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11-6-72

INDEXING DATA

MSC



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

* APOLLO 17

DECEMBER 6 LAUNCH

CI P
DOBLE

DO NOT DISCARD
THIS COPY BASELINE FOR
ALL LAUNCH DATES

REVISION A

LM LUNAR SURFACE CHECKLIST

PREPARED BY

EVA/IVA PROCEDURES BRANCH
CREW PROCEDURES DIVISION

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

NOVEMBER 6, 1972



HSL-441050

APOLLO 17

LM LUNAR SURFACE CHECKLIST

NOVEMBER 6, 1972

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It is requested that any organization having comments, questions, or suggestions concerning this document contact Wallace Teague, EVA & Experiments Branch, CG34, Building 4, room 213, telephone 483-3048.

This document is under the configuration control of the Crew Procedures Control Board (CPCB). All proposed changes should be submitted to the Apollo Flight Data File Manager, T. W. Holloway, CG5, Building 4, room 230, telephone 483-4271.

Distribution of this document is controlled by Flight Data File Manager, T. W. Holloway, Flight Planning Branch, Crew Procedures Division.

ACKNOWLEDGEMENT

<u>AREA</u>	<u>NAME/BRANCH</u>	<u>LOCATION</u>
Lunar Surface Timeline (Pg. a - g)	Charles Stough Flight Planning CG52	Ext 4271 Bldg 4 Rm 224
Section 1,8,11,12,14,15	T. H. Kaiser Flight Planning CG5	Ext 4271 Bldg 4 Rm 231
Section 2,3,4,5,6, 7,9,10,13	John H. Covington EVA Procedures CG32	Ext 3091 Bldg 4 Rm 222

Any organization having specific comments regarding a particular area of responsibility should contact the individual(s) listed above.

LM LUNAR SURFACE CHECKLIST

LIST OF EFFECTIVE PAGES

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*1-9	11/6/72	*5-4	11/6/72
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*Current change

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*Current Change

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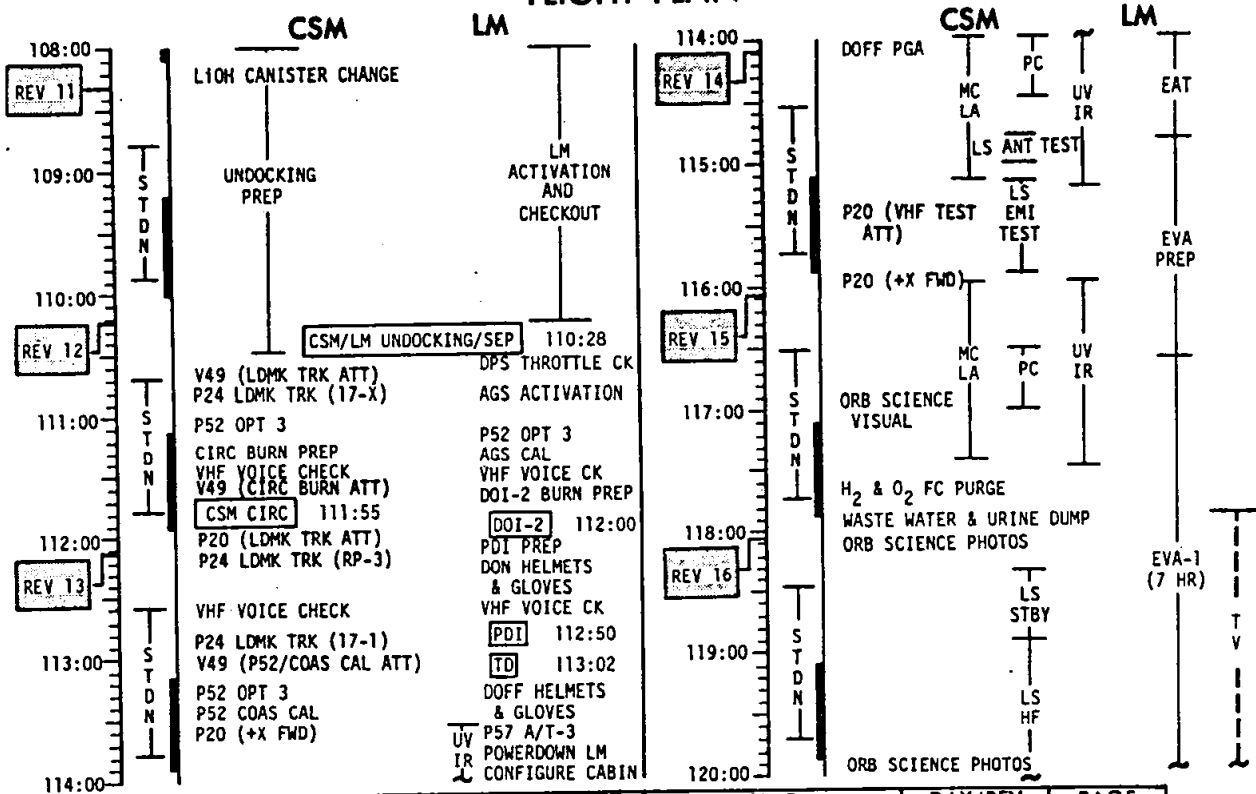
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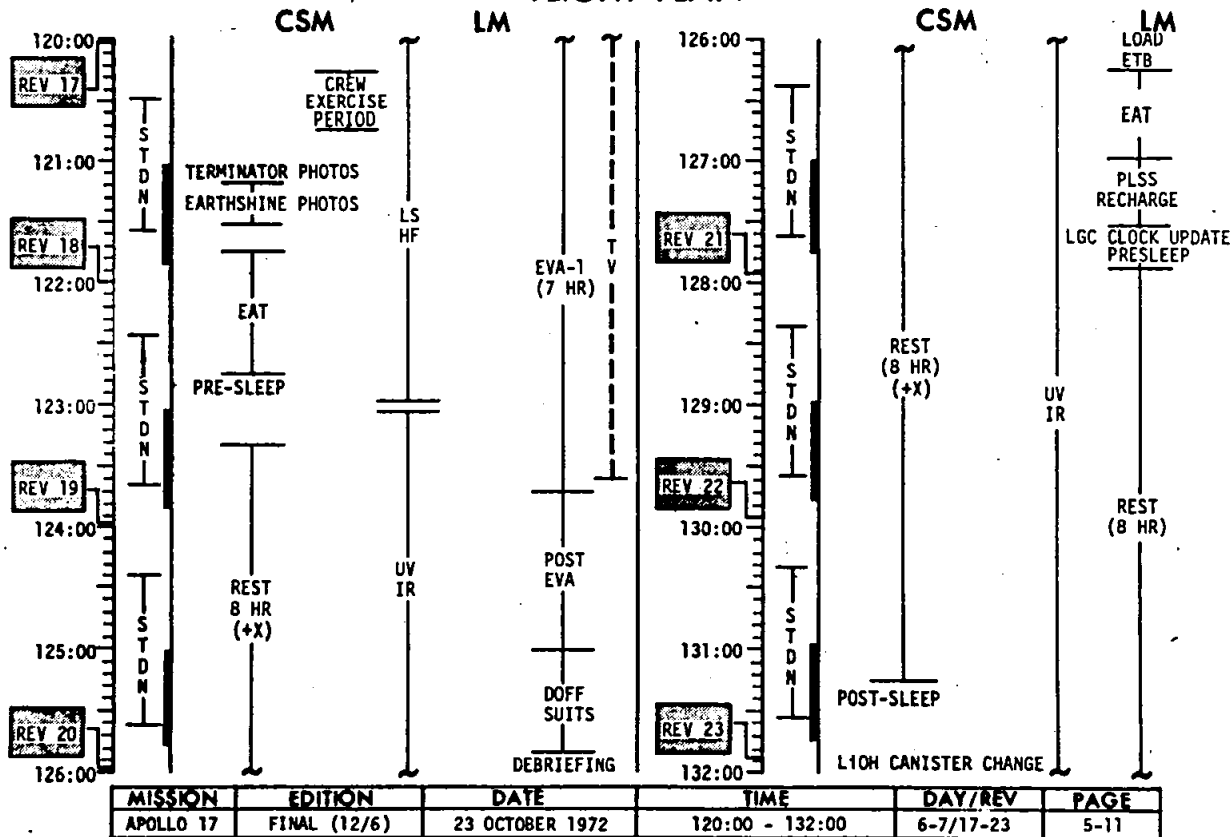
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FLIGHT PLAN



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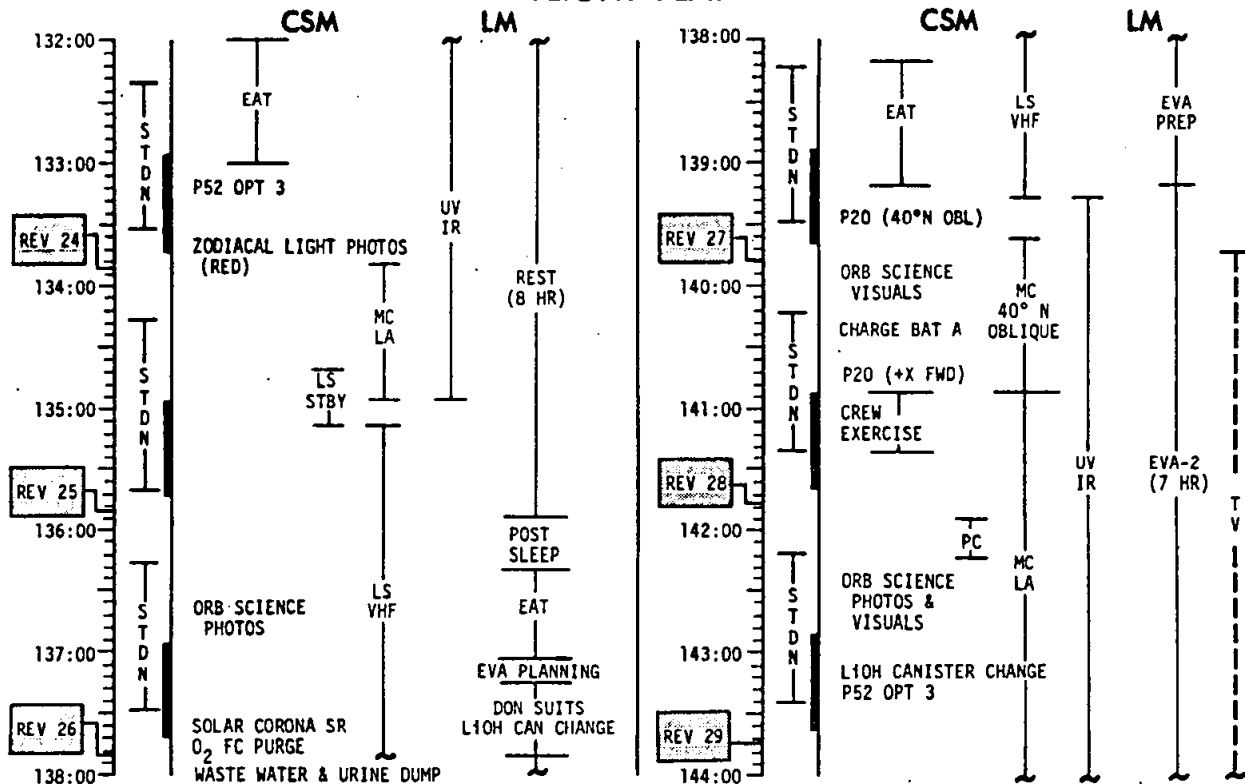
FLIGHT PLAN



b

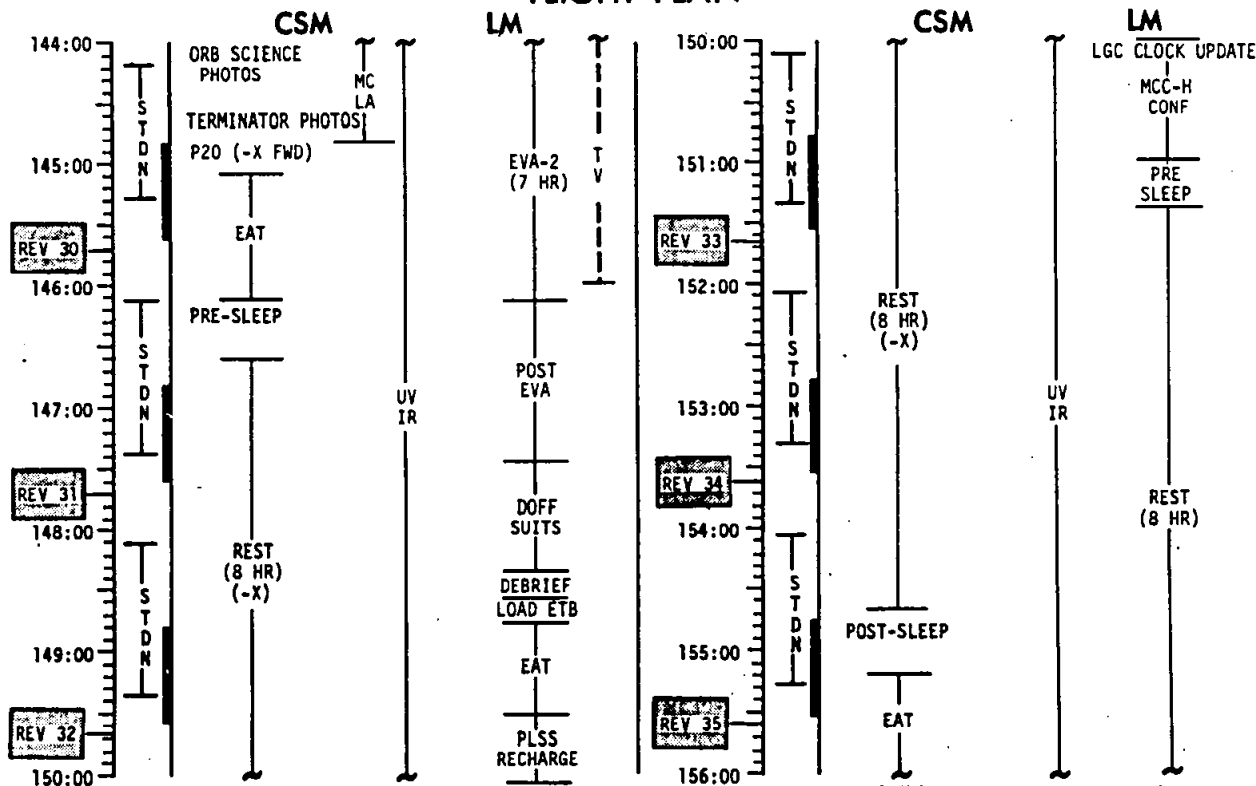
DATE 11/6/72

FLIGHT PLAN



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
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FLIGHT PLAN



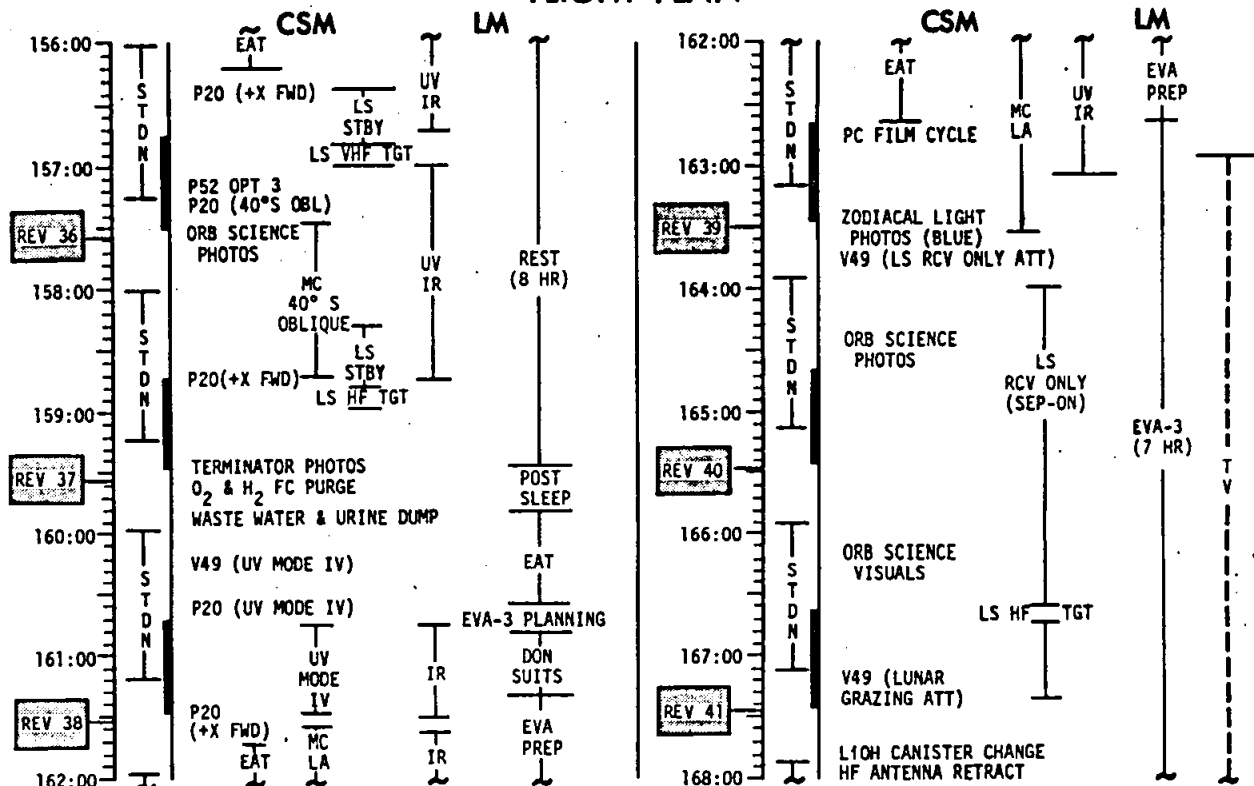
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d

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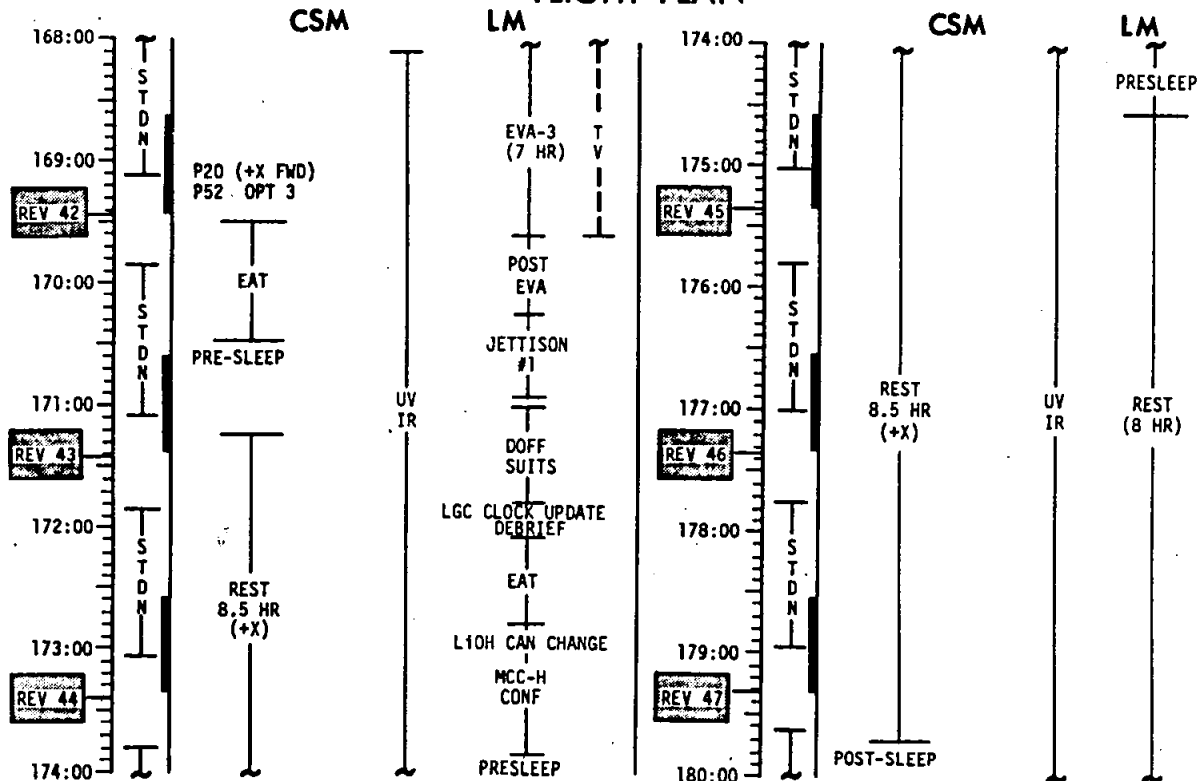
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FLIGHT PLAN



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
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FLIGHT PLAN



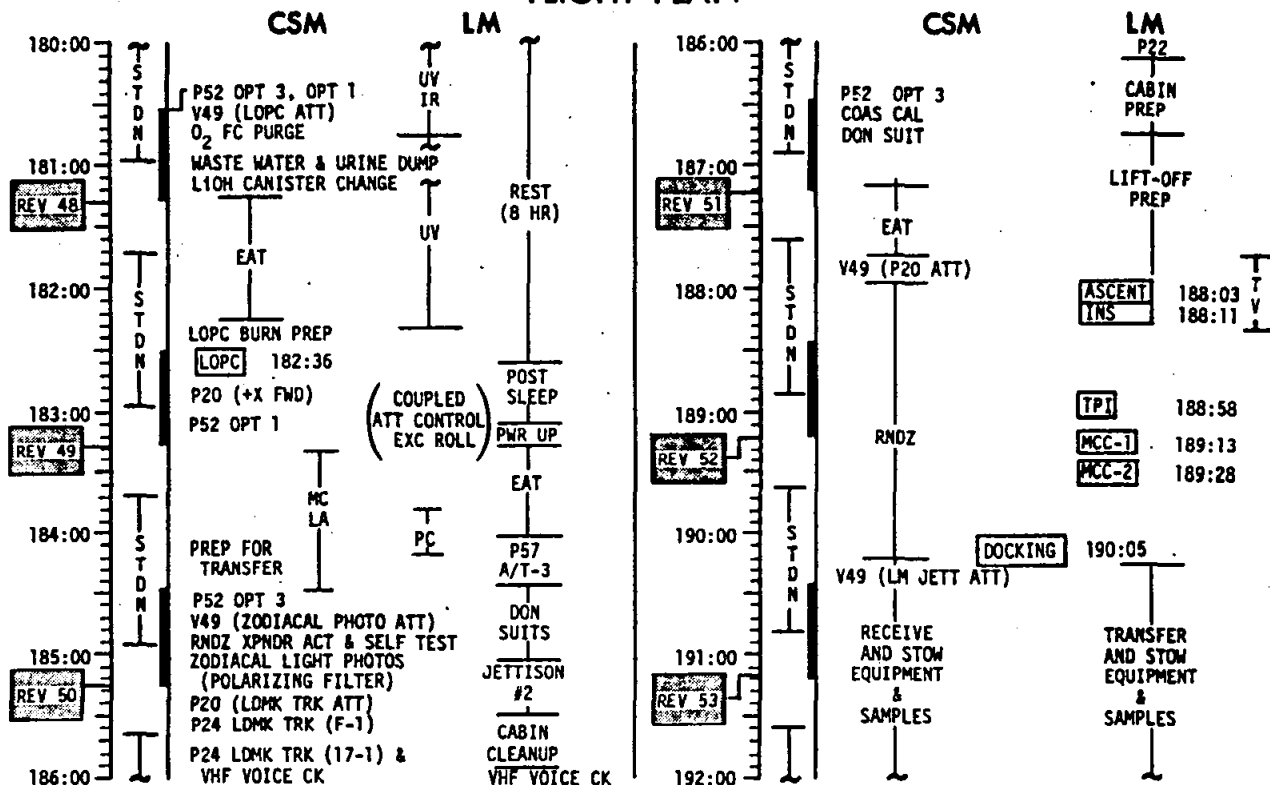
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FLIGHT PLAN



