ASCENT CHECKLIST

STS 8

CONTENTS PAGE

PRELAUNCH PROCEDURES..... 1-1
ASCENT FLIP BOOK & CONTINGENCY CARDS..... 2-1
POST OMS 1 BURN PROCEDURES..... 3-1
DELAYED OMS 1 BURN PROCEDURES..... 4-1
OMS 2 BURN PROCEDURES..... 5-1
POST OMS 2 BURN PROCEDURES..... 6-1
ABORT ONCE AROUND (AOA) PROCEDURES..... 7-1
OMS TARGETS AND AOS/LOS..... 8-1
WEATHER PADS..... 9-1
SWITCH LIST..... 10-1
ASCENT CUE CARDS..... 11-1

This Page Intentionally Blank

RECYCLE PROCEDURES

NOTE

These recycle procedures will be used inside T-5 min

B W1/W6 ✓16mm Camr (two) - off

Test Conductor calls for APU Shutdown and Heater Activation (Aerosurface positioning complete)

P **APU SHUTDOWN**

R2 APU CNTL (three) - OFF
FUEL TK VLV (three) - CL
✓CNTLR PWR (three) - ON

C **HEATER ACTIVATION**

L2 FLASH EVAP FDLN HTR (two) - 2

Report APU Shutdown and Heater Activation Complete

NOTE

Numerous non time-critical steps for recycle will be individually called by the Test Conductor

-2:15:00 **PRE-INGRESS SW RECONFIGURATION**

NOTE

ASP configures OI PCMMU PWR - 1***(C3), RCS/OMS HTR FWD, AFT RCS JET 1,2,3,4 (eight) - OFF (A14), ESS BUS SOURCE FC (three) - ON, AC BUS SNSR (three) - OFF (1 sec) then AUTO TRIP (R1)

-1:50:00 A (-2:10:00) **INGRESS ORBITER & SEATS**

NOTE

During seat ingress COMM PWR - ON (L5, R6)
CCU PWR - ON (A11, A15, M039M)

O5/09 AUD VOX SENS (four) - adj as reqd
R10/L9 Contact LCC (OTC & NTD) on A/G 1
M042F

-1:45:00 (-2:05:00) **POST INGRESS SW RECONFIGURATION**

NOTE

ASP turns on RCS 1,2,3,4 DRIVERS (eight) (014,015 & 016), OMS ENG VLV (two) (014,016), GPC OUTPUT 5 - B/U (06)

Install ASC Flip Cards and Ascent ADI Cards

✓Cue Card positions

-1:35:00 (-1:55:00)

NOTE

ASP doing C/W VOL adjust, expect MA

1: GNC GPC MEMORY	2: GNC 104 GND IMU CNTL/MON
3: GNC 1 OPS UTILITY	

-1:30:00 A (-1:50:00) **ASTRO COMM CHECK**

LCC will contact CDR, PLT, MS1 & MS2 on A/G 2, ICOM A, ICOM B then A/A

A **A/G VOICE CHECK**

B

A/G 1 Voice Check
05/09 L,R AUD A/G 2 (two) - OFF
A/A (two) - OFF
Voice check with MCC

A/G 2 Voice Check
L,R AUD A/G 2 (two) - T/R
A/G 1 (two) - OFF
Voice check with MCC

A/A Voice Check
L,R AUD A/A (two) - T/R
A/G 2 (two) - OFF
Voice check with MCC

A

Simo Voice Check (Launch Config)
L,R AUD A/G 1 (two) - T/R
A/G 2 (two) - T/R
Voice check with MCC

NOTE
Side hatch closure

-1:10:00 C (-1:30:00) **CABIN LEAK CHECK**

L2 CAB VENT ISOL - OP (tb-OP)
✓VENT tb - CL

01 ✓CAB PRESS - increasing to 16.7 (MA)

|1: GNC GPC MEMORY |2: GNC 104 GND IMU CNTL/MON|
|3: GNC 1 DPS UTILITY |

-1:01:00 **(DEU Equivalent)**
(-1:21:00)

✓|2: GNC 104 GND IMU CNTL/MON|

NOTE
IMU preflight align begins

NOTE
Flt crew functions from this point on will be initiated by a call from the OTC to proceed. The flt crew will report back to the OTC after completion

-50:00 P **H2O BOILER PREACTIVATION**
(-1:10:00)

R2 BLR CNTLR (three) - ON
N2 SPLY (three) - ON

NOTE
Vent vlv operation may occur earlier or later at LCC direction

-45:00 C **CABIN VENT REDUNDANCY CHECK**
(-1:05:00)

L2 CAB VENT ISOL - CL (th-CL)
VENT - OP (th-OP)

-32:00 C **PASS/BFS TRANSFER PREP**
(-52:00)

|3: GNC GPC MEMORY |

06 GPC S MODE - STBY (th-RUN)
C3 ✓BFC CRT SEL - 3+1
DISP - ON

|3: BFS, GNC BFS MEMORY |

CRT3 PASS/BFS XFER ENA - ITEM 25 EXEC

|1: GNC GPC MEMORY |2: GNC 104 GND IMU CNTL/MON|
|3: BFS, GNC BFS MEMORY |

-30:00 (-50:00) **OMS GN2 PRESS**

C3 OMS ENG (two) - ARM/PRESS

CABIN VENT

L2 CAB VENT ISOL - OP (tb-OP) (klaxon)

✓VENT tb - OP

01 ✓CAB PRESS - decreasing

-25:00 (-45:00) A **A/G VOICE CHECK**

Simo Voice Check (Launch Config)
Voice check with MCC

Update Abort Winds Pad, ASC Flip Book, and ATTM, 1-7 (if reqd)

-22:00 (-42:00) **PASS/BFS TRANSFER (DEU Equivalent)**
(ONE-SHOT TRANSFER)

|1: GNC 100 GTS DISPLAY|

CRT3 ✓ITEM 25 - (no *)

01 Report cabin pressure to OTC

NOTE
Vent vlv closure may occur earlier or later at LCC direction

-21:00 (-41:00) C **CLOSE VENT VLVS**

L2 CAB VENT ISOL - CL (tb-CL)
VENT - CL (tb-CL)

1: GNC 100 GTS DISPLAY	2: GNC 104 GND IMU CNTL/MON
3: BFS, GNC BFS MEMORY	

NOTE
At T-20 there will be a planned 10 minute hold

-20:00 (-30:00) **OPS 1 LOAD (DEU Equivalent)**

1: GNC LAUNCH TRAJ	2: GNC LAUNCH TRAJ
1: GNC 0 GPC MEMORY	

1: GNC FAULT

Report faults other than from unpowered equipment

CRT1 GNC, SPEC 99 PRO

NOTE
Gnd-Controlled Fuel Cell Purge

-19:00 (-29:00) **BFS to OPS 1**

3: BFS, GNC FAULT

CRT3 GNC, SPEC 99 PRO

06 GPC 5 MODE - RUN (tb-RUN)

CRT3 GNC, OPS 101 PRO

3: BFS, GNC LAUNCH TRAJ 1
3: BFS, GNC FAULT

Report faults other than from unpowered equipment

CRT3 GNC, SPEC 99 PRO

1: GNC FAULT	2: GNC LAUNCH TRAJ
3: BFS, GNC FAULT	

P **HORIZ SIT CONFIG**

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

ALTM - ITEM 9 * 29.87

		PASS ITEM		BFS ITEM	
PTI EXEC	INH	2✓			
RWY	KSC 15	3*✓	KSC 15	3*✓	
	KSC 33	4✓	KSC 33	4✓	
	(TAL)	5✓		5✓	

* If RWY KSC 33 selected: *
* 08 MLS CH tw (three) - 6 *

G&N	OVHD	6✓	OVHD	6✓
NEP	NEP	7✓	NEP	7✓
AIM	NOM	8✓	NOM	8✓
TAC	INH	20✓	INH	20✓
DRAG H	AUT	22✓	AUT	22✓
ADTA H	INH	26✓	INH	26✓
ADTA TO G&C	INH	29✓	AUT	28✓
TAC	DELTA	35✓		-
HUD	Blank	37✓		-
	Blank	38✓		-

1: GNC LAUNCH TRAJ	2: GNC SYS SUMM 1
3: BFS, GNC SYS SUMM 2	

-16:00
(-26:00)

MPS He RECONFIGURATION

R2 MPS He ISOL A,B (six) - OP
PNEU He ISOL - OP

1: GNC LAUNCH TRAJ	2: GNC SYS SUMM 1
3: BFS, GNC SYS SUMM 2	

CONFIG OMS/RCS XFEED VLVS

NOTE
OMS/RCS XFEED vlvs are reconfigured for launch by LPS

C CRT3 Report RCS QTYs F,L,R OXID, FU

3: BFS, SM SYS SUMM ?

