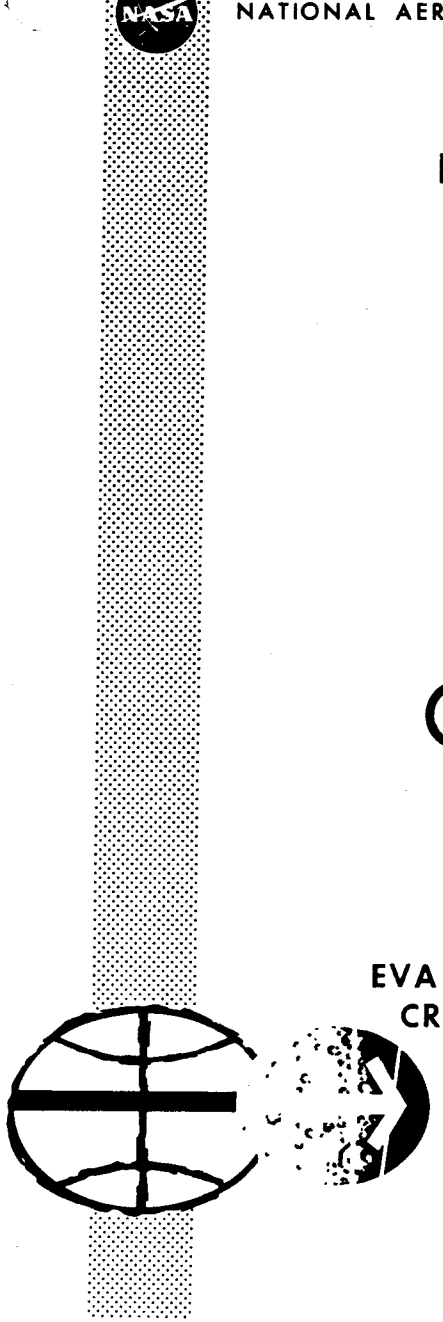

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

SL-1/SL-2
FIRST SKYLAB MISSION

FINAL

EVA CHECKLIST

PREPARED BY
EVA AND EXPERIMENTS BRANCH
CREW PROCEDURES DIVISION

MANNED SPACECRAFT CENTER
HOUSTON, TEXAS

MARCH 22, 1973

SL-1/SL-2
FIRST SKYLAB MISSION
EVA CHECKLIST

MARCH 22, 1973

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EVA Procedures Section

IT IS REQUESTED THAT ANY ORGANIZATION HAVING COMMENTS, QUESTIONS, OR SUGGESTIONS CONCERNING THIS DOCUMENT CONTACT R. SCOTT MILLICAN, EVA AND EXPERIMENTS BRANCH, CG3, BLDG. 4, ROOM 219, TELEPHONE 483-3091.

DISTRIBUTION OF THIS DOCUMENT IS CONTROLLED BY J. W. O'NEILL, FLIGHT PLANNING BRANCH, CREW PROCEDURES DIVISION, TELEPHONE 483-4471.

PREP CDR/SPT

OWS COMPT PREP FOR EVA

CDR/SPT
Don triangle shoes

CDR
Unstow PRDs (3): 1 from cntr sleep compt, 1 from exp compt, and 1 from above +Z SAL
Temp stow PRDs near suit donning sta

SPT
(901) Disconn M133 cable from SIA CHAN B

Transfer the following to fwd compt:
TSBs from sleep compt (3)
(E621) Bungees (2)
(W710) Disposal bags (2)
TSB from wardroom (to stow IV gloves in CM)

Snap TSBs (3) on F557, F561, and F563, snap one disposal bag on vert handrail right side of SIA
Stow long bungees (2) on F555, move to STS & unstow snap bungee (M208)
Snap bungee by lt next to VC tree recept (for D024)

CDR
Install emer egress cover
Stow S183 bumper guard on grid between S190B and S149
Position 3 foot restraints, install portable handholds if desired
Stow scissors (1) in AM pouch next to pnl 316

SPT
Remove IV gloves from EV1&2 PGAs & place in TSB
Stow TSB in CM

PREP CDR/SPT

(A8,U1) Unstow LCG/FCS (3) & place in disposal bag
Move to OWS
Stow LCGs in applicable TSB

CDR/SPT

CAUTION

Protect CCA during xfer

Transfer PGAs to suit donning sta
Secure PGAs in foot restraints
Verify plugs in outboard O2 connectors

CDR
Configure EV1 & 2 PGA's:
Snap helmet & bag to handrails
Snap CCA around handrails
Open all zippers
Stow desiccants (2) in disposal bag
Verify PGA urine hose snapped in place
Stow H20 plug & elec connector cap in accessory bags

SPT
Configure EV3 PGA:
Snap helmet & bag to F520
Place IV gloves in accessory bag
Open all zippers
Stow desiccants (2) in disposal bag
Verify PGA urine hose snapped in place
Stow H20 plug & elec connector cover in accessory bag

