APOLLO 17
DECEMBER 6 LAUNCH

DO NOT DISCARD
THIS COPY BASELINE FOR
ALL LAUNCH DATES

CHANGE A
CSM LAUNCH
CHECKLIST

PREPARED BY
FLIGHT PROCEDURES BRANCH
CREW PROCEDURES DIVISION

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

OCTOBER 11, 1972
APOLLO 17

CSM LAUNCH CHECKLIST

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It is requested that any organization having comments, questions, or suggestions concerning this document contact Dennis L. Bentley, Flight Procedures Branch, CG42, Building 4, room 256, telephone 483-3291.

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+06:15 OMNI ANT - D (AZ < 96°) - C (AZ > 96°)
+06:45 SIVB to orbit
+07:00 Report Status
+07:41 IECO (Itt 5 - on)
+08:00 Report Status
+08:11 PU SHIFT
+08:30 GO/NO GO FOR STAGING - report
+08:36 Level sense arm
+09:17 Mode IV - Report
  (VI ~ 22,685, H DOT ~ +104, H ~ +94)
+09:20 DECO (Its on)
+09:21 SII Staging - Its out
+09:22 SIVB Ign Cmd - It on
+09:24 SIVB 65% - It out
+10:00 GO/NO GO FOR ORBIT - report
+10:24 MODE III
+11:00 Report Status
+11:51 SECO (Itt on) - report
  (Begin TB5)
  *If LV GUID - CMC:
  * LV STAGE sw - SII/SIVB
  * SECO (It on, begin TB5)*
  *If no SECO (VI +100 fps):
  * THC-CCW & neutral in 1 sec*
+12:01 INSERTION - It out (TB5 + 10 sec)
  Record VI (fps)  H DOT (fps)  H PAD (.1nm)
  KEY RLSE
  Record HA (.1nm)  HP (.1nm)  TFF (min-sec)
SM RCS Control of SIVB (APS module failed)

LV GUID - CMC
MAN ATT (ROLL) - MIN IMP
cb SECS ARM (2) - close
AUTO RCS SEL P&Y - OFF
AUTO RCS SEL A/C ROLL - MNB
AUTO RCS SEL B/D ROLL - MNA
RCS CMD - ON
BSE command BURN MODE ON
If successful: LV GUID - IU
Control PITCH & YAW with THC, ROLL with RHC
Allow SIVB to drift in PITCH (Gravity Gradient)
Control YAW within platform limits
Perform normal procedures except:
TB6-15min: Mnvr to R2 Align Att & set up ORDEAL Pitch = 0°
Hold R2 Align Att until Ignition
Null Ullage deviations with SM RCS
After TLI IGNITION: RCS CMD - OFF
AUTO RCS SEL (16) - MNA/MNB
MAN ATT (3) - RATE CMD
After TLI CUTOFF: LV GUID - CMC
MAN ATT (3) - ACCEL CMD
RCS CMD - ON
PANCAM R SELF TEST - off (ctr)
PANCAM R STEREO - STEREO
PANCAM R MODE - STBY
PANCAM R OPR tb - gray
PANCAM R PWR - BOOST
PANCAM R V/h OVRO - off (ctr)
UV SPECT - OFF

**PANEL 250**

- cb Panel 250 - all closed except:
  - cb PYRO A TIE TO BAT BUS A - open
  - cb PYRO B TIE TO BAT BUS B - open
  - cb BAT C TO BAT BUS A - open
  - cb BAT C TO BAT BUS B - open

**PANEL 251**

- WASTE MGMT OVBD DRAIN vlv - OFF

**PANEL 252**

- BAT VENT vlv - VENT
  - WASTE STOWAGE VENT vlv - VENT

**PANEL 275**

- cb Panel 275 - all closed except:
  - cb MNA BAT C - open
  - cb MNB BAT C - open
  - cb FLT/PL BAT BUS A - open
  - cb FLT/PL BAT BUS B - open
  - cb FLT/PL BAT C - open