NOTE
At T-9 there will be a planned 10 min hold

WEATHER UPDATE (if reqd)

Update Abort winds, RWY and ALTM setting

-9:00 **'GO FOR LAUNCH' - All**

C2 EVENT TIMER - START
F7 ✓EVENT TIME ind - counting down

NOTE
GLS starts

-8:00 P **AC SNSR TO MONITOR**

R1 AC BUS SNSR (three) - OFF (1 sec), then MONITOR

-7:00 NOTE
ACCESS ARM RETRACT

✓Seat in launch position

1: GNC LAUNCH TRAJ	2: GNC SYS SUMM 1
	3: BFS, SM SYS SUMM 2

-6:00 P **APU PRE START**

R4 ✓HYD LG RET/CIRC VLV - CL

R2 ✓BLR N2 SPLY (three) - ON
✓CNTLR (three) - ON
✓CNTLR PWR/HTR (three) - A
✓APU FUEL TK VLV (three) - CL
✓PUMP/VLV COOL (two) - OFF

APU CNTLR PWR (three) - ON
✓HYD CIRC PUMP (three) - GPC
MN PUMP PRESS (three) - LO
✓APU AUTO SHUT DN - ENA
✓SPEED SEL (three) - NORM
✓CNTL (three) - OFF

APU FUEL TK VLV (three) - OP
✓APU/HYD RDY tb (three) - gray

* If any tb not gray, *
* consult LCC before *
* continuing *

-5:00 ▸ **APU START**

R2 APU CNTL (three) - START/RUN

F8 ✓HYD PRESS ind (three) - LO green

R2 ✓READY TO START tb (three) - bp
HYD MN PUMP PRESS (three) - NORM

F8 ✓HYD PRESS ind (three) - HI green

R2 HYD CIRC PUMP (three) - OFF

F7 ✓HYD PRESS lt - off

1: GNC LAUNCH TRAJ	2: GNC SYS SUMM 1
3: BFS, SM SYS SUMM 2	

C **HTR RECONFIG**

L2 FLASH EVAP FDLN HTR (two) - OFF

3: BFS, SM SYS SUMM 1

-4:00 A **CLOSE VISOR**

NOTE
Motion/Vibration may be felt in crew module due to Main Engine gimbal profile cks at -3:25 and move to start at -3:10

-2:30 P **CLEAR C/W MEMORY**

2: GNC 99 FAULT
3: BFS, GNC 99 FAULT

Verify no unexpected errors
CRT2 GNC, SPEC 99 PRO
CRT3 GNC, SPEC 99 PRO

1: GNC LAUNCH TRAJ	2: GNC SYS SUMM 1
3: BFS, GNC SYS SUMM 1	

C3 C/W MEM - CLEAR

-00:30 B W1/W6 16mm Camr (two) - on

POST OMS 1 BURN PROCEDURES

1: GNC OMS 1 MNVR EXEC	2: GNC OMS 1 MNVR EXEC
3: BFS, GNC SYS SUMM 2	

C **POST BURN STATUS**

NOMINAL

Δ TIG

POST OMS 1

B F7/F8 FLT CNTLR PWR (two) - OFF
C3 ✓DAP - AUTO

* C **ALPHA MANAGEMENT (if reqd)** *
*
* If underspeed ATO or AOA-S OMS 1: *
* Maneuver to LVLH R180, P340, Y000 *
* (maintain LVLH P = ±20) *
* After 10 minutes: *
* Maneuver to LVLH P = 340 *
* After 10 minutes: *
* Maneuver to Burn Attitude *

P **APU/HYD SHUTDOWN (Not AOA)**

F4 ✓BDY FLP pb - lt off (MPS stowed)
(~2 min 21 sec)
R4 HYD MPS/TVC ISOL VLV (three) - CL
(tb-CL)
R2 ✓APU AUTO SHUT DN - ENA
BLR CNTLR (three) - OFF
APU CNTL (three) - OFF (MA)
FUEL TK VLV (three) - CL
✓CNTLR PWR (three) - ON
BLR N2 SPLY (three) - OFF
APU FUEL PUMP/VLV COOL A - AUTO

1: GNC OMS 2 MNVR EXEC	2: GNC OMS 2 MNVR EXEC
3: BFS, GNC OMS 2 MNVR EXEC	

HYD DEPRESS (ACA only)

P

F4 ✓BDY FLP pb - lt off (MPS stowed)
(~2 min 21 sec)

R4 HYD MPS/TVC ISOL VLV (three) - CL
(tb-CL)

R2 ✓APU SPEED SEL (three) - NORM
✓AUTO SHUT DN - ENA
HYD MN PUMP PRESS (three) - LO (MA)

FES & HEATER ACTIVATION

C L1 FLASH EVAP CNTLR PRI A - ON
(not AOA)

L2 FLASH EVAP FDLN HTR (two) - 1

P R1 O2 TK1,2 HTRS A (two) - AUTO
H2 TK1,2 HTRS A (two) - AUTO

AC BUS SNSR

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

MAJOR MODE CHANGE

CRT1 GNC, OPS 105 PRO

1: GNC OMS 2 MNVR EXEC	2: GNC OMS 2 MNVR EXEC
3: BFS, GNC OMS 2 MNVR EXEC	

NOTE

Consult ASC PRT C/L for failures that occurred during ascent

CAMERAS OFF

B W1/W6 16mm Camr (two) - off

B OMS 2 BURN SETUP

✓OMS 2 TARGETING, Flip Book

CRT1 TRIM LOAD - ITEM 6 +0.4 -5.7
+5.7 EXEC

* For single eng burn (good eng): *
* TRIM LOAD LY - ITEM 7 + 5.2 EXEC *
* RY - ITEM 8 - 5.2 EXEC *
* OMS L - ITEM 2 EXEC *
* R - ITEM 3 EXEC *

* For RCS burn: *
* RCS SEL - ITEM 4 EXEC *

NOTE
Onboard computed TIG may vary slightly but is acceptable

NOTE
If AOA, verify/enter appropriate ABORT TGT number in MM105 but do not LOAD targets until OPS 3

✓Targets, OMS TARGETS

LOAD - ITEM 22 EXEC
TIMER - ITEM 23 EXEC

CRT3 ✓BFS TGT

P **MPS POWERDOWN**

R2 MPS ENG PWR (six) - OFF
He ISOL (six) - CL
✓He I'CNECT (three) - GPC

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

MPS VACUUM INERTING ACT

R2 ✓MPS PNEU He ISOL - OP

R4 MPS LO2 PREVLV (three) - CL
Wait 3 sec .... - OP

MPS H2 PRESS LINE VENT - OP
(Start watch)
FILL/DRAIN LH2 INBD - CL
OUTBD - CL
LO2 INBD - CL
OUTBD - CL

Wait 10 sec:
LH2 INBD - OP
OUTBD - OP
LO2 INBD - OP
OUTBD - OP

After 1 minute:
MPS H2 PRESS LINE VENT - GND

P **ET UMBILICAL DOOR CLOSURE**

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

NOTE

Double times for single motor operation

R2 ET UMB DR
MODE - GPC/MAN
CTRLINE LAT - STOW
✓After 6 sec, CTRLINE LAT tb - STO
L,R DR (two) - CL (tb-bp)
After 24 sec, L,R DR tb - CL
L,R LAT (two) - LAT (tb-bp)
After 6 sec, L,R LAT tb - LAT
MODE - GPC

* If doors not closed: *
* |2: GNC 51 OVERRIDE| *
* ET UMB DR CLOSE - ITEM 6(11) *
* EXEC *

CTRLINE LAT - GND
L,R DR (two) - OFF
L,R LAT (two) - OFF

++++++++++++++++ If AOA: Go to AOA ++++++++++++++++ ..

