Flight

"INTEGRATED"

CSM ENTRY PROCEDURES

- STARTS WITH THE BASELINE SW & CB CONFIGURATION
- INTEGRATES "NEW" PROCEDURES & CHECKLIST PROCEDURES WITH REVISIONS
- INCLUDES SM PHOTO & STOWAGE PROCEDURES
- SHOULD REFLECT WHAT WAS READ UP TO THE CREW ~ GET 127

O'Neill FCSD

Master

Front Color _____ 4/17/70 12:00

Do not Read To Crew

CSM BASELINE (BL) CONFIGURATION

BL-1

PANEL 1

EMS FUNC - OFF
EMS MODE - STBY
GTA - off (down)
EMS GTA COVER - Secure
CMC ATT - IMU
FDAI SCALE - 5/5
FDAI SEL - 1
FDAI SOURCE - GDC
ATT SET - GDC
MAN ATT ROLL - RATE CMD
MAN ATT PITCH - RATE CMD
MAN ATT YAW - RATE CMD
LIM CYCLE - OFF
ATT DBD - MIN
RATE - HIGH
TRANS CONTR PWR - OFF
RHC PWR NORM (2) - OFF
RHC PWR DIR (2) - OFF
SC CONT - SCS
CMC MODE - FREE
BMAG MODE ROLL - RATE 2
BMAG MODE PITCH - RATE 2
BMAG MODE YAW - RATE 2
SPS THRUST - NORMAL (lock)
ΔV THRUST (2) - OFF (guarded)
SCS TVC PITCH - AUTO
SCS TVC YAW - AUTO
SPS GMBL MOT PITCH (2) - OFF
SPS GMBL MOT YAW (2) - OFF
ΔV CG - LM/CSM
ELS LOGIC - OFF (guarded)
ELS AUTO - MAN
CM RCS LOGIC - OFF (down)
CM PRPLNT DUMP - OFF (guarded)
CM PRPLNT PURG - off (down) (guarded)
IMU CAGE - off (down) guarded)
EMS ROLL - OFF
.05G sw - OFF

Basic Date _____
Changed _____

Back Color_____

Do not send To crew

BL-2

a/Pc IND sw - Pc
LV/SPS IND SII/SIVB - GPI
TVC GMBL DR PITCH - AUTO
TVC GMBL DR YAW - AUTO
EVNT TMR RSET - up (center)
EVNT TMR STRT - stop
EVNT TMR MIN - center
EVNT TMR SEC - center

PANEL 2

PL VENT vlv - push (lock)
PROBE EXTD/REL - OFF (guarded)
PROBE EXTD/RETR (2) tb - gray
DOCK PROBE RETR PRIM - OFF
DOCK PROBE RETR SEC - OFF
EXT RUN/EVA LT - OFF
EXT RNDZ LT - off (center)
TUNL LT - OFF
LM PWR - OFF
SM RCS He 1 (4) - center (on,up*)
SM RCS He 1 tb (4) - gray
UP TLM CM - BLOCK
UP TLM IU - BLOCK
CM RCS PRESS - off (down) (guarded)
SM RCS IND sw - PRPLNT QTY
SM RCS He 2 (4) - center (on,up*)
SM RCS He 2 (4) tb - gray
SM RCS HTRS (4) - OFF
SM RCS PRPLNT (4) - center (on,up*)
SM RCS PRPLNT tb (4) - gray
SM RCS PRPLNT tb (4) - bp
RCS CMD - center (OFF*)
RCS TRNFR - center (SM*)
CM RCS PRPLNT (2) - center (on,up*)
CM RCS PRPLNT tb (2) - gray
SM RCS SEC FUEL PRESS (4) - center (CLOSE*)
EDS AUTO - OFF
CSM/LM FINAL SEP (2) - off (down) (guarded)
CM/SM SEP (2) - off (down) (guarded)
SIVB/LM SEP - off (down) (guarded)
PRPLNT DUMP - RCS CMD
2 ENG OUT - OFF
LV RATES - OFF

Basic Date_____
Changed_____

Do not read To Crew

TWR JETT (2) - OFF (down) (guarded)
LV GUID - IU
LV STAGE - off (down) (guarded)
XLUNAR - INJECT
MN REL - off (down) (guarded)
MSN TMR HR - off (center)
MSN TMR MIN - off (center)
MSN TMR SEC - off (center)
C/W NORM - ACK
C/W CSM - CM
C/W PWR - OFF
C/W LAMP TEST - off (center)
MSN TMR - START
RCS IND sel - SM D
CAB FAN (2) - OFF
H2 HTRS (2) - OFF
O2 HTRS (2) - OFF
O2 PRES IND sw - SURGE TK
H2 FANS (2) - OFF
O2 FANS (2) - OFF
ECS IND sel - PRIM
ECS RAD FLOW AUTO CONT - AUTO
ECS RAD tb - gray
ECS RAD FLOW PWR CONT - off (center)
ECS RAD MAN SEL - RAD 1
ECS RAD PRIM HTR - off (center)
ECS RAD SEC HTR - OFF
POT H2O HTR - OFF
SUIT CKT H2O ACCUM AUTO - 1
SUIT CKT H2O ACCUM - off (center)
SUIT CKT HT EXCH - off (center)
SEC COOL LOOP EVAP - off (center)
SEC COOL LOOP PUMP - off (center)
H2O QTY IND sw - POT
GLY EVAP IN TEMP - MAN
GLY EVAP STM PRESS AUTO - MAN
GLY EVAP STM PRESS INCR - center
GLY EVAP H2O FLOW - off (center)
CAB TEMP - MAN
CAB AUTO TEMP tw - max decr
HI GAIN ANT TRACK - AUTO
HI GAIN ANT BEAM - WIDE
HI GAIN ANT PITCH POS - 0^{o}

