS MODE Recall

- CRT 5. GNC, OPS 10X PRO
- 6. (BFS) GNC I/O RESET

If AV BAY 1 fire:

- 7. Continue; otherwise go to step 30

NOTE

While performing proc, note any cbs open. Equipment still pwr'd in Av Bay following pwr'dn:

FPCA 1, FLCA 1, IMU FAN, MDM OF1, DSC OF1, and ACCU

Cont next page

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A10-7

APCL/3,4/GEN N



- C3 26. √OI PCMMU FORMAT – GPC  
PWR – 2
- MA73C:A 27. MCA LOGIC MNA FWD 1 – OFF
- AW18H 28. √PWR/BATT CHGR EMU 1,2 BUS SEL (two) – OFF
- If visors reqd to remain down due to fire and rev 3 avail:
29. Go to LAUNCH DAY DEORBIT PREP (ORBIT 3)  
with AV BAY FIRE CONTINGENCY DELTAS  
(CONT DEORB, LAUNCH DAY (ORBIT 3)) >>
- Otherwise:
- For MM201 trans:
30. Go to MAL, DPS, GPC FRP-7, DPS RECONFIG  
FOR LOSS OF AV BAY COOLING  
(ASCENT/ORBIT) >>
- If orbit 7 deorbit:
31. Perform Deltas to nominal POST INSERT and  
DEORB PREP (POST INSERT, ORBIT 7  
DEORB), then:
- If AV BAY fire:
32. Go to AV BAY FIRE (ORB PKT, PWRDN) and  
complete remaining actions

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A10-9

APCL/ALL/GEN N

## LOSS OF AV BAY 2 COOLING/AV BAY 2 FIRE

### WARNING

There is no smoke detection or air cooling in AV BAY 2. Failure of any LRU still pwr'd in AV BAY 2 may be indicative of fire in progress

- O7 1. √TACAN 2 MODE sel – OFF  
L1 2. √AV BAY 2 FAN A,B (two) – OFF  
O6 3. GPC MODE 2 – STBY (tb-bp)  
– HALT  
– STBY (tb-RUN)  
– HALT (tb-bp)

If AV BAY 2 fire:

4. Continue; otherwise go to step 23

### NOTE

While performing proc, note any cbs open. Equipment still pwr'd in Av Bay following pwr'dn:

FPCA 2, FLCA 2, BFC 3A (when GPC 3 is pwr'd), MDM OF2, and DSC OF2

- R1 5. cb AC CONTR AC2 (three) – cl  
6. INV/AC BUS 2 – OFF (tb-OFF)  
INV PWR 2 – OFF (tb-OFF)  
cb AC CONTR AC2 (three) – op  
R2 7. √BLR CNTLR/HTR 2 – A  
1 – B  
8. Perform FC2 SHUTDN, except PWRDN (Cue Card), then:  
L4:H 9. cb AC3 AV BAY 2 FAN B (three) – op  
L1 10. FREON PUMP LOOP 1 – A  
11. AV BAY 1 FAN A – ON  
B – OFF  
12. √CAB FAN A – ON  
√B – OFF  
O13:C 13. cb ESS 2CA AC2 SNSR – op

Cont next page

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A10-10

APCL/3,4/GEN N

O15:A	14.	BRAKES MNB – OFF
:E	15.	cb MNB RDR ALTM 2 – op MLS 2 – op ADTA 2 – op ACCEL 2 – op
:F	16.	MMU 2 – OFF
O16:A	17.	BRAKES MNC – OFF
:E		cb MNC MLS 3 – op ADTA 4 – op
O8	18.	FWD RCS MANF ISOL 3,4 (two) – CL (tb-CL)
O16:F	19.	RJDF 2A F3 LOGIC – OFF DRIVER – OFF RJDF 2B F4/F5 LOGIC – OFF F4 DRIVER – OFF ACCEL 3 – OFF
A1L	20.	S-BD PM MODE sel – TDRS DATA √NSP DATA RATE XMIT – HI √RCV – HI CODING XMIT – ON √RCV – ON √PWR – 1 S-BD PL PWR SYS – OFF CNTL – PNL,CMD
C3	21.	S-BD PM CNTL – PNL,CMD √OI PCMMU PWR – 1 FORMAT – GPC
MA73C:A	22.	MCA LOGIC MNB FWD 2 – OFF

Cont next page

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A10-11

APCL/3,4/GEN N

23. ASAP post OMS 2:

REASSIGN STRINGS TO GPCs 1,3,4 IN MC 1

24. GNC 0 GPC MEMORY

CONFIG – ITEM 1 +1 EXEC

Modify MC 1 per table ---->

CONFIG	1
GPC	12340
STR	1 1
	2 4
	3 3
	4 4
PL	1/2 1
CRT	1 1
	2 4
	3 3
	4 0
L	1 1
	2 2
MM	1 1
	2 3

NOTE

The following must be an OPS MODE Recall

CRT

- 25. GNC, OPS 10X PRO
- 26. (BFS) GNC I/O RESET  
GNC, OPS 106 PRO  
000 PRO

C3

- 27. BFC CRT DISP – OFF

O6

- 28. GPC MODE 5 – STBY  
(tb-RUN)  
– HALT  
OUTPUT 5 – NORM

C3

- 29. Sel best S-BD PM ANT until SM GPC is established  
If AV BAY 2 fire:

O6

- 30. GPC PWR 2 – OFF  
5 – OFF  
MDM FF2, FF4 (two) – OFF  
PL2 – OFF

If visors reqd to remain down due to fire and rev 3 avail:

- 31. Go to LAUNCH DAY DEORBIT PREP (ORBIT 3)  
with AV BAY FIRE CONTINGENCY DELTAS  
(CONT DEORB, LAUNCH DAY (ORBIT 3)) >>

Otherwise:

For MM201 trans:

- 32. Go to MAL, DPS, GPC FRP-7, DPS RECONFIG  
FOR LOSS OF AV BAY COOLING  
(ASCENT/ORBIT) >>

If orbit 7 deorbit:

- 33. Perform Deltas to nominal POST INSERT and  
DEORB PREP (POST INSERT, ORBIT 7  
DEORB), then:

If AV BAY fire:

- 34. Go to AV BAY FIRE (ORB PKT, PWRDN) and  
complete remaining actions

**OV103,104**

## LOSS OF AV BAY 3 COOLING/AV BAY 3 FIRE

### WARNING

There is no smoke detection or air cooling in AV BAY 3. Failure of any LRU still pwr'd in AV BAY 3 may be indicative of fire in progress

- O7 1. √TACAN 3 MODE sel – OFF  
L1 2. √AV BAY 3 FAN A,B (two) – OFF  
O6 3. GPC MODE 3 – STBY (tb-bp)  
– HALT  
– STBY (tb-RUN)  
– HALT (tb-bp)

If AV BAY 3 fire:

4. Continue; otherwise go to step 20

### NOTE

While performing proc, note any cbs open. Equipment still pwr'd in Av Bay following pwr'dn:

FPCA 3, FLCA 3, MDM OF3, DSC OF3, and active comm equipment

- R1 5. cb AC CONTR AC3 (three) – cl  
6. INV/AC BUS 3 – OFF (tb-OFF)  
INV PWR 3 – OFF (tb-OFF)  
cb AC CONTR AC3 (three) – op  
R2 7. √BLR CNTLR/HTR 3 – A  
2 – B  
8. Perform FC3 SHUTDN, except PWRDN (Cue Card), then:  
L1 9. H2O PUMP LOOP 1 – ON  
2 – OFF  
CAB FAN B – ON  
A – OFF  
L4:H 10. cb AC1 AV BAY 3 FAN B (three) – op

Cont next page

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A10-13

APCL/3,4/GEN N

**WARNING**

The following steps will unpwr C/W sys. All Class 1, Class 2, and SM aural tones and C/W annun lights will be lost. CRTs must be monitored for fault summ msgs

- O13:A            11.    cb ESS 1BC C/W A – op  
      :C                            2CA C/W B – op  
      :E                            3AB AC3 SNSR – op

**NOTE**

If comm presently working, performing a PNL,CMD may result in loss of comm (if fire has aff alt comm sys)

If no comm:

- A1L            12.    S-BD PM MODE sel – TDRS DATA  
                  √NSP DATA RATE XMIT – HI  
                                  √RCV – HI  
                                  CODING XMIT – ON  
                                  √RCV – ON  
                                  √PWR – 1

- C3            13.    S-BD PM CNTL – PNL,CMD  
                  If S-BD comm avail:

- O6            14.    UHF MODE sel – OFF

If comm not recovered:

- C3            15.    S-BD PM CNTL – PNL  
A1L                            ANT SW ELEC – OFF  
                                  PRE AMP – OFF  
                                  PWR AMPL STBY – OFF  
                                  OPER – OFF  
                                  XPNDR – OFF  
                                  NSP PWR – OFF  
                                  ENCRYPTION SEL – BYP  
                                  PWR – OFF

- O6            16.    √UHF MODE sel – SPLX

- A1L            17.    S-BD PL CNTL – PNL  
                  PL DATA INTLVR PWR – OFF

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A10-14

APCL/ALL/GEN N



- A1R 18. S-BD FM PWR – OFF  
 CNTL – PNL  
 MA73C:A 19. MCA LOGIC MNC FWD 3 – OFF

20. ASAP post OMS 2:

REASSIGN STRINGS TO GPCs 1,2,4 IN MC 1

21. GNC 0 GPC MEMORY

CONFIG – ITEM 1 +1 EXEC  
 Modify MC 1 per table---->

CONFIG GPC	1	12340
STR 1	1	1
2	2	2
3	4	4
4	2	2
PL 1/2	1	1
CRT 1	1	1
2	2	2
3	4	4
4	0	0
L 1	1	1
2	2	2
MM 1	1	1
2	2	2

NOTE

The following must be  
 an OPS MODE Recall

22. GNC, OPS 10X PRO  
 23. (BFS) GNC I/O RESET  
 If AV BAY 3 fire:  
 24. GPC PWR 3 – OFF  
 MDM FF3 – OFF

If visors reqd to remain dn due to fire and rev 3 avail:

25. Go to LAUNCH DAY DEORBIT PREP (ORBIT 3)  
 with AV BAY FIRE CONTINGENCY DELTAS  
 (CONT DEORB, LAUNCH DAY (ORBIT 3)) >>

Otherwise:

For MM201 trans:

26. Go to MAL, DPS, GPC FRP-7, DPS RECONFIG  
 FOR LOSS OF AV BAY COOLING  
 (ASCENT/ORBIT) >>

If orbit 7 deorbit:

27. Perform Deltas to nominal POST INSERT and  
 DEORB PREP (POST INSERT, ORBIT 7  
DEORB), then:

If AV Bay fire:

28. Go to AV BAY FIRE (ORB PKT, PWRDN) and  
 complete remaining actions

**OV103,104**

## LOSS OF CAB PRESS (MINOR PWRDN)

### NOTE

If EQ dP/dT < 0.6, CAB P will stabilize at 8 psia

1. Minimize Itg
- O7 2. √TACAN MODE sel (three) – OFF
- O8 3. √MLS (three) – OFF
4. Perform PL PWRDN, then:
- L1 5. √H2O LOOP 2(1) BYP MODE – MAN  
MAN – DECR (hold 30 sec)
6. √FLOW PROP VLV LOOP tb (two) – ICH
- C3 7. Use two IDP/CRTs with four MDUs
- If AOA:
  8. Deltas to ENTRY MANEUVERS (Cue Card)  
At V = 10K:  
TACAN 2,3 MODE sel (two) – GPC  
At M = 2.9:  
Use two HUDs, MLS, and RAs as reqd  
GNC I/O RESET
  9. Continue AOA PROCEDURES (ASC, AOA).  
Do not perform ENT PKT pwrn >>
- If not AOA:
  10. Go to LOSS OF CAB PRESS (MAJOR PWRDN) (PWRDN), 10-17

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A10-16

APCL/3,4/GEN N

## LOSS OF CAB PRESS (MAJOR PWRDN)

### NOTE

If EQ dP/dT > 0.6, CAB P will stabilize  
below 8 psia

1. Minimize Itg
- O7 2.  $\sqrt$ TACAN MODE sel (three) – OFF
- O8 3.  $\sqrt$ MLS (three) – OFF
- C3 4. MSTR MADS PWR – OFF
5. Perform PL PWRDN, then:
- L1 6.  $\sqrt$ H2O LOOP 2(1) BYP MODE – MAN  
MAN – DECR (hold 30 sec)
7.  $\sqrt$ FLOW PROP VLV LOOP tb (two) – ICH
- C3 8. Use one IDP/CRT with two MDUs
- F6,F8 9. FLT CNTLR PWR (two) – OFF
- If FLT CNTLR PWR not reqd:
- O14,O15, 10. cb DDU L,R (four) – op  
O16:E  $\sqrt$ AFT (two) – op
11. ADTA (four) – op
- L2 12. ANTISKID – OFF  
NWS – OFF
- L1 13. HUM SEP B – OFF
- O16:E 14. cb MNC RCS/OMS PRPLT QTY GAUGE – op(cl) as  
reqd
- If AOA:  
15. Continue AOA PROCEDURES (ASC, AOA)  
Do not perform ENT PKT pwrdn  
Use DEORB PREP/ENTRY DELTAS PULLOUT  
PAGE, 10-19, for changes >>
- If orbit 2 or 3 deorb:  
16. Continue ASC  
Use DEORB PREP/ENTRY DELTAS PULLOUT  
PAGE, 10-19, for changes

# OV103,104

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APCL/3,4/GEN N

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APCL/ALL/GEN N

DEORB PREP/ENTRY DELTAS PULLOUT PAGE

NOTE

Cycle MDUs. If ON at loss of cooling, turn OFF within 30 min. Allow 3 min OFF prior to each 1 min ON (30 min max ON time). Save two MDUs that interface with a single IDP for entry

If no comm or if CAB P stabilizes < 6 psia (MCC call), after OPS 301 transition:

PWRDN GPC 1 AND REASSIGN STRINGS TO REMAINING PASS GPCs IN MC 3

	1.	<u>GNC 0 GPC MEMORY</u> CONFIG – ITEM 1 +3 EXEC Modify MC 3 per table ----->	CONFIG GPC	3 02340
CRT	2.	GNC, OPS 301 PRO	STR 1	4
	3.	<u>GNC 50 HORIZ SIT</u> Check runway sel Resel runway	2 3 4	2 3 2
O6	4.	(BFS) GNC, OPS 301 PRO	PL 1/2	4
	5.	GPC MODE 1 – STBY (tb-bp) – HALT	CRT 1 2 3 4	4 2 3 0
			L 1 2	0 0
			MM 1 2	4 2

NOTE

Single fault tolerance used for most cab air-cooled equipment. Add'l LRUs may be activated as reqd if cab press stable ≥ 8 psia

Initiate changes:

If Orbit 2(3):

- 6. Start with step A

If AOA:

- 7. Start with step B, 10-20

A. Deltas to LAUNCH DAY ORBIT 2(3) (CONT DEORB)

- 1. Minimize use of IDPs, MDUs, FLT CNTLR PWR, DDUs. Use one PGSC

If orbit 2:

- 2. APU HTRS & DED DISP ENT CONFIG [3]  
Do not pwr MLS, TACANs

If orbit 3:

- 3. ENT FWD FLT DECK CONFIG [10]  
Do not pwr MLS, TACANs
- 4. In ENT FORWARD, AFT, MIDDECK, do not activate pwrdn items