NOTE

If HYD DEPRESS and not AOA, perform APU/HYD SHUTDOWN, 3-2, then:

1: GNC OMS 2 MNVR EXEC	2: GNC OMS 2 MNVR EXEC
3: BFS, GNC SYS SUMM 2	

C **OMS TVC GIMBAL CHECK**
(Perform during S-band AOS)

CRT1 SECONDARY CHECK
Perform SEC L,R then PRI L,R GMBL CK

* If down arrow(s) or M's: *
* Select good GMBL *

OMS BURN PREP

P 08 L,R OMS
✓He PRESS/VAP ISOL A (two) - GPC
B (two) - CL
✓TK ISOL (four) - OP (tb-OP)
XFEED (four) - CL (tb-CL)

.....FRCS BURN PREP.....
. Load DUMMY target for FRCS .
. attitude .
. RCS SEL - ITEM 4 EXEC .
. TIG = TTA -1:00 .
. ΔVX = -2.1 (ITEM 19) .
. ΔVY = 0 (ITEM 20) .
. ΔVZ = -1.0 (ITEM 21) .
. LOAD - ITEM 22 EXEC .
. Mnvr to ATT (error needles) .
. When in attitude: .
. ADI ATT - REF (push) .
. .
. Load External ΔV Burn Target .
. ΔVX = +80 .
. ΔVY = 0 .
. ΔVZ = 0 .
. LOAD - ITEM 22 EXEC .
. TIMER - ITEM 23 EXEC .
. ✓VGOX = negative .
. ✓VGOY = 0 .
. ✓VGOZ = +21 ± 2 .
. ✓REF ball - 0,0,0 .
.....

1: GNC OMS 2 MNVR EXEC	2: GNC OMS 2 MNVR EXEC
3: BFS, GNC SYS SUMM 2	

B Wedge Install OMS 2/ORBIT BURN and OMS 2 BURN MONITOR Cue Cards (F6/F8)

OMS 2 BURN ATTITUDE MNVR

B F6/F8 ✓ADI ATT (two) - INRTL
ADI RATE - 1
C Mnvr to OMS 2 Burn Attitude

3: BFS, GNC SYS SUMM 2

B **SEAT SAFING AND ADJUSTMENT**

Open Visor
Remove from pocket and install:
Panel Jettison T-Handle Pin
Adjust Back Angle
Take antimotion sickness medication

TIG-5 ▶ P **VACUUM INERTING TERMINATE**

R4 MPS FILL/DRAIN
LH2,LO2 OUTBD (two) - CL
Wait 10 sec .... - GND
LH2,LO2 INBD (two) - GND
MPS LO2 PREVLV (three) - CL
Wait 2 sec .... - GPC

R2 MPS PNEU He ISOL - CL

* If MPS PRPLT DUMP B/U LH2 VLV *
* sw was set to OP, set sw to CL *

TIG-2 ▶ B Go to OMS 2/ORBIT BURN Cue Card

DELAYED OMS 1 BURN PROCEDURES

DELAYED OMS 1

DELAYED OMS 1 BURN

B **OMS 1 TARGET CHECK (FEEDLINE FAIL ONLY)**

✓MM104
C3 ✓ET SEP - MAN

Check for underspeed:
Load TIG = MECO + 2 (~10:38 Nom)
LOAD - ITEM 22 EXEC
✓OMS 1 TARGETING, Flip Book

> **CAUTION**
> If targeting requires underspeed ATO (AOA-S), perform manual ET SEP and ATO (AOA-S) OMS 1 burn prior to apogee (TTA = 0)

MANUAL MPS DUMP (PASS)

C +X xlation (5 sec)

P R2 MPS PRPLT DUMP SEQ - START
(Start watch)
After 2:21:
F2/F4 ✓BDY FLP pb - lt off

1: GNC OMS 1 MNVR EXEC	2: GNC SYS SUMM 1
3: BFS, GNC SYS SUMM 1	

C **OMS 1 BURN SETUP**

MCC give:
Nav State
OMS 1 Target Selection
---------- Go for APU Shutdown ----------

3: BFS, GNC OMS 1 MNVR EXEC

CRT1 Enter Target from OMS TARGETS

LOAD - ITEM 22 EXEC
TIMER - ITEM 23 EXEC

CRT3 ✓BFS TGT

* If BFS: *
* HYD MN PUMP PRESS (three) - LO (MA) *
* Go to FES & HEATER ACTIVATION, 4-4 *

P **APU/HYD SHUTDOWN (Not AOA)**

F4 ✓BDY FLP pb - lt off (MPS stowed)
(~2 min 21 sec)

R4 HYD MPS/TVC ISOL VLV (three) - CL (tb-CL)

R2 ✓APU AUTO SHUT DN - ENA
BLR CNTLR (three) - OFF
APU CNTL (three) - OFF(MA)
FUEL TK VLV (three) - CL
✓CNTLR PWR (three) - ON
BLR N2 SPLY (three) - OFF
APU FUEL PUMP/VLV COOL A - AUTO

HYD DEPRESS (AOA only)

F4 ✓BDY FLP pb - lt off (MPS stowed)
(~2 min 21 sec)
R4 HYD MPS/TVC ISOL VLV (three) - CL
(tb-CL)
R2 ✓APU SPEED SEL (three) - NORM
✓AUTO SHUT DN - ENA
HYD MN PUMP PRESS (three) - LO (MA)

FES & HEATER ACTIVATION

C L1 FLASH EVAP CNTLR PRI A - ON
(not AOA)
L2 FLASH EVAP FDLN HTR (two) - 1
P R1 O2 TK1,2 HTRS A (two) - AUTO
H2 TK1,2 HTRS A (two) - AUTO

P **AC BUS SNSR**

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

► C **ET SEP (MECO + 6 MIN)** (-14:30 Nom)
(FEEDLINE FAIL ONLY)

ET SEP pb - SEP
✓MN ENG STAT lt (three) - off

✓Att within 10° of SEP ATT

If not:
Delete +X xlation and
Delay mnvr for 20 sec

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

LOAD - ITEM 22 EXEC
TIMER - ITEM 23 EXEC

ATTITUDE MNVR

B F6/F8 ADI ATT (two) - INRTL

Mnvr to OMS 1 Burn Attitude
(Compare ADI ATT with CRT BURN ATT)

2: GNC OMS 1 MNVR EXEC
3: BFS, GNC SYS SUMM 2

* If BFS: (Prior to TIG) *
* HYD MN PUMP PRESS (three) - NORM *

Go to OMS 1 BURN Flip Book

This Page Intentionally Blank

POST DELAYED - OMS 1 BURN

1: GNC OMS 1 MNVR EXEC	2: GNC OMS 1 MNVR EXEC
3: BFS, GNC SYS SUMM 2	

C **POST BURN STATUS**

NOMINAL

☐

Δ TIG

	:		