Basic Date
Changed

Basic Date
Changed

Do not read to crew

HI GAIN ANT YAW POS - 180°
HI GAIN ANT PWR - OFF
HI GAIN ANT SERVO ELECT - PRIM

PANEL 3

VHF ANT - SM LEFT
SPS ENG INJ VLV ind (4) - CLOSE
FC RAD (3) - center (NORMAL*)
FC RAD (3) tb - N/A
FC HTRS (3) - OFF
FC IND sel - 2
SPS QTY TEST - off (center)
OXID FLOW VLV INCR - INCR
OXID FLOW VLV PRIM - PRIM
PUG MODE - NORM
FC PURG (3) - OFF
FC REAC (3) - center
FC REAC tb (3) - gray
FC 1 MN BUS A - OFF
FC 1 MN BUS A tb - gray
FC 2 MN BUS A - OFF
FC 2 MN BUS A tb - gray
FC 3 MN BUS A - OFF
FC 3 MN BUS A tb - gray
MN BUS A RSET - OFF
FC 1 MN BUS B - OFF
FC 1 MN BUS B tb - gray
FC 2 MN BUS B - OFF
FC 2 MN BUS B tb - gray
FC 3 MN BUS B - OFF
FC 3 MN BUS B tb - gray
MN BUS B RSET - OFF
DC IND sel - MNA
BAT CHARGE - OFF
SPS He vlv (2) - AUTO
SPS He vlv tb (2) - bp
SPS LINE HTRS - off (center)
SPS PRESS IND sw - He
S BD XPNDR - center (OFF)
S BD PWR AMPL PRIM - PRIM
S BD PWR AMPL HI - center (OFF)
PWR AMPL tb - bp

Basic Date Changed

Basic Date Changed

Do not read To Crew

S BD MODE VOICE - VOICE
S BD MODE PCM - PCM
S BD MODE RNG - RNG
S BD AUX TAPE - off (center)
S BD AUX TV - off (center)
UP TLM DATA - DATA
UP TLM CMD - OFF
S BD ANT OMNI - B
S BD ANT - OMNI
VHF AM A - (center)
VHF AM B - center
VHF AM RCV - off (center)
VHF AM SQLCH tw (2) - noise threshold +1 div
VHF BCN - OFF
VHF RNG - OFF
S BD SQUELCH - OFF
FC REACS vlv - NORMAL
H2 PURG LINE HTR - OFF
TAPE RCDR PCM - PCM/ANLG
TAPE RECDR RCD - RCD
TAPE RECDR FWD - CENTER
TAPE MOTION tb - bp
SCE PWR - CENTER
PMP PWR - CENTER
PCM BIT RATE - HI
AC INV 1 - OFF
AC INV 2 - OFF
AC INV 3 - OFF
INV 1 AC 1 - OFF
INV 2 AC 1 - OFF
INV 3 AC 1 - OFF
AC 1 RSET - OFF
INV 1 AC 2 - OFF
INV 2 AC 2 - OFF
INV 3 AC 2 - OFF
AC BUS 2 RSET - OFF
AC IND sel - BUS 2ØC

Basic Date Changed

Basic Date Changed

PANEL 4

SPS GAUGING - OFF
TELCOM GRP 1 - OFF
TEL COM GRP 2 - OFF
GLY PUMPS - OFF

Do not read To crew

SUIT COMPR (BOTH) - OFF
cb Panel 4 - all closed

PANEL 5

FC1 PUMPS - OFF
FC2 PUMPS - OFF
FC3 PUMPS - OFF
G/N PWR - OFF
MN BUS TIE BAT A/C - OFF
MN BUS TIE BAT B/C - OFF
BAT CHGR - AC1
NONESS BUS - OFF
INT INTGL LT - OFF
INT FLOOD LT - OFF
INT FLOOD LT DIM - 1
INT FLOOD LT FIXED - OFF
cb Panel 5 all open

Basic Date Changed

PANEL 6

MODE - INTERCOM/PTT
PWR - OFF
INTERCOM - T/R
PAD COMM - OFF
S BD - T/R
VHF AM - T/R
AUDIO CONT - NORM
SUIT PWR - OFF
tw settings - as desired

Basic Date Changed

PANEL 7

EDS PWR - OFF
SCS TVC SERVO PWR #1 - OFF
SCS TVC SERVO PWR #2 - OFF
FDAI/GPI PWR - OFF
LOGIC 2/3 PWR - OFF

Do not read To crew

SCS ELEC PWR - OFF
SCS SIG CONDR/DR BIAS 1 - OFF
SCS SIG CONDR/DR BIAS 2 - OFF
BMAG PWR(BOTH) - OFF
DIRECT 02 vlv - CLOSE

PANEL 8

cb Panel 8 - all closed except:
- cb SCS LOGIC BUS (4) - OPEN
- cb SPS PITCH, YAW (4) - open
- cb SPS GAUGING (4) - open
- cb SECS ARM (2) - open
- cb EDS (3) - open
- cb ELS BAT A BAT B (2) - open
- cb PL VENT FLT/PL - open
- cb SCS DIRECT ULL (2) - open
- cb SM RCS HTR A MN B - open
- cb SM RCS HTR C MN B - open
- cb SM RCS HTR B MN A - open
- cb SM RCS HTR D MNA - open
- cb CM RCS HTRS (2) - open
- cb FLOAT BAG (3) - open