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**LOSS OF CAB PRESS  
D/O PULLOUT PAGE**

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- B. Deltas to DEORBIT BURN (ENT)  
At TIG-4:
- 1. Use two IDP/CRTs with four MDUs for deorb burn
  - 2. cb DDU L,R (four) – cl
  - 3. L,R FLT CNTLR PWR (two) – ON
- O14,O15,  
O16:E  
F6,F8
- C. Deltas to POST BURN (ENT)
- 1. Use one IDP/CRT with two MDUs
  - 2. L,R FLT CNTLR PWR (two) – OFF
  - 3. cb DDU L,R (four) – op
  - 4. Delete ANTISKID, NWS callouts (ENTRY SW CHECK)
- F6,F8  
O14,O15,  
O16:E
- D. Deltas to ENTRY MANEUVERS (Cue Card)  
At EI:
- 1. Use only one IDP/CRT with two MDUs
  - 2. cb DDU L,R (four) – cl
  - 3. L FLT CNTLR PWR – ON
  - 4. cb ADTA (three) – cl
  - 5. (BFS) GNC I/O RESET
- O14,O15,  
O16:E  
F6  
O14,O15,  
O16:E
- At V = 15K:  
If CAB PRESS < 8 psia:
- 6. Delete NAVAIDS callout
- If CAB PRESS ≥ 8 psia:
- 7. Activate all TACANs, RAs, MLS
  - 8. GNC I/O RESET
  - 9. Disregard subs NAVAID callout DELTAS
- At V = 10K:
- 10. TACAN 2,3 MODE sel (two) – GPC
- O7
- At M = 2.7:
- 11. Use two HUDs, MLS, and RAs as reqd
  - 12. GNC I/O RESET
- At M < 1.0:
- 13. ANTISKID – ON
  - 14. NWS – 1
- L2

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D/O PULLOUT PAGE**

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## LOSS OF 2 H2O LOOPS (POST OMS-2)

### NOTES

- Loss of water loop cooling aff both water and air cooled equipment
- This proc assumes loss of both water loops occurs after AOA opportunity has passed, but before OPS 2 transition
- If orbit 2 deorb, this pwrdn leads into LOSS OF 2 H2O LOOPS DEORBIT PREP/ENTRY (CONT DEORB, LOSS OF 2 H2O LOOPS D/O PREP). For all other launch day deorb, this pwrdn leads to LOSS OF 2 H2O LOOPS ON-ORBIT WAIT (CONT DEORB, LOSS OF 2 H2O LOOPS)
- The LOSS OF 2 H2O LOOPS (ORB PKT, PWRDN) is used for MS pwrdn and comm config. This proc powers down all comm. If comm reqd, preferred comm config in order of heat production:
  1. UHF only
  2. STDN LO PWR if reqd
  3. TDRS only if mandatory

### CAUTION

TDRS OR STDN – HI AOS may be limited to 10 min (pwr amp will overheat)

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APCL/ALL/GEN N

TIME CRITICAL PROCEDURES (execute simo)

- L4:B 1. Unstow ORB PKT, CONT DEORB, ORB OPS, and one PGSC. To pwr the PGSC:  
cb UTIL PWR A15/MO13Q AC3 – cl, or  
F1/MO52J AC1 – cl
- MS1 2. Perform MS OVHD PNL PWRDN (N2 qty not reqd by CDR in step 11 and omit step 14) (ORB PKT, PWRDN) |

As part of MS OVHD PNL PWRDN perform the following:

- O14:B 3. cb MNA OI SIG CONDR OF 1/4 A – op  
:E DDU AFT – op
- O15:B 4. cb MNB OI SIG CONDR OF 1/4 B – op  
2/3 A – op
- O16:B 5. cb MNC OI SIG CONDR OF 2/3 B – op  
:E DDU AFT – op

NOTE

- MS Do not pwrdrn MMU 1.
- If orbit 2 deorb, do not pwrdrn MTU.

If orbit 2 deorb and TIG > 1 hr, perform 20 MINUTE DE/REPRESS MS PULLOUT PAGE (CONT DEORB, LOSS OF 2 H2O LOOPS)

- MS2 6. Perform LOSS OF 2 H2O LOOPS, COMM PWRDN (ORB PKT, PWRDN), within 10 min

CDR and PLT perform following PWRDN ASAP:

CDR AND PLT PWRDN

- C3 7. √MSTR MADS PWR – OFF  
Minimize Itg
8. Use only one IDP/CRT with one MDU
- F6,F8 9. FLT CNTLR PWR (two) – OFF, use one as reqd
10. Perform PL PWRDN, then:
- O7 11. √TACAN MODE sel (three) – OFF
- O8 12. √RDR ALTM (two) – OFF
13. √MLS (three) – OFF
- L1 14. H2O PUMP LOOP 1,2 (two) – OFF (one ON if PUMP OUT P > 45 psia, or MCC call)
15. HUM SEP A,B (two) – OFF (one ON if either H2O loop ON)

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APCL/3,4/GEN N,1



**NOTE**

If performing 20 MINUTE DE/REPRESS MS PULLOUT PAGE (CONT DEORB, LOSS OF 2 H2O LOOPS), do not turn cab fan OFF. Record MET for fan OFF when DE/REPRESS complete

- 16. CAB FAN A,B (two) – OFF  
(one ON if either H2O LOOP ON)  
Rcd MET \_\_\_/\_\_\_:\_\_\_
- 17. FREON PUMP LOOP 1 – OFF  
2 – B  
√FLOW PROP VLV LOOP 1,2 (two) – ICH (tb-ICH)
- L2 18. √FLASH EVAP CNTLR PRI A – ON
- 19. O2 SYS 1 SPLY – CL (tb-CL)
- 20. ANTISKID – OFF  
NWS – OFF
- R2 21. FLASH EVAP FDLN HTR SPLY (two) – 2
- 22. HYD CIRC PUMP (three) – ON (to prevent MN BUS O/V)

RECONFIG DPS

- O14:F 23. √MMU 1 – ON
- 24. GNC 0 GPC MEMORY

Reassign Strings to GPC 1 in MC 1

- 25. CONFIG – ITEM 1 +1 EXEC  
Modify MC 1 per table ---->

**NOTE**

The following must be an OPS MODE Recall

- CRT 26. GNC, OPS 10X PRO

CONFIG	1
GPC	12340
STR 1	1
2	1
3	1
4	1
PL 1/2	1
CRT 1	1
2	1
3	1
4	0
L 1	0
2	0
MM 1	1
2	1

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- O6 27. GPC MODE 2,3,4 (three) – STBY (tb-bp)
  - HALT
  - STBY (tb-RUN)
  - HALT (tb-bp)
- CRT 28. (BFS) GNC, OPS 106 PRO  
000 PRO
- O6 29. GPC MODE 5 – STBY (tb-RUN), HALT (tb-bp)  
OUTPUT 5 – NORM
- C3 30. BFC CRT DISP – OFF
- L1 31. AV BAY 2,3 FANS (four) – OFF
  - √1 FAN A – ON
  - B – OFF
- 32. IMU FAN A – ON
  - B,C (two) – OFF
- 33. If not orbit 2 deorb: Go to step 40  
Transition GPC 1 to GNC OPS 3:
- O14,O15, 34. √RGA (four) – ON  
O16:A
- O14,O15:E √cb ACCEL (two) – cl
- O15,O16:F √ACCEL 3,4 (two) – ON
- O14,O15, √ASA (four) – ON  
O16:F
- C3 35. √FCS CH (four) – AUTO
- 36. **GNC 0 GPC MEMORY**

Reassign Strings to GPC 1 in MC 3

- CRT 37. CONFIG – ITEM 1 +3 EXEC  
Modify MC 3 per table----->
- 38. GNC, OPS 301 PRO  
**GNC DEORB MNVR COAST**
- 39. Go to step 43

CONFIG	3
GPC	10000
STR 1	1
2	1
3	1
4	1
PL 1/2	1
CRT 1	1
2	1
3	1
4	0
L 1	0
2	0
MM 1	1
2	1

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RECONFIG DPS, TRANSITION TO OPS 2

40. GNC 0 GPC MEMORY

Reassign Strings to GPC 1 in MC 2

	41. CONFIG – ITEM 1 +2 EXEC Modify MC 2 per table----->	CONFIG GPC	2 10000
	42. GNC, OPS 201 PRO	STR	1 1
	43. For any CRT that is OFF: GPC/CRT1/X EXEC		2 1
			3 1
O14:F	44. MMU 1 – OFF		4 1
	45. Calculate DEORBIT TARGETS using PGSC	PL	1/2 1
C3	46. C/W MODE – ACK	CRT	1 1
			2 1
			3 1
			4 0
		L	1 0
			2 0
		MM	1 1
			2 1

NOTE

For F7 lts, hold F2 or  
F4 MA in

Repress SPLY H2O TKA:

- ML26C 47. SPLY H2O GN2 TK VENT vlv – PRESS  
TKA SPLY vlv – OP
- R11L XOVR VLV – OP (tb-OP)

If time to CONUS TIG < 50 min:

48. Read notes below then go to step 69

If time to CONUS TIG > 50 min, continue:

- O14:A,  
O15:A  
O6 49. GNC 21 IMU ALIGN  
IMU 1,3 (two) – desel
50. IMU 1,3 (two) – OFF
51. MDM FF1,3,4 (three) – OFF
- If orbit 2 deorb:  
52. Mnvr to shade windows from sun or install Window  
Shades until TIG-10 min, then go to step 61
- If not orbit 2 deorb:  
53. Config DAPs A1,B1 with these exceptions:  
(A) ITEM 10 +1.0 0 EXEC  
ITEM 11 +3.0 0 EXEC  
ITEM 15 EXEC (TAIL)  
ITEM 16 EXEC (TAIL)  
(B) ITEM 30 +0.2 0 EXEC  
ITEM 31 +1.0 0 EXEC  
ITEM 35 EXEC (TAIL)  
ITEM 36 EXEC (TAIL)

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Mnvr to tail Sun att:

54. GNC UNIV PTG  
TGT ID – ITEM 8 +4 EXEC  
BODY VECT – ITEM 14 +5 EXEC  
P – ITEM 15 +2 2 5 EXEC  
Y – ITEM 16 +0 EXEC  
OM – blank (MCC provided if reqd)  
DAP: A/AUTO/PRI  
START TRK – ITEM 19 EXEC

Establish stabilized att:

55. DAP: B/AUTO/PRI  
ADI ATT – INRTL  
Wait 30 sec (check rates)

Establish free drift:

56. DAP: FREE
- O6 57. GPC MODE 1 – STBY (tb-bp), HALT  
– STBY (tb-RUN)  
– HALT (tb-bp)  
PWR (five) – OFF
58. Record MET \_\_\_/\_\_\_/\_\_\_
- C2,R12L 59. Confirm all IDPs and MDUs – OFF
- L1 60. AV BAY 1 FAN (two) – OFF
- O8 61. FWD RCS MANF ISOL 1,2,3,4 (four) – CL (tb-CL)
- O14:F 62. RJDF 1B F1 LOGIC – OFF  
DRIVER – OFF
- O15:F 63. 1A F2 DRIVER – OFF  
LOGIC – OFF
- O16:F 64. 2A F3, 2B F4 DRIVER (two) – OFF  
F4/F5 LOGIC (two) – OFF  
RJD MANF L5/F5/R5 DRIVER – OFF
- L4:J 65.  $\sqrt{cb}$  AC3  $\Phi$ A SIG CONDR HUM SEP – op
- :P 66.  $\Phi$ A LG SNSR (two) – op
- MA73C If H2O PUMP LOOP 1 A(B) ON:  
67. Leave MCA LOGIC MNA FWD 1 – ON  
(MNB FWD 2 – ON)  
MCA LOGIC MNA,B,C (thirteen) – OFF
- If H2O PUMP LOOP 1 A,B OFF:  
68. MCA LOGIC MNA,B,C (fourteen) – OFF

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NOTE

30 min after deact, cycle one CAB FAN – ON (30 min ON, 30 min OFF) to control PPCO2 and for cooling.

Cycle MDUs. If ON at loss of cooling, turn OFF within 30 min. Allow 3 min OFF prior to each 1 min ON (30 min max ON time). Save two MDUs that interface with a single IDP for entry.

If GPC 1 remains in RUN, limit its operation to max of 1 hr. If reqd, reactivate GPC 2 and restrng in MC 3, take GPC 1 to HALT, turn AV BAY 2 FAN B – ON, AV BAY 1 FAN – OFF, then wherever GPC 1 is referenced, replace with GPC 2 in the LOSS OF 2 H2O LOOPS DEORBIT PREP/ENTRY or LOSS OF 2 H2O LOOPS ON-ORBIT WAIT (CONT DEORB).

Expect 100% cab humidity in ~2 hr.

Possible cab air OVBD RLF due to cab air heating which may cause a loud noise

69. Verify MS PWRDN complete, then:  
If not orbit 2 deorb:

NOTE

Use QDM as needed for temp > 90 degF. If temp > 95 degF and no evaporative cooling is sensed, don LES, check tabs, close visor, LES O2 – ON.

Immed begin drinking H2O (one 8-oz container every 15 min with salt tablet in every other container) and continue thru entry

70. Go to LOSS OF 2 H2O LOOPS ON-ORBIT WAIT (CONT DEORB, LOSS OF 2 H2O LOOPS) >>  
71. Go to LOSS OF 2 H2O LOOPS DEORBIT PREP/ENTRY (CONT DEORB, LOSS OF 2 H2O LOOPS D/O PREP). Perform all steps although some activities may already have been performed

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## LOSS OF 1 FREON LOOP

- C3 1. MSTR MADS PWR – OFF
- 2. Minimize Itg
- 3. Use one IDP/CRT with two MDUs, FLT CNTLR PWR
- O7 4. TACAN MODE sel (three) – OFF
- O8 5. RDR ALTM (two) – OFF
- 6. If reqd: Perform PL PWRDN, then:
- L1 7.  $\sqrt{\text{FLOW PROP VLV LOOP tb}}$  (two) – ICH
- 8. H2O LOOP 2(1) BYP MODE – MAN  
MAN – DECR (30 sec)

- O14, 9. BRAKES (three) – OFF
- O15,
- O16:A

- O14, 10. cb ADTA (four) – op
- O15,
- O16:E

If FLT CNTLR PWR not reqd:

- 11. cb DDU L,R,AFT (six) – op
- 12.  $\sqrt{\text{(Aff) FREON PUMP}}$  – OFF

If FREON LEAK performed and leak isolated (accum qty > 3 and not decr)( $\sqrt{\text{MCC}}$ ):

- 13. Perform EMER PLBD OPENING (ECLS), 4-8
- 14. Mnvr per MCC >>

If AOA:

- 15. Deltas to AOA (ASC)  
At TIG-10 min:  
 $\sqrt{\text{cb DDU L,R}}$  (four) – cl

O14,  
O15,  
O16:E

Use two IDP/CRTs with four MDUs, two FLT CNTLR PWR for burn

- 16. Deltas to AOA POST D/O BURN (ASC)  
FLT CNTLR PWR (two) – OFF  
cb DDU L,R (four) – op

F7,F8  
O14,  
O15,  
O16:E

- 17. Use one IDP/CRT with two MDUs  
Deltas to ENTRY SW CHECK (ENT, POST BURN)  
Pwr NAV AIDS per ENTRY MANEUVERS (Cue Card)