**PANEL 276**

- cb Panel 276 - all closed

**PANEL 277**

- cb Panel 277 - all open
  - SPS PRESS FUEL IND - 1
  - SPS PRESS OXID IND - 1
PANEL 278

cb Panel 278 - all closed except:
  cb UPRT SYS COMPR (2) - open
MAP CAMR/LASER EXP COVERS - ctr
MAP CMR/LASER EXP COVERS tb - gray
IR EXP COVER - ctr
IR EXP COVER tb - gray
UV EXP COVER - ctr
UV EXP COVER tb - gray
SM PWRSOURCE - FC2 (guarded)
02 TK 3 ISOL vlv - (ctr)(OPEN*)
02 TK 3 ISOL vlv tb - gray

PANEL 300

RH SUIT FLOW vlv - FULL FLOW

PANEL 301

LH SUIT FLOW vlv - FULL FLOW

PANEL 302

CTR SUIT FLOW vlv - FULL FLOW

PANEL 303

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

PANEL 304

DRNK H2O SUPPLY vlv - OFF (CW)

PANEL 305

FOOD PREP COLD H2O vlv - rel
FOOD PREP HDT H2O vlv - rel
INSERTION AND SYSTEMS CHECKS

1. GBML MTRS (4) - OFF (LMP confirm)
   TVC SERVO PWR (2) - OFF
   SECS PYRO ARM (2) - SAFE
   SECS LOGIC (2) - OFF
   cb SECS ARM (2) - open
   cb DIRECT ULLAGE (2) - open
   cb ELS/CM-SM SEP (2) - Open (verify)
   cb FLT/PL VENT - open
   MN BUS TIE (2) - OFF (LMP)
   EMS FUNC - OFF
   TRANS CONT PWR - OFF
   ROT CONTR PWR DIRECT (2) - OFF
   BMAG MODE (3) - RATE 2
   CM RCS LOGIC - OFF
   LV STAGE sw - OFF (verify)
   RHC #1 & #2 - LOCKED
   CAB PRESS REL vlv (2) - NORMAL/LATCHED
   REPRESS PKG vlv - OFF
   cb ECS XDUCR PRESS GRP 2 MNA - close
   INSTALL COAS

2. MONITOR LV TANK PRESS
   *If \( \Delta P > 30 \text{ psid} \) (OXID > FUEL) or *
   *If \( \Delta P > 20 \text{ psid} \) (FUEL > OXID) or *
   *If LOX TK PRESS >50 psia: *
   * EMERGENCY CSM/LV SEP, pg EMER/1-1*
   CYI AOS (00:16:44)
   NOTE: Steps 2 thru 22 are not sequential

3. SM RCS HTRS (4) - PRIM
   C/W - NORMAL
   BPC JETT KNOB - 180° from BPC JETT
   GN2 vlv HNDL - VENT (pull)
   HATCH GEAR BOX - LATCH (verify)
   ACTR HNDL SELECTOR - neutral

4. cb WASTE H2O/URINE DUMP HTRS (2) - close
   FC REACS vlv - NORM
   H2 PURGE LINE HTR - ON
MCCH - G/N Status
Z Torquing angle

SM RCS MONITORING CHECK
SM RCS PRPLNT tb (8) - gray
SM RCS He 1 & 2 tb (8) - gray
SM RCS IND - He TK TEMP
RCS IND sel - SM, A, B, C, D
PKG TEMP - 115°-175° F (C/W 75°-205°)
He PRESS - 4100-4200 psia
MANF PRESS - 192-207 psia (C/W 145-215 psia)
He TK TEMP - 60°-90°F

CM RCS MONITORING CHECK
CM RCS PRPLNT tb (2) - gray
RCS IND sw - CM 1,2
He TEMP - 60°-90°F
He PRESS - 4100-4200 psia
MANF PRESS - 80-105 psia

C/W OPERATIONAL CHECK
C/W LAMP TEST - 1 (LH MA & 15 lts)
C/W LAMP TEST - 2 (RH MA & 20 lts)
C/W CSM - CM (CM RCS lt (2) - on)
C/W CSM - CSM (CM RCS lt (2) - out)

CMP to LEB for MN REG CHECK
STRUT UNLOCK LANYARD (2) - STOW
DRINKING WATER SUPPLY vlv - ON
cb COAS/TUNLT GT NMB - close
Unstow:
Helmet bags (U1)
Accessory bags (U1)
Tool E (L2)