CDR/SPT
Stow penlight on EV1&2 PGAs

CDR
Voice record PRD readings (3)
Stow PRDs in PGA pockets

SPT
Lubricate 3 PGAs (Maint Kit decal):
Remove feedport cap from helmets
Lube projection & reinstall
Lube & inspect press sealing zipper & 8 rings (4 O2, 1 H2O, 2 wrist, & 1 neck ring)

CDR
Clean and antifog 3 helmets (Maint Kit decal)

Unstow feedport purge vlv from PGA zip pkt & install in helmet (3); stow cap in accessory bag

Attach SEVA to EV1 & EV2 helmets after anti-fogging:
Verify visors open
Align SEVA left hinge with helmet align mark & lock
Stow SEVA/helmets in SEVA bag: Stow PCU deflector

from SEVA bag 1 on FMU 2
Restow EV3 helmet in bag

CDR/SPT
(F595/F599) Unstow 2 PCUs from containers (mark PCU serial number on container)

Adjust belt (slider) & re-strain to floor grid:

CDR	(P)	4
	(BU)	3-1/2
SPT	(P)	3-3/4
	(BU)	4
PLT	(P)	6-1/4
	(BU)	3

Remove 10 dust caps from each PCU and stow in each accessory bag

SPT
Move to wardroom
(W752) Unstow in-suit drinking device (ISDD) (2) (crew option)
Remove packaging and trash

Place ISDD on food table water dispenser
Inject 8 oz water in each ISDD
Install ISDDs in EV1&2 PGAs

CDR
(D424) Unstow wrist tethers (2)
(D426) Unstow UCTA & clamps (3) w/o box & stow in applicable TSB
(317/323) Stow wrist tethers on EVA pnls
Conn hook to ring & lock

ATM FILM PREP

CDR
Move to MDA & stow ATM chair on M512 grid

Temp stow ATM boards
(M170) Unstow VS tree
Install VS tree in AM recept & lock

(M154) Unstow S082A (L-2)
Install S082A on VS tree

and lock
(M172) Repeat procedure for S082B (L-2)

(M162) Fold VC tree cover under tree

CAUTION

Do not touch mag windows.

(M152) Unstow S052 (L-2)
Remove camera cover and stow on mount with expando
Stow S052 on VC tree and lock

(M162) Unstow VC tree
Restrain tree on ATM grid with long straps, locking handle up

(M152) Unstow S054 (L-2)
Install S054 on VC tree and lock

LSU CONNECTION TO EVA PANEL

SPT
(A310) Unstow LSU stowage sphere lid
Disconn all LSU connectors, composite disconnect first

(314/315) Stow lid on brackets in AM aft compt

Conn LSU tether to attach pt & lock
Snap strap around tether hook & LSU
(A311) Repeat for remaining LSU

(317) SUS 2 LSU POWER sw - OFF (verify)
SUS 1 PUMP sw - OFF (verify)
SUS 1 02 SUPPLY vlv - CLOSE (verify)
Uncap SUS 1 02 SUPPLY qd, LCG qds (2), and SUS 2 EVA CCU AUDIO CHAN B receptacles
Conn LSU connectors (4) R/R, B/B
Verify connectors locked

(323) SUS 2 LSU POWER sw - OFF (verify)
SUS 2 PUMP sw - OFF (verify)
SUS 2 02 SUPPLY vlv - CLOSE (verify)
Uncap SUS 2 02 SUPPLY qd, LCG qds (2), and SUS 2 EVA CCU AUDIO CHAN B receptacles
Conn LSU connectors (4) R/R, B/B
Verify connectors locked

Note LSU IDs: EV1(317)__, EV2(323)__.

Route LSUs to OWS suit donning station

LSU Connection To PCU

Verify following:
PRESS sel - OFF
MODE SEL - ABS

Cycle FLOW sel to EVA HI FLO, then OFF
LCG FLO lever - 1
Verify SOP connector unlocked

Conn LSU (EV1(317)__) composite disconnect & lock
Conn LSU tether hook to PCU ring (left, forward)
Repeat LSU Connection To PCU for second LSU

Attach PCU deflector to EV2 PCU (FMU2)

(F8) Hi Intensity Light sys 1&2 sw - HI
Hi Intensity Light POWER sw - ON

CDR/SPT
Remove passive dosimeter from watchband, place watch on PGA arm
Stow dosimeters top pkt TSB & proceed to sleep compt with own TSBs

EV1&2 procedures next, EV1&2 use cue cards, EV3 use C/L

EMU DONNING IN OWS FOR EVA

EV1&2
Doff clothing & stow
Urinate
Shave electrode sites as required

Unpackage LCG/FCS
Don FCS
Don UCTA

OBS and LCG Donning

Don lower LCG, insert dosimeter (top pkt TSB) in chest pocket

Unstow biobelt/containers (crew pref compt)
(S908) Unstow OBS electrode kit

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Proceed to WMC with biobelt/ container & electrode kit
Secure items to wall