AUTO RCS SEL A/C ROLL A1 - OFF
AUTO RCS SEL A/C ROLL C1 - OFF
AUTO RCS SEL A/C ROLL A2 - OFF
AUTO RCS SEL A/C ROLL C2 - OFF
AUTO RCS SEL B/D ROLL B1 - OFF
AUTO RCS SEL B/D ROLL D1 - OFF
AUTO RCS SEL B/D ROLL B2 - OFF
AUTO RCS SEL B/D ROLL D2 - OFF
AUTO RCS SEL PITCH A3 - OFF
AUTO RCS SEL PITCH C3 - OFF
AUTO RCS SEL PITCH A4 - OFF
AUTO RCS SEL PITCH C4 - OFF
AUTO RCS SEL YAW B3 - OFF
AUTO RCS SEL YAW D3 - OFF
AUTO RCS SEL YAW B4 - OFF
AUTO RCS SEL YAW D4 - OFF
INT NUM LT - OFF
INT INTGL LT - OFF
INT FLOOD LT - OFF
FLOOD LTS DIM - 1
FLOOD LTS FIXED - OFF
FLOAT BAG (3) - VENT (locked)
SECS LOGIC (2) - OFF (down)
SECS PYRO ARM (2) - OFF (down)

Basic Date
Changed

Basic Date
Changed

Do not read to crew

PANEL 9

MODE - INTERCOM /PTT
PWR - OFF
INTERCOM - T/R
PADD COMM - OFF
S BD - T/R
VHF AM - T/R
AUDIO CONT - NORM
SUIT PWR - OFF
VHF RNG - NORM
tw settings - as desired

PANEL 10

MODE - INTERCOM/PTT
PWR - OFF
PAD COMM - OFF
INTERCOM - T/R
S BD - T/R
VHF AM - T/R
AUDIO CONT - NORM
SUIT PWR - OFF
tw settings - as desired

Basic Date
Changed

PANEL 12

LM TUNL VENT vlv - LM/CM ΔP

Basic Date
Changed

PANEL 13

FDAI sw (2) - INRTL
EARTH/LUNAR - PWR OFF
ALT SET - 100
LTG - OFF
MODE - HOLD/FAST
SLEW - off (center)

PANEL 15

COAS PWR - OFF
UTIL PWR - OFF
PL BCN LT - off (center)
PL DYE MARKER - off (down) (guarded)
PL VENT - OFF

PANEL 16

DOCK TRGT - OFF
UTIL PWR - OFF
COAS PWR - OFF

Do not need To Crew

PANEL 100

UTIL PWR - OFF
FLOOD LTS DIM - 1
FLOOD LTS FIXED - OFF
OPT PWR - OFF
IMU PWR - OFF
RNDZ XPNDR - OFF
NUMERICS LT - OFF
FLOOD LTS - OFF
INTGL LT - OFF

PANEL 101

SYS TEST (LH) - 4
SYS TEST (RH) - B
CM RCS HTRS - OFF
UR DUMP - OFF
WASTE H2O DUMP - OFF
RNDZ XPNDR - OPR

Basic Date Changed

PANEL 122

OPT ZERO - ZERO
OPT TELTRUN - SLAVE TO SXT
OPT COUPLING - DIRECT
OPT MODE - MAN
OPT SPEED - LO
COND LAMPS - OFF
UP TLM - ACCEPT

Basic Date Changed

PANEL 162

SCI PWR - OFF

PANEL 163

SCI/UTIL PWR - OFF

PANEL 201

FOOD WARMER - OFF

PANEL 225

cb Panel 225 - all closed except:
   cb HI GAIN ANT FLT BUS - open
   cb HI GAIN ANT GRP 2 - open

Do not read to crew

cb S BAND FM XMITTER DATA STOWAGE EQUIP GROUP 1 - open
cb S-BAND FM XMITTER DATA STOWAGE EQUIP FLT BUS - open
cb FLT BUS MNA & MNB (BOTH) - open
cb CTE (BOTH) - open
cb RNDZ XPNDR FLT BUS - open

PANEL 226

cb Panel 226 - all open except:
cb LIGHTING FLOOD MAN, MNB & FLT/PL - closed
cb LIGHTING NUMERICS/INTEGRAL LEB-AC2, LMDC-AC1 & RMCS-AC1 - closed

PANEL 227

SCI PWR - OFF

PANEL 229

cb Panel 229 all closed except:
cb MAIN REL PYRO (2) - open
cb O2 VAC ION PUMPS (2) - open
cb TIMERS MNA & MNB (2) - open

Basic Date Changed

PANEL 250

cb Panel 250 - all open except:
cb SEQ A - closed
cb SEQ B - closed

Basic Date Changed

PANEL 251

WASTE MGMT OVBD DRAIN vlv - OFF

PANEL 252

BAT VENT vlv - CLOSED
WASTE STOWAGE VENT vlv - closed

PANEL 275

cb Panel 275 - all open

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

Do not use

PANEL 276

cb Panel 276 - all closed

PANEL 278

cb Panel 278 - all open

PANEL 300

LH SUIT FLOW vlv - FULL FLOW

PANEL 301

RH SUIT FLOW vlv - FULL FLOW

PANEL 302

CTR SUIT FLOW vlv - FULL FLOW

Basic Date
Changed

PANEL 303

PRIM CAB TEMP vlv - COLD (CW)
SEC CAB TEMP vlv - COOL-MAX (CW)

PANEL 304

DRNK H2O SUPPLY vlv - OFF (CW)

Basic Date
Changed

PANEL 305

FOOD PREP COLD H2O vlv - rel
FOOD PREP HOT H2O vlv - rel

PANEL 306

MSN TMR - STOP
EVNT TMR RSET - UP (center)
EVNT TMR STRT - STOP
EVNT TMR MIN - center
EVNT TMR SEC - center
MSN TMR HR - center
MSN TMR MIN - center
MSN TMR SEC - center

