

Post Insertion

STS-135

**Mission Operations Directorate
Operations Division**

**Final
April 15, 2011**

National Aeronautics and
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MISSION OPERATIONS DIRECTORATE

**POST INSERTION
STS-135**


FINAL
April 15, 2011

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POST INSERTION
STS-135

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POST INSERTION CUE CARDS

<u>Title</u>	<u>Ref. Page</u>	<u>Card No.</u>
AFT FLIGHT DECK RECONFIGURATION (Front).....	CC 3-3	PI-1a/135/O/B
(Back).....	CC 3-4	PI-1b/135/O/B
MIDDECK RECONFIGURATION (Front).....	CC 3-5	PI-2a/135/O/B
(Back).....	CC 3-6	PI-2b/135/O/A

* – Omit from flight book

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ON-ORBIT SWITCH LIST	1-17
ORBIT 5/6 DEORBIT	2-1
CUE CARD CONFIG	3-1

NOTE

The STS-135 Post Insertion contains the nominal procedures from:

MET (DAY/HR:MIN)
000/00:51 TO 000/02:30 – POST INSERTION (Section 1)

The remaining STS-135 flight phases are conducted using the Ascent Checklist, Flight Plan, Deorbit Prep Book, Entry Checklist, EVA Checklist, and Rendezvous Book.

POST INSERTION PROCEDURES

CONFIG GPCs FOR OPS 2 1

* For single PASS GPC failure, build PASS set as follows: *

FAILED GPC	GPC			
	1	2	3	4
1	X	G2	FD	SM
2	G2	X	FD	SM
3	G2	FD	X	SM
4	G2	SM	FD	X

* In step 1:
* Assign strings 1,3 to one GPC and
* strings 2,4 to other GPC
*

NOTE

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

C,P 1. REASSIGN G2FD STRING TO ANOTHER GPC IN MC 1

GNC 0 GPC MEMORY

CONFIG – ITEM 1 +1 EXEC

Modify MC 1 per table

BFC CRT DISP – OFF

GNC, OPS 106 PRO

GNC 0 GPC MEMORY

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

CAUTION
If BFS is standalone (BFC It flash):
BFC CRT DISP – ON
BFS, GNC I/O RESET
BFC CRT DISP – OFF

O6 2. MODE G2FD GPC TO OPS 0
GPC MODE G2FD – STBY (tb-bp)
– RUN (tb-RUN)

CRTX 3. LOAD MC 2 INTO G2FD GPC
PL, GPC/CRT G2FD GPC/X EXEC
X: PL GPC MEMORY
CONFIG – ITEM 45 +2 EXEC
GPC – ITEM 46 +(G2FD) EXEC
STORE – ITEM 47 EXEC
Store complete when MC = 02

* If no MC = 02 after 30 sec: *

a. On MCC GO, cycle pwr on MMU 1,2

b. Retry GPC FREEZE DRY (step 3)

c. If FD successful, continue with step 4
If not successful and:
NO GPCs FAILED: go to step 1, delete GPC 3
from TGT SET, restring 1,3 to GPC 1, and
restring 2,4 to GPC 4, try to FD GPC 2 with
steps 2,3; then go to step d
ONE GPC FAILED: go to step 1, delete
attempted FD GPC from TGT SET, restring all
strings to lowest ID GPC, try to FD other GPC
with steps 2,3; then go to step d

d. If FD successful, continue with step 4
If not successful: consider both MMUs failed;
on MCC GO, perform transition to OPS 3

4. TRANSITION TO GNC OPS 2

GNC 0 GPC MEMORY

CONFIG – ITEM 1 +2 EXEC

Modify MC 2 per table

GNC, OPS 201 PRO

GNC UNIV PTG

CONFIG GPC	DUAL G2	SINGLE G2
	2 12000	2 10000
STR 1	1	1
2	2	1
3	1	1
4	2	1
PL 1/2	0	0
CRT 1	1	1
2	2	1
3	0	0
4	2	1
L 1	0	0
2	0	0
MM 1	1	1
2	2	1

C3
C2
F2,F4
C3

5. TURN OFF BFC LT
BFC CRT DISP – ON
BFS, MSG RESET
√BFC It – off
CRT DISP – OFF

MET
DAY 000
00:30
TRANS
DAP
AUTO
RT 0.5
DB 3.5

00:35
00:40
00:45
00:50
00:55
01:00

Ref ASC for activities from 00:00-00:50 MET

MEMORY CONFIGURATION TABLE				
CONFIG	1	2	3	4
OPS	G1, G6	G2	G3	SM
GPC SEL	1,2,3,4	1,2	1,2,3,4	4
STR	1 1 2 2 3 3 4 4	1 1 2 2 1 1 2 2	1 1 2 2 3 3 4 4	0 0 0 0 0 0 0 0
P/L	1/2 1	0 0	1 1	4 4
CRT	1 1 2 2 3 3 4 0	1 1 2 2 0 0 2 0	1 1 2 2 3 3 0 0	4 4 4 4 0 0 4 4
L	1 1 2 2	0 0 0 0	0 0 0 0	4 4 0 0
MM	1 1 2 2	1 1 2 2	1 1 2 2	4 4 4 4

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

C L4:B,Q,R All cbs closed
L4:D,E All cbs open
L4:J cb AC3 φA SIG CONDR HUM SEP - cl
B SIG CONDR IMU FAN - cl
MS1 R14:A cb MNB AUD MIDDECK SPKR - cl
MS **SPECIALIST SEAT EGRESS**
C,P **CONFIG GPCs FOR OPS 2** [1], 1-2
(USE DUAL G2 CONFIG)
If two PASS GPCs failed, √MCC
If BFS engaged: Go to MAL, DPS, GPC FRP-4
P R1 **PL BUS ACTIVATION**
PL CAB - MNA
PRI MNC - ON (tb-ON)
√AUX - ON
AFT MNB - ON
AFT MNC - ON
MS **PRELIM MIDDECK CONFIG** (MID Cue Card) [2], 1-15
MS **AFT STATION CONFIG** (AFT Cue Card) [3], 1-13

CRTX 6. **TRANSITION TO SM OPS 201**
SM, GPC/CRT SM GPC/X EXEC
X: SM GPC MEMORY
CONFIG - ITEM 1 +4 EXEC
Modify MC 4 per table
SM, OPS 201 PRO
SM ANTENNA
C3 √UPLK - ENA
SM 1 DPS UTILITY
UL CNTL AUTO - ITEM 35 EXEC
C3 7. **SECURE BFS**
BFC CRT DISP - ON
CRT3 BFS, GNC, OPS 000 PRO
3: BFS, BFS MEMORY
C3 BFC CRT DISP - OFF
√All IDPs deassigned from BFS
O6 GPC MODE 5 - STBY (tb-RUN)
C2 8. **RECONFIG MEDs**
GPC/CRT 0/3 EXEC
IDP/CRT 3 PWR - OFF
√4 PWR - ON
F6,F7,F8 GPC/CRT SM GPC/4 EXEC
Power off MDUs as desired
C3 9. **LOAD ORBIT TFLs**
√OI PCMMU FORMAT - GPC
SM 62 PCMMU/PL COMM
FORMAT:
CRT FXD - ITEM 1 EXEC (*)
SEL ID - ITEM 3 +1 8 8 EXEC
LOAD - ITEM 4 EXEC
- √RUN, CPLT
SEL ID - ITEM 3 +1 0 3 EXEC
LOAD - ITEM 4 EXEC
- √RUN, CPLT
PGM - ITEM 2 EXEC
SM ANTENNA

CONFIG	4
GPC	00040
STR	1 0 2 0 3 0 4 0
PL	1/2 4
CRT	1 4 2 4 3 0 4 4
L	1 4 2 0
MM	1 4 2 4

10. RECONFIG GPCs

O6 GPC MODE 5 – HALT (tb-bp)
 OUTPUT 5 – NORM (tb-bp)
 OUTPUT (SM GPC) – TERM (tb-bp)

If no failed GPC:

√All IDPs deassigned from FD GPC
 GPC MODE (FD GPC) – STBY (tb-bp)
 – HALT (tb-bp)
 – STBY (tb-RUN)
 – HALT (tb-bp)

If single G2 reqd:

IDP/CRTX MAJ FUNC – PL
 GPC/CRT 2/X EXEC

X: PL GPC MEMORY

CONFIG – ITEM 45 +2 EXEC
 GPC – ITEM 46 +2 EXEC
 STORE – ITEM 47 EXEC
 Store complete when MC = 2 (~30 sec)

√All IDPs deassigned from FD GPC
 GPC MODE 2 – STBY (tb-bp)
 – HALT (tb-bp)
 – STBY (tb-RUN)
 – HALT (tb-bp)

Perform ERR LOG RESET

GNC 0 GPC MEMORY

ITEM 48 EXEC

SM 0 GPC MEMORY

ITEM 48 EXEC

If PASS GPC failed from ASCENT and dual
 G2 reqd, use G2FD to form G2 RS:

GNC 0 GPC MEMORY

CONFIG – ITEM 1 +2 EXEC

Modify MC 2 per table →

GNC, OPS 201 PRO

GNC UNIV PTG

If PASS GPC failed from ASCENT and single
 G2 reqd:

√All IDPs deassigned from FD GPC
 GPC MODE (FD GPC) – STBY (tb-bp)
 – HALT (tb-bp)
 – STBY (tb-RUN)
 – HALT (tb-bp)

If GPC failed from ASCENT,
 Perform MAL, DPS, GPC FRP-1 as time permits

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

C2
 CRTX

CRT

PI LOCKER

When all GPC switch configuration complete,
 unstow, install GPC MODE switchguard