Snap biobelt to LCG

Route electrode harness through hole in LCG
Swab sites with wetwipes
Blot with tissues

Open electrolyte sponges
Stick attach rings to each electrode (5)
Insert electrolyte sponges
Remove covers from sternal harness attach per diagram
Remove covers from axillary harness & attach per diagram
Place overtapes over each electrode

Don upper LCG
Verify biobelt connects (8) - tight

1.1-7

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(E670)/(E632) Unstow SOPs (2)

Adjust SOP straps:

		UPPER	LOWER
CDR	(P)	2	3-1/2
	(BU)	3	3
SPT	(P)	3	3
	(BU)	2	3
PLT	(P)	3	3
	(BU)	2	3

High press gage - 6000 +/- 500 PSI, voice rcd hi press

Hang SOP on handrails next to donning sta

Voice record PRD readings (2)

Assist EV3 in PGA donning as req'd

PGA Donning

EV1
DAC pb - on

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EV1&2
Don lower PGA
Conn biomed
Conn LCG water connector & verify locked
Verify PGA harness snapped at neck ring

Don upper PGA (assist)
Engage donning hook to right PGA D-ring

CAUTION

Do not pull red lanyard.

Close press seal zipper

Engage & lock slider
Cover slide with flap

Close horiz restraint zipper
Disconn donning hook from PGA D-ring
Engage two donning aid hooks

1.1-8

Close vert restraint zipper
Lock sliders together. Pull horiz zipper lanyard to verify lock (verify red tab flush with slider)
Close zipper cover
PGA diverter vlv - vert
Unstow wristlets & comfort gloves (PGA zip pkt) & temp stow

SOP Donning

Attach SOP vertical strap to PGA
Attach SOP leg straps

PCU/LSU Donning

Conn water to PGA
Route cntr PCU strap under H2O hose & conn
Conn waist belt
Conn O2, R/R and B/B, and lock
Conn elec

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Adjust cntr strap

Route SOP hose under vert strap, conn & lock

Verify cooling
LCG FLO lever - as desired

PRESS sel - REG 1, then OFF
SOP O2 vlv - OPEN

Med press gage - 27-55 psig
SOP O2 vlv - CLOSE

CCA Donning

Unsnap PGA elect harness from PGA and conn to CCA
Don CCA

Verify mike booms at corners of mouth, bend in middle, 80 deg max
Don wristlets & comfort gloves
Verify ISDD mouthpiece properly positioned

1.1-9

ALSA CHECKOUT & PRESS INTEGRITY CK

Notify EV3 to perform SUS Power Activation

EV1&2
PCU Activation

(PCU) Audio warning tone - on
SUIT PRESS lt - on
REG 1 LO FLOW lt - on
SOP FLO lt - on, then off
LO VENT FLO lt - on
Pnl ltg - on

(PCU) MODE SEL - ABS (verify)
PRESS sel - OFF (verify)
FLOW sel - IVA

Wrist disconnect - ENGAGE
Don EV gloves and lock (SEVA bag)
Roll glove gauntlet over wrist disconnects

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Verify PGA diverter vlv - vert
Don helmet, align, & lock (Do not rotate helmet after attachment)

PRESS sel - BOTH
Verify O2 flow
REG 1 LO FLOW lt - off
LO VENT FLO lt - off
Lower SEVA protective visor

EV1
DAC pb - off

PCU Checkout

EV1&2
Note: Cuff gage inaccuracy +/- .15 psig max, (Nominal +/- .04 psig), REG 1 LO FLOW & LO VENT FLO lts have 5 sec delay.

PRESS sel - REG 2 (Tone, SUIT PRESS, REG 1 LO FLOW and possible LO VENT FLO)
MODE SEL - delta P, monitor cuff gage, verify SUIT PRESS lt off 2.8-3.1 psig and LO VENT FLO - off

Verify cuff gage stable 3.2 to 3.5 psig

PRESS sel - REG 1 (REG 1 LO FLOW - off)

Verify cuff gage stable 3.6 to 3.9 psig and all lts off

PRESS sel - BOTH, verify no change in cuff gage or displays

EMU Integrity Check

Note: Next sequence terminates O2 flow to PGA. REG 1 LO FLOW and LO VENT FLO lts will

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light. Monitor cuff gage for max decay of 0.8 psig.

FLOW sel - OFF, then
PRESS sel - OFF for 1 min

PRESS sel - BOTH, then
flow sel - IVA

Note: If suit press decays 0.3 to 0.8 verify helmet, wrist rings, & gas connectors locked before proceeding.