- 18. Deltas to ENTRY MANEUVERS (Cue Card)  
Use DEORB PREP/ENTRY DELTAS PULLOUT  
PAGE, 10-31, starting with step D,1  
Continue with AOA (ASC) >>

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APCL/3,4/GEN N





DEORB PREP/ENTRY DELTAS PULLOUT PAGE

DO NOT DISCARD; USE TO LANDING

- A. Deltas to LAUNCH DAY ORBIT 2(3) (CONT DEORB)
1. Use one FLT CNTLR PWR, DDU, PGSC, and one IDP/CRT with two MDUs
  2. Minimize Itg
  3. Minimize sun in cab if possible
- If orbit 2:
4. APU HTRS & DED DISP ENT CONFIG [3]  
Do not pwr TACANs
  5. Go to step 7
- If orbit 3:
6. ENT FWD FLT DECK CONFIG [10]  
Do not pwr MLS, TACANs
  7. In ENT SW LIST/VER, do not activate TACANs, MLS, RA, ADTAs until indicated by ENTRY MANEUVERS (Cue Card) deltas

O14,  
O15,  
O16:E

- B. Deltas to DEORBIT BURN (ENT)
- At TIG-15 min:
1. Remove Window Shades/mnvr to deorb burn att
- At TIG-10 min:
2. √cb DDU L,R (four) – cl
  3. Use two IDP/CRTs with four MDUs, two FLT CNTLR PWR for burn

F6,F8  
O14,  
O15,  
O16:E

- C. Deltas to POST BURN (ENT)
1. L,R FLT CNTLR PWR (two) – OFF
  2. cb DDU L,R (four) – op
  3. Use one IDP/CRT with two MDUs, as reqd

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**LOSS OF 1 FREON LOOP  
D/O PULLOUT PAGE**

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- D. Deltas to ENTRY MANEUVERS (Cue Card)
- At EI:
- 1. cb DDU L,R (four) – cl
  - 2. L FLT CNTLR PWR – ON
  - 3. Use two IDP/CRTs with four MDUs, as reqd
  - 4. BRAKES (three) – ON
- cb ADTA 1,2,3 (three) – cl
- 5. GNC I/O RESET
- At V = 15K:
- 6. Delete NAVAIDS callout
  - 7. TACAN 1,2 MODE sel (two) – GPC
- At V = 12K:
- If loop 1(2) lost:
- 8. NH3 CNTLR A(B) – OFF  
B(A) – PRI/GPC
- At M = 2.7:
- 9. Use two HUDs, MLS, and RAs  
GNC I/O RESET

## LOSS OF HI LOAD EVAP

- |                                |   |
|--------------------------------|---|
| C3                             | <ol style="list-style-type: none"> <li>1. √MSTR MADS PWR – OFF</li> <li>2. Minimize Itg</li> <li>3. Use one PGSC and one IDP/CRT with two MDUs, as reqd</li> </ol>  |
| O7                             | <ol style="list-style-type: none"> <li>4. TACAN MODE sel (three) – OFF</li> </ol>   |
| O8                             | <ol style="list-style-type: none"> <li>5. RDR ALTM (two) – OFF</li> </ol>   |
| L1                             | <ol style="list-style-type: none"> <li>6. Perform <u>PL PWRDN</u>, then:</li> <li>7. H2O LOOP 2(1) BYP MODE – MAN<br/>MAN – DECR (hold 30 sec)</li> </ol>   |
| O14,<br>O15,<br>O16:A          | <ol style="list-style-type: none"> <li>8. √FLOW PROP VLV LOOP tb (two) – ICH</li> <li>9. BRAKES (three) – OFF</li> </ol>  |
| O14,<br>O15,<br>O16:E          | <ol style="list-style-type: none"> <li>10. cb ADTA (four) – op</li> </ol>   |
|                                | <p>If FLT CNTLR PWR not reqd:</p> <ol style="list-style-type: none"> <li>11. cb DDU L,R (four) – op</li> </ol>  |
|                                | <p>If AOA:</p> <ol style="list-style-type: none"> <li>12. Deltas to <u>AOA</u> (ASC)<br/>At TIG-10:<br/>√cb DDU L,R (four) – cl</li> </ol>  |
| O14,<br>O15,<br>O16:E          | <p style="text-align: center;">Use FLT CNTLR, and two IDP/CRTs with four MDUs, as reqd for burn</p> <ol style="list-style-type: none"> <li>13. Deltas to <u>AOA POST D/O BURN</u> (ASC)<br/>L,R FLT CNTLR PWR (two) – OFF<br/>cb DDU L,R (four) – op</li> </ol> |
| F6,F8<br>O14,<br>O15,<br>O16:E | <p style="text-align: center;">Use two IDP/CRTs with four MDUs</p> <ol style="list-style-type: none"> <li>14. Deltas to ENTRY SW CHECK (ENT, <u>POST BURN</u>)<br/>BRAKES (three) – ON</li> </ol>   |
| O14,<br>O15,<br>O16:A          | <p>Do not pwr NAVAIDS, NWS<br/>Perform LOSS OF HI LOAD EVAP DEORB OR ENTRY PULLOUT PAGE (ENT PKT, <u>PWRDN</u>), then:</p>  |

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~  
 If not AOA:  
     After MPS pwrn:  
 O17:A      15. ATVC (four) – OFF  
   :B        16. EIU (three) – OFF  
   :D        17. MEC 1 – OFF (wait 2 sec), then:  
             2 – OFF  
 If launch day deorbit: Go to LOSS OF HI LOAD EVAP (ORB  
 PKT, PWRDN) >>  
 After PLB doors open:  
 L1        18. SM 88 APU/ENVIRON THERM  
           19. H2O LOOP 2(1) BYP MODE – MAN  
                     MAN – INCR, until FLOW = 950  
           20. On MCC call, go to FULL-UP FES FLUSHING (ECLS),  
               4-16

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APCL/3,4/GEN N,2

## LOSS OF 2 FREON LOOPS (POST OMS-2)

### WARNING

FC purge must be started and loads pwr'd dn ASAP

Orbiter lifetime is expected to be 120 min from LOSS OF 2nd FREON LOOP with all three FCs running. This assumes three FCs are pwr'd dn to a total level of 8 kW immed and are continuously purged

Earliest possible landing is req'd

### NOTES

- Failure assumed to occur too late for an AOA and before OPS 2 transition
- FC purging and pwr'dn should be performed ASAP after failure
- COMM proc (ORB PKT) should be used throughout this proc and CONT DEORB.  
Preferred comm config is:
  - A. UHF only
  - B. GSTDN S-BD if req'd
  - C. Use TDRS only if mandatory

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APCL/ALL/GEN N

TIME CRITICAL PROCEDURES

1. MS initiate FC purge (step 4) and unstow ORB PKTs and PGSC, ASAP
2. MS perform LOSS OF 2 FREON LOOPS, COMM PWRDN (ORB PKT, PWRDN); delay 10 min max if AOS

CDR and PLT perform following steps ASAP:

- |         |    |   |
|---------|----|---|
| C3      | 3. | MSTR MADS PWR – OFF   |
| MS R11U | 4. | √FC PURGE HTR – ON<br>√VLVS (three) – OP                    |
|         | 5. | Perform <u>PL PWRDN</u> , then:                             |
|         | 6. | Minimize Itg  |
| CRTX    | 7. | Use only one FWD IDP/CRT with one MDU (save IDP3 for entry) |
|         | 8. | Use only one PGSC   |
| F6/F8   | 9. | √FLT CNTLR PWR (two) – OFF                                  |

RESTRICTING TO GPC 1/TRANSITION TO OPS 3

- |    |     |  |  |
|----|-----|--|--|
|    | 10. | <u>GNC 0 GPC MEMORY</u><br>CONFIG – ITEM 1 +3 EXEC<br>Modify MC 3 per table----->                                  |  |
|    | 11. | GNC, OPS 301 PRO<br>For any FWD IDP that is OFF:   |  |
|    | 12. | GPC/CRT1/X EXEC  |  |
| C3 | 13. | BFC CRT DISP – OFF   |  |
| O6 | 14. | GPC MODE 2,3,4 (three)<br>– STBY (tb-bp)<br>– HALT<br>– STBY (tb-RUN)<br>– HALT (tb-bp)<br>PWR 2,3,4 (three) – OFF |  |
|    | 15. | BFS GNC, OPS 106 PRO<br>000 PRO  |  |
|    | 16. | GPC MODE 5 – STBY (tb-RUN)<br>– HALT (tb-bp)<br>OUTPUT 5 – NORM<br>PWR 5 – OFF                                     |  |
|    | 17. | <u>GNC 53 ENTRY CONTROLS</u><br>RGA 1,3,4 (three) – desel  |  |
|    | 18. | Have MS perform MS OVHD AND AFT PNL PWRDN (ORB PKT, <u>PWRDN</u> ), but leave RGA 2 pwr until step 52              |  |

CONFIG GPC	3	10000
STR 1	1	
2	1	
3	1	
4	1	
PL 1/2	1	
CRT 1	1	
2	1	
3	1	
4	0	
L 1	0	
2	0	
MM 1	1	
2	1	

Cont next page

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PLT

- O7 19. √TACAN MODE sel (three) – OFF
- O8 20. √RDR ALTM (two) – OFF
- 21. √MLS (three) – OFF
- C3 22. FCS CH (four) – AUTO
- R4 23. MPS MANF PRESS LO2,LH2 (two) – CL
- R2 24. √HYD CIRC PUMP (three) – OFF
- 25. MPS He ISOL (six) – CL
  - PNEU He ISOL – CL
  - L ENG He XOVR – CL
- 26. Go to step 47

CDR

- L1 27. HUM SEP A,B (two) – OFF
- 28. √IMU FAN B – ON
  - A,C (two) – OFF
- 29. CAB FAN A,B (two) – OFF
- 30. AV BAY 1,2,3 FAN A,B (five) – OFF
- 31. √1 FAN B – ON
- 32. FREON PUMP LOOP 1,2 (two) – OFF (one-ON, if any flow)
- 33. √RAD CNTLR LOOP 1,2 (two) – OFF
- 34. NH3 CNTLR A,B (two) – OFF
- If no FREON PUMP ON:
  - L2 35. O2 SYS 1,2 SPLY (two) – OP (tb-OP)
  - L1 36. FLASH EVAP CNTLR PRI A,B (two) – OFF
  - 37. TOP EVAP HTR NOZ (two) – OFF
    - DUCT sel – OFF
  - L2 38. HI LOAD DUCT HTR sel – OFF
  - 39. FLASH EVAP FDLN HTR SPLY (two) – OFF
- If one FREON PUMP ON:
  - L1 40. FLASH EVAP CNTLR PRI A – ON
  - 41. TOP EVAP HTR NOZ (two) – OFF
    - √DUCT sel – ON
  - 42. √HI LOAD DUCT HTR sel – ON
  - L2 43. FLASH EVAP FDLN HTR B SPLY – OFF
  - 44. NWS – OFF
  - O6 45. √S TRK PWR -Y,-Z (two) – OFF
  - 46. ANNUN BUS SEL ACA 2/3 – OFF

Cont next page

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APCL/3,4/GEN N

- |                       |     |  |
|-----------------------|-----|--|
|                       | 47. | <u>GNC 51 OVERRIDE</u>   |
|                       |     | IMU 1,2 (two) – desel  |
| O14,<br>O15:A         | 48. | IMU 1,2 (two) – OFF  |
| O14,<br>O15,<br>O16:A | 49. | BRAKES (three) – OFF   |
|                       | 50. | All IDPs, MDUs – OFF (use IDP1 as reqd until<br>CONT DEORB proc, 3 min<br>OFF for each min ON)   |
|                       | 51. | DAP: INRTL/PULSE   |
| O15:A                 | 52. | RGA 2 – OFF  |
| O6                    | 53. | MDM FF1,4 (two) – OFF<br>FA1,4 (two) – OFF   |
| F6                    | 54. | CDR disp sws – green dot   |
| O8                    | 55. | FWD RCS MANF ISOL 1,2,3,4 (four) – CL (tb-CL)  |
| MA73C:<br>A,B         | 56. | √MCA LOGIC MNA FWD 1 – ON<br>MID 1,AFT 1,MID 3 (three) – OFF<br>MNB,MNC (ten) – OFF  |
| O14:F                 | 57. | RJDA 1A,2A LOGIC,DRIVER (four) – OFF<br>RJDF 1B F1 LOGIC,DRIVER (two) – OFF  |
| O15:F                 | 58. | RJDA 1B LOGIC,DRIVER (two) – OFF<br>RJDF 1A F2 LOGIC,DRIVER (two) – OFF  |
| O16:F                 | 59. | RJDA 2B LOGIC,DRIVER (two) – OFF<br>RJDF 2A F3 LOGIC,DRIVER (two) – OFF<br>2B LOGIC,DRIVER (two) – OFF<br>RJD MANF L5/F5/R5 DRIVER – OFF |
|                       | 60. | Go to LOSS OF 2 FREON LOOPS (ORB PKT,<br><u>PWRDN</u> ), beginning at step 58 (Sel ELS TIG)  |

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A10-38

APCL/ALL/GEN N



## LOSS OF FES/1 FC

- ⇒ C3
1. √MSTR MADS PWR – OFF
  2. Minimize Itg
  3. Use only one IDP/CRT with two MDUs
- If FLT CNTLR PWR not reqd:
4. cb DDU L,R,AFT (six) – op
- O14,  
O15,  
O16:E
5. TACAN MODE sel (three) – OFF
  6. RDR ALTM (two) – OFF
  7. √FLASH EVAP FDLN HTR SPLY (two) – OFF
  8. NWS – OFF
  9. ANTISKID – OFF
- O7
10. √CAB FAN A(B) – ON
- O8
11. Perform PL PWRDN, then:
- L2
12. √FLOW PROP VLV LOOP 1,2 tb (two) – ICH
- L1
- If AOA and FES lost:
- MS perform pwrnd activities (steps 13-18)
13. Minimize Itg
  14. BRAKES (three) – OFF
- O14,  
O15,  
O16:A
15. cb ADTA (four) – op
- O14,  
O15,  
O16:E
16. cb MSN TIMER FWD,AFT (two) – op
- O14,  
O15:B
17. EVENT TIMER AFT,FWD (two) – op
  18. MMU 1,2 (two) – OFF (MMU 2 ON for OPS TRANSITION, then OFF)
- O14,  
O15:F
19. H2O LOOP 2(1) BYP MODE – MAN  
MAN – DECR  
(hold 30 sec)
- L1
20. Continue with AOA (ASC):  
Do not perform LOSS OF FES (ENT PKT, PWRDN)  
Use ENTRY DELTAS PULLOUT PAGE,  
10-41

Cont next page

# OV103,104

A10-39

APCL/3,4/GEN N

~  
If not AOA:

After APU/HYD SHUTDOWN and MPS PWRDN/ISOL:

O17:A  
:B  
:D

21. ATVC (four) – OFF
- EIU (three) – OFF
- MEC 1 – OFF (wait 2 sec)
- 2 – OFF

L2

If FES failed, after MM201 transition:

22. FLASH EVAP FDLN HTR A,B SPLY (two) – 1
23. On MCC call, go to FULL-UP FES FLUSHING (ECLS), 4-16 >>

If FC lost, after MM201 transition:

24. FLASH EVAP FDLN HTR A,B SPLY (two) – 1
25. Go to LOSS OF 1 FC (ORB PKT, PWRDN) >>

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A10-40

APCL/3,4/GEN N,2

ENTRY DELTAS PULLOUT PAGE

DO NOT DISCARD; USE TO LANDING

NOTE

Incorporate following changes or remove this page for use with indicated checklist or cue card