MET
DAY 000
01:00
A1(B1)
AUTO
PRI
RT 0.2
DB 5.0

1: GNC UNIV PTG 2: SM ANTENNA

MS **CONFIG FOR PLBD OPERATIONS** (AFT Cue Card) **4**, 1-14

01:05

MS **WCS CONFIG/ACT** (MID Cue Card) **5**, 1-16
MS **SWITCH CONFIG/GALLEY ACT** (MID Cue Card) **6**, 1-16
C,P **DON/CONFIG COMM**
Don headsets
HIU Vol – minimum
P **LOAD DAP A5**

01:10

MNVR TO PLBD OPENING ATT (-ZLV, -XVV)
CRT1 √TGT ID +2
 BODY VECT +3
 √P +90
 √Y +0.0
 OM 0

01:15

DAP: A/AUTO/ALT
Initiate TRK
C **RAD ACT** **7**

A5(B1)
AUTO
ALT
RT 0.2
DB 5.0

RAD/PLBD OPS NO-GO FOR FOLLOWING FAILURES

OMS/RCS	GNC	ECLS/EPS	MECH
2 OMS Engs	2 IMUs	1 H2O or Freon Lp	2 LG DPY METHODS
1 OMS Eng & 1 +X RCS jet	3 RGAs	Both RFCAs	PRES or REDNT
1 OMS Inlet line	3 AAs	Both Cab Fans	WINDOW PANE FAILURE
OMS Prop Tk Leak	3 ADTAs	3 of 6 Av Bay Fans	DPS
Aft RCS He or Prop Leak	3 Elevon or BF Pos Fdbks (same surface)	2 FCs	3 GPCs
COMM	2 FCS Ch (same surface)	Any MN or 3Φ AC Bus	2 PL MDMs
No Voice and No CMD	2 FCS Ch (same surface)	Any CNTL or MPC Bus	2 FF or FA MDMs
		3 IMU Fans	APU/HYD
			2 APU/HYD/WBS

01:25

UPLINK
VAR
PARAM
TMBU
(IF
REQD)

If NO-GO for RAD/PLBD OPS, go to **ORB 3 DEORBIT** **8**
MS **OPEN PLBDs, AUTO MODE,** **18** 1-11
NOTE: CAUTION BLOCK on 1-11

01:30

RAD ACT **7**

NOTE

If RAD flow has been initiated manually, delay RAD ACT until MCC call or until RAD OUT T low

L1

RAD BYP VLV MODE (two) – AUTO
CNTLR LOOP (two) – AUTO A
Wait 90 sec
√RAD BYP VLV tb (two) – RAD

```

* If RAD BYP VLV 1(2) tb – BYP:
*   RAD CNTLR LOOP 1(2) – AUTO B
*   Wait 90 sec
*   √RAD BYP VLV 1(2) tb – RAD
*
* If RAD BYP VLV 1(2) tb still BYP or bp:
*   RAD BYP VLV MODE 1(2) – MAN
*   MAN SEL 1(2) – RAD FLOW
*   Hold 3 sec or until tb – RAD
*
* If RAD BYP VLV 1(2) tb – bp:
*   RAD BYP VLV MODE 1(2) – MAN
*   CNTLR LOOP 1(2) – AUTO B
*   After 10 sec, RAD BYP VLV MODE 1(2) – AUTO
*   Wait 90 sec
*   RAD BYP VLV 1(2) tb – RAD
*   If RAD BYP VLV 1(2) tb – bp:
*     RAD BYP VLV MODE 1(2) – MAN
*     MAN SEL 1(2) – RAD FLOW
*     Hold 3 sec or until tb – RAD
*   If RAD BYP VLV 1(2) tb – bp:
*     √MCC

```

L2

FREON ISOL MODE – AUTO

ORB 3 DEORBIT **8**

If NO-GO for RAD/PLB OPS due to 2 FCs failed:
Go to CONT DEORB, **LOSS OF 2 FC ORB 2 OR 3**,
at TIG-1:30
If NO-GO due to any other failure:
Go to CONT DEORB, **LAUNCH DAY ORBIT 3**,
at TIG-2:00

STAR TRKR ACTIVATION/DOOR OPEN 12

- C** O6 S TRK PWR (two) – ON
GNC I/O RESET
- O6 S TRK DR CNTL SYS (two) – OP (start timer)
√POS tb (two) – bp
When both tb – OP (8-24 sec), or either tb – bp for > 24 sec,
CNTL SYS (two) – OFF
- * If tb – bp > 8 sec, notify MCC *

1: GNC 22 S TRK/COAS CNTL
STAR TRK – ITEM 3,4 EXEC
1: GNC 21 IMU ALIGN
RESUME

SUPPLY WATER CONFIG 14

NOTE

Do not perform until blocks 5 and 6 are performed

- L1 FLASH EVAP CNTLR PRI A – OFF
- R11L SPLY H2O DUMP ISOL VLV – OP (tb-OP)
√XOVR VLV – CL (tb-CL)
TKB INLET – CL (tb-CL)
TKA OUTLET – OP (tb-OP)
- ML86B:A cb MNB SPLY H2O TKB INLET – op
MNC SPLY H2O XOVR VLV – op

SM SYS SUMM 2

- CRT If FREON EVAP OUT TEMP > 41 and ≤ 47 degF:
L1 RAD CNTLR OUT TEMP – HI
- CRT When FREON EVAP OUT TEMP > 50 degF,
L1 RAD CNTLR OUT TEMP – NORM, then immediately:
FLASH EVAP CNTLR PRI B – ON
- CRT If FREON EVAP OUT TEMP ≤ 41 or > 47 degF:
L1 FLASH EVAP CNTLR PRI B – ON

MET	1: GNC UNIV PTG	2: SM PL BAY DOORS
DAY 000	4: SM PL BAY DOORS	
01:30		
A5(B1)		
AUTO		
ALT		
RT 0.2		
DB 5.0		
01:35	MCC & CREW:	GO for orbit ops
	C O6	UHF MODE sel – OFF
	MS	KU-BD ANT DEPLOY (ORB OPS, COMM/INST)
		KU-BD ANT ACTIVATION (ORB OPS, COMM/INST)
	C,P	SEAT EGRESS
01:40	C,P	CLOTHING CONFIG 9
	MS	CLOTHING CONFIG (MID,AFT Cue Cards) 10, 1-14, 1-15
01:45	ALL	QUICKDON MASKS SETUP 19
		If time permits: OCAC SETUP (ORB OPS, CREW SYS)
01:50	C	POST PLBD OPS RAD CONFIG 11
	MS	SPECIALIST SEAT REMOVAL/STOWAGE
01:55	C	STAR TRKR ACTIVATION/DOOR OPEN 12, 1-6
	MS	ESCAPE POLE STOWAGE (MID Cue Card) 13, 1-16
02:00		

CLOTHING CONFIG 9

Doff, stow:
 Harness, Boots, LES
 Stow gloves in Helmet
 Remove radiation dosimeter from LES and insert in inflight garments

Doff, stow in Wet Trash:
 UCD (clamp if used)
 Emesis Bag, if used (unstow new bag)

POST PLBD OPS RAD CONFIG 11

C 1: SM 88 APU/ENVIRON THERM

NOTE
 FREON LOOP RAD OUT temps will not drop to normal operating range (< 60 deg) until ~15 min after doors are opened

L1 NH3 CNTLR B(A) – OFF
 √RAD BYP VLV tb (two) – RAD
 H2O LOOP 2 BYP MODE – AUTO

CRT1 When FREON LOOP RAD OUT T < 60 deg:
 L1 HI LOAD EVAP – OFF

1: GNC UNIV PTG

QUICKDON MASKS SETUP 19

Connect QDM COMM to HIU
 Connect QDM O2 to LEH hose
 Verify operation
 Temp stow QDM/HIU assembly

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MET		1: GNC UNIV PTG	2: SM ANTENNA
DAY 000		4: SM ANTENNA	
02:00	MS	AIRLOCK SETUP FOR INGRESS [15], 1-16	
A5(B1)	P	W/B STEAM VENT HTR ACT	
AUTO		R2	√BLR CNTLR/HTR (three) – A
ALT			PWR (three) – ON
RT 0.2			
DB 5.0			
02:05	C	CONFIG VERNIER CONTROL	
A5(B1)	O16:F	√MCC GO for vernier control	
AUTO		RJD MANF L5/F5/R5 DRIVER – ON, wait 5 sec	
VERN		DAP: A/AUTO/VERN	
RT 0.05			
DB 1.0			
02:10			
	ALL	CONFIG CONTROLS FOR ON-ORBIT	
		Perform actions on 1-17 thru 1-26	
		Unstow, install HUD covers (two)	
02:15	L2	Remove, stow (on PNL L2/FDF FD locker)	
		NWS sw flex extension	
	P	HYD THERMAL CONDITIONING-ENABLE	
	R2	HYD CIRC PUMP (three) – GPC	
02:20	P	SUPPLY WATER CONFIG [14], 1-6	
02:25	MS	RESET C/W (AFT Cue Card) [16], 1-14	
	MS	FUEL CELL VI PERFORMANCE PLOT (ORB OPS, EPS)	
02:30		Stow POST INSERTION, go to FLIGHT PLAN, <u>FLT DAY 1</u>	

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DETAILED PLBD OPENING PROCEDURES 18

- | | | |
|------|--|--|
| R13L | <ul style="list-style-type: none"> * If no motion determined visually or 'OP/CL' not blank within 10 sec * after cmd, * PL BAY DR – STOP, perform MAL, <u>MECH</u>, 9.1a * If latch not 'OP' in single mtr time, * PL BAY DR – STOP, perform MAL, <u>MECH</u>, 9.1d * If door motion stops and not 'OP', * PL BAY DR – STOP, perform MAL, <u>MECH</u>, 9.1f * If SM GPC fails during this operation, * PL BAY DR SYS (two) – DSBL * – STOP * Perform PASS SM GPC FAIL (ORB PKT, <u>DPS</u>) | *
*
*
*
*
*
*
*
*
* |
|------|--|--|

CAUTION

Use MANUAL mode for subsequent BFS PLBD ops if BFS AUTO sequence has been interrupted by reversing latch/door drive direction or if MANUAL mode has already been used during mission

NOTE

Note any single mtr operations (continue ops)
(single mtr times = 2X listed dual motor times).