* If decay greater than 0.8 psig, exchange PCUs between cmn & repeat EMU Integrity CK. If PCU leak, obtain new PCU; if PGA leak, change cmn. *

Cuff gage stable 3.6 to 3.9 psig & all lts off

MODE SEL - ABS (Tone, SUIT PRESS at 3.1 to 2.8 psig)

Notify EV3 EMU Integrity Ck complete

Note: EV3 will read all procedures from here to ALSA deactivation following EVA.

Temp stow EV1&2 POST cue card

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PREP PLT

CM/MDA/STS SYSTEM PREP

PLT

(S921) Don triangle shoes

Unstow following:
(E621) long straps (3)
Bungee (1)
(E632) Radiation Survey Meter (RSM)
Move to aft AM

(390) LTS AFT sw - BRIGHT
(316) LTG METER sw - ON
LTG LOCK sw - BRIGHT

Stow long straps (3) on ATM grid
Stow RSM in STS with bungee

(207) Configure MDA/STS lighting as required
TRACKING sw - OFF (verify)
DOCKING sw - OFF (verify)

(M144) Verify tool kit contains all tools (Drawer 1)
(M126) Verify SWS MALF PROCEDURES & SWS SYSTEMS C/Ls accessible

ATM C&D Panel Configuration

ATTITUDE CONTROL SYSTEM:
MODE SOLAR INERTIAL
sw - SOLAR INERTIAL:
tb - SI

DISPLAYS:
ACS CNTRS - BUS 1

LIGHTING:
INTEGRAL - VAR
NUMERIC cont - as desired

EVA:
ROLL sw - EVA
AUTO sw DOOR - INHIBIT

MONITOR:
COUNTER 1 sel - ROLL CSTR

XUV SLIT:
PWR/DOORS tb - bp
MAIN PWR - OFF
PWR/DOORS tb - white

WLC:
DOOR tb - bp
MAIN PWR sw - OFF

X-RAY/RF Activity:
DATA DRIVE FWD sw - OFF

DAS:
PWR sw - OFF

ATTITUDE CONTROL SYSTEM:
FSS DOOR tb - bp

SCAN SPECT:
HV ENABLE/RESET sws (7) - OFF
INTENSITY DATA sw - OFF
DOOR tb - bp
MAIN HV sw - OFF
MAIN PWR sw - OFF

X-RAY SPECT (Control):
DOOR tb - bp
MAIN PWR sw - OFF
THERMAL POWER sw - OFF

TV:
SYNC GEN sw - OFF
XUV MON DOORS tb - white
XUV MON PWR sw - OFF
WLC PWR sw - OFF

DISPLAYS:
DAS/ORB PHASE sw - BUS 1
POWER SYSTEM sw - OFF
EVENT TIME sw - OFF
ACS CNTRS sw - BUS 1

LIGHTING:
INTEGRAL sw - OFF

Coolant Loop Configuration

(203) RAD FLOW PRI. SEC (2) sw - NORM (verify)
(200) cb RAD FLOW PRI. SEC (2) - close

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O2/N2 System Verification

(200) cb O2/N2 GAS FILL PRI, SEC (2) - open

(225) 120 PSI REG A, B tgl vlv (2) - OPEN (verify)
5 PSI REG A, B tgl vlv (2) - OPEN (verify)
O2 ind (reg) - 115 to 135 psia (verify)
OWS N2 vlv - CLOSE (7-1/2 turns cw)

If PPO2 1, 2 ind (2) less than 3.9:
N2 SOLENOID VLV SEL - OFF

(217) Uncap SUS 1 & 2 O2 SUP qds & O2 SUP qd on side of panel
SUS 1 & 2 O2 SUP vlvs - OPEN
Verify flow (3 places)
SUS 1 & 2 O2 SUP vlvs - CLOSE
Cap SUS 1 & 2 O2 SUP qds (3)

(317) Uncap SUS 1 & 2 O2 SUP qds
SUS 1 & 2 O2 SUP vlvs - OPEN
Verify flow
SUS 1 & 2 O2 SUP vlvs - CLOSE
Cap SUS 1 & 2 O2 SUP qds

(323) Repeat flow check on pnl 323

DAC Prep (M151)

Set up DAC per photo pad:

F9/DAC/10mm(F2.0, 1/60) infinity/6FPS
Universal mount x=60, y=192, z=315
Remote control cable to -Z SAL, 6FPS
XPT per photo pad

Camera Test

(F8) Set up hi intensity lt
Conn hi pwr access cable

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to 551
Aim lt at S019 container with long axis of lt normal to floor

DAC Prep (EVA)

(F525) Unstow EVA universal mount & lock on grid near vaults
(F527) Unstow DAC POWER PACK, restow cover

Unstow DAC EVA BRKT (stowed with RT angle mirror) & install on POWER PACK

(F527) Unstow DAC & attach to EVA BRKT
Unstow 10mm lens & install on DAC:

Note: Insert lens with orange index marks on lens and DAC 180 deg apart.

