

Front

Color

MCC 7 Final Procedure

6:00 PWR UP²⁴ up AGS

30-MIN ACTIVATION

INT TO LM

• Batt 5 Norm Feed
• use this checklist

1/6/70

Basic Date
Changed

LM-7

- 1 GSM Mvvr To Burn Attitude
Activate CABIN DUMP VALVE & Open Hatch
Carry COMM Carrier & CWG Connector to LM
- 2 FLOOD LIGHT - A11
DES O2 - OPEN
DES H2O - OPEN
CABIN REPRESS- AUTO
CB(16)ECS: CABIN REPRESS - CLOSE
SUIT GAS DIVERTER - CABIN
- 3 CSM Transfer To LM PWR
(Flood Lts Blink, C/W PWR Caution Lt-On)
CB(11) EPS: XLUNAR BUS TIE - CLOSE
HEATERS: RCS SYS A/B-1 QUAD 4,3,2,1 (4)-CLOSE
CB(16) EPS: XLUNAR BUS TIE - CLOSE
HEATERS: RCS SYS A/B-2 QUAD 1,2,3,4 (4)-CLOSE
- 4 RCS SYS A/B-2: QUADS (4) - AUTO

EPS ACTIVATION

- 1 LTG: ANUN/NUM - BRIGHT
- 2 ~~CB(11) INST: SIG CONDR 1 - CLOSE~~
~~EPS: DES ECA CONT - CLOSE~~
CB(16) INST: SIG SENSOR - CLOSE
: PGM/TE - CLOSE
: SIG CONDR 2 - CLOSE
EPS: DISP - CLOSE
: DES ECA CONT - CLOSE

30-MIN ACTIVATION

3

Verify BAT 1,2,3,4 - tb-LO
 DES BATS - tb-gray
 BATS 5&6 NORMAL & BACKUP(4)-tb-bp
 Check BAT and BUS Voltages

When BUS Volts <27V, Select High Voltage Taps
 CB(16) EPS: CROSS TIE BAL LOADS - OPEN
 BAT 1 HI VOLTAGE-OFF/RESET Then ON
 Repeat for BATS 2,3,4

4 CB(11) AC BUS B&A: BUS TIE INV 2&1(4) - CLOSE
 : AC BUS VOLT - CLOSE
 EPS: INV 1 - CLOSE
~~CB(16) EPS: INV 2 - CLOSE~~

5 INV-1, Verify Voltage In Green Band

PRIMARY GLYCOL LOOP ACT

1 CB(16) ECS: DISP - CLOSE (CREW OPTION)
~~CB(11) ECS: GLYCOL PUMP AUTO TRNFR - CLOSE~~
 : GLYCOL PUMP 1 - CLOSE
 : GLYCOL PUMP AUTO TRNFR - OPEN
 GLYCOL - PUMP 1
 CB(11) ECS: GLYCOL PUMP 2 - CLOSE