CONFIRM NORMAL SUIT and CABIN PRESSURE
If cabin press > 5.3:
- O2 flow - 0.7 lb/hr
If 4.7 < cabin press < 5.3:
- O2 flow - 0.6 lb/hr to pegged hi
EMERG CABIN PRESS vlv - BOTH
SUIT CKT RET vlv - open (pull)
Remove helmet & gloves & stow in PGA bag
Unstow & mount TSB's (U1)
**16 ECSC MONITORING CHECK**

- **SUIT COMP ΔP** - 0.3 - 0.4 psid
- **O2 SURGE TANK PRESS** - 865 - 935 psia
- **REPRESS O2** > 865 psia
- **PRIM RAD tb** - gray
  * If PRIM RAD tb - 2
  * ECS RAD FLOW AUTO CONT - 1 until *
  * tb gray, then AUTO *
- **ECS RAD TEMP PRIM IN** - 67 - 97°F
- **ECS RAD TEMP PRIM OUT** - -20° to +63°F
- **PRIM GLY EVAP TEMP OUT** - 38 - 50.5°F
- **PRIM GLY DISCH PRESS** - 40 - 52 psig
- **SUIT TEMP** - 45 - 55°F
- **SUIT PRESS/CABIN PRESS** - 4.7 - 5.3 psia
- **PART PRESS CO2** < 7.6 mm Hg
- **POT H2O QTY** - 10 - 100%
- **WASTE H2O QTY** - 25 - 85%

**17 SPS MONITORING CHECK**

- **SPS PPPLNT TK TEMP** ind - 45 to 75°F
  * IF < 45°F, SPS LINE HTRS - A
  * IF > 75°F, SPS LINE HTRS - off (ctr)
- **SPS PRESS IND sw** - He, N2A, & N2B
- **SPS PPPLNT TK PRESS** ind
  He 3900 psia max
  N2A 2900 psia max
  N2B 2900 psia max
- **SPS PRESS IND sw** - He
- **FUEL & OXID PRESS** ind - 170 to 195 psia
- **SPS PRESS IND sw (both)** - 2
- **FUEL & OXID PRESS** ind - 170 to 195 psia
- **SPS PRESS IND sw (both)** - 1
- **SPS ENG INJ VLVS (4)** - CLOSE
- Check SPS OXID, FUEL QTY & UNBAL
- **OXID FLOW VLV PRIM** - PRIM
- **SPS He VLV (1&2)** - AUTO, tb - bp

**18 GDC ALIGN** ( __ : __ : __ )

**19 UNSTOW SEQ CAMERA BRACKET & ORDEAL**

**20 MOUNT ORDEAL BOX & INITIALIZE**
21 SECONDARY GLYCOL LOOP CHECK

ECS IND sw - SEC
SEC COOL LOOP PUMP - AC1
GLY DISCH SEC PRESS - 39-51 psig
ACCUM SEC QTY IND - 30-55%
SEC COOL LOOP - EVAP

After 5 min:
SEC EVAP TEMP OUT - 38-50.5°F
SEC COOL LOOP EVAP - RSET 1 min,
off (ctr)
SEC COOL LOOP PUMP - off (ctr)
ECS IND sw - PRIM

22 UNSTOW CAMERAS

DAC (T8,1/250,10) 12 fps, MAG AA (B3)
Power cable (B3)
18mm lens (B3)
Rt. angle mirror (B3)
(Assemble & mount in L.H. rendezvous window)

EL (f8,1/250,focus) 10fr, MAG NN (B3)
Spotmeter
(Stow in LMP TSB)

TV (ALC - PEAK, f44) (A1)
Power cable (A1)
Bracket (A1)
Monitor & cable (A1)
(Assemble, connect cables & hand to LMP)

23 OPTICS DUST COVER JETT

Install Optics eyepieces
G/N PWR OPTICS - on (up)
OPT ZERO - OFF, then ZERO (15 sec)
OPT ZERO - OFF
OPT MODE - MAN
OPT COUPLING CONT - DIRECT
OPT SPEED CONT - HI
OHC - MAX RIGHT (Obs eject thru SCT)
(SXT 40°, SCT 150° shaft angle)
IMU REFSSMAT REALIGN CHECK (P52)