MISSION	EDITION	DATE	TIME	DAY/REV	PAGE
APOLLO 17	FINAL (12/6)	23 OCTOBER 1972	180:00 - 192:00	9 / 48-53	5-16

DATE 9/12/72

***** PDI +20 (113:10) *****

PRPLNT TEMP/PRESS MON - DES 1, 2
DES He REG 1 - CLOSE; tb(2)-bp
OXID & FUEL VENTS - OPEN; tb(2)-gray
MASTER ARM - ON
DES VENT - FIRE
MASTER ARM - OFF

Monitor OXID Press Until 20 to
40 psi, then OXID VENT - CLOSE
Monitor FUEL Press Until <8 psi,
Then FUEL VENT - CLOSE

MODE CONTROL (2) - ATT HOLD

Verify INV - 2 Selected
CB(11) INV 1 - Open
DECA PWR - Open

CB (16) ASC ECA CONT - Close
BAT 5,6 - OFF/RESET, tb - bp
INVERTER - 2
CB(16) PQGS - Open
DES ENG OVRD - Open
ASC ECA CONT - Open
CWEA - Open Then Close (DES REG Lt - Off)

Verify Cabin Press
PRESS REG A&B - CABIN
SUIT GAS DIVERTER - Pull/EGRESS
CABIN GAS RETURN - EGRESS
CABIN REPRESS - AUTO

Doff Helmet & Gloves
PGA Diverter Vlvs - IV (Horz)
Remove & Stow Restraints (CDR's To Floor Fittings)
Window Shades - Close

V16 N2OE
Record _____ OG (.01°)
 _____ IG
 _____ MG

Park RR Ant For P57 Use

1-1

047 R _____ Sin Az (To MSFN)
053 R _____ Cos Az (To MSFN)
544 R _____ X Gyro Coeff (.01°/hr)
545 R _____ Y Gyro Coeff
546 R _____ Z Gyro Coeff
400 + 6 Calib Gyros

FIRST REV ACT

CB(11)AOT LAMP - Close

P57E, R2 00003, PRO

N06 00010

00003

00110

PRO (NO ATT Lt - On/Off, Twice)

N04 Nav. Err. (.01°)

V32E (NO ATT Lt - On/Off, Twice)

N04 Grav. Err. (.01°)

PRO

N22 ICDU Angles (.01°)

PRO (NO ATT Lt - On/Off)

N70 (Dubhe #52) 300

PRO

N88 X -45598

Y +11790

Z +88215

PRO

N71 Star, 4 Marks

N88 Values As Above

PRO

N05 Angle Diff (.01°)

PRO

N93 Torq. Angles (.001°)

PRO

N25 00014, ENTR, POOE

CB(11)AOT LAMP - Open; AOT - CL

224 + 58113E

226 + 58113E

662 + 0E

673 + 0E

400 R (+0 Calib Complete In 5m 2s)

VHF - OFF, ON, OFF, OFF

AUDIO (Both): VHF A - RCV

: VHF B - OFF

S-BD P&Y Set (+24°/-48°), SLEW

P

Y

Peak Until > 3.9

544 R _____ X Gyro Coeff (0.01°/hr)

545 R _____ Y Gyro Coeff

546 R _____ Z Gyro Coeff

If Adjacent Detent Desired:

V21 N01E, 373E, 32533E

PRO To N79

If Gyro Drift Changes >2.0°/hr
AGS Failed

Voice Pre-PDI AGS Cal.

Values To STDN

DATE 11/6/72

DATE 9/12/72

Notify STDN of E-DUMP
TLM-HI (Verify)
V74E (42 sec)

400 +3 AGS/PGNS Align
413 +1 Store Azimuth

STAY/NO STAY From STDN

Park RR Ant. Along +X For Lunar Stay

342 + OE
CB(16) AEA - Open (M.A., AGS Warn Lt-On)
AGS STATUS - STBY
CB(16) AEA - Close (AGS Lt - Off)

V41 N20E, Load OG, IG, MG From STDN
V16 N20E, Verify Angles

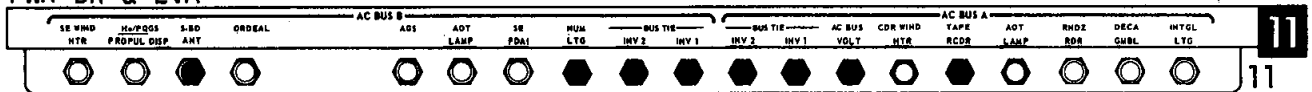
NO ATT, NO DAP, GIMBAL LOCK, ALT, &
VEL Lts - On; RSET (ALT & VEL - Off)

P06E
CB (11) IMU OPR - Open
PRO (Hold In Until STBY Lt-On)

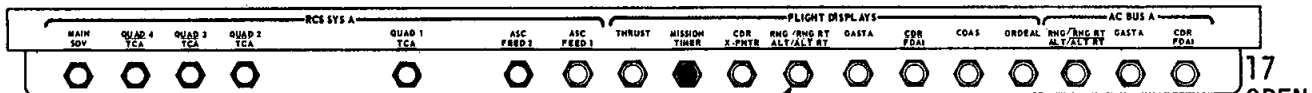
Window Shades - Open
POWER/TEMP MON - ED/OFF
Check ED VOLTS, A _____, B _____ (To STDN)
POWER/TEMP MON - LUN
BAT 2 - OFF/RESET, tb-bp
BAT L (LMP) - ON; tb - LMP
BAT 1 - OFF/RESET; tb-bp
POWER/TEMP MON - Check Bus Volts

Configure CB's Per PWR DN Charts 1-3

PWR DN & EVA

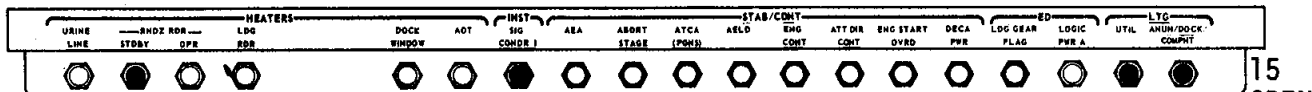


11
OPEN

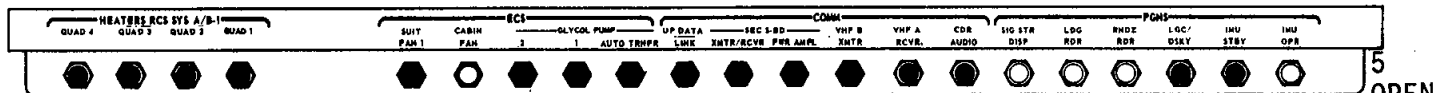


17
OPEN

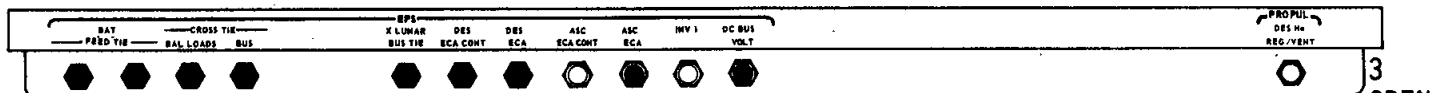
OPEN 1st



15
OPEN



5
OPEN



3
OPEN

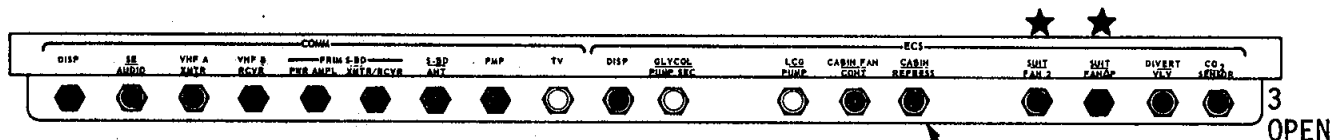
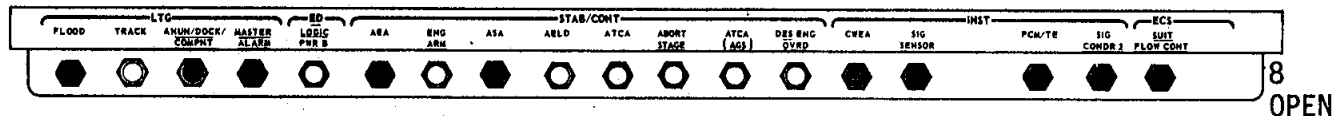
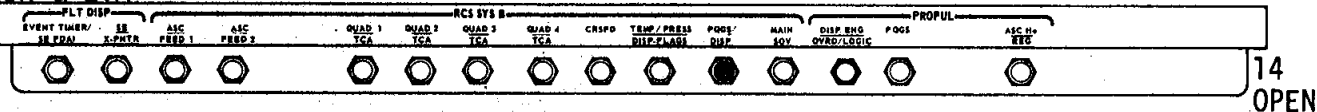
1-4

DATE 9/12/72

DATE 11/6/72

PWR DN & EVA

16



OPEN PRIOR TO DEPRESS

OPEN IN EVA 2 POST & LEFT OPEN THEREAFTER

★ — OPEN FOR EVA

POWERDOWN SWITCH CONFIG.

FDAI 1&2 - INRTL
EARTH/LUNAR - PWR OFF
LTG - OFF
MODE - HOLD/FAST
ALT SET - 35

FUEL & OXID VENT tb-bp
MESA - HI
URINE LINE - OFF
MASTER ARM - OFF
ASC He SEL - BOTH
STAGE - SAFE (guarded)

S BAND T/R - T/R
ICS T/R - T/R
RELAY - OFF
MODE - ICS/PTT
AUDIO CONT - NORM
VHF A - RCV
VHF B - OFF
COAS - OFF

TTCA (CDR) - JETS (Dn)

Eng STOP - Reset
Eng START - Reset

TMR CONT - START
OVERRIDE ANUN - OFF
OVERRIDE NUM - OFF
OVERRIDE INTEGRAL - OFF

X-POINTER SCALE (CDR) - HI MULT
RATE/ERR MON (CDR) - LDG RDR/CMPTR
ATTITUDE MON (CDR) - PGNS
GUID CONT - PGNS
MODE SEL - PGNS
RNG/ALT MON - RNG/RNG RT
SHFT/TRUN - +50°
RATE SCALE - 25°/SEC
ACA PROP (CDR) - ENABLE
THR CONT - AUTO
MAN THROT - CDR
ENG ARM - OFF
ATT/TRANSL - 4 JETS
BAL CPL - ON
ABORT - Reset
ABORT STAGE - Reset (Guarded)
PRPLNT QTY MON - OFF
PRPLNT TEMP/PRESS MON - ASC
HELIUM MON - PRESS 1

RR GYRO SEL - PRIM

TEMP/PRESS MON - OXID MANF
ACA PROP (LMP) - ENABLE
GLYCOL - PUMP 1
SUIT FAN - 1
O2/H2O QTY MON - DES 2
RATE/ERR MON (LMP) - RNDZ RADAR
ATTITUDE MON (LMP) - AGS

ENG GMBL - ENABLE
DES ENG CMD OVRD - OFF
LDG ANT - AUTO
RDR TEST - OFF
TEST MONITOR - AGC
SLEW RATE - LO
RR MODE - SLEW

DEAD BAND - MIN
ATTITUDE CONTROL (3) - MODE CONT
MODE CONTROL (2) - ATT HOLD
TEMP MON - RNDZ RDR
RCS SYS A/B-2 QUAD 1,2,3,4 - AUTO
X-POINTER SCALE (LMP) - HI MULT
EXTERIOR LTG - OFF
FLOOD - OFF

ACA/4 JET (2) - ENABLE
TTCA/TRANSL (2) - ENABLE
TTCA (LMP) - JETS (Dn)

Eng STOP - Reset
AGS STATUS - STBY

POWER/TEMP MON - CDR BUS
INVERTER - 2
UP LINK SQUELCH - OFF
UP DATA LINK - OFF

AUDIO CONT - NORM
S BAND T/R - T/R
ICS T/R - T/R
RELAY - OFF
MODE - ICS/PTT
VHF A - RCV
VHF B - OFF
S BAND MODULATE - PM
XMTR/RCVR - SEC
PWR AMPL - OFF
VOICE - VOICE
PCM - PCM
RANGE - RANGE

VHF A XMTR - OFF
VHF A RCVR - ON
VHF B XMTR & RCVR (2) - OFF
BIOMED - RIGHT
TLM - LO
RECORDER - OFF

VHF - AFT
TRACK MODE - SLEW
S BAND - SLEW

PRESS REG A&B - CABIN
CABIN REPRESS - AUTO
LO PLSS FILL - CLOSE
DES O2 - OPEN
#1, #2 ASC O2 - CLOSE
SUIT ISOL (2) - SUIT FLOW
SUIT CIRCUIT RELIEF - AUTO
CABIN GAS RETURN - EGRESS
SUIT GAS DIVERTER - Pull/EGRESS
CO2 CANISTER SEL - PRIM
PRIM & SEC CO2 CANISTER - CLOSE
WATER SEP SEL - PUSH/SEP 1
ASC H2O - CLOSE
SEC EVAP FLOW - CLOSE
PRIM EVAP FLOW No. 2 - CLOSE
DES H2O - OPEN
PRIM EVAP FLOW No. 1 - OPEN
WATER TANK SELECT - DES
HI PLSS O2 FILL - CLOSE
WMS - CLOSE
DES COOLING - ON

CABIN RELIEF & DUMP (2) - AUTO & Locked

CWEA STATUS: CAUTION: PREAMPS
CES AC & CES DC - Reset Via GYRO TEST

Copy Lift-off Time In Data Card Book
For Rev 15 thru 20

DATE 11/0/72

113:42 CONFIGURE CABIN FOR STAY (28 Min)

Stow Armrests

Stow COAS In Fwd window Mount

Unstow PLSS On Floor, Set Against Hatch
Install BRA, Stow Helmets

Stow LEVA Bags On Floor, 1 Left, 1 Right
Stow 2 Lens Brush (ISA Top Pkt) In Purse
Change 16mm Camr Mag: Stow O, Install P
(ISA Top Pkt)

CDR Move Aft & Remove ISA, Temp Stow
On Eng Cover

Transfer RCU's To LCG Bag (LHMS, CDR's 1st)
Stow ISA Above RCU Shelf
Stow Sleep Restraints Above RCU Shelf

Deploy LM EVA Antenna

Transfer LM Mag Bag (Aft Of Eng Cover) To
LCG Compt (RHSSC)
Stow 4 Jett Bags (3-Aft OPS, 2 In Box) In LHSSC
Hang 1 Jett Bag From CDR's LH Handhold

Transfer 500mm Lens, Camr & Ring Sight
To Purse
Stow CWG's In Camr Box

Connect Aft ISS Hooks
Stow Camr Bag In Jett Bag

Disconnect 3 Armrests, CDR LH,
LMP RH & LH, Stow In Jett Bag

114:12 EAT PERIOD (45 Min)

Report PRD Readings To Hou
Window Photos, Setting: 1/250

CDR

8,74 8,74 11,74

8,30 8,30

8,15

LMP

11,74 8,74 8,74

8,30 8,30

8,15

DATE 11/6/72

114:55 CABIN PREP EVA 1 (20 Min)

Stow All Loose Items Not Req'd For EVA
Set 16mm Camr For EVA (T8,1/250,∞) 6 fps,
15 Min With ULC & Rt Angle Bkt (RHSSC)
Secure Behind AOT
Secure Util Lts & Wires Behind AOT

Disconnect BSLSS Bag & Remove ETB

Configure 500mm Lens Camr (Purse)
Remove Tape From Camr & Lens
Install 500mm Lens
Install Ring Sight
Stow Reseau Cover & Tape In Jett Bag
Install B&W Mag R (LCG Compt)
Stow Dark Slide In Mag Pkt

Stow In ETB:

Cosmic Ray (ETB)
BSLSS
500mm Lens Camr
70mm Camr With CEX Mag A
Bag Dispenser Bkt (Camr Compt)
2 - CEX Mags B&C (Fwd RHSSC)
1 - B&W Mag G (Fwd RHSSC)
1 - B&W Mag H (LCG Compt)
2 Lens Brush (Purse)
25' Tape (LHSSC)
Scissors (LMP PGA)
Sun Compass, Map Holder, LRV CKLIST (AFT FDF)
EVA 1 Maps & Horizon/Return Chart (Fwd FDF)

Unstow EVA 1 Prep & Post Card
Scissors (Aft FDF) To Purse

CB(11) HTR: URINE LINE - Close
HTR CONT: URINE LINE - HTR 1

Attach LEC (Fwd RHSSC) To ETB
Stow ETB Fwd Corner LMP's Station
Stow BSLSS Bag Behind LMP's Fwd
Restraint Cables

Clip Page 2-3 Over AOT
Stow Lunar Surface Checklist

COLLECTION WEIGHT SUMMARY (#)

<u>EVA 1</u>	<u>EVA 2</u>	<u>EVA 3</u>
SRC _____	SRC _____	BSLSS/Rock Bag _____
Bag _____	Bag _____	Bag _____
Bag _____	Bag _____	Bag _____
TOTAL _____	TOTAL _____	TOTAL _____

COLLECTION BAG STOWAGE

1 - Aft Eng Cover (40 # Max): Bag _____
 1 - LHMS (40 # Max): Bag _____
 2 - LH + RHSSC (40 # Max): Bags _____, _____
 2 - ISA (50 # Max): Bags _____, _____

TRANSITION TO ONE-MAN EVA

BOTH Verify/Perform-As Req'd At Time of NO GO
 PLSS PRIM H2O - CLOSE
 Fwd Hatch Closed & Locked, Dump Vlv - AUTO
 CABIN REPRESS - AUTO
 CB(16)ECS: CABIN REPRESS - Close (Cab Warn Lt)
 Verify Press Increasing
 PRESS REGS A & B - CABIN
 PLSS O2 - OFF @ Cabin >2.5 Psia
 CB(16) ECS: SUIT FAN 2 - Close
 SUIT FAN Δ P - Close
 ECS Caution & H2O SEP Comp Lts - Out
 PGA Press Equal To Cabin, Use Purge Vlv If Req'd
 Cab At 5.0 psia, Doff Gloves, Helmets With
 Visors
 PLSS PUMP - OFF (Left)
 PLSS FAN - OFF (Left)

NO GO CREWMAN:

PLSS MODE - 0
 Disconnect OPS O2 Hose
 Disconnect Purge Vlv, Stow In Purse
 Disconnect OPS Actuator From RCU
 Disconnect RCU From PLSS, Then PGA
 Disconnect PLSS COMM, H2O, And O2
 Doff PLSS/OPS
 AUDIO CB - Open, TLM BIOMED - OFF
 Connect LM COMM, O2, & H2O
 Audio CB - Close, Comm Sws - As Req'd

OTHER CREWMAN (As Req'd):

Disconnect PLSS H2O
 Connect LM H2O
 CB (16) ECS: LCG PUMP - Close

BOTH Stow NO GO Equipment

OPS - Aft Engine Cover (Discon Antenna)
 PLSS - Recharge Station (Remove All 4
 Straps, Stow in LHSSC or Exchange On
 PLSS's If Required)
 RCU - LCG Bag (LHMS)

Unstow ONE MAN EVA PREP CARD & LUNAR SURFACE BOOK

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LM REPRESS FAILURE PROCEDURE

CB(16) ECS: CABIN REPRESS - Open (Verify)

Verify CABIN REPRESS - AUTO

Verify PRESS REG A & B - EGRESS

Verify LM Suit Circuit 3.6 - 4.0 Psia

CB(16) ECS: SUIT FAN 2 - Close

SUIT FAN ΔP - Close

ECS Caution & H2O SEP Comp Lts - Out

Verify OPS 02 - OFF

Disconnect Purge Vlv, Stow In Purse

Disconnect OPS 02 Hose

Connect to LM ECS Hoses, R/R, B/B

SUIT ISOL - SUIT FLOW

PLSS FAN - OFF (Left)

PLSS 02 - OFF

Verify Cuff Gage 3.6 - 4.0 Psig

PGA Diverter Vlv - Horizontal

PLSS Mode - 0

Disconnect PLSS Elec From PGA

AUDIO CB - Open

Connect To LM Comm

AUDIO CB - Close

Audio (CDR & LMP)

VHF A - RCV

VHF B - OFF

MODE - ICS/PTT

RELAY - OFF

COMM:

VHF - OFF, ON, OFF, OFF, LEFT

PLSS PRIM H2O - Close

PLSS PUMP - OFF (Left)

Disconnect OPS 02 Actuator

Disconnect RCU From PGA, Then PLSS

Stow RCU On Eng Cover

Disconnect PLSS H2O From PGA

Disconnect PLSS Red 02 Hose, Then Blue

Doff PLSS/OPS, Place on Floor

Stow OPS 02 Hose & Actuator

As Req'd-Connect LM H2O to PGA

CB(16) ECS: LCG PUMP - Close

2-4

DATE 9/12/72

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115:15 EQUIPMENT PREP EVA 1 (25 Min)

Empty UCTA's (WMS Valve), Install Cap
HTR CONT: URINE LINE - OFF

CB(11) HTR: URINE LINE - Open
Check PGA Zippers, Verify Lock - Lock
Stow PGA Gas Conn Plugs In Purse
Empty PGA Pockets Into Purse
PGA Relief Valve Cap In Pkt

CDR Move To Aft Cabin Area

Unstow CDR Boots, Purge Valve And
Donning Lanyard To Purse
CDR Don Boots
Unstow CDR OPS

Remove Pallet, Stow In Jett Bag
Perform OPS Check, Restow OPS

LMP Move To Aft Cabin Area
Unstow LMP Boots, Purge Valve To Purse
Stow IV Gloves In Bot Boot Comp
LMP Don Boots

Unstow LMP OPS
Remove Pallet, Stow In Jett Bag
Perform OPS Check

Stow LMP OPS On Eng Cover
Install ISS

Apply Antifog (LEVA Bags), Wipe Dry
With Tissue (LHSSC)
Stow EMU Maintenance Kits In Purse
Stow LEVA's, Helmets & EV Gloves
(Attach Watch & Mirror) On ISS
Stow LEVA Bags Under SRC Compt
Stow BRA

Move CDR's OPS To Front Of Eng Cover
Stow ETB On Aft Eng Cover
Tie Jett Bag, Stow On Aft Engine Cover

Fwd Hatch Handle - UNLOCK

115:40 PLSS DONNING (26 Min)

* * * * LMP 1st: * * * *

Set PLSS On Mid-Step

Verify OPS Reg Decay

Unstow O2 Nozzle & Antenna Lead

Secure Flaps

Attach OPS To PLSS

Connect OPS Antenna Lead To PLSS

Verify Sublimator Exhausts Clear

Unstow PLSS Straps & Hoses

Remove Elect Dust Cap, Stow In Purse

Verify AUX H2O, DIVERTER, O2 &

PRIM H2O-OFF

Connect Battery Cable

Verify The Following Locked:

