

Systems AOA Procedures

**Mission Operations Directorate
Operations Division**

**Generic, Rev K
January 31, 2008**

NOTE

For STS-123 and subsequent flights

National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas



SYSTEMS AOA PROCEDURES

GENERIC, REV K (Jan 31, 2008)

PCN-2 (October 13, 2008) Sheet 1 of 1

List of Implemented Change Requests (482s):

MULTI-1817

MULTI-1829

Incorporate the following:

1. Replace iii & iv
2. Replace 2-5 & 2-6
3. Replace 8-5 & 8-6

NOTE

For STS-126 and subsequent flights

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SYSTEMS AOA PROCEDURES

GENERIC, REV K (Jan 31, 2008)

PCN-1 (April 24, 2008) Sheet 1 of 1

List of Implemented Change Requests (482s):

MULTI-1816

Incorporate the following:

1. Replace iii & iv
2. Replace section 4 (4 pages)
3. Replace section 10 (4 pages)

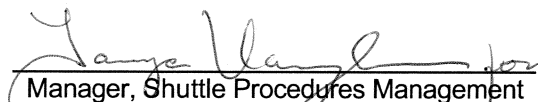
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For STS-124 and subsequent flights


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MISSION OPERATIONS DIRECTORATE

SYSTEMS ABORT-ONCE-AROUND PROCEDURES

GENERIC, REVISION K

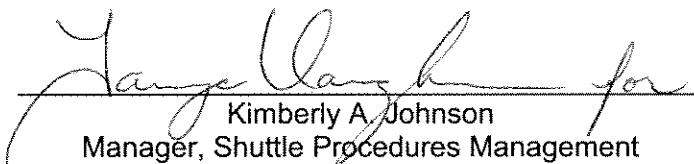
January 31, 2008

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Incorporates the following:
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GPO	DM43/J. Jones	281-483-1170
MPS (BOOSTER)	DF5/M. Patel	281-483-0083
OMS/RCS (PROP)	DF63/I. Young	281-483-2918

SYSTEMS AOA PROCEDURES

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REV K	01/31/08	PCN-2	10/13/08

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6-3		ALL/GEN K		
6-4		ALL/GEN K		
7-1		ALL/GEN K		
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7-3		ALL/GEN K		
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LOSS OF 2 FREON LOOPS (AOA) STAND-ALONE PROCEDURES

LOSS OF 2 FREON
LOOPS (AOA)

IMMEDIATE AOA DEORBIT BURN STEPS

- R11U 1. FC PURGE HTR – ON
VLVS (three) – OP

If time to AOA TIG greater than 15 min, proceed to next page, 1-2

If time to AOA TIG less than 15 min, perform the following:

2. In MM105 select any AOA I_TGT (3-12) to set AOA flag; but DO NOT LOAD until OPS 3
3. Assign all strings to GPC1 in MC3 with target set 10000
GNC, OPS 301 PRO; BFS GNC, OPS 301 PRO; GNC, OPS 302 PRO
4. Have MS perform MS OVHD, AFT, & MIDDECK PNL PWRDN, 5-1
5. Have another MS perform COMM PWRDN (COMM), 6-1
6. GNC 50 HORIZ SIT
√LDG site: ITEM 41 +__
1 = KSC 15/33
41 = NOR 17/23
45 = EDW 22/04
7. Check or enter target from OMS TARGETS, AOA PADS (ASC, OMS TGTS and AOA PADS), or MCC
8. LOAD TGTs:
LOAD – ITEM 22 EXEC
TIMER – ITEM 23 EXEC
9. MNVR TO ATT: MNVR – ITEM 27 EXEC

NOTE

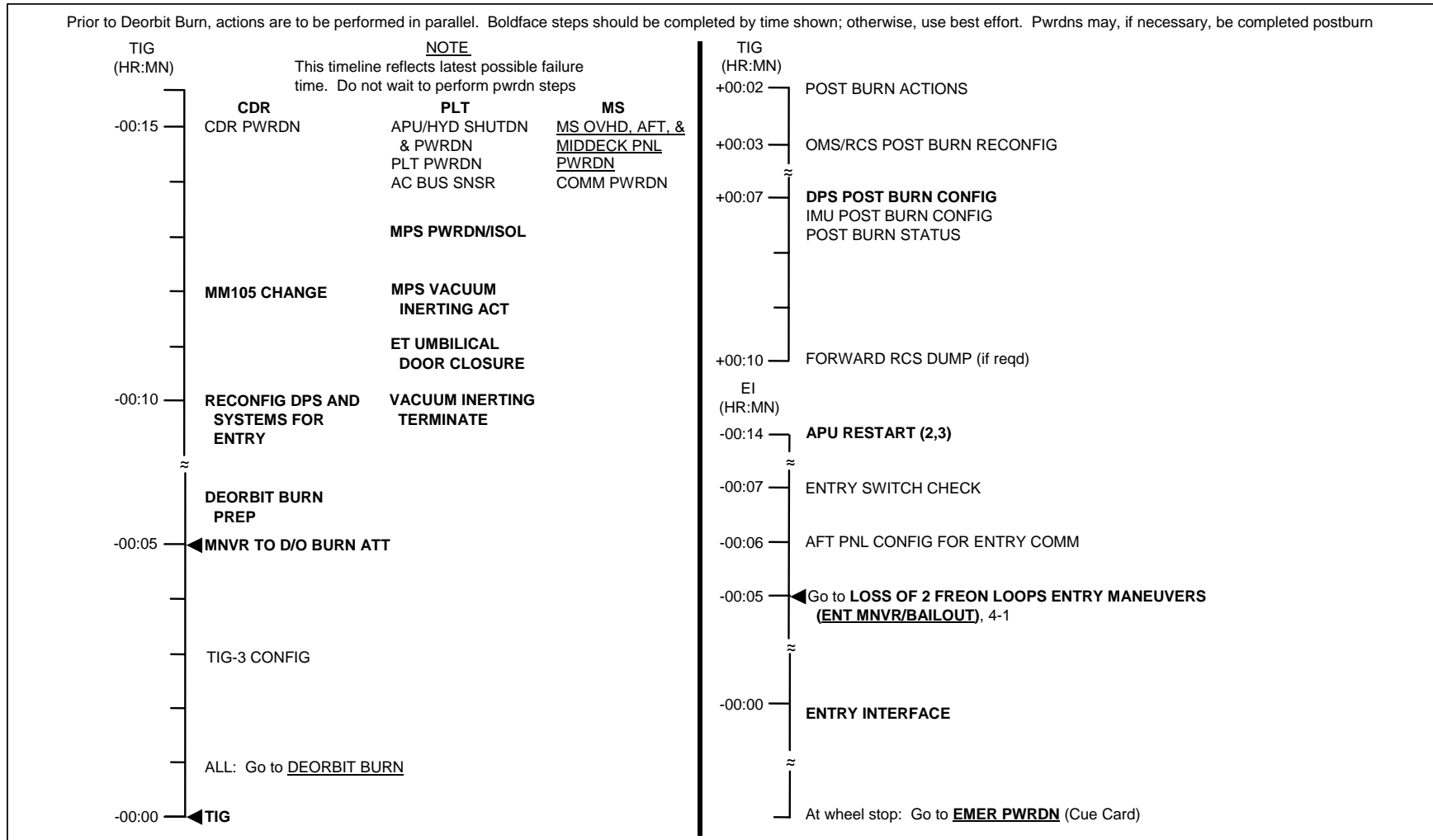
Disregard jet msgs during maneuver. If time to attitude (TTG) double overbright, manual mnvr may be reqd

10. Fill in AOA DEORBIT BURN CARDS from AOA DEL PAD (ASC)
11. If time to AOA TIG > 5 min, CDR and PLT: Perform CDR AND PLT TIME CRITICAL PROCEDURES, 2-1 through 2-4 as time permits until TIG-5
CDR: Skip steps 5 and 8 of CDR PWRDN on 2-2, step 1 of MAJOR MODE CHANGE on 2-3, and steps 1 and 6 of CDR DEORBIT CONFIG on 2-4
12. At TIG-5 perform TIG-5 min steps on 2-5. Then, perform AOA DEORBIT BURN (DEORBIT BURN), 2-6
13. Post Burn: Complete CDR AND PLT TIME CRITICAL PROCEDURES, 2-1 through 2-4 as reqd
CDR: Skip steps 5 and 8 of CDR PWRDN on 2-2, step 1 of MAJOR MODE CHANGE on 2-3, and steps 1 and 6 of CDR DEORBIT CONFIG on 2-4
14. Go to POST BURN ACTIONS, 3-1, and catch up with timeline

NOTES

- Fuel Cell flooding and excessive stack temperatures caused by loss of cooling are of primary concern. Begin Fuel Cell Purge ASAP, MS OVHD, AFT, & MIDDECK PNL PWRDN, 5-1
- Procedure is zero-fault tolerant and assumes no other failures. Actions taken for previous failures should be integrated carefully with this procedure
- Perform CDR AND PLT TIME CRITICAL PROCEDURES (section 2) in parallel ASAP after failure. The Summary Timeline, 1-3, is provided as an overview showing latest completion times for pwrdn procedures
- Establish comm and burn plan with MCC prior to COMM PWRDN (COMM), 6-1
If Comm reqd prior to Entry Comm activation at V = 12K, go to COMM PWRUP (COMM), 6-3
Order of least heat production for S-BAND is:
 1. SGLS/STDN LO
 2. TDRS (10 min max operating time without cooling to S-BAND Power Amp)
- Cycle MDUs. If ON at loss of cooling, turn OFF within 15 min. Allow 2 min OFF prior to each 1 min ON (30 min max ON time). Save two MDUs that interface with a single IDP for entry
- Possible cabin air OVBD RLF due to loss of cabin cooling. Expect Klaxon and -dP/dt during OVBD RLF

SUMMARY TIMELINE FOR LOSS OF 2 FREON LOOPS (AOA) PWRDN (TIG > 15 MIN)



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CDR AND PLT TIME CRITICAL PROCEDURES

1. MS execute MS OVHD, AFT, & MIDDECK PNL PWRDN, 5-1, ASAP (√Fuel Cell Purge)
2. MS execute COMM PWRDN (COMM), 6-1, ASAP
3. Execute following procedures in parallel ASAP

CDR

PLT

NOTE

Time reqd to execute deorbit burn
using these procedures is 15 min

CDR PWRDN

- | | |
|----|---|
| C3 | 1. √MSTR MADS PWR – OFF, use only one IDP with two MDUs, L FLT CNTLR PWR as reqd
√DAP: AUTO |
| | 2. Minimize Itg |
| L1 | 3. √HUM SEP (two) – OFF
√IMU FAN B – ON
√A,C (two) – OFF
√H2O PUMP LOOP 1 – OFF
√2 – ON
√CAB FAN (two) – OFF
√AV BAY 1 FAN B – ON
FAN A – OFF
√2,3 FAN (four) – OFF |
| O1 | If no FREON FLOW: |
| L1 | FREON PUMP LOOP (two) – OFF
√RAD CNTLR LOOP (two) – OFF
√NH3 CNTLR (two) – OFF
√TOP EVAP HTR NOZ (two) – OFF
If no FREON PUMPS ON, then:
FLASH EVAP CNTLR PRI (two) – OFF
TOP EVAP HTR DUCT sel – OFF
HI LOAD DUCT HTR sel – OFF |
| L2 | FLASH EVAP FDLN HTR SPLY (two) – OFF |
| L1 | If any FREON PUMP ON, then:
FLASH EVAP CNTLR PRI A – ON |

APU/HYD SHUTDN AND PWRDN

- | | |
|----|--|
| R2 | √APU AUTO SHTDN (three) – ENA
BLR PWR (three) – OFF
N2 SPLY (three) – OFF
CNTLR/HTR (three) – OFF
APU OPER (three) – OFF
FU TK VLV (three) – CL
CNTLR PWR (three) – OFF
√HYD MN PUMP PRESS (three) – NORM |
|----|--|

PLT PWRDN

- | | |
|----|---|
| | 1. Use only one IDP with two MDUs, L FLT CNTLR PWR as reqd |
| C3 | √DAP: AUTO |
| | 2. Minimize Itg |
| | 3. Perform PL PWRDN (ASC PKT, <u>PL PWRDN</u>) |
| O7 | 4. TACAN MODE sel (three) – OFF
AFT L RCS MANF ISOL 1,4 (two) – CL (tb-CL)
R RCS MANF ISOL 1,4 (two) – CL (tb-CL) |
| O8 | 5. FWD RCS MANF ISOL 1,2,3,4 (four) – CL (tb-CL)
√RDR ALTM (two) – OFF |
| C3 | 6. √FCS CH (four) – AUTO |

AC BUS SNSR

- | | |
|----|---|
| R1 | AC BUS SNSR (three) – OFF
(1 sec) then AUTO TRIP |
|----|---|

Cont next page
(OV103,104) 2-1

OV103,104
SYS AOA/3,4/GEN K

**CDR AND PLT
PWRDNS**

CDR

PLT

- L2 4. ANTISKID – OFF
 NWS – OFF
 O2 SYS 1,2 SPLY (two) – OP (tb-OP)
 FLASH EVAP FDLN HTR B SPLY – OFF
- | CONFIG | 1 | 3 |
|--------|-------|-------|
| GPC | 12340 | 10000 |
| STR 1 | 1 | 1 |
| 2 | 1 | 1 |
| 3 | 1 | 1 |
| 4 | 1 | 1 |
| PL 1/2 | 1 | 1 |
| CRT 1 | 1 | 1 |
| 2 | 1 | 1 |
| 3 | 1 | 1 |
| 4 | 0 | 0 |
| L 1 | 1 | 0 |
| 2 | 1 | 0 |
| MM 1 | 1 | 1 |
| 2 | 1 | 1 |
5. **GNC 0 GPC MEMORY**
 CONFIG – ITEM 1 +1 EXEC
 Modify MC1 per table →
 CONFIG – ITEM 1 +3 EXEC
 Modify MC3 per table →
- GNC, OPS 10X PRO
6. For any forward IDP that is OFF:
 GPC/CRT 1/X EXEC
- O6 7. GPC MODE 2,3,4 (three) – STBY (tb-bp)
 – HALT
 – STBY (tb-RUN)
 – HALT (tb-bp)
 PWR 2,3,4 (three) – OFF
8. BFS GNC, OPS 105 PRO
 106 PRO
9. BFS GNC, OPS 000 PRO
10. GPC MODE 5 – STBY (tb-RUN)
 – HALT (tb-bp)
 OUTPUT 5 – NORM
 PWR 5 – OFF
- C3 BFC CRT DISP – OFF
- NOTE**
 Operate AV BAY FAN 1B or 3B only
 to maintain cooling to active GPC
11. MDM FF 1,4 (two) – OFF
 FA 1,4 (two) – OFF
- F6 12. CDR disp – green dot
- CRT 13. L,R OMS – sel SEC GMBL

- MPS PWRDN/ISOL**
- R2 1. MPS ENG PWR L (two) – OFF
 CTR (two) – OFF
 R (two) – OFF
 He ISOL (six) – CL
 PNEU L ENG He XOVR – CL
 √He I'CONNECT (three) – GPC
- NOTE**
 Expect multiple MAs for MPS He P
 as regs bleed dn
- R4 2. MPS MANF PRESS (two) – CL
- O17:B 3. EIU (three) – OFF
- :D 4. MEC 1 – OFF, wait 2 sec, then
 2 – OFF

- MPS VACUUM INERTING ACT**
- R2 1. √MPS PNEU He ISOL – OP
- R4 2. MPS FILL/DRAIN LO2,LH2 (four) – OP
 Wait 15 sec
3. MPS FILL/DRAIN LO2,LH2 (four) – GND
- R2 4. MPS PNEU He ISOL – CL

CDR AND PLT TIME CRITICAL PROCEDURES

1. MS execute MS OVHD, AFT, & MIDDECK PNL PWRDN, 5-1, ASAP (√Fuel Cell Purge)
2. MS execute COMM PWRDN (COMM), 6-1, ASAP
3. Execute following procedures in parallel ASAP

CDR

PLT

NOTE

Time reqd to execute deorbit burn
using these procedures is 15 min

CDR PWRDN

- | | |
|----|---|
| C3 | 1. √MSTR MADS PWR – OFF, use only one IDP with two MDUs, L FLT CNTLR PWR as reqd
√DAP: AUTO |
| L1 | 2. Minimize Itg
3. √HUM SEP (two) – OFF
√IMU FAN B – ON
√A,C (two) – OFF
√H2O PUMP LOOP 1 – OFF
√2 – ON
√CAB FAN (two) – OFF
√AV BAY 1 FAN B – ON
FAN A – OFF
√2,3 FAN (four) – OFF |
| O1 | If no FREON FLOW: |
| L1 | FREON PUMP LOOP (two) – OFF
√RAD CNTLR LOOP (two) – OFF
√NH3 CNTLR (two) – OFF
√TOP EVAP HTR NOZ (two) – OFF
If no FREON PUMPS ON, then:
FLASH EVAP CNTLR PRI (two) – OFF
TOP EVAP HTR DUCT sel – OFF
HI LOAD DUCT HTR sel – OFF
FLASH EVAP FDLN HTR SPLY (two) – OFF |
| L2 | |
| L1 | If any FREON PUMP ON, then:
FLASH EVAP CNTLR PRI A – ON |