- A. Deltas to AOA (ASC)  
TIG-5 min:
- 1. Use two IDP/CRTs with four MDUs
  - 2. cb DDU L,R (four) – cl
  - 3. L,R FLT CNTLR PWR (two) – ON
- O14,O15,  
O16:E  
F6,F8
- B. Deltas to POST D/O BURN (ASC)
- 1. Use one IDP/CRT with two MDUs
  - 2. L,R FLT CNTLR PWR (two) – OFF
  - 3. cb DDU L,R (four) – op
  - 4. Delete ANTISKID, NWS callouts (ENTRY SW CHECK)
- F6,F8  
O14,  
O15,  
O16:E
- At EI-7:
- 5. Use two IDP/CRTs with four MDUs
  - 6. Perform EMER PLBD CLOSING (ENT PKT, ECLS)
- C. Deltas to ENTRY MANEUVERS (Cue Card)  
At EI:
- 1. NH3 CNTLR B(A) – SEC/ON
  - 2. cb DDU L,R (four) – cl
  - 3. L,R FLT CNTLR PWR (two) – ON
  - 4. BRAKES (three) – ON
  - 5. cb ADTA (four) – cl
  - 6. GNC I/O RESET
- L1  
O14,  
O15,  
O16:E  
F6,F8  
O14,  
O15,  
O16:A  
O14,  
O15,  
O16:E

Cont next page

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**LOSS OF FES/1 FC  
ENTRY PULLOUT PAGE**

A10-41

APCL/ALL/GEN N

- At V = 15K:
- 7. Delete NAVAIDS callout
  - 8. TACAN MODE sel (three) – GPC
- At V = 12K:
- 9. Delete ref to RAD FLOW
- At V = 6K:
- 10. NH3 CNTLR B(A) – OFF  
A(B) – PRI/GPC
- At M = 2.7:
- 11. Use two HUDs, three MLSs, and two RAs as reqd
  - 12. GNC I/O RESET
  - 13. ANTISKID – ON
  - 14. NWS – 1
- At post Wheel Stop:
- 15. Go to EXPEDITED PWRDN (ENT, POST LDG)



- O6 12. GPC MODE 2,3,4 (three) – STBY (tb-bp)  
 – HALT  
 – STBY (tb-RUN)  
 – HALT (tb-bp)

PWR 2,3 (two) – OFF

13. (BFS) GNC I/O RESET

14. Go to step 21

15. GNC 0 GPC MEMORY

CONFIG – ITEM 1 +2 EXEC

Modify MC 2 per table----->

DOWNLIST GPC – ITEM 44 +1  
 EXEC

	CONFIG	2
GPC		10000
STR	1	1
	2	1
	3	1
	4	1
PL	1/2	0
CRT	1	1
	2	1
	3	0
	4	1
L	1	0
	2	0
MM	1	1
	2	1

- CRT O6 16. GNC, OPS 201 PRO  
 17. GPC MODE 2 – STBY (tb-bp)  
 – HALT

PWR 2 – OFF

18. √GPC MODE 3,5 (two) – HALT  
 (tb-bp)

PWR 3 – OFF

19. GNC 20 DAP CONFIG

P OPTION – ITEM 15 EXEC  
 (TAIL)

Y OPTION – ITEM 16 EXEC  
 (TAIL)

- C3 20. DAP: A/AUTO/PRI  
 R2 21. When MPS Dump Complete:  
 MPS ENG PWR (six) – OFF

22. GNC 51 OVERRIDE

Any comm faulted IMU – desel

- L1 23. √IMU FAN (one) – ON  
 24. √H2O PUMP LOOP (one) – ON  
 25. AV BAY 1 FAN B(A) – ON  
 26. AV BAY 2 FAN A(B) – ON

If MNA unpwr:

27. FREON PUMP LOOP 1 – B  
 2 – A  
 28. FLASH EVAP CNTLR PRI A – ON  
 B – OFF  
 29. TOP EVAP HTR DUCT sel – B  
 HI LOAD DUCT HTR sel – B  
 30. L OMS – sel SEC

Cont next page

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A10-44

APCL/ALL/GEN N

- If MNB(C) unpwr:
- L1 31. FREON PUMP LOOP 1,2 (two) – A(B)  
 32. TOP EVAP HTR DUCT sel – A  
 HI LOAD DUCT HTR sel – A
- If MNC unpwr:
33. FLASH EVAP CNTLR PRI B – ON  
 A – OFF
34. R OMS – sel SEC
- If no MANF leak:
- R1 35.  $\sqrt{O_2, H_2}$  MANF VLV TK1, TK2 (four) – OP  
 TK1 HTRS B – AUTO (MNA or MNB ↓) or  
 TK2 HTRS B – AUTO (MNC or no  
 MN BUS ↓); then:  
 All others OFF
- If MANF leak:
36.  $\sqrt{O_2, H_2}$  HTR LOSS TABLE (EPS), 5-20  
 37. Sel one htr in one O<sub>2</sub>, H<sub>2</sub> TK
- R4 38. Activate PGSC if reqd
- L2 39.  $\sqrt{FLASH EVAP FDLN HTR A, B SPLY}$  (two) – OFF
- L4:L 40. cb  $\Phi A$  CAB T CNTLR (two) – op
- C3 41. C/W MODE – ACK
- F6/F8 42. FLT CNTLR PWR (two) – OFF, use one as reqd
- Post APU/HYD SHUTDN:
- R2 43. BLR CNTLR/HTR (three) – OFF  
 44.  $\sqrt{HYD CIRC PUMP}$  (three) – OFF  
 45. GNC 23 RCS  
 ITEM 1 EXEC (FRCS page)  
 Ovrdr FRCS MANF 1,2,3,4 STAT (four) – CL
- O8 46. RJDF DRIVER, LOGIC (eight) – OFF  
 O14, O15, O16:F  $\sqrt{RJDF MANF L5/F5/R5 DRIVER}$  – OFF
- If not MN BUS SHORT:
47. Tie three MN buses, BUS TIE (Cue Card)
- Post BUS TIE config check:
- L1 48. CAB FAN A(B) – ON  
 49.  $\sqrt{AV BAY 1 FAN}$  (one) – ON  
 50.  $\sqrt{AV BAY 2 FAN}$  (one) – ON  
 51.  $\sqrt{MS OVHD AND AFT PNL PWRDN}$  complete, then  
 continue:
- If in OPS 2:
52. Go to LOSS OF 2 FC LAUNCH DAY DEORBIT  
 PREP (ORBIT 2 OR ORBIT 3) (CONT DEORB,  
LOSS OF 2 FC ORB 2 OR 3) (read notes) >>
53. Set watch to count down to DEORBIT TIG (use PGSC  
 or MCC for TIG time)

Cont next page

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A10-45

APCL/ALL/GEN N

OPS 3 TRANSITION CONFIG – POST OMS 2

- O14,O15,  
O16:F 54. ASA (four) – ON
- O14,  
O15,  
O16:A 55. √RGA 1,2,3 (three) – ON
- O14,  
O15:E 56. √cb ACCEL (two) – cl
- O16:F 57. √ACCEL 3 – ON
- C3 58. √FCS CH (four) – AUTO

TRANSITION GPC 1 TO GNC OPS 3

- CRT1 59. GNC 0 GPC MEMORY  
CONFIG – ITEM 1 +3 EXEC  
Modify MC 3 per table----->
- CRT 60. GNC, OPS 301 PRO
- 61. GNC DEORB MNVR COAST

	CONFIG GPC	3 10000
STR	1	1
	2	1
	3	1
	4	1
PL	1/2	1
CRT	1	1
	2	1
	3	1
	4	0
L	1	0
	2	0
MM	1	1
	2	1

- C3 TRANSITION BFS GPC TO  
GNC OPS 3  
62. BFC CRT DISP – ON  
√SEL – 3+1
- CRT 63. (BFS) GNC OPS 301 PRO
- O14,  
O15:F 64. MMU (two) – OFF

- 65. Go to LOSS OF 2 FC LAUNCH DAY DEORBIT PREP (ORBIT 2 OR ORBIT 3) (CONT DEORB, LOSS OF 2 FC ORB 2 OR 3); DO NOT perform PRE DPS TRANSITION SWITCH CONFIG [5] and DPS ENTRY CONFIG [6]

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MS OVHD AND AFT PNL PWRDN

- O14,O15, 1. BRAKES (three) – OFF  
O16:A
- O14,O15, 2. cb ADTA (four) – op  
O16:E
- O16:E 3. cb MNC RCS/OMS PRPLT QTY GAUGE – OP
- O15, 4. cb DDU R (two) – op  
O16:E
- O14:A 5. Desel IMU – OFF (one of three IMUs OFF)
- :B 6. cb MNA MSN TIMER FWD – op  
EVENT TIMER AFT – op
- O15:B 7. MNB MSN TIMER AFT – op  
EVENT TIMER FWD – op
- Post MPS pwrdn and APU/HYD SHUTDN:
- O14,O15, 8. ASA (four) – OFF  
O16:F
- O17:A 9. ATVC (four) – OFF
- :B 10. EIU (three) – OFF
- :D 11. MEC 1 – OFF (wait 2 sec), then  
2 – OFF
- A12 12. √APU HTR LUBE OIL LN (three) – OFF
- 13. HYD HTR (eight) – OFF
- A13 14. GPS PWR – OFF  
PRE AMPL (two) – OFF
- A14 15. RCS/OMS HTR FWD RCS – OFF  
JET 1,2,3,4,5  
(five) – OFF  
AFT RCS JET 5 (one) – OFF
- ML26C 16. SPLY H2O GN2 TK VENT vlv – PRESS  
TKA SPLY vlv – OP

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**LOSS OF 2nd FC  
ASCENT  
MS PAGE**

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**OV103,104**

APCL/ALL/GEN N

PWRDN

LOSS OF 2 CAB FANS .....	10-2
AV BAY 1 COOLING/AV BAY 1 FIRE .....	10-7
2 COOLING/AV BAY 2 FIRE .....	10-10
3 COOLING/AV BAY 3 FIRE .....	10-13
CAB PRESS (MINOR PWRDN) .....	10-16
(MAJOR PWRDN).....	10-17
2 H2O LOOPS (POST OMS-2) .....	10-21
1 FREON LOOP .....	10-29
HI LOAD EVAP .....	10-33
2 FREON LOOPS (POST OMS-2) .....	10-35
FES/1 FC .....	10-39
2nd FC .....	10-43

PWRDN

**OV105**

B10-1

APCL/ALL/GEN N

## LOSS OF 2 CAB FANS

### NOTE

Cab press increase due to air heating  
may cause noisy CAB PRESS RELIEF  
vlv cycling

### PWRDN

- |                   |     |  |
|-------------------|-----|--|
| C3                | 1.  | MSTR MADS PWR – OFF  |
|                   | 2.  | Minimize Itg   |
|                   | 3.  | Perform <u>PL PWRDN</u> , then:  |
| L1                | 4.  | √CAB FAN A,B (two) – OFF   |
|                   |     | TEMP CNTLR – OFF   |
|                   | 5.  | HUM SEP A,B (two) – OFF  |
|                   | 6.  | Use only one FLT CNTLR PWR, PGSC   |
| L4:L              | 7.  | cb ΦA CAB T CNTLR 1,2 (two) – op   |
|                   | 8.  | Cycle MDUs. If ON at loss of cooling, turn OFF<br>within 30 min. Allow 3 min OFF prior to each 1 min<br>ON (30 min max ON time). Save two MDUs that<br>interface with a single IDP for entry |
| O14:B             | 9.  | cb MNA EVENT TIMER AFT – op  |
| :C                | 10. | SMOKE DETN L/R FLT DK – op   |
| O15:B             | 11. | MNB OI H2O BYP LOOP 2 SNSR – op  |
|                   | 12. | MSN TIMER AFT – op   |
| O16:C             | 13. | MNC SMOKE DETN CAB – op  |
| L4:J              | 14. | √cb AC3 ΦA SIG CONDR HUM SEP – op  |
|                   |     | Post OMS-2:  |
| F6/F8             | 15. | √FLT CNTLR PWR (two) – OFF   |
| O14,O15,<br>O16:E | 16. | cb DDU L,R,AFT (six) – op  |
| W1-10             |     | Install Window Shades or mnvr to tail Sun att:<br>If in OPS 1:<br>  17. Manually mnvr to shade windows<br>If in OPS 3:<br>18. Obtain ATT data from MCC<br><u>XXXXX MNVR YYYY</u>             |

Cont next page

B10-2

# OV105

APCL/ALL/GEN N

NOTE

If uncomfortable, doff LES. Use QDM as needed to provide respiratory cooling. If cab temp > 95 degF and no evaporative cooling is sensed, don LES, check tabs, close visor, LES O2 – ON.

Begin drinking H2O (one 8-oz container every 15 min with salt tablet in every other container) and continue thru entry

19. Continue with ASC, then LAUNCH DAY ORBIT 2(3) (CONT DEORB). Use DEORB PREP/ENTRY DELTAS PULLOUT PAGE, 10-5, for changes

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B10-3

APCL/ALL/GEN N

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B10-4

**OV105**

APCL/ALL/GEN N

DEORB PREP/ENTRY DELTAS PULLOUT PAGE

- A. Deltas to LAUNCH DAY ORBIT 2(3) (CONT DEORB)
1. Minimize use of IDPs, MDUs, FLT CNTLR PWR, DDU's; use one PGSC only if reqd
  2. Minimize Itg
  3. Minimize sun in cab (delay mnvr to burn att until TIG-15 if necessary)
- If orbit 2 deorb:
4. APU HTRS & DED DISP ENT CONFIG [3]
  5. Go to step 7
- If orbit 3 deorb:
6. ENT FWD FLT DECK CONFIG [10]
  7. In ENT SW LIST/VER, do not activate pwrdrn items

B. Deltas to DEORBIT BURN (ENT)

At TIG-25:

If time permits, set up for cab purge:

- |             |  |
|-------------|--|
| MO10W       | 1. 14.7 CAB REG INLET SYS 1,2 vlv (two) – OP             |
|             | 2. O2 REG INLET SYS 1 vlv – OP<br>√2 vlv – CL            |
| L2          | 3. O2/N2 CNTLR VLV SYS 1 – AUTO (O2/N2)<br>2 – OP (N2)   |
| Inner Hatch | 4. √O2 SYS 1,2 SPLY (two) – OP (tb-OP)                   |
|             | 5. Remove INNER HATCH Equal vlv cap (two)                |
|             | 6. √Equal vlv (two) – NORM                               |
|             | 7. Reinstall Equal vlv cap (two)                         |
|             | 8. Open INNER HATCH                                      |
| ML86B:B     | 9. cb MNA VAC VENT ISOL VLV – cl                         |
| ML31C       | 10. VAC VENT ISOL VLV BUS SEL – MNA<br>CNTL – OP (tb-OP) |
- NOZ HTR – ON

Cont next page

**LOSS OF 2 CAB FANS  
D/O PULLOUT PAGE**

B10-5

**OV105**

APCL/ALL/GEN N

At TIG-20:

11. Initiate cab purge

<p><b>WARNING</b> Do not use WCS once constant cab purge has started (because of high N2 concentration)</p>
---