Do not read to crew

PANEL 325

CAB PRESS RELF vlv (RH) - NORMAL
CAB PRESS RELF vlv (LH) - NORMAL
PRIM GLY TO RAD vlv - BYPASS (pull)

PANEL 326

REPRESS PKG vlv - OFF
SM 02 SUPPLY vlv - OFF
SURGE TK 02 vlv - OFF
GLY RSVR IN vlv - CLOSED
GLY RSVR BYPASS vlv - OPEN
GLY RSVR OUT vlv - CLOSED

PANEL 350

CO2 CSTR DIVERT vlv - both (center)

Basic Date Changed

PANEL 351

MAIN REG vlv (2) - CLOSED
H2O/GLY TK PRESS REG vlv - OFF
H2O/GLY TK PRESS RELF vlv - OFF
EMER CAB PRESS vlv - OFF
CAB REPRESS vlv - OFF (CCW)

Basic Date Changed

PANEL 352

WASTE TK SERVICING vlv - CLOSE
PRESS RELF vlv - 2
POT TK IN vlv - OPEN
WASTE TK IN vlv - AUTO

PANEL 375

SURGE TK PRESS RELF vlv - open (CW)

PANEL 376

PLVC - NORMAL (up)

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

Do not turn to crew

PANEL 377

GLY TO RAD SEC vlv - BYPASS (CCW)

PANEL 378

PRIM GLY ACCUM vlv - open (CCW)

PANEL 379

PRIM ACCUM FILL vlv - OFF (CW)

PANEL 380

02 DEMAND REG vlv - OFF
SUIT TEST vlv - OFF
SUIT CKT RET vlv - OPEN (Pull)

PANEL 382

Basic Date Changed

SUIT HT EXCH PRIM GLY vlv - FLOW (CCW)
SUIT FLOW RELF vlv - OFF
PRIM GLY EVAP IN TEMP vlv - MIN (CCW)
SUIT HT EXCH SEC GLY vlv - FLOW (CCW)
SEC EVAP H2O CONT vlv - OFF (CCW)
PRIM EVAP H2O CONT vlv - OFF (CCW)
H2O ACCUM vlv (2) - RMTE (CCW) CREW REPORTED WENT TO OFF

Basic Date Changed

PANEL 600

EMER 02 vlv - close

PANEL 601

REPRESS 02 vlv - close

PANEL 602

REPRESS 02 RELF vlv - OPEN (CW)

FWD HATCH

PRESS EQUAL vlv - CLOSE
ACTR HNDL sel - stow/check locked

Do not read to crew

BL-14

SIDE HATCH

CAB PRESS DUMP vlv - close (CW)
GEAR BOX sel - LATCH
ACTR HANDLE sel - UNLATCH
LOCK PIN REL KNOB - LOCK
LOCK PIN ind - flush
GN2 VLV HANDLE - outboard
BPC JETT KNOB - toward BPC JETT

* - last momentary position before liftoff.

Basic Date
Changed

Basic Date
Changed

EI-6+30 ASSUMES LM PWR TO MN B

LM PADS

SM JETT ATTITUDE
MOON VIEWING ATTITUDE
SUN VIEWING ATTITUDE
LM JETT ATTITUDE

CM PADS

COARSE ALIGN ANGLES FOR LM ATTITUDES DURING MOON (AND SUN) NO SUN
SIGHTINGS
COARSE ALIGN ANGLES FOR ENTRY REFSMMAT } Available no plans to send up.
CMC ANGLES ON ENTRY REFSMMAT FOR:

1. LM JETT
2. MOON VIEWING
3. ENTRY

INSTALL LIOH CANNISTERS, STOW ORDEAL

PNL 8 - FLOOD LIGHTS - FIXED

PNL 5 - INTERIOR LIGHTS RHEOSTAT TO FLOOD, LEB 100 FLOOD - FIXED

PNL 8

cb EMS MNA & MNB - OPEN

PNL 250

cb BAT A PWR ENTRY/POST LANDING - CLOSED
cb BAT B PWR ENTRY/POST LANDING - CLOSED
cb BAT C PWR ENTRY/POST LANDING - CLOSED

PNL 5

cb BAT CHG BAT A CHG - CLOSED
cb BAT CHG BAT B CHG - CLOSED
MAIN BUS TIES (2) - ON (UP) VERIFY
cb EPS SENSOR SIGNAL MNA & MNB - CLOSED
cb BAT RELAY BUS BAT A & B - CLOSED

PNL 275

~~cb MNB BAT BUS B~~ ~~CLOSED~~
cb MNA BAT C - CLOSED

PNL 276

cb INST PWR CNTL 3 & 4 - OPEN

PNL 5

cb ESS INST PWR [redacted] MNB - CLOSED

PRIM EVAP H2O CNTL VLV - AUTO (CW)

SEC EVAP H2O CNTL VLV AUTO (CW)

PERFORM CSM RCS PREHEAT, PAGE E1-5, STEP 35 & 37

35 (-6:30 ~~-01:10~~h) CM RCS PREHEAT

Note: If sys test mtr 5c,d,6a,b,c,d all read 3.9 vdc (28°F) or more, omit preheat

(8) cb RCS LOGIC (2) - close
CM RCS LOGIC - on (up)

(8) cb CM RCS HTRS (2) - close

(101) CM RCS HTRS - ON (LMP Confirm) (20 min or til lowest rdg is 3.9 vdc) (Monitor Manf press for press drop)