APU/HYD SHUTDN AND PWRDN

- | | |
|----|--|
| R2 | √APU AUTO SHTDN (three) – ENA
BLR PWR (three) – OFF
N2 SPLY (three) – OFF
CNTLR/HTR (three) – OFF
APU OPER (three) – OFF
FU TK VLV (three) – CL
CNTLR PWR (three) – OFF
√HYD MN PUMP PRESS (three) – NORM |
|----|--|

PLT PWRDN

- | | |
|----|--|
| C3 | 1. Use only one IDP with two MDUs, L FLT CNTLR PWR as reqd
√DAP: AUTO |
| O7 | 2. Minimize Itg
3. Perform PL PWRDN (ASC PKT, <u>PL PWRDN</u>)
4. GPS PWR (three) – OFF
GPS PRE AMPL (six) – OFF
AFT L RCS MANF ISOL 1,4 (two) – CL (tb-CL)
R RCS MANF ISOL 1,4 (two) – CL (tb-CL) |
| O8 | 5. FWD RCS MANF ISOL 1,2,3,4 (four) – CL (tb-CL)
√RDR ALTM (two) – OFF |
| C3 | 6. √FCS CH (four) – AUTO |

AC BUS SNSR

- | | |
|----|---|
| R1 | AC BUS SNSR (three) – OFF
(1 sec) then AUTO TRIP |
|----|---|

Cont next page
(OV105) 2-1

OV105
SYS AOA/5/GEN K

**CDR AND PLT
PWRDNS**

CDR

PLT

- L2 4. ANTISKID – OFF
 NWS – OFF
 O2 SYS 1,2 SPLY (two) – OP (tb-OP)
 FLASH EVAP FDLN HTR B SPLY – OFF
- | CONFIG | 1 | 3 |
|--------|-------|-------|
| GPC | 12340 | 10000 |
| STR 1 | 1 | 1 |
| 2 | 1 | 1 |
| 3 | 1 | 1 |
| 4 | 1 | 1 |
| PL 1/2 | 1 | 1 |
| CRT 1 | 1 | 1 |
| 2 | 1 | 1 |
| 3 | 1 | 1 |
| 4 | 0 | 0 |
| L 1 | 1 | 0 |
| 2 | 1 | 0 |
| MM 1 | 1 | 1 |
| 2 | 1 | 1 |
5. **GNC 0 GPC MEMORY**
 CONFIG – ITEM 1 +1 EXEC
 Modify MC1 per table →
 CONFIG – ITEM 1 +3 EXEC
 Modify MC3 per table →
- GNC, OPS 10X PRO
6. For any forward IDP that is OFF:
 GPC/CRT 1/X EXEC
- O6 7. GPC MODE 2,3,4 (three) – STBY (tb-bp)
 – HALT
 – STBY (tb-RUN)
 – HALT (tb-bp)
 PWR 2,3,4 (three) – OFF
8. BFS GNC, OPS 105 PRO
 106 PRO
9. BFS GNC, OPS 000 PRO
10. GPC MODE 5 – STBY (tb-RUN)
 – HALT (tb-bp)
 OUTPUT 5 – NORM
 PWR 5 – OFF
- C3 BFC CRT DISP – OFF
- NOTE
 Operate AV BAY FAN 1B or 3B only
 to maintain cooling to active GPC
11. MDM FF 1,4 (two) – OFF
 FA 1,4 (two) – OFF
- F6 12. CDR disp – green dot
- CRT 13. L,R OMS – sel SEC GMBL

- MPS PWRDN/ISOL**
- R2 1. MPS ENG PWR L (two) – OFF
 CTR (two) – OFF
 R (two) – OFF
 He ISOL (six) – CL
 PNEU L ENG He XOVR – CL
 √He I'CONNECT (three) – GPC
- NOTE
 Expect multiple MAs for MPS He P
 as regs bleed dn
- R4 2. MPS MANF PRESS (two) – CL
- O17:B 3. EIU (three) – OFF
- :D 4. MEC 1 – OFF, wait 2 sec, then
 2 – OFF

- MPS VACUUM INERTING ACT**
- R2 1. √MPS PNEU He ISOL – OP
- R4 2. MPS FILL/DRAIN LO2,LH2 (four) – OP
 Wait 15 sec
3. MPS FILL/DRAIN LO2,LH2 (four) – GND
- R2 4. MPS PNEU He ISOL – CL

MAJOR MODE CHANGE

CRT 1. GNC, OPS 105 PRO

ET UMBILICAL DOOR CLOSURE

* If Feedline fail, √MCC before closure *

WARNING
 ET CTRLINE LATCHES must be stowed prior to
 L,R DR closure to prevent door drive damage

* If ET Doors will not manually close and latch, *
 * prior to OPS 3 transition: *
 * 2: GNC 51 OVERRIDE *
 * ET UMB DR CLOSE – ITEM 40(30) *
 * EXEC *

NOTE

Double times for single motor operation

R2

ET UMB DR

MODE – GPC/MAN

CTRLINE LAT – STO

√After 6 sec, CTRLINE LAT tb – STO

* If CTRLINE LAT does not stow within 12 sec: *
 * CTRLINE LAT – GND *
 * √MCC *

CTRLINE LAT – GND

L,R DR (two) – CL (tb-bp)

√After 24 sec, L,R DR tb (two) – CL

* If doors do not close within 48 sec: *
 * L,R DR (two) – OFF *
 * √MCC *

L,R LAT (two) – LAT (tb-bp)

√After 6 sec, L,R LAT tb (two) – LAT

* If doors do not latch within 12 sec: *
 * L,R DR (two) – OFF *
 * LAT (two) – OFF *
 * √MCC *

L,R DR (two) – OFF

LAT (two) – OFF

MODE – GPC

CDR

PLT

DEORBIT FDF CONFIG

- C4F 1. Unstow ENT PKT
Stow ASC PKT
- R3A 2. Stow ASC Cue Cards
- C1 Use DEORBIT BURN MONITOR (LOSS OF 2
FREON LOOPS AOA) (DEORBIT BURN), 2-6

CDR DEORBIT CONFIG

- 1. Select AOA I_TGT (3-12) to set AOA flag, but
DO NOT LOAD until OPS 3

NOTE

Manually entered tgt data will be carried over to
OPS 3 except: PASS, BFS ITEMS 5,18 (ILL ENTRY)

- 2. √MS: MS OVHD, AFT, & MIDDECK PNL PWRDN complete
- C3 3. √FCS CH (four) – AUTO
- MS/O15:A, O16:A 4. √RGA 2,3 – ON
- MS/O15:F, O16:F 5. √ASA 2,3 – ON
- CRT 6. GNC, OPS 301 PRO
√DAP: AUTO A/E PFD
- MS/O15:F 7. MMU 2 – OFF
- MS/O16:F 8. ASA 2 – OFF
- 9. 3 – OFF

GNC 50 HORIZ SIT

AOA RWY OPTIONS

ALL INCLINATIONS				
SITE	RWY	TACANS	ITEM 5	MLS
1	KSC 15	TTS 59Y	COF 97	8
	KSC 33			6
41	NOR 17	SNG 121Y	HMN 92	6
	NOR 23			6
45	EDW 22	EDW 111	LHS 21	8/†
	EDW 04			6

If other runways reqd, use AOA RWY OPTIONS (ASC, AOA)

- L1 10. √RWY selection
- 11. CAB FAN A – ON
- 12. IMU FAN (three) – OFF

DEORBIT FDF CONFIG

Post MM105:
Fill-in AOA DEORBIT BURN CARDS from
AOA DEL PAD (ASC)

- R3F 1. Unstow ENT PKT
Stow ASC PKT
- R3A 2. Stow ASC Cue Cards
- C1 Use DEORBIT BURN MONITOR (LOSS OF 2
FREON LOOPS AOA) (DEORBIT BURN), 2-6

VACUUM INERTING TERMINATE

NOTE

TERM no sooner than 2 min after ACT

- R2 1. MPS PNEU He ISOL – OP
- R4 2. FILL/DRAIN LO2,LH2 OUTBD (two) – CL
Wait 15 sec
- 3. MPS FILL/DRAIN LO2,LH2 OUTBD (two) – GND
- R2 4. PNEU He ISOL – CL

CDR

PLT

DEORBIT BURN PREP

GNC DEORB MNVR EXEC

- 1. GNC, OPS 302 PRO
- 2. TRIM LOAD ITEM 6 +0.4 -5.7 +5.7 EXEC
 - * If single engine burn: *
 - * TRIM LOAD LY – ITEM 7 +5.2 EXEC *
 - * RY – ITEM 8 -5.2 EXEC *
 - * OMS L – ITEM 2 EXEC *
 - * R – ITEM 3 EXEC *
- 3. Check or enter Target from OMS TGTS and AOA PADS (ASC, OMS TGTS and AOA PADS)
- 4. LOAD – ITEM 22 EXEC
TIMER – ITEM 23 EXEC
- 5. DEORBIT BURN TIG ADJUST (if reqd)
Determine Δ TIG (if REI-REF > 50) from (ASC, OMS TGTS):
Enter new TIG
LOAD – ITEM 22 EXEC
TIMER – ITEM 23 EXEC
Repeat until Δ RANGE < 50

TIG-5 min

- MS/O14:E 6. cb MNA DDU L – cl
- MS/O15:E 7. MNB DDU L – cl

TIG-3 min

TIG-3 CONFIG

- O6 1. MDM FA4 – ON
- 2. GNC I/O RESET
Use one IDP with two MDUs, L FLT CNTLR PWR as reqd

MNVR TO DEORBIT BURN ATTITUDE

F8

GNC DEORB MNVR EXEC

- MNVR – ITEM 27 EXEC (*)
- √ADI ATT – INRTL
- √ERR – MED
- √RATE – MED

NOTE

If time to attitude (TTG) double overbright, manual mnvr may be reqd

WARNING
CDR ADI green dot (LVLH)
If manual mnvr reqd, use PLT ADI (√INRTL)

TIG-3 min

Use one IDP with two MDUs, L FLT CNTLR PWR as reqd

GO TO DEORBIT BURN

2-5

DEORBIT BURN

SYS AOA/ALL/GEN K

**DEORBIT BURN MONITOR
(LOSS OF 2 FREON LOOPS AOA)**

OMS PC & OMS ↓	OMS PRPLT FAIL (NO OX IN P)
OMS OX/FU TK P (√Meter) OX/FU LOW	He PRESS/VAP ISOL (two) – OP If aff TK P not incr: He PRESS/VAP ISOL (two) – CL At PC < 72: OMS PRPLT FAIL
OX & FU HIGH	He PRESS/VAP ISOL (two) – CL Cycle He A(B) to maintain TK P 234-284
OMS GMBL	If high RCS usage: OMS ENG FAIL
I/O ERROR FA	◆ I/O RESET (if recov >>) If high RCS usage: OMS ENG FAIL
BCE STRG D	I/O RESET (if recov >>) If high RCS usage: OMS ENG FAIL

The following parameters are available for monitoring the OMS during the D/O burn

Parameter	Display
OMS Pc	OMS/MPS
He Tk P	OMS/MPS
GN2 Tk P	OMS/MPS
Prop Tk P	O3 Meter

NOTE

With no BFS, FU system monitoring of the OMS is not possible (No FU INJ T or FU IN P)

DEORBIT
BURN

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**AOA DEORBIT BURN (2 ENG)
(LOSS OF 2 FREON LOOPS)**

√MM302 √OMS BOTH
 Enter TGO + 5 sec
 √TRIM: P +0.4, LY -5.7, RY +5.7
 L,R OMS He PRESS/VAP ISOL A (two) – GPC
 B (two) – OP
 √DAP – AUTO/DISC A/E PFD
 ADI – LVLH(REF)/HI/MED
 L FLT CNTLR PWR – ON

TIG-2 OMS ENG (two) – ARM/PRESS
 -:15 EXEC
 -:15 If OMS AFT QTY < 11%, THC +X to OMS IGN + 1 sec
 :00 TIG Start watch (√Pc, ΔVTOT, ENG VLVs)

- * **OMS PRPLT FAIL (CONTINUE BURN):** *
- * Failed OMS ENG – OFF *
- * ITEM 18 +0 EXEC *
- * When good OMS QTY: *
- * 5%: L,R OMS XFEED (four) – OP *
- * 4%: Good OMS TK ISOL (two) – CL *
- * If OMS Pc < 80 or OMS TEMP, *
- * OMS ENG – OFF *
- * √ADI – LVLH, center needles *
- * RCS COMPLETION *
- * **OMS ENG FAIL:** *
- * Failed OMS ENG – OFF *
- * OMS XFEED at 1/2 ΔVTOT at fail *
- * or OMS QTY %L or %R *
- * **2nd OMS FAIL (ENG or PRPLT):** *
- * Failed OMS ENG – OFF *
- * If PRPLT FAIL: *
- * Secure aff OMS *
- * ITEM 18 +0 EXEC *
- * √ADI – LVLH, center needles *
- * Interconnect good OMS to RCS *
- * THC +X (√OMS% vs RCS Burn Time) *
- * RCS I'CNCT TK SW (N/A for OMS PRPLT FAIL) *
- * THC +X (√OMS% vs RCS Burn Time) *
- * with MDM FA1 ↓ double time *
- * AFT RCS RECONFIG *
- * RCS COMPLETION *

* **RCS COMPLETION:** *

* If DIRECT INSERTION: *

* THC +X to $\Delta VTOT = 0$ or TOT AFT QTY 1 168 % *

* At AFT QTY 1 THC +X to FLIP ΔV or *

* if CUR $\Delta VTOT$: TOT AFT QTY 2 6 1 % then *

* FRCS COMPLETION *

* FLIP 7 1 ----- *

* ΔV FRCS COMPLETION *

* AFT 3 6 ----- *

* ΔV THC +X to TGT ΔV *

* TGT 0 0 ----- *

* ΔV *

* If w/OMS 1: *

* THC +X to TGT HP or TOT AFT QTY 1 168 % *

* At AFT QTY 1 THC +X to FLIP HP or *

* if CUR HP: TOT AFT QTY 2 6 1 % then *

* FRCS COMPLETION *

* FLIP ----- *

* HP FRCS COMPLETION *

* AFT ----- *

* HP THC +X to TGT HP *

* TGT ----- *

* HP *

* **FRCS COMPLETION:** *

* Perform FRCS REACTIVATION, 3-3, steps 1 thru 4 *

* Mnv'r to -X Att (pitch up at 3°/sec to VGOz = +1/4 $\Delta VTOT$) *

* THC -X to $\Delta VTOT = 0$ or FRCS depletion (JET FAIL OFF) *

CUTOFF

+ :02 OMS ENG(s) – OFF (If < 3 IMU, at :)

* AFT RCS RECONFIG if INTERCONNECT *

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

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|

POST BURN ACTIONS

- | | | |
|----------|--|--|
| | | 1. \sqrt CDR AND PLT TIME CRITICAL PROCEDURES complete |
| | | 2. Use one IDP with two MDUs max |
| F6 | | 3. L FLT CNTLR PWR – OFF |
| CM O15:A | | 4. IMU 2 – ON |
| MS O14:E | | 5. cb MNA DDU L – op |
| O15:E | | 6. MNB DDU L – op |
| CM O6 | | 7. MDM FA4 – OFF |
| C3 | | 8. DAP: AUTO A/E PFD |

NOTE

Prebank is applicable ONLY if OMS 1 reqd

9. Determine PREBANK
 Determine Δ HP (CUR HP – TGT HP)
 Use RECOVERY PREBANK TABLES

RECOVERY PREBANK TABLES (EDW)										
NOTE: APPLICABLE <u>ONLY</u> IF OMS 1 REQD										
(ATO/AOA steep entries)										
EDW										
Δ HP	0	5	10	15	19	REDES.	21	25	32	
PREBANK	0	45	70	85	95	NOR	100	115	175	
							IF NOR NOGO			
NOR										
Δ HP			13	15	17	20	25	30	35	42
PREBANK			50	55	65	70	90	105	130	180
(ATO/AOA shallow entries)										
EDW										
Δ HP	0	1	3	5	7	REDES.	9	10	12	
PREBANK	90	95	105	110	125	NOR	140	150	175	
							IF NOR NOGO			
NOR										
Δ HP					5	8	10	12	15	16
PREBANK					95	105	115	130	160	170