If one mtr in each of two separate latch gangs fails:
PL BAY DR – STOP
√MCC

AUTO PLBD OPENING PROCEDURE

- | | |
|----------------------------------|--|
| MS CRT4 | <ol style="list-style-type: none"> 1. SM, OPS 202 PRO or BFS, SM 63 PL BAY DOORS
4: SM PL BAY DOORS |
| R13L
CRT4 | <ul style="list-style-type: none"> √PL BAY DR – STOP √PBD SW – STOP √MAN SEL (ten) – (no *) √PBD SW BYPASS – (no *) |
| R13L
CRT4 | <ol style="list-style-type: none"> 2. AC POWER ON – ITEM 1 EXEC (*) 3. AUTO MODE SEL – ITEM 3 EXEC (*) 4. PL BAY DR SYS (two) – ENA |
| R13L
CRT4 | <ul style="list-style-type: none"> √OP/CL STATUS (ten) – CL 5. PL BAY DR – OP |
| R13L
CRT4 | <ul style="list-style-type: none"> √CENTER LATCHES 5-8,9-12 (two) – blank,OP (~20 sec) <li style="padding-left: 20px;">√1-4,13-16 (two) – blank,OP (~20 sec) √STBD FWD,AFT LATCHES (two) – blank,OP (~30 sec) <li style="padding-left: 20px;">√DOOR – RDY,blank,OP (~63 sec) √PORT FWD,AFT LATCHES (two) – blank,OP (~30 sec) <li style="padding-left: 20px;">√DOOR – RDY,blank,OP (~63 sec) |
| R13L | <ol style="list-style-type: none"> 6. PL BAY DR – STOP |
| POST-PLBD OPENING CLEANUP | |
| CRT4 | <ol style="list-style-type: none"> 7. PL BAY DOOR SYS (two) – DSBL √OP/CL STATUS (ten) – OP 8. AC POWER OFF – ITEM 2 EXEC (*) 9. SM, OPS 201 PRO (if PASS SM) 4: SM ANTENNA |
| A7U | <ol style="list-style-type: none"> 10. After floodlights ON > 10 min:
PL BAY FLOOD (all) – OFF |

MANUAL PLBD OPENING PROCEDURE

- | | |
|---|---|
| MS CRT4 | <ol style="list-style-type: none"> 1. SM, OPS 202 PRO or BFS, SM 63 PL BAY DOORS
4: SM PL BAY DOORS |
| R13L
CRT4 | <ul style="list-style-type: none"> √PL BAY DR – STOP √PBD SW – STOP √MAN SEL (ten) – (no *) √PBD SW BYPASS – (no *) |
| R13L
CRT4 | <ol style="list-style-type: none"> 2. AC POWER ON – ITEM 1 EXEC (*) √AUTO MODE SEL – (no *) 3. PL BAY DR SYS (two) – ENA √OP/CL STATUS (ten) – CL |
| OPEN C/L LATCHES | |
| R13L
CRT4 | <ol style="list-style-type: none"> 4. Select CENTER LATCHES 5-8,9-12 – ITEM 4,5 EXEC (*) 5. PL BAY DR – OP √CENTER LATCHES 5-8,9-12 (two) – blank,OP (~20 sec) |
| R13L
CRT4 | <ol style="list-style-type: none"> 6. PL BAY DR – STOP 7. Deselect CENTER LATCHES 5-8,9-12 – ITEM 4,5 EXEC (no *) 8. Select CENTER LATCHES 1-4,13-16 – ITEM 6,7 EXEC (*) |
| R13L
CRT4 | <ol style="list-style-type: none"> 9. PL BAY DR – OP √CENTER LATCHES 1-4,13-16 (two) – blank,OP (~20 sec) |
| R13L
CRT4 | <ol style="list-style-type: none"> 10. PL BAY DR – STOP 11. Deselect CENTER LATCHES 1-4,13-16 – ITEM 6,7 EXEC (no *) |
| OPEN STBD FWD,AFT LATCHES & DOOR | |
| R13L
CRT4 | <ol style="list-style-type: none"> 12. Select STBD FWD,AFT LATCHES – ITEM 8,9 EXEC (*) 13. PL BAY DR – OP √STBD FWD,AFT LATCHES (two) – blank,OP (~30 sec) |
| R13L
CRT4 | <ol style="list-style-type: none"> 14. PL BAY DR – STOP 15. Deselect STBD FWD,AFT LATCHES – ITEM 8,9 EXEC (no *) 16. Select STBD DOOR – ITEM 10 EXEC (*) |
| R13L
CRT4 | <ol style="list-style-type: none"> 17. PL BAY DR – OP √STBD DOOR – RDY,blank,OP (~63 sec) |
| R13L
CRT4 | <ol style="list-style-type: none"> 18. PL BAY DR – STOP 19. Deselect STBD DOOR – ITEM 10 EXEC (no *) |
| OPEN PORT FWD,AFT LATCHES & DOOR | |
| R13L
CRT4 | <ol style="list-style-type: none"> 20. Select PORT FWD,AFT LATCHES – ITEM 11,12 EXEC (*) 21. PL BAY DR – OP √PORT FWD,AFT LATCHES (two) – blank,OP (~30 sec) |
| R13L
CRT4 | <ol style="list-style-type: none"> 22. PL BAY DR – STOP 23. Deselect PORT FWD,AFT LATCHES – ITEM 11,12 EXEC (no *) 24. Select PORT DOOR – ITEM 13 EXEC (*) |
| R13L
CRT4 | <ol style="list-style-type: none"> 25. PL BAY DR – OP √PORT DOOR – RDY,blank,OP (~63 sec) |
| R13L
CRT4 | <ol style="list-style-type: none"> 26. PL BAY DR – STOP 27. Deselect PORT DOOR – ITEM 13 EXEC (no *) |
| POST-PLBD OPENING CLEANUP | |
| R13L
CRT4 | <ol style="list-style-type: none"> 28. PL BAY DR SYS (two) – DSBL √OP/CL STATUS (ten) – OP 29. AC POWER OFF – ITEM 2 EXEC (*) 30. SM, OPS 201 PRO (if PASS SM) 4: SM ANTENNA |
| A7U | <ol style="list-style-type: none"> 31. After floodlights ON > 10 min:
PL BAY FLOOD (all) – OFF |

FUNCTION	PLBD CONTROL								PLBD DISPLAY MDM								
	Ref: MA73C:C&D for MCA cbs																
	MTR 1				MTR 2				C	C	O	O	C	R	R	R	O
	AC/ MCA	CNTL	MDM	SYS	AC/ MCA	CNTL	MDM	SYS	A	B	A	B	A	B	C		
LATCH																	
5-8	1/MID3	AB3/AB2	PL1	2	3/MID2	CA3/CA1	PL2	1	1	2	1	2					
9-12	1/MID1	AB3/AB1	PL1	1	3/MID4	CA3/CA2	PL2	2	1	2	1	2					
1-4	1/MID3	AB3/AB2	PL1	2	3/MID2	CA3/CA1	PL2	1	1	2	1	2					
13-16	3/MID4	CA3/CA2	PL2	2	2/MID2	BC3/BC1	PL1	1	2	1	2	1					
S FWD	1/MID1	AB3/AB1	PL1	1	2/MID4	BC3/BC2	PL2	2	1	2	1	2					
S AFT	3/MID4	CA3/CA2	PL2	2	2/MID2	BC3/BC1	PL1	1	2	1	2	1					
S DOOR	1/MID1	AB3/AB1	PL1	1	2/MID4	BC3/BC2	PL2	2									
													1	1	2	2	1
													2	1	2	2	2
P FWD	1/MID1	AB3/AB1	PL1	1	2/MID4	BC3/BC2	PL2	2	1	2	1	2					
P AFT	1/MID3	AB3/AB2	PL1	2	3/MID2	CA3/CA1	PL2	1	1	2	1	2					
													2	1	1	2	2
P DOOR	3/MID4	CA3/CA2	PL2	2	2/MID2	BC3/BC1	PL1	1					1	1	1	2	1

MIDDECK RECONFIGURATION

PRELIM MIDDECK CONFIG 2

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

INSTALL FILTERS

Don Sunglasses

Unstow,install: Side Hatch UV Filter and Locking Device, and Pyro Box Safing Pin

PRESS H2O TKA

ML26C SPLY H2O GN2 TK VENT vlv – PRESS
A SPLY vlv – OP

NOTE

Disregard possible 'S66 WASTE H2O PRES' fault msg

R14:A √cb MNB AUD MIDDECK SPKR – cl

COMM CONFIG

Unstow: headsets, handheld mic

MO42F MIDDECK SPKR AUD A/G 1 – T/R, tw-5
A/G 2 – RCV, tw-5
A/A – RCV, tw-5
ICOM A – T/R, tw-5
B – RCV, tw-5
√XMIT/ICOM MODE – PTT/PTT
√SPKR PWR – SPKR
√MSTR SPKR VOL – 8