Conn PWR PACK cable to DAC (fwd connector)
Install DAC on mount
XPT per photo pad

Camera Test

OWS SYST PREP

Television System Activation

WARNING

If rod extension causes a leak, immediately remove plug from top of canister & insert in opening.

Note: Attach rod A first, 5 B rods, then rod C.

Attach handle & remove rod A from rack

Partially thread rod to extension mechanism
Lock LATCH open

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Complete rod threading

Pull rod and clamp rod brake

Open SAL door (Decal)

Note time, 15 min TV vacuum exposure reqd prior to TV activation

CAUTION

When extending rods, rod brake must be used. Tighten brake before removing rod handle & loosen before extending rod.

Release rod brake
Extend rod until handle is approx 5 inches from panel, clamp brake

Extend second rod, then clamp brake

Extend remaining rods with rod C last
Remove rod handle & attach crank handle to rod C
Release rod brake and LATCH
Insert handle into crank handle & press rod C to full extension (verify latch engages)
Stow rod handle

WARNING

Do not stand in front of crank handle during following step.

Rotate crank handle CW until tension increases abruptly (approx 37 turns)

Common control panel:
POWER sw - ON
SHAFT sw INCR to 300
TRUNNION sw - INCR to 107
POWER sw - OFF

Verify 15 min elapsed since

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SAL door opened

(555) TV POWER sw - ON

TV REMOTE CONTROL PANEL:
POWER - ON (power lt - on)
F/STOP - OPEN (hold approx 7 sec)
TV Monitor
ON/OFF - ON (15 sec warmup)
Adjust TV monitor controls & F/STOP for optimum picture

Note: If necessary use the SHAFT and TRUNNION sws to accurately position camera.

Common Control Panel POWER - OFF

OWS Ventilation Deactivation

(203) AM FANS CIRC 1,2 and 3 sw (3) - OFF
(203) AM FANS DUCT sw - OFF
MDA FANS 1,2 and CSM sw (3) - HI
(234) MOLE SV OUTLET vlv - MDA

Release fwd AM hatch & untape ECS supply duct cap
Insert cap in supply duct

Restow fwd hatch

(390) OWS HEAT EXCHANGER FANS 1-4 (4) - OFF

(393) Disconn CNDST HOLDING TANK INLET hose qd from CNDST DUMP PORT
Install cap on CNDST DUMP PORT qd
Temp stow TANK INLET hose

Loosen calfax (4) on OWS/VCS duct at AM supply
Loosen calfax (2) at hatch sill
Remove duct from OWS plenum & stow on fwd compt grid

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with bungees from F555

Lock EVA DAC on AM handrail opposite fwd hatch handle

(M165) Unstow SOP & remove SOMA
Secure SOP under aft AM hatch

(217) SUS 1 LSU POWER sw - OFF (verify)
SUS 1 PUMP sw - OFF (verify)
SUS 1 O2 SUP vlv - CLOSE (verify)
Repeat above operations for SUS 2

Uncap SUS 1 O2 SUPPLY qd on side of panel
Remove jumpers (2) from SUS 1 & SUS 2 LCG qds and stow in TSB
Remove LSU connectors from plenum bag
Remove caps from connectors (4) stow in TSB

(225) Remove cap and conn LSU elec connector to IVA CCU AUDIO CHAN A connector
(217) Conn O2 hose to SUS 1 O2 SUP on side of panel
Conn LCG hoses to SUS 1 R/R, B/B
Attach tether to CNDST TANK switch guard
Remove caps (6) from PCU & stow in TSB
Adjust waist belt for PLT (6-1/4) & restrain to ATM grid

(131) CHAN A sel - OFF (verify)
(200) cb AUDIO SYS:
INTERCOM A - open
CCU A - open
(131) Disconnect blue elec cable from SIA
(225) Uncap IVA CCU POWER CONNECTOR and cap SIA connector
Conn SIA cable to IVA CCU POWER CONNECTOR
(200) cb AUDIO SYS:

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INTERCOM A - close

(M124) Unstow CCU or use avail LCCU
(102) CHAN A sw - OFF
Conn CCU to CHAN A
CHAN A sw - PTT
Route CCU to STS, secure with straps

Configure Recording:

(204) TAPE RECORDING EKG/ZPN sw - ENABLE
TAPE RECORDING EXP 1 sw - RECORD, TAPE RECORDING EXP 1 lt - on
TAPE RECORDING EXP 2 sw - RECORD, TAPE RECORDING EXP 2 lt - on

(316) LTG EVA AM, DA, & ATM sws (3) - ON

SUS Suit Cooling Activation

Note: Following steps will activate C/W EVA 1&2 indications, notify cmn. Verify LSUs connected to PCUs before proceeding.