125 oct

Record PREBANK on LOSS OF 2 FREON LOOPS ENTRY
 MANEUVERS (ENT MNVR/BAILOUT), 4-1

- R2 10. BLR PWR 2,3 (two) – ON
 CNTLR/HTR 2,3 (two) – A

OMS/RCS POST BURN RECONFIG

- | | |
|----|---|
| O7 | 1. \sqrt AFT L,R RCS He PRESS (four) – OP (tb-OP) |
| | \sqrt TK ISOL (six) – GPC (tb-OP) |
| | \sqrt XFEED (four) – GPC (tb-CL) |
| O8 | 2. L,R OMS He PRESS/VAP ISOL (four) – CL |
| | TK ISOL (four) – OP (tb-OP) |
| | XFEED (four) – CL (tb-CL) |

POST BURN ACTIONS

DPS POST BURN CONFIG

- O6 1. GPC PWR 3 – ON
 MODE 3 – STBY (tb-RUN)
 – RUN
- O15:F 2. ASA 2 – ON
 O16:F 3 – ON

EXPAND RS AND ASSIGN ALL STRINGS TO GPC 3

3. GNC, OPS 301 PRO

GNC 0 GPC MEMORY
 CONFIG – ITEM 1 +3 EXEC
 Modify MC3 per table →

CONFIG	3
GPC	10300
STR	1 3
	2 3
	3 3
	4 3
PL	1/2 3
CRT	1 3
	2 3
	3 3
	4 0
L	1 0
	2 0
MM	1 3
	2 3

GNC 50 HORIZ SIT

4. √RWY selection
 Reselect AOA RWY
5. GNC, OPS 302,303 PRO
6. For any forward IDP that is OFF:
 GPC/CRT3/X EXEC

GNC 0 GPC MEMORY

- O6 7. DOWNLIST GPC – ITEM 44 +3 EXEC
8. GPC MODE 1 – STBY (tb-bp)
 – HALT
 PWR 1 – OFF
- O15:F 9. ASA 2 – OFF
 O16:F 3 – OFF

NOTE

Keep one AV Bay fan active in each bay
 with a GPC in RUN

- L1 10. AV BAY 1 FAN B – OFF
 3 FAN B – ON

IMU POST BURN CONFIG

GNC 21 IMU ALIGN

1. √IMU 2 DES – ITEM 8 (*)
 √OPER – ITEM 5 (*)
2. GNC I/O RESET
3. Align IMU 2 using IMU 3 as reference
 REF IMU – ITEM 14 +3 EXEC
 √TYPE, ITEM 15 – TORQUE
 ALIGN IMU 2 – ITEM 11 EXEC (*)
 EXEC – ITEM 16 (*)
 When align complete (3 to 6 min):
4. Reselect IMU 2
 IMU 2 DES – ITEM 8 EXEC (no *)
- O16:A 5. 3 – OFF

MNVR TO EI-5 ATT

O15:E Pwr up R DDU as reqd to achieve/maintain EI-5 ATT
 C CRT √Uplinked INRTL EI-5 MM303 ATT w/DEL PAD

- * If no Deorbit TGT uplink, enter INRTL EI-5 *
- * MM303 ATT from DEL PAD *
- * R – ITEM 24 + _____ *
- * P – ITEM 25 + _____ *
- * Y – ITEM 26 + _____ *

MNVR TO EI-5 ATT – ITEM 27 EXEC (*)

- * If UNDERBURN or no DEL PAD, PLT should manually *
- * mnvr to LVLH R001, Y358, P per table below *

TIME to EI (min)	LVLH PITCH (deg)
20	339
	343
	347
	351
	355
15	359
	3
	7
	11
	15
10	19
	23
	27
	31
	35
5	39

FRCS REACTIVATION

- MS O14 1. √cb MNA OI SIG CONDR OF 1/4 A – cl
 O15:B √cb MNB OI SIG CONDR OF 2/3 A – cl
 O14, 2. Pri RJDF DRIVER, LOGIC (eight) – ON
 O15,
 O16:F
- CM O6 3. MDM FF 1,4 (two) – ON
 √FF 2,3 (two) – ON
 GNC I/O RESET
- O8 4. FWD RCS MANF ISOL 1,2,3,4 (four) – OP (tb-OP)

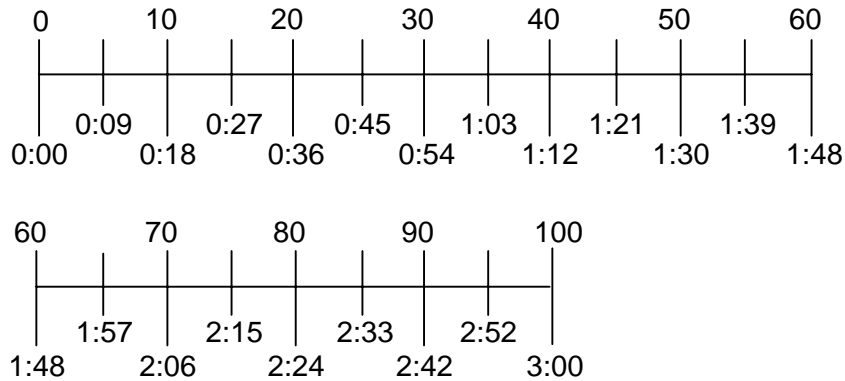
FORWARD RCS DUMP

GNC 23 RCS

1. Determine FWD RCS 'DUMP TO %' using lowest of Ox or Fu qty (DEL PAD)

FOUR JET DUMP:

FRCS PRPLT TO BE DUMPED (%)



TIME FROM DUMP INITIATION (M:S)

NOTE

During dump, disregard FRCS qty

- * If TWO JET DUMP: *
- * Double FOUR JET DUMP time *

- CRT 2. FWD RCS ARM – ITEM 36 EXEC
 DUMP – ITEM 37 EXEC (start watch)
 When dump time achieved:
 3. FWD RCS OFF – ITEM 38 EXEC

ISOLATE FRCS:

When dump complete:

- O8 4. FWD RCS MANF ISOL 1,2,3,4 (four) – CL (tb-CL)
 O6 5. MDM FF 1,4 (two) – OFF
 MS O14, 6. PRI RJDF DRIVER, LOGIC (eight) – OFF
 O15, O16:F

OMS GMBL PWRDN

CRT Verify GMBL positions:

	L	R
P	+5.9	+5.9
Y	+6.4	-6.4

GMBL OFF – ITEM 32 EXEC
 – ITEM 33 EXEC

EI-14 APU RESTART (APUs 2,3)

- O17:D
R2
1. √SIG CONDR OA 1/2/3 – ON
 2. BLR N2 SPLY (two) – ON
 - √PWR (two) – ON
 - √CNTLR/HTR (two) – A
 3. √cb APU FU TK VLV ENA (six) – cl
 - √APU FU TK VLV (three) – CL
 - √AUTO SHTDN (three) – ENA
 - √SPEED SEL (three) – NORM
 - √OPER (three) – OFF
 4. HYD MN PUMP PRESS (two) – LO
 5. APU CNTLR PWR (two) – ON
 6. FU TK VLV (two) – OP
 - OPER (two) – INJ COOL (start watch)

WARNING
Do not take HYD MN PUMP PRESS to
NORM/PRESS with ASA OFF

After 3.5 min cool down:

- CRT
7. APU OPER (two) – START/RUN
 8. √HYD PRESS ind (two) – LO green

- | | |
|-----|---|
| | <ul style="list-style-type: none"> * If APU 2(3) does not start: * * 9. BLR PWR 1 – ON * * N2 SPLY 1 – ON * * CNTLR/HTR 1 – A * * 10. APU CNTLR PWR 1 – ON * * 11. HYD MN PUMP PRESS 1 – LO * * 12. APU FU TK VLV 1 – OP * * OPER 1 – INJ COOL (start watch) * * After 3.5 min cool down: * * 13. APU OPER 1 – START/RUN * |
| R2 | |
| CRT | <ul style="list-style-type: none"> * 14. √HYD PRESS 1 ind – LO green * |
| R2 | <ul style="list-style-type: none"> * If less than two APUs operating: * * (Good) APU AUTO SHTDN (one) – INH * * If any APU does not start: * * 15. (Aff) BLR CNTLR/HTR – OFF * * 16. APU OPER – OFF * * 17. FU TK VLV – CL * * CNTLR PWR – OFF * * HYD MN PUMP PRESS – NORM * * If no APU starts: Contact MCC (Perform COMM * * PWRUP, 6-3) * |

- O17:D
18. SIG CONDR OA 1/2/3 – OFF

EI-7 ENTRY PWRUP & SWITCH CHECK

- | | | | | | | | |
|----------------------------|---|-----------------------|-------|-------|-------|--------|-------|
| C3 | 1. FCS CH 1 – OFF
2 – ORIDE
3 – ORIDE
4 – OFF | | | | | | |
| MS O14:F
O15:F
O16:F | 2. ASA 1 – ON
2 – ON
3 – ON
4 – ON | | | | | | |
| | <table border="1" style="margin-left: 40px;"><tr><td>GNC 53 ENTRY CONTROLS</td></tr></table> | GNC 53 ENTRY CONTROLS | | | | | |
| GNC 53 ENTRY CONTROLS | | | | | | | |
| | 3. GNC I/O RESET | | | | | | |
| | 4. DES SURF FDBK 1,4 – ITEM 18,21 EXEC (*)
√2,3 – ITEM 19,20 (no *) | | | | | | |
| MA73C:A | 5. MCA LOGIC MNA MID 1 – ON
MNB MID 1 – ON
MNC MID 2 – ON | | | | | | |
| :B | AFT 3 – OFF | | | | | | |
| 07 | 6. √TACAN ANT SEL (three) – AUTO
CH tw (three) – <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>111</td></tr></table> (EDW)
<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>59Y</td></tr></table> (KSC)
<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>121Y</td></tr></table> (NOR) | 111 | 59Y | 121Y | | | |
| 111 | | | | | | | |
| 59Y | | | | | | | |
| 121Y | | | | | | | |
| O8 | 7. √MLS CH tw (three) – 8 <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>EDW22</td></tr></table> <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>KSC15</td></tr></table>
– 6 <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>KSC33</td></tr></table> <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>NOR17</td></tr></table> <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>NOR 23</td></tr></table> <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>EDW04</td></tr></table> | EDW22 | KSC15 | KSC33 | NOR17 | NOR 23 | EDW04 |
| EDW22 | | | | | | | |
| KSC15 | | | | | | | |
| KSC33 | | | | | | | |
| NOR17 | | | | | | | |
| NOR 23 | | | | | | | |
| EDW04 | | | | | | | |
| L2 | 8. √ENTRY MODE – AUTO | | | | | | |
| | 9. <table border="1" style="margin-left: 40px;"><tr><td>GNC 51 OVERRIDE</td></tr></table>
SSME REPOS – ITEM 19 EXEC (INH)
√ROLL MODE – AUTO | GNC 51 OVERRIDE | | | | | |
| GNC 51 OVERRIDE | | | | | | | |
| L2/C3 | 10. √SBTC – FULL FWD | | | | | | |
| C3 | √SRB SEP – AUTO
√ET SEP – AUTO | | | | | | |
| F6 | 11. CDR disp – green dot | | | | | | |
| F8 | √R AIR DATA – NAV
√ADI ERR – MED
√RATE – MED | | | | | | |
| | 12. √HSI SEL MODE – ENTRY
√SOURCE – NAV, 2 | | | | | | |
| F3 | 13. L TRIM RHC/PNL – INH
PNL – ON | | | | | | |
| C3 | √DAP: AUTO <table border="1" style="margin-left: 40px;"><tr><td>A/E PFD</td></tr></table> | A/E PFD | | | | | |
| A/E PFD | | | | | | | |
| | 14. Have MS complete AFT PNL CONFIG FOR ENTRY COMM (<u>COMM</u>),
6-2, prior to MS/PS seat ingress (COMM will be activated at V = 12K) | | | | | | |
| | 15. MS/PS INGRESS SEATS | | | | | | |
| | 16. Go to <u>LOSS OF 2 FREON LOOPS ENTRY MANEUVERS</u>
(<u>ENT MNVR/BAILOUT</u>), 4-1 | | | | | | |

EI-14 APU RESTART (APUs 2,3)

- O17:D
R2
1. √SIG CONDR OA 1/2/3 – ON
 2. BLR N2 SPLY (two) – ON
 - √PWR (two) – ON
 - √CNTLR/HTR (two) – A
 3. √cb APU FU TK VLV ENA (six) – cl
 - √APU FU TK VLV (three) – CL
 - √AUTO SHTDN (three) – ENA
 - √SPEED SEL (three) – NORM
 - √OPER (three) – OFF
 4. HYD MN PUMP PRESS (two) – LO
 5. APU CNTLR PWR (two) – ON
 6. FU TK VLV (two) – OP
 - OPER (two) – INJ COOL (start watch)

WARNING
Do not take HYD MN PUMP PRESS to
NORM/PRESS with ASA OFF

After 3.5 min cool down:

- CRT
7. APU OPER (two) – START/RUN
 8. √HYD PRESS ind (two) – LO green

- | | | |
|-----|---|---|
| | * If APU 2(3) does not start: | * |
| R2 | * 9. BLR PWR 1 – ON | * |
| | N2 SPLY 1 – ON | * |
| | CNTLR/HTR 1 – A | * |
| | * 10. APU CNTLR PWR 1 – ON | * |
| | * 11. HYD MN PUMP PRESS 1 – LO | * |
| | * 12. APU FU TK VLV 1 – OP | * |
| | OPER 1 – INJ COOL (start watch) | * |
| | * After 3.5 min cool down: | * |
| | * 13. APU OPER 1 – START/RUN | * |
| CRT | * 14. √HYD PRESS 1 ind – LO green | * |
| | * If less than two APUs operating: | * |
| R2 | * (Good) APU AUTO SHTDN (one) – INH | * |
| | * If any APU does not start: | * |
| | * 15. (Aff) BLR CNTLR/HTR – OFF | * |
| | * 16. APU OPER – OFF | * |
| | * 17. FU TK VLV – CL | * |
| | CNTLR PWR – OFF | * |
| | HYD MN PUMP PRESS – NORM | * |
| | * If no APU starts: Contact MCC (Perform COMM | * |
| | * PWRUP, 6-3) | * |

- O17:D 18. SIG CONDR OA 1/2/3 – OFF

EI-7 ENTRY PWRUP & SWITCH CHECK

- | | | | | | | | |
|----------------------------|---|-----------------------|-------|-------|-------|--------|-------|
| C3 | 1. FCS CH 1 – OFF
2 – ORIDE
3 – ORIDE
4 – OFF | | | | | | |
| MS O14:F
O15:F
O16:F | 2. ASA 1 – ON
2 – ON
3 – ON
4 – ON | | | | | | |
| | <table border="1" style="margin-left: 40px;"><tr><td>GNC 53 ENTRY CONTROLS</td></tr></table> | GNC 53 ENTRY CONTROLS | | | | | |
| GNC 53 ENTRY CONTROLS | | | | | | | |
| | 3. GNC I/O RESET | | | | | | |
| | 4. DES SURF FDBK 1,4 – ITEM 18,21 EXEC (*)
√2,3 – ITEM 19,20 (no *) | | | | | | |
| MA73C:A | 5. MCA LOGIC MNA MID 1 – ON
MNB MID 1 – ON
MNC MID 2 – ON
AFT 3 – OFF | | | | | | |
| O8 | 6. √MLS CH tw (three) – 8 <table border="1" style="margin-left: 40px;"><tr><td>EDW22</td><td>KSC15</td></tr></table>
– 6 <table border="1" style="margin-left: 40px;"><tr><td>KSC33</td><td>NOR17</td><td>NOR 23</td><td>EDW04</td></tr></table> | EDW22 | KSC15 | KSC33 | NOR17 | NOR 23 | EDW04 |
| EDW22 | KSC15 | | | | | | |
| KSC33 | NOR17 | NOR 23 | EDW04 | | | | |
| L2 | 7. √ENTRY MODE – AUTO | | | | | | |
| | 8. <table border="1" style="margin-left: 40px;"><tr><td>GNC 51 OVERRIDE</td></tr></table>
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| GNC 51 OVERRIDE | | | | | | | |
| L2/C3
C3 | 9. √SBTC – FULL FWD
√SRB SEP – AUTO
√ET SEP – AUTO | | | | | | |
| F6
F8 | 10. CDR disp – green dot
√R AIR DATA – NAV
√ADI ERR – MED
√RATE – MED | | | | | | |
| | 11. √HSI SEL MODE – ENTRY
√SOURCE – NAV, 2 | | | | | | |
| F3 | 12. L TRIM RHC/PNL – INH
PNL – ON | | | | | | |
| C3 | √DAP: AUTO <table border="1" style="margin-left: 40px;"><tr><td>A/E PFD</td></tr></table> | A/E PFD | | | | | |
| A/E PFD | | | | | | | |
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6-2, prior to MS/PS seat ingress (COMM will be activated at V = 12K) | | | | | | |
| | 14. MS/PS INGRESS SEATS | | | | | | |
| | 15. Go to LOSS OF 2 FREON LOOPS ENTRY MANEUVERS
(<u>ENT MNVR/BAILOUT</u>), 4-1 | | | | | | |