MO39M √MIDDECK COMM CCU PWR – OFF
Connect HHMIC to CCU
MIDDECK COMM CCU PWR – ON

ML86B:C cb MNA EXT ARLK HTR LINE ZN1,2 (two) – cl
STRUC Z1/2/3 – cl
:E cb MNA FC PCM – op

FDF CONFIG

Stow in Helmet Bag: ASCENT Cue Cards, ASC, ASC PKT, SYS AOA
Unstow Jettison Stowage Bag, mark "Return to Houston"
Place Helmet Bag in Return to Houston Bag

Unstow VW Bags

MET	MS AFT ACTIONS
00:53	<u>SPECIALIST SEAT EGRESS</u>
00:57	<u>PRELIM MIDDECK CONFIG</u> 2
01:07	<u>WCS CONFIG/ACT</u> 5
01:08	<u>SWITCH CONFIG/GALLEY ACT</u> 6
01:41	<u>CLOTHING CONFIG</u> 10
01:45	<u>QUICKDON MASKS SETUP</u> 19
01:54	<u>SPECIALIST SEAT REMOVAL/STOWAGE</u>
01:59	<u>ESCAPE POLE STOWAGE</u> 13
02:01	<u>AIRLOCK SETUP FOR INGRESS</u> 15

CLOTHING CONFIG 10

Doff,stow:

Harness, Boots, LES

Stow gloves in Helmet

Remove radiation dosimeter from LES and insert in inflight garments

Doff,stow in Wet Trash:

UCD (clamp if used)

Emesis Bag, if used (unstow new bag)

QUICKDON MASKS SETUP 19

Connect QDM COMM to HIU

Connect QDM O2 to LEH hose

Verify operation

Temp stow QDM/HIU assembly

MIDDECK RECONFIGURATION

WCS CONFIG/ACT 5

WCS SWITCH CONFIGURATION

ML86B:A cb MNA H2O LINE HTR A - cl
 :B WASTE H2O DUMP ISOL - cl
 MNA,MNB VAC VENT ISOL VLV (two) - cl
 WCS CNTLR (two) - cl
 MNB VAC VENT NOZ HTR - cl
 :F MNA FLOODS WMC/MO13Q - cl

MA73C:E All cbs closed except:
 cb AC3 PL 3Φ - op

ML31C WASTE H2O DUMP ISOL VLV - OP (tb-OP)
 √VAC VENT ISOL VLV BUS SEL - MNA
 NOZ HTR - ON
 ISOL VLV CNTL - OP (tb-OP)

* If VAC VENT ISOL VLV CNTL tb - CL or bp: *
 * VAC VENT ISOL VLV BUS SEL - MNB *
 * CNTL - OP (tb-OP) *
 * If VAC VENT ISOL VLV CNTL tb still CL or bp: *
 * √MCC for further actions *

WCS ACTIVATION

WCS Foot/Toe Restraints - down,locked
 VAC VLV - OP
 Unstow urinal hose from Velcro strap, install hose in cradle
 √CRADLE - AUTO
 √MODE - AUTO
 FAN SEP SEL sw - 1
 Unstow hose from cradle (√Airflow)
 √WCS ON It - on
 Stow hose in cradle
 √WCS ON It - off
 Unstow,install WCS Container, Bag & Hose, Mirror, Elbow Bag
 Dispenser, First Day Clothing
 √Ventline mated in aux Wet Trash
 Perform URINE PRETREAT SETUP (Cue Card, URINE
 PRETREAT CHANGEOUT)

SWITCH CONFIG/GALLEY ACT 6

MA73C:F cb AC1 MAR 3Φ - cl
 :G cb AC3 GALLEY FAN (three) - cl

 ML86B:A All cbs closed except: MNB H2O LINE HTR B - op
 :B All cbs closed
 :E All cbs closed except: FLOOD TUNNEL ADAPTER (three) - op
 CO2 SYS 1,2 CNTLR, CO2 COMM INSTR - op
 FC PCM - op
 MAR 1 - op

 :F All cbs closed
 :G All cbs closed except: ESS1BC FLOOD TUNNEL ADAPTER 1 - op

 R11L:G SPLY H2O GALLEY SPLY VLV - OP (tb-OP)

 GALLEY H2O HTRS (two) - ON
 OVEN/RHS - ON

 Unstow,install Personal Hygiene Hose

ESCAPE POLE STOWAGE 13

Remove large Port Pin
 Slide back - Safing Latch
 Retract,hold Locking Pin (Ring)
 Remove Large Pin
 Release Locking Pin (Ring)
 Remove STBD Pip Pin
 Stow Pole
 Reinstall Large Pin

AIRLOCK SETUP FOR INGRESS 15

MA73C:G 1. cb AC 1,2 ARLK TNL FAN A,B (six) - cl
 MO13Q 2. AIRLK 2 - ON/OFF
 Inner Hatch 3. Equal vlv cap (two) - remove
 4. Open hatch per decal
 5. Equal vlv (two) - OFF, install caps
 Tunnel Ext 6. Unstow Airlock Fan Inlet duct from Tunnel Extension wall
 MDDK 7. Remove diffuser cap from Aft Middeck floor fitting and temp stow
 8. Attach one end of Airlock Fan Inlet duct to Airlock Fan muffler inlet,
 attach free end to Aft Middeck floor fitting
 AW18A 9. LTG FLOOD 1(3,4) - ON (as reqd)
 MO13Q 10. AIRLK FAN A - ON
 EXT A/L 11. √Airflow at top of external airlock halo
 12. √NEG CAB PRESS RELIEF vlv cover (two) - CL (pushed in)