37 (-6:10) TERM. CM RCS PREHEAT

(101) CM RCS HTRS - OFF
CM RCS LOGIC - OFF

(8) cb CM RCS HTR (2) - open

PNL 5

cb C&W MNB - CLOSED

PNL 2

C&W PWR - 1 MCC W CW RES 1 & 2

PNL 5

cb EPS SENSOR UNIT DC BUS A&B - CLOSED

PNL 3

MAIN BUS A & B - RESET/CENTER

EI-5+05

EARTH TERMINATOR AGS ALIGN

EI-5+00

MCC 7

MANEUVER TO SEP ATTITUDE

EI-4+40

PERFORM PYRO BATT CHECK [redacted] PAGE E1-6, STEP 39

39 PYRO BATT CK

(250) cb PYRO A SEQ A - close (verify)
cb PYRO B SEQ B - close (verify)
DC IND - PYRO BAT A(B)
*If PYRO BAT A(B) < 35 vdc *
(250) *cb PYRO A(B) seq A(B) - open *
cb PYRO A(B)BAT BUS A(B)TO PYRO
* BUS TIE - close *

~~(275) cb MNA BAT C close~~
~~cb MNB BAT C close~~
~~DC IND MNB~~
PNL 8 - All cb's closed except:

cb SM RCS HTRS C MNB - OPEN
cb SM RCS HTRS D MNA - OPEN
cb EMS (2) - OPEN
cb SPS GAUGING (4) - OPEN

EDS BAT (3) - open (verify)
PL VENT - open (verify)
FLOAT BAG (3) - open (verify)
SPS P&Y (4) - open
CM RCS HTRS (2) - open (verify)
DOCKING PROBE (2) - open (verify)
DIRECT ULLAGE (2) - open

PNL 8

ALL cb's CLOSED EXCEPT:

DIRECT ULL MNA & MNB	- OPEN
CM RCS HTR MNA & MNB	- OPEN
SM RCS HTRS C MNB	- OPEN
SM RCS HTRS D MNA	- OPEN
EMS MNA & MNB	- OPEN
SPS GAUGING (4)	- OPEN
SPS PITCH & YAW (4)	- OPEN
FLOAT BAG (3)	- OPEN
EDS (3)	- OPEN
PL VENT/FLT/PL	- OPEN

CM RCS ACTIVATION E 1-6, STEP 41

41 (-4:40) CM RCS ACTIVATION

(8) cb SECS ARM (2) - close (verify)
SECS LOGIC (2) - on(up)
MSFN confirm GO for PYRO ARM
SECS PYRO ARM (2) - ARM
CM RCS PRPLNT 1&2 tb(2) - gray (verify)
CM RCS PRESS - ON
RCS IND sw - CM1, then 2
He PRESS stabilizes at 3300 - 3500
psia after 15 minutes
MANF PRESS 287-302 psia
SECS PYRO ARM (2) - SAFE

~~PNL 8~~

~~SECS LOGIC (2)~~ ~~OFF (DOWN)~~

EI-4+30

VERIFY LM CONFIGURED FOR RCS HOT FIRE

PNL 5

cb G/N IMU HTR MNB - CLOSED

PNL ~~8~~ 1

ROT CNTL PWR NORMAL (2) - AC/DC

PNL 7

SCS LOGIC PWR 2/3 - ON

PNL 2

RCS CMD - ON

CM RCS HTR SW — OFF

CM RCS CHECK E 2-1, Step 4

4 (-4:30) CM RCS CHECK

AUTO RCS A/C ROLL (4) - OFF (verify)
cb RCS LOGIC (2)-close (verify)
SC CONT - SCS
MAN ATT (3) - ~~MIN IMP~~ ACCEL CMD
RCS TRANSFER - CM
AUTO RCS SEL (RING 1) - MNA
AUTO RCS SEL (RING 2) - MNB
cb SCS B/D ROLL, P&Y MNA (3) - open
TEST RING 2 THRUSTERS
cb SCS B/D ROLL, P&Y MNA (3) - close
cb SCS B/D ROLL, P&Y MNB (3) - open
TEST RING 1 THRUSTERS
cb SCS B/D ROLL, P&Y MNB (3) - close
~~RCS TRANS SM~~
~~MAN ATT (3) RATE CMD~~
~~SC CONT CMC/AUTO~~

LOCK RHC'S

PNL 8

SECS PYRO ARM 2) - ARM

LM +X 0.5 FT/SEC

PNL 2

CM/SM SEP (2)	- ON (UP)

LM -X 0.5 FT/SEC

PNL 8

SECS PYRO ARM (2)	- SAFE (DOWN)
SECS LOGIC (2)	- OFF

LM PITCH UP TO ACQUIRE SM AND PHOTOGRAPH

(LM USE ACA FOR ALL ROTATIONS)

EI-3+00

MOON VIEW

LM START MANEUVER TO ~~CM ATTGN~~ ATTITUDE

PNL 5

cb G/N COMPUTER ~~MNA~~ MNB	- CLOSED

37E06E PRO (HOLD TIL DSKY BLANKS) ~~- STANDBY~~

EI-2+30

PNL 5

cb ESS INST MNA	- CLOSED
cb G/N IMU HTR MNA	- CLOSED
cb LM PWR 1	- OPEN
cb LM PWR 2	- OPEN
G/N COMPUTER MNA	- CLOSED

PNL 275

cb MNB BAT BUS B	- CLOSED
cb INVERTER PWR 1, 2, 3	- CLOSED

PNL 5

cb BATT RLY BUS BAT A & B	- CLOSED
cb INV CONTROL 1-2 & 3	- CLOSED

PNL 3

AC INVERTER 1	- MNA
AC INV 1 AC BUS 1	- ON (UP)
AC INV 1 AC BUS 2	- ON (UP)