LOSS OF 2 FREON LOOPS ENTRY MANEUVERS

FLIGHT CONDITIONS	MANEUVER
EI-5	√AV BAY 3 FAN B – ON √CAB FAN A – ON Use up to one IDP and three MDUs if reqd cb MNA DDU L – cl MNB ADTA 2 – cl ACCEL 2 – cl DDU L – cl MNC ADTA 3 – cl ACCEL 3 – ON MDM FF1, FF4, FA1, FA4 (four) – ON GNC I/O RESET √LVLH ATT GNC, OPS 304 PRO Wait 1 min then MDM FF1, FF4, FA1, FA4 (four) – OFF MNB MID 1, MNC MID 2 (two) – OFF * If PREBANK, R/Y – CSS * * Roll at 1°/sec to <input type="text"/> <input type="text"/> * * Maintain PREBANK ± 5° *
EI	GPS 2 PWR – ON GPS 2 PRE AMPL (two) – MN C Wait 30 sec GNC I/O RESET <input type="text"/> GNC 55 GPS STATUS INIT – ITEM 15 EXEC (*) NAV – ITEM 18 EXEC (*)
$\bar{q} = 1$	SIG CONDR OA 1/2/3 – ON √APUs HYD MN PUMP PRESS (two) – NORM SIG CONDR OA 1/2/3 – OFF
'Guidance Box' @ $\bar{q} \sim 8$ or $D \sim 3$	CLOSED LOOP GUIDANCE _____ : _____ : _____ * If PREBANK: P,R/Y – AUTO * Begin AIL trim monitoring
D = 11	√DRAG H
$\Delta Az = 10.5$	FIRST ROLL REVERSAL <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> (DEL PAD)
V = 19K	√HYD MPS/TVC ISOL VLV SYS (three) – CL [G50] √GPS, INCORPORATE
V = 12K	BRAKES MNB – ON MNC – ON <u>ACTIVATE ENTRY COMM</u> UHF MODE – SPLX AUD CTR – 1 √OI PCMMU FORMAT – FXD On MCC CALL: (N/A for Northrup) S-BD PM CNTL – PNL,CMD Sel best ANT OI PCMMU PWR – 1 MDM PL2 – ON GNC I/O RESET
V = 5K	ADTA PROBES – DEPLOY (√HEAT, only 1 side if reqd) Begin AIL and RUD trim monitoring

FLIGHT CONDITIONS	MANEUVER
V = 4K	MDM FF1 – ON GNC I/O RESET
M = 2.9	RDR ALTM 2 – ON CAB FAN (two) – OFF Use no landing aids (HUD, MLS) unless reqd to safely land the vehicle If MLS reqd: GNC I/O RESET
M = 2.7	SIG CONDR OA 1/2/3 – ON √APUs APU SPEED SEL (two) – HI SIG CONDR OA 1/2/3 – OFF
	* If M < 2.5, P CSS for ADTA to G&C incorp *
M = 2.0	Ensure ADTA to G&C, else √Theta Limits If NWS not reqd: MDM FF1 – OFF
M < 1.0	L FLT CNTLR PWR – ON P,R/Y – CSS as reqd LOCK INERTIA REELS MAX N _z <input type="text"/> . <input type="text"/> ANTISKID – ON If NWS reqd: cb MNB DDU R – cl MNC DDU R – cl R FLT CNTLR PWR – ON NWS – 1
M = 0.7	If APU 1 running: LG EXTD ISO VLV – OP HYD BK ISOL VLV 1 – OP
h = 15K	√MLS (If on)
h = 10K	√A/L, √TABS/VISOR – CL/SUIT O2 – ON (KSC)
h = 2K	LDG GEAR ARM pb – push (ARM It on)
h = 300	LDG GEAR DN pb – push (DN It on)
MAIN GEAR TD	√SPDBK – 100%
V = 195 KEAS	DRAG CHUTE ARM, DPY pb (two) – push (simo) (All Its on)
V = 185 KEAS	DEROTATE
NOSE GEAR TD	SRB SEP – MAN/AUTO and depress pb √Auto Load Relief √HYD BK ISOL VLV 2,3 (two) – OP
V < 120 KGS or 5K' remaining	BRAKE as required (8-10 fps ² , -0.25 to -0.3G)
	* If 5K' remaining and V > 140 KGS – MAX BRAKING *
V = 60 KGS	DRAG CHUTE JETT pb – push (JETT1, JETT2 It on)
V = 40 KGS	BRAKE < 6 fps ² (-0.2G) (Antiskid cutout)
WHEEL STOP	Go to <u>EMER PWRDN</u> (Cue Card)

For **BALLOUT** see 4-2

BAILOUT MODE 8

REPORT POSITION

√MACH < 1.0

P, R/Y – CSS

OPS 305/603 PRO (if reqd)

SB – AUTO, BF – AUTO

FLY 185-195 KEAS, $\Phi = 0^\circ$

ABORT MODE – ATO

ABORT PBI – PUSH

P, R/Y – AUTO

FLT CNTLR PWR (two) – OFF

~50K FT

TABS – RELEASE

VISOR – CLOSE/LOCK

SUIT O2 – ON

GREEN APPLE – PULL

~40K FT

MS3 – VENT CABIN

CDR,PLT SEATS – LOWER

KNEEBOARDS – REMOVE

COOLING – DISCONNECT

SEAT RESTRAINT – RELEASE

D-RING – UNCOVER

~30K FT

MS3 – JETTISON HATCH

COMM – DISCONNECT

(G-SUIT CLIP – PULL)

SUIT O2 – DISCONNECT

EGRESS SEAT

POLE – DEPLOY

D-RING – HOOK UP

BAILOUT

ENT MNVR/
BAILOUT

LOSS OF 2 FREON LOOPS ENTRY MANEUVERS

FLIGHT CONDITIONS	MANEUVER
EI-5	√AV BAY 3 FAN B – ON √CAB FAN A – ON Use up to one IDP and three MDUs if reqd cb MNA DDU L – cl MNB ADTA 2 – cl ACCEL 2 – cl DDU L – cl MNC ADTA 3 – cl ACCEL 3 – ON MDM FF1, FF4, FA1, FA4 (four) – ON GNC I/O RESET √LVLH ATT GNC, OPS 304 PRO Wait 1 min then MDM FF1, FF4, FA1, FA4 (four) – OFF MNB MID 1, MNC MID 2 (two) – OFF * If PREBANK, R/Y – CSS * * Roll at 1°/sec to <input type="text"/> <input type="text"/> * * Maintain PREBANK ± 5° *
EI	GPS 2 PWR – ON GPS 2 PRE AMPL (two) – ON Wait 30 sec GNC I/O RESET <u>GNC 55 GPS STATUS</u> INIT – ITEM 15 EXEC (*) NAV – ITEM 18 EXEC (*)
$\bar{q} = 1$	SIG CONDR OA 1/2/3 – ON √APUs HYD MN PUMP PRESS (two) – NORM SIG CONDR OA 1/2/3 – OFF
'Guidance Box' @ $\bar{q} \sim 8$ or $D \sim 3$	CLOSED LOOP GUIDANCE _____ : _____ : _____ * If PREBANK: P,R/Y – AUTO * Begin AIL trim monitoring
D = 11	√DRAG H
$\Delta Az = 10.5$	FIRST ROLL REVERSAL <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> (DEL PAD)
V = 19K	√HYD MPS/TVC ISOL VLV SYS (three) – CL [G50] √GPS, INCORPORATE
V = 12K	BRAKES MNB – ON MNC – ON <u>ACTIVATE ENTRY COMM</u> UHF MODE – SPLX AUD CTR – 1 √OI PCMMU FORMAT – FXD On MCC CALL: (N/A for Northrup) S-BD PM CNTL – PNL,CMD Sel best ANT OI PCMMU PWR – 1 MDM PL2 – ON GNC I/O RESET
V = 5K	ADTA PROBES – DEPLOY (√HEAT, only 1 side if reqd) Begin AIL and RUD trim monitoring

FLIGHT CONDITIONS	MANEUVER
V = 4K	MDM FF1 – ON GNC I/O RESET
M = 2.9	RDR ALTM 2 – ON CAB FAN (two) – OFF Use no landing aids (HUD, MLS) unless reqd to safely land the vehicle If MLS reqd: GNC I/O RESET
M = 2.7	SIG CONDR OA 1/2/3 – ON √APUs APU SPEED SEL (two) – HI SIG CONDR OA 1/2/3 – OFF
	* If M < 2.5, P CSS for ADTA to G&C incorp *
M = 2.0	Ensure ADTA to G&C, else √Theta Limits If NWS not reqd: MDM FF1 – OFF
M < 1.0	L FLT CNTLR PWR – ON P,R/Y – CSS as reqd LOCK INERTIA REELS MAX N _z <input type="text"/> . <input type="text"/> ANTISKID – ON If NWS reqd: cb MNB DDU R – cl MNC DDU R – cl R FLT CNTLR PWR – ON NWS – 1
M = 0.7	If APU 1 running: LG EXT D ISO VLV – OP HYD BK ISOL VLV 1 – OP
h = 15K	√MLS (If on)
h = 10K	√A/L, √TABS/VISOR – CL/SUIT O2 – ON (KSC)
h = 2K	LDG GEAR ARM pb – push (ARM It on)
h = 300	LDG GEAR DN pb – push (DN It on)
MAIN GEAR TD	√SPDBK – 100%
V = 195 KEAS	DRAG CHUTE ARM, DPY pb (two) – push (simo) (All Its on)
V = 185 KEAS	DEROTATE
NOSE GEAR TD	SRB SEP – MAN/AUTO and depress pb √Auto Load Relief √HYD BK ISOL VLV 2,3 (two) – OP
V < 120 KGS or 5K' remaining	BRAKE as required (8-10 fps ² , -0.25 to -0.3G)
	* If 5K' remaining and V > 140 KGS – MAX BRAKING *
V = 60 KGS	DRAG CHUTE JETT pb – push (JETT1, JETT2 It on)
V = 40 KGS	BRAKE < 6 fps ² (-0.2G) (Antiskid cutout)
WHEEL STOP	Go to <u>EMER PWRDN</u> (Cue Card)

For **BALLOUT** see 4-2

**ENT MNVR/
BALLOUT**

(OV104,105) 4-1

OV104,105
SYS AOA/4,5/GEN K,1

BAILOUT MODE 8

REPORT POSITION

√MACH < 1.0

P, R/Y – CSS

OPS 305/603 PRO (if reqd)

SB – AUTO, BF – AUTO

FLY 185-195 KEAS, $\Phi = 0^\circ$

ABORT MODE – ATO

ABORT PBI – PUSH

P, R/Y – AUTO

FLT CNTLR PWR (two) – OFF

~50K FT

TABS – RELEASE

VISOR – CLOSE/LOCK

SUIT O2 – ON

GREEN APPLE – PULL

~40K FT

MS3 – VENT CABIN

CDR,PLT SEATS – LOWER

KNEEBOARDS – REMOVE

COOLING – DISCONNECT

SEAT RESTRAINT – RELEASE

D-RING – UNCOVER

~30K FT

MS3 – JETTISON HATCH

COMM – DISCONNECT

(G-SUIT CLIP – PULL)

SUIT O2 – DISCONNECT

EGRESS SEAT

POLE – DEPLOY

D-RING – HOOK UP

BAILOUT

ENT MNVR/
BAILOUT

OV104,105

SYS AOA/ALL/GEN K

MS PULLOUT SECTION

Pull this section for MS use. Complete MS OVHD, AFT, & MIDDECK PNL PWRDN, ASAP
If STDN LOS, have another MS perform COMM PWRDN (COMM), 6-1, at the same time

MS OVHD, AFT, & MIDDECK PNL PWRDN

- R11U 1. √FC PURGE HTR – ON
√VLVS (three) – OP
- O6 2. Minimize Itg on AFT Flt Deck and Middeck
- O13:A 3. ANNUN BUS SEL ACA 2/3 – OFF
4. cb ESS 1BC C/W A – op (MA)
MTU A – op
- :B 5. cb ESS 1BC CRYO QTY (two) – op
- NOTE
All tone generation, MA pbis, and F7 matrix are lost.
CRT FAULT SUMM and SM ALERT It remains for
GNC generated msgs
- :C 6. cb ESS 2CA C/W B – op
MTU B – op
- :E 7. cb ESS 3AB GPC STAT – op
- O14:A 8. BRAKES MNA – OFF
RGA 1 – OFF
IMU 1 – OFF
- :B 9. cb MNA OI MDM OF 1/2 A, 3/4 A (two) – op
H2O BYP LOOP 1 SNSR – op
MSN TIMER FWD – op
EVENT TIMER AFT – op
- :C 10. cb MNA UTIL PWR O19/MO52J – op
- :D 11. FREON RAD CNTLR (two) – op
O2/N2 CNTLR 1 – op
CAB VENT – op
VENT ISOL – op
- :E 12. cb MNA ADTA 1 – op
ACCEL 1 – op
DDU L – op (leave cl if TIG < 15 min)
AFT – op
- :F 13. MMU 1 – OFF
ASA 1 – OFF

MS OVHD, AFT, &
MDK PNL PWRDN

Cont next page

- Verify with PLT:
- O8 14. FWD RCS MANF ISOL 1,2,3,4 (four) – CL
 - O7 AFT L RCS MANF ISOL 1,4 (two) – CL
 - R RCS MANF ISOL 1,4 (two) – CL, then:
 - O14:F 15. RJDA 2A L4/R4 LOGIC – OFF
DRIVER – OFF
RJDF 1B F1 LOGIC – OFF
DRIVER – OFF
 - O15:A 16. BRAKES MNB – OFF
RGA 4 – OFF
IMU 2 – OFF
 - O15:B 17. cb MNB OI MDM OF 1/2 B – op
H2O BYP LOOP 2 SNSR – op
MSN TIMER AFT – op
EVENT TIMER FWD – op
 - :D 18. cb MNB FREON RAD CNTLR (two) – op
O2/N2 CNTLR 2 – op
 - :E 19. cb MNB ADTA 2 – op
DDU L – op (leave cl if TIG < 15 min)
R – op
 - :F 20. RJDA 1B L1/L5/R1 LOGIC – OFF
DRIVER – OFF
RJDF 1A F2 LOGIC – OFF
DRIVER – OFF
ACCEL 4 – OFF
 - O16:A 21. BRAKES MNC – OFF
 - :B 22. cb MNC OI MDM OF 3/4 B – op
AUX TIMING BUFF – op
 - :E 23. cb MNC ADTA 3,4 – op
DDU R – op
AFT – op
 - :F 24. RJDF 2A F3 LOGIC – OFF
DRIVER – OFF
RJDF 2B F4/F5 LOGIC – OFF
F4 DRIVER – OFF
ASA 4 – OFF
√RJD MANF L5/F5/R5 DRIVER – OFF
 - O17:A 25. ATVC (four) – OFF
 - O1 If any Freon Flow:
 - O17:C 26. SIG CONDR FREON A – AC2
B – AC3
 - O1 If no Freon Flow:
 - O17:C 27. SIG CONDR FREON (two) – OFF
 - :D 28. SIG CONDR OA 1/2/3 – OFF
 - A12 29. APU HTR TK/FU LN/H2O SYS 1B,2B,3B (three) – AUTO
HYD HTR (eight) – OFF
 - If OV103/104:
 - A13 30. GPS PWR – OFF
PRE AMPL (two) – OFF
 - A14 31. RCS/OMS HTR FWD RCS – OFF
OMS CRSFD LN (two) – OFF
FWD RCS JET (five) – OFF
AFT RCS JET (five) – OFF
 - MA73C:A 32. MCA LOGIC MID (eight) – OFF
 - :B MNA AFT 1 – OFF
√MFWD (three) – ON
 - :C 33. cb MCA PWR AC1 3Φ FWD 1 – op
AC3 3Φ FWD 3 – op

MS PULLOUT SECTION

COMM PWRDN

Site	MET (mm:ss)
NHS (SGLS)	~06:30 - ~11:30
TCS (SGLS)	~18:00 - ~26:00
DGS (SGLS)	~40:00 - ~48:00

TDRS	MET (hh:ss)
TDRS East 46	~00:00 - ~35:00
TDRS Z 275	~20:00 - ~1:18:00
TDRS West 171	~50:00 - ~01:40:00