(317) SUS 1 PUMP - PRI (Warn/MA/Recall - on; EVA 1 - on, then off)
MASTER ALARM pb/lt - push
(206) C&W (CLEAR) sw - CLEAR (RECALL - off)

(323) Repeat above sequence for SUS 2 PUMP except:
(207) C/W EVA 2 lt - on, then off

(217) SUS 1 HX COOLANT FLOW sw - EVA
SUS 1 HX COOLANT FLOW EVA lt (2) - on
SUS 2 HX COOLANT FLOW sw - EVA
SUS 2 HX COOLANT FLOW EVA lt (2) - on

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Move to OWS

Stow pen, pencil, & penlight on PGA if desired
Remove passive dosimeter from watch band, place watch and band on PGA arm

Stow dosimeter top pkt TSB & proceed to sleep compt with own TSB

EV3 procedures next, EV1&2 use cue cards, EV3 use C/L

EMU DONNING

EV3
Doff clothing
Urinate

Unpackage LCG/FCS
Don FCS
Don UCTA
Don LCG, insert dosimeter (top pkt TSB) in chest pocket

(E610A) Obtain cover from long lead of CWG harness
Move to suit donning sta & conn CWG cover to lower lead of PGA harness
Voice record PRD reading

PGA Donning

Don lower PGA (call for EV1, 2 assist as req'd)

Conn LCG water connector & verify locked
Verify PGA harness snapped at neck ring

Don upper PGA

Engage donning hook to right PGA D-ring

CAUTION

Do not pull red lanyard.

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Close press seal zipper

Engage & lock slider
Cover slider with flap

Close horiz restraint zipper
Disconn donning hook from PGA D-ring
Engage two donning aid hooks
Close vert restraint zipper
Lock sliders together. Pull horiz zipper lanyard to verify lock (verify red tab flush with slider)
Close zipper cover

PGA diverter valve - vert

Unstow portable foot restraint, if desired
(F520) Obtain helmet, bag, & CCA
Move to AM
(318) Remove depress vlv cap & stow on side of panel 317
Stow helmet & bag in MDA

Install foot restraint on ATM grid

PCU/LSU Donning

Conn water to PGA
Route cntr PCU strap under H2O hose & conn
Conn waist belt
Conn O2 R/R and B/B, and lock
Conn elec
Adjust cntr strap

Verify LSU tether hook conn to PCU ring (left, forward)

Verify cooling
LCG FLO lever - as desired

CCA Donning

Obtain CCA from helmet & don
Unsnap PGA elec harness from PGA & conn to CCA

Verify mike booms are at

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corners of mouth, bend in middle, 80 deg max
(200) cb AUDIO SYS CCU A - close

(116) [RCD] sw - RECORD
RCD lt - on

EV3
When called by EV1&2, perform SUS Power Activation

SUS Power Activation

(317) SUS 2 LSU PWR - ON
SUS 1 O2 SUP vlv - OPEN

(323) SUS 2 LSU PWR - ON
SUS 2 O2 SUP vlv - OPEN

Configure CSM Communications

EV3
Pull approx 30 ft of LSU from bag
Move to CM, configure comm, & verify comm (Do not interrupt EMU Integrity check):
(9) MODE sw - VOX
VOX SENS adjust for proper keying of EVA 1&2 voice:
INTERCOM - T/R
MASTER - as desired
S-BAND - T/R
(6) INTERCOMM - T/R
S BAND - T/R
MASTER VOLUME - as desired (approx 6)

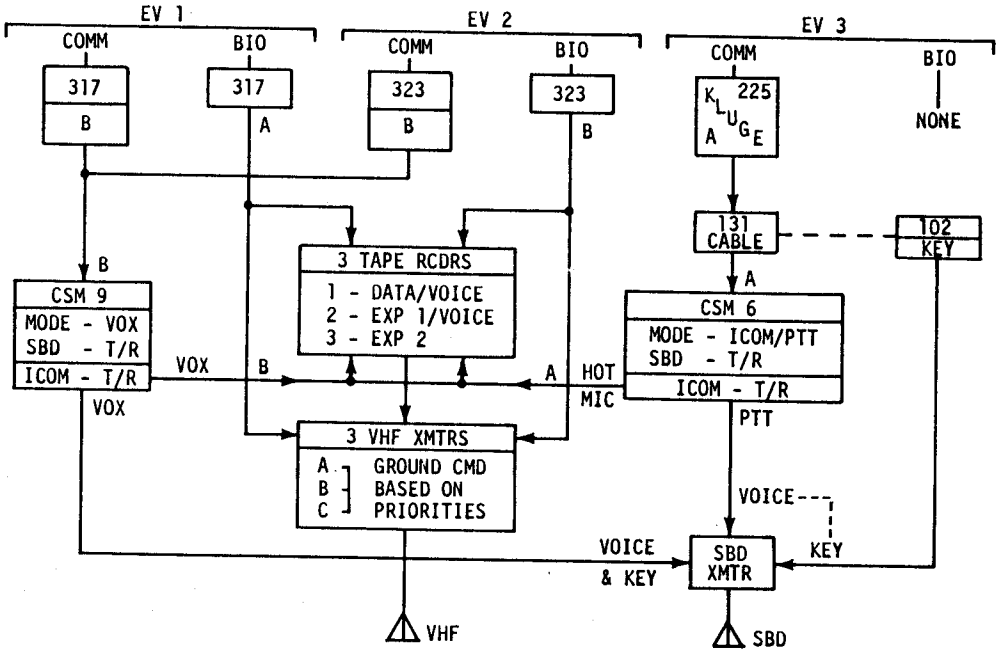
Note: (1) See diagram next page for comm configuration.