PNL 5

cb EPS SENSOR SIG AC 1 & 2	- CLOSED
cb EPS SENSOR UNIT AC 1 & 2	- CLOSED
cb C&W MNA	- CLOSED

PNL 3

cb AC INV AC BUS 1 & 2	- RESET (CNTR)

PNL 225

cb FLT BUS MNA & MNB	- CLOSED
cb CTE MNA & MNB	- CLOSED

PNL 4

TELECOM GROUP 1	- AC 1
TELECOM GROUP 2	- AC 2

PNL 3

S-BAND NORM XPONDER	- PRIM
PWR SCE	- NORM
PWR PMP	- NORM
UPTLM CMD RESET	- RESET THEN NORM

PNL 2

UPTLM CM	- ACCEPT

PNL 275

cb FLT/POST LANDING MNA & MNB	- CLOSED

CONFIGURE FOR COMM ON PNL 6, 9 & 10

PNL 5

cb IMU MNA & MNB	- CLOSED
cb OPTICS MNA & MNB	- CLOSED
cb G&N PWR AC 1	- CLOSED
cb G&N PWR AC 2	- CLOSED
G&N PWR SW	- AC-2

PERFORM CMC POWER UP PER CSM G&C CHECKLIST G 2-2

~~EXCEPT: SELECT V96 ON FL 37~~

CMC POWER UP PROCEDURE

PRO, push until STBY lt - out
(repeat, if necessary)
CMC warning, RESTART, PROG ALARM
*RSET and continue *

F 37 ~~00~~ V96E

See next Pg.

PERFORM EMS CHECK STEP 32, E 1-4

(-2:30) E 1-4

IF Necessary Move to EI-55

32 ~~-01:15h~~ EMS ENTRY CHECK

EMS FUNC - OFF
(8) cb EMS (2) - close
EMS MODE - STBY
EMS FUNC - EMS TEST 1 (wait 5 sec)
EMS MODE - NORMAL (wait 10 sec)
Check ind lts - off
RANGE ind - 0.0
Slew hairline over notch in self-test pattern
EMS FUNC - EMS TEST 2 (wait 10 sec)
.05G lt - on (all others out)
EMS FUNC - EMS TEST 3
.05G lt - on
RSI lower lt - on (10 sec later)
Set RANGE counter to 58 nm±0.0
EMS FUNC - EMS TEST 4
.05G lt - on (all others out)
G-V trace within pattern to lwr rt corner @9G
RANGE ind counts down to 0±0.2
EMS FUNC - EMS TEST 5
.05G lt - on
RSI upper lt - on (10 sec later)
RANGE ind - 0.0
Scribe traces vertical line 9g to 0.28±0.1
ALIGN SCROLL TO ENTRY PATTERN (on 37K ft sec line)
EMS FUNC - RNG SET
G-V scroll assy traces vert. line 0.28g to 0±0.1
EMS MODE - STBY
cb EMS (2) - OPEN

DO NOT INITIALIZE RTGO

V74E - EMOD

EI -2:15

CLOCK INCREMENT UPDATE
P27 UPDATES: STATE VECTOR, V66 ACTUAL & PREFERRED REFSMMATS ENTRY TARGET

PERFORM IMU POWER UP - G 2-1

IMU POWER UP PROCEDURE

LOGIC POWER 2/3-on
FDAI POWER - ~~BOTH~~ 1
FDAI SELECT - 1/2
CMC MODE - FREE

1 G/N IMU PWR - on (up)
NO ATT lt - on (90 sec)
NO ATT lt - out

2 V37E XXE

*If CMC not available: *
* G/N IMU PWR - on(up) *
* Wait 90 sec *
* IMU CAGE - on(up) 5 sec,*
* then release *

PERFORM OPTICS POWER UP - G 2-3

OPTICS POWER UP PROCEDURE

Verify optics manual drive disengaged

G/N PWR OPTICS - on (up)

OPT ZERO - OFF
OPT ZERO - ZERO (15 sec)

PNL 229

cb TIMERS MNA - CLOSED
SET MISSION TIMER

CSM
V41 N20
R_____P_____Y_____ (PAD CSM COARSE ALIGN ANGLES)

V40 N20 E WHEN AT MOON VIEW LM FDAI ANGLES, PRESENT REFSMMAT SET REFSMMAT
AND DRIFT FLAGS PG G7-1, STEPS 3 & 4

V37E 52E OPTION 1

Docked

COARSE ALIGN IN SM Jett Attitude

~~MARK ON MOON~~

~~LM MANEUVER TO SUN~~ VIEW ATTITUDE
~~MARK ON SUN~~
~~PULSE~~ TORQUE N93

MCC Provide 3 Coarse Align ∠'s then Into V40N20

Perform P-52
LM MANEUVER TO JETTISON ATTITUDE (WATCH GIMBAL LOCK)

LM ~~MIN~~ MAX DB, ATT HOLD

PNL 275

cb MNA BAT BUS A - CLOSED
cb ~~MB~~ MNB BAT C - CLOSED

T-2HR
Check CM RCS Temps

EI-1+30

PROCEED WITH CLOSEOUT AND HATCH INSTALLATION; CLOSE LM HATCH, DUMP VLV - OPEN

PERFORM HATCH DECAL

12 HATCH INTEGRITY CHECK (Decal)
Verify LM Hatch Closed, DUMP vlv - AUTO (CDR)
Verify CABIN PRESS ind - 4.7-5.3 psi
TUNL VENT vlv - TUNL VENT ~~for 30 sec~~ UNTIL
- LM/CM ΔP, ~~check ΔP~~ = 3.0
~~Recycle to TUNL VENT until ΔP>3.5~~
~~(0.8-1/2 min)~~

tunnel - 1.5 to 2.0

*Cannot vent tunnel: *
* If O2 FLOW ind increases, open hatch,*
* wipe seal surfaces, close hatch *
* If O2 FLOW ind does not increase, dump*
* tunnel through LM during reg check *
* Monitor LM/CM ΔP & flow to check *
* integrity *