NOTE

Preferred comm config in order of least heat production:

1. SGLS/STDN LO
2. TDRS (10 min max operating time without cooling to S-BAND Power Amp)

MS/CDR As soon as possible, perform following pwrdn:

- A1L
1. S-BD PM ANT SW ELEC – OFF
 PRE AMP – OFF
 PWR AMPL STBY – OFF
 OPER – OFF
 MODE – STDN LO
 XPNDR – OFF
 2. NSP PWR – OFF

NOTE

Verify CDR is ready for COMM PWRDN prior to performing step 3

- C3
3. S-BD PM CNTL – PNL
 OI PCMMU FORMAT – FXD
 PWR – OFF
 AUD CTR – OFF (pwr up as reqd for cockpit audio)
- A1L
4. NSP ENCRYPTION PWR – OFF (Encryption disabled for rest of flight)
 MODE – SEL
 SELECT – BYP
- O6
5. UHF MODE sel – OFF
 MDM PL1, PL2 (two) – OFF
- A1L
6. S-BD PL CNTL – PNL
 √PWR SYS – OFF
 PL DATA INTLVR PWR – OFF
- A1R
7. S-BD FM CNTL – PNL
 PWR – OFF
- R14:B
8. cb MNA, MNC GCILC (two) – op
 On GO from CDR prior to MS/PS seating ingress:
 9. Perform AFT PNL CONFIG FOR ENTRY COMM, 6-2
 If COMM reqd prior to ENTRY COMM Activation at V = 12K,
 Go to COMM PWRUP, 6-3

COMM

AFT PNL CONFIG FOR ENTRY COMM

- R14:B
C3
A1L
- On GO from CDR prior to MS/PS seat ingress:
1. cb MNA,MNC GCILC (two) – cl
 2. S-BD PM CNTL – CMD
 3. ANT SW ELEC – 2
 - √MODE – STDN LO
 - XPNDR – 2
 4. NSP PWR – 2
 - √DATA RATE XMIT – HI
 - √RCV – HI
 - √UPLK DATA – S-BD
 - √CODING XMIT – OFF
 - √RCV – OFF

NOTE

CDR will activate COMM at V = 12k

COMM

MS PULLOUT SECTION

COMM PWRUP (If COMM reqd prior to landing site coverage)

C3 1. AUD CTR – 1

If ground site available:

Site	MET (mm:ss)
NHS (SGLS)	~06:30 - ~11:30
TCS (SGLS)	~18:00 - ~26:00
DGS (SGLS)	~40:00 - ~48:00

Config for SGLS S-BD:

C3
A1L

2. S-BD PM CNTL – PNL
 - √ANT SW ELEC – 2
 - MODE – SGLS
 - √XPNDR – 2

3. NSP PWR – 2
 - √DATA RATE XMIT – HI
 - √RCV – HI
 - √CODING XMIT – OFF
 - √RCV – OFF
 - √UPLK DATA – S-BD

C3/F9

4. Select best S-BD PM ANT

On MCC GO (if data reqd):

O14:B
O17:D
C3
O6

5. cb MNA OI MDM OF 1/2,3/4 A (two) – cl
- SIG CONDR OA 1/2/3 – ON
- OI PCMMU PWR – 1
- MDM PL2 – ON
- GNC I/O RESET

At end of data transmission:

O14:B
O17:D
O6

6. cb MNA OI MDM OF 1/2,3/4 A (two) – op
- SIG CONDR OA 1/2/3 – OFF
- MDM PL2 – OFF
7. After comm/data complete: Go to COMM PWRDN, 6-1>>

Cont next page

If GND site not available, config for TDRS S-BD

TDRS	MET (hh:ss)
TDRS East 46	~00:00 - ~35:00
TDRS Z 275	~20:00 - ~01:18:00
TDRS West 171	~50:00 - ~01:40:00

CAUTION

This is a High Pwr mode. On-time should be limited to 10 min max due to Pwr Amp Thermal constraints. A 2 min, 20 sec delay occurs after S-BD PM PNL/CMD before Pwr Amp is active. Uplink not affected. Proceed with selection of best antenna

C3
A1L

8. S-BD PM CNTL – PNL
 - √ANT SW ELEC – 2
 - PRE AMP – 2
 - PWR AMPL OPER – 2
 - MODE – TDRS DATA
 - √XPNDR – 2

9. √NSP PWR – 2
 - √DATA RATE XMIT – HI
 - √RCV – HI
 - CODING XMIT – ON
 - RCV – ON
 - √UPLK DATA – S-BD

C3/F9

Select best – S-BD PM ANT

O14:B
O17:D
C3
O6

- On MCC GO (If data reqd):
10. cb MNA OI MDM OF 1/2,3/4 A (two) – cl
 - SIG CONDR OA 1/2/3 – ON
 - OI PCMMU PWR – 1
 - MDM PL2 – ON
 - GNC I/O RESET

O14:B
O17:D
O6

- At end of data transmission:
11. cb MNA OI MDM OF 1/2,3/4 A (two) – op
 - SIG CONDR OA 1/2/3 – OFF
 - MDM PL2 – OFF
 12. After comm/data complete, Go to COMM PWRDN, 6-1

LOSS OF 2 H2O LOOPS (AOA) STAND-ALONE PROCEDURES

IMMEDIATE AOA DEORBIT BURN STEPS

If time to AOA TIG greater than 15 min, proceed to next page, 7-2

If time to AOA TIG less than 15 min, perform the following:

1. In MM105 select any AOA I_TGT (3-12) to set AOA flag; but DO NOT LOAD until OPS 3
2. Assign all strings to GPC 1 in MC3 with target set 12340
GNC, OPS 301 PRO; GNC, OPS 302 PRO; BFS: GNC, OPS 301 PRO, BFS: GNC, OPS 302 PRO
3. Have MS perform MS OVHD & AFT PNL PWRDN, 11-1
4. Have another MS perform COMM PWRDN (COMM), 12-1
5. GNC 50 HORIZ SIT
√LDG site: ITEM 41 + ___
1 = KSC 15/33
41 = NOR 17/23
45 = EDW 22/04
6. Check or enter target from OMS TARGETS, AOA PADS (ASC, OMS TGTS and AOA PADS), or MCC
7. LOAD TGTs:
LOAD – ITEM 22 EXEC
TIMER – ITEM 23 EXEC
8. MNVR TO ATT: MNVR – ITEM 27 EXEC

NOTE

Disregard jet msgs during maneuver. If time to attitude (TTG) double overbright, manual mnvr may be reqd

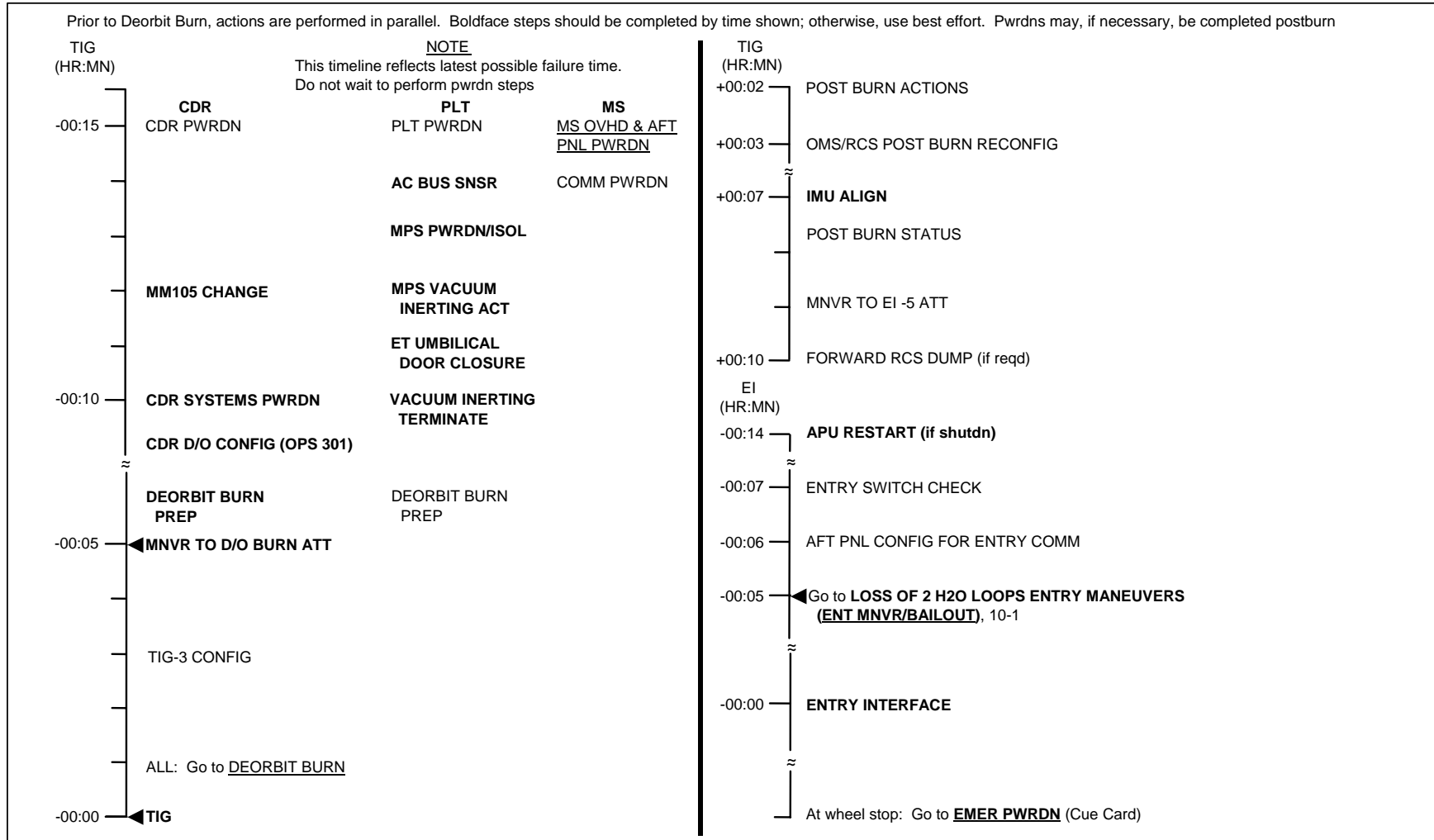
9. Fill in AOA DEORBIT BURN CARDS from AOA DEL PAD (ASC)
10. If time to AOA TIG > 5 min, CDR and PLT: Perform CDR AND PLT TIME CRITICAL PROCEDURES, 8-1 through 8-4 as time permits until TIG-5
CDR: Skip steps 6,9, and 10 on 8-2, step 1 of MAJOR MODE CHANGE on 8-3, and steps 1 and 4 of CDR DEORBIT CONFIG on 8-4
11. At TIG-5 perform TIG-5 min steps on 8-5. Then, perform AOA DEORBIT BURN (DEORBIT BURN), 8-6
12. Post Burn: Complete CDR AND PLT TIME CRITICAL PROCEDURES, 8-1 through 8-4
CDR: Skip steps 5, 6, and 9 on 8-2, step 1 of MAJOR MODE CHANGE on 8-3, and steps 1 and 4 of CDR DEORBIT CONFIG on 8-4
13. Go to POST BURN ACTIONS, 9-1, and catch up with timeline

LOSS OF 2 H2O
LOOPS (AOA)

NOTES

- Perform CDR AND PLT TIME CRITICAL PROCEDURES (section 8) in parallel ASAP after failure. The Summary Timeline, 7-3, is provided as an overview showing latest possible completion times for pwrdrn procedures
- Loss of H2O loop cooling affects both water and air cooled equipment
- Establish comm and burn plan with MCC prior to COMM PWRDN (COMM), 12-1
If Comm reqd prior to Entry Comm activation at V = 12K, go to COMM PWRUP (COMM), 12-3
Order of least heat production for S-BAND is:
 1. SGLS/STDN LO
 2. TDRS (10 min max operating time without cooling to S-BAND Power Amp)
- Cycle MDUs. If ON at loss of cooling, turn OFF within 15 min. Allow 2 min OFF prior to each 1 min ON (30 min max ON time). Save two MDUs that interface with a single IDP for entry
- Possible cabin air OVBD RLF due to loss of cabin cooling. Expect Klaxon and -dP/dt during OVBD RLF

SUMMARY TIMELINE FOR LOSS OF 2 H2O LOOPS (AOA) PWRDN (TIG > 15 MIN)



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**CDR AND PLT
TIME CRITICAL PROCEDURES**

1. MS execute MS OVHD & AFT PNL PWRDN, 11-1, ASAP
2. MS execute COMM PWRDN (COMM), 12-1, ASAP
3. Execute following procedures in parallel ASAP

CDR

PLT

NOTE

Time reqd to execute deorbit burn
using these procedures is 15 min

CDR PWRDN

- C3 1. √MSTR MADS PWR – OFF, use only one IDP with two MDUs, L FLT CNTLR PWR as reqd
√DAP: AUTO
2. Minimize Itg
- L1 3. √H2O PUMP LOOP (two) – OFF
(Leave ON if any loop running)
HUM SEP (two) – OFF
(Leave HUM SEP B ON if any H2O Pump ON)
CAB FAN (two) – OFF
4. √AV BAY 1 FAN B – ON
√FAN A – OFF
2,3 FAN A,B (four) – OFF
- L2 5. FREON PUMP LOOP 1 – OFF
O2 SYS 1 SPLY VLV – CL (tb-CL)
ANTISKID – OFF
NWS – OFF

PLT PWRDN

1. Use only one IDP with two MDUs and L FLT CNTLR PWR as reqd
√DAP: AUTO
2. Minimize Itg
3. Perform PL PWRDN (ASC PKT, PL PWRDN), then:
- O7 4. √TACAN MODE sel (three) – OFF
- O8 5. FWD RCS MANF ISOL 1,2,3,4 (four) – CL (tb-CL)
√RDR ALTM (two) – OFF

Cont next page
(OV103,104) 8-1

**CDR AND PLT
PWRDNS**

OV103,104
SYS AOA/3,4/GEN K

**CDR AND PLT
TIME CRITICAL PROCEDURES**

1. MS execute MS OVHD & AFT PNL PWRDN, 11-1, ASAP
2. MS execute COMM PWRDN (COMM), 12-1, ASAP
3. Execute following procedures in parallel ASAP

CDR

PLT

NOTE

Time reqd to execute deorbit burn
using these procedures is 15 min

CDR PWRDN

- C3 1. √MSTR MADS PWR – OFF, use only one IDP with two MDUs, L FLT CNTLR PWR as reqd
√DAP: AUTO
2. Minimize Itg
- L1 3. √H2O PUMP LOOP (two) – OFF
(Leave ON if any loop running)
HUM SEP (two) – OFF
(Leave HUM SEP B ON if any H2O Pump ON)
CAB FAN (two) – OFF
4. √AV BAY 1 FAN B – ON
√FAN A – OFF
2,3 FAN A,B (four) – OFF
- L2 5. FREON PUMP LOOP 1 – OFF
O2 SYS 1 SPLY VLV – CL (tb-CL)
ANTISKID – OFF
NWS – OFF

PLT PWRDN

1. Use only one IDP with two MDUs and L FLT CNTLR PWR as reqd
√DAP: AUTO
2. Minimize Itg
3. Perform PL PWRDN (ASC PKT, PL PWRDN), then:
- O7 4. GPS PWR (three) – OFF
- O8 5. FWD RCS MANF ISOL 1,2,3,4 (four) – CL (tb-CL)
√RDR ALTM (two) – OFF

Cont next page
(OV105) 8-1

**CDR AND PLT
PWRDNS**

OV105
SYS AOA/5/GEN K

**CDR AND PLT
PWRDNS**

CDR

PLT

Reassign strings to GPC 1 in MC 1,3:

		CONFIG	1	3
		GPC	12340	10000
O6	6. CONFIG – ITEM 1 +1 EXEC Modify MC1 per table →	STR	1	1
			2	1
			3	1
			4	1
O6	7. For any forward IDP that is off: GPC/CRT 1/X EXEC	PL 1/2	1	1
		CRT	1	1
			2	1
			3	1
O6	8. GPC MODE 2,3,4 (three) – STBY (tb-bp) – HALT MODE 3 – STBY (tb-RUN) – HALT (tb-bp) PWR 2,4 (two) – OFF	L	1	0
			2	0
O6	10. GPC MODE 5 – STBY (tb-RUN) – HALT (tb-bp) OUTPUT 5 – NORM	MM	1	1
			2	1

- O6 8. GPC MODE 2,3,4 (three) – STBY (tb-bp)
– HALT
MODE 3 – STBY (tb-RUN)
– HALT (tb-bp)
PWR 2,4 (two) – OFF
- O6 9. BFS: GNC, OPS 106 PRO
000 PRO
- O6 10. GPC MODE 5 – STBY (tb-RUN)
– HALT (tb-bp)
OUTPUT 5 – NORM