2 PRIM EVAP FLOW No. 1 - OPEN

3 Close CB's Per 30-MIN ACTIVATION Chart

Basic Date 1/6/70
 Changed 2/13/70

30-MIN ACTIVATION

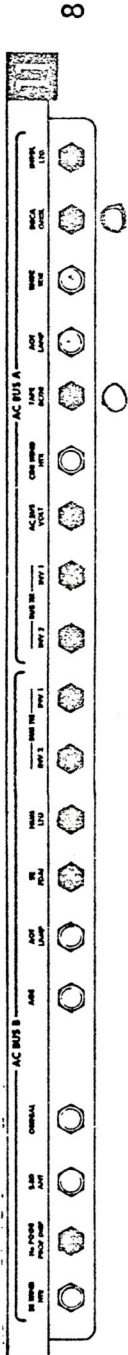
LM-7

○ Open
X Close

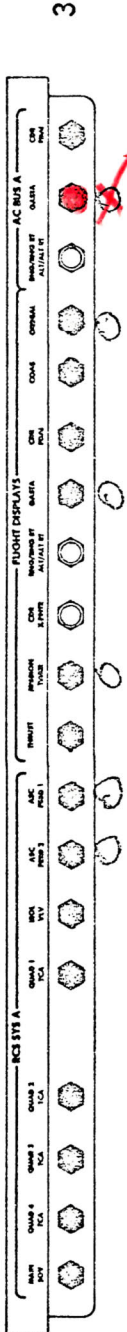
Basic Date 1/6/70
Changed 3/10/70

LM-7

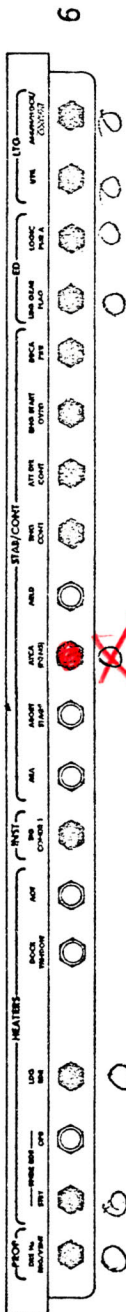
30-MIN ACTIVATION



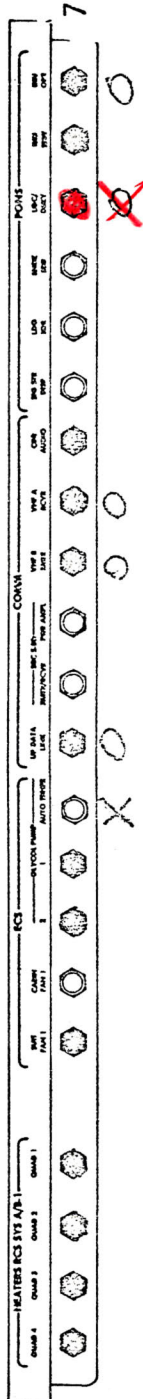
20's



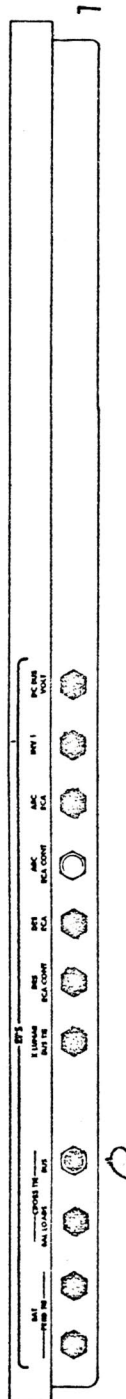
60's



80's



60's



10

Basic Date _____
Changed _____

(Trim front page on solid crop marks; back page on dash crop marks.)

30-MIN ACTIVATION

| | | | | | | | | | |
|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| ECS SYS 8 | | | | | | | | | |
| FLI DISP | ASC | ASC | ASC | ASC | ASC | ASC | ASC | ASC | ASC |
| EVENT | TRIP | TRIP | TRIP | TRIP | TRIP | TRIP | TRIP | TRIP | TRIP |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ECS SYS 9 | | | | | | | | | |
| STAN/CONT | STAN/CONT | STAN/CONT | STAN/CONT | STAN/CONT | STAN/CONT | STAN/CONT | STAN/CONT | STAN/CONT | STAN/CONT |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ECS SYS 10 | | | | | | | | | |
| CONM | CONM | CONM | CONM | CONM | CONM | CONM | CONM | CONM | CONM |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ECS SYS 11 | | | | | | | | | |
| HEATERS | HEATERS | HEATERS | HEATERS | HEATERS | HEATERS | HEATERS | HEATERS | HEATERS | HEATERS |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

4A's

5A's

3A's

1A

LM-7

Basic Date 1/6/70
 Changed 3/10/70

4 CB(16) INST: CWEA - Open Then Close

WARN
ASC PRESS
RCS-A-REG
RCS-B-REG
~~LGC~~

CAUT
~~PREPARE~~

VHF/S-BD ACTIVATION AND CHECKOUT

~~1 CSM Configure For VHF Simplex A
VHF - A: XMTR - VOICE
RCVR - ON
AUDIO (BOTH): S-BAND T/R - T/R
ICS T/R - T/R
VHF-A - T/R~~

2 COMM: S-BD-PM, PRIM, PRIM, ~~EN~~ VOICE BU, ~~BU~~
PCM, ~~OFF/RESET~~, OFF, HI
S-BD ANT-As Required

3 ~~LMP Perform Comm Check With CSM.~~

Basic Date 1/6/70
Changed 3/10/70

Basic Date 1/6/70
Changed

PGNS TURN - ON

1 NO ATT Lt - Off (90")
V96E
2 ~~Set EVENT TIMER~~
V25 NONE, 1267E, 252E, E

DAP SET/GIMBAL DRIVE

1 ~~MODE CONT: PGNS - AUTO
GUID CONT - PGNS
TTCA (CDR) - THROTTLE (MIN)~~

2 V48E
N46 31021 ~~32021~~
PRO
N47 + _____ (33731)
+ _____ (From MSFN or CSM)

~~PRO~~
N48 + _____ (From MSFN or Chart)
+ _____ (From MSFN or Chart)

LM-7

LM-7

V34

(Trim front page on solid crop marks; back page on dash crop marks.)