PLSS Battery Connection

OPS Antenna Lead To PLSS

OPS To PLSS

Don PLSS/OPS, Lift PLSS Hoses Above

Lower Straps

Connect PLSS O2 Hoses To PGA
Verify AUX H2O, DIVERTER, O2 &
PRIM H2O-OFF

Connect RCU To PGA & Upper Straps

Verify RCU Controls:

PUMP, FAN - OFF (Left) MODE SEL-0

Connect RCU To PLSS

Unstow OPS O2 Hose & Actuator, Route
Hose Behind PGA

Connect Actuator To RCU

CDR Repeat PLSS DONNING * * * *

116:06 PLSS COMM CHECK (8 Min)

Verify Powerdown CB Configuration
(White Dots Out)

Verify Voice Comm With Hou

Audio (LMP)

S-BAND - T/R

ICS - T/R

RELAY - ON

MODE - VOX

VOX SENS-MAX

VHF A - T/R

B - RCV

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COMM:

VHF A XMTR - VOICE
A RCVR - ON
B XMTR - OFF
B RCVR - ON
TLM BIOMED - OFF
SQUELCH VHF A&B -
Noise Thres + 1 1/2
RECORDER - ON
VHF Antenna - EVA
UPLINK SQUELCH - ENABLE

Audio (CDR)

S-BAND - T/R
ICS - T/R
RELAY - OFF
MODE - VOX
VOX SENS-MAX
VHF A - T/R
B - RCV

CB(16) COMM: SE AUDIO - Open
LMP Connect To PLSS Comm

CB(16) COMM: SE AUDIO - Close
PLSS PTT (LMP) - MAIN (Rt), Verify
PLSS Mode(LMP) - A, Wheel-CCW
(Tone-On, Vent Flag - P,
Press Flag - 0, 02 Mom)
PLSS 02 Press Gage > 85%
LMP Comm Check With CDR And Hou

NOTE: Unstow PLSS Antenna If It
Transmits Garbled And/Or Loses TM
Restow Before Egress

CB(11) COMM: CDR AUDIO - Open
CDR Connect To PLSS Comm

CB(11) COMM: CDR AUDIO - Close
Audio (CDR)
VHF A - OFF
VHF B - OFF

PLSS PTT (CDR) - MAIN (Rt), Verify
PLSS Mode(CDR) - B, Blade-CCW
(Tone-On, Vent Flag - P,
Press Flag - 0, 02 Mom)
PLSS 02 Press Gage > 85%

NOTE: Crewman In Mode B Cannot
Hear Hou

LMP Comm Check With CDR And Hou

PLSS Mode(LMP)-B, Blade-CCW(Tone-On)
PLSS Mode(CDR)-A, Wheel-CCW(Tone-On)
CDR Comm Check With LMP And Hou

PLSS Mode (Both) - AR (Tone-On)

NOTE: (AR) Wheel-Hou, Blade-EVA

Perform Comm & TM Check With Hou &
Comm Check With Each Other
Read PLSS O2 Qty to Hou

SQUELCH VHF B (LMP) - FULL DECREASE

116:14 FINAL SYSTEMS PREP (1 Min)

CB(16) ECS: LCG PUMP - Close
LCG - Cold, As Req'd
CB(16) ECS: CABIN REPRESS - Close (Ver)
SUIT FAN ΔP - Open
SUIT FAN 2 - Open
SUIT FAN Sel - 2
Verify ECS Caution & H2O SEP Comp
Lts - On (~ 1 Min)

SUIT GAS DIVERTER - PULL-EGRESS(Verify)
CABIN GAS RETURN - EGRESS (Verify)
SUIT CIRCUIT RELIEF - AUTO (Verify)

116:15 OPS CONNECT (6 Min)

LMP 1st: ###
 SUIT ISOL - ACT OVRD (SUIT DISC)
 Discon LM 02 Hoses, Secure About PGA

Connect OPS 02 Hose To PGA B/B
 Retrieve Purge Valve (Purse)-
 Verify Closed, Lock Pin In & LO
 Install Purge Valve In PGA R/R
 PGA Diverter Valve - Vertical

CDR Repeat OPS CONNECT ###

Drink
 DES H2O Vlv - CLOSE

116:21 HELMET/GLOVE DONNING (12 Min)

Position Mikes (Both)
 PLSS FAN - ON, Rt (Vent Flag - Clear)
 Don Helmets, Check Drink Bag Position
 Don LEVA's And Lower Protective Visor
 Secure Tool Harness Self Doff Straps
 To LEVA's

Stow LM 02 & Comm(CDRs To ECS Handhold

Verify The Following:

Helmet & Visor (1) - Aligned &
 Adjusted
 02 Connectors (3) - Locked
 Purge Valves (1) - Locked
 Comm Connectors (1) - Locked
 PGA Diverter Vlv(1) - Vertical

Verify EVA CB Configuration
 (White Dots Out + EVA Decals)

Don EV Gloves & Verify:

Wrist Locks (4) - Locked
 Glove Straps (4) - Adjusted
 Cover Wrist Rings

NOTE: If PGA Biting, PLSS 02 - ON/OFF

LCG-Cold, As Req'd
 CB(16) ECS: LCG PUMP - Open
 Disconnect LM H2O Hose
 Connect PLSS H2O Hose, verify Locked

PLSS DIVERTER - MIN (Verify)
 PLSS PUMP - ON (Rt)

PRESS REG A & B - EGRESS

116:33 PRESSURE INTEGRITY CHECK (4 Min)

PLSS 02 - ON (Tone-On, 02 Flag-0)
Press Flag Clear (3.1-3.4 Psid)
Cuff Gage 3.7-4.0 Psig
02 Flag Clear

PLSS 02 - OFF (Monitor Cuff Gage For
1 Min, Report Decay)
PLSS 02 - ON (Cuff Gage 3.7-4.0 Psig,
Tone & 02 Flag May Come On)
Verify 02 Flag Clear

116:37 CABIN DEPRESS (3 Min)

Confirm Go For Depress From Hou
CB(16)ECS: CABIN REPRESS - Open
CABIN REPRESS Vlv - CLOSE

Ovhd Or Fwd Dump Vlv - OPEN Then AUTO @
3.5 Psia (Verify Cuff Gage Does
Not Drop Below 4.6 Psig)

Verify:
Cabin At 3.5 Psia
LM Suit Circuit Lockup At 4.3 Psia
PGA > 4.6 Psig & Decaying

116:40 Start Wrist Watch :00

Ovhd Or Fwd Dump Valve - OPEN
Verify:
Tone-On & H2O Flag - A (1.2-1.7 Psia)
PGA > 4.6 Psig & Decaying

Partially Open Fwd Hatch

FINAL PREP FOR EGRESS :03

PLSS PRIM H2O - OPEN (H2O Flag -
Clear In About 4 Min)

Fwd Hatch - Open

Rest Until Cooling Sufficient
Verify:

PGA 3.7 To 4.6 Psig

CWEA Status:

Caution

PREAMPS

ECS

H2O SEP Comp Lt - On

Lower EV Visor As Req'd :10

2-10

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POST EVA 1

PLSS PRIM H2O - CLOSE
Fwd Hatch - Close & Lock
Dump Valves (Both) - AUTO

NOTE: PLSS O2 & PRESS Flags May Come
On During Repress. If PLSS O2 <10%
Manually Control Cabin Repress To
Maintain Positive PGA Pressure.
(Leave Cabin Repress CB Open For
Manual Repress)

CABIN REPRESS - AUTO
CB(16)ECS: CABIN REPRESS - Close
MASTER ALARM & CABIN Warning Lt - On
Verify Cabin Press Increasing
PRESS REG A & B - CABIN

PLSS O2 - OFF @ Cabin > 2.5 Psia

CABIN Warning Lt - Off
Verify Cabin Press Stable At 4.6-5 Psia
Use Purge Valve To Depress PGA As Req'd

123:40 POST EVA SYSTEMS CONFIG (15 Min)

Verify EVA CB Configuration
(White Dots Out + EVA Decals)
CB(16) ECS: SUIT FAN 2 - Close
SUIT FAN Δ P- Close
ECS Caution & H2O SEP Comp Lts - Out

Doff Gloves, Stow On Comm Panel
Doff Helmets With Visors, Lower Shades,
Stow In BRA

Verify Safety On Dump Valve
DES H2O Vlv - OPEN
Remove Purge Valve, Stow In Purse
Disconnect OPS O2 Hose

Connect LM O2 Hoses R/B & B/R
PGA Diverter Vlv - Horizontal

SUIT ISOL (Both) - SUIT FLOW
PLSS PUMP - OFF (Left)
PLSS FAN - OFF (Left)

Disconnect PLSS H2O From PGA
Connect LM H2O

PLSS Mode (Both) - 0
 AUDIO CB - Open
 Connect To LM Comm

AUDIO CB - Close
 AUDIO (CDR & LMP)
 VHF A - RCV
 B - OFF
 MODE - ICS/PTT
 RELAY - OFF

COMM:
 VHF A XMTR - OFF
 A RCVR - ON
 B XMTR & RCVR - OFF
 TLM BIOMED - LEFT
 VHF ANTENNA - AFT
 UPLINK SQUELCH - OFF

123:55 PLSS 02 RECHARGE (15 Min)

Verify DES 2 02 >56%

* * * * LMP 1st: * * * *

Connect LM 02 To PLSS
 HI PLSS 02 FILL - OPEN Then CLOSE
 After 4 Min

PLSS Mode - AR (02 QTY ~85%)
 PLSS Mode - 0

Disconnect LM 02

CDR Repeat 02 RECHARGE * * * *

Stow LM 02 Supply Hose

124:10 PLSS/OPS DOFFING (30 Min)

Disconnect OPS Actuator From RCU
 Disconnect RCU From PGA
 PLSS PUMP, FAN - OFF (Left) MODE SEL-0
 Disconnect RCU From PLSS, Stow In
 LCG Bag (LHMS, CDR's 1st)

Disconnect PLSS 02 Hoses
 Doff PLSS/OPS (LMP 1st)
 Stow LMP PLSS On Floor
 Stow CDR PLSS On Mid-Step

Report OPS Press To Hou
 Stow OPS 02 Hose & Actuator

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Install Gas Conn Plugs (Purse) In PGA
Install PLSS Elect Dust Cap (Purse)

CAUTION: Insure PLSS LiOH Carts & Batts
Numbered 1 or 2 Replaced with 3 or 4.

CDR 1st: # # # #
Change PLSS Batt, Stow In Jett Bag
Connect Cable to Battery
Stow PLSS Hoses & Straps

Disconn PLSS Tool Harness
Change LiOH Cart, Temp<130°, Read Cart
Decal
Stow Used LiOH Carts Inside Canisters
Stow Canisters In Jett Bag
Install PLSS Tool Harness

Disconnect OPS Antenna Lead
Remove OPS & Stow Antenna Lead
Stow CDR OPS On Eng Cover
Stow CDR PLSS In Recharge Station

LMP PLSS To Mid-Step, Repeat Above ####

Stow LMP OPS On Floor Under Dump Vlv
Stow PLSS On Floor Against Hatch

124:40 POST EVA CABIN CONFIG (20 Min)

Unstow Lunar Surface Checklist, 3-3
Stow EVA 1 Prep & Post Card

Remove Samples From PGA Pkt, Stow In
Collection Bags
Stow Collection Bags In Covers (ETB)
Stow Loose Covers In Camr Compt (RHSSC)
Stow ETB On RH Cabin Floor, Fwd

Unstow Scale (Bot RHSSC)
Weigh SRC & Collection Bags,
Record On 2-2 & Report To Hou
Stow Scale In RHSSC

CB(11) HTR: URINE LINE - Close
HTR CONT: URINE LINE - HTR 1

Stow Core Tube Bag On Floor
Stow SRC In Lower Comp
Stow CDR OPS In Top Comp
Place Collection Bags Aft Of Eng Cvr
Place CWG's Under PLSS

Verify Powerdown CB Configuration
(White Dots Out)

125:00 DOFF SUITS (50 Min)

Empty UCTA (WMS Valve), Install Cap
HTR CONT: URINE LINE - OFF
CB(11) HTR: URINE LINE - Open

TLM BIOMED - OFF

* * * * CDR 1st: * * * *

SUIT ISOL - ACT OVRD (SUIT DISC)

AUDIO CB - OPEN

DOFF PGA

Stow Comm Carrier On Comm Panel
Stow LM O2, H2O & Comm
Install PGA Elect Connector Cap (Purse)
Stow EVA 1 Cuff Checklist In Purse

NOTE: Wipe With Tissue, Lub With Pad From
EMU Main Kit: Neckring, Wristings,
Gas Connectors & PRV "O" Ring
Lub Zipper With Pad

Disconnect LCG, Bio Belt & UCTA
Insert LCG Plug (Purse)
Close Inner & Outer Zipper
Attach Neckring Cover (Aft RHSSC)
Stow On Eng Cover, Neck Aft &
CDR On RH, Face Up
LMP On LH, Face Down
Install One Glove
Cover PGA Legs With Jett Bag (LHSSC)

DRY PGA (Or Perform Configure ECS For Sleep)

Connect LM O2 Hoses, R/B & B/R
CABIN GAS RETURN - AUTO
SUIT GAS DIVERter - PUSH - CABIN
SUIT ISOL - SUIT FLOW

CONNECT TO LM COMM

Don Comm Carrier (Comm Panel)
Connect CWG Adapter (LHSSC)
Connect LM Comm Cable
Audio CB - CLOSE
Verify Comm

LMP REPEAT DOFF SUITS * * * *

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DOFF LCG - Place In Jett Bag, Stow On RCU Shelf

Stow Bio Belt On Comm Panel

Stow UCTA For Drying

DON CWG (Under PLSS)

Connect Bio Belt (LMP Only)

DON ICG (ICG Bag, LHMS)

TLM BIOMED - RIGHT

125:50 EVA DEBRIEFING WITH HOU (15 Min)

Copy Liftoff Time In Data Book

For Rev 21 - 25

126:05 CONFIGURE ETB (10 Min)

Empty ETB As Follows:

1-B&W Mag G In Fwd RHSSC

1-CEX Mag A In Aft RHSSC

EVA 1 Maps As Req'd

Return Items In Purse

Stow In ETB:

CDR's Camr With CEX Mag C (ETB)

LMP's Camr With B&W Mag H (ETB)

1-CEX Mag B (ETB)

1-B&W Mag R (ETB)

3-B&W Mags I, J & K (LCG Compt)

1-CEX Mag D (LCG Compt)

EVA 2 Maps

Polarizing Filter (Camr Compt)

126:15 EAT PERIOD (45 Min)

Stow Food as Req'd

Remove Fwd End Of ISS

Fill Drink Bags (Food Compt), Evacuate

& Stow In Top Boot Compt

126:55 5 MIN Before Transfer:

CB(11) HTR: URINE LINE - Close

HTR CONT: URINE LINE - HTR 1

127:00 PLSS O2 & H2O RECHARGE (30 Min)

Verify 1 Hr Elapsed Since Initial

O2 Recharge (DES 2 O2 >56%)

Fold LMP's PGA Legs Over PGA Back

* * * * CDR 1st: * * * *

Connect LM 02 To PLSS

HI PLSS 02 FILL - OPEN Then CLOSE

After 10 min

Perform Feedwater Recharge (Decal):

PLSS AUX H2O - OPEN

Connect WMS To PLSS H2O DRAIN

WMS VALVE - OPEN

LM DES H2O - OPEN

Connect LM H2O To PLSS H2O FILL, Verify

Condensate Flow Thru WMS Sight Glass

FILL FOR 5 MINUTES

Connect WMS To PLSS PRIM Vent For 10 Sec

Connect WMS To PLSS AUX Vent For 10 Sec

WMS VALVE - CLOSE, Stow WMS Hose

PLSS AUX H2O - CLOSE

Disconnect And Stow LM H2O Hose

Verify HI PLSS 02 FILL - CLOSED

Disconnect And Stow LM 02 Supply Hose

Stow PLSS Connector Covers

Set LMP PLSS On Mid-step

LMP Repeat 02 & H2O RECHARGE * * * *

Set LMP PLSS Against Hatch

HTR CONT: URINE LINE - OFF

CB(11) HTR: URINE LINE - Open

127:30 PRESLEEP (25 Min)

PWR AMP - PRIM

TLM PCM - HI

PRO, V96E, DATA (MSFN

UPLINK CSM S.V.) OFF

V37E 06E, PRO (STBY LT - On)

127:30 BATT MGMT

POWER/TEMP MON - ED/OFF

Check ED Volts A____, B____ (To Hou)

POWER/TEMP MON - BAT 1

BAT 1 HI V-ON; tb - gray

POWER/TEMP MON - BAT 2

BAT 1 (LMP) - OFF/RESET; tb - bp

BAT 2 - ON; tb - gray

BAT 3 - OFF/RESET; tb - bp

BAT 1 (CDR) - ON; tb - CDR

BAT 4 - OFF/RESET; tb - bp

POWER/TEMP MON - Check Bus Volts

On Hou Cue: TLM PCM - LO

PWR AMP - OFF

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S-BD VOICE - DN VOICE BU

Configure ECS For Sleep

Stow LM 02 Hoses, R/R & B/B

SUIT ISOL - SUIT FLOW

CABIN GAS RETURN - AUTO (Verify)

SUIT GAS DIVERter - PUSH - CABIN (Verify)

Install Other Glove

Unstow CDR's Hammock, Place On Suits

Unroll LMP's Hammock

LMP: Attach Straps To LH & RHSSC

Adjust Strap Tension LHSSC

Route Inboard Center Support Strap

Under LMP & CDR Comm Cables,

Attach To Vertical Handhold, ECS
Module

Attach Outboard Center Support

Strap To Lower ISA Fitting, Position

Sleep Restraint (RCU Shelf)

Straddle/Ingress

CDR: Attach Aft Straps - Z27

Route Hammock Under Comm Cable

Attach Fwd Straps, Panel 1 & 2

Adjust Strap Tension

Attach Outboard Center Support Strap

To Horizontal Handhold, ECS Module

Position Sleep Restraint (RCU Shelf)

Ingress Hammock

Attach Inboard Center Support Strap

To PLSS Donning Station, Upper

Outboard

Adjust Strap Tension

127:55 REST PERIOD (8:00 Hr)

135:55 POSTSLEEP (25 Min)
Crew Awake - Verify CWEA Status:
Caution: PREAMPS

Stow Hammocks, Roll Up With
Sleep Restraints

STAY/NO STAY FOR EVA 2 PREP

CREW STATUS REPORT	
CDR	LMP
FOOD _____	_____
MED _____	_____
SLEEP _____	_____

Copy Liftoff Time In Data
Book For Rev 26-32

136:20 EAT PERIOD (45 Min)

Stow Food Sticks (Food Compt) & Drink
Bags (Top Boot Compt) On ISS
Install ISS
Top Off PLSS 02 One Minute Min

137:05 EVA 2 PLANNING WITH HOU (5 Min)

Update EVA 2 Cuff Checklist
As Req'd (RHSSC)

Unstow EVA 2 Prep & Post Card

137:10 DON SUITS (40 Min)

TLM BIOMED - OFF

DOFF ICG - Stow In ICG Bag (LHMS)

DOFF CWG - Stow In Top Boot Box
Stow Bio Belt On Comm Panel

DON LCG (RCU Shelf)
Don UCTA
Connect Bio Belt

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* * * * LMP 1st: * * * *

AUDIO CB - OPEN

Stow LM Comm Cable

Stow CWG Adapter LHSSC

Stow Comm Carrier On Comm Panel

■ Install EVA 2 Cuff Checklist (RHSSC)

Stow Gloves On Comm Panel

Stow Neckring Cover Aft RHSSC

Install Drink Bag (On ISS)

Stow Used Bag In Jett Bag

Install Food Stick (On ISS)

DON PGA

Stow Jett Bag On PGA Legs In LHSSC

Stow LCG Plug In Purse

Connect UCTA, Bio Belt & LCG

Close Zippers & Lock

Don & Connect Comm Carrier

Stow PGA Elect Connector Cap In Purse

SUIT ISOL - ACT OVRD (SUIT DISC)

Connect LM 02 R/B & B/R, H2O & Comm

SUIT ISOL - SUIT FLOW

SUIT GAS DIVERter - PULL - EGRESS

CABIN GAS RETURN - EGRESS

AUDIO CB - CLOSE

Verify Comm

Change LM ECS LiOH Cart

Stow Used Cart In Jett Bag

CDR REPEAT ABOVE * * * *

TLM BIOMED - LEFT

S-BD VOICE - VOICE

137:45 BATT MGMT

POWER/TEMP MON - ED/OFF

Check ED VOLTS A____, B____ (To Hou)

TLM PCM - HI

POWER/TEMP MON - BAT 4

BAT 4 - ON; tb - gray

POWER/TEMP MON - BAT 3

BAT L (CDR) - OFF/RESET; tb - bp

BAT 3 - ON; tb - gray

POWER/TEMP MON - Check BUS Volts

On Hou Cue: TLM PCM - LO

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137:50 CABIN PREP EVA 2 (10 Min)

Stow All Loose Items Not Req'd For EVA

Report PRD Readings to Hou

Stow Lunar Surface Checklist

4-1

EVA 2 PREP



138:00 EQUIPMENT PREP EVA 2 (16 Min)

Stow PGA Gas Conn Plugs In Purse
Empty PGA Pockets Into Purse
PGA Relief Valve Cap In Pkt
Verify Watch & Mirror Donned

Unstow CDR OPS
Perform OPS Check (Both)
Stow Both OPS On Floor

Apply Antifog (Purse), Wipe Dry With
Tissue (LHSSC)
Stow EMU Maintenance Kit In Purse
Stow LEVA's & Helmets On ISS
Stow BRA

Stow ETB On RH Eng Cover
Tie Jett Bag, Stow On LH Eng Cover

Fwd Hatch Handle - UNLOCK

138:16 PLSS DONNING (20 Min)

* * * * LMP 1st: * * * *
Set PLSS On Mid-Step
Verify OPS Reg Decay
Unstow O2 Nozzle & Antenna Lead
Secure Flaps

Attach OPS To PLSS
Connect OPS Antenna Lead To PLSS
Verify Sublimator Exhausts Clear

Unstow PLSS Straps & Hoses
Remove Elect Dust Cap, Stow In Purse
Verify AUX H2O, DIVERTER, O2 &
PRIM H2O - OFF

Verify The Following Locked:
PLSS Battery Connection
OPS Antenna Lead To PLSS
OPS To PLSS

Don PLSS/OPS, Lift PLSS Hoses Above
Lower Straps

Connect PLSS O2 Hoses To PGA
Verify AUX H2O, DIVERTER, O2 &
PRIM H2O - OFF

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Connect RCU To PGA & Upper Straps

Verify RCU Controls:

PUMP, FAN - OFF (Left) MODE SEL-0

Connect RCU To PLSS

Unstow OPS 02 Hose & Actuator, Route

Hose Behind PGA

Connect Actuator To RCU

CDR Repeat PLSS DONNING * * * *

138:36 PLSS COMM CHECK (8 Min)

Verify Powerdown CB Configuration
(White Dots Out)

Verify Voice Comm With Hou

Audio (LMP)

S-BAND - T/R

ICS - T/R

RELAY - ON

MODE - VOX

VOX SENS - MAX

VHF A - T/R

B - RCY

COMM:

VHF A XMTR - VOICE

A RCVR - ON

B XMTR - OFF

B RCVR - ON

TLM BIOMED - OFF

SQUELCH VHF A&B -

Noise Thres + 1 1/2

RECORDER - ON

VHF Antenna - EVA

UPLINK SQUELCH - (ENABLE)

Audio (CDR)

S-BAND - T/R

ICS - T/R

RELAY - OFF

MODE - VOX

VOX SENS - MAX

VHF A - T/R

B - RCY

CB(16) COMM: SE AUDIO - Open
LMP Connect To PLSS Comm

CB(16) COMM: SE AUDIO - Close
PLSS PTT (LMP) - MAIN (Rt), Verify
PLSS Mode(LMP) - A, Wheel-CCW
(Tone-On, Vent Flag - P,
Press Flag - 0, 02 Mom)
PLSS 02 Press Gage > 85%
LMP Comm Check With CDR And Hou

NOTE: Unstow PLSS Antenna If It
Transmits Garbled And/Or Loses TM
Restow Before Egress

CB(11) COMM: CDR AUDIO - Open
CDR Connect To PLSS Comm

CB(11) COMM: CDR AUDIO - Close
Audio (CDR)
VHF A - OFF
VHF B - OFF

PLSS PTT (CDR) - MAIN (Rt), Verify
PLSS Mode(CDR) - B, Blade-CCW
(Tone-On, Vent Flag - P,
Press Flag - 0, 02 Mom)
PLSS 02 Press Gage > 85%

NOTE: Crewman In Mode B Cannot
Hear Hou

LMP Comm Check With CDR And Hou

PLSS Mode(LMP)-B, Blade-CCW(Tone-On)
PLSS Mode(CDR)-A, Wheel-CCW(Tone-On)
CDR Comm Check With LMP And Hou

PLSS Mode (Both) - AR (Tone-On)

NOTE: (AR) Wheel-Hou, Blade-EVA

Perform Comm & TM Check With Hou &
Comm Check With Each Other
Read PLSS 02 Qty to Hou

SQUELCH VHF B (LMP) - Full Decrease

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138:44 FINAL SYSTEMS PREP (1 Min)

CB(16) ECS: LCG PUMP - Close
LCG - Cold, As Req'd
CB(16) ECS: CABIN REPRESS - Close (Ver)
 SUIT FAN Δ P - Open
 SUIT FAN 2 - Open
Verify ECS Caution & H2O SEP Comp
 Lts - On (~ 1 Min)

SUIT GAS DIVERter - PULL-EGRESS(Verify)
CABIN GAS RETURN - EGRESS (Verify)
SUIT CIRCUIT RELIEF - AUTO (Verify)

138:45 OPS CONNECT (6 Min)

LMP 1st # # # #
SUIT ISOL - ACT OVRD (SUIT DISC)
Discon LM 02 Hoses, Secure About PGA

Connect OPS 02 Hose To PGA B/B
Retrieve Purge Valve (Purse)-
 Verify Closed, Lock Pin In & LO
Install Purge Valve In PGA R/R
PGA Diverter Valve - Vertical

CDR Repeat OPS CONNECT # # # #

Drink
DES H2O VLV - CLOSE

138:51 HELMET/GLOVE DONNING (12 Min)

Position Mikes (Both)
PLSS FAN - ON, Rt (Vent Flag - Clear)
Don Helmets With LEVA's, Check Drink
 Bag Position
Lower LEVA Protective Visor
Secure Tool Harness Self Doff Straps
 To LEVA's

Stow LM 02 & Comm(CDRs To ECS Handhold .