NOTE

Operate AV BAY FAN 1A only to maintain cooling to active GPC

- CRT 11. MDM FF4 – OFF
- O6 12. R OMS – sel SEC GMBL
- O6 13. ANNUN BUS SEL ACA 2/3 – OFF
- C3 14. C/W MODE – ACK

NOTE

For F7 lts, hold F2 or F4 MA in

HYD DEPRESS

- R2 √APU SPEED SEL (three) – NORM
√AUTO SHTDN (three) – ENA
HYD MN PUMP PRESS (three) – LO (MA)

HTR ACTIVATION

- R1 O2 TK1,TK2 HTRS B (two) – AUTO
H2 TK1,TK2 HTRS B (two) – AUTO

AC BUS SNSR

- R1 AC BUS SNSR (three) – OFF (1 sec)
– AUTO TRIP

MPS PWRDN/ISOL

- R2 MPS ENG PWR L (two) – OFF
CTR (two) – OFF
R (two) – OFF
He ISOL (six) – GPC
√I'CNECT (three) – GPC

NOTE

Expect multiple MAs for MPS He P as regs bleed dn

MPS VACUUM INERTING ACT

- R2 1. √MPS PNEU He ISOL – OP
- R4 2. FILL/DRAIN LO2,LH2 (four) – OP

CDR

PLT

FES ACTIVATION/PL MDM CONFIG

- L1 1. √FLASH EVAP CNTLR PRI A – ON
- O6 2. MDM PL 1,2 (two) – OFF

MAJOR MODE CHANGE

- CRT 1. GNC, OPS 105 PRO

ET UMBILICAL DOOR CLOSURE

* If Feedline fail, √MCC before closure *

WARNING
ET CTRLINE LATCHES must be stowed prior to L,R DR closure to prevent door drive damage

- * If ET Doors will not manually close and *
- * latch, prior to OPS 3 transition: *
- *

2: GNC 51 OVERRIDE

 *
- * ET UMB DR CLOSE – ITEM 40(30) *
- * EXEC *

NOTE

Double times for single motor operation

R2

ET UMB DR

MODE – GPC/MAN

CTRLINE LAT – STO

√After 6 sec, CTRLINE LAT tb – STO

- * If CTRLINE LAT does not stow within 12 sec: *
- * CTRLINE LAT – GND *
- * √MCC *

CTRLINE LAT – GND

L,R DR (two) – CL (tb-bp)

√After 24 sec, L,R DR tb (two) – CL

- * If doors do not close within 48 sec: *
- * L,R DR (two) – OFF *
- * √MCC *

L,R LAT (two) – LAT (tb-bp)

√After 6 sec, L,R LAT tb (two) – LAT

- * If doors do not latch within 12 sec: *
- * L,R DR (two) – OFF *
- * LAT (two) – OFF *
- * √MCC *

L,R DR (two) – OFF

LAT (two) – OFF

MODE – GPC

CDR

PLT

DEORBIT FDF CONFIG

- C4F 1. Unstow ENT PKT
Stow ASC PKT
- R3A 2. Stow ASC Cue Cards
- C1 Use DEORBIT BURN MONITOR (LOSS OF 2
H2O LOOPS AOA) (DEORBIT BURN), 8-6

CDR DEORBIT CONFIG

- 1. Select AOA I_TGT (3-12) to set AOA flag,
but DO NOT LOAD until OPS 3

NOTE

Manually entered tgt data will be carried over to OPS 3
except: PASS, BFS ITEMS 5,18 (ILL ENTRY)

- 2. √MS: MS OVHD & AFT PNL PWRDN
- 3. GNC, OPS 301 PRO (√DAP)
- CRT 4. √GPC PWR 5 – ON
O6 MODE 5 – STBY (tb-RUN)
– RUN
OUTPUT 5 – B/U
- CRT 5. BFS: GNC, OPS 301 PRO
- 6. GNC 51 OVERRIDE
VENT DOOR CNTL CLOSE – ITEM 44 EXEC (*)
Wait 1 min, then:
GNC, OPS 302 PRO

GNC 50 HORIZ SIT

AOA RWY OPTIONS

ALL INCLINATIONS				
SITE	RWY	TACANS	ITEM 5	MLS
1	KSC 15	TTS 59Y	COF 97	8
	KSC 33			6
41	NOR 17	SNG 121Y	HMN 92	6
	NOR 23			6
45	EDW 22	EDW 111	LHS 21	8/†
	EDW 04			6

If other runways reqd, use AOA RWY OPTIONS (ASC, AOA)

- L1 7. √RWY selection
- 8. CAB FAN A – ON
AV BAY 2 FAN A – ON

DEORBIT FDF CONFIG

Post MM105:

Fill in AOA DEORBIT BURN CARDS from
AOA DEL PAD (ASC)

- R3F 1. Unstow ENT PKT
Stow ASC PKT
- R3A 2. Stow ASC Cue Cards
- C1 Use DEORBIT BURN MONITOR (LOSS OF 2
H2O LOOPS AOA) (DEORBIT BURN), 8-6

VACUUM INERTING TERMINATE

- R4 1. MPS FILL/DRAIN LO2,LH2 OUTBD (two) – CL
Wait 15 sec
MPS FILL/DRAIN LO2,LH2 OUTBD (two) – GND
INBD (two) – GND
- R2 2. MPS PNEU He ISOL – GPC

CDR

PLT

DEORBIT BURN PREP

GNC DEORB MNVR EXEC

1. TRIM LOAD – ITEM 6 +0.4, -5.7, +5.7 EXEC
 - * If single engine burn: *
 - * TRIM LOAD LY – ITEM 7 +5.2 EXEC *
 - * RY – ITEM 8 -5.2 EXEC *
 - * OMS L – ITEM 2 EXEC *
 - * R – ITEM 3 EXEC *
2. Check or enter Target from OMS TGTS and AOA PADS (ASC, OMS TGTS and AOA PADS)
3. LOAD – ITEM 22 EXEC
TIMER – ITEM 23 EXEC
√BFS TGT
4. OMS BURN TIG ADJUST (if reqd)
Determine ΔTIG (REI – REF > 50) from (ASC, OMS TGTS):
Enter new TIG
LOAD – ITEM 22 EXEC
TIMER – ITEM 23 EXEC
Repeat until ΔRANGE < 50
√BFS TGT

TIG-5 min

- O14:E 5. cb MNA DDU L – cl
O15:E MNB DDU L – cl

At TIG-3

Use only two IDPs with three MDUs, L FLT CNTLR PWR for burn as reqd

BFS, GNC SYS SUMM 2

C3 OI PCMMU PWR – 2

DEORBIT BURN PREP

OMS GMBL CHECK

- CRT 1. Perform L,R SEC GMBL CK, then:
 L PRI GMBL CK
- * If R SEC TVC problem, repower *
 - * MDM FF4 (I/O RESET) and select *
 - * R PRI TVC *

MNVR TO DEORBIT BURN ATTITUDE

GNC DEORB MNVR EXEC

- F8 MNVR – ITEM 27 EXEC (*)
 √ADI ATT – INRTL
 √ERR – MED
 √RATE – MED

NOTE

If time to attitude (TTG) double overbright, manual mnvr may be reqd

At TIG-3

Use only two IDPs with three MDUs, L FLT CNTLR PWR for burn as reqd

GO TO DEORBIT BURN

**DEORBIT BURN MONITOR
(LOSS OF 2 H2O LOOPS AOA)**

OMS TEMP* FU IN P	L R	
	≥	230 230
	≤	214 212
		or No FU IN P
		OMS ENG FAIL
		OMS PRPLT FAIL
OMS PC* & OMS ↓ (BFS: √accel)		
ENG VLV 1 or 2	< 70	
or OX IN P	> 227	
		OMS ENG FAIL
		OMS PRPLT FAIL
OMS OX/FU TK P (√ENG IN P)		
OX/FU LOW		
		He PRESS/VAP ISOL (two) – OP If aff TK P not incr: He PRESS/VAP ISOL (two) – CL At PC < 72 or OMS TEMP: OMS PRPLT FAIL
		OMS PRPLT FAIL
		He PRESS/VAP ISOL (two) – CL Cycle He A(B) to maintain TK P 234-284
OMS GMBL	PRI fail	L OMS GMBL – SEC (twice)
	SEC fail	If high RCS usage: OMS ENG FAIL
GPC 1	BFS Engage	
I/O ERROR FA	1	L OMS GMBL – SEC
		◆ I/O RESET (if recov: BFS I/O RESET) If high RCS usage: OMS ENG FAIL
	2 FAs lost	√MAN SHUTDN
BCE STRG D		I/O RESET (if recov >>)
	1	If high RCS usage: L OMS GMBL – SEC (twice)
	3	If high RCS usage: R OMS ENG FAIL
RM DLMA IMU	After C/O: √timer G21 If any IMU ACC > 0.03: aff IMU – desel I'cncct OMS to RCS (√RCS Burn Time) THC + X (3.5 X timer at C/O)	
I/O ERROR PCM	OI PCMMU PWR – 1	
*If XFD, BLDN, or sensor fail, monitor ENG IN P for off-nominal performance		

DEORBIT
BURN

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**AOA DEORBIT BURN (2 ENG)
(LOSS OF 2 H2O LOOPS)**

√MM302 √OMS BOTH
 Enter TGO + 5 sec
 √TRIM: P +0.4, LY -5.7, RY +5.7
 L,R OMS He PRESS/VAP ISOL A (two) – GPC
 B (two) – OP
 √DAP – AUTO(PASS)/DISC
 ADI – LVLH(REF)/HI/MED
 FLT CNTLR PWR (two) – ON

TIG-2 OMS ENG (two) – ARM/PRESS
 -:15 EXEC
 -:15 If OMS AFT QTY < 11%, THC +X to OMS IGN + 1 sec
 :00 TIG Start watch (√Pc, ΔVTOT, ENG VLVs)

- * **OMS PRPLT FAIL (CONTINUE BURN):** *
 - * Failed OMS ENG – OFF *
 - * ITEM 18 +0 EXEC *
 - * When good OMS QTY: *
 - * 5%: L,R OMS XFEED (four) – OP *
 - * 4%: Good OMS TK ISOL (two) – CL *
 - * If OMS Pc < 80 or OMS TEMP, *
 - * OMS ENG – OFF *
 - * √ADI – LVLH, center needles *
 - * RCS COMPLETION *
 - * **OMS ENG FAIL:** *
 - * Failed OMS ENG – OFF *
 - * *
 - * OMS XFEED at 1/2 ΔVTOT at fail

--	--	--

 *
 - * or OMS QTY

--	--

 %L or

--	--

 %R *
 - * *
 - * **2nd OMS FAIL (ENG or PRPLT):** *
 - * Failed OMS ENG – OFF *
 - * If PRPLT FAIL: *
 - * Secure aff OMS *
 - * ITEM 18 +0 EXEC *
 - * √ADI – LVLH, center needles *
 - * Interconnect good OMS to RCS *
 - * THC +X (√OMS% vs RCS Burn Time) *
 - * RCS I'CNCT TK SW (N/A for OMS PRPLT FAIL) *
 - * THC +X (√OMS% vs RCS Burn Time) *
 - * With MDM FA1 ↓ double time *
 - * AFT RCS RECONFIG *
 - * RCS COMPLETION *
-

* **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 ΔV or TOT AFT QTY 2 % then FRCS COMPLETION *

* FLIP ΔV ----- FRCS COMPLETION *

* AFT ΔV ----- THC +X to TGT ΔV *

* TGT ΔV ----- *

* 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:** *

- * Perform FRCS REACTIVATION, 9-3, steps 1 thru 7
- * MnvR to -X Att (pitch up at 3°/sec to VGOz = +1/4 $\Delta VTOT$)
- * THC -X to $\Delta VTOT = 0$ or FRCS depletion (JET FAIL OFF)

CUTOFF

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

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I

POST BURN ACTIONS

- | | |
|---|---|
| <p>F7
CM O14:A</p> <p>MS O14:E
O15:E
C3</p> | <ol style="list-style-type: none"> 1. \sqrtCDR AND PLT TIME CRITICAL PROCEDURES complete 2. Use only one IDP with one MDU, max 3. L FLT CNTLR PWR – OFF 4. IMU 1 – ON (already ON if IMMEDIATE AOA DEORBIT BURN STEPS performed) 5. cb MNA DDU L – op 6. MNB DDU L – op 7. OI PCMMU PWR – OFF 8. \sqrtDAP: AUTO A/E PFD |
|---|---|

NOTE

Prebank is applicable ONLY if OMS 1 reqd

9. Determine PREBANK
Determine Δ HP (CUR HP – TGT HP)
Use RECOVERY PREBANK TABLES

RECOVERY PREBANK TABLES (EDW)										
NOTE: APPLICABLE <u>ONLY</u> IF OMS 1 REQD										
(ATO/AOA steep entries)										
EDW										
Δ HP	0	5	10	15	19	REDES.	21	25	32	
PREBANK	0	45	70	85	95	NOR	100	115	175	
							IF NOR NOGO			
NOR										
Δ HP			13	15	17	20	25	30	35	42
PREBANK			50	55	65	70	90	105	130	180
(ATO/AOA shallow entries)										
EDW										
Δ HP	0	1	3	5	7	REDES.	9	10	12	
PREBANK	90	95	105	110	125	NOR	140	150	175	
							IF NOR NOGO			
NOR										
Δ HP					5	8	10	12	15	16
PREBANK					95	105	115	130	160	170

Record PREBANK on LOSS OF 2 H2O LOOPS ENTRY
MANEUVERS (ENT MNVR/BAILOUT), 10-1, then:

OMS/RCS POST BURN RECONFIG

- | | |
|---------------------|--|
| <p>O7</p> <p>O8</p> | <ol style="list-style-type: none"> 1. \sqrtAFT L,R RCS He PRESS (four) – OP (tb-OP)
\sqrtTK ISOL (six) – GPC (tb-OP)
\sqrtXFEED (four) – GPC (tb-CL) 2. L,R OMS He PRESS/VAP ISOL (four) – CL
TK ISOL (four) – OP (tb-OP)
XFEED (four) – CL (tb-CL) |
|---------------------|--|

POST BURN ACTIONS

C **DPS POST BURN CONFIG**

GNC, OPS 303 PRO

IMU POST BURN CONFIG

If IMMEDIATE AOA DEORBIT BURN STEPS, 7-1, performed:

O16:A

1. **BFS, GNC 51 OVERRIDE**
IMU 3 DES – ITEM 27 EXEC (*)
– OFF

If IMMEDIATE AOA DEORBIT BURN STEPS, 7-1, NOT performed:

2. **BFS, GNC 51 OVERRIDE**
IMU 1 DES – ITEM 25 EXEC (*)
3. **GNC 21 IMU ALIGN**
√IMU 1 DES – ITEM 7 EXEC
OPER – ITEM 4 EXEC (*)
Wait for asterisk (*) to appear (~ 90 sec from power on), then
4. GNC I/O RESET
Align IMU 1 and 2 using IMU 3 as reference:
 5. REF IMU – ITEM 14 +3 EXEC
√TYPE, ITEM 15 – TORQUE
ALIGN IMU 1(2) – ITEM 10(11) EXEC (*)
EXEC – ITEM 16When no asterisk (*) align complete (3 to 6 min):
Reselect IMU 1 (PASS and BFS)
 6. IMU 1 DES – ITEM 7 EXEC (no*)
BFS, GNC 51 OVERRIDE
IMU 1 DES – ITEM 25 EXEC (no*)
3 DES – ITEM 27 EXEC (*)PWRDN IMU 3
7. IMU 3 – OFF

O16:A

MNVR TO EI-5 ATT

O15:E Pwr R DDU as reqd to achieve/maintain EI-5 ATT
 C CRT √Uplinked INRTL EI-5 MM303 ATT w/DEL PAD

- * If no Deorbit TGT uplink, enter INRTL EI-5 *
- * MM303 ATT from DEL PAD *
- * R – ITEM 24 + _____ *
- * P – ITEM 25 + _____ *
- * Y – ITEM 26 + _____ *

MNVR TO EI-5 ATT – ITEM 27 EXEC (*)

- * If UNDERBURN or no DEL PAD, manually mnvr *
- * to LVLH R001, Y358, P per table below *

TIME to EI (min)	LVLH PITCH (deg)
20	339
	343
	347
	351
	355
15	359
	3
	7
	11
	15
10	19
	23
	27
	31
	35
5	39