MO32M,  
MO69M,  
C6  
L2

12. LEH O2 1(2,...8) vlv – OP (as reqd)

13. O2 XOVR SYS 1 – CL  
√2 – OP

AW82B

14. AIRLK DEPRESS vlv cap – vent, remove  
vlv – 5

15. Close INNER HATCH

At TIG-15:

16. Mnvr to deorb burn att

At TIG-4:

17. Use two IDP/CRTs with four MDUs for deorb burn

O14,O15,  
O16:E  
F6,F8

18. cb DDU L,R (four) – cl, then:

19. L,R FLT CNTLR PWR (two) – ON

C. Deltas to POST BURN (ENT)

F6,F8  
O14,O15,  
O16:E

1. Use one IDP/CRT with two MDUs
2. L,R FLT CNTLR PWR (two) – OFF
3. cb DDU L,R (four) – op

D. Deltas to ENTRY MANEUVERS (Cue Card)

At EI:

O14,O15,  
O16:E  
F6

1. Use only two IDP/CRTs with four MDUs
2. cb DDU L,R (four) – cl
3. L FLT CNTLR PWR – ON

At Wheel Stop:

4. Open visor, LES O2 – OFF
5. Go to EXPEDITED PWRDN (ENT, POST LDG)



**LOSS OF AV BAY 1 COOLING/AV BAY 1 FIRE**

WARNING  
 There is no smoke detection or air cooling in AV BAY 1. Failure of any LRU still pwr'd in AV BAY 1 may be indicative of fire in progress

- O7 1. GPS 1 PWR – OFF  
     PRE AMPL (two) – OFF
- L1 2. √AV BAY 1 FAN A,B (two) – OFF
- O6 3. GPC MODE 1,4 (two) – STBY (tb-bp)  
     – HALT  
     – STBY (tb-RUN)  
     – HALT (tb-bp)

REASSIGN STRINGS TO GPCs 2,3 IN MC 1

- 4. GNC 0 GPC MEMORY  
 CONFIG – ITEM 1 +1 EXEC  
 Modify MC 1 per table----->

CONFIG GPC	1	2	3	4
STR 1	3			
2	2			
3	3			
4	2			
PL 1/2	2			
CRT 1	2			
2	2			
3	3			
4	0			
L 1	1			
2	2			
MM 1	2			
2	3			

- NOTE  
 The following must be an OPS MODE Recall
- CRT 5. GNC, OPS 10X PRO
- 6. (BFS) GNC I/O RESET
- 7. Perform PL PWRDN, then:  
 If AV BAY 1 fire:
- 8. Continue; otherwise go to step 31

NOTE  
 While performing proc, note any cbs open. Equipment still pwr'd in Av Bay following pwr'dn:  
 FPCA 1, FLCA 1, IMU FAN, MDM OF1, DSC OF1, and ACCU

Cont next page

B10-7

**OV105**

APCL/5/GEN N,4

- R1 9. cb AC CONTR AC1 (three) – cl
- 10. INV/AC BUS 1 – OFF (tb-OFF)
- INV PWR 1 – OFF (tb-OFF)
- cb AC CONTR AC1 (three) – op
- R2 11. √BLR CNTLR/HTR 1 – A
- 3 – B
- 12. Perform FC1 SHUTDOWN, except PWRDN (Cue Card), then:
- L1 13. FREON PUMP LOOP 2 – A
- AV BAY 3 FAN A – ON
- B – OFF
- L4:G 14. cb AC2 AV BAY 1 FAN B (three) – op
- O6 15. GPC PWR 1 – OFF
- 4 – OFF
- 16. MDM FF1 – OFF
- PL1 – OFF
- O8 17. RDR ALTM 1 – OFF
- √MLS 1 – OFF
- FWD RCS MANF ISOL 2 – CL (tb-CL)
- O13:A 18. cb ESS 1BC AC1 SNSR – op
- :E 3AB GPC STAT – op
- O14:A 19. BRAKES MNA – OFF
- :E 20. cb MNA RDR ALTM 1 – op
- MLS 1 – op
- ADTA 1 – op
- ACCEL 1 – op
- :F 21. MMU 1 – OFF
- RJDF 1B F1 LOGIC – OFF
- DRIVER – OFF
- O15:F 22. RJDF 1A F2 LOGIC – OFF
- DRIVER – OFF
- ACCEL 4 – OFF
- O16:A 23. BRAKES MNC – OFF
- :E 24. cb MNC ADTA 3 – op
- A1L 25. PL DATA INTLVR PWR – OFF
- S-BD PL CNTL – PNL,CMD
- A12 26. HYD CIRC PUMP PWR 1 – MNB
- 2 – MNC
- 3 – MNA

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APCL/ALL/GEN N,4

- C3 27. √OI PCMMU FORMAT – GPC  
PWR – 2
- MA73C:A 28. MCA LOGIC MNA FWD 1 – OFF
- AW18H 29. √PWR/BATT CHGR EMU 1,2 BUS SEL (two) – OFF
- If visors reqd to remain down due to fire and rev 3 avail:
30. Go to LAUNCH DAY DEORBIT PREP (ORBIT 3)  
with AV BAY FIRE CONTINGENCY DELTAS  
(CONT DEORB, LAUNCH DAY (ORBIT 3)) >>
- Otherwise:
- For MM201 trans:
31. Go to MAL, DPS, GPC FRP-7, DPS RECONFIG  
FOR LOSS OF AV BAY COOLING  
(ASCENT/ORBIT) >>
- If orbit 7 deorbit:
32. Perform Deltas to nominal POST INSERT and  
DEORB PREP (POST INSERT, ORBIT 7  
DEORB), then:
- If AV BAY fire:
33. Go to AV BAY FIRE (ORB PKT, PWRDN) and  
complete remaining actions

**OV105**

B10-9

APCL/ALL/GEN N,4

## LOSS OF AV BAY 2 COOLING/AV BAY 2 FIRE

### WARNING

There is no smoke detection or air cooling in AV BAY 2. Failure of any LRU still pwr'd in AV BAY 2 may be indicative of fire in progress

- L1  
O6
1. √AV BAY 2 FAN A,B (two) – OFF
  2. GPC MODE 2 – STBY (tb-bp)  
– HALT  
– STBY (tb-RUN)  
– HALT (tb-bp)
  3. Perform PL PWRDN, then:  
If AV BAY 2 fire:
  4. Continue; otherwise go to step 23

### NOTE

While performing proc, note any cbs open. Equipment still pwr'd in Av Bay following pwr'dn:

FPCA 2, FLCA 2, BFC 3A (when GPC 3 is pwr'd), MDM OF2, and DSC OF2

- R1
5. cb AC CONTR AC2 (three) – cl
  6. INV/AC BUS 2 – OFF (tb-OFF)  
INV PWR 2 – OFF (tb-OFF)  
cb AC CONTR AC2 (three) – op
- R2
7. √BLR CNTLR/HTR 2 – A  
1 – B
  8. Perform FC2 SHUTDN, except PWRDN (Cue Card), then:
- L4:H  
L1
9. cb AC3 AV BAY 2 FAN B (three) – op
  10. FREON PUMP LOOP 1 – A
  11. AV BAY 1 FAN A – ON  
B – OFF
  12. √CAB FAN A – ON  
√B – OFF
- O13:C
13. cb ESS 2CA AC2 SNSR – op

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# OV105

APCL/5/GEN N,4

O15:A	14.	BRAKES MNB – OFF
:E	15.	cb MNB RDR ALTM 2 – op MLS 2 – op ADTA 2 – op ACCEL 2 – op
:F	16.	MMU 2 – OFF
O16:A	17.	BRAKES MNC – OFF
:E		cb MNC MLS 3 – op ADTA 4 – op
O8	18.	FWD RCS MANF ISOL 3,4 (two) – CL (tb-CL)
O16:F	19.	RJDF 2A F3 LOGIC – OFF DRIVER – OFF RJDF 2B F4/F5 LOGIC – OFF F4 DRIVER – OFF ACCEL 3 – OFF
A1L	20.	S-BD PM MODE sel – TDRS DATA √NSP DATA RATE XMIT – HI √RCV – HI CODING XMIT – ON √RCV – ON √PWR – 1 S-BD PL PWR SYS – OFF CNTL – PNL,CMD
C3	21.	S-BD PM CNTL – PNL,CMD √OI PCMMU PWR – 1 FORMAT – GPC
MA73C:A	22.	MCA LOGIC MNB FWD 2 – OFF

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**OV105**

APCL/5/GEN N,4

23. ASAP post OMS 2:

REASSIGN STRINGS TO GPCs 1,3,4 IN MC 1

24. GNC 0 GPC MEMORY

CONFIG – ITEM 1 +1 EXEC  
 Modify MC 1 per table ---->

CONFIG	1	1
GPC	12340	
STR	1	1
	2	4
	3	3
	4	4
PL	1/2	1
CRT	1	1
	2	4
	3	3
	4	0
L	1	1
	2	2
MM	1	1
	2	3

NOTE

The following must be  
 an OPS MODE Recall

CRT

25. GNC, OPS 10X PRO  
 26. (BFS) GNC I/O RESET  
 GNC,OPS 106 PRO  
 000 PRO

C3

27. BFC CRT DISP – OFF

O6

28. GPC MODE 5 – STBY  
 (tb-RUN)  
 – HALT  
 OUTPUT 5 – NORM

C3

29. Sel best S-BD PM ANT until SM GPC is established  
 If AV BAY 2 fire:

O6

30. GPC PWR 2 – OFF  
 5 – OFF  
 MDM FF2,FF4 (two) – OFF  
 PL2 – OFF

If visors reqd to remain down due to fire and rev 3 avail:

31. Go to LAUNCH DAY DEORBIT PREP (ORBIT 3)  
 with AV BAY FIRE CONTINGENCY DELTAS  
 (CONT DEORB, LAUNCH DAY (ORBIT 3)) >>

Otherwise:

For MM201 trans:

32. Go to MAL, DPS, GPC FRP-7, DPS RECONFIG  
 FOR LOSS OF AV BAY COOLING  
 (ASCENT/ORBIT) >>

If orbit 7 deorbit:

33. Perform Deltas to nominal POST INSERT and  
 DEORB PREP (POST INSERT, ORBIT 7  
DEORB), then:

If AV BAY fire:

34. Go to AV BAY FIRE (ORB PKT, PWRDN) and  
 complete remaining actions

**OV105**

## LOSS OF AV BAY 3 COOLING/AV BAY 3 FIRE

### WARNING

There is no smoke detection or air cooling in AV BAY 3. Failure of any LRU still pwr'd in AV BAY 3 may be indicative of fire in progress

- O7 1. GPS 3 PWR – OFF  
PRE AMPL (two) – OFF
- L1 2. √AV BAY 3 FAN A,B (two) – OFF
- O6 3. GPC MODE 3 – STBY (tb-bp)  
– HALT  
– STBY (tb-RUN)  
– HALT (tb-bp)
- If AV BAY 3 fire:
4. Continue; otherwise go to step 20

### NOTE

While performing proc, note any cbs open. Equipment still pwr'd in Av Bay following pwr'dn:

FPCA 3, FLCA 3, MDM OF3, DSC OF3, and active comm equipment

- R1 5. cb AC CONTR AC3 (three) – cl
6. INV/AC BUS 3 – OFF (tb-OFF)  
INV PWR 3 – OFF (tb-OFF)  
cb AC CONTR AC3 (three) – op
- R2 7. √BLR CNTLR/HTR 3 – A  
2 – B
8. Perform FC3 SHUTDN, except PWRDN (Cue Card), then:
- L1 9. H2O PUMP LOOP 1 – ON  
2 – OFF  
CAB FAN B – ON  
A – OFF
- L4:H 10. cb AC1 AV BAY 3 FAN B (three) – op

Cont next page

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# OV105

APCL/5/GEN N

**WARNING**

The following steps will unpwr C/W sys. All Class 1, Class 2, and SM aural tones and C/W annun lights will be lost. CRTs must be monitored for fault summ msgs

- O13:A            11.    cb ESS 1BC C/W A – op  
      :C                            2CA C/W B – op  
      :E                            3AB AC3 SNSR – op

**NOTE**

If comm presently working, performing a PNL,CMD may result in loss of comm (if fire has aff alt comm sys)

If no comm:

- A1L            12.    S-BD PM MODE sel – TDRS DATA  
                  √NSP DATA RATE XMIT – HI  
                                  √RCV – HI  
                                  CODING XMIT – ON  
                                  √RCV – ON  
                                  √PWR – 1

- C3            13.    S-BD PM CNTL – PNL,CMD  
                  If S-BD comm avail:

- O6            14.    UHF MODE sel – OFF

If comm not recovered:

- C3            15.    S-BD PM CNTL – PNL  
A1L                            ANT SW ELEC – OFF  
                                  PRE AMP – OFF  
                                  PWR AMPL STBY – OFF  
                                  OPER – OFF  
                                  XPNDR – OFF  
                                  NSP PWR – OFF  
                                  ENCRYPTION SEL – BYP  
                                  PWR – OFF

- O6            16.    √UHF MODE sel – SPLX

- A1L            17.    S-BD PL CNTL – PNL  
                  PL DATA INTLVR PWR – OFF

Cont next page

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**OV105**

APCL/ALL/GEN N



- A1R 18. S-BD FM PWR – OFF  
 CNTL – PNL  
 MA73C:A 19. MCA LOGIC MNC FWD 3 – OFF

20. ASAP post OMS 2:

REASSIGN STRINGS TO GPCs 1,2,4 IN MC 1

21. GNC 0 GPC MEMORY

CONFIG – ITEM 1 +1 EXEC  
 Modify MC 1 per table---->

CONFIG GPC	1	12340
STR 1	1	
2	2	
3	4	
4	2	
PL 1/2	1	
CRT 1	1	
2	2	
3	4	
4	0	
L 1	1	
2	2	
MM 1	1	
2	2	

NOTE

The following must be  
 an OPS MODE Recall

22. GNC, OPS 10X PRO  
 23. (BFS) GNC I/O RESET  
 If AV BAY 3 fire:  
 24. GPC PWR 3 – OFF  
 MDM FF3 – OFF

If visors reqd to remain dn due to fire and rev 3 avail:

25. Go to LAUNCH DAY DEORBIT PREP (ORBIT 3)  
 with AV BAY FIRE CONTINGENCY DELTAS  
 (CONT DEORB, LAUNCH DAY (ORBIT 3)) >>

Otherwise:

For MM201 trans:

26. Go to MAL, DPS, GPC FRP-7, DPS RECONFIG  
 FOR LOSS OF AV BAY COOLING  
 (ASCENT/ORBIT) >>

If orbit 7 deorbit:

27. Perform Deltas to nominal POST INSERT and  
 DEORB PREP (POST INSERT, ORBIT 7  
DEORB), then:

If AV Bay fire:

28. Go to AV BAY FIRE (ORB PKT, PWRDN) and  
 complete remaining actions

**OV105**

B10-15

APCL/ALL/GEN N

## LOSS OF CAB PRESS (MINOR PWRDN)

### NOTE

If EQ dP/dT < 0.6, CAB P will stabilize at 8 psia

- O8 1. Minimize Itg
- 2. √MLS (three) – OFF
- L1 3. Perform PL PWRDN, then:
- 4. √H2O LOOP 2(1) BYP MODE – MAN  
MAN – DECR (hold 30 sec)
- C3 5. √FLOW PROP VLV LOOP tb (two) – ICH
- 6. Use two IDP/CRTs with four MDUs
- If AOA:
  - 7. Deltas to ENTRY MANEUVERS (Cue Card)  
At M = 2.9:  
Use two HUDs, MLS, and RAs as reqd  
GNC I/O RESET
  - 8. Continue AOA PROCEDURES (ASC, AOA).  
Do not perform ENT PKT pwrdn >>
- If not AOA:
  - 9. Go to LOSS OF CAB PRESS (MAJOR PWRDN) (PWRDN), 10-17