Verify LM/CM ΔP ind constant (±.2) at last value for 2 min

Verify O2 FLOW ind - no increase

Before Undocking only:
TUNL VENT vlv - LM TUNL VENT for 10 min, then LM/CM ΔP
Verify LM/CM ΔP >4.0 (pegged)
TUNL VENT vlv - OFF
TUNNEL LIGHTS - OFF
Before Jettison only:
TUNL VENT vlv - TUNL VENT (at least 10 min)
TUNNEL LIGHTS - OFF (VERIFY)

LM TUNNEL VENT VLV - CM/LMΔP

SURGE TK O2 VLV -ON
MAIN REG VLV (2) -OPEN
H2O/GLY TK PRESS REG VLV - BOTH
H2O/GLY TK PRESS RLV VLV - BOTH
EMER CAB PRESS VLV -BOTH
SUIT DEMAND REGS -BOTH

PNL 5

cb ECS TRANSDUCERS PRESS GROUP 1 & 2 MNA & MNB (4) - CLOSED

[redacted]

cb ECS TRANSDUCERS TEMP MNA & MNB (2) - CLOSED

PNL 4

PRI ECS GLYCOL PUMPS 1 - AC1

[redacted]

INCREASE CABIN PRESS TO 5.5 PSIA (DIRECT O_2) [redacted]

VERIFY LM-CM ΔP - POSITIVE AND NOT DECREASING FOR 10 MIN

EI-1+20

PNL 7

[redacted]

BMAG #1 PWR - WARMUP

MC&W Expected

EI-1+10

PERFORM SCS POWER UP PAGE G 2-4

PNL 1
SUIT COMP #2 - AC1

S/C CONTROL - SCS

MAN ATT SWITCHES (AS DESIRED)

PERFORM GDC ALIGN

PNL 8

ROT CNTL PWR DIRECT 1 & 2 - MNA/MNB

EI-1+00

V37E47E

PNL 8

SECS PYRO ARM (2) - UP/ON

GO FROM MSFN

PNL 2

CSM LM FINAL SEP (2) - UP/ON

PNL 8

SECS PYRO ARM (2) - SAFE

PRO OOE

CONFIGURE FOR SINGLE RING

MANEUVER TO ENTRY ATTITUDE

EI-55 MINS

SEXTANT STAR CHECK

PARK OPTICS 90° SHAFT
OPTICS POWER OFF
STOW OPTICS

~~PNL 8~~

~~cb EMS MAIN A & B~~ ~~- CLOSED~~

INITIALIZE EMS, PAGE E 2-1, STEP 2

2 (-00:55) EMS INITIALIZATION

cb EMS (2) - CLOSE

Scroll not on 37K:
EMS FUNCT - TEST 5
Slew scroll to 37K

EMS FUNCT - RNG SET (verify)
SET RNG TO PAD DATA RNG
EMS FUNC - Vo SET
Slew Scroll to Pad Data VIO
EMS MODE - STBY (verify)
EMS FUNC - ENTRY

Alt EMS Init Time.

EI-45 MINS

ENTRY PAD & STATE VECTOR

MANEUVER TO MOON ATTITUDE CHECK (36° WINDOW MARK)

EI-40

PNL 7.

BMAG #2 PWR - WARMUP

MC&W Expected

VERIFY SURGE TANK & REPRESS PKG ON

PNL 5

cb ENV CONT SYS WASTE WATER/URINE DUCT HTR (2) - CLOSED

SUIT COMP #2 - OFF

EI-30

SECS LOGIC (2) - ON (UP)

PNL 7

BMAG #2 PWR - ON

FDAI PWR - BOTH

~~PNL 275~~

~~cb MNA BATT BUS A~~ - ~~CLOSED~~

~~cb MNB BATT C~~ - ~~CLOSED~~ ✓

ACTIVATE PRIMARY EVAPORATOR

EI-19 MIN

GO TO ENTRY CHECKLIST E 2-2

12

5 ~~30:00m~~ ~~MN BUS TIE (2) - ON~~
(~~30:00~~) ~~TAPE RCDR - REWIND~~

6 ~~35:00m~~ ~~SEPARATION CHECKLIST~~
(~~25:00~~) ~~cb ELS BAT (2) - close (verify)~~
~~TRIM GLY TO RAD - BYPASS (pull)~~
~~REPRESS PKG vlv - FILL to 865-935,~~
~~then ON~~
~~O2 SM SUPPLY vlv - OFF~~
~~SURGE TK - ON (verify)~~
~~CAB PRESS REL vlv (2) - NORM~~
~~ABORT SYS PRPLNT - RCS CMD (verify)~~
~~SM RCS SEC PRPLNT FUEL PRESS (4) - ON~~
~~VHF AM A&B - off (ctr)~~
~~HI GAIN ANT PWR - OFF~~
~~FC PUMPS (3) - OFF~~
~~FC 2 MNA - OFF~~
~~Verify Loads Balanced~~
~~S BD PWR AMP - LOW~~
~~cb ECS RAD CONT/HTR (2) - open~~
~~cb WASTE H2O/URINE DUMP HTR (2) - open~~
~~cb RAD HTRS OVLD (2) - open~~
~~POT H2O HTR - OFF~~
~~GLY EVAP TEMP IN - MAN~~