Verify The Following:

Helmet & Visor (1) - Aligned &
Adjusted
02 Connectors (3) - Locked
Purge Valves (1) - Locked
Comm Connectors (1) - Locked
PGA Diverter Vlv(1) - Vertical

Verify EVA CB Configuration
(White Dots Out + EVA Decals)

Don EV Gloves & Verify:

Wrist Locks (4) - Locked
Glove Straps (4) - Adjusted

■ Cover Wrist Rings

NOTE: If PGA Biting, PLSS 02 - ON/OFF

LCG-Cold, As Req'd

CB(16) ECS: LCG PUMP - Open

Disconnect LM H2O Hose

■ Connect PLSS H2O Hose, verify Locked

PLSS DIVERTER - MIN (Verify)

PLSS PUMP - ON (Rt)

PRESS REG A & B - EGRESS

139:03 PRESSURE INTEGRITY CHECK (4 Min)

PLSS 02 - ON (Tone-On, 02 Flag-0)

Press Flag Clear (3.1-3.4 Psid)

Cuff Gage 3.7-4.0 Psig

02 Flag Clear

PLSS 02 - OFF (Monitor Cuff Gage For
1 Min, Report Decay)

PLSS 02 - ON (Cuff Gage 3.7-4.0 Psig,
Tone & 02 Flag May Come On)

Verify 02 Flag Clear

139:07 CABIN DEPRESS (3 Min)

Confirm Go For Depress From Hou
CB(16)ECS: CABIN REPRESS - Open
CABIN REPRESS Vlv - CLOSE

Ovhd Or Fwd Dump Vlv - OPEN Then AUTO @
3.5 Psia (Verify Cuff Gage Does
Not Drop Below 4.6 Psig)

Verify:

Cabin At 3.5 Psia

LM Suit Circuit Lockup At 4.3 Psia

PGA > 4.6 Psig & Decaying

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139:10 Start Wrist Watch :00

Ovhd Or Fwd Dump Valve - OPEN

Verify:

Tone-On & H2O Flag - A (1.2-1.7 Psia)

PGA > 4.6 Psig & Decaying

Partially Open Fwd Hatch

FINAL PREP FOR EGRESS :03

PLSS PRIM H2O - OPEN (H2O Flag -
Clear In 2-4 Min)

Fwd Hatch - Open

Rest Until Cooling Sufficient

Verify:

PGA 3.7 To 4.6 Psig

CWEA Status:

Caution

PREAMPS

ECS

H2O SEP Comp Lt - On

Lower EV Visor As Req'd :10

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POST EVA 2

PLSS PRIM H2O - CLOSE
Fwd Hatch - Close & Lock
Dump Valves (Both) - AUTO

NOTE: PLSS O2 & PRESS Flags May Come
On During Repress. If PLSS O2 <10%
Manually Control Cabin Repress To
Maintain Positive PGA Pressure.
(Leave Cabin Repress CB Open For
Manual Repress)

CABIN REPRESS - AUTO
CB(16)ECS: CABIN REPRESS - Close
MASTER ALARM & CABIN Warning Lt - On
Verify Cabin Press Increasing
PRESS REG A & B - CABIN

PLSS O2 - OFF @ Cabin > 2.5 Psia

CABIN Warning Lt - Off
Verify Cabin Press Stable At 4.6-5 Psia
Use Purge Valve To Depress PGA As Req'd

146:10 POST EVA SYSTEMS CONFIG (15 Min)

Verify EVA CB Configuration
(White Dots Out + EVA Decals)
CB(16) ECS: SUIT FAN 2 - Close
SUIT FAN ΔP- Close

HTRS: MESA - Open
ECS Caution & H2O SEP Comp Lts - Out

Doff Gloves, Stow On Comm Panel
Doff Helmets With Visors, Lower Shades,
Stow In BRA

Verify Safety On Dump Valve
DES H2O Vlv - OPEN
Remove Purge Valve, Stow In Purse
Disconnect OPS O2 Hose

Connect LM O2 Hoses R/B & B/R
PGA Diverter Vlv - Horizontal

SUIT ISOL (Both) - SUIT FLOW
PLSS PUMP - OFF (Left)
PLSS FAN - OFF (Left)

Disconnect PLSS H2O From PGA
Connect LM H2O

PLSS Mode (Both) - 0
AUDIO CB - Open
Connect To LM Comm

AUDIO CB - Close
AUDIO (CDR & LMP)
VHF A - RCV
B - OFF
MODE - ICS/PTT
RELAY - OFF

COMM:
VHF A XMTR - OFF
A RCVR - ON
B XMTR & RCVR - OFF
TLM BIOMED - RIGHT
VHF ANTENNA - AFT
UPLINK SQUELCH-OFF

146:25 PLSS 02 RECHARGE (15 Min)

Verify DES 2 02 >56%

* * * * LMP 1st: * * * *
Connect LM 02 To PLSS
HI PLSS 02 FILL - OPEN Then CLOSE
After 4 Min

PLSS Mode - AR (02 QTY ~85%)
PLSS Mode - 0

Disconnect LM 02

CDR Repeat 02 RECHARGE * * * *

Stow LM 02 Supply Hose

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146:40 PLSS/OPS DOFFING (30 Min)

Disconnect OPS Actuator From RCU
Disconnect RCU From PGA
PLSS PUMP, FAN - OFF (Left) MODE SEL-0
Disconnect RCU From PLSS, Stow In
LCG Bag (LHMS, CDR's 1st)

Disconnect PLSS 02 Hoses
Doff PLSS/OPS (LMP 1st)
Stow LMP PLSS On Floor
Stow CDR PLSS On Mid-Step

Report OPS Press To Hou
Stow OPS 02 Hose & Actuator

Unstow Jett Bag (LHSSC), Hang From
CDR's LH Handhold
Install Gas Conn Plugs (Purse) In PGA
Install PLSS Elect Dust Cap (Purse)

CAUTION: Insure PLSS LiOH Carts & Batts
Numbered 3 or 4 Replaced with 5 or 6.

CDR 1st: # # # #
Change PLSS Batt, Stow In Jett Bag
Connect Cable to Battery
Stow PLSS Hoses & Straps

Disconnect PLSS Tool Harness
Change LiOH Cart, Temp<130°, Read Cart
Decal
Stow Used LiOH Carts Inside Canisters
Stow Canisters In Jett Bag
Install PLSS Tool Harness

Disconnect OPS Antenna Lead
Remove OPS & Stow Antenna Lead
Stow CDR OPS On Floor Under Purse
Stow CDR PLSS In Recharge Station

LMP PLSS To Mid-Step, Repeat Above ****

Stow LMP OPS On Floor Under Dump Vlv
Stow PLSS On Floor Against Hatch

147:10 POST EVA CABIN CONFIG (20 Min)

147:10 BATT MGMT

POWER/TEMP MON - ED/OFF

Check ED Volts A ____, B ____ (To Hou)

TLM PCM - HI

POWER/TEMP MON - LUN

BAT 3 - OFF/RESET; tb - bp

BAT L (CDR) - ON; tb - CDR

BAT 4 - OFF/RESET; tb - bp

POWER/TEMP MON - Check Bus Volts

Unstow Lunar Surface Checklist, 5-4
Stow EVA 2 Prep & Post Card

Stow ETB On RH Cabin Floor, Fwd

Unstow Scale (Bot RHSSC)

Stow Collection Bags In Covers (Camr Compt)

Weigh SRC & Collection Bags,

Record On 2-2 & Report To Hou

Stow Scale In RHSSC

CB(11) HTR: URINE LINE - Close

HTR CONT: URINE LINE - HTR 1

Stow Collection Bags Aft Of Eng Cover

Stow SRC In Upper Comp

Verify Powerdown CB Configuration
(White Dots Out)

On Hou Cue: TLM PCM - LO

S-BD VOICE - DN VOICE BU

147:30 DOFF SUITS (50 Min)

Empty UCTA (WMS Valve), Install Cap
HTR CONT: URINE LINE - OFF
CB(11) HTR: URINE LINE - Open

TLM BIOMED - OFF

* * * * CDR 1st: * * * *

SUIT ISOL - ACT OVRD (SUIT DISC)

AUDIO CB - OPEN

DOFF PGA

Stow Comm Carrier On Comm Panel
Stow LM O2, H2O & Comm
Install PGA Elect Connector Cap (Purse)
■ Stow EVA 2 Cuff Checklist In RHSSC

NOTE: Wipe With Tissue, Lub With Pad From
EMU Main Kit: Neckring, Wristings,
Gas Connectors & PRV "O" Ring
Lub Zipper With Pad

Disconnect LCG, Bio Belt & UCTA
Insert LCG Plug (Purse)
Close Inner & Outer Zipper
Attach Neckring Cover (Aft RHSSC)
Stow On Eng Cover, Neck Aft &
CDR On RH, Face Up
LMP On LH, Face Down
Install One Glove
Cover PGA Legs with Jett Bag (LHSSC)

DRY PGA (Or Perform Configure ECS for Sleep)

Connect LM O2 Hoses, R/B & B/R
CABIN GAS RETURN - AUTO
SUIT GAS DIVERter - PUSH - CABIN
SUIT ISOL - SUIT FLOW

CONNECT TO LM COMM

Don Comm Carrier (Comm Panel)
Connect CWG Adapter (LHSSC)
Connect LM Comm Cable
Audio CB - CLOSE
Verify Comm

Stow LM ECS LiOH Cart In
Bkt Aft Of Eng Cover

LMP REPEAT DOFF SUITS * * * *

DOFF LCG - Place In Jett Bag, Stow On RCU

Shelf

Stow Bio Belt On Comm Panel

Stow UCTA for Drying

DON CWG (Top Boot Box)

Connect Bio Belt (CDR Only)

DON ICG (ICG Bag, LHMS)

TLM BIOMED - LEFT

148:20 EVA DEBRIEFING WITH HOU (15 Min)

Copy Liftoff Time in Data Book

For Rev 33-37

148:35 CONFIGURE ETB (10 Min)

Empty ETB As Follows:

1-CEX Mag C In Fwd RHSSC

1-CEX Mag B In LCG Compt

4-B&W Mags H,I,J & K In LCG Compt

EVA 2 Maps As Reqd

Return Items In Purse

Stow In ETB:

CDR's Camr With CEX Mag E (Aft RHSSC)

1-CEX Mag F (Aft RHSSC)

LMP's Camr With B&W Mag L (Aft RHSSC)

1-B&W Mag R (ETB)

1-CEX Mag D (ETB)

2-B&W Mags M & N (Bot RHSSC)

EVA 3 Maps

148:45 EAT PERIOD (45 Min)

Stow Food As Reqd

Remove Fwd End of ISS

Fill Drink Bags (Food Compt), Evacuate
& Stow in Top Boot Compt

149:25 5 MIN Before Transfer:

CB(11) HTR: URINE LINE - Close

HTR CONT: URINE LINE - HTR 1

149:30 PLSS 02 & H2O RECHARGE (30 Min)

Verify 1 Hr Elapsed Since Initial

02 Recharge (DES 2 02 >56%)

Fold LMP's PGA Legs Over PGA Back

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* * * * CDR 1st: * * * *

Connect LM 02 To PLSS

HI PLSS 02 FILL - OPEN Then CLOSE

After 10 min

Perform Feedwater Recharge (Decal):

PLSS AUX H2O - OPEN

Connect WMS To PLSS H2O DRAIN

WMS VALVE - OPEN

LM DES H2O - OPEN

Connect LM H2O To PLSS H2O FILL, Verify

Condensate Flow Thru WMS Sight Glass

Fill For 5 Minutes

Connect WMS To PLSS PRIM Vent For 10 Sec

Connect WMS To PLSS AUX Vent For 10 Sec

WMS VALVE - CLOSE, Stow WMS Hose

PLSS AUX H2O - CLOSE

Disconnect And Stow LM H2O Hose

Verify HI PLSS 02 FILL - CLOSED

Disconnect And Stow LM 02 Supply Hose

Stow PLSS Connector Covers

Set LMP PLSS On Mid-step

LMP Repeat 02 & H2O RECHARGE * * * *

Set LMP PLSS Against Hatch

HTR CONT: URINE LINE - OFF

CB(11) HTR: URINE LINE - Open

150:00 MCC-H CONFERENCE (60 Min)

PRO,V37E 06E,PRO

(STBY LT - ON)

151:00 PRESLEEP (25 Min)

Configure ECS For Sleep

Stow LM 02 Hoses, R/R & B/B

SUIT ISOL - SUIT FLOW

CABIN GAS RETURN - AUTO (Verify)

SUIT GAS DIVERter - PUSH - CABIN (Verify)

Install Other Glove

Unroll CDR's Hammock With Sleep

Restraint

Unroll LMP's Hammock With Sleep

Restraint

LMP: Attach Straps To LHSSC & RHSSC
Adjust Strap Tension LHSSC
Route Inboard Center Support Strap
Under LMP & CDR Comm Cables,
Attach To Vertical Handhold, ECS
Module

Attach Outboard Center Support
Strap To Lower ISA Fitting,
Straddle/Ingress

CDR: Attach Aft Straps - Z27
Route Hammock Under Comm Cable
Attach Fwd Straps, Panel 1 & 2
Adjust Strap Tension

Attach Outboard Center Support Strap
To Horizontal Handhold, ECS Module
Ingress Hammock
Attach Inboard Center Support Strap
To PLSS Donning Station, Upper
Outboard
Adjust Strap Tension

151:25 REST PERIOD (8:00 Hr)

159:25 POSTSLEEP (25 Min)
Crew Awake - Verify CWEA Status:
Caution: PREAMPS

Stow Hammocks, Roll Up With
Sleep Restraints
Stow ISA Aft Engine Cover
Stow LCG's (ISA Big Pkt) On PGA's

STAY/NO STAY FOR EVA 3 PREP

CREW STATUS REPORT		
	CDR	LMP
FOOD	_____	_____
MED	_____	_____
SLEEP	_____	_____

Copy Liftoff Time In Data
Book For Rev 38-43

159:50 EAT PERIOD (45 Min)

Stow Food Sticks (Food Compt) & Drink
Bags (Top Boot Compt) On ISS
Install ISS
Top Off PLSS 02 One Minute Min

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160:35 EVA 3 PLANNING WITH HOU (5 Min)

| Update EVA 3 Cuff Checklist
As Req'd (RHSSC)

Unstow EVA 3 Prep & Post Card

160:40 DON SUITS (40 Min)

TLM BIOMED - OFF

DOFF ICG - Stow In ICG Bag (LHMS)

DOFF CWG - Stow In Top Boot Box
Stow Bio Belt On Comm Panel

Stow In Jett Bag:
2 Spare LCG's
Used Food & Containers

| DON LCG (RCU Shelf)
Don UCTA
Connect Bio Belt

* * * * LMP 1st: * * * *

AUDIO CB - OPEN
Stow LM Comm Cable
Stow CWG Adapter LHSSC
Stow Comm Carrier On Comm Panel

Install EVA 3 Cuff Checklist (RHSSC)
Stow Gloves On Comm Panel
Stow Neckring Cover Aft RHSSC

Install Drink Bag (On ISS)
Stow Used Bag In Jett Bag
Install Food Stick (On ISS)

DON PGA

Stow Jett Bag On PGA Legs In LHSSC
Stow LCG Plug In Purse
Connect UCTA, Bio Belt & LCG
Close Zippers & Lock
Don & Connect Comm Carrier

Stow PGA Elect Connector Cap In Purse

SUIT ISOL - ACT OVRD (SUIT DISC)
Connect LM 02 R/B & B/R, H2O & Comm
SUIT ISOL - SUIT FLOW
SUIT GAS DIVERTER - PULL - EGRESS
CABIN GAS RETURN - EGRESS
AUDIO CB - CLOSE
Verify Comm

CDR REPEAT ABOVE * * * *

TLM BIOMED - RIGHT
S-BD VOICE - VOICE

161:15 BATT MGMT
POWER/TEMP MON - ED/OFF
Check ED Volts A ____, B ____ (To Hou)
PWR AMP - PRIM
TLM PCM - HI
POWER/TEMP MON - BAT 4
BAT 4 ON; tb - gray
POWER/TEMP MON - BAT 3
BAT L (CDR) - OFF/RESET; tb - bp
BAT 3 - ON; tb - gray
BAT 2 - OFF/RESET; tb - bp
POWER/TEMP MON - LUN
BAT L (LMP) - ON; tb - LMP
BAT 1 - OFF/RESET; tb - bp
POWER/TEMP MON - Check Bus Volts

On Hou Cue: PWR AMP - OFF
TLM PCM - LO

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161:20 CABIN PREP EVA 3 (10 Min)

Stow All Loose Items Not Req'd For EVA

Report PRD Readings To Hou

Stow Lunar Surface Checklist

6-1

EVA 3 PREP

161:30 EQUIPMENT PREP EVA 3 (16 Min)

Stow PGA Gas Conn Plugs In Purse
 Empty PGA Pockets Into Purse
 PGA Relief Valve Cap In Pkt
 Verify Watch & Mirror Donned

Perform OPS Check (Both)

Apply Antifog (Purse), Wipe Dry With
 Tissue (LHSSC)

Stow EMU Maintenance Kit In Purse
 Stow LEVA'S & Helmets On ISS
 Stow BRA

Stow ETB on RH Eng Cover
 Tie Jett Bag, Stow On LH Eng Cover

FWD Hatch Handle - UNLOCK

161:46 PLSS DONNING (20 Min)

* * * * LMP 1st: * * * *

Set PLSS On Mid-Step
 Verify OPS Reg Decay
 Unstow O2 Nozzle & Antenna Lead
 Secure Flaps

Attach OPS To PLSS
 Connect OPS Antenna Lead To PLSS
 Verify Sublimator Exhausts Clear

Unstow PLSS Straps & Hoses
 Remove Elect Dust Cap, Stow In Purse
 Verify AUX H2O, DIVERTER, O2 &
 PRIM H2O - OFF

Verify The Following Locked:
 PLSS Battery Connection
 OPS Antenna Lead To PLSS
 OPS To PLSS

Don PLSS/OPS, Lift PLSS Hoses Above
 Lower Strap

Connect PLSS O2 Hoses To PGA
 Verify AUX H2O, DIVERTER, O2 &
 PRIM H2O - OFF

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Connect RCU To PGA & Upper Straps
Verify RCU Controls:
PUMP, FAN - OFF (Left) MODE SEL - 0
Connect RCU To PLSS

Unstow OPS O2 Hose & Actuator, Route
Hose Behind PGA
Connect Actuator To RCU

CDR Repeat PLSS DONNING * * * *

162:06 PLSS COMM CHECK (8 Min)

Verify Powerdown CB Configuration
(White Dots Out)
Verify Voice Comm With Hou

Audio (LMP)
S-BAND - T/R
ICS - T/R
RELAY - ON
MODE - VOX
VOX SENS - MAX
VHF A - T/R
B - RCV

COMM:

VHF A XMTR - VOICE
A RCVR - ON
B XMTR - OFF
B RCVR - ON
TLM BIOMED - OFF
SQUELCH VHF A&B -
Noise Thres + 1 1/2
RECORDER - ON
VHF Antenna - EVA
UPLINK SQUELCH - ENABLE

Audio (CDR)
S-BAND - T/R
ICS - T/R
RELAY - OFF
MODE - VOX
VOX SENS - MAX
VHF A - T/R
B - RCV

CB(16) COMM: SE AUDIO - Open
LMP Connect To PLSS Comm

CB(16) COMM: SE AUDIO - Close
PLSS PTT (LMP) - MAIN (Rt), Verify
PLSS Mode(LMP) - A, Wheel-CCW
(Tone-On, Vent Flag-P,
Press Flag-0, 02 Mom)
PLSS 02 Press Gage >85%
LMP Comm Check With CDR And Hou

NOTE: Unstow PLSS Antenna If It
Transmits Garbled And/Or Loses TM
Restow Before Egress

CB(11) COMM: CDR AUDIO - Open
CDR Connect To PLSS Comm

CB(11) COMM: CDR AUDIO - Close
Audio (CDR)
VHF A - OFF
VHF B - OFF

PLSS PTT(CDR) - MAIN (Rt), Verify
PLSS Mode(CDR) - B, Blade-CCW
(Tone-On, Vent Flag- P,
Press Flag-0, 02 Mom)
PLSS 02 Press Gage >85%