Verify RCS Htrs In AUTO For 15 min

BAL CPL - OFF

DEADBAND - MIN

ATT CONT, P, R - PULSE, YAW - DIR

MODE CONT (AGS) - ATT HOLD

GUID CONT - AGS 29

Damp Rates, Pitch & Roll with TTCA, YAW with AGS DIR

~~ENG STOP - PUSH~~

~~ENG ARM - DES (DES REG Lt-ON)~~

~~PRO (ENG GMBL Lt-ON)~~

~~MSFN Verify GDA Position~~

| | |
|---|--|
| 3 | F 50 48 |
| | PRO |
| | ENG ARM - OFF (ENG GMBL Lt-OFF) |
| | ENG STOP - Reset |

AGS ACTIVATION

Verify AGS CB In For 10 min

- AGS STATUS - STBY (AGS Warn Lt - On)
 CB(11) AC BUS B: AGS - CLOSE
 CB(16) STAB/CONT: AEA - CLOSE (AGS Warn Lt-Off)
 AGS STATUS - OPERATE (AGS Warn Lt - On)
 O2/H2O QTY MON - C/W RESET, Then DES

- 412R + 1 SELF TEST SATISFACTORY

~~RCS PRESS~~

Basic Date
Changed

| | |
|---|---|
| 1 | Recycle: SYS A&B ASC FEED 2(2) - CLOSE, tb(4)-bp : SYS A&B ASC FEED 1(2) - OPEN, tb(4)-bp : SYS A&B THRUSTER PAIR QUADS-OPEN, tb(8)-gray : CRSFD - CLOSE : MAIN SOV SYS A&B - OPEN |
| 2 | Cycle TEMP/PRESS MON |
| 3 | MASTER ARM - ON HE PRESS RCS - FIRE (RCS A&B REG. Warning Lts - Off) RECYCLE: SYS A&B ASC FEED 2(2) - CLOSE, tb(4)-bp : SYS A&B ASC FEED 1(2) - OPEN, tb(4)-bp : SYS A&B THRUSTER PAIR QUADS-OPEN, tb(8)-gray : CRSFD - CLOSE : MAIN SOV SYS A&B - OPEN |

Basic Date 1/6/70
Changed 3/10/70

LM-7

(Trim front page on solid crop marks; back page on dash crop marks.)

30

~~4~~ TEMP/PRESS MON - He (2750-3200 psi)
~~- PRPLNT (40°-100°/178-188 psi)~~
~~- FUEL MANF (175-188)~~
~~- OXID MANF (175-188)~~

DPS PRESS

1 ~~PRPLNT QTY MON - DES 1~~
 PROP TEMP/PRESS MON - DES 2
 HELIUM MON - AMB PRESS
 DES HE REG 1 - tb-gray *bp*
 DES HE REG 2 - tb-bp

~~2~~ ~~DES PRPLNT ISOL VLV - FIRE~~
~~HE PRESS/DES START - FIRE~~

~~3~~ ~~PRPLNT TEMP/PRESS MON: DES 2&1~~
~~(50°-90° FUEL; 50°-90° OXID/242-253 psi)~~
~~HELIUM MON: AMB PRESS (200-1110 psi)~~
~~SUPRCRIT PRESS (610-1070 psi)~~

~~LANDING GEAR DEPLOY~~

1 CB(11) LOGIC PWR A - Open
 LDG GEAR DEPLOY - FIRE, tb-gray

2 CB(11) LOGIC PWR A - Close
 LDG GEAR DEPLOY - FIRE
 MASTER ARM - OFF

Basic Date 1/6/70
 Changed 3/10/70

Basic Date _____
 Changed _____

MNVR TO BURN ATT

AGS in Operate for 5 min
400 + 5 \Rightarrow Body Axis Align

400 + 0 \Rightarrow Att Hold

ATT CONT: P, R - PULSE

: YAW - MODE CONT

MNVR using TTCA.

Crew can control Pitch, Roll w/TTCA

Computer controls Yaw but ACA can
override

When in Attitude - ACA Out of Detent

Set EVNT TMR

Front

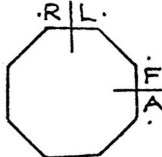
Color _____

DOCKED DPS BURN (MANUAL)

DOCKED DPS BURN
(MANUAL)

Basic Date 1/6/70
Changed _____

- * DPS BURN TECHNIQUE *
- *If PITCH Error Needle Goes Down, *
- *LMP Thrust AFT (Pull Out On TTCA). *
- *If ROLL Needle Left, CDR Thrust *
- * Right (Push Right On TTCA). *
- *See FDAI Picture Below. *