SUPERCIRCULAR ENTRY

Basic Date 170 3/27/70
Changed

7 MNVR TO ~~HORIZON~~ MIDR CHECK ATT

MNVR TO PAD ATT
R _____(0°)
P _____(~~265°~~) 2°
Y _____(0°)

~~S BD OMNI ANT - C~~

START HERE

P61 - ENTRY PREP

1 EI-M:0c V37E 61E (AVE G ON)

05 09 01427 - ROLL REVERSED
*05 09 01426 - IMU UNSAT *

CSM 1C

2 F 06 61 IMPACT LAT, LONG, HDS UP/DN (+/-)
41:30m (.01°,.01°,±00001)
(-18:30) PRO

3 F 06 60 GMAX,V400K,GAMMA EI (.01G,fps,.01°)
Record
GMAX _____
V400K _____
GAMMA EI _____
PRO

4 F 16 63 RTOGO (.1nm) _____ PAD _____
VIO (fps) _____ PAD _____
TFE(min-sec) _____
If NO COMM, Set RTOGO & VIO in EMS
& initialize
(ACCEPT) PRO
(RECYCLE) V32E to 3

P62 - CM/SM SEP & PRE-ENTRY MNVR

5 F 50 25 00041 REQUEST CM/SM SEP
~~42:00~~ ~~COMPARE PITCH ATT WITH PAD DATA~~
(-17:00) If not ±5°, G&N NO GO
YAW - 45° OUT-OF-PLANE (LEFT) (315°)
RATE - HIGH
ATT DB - MIN
MAN ATT(3) - RATE CMD
SC CONT - SCS/FREE
BMAG MODE (3) - ATT1/RATE 2
MN BUS TIE (2) - ON (verify)
PRIM GLY TO RAD - BYPASS (verify)
EMS MODE - STBY (verify)
CM RCS LOGIC - on (up)
SECS LOGIC (2) - on(up)(verify)
SECS PYRO ARM (2) - on (up)

~~45:00m~~ CM/SM SEP (2) - ON
~~(-15:00)~~ If docking ring still on:
CSM/LM FNL SEP (2) - on(up)(verify)

Basic Date 3/9/70
Changed

CSM 109

E
2-4

(258°P)

MAN ATT (3) - MIN IMP
BMAG MODE (3) - RATE 2
C&W MODE - CM
RCS TRNFR - CM
CM RCS MANF PRESS - 287-302 psia
CM RCS LOGIC - OFF
SECS PYRO ARM (2)-SAFE
Monitor VMA/B:
If <25 vdc go to EMERG
POWERDOWN PG

50:00m
(-10:00)
(236°P)

AUTO RCS SEL A/C ROLL (4) - OFF (verify)
cb SCS B/D ROLL, P & Y MNB (3) - open
AUTO RCS SEL CM 1(6)-MNA (verify)
YAW back to 0°
PITCH TO HORIZ TRACK ATT
ROLL - 0° (LIFT UP)
PITCH - 400K Horiz Mark (31.7°)
YAW - 0°

(__:__:__)

Dark Horiz

(__:__:__)

ATT DB - MAX
EMS DATA - Verify
EMS FUNC - ENTRY (verify)
EMS MODE - NORMAL
MAINT HORIZ TRK
MAN ATT (3) - RATE CMD
PRO (Act ENTRY DAP Att Hold)

6 F 06 61 IMPACT LAT,LONG,HDS/DN (.01°,.01°,-00001)
PRO (CMC Guidance)
MAN ATT (3) - MIN IMP (if desired)

7 POSS 06 22 FINAL ATT DISP, RPY (.01°)
(Only if X-axis beyond 45° of Vel vector)

P63 - ENTRY INIT

8 06 64 G,VI,RTOGO (.01G,fps,.1nm)
FDAI SCALE - 5/5
ROT CONTR PWR DIR (2) - MNA/MNB
TAPE RCDR - HBR/RCD/FWD

Basic Date 3/9/70
Changed

CSM 109

15

57:37 MOON SET
~~58:00m~~
(-02:60)23
(177°P)

CHECK
Pitch error needle goes toward
zero approaching .05G time
If CMC is GO:
MAN ATT (3) - RATE CMD (verify)
SC CONT - CMC/AUTO

*If DAP NO GO: *
* SC CONT - SCS*
* FLY BETA *
*If CMC NO GO: *
* SC CONT - SCS*
* FLY EMS *

BEGIN BLACKOUT
PNL 3

PWR SCE -OFF
~~PWR PMP OFF~~

P64 - ENTRY POST .05G
(If no P64 at .05G ±5 sec & .05G Lt - on,
GNCS NO GO)

Start DAC

Basic Date 3/9/70
Changed

9 (158°P at 400K)
(RRT=0:00)

RTOGO AT .05G AGREES WITH EMS-verify
HORIZ CHECK
.05G lt - on (EMS START)

.05G time
(+0__:__)
(__:__:__)
(152°P at .05G)

* No EMS START within 3 sec: *
* EMS MODE - BACKUP/VHF RNG *

S Band P/A - High.

.05G sw - on (up)
EMS ROLL - on (up)

06'74 BETA, VI, G (.01°,fps,.01G)
NOTE: To monitor N68, (BETA,VI,HDOT)
Key V16 N68E
Compare RSI & FDAI
If CMC or PAD cmds Lift DN,
MNVR Lift DN (Lift UP at 1.5 G)
EMS GO/NO GO
G-V Plot within limits
Monitor G-meter for
convergence with pad data (Do)
CMC is NO GO if commanding
>±90° when G >6.52
Go to 13 (P67) or continue

CSM 109