B F7/F8 FLT CNTLR PWR (two) - OFF
C3 ✓DAP - AUTO

* If BFS: *
* ✓BDY FLP pb - lt off (MPS stowed) *
* (-2 min 21 sec) *
* Perform APU/HYD SHUTDOWN, 4-3, *
* HYD DEPRESS, 4-4, then *

MAJOR MODE CHANGE

CRT1 GNC, OPS 105 PRO

1: GNC OMS 2 MNVR EXEC	2: GNC OMS 2 MNVR EXEC
3: BFS, GNC OMS 2 MNVR EXEC	

NOTE
Consult ASC PRT C/L for failures that occurred during ascent

CAMERAS OFF

B W1/W6 16mm Camr (two) - off

1: GNC OMS 2 MNVR EXEC	2: GNC OMS 2 MNVR EXEC
3: BFS, GNC OMS 2 MNVR EXEC	

C **OMS 2 BURN SETUP**

✓OMS 2 TARGETING, Flip Book

CRT1 TRIM LOAD - ITEM 6 +0.4 -5.7
+5.7 EXEC

* For single eng burn (good eng): *
* TRIM LOAD LY - ITEM 7 + 5.2 EXEC *
* RY - ITEM 8 - 5.2 EXEC *
* OMS L - ITEM 2 EXEC *
* R - ITEM 3 EXEC *

* For RCS burn: *
* RCS SEL - ITEM 4 EXEC *

✓Target from OMS TARGETS

NOTE
If AOA, verify enter appropriate ABORT TGT number in MM105 but do not LOAD targets until OPS 3

LOAD - ITEM 22 EXEC
TIMER - ITEM 23 EXEC

CRT3 ✓BFS TGT

P **MPS POWERDOWN**

R2 MPS ENG PWR (six) - OFF
He ISOL (six) - CL
✓He I'CNECT (three) - GPC

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

MPS VACUUM INERTING ACT

R2 ✓MPS PNEU He ISOL - OP

R4 MPS LO2 PREVLV (three) - CL
Wait 3 sec .... - OP

MPS H2 PRESS LINE VENT - OP
(Start watch)
FILL/DRAIN LH2 INBD - CL
OUTBD - CL
LO2 INBD - CL
OUTBD - CL
Wait 10 sec:
LH2 INBD - OP
OUTBD - OP
LO2 INBD - OP
OUTBD - OP

After 1 minute:
MPS H2 PRESS LINE VENT - GND

P **ET UMBILICAL DOOR CLOSURE**

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

NOTE
- If FEEDLINE FAIL and not AOA, stow CTRLINE LAT but DO NOT CLOSE DOORS
- Double times for single motor operation

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

R? ET UMB DR
MODE - GPC/MAN
CTRLINE LAT - STOW
✓After 6 sec, CTRLINE LAT tb - STO
L,R DR (two) - CL (tb-bp)
After 24 sec, L,R DR tb - CL
L,R LAT (two) - LAT (tb-bp)
After 6 sec, L,R LAT tb - LAT
MODE - GPC

* If doors not closed: *
* |2: GNC 51 OVERRIDE| *
* ET UMB DR CLOSE - ITEM 6(11) EXEC *

CTRLINE LAT - GND
L,R DR (two) - OFF
L,R LAT (two) - OFF

++++++++++++++++ If AOA: Go to AOA ++++++++++++++++++ ..

NOTE
If HYD DEPRESS and not AOA, perform APU/HYD SHUTDOWN, 4-3, then:

OMS BURN PREP

P 08 L,R OMS
✓He PRESS/VAP ISOL A (two) - GPC
B (two) - CL
✓TK ISOL (four) - OP (tb-OP)
XFEED (four) - CL (tb-CL)

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

```
...FRCS BURN PREP.....
.  Load DUMMY target for FRCS
.   attitude
.    RCS SEL - ITEM 4 EXEC
.    TIG = TTA -1:00
.    ΔVX = -2.1 (ITEM 19)
.    ΔVY = 0    (ITEM 20)
.    ΔVZ = -1.0 (ITEM 21)
.
.    LOAD - ITEM 22 EXEC
.
.  Mnvr to ATT (error needles)
.  When in attitude:
.    ADI ATT - REF (push)
.
.  Load External ΔV Burn Target
.    ΔVX = +80
.    ΔVY = 0
.    ΔVZ = 0
.
.    LOAD  - ITEM 22 EXEC
.    TIMER - ITEM 23 EXEC
.
.     √VGOX = negative
.     √VGOY = 0
.     √VGOZ = +21 +2
.     √REF ball - 0,0,0
.....
```

B Wedge Install OMS 2/ORBIT BURN and OMS BURN MONITOR Cue Cards (F6/F8)

OMS 2 BURN ATTITUDE MNVR

B F6/F8 √ADI ATT (two) - INRTL
√Rate Needles

C Mnvr to OMS 2 Burn Attitude

3: BFS, GNC SYS SUMM 2

1: GNC OMS 2 MNVR EXEC	2: GNC OMS 2 MNVR EXEC
3: BFS, GNC SYS SUMM 2	

B **SEAT SAFING AND ADJUSTMENT**

Open Visor
Remove from pocket and install:
  Panel Jettison T-Handle Pin
Adjust Back Angle
Take antimotion sickness
 medication

C **OMS TVC GIMBAL CHECK**

CRT1 SECONDARY CHECK
Perform SEC L,R then PRI L,R
 GMBL CK

* If down arrow(s) or M's: *
* Select good GMBL *

TIG-5 ▶ P **VACUUM INERTING TERMINATE**

R4 MPS FILL/DRAIN
 LH2,LO2 OUTBD (two) - CL
  Wait 10 sec .... - GND
 LH2,LO2 INBD (two) - GND
 MPS LO2 PREVLV (three) - CL
  Wait 2 sec .... - GPC

R2 MPS PNEU He ISOL - CL

* If MPS PRPLT DUMP B/U LH2 VLV *
* sw was set to OP, set sw to CL *

TIG-2 ▶ B Go to OMS 2/ORBIT BURN Cue Card

This Page Intentionally Blank

POST OMS 2 BURN PROCEDURES

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

C **POST BURN STATUS**

NOMINAL [ ]

A TIG [| | : | | |]

B F6/F8 FLT CNTLR PWR (two) - OFF
C3 ✓DAP - AUTO

C **OMS TVC GIMBAL CHECK**

CRT1 SECONDARY CHECK
Perform SEC L,R then PRI L,R GMBL CK

P **OMS/RCS POST BURN RECONFIGURATION**

07 AFT L,R RCS
He PRESS A (two) - GPC (th-OP)
B (two) - CL (th-CL)
TK ISOL (six) - OP (th-OP)
XFEED (four) - CL (th-CL)

08 FWD RCS
He PRESS A - GPC (th-OP)
B - CL (th-CL)

L,R OMS
He PRESS/VAP ISOL (four) - CL
✓TK ISOL (four) - OP (th-OP)
✓XFEED (four) - CL (th-CL)

MAJOR MODE CHANGE

CRT1 GNC, OPS 106 PRO

|1: GNC OMS 2 MNVR COAST | 2: GNC OMS 2 MNVR COAST |

B C4A/ Stow ASC PKT C/L (Helmet Bag)
R3A Unstow ORBIT Cue Cards & ORB PKT C/L

Go to POST INSERT, POST INSERTION **

* If ATO, go to POST INSERT, *
* ATO POST INSERTION *

AOA PADS

AOA
PADS

AOA DEL PAD

DEORBIT

PRPLT ( )

BURN CUE CARD:
PRI HP -TGT HP +42 (Delayed NOM/AOA)
= B/U HP +52 (All other steeps)
+34 (All shallow entries)

TOT AFT QTY 1 (%) 96

TOT AFT QTY 2 (%) 53

FRCS: DUMP TO % OX

ENTRY/LANDING

EI-5 MM303
INRTL ATT (7-22) R P Y

EI-5 MM304 PREBANK
(ENT Mnvr Cue Card)

ALTM SET (7-25) .