ON-ORBIT SWITCH LIST

LEFT SEAT

L1..... 1-19
 L2..... 1-19

O6..... 1-19
 O7 1-20
 O8..... 1-20

O14..... 1-21
 O15..... 1-22

RIGHT SEAT

O16..... 1-22
 O8 1-20

R1 1-18

AFT

C5 1-22
 C6 1-22
 C7 1-22









A11..... 1-23

MIDDECK-FWD

ML86B..... 1-25

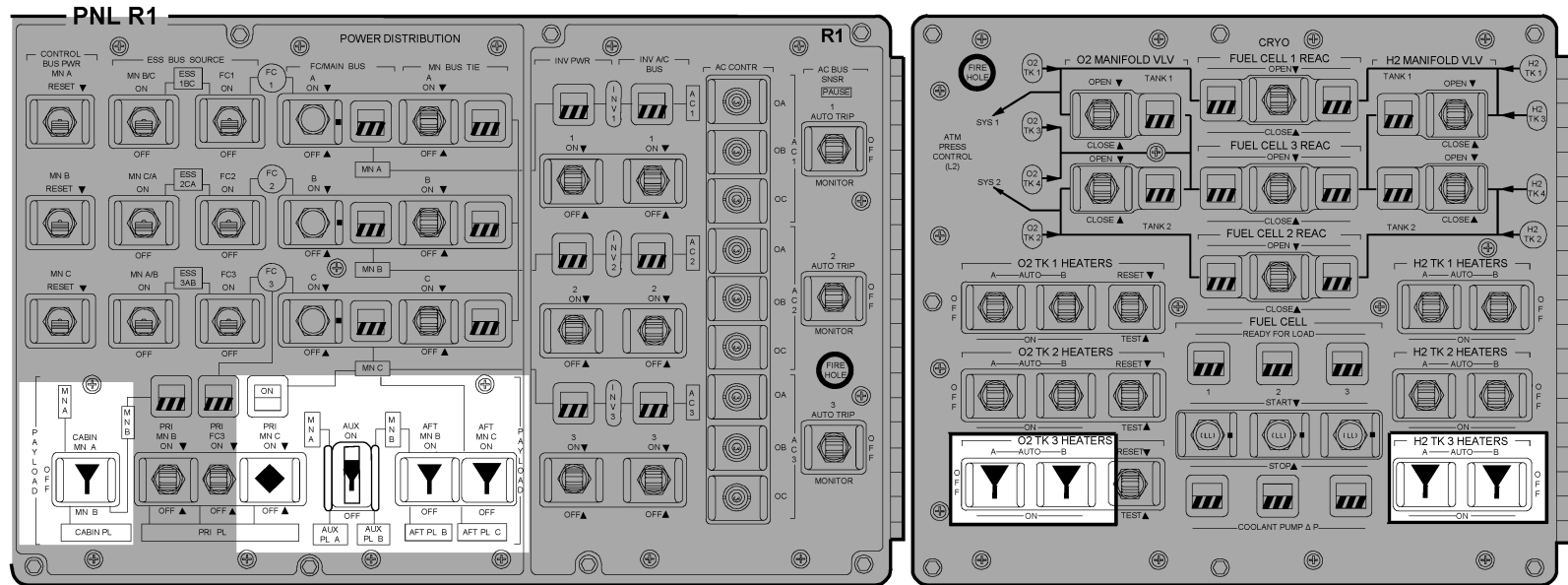
MIDDECK-AFT

MA73C 1-25
 MO32M 1-24
 MO69M 1-24
 MO63P 1-26

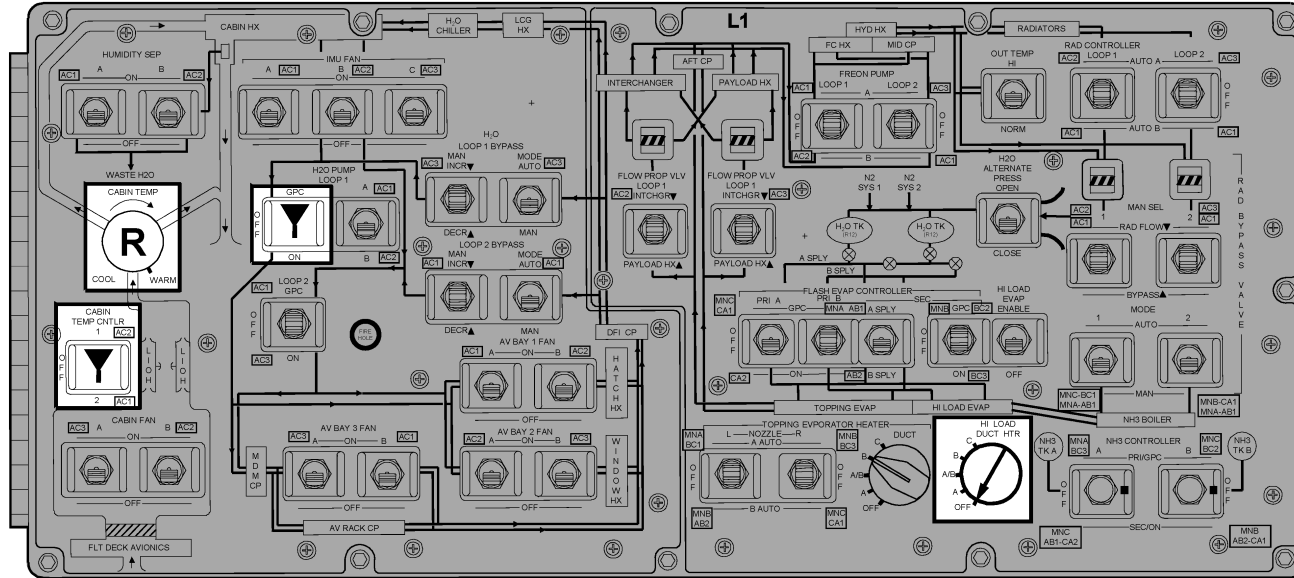
 - Up	R - As reqd	 - Indicates switch/display not checked during ON-ORBIT SWITCH/VERIF
 - Center	 - cb close	Switch/display pictorials are generic representations and are not intended to depict actual switch position. Check MCC if clarification reqd
 - Down	 - cb open	
 - Boxed items indicate switch configured during ON-ORBIT CONFIGURATION	 - White area indicates switch verified during ON-ORBIT SWITCH CONFIGURATION	

<u>CIRCUIT BREAKER SNAP RING COLOR CODES</u>	
<u>COLOR</u>	<u>CONFIGURATION</u>
Red	Open at all times
Green	Open on-orbit only
Yellow	Open ascent, close per procedure
Orange	Open orbit through entry
Blank (no ring)	Always closed or as required

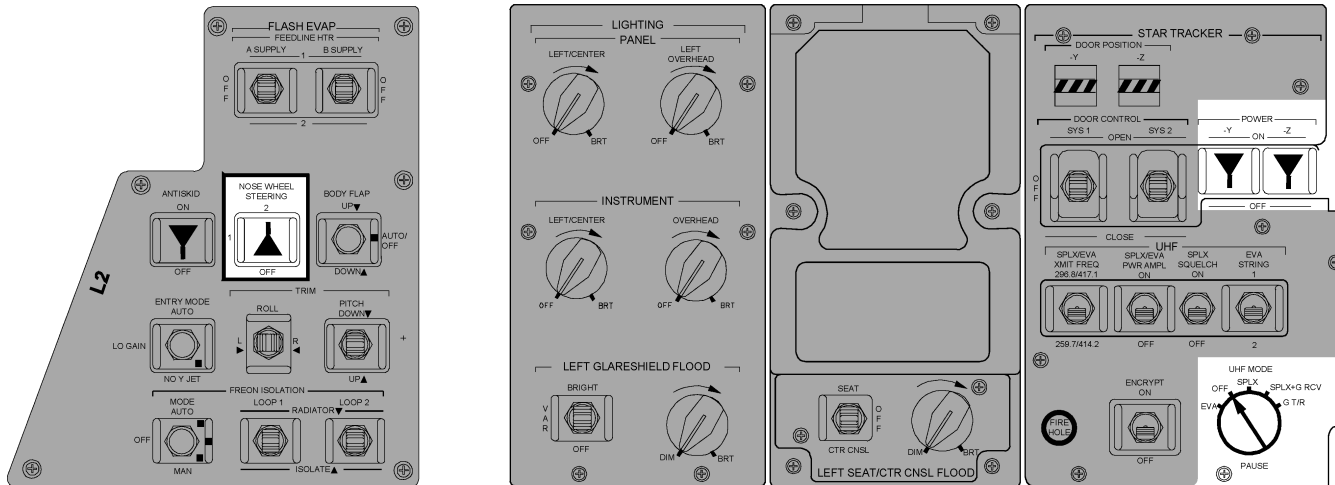
ALL VEH



ALL VEH

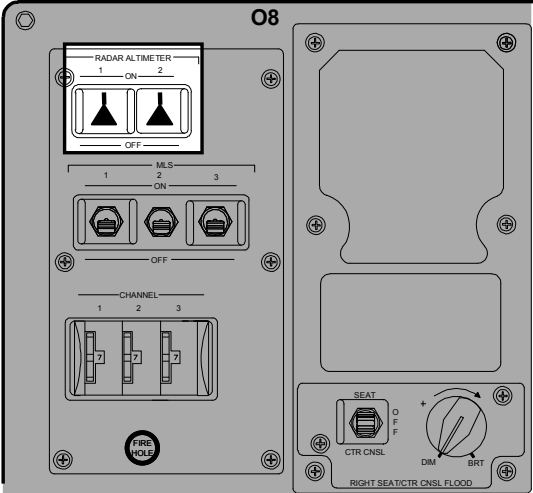
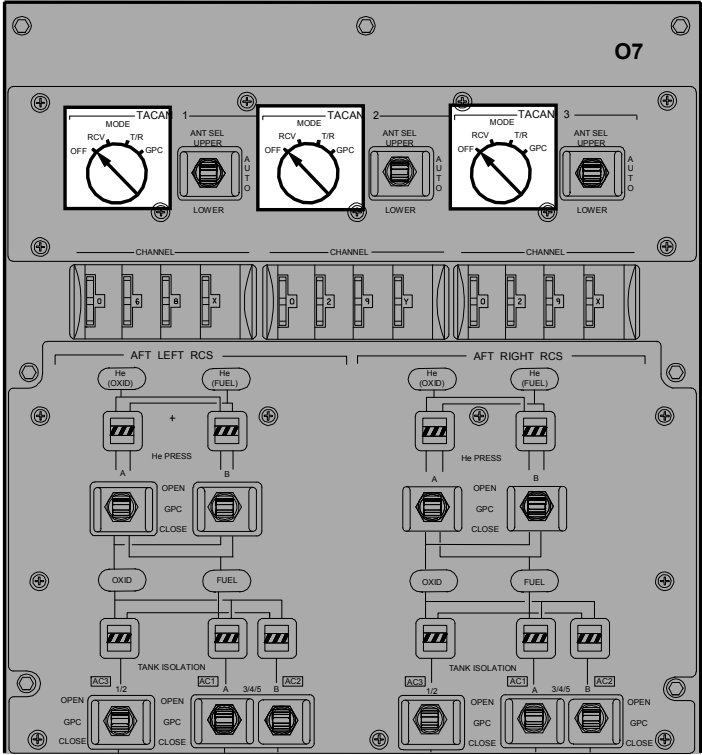