P52 - (PAD REFSSMAT)

N71: __ __ __ __

N05: __ __ __ __

N93: X __ __ __ __

Y __ __ __ __

Z __ __ __ __

GET: __ __ __ __

If IMU is realigned, Realign GDC (CDR)

OOE RETICLE BRIGHTNESS - DIM

CRO AOS 25
(00:52:21)
Increase S-BD volume

CRO LOS
(00:57:44)
Two way S-BD VOICE Check

HSK AOS
(00:59:37)
Report GYRO torquing angles

SCS ATT REF COMP CHECK
V16 N20E

FDAO SELECT - 1

FDAO SOURCE - ATT SET

ATT SET - GDC

ATT SET dials - null FDAO 1 err needles

Key VERB when nulled (freeze display)

Record from DSKY:

R , P , Y

Record from ATT SET dials:

R , P , Y

FDAO SEL - 1/2
27 EXTEND DOCKING PROBE
   cb DOCK PROBE (2) - close (verify)
   DOCK PROBE EXTD/REL - EXTD/REL until
      full probe extension
      (DOCK PROBE tb - gray at full extension)
   EXT RET
   FULL EXT Gray Gray
   FULL RET BP BP
   PART EXT BP Gray
   DOCK PROBE EXTD/REL - RETRACT (tb-gray)

28 COPY_TLI_ABORT & P37_PADS

US LOS  29 PS2 - IMU REALIGN (OPTION 3)
(01:48:42) Stow Optics Eyepieces

CYI AOS
(01:49:57)

CYI LOS
(01:54:44)

VERIFY DSE TAPE MOTION
      (LBR/RCD/FWD/CMD RESET)

SUNRISE
(01:59:23)

CRO AOS
(02:25:02)

CRO LOS
(02:30:53)

SUNSET
(02:49:34)

HAW AOS  30 SV_UPDATES, COPY_TLI_PAD
(02:50:15)

31 LOGIC_SEQUENCE_CK
   cb SECS ARM (2) - close
   Cue STDN
   HAW LOS
   SECS_LOGIC (2) - on(up)
   STDN confirm GO for PYRO ARM
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DATE: 10/11/72
## P30 Maneuver

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### Date

10/11/72
USAOS
(02:59:24)
L
2-27
TLI PREPARATION
XLUNAR - INJECT (verify)
EDS PWR - on (up) (verify)
Perform EMS ΔV TEST & NULL
BIAS CHECK, pg G/2-5
Set ΔVC
EMS FUNC - ΔV
GDC ALIGN
V48E, 31102, 0111
Key V83E
Set ORDEAL - 90/EARTH
SECS PYRO ARM (2) - ARM
TRANS CONTROL PWR - ON
US AOS
(02:59:24)
ROT CONTR PWR NORMAL (2) - AC/DC (verify)
ROT CONTR PWR DIRECT (2) - MNA/MNB
SC CONT - SCS (verify)
LV/SPS IND - SIVB (verify)
cb DIRECT ULLAGE (2) - close
Set DET - 51:00

P15 - TLI INITIATE/CUTOFF
V37E T5E
F 06 33 GET of TB6 (hrs,min,.01sec)
Load GET of TB6 PRO
F 06 14 VC/O (fps)
Load VC/O PRO
06 95 TFI, VG, VI (min-sec,fps,fps)
TLI, NOMINAL & MANUAL

LV GUID - IU (verify)
* If LV GUID it - on: *
  * LV GUID - CMC *
  * RHC PWR DIRECT (2) - OFF *

TB6 UPLINK ACTY lt - on
(-09:38) SII SEP lt - on (TIG-09:38)
TB6 + 10sec UPLINK ACTY lt - out

SII SEP lt - out
(-09:00) TB6 UPLINKACTY lt - on
Start DET counting up
* If LV GUID - CMC: *
  * V16 N20E *
  * MNVR to R2 Align = _____(278°)*

MONITOR LV TANK PRESS SEQUENCE
Nominal LOX ~ 40 psia
Nominal LH2 ~ 31 psia
* If AP > 36 psid (OXID > FUEL) or *
* If AP > 26 psid (FUEL > OXID) or *
* If LOX TX PRESS > 50 psia: *
  * EMERGENCY CSM/LV SEP pg EMER/1-1 *