NOTE: Crewman In Mode B Cannot
Hear Hou

LMP Comm Check With CDR And Hou

PLSS Mode(LMP)-B, Blade-CCW(Tone-On)
PLSS Mode(CDR)-A, Wheel-CCW(Tone-On)
CDR Comm Check With LMP And HOU

PLSS Mode (Both) - AR (Tone-On)

NOTE: (AR) Wheel-Hou, Blade-EVA

Perform Comm & TM Check With Hou &
Comm Check With Each Other
Read PLSS 02 Qty To Hou

SQUELCH VHF B (LMP) - Full Decrease

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162:14 FINAL SYSTEMS PREP (1 Min)

CB(16) ECS: LCG PUMP - Close
LCG - Cold, As Req'd
CB(16) ECS: CABIN REPRESS - Close (Ver)
 SUIT FAN Δ P - Open
 SUIT FAN 2 - Open
Verify ECS Caution & H2O SEP Comp
 Lts - On (~1 Min)

SUIT GAS DIVERter - PULL-EGRESS(Verify)
CABIN GAS RETURN - EGRESS (Verify)
SUIT CIRCUIT RELIEF - AUTO (Verify)

162:15 OPS CONNECT (6 Min)

LMP 1st: ###
SUIT ISOL - ACT OVRD (SUIT DISC)
Discon LM 02 Hoses, Secure About PGA

Connect OPS 02 Hose To PGA B/B
Retrieve Purge Valve (Purse) -
 Verify Closed, Lock Pin In & LO
Install Purge Valve In PGA R/R
PGA Diverter Valve - Vertical

CDR Repeat OPS CONNECT ###

Drink
DES H2O VLV - CLOSE

162:21 HELMET/GLOVE DONNING (12 Min)

Position Mikes (Both)
PLSS FAN - ON, Rt (Vent Flag - Clear)
Don Helmets With LEVA's, Check Drink
 Bag Position
Lower LEVA Protective Visor
Secure Tool Harness Self Doff Straps
 To LEVA's

Stow LM 02 & Comm(CDRs To ECS Handhold

Verify The Following:

Helmet & Visor (1) - Aligned &
Adjusted
02 Connectors (3) - Locked
Purge Valves (1) - Locked
Comm Connectors (1) - Locked
PGA Diverter Vlv(1) - Vertical

Verify EVA CB Configuration
(White Dots Out + EVA Decals)

Don EV Gloves & Verify:

Wrist Locks (4) - Locked
Glove Straps (4) - Adjusted

Cover Wrist Rings

NOTE: If PGA Biting, PLSS 02 - ON/OFF

LCG-Cold, As Req'd

CB(16) ECS: LCG PUMP - Open

Disconnect LM H2O Hose

Connect PLSS H2O Hose, verify Locked

PLSS DIVERTER - MIN (Verify)

PLSS PUMP - ON, Rt

PRESS REG A & B - EGRESS

162:33 PRESSURE INTEGRITY CHECK (4 Min)

PLSS 02 - ON (Tone-On, 02 Flag - 0)

Press Flag Clear (3.1-3.4 Psid)

Cuff Gage 3.7-4.0 Psig

02 Flag Clear

PLSS 02 - OFF (Monitor Cuff Gage For
1 Min, Report Decay)

PLSS 02 - ON (Cuff Gage 3.7-4.0 Psig,
Tone & 02 Flag May Come On)

Verify 02 Flag Clear

162:37 CABIN DEPRESS (3 Min)

Confirm Go For Depress From Hou
CB(16)ECS: CABIN REPRESS - Open
CABIN REPRESS Vlv - CLOSE

Ovhd Or Fwd Dump Vlv - OPEN Then AUTO @
3.5 Psia (Verify Cuff Gage Does
Not Drop Below 4.6 Psig)

Verify:

Cabin At 3.5 Psia

LM Suit Circuit Lockup At 4.3 Psia

PGA > 4.6 Psig & Decaying

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162:40 Start Wrist Watch :00

Ovhd Or Fwd Dump Valve - OPEN

Verify:

Tone-On & H2O Flag - A (1.2-1.7 Psia)

PGA > 4.6 Psig & Decaying

Partially Open Fwd Hatch

FINAL PREP FOR EGRESS :03

PLSS PRIM H2O - OPEN (H2O Flag -
Clear In 2-4 Min)

Fwd Hatch - Open

Rest Until Cooling Sufficient

Verify:

PGA 3.7 To 4.6 Psig

CWEA Status:

Caution

PREAMPS

ECS

H2O SEP Comp Lt - On

Lower EV Visor As Reqd :10

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POST EVA 3

PLSS PRIM H2O - CLOSE
Fwd Hatch - Close & Lock
Dump Valves (Both) - AUTO

NOTE: PLSS O2 & PRESS Flags May Come
On During Repress. If PLSS O2 <10%
Manually Control Cabin Repress To
Maintain Positive PGA Pressure.
(Leave Cabin Repress CB Open For
Manual Repress)

CABIN REPRESS - AUTO
CB(16)ECS: CABIN REPRESS - Close
MASTER ALARM & CABIN Warning Lt - On
Verify Cabin Press Increasing
PRESS REG A & B - CABIN

PLSS O2 - OFF @ Cabin > 2.5 Psia

CABIN Warning Lt - Off
Verify Cabin Press Stable At 4.6-5 Psia
Use Purge Valve To Depress PGA As Req'd

169:40 POST EVA SYSTEMS CONFIG (15 Min)

Verify EVA CB Configuration
(White Dots Out + EVA Decals)
CB(16) ECS: SUIT FAN 2 - Close
SUIT FAN ΔP - Close
ECS Caution & H2O SEP Comp Lts - Out

Doff Gloves, Stow On Comm Panel

Verify Safety On Dump Valve
DES H2O VLV - OPEN
Remove Purge Valves, Stow In Purse
Disconnect OPS O2 Hose

Connect LM O2 Hoses R/R & B/B

SUIT ISOL (Both) - SUIT FLOW
PLSS PUMP - OFF (Left)
PLSS FAN - OFF (Left)

Disconnect PLSS H2O From PGA
Connect LM H2O To PGA

PLSS Mode (Both) - 0
 AUDIO CB - Open
 Connect To LM Comm

AUDIO CB - Close
 SQUELCH VHF B (LMP) -
 Noise Thres + 1 1/2
 AUDIO (CDR & LMP)
 VHF A - RCV
 B - OFF
 MODE - ICS/PTT
 RELAY - OFF

COMM:
 VHF A XMTR - OFF
 A RCVR - ON
 B XMTR & RCVR - OFF
 TLM BIOMED - LEFT
 PCM - HI
 VHF ANTENNA - AFT

169:55 PLSS/OPS DOFFING (20 Min)

Disconnect OPS Actuator From RCU's
 Disconnect RCU's From PGA
 Verify Pump, Fan - OFF (Left) MODE SEL-0
 Disconnect RCU From PLSS, Stow On
 Eng Cover

Disconnect PLSS 02 Hoses
 Doff PLSS/OPS (LMP 1st)
 Stow LMP PLSS On Floor
 Stow CDR PLSS On Mid-Step
 Stow OPS 02 Hose & Actuator

Install Gas Conn Plugs (Purse) In PGA

* * * * CDR 1st: * * * *
 Disconnect OPS Antenna Lead
 Remove OPS & Stow Antenna Lead
 Perform OPS Checkout
 Report OPS Press To Hou
 Stow OPS On Eng Cover

Stow PLSS Hoses & Upper Straps
 Remove Lower PLSS Straps, Clip Straps
 Together, D-Ring (Name-To-Name)
 Remove Yo-Yo, Stow On Eng Cover

Stow Straps In Aft LHSSC
 Stow PLSS On Floor

LMP PLSS To Mid-Step, Repeat Above ****

Verify Powerdown CB Configuration
 (White Dots Out)

DATE 11/6/72

170:15 PREP FOR EQUIP JETT 1 (24 Min)

Stow Return Items In ISA Big Pkt
Unstow Scale (Bot RHSSC)

Weigh BSLSS/Rock Bag (30# Max) &
Collection Bags
Record On 2-2 & Report To Hou

■ Weigh ISA (19# Max)
Stow Scale In RHSSC
Stow Collection Bags & BSLSS/Rock Bag
Aft Eng Cover

Verify Total DES 02 QTY (Tank 1+2) >31%
Fwd Hatch Handle - UNLOCK

Remove ISS, Wrap & Tie The Following:
Lunar Boots (4)
RCU's (2)
Armrest (1)
Yo-Yo's (2)

Position PLSS's For Jettison, Eng
Cover & Mid-Step

Clean & Lub Wristings As Req'd
PGA Diverter Vlvs - Horizontal

Audio (CDR & LMP)
Mode - VOX
VOX SENS - As Req'd
Comm: RECORDER - ON

Don EV Gloves
Check PGA Connectors

170:39 PRESS INTEGRITY CHECK (4 Min)

NOTE: LM Suit Circuit Shall Not Be
Maintained At Elevated Press >5 Min

SUIT GAS DIVERTER - PULL-EGRESS (Ver)
CABIN GAS RETURN - EGRESS (Verify)
SUIT CIRCUIT RELIEF - CLOSE

PRESS REG A - EGRESS
PRESS REG B - DIRECT 02
Monitor Cuff Gage To 3.7 - 4.0 Psig
Then PRESS REG B - EGRESS (Cuff
Gage Decay <.3 Psig In 1 Min)

SUIT CIRCUIT RELIEF - AUTO (Suit Ckt
Press Decays To 4.8 Psia)

170:43 CABIN DEPRESS FOR JETT (4 Min)

Confirm Go For DEPRESS From Hou
CB(16)ECS: CABIN REPRESS - Open
Ovhd Or Fwd Dump Valve - OPEN Then AUTO
At 3.5 Psia
(Verify Cabin Press 3.5 Psia
& LM Suit Circuit Lockup At
4.3 Psia & Decaying)

Ovhd Or Fwd Dump Vlv - OPEN (Verify LM
Suit Circuit 3.6 To 4.3 Psia)

170:47 HATCH OPENING (4 Min)

Partially Open Fwd Hatch
Ovhd Or Fwd Dump Valve - AUTO

Fwd Hatch - Full Open

Jettison The Following:
PLSS On Mid-Step
PLSS On Eng Cover
ISS

Verify Items Clear Of Ascent Stage

Fwd Hatch - Close & Lock

170:51 CABIN REPRESS (7 Min)

Dump Valves(Both)- AUTO (Verify)
CABIN REPRESS - AUTO (Verify)

CB(16)ECS: CABIN REPRESS - Close
MASTER ALARM & CABIN Warning Lt - On
Verify Cabin Press Increasing
PRESS REG A & B - CABIN

CABIN Warning Lt - Off
Verify Cabin Press Stable At 4.6-5 Psia

Doff Gloves, Stow On Comm Panel
Doff Helmets With Visors, Lower Shades,
Stow In BRA

Verify Safety On Dump Valve

Audio (CDR & LMP):
Mode - ICS/PTT

COMM: UPLINK SQUELCH - OFF
RECORDER - OFF

DATE 11/6/72

Unstow Lunar Surface Checklist, 7-5
Stow EVA 3 Prep & Post Card

170:56 BATT MGMT

POWER/TEMP MON - ED/OFF
Check ED VOLTS A _____, B _____ (To Hou)
POWER/TEMP MON - BAT 1
BAT 1 - ON; tb - gray
BAT 1 (LMP) - OFF/RESET; tb - bp
POWER/TEMP MON - BAT 2
BAT 2 - ON; tb - gray
POWER/TEMP MON - Check BUS Volts

On Hou Cue: TLM PCM - LO

S-BD VOICE - DN VOICE BU

CB(11) HTR: URINE LINE - Close
HTR CONT: URINE LINE - HTR 1

170:58 POST EVA CABIN CLEANUP (3 Min)

Stow On Floor:

CDR's OPS Under Purse
LMP's OPS Under Dump Vlv
ETB RH Corner, Fwd
ISA Against Hatch
BSLSS/Rock Bag Against Hatch

171:01 DOFF SUITS (50 Min)

Empty UCTA (WMS Valve), Install Cap
HTR CONT: URINE LINE - OFF
CB(11) HTR: URINE LINE - Open

TLM BIOMED - OFF

* * * * CDR 1st: * * * *

SUIT ISOL - ACT OVRD (SUIT DISC)

AUDIO CB - OPEN

DOFF PGA

Stow Comm Carrier On Comm Panel

Stow LM O2, H2O & Comm

Install PGA Elect Connector Cap (Purse)

■ Stow EVA 3 Cuff Checklist In RHSSC

NOTE: Wipe With Tissue, Lub With Pad From

EMU Main Kit: Neckring, Wristings,

Gas Connectors & PRV "O" Ring

Lub Zipper With Pad

Disconnect LCG, Bio Belt & UCTA

Insert LCG Plug (Purse)

Close Inner & Outer Zipper

Attach Neckring Cover (Aft RHSSC)

Stow on Eng Cover, Neck Aft &

CDR On RH, Face Up

LMP On LH, Face Down

Install One Glove

Cover PGA Legs with Jett Bag (LHSSC)

DRY PGA (Or Perform Configure ECS for Sleep)

Connect LM O2 Hoses, R/B & B/R

CABIN GAS RETURN - AUTO

SUIT GAS DIVERter - PUSH - CABIN

SUIT ISOL - SUIT FLOW

CONNECT TO LM COMM

Don Comm Carrier (Comm Panel)

Connect CWG Adapter (LHSSC)

Connect LM Comm Cable

Audio CB - CLOSE

Verify Comm

Stow Neutron Flux Bag With Core Tube Bag

Stow Heaviest Collection Bag (Place

In Cover) Aft Of Eng Cover (See 2-2)

Transfer Others To CDR's Station

LMP REPEAT DOFF SUITS * * * *

DOFF LCG - Place In Jett Bag, Stow On RCU Shelf

Stow Bio Belt On Comm Panel
Stow UCTA for Drying

DON CWG (Top Boot Box)
Connect Bio Belt (LMP Only)

DON ICG (ICG Bag, LHMS)

TLM BIOMED - RIGHT

PRO,V37E, 06E, PRO
(STBY Lt - ON)

171:51 EVA DEBRIEFING WITH HOU (15 Min)

Copy Liftoff Time In Data Book
For Rev 44-50

172:06 EAT PERIOD (45 Min)

172:51 MCC-H CONFERENCE (60 Min)

Change LM ECS LiOH Cart
Stow Used Cart In Bkt Aft of Eng Cover

173:51 PRESLEEP & EQUIPMENT STOWAGE (48 Min)

Empty ETB As Follows:

Stow 70mm Mags (7) In RHSSC
Transfer Mags In LCG Compt (RHSSC) To Bot
Boot Compt, IV Gloves To Comm Panel
SEP DESA In Top Boot Compt
EVA 3 Maps As Reqd
Cosmic Ray In ISA Top Pkt

Stow ETB Against Hatch

Stow Cuff Checklists (2 In Purse, 4 In RHSSC)
In ISA Big Pkt
Stow Purge Valves (Purse) In Aft LHSSC

Stow Collection Bags In Covers (Camr Compt)
Stow Collection Bags, See 2-2
Report Bag Location To Hou

Configure ECS For Sleep

Stow LM 02 Hoses, R/R & B/B
SUIT ISOL - SUIT FLOW
CABIN GAS RETURN - AUTO (Verify)
SUIT GAS DIVERTER - PUSH - CABIN (Verify)
Install Other Glove

16mm Camr To Window Bkt
Remove ULC & Rt Angle Bkt

Stow LM EVA Antenna

Unroll CDR's Hammock With Sleep
Restraint

Unroll LMP's Hammock With Sleep
Restraint

LMP: Attach Straps To LH & RHSSC
Adjust Strap Tension LHSSC
Route Inboard Center Support Strap
Under LMP & CDR Comm Cables,
Attach To Vertical Handhold, ECS
Module

Attach Outboard Center Support
Strap To Lower ISA Fitting,
Straddle/Ingress

CDR: Attach Aft Straps - Z27
Route Hammock Under Comm Cable
Attach Fwd Straps, Panel 1 & 2
Adjust Strap Tension

Attach Outboard Center Support Strap
To Horizontal Handhold, ECS Module
Ingress Hammock
Attach Inboard Center Support Strap
To PLSS Donning Station, Upper
Outboard
Adjust Strap Tension

174:39 REST PERIOD (8:00 Hr)

182:39 POSTSLEEP (25 Min)

Crew Awake - Verify CWEA Status
Caution: PREAMPS

Stow Hammocks & Sleep Restraints In
Jett Bag (On PGA)
Stow ETB In Jett Bag
Stow BSLSS Bag In Jett Bag

STAY/NO STAY FOR FINAL JETTISON

CREW STATUS REPORT

	CDR	LMP
FOOD	_____	_____
MED	_____	_____
SLEEP	_____	_____

7-8

DATE 11/6/72

DATE 3/12/72

183:04 LGC/IMU POWER UP

PRO (Hold In Until STBY Lt-Off) Possible
PROG, RESTART Lts-On, M.A., LGC Warn-On/Off
(NO ATT, NO DAP, & GIMBAL LOCK Lts-On)

PWR AMPL - PRIM
TLM - HI
VOICE - VOICE

RSET, V96E

CB(11) GASTA (AC/DC) - Close (2)

CDR FDAI (AC/DC) - Close (2)

IMU OPR - Close

(GIMBAL LOCK Lt-Off, NO ATT Lt-Off In 90s)

V16 N65E

MISSION TIMER - Check

V25 N01E, 1365E, E,E,E

V15 N01E, 1365E, (All Zero)

V21 N27E, 10E

15 01 Test Successful When

R2 $\geq$ 3 (78 sec)

V21 N27E, 0E

Notify STDN of E-Dump

TLM-HI (Verify)

V74E (42 sec)

CB(11) HEATERS: AOT - Close

183:14 EAT PERIOD (45 min)

CB(11) HEATERS: RR OPR - Close

RR STBY - Open

UPDATA LINK - DATA (STDN
UpLinks CSM S.V. & RLS)
UPDATA LINK - OFF

Copy:
P22 Acq Time ____:____:____(186:03:34)
LO TIME (P57) ____:____:____(188:03:14.60)

183:59
Park RR Ant For P57 Use
CB(11) AOT LAMP - Close
P57E, R2 00004, PRO
N34 (Load LO Time), PRO
N06 00010
00003
00010

PRO (NO ATT Lt - On/Off, Twice)
N04 Grav. Err. (.01°)
V32E (NO ATT Lt - On/Off, Twice)
N04 Grav. Err. (.01°)
PRO
N22 ICDU Angles (.01°)
PRO (NO ATT Lt - On/Off)
N71 Align Star, 4 Marks, Vega (436)
N05 Angle Diff (.01°)
PRO
N93 Torq. Angles (.001°)
PRO

If Adjacent Detent Desired:
V21 N01E,373E,32533E
PRO To N79

A/T-3 DATA STAR INFO			
Str 1: Alkaid (327)			
Str 2:	Str 3:	Str 4:	
N88 Alloth	Eltanin	α2 Canes Venatici	
#74(300)	#116(400)	#157(300)	
X -54285	-01099	-76073	
Y -12733	-62254	-18517	
Z +83012	+78251	+62209	

N25 00014, PRO (Alignment Complete)

DATA STAR MARKS

N70 Data Star Code (From Table)

PRO

N71 Verify Detent & Star Code

PRO

V52/3 Mk; Load 4 Mk Pairs via N79

PRO

N05 Angle Diff. (.01°)

V32E For Remaining Data Stars

(After Last Star) V34E, 00E

CB(11) AOT LAMP - Open

Window Shades - Open

Park RR Ant. Along (+00000, +03000)

7-10

DATE 9/12/72

DATE 11/6/72

184:24 DON SUITS (35 Min).

TLM BIOMED - OFF

DOFF ICG - Stow In Jett Bag
Empty Pockets

DOFF CWG - Stow In Jett Bag
Stow Bio Belt On Comm Panel

DON LCG (RCU Shelf)
Don UCTA
Connect Bio Belt

* * * * LMP 1st: * * * *

AUDIO CB - OPEN
Stow LM Comm Cable
Stow CWG Adapter LHSSC
Stow Comm Carrier On Comm Panel

Stow Gloves On Comm Panel
Stow Neckring Cover Aft RHSSC
Remove Drink Bag, Stow In Jett Bag

DON PGA
Stow Jett Bag On PGA Legs In LHSSC
Stow LCG Plug In Purse
Connect UCTA, Bio Belt & LCG

Close Zippers & Lock
Don & Connect Comm Carrier
Stow PGA Elect Connector Cap In Purse

SUIT ISOL - ACT OVRD (SUIT (DISC)
Connect LM O2 R/B & B/R, H2O & Comm
SUIT ISOL - SUIT FLOW
SUIT GAS DIVERter - PULL - EGRESS
CABIN GAS RETURN - EGRESS
AUDIO CB - CLOSE
Verify Comm

AUDIO (CDR & LMP)
VHF A - OFF
B - RCv

COMM:
VHF A RCVR - OFF
B RCVR - ON

Stow In Jett Bag:
2 LCG Adapters (Aft RHSSC)
Urine Receptacle
LM ECS LiOH Cart & BKT

CDR REPEAT ABOVE * * * *

TLM BIOMED - LEFT
UPLINK SQUELCH - ENABLE

184:59 PREP FOR EQUIPMENT JETTISON 2 (8 Min)

Report PRD Readings To Hou

Stow Purse In ISA Bot Pkt
Stow ISA Aft Of Eng Cover
Stow BSLSS/ROCK Bag Aft Of Eng Cover
Stow Both OPS On Aft Eng Cover

Stow Helmets With LEVA's On OPS
Stow BRA In Jett Bag
Tie Jett Bag, Stow On Eng Cover

Fwd Hatch Handle - UNLOCK

185:07 HELMET/GLOVE DOWNING (6 Min)

Position Mikes (Both)
■ Don Helmets With LEVA's
Lower LEVA Protective Visor

Verify The Following:

Helmet & Visor	(1) - Aligned & Adjusted
O2 Connectors	(2) - Locked
Connector Plugs	(2) - Locked
Comm Connector	(1) - Locked
PGA Diverter Vlv	(1) - Horizontal

Audio (CDR & LMP):
MODE - VOX
VOX SENS - As Req'd
Comm: RECORDER - ON

Don EV Gloves & Verify
Wrists Locks (4) - Locked
Glove Straps (4) - Adjusted

DATE 11/6/72

185:13 PRESS INTEGRITY CHECK (4 Min)

NOTE: LM Suit Circuit Shall Not Be
Maintained At Elevated Press > 5 Min

SUIT GAS DIVERTER - PULL - EGRESS (Ver)
CABIN GAS RETURN - EGRESS (Verify)
SUIT CIRCUIT RELIEF - CLOSE

PRESS REG A - EGRESS
PRESS REG B - DIRECT 02
Monitor Cuff Gage To 3.7 - 4.0 Psig
Then PRESS REG B - EGRESS (Cuff
Gage Decay <.3 Psig In 1 Min)

Suit Circuit Relief - AUTO (Suit Ckt
Press Decays To 4.8 Psia)

185:17 CABIN DEPRESS FOR JETTISON (4 Min)

Confirm Go For DEPRESS From Hou
CB(16) ECS: CABIN REPRESS - Open
Ovhd Or Fwd Dump Valve - OPEN Then Auto
At 3.5 Psia
(Verify Cabin Press 3.5 Psia
& LM Suit Circuit Lockup At
4.3 Psia & Decaying)

H2O SEP SEL - PULL SEP 2

Ovhd Or Fwd Dump Vlv - OPEN (Verify LM
Suit Circuit 3.6 To 4.3 Psia)