# OV105

APCL/5/GEN N

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## LOSS OF CAB PRESS (MAJOR PWRDN)

### NOTE

If EQ dP/dT > 0.6, CAB P will stabilize  
below 8 psia

1. Minimize Itg
- O8 2.  $\sqrt$ MLS (three) – OFF
- C3 3. MSTR MADS PWR – OFF
4. Perform PL PWRDN, then:
- L1 5.  $\sqrt$ H2O LOOP 2(1) BYP MODE – MAN  
MAN – DECR (hold 30 sec)
6.  $\sqrt$ FLOW PROP VLV LOOP tb (two) – ICH
- C3 7. Use one IDP/CRT with two MDUs
- F6,F8 8. FLT CNTLR PWR (two) – OFF
- If FLT CNTLR PWR not reqd:
- O14,O15, 9. cb DDU L,R (four) – op  
O16:E  $\sqrt$ AFT (two) – op
10. ADTA (four) – op
- L2 11. ANTISKID – OFF  
NWS – OFF
- L1 12. HUM SEP B – OFF
- O16:E 13. cb MNC RCS/OMS PRPLT QTY GAUGE – op(cl) as  
reqd
- If AOA:
  14. Continue AOA PROCEDURES (ASC, AOA)  
Do not perform ENT PKT pwrdn  
Use DEORB PREP/ENTRY DELTAS PULLOUT  
PAGE, 10-19, for changes >>
- If orbit 2 or 3 deorb:
  15. Continue ASC  
Use DEORB PREP/ENTRY DELTAS PULLOUT  
PAGE, 10-19, for changes

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APCL/5/GEN N

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**OV105**

APCL/ALL/GEN N

DEORB PREP/ENTRY DELTAS PULLOUT PAGE

NOTE

Cycle MDUs. If ON at loss of cooling, turn OFF within 30 min. Allow 3 min OFF prior to each 1 min ON (30 min max ON time). Save two MDUs that interface with a single IDP for entry

If no comm or if CAB P stabilizes < 6 psia (MCC call), after OPS 301 transition:

PWRDN GPC 1 AND REASSIGN STRINGS TO REMAINING PASS GPCs IN MC 3

	1.	<u>GNC 0 GPC MEMORY</u> CONFIG – ITEM 1 +3 EXEC Modify MC 3 per table ----->	CONFIG GPC	3 02340
CRT	2.	GNC, OPS 301 PRO	STR 1	4
	3.	<u>GNC 50 HORIZ SIT</u> Check runway sel Resel runway	2 3 4	2 3 2
O6	4.	(BFS) GNC, OPS 301 PRO	PL 1/2	4
	5.	GPC MODE 1 – STBY (tb-bp) – HALT	CRT 1 2 3 4	4 2 3 0
			L 1 2	0 0
			MM 1 2	4 2

NOTE

Single fault tolerance used for most cab air-cooled equipment. Add'l LRUs may be activated as reqd if cab press stable ≥ 8 psia

Initiate changes:

If Orbit 2(3):

- 6. Start with step A

If AOA:

- 7. Start with step B, 10-20

A. Deltas to LAUNCH DAY ORBIT 2(3) (CONT DEORB)

- 1. Minimize use of IDPs, MDUs, FLT CNTLR PWR, DDUs. Use one PGSC

If orbit 2:

- 2. APU HTRS & DED DISP ENT CONFIG [3]  
Do not pwr MLS

If orbit 3:

- 3. ENT FWD FLT DECK CONFIG [10]  
Do not pwr MLS
- 4. In ENT FORWARD, AFT, MIDDECK, do not activate pwrdn items

Cont next page

**LOSS OF CAB PRESS  
D/O PULLOUT PAGE**

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**OV105**

APCL/5/GEN N

- B. Deltas to DEORBIT BURN (ENT)  
 At TIG-4:  
 O14,O15,  
 O16:E  
 F6,F8
1. Use two IDP/CRTs with four MDUs for deorb burn
  2. cb DDU L,R (four) – cl
  3. L,R FLT CNTLR PWR (two) – ON
- C. Deltas to POST BURN (ENT)  
 F6,F8  
 O14,O15,  
 O16:E
1. Use one IDP/CRT with two MDUs
  2. L,R FLT CNTLR PWR (two) – OFF
  3. cb DDU L,R (four) – op
  4. Delete ANTISKID, NWS callouts (ENTRY SW CHECK)
- D. Deltas to ENTRY MANEUVERS (Cue Card)  
 At EI:  
 O14,O15,  
 O16:E  
 F6  
 O14,O15,  
 O16:E
1. Use only one IDP/CRT with two MDUs
  2. cb DDU L,R (four) – cl
  3. L FLT CNTLR PWR – ON
  4. cb ADTA (three) – cl
  5. (BFS) GNC I/O RESET
- At V = 15K:  
 If CAB PRESS < 8 psia:  
 6. Delete NAVAIDS callout  
 If CAB PRESS ≥ 8 psia:  
 7. Activate all RAs, MLS  
 8. GNC I/O RESET  
 9. Disregard subs NAVAID callout DELTAS
- At M = 2.7:  
 10. Use two HUDs, MLS, and RAs as reqd  
 11. GNC I/O RESET
- At M < 1.0:  
 L2
12. ANTISKID – ON
  13. NWS – 1

## LOSS OF 2 H2O LOOPS (POST OMS-2)

### NOTES

- Loss of water loop cooling aff both water and air cooled equipment
- This proc assumes loss of both water loops occurs after AOA opportunity has passed, but before OPS 2 transition
- If orbit 2 deorb, this pwrdn leads into LOSS OF 2 H2O LOOPS DEORBIT PREP/ENTRY (CONT DEORB, LOSS OF 2 H2O LOOPS D/O PREP). For all other launch day deorb, this pwrdn leads to LOSS OF 2 H2O LOOPS ON-ORBIT WAIT (CONT DEORB, LOSS OF 2 H2O LOOPS)
- The LOSS OF 2 H2O LOOPS (ORB PKT, PWRDN) is used for MS pwrdn and comm config. This proc powers down all comm. If comm reqd, preferred comm config in order of heat production:
  1. UHF only
  2. STDN LO PWR if reqd
  3. TDRS only if mandatory

### CAUTION

TDRS OR STDN – HI AOS may be limited to 10 min (pwr amp will overheat)

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# OV105

APCL/ALL/GEN N

TIME CRITICAL PROCEDURES (execute simo)

- L4:B 1. Unstow ORB PKT, CONT DEORB, ORB OPS, and one PGSC. To pwr the PGSC:  
cb UTIL PWR A15/MO13Q AC3 – cl, or  
F1/MO52J AC1 – cl
- MS1 2. Perform MS OVHD PNL PWRDN (N2 qty not reqd by CDR in step 11 and omit step 13) (ORB PKT, PWRDN)

As part of MS OVHD PNL PWRDN perform the following:

- O14:B 3. cb MNA OI SIG CONDR OF 1/4 A – op  
:E DDU AFT – op
- O15:B 4. cb MNB OI SIG CONDR OF 1/4 B – op  
2/3 A – op
- O16:B 5. cb MNC OI SIG CONDR OF 2/3 B – op  
:E DDU AFT – op

NOTE

- MS Do not pwrdrn MMU 1.
- If orbit 2 deorb, do not pwrdrn MTU.

If orbit 2 deorb and TIG > 1 hr, perform 20 MINUTE DE/REPRESS MS PULLOUT PAGE (CONT DEORB, LOSS OF 2 H2O LOOPS)

- MS2 6. Perform LOSS OF 2 H2O LOOPS, COMM PWRDN (ORB PKT, PWRDN), within 10 min

CDR and PLT perform following PWRDN ASAP:

CDR AND PLT PWRDN

- C3 7. √MSTR MADS PWR – OFF  
Minimize Itg
8. Use only one IDP/CRT with one MDU
- F6,F8 9. FLT CNTLR PWR (two) – OFF, use one as reqd
10. Perform PL PWRDN, then:
- O7 11. GPS PWR (three) – OFF
- O8 12. √RDR ALTM (two) – OFF
13. √MLS (three) – OFF
- L1 14. H2O PUMP LOOP 1,2 (two) – OFF (one ON if PUMP OUT P > 45 psia, or MCC call)
15. HUM SEP A,B (two) – OFF (one ON if either H2O loop ON)

Cont next page

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**OV105**

APCL/5/GEN N



**NOTE**

If performing 20 MINUTE DE/REPRESS MS PULLOUT PAGE (CONT DEORB, LOSS OF 2 H2O LOOPS), do not turn cab fan OFF. Record MET for fan OFF when DE/REPRESS complete

- 16. CAB FAN A,B (two) – OFF  
(one ON if either H2O LOOP ON)  
Rcd MET \_\_\_/\_\_\_:\_\_\_
- 17. FREON PUMP LOOP 1 – OFF  
2 – B  
√FLOW PROP VLV LOOP 1,2 (two) – ICH (tb-ICH)
- L2 18. √FLASH EVAP CNTLR PRI A – ON
- 19. O2 SYS 1 SPLY – CL (tb-CL)
- 20. ANTISKID – OFF  
NWS – OFF
- R2 21. FLASH EVAP FDLN HTR SPLY (two) – 2
- 22. HYD CIRC PUMP (three) – ON (to prevent MN BUS O/V)

RECONFIG DPS

- O14:F 23. √MMU 1 – ON
- 24. GNC 0 GPC MEMORY

Reassign Strings to GPC 1 in MC 1

- 25. CONFIG – ITEM 1 +1 EXEC  
Modify MC 1 per table ---->

**NOTE**

The following must be an OPS MODE Recall

- CRT 26. GNC, OPS 10X PRO

CONFIG	1	
GPC	12340	
STR	1	1
	2	1
	3	1
	4	1
PL	1/2	1
CRT	1	1
	2	1
	3	1
	4	0
L	1	0
	2	0
MM	1	1
	2	1

Cont next page

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APCL/ALL/GEN N

- O6 27. GPC MODE 2,3,4 (three) – STBY (tb-bp)
  - HALT
  - STBY (tb-RUN)
  - HALT (tb-bp)
- CRT 28. (BFS) GNC, OPS 106 PRO  
000 PRO
- O6 29. GPC MODE 5 – STBY (tb-RUN), HALT (tb-bp)  
OUTPUT 5 – NORM
- C3 30. BFC CRT DISP – OFF
- L1 31. AV BAY 2,3 FANS (four) – OFF
  - √1 FAN A – ON
  - B – OFF
- 32. IMU FAN A – ON
  - B,C (two) – OFF
- 33. If not orbit 2 deorb: Go to step 40  
Transition GPC 1 to GNC OPS 3:
- O14,O15, 34. √RGA (four) – ON  
O16:A
- O14,O15:E √cb ACCEL (two) – cl
- O15,O16:F √ACCEL 3,4 (two) – ON
- O14,O15, √ASA (four) – ON  
O16:F
- C3 35. √FCS CH (four) – AUTO
- 36. GNC 0 GPC MEMORY

Reassign Strings to GPC 1 in MC 3

- CRT 37. CONFIG – ITEM 1 +3 EXEC  
Modify MC 3 per table-----→
- 38. GNC, OPS 301 PRO  
GNC DEORB MNVR COAST
- 39. Go to step 43

CONFIG	3
GPC	10000
STR 1	1
2	1
3	1
4	1
PL 1/2	1
CRT 1	1
2	1
3	1
4	0
L 1	0
2	0
MM 1	1
2	1

Cont next page

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**OV105**

APCL/ALL/GEN N

RECONFIG DPS, TRANSITION TO OPS 2

40. GNC 0 GPC MEMORY

Reassign Strings to GPC 1 in MC 2

	41. CONFIG – ITEM 1 +2 EXEC Modify MC 2 per table----->	CONFIG GPC	2 10000
	42. GNC, OPS 201 PRO	STR	1 1
	43. For any CRT that is OFF: GPC/CRT1/X EXEC		2 1
O14:F	44. MMU 1 – OFF		3 1
	45. Calculate DEORBIT TARGETS using PGSC		4 1
C3	46. C/W MODE – ACK	PL	1/2 1
		CRT	1 1
			2 1
			3 1
			4 0
		L	1 0
			2 0
		MM	1 1
			2 1

NOTE

For F7 lts, hold F2 or  
F4 MA in

Repress SPLY H2O TKA:

- ML26C 47. SPLY H2O GN2 TK VENT vlv – PRESS  
TKA SPLY vlv – OP
- R11L XOVR VLV – OP (tb-OP)

If time to CONUS TIG < 50 min:

48. Read notes below then go to step 69

If time to CONUS TIG > 50 min, continue:

- O14:A,  
O15:A  
O6 49. GNC 21 IMU ALIGN  
IMU 1,3 (two) – desel
50. IMU 1,3 (two) – OFF
51. MDM FF1,3,4 (three) – OFF
- If orbit 2 deorb:  
52. Mnvr to shade windows from sun or install Window  
Shades until TIG-10 min, then go to step 61
- If not orbit 2 deorb:  
53. Config DAPs A1,B1 with these exceptions:  
(A) ITEM 10 +1.0 0 EXEC  
ITEM 11 +3.0 0 EXEC  
ITEM 15 EXEC (TAIL)  
ITEM 16 EXEC (TAIL)  
(B) ITEM 30 +0.2 0 EXEC  
ITEM 31 +1.0 0 EXEC  
ITEM 35 EXEC (TAIL)  
ITEM 36 EXEC (TAIL)

Cont next page

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**OV105**

APCL/ALL/GEN N

Mnvr to tail Sun att:

54. GNC UNIV P TG  
TGT ID – ITEM 8 +4 EXEC  
BODY VECT – ITEM 14 +5 EXEC  
P – ITEM 15 +2 2 5 EXEC  
Y – ITEM 16 +0 EXEC  
OM – blank (MCC provided if reqd)  
DAP: A/AUTO/PRI  
START TRK – ITEM 19 EXEC

Establish stabilized att:

55. DAP: B/AUTO/PRI  
ADI ATT – INRTL  
Wait 30 sec (check rates)

Establish free drift:

56. DAP: FREE
- O6 57. GPC MODE 1 – STBY (tb-bp), HALT  
– STBY (tb-RUN)  
– HALT (tb-bp)  
PWR (five) – OFF
58. Record MET \_\_\_/\_\_\_/\_\_\_
- C2,R12L 59. Confirm all IDPs and MDUs – OFF
- L1 60. AV BAY 1 FAN (two) – OFF
- O8 61. FWD RCS MANF ISOL 1,2,3,4 (four) – CL (tb-CL)
- O14:F 62. RJDF 1B F1 LOGIC – OFF  
DRIVER – OFF
- O15:F 63. 1A F2 DRIVER – OFF  
LOGIC – OFF
- O16:F 64. 2A F3, 2B F4 DRIVER (two) – OFF  
F4/F5 LOGIC (two) – OFF  
RJD MANF L5/F5/R5 DRIVER – OFF
- L4:J 65.  $\sqrt{cb}$  AC3  $\Phi$ A SIG CONDR HUM SEP – op
- :P 66.  $\Phi$ A LG SNSR (two) – op
- MA73C If H2O PUMP LOOP 1 A(B) ON:  
67. Leave MCA LOGIC MNA FWD 1 – ON  
(MNB FWD 2 – ON)  
MCA LOGIC MNA,B,C (thirteen) – OFF
- If H2O PUMP LOOP 1 A,B OFF:  
68. MCA LOGIC MNA,B,C (fourteen) – OFF

Cont next page

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**OV105**

APCL/ALL/GEN N

NOTE

30 min after deact, cycle one CAB FAN – ON (30 min ON, 30 min OFF) to control PPCO2 and for cooling.