ORDEAL FDAI #1 - ORB RATE
ORDEAL FDAI #2 - INERTIAL
ORDEAL MODE - HOLD/FAST
ORDEAL - 300/LUNAR
RHC #2 - ARMED

UP TLM CM - BLOCK (verify)
UP TLM IU - BLOCK (verify)

Slew FDAI #1 to PITCH = 17°
(-04:00) 56:00
* If LV GUID - CMC: *
  * Slew FDAI #1 to PITCH = 0° *
  * V16 N20E *
  * Insure R2 Align = _____(278°)*

DATE 9/4/72
57:10 Insure FDAO #1 PITCH = 12°

*ORDEAL MODE - OPERATE/SLOW, IU or CMC*

*If LV GUID - CMC:
* MNVR to R2 Ign = _____ (271.5°)*

58:15 DSKY BLANKS

58:20 06 95 TFI, VG, VI (Ave G on) (min-sec,fps,fps)

58:36 S11 SEP lt - on

*If TLI Inhibit req'd:
* before 59:42 - XLUNAR INJECT - SAFE*
* (recycle to TB5) *
* 59:42-00:12 - LV STAGE - SII/SIVB *
* (recycle to TB5) *
* after 00:12 - LV STAGE - SII/SIVB *
* (permanent inhibit)*

58:38 SIVB ULLAGE Begins

59:42 S11 SEP lt - out (TIG - 18 sec)
59:52 SIVB FUEL LEAD
59:55 SIVB ULLAGE discontinues
Insure FDAI #1 PITCH = 6°
* If LV GUID - CMC: *
* FDAI #1 PITCH = 0° *

59:59 LV ENG 1 lt - on
00:00 SIVB IGNITION (_:_:_:) GETI
00:02 LV ENG 1 lt - out
00:10 06 95 TFC, VG, VI (min-sec, fps, fps)

MONITOR THRUST & ATTITUDE
+45°/P,Y
MONITOR LV TANK PRESS
+10°/sec P,Y
* If LV GUID - CMC: *
* Fly PITCH = 0° *
* YAW = ____ (0°) *

01:32 PU SHIFT
05:46 SIVB ECO (lt on) (BEGIN TB7)

* If no ECO at TFC = 0 + 1 sec *
* or updated BT + 1 sec *
* or EMS = -150 fps (CMC failed): *
* THC - CCW & NEUTRAL in 1 sec *

Key VERB (freeze display)

Record TFC

05:56 LV ENG 1 lt - out (TB 7 + 10 sec)

08:26 SIVB MNVR TO ORB RT (HDS DN) (.3°/sec)
59:50 CMODE - AUTO
59:58 Thrust +X and hold
00:00 CSM/LV SEP pb - push, hold, and release
LV TANK PRESS - full scale Low
  * If No Separation:
  * cb RCS LOGIC (2) - close
  * THC - CCW (leave in detent)
  * DET reset and counting up (auto)
  * LV TX PRESS - full scale low (SEP ind)
  * 00:03 THC - neutral

00:03 THC - release (aV ~.5 fps)
  SM RCS PRPLNT tb (8)-gray (verify)
  SM RCS He tb (8)-gray (verify)
  SM RCS SEC PRPLNT FUEL PRESS (4) - CLOSE
  FC REAC vlv - NORM
  02 TK 3 ISOL vlv tb - gray (verify)

4 CSM TRANSPOSITION

MAN ATT (PITCH) - ACCEL CMD
00:15 Pitch up at .5°/sec
  When Pitch error needle positive,
  PRO F 50 18 OMNI ANT - B
  PRO 06 18
  MAN ATT (PITCH) - RATE CMD
  F 50 18 (completion of mnvr)
  ENTR
  Thrust +X(4 sec)(aV ~.7 fps)
  cb DIRECT ULLAGE (2) - open
  Load RCS DAP 11102, 01111
  S BD AUX TV - TV (90 sec delay)
  HI GAIN ANT TRACK - MAN
  HI GAIN ANT PWR - POWER
  Slew ANT to verify operation
  HGA angles: P = -42°, Y = +293°
  S BD ANT OMNI - HI GAIN
  HI GAIN ANT TRACK - REACQ
  TV TRANSMIT/STBY sw - TRANSMIT
  Start DAC
DOCKING