185:21 HATCH OPENING (3 Min)

Partially Open Fwd Hatch
Ovhd Or Fwd Dump Valve - Auto

Fwd Hatch - Full Open

Jettison The Jett Bag

Verify Items Clear Of Ascent Stage

Fwd Hatch - Close & Lock

185:24 CABIN REPRESS (5 Min)

Dump Valves (Both) - Auto (Verify)
Cabin REPRESS - Auto (Verify)

CB(16) ECS: CABIN REPRESS - Close
MASTER ALARM & CABIN Warning Lt - On
Verify Cabin Press Increasing
PRESS REG A & B - CABIN

CABIN Warning Lt - Off
Verify Cabin Press Stable At 4.6-5 Psia

Doff Gloves, Stow On Comm Panels
Doff Helmets With Visors, Stow On
Eng Cover

Verify Safety On Dump Valve

Audio (CDR & LMP):
MODE - ICS/PTT
Comm: RECORDER - OFF

185:29 CABIN CLEAN UP FOR LAUNCH (25 Min)

Secure OPS (2) On Floor
Stow EV Gloves & Visors (Remove Helmets)
In LEVA Bags (Visors Aft)
Place LEVA Bags On Floor, 1 Rt, 1 Left

Install ISA In Aft Cabin, High
Attach BSLSS/Rock Bag To +Z27

Secure LEVA Bags On Eng Cover
Secure Utility Lights On AOT
Stow All EVA Onboard Data
In Flt Data File

Attach Floor Hole Covers (Fwd PDF)

185:54 P22
 (Acq-:09)

CB(11) RR (2) - Close
 R/RDOT H/HDOT (AC/DC) - Close
 CDR X-PNTR - Close
 SIG STR DISP - Close

RR MODE - LGC (Wait 10 sec Before V37E)
 RATE/ERR MON (CDR) - RNDZ RDR

V95E

P22E

N06 R2 00001

PRO (N54 R, R; If R>400 & R<0)

DSKY Blanks: V83E, N54, PRO By 130 nmi

V16 N72E (+18900, +33200)

NO TRACK Lt-Off at ~103nmi

(N78E, Rng, Rng Rt)

NO TRACK Lt-On At ~80nmi

(N72 Goes To +18000, +27000)

P00E

Park RR Ant Along (+00000, +03000)

CB (11) RR (2) - Open

Copy Ascent Pads

CSI Pad

LM DAP Wt

On Call From CMP: VHF A XMTR - VOICE/RNG VHF A(2)-T/R (VHF A XMTR - OFF After Conversation)

186:09 CABIN PREP FOR ASCENT (39 Min)

7-16

DATE 11/6/72

DATE 9/12/72

***** L0-1:15 (186:48) *****

Verify:

MASTER ARM - OFF

GUID CONT - PGNS

ENG ARM - OFF

ATTITUDE CONT (3) - MODE CONT

MODE CONT (Both) - ATT HOLD

Configure CB's Per PWR UP Charts

8-1

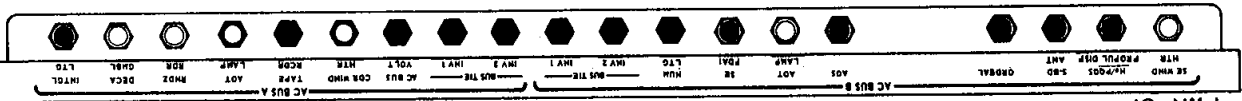
LAUNCH PREP

PWR UP

11

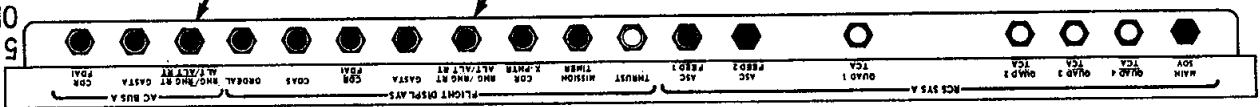
OPEN

6



OPEN

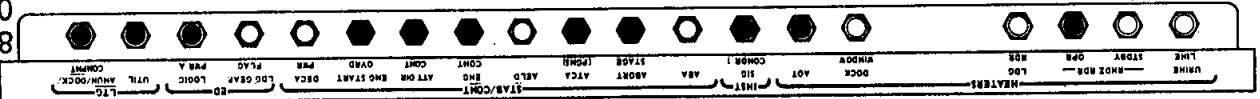
5



CLOSE 1st
CLOSE 2nd

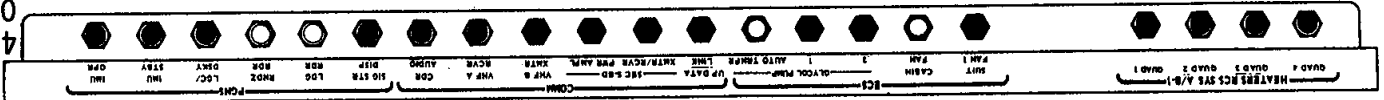
OPEN

8



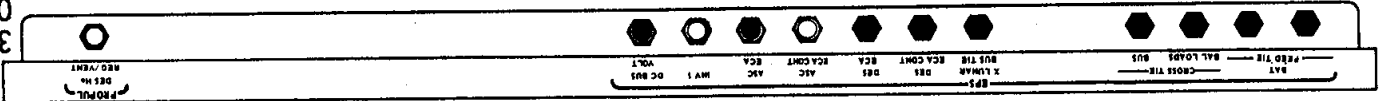
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4



OPEN

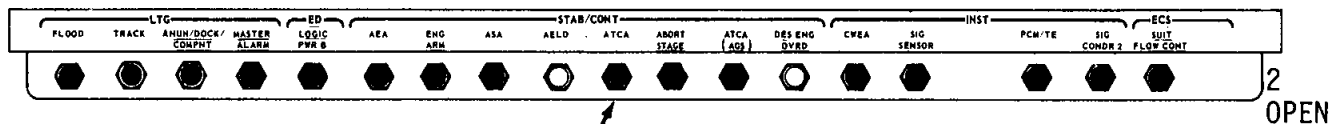
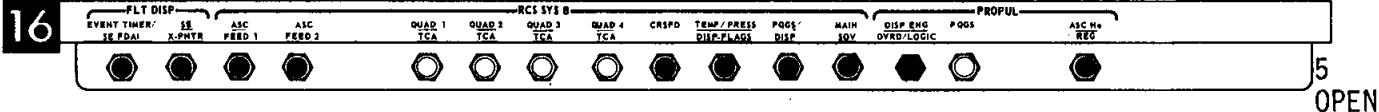
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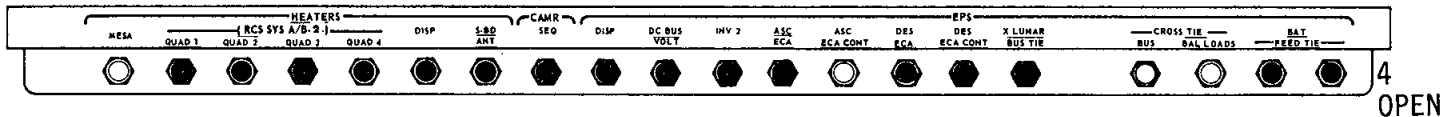
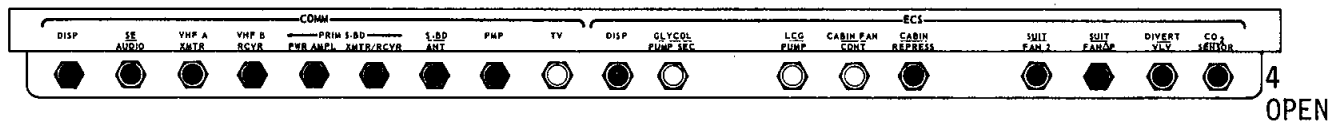
DATE 9/12/72

DATE 9/12/72

PWR UP



PREAMPS (Off)



[If P22 Performed Omit Self Test To]
[RADAR TEST - OFF]
CB(11) RR (2) - Close (NO TRACK Lt-On)
X-POINTER SCALE (2) - HI MULT
RATE/ERR MON (2) - RNDZ RDR
ATTITUDE MON (CDR) - PGNS, (LMP) - AGS
RNG/ALT MON - RNG/RNG RT
SHFT/TRUN - +50°
TEMP MONITOR - RNDZ (+10° To +75°)
RR MODE - AUTO TRACK
RADAR TEST - RNDZ (Rng Rt Tape
Drives, X-POINTERS Oscillate,
After 12 sec Rng Tape Drives
NO TRACK & PWR FAIL Lts - Off)

TEST/MONITOR - AGC 1.5 To 1.9
- XMTR PWR 2.8 To 3.2
- SHAFT ERR 2.2 To 2.6
- TRUN ERR 2.2 To 2.6
- AGC

V25 N07E (Set NORRMON Flg)
101E, 10E, 1E

RR MODE - LGC (NO TRACK Lt - On)

CB(16) Cycle CWEA

AGS STATUS-OPERATE
(AGS Warn Lt-On)

000 +888888 (OPR ERR Lt-On)

123 -45679

412R +1 Satisfactory

574R +Not Staged

604R -On Surface

612R +0 Attitude Hold At ABORT STAGE

400 + 4 Lunar Align (Wait 30 sec
Before 400 + 6)

544R _____ X Gyro Coeff (.01°/hr)

545R _____ Y Gyro Coeff

546R _____ Z Gyro Coeff

400 + 6E Calibrate Gyros
(Calib. Complete in 5m 2s)

V63E, R2 00001, PRO
 (TRACKER & NO TRACK Lts - Off After 12 sec)
 N72 Varying @ 1/2 cps,
 PRO
 N78 +195.10 To +195.50 Rng (TM 193 To 197)
 -0470.5 To -0510.5 Rng Rt (TM -468 To -508)
 V34E
 (PWR FAIL & NO TRACK Lts - On,
 X-PNTRS Center)
 RADAR TEST - OFF
 Park RR Ant Along (+00000, +03000)

224 _____ LOW LIM (+58624)
 226 _____ RETGT VAL FOR TERM IN α L(+58624)
 231 _____ RLS (+56906)
 232 _____ INS ALT (+00600)
 410+0 _____ ORB INS
 465 _____ INS HDOT (+00320)
 662R +0 (4K10)
 673R +0

373 +04832 TIG L/O

400R (+0 Calib Complete)

544R _____ X (.01°/hr)
 545R _____ Y
 546R _____ Z

If Gyro Drift Changes $>2.0^{\circ}/\text{hr}$, AGS Failed
--

LO-:55 (187:08)

GYRO TEST - POS RT (RPY RATE +5°/SEC)
GYRO TEST - NEG RT (YPR RATE -5°/SEC)

V16 N65E LGC TIME
377 _____ (Bias 180)

RATE SCALE -5°/SEC
Repeat Tests

P____, Y____ (+22°/-50°)
TRACK MODE - AUTO

LO-:50 (187:13)

V48, 12102, PRO, +10900 LM Wt (Max = 10900), PRO
V76E (Min Imp Check of CDR ACA To LGC, ACA
Cold Fire CES Voltage, SEC RCS Coil Hot
Fire 4-JET In AGS)

V11 N10E, 31E, R1 67777

GUID CONT-AGS

MODE CONT (2) - ATT HOLD

ATTITUDE CONT (3) - MODE CONT

CDR ACA (Deflect Slowly To Hardover, Pause
2 sec At Null)

Roll Rt R1 27757 (QUAD Flag & RCS
Lt 27737 TCA Warn Lt-On

Pitch Up 27776
Dn 27775

Yaw Rt 27767
Lt 27773

GUID CONT - PGNS

MODE CONT (2) - ATT HOLD

Cycle CB(16) CWEA

8-6

DATE 11/6/72

DATE 2/12/72

V77E

V15N01E,42E(Rate Cmd Hot Fire Check

ACA to Jets)

CB(11 & 16) QUAD TCA (8)-Close

CDR ACA (Out-Of-Detent, Pause 2 sec At

Roll Rt R3 000XX Null)

Lt 777XX

Pitch Up R1 000XX

Dn 777XX

Yaw Rt R2 777XX

Lt 000XX

V76E

UPDATA LINK - DATA

(STDN Uplinks CSM S.V., RLS,

& Zeros POS/NEG Cells)

UPDATA LINK - OFF

***** L0-:45 (187:18) *****

Park RR Ant For P57 Use

Window Shades - Close

CB(11) AOT LAMP - Close

P57E, R2 00004, PRO

N34 Load L0 Time, PRO

N06 00010

00003

00110

PRO (NO ATT Lt - On/Off, Twice)

N04 Grav. Err. (.01°)
V32E (NO ATT Lt - On/Off, Twice)
N04 Grav. Err. (.01°)
PRO
N22 ICDU Angles (.01°)
PRO (NO ATT Lt - On/Off)
N71 Star, 4 Marks, Vega (436)

If Adjacent Detent Desired:
V21N01E, 373E, 32533E
PRO To N79

N05 Angle Diff. (.01°)
PRO
N93 Torq. Angles (.001°)
PRO
N25 00014, ENTR
P00E
CB(11) AOT LAMP - Open
Window Shades - Open

CB(11)RR(2) - Close
GYRO SEL - PRIM
SLEW RATE - HI
Position RR Ant (+18000,+33300)
via V41 N72
RR MODE - SLEW
Manually Slew Up For 3 sec
CB(11)RR(2) - Open

BAT 5,6 - ON, tb - gray
BAT 1,3 - OFF/RESET, tb-bp
CB(11&16) ASC ECA CONT(2)-Close

Set Camr For Ascent (LM3/DAC/10/CEX (T4,1/500,∞)
Mag (Q), ISA Top Pkt, 12fps, 6 min)

DATE 9/12/72

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***** L0-:35 (187:28) *****

V48E
N46 12102 PRO
N47 (+10900) LM Wt
PRO
V77E
GUID CONT - PGNS
MODE CONTROL (PGNS) - AUTO

Possible STDN Voice Update Of PIPA BIAS and/or LGC Gyro Compensation
--

P12E
N33 ____:____:____ TIG (188:03:14.60)
PRO

Copy & Load:
047 ____ (From STDN)
053 ____ (From STDN)

N76 VH Final (+55408)
HDot Final (+00320)
Xrng (+00000)
PRO

Copy Updated AGS K Factor
____:____:____

N74 TFI, YAW, PITCH
DET - Set/DN

***** LO-:30 (187:33) *****

400 + 4E Lunar Align

CB(11) QUAD 4,3,2,1 TCA (4) - Close

DES He REG/VENT - Close

AELD - Close

INV 1 - Close

CB(16) QUAD 1,2,3,4 TCA (4) - Close

AELD - Close

MASTER ARM - OFF

STAGE - SAFE/Guarded

X-POINTER SCALE (CDR) - LO MULT

RATE/ERR MON (CDR) - LDG RDR/CMPTR

ATTITUDE MON (CDR) - PGNS

GUID CONT - PGNS

MODE SEL - AGS

RNG/ALT MON - ALT/ALT RT

RATE SCALE - 25°/SEC

ACA PROP (CDR) - ENABLE

ENG ARM - OFF

ATT/TRANSL - 4 JETS

BAL CPL - ON

ABORT - Reset

ABORT STAGE - Reset

8-10

DATE 9/12/72

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PRPLNT TEMP/PRESS MON - ASC
HELIUM MON - ASC PRESS 1
SYS A&B ASC FUEL & OXID tb(4)-bp
SYS A&B QUAD 1,2,3,4, (8) tb-gray
CRSFD tb-bp
SYS A&B MAIN SOV tb(2)-gray
TEMP/PRESS MON - OXID MANF
ACA PROP (LMP) - ENABLE
GLYCOL - PUMP 1
SUIT FAN - 1
O2/H2O QTY MON - ASC 1
RATE/ERR MON (LMP) - LDR RDR/CMPTR
ATTITUDE MON (LMP) - AGS
RADAR TEST - OFF
TEST MONITOR - AGC
SLEW RATE - HI
RR MODE - SLEW
DEAD BAND - MIN
ATTITUDE CONTROL (3) - MODE CONT
MODE CONTROL (PGNS) - AUTO
MODE CONTROL (AGS) - ATT HOLD (AUTO After LO)
TEMP MONITOR - RNDZ RDR
RCS SYS A/B-2 QUAD 1,2,3,4 - AUTO
X-POINTER SCALE (LMP) - LO MULT
ACA/4 JET (2) - ENABLE
TTCA/TRANSL (2) - ENABLE
TTCA (2) - JETS (Dn)
Eng STOP (2) - Reset

Verify 02 Hoses R/R, B/B
Don Helmets, Gloves (Bot Boot Comp)
& Restraints

DES H2O - CLOSE
ASC H2O - OPEN
WATER TANK SEL - ASC
CABIN REPRESS - CLOSE
DES 02 - CLOSE
ASC 02 No. 1 - OPEN

PRESS REG A&B - EGRESS
SUIT GAS DIVERter - PULL/EGRESS
CABIN GAS RETURN - AUTO
SUIT CIRCUIT RELIEF - AUTO

DES FUEL & OXID VENTS (2) - OPEN
(tb(2)-gray)
DES He REG 1&2 - OPEN
(tb-gray)
CB(11) DES HE REG/VENT - OPEN
ASC He REG 1&2 - tb(2) -gray

***** LO-:17 (187:46) *****

V47E, 414 + 1

8-12

DATE 9/12/72

DATE 9/12/72

VHF A: XMTR - VOICE/RNG (HOT MIKE TO CSM)
RCVR - OFF
VHF B: XMTR - OFF
RCVR - ON
AUDIO (Both) VHF A - T/R
VHF B - RCV
MODE - ICS/PTT
VHF ANT - AFT
RECORDER - ON

***** LO-:15 (187:48) *****

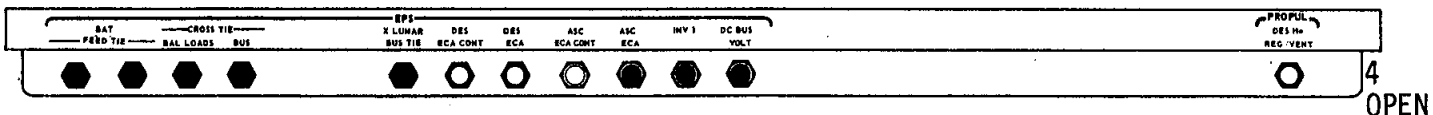
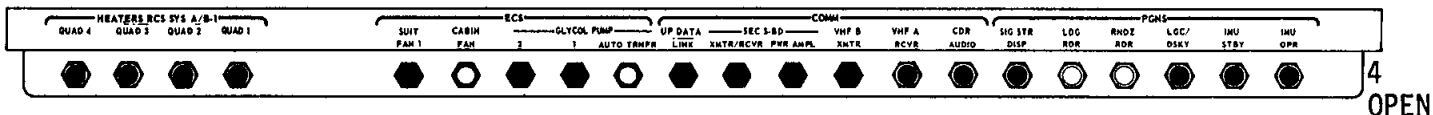
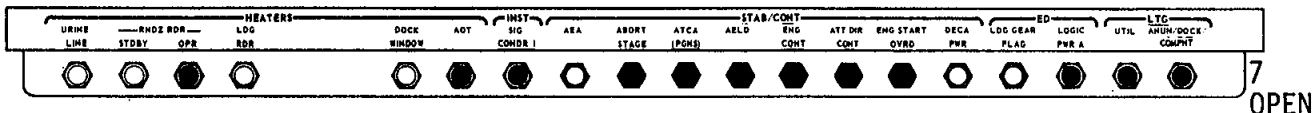
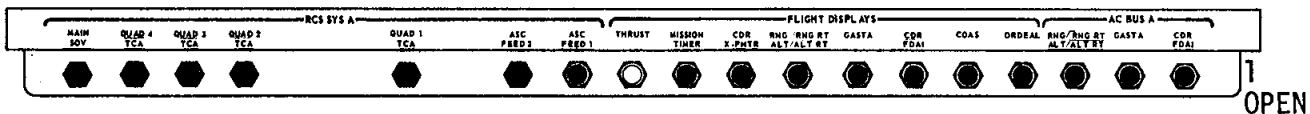
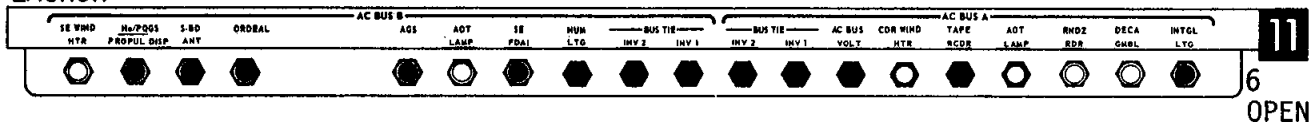
Guidance Recommendation From STDN

BAT 2,4 - OFF/RESET, tb-bp
DES BATS - DEADFACE, tb-bp
If tb-bp,
CB(11 & 16) DES ECA - Open
CB(11 & 16) DES ECA CONT - Open

CB(11 & 16) ASC ECA CONT - Open

Verify CB's Per LAUNCH Configuration Charts

LAUNCH

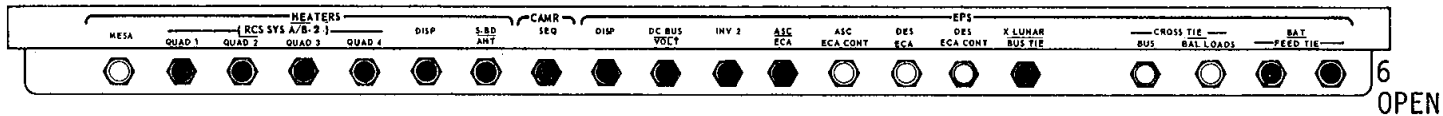
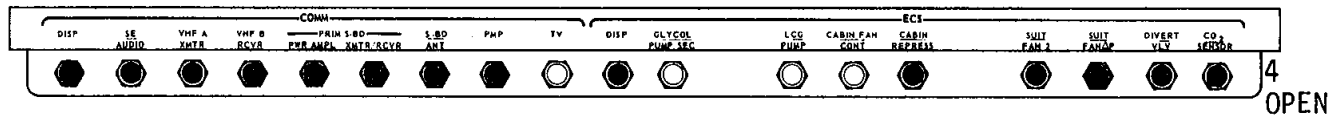
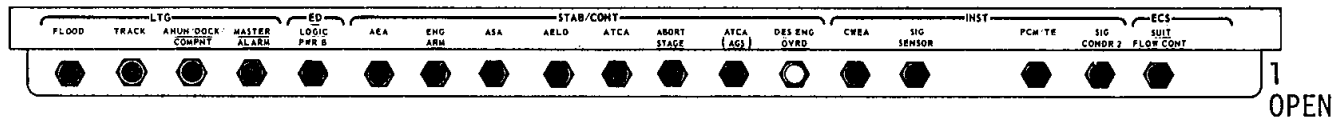
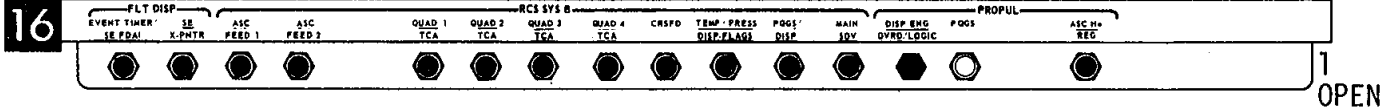


8-14

DATE 9/12/72

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LAUNCH



***** L0-:12 (187:51) *****

V83E, 440R ($\Delta R \leq 1.0$ fps)

***** L0-:10 (187:53) *****

EMER LO (APS LEAK)

MODE CONT (AGS) - AUTO

400+1, 604+0E

GUID CONT - AGS

Verify ASC Regs - OPEN

MASTER ARM - ON

ENG ARM - ASC

ABORT STAGE - Push

ENGINE START - Push

Go To ASCENT MONITOR T+1:00

(No Yaw Mnvr For Man ASC)

MASTER ARM - ON

ASC He SEL - TANK 1

ASC He PRESS - FIRE

ASC He SEL - TANK 2

HELIUM MON - ASC PRESS 2

ASC He PRESS - FIRE

MASTER ARM - OFF

SYS A ASC FEED 2 - OPEN, tb(2)-gray (Unless
Monitor SYS A Manf Press CDR BUS

SYS A MAIN SOV - CLOSE, tb-bp Loss)

SYS B ASC FEED 2 - OPEN, tb(2)-gray (Unless
Monitor SYS B Manf Press LMP BUS

SYS B MAIN SOV - CLOSE, tb-bp Loss)

GO/NO GO For LO

8-16

DATE 11/6/72

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***** L0-:5 (187:58) *****

CB(11) RR (AC) - Close

Check APS BURN CARD

Check APS, RCS, EPS, ECS

GO To LM TIMELINE BOOK

TWEAK APOLUNES (315R) FOR EARLY L.O. FOLLOWED BY LOSS OF COMM (COELLIPTIC SEQ.)