GNC DEORB MNVR COAST

FRCS REACTIVATION

- O14:B 1. cb MNA OI SIG CONDR OF 1/4 A – cl
- O15:B MNB OI SIG CONDR OF 2/3 A – cl
- O14, 2. Pri RJDF DRIVER, LOGIC (eight) – ON
- O15,
- O16:F
- O6 3. MDM FF4 – ON
- CRT GNC I/O RESET
- O8 4. FWD RCS MANF ISOL 1,2,3,4 (four) – OP (tb-OP)
- GNC 23 RCS
- 5. JET RESET – ITEM 45 EXEC
- 6. Reselect deselected PRI FRCS jets
- 7. JET RESET – ITEM 45 EXEC

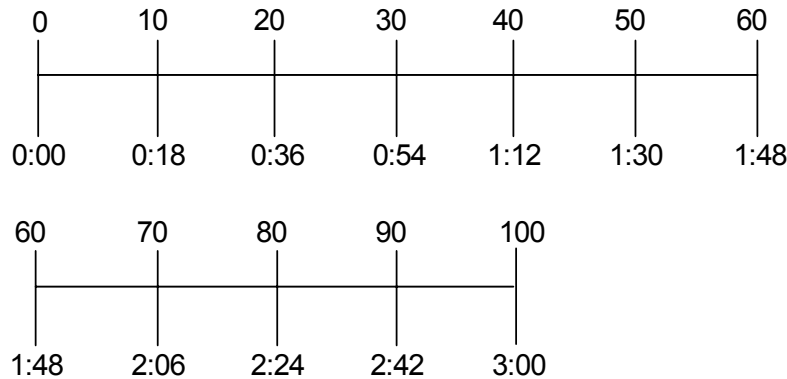
FORWARD RCS DUMP – FOUR JETS

GNC 23 RCS

1. Determine FWD RCS 'DUMP TO %' using lowest of Ox or Fu qty (DEL PAD)

FOUR JET DUMP:

FRCS PRPLT TO BE DUMPED (%)



TIME FROM DUMP INITIATION (M:S)

NOTE

During dump, disregard FRCS qty

- * If TWO JET DUMP: *
- * Double FOUR JET DUMP time *

CRT

2. FWD RCS ARM – ITEM 36 EXEC
DUMP – ITEM 37 EXEC

When dump time achieved:

3. FWD RCS OFF – ITEM 38 EXEC

ISOLATE FRCS

When dump complete:

- | | |
|-----------------------|--|
| O8 | 1. FWD RCS MANF ISOL 1,2,3,4 (four) – CL (tb-CL) |
| O6 | 2. MDM FF4 – OFF |
| O14:B | 3. cb MNA OI SIG CONDR OF 1/4 A – op |
| O15:B | MNB OI SIG CONDR OF 2/3 A – op |
| O14,
O15,
O16:F | 4. Pri RJDF DRIVER, LOGIC (eight) – OFF |

OMS GMBL PWRDN (PASS ONLY)

CRT

Verify GMBL positions:

	L	R
P	+5.9	+5.9
Y	+6.4	-6.4

- GMBL OFF – ITEM 32 EXEC
– ITEM 33 EXEC

EI-15 GPS RECOVERY

- A13 1. GPS POWER – ON
Wait 30 sec
- CRT 2. GNC I/O RESET
3. GNC 55 GPS STATUS
INIT – ITEM 15 EXEC
NAV – ITEM 18 EXEC

EI-14 APU RESTART (IF APUs SHUTDN)

- BFS, SM SYS SUMM 2
- R2 1. Use additional MDU, if reqd
2. BLR N2 SPLY (three) – ON
PWR (three) – ON
√CNTLR/HTR (three) – A
3. √cb APU FU TK VLV ENA (six) – cl
√APU FU TK VLV (three) – cl
√AUTO SHTDN (three) – ENA
√SPEED SEL (three) – NORM
√OPER (three) – OFF
4. HYD MN PUMP PRESS (three) – LO
5. APU CNTLR PWR (three) – ON
FU TK VLV (three) – OP
OPER (three) – INJ COOL (start watch)
- C3 6. OI PCMMU PWR – 1
- CRT * If after 1.5 min APU TEMP INJ not decr: *
- R2 * (Aff) APU OPER – OFF *
- * FU TK VLV – CL *
- * CNTLR PWR – OFF *
- * HYD MN PUMP PRESS – NORM *
- C3 7. OI PCMMU PWR – OFF
- At 3.5 min:
- R2 8. APU OPER (three) – START/RUN
- CRT 9. √HYD PRESS ind (three) – LO green
10. Pwr off additional MDU if used
- R2 * If any APU does not start: *
- * (Aff) APU OPER – OFF *
- * FU TK VLV – CL *
- * CNTLR PWR – OFF *
- * HYD MN PUMP PRESS – NORM *
- * If no APU starts: Contact MCC (Perform COMM *
- * PWRUP, 12-3) *

DPS ENTRY CONFIG

- O6 1. √GPC PWR 3 – ON
 MODE 3 – STBY (pause 10 sec, tb-RUN)
 – RUN
- EXPAND RS AND ASSIGN ALL STRINGS TO GPC 3
2. GNC, OPS 301 PRO
 GNC 0 GPC MEMORY
3. CONFIG ITEM 1 +3 EXEC
 Modify MC 3 per table →
4. GNC, OPS 301 PRO (√DAP)
 GNC 50 HORIZ SIT
5. BFS: GNC, OPS 000 PRO
 OPS 301 PRO
6. √RWY selection (PASS and BFS)
 Reselect AOA RWY
7. GNC, OPS 302,303 PRO
8. For any forward IDP that is off:
 GPC/CRT 3/X EXEC
9. DOWNLIST GPC – ITEM 44 +3 EXEC
- O6 10. GPC MODE 1 – STBY (tb-bp)
 – HALT
 PWR 1 – OFF
- C3 11. √FCS CH (four) – AUTO

CONFIG		3
GPC		10300
STR	1	3
	2	3
	3	3
	4	3
PL	1/2	3
CRT	1	3
	2	3
	3	3
	4	0
L	1	0
	2	0
MM	1	3
	2	3

EI-15 GPS RECOVERY

- O7 1. GPS 2,3 POWER – ON
Wait 30 sec
- CRT 2. GNC I/O RESET
3. GNC 55 GPS STATUS
INIT – ITEM 15,16 EXEC
NAV – ITEM 18,19 EXEC

EI-14 APU RESTART (IF APUs SHUTDN)

- BFS, SM SYS SUMM 2
- R2 1. Use additional MDU, if reqd
2. BLR N2 SPLY (three) – ON
PWR (three) – ON
√CNTLR/HTR (three) – A
3. √cb APU FU TK VLV ENA (six) – cl
√APU FU TK VLV (three) – cl
√AUTO SHTDN (three) – ENA
√SPEED SEL (three) – NORM
√OPER (three) – OFF
4. HYD MN PUMP PRESS (three) – LO
5. APU CNTLR PWR (three) – ON
FU TK VLV (three) – OP
OPER (three) – INJ COOL (start watch)
- C3 6. OI PCMMU PWR – 1
- CRT * If after 1.5 min APU TEMP INJ not decr: *
- R2 * (Aff) APU OPER – OFF *
- * FU TK VLV – CL *
- * CNTLR PWR – OFF *
- * HYD MN PUMP PRESS – NORM *
- C3 7. OI PCMMU PWR – OFF
- At 3.5 min:
- R2 8. APU OPER (three) – START/RUN
- CRT 9. √HYD PRESS ind (three) – LO green
10. Pwr off additional MDU if used
- R2 * If any APU does not start: *
- * (Aff) APU OPER – OFF *
- * FU TK VLV – CL *
- * CNTLR PWR – OFF *
- * HYD MN PUMP PRESS – NORM *
- * If no APU starts: Contact MCC (Perform COMM *
- * PWRUP, 12-3) *

DPS ENTRY CONFIG

- O6 1. √GPC PWR 3 – ON
 MODE 3 – STBY (pause 10 sec, tb-RUN)
 – RUN
EXPAND RS AND ASSIGN ALL STRINGS TO GPC 3

2. GNC, OPS 301 PRO
 GNC 0 GPC MEMORY
3. CONFIG ITEM 1 +3 EXEC
 Modify MC 3 per table →

CONFIG		3
GPC		10300
STR	1	3
	2	3
	3	3
	4	3
PL	1/2	3
CRT	1	3
	2	3
	3	3
	4	0
L	1	0
	2	0
MM	1	3
	2	3

4. GNC, OPS 301 PRO (√DAP)
 GNC 50 HORIZ SIT
5. BFS: GNC, OPS 000 PRO
 OPS 301 PRO
6. √RWY selection (PASS and BFS)
 Reselect AOA RWY
7. GNC, OPS 302,303 PRO
8. For any forward IDP that is off:
 GPC/CRT 3/X EXEC
9. DOWNLIST GPC – ITEM 44 +3 EXEC
- O6 10. GPC MODE 1 – STBY (tb-bp)
 – HALT
 PWR 1 – OFF
- C3 11. √FCS CH (four) – AUTO

HORIZ SIT CONFIG

ALTM – ITEM 9 +

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

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

* If BFS engaged: *

* Set HORIZ SIT BFS ITEMS to PASS config *

ECLSS ENTRY CONFIG

L1 IMU FAN (three) – OFF
 AV BAY 3 FAN B – ON
 √2 FAN A – ON
 √All other AV BAY FAN A,B (four) – OFF
 √NH3 CNTLR B – PRI/GPC
 √A – OFF

EI-7 ENTRY PWRUP & SWITCH CHECK

- F3 1. L,R TRIM RHC/PNL (two) – INH
PNL (two) – ON
- O14:E 2. cb MNA ACCEL 1 – cl
DDU L – cl
- O15:E 3. cb MNB ACCEL 2 – cl
DDU L – cl
- O16:F 4. ACCEL 3 – ON
- F6 5. L FLT CNTLR PWR – ON
- C3 √DAP: AUTO A/E PFD
- O15:D 6. cb MNB O2/N2 CNTLR 2 – cl
- R3A 7. Install ENTRY Cue Cards
- O7 8. √TACAN ANT SEL (three) – AUTO
CH tw (three) – 111 (EDW)
59Y (KSC)
121Y (NOR)
- O8 9. √MLS CH tw (three) – 8 EDW22 KSC15
– 6 KSC33 NOR17 NOR23 EDW04
10. √ENTRY MODE – AUTO
GNC 51 OVERRIDE
11. √ROLL MODE – AUTO
- L2/C3 11. √SBTC – full fwd
- C3 12. √SRB SEP – AUTO
√ET SEP – AUTO
- F6/F8 13. √AIR DATA (two) – NAV
√ADI ERR (two) – MED
√RATE (two) – MED
√HSI SEL MODE (two) – ENTRY
√SOURCE (two) – NAV, 1
– NAV, 2
- F6
- F8
14. Have MS complete AFT PNL CONFIG FOR ENTRY COMM (COMM),
12-2, prior to MS/PS seat ingress
(Comm will be activated at V = 12K)
15. MS/PS INGRESS SEATS
16. Go to LOSS OF 2 H2O LOOPS ENTRY MANEUVERS
(ENT MNVR/BAILOUT), 10-1

HORIZ SIT CONFIG

ALTM – ITEM 9 +

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

	<u>PASS ITEM</u>		<u>BFS ITEM</u>	
PTI	INH	√1		
LAND SITE (AOA DEL PAD)		√41		√41
RWY (AOA DEL PAD)		√3		√3
		√4		√4
TAEM TGT				
G&N	OVHD	√6	blank	
HSI	blank		blank	
XEP	NEP	√7	NEP	√7
AIM (AOA DEL PAD)	NOM	√8	NOM	√8
	(or CLSE)		(or CLSE)	
SPDBK	NOM	√39		
NAV				
GPS	INH	√43	INH	√43
DRAG H	AUT	√22	AUT	√22
ADTA H	INH	√26	INH	√26
MLS	AUT	√50		
G&C				
GPS	INH	√48		
ADTA	INH	√29	AUT	√28

* If BFS engaged: *

* Set HORIZ SIT BFS ITEMS to PASS config *

ECLSS ENTRY CONFIG

L1 IMU FAN (three) – OFF
 AV BAY 3 FAN B – ON
 √2 FAN A – ON
 √All other AV BAY FAN A,B (four) – OFF
 √NH3 CNTLR B – PRI/GPC
 √A – OFF

EI-7 ENTRY PWRUP & SWITCH CHECK

- F3 1. L,R TRIM RHC/PNL (two) – INH
PNL (two) – ON
- O14:E 2. cb MNA ACCEL 1 – cl
DDU L – cl
- O15:E 3. cb MNB ACCEL 2 – cl
DDU L – cl
- O16:F 4. ACCEL 3 – ON
- F6 5. L FLT CNTLR PWR – ON
- C3 √DAP: AUTO A/E PFD
- O15:D 6. cb MNB O2/N2 CNTLR 2 – cl
- R3A 7. Install ENTRY Cue Cards
- O8 8. √MLS CH tw (three) – 8 EDW22 KSC15
– 6 KSC33 NOR17 NOR23 EDW04
- 9. √ENTRY MODE – AUTO
GNC 51 OVERRIDE
- 10. √ROLL MODE – AUTO
- L2/C3 10. √SBTC – full fwd
- C3 11. √SRB SEP – AUTO
√ET SEP – AUTO
- F6/F8 12. √AIR DATA (two) – NAV
√ADI ERR (two) – MED
√RATE (two) – MED
√HSI SEL MODE (two) – ENTRY
√SOURCE (two) – NAV, 1
– NAV, 2
- F6
- F8
- 13. Have MS complete AFT PNL CONFIG FOR ENTRY COMM (COMM),
12-2, prior to MS/PS seat ingress
(Comm will be activated at V = 12K)
- 14. MS/PS INGRESS SEATS
- 15. Go to LOSS OF 2 H2O LOOPS ENTRY MANEUVERS
(ENT MNVR/BAILOUT), 10-1

LOSS OF 2 H2O LOOPS ENTRY MANEUVERS

FLIGHT CONDITIONS	MANEUVER
EI-5	Use up to two IDPs and with three MDUs, if reqd √LVLH ATT GNC, OPS 304 PRO * If PREBANK, R/Y – CSS * * Roll at 1°/sec to <input type="text"/> <input type="text"/> <input type="text"/> * * Maintain PREBANK ± 5° *
EI	cb MNA ADTA 1 – cl MNB ADTA 2 – cl MNC ADTA 3 – cl GNC I/O RESET
$\bar{q} = 1$	HYD MN PUMP PRESS (three) – NORM
'Guidance Box' @ $\bar{q} \sim 8$ or D ~ 3	CLOSED LOOP GUIDANCE _____ : _____ : _____ * If PREBANK: P,R/Y – AUTO * Begin AIL trim monitoring
D = 11	√DRAG H
$\Delta Az = 10.5$	FIRST ROLL REVERSAL <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> (DEL PAD)
V = 19K	√HYD MPS/TVC ISOL VLV SYS (three) – CL <input type="text"/> G50 √GPS, INCORPORATE
V = 15K	TACAN 1 – GPC
V = 12K	BRAKES (three) – ON <u>ACTIVATE ENTRY COMM</u> UHF MODE – SPLX AUD CTR – 1 √OI PCMMU FORMAT – FXD On MCC CALL: (N/A for Northrup) S-BD PM CNTL – PNL, CMD Sel best ANT OI PCMMU PWR – 1 MDM PL2 – ON GNC I/O RESET BFS I/O RESET
V = 10K	√SPDBK to 81%
V = 7K	<input type="text"/> G50 √TACAN & GPS, INCORPORATE
V = 5K	ADTA PROBES – DEPLOY (√HEAT) Begin AIL and RUD trim monitoring

FLIGHT CONDITIONS	MANEUVER
M = 2.9	CAB FAN A – OFF Pwr one HUD, MLS 2, RA 1 for landing GNC I/O RESET
M = 2.7	cb MNB, MNC DDU R (two) – cl R FLT CNTLR PWR – ON Use additional MDU for FLT INST, if reqd √APUs
h = 85K	FLASH EVAP CNTLR PRI A – OFF * If M < 2.5, P CSS for ADTA to G&C incorp *
M = 2.0	Ensure ADTA to G&C, else √Theta Limits
M < 1.0	P,R/Y – CSS as reqd √SPDBK CMD vs POS ANTISKID – ON NWS – 1 LOCK INERTIA REELS MAX Nz <input type="text"/> . <input type="text"/>
M = 0.7	√LG EXTD ISO VLV – OP
h = 15K	√MLS
h = 10K	√A/L, √TABS/VISOR – CL/SUIT O2 – ON (KSC)
h = 2K	LDG GEAR ARM pb – push (ARM It on)
h = 300	LDG GEAR DN pb – push (DN It on)
MAIN GEAR TD	√SPDBK – 100%
V = 195 KEAS	DRAG CHUTE ARM, DPY pb (two) – push (simo) (All Its on)
V = 185 KEAS	DEROTATE
NOSE GEAR TD	SRB SEP – MAN/AUTO and depress pb √Auto Load Relief √HYD BK ISOL VLV (three) – OP
V < 120 KGS or 5K' remaining	BRAKE as required (8-10 fps ² , -0.25 to -0.3G) * If 5K' remaining and V > 140 KGS – MAX BRAKING *
V = 60 KGS	DRAG CHUTE JETT pb – push (JETT1, JETT2 It on)
V = 40 KGS	BRAKE < 6 fps ² (-0.2G) (Antiskid cutout)
WHEEL STOP	Go to <u>EMER PWRDN</u> (Cue Card)