PNL O6

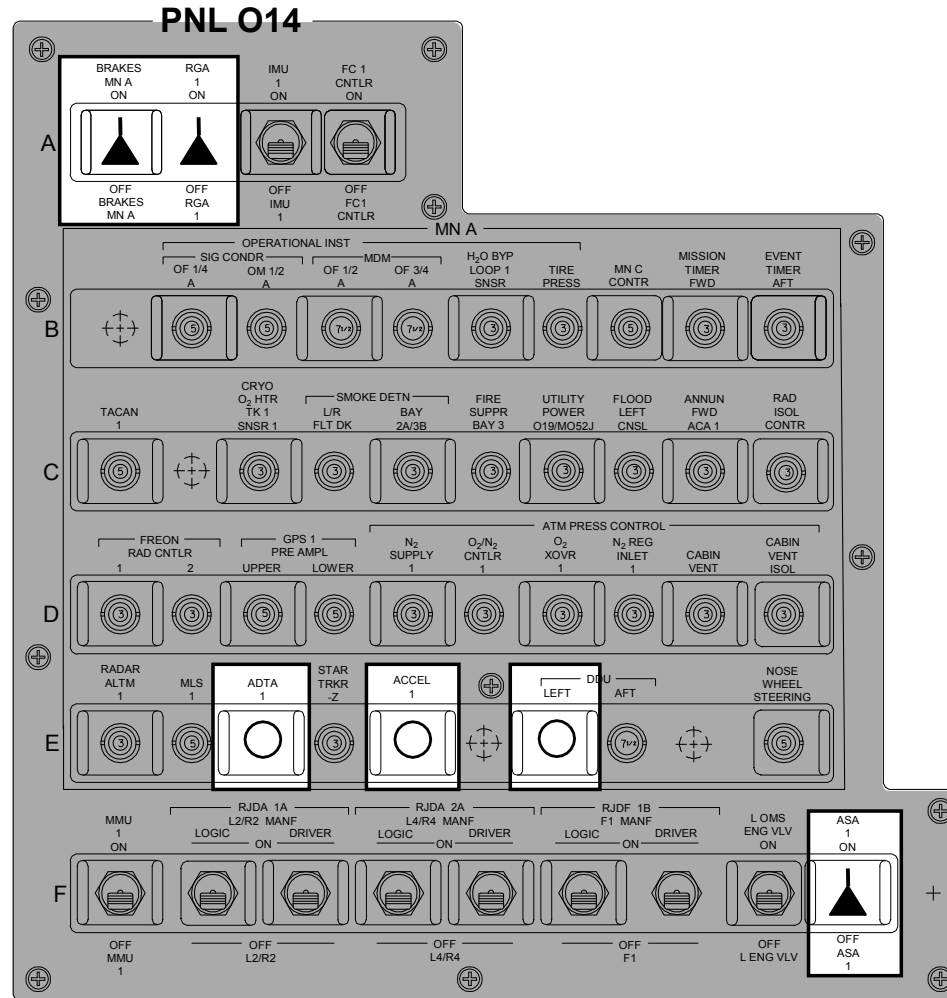


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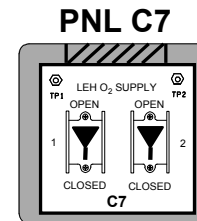
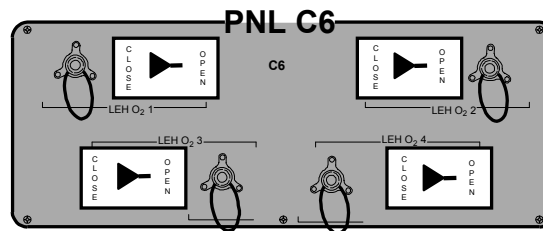
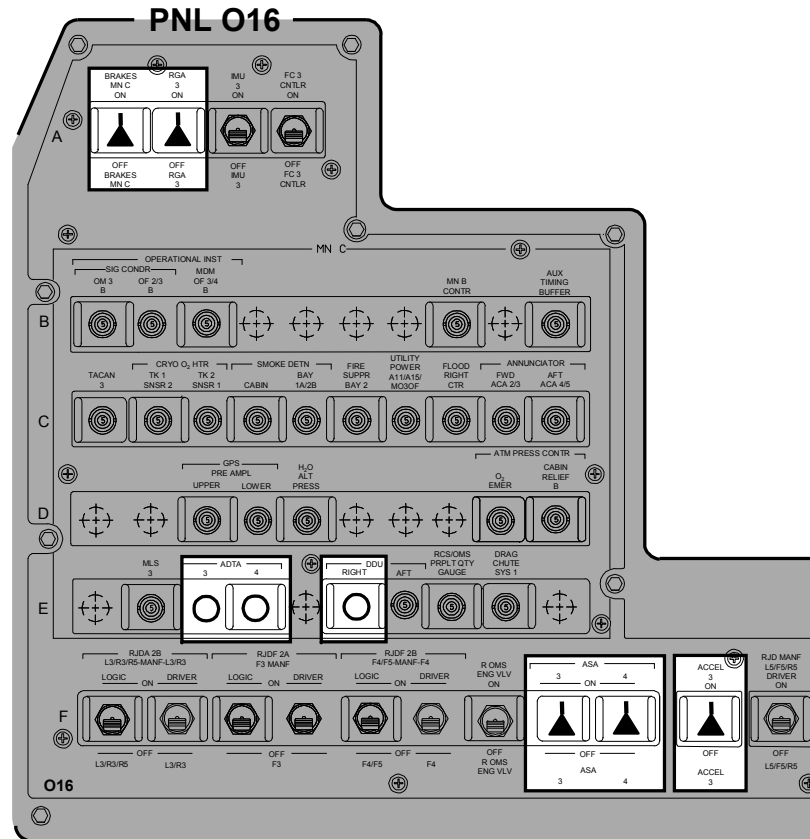
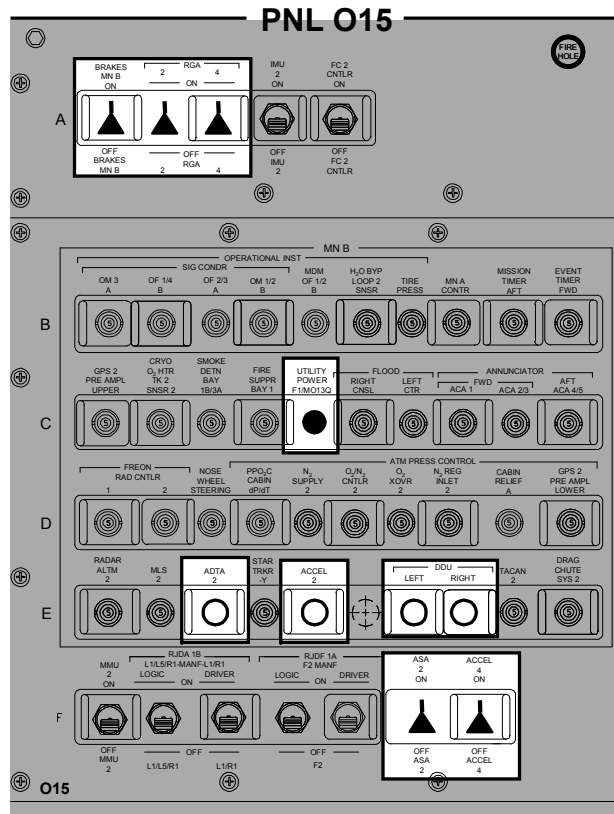
OV103, OV104



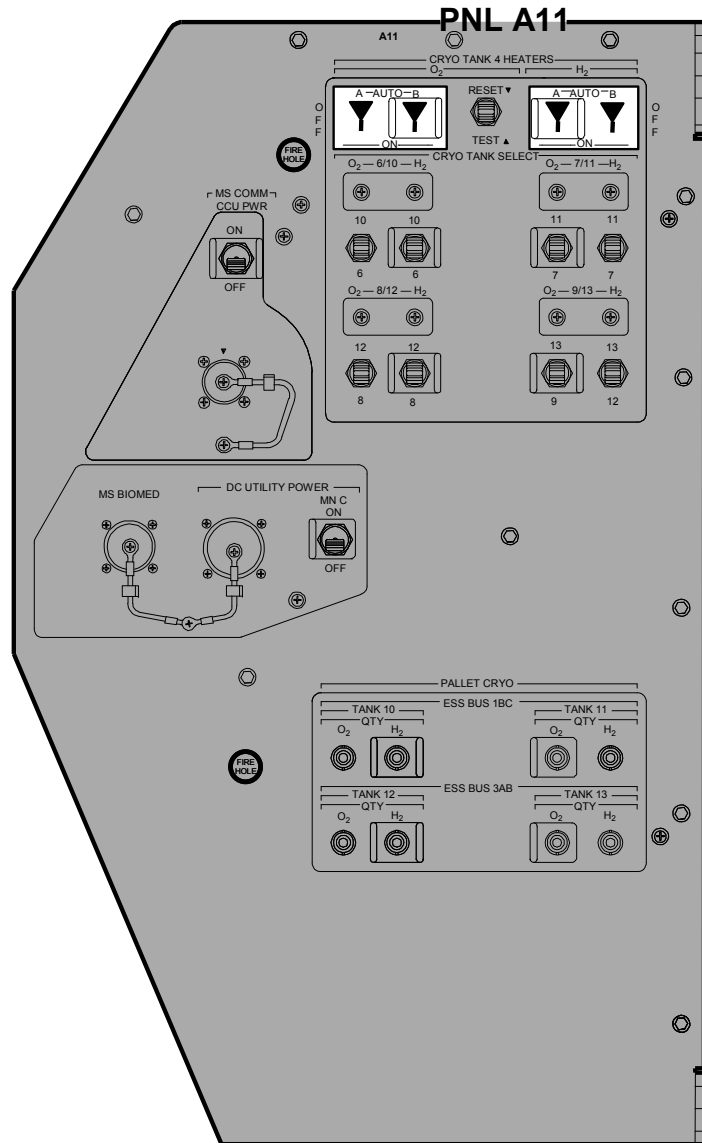
OV104



OV104

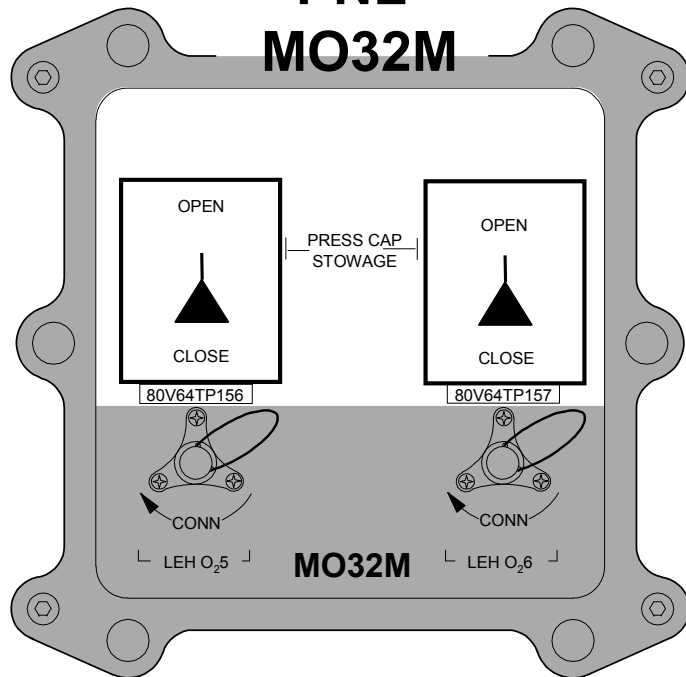


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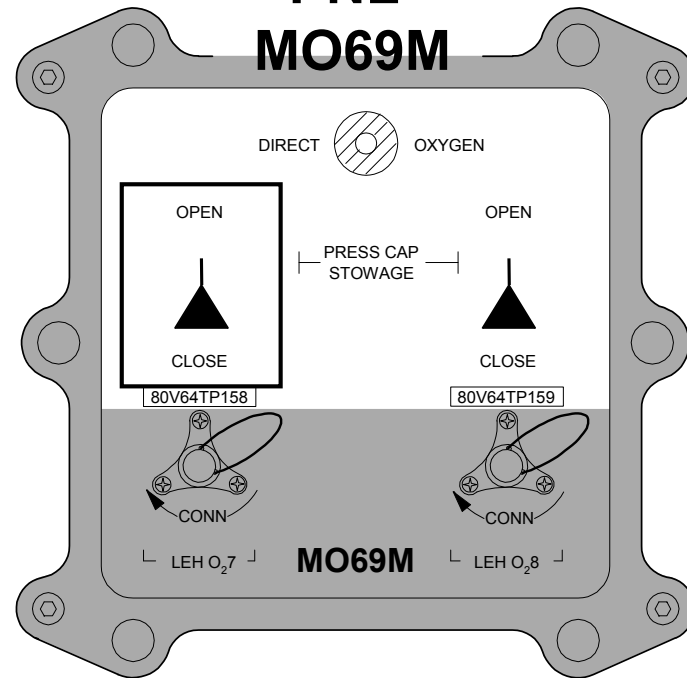