L.O. -	H _A	ΔV_X	CSI IS INS +	H _A MIN (CSM RESCUE)
10	190	181	62	112
9	179	169	61	107
8	168	156	61	97
7	157	143	60	94
6	146	129	60	89
5	135	116	59	83
4	123	101	58	75
3	113	88	58	71
2	101	72	57	63
1	91	58	56	58

BURN TO HA

TPI (LM ACTIVE): NOM PAD

TPI (CSM ACTIVE): NOM PAD (-) 4 min

20% LM RCS REQ FOR NAV ATT CONT

DATE 9/12/72

ONE MAN EVA PREP

CABIN PREP-Perform EVA 1,2 Or 3 As Reqd

EQPT PREP-Perform EVA 1,2 Or 3 As Reqd

PLSS DONNING-Perform EVA 1,2 Or 3 As Reqd

Position Post EVA 1, 2 Or 3 Cue Card
For Post EVA

NON EVA CREWMAN-Connected To LM 02,
Comm, & H2O
Gas Connector Plugs In PGA
PGA Diverter Vlv - Horizontal

EVA CREWMAN: PGA Diverter Vlv -
Vertical

PLSS COMM CHECK

Verify Powerdown CB Configuration
(White Dots Out)

Verify LM EVA Antenna Deployed

Verify Voice Comm With Hou

Audio (Non EVA Crewman)

S-BAND - T/R

ICS - T/R

RELAY - OFF

MODE - VOX

VOX SENS - MAX

VHF A - RCV

B - T/R

Audio (EVA Crewman)

S-BAND - T/R

ICS - T/R

RELAY - ON

MODE - VOX

VOX SENS - MAX

VHF A - RCV

B - T/R

COMM:

VHF A XMTR - OFF

A RCVR - ON

B XMTR - VOICE

B RCVR - ON

TLM BIOMED - NON EVA CREWMAN

SQUELCH VHF A&B -

Noise Thres + 1 1/2

RECORDER - ON

VHF Antenna - EVA

AUDIO CB - Open
EVA Crewman Connect to PLSS Comm

AUDIO CB - Close
RCU PTT - MAIN (Rt), Verify

PLSS Mode-B, Blade-CCW
(Tone-On, Vent Flag-P,
Press Flag-0, 02 Mom)
PLSS 02 Press Gage >85%

Comm Check With Each Other & Hou

NOTE: Unstow PLSS Antenna If It
Transmits Garbled And/Or Loses TM
Restow Before Egress

Audio (CDR & LMP)
VHF A - T/R
VHF B - RCV

COMM:
VHF A XMTR - VOICE
VHF B XMTR - OFF

PLSS Mode - A, Wheel-CCW (Tone-On)

Perform Comm Check With Each Other &
Comm & TM Check With Hou
Read PLSS 02 Qty To Hou

FINAL SYSTEMS PREP

CB(16) ECS: LCG PUMP - Close
LCG - Cold, As Req'd
CB(16) ECS: CABIN REPRESS - Close (Ver)
SUIT FLOW CONT- Open

SUIT GAS DIVERTER - PULL-EGRESS(Verify)
CABIN GAS RETURN - EGRESS (Verify)
SUIT CIRCUIT RELIEF - AUTO (Verify)

DATE 11/6/72

OPS CONNECT

SUIT ISOL - ACT OVRD (SUIT DISC)
Discon LM 02 Hoses, Secure About PGA

Connect OPS 02 Hose To PGA B/B
Retrieve Purge Valve (Purse) -
Verify Closed, Lock Pin In & LO
Install Purge Valve In PGA R/R

Drink
DES H2O VLV - CLOSE

HELMET/GLOVE DONNING

Position Mikes (Both)
PLSS FAN - ON, Rt (Vent Flag - Clear)
Don Helmets, Check Drink Bag Position
Don LEVA And Lower Protective Visor

EVA Crewman: Stow LM 02 & Comm

Verify EVA Crewman in CDR's Station

Verify The Following (Both):
Helmet & Visor (2) - Aligned &
Adjusted
02 Connectors (7) - Locked
Purge Valve (1) - Locked
H2O Connectors (1) - Locked
Comm Connectors (2) - Locked

Don EV Gloves & Verify:
Wrist Locks (4) - Locked
Glove Straps (4) - Adjusted
Cover Wrist Rings

NOTE: If PGA Biting, PLSS 02 - ON/OFF

LCG - COLD, As Reqd
Disconnect LM H2O Hose
Connect PLSS H2O Hose, verify Locked

PLSS DIVERTER - MIN (Verify)
PLSS PUMP - ON (Rt)

PRESSURE INTEGRITY CHECK

(Non EVA Crewman)

NOTE: LM Suit Circuit Shall Not Be
Maintained At Elevated Press >5 min

SUIT GAS DIVERter - PULL-EGRESS(Verify)
CABIN GAS RETURN - EGRESS (Verify)
SUIT CIRCUIT RELIEF - CLOSE

PRESS REG A - EGRESS
PRESS REG B - DIRECT 02
Monitor Cuff Gage To 3.7 - 4.0 Psig
Then PRESS REG B - EGRESS (Cuff Gage
Decay <.3 Psig In 1 min)

SUIT CIRCUIT RELIEF - AUTO (Suit Ckt
Press Decays To 4.8 Psia)

(EVA Crewman)

PLSS 02 - ON (Tone-On, 02 Flag-0)
Press Flag Clear (3.1-3.4 Psid)
Cuff Gage 3.7-4.0 Psig
02 Flag Clear

PLSS 02 - OFF (Monitor Cuff Gage For
1 Min, Report Decay)
PLSS 02 - ON (Cuff Gage 3.7-4.0 Psig,
Tone & 02 Flag May Come On)
Verify 02 Flag Clear

DATE 9/12/72

CABIN DEPRESS

Confirm Go For Depress From Hou
CB(16)ECS: CABIN REPRESS - Open
CABIN REPRESS VLV - Close

Ovhd Or Fwd Dump Valve - OPEN Then AUTO
At 3.5 Psia (Verify EVA Crewman Cuff
Gage Does Not Drop Below 4.6 Psig)

Verify:

Cabin At 3.5 Psia

LM Suit Circuit Lockup At 4.3 Psia &
Decaying

PLSS/OPS/PGA > 4.6 Psig & Decaying

Start Wrist Watch :00

Ovhd Or Fwd Dump Valve - OPEN

Verify:

Tone-On & H2O Flag - A (1.2-1.7 Psia)

LM Suit Circuit 3.6 To 4.3 Psia &
Decaying

PLSS/OPS/PGA > 4.6 Psig & Decaying

Partially Open Fwd hatch

FINAL PREP FOR EGRESS :03

PLSS FEEDWATER - OPEN (H2O Flag -
Clear In 2-4 Min)

Fwd Hatch - Open

Rest Until Cooling Sufficient

Verify:

PLSS/OPS/PGA 3.7 To 4.6 Psig

CWEA Status:

Caution

PREAMPS

Lower EV Visor As Req'd

Release PLSS Antenna :10

POST ONE-MAN EVA

Perform POST EVA 1,2 Or 3 As Applicable

Emergency Launch Stowage
Before EVA 1

CDR's PLSS (Remove Recharge Station
Adjustable Strap)

OPS (Both) SRC Compt Or Floor (Temporary)

ISS ISA Big Pkt
ETB & Contents ISA Big Pkt
Jett Bag & Contents ISA Big Pkt
Purse & Contents ISA Big Pkt
Tool Harnesses ISA Big Pkt

LM EVA Antenna Stow
RCU's RCU Shelf Or LCG Bag, LHMS
Sleep Restraints BSLSS Bag
ISA Hang Aft

EV Gloves LEVA Bags
LEVA's LEVA Bags
LEVA Bags Floor, 1 Lt, 1 Rt

BRA ISA Bot Pkt
LMP's PLSS Floor Or Donning Sta.-Use 2
Adjustable Straps On Bottom: Break 2 Stitches, Re-
move Keeper, Extend To Max Length, Hand PLSS Upside
Down, Conformal Pad Aft. Attach 2 Waist Tethers
(LEC Kit, RHSSC) To Handhold On Back Of PLSS Using
Small Hooks. Route One Tether To Vertical Handhold
On ECS Module And One Tether To Bracket Supporting
PLSS In Recharge Station. Pull Straps Tight.

OPS (Both) SRC Rack Or Floor (Secure)
BSLSS Bag & Contents Attach To Floor.

Fwd Hatch Verify Locked
Verify Snaps On LHMS, LH & RHSSC

Emergency Launch Stowage Before EVA 2

ICG's	On Crew Or ICG Bag, LHMS
PGA's	Don Or Tie To Eng Cover
CWG's	On Crew Or Top Boot Box
LCG's	On Crew Or ISA Big Pkt
UCTA's	On Crew Or In Purse

CDR's PLSS (Remove	Recharge Station
------------------------------	------------------

Adjustable Strap

OPS (Both)	Floor (Temporary)
----------------------	-------------------

RCU's	LCG Bag, LHMS
-----------------	---------------

Tool Harnesses	ICG And LCG Bags, LHMS
--------------------------	------------------------

SRC	SRC Compt
---------------	-----------

1 Collection Bag	Box Aft Of Eng Cover
----------------------------	----------------------

LM ECS LiOH Cart (Jett Bag)	Bkt Aft Of Eng Cover
-----------------------------	----------------------

ISS	ISA Big Pkt
---------------	-------------

Food Bag	ISA Big Pkt
--------------------	-------------

ETB & Contents	ISA Big Pkt
--------------------------	-------------

Purse & Contents	ISA Big Pkt
----------------------------	-------------

LM EVA Antenna	Stow
--------------------------	------

CDR's Hammock & Sleep	
-----------------------	--

Restraint	Boot Compts
---------------------	-------------

ISA	Hang Aft
---------------	----------

EV Gloves	LEVA Bags
---------------------	-----------

LEVA's	LEVA Bags
------------------	-----------

LEVA Bags	Floor, 1 Lt, 1 Rt
---------------------	-------------------

BRA	ISA Bot Pkt
---------------	-------------

LMP's PLSS	Donning Station. Same As <u>Before EVA 1</u> Chart
----------------------	---

OPS (Both)	Floor (Secure)
----------------------	----------------

Jett Bag	BSLSS Bag
--------------------	-----------

BSLSS Bag & Contents	Attach to Floor. Wrap With Tape Or Webbing As Req'd.
--------------------------------	--

Fwd Hatch	Verify Locked
---------------------	---------------

Verify Snaps on LHMS, LH & RHSSC	
----------------------------------	--

Emergency Launch Stowage
Before EVA 3

ICG's	On Crew Or ICG Bag, LHMS
PGA's	Don Or Tie To Eng Cover
CWG's	On Crew Or Top Boot Box
LCG's	On Crew Or ISA Big Pkt
UCTA's	On Crew Or In Purse
CDR's PLSS (Remove Adjustable Strap)	Recharge Station
OPS (Both)	Floor (Temporary)
RCU's	LCG Bag, LHMS
Tool Harnesses	ICG And LCG Bags, LHMS
SRC's	SRC Compt
1 Collection Bag (Heaviest)	Box Aft Eng Cover
LM ECS LiOH Cart	Bkt Aft Of Eng Cover
Spare LCG's	ISA Big Pkt
ISS	ISA Big Pkt
Food Bag	Aft Food Box
ETB Contents	ISA Big Pkt
Purse & Contents	ISA Big Pkt
LMP's Hammock & Sleep Restraint	ISA Big Pkt
LM EVA Antenna	Stow
CDR's Hammock & Sleep Restraint	Boot Compts
ISA	Hang Aft

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(Go to next page)

Emergency Launch Stowage
Before EVA 3
 (Continued)

Mags & Bags In LCG	Camr Compt, RHSSC
Compt, RHSSC	
1 Collection Bag	Hammock Compt, LHSSC
1 Collection Bag	LCG Compt, RHSSC
1 Collection Bag	On LCG Bag, LHMS
EV Gloves	LEVA Bags
LEVA's	LEVA Bags
LEVA Bags	Floor, 1 Lt, 1 Rt
BRA	ISA Bot Pkt
LMP's PLSS	Donning Station. Same
	as <u>Before EVA 1 Chart</u>
OPS(Both)	Floor (Secure)
Jett Bag	BSLSS Bag
BSLSS Bag & Contents . . .	Attach To Floor. Wrap
	With Tape Or Webbing
	As Req'd
Fwd Hatch	Verify Locked
Verify Snaps On LHMS, LH & RHSSC	

Emergency Launch Stowage
Before Equipment Jettison 1

CDR's PLSS(Remove Adjustable Strap)	Recharge Station
OPS(Both)	Floor(Temporary)
Lunar Boots	Donned
RCU's	LCG Bag, LHMS
1 Armrest	Installed Or ISA Big Pkt
Yo-Yo's	ISA Big Pkt
1 Collection Bag(Heaviest)	Box Aft Of Eng Cover
1 Collection Bag	ISA Big Pkt
ISS	ISA Big Pkt
ETB & Contents	ISA Big Pkt
Purse & Contents	ISA Big Pkt
LMP's Hammock & Sleep	ISA Big Pkt
Restraint	
LM EVA Antenna	Stow
CDR's Hammock & Sleep	Boot Compts
Restraint	
ISA	Hang Aft
Mags & Bags In LCG	Camr Compt, RHSSC
Compt, RHSSC	
1 Collection Bag	LMP Crew Station,
(Lightest)	Secure Against Floating
1 Collection Bag	Hammock Compt, LHSSC
1 Collection Bag	LCG Compt, RHSSC
1 Collection Bag	On LCG Bag, LHMS
EV Gloves	LEVA Bags
LEVA's	LEVA Bags
LEVA Bags	Floor, 1 Lt, 1 Rt
BRA	ISA Bot Pkt
LMP's PLSS	Donning Station. Same
	As <u>Before EVA 1 Chart</u>
OPS (Both)	Floor (Secure)
BSLSS/Rock Bag	Attach To Floor
Fwd Hatch	Verify Locked
Verify Snaps On LHMS, LH & RHSSC	

DATE 11/6/72

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EMERGENCY LIFTOFF (NO COOLING) CSM PHASED

Note:

* Perform ONLY For Loss of Circulation In Both Glycol Loops

CB(11) AGS (AC) - Open	CB(16) AEA - Open
NUM LTG (AC) - Open	ASA - Open
GASTA(AC/DC) - Open	ATCA - Open
IMU OPR - Open	INV2 - Open
LGC/DSKY - Open	
IMU STBY - Open	
CB(11&16) ANUN/DOCK/COMPNT (2) - Open	

***** (L/O-:45) *****

*(If Loss Of Glycol, Delay

* PGNS ACT Until LO-:30)

PGNS ACT

* CB (11or16) ANUN/DOCK/COMPNT-Close

* CB(11) LGC/DSKY - Close Or

* If Closed:

PRO (Hold In Until STBY Lt-Off)

Possible RESTART Lt-On,

NO DAP Lt-On

* CB(11) INV 1 - Close

* INV-1

BAT 5&6 - ON, tb-gray

(If BAT L-On, Remove One DES

BAT & Skip Next Line)

BAT 1&3 - OFF/RESET, tb-bp

RSET
V96E
CB(11) IMU OPR - Close
(NO ATT Lt-Off In 90 Sec)
* CB(11&16) ANUN/DOCK/COMPNT - Open

DES H20 - CLOSE
ASC H20 - OPEN
WATER TANK SEL - ASC
* WATER TANK SEL - SEC
* SEC EVAP FLOW - OPEN
CABIN REPRESS - CLOSE
DES 02 - CLOSE
ASC 02 #1 - OPEN

IF TIME PERMITS:

Verify 02 Hoses R/R, B/B
Don Helmets And Gloves
PRESS REG A&B - EGRESS
SUIT GAS DIV - PULL/EGRESS
SUIT CIRCUIT RELIEF - AUTO

* S-BD: XMTR/RCVR - SEC
* : PWR AMPL - OFF
* CB(11) CDR AUDIO - Close
* AUDIO CONT (CDR) - NORM
* (LMP) - BU
* CB(16) SE AUDIO - Open

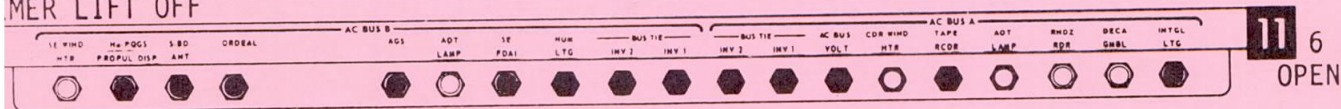
Configure CB's Per EMER LIFT OFF Status Charts

or

Configure CB's Per EMER LIFT OFF NO GLYCOL CIRCULATION Status Charts

DATE 11/6/72

MER LIFT OFF



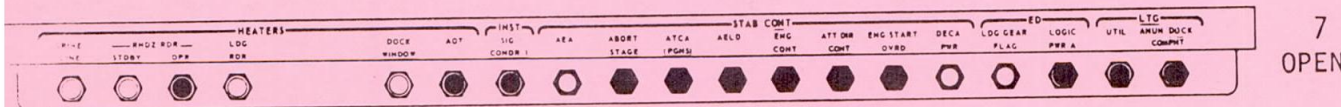
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OPEN



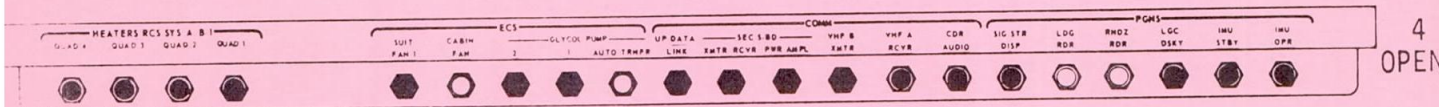
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OPEN

CLOSE 2nd

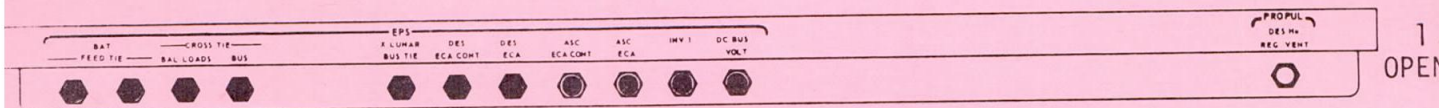
CLOSE 1st



7
OPEN

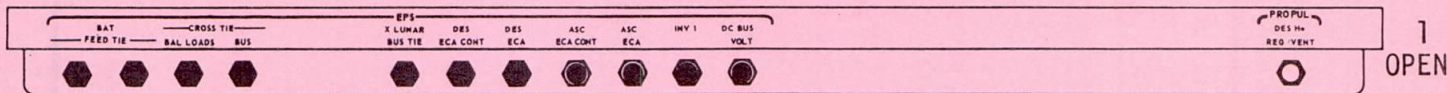
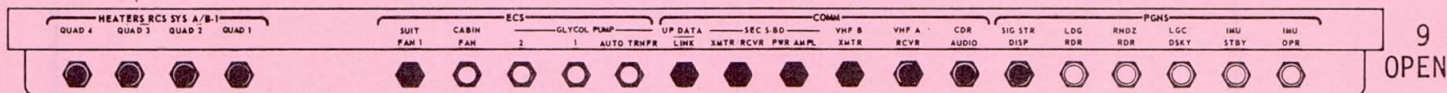
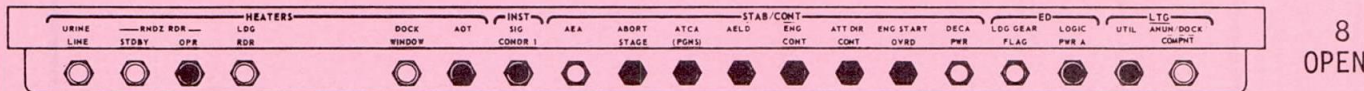
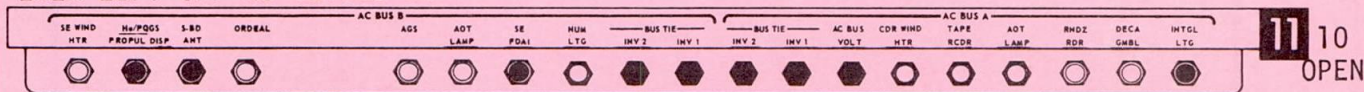


4
OPEN



1
OPEN

EMER LIFT OFF NO GLYCOL CIRCULATION



11-4

DATE 9/12/72

DATE 9/12/72

EMER LIFT OFF

16



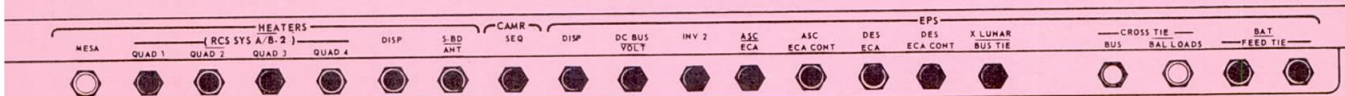
1
OPEN



1
OPEN



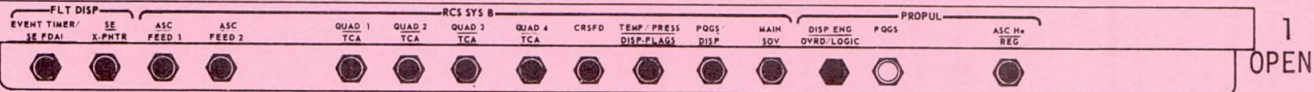
4
OPEN



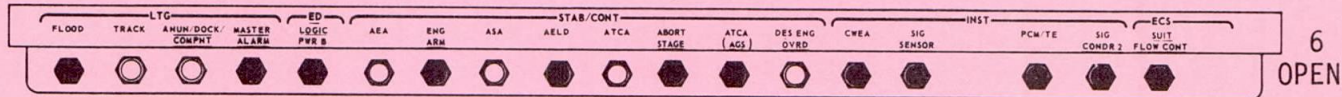
3
OPEN

EMER LIFT OFF NO GLYCOL CIRCULATION

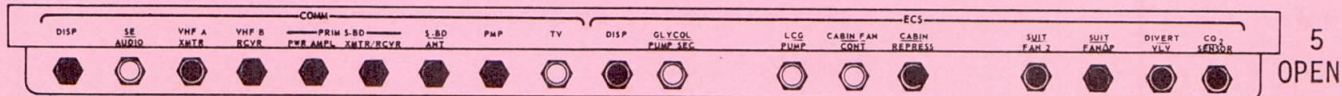
16



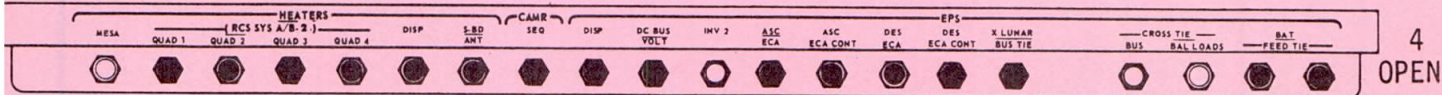
1
OPEN



6
OPEN



5
OPEN



4
OPEN

11-6

DATE 9/12/72

DATE 9/12/72

***** L/0-:30 *****

STDN-UPDATE

* CB(11) NUM LTG - Close
UPDATA LINK - DATA
(STDN Updates State Vector &
Increments LGC Clock)
UPDATA LINK - OFF

*NOTE Clock Incremented
Only For A Loss Of Glycol.