VREL 1ST REVERSAL

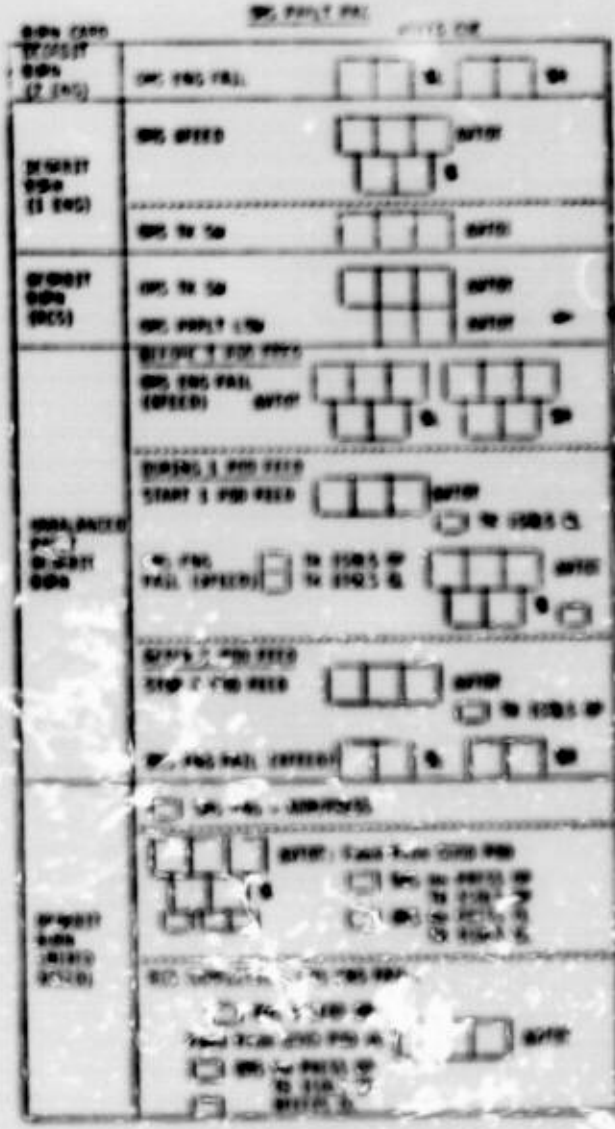
L/R OVHD/STRT deg RWY

WINDS: (ENT Mnvr Cue Card)

50K	/
40K	/
30K	/
20K	/
7K	/
SURFACE	/

REMARKS:

AOA PADS



AOA PROCEDURES

1: GNC OMS 2 MNVR EXEC | 2: ... OMS 2 MNVR EXEC | 3: BFS, GNC OMS 2 MNVR EXEC

B C4F/ Stow ASC PKT C/L
R3F Unstow ENT PKT C/L

F6/F8 Install DEORBIT BURN and DEORB BURN MONITOR Cue Cards (R3A)

Stow Ascent Cue Cards (R3A)

NOTE
Verify/enter appropriate ABORT TGT number in MM105 but do not LOAD targets until OPS 3

RECONFIGURE DPS FOR ENTRY

CAUTION
If recovering string(s) due to failed GPC(s), all FCS CH(s) to AUTO prior to OPS 301 PRO

CRT1 GNC, OPS 301 PRO (./DAP)
CRT3 BFS, GNC, OPS 301 PRO

CRT1 GNC, OPS 302 PRO **

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

C3 OI PCMMU FORMAT - FXD

AOA

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

B **OMS 2 BURN SETUP**

CRT1 TRIM LOAD - ITEM 6 +0.4 -5.7
+5.7 EXEC

* For single engine burn (good engine):
* TRIM LOAD LY - ITEM 7 + 5.2 EXEC
* LOAD RY - ITEM 8 - 5.2 EXEC
* OMS L - ITEM 2 EXEC
* R - ITEM 3 EXEC
* For RCS burn:
* RCS SEL - ITEM 4 EXEC

1: GNC 50 HORIZ SIT
✓RWY selection

* If required:
* Select correct runway

1: GNC DEORB MNVR EXEC
✓Or enter Target from OMS TARGETS

NOTE
Onboard computed TIG & ΔT may vary slightly and are acceptable if REI is correct

CRT1 LOAD - ITEM 22 EXEC
TIMER - ITEM 23 EXEC
✓PRPLT (after target loaded)

* If PRPLT change desired:
* WT - ITEM 9 + _____ EXEC
* (reenter wt to cause flashing load)
* PRPLT - ITEM 18 ± _____ EXEC
* LOAD - ITEM 22 EXEC
* TIMER - ITEM 23 EXEC

CRT3 ✓BFS TGT

C **OMS TVC GIMBAL CHECK**
(Perform during S-band AOS)

CRT1 SECONDARY CHECK
Perform SEC L,R then PRI L,R GMBL CK

* If down arrow(s) or M's: *
* Select good GMBL *

SEAT ADJUSTMENT

Adjust Back Angle

P **OMS BURN PREP**

08 L,R OMS
✓He PRESS/VAP ISOL A (two) - GPC
B (two) - CL
✓TK ISOL (four) - OP (tb-OP)
XFEED (four) - CL (tb-CL)

.....RCS BURN PREP(Inhibit OMS to RCS).....
.
. P 08 L,R OMS .
. He PRESS/VAP ISOL (four) - CL .
. ✓TK ISOL (four) - OP (tb-OP) .
. L OMS XFEED (two) - OP (tb-OP) .
. R OMS XFEED (two) - CL (tb-CL) .
. 07 AFT L,R RCS .
. XFEED (four) - OP (tb-OP) .
. TK ISOL (six) - CL (tb-CL) .
.
.....

OMS BURN TIG ADJUST (if reqd)

CRTX LOAD - ITEM 22 EXEC
TIMER - ITEM 23 EXEC

Determine ΔTIG (if REI - REF > 50) from OMS TARGETS

CRTX Enter new TIG

LOAD - ITEM 22 EXEC
TIMER - ITEM 23 EXEC

Repeat until ΔRANGE < 50

CRT3 √BFS TGT

MNVR TO DEORBIT BURN ATTITUDE

B F6/F8 √ADI ATT (two) - INRTL
√ERR (two) - 5
√RATE (two) - 5

C Mnvr to Deorbit Burn Attitude
(√ADI ATT with CRT BURN ATT)

TIG-10 ▶ P **VACUUM INERTING TERMINATE**

R4 MPS FILL/DRAIN
LH2,LO2 OUTBD (two) - CL
Wait 10 sec... - GND
LH2,LO2 INBD (two) - GND
MPS LO2 PREVLV (three) - CL
Wait 2 sec... - GPC

R2 MPS PNEU He ISOL - CL

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

P **MPS/H2 PURGE PREP**

R2	MPS He ISOL L (two)	- GPC
	I'CNECT L	- IN OP
	I'CNECT CTR, R	- IN CL
	PNEU L ENG He XOVR	- OP
	He ISOL	- GPC
R4	MPS MANF PRESS (two)	- OP
	FILL/DRAIN LH2 INBD	- OP