For **BAILOUT** see 10-2

(OV103,104) 10-1

OV103,104
SYS AOA/3,4/GEN K,1

**ENT MNVR/
BAILOUT**

BAILOUT MODE 8

REPORT POSITION

$\sqrt{\text{MACH}} < 1.0$

P, R/Y – CSS

OPS 305/603 PRO (if reqd)

SB – AUTO, BF – AUTO

FLY 185-195 KEAS, $\Phi = 0^\circ$

ABORT MODE – ATO

ABORT PBI – PUSH

P, R/Y – AUTO

FLT CNTLR PWR (two) – OFF

~50K FT

TABS – RELEASE

VISOR – CLOSE/LOCK

SUIT O2 – ON

GREEN APPLE – PULL

~40K FT

MS3 – VENT CABIN

CDR,PLT SEATS – LOWER

KNEEBOARDS – REMOVE

COOLING – DISCONNECT

SEAT RESTRAINT – RELEASE

D-RING – UNCOVER

~30K FT

MS3 – JETTISON HATCH

COMM – DISCONNECT

(G-SUIT CLIP – PULL)

SUIT O2 – DISCONNECT

EGRESS SEAT

POLE – DEPLOY

D-RING – HOOK UP

BAILOUT

LOSS OF 2 H2O LOOPS ENTRY MANEUVERS

FLIGHT CONDITIONS	MANEUVER
EI-5	Use up to two IDPs and with three MDUs, if reqd √LVLH ATT GNC, OPS 304 PRO * If PREBANK, R/Y – CSS * * Roll at 1°/sec to <input type="text"/> <input type="text"/> <input type="text"/> * * Maintain PREBANK ± 5° *
EI	cb MNA ADTA 1 – cl MNB ADTA 2 – cl MNC ADTA 3 – cl GNC I/O RESET
$\bar{q} = 1$	HYD MN PUMP PRESS (three) – NORM
'Guidance Box' @ $\bar{q} \sim 8$ or $D \sim 3$	CLOSED LOOP GUIDANCE _____ : _____ : _____ * If PREBANK: P,R/Y – AUTO * Begin AIL trim monitoring
D = 11	√DRAG H
$\Delta Az = 10.5$	FIRST ROLL REVERSAL <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> (DEL PAD)
V = 19K	√HYD MPS/TVC ISOL VLV SYS (three) – CL <input type="text"/> G50 √GPS, INCORPORATE
V = 12K	BRAKES (three) – ON <u>ACTIVATE ENTRY COMM</u> UHF MODE – SPLX AUD CTR – 1 √OI PCMMU FORMAT – FXD On MCC CALL: (N/A for Northrup) S-BD PM CNTL – PNL, CMD Sel best ANT OI PCMMU PWR – 1 MDM PL2 – ON GNC I/O RESET BFS I/O RESET
V = 10K	√SPDBK to 81%
V = 7K	<input type="text"/> G50 √GPS, INCORPORATE
V = 5K	ADTA PROBES – DEPLOY (√HEAT) Begin AIL and RUD trim monitoring

FLIGHT CONDITIONS	MANEUVER
M = 2.9	CAB FAN A – OFF Pwr one HUD, MLS 2, RA 1 for landing GNC I/O RESET
M = 2.7	cb MNB, MNC DDU R (two) – cl R FLT CNTLR PWR – ON Use additional MDU for FLT INST, if reqd √APUs
h = 85K	FLASH EVAP CNTLR PRI A – OFF * If M < 2.5, P CSS for ADTA to G&C incorp *
M = 2.0	Ensure ADTA to G&C, else √Theta Limits
M < 1.0	P,R/Y – CSS as reqd √SPDBK CMD vs POS ANTISKID – ON NWS – 1 LOCK INERTIA REELS MAX N _z <input type="text"/> . <input type="text"/>
M = 0.7	√LG EXTD ISO VLV – OP
h = 15K	√MLS
h = 10K	√A/L, √TABS/VISOR – CL/SUIT O2 – ON (KSC)
h = 2K	LDG GEAR ARM pb – push (ARM It on)
h = 300	LDG GEAR DN pb – push (DN It on)
MAIN GEAR TD	√SPDBK – 100%
V = 195 KEAS	DRAG CHUTE ARM, DPY pb (two) – push (simo) (All Its on)
V = 185 KEAS	DEROTATE
NOSE GEAR TD	SRB SEP – MAN/AUTO and depress pb √Auto Load Relief √HYD BK ISOL VLV (three) – OP
V < 120 KGS or 5K' remaining	BRAKE as required (8-10 fps ² , -0.25 to -0.3G) * If 5K' remaining and V > 140 KGS – MAX BRAKING *
V = 60 KGS	DRAG CHUTE JETT pb – push (JETT1, JETT2 It on)
V = 40 KGS	BRAKE < 6 fps ² (-0.2G) (Antiskid cutout)
WHEEL STOP	Go to <u>EMER PWRDN</u> (Cue Card)

For **BAILOUT** see 10-2

BAILOUT MODE 8

REPORT POSITION

$\sqrt{\text{MACH}} < 1.0$

P, R/Y – CSS

OPS 305/603 PRO (if reqd)

SB – AUTO, BF – AUTO

FLY 185-195 KEAS, $\Phi = 0^\circ$

ABORT MODE – ATO

ABORT PBI – PUSH

P, R/Y – AUTO

FLT CNTLR PWR (two) – OFF

~50K FT

TABS – RELEASE

VISOR – CLOSE/LOCK

SUIT O2 – ON

GREEN APPLE – PULL

~40K FT

MS3 – VENT CABIN

CDR,PLT SEATS – LOWER

KNEEBOARDS – REMOVE

COOLING – DISCONNECT

SEAT RESTRAINT – RELEASE

D-RING – UNCOVER

~30K FT

MS3 – JETTISON HATCH

COMM – DISCONNECT

(G-SUIT CLIP – PULL)

SUIT O2 – DISCONNECT

EGRESS SEAT

POLE – DEPLOY

D-RING – HOOK UP

BAILOUT

MS PULLOUT SECTION

Pull this section for MS use. Complete MS OVHD & AFT PNL PWRDN, ASAP
If STDN LOS, have another MS perform COMM PWRDN (COMM), 12-1, at the same time
Use only two IDPs with the three MDUs

MS OVHD & AFT PNL PWRDN

1. Minimize lgt on AFT Flt Deck and Middeck
- O13:A 2. cb ESS 1BC MTU A – op
- :C 2CA C/W B – op (Expect MA and two F7 lts)
- :E 3AB GPC STAT – op
- O14:A 3. BRAKES MNA – OFF
- If not executing IMMEDIATE AOA DEORBIT BURN STEPS, 7-1:
- :B 4. Verify with CDR: IMU 1 – OFF
5. cb MNA OI SIG CONDR OF 1/4 A – op
- MDM OF 1/2 A,3/4 A (two) – op
- H2O BYP LOOP 1 SNSR – op
- MSN TIMER FWD – op
- EVENT TIMER AFT – op
- :D 6. cb MNA CAB VENT – op
- VENT ISOL – op
- :E 7. cb MNA ADTA 1 – op
- ACCEL 1 – op
- DDU L – op (leave cl if TIG < 15 min)
- Verify with PLT:
- FWD RCS MANF ISOL 1,2,3,4 (four) – CL (tb-CL)
- :F 8. Verify with CDR: MMU 1 – OFF
- RJDF 1B F1 LOGIC – OFF
- DRIVER – OFF
- O15:A 9. BRAKES MNB – OFF
- :B 10. cb MNB OI SIG CONDR OF 1/4 B,2/3 A (two) – op
- MDM OF 1/2 B – op
- H2O BYP LOOP 2 SNSR – op
- MSN TIMER AFT – op
- EVENT TIMER FWD – op
- :D 11. cb MNB O2/N2 CNTLR 2 – op
- :E 12. ADTA 2 – op
- ACCEL 2 – op
- DDU L – op (leave cl If TIG < 15 min)
- R – op
- :F 13. ACCEL 4 – OFF
- RJDF 1A F2 LOGIC – OFF
- DRIVER – OFF

MS OVHD & AFT
PNL PWRDN

Cont next page

- O16:A 14. BRAKES MNC – OFF
 - :B 15. cb MNC OI SIG CONDR OF 2/3 B – op
MDM OF 3/4 B – op
 - :E 16. cb MNC ADTA 3,4 (two) – op
DDU R – op
 - :F 17. ACCEL 3 – OFF
RJDF 2A F3 LOGIC – OFF
DRIVER – OFF
2B F4/F5 LOGIC – OFF
F4 DRIVER – OFF
- A13 If OV103/104:
18. GPS PWR – OFF

MS OVHD & AFT
PNL PWRDN

MS PULLOUT SECTION

COMM PWRDN

Site	MET (mm:ss)
NHS (SGLS)	~06:30 - ~11:30
TCS (SGLS)	~18:00 - ~26:00
DGS (SGLS)	~40:00 - ~48:00

TDRS	MET (hh:ss)
TDRS East 46	~00:00 - ~35:00
TDRS Z 275	~20:00 - ~01:18:00
TDRS West 171	~50:00 - ~01:40:00

NOTE

Preferred comm config in order of least heat production

1. SGLS/STDN LO
2. TDRS (10 min max operating time without cooling to S-BAND Power Amp)

- | | |
|---------------------|--|
| MS/CDR | As soon as possible, perform following pwrdn: |
| A1L | <ol style="list-style-type: none"> 1. S-BD PM ANT SW ELEC – OFF
 PRE AMP – OFF
 PWR AMPL STBY – OFF
 OPER – OFF
 MODE – STDN LO
 XPNDR – OFF |
| A1L | <ol style="list-style-type: none"> 2. NSP PWR – OFF |
|
<u>NOTE</u>
 | |
| | Verify CDR is ready for COMM PWRDN prior to performing step 3 |
| C3 | <ol style="list-style-type: none"> 3. S-BD PM CNTL – PNL
 OI PCMMU FORMAT – FXD
 PWR – OFF
 AUD CTR – OFF (pwr up as reqd for cockpit audio) |
| A1L | <ol style="list-style-type: none"> 4. NSP ENCRYPTION PWR OFF (Encrypt disabled rest of flight)
 √ENCRYPTION MODE – SEL
 – SEL BYP |
| O6 | <ol style="list-style-type: none"> 5. UHF MODE sel – OFF |
| A1L | <ol style="list-style-type: none"> 6. S-BD PL CNTL – PNL
 √PWR SYS – OFF
 PL DATA INTLVR PWR – OFF |
| A1R | <ol style="list-style-type: none"> 7. S-BD FM CNTL – PNL
 PWR – OFF |
| R14:B | <ol style="list-style-type: none"> 8. cb MNA,MNC GCILC (two) – op
 On GO from CDR prior to MS/PS seat ingress: |
| | <ol style="list-style-type: none"> 9. Perform AFT PNL CONFIG FOR ENTRY COMM, 12-2
 If COMM reqd prior to ENTRY COMM activation at V=12K: Go to COMM PWRUP, 12-3 |

COMM

AFT PNL CONFIG FOR ENTRY COMM

- On GO from CDR prior to MS/PS seat ingress:
- R14:B
C3
A1L
1. cb MNA,MNC GCILC (two) – cl
 2. S-BD PM CNTL – CMD
 3. ANT SW ELEC – 2
√MODE – STDN LO
XPNDR – 2
 4. NSP PWR – 2
√DATA RATE XMIT – HI
√RCV – HI
√UPLK DATA – S-BD
√CODING XMIT – OFF
RCV – OFF

NOTE

CDR will activate COMM at V = 12K

COMM

MS PULLOUT SECTION

COMM PWRUP (If COMM reqd prior to landing site coverage)

C3 1. AUD CTR – 1

If ground site available:

Site	MET (mm:ss)
NHS (SGLS)	~06:30 - ~11:30
TCS (SGLS)	~18:00 - ~26:00
DGS (SGLS)	~40:00 - ~48:00

Config for SGLS S-BD:

C3
A1L

2. S-BD PM CNTL – PNL
 - ANT SW ELEC – 2
 - MODE – SGLS
 - XPNDR – 2

3. NSP PWR – 2
 - √DATA RATE XMIT – HI
 - √RCV – HI
 - √CODING XMIT – OFF
 - RCV – OFF
 - √UPLK DATA – S-BD

C3/F9

4. Select best S-BD PM ANT

On MCC GO (if data reqd):

O14:B

5. cb MNA OI MDM OF 1/2,3/4 A (two) – cl
 - SIG CONDR OF 1/4 A – cl

O15:B

- MNB OI SIG CONDR OF 2/3 A – cl

C3

- OI PCMMU PWR – 1

O6

- MDM PL2 – ON
- GNC I/O RESET
- BFS I/O RESET

At end of data transmission:

O14:B

6. cb MNA OI MDM OF 1/2,3/4 A (two) – op
 - SIG CONDR OF 1/4 A – op

O15:B

- cb MNB OI SIG CONDR OF 2/3 A – op

O6

- MDM PL2 – OFF

7. After comm/data complete: Go to COMM PWRDN, 12-1 >>

Cont next page

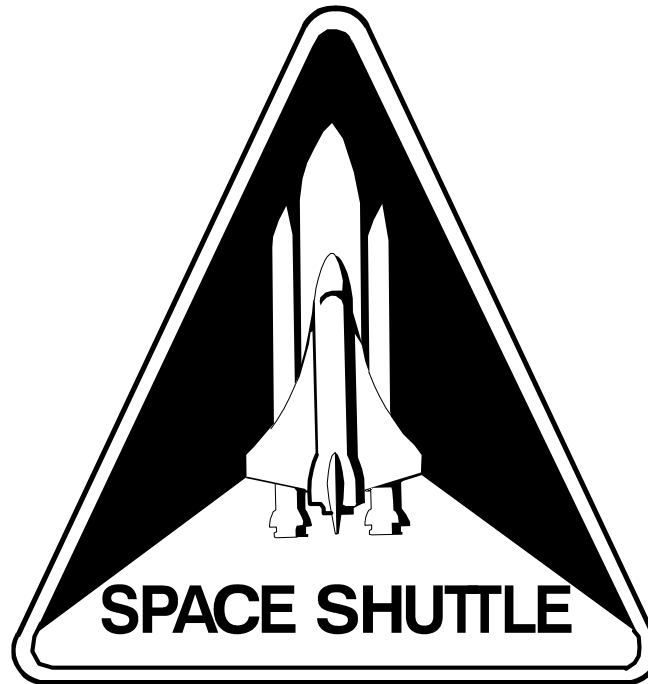
~
 If GND site not available, config for TDRS S-BD

TDRS	MET (hh:ss)
TDRS East 46	~00:00 - ~35:00
TDRS Z 275	~20:00 - ~01:18:00
TDRS West 171	~50:00 - ~01:40:00

CAUTION

This is a High Pwr Mode. On-time should be limited to 10 min max due to Pwr Amp Thermal constraints. A 2 min, 20 sec delay occurs after S-BD PM PNL/CMD before Pwr Amp is active. Uplink not affected. Proceed with selection of best antenna

- C3 8. √S-BD PM CNTL – PNL
- A1L ANT SW ELEC – 2
- PRE AMP – 2
- PWR AMPL OPER – 2
- MODE – TDRS DATA
- XPNDR – 2
- 9. NSP PWR – 2
- √DATA RATE XMIT – HI
- √RCV – HI
- CODING XMIT – ON
- RCV – ON
- √UPLK DATA – S-BD
- C3/F9 Select best – S-BD PM ANT
- On MCC GO (if data reqd):
- O14:B 10. cb MNA OI MDM OF 1/2,3/4 A (two) – cl
- SIG CONDR OF 1/4 A – cl
- O15:B OI MDM SIG CONDR OF 2/3 A – cl
- C3 OI PCMMU PWR – 1
- O6 MDM PL2 – ON
- GNC I/O RESET
- BFS I/O RESET
- At end of data transmission:
- O14:B 11. cb MNA OI MDM OF 1/2,3/4 A (two) – op
- SIG CONDR OF 1/4 A – op
- O15:B MNB OI SIG CONDR OF 2/3 A – op
- O6 12. MDM PL2 – OFF
- 13. After comm/data complete, Go to COMM PWRDN, 12-1



**SYSTEMS AOA
PROCEDURES**

**STS
ALL**