V16 N65E
MISSION TIMER - Set

ALIGN PGNS

* CB(11) GASTA (AC/DC) - Close
P57E, OPT 4, PRO
N34 Load LO Time, PRO
N06 R1 00010
00001
00010
PRO (NO ATT Lt - On/Off, Twice)
N04 Grav. Err. (.01°)
PRO
N22 ICDU ANGLES (.01°)
PRO (NO ATT Lt - On/Off)
N05 Angle Diff (.01°)
PRO

N93 Torq Angles (.001°)
PRO
N25 00014 ENTR
P00E

***** (L/O-:17) *****

P_____, Y_____ (+23°/-49°)
S-BAND ANT-SLEW (>3.0)
TRACK MODE - AUTO

RCS HOT FIRE

V77E
CDR ACA (Deflect Out-of-Detent)
Roll Rt, Lt
Pitch Up, Dn
Yaw Rt, Lt

DAP LOAD

V48E, 12102, PRO
N47 (+10900) LM Wt (Max = 10900)
PRO

11-8

DATE 11/6/72

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TARGET PGNS

GUID CONT - PGNS
MODE CONT (PGNS) - AUTO
P12E

N33 _____:_____:_____ TIG LO

PRO

N76 VH Final (+55095)
HDot Final (+00195)
Xrng (+00000)

PRO

N74 TFI, YAW, PITCH
DET - Set/DN

***** (L/O-:15) *****

AGS ACT AND INITIAL

- * CB(11) NUM LTG - Close (Open When Not Needed)
- * AGS - Close
- * CB(16) AEA - Close
- * ASA - Close
- * ATCA - Close

AGS STATUS - OPERATE
(M.A., & AGS Warn Lt - On)

V16 N65E, 377 _____

V47E, 414+1E

400 + 3E

413 + 1E

400 + 4E

If V47 Inoperative:

400 + 4E Lunar Align

240 +56906 X Position Comp

261 +00030E Y Velocity Comp

262 -00140E Z Velocity Comp

254 + _____ E TIG

414 + 2E LM S.V. Via DEDA

TARGET AGS

224 + _____ (+58113)

226 + _____ (+58113)

232 + _____ (+00600)

410 + 0

465 + _____ (+00195)

662 + 0E

673 + 0E

* CB(16) INV 2 - Close

* INV - 2

11-10

DATE 9/12/72

DATE 11/6/72

APS PRESS

MASTER ARM - ON
ASC He SEL - TANK 1
ASC He PRESS - FIRE
HELIUM MON - ASC PRESS 2
ASC He SEL - TANK 2
ASC He PRESS - FIRE
MASTER ARM - OFF
SYS A&B ASC FEED 2 (2) - OPEN
SYS A&B MAIN SOV (2) - CLOSE

ENABLE CONTROLS

MODE SEL - AGS
RNG/ALT MON - ALT/ALT RT
ACA PROP (2) - ENABLE
ATT CONT (3) - MODE CONT
MODE CONT (PGNS) - AUTO
MODE CONT (AGS) - ATT HOLD (AUTO After LO)
ACA/4 JET (2) - ENABLE
TTCA/TRANSL (2) - ENABLE

CONFIGURE COMM

S-BD: XMTR/RCVR - SEC
* : PWR AMPL - PRIM
VHF A: XMTR - VOICE/RNG
: RCVR - OFF
VHF B: XMTR - OFF
: RCVR - ON
AUDIO (Both): VHF A - T/R
VHF B - RCV
RECORDER - ON

* CB(16) SE AUDIO - Close
* AUDIO CONT (CDR) - BU
* (LMP) - NORM
* CB(11) CDR AUDIO - Open

***** (L/O-:05) *****

BEGIN FINAL COUNTDOWN

BATS 1,2,3,4,L - OFF/RESET,tb-bp

DES BATS - DEADFACE, tb-bp

If tb-bp:

CB(11&16) DES ECA (2) - Open

DES ECA CONT (2) - Open

CB(11&16) ASC ECA CONT - Open

Check APS BURN Card

Go To LM TIMELINE BOOK

11-12

DATE 9/12/72

DATE 9/12/72

EMERGENCY L/O (TIME CRITICAL) SAFE ORBIT ONLY

If CB(11) LGC/DSKY Was Opened
During Lunar Stay, Load M.E.T.
via V25 N36E Before P57.

PRO (Hold In Until STBY Lt - Off)

RSET

V96E

CB(11)IMU OPR - Close

(NO ATT Lt - Off In 90 sec)

GASTA (AC/DC) - Close (2)

Configure CB(11)Per 11-3

Verify NO ATT Lt - Off

V37E 57E, OPT 4, PRO

N34 (Load LO Time) Don't PRO

V01N25E, Copy R1

V21N01E, 1570E, Load

Copied Value

PRO

N06 00010

00000

00010

PRO

N22, PRO

N25 00014, ENTR, 12E

GUID CONT - PGNS

MODE CONT (PGNS) - AUTO

Verify INVERTER -2

BAT 5, 6 - ON, tb - gray

(If BAT L - On, Remove One

Des Bat & Skip Next Line)

BAT 1 & 3 - OFF/RESET, tb-bp

Configure CB(16)Per 11-5

AGS STATUS - OPERATE

(M.A., AGS Warn Lt - On)

400 + 4E (30sec minimum)

342 + 0E

P _____, Y _____ (+23°/-49°)

S-BAND - SLEW (>3.0)

TRACK MODE - AUTO

12-1

EMER LIFTOFF
(TIME CRITICAL)

EMER LIFTOFF
(TIME CRITICAL)

(P12)

N33, PRO

N76, +55095

+00195

+00000 (Limit = 00080)

PRO

N74 TFI, YAW, PITCH

V48E, 12102, PRO

N47 (+10,900) LM Wt (Max=10,900)

PRO

V77E, Checkout RCS
Jets via ACA

MASTER ARM - ON

ASC He SEL - 1, 2, or BOTH

ASC He PRESS - FIRE

SYS A&B ASC FEED 2 (2) - Open

SYS A&B MAIN SOV (2) - Close

GUID CONT - PGNS or AGS

MODE SEL - AGS

RNG/ALT MON - ALT/ALT RT

ACA PROP (2) - ENABLE

ATT CONT (3) - MODE CONT

MODE CONT (PGNS) - AUTO

MODE CONT (AGS) - ATT HOLD (AUTO After LO)

ACA/4JET (2) - ENABLE

TTCA/TRANSL (2) - ENABLE

12-2

DATE 11/6/72

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VHF A: XMTR - VOICE/RNG (Hot Mike to CSM)
: RCVR - OFF
VHF B: XMTR - OFF
: RCVR - ON
AUDIO (Both): VHF A - T/R
: VHF B - RCV

BAT 1, 2, 3, 4, L - OFF/RESET

DES BATS - DEADFACE, tb-bp

If tb-bp:

CB(11 & 16) DES ECA (2) - Open

DES ECA CONT (2) - Open

CB(11 & 16) ASC ECA CONT (2) - Open

If Time Permits:

Connect 02 Hoses R/R, B/B

Don Helmets & Gloves

PRESS REGS A & B - EGRESS

SUIT GAS DIVERter - PULL/EGRESS

SUIT CIRCUIT RELIEF - AUTO

Check APS ABORT card

Go To TIMELINE BOOK

DATE 11/6/72

CONFIGURE CABIN FOR STAY (28 Min)

Stow Armrests
Stow COAS In Fwd Window Mount

Unstow PLSS On Floor, Set Against Hatch
Install BRA, Stow Helmets

Stow LEVA Bags On Floor, 1 Left, 1 Right
Stow 2 Lens Brush (ISA Top Pkt) In Purse
Change 16mm Camr Mag: Stow O, Install P
(ISA Top Pkt)

CDR Move Aft & Remove ISA, Temp Stow
On Eng Cover
Transfer RCU's To LCG Bag (LHMS, CDR's 1st)
Stow ISA Above RCU Shelf
Stow Sleep Restraints Above RCU Shelf

Deploy LM EVA Antenna

Transfer LM Mag Bag (Aft Of Eng Cover) To
LCG Compt (RHSSC)
Stow 4 Jett Bags (3-Aft OPS, 2 In Box) In
LHSSC
Hang 1 Jett Bag From CDR's LH Handhold

Transfer 500mm Lens, Camr & Ring Sight
To Purse
Stow CWG's In Camr Box

Connect Aft ISS Hooks
Stow Camr Bag In Jett Bag

Disconnect 3 Armrests, CDR LH,
LMP RH & LH, Stow In Jett Bag

CABIN PREP EVA 1 (20 Min)

Stow All Loose Items Not Req'd For EVA
Set 16mm Camr For EVA (T8, 1/250, ∞) 6 fps,
15 Min With ULC & Rt Angle Bkt (RHSSC),
Secure Behind AOT
Secure Util Lts & Wires Behind AOT

Disconnect BSLSS Bag & Remove ETB

Configure 500mm Lens Camr (Purse)
Remove Tape From Camr & Lens
Install 500mm Lens
Install Ring Sight
Stow Reseau Cover & Tape In Jett Bag
Install B&W Mag R (Aft RHSSC)
Stow Dark Slide In Mag Pkt

Stow In ETB:

Cosmic Ray (ETB)
 BSLSS
 500mm Lens Camr
 70mm Camr With CEX Mag A
 Bag Dispenser Bkt (Camr Compt)
 2 - CEX Mags B&C (Fwd RHSSC)
 1 - B&W Mag G (Fwd RHSSC)
 1 - B&W Mag H (LCG Compt)
 2 Lens Brush (Purse)
 25' Tape (LHSSC)
 Scissors (LMP PGA)
 Sun Compass, Map Holder, LRV CKLIST (Aft FDF)
 EVA 1 Maps & Horizon/Return Chart (Fwd FDF)

Unstow EVA 1 Prep & Post Card
 Scissors (Aft FDF) To Purse

CB(11) HTR: URINE LINE - Close
 HTR CONT: URINE LINE - HTR 1

Attach LEC (Fwd RHSSC) To ETB
 Stow ETB Fwd Corner LMP's Station

Stow BSLSS Bag Behind LMP's Fwd
 Restraint Cables

Clip Page 2-3 Over AOT
 Stow Lunar Surface Checklist

DOFF SUITS (50 Min)

Empty UCTA (WMS Valve), Install Cap
 HTR CONT: URINE LINE - OFF
 CB(11) HTR: URINE LINE - Open

TLM BIOMED - OFF

* * * * CDR 1st: * * * *

SUIT ISOL - ACT OVRD (SUIT DISC)
 AUDIO CB - OPEN

DOFF PGA

Stow Comm Carrier On Comm Panel
 Stow LM O2, H2O & Comm
 Install PGA Elect Connector Cap (Purse)

Disconnect LCG, Bio Belt & UCTA
 Insert LCG Plug (Purse)
 Close Inner & Outer Zipper
 Attach Neckring Cover (Aft RHSSC)
 Stow On Eng Cover, Neck Aft &
 CDR On RH, Face Up
 LMP On LH, Face Down
 Install One Glove
 Cover PGA Legs With Jett Bag (LHSSC)

DRY PGA (Or Perform Configure ECS For Sleep)

Connect LM 02 Hoses, R/B & B/R
 CABIN GAS DIVERTER - PUSH - CABIN
 SUIT ISOL - SUIT FLOW

CONNECT TO LM COMM

Don Comm Carrier (Comm Panel)
 Connect CWG Adapter (LHSSC)
 Connect LM Comm Cable
 Audio CB - CLOSE
 Verify Comm

LMP REPEAT DOFF SUITS * * * *

DOFF LCG - Place In Jett Bag, Stow On
RCU Shelf

Stow Bio Belt On Comm Panel
 Stow UCTA For Drying

DON CWG (Aft of Eng Cover)
Connect Bio Belt (LMP Only)

DON ICG (ICG Bag, LHMS)

EVA DEBRIEFING WITH HOU (15 Min)

Copy Liftoff Time In Data Book
 For Rev 21 - 25

EAT PERIOD (45 Min)

Remove Fwd End Of ISS

CDR

8,74 8,74 11,74

8,30 8,30

8,15

LMP

11,74 8,74 8,74

8,30 8,30

8,15

PRESLEEP (25 Min)

S-BD VOICE - DN VOICE BU

Configure ECS For Sleep

Stow LM 02 Hoses, R/R & B/B

SUIT ISOL - SUIT FLOW

CABIN GAS RETURN - AUTO (Verify)

SUIT GAS DIVERTER - PUSH - CABIN (Verify)

Install Other Glove

Unstow CDR's Hammock, Place On Suits

Unroll LMP's Hammock

LMP: Attach Straps To LH & RHSSC

Adjust Strap Tension LHSSC

Route Inboard Center Support Strap

Under LMP & CDR Comm Cables,

Attach To Vertical Handhold, ECS
Module

Attach Outboard Center Support

Strap To Lower ISA Fitting, Position

Sleep Restraint (RCU Shelf)

Straddle/Ingress

CDR: Attach Aft Straps - Z27

Route Hammock Under Comm Cable

Attach Fwd Straps, Panel 1 & 2

Adjust Strap Tension

Attach Outboard Center Support Strap

To Horizontal Handhold, ECS Module

Position Sleep Restraint (RCU Shelf)

Ingress Hammock

Attach Inboard Center Support Strap

To PLSS Donning Station, Upper

Outboard

Adjust Strap Tension

REST PERIOD (8:00 Hr)

POSTSLEEP (25 Min)

Crew Awake - Verify CWEA Status:

Caution: PREAMPS

Stow Hammocks, Roll Up With

Sleep Restraints

STAY/NO STAY FOR EVA 1 PREP

DATE 11/6/72

CREW STATUS REPORT

CDR

LMP

FOOD _____

MED _____

SLEEP _____

Copy Liftoff Time In Data
Book For Rev 26-32

EAT PERIOD (45 Min)

Install ISS

DON SUITS (40 Min)

TLM BIOMED - OFF

DOFF ICG - Stow In ICG Bag (LHMS)

DOFF CWG - Stow In Top Boot Box
Stow Bio Belt On Comm Panel

DON LCG (RCU Shelf)

Don UCTA

Connect Bio Belt

* * * * LMP 1st: * * * *

AUDIO CB - OPEN

Stow LM Comm Cable

Stow CWG Adapter LHSSC

Stow Comm Carrier On Comm Panel

Stow Gloves On Comm Panel

Stow Neckring Cover Aft RHSSC

DON PGA

Stow Jett Bag On PGA Legs In LHSSC

Stow LCG Plug In Purse

Connect UCTA, Bio Belt & LCG

Close Zippers & Lock

Don & Connect Comm Carrier

Stow PGA Elect Connector Cap In Purse

SUIT ISOL - ACT OVRD (SUIT DISC)

Connect LM O2 R/B & B/R, H2O & Comm

SUIT ISOL - SUIT FLOW

SUIT GAS DIVERter - PULL - EGRESS

CABIN GAS RETURN - EGRESS

AUDIO CB - CLOSE

Verify Comm

CDR REPEAT ABOVE * * * *

TLM BIOMED - LEFT

S-BD VOICE - VOICE

BATT MGMT

PWR AMP - PRIM
TLM PCM - HI

PRO, V96E, DATA (MSFN
UPLINK CSM S.V.) OFF
V37E 06E, PRO (STBY LT - On)

BATT MGMT

POWER/TEMP MON - ED/OFF
Check ED Volts A____, B____ (To Hou)
POWER/TEMP MON - BAT 1
BAT 1 HI V-ON; tb - gray
POWER/TEMP MON - BAT 2
BAT L (LMP) - OFF/RESET; tb - bp
BAT 2 - ON; tb - gray
BAT 3 - OFF/RESET; tb - bp
BAT L - (CDR) - ON; tb - CDR
BAT 4 - OFF/RESET; tb - bp
POWER/TEMP MON - Check Bus Volts

On Hou Cue: TLM PCM - LO
PWR AMP - OFF

■ Start EVA 1 Prep On 2-5 (Cue Card)

13-6

DATE 11/6/72

DATE 11/6/72

NOTE: PERFORM ALL SECTIONS WITH THE
CHANGES BELOW FROM POSTSLEEP (Pg 5-8) TO
POST EVA CABIN CLEANUP (Pg 7-5).

POSTSLEEP (Pg 5-8)

CHANGE: STOW HAMMOCKS, ROLL UP WITH SLEEP RESTRAINTS
TO: STOW HAMMOCKS & SLEEP RESTRAINTS IN JETT BAG

DON SUITS (Pg 5-9)

CHANGE: DOFF ICG-STOW IN ICG BAG (LHMS)

TO: DOFF ICG-STOW IN JETT BAG
EMPTY POCKETS

CHANGE: DOFF CWG-STOW IN TOP BOOT BOX

TO: DOFF CWG-STOW IN JETT BAG

CHANGE: STOW IN JETT BAG:

2 SPARE LCG'S

USED FOOD & CONTAINERS

TO: "ALL THE ABOVE," PLUS -
LCG ADAPTERS (2)

URINE RECEPTACLE

BATT MGMT (Pg 5-10): DELETE

PREP FOR EQUIP JETT 1 (Pg 7-3)

CHANGE: VERIFY TOTAL DES 02 QTY(TANK 1&2)>31%

TO: VERIFY TOTAL DES 02 QTY(TANK 1&2)>22%

CHANGE: REMOVE ISS, WRAP & TIE THE FOLLOWING:

TO: STOW IN JETT BAG:

-4:00

-3:00

CHANGE: LUNAR BOOTS (4)

RCU'S (2)

ARMREST (1)

YO-YO'S (2)

TO: "ALL THE ABOVE," PLUS -
ISS

BRA

BSLSS BAG

BATT MGMT (Pg 7-5): DELETE

NOTE: PERFORM ONLY THE SECTIONS LISTED
BELOW WITH THE CHANGES NOTED.

POST EVA CABIN CLEANUP (Pg 7-5)

PRESLEEP & EQUIPMENT STOWAGE (Pg 7-7)
PERFORM ONLY EQUIPMENT STOWAGE, PLUS

-STOW NEUTRON FLUX BAG WITH CORE
TUBE BAG

-STOW ETB IN ISA BIG PKT

-STOW 16mm CAMR & 2 BKTS

-STOW LM EVA ANTENNA

-REPORT PRD READINGS TO HOU

-CB(11) HEATERS: AOT - CLOSE

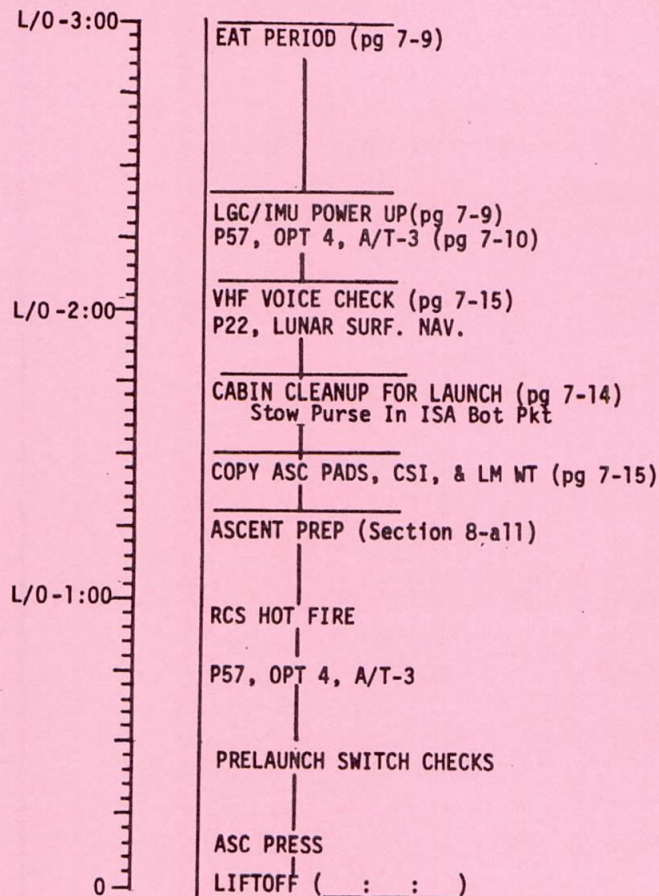
-CB(11) HEATERS: RR OPR - CLOSE

RR STBY - OPEN

14-1

POST EVA 3
LIFT-OFF

FLIGHT PLAN



DATE 9/12/72

DATE 9/12/72

MANUAL ASCENT GUIDANCE AND CONTROL MATRIX

CONTROL MODE SW POSITION	PGNS AUTO	AGS AUTO (1)	PGNS ATT HOLD	AGS ATT HOLD (1)(2)	CES RATE CMD (2)	DIRECT (2 JET SYS B)	HARDOVER (4 JET)
PGNS MODE CONT SW	AUTO	ATT HOLD	ATT HOLD	ATT HOLD	ATT HOLD	ATT HOLD	ATT HOLD
AGS MODE CONT SW	AUTO	AUTO	AUTO	ATT HOLD	ATT HOLD	AUTO	AUTO
GUID CONT SW	PGNS	AGS	PGNS	AGS	AGS (AEA-STBY) (3)	AGS (4)	AGS (4)
ATT CONT SW (3)	MODE	MODE	MODE	MODE	MODE	DIRECT (5)	DIRECT (5)
GUIDANCE SOURCE AND/OR DISPLAY * PGNS TAKES PRIORITY OVER AGS	PGNS AUTO	AGS AUTO	*PGNS/AGS ERROR NEEDLES	PGNS ERROR NEEDLES		*PGNS/AGS ERROR NEEDLES	
			*PGNS/AGS FDAI	*PGNS/AGS FDAI		*PGNS/AGS FDAI	
			HORIZON	HORIZON		HORIZON	

- (1) 2-AXIS AUTO/ATT HOLD AND 1-AXIS DIRECT IS AN ACCEPTABLE CONTROL MODE.
- (2) AGS ERROR NEEDLES AND AUTO SHUTDOWN UNAVAILABLE IN AGS ATT HOLD.
- (3) AEA-STANDBY REQUIRED TO PREVENT INADVERTANT AEA ERROR COMMANDS.
- (4) GUID CONT-AGS REQUIRED TO PREVENT INADVERTANT PGNS JET FIRINGS.
- (5) ATT CONT-DIRECT (3) REQUIRED TO PREVENT INADVERTANT AGS JET FIRINGS.

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15-2

DATE 9/12/72

 A — MSC