(2) Do not use CSM or SWS call. Full conference exists between crewmen & STDN. EV3 must use "ICOM/XMIT" sw on MDA/CCU to communicate with STDN.

(3) Do not conn headset to CDR or PLT CCU.

DATE_____

DATE_____



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* If comm inoperative, go to*
* CSM SYSTEMS C/L, section 4*
* for alternate EVA confi- *
* gurations *

When notified EMU Integrity Ck complete, read all procedures to EV1 & 2 from here to ALSA DEACTIVATION following EVA

Vehicle O2 Reg Check

EV3
(225) O2 ind (reg) - 115 to 135 psia
120 PSI REG B tgl vlv - CLOSE
O2 ind (reg) - verify press drop less than 10 psia

EV1&2
LO VENT FLO lt - off (verify)

EV3
(225) 120 PSI REG B tgl vlv - OPEN
120 PSI REG A tgl vlv - CLOSE
O2 ind (reg) - verify press drop less than 10 psia

EV1&2
LO VENT FLO lt - off (verify)

EV3
(225) 120 PSI REG A tgl vlv - OPEN

EV1
Proceed to AM, enter head first

EV3
Restow EV1 LSU in sphere as EV1 transfers to AM

EV1
Rotate to EVA egress position, feet toward MDA

EV2
Move to OWS hatch

1.2-13

DATE_____

EV3
Manage EV2 LSU; stow in aft compt
Move to STS

OWS HATCH CLOSURE

EV2
(400) Inspect hatch seal for obstructions
HATCH HANDLE - OPEN (verify)
Release OWS hatch from wall
Close hatch while entering aft lock
HATCH HANDLE - EQUALIZE PRESSURE
RELEASE HANDLE - UNLOCK
HATCH HANDLE - CLOSE
RELEASE HANDLE - LOCK (verify)

Assume EVA egress position, feet toward MDA

AM FWD HATCH CLOSE

EV3
Unstow VC tree & pass to EV1, handle first

EV1
Hold VC tree

EV3
(311) Release fwd hatch
Press equal valve cap - stowed (verify)
PRESS EQUAL VLV - OPEN (verify)
Inspect hatch seal for obstruction
Close hatch
Hatch handle - CLOSE

EV1
Install tree in recept

EV1&2
(317/323) Install wrist tethers on RT arm
FLOW sel - IVA (verify)
PRESS sel - REG 1
MODE SEL - delta P (verify
SUIT PRESS lt off 2.8-3.1

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psig)

Verify cuff gage stable 3.6 to 3.9 psig
PRESS sel - BOTH, verify no change in cuff gage or displays

SOP FLOW CHECK

EV1&2
SOP O2 vlv - OPEN (assist each other)

Note: Perform following SOP FLOW CHECK rapidly to conserve SOP O2.

EV1
(317) SUS 1 O2 SUP vlv - CLOSE (Tone and SOP FLO)

Med press gage - 27 to 45 psig

Possible slight cuff gage decrease

SUS 1 O2 SUP vlv - OPEN (SOP FLO - off)

EV2
(323) Repeat SOP FLOW CHECK for SUS 2

EV1&2
Visually verify neck rings, SOP, and 4 PCU connectors locked

AM DEPRESS

WARNING

EV1&2
If cuff gage drops below 3.6 psig during depress, LOCK COMP DEPRESS VLV - CLOSE and EV3 fwd hatch PRESS EQUAL VLV - OPEN

EV3
(311) Fwd hatch PRESS EQUAL VLV - CLOSE

EV1&2

Note: If LO VENT FLOW lt comes on before depress complete, FLOW sel - EVA NORM. During depress, cuff gage may read 4.1 max in delta P mode.