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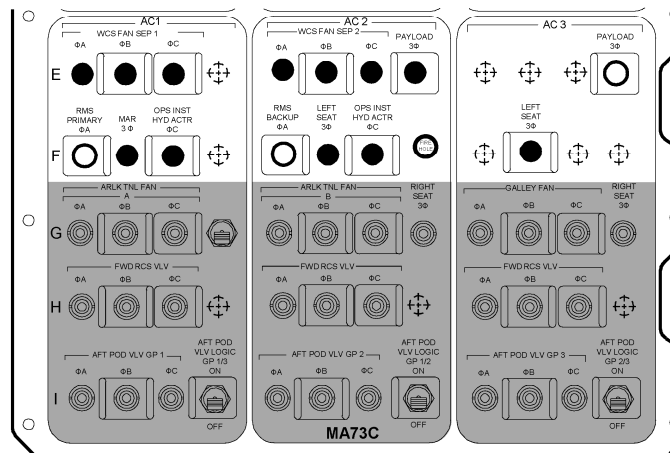
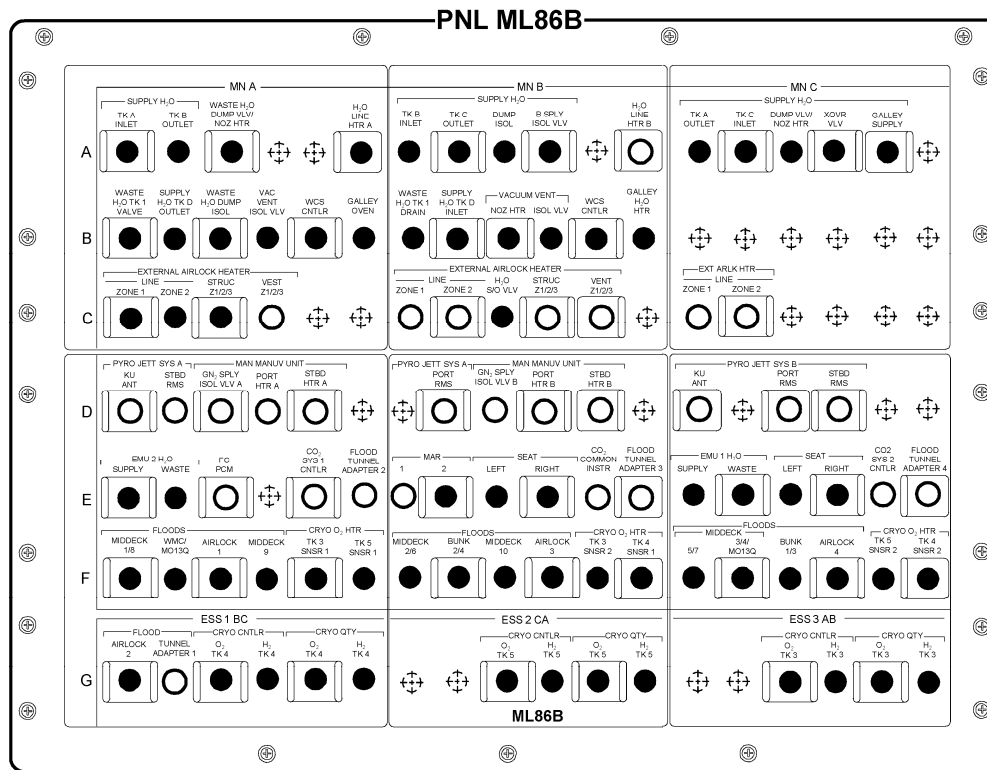
PNL MO32M



PNL MO69M

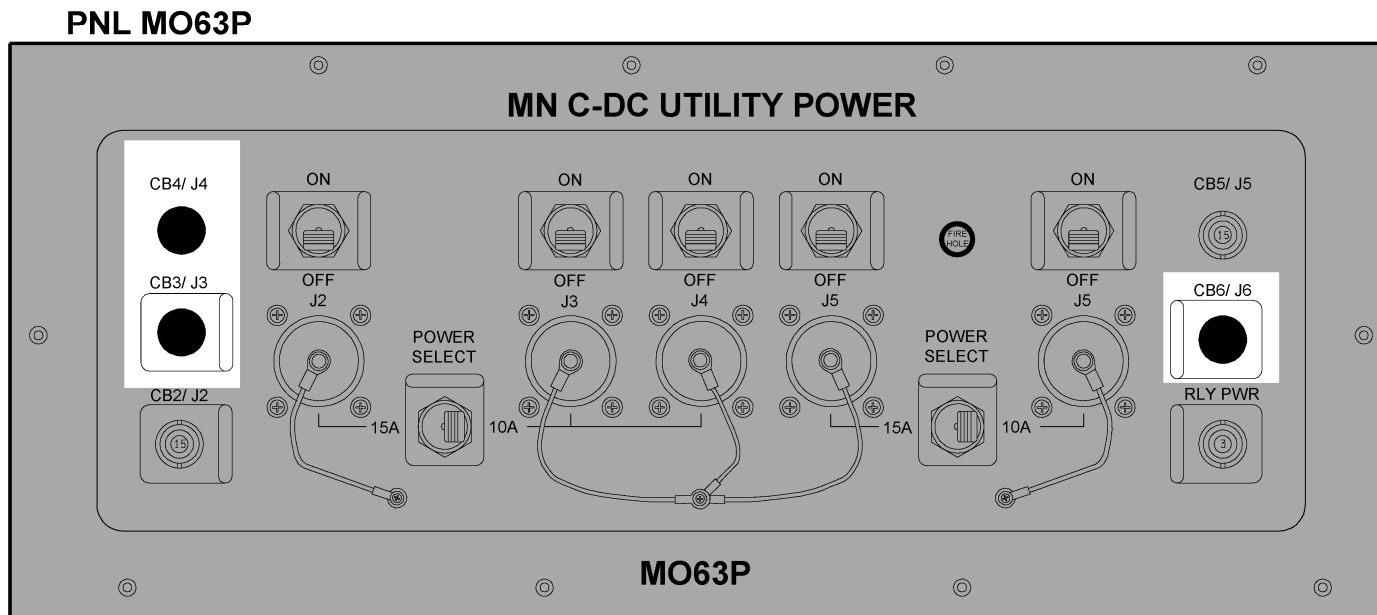


OV104



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OV103,OV104



ORBIT 5/6 DEORBIT

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**PEN AND INKS TO NOMINAL POST
INSERTION FOR ORBIT 5/6 DEORBIT**

WARNING

If AV BAY FIRE (ASC PKT, PWRDN or ORBIT PKT, PWRDN) has been completed and the associated AC BUS, FF MDM, or FMCA is not recovered, \sqrt MCC for Vent Door config. Certain failure combinations will cause multiple vent doors to remain open during entry

MET	ACTIVITY
ASAP	<p>Perform PRIORITY PWRDN GROUPS A & B (ORB PKT, <u>PRIOR PWRDN</u>) with following deltas:</p> <p style="padding-left: 40px;">DELETE: HI LOAD DUCT HTR OFF in Group A Pwrn PRI RJDs DRIVER & LOGIC OFF in Group B Pwrn</p> <p>When PRIORITY PWRDN is complete, return to Nominal Post Insertion, 1-5, completing all activities except the following:</p> <p style="padding-left: 40px;">MET 1:28 OPEN PLBDs MET 1:36 KU-BD ANT DEPLOY KU-BD ANT ACTIVATION MET 1:52 POST PLBD OPS RAD CONFIG MET 1:54 SPECIALIST SEAT REMOVAL/STOWAGE MET 1:57 ESCAPE POLE STOWAGE MET 2:01 AIRLOCK SETUP FOR INGRESS MET 2:05 CONFIG VERNIER DRIVERS</p>
1:00	<p><u>If Both Voice and Command Unavailable:</u> Perform GPS INCORPORATION (ORB OPS, <u>GNC</u>)</p>
2:12	<p><u>CONFIG CONTROLS FOR ON-ORBIT</u>, 1-17 thru 1-26 (SWITCH PICTORIALS) <u>NOTE:</u> Some of these switch throws will have been done during PRIORITY POWERDOWNS</p> <p>DELETE: HI LOAD DUCT HTR – OFF, on 1-19</p>
2:30	<p>Add following MNVR: <u>MNVR (TRK) –ZLV, +YVV</u> TG = 2 BV = 3 OM = 270</p>