Cycle MDUs. If ON at loss of cooling, turn OFF within 30 min. Allow 3 min OFF prior to each 1 min ON (30 min max ON time). Save two MDUs that interface with a single IDP for entry.

If GPC 1 remains in RUN, limit its operation to max of 1 hr. If reqd, reactivate GPC 2 and restrng in MC 3, take GPC 1 to HALT, turn AV BAY 2 FAN B – ON, AV BAY 1 FAN – OFF, then wherever GPC 1 is referenced, replace with GPC 2 in the LOSS OF 2 H2O LOOPS DEORBIT PREP/ENTRY or LOSS OF 2 H2O LOOPS ON-ORBIT WAIT (CONT DEORB).

Expect 100% cab humidity in ~2 hr.

Possible cab air OVBD RLF due to cab air heating which may cause a loud noise

69. Verify MS PWRDN complete, then:  
If not orbit 2 deorb:

NOTE

Use QDM as needed for temp > 90 degF. If temp > 95 degF and no evaporative cooling is sensed, don LES, check tabs, close visor, LES O2 – ON.

Immed begin drinking H2O (one 8-oz container every 15 min with salt tablet in every other container) and continue thru entry

70. Go to LOSS OF 2 H2O LOOPS ON-ORBIT WAIT (CONT DEORB, LOSS OF 2 H2O LOOPS) >>  
71. Go to LOSS OF 2 H2O LOOPS DEORBIT PREP/ENTRY (CONT DEORB, LOSS OF 2 H2O LOOPS D/O PREP). Perform all steps although some activities may already have been performed

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APCL/ALL/GEN N

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**OV105**

APCL/ALL/GEN N

## LOSS OF 1 FREON LOOP

- C3 1. MSTR MADS PWR – OFF  
 2. Minimize Itg  
 3. Use one IDP/CRT with two MDUs, FLT CNTLR PWR
- If not AOA:
- O7 4. GPS 1,3 PWR (two) – OFF  
 O8 5. RDR ALTM (two) – OFF  
 6. If reqd: Perform PL PWRDN, then:
- L1 7.  $\sqrt$ FLOW PROP VLV LOOP tb (two) – ICH  
 8. H2O LOOP 2(1) BYP MODE – MAN  
 MAN – DECR (30 sec)
- O14, 9. BRAKES (three) – OFF  
 O15,  
 O16:A  
 O14, 10. cb ADTA (four) – op  
 O15,  
 O16:E
- If FLT CNTLR PWR not reqd:  
 11. cb DDU L,R,AFT (six) – op  
 12.  $\sqrt$ (Aff) FREON PUMP – OFF
- If FREON LEAK performed and leak isolated (accum qty > 3 and not decr)( $\sqrt$ MCC):  
 13. Perform EMER PLBD OPENING (ECLS), 4-8  
 14. Mnvr per MCC >>
- If AOA:
- O14, 15. Deltas to AOA (ASC)  
 O15, At TIG-10 min:  
 O16:E  $\sqrt$ cb DDU L,R (four) – cl
- Use two IDP/CRTs with four MDUs, two FLT CNTLR PWR for burn
- F7,F8 16. Deltas to AOA POST D/O BURN (ASC)  
 O14, FLT CNTLR PWR (two) – OFF  
 O15, cb DDU L,R (four) – op  
 O16:E
- Use one IDP/CRT with two MDUs
17. Deltas to ENTRY SW CHECK (ENT, POST BURN)  
 Pwr NAV AIDS per ENTRY MANEUVERS (Cue Card)
18. Deltas to ENTRY MANEUVERS (Cue Card)  
 Use DEORB PREP/ENTRY DELTAS PULLOUT PAGE, 10-31, starting with step D,1  
 Continue with AOA (ASC) >>

Cont next page

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# OV105

APCL/5/GEN N





DEORB PREP/ENTRY DELTAS PULLOUT PAGE

DO NOT DISCARD; USE TO LANDING

- A. Deltas to LAUNCH DAY ORBIT 2(3) (CONT DEORB)
1. Use one FLT CNTLR PWR, DDU, PGSC, and one IDP/CRT with two MDUs
  2. Minimize Itg
  3. Minimize sun in cab if possible
- If orbit 2:
4. APU HTRS & DED DISP ENT CONFIG 3  
Do not pwr GPS
  5. Go to step 7
- If orbit 3:
6. ENT FWD FLT DECK CONFIG 10  
Do not pwr MLS
  7. In ENT SW LIST/VER, do not activate GPS, MLS, RA, ADTAs until indicated by POST BURN (ENT) and ENTRY MANEUVERS (Cue Card) deltas

O14,  
O15,  
O16:E

- B. Deltas to DEORBIT BURN (ENT)
- At TIG-15 min:
1. Remove Window Shades/mnvr to deorb burn att
- At TIG-10 min:
2. √cb DDU L,R (four) – cl
  3. Use two IDP/CRTs with four MDUs, two FLT CNTLR PWR for burn

F6,F8  
O14,  
O15,  
O16:E

- C. Deltas to POST BURN (ENT)
1. L,R FLT CNTLR PWR (two) – OFF
  2. cb DDU L,R (four) – op
  3. Use one IDP/CRT with two MDUs, as reqd
- At EI-15 min:

O7

4. GPS 3 PWR – ON  
PRE AMPL (two) – ON  
Wait 30 sec  
GNC I/O RESET  
GNC 55 GPS STATUS  
INIT – ITEM 16 EXEC  
NAV – ITEM 19 EXEC

Cont next page

**LOSS OF 1 FREON LOOP  
D/O PULLOUT PAGE**

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**OV105**

APCL/5/GEN N

- D. Deltas to ENTRY MANEUVERS (Cue Card)
- At EI:
- 1. cb DDU L,R (four) – cl
  - 2. L FLT CNTLR PWR – ON
  - 3. Use two IDP/CRTs with four MDUs, as reqd
  - 4. BRAKES (three) – ON
- cb ADTA 1,2,3 (three) – cl
5. GNC I/O RESET
- At V = 12K:
- If loop 1(2) lost:
- 6. NH3 CNTLR A(B) – OFF  
B(A) – PRI/GPC
- At M = 2.7:
- 7. Use two HUDs, MLS, and RAs  
GNC I/O RESET

## LOSS OF HI LOAD EVAP

- |                                |   |
|--------------------------------|---|
| C3                             | <ol style="list-style-type: none"> <li>1. √MSTR MADS PWR – OFF</li> <li>2. Minimize Itg</li> <li>3. Use one PGSC and one IDP/CRT with two MDUs, as reqd</li> </ol>  |
| O8                             | <ol style="list-style-type: none"> <li>4. RDR ALTM (two) – OFF</li> <li>5. Perform PL PWRDN, then:</li> </ol>   |
| L1                             | <ol style="list-style-type: none"> <li>6. H2O LOOP 2(1) BYP MODE – MAN<br/>MAN – DECR (hold 30 sec)</li> <li>7. √FLOW PROP VLV LOOP tb (two) – ICH</li> </ol>   |
| O14,<br>O15,<br>O16:A          | <ol style="list-style-type: none"> <li>8. BRAKES (three) – OFF</li> </ol>   |
| O14,<br>O15,<br>O16:E          | <ol style="list-style-type: none"> <li>9. cb ADTA (four) – op</li> </ol>  |
|                                | <p>If FLT CNTLR PWR not reqd:</p> <ol style="list-style-type: none"> <li>10. cb DDU L,R (four) – op</li> </ol>  |
|                                | <p>If AOA:</p> <ol style="list-style-type: none"> <li>11. Deltas to <u>AOA</u> (ASC)<br/>At TIG-10:<br/>√cb DDU L,R (four) – cl</li> </ol>  |
| O14,<br>O15,<br>O16:E          | <p style="text-align: center;">Use FLT CNTLR, and two IDP/CRTs with four MDUs, as reqd for burn</p> <ol style="list-style-type: none"> <li>12. Deltas to <u>AOA POST D/O BURN</u> (ASC)<br/>L,R FLT CNTLR PWR (two) – OFF<br/>cb DDU L,R (four) – op</li> </ol> |
| F6,F8<br>O14,<br>O15,<br>O16:E | <p style="text-align: center;">Use two IDP/CRTs with four MDUs</p> <ol style="list-style-type: none"> <li>13. Deltas to ENTRY SW CHECK (ENT, <u>POST BURN</u>)<br/>BRAKES (three) – ON</li> </ol>   |
| O14,<br>O15,<br>O16:A          | <p>Do not pwr NAVAIDS, NWS<br/>Perform LOSS OF HI LOAD EVAP DEORB OR ENTRY PULLOUT PAGE (ENT PKT, <u>PWRDN</u>), then:</p>  |

Cont next page

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# OV105

APCL/5/GEN N



## LOSS OF 2 FREON LOOPS (POST OMS-2)

### WARNING

FC purge must be started and loads pwr'd dn ASAP

Orbiter lifetime is expected to be 120 min from LOSS OF 2nd FREON LOOP with all three FCs running. This assumes three FCs are pwr'd dn to a total level of 8 kW immed and are continuously purged

Earliest possible landing is req'd

### NOTES

- Failure assumed to occur too late for an AOA and before OPS 2 transition
- FC purging and pwr'dn should be performed ASAP after failure
- COMM proc (ORB PKT) should be used throughout this proc and CONT DEORB.  
Preferred comm config is:
  - A. UHF only
  - B. GSTDN S-BD if req'd
  - C. Use TDRS only if mandatory

Cont next page

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# OV105

APCL/ALL/GEN N

TIME CRITICAL PROCEDURES

1. MS initiate FC purge (step 4) and unstow ORB PKTs and PGSC, ASAP
2. MS perform LOSS OF 2 FREON LOOPS, COMM PWRDN (ORB PKT, PWRDN); delay 10 min max if AOS

CDR and PLT perform following steps ASAP:

- |         |    |   |
|---------|----|---|
| C3      | 3. | MSTR MADS PWR – OFF   |
| MS R11U | 4. | √FC PURGE HTR – ON<br>√VLVS (three) – OP                    |
|         | 5. | Perform <u>PL PWRDN</u> , then:                             |
|         | 6. | Minimize Itg  |
| CRTX    | 7. | Use only one FWD IDP/CRT with one MDU (save IDP3 for entry) |
|         | 8. | Use only one PGSC   |
| F6/F8   | 9. | √FLT CNTLR PWR (two) – OFF                                  |

RESTRICTING TO GPC 1/TRANSITION TO OPS 3

- |    |     |  |  |
|----|-----|--|--|
|    | 10. | <u>GNC 0 GPC MEMORY</u><br>CONFIG – ITEM 1 +3 EXEC<br>Modify MC 3 per table----->                                  |  |
|    | 11. | GNC, OPS 301 PRO<br>For any FWD IDP that is OFF:   |  |
|    | 12. | GPC/CRT1/X EXEC  |  |
| C3 | 13. | BFC CRT DISP – OFF   |  |
| O6 | 14. | GPC MODE 2,3,4 (three)<br>– STBY (tb-bp)<br>– HALT<br>– STBY (tb-RUN)<br>– HALT (tb-bp)<br>PWR 2,3,4 (three) – OFF |  |
|    | 15. | BFS GNC, OPS 106 PRO<br>000 PRO  |  |
|    | 16. | GPC MODE 5 – STBY (tb-RUN)<br>– HALT (tb-bp)<br>OUTPUT 5 – NORM<br>PWR 5 – OFF                                     |  |
|    | 17. | <u>GNC 53 ENTRY CONTROLS</u><br>RGA 1,3,4 (three) – desel  |  |
|    | 18. | Have MS perform MS OVHD AND AFT PNL PWRDN (ORB PKT, <u>PWRDN</u> ), but leave RGA 2 pwr until step 52              |  |

CONFIG GPC	3	10000
STR 1	1	
2	1	
3	1	
4	1	
PL 1/2	1	
CRT 1	1	
2	1	
3	1	
4	0	
L 1	0	
2	0	
MM 1	1	
2	1	

Cont next page

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**OV105**

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PLT

- O7 19. GPS PWR (three) – OFF  
PRE AMPL (six) – OFF
- O8 20. √RDR ALTM (two) – OFF
- 21. √MLS (three) – OFF
- C3 22. FCS CH (four) – AUTO
- R4 23. MPS MANF PRESS LO2,LH2 (two) – CL
- R2 24. √HYD CIRC PUMP (three) – OFF
- 25. MPS He ISOL (six) – CL  
PNEU He ISOL – CL  
L ENG He XOVR – CL
- 26. Go to step 47

CDR

- L1 27. HUM SEP A,B (two) – OFF
- 28. √IMU FAN B – ON  
A,C (two) – OFF
- 29. CAB FAN A,B (two) – OFF
- 30. AV BAY 1,2,3 FAN A,B (five) – OFF
- 31. √1 FAN B – ON
- 32. FREON PUMP LOOP 1,2 (two) – OFF (one-ON,  
if any flow)
- 33. √RAD CNTLR LOOP 1,2 (two) – OFF
- 34. NH3 CNTLR A,B (two) – OFF
- If no FREON PUMP ON:
  - L2 35. O2 SYS 1,2 SPLY (two) – OP (tb-OP)
  - L1 36. FLASH EVAP CNTLR PRI A,B (two) – OFF
  - 37. TOP EVAP HTR NOZ (two) – OFF  
DUCT sel – OFF
  - 38. HI LOAD DUCT HTR sel – OFF
  - L2 39. FLASH EVAP FDLN HTR SPLY (two) – OFF
- If one FREON PUMP ON:
  - L1 40. FLASH EVAP CNTLR PRI A – ON
  - 41. TOP EVAP HTR NOZ (two) – OFF  
√DUCT sel – ON
  - 42. √HI LOAD DUCT HTR sel – ON
  - L2 43. FLASH EVAP FDLN HTR B SPLY – OFF
- 44. NWS – OFF
- O6 45. √S TRK PWR -Y,-Z (two) – OFF
- 46. ANNUN BUS SEL ACA 2/3 – OFF