WARNING

EV3
If C&W alert (RAPID delta P, PPO2 LO or CLUSTER PRESS LO) tell EV1 to CLOSE LOCK COMP DEPRESS vlv

EV1
(318) LOCK COMP DEPRESS VLV - OPEN

EV3
(225) Monitor PRESS FWD & OWS stable 4.8 to 5.2 PSI

EV1
(316) Monitor PRESS LOCK to approx 0.15 PSI

EV1&2
When depress is complete:
MODE SEL - ABS (possible cuff gage decrease)

PRESS sel - BOTH (verify)
FLOW sel - EVA NORM

Cuff gage stable 3.6 to 3.9 psig
All lts off

EV3
Verify EV1&2 VOX keying satisfactory

EVA HATCH OPENING

EV3
Start watch for beginning of EVA

EV1
(319) EVA hatch retainer - spring loaded to engaged position (verify)
Hatch handle lock - unlock

Hatch handle - OPEN

Verify hatch handle fully CW

Open hatch
Engage hold-open rod

EV3
Monitor radiation with RSM during EVA:
If RSM indicates greater than 5 RAD/hr during EVA, verify RSM reading with own PRD. If PRD increases a minimum of 2 increments in 2 minutes, terminate EVA immediately.

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EV1 EV3 EV2

AM EGRESS

Note
CONTAMINATION
EV1 and EV2 comment on any observed dispersion patterns or any OWS waste tank vent plumes during EVA

Egress AM head first

Manage EV1 LSU

PULL TO UNCAGE boom launch lock D-rings (2)

AM/VF OPERATIONS

Ingress VF foot restraints with left hand on F15 and right hand on F4 handrail
Clamp own LSU at approx 9 feet
EMU status check (PCU warning lts) (Suit pressure)
Pnl 321, BOOM (2) - EXTEND and RETRACT to verify booms

EMU status check (PCU warning lts) (Suit pressure)

EVA OPERATIONS

EV1 EV3 EV2

```
**********************************
* If one boom failed, use BOOM   *
*   REPLACEMENT                  *
* If two booms failed, use BACKUP *
*   EVA CLOTHESLINE              *
**********************************
```

Pnl 321, CENTER BOOM - EXTEND approx 6 inches
Pull boom hook box pip pin, unlock and open box
Remove any hook from box and verify quick-disconnect marks aligned
Install by aligning marks on boom and hook, pushing and rotating cover ring 90 deg
Pnl 321, CENTER BOOM RETRACT fully and fold hook
Pnl 321, SUN END BOOM - EXTEND approx 6 inches
Remove any hook from boom hook storage box and verify quick-disconnect marks aligned

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EV1	EV3	EV2
Install by aligning marks on boom and hook, pushing, and rotating cover ring 90 deg		
Pnl 321, SUN END BOOM - RETRACT fully and fold hook		
Close boom hook storage box and lock		
Stow pip pin in hole		Unstow VS TREE and pass to EV1
Stow VS TREE in VF receptacle (F15) and lock		
		Unstow VC TREE and pass to EV1
Stow VC TREE in VF receptacle (F7) and lock		
		Unstow DAC and pass to EV1
Verify (day) F11, 500, 6 FPS, infinity, or (night) F1.8, 60, 6 FPS, infinity		
Install DAC on F6 below clothesline clip and lock (lock toward EV1)		
Adjust universal mount to red marks (x=350, y=320, z=10)		
DAC pb - on (push)		
Operate lt - on (verify)		
	2.1-3	Egress AM and translate to VC

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EV1	EV3	EV2
Assist EV2 in translation and manage EV2 LSU		
	Panel 122 Head wheel drive motor SW - ON (motor ON LT - ON) Tape drive sw - RECORD (Record LT - ON)	
	NOTE Limit TV record time at VC to ~ 10 min.	
	VC OPERATIONS	
		Ingress VC foot restraints Clamp own LSU at approx 9 feet
Remove slack and clamp EV2 LSU in fwd clamp at approx 31 feet		
EMU status check (PCU warning lts) (Suit pressure)		EMU status check (PCU warning lts) (Suit pressure)

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EV1	EV3	EV2
Pnl 321, CENTER BOOM - EXTEND approx one foot, deploy boom hook and verify boom hook unlocked	Verify ATM positioned to S054	
Unstow S054 from VC TREE by pushing button and turning CCW	********** * If ATM not positioned to S054: * * Pnl 160, * * POWER (2) - ENABLE * * ROLL - ENABLE * * CANISTER ROTATION - RIGHT or LEFT to ALIGN S054 * * ROLL - INHIBIT * **********	
Attach S054 to boom and lock hook	Pull S054 door launch lock D-ring and stow in clip Push S054 handle to unlock door and open S054 door Deploy VC temp stow hook and verify hook unlocked	
Pnl 321, CENTER BOOM - EXTEND as directed by EV2	Lean back to clear boom	
	Remove S054 from boom	

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EV1	EV3	EV2
CENTER BOOM - RETRACT as directed by EV2		
	Stow S054 on VC