3: BFS, GNC SYS SUMM 2

TIG-2 B R3A Go to DEORBIT BURN Cue Card

AOA POST DEORB BURN

P/DEORB BURN

P **OMS/RCS POST BURN RECONFIGURATION**

07 AFT L,R RCS
✓He PRESS (four) - OP (th-OP)
✓TK ISOL (six) - GPC (th-OP)
✓XFEED (four) - GPC (th-CL)

08 L,R OMS
He PRESS/VAP ISOL (four) - CL
✓TK ISOL (four) - OP (th-OP)

* If OMS PRPLT FAIL, *
* ✓Affected TK ISOL (two) - CL *

✓XFEED (four) - CL (th-CL)

F8 FLT CNTLR PWR - OFF

* **UNDERBURN** *
* *
* Determine ΔHP *
* (CUR HP - TGT HP) *
* If ΔHP > 2: *
* Use PREBANK TABLE *

OV099
BURN

PREBANK TABLES

(Delayed Nominal/AOA steep entry)

ΔHP	3	5	8	10	15	18
PREBANK	57	74	90	102	123	149

(All other steep entries)

ΔHP	3	5	8	10	15	20	25	30
PREBANK	37	48	62	69	81	95	113	143

(AOA shallow/AOA shallow entry)

ΔHP	5	10	15	20
PREBANK	97	106	123	167

(All other AOA shallow entries)

ΔHP	2	4	6	8
PREBANK	100	110	124	149

Record UNDERBURN prebank on ENTRY MANEUVERS Cue Card

C **POST BURN STATUS**

NOMINAL ☐

Δ TIG ☐ : ☐ ☐

P CRT2 GNC, OPS 303 PRO **

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

C CRT1 ✓or load INRTL EI-5 MM303 ATT from DEL PAD:

R - ITEM 21 + | | | |

P - ITEM 25 + | | | |

Y - ITEM 26 + | | | |

MNVR to EI-5 Att

* If UNDERBURN, or no DEL PAD, ignore *
* INRTL ATT ERR needles and Mnvr to *
* LVLH R001, Y358 and 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

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

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

P **STATE VECTOR CHANGE (if reqd)**

CRT2 ΔT - ITEM 18 | ( ) | | | . | | |

LOAD - ITEM 16 EXEC
.....wait 8 sec(min).....
CRT3 PASS/BFS SV XFER - ITEM 17 EXEC
LOAD - ITEM 16 EXEC

NOTE
Wait at least 8 sec before additional ITEM 17 EXEC

C **OMS GIMBAL POWERDOWN (PASS ONLY)**

Verify gimbal positions:

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

CRT1 GMBL OFF - ITEM 32 EXEC
- ITEM 33 EXEC

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

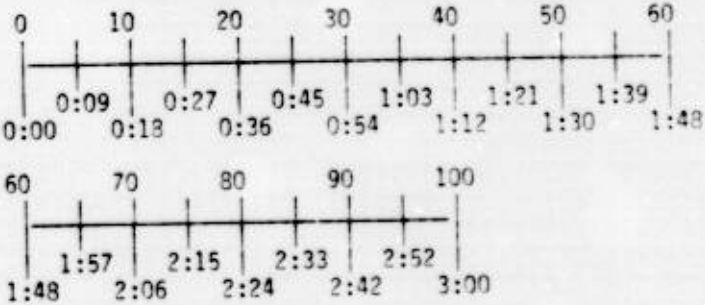
P FORWARD RCS DUMP

2: GNC DEORB MNVR COAST

Determine FWD RCS 'DUMP TO %' (Calculator or DEL PAD)

FOUR JET DUMP:

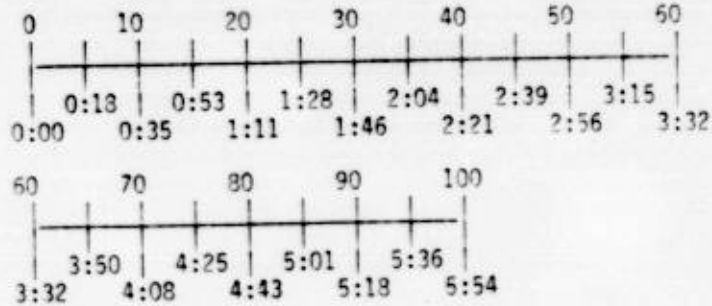
F RCS PRPLT TO BE DUMPED (%)



TIME FROM DUMP INITIATION (M:S)

TWO JET DUMP:

F RCS PRPLT TO BE DUMPED (%)



TIME FROM DUMP INITIATION (M:S)

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

CRT2 FWD RCS ARM - ITEM 36 EXEC
DUMP - ITEM 37 EXEC
When required:
OFF - ITEM 38 EXEC

When dump complete:
08 FWD RCS
MANF ISOL (five) - CL (tb-CL)

HORIZ SIT CONFIG

2: GNC 50 HORIZ SIT

ALTM - ITEM 9 + [| | . | |]

	PASS ITEM		BFS ITEM	
		3✓		3✓
RWY		4✓		4✓
✓correct RWY selected per DEL PAD		5✓		5✓
G&N	OVHD	6✓	OVHD	6✓
NEP		7✓		7✓
AIM	NOM	8✓	NOM	8✓
TAC	INH	20✓	INH	20✓
DRAG H	AUT	22✓	AUT	22✓
ADTA H	INH	26✓	INH	26✓
ADTA TO G&C	INH	29✓	AUT	28✓
TAC	DELTA	35✓		-
Failed TACANs deselected		✓		✓
HUD	Blank	37✓		-
	Blank	38✓		-

* If BFS engaged: *
* Set HSD BFS ITEMS to PASS Config *

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

* **If APUs shutdown:** *
* Perform APU HOT RESTART *
* (ENT PRO C/L, APU/HYD), then: *

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

ENTRY SW CHECK

```
B  F6/F8  Stow Doorbit Burn Cue Cards (RUA)
   F3     Install Entry Cue Cards

P  07     ,TACAN MODE (three)      = T/R
                ,ANT SEL (three)   = AUTO
                  CH (three)       = 111X (EDW)
                                   = 069X (KSC)
                                   = 069X (NOR)
   08     ,RADAR ALTM (two)        = ON
           MLS (three)             = ON (PASS)
          ,MLS CH (three)          = 8 (EDW22, KSC15,
                                       NOR17)
                                   = 6 (EDW17, KSC33)
           I/O RESET EXEC
C  L2     ,CAB RELIEF (two)        = ENA (to=ENA)
          ,ANTISKID                = ON
          ,NWS                     = ON
          ,ENTRY MODE              = A

          3: GNC SW OVERRIDE
          ,ENTRY R MODE            = AUTO
K  L2/C3  ,SBTC                    = Full Fwd
   C3     ,FRB SEP                 = AUTO
          ,LT SEP                  = AUTO
   F6/F8  ,AIR DATA                    = NAV
          ,ADI ERR                     = 8
              ,RATE                    = 5
          ,HSI SEL MODE                = ENTRY
C  F6             ,SOURCE (two)       = NAV, 1
P  F8             ,SOURCE (two)       = NAV, 2

B  F3     ,TRIM RHC/PNL (two)        = INH
              ,PNL (two)             = ON
   F7/F8  ,RADAR ALTM                = 1(C), 2(P)
          ,FLT CNTLR PWR (two)       = ON
```

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

PRE EI CHECKLIST

```
* If only one APU running:                    *
*   Good HYD MAIN PUMP PRESS - LOW             *
*   Delay MM304 transition to EI-2             *
*   Just prior to transition:                  *
*     Good HYD MAN PUMP PRESS - NORM           *
*          APU SPEED SEL       - HIGH          *

* If 3 PASS GPC configuration:                 *
*   FCS CH4 - OFF                              *
```