- ~~*Only Set The PITCH or ROLL ATTITUDE*~~
- ~~*CONTROL Switches To MODE CONT When *~~
- ~~*The Rates & Errors Are Zero And *~~
- ~~*Not Thrusting With TTCA's. Throt- *~~
- ~~*tle Initially At 10%, Then Throt- *~~
- ~~*tle Up When Stabilized, 10% Before *~~
- ~~*Cutoff. *~~

GMBL LOCKED

LM-7

NOV 17 17

DOCKED DPS BURN
(MANUAL)

~~V76E~~
GUID CONT - AGS
MODE CONT (~~BOTH~~) - OFF - ATT HOLD
ENG STOP (2) - RESET
ABORT/ABORT STAGE - RESET

~~-6:00 - MODE CONT: PGNS - ATT HOLD~~
~~V41 N20E, E, E, E~~

V41 N20E, E, E, E Body
Axis
Align

At burn attitude: 400 + 5
~~V40 N20E~~
V40 N20E

~~V25 N07E, 77E, 10000E, 1E~~
~~V01 N01E, 77E (Verify A=1,3,5,7)~~
~~V37E 51E, PRO, V37E00E~~

~~400 + 5~~

~~At burn attitude:~~
400 + 0

Caution: Do not go
out of detent on ACA
again

~~V37E 47E~~
~~When CMPTR ACTY Lt - ON~~
~~V06 N65 E _____ hrs~~
~~_____ min~~
~~_____ sec~~

~~Load N65 Into N38:~~
~~V25 N38E (_____ hrs) E~~
~~(_____ min) E~~
~~(.01 sec) E~~

404 + 0 ✓
405 + 0 ✓
406 + 0 ✓
470R ✓

Basic Date 1/6/70
Changed _____

LM-7

-4:00 RATE/ERR MON (BOTH) - LDG RDR/CMPTR
 ATT MON (BOTH) - AGS
 RATE SCALE - 5°/SEC
 THR CONT - MAN
 MAN THROT - CDR
 ATT/TRANSL - 4 JET
 BAL CPL - OFF
 ENG GMBL - ENABLE - OFF
 DES ENG CMD OVRD - OFF
 DEADBAND - MIN
 ATT CONT: ROLL - PULSE
 PITCH - PULSE
 YAW - MODE CONT
 MODE CONT (Both) - ATT HOLD
 PRPLNT QTY MON - DES 1

mode cont RC2
 AGS

TTCA (CDR) - THROT (MIN) DP2BORN/Jets RC2.
 TTCA (LMP) - JETS

Basic Date 1/6/70
 Changed 3/23/70

Basic Date
 Changed

~~-1:00 MASTER ARM - ON~~

- :35 V32E
 F-16 83 AVX, Y, Z (ATT Zero) (→ fps)

ENG ARM - DES Delete RC2

- :10 MANUAL ULLAGE (LMP) T=0 RC2

~~:02 CMC MODE - FREE~~

~~ACA - Out of Detent (Yaw) (Zero Error Needles)~~

:00 ENG START (CDR) - PUSH Delete RC2
 Ignition

01 Release ullage Delete RC2

+ :05 TTCA (CDR) - Throttle Up As Req'd
 ATT CONT: PITCH, ROLL - As Req'd

+ :15 MASTER ARM - OFF

Monitor ΔVX Via N83, 470

~~When PRPLNT QTY = 37%:
DES He REG 1 = CLOSE~~

~~TTCA (CDR) - Reduce to 10% when Vgo = 10.0 fps~~
Shut down on Burn Time ~~1 sec~~ **1 sec**

RCS
TERM
TRANSON
delete 470

~~ENG STOP - PUSH~~
~~ATT CONT: YAW - PULSE~~
Record 470, trim to 1 fps
Damp Excessive Rates Via LM Y, Z Translation

~~CSM-Resume-Attitude-Control~~

~~PRO, V96E~~
ENG ARM - OFF
~~PRPLNT QTY MON - OFF~~
ENG STOP - RESET
TTCA (CDR) - JETS

Return to ENTRY
LM Prep ~~1/6/70~~ 3/23/70
EI-5

Basic Date
Changed

RE-ESTABLISH PTC

Basic Date
Changed

- 1. ATT CONT (3) - PULSE
- 2. ROLL WITH TTCA until

| | |
|---|-----|
| R | 90° |
| P | 0° |
| Y | 0° |

- 3. When at attitude go out of Detent w/ ACA
- 4. ATT CONT: YAW - MODE CONT
- 5. When rates are < .05:
ATT CONT (YAW) - ~~DIR~~ PULSE
- 6. Spin up to .3 %/sec in yaw (~21 PULSES)
- 7. MODE CONT: AGS - OFF
- 8. PUR DOWN Per PWR - 5 (Contr. Checklist)
(AS MODIFIED)