**PEN AND INKS TO NOMINAL D/O
PREP FOR ORBIT 5/6 DEORBIT**

TIG-	ACTION	PROCEDURES
3:57	Delete	<u>COLDSOAK INITIATE</u> 2
3:35	Delete	<u>SPECIALIST SEAT INSTALLATION</u>
3:30	Move to TIG-2:30	<u>DPS CONFIG FOR D/O PREP</u> 4a
3:15	Move to TIG-2:20	<u>DED DISP ENT CONFIG</u> 6
3:00	Add	<u>GNC FRP-3 (MAL, GNC FRPs)</u> to recover IMU 2
2:56	Delete	<u>RAD BYPASS/FES C/O</u> (ORB OPS, <u>ECLS</u>)
2:55	Delete	<u>CONFIG FOR PLBD CLOSING</u> 7
2:40	Delete	<u>PLBD CLOSING</u> 9
2:40	Add	<u>PWRDN BACKOUT</u> (Group A & B) (ORB PKT, <u>PRIOR PWRDN</u>) (Delete IMU 2 recovery step)
2:26	Delete	<u>POST CLOSING CONFIG</u> 10

CUE CARD CONFIG

**CUE CARD
CONFIG**

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TOP

AFT FLIGHT DECK RECONFIGURATION

CONFIG FOR PLBD OPERATIONS 4

A6U **SET UP LIGHTS**
ANNUN BUS SEL – MNC

NOTE

Minimum operating time for PLB Floodlights is 10 min.
Light must be OFF for minimum of 10 min UNBLOCKED,
16 min BLOCKED prior to reuse. ~3 min to full bright

A7U PL BAY FLOOD AFT (two) – OFF
MID (two) – ON
FWD (two) – ON
BHD – ON

Record MET: ____/____:____:____

- * If PLB Floodlight not ON to full bright within 5 min: *
- * (Aff) PL BAY FLOOD – OFF *

SET UP P/TV

Perform ACTIVATION, OPERATION (Cue Card, TV)

If PLBD video rec desired:

Perform PLBD VTR RECORDING (Cue Card)

RESET C/W 16

R13U			
PARAMETER NAME	C/W CH	LOWER LIMIT	UPPER LIMIT
FREON LOOP EVAP OUT T1	107	--	1.90V/64.8 deg
T2	117	--	1.90V/64.8 deg

R13U		
PARAMETER NAME	C/W CH	ENA/INH
MPS He TK P C	9	INH
L	19	INH
R	29	INH
MPS He REG P C	39	INH
L	49	INH
R	59	INH
HYD P 1	99	INH
2	109	INH
3	119	INH

CLOTHING CONFIG 10

Doff, stow:

Harness, Boots, LES

Stow gloves in Helmet

Remove radiation dosimeter from LES and insert in inflight garments

Doff, stow in Wet Trash:

UCD (clamp if used)

Emesis Bag, if used (unstow new bag)

PI-1b/135/O/B

(reduced copy)

CC 3-4

PI/135/FIN

HOOK
VELCRO

HOOK
VELCRO

HOOK
VELCRO

HOOK
VELCRO

HOOK
VELCRO

HOOK
VELCRO

MIDDECK RECONFIGURATION

PRELIM MIDDECK CONFIG 2

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

INSTALL FILTERS

Don Sunglasses
Unstow,install: Side Hatch UV Filter and Locking Device, and Pyro Box Safing Pin

PRESS H2O TKA
ML26C SPLY H2O GN2 TK VENT vlv - PRESS
A SPLY vlv - OP

NOTE

Disregard possible 'S66 WASTE H2O PRES' fault msg

R14:A √cb MNB AUD MIDDECK SPKR - cl

COMM CONFIG

Unstow: headsets, handheld mic
MO42F MIDDECK SPKR AUD A/G 1 - T/R, tw-5
A/G 2 - RCV, tw-5
A/A - RCV, tw-5
ICOM A - T/R, tw-5
B - RCV, tw-5
√XMIT/ICOM MODE - PTT/PTT
√SPKR PWR - SPKR
√MSTR SPKR VOL - 8

MO39M √MIDDECK COMM CCU PWR - OFF
Connect HHMIC to CCU
MIDDECK COMM CCU PWR - ON

ML86B:C cb MNA EXT ARLK HTR LINE ZN1,2 (two) - cl
STRUC Z1/2/3 - cl
:E cb MNA FC PCM - op

FDF CONFIG

Stow in Helmet Bag: ASCENT Cue Cards, ASC, ASC PKT, SYS AOA
Unstow Jettison Stowage Bag, mark "Return to Houston"
Place Helmet Bag in Return to Houston Bag

Unstow VW Bags

MET	MS AFT ACTIONS
00:53	SPECIALIST SEAT EGRESS
00:57	PRELIM MIDDECK CONFIG 2
01:07	WCS CONFIG/ACT 5
01:08	SWITCH CONFIG/GALLEY ACT 6
01:41	CLOTHING CONFIG 10
01:45	QUICKDON MASKS SETUP 19
01:54	SPECIALIST SEAT REMOVAL/STOWAGE
01:59	ESCAPE POLE STOWAGE 13
02:01	AIRLOCK SETUP FOR INGRESS 15

CLOTHING CONFIG 10

Diff, stow:
Harness, Boots, LES
Stow gloves in Helmet
Remove radiation dosimeter from LES and insert in inflight garments

Diff, stow in Wet Trash:
UCD (clamp if used)
Emesis Bag, if used (unstow new bag)

QUICKDON MASKS SETUP 19

Connect QDM COMM to HIU
Connect QDM O2 to LEH hose
Verify operation
Temp stow QDM/HIU assembly

PI-2a/135/O/B

MIDDECK RECONFIGURATION

WCS CONFIG/ACT 5

WCS SWITCH CONFIGURATION

ML86B:A cb MNA H2O LINE HTR A - cl
 :B WASTE H2O DUMP ISOL - cl
 MNA,MNB VAC VENT ISOL VLV (two) - cl
 WCS CNTLR (two) - cl
 MNB VAC VENT NOZ HTR - cl
 :F MNA FLOODS WMC/MO13Q - cl

MA73C:E All cbs closed except:
 cb AC3 PL 3Φ - op

ML31C WASTE H2O DUMP ISOL VLV - OP (tb-OP)
 √VAC VENT ISOL VLV BUS SEL - MNA
 NOZ HTR - ON
 ISOL VLV CNTL - OP (tb-OP)

- * If VAC VENT ISOL VLV CNTL tb - CL or bp: *
- * VAC VENT ISOL VLV BUS SEL - MNB *
- * CNTL - OP (tb-OP) *
- * If VAC VENT ISOL VLV CNTL tb still CL or bp: *
- * √MCC for further actions *

WCS ACTIVATION

WCS Foot/Toe Restraints - down,locked
 VAC VLV - OP
 Unstow urinal hose from Velcro strap, install hose in cradle
 √CRADLE - AUTO
 √MODE - AUTO
 FAN SEP SEL sw - 1
 Unstow hose from cradle (√Airflow)
 √WCS ON It - on
 Stow hose in cradle
 √WCS ON It - off
 Unstow,install WCS Container, Bag & Hose, Mirror, Elbow Bag
 Dispenser, First Day Clothing
 √Ventline mated in aux Wet Trash
 Perform URINE PRETREAT SETUP (Cue Card, URINE
 PRETREAT CHANGEOUT)

SWITCH CONFIG/GALLEY ACT 6

MA73C:F cb AC1 MAR 3Φ - cl
 :G cb AC3 GALLEY FAN (three) - cl

ML86B:A All cbs closed except: MNB H2O LINE HTR B - op
 :B All cbs closed
 :E All cbs closed except: FLOOD TUNNEL ADAPTER (three) - op
 CO2 SYS 1,2 CNTLR, CO2 COMM INSTR - op
 FC PCM - op
 MAR 1 - op

:F All cbs closed
 :G All cbs closed except: ESS1BC FLOOD TUNNEL ADAPTER 1 - op

R11L:G SPLY H2O GALLEY SPLY VLV - OP (tb-OP)

GALLEY H2O HTRS (two) - ON
 OVEN/RHS - ON
 Unstow,install Personal Hygiene Hose

ESCAPE POLE STOWAGE 13

Remove large Port Pin
 Slide back - Safing Latch
 Retract,hold Locking Pin (Ring)
 Remove Large Pin
 Release Locking Pin (Ring)
 Remove STBD Pip Pin
 Stow Pole
 Reinstall Large Pin

AIRLOCK SETUP FOR INGRESS 15

- | | | |
|-------------|-----|---|
| MA73C:G | 1. | cb AC 1,2 ARLK TNL FAN A,B (six) - cl |
| MO13Q | 2. | AIRLK 2 - ON/OFF |
| Inner Hatch | 3. | Equal viv cap (two) - remove |
| | 4. | Open hatch per decal |
| | 5. | Equal viv (two) - OFF, install caps |
| Tunnel Ext | 6. | Unstow Airlock Fan Inlet duct from Tunnel Extension wall |
| MDDK | 7. | Remove diffuser cap from Aft Middeck floor fitting and temp stow |
| | 8. | Attach one end of Airlock Fan Inlet duct to Airlock Fan muffler inlet, attach free end to Aft Middeck floor fitting |
| AW18A | 9. | LTG FLOOD 1(3,4) - ON (as reqd) |
| MO13Q | 10. | AIRLK FAN A - ON |
| EXT A/L | 11. | √Airflow at top of external airlock halo |
| | 12. | √NEG CAB PRESS RELIEF viv cover (two) - CL (pushed in) |

PI-2b/135/O/A



POST INSERTION

**STS
135**