Stabilize & align CSM
BMAG MODE (3) - ATT 1/RATE 2
At capture:
  PROBE EXTD/RETR tb-bp (A, pg S/2-11) malf. DOCK
  CMC MODE - FREE
  Allow probe to damp S/C motions (approx 10 sec)
Align Pitch and Yaw with THC (<3°)
  (minimum possible)
DOCK PROBE RETRACT PRIM-1
*If no RETRACT in 30 sec: PRIM-2 *
*If still no RETRACT: SEC-1 *

After dock latches have engaged:
  PROBE EXTD/RETR tb - gray
    (A-1,5,9,;B-3,7,11)
  SECS PYRO ARM (2) - SAFE
  SECS LOGIC (2) - OFF
  EDS PWR - OFF
  cb EDS (3) - open
  DOCK PROBE EXTD/REL - OFF
  DOCK PROBE RETRACT (2) - OFF
  cb DOCK PROBE (2) - open
  EXT LTS - OFF (verify)
  TAPE RCDR - off (ctr)
  POM BIT RATE - LOW
  DAC/TV - off
  S BD AUX TV - off (center)

POST DOCKING

RATE - HIGH
ATT DB - MAX
COAS PWR - OFF
  cb RCS LOGIC (2) - open (verify)
TVC SERVO PWR #1 - OFF
THC, RHC - locked
EMS MODE - STBY
EMS FUNC - OFF
BMAG MODE (3) - RATE 2 (verify)
COUCHES - CDR-90°, CMP-0°, LMP-180°
LM PWR - OFF (verify)
TUNNEL LIGHTS - ON
O2 HTR 3 - AUTO
7 EQUALIZE CM/LM PRESSURE (Decal) (pg S/2-4)
8 REMOVE TUNNEL HATCH (Decal) (pg S/2-5)
9 VERIFY DOCKING LATCHES (Decal) (pg S/2-10)
10 CONNECT LM UMBILICALS (Decal) (pg S/2-11)
11 INSTALL TUNNEL HATCH (Decal) (pg S/2-8)
   LM TUNL VENT vlv - LM/CM ΔP
   WASTE STOWAGE VENT vlv - VENT (verify)
   TUNNEL LIGHTS - OFF
12 PRE LM SEP & EJECTION
   cb SIVB/LM SEP (2) - close (verify)
   ΔV CG - LM/CSM (verify)
   EMS FUNC - ΔV SET/VHF RNG
   Slow ΔV ind to +100.0
   EMS FUNC - ΔV
   TAPE RCDR - HBR/RCD/FWD/CMD RESET
   DAC - 6 fps
   Load RCS DAP 21101, X1111
   Load N22 att (monitor APS mnvr, hatch window)
   270.0°, 129.8°, 4.3°
   V60E, V63E
   GDC ALIGN
   DET - RESET
   cb SECS ARM (2) - close (verify)
   Cue MSFN
   SECS LOGIC (2) - on (up)
   Obtain GO from MSFN
   SECS PYRO ARM (2) - ARM
   TVC SERVO PWR #1 - AC1/MNA
   TRANS CONTR PWR - on (up) (verify)
   RHC & THC - ARMED
   V37E 47E F 16 83 ΔVX,Y,Z
   (.1fps)
13 EMS MODE - NORMAL
   Start DAC
   DATE 10/11/72
13 **LM SEP & EJECTION**

SIVB/LM SEP - on (up)

00:00 Start DET
CMC MODE - AUTO
00:05 Thrust -X (3 sec)

14 **POST LM EJECTION**

F37 OOE
When CMC Acty it out,
  Key V66E
SECS PYRO ARM (2) - SAFE
SECS LOGIC (2) - OFF
cb SECS ARM (2) - open
cb SIVB/LM SEP (2) - open
02 TK 3 ISOL vlv tb - gray (verify)
MAP CAMR ON - OFF
PAN CAMR PWR - OFF
SM/AC PWR - OFF
LV/SPS IND sw - GPI
TVC SERVO PWR (2) - OFF
EMS MODE - STBY
EMS FUNC - OFF
TAPE RCDR - off (ctr)
PCM BIT RATE - LOW
Stop DAC
AUTO RCS SEL AC ROLL or BD ROLL (4) - OFF
02 HTR 3 - OFF
13:00 GO/NO GO for S-IVB YAW mnvr
17:30 GO/NO GO for S-IVB EVASIVE mnvr