Cont next page

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**OV105**

APCL/5/GEN N

- |                       |     |  |
|-----------------------|-----|--|
|                       | 47. | <u>GNC 51 OVERRIDE</u>   |
|                       |     | IMU 1,2 (two) – desel  |
| O14,<br>O15:A         | 48. | IMU 1,2 (two) – OFF  |
| O14,<br>O15,<br>O16:A | 49. | BRAKES (three) – OFF   |
|                       | 50. | All IDPs, MDUs – OFF (use IDP1 as reqd until<br>CONT DEORB proc, 3 min<br>OFF for each min ON)   |
|                       | 51. | DAP: INRTL/PULSE   |
| O15:A                 | 52. | RGA 2 – OFF  |
| O6                    | 53. | MDM FF1,4 (two) – OFF<br>FA1,4 (two) – OFF   |
| F6                    | 54. | CDR disp sws – green dot   |
| O8                    | 55. | FWD RCS MANF ISOL 1,2,3,4 (four) – CL (tb-CL)  |
| MA73C:<br>A,B         | 56. | √MCA LOGIC MNA FWD 1 – ON<br>MID 1,AFT 1,MID 3 (three) – OFF<br>MNB,MNC (ten) – OFF  |
| O14:F                 | 57. | RJDA 1A,2A LOGIC,DRIVER (four) – OFF<br>RJDF 1B F1 LOGIC,DRIVER (two) – OFF  |
| O15:F                 | 58. | RJDA 1B LOGIC,DRIVER (two) – OFF<br>RJDF 1A F2 LOGIC,DRIVER (two) – OFF  |
| O16:F                 | 59. | RJDA 2B LOGIC,DRIVER (two) – OFF<br>RJDF 2A F3 LOGIC,DRIVER (two) – OFF<br>2B LOGIC,DRIVER (two) – OFF<br>RJD MANF L5/F5/R5 DRIVER – OFF |
|                       | 60. | Go to LOSS OF 2 FREON LOOPS (ORB PKT,<br><u>PWRDN</u> ), beginning at step 58 (Sel ELS TIG)  |

# OV105

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APCL/ALL/GEN N



## LOSS OF FES/1 FC

- ⇒ C3
1. √MSTR MADS PWR – OFF
  2. Minimize Itg
  3. Use only one IDP/CRT with two MDUs
- If FLT CNTLR PWR not reqd:
4. cb DDU L,R,AFT (six) – op
- O14,  
O15,  
O16:E
5. RDR ALTM (two) – OFF
- O8
6. √FLASH EVAP FDLN HTR SPLY (two) – OFF
- L2
7. NWS – OFF
  8. ANTISKID – OFF
- L1
9. √CAB FAN A(B) – ON
  10. Perform PL PWRDN, then:
  11. √FLOW PROP VLV LOOP 1,2 tb (two) – ICH
- If AOA and FES lost:
- MS perform pwrdrn activities (steps 12-17)
12. Minimize Itg
  13. BRAKES (three) – OFF
- O14,  
O15,  
O16:A
14. cb ADTA (four) – op
- O14,  
O15,  
O16:E
15. cb MSN TIMER FWD,AFT (two) – op
- O14,  
O15:B
16. EVENT TIMER AFT,FWD (two) – op
  17. MMU 1,2 (two) – OFF (MMU 2 ON for OPS TRANSITION, then OFF)
- O14,  
O15:F
18. H2O LOOP 2(1) BYP MODE – MAN  
MAN – DECR  
(hold 30 sec)
- L1
19. Continue with AOA (ASC):  
Do not perform LOSS OF FES (ENT PKT, PWRDN)  
Use ENTRY DELTAS PULLOUT PAGE,  
10-41

Cont next page

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# OV105

APCL/5/GEN N

~  
If not AOA:

After APU/HYD SHUTDOWN and MPS PWRDN/ISOL:

O17:A  
:B  
:D

20. ATVC (four) – OFF
- EIU (three) – OFF
- MEC 1 – OFF (wait 2 sec)
- 2 – OFF

L2

If FES failed, after MM201 transition:

21. FLASH EVAP FDLN HTR A,B SPLY (two) – 1
22. On MCC call, go to FULL-UP FES FLUSHING (ECLS), 4-16 >>

If FC lost, after MM201 transition:

23. FLASH EVAP FDLN HTR A,B SPLY (two) – 1
24. Go to LOSS OF 1 FC (ORB PKT, PWRDN) >>

**OV105**

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APCL/5/GEN N,2

ENTRY DELTAS PULLOUT PAGE

DO NOT DISCARD; USE TO LANDING

NOTE

Incorporate following changes or remove this page for use with indicated checklist or cue card

- A. Deltas to AOA (ASC)  
TIG-5 min:
- 1. Use two IDP/CRTs with four MDUs
  - 2. cb DDU L,R (four) – cl
  - 3. L,R FLT CNTLR PWR (two) – ON
- O14,O15,  
O16:E  
F6,F8
- B. Deltas to POST D/O BURN (ASC)
- 1. Use one IDP/CRT with two MDUs
  - 2. L,R FLT CNTLR PWR (two) – OFF
  - 3. cb DDU L,R (four) – op
  - 4. Delete ANTISKID, NWS callouts (ENTRY SW CHECK)
- F6,F8  
O14,  
O15,  
O16:E
- At EI-7:
- 5. Use two IDP/CRTs with four MDUs
  - 6. Perform EMER PLBD CLOSING (ENT PKT, ECLS)
- C. Deltas to ENTRY MANEUVERS (Cue Card)  
At EI:
- 1. NH3 CNTLR B(A) – SEC/ON
  - 2. cb DDU L,R (four) – cl
  - 3. L,R FLT CNTLR PWR (two) – ON
  - 4. BRAKES (three) – ON
  - 5. cb ADTA (four) – cl
  - 6. GNC I/O RESET
- L1  
O14,  
O15,  
O16:E  
F6,F8  
O14,  
O15,  
O16:A  
O14,  
O15,  
O16:E

Cont next page

**LOSS OF FES/1 FC  
ENTRY PULLOUT PAGE**

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**OV105**

APCL/ALL/GEN N

At V = 15K:

7. Delete NAVAIDS callout

At V = 12K:

8. Delete ref to RAD FLOW

At V = 6K:

L1

9. NH3 CNTLR B(A) – OFF  
A(B) – PRI/GPC

At M = 2.7:

L2

10. Use two HUDs, three MLSs, and two RAs as reqd
11. GNC I/O RESET
12. ANTISKID – ON
13. NWS – 1

At post Wheel Stop:

14. Go to EXPEDITED PWRDN (ENT, POST LDG)

## LOSS OF 2nd FC

- ⇒ C3 1. √MSTR MADS PWR – OFF
- 2. Use one IDP/CRT with three MDUs
- O7 3. GPS PWR (three) – OFF
- PRE AMPL (six) – OFF
- O8 4. √RDR ALTM (two) – OFF

### NOTE

Do not tie three main buses during ascent

- \* FC capability is 12 kW for sustained \*
- \* operations, ~13 kW for short duration (~4 hr), \*
- \* ~16 kW for contingency situations (~10 min). \*
- \* Purge FC at 430 amps or less \*

MS Perform MS OVHD AND AFT PNL PWRDN, 10-47,  
immed

- 5. Minimize Itg
- 6. Perform PL PWRDN, then:
- L1 7. CAB FAN (two) – OFF
- 8. If in OPS 2: Go to step 15

### CONTRACT RS AND REASSIGN STRINGS TO GPC 1 IN MC 1

9. GNC 0 GPC MEMORY  
CONFIG – ITEM 1 +1 EXEC  
Modify MC 1 per table-----→

CONFIG GPC	1 12340
STR 1	1
2	1
3	1
4	1
PL 1/2	1
CRT 1	1
2	1
3	1
4	0
L 1	1
2	1
MM 1	1
2	1

NOTE  
The following must be  
an OPS MODE recall

CRT 10. GNC, OPS 10X PRO

- For any CRT that is OFF:  
11. GPC/CRT1/X EXEC

Cont next page

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# OV105

APCL/5/GEN N

- O6 12. GPC MODE 2,3,4 (three) – STBY (tb-bp)  
 – HALT  
 – STBY (tb-RUN)  
 – HALT (tb-bp)

PWR 2,3 (two) – OFF

13. (BFS) GNC I/O RESET

14. Go to step 21

15. **GNC 0 GPC MEMORY**

CONFIG – ITEM 1 +2 EXEC

Modify MC 2 per table----->

DOWNLIST GPC – ITEM 44 +1  
 EXEC

	CONFIG	2
GPC	10000	
STR	1	1
	2	1
	3	1
	4	1
PL	1/2	0
CRT	1	1
	2	1
	3	0
	4	1
L	1	0
	2	0
MM	1	1
	2	1

- CRT 16. GNC, OPS 201 PRO

- O6 17. GPC MODE 2 – STBY (tb-bp)  
 – HALT

PWR 2 – OFF

18. √GPC MODE 3,5 (two) – HALT  
 (tb-bp)

PWR 3 – OFF

19. **GNC 20 DAP CONFIG**

P OPTION – ITEM 15 EXEC  
 (TAIL)

Y OPTION – ITEM 16 EXEC  
 (TAIL)

- C3 20. DAP: A/AUTO/PRI

- R2 21. When MPS Dump Complete:  
 MPS ENG PWR (six) – OFF

22. **GNC 51 OVERRIDE**

Any comm faulted IMU – desel

- L1 23. √IMU FAN (one) – ON

24. √H2O PUMP LOOP (one) – ON

25. AV BAY 1 FAN B(A) – ON

26. AV BAY 2 FAN A(B) – ON

If MNA unpwr:

27. FREON PUMP LOOP 1 – B  
 2 – A

28. FLASH EVAP CNTLR PRI A – ON  
 B – OFF

29. TOP EVAP HTR DUCT sel – B  
 HI LOAD DUCT HTR sel – B

30. L OMS – sel SEC

Cont next page

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**OV105**

APCL/ALL/GEN N

- If MNB(C) unpwr:
- L1 31. FREON PUMP LOOP 1,2 (two) – A(B)  
 32. TOP EVAP HTR DUCT sel – A  
 HI LOAD DUCT HTR sel – A
- If MNC unpwr:
33. FLASH EVAP CNTLR PRI B – ON  
 A – OFF
34. R OMS – sel SEC
- If no MANF leak:
- R1 35.  $\sqrt{O_2, H_2}$  MANF VLV TK1, TK2 (four) – OP  
 TK1 HTRS B – AUTO (MNA or MNB ↓) or  
 TK2 HTRS B – AUTO (MNC or no  
 MN BUS ↓); then:  
 All others OFF
- If MANF leak:
36.  $\sqrt{O_2, H_2}$  HTR LOSS TABLE (EPS), 5-20  
 37. Sel one htr in one O<sub>2</sub>, H<sub>2</sub> TK
- R4 38. Activate PGSC if reqd
- L2 39.  $\sqrt{FLASH EVAP FDLN HTR A, B SPLY}$  (two) – OFF
- L4:L 40. cb  $\Phi A$  CAB T CNTLR (two) – op
- C3 41. C/W MODE – ACK
- F6/F8 42. FLT CNTLR PWR (two) – OFF, use one as reqd
- Post APU/HYD SHUTDN:
- R2 43. BLR CNTLR/HTR (three) – OFF  
 44.  $\sqrt{HYD CIRC PUMP}$  (three) – OFF  
 45. GNC 23 RCS  
 ITEM 1 EXEC (FRCS page)  
 Ovrdrd FRCS MANF 1,2,3,4 STAT (four) – CL
- O8 46. RJDF DRIVER, LOGIC (eight) – OFF  
 O14, O15, O16:F  $\sqrt{RJDF MANF L5/F5/R5 DRIVER}$  – OFF
- If not MN BUS SHORT:
47. Tie three MN buses, BUS TIE (Cue Card)
- Post BUS TIE config check:
- L1 48. CAB FAN A(B) – ON  
 49.  $\sqrt{AV BAY 1 FAN}$  (one) – ON  
 50.  $\sqrt{AV BAY 2 FAN}$  (one) – ON  
 51.  $\sqrt{MS OVHD AND AFT PNL PWRDN}$  complete, then  
 continue:
- If in OPS 2:
52. Go to LOSS OF 2 FC LAUNCH DAY DEORBIT  
 PREP (ORBIT 2 OR ORBIT 3) (CONT DEORB,  
LOSS OF 2 FC ORB 2 OR 3) (read notes) >>
53. Set watch to count down to DEORBIT TIG (use PGSC  
 or MCC for TIG time)

Cont next page

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**OV105**

APCL/ALL/GEN N

OPS 3 TRANSITION CONFIG – POST OMS 2

- O14,O15, O16:F 54. ASA (four) – ON
- O14, O15, O16:A 55. √RGA 1,2,3 (three) – ON
- O14, O15:E 56. √cb ACCEL (two) – cl
- O16:F 57. √ACCEL 3 – ON
- C3 58. √FCS CH (four) – AUTO

TRANSITION GPC 1 TO GNC OPS 3

- CRT1 59. GNC 0 GPC MEMORY  
CONFIG – ITEM 1 +3 EXEC  
Modify MC 3 per table----->
- CRT 60. GNC, OPS 301 PRO
- 61. GNC DEORB MNVR COAST

	CONFIG GPC	3 10000
STR	1	1
	2	1
	3	1
	4	1
PL	1/2	1
CRT	1	1
	2	1
	3	1
	4	0
L	1	0
	2	0
MM	1	1
	2	1

- C3 TRANSITION BFS GPC TO GNC OPS 3  
62. BFC CRT DISP – ON  
√SEL – 3+1
- CRT 63. (BFS) GNC OPS 301 PRO
- O14, O15:F 64. MMU (two) – OFF

- 65. Go to LOSS OF 2 FC LAUNCH DAY DEORBIT PREP (ORBIT 2 OR ORBIT 3) (CONT DEORB, LOSS OF 2 FC ORB 2 OR 3); DO NOT perform PRE DPS TRANSITION SWITCH CONFIG [5] and DPS ENTRY CONFIG [6]

**OV105**



MS OVHD AND AFT PNL PWRDN

- O14,O15, 1. BRAKES (three) – OFF  
O16:A
- O14,O15, 2. cb ADTA (four) – op  
O16:E
- O16:E 3. cb MNC RCS/OMS PRPLT QTY GAUGE – OP
- O15, 4. cb DDU R (two) – op  
O16:E
- O14:A 5. Desel IMU – OFF (one of three IMUs OFF)
- :B 6. cb MNA MSN TIMER FWD – op  
EVENT TIMER AFT – op
- O15:B 7. MNB MSN TIMER AFT – op  
EVENT TIMER FWD – op
- Post MPS pwrdn and APU/HYD SHUTDN:
- O14,O15, 8. ASA (four) – OFF  
O16:F
- O17:A 9. ATVC (four) – OFF
- :B 10. EIU (three) – OFF
- :D 11. MEC 1 – OFF (wait 2 sec), then  
2 – OFF
- A12 12. √APU HTR LUBE OIL LN (three) – OFF
- 13. HYD HTR (eight) – OFF
- A14 14. RCS/OMS HTR FWD RCS – OFF  
JET 1,2,3,4,5  
(five) – OFF
- ML26C 15. AFT RCS JET 5 (one) – OFF  
SPLY H2O GN2 TK VENT vlv – PRESS  
TKA SPLY vlv – OP

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**LOSS OF 2nd FC  
ASCENT  
MS PAGE**

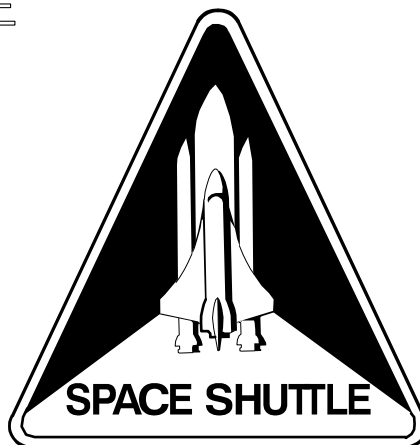
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**OV105**

APCL/ALL/GEN N

Space Shuttle Program  
FLIGHT DATA FILE

JSC-48003  
GENERIC, REV N



AESP:	MM101
APCL:	MM104
OPCL:	MM106
EPCL:	MM301
AESP:	MM304

# ASCENT PKT CHECKLIST

OV  
ALL

Flight Cover (trim bottom to expose tabs)