NOTE
If OMS/RCS He or TK PRESS leak,
do not perform this procedure

|2: GNC SI OVERRIDE |

-EI-5 CRT2 VENT DOOR CNTL CL - ITEM 23 (5) EXEC

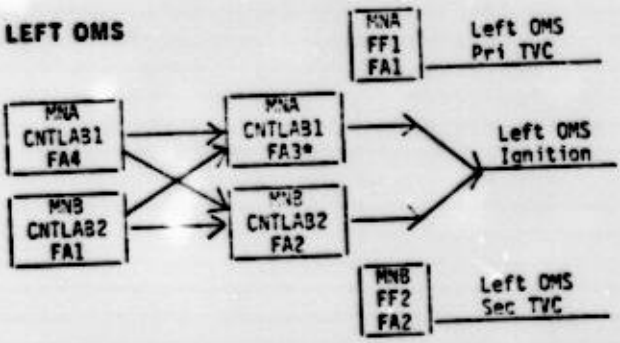
|2: GNC DEORB MNVR EXEC |

Go to ENTRY MANEUVERS Cue Cards

This Page Intentionally Blank

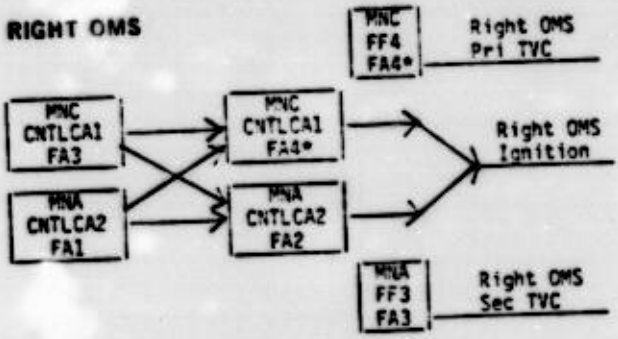
OMS FAILURES

LEFT OMS



*Loss of FA3(4) or Pc Fail High:
Guidance will not downmode to single engine logic with closure of Left (Right) Arm/Arm/Press Switch. (Guidance needles in error, TGO countdown slow, expect 6 sec underburn - 6 ft/sec

RIGHT OMS

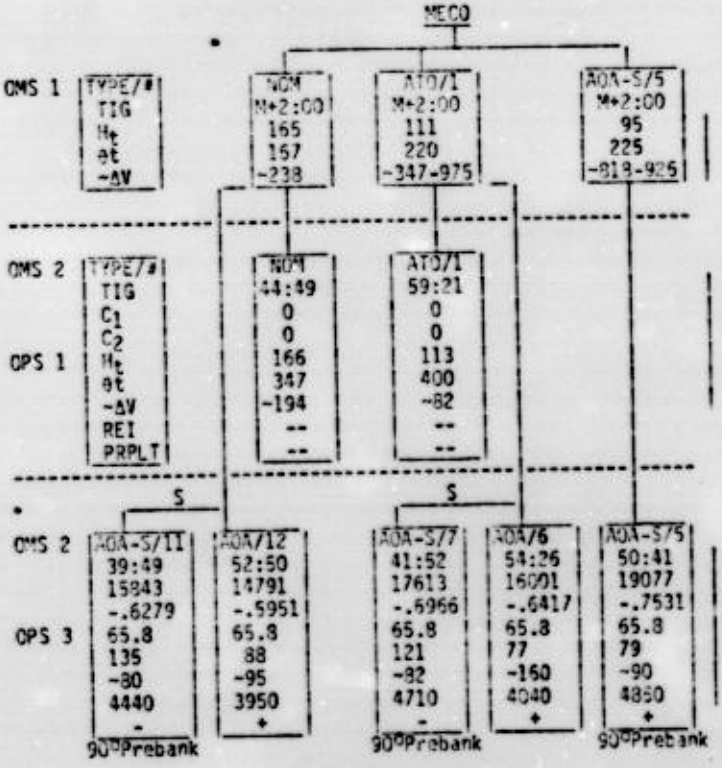


If during OMS burn and two FA MDMs lost, Man Shutdn reqd:

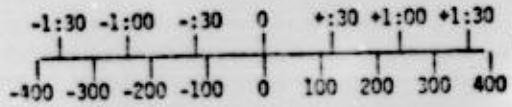
MDMs	ENGs	MDMs	ENGs
1&2	BOTH	2&3	RIGHT
1&3	LEFT	2&4	LEFT
1&4	RIGHT	3&4	BOTH

OMS TARGETS - ON TIME

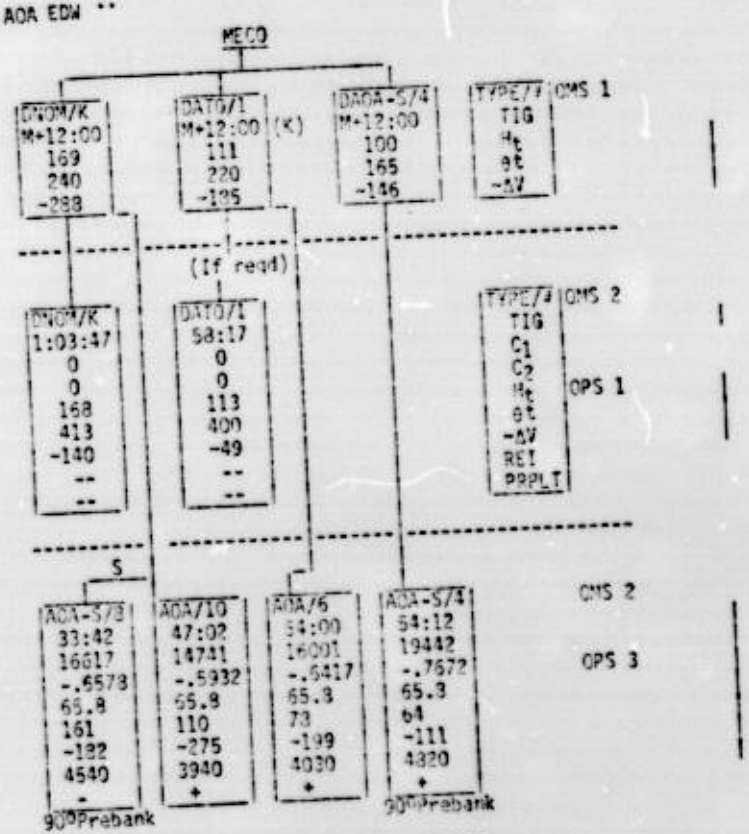
AOA EDW **



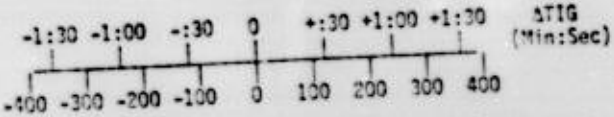
TIG ADJUST TIMELINE



OMS TARGETS - DELAYED

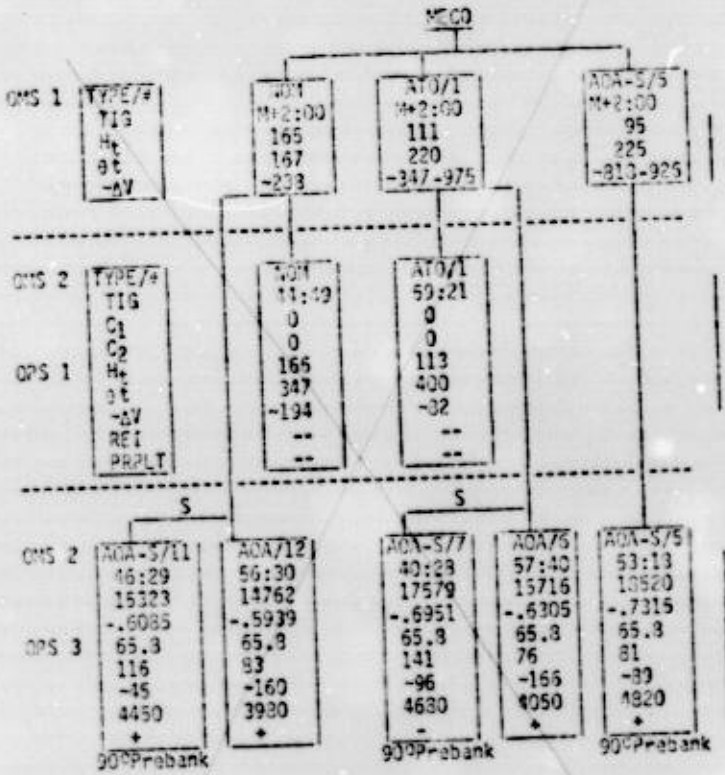


TIG ADJUST TIMELINE

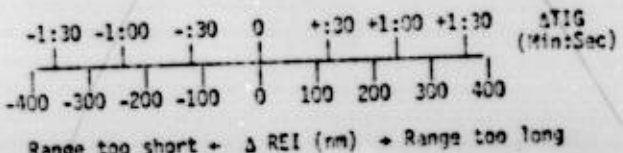


OMS TARGETS - ON TIME

AOA NOR **

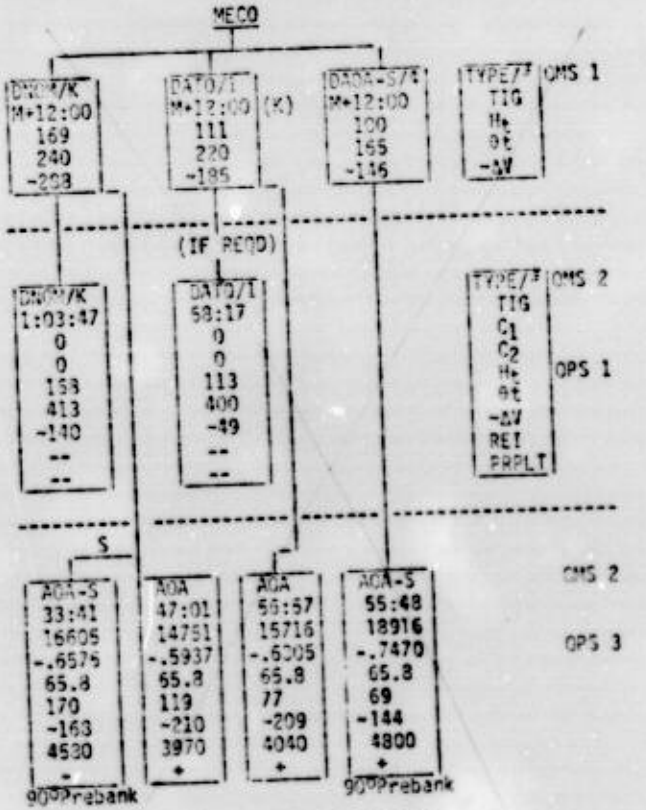


TIG ADJUST TIMELINE

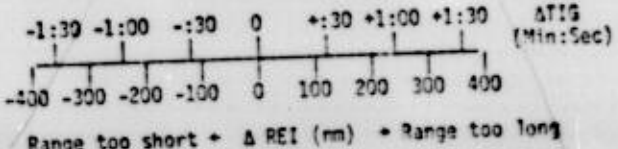


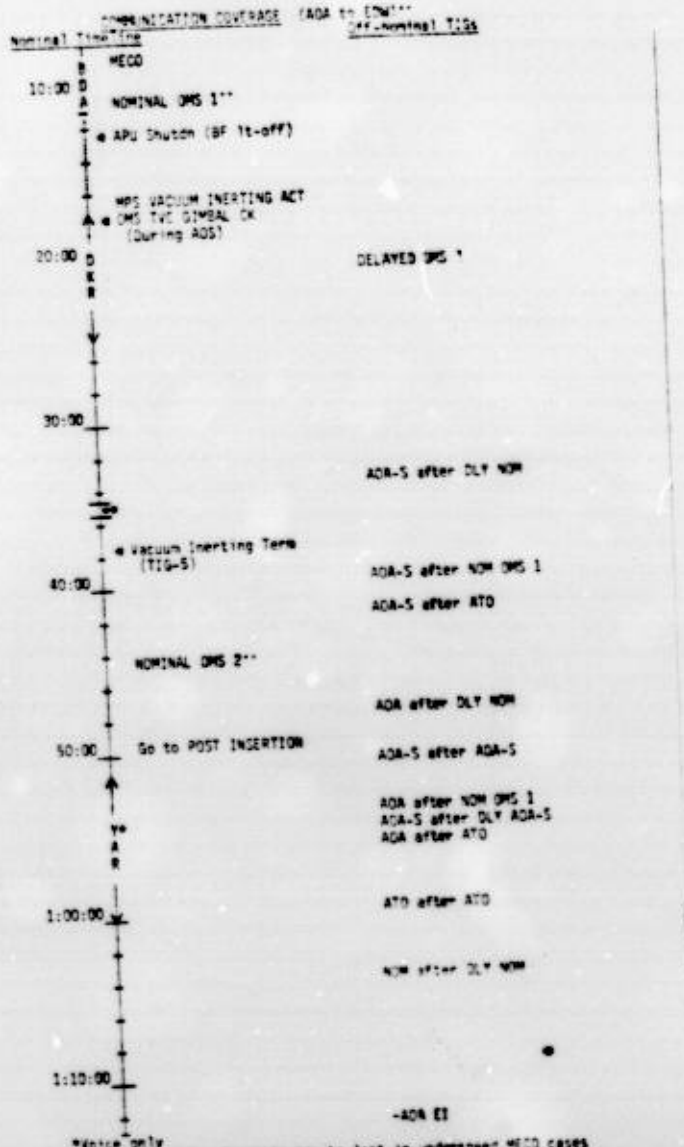
OMS TARGETS - DELAYED

AOA NOR **



TIG ADJUST TIMELINE





*Voice only
**Opt. Voice only. Coverage may be lost in underspeed MECO cases
***At AOA & DKR LOS
At DKR AOS
CI UPLK - GPC BLK
CI UPLK - ENA

WEATHER PADS

WEATHER
PADS

U.S. TERMINAL FORECASTS

DEORBIT ORBIT	SITE	LDG GMT	SKY/VIS/WEATHER/T	WIND	ALTM	RWY	REMARKS
RTLS							
AOA							
AOA							
2							
3							
4							
5							
6							

UPPER WINDS FORECAST

ALT	RTLS	TAL _____	TAL _____	AOA _____	ORB _____ DEORB _____
60K	/	/	/	/	
50K	/	/	/	/	
40K	/	/	/	/	
30K	/	/	/	/	
20K	/	/	/	/	
7K	/	/	/	/	
SURF	/	/	/	/	

CLS TERMINAL FORECAST (FIRST OPPORTUNITY)

DEORBIT ORBIT	SITE	GMT	SKY/VIS/WEATHER/T	WIND	ALTM	RWY	REMARKS
TAL							
TAL							
	HNL						
	KAD						

MISCELLANEOUS

NOTAMS: _____

EXPECTED RATES DURING LOAD RELIEF

MAX RATES: ROLL _____ °/sec at _____

PITCH _____ °/sec

YAW _____ °/sec

IGNORE ATTITUDE ERRORS

DEORB ORB	APPROX TIG	RWY		HP ADJ TIG

This Page Intentionally Blank