*If NO APS EVASIVE at 23:00: *
* Thrust +X (6 sec) *
* Monitor SIVB thru Hatch Window *

*Time from Att for viewing SIVB *
*Ejection after RCS EVASIVE mnvr*
*(min:sec) Roll Pitch Yaw *
* 25:00 286.3° 114.1° 0.0°*
* 30:00 270.0° 129.7° 358.1°*

cb DIRECT ULLAGE (2) - open (verify)
TRANS CONT PWR - OFF
ROT CONTR PWR DIR (2) - OFF
RHC & THC - LOCKED
REPRESS PKG vlv - OFF
cb 02 ISOL/AUX BAT - open

*If no TLI: *
* SIVB - CSM/LM SEP (Earth orbit) *

*min-sec Event R P Y *
*00:00 Ejection 298.4° 129.8° 319.3°*
*00:05 3 sec -X *
*00:22 Mnvr 270.0° 129.8° 4.3°*
*03:00 6 sec -X *
MODE II RCS ABORT
(TWR JETT to MODE III)

00:00 THC - CCW (4 sec min)
* If No BECO: Reset THC *
* Req. RSO Shutdown *
* Reset & start DET *

00:03 *CSM/LV SEP - PUSH*
* RCS CMD - ON *

00:05 THC - ARMED then +X

00:24 THC - +X OFF
KEY RLSE to N44, Check TFF
If TFF>2 min, Yaw 45° (LEFT) out-of-plane
BMAG MODE (3) - ATTI/RATE 2
cb MNA&B BAT C (2) - close
cb ELS/CM-SM SEP (2) - close
CM/SM SEP - on (up)
CM RCS PRESS - on (up)
RCS TRNR - CM
C&W MODE - CM
Entry ATT - (R=0°, P=120°, Y=0°) (Compl by 1:40)
cb CSM/LM FNL SEP (2) - close (pull lanyard)
CBMAG (3) - ATT1/RATE 2
CBMAG (3) - ATT1/RATE 2
EMS FUNC - ENTRY GET 300K
EMS MODE - NORMAL
EMS FUNC - ENTRY GET DROGUE

At .05G It - on
.05G sw - on (up)
EMS ROLL - on (up)
Fly Max Lift
N62E VI, HDOT, H

Go to LANDING PHASE pg L/4-8
MODE III SPS ABORT
(AR= -400 NM to INSERTION)

00:00 THC - CCW (4 Sec Min)
  *If No BECO: Reset THC *
  * LV STAGE sw - SII/SIVB *
  * Reset & start DET *

00:03 *CSM/LV SEP - PUSH*
  *RCS CMD - ON *

THC - ARMED
00:05 THC - NEUTRAL, then +X
LV/SPS IND sw - GPI

00:24 THC - +X OFF
N50E AR, HP, TFF
BMAG MODE (3) - ATT1/RATE2
  If AR>0:
  MNVR to retro att (R=180°, P=194°, Y=0°)
  (Scribe on horiz, BEF, Hds up)
SCS TVC P&Y - AUTO (verify)
EMS MODE - NORMAL

02:05 DIRECT ULLAGE PB - PUSH
THRUST ON PB - PUSH
Burn to VC (AR=0)

ΔV THRUST (2) - OFF
ΔV THRUST A - NORMAL

GETI

If TFF>2min, Yaw 45° (LEFT)
  out-of-plane
  cb MMAB BAT C(2) - close
  cb ELS/CM-SM SEP (2) - close
  CM/SM SEP - on (up)
  CM RCS PRESS - on (up)
  RCS TRNFR - CM
  C&W MODE - CM
  Mnvr to entry att (R=0°, P=105°, Y=0°)
  (BEF, Hds On, Full Lift)
  cb CSM/LM FNL SEP (2) - close (pull lanyard)
  CSM/LM FNL SEP (2) - on (up)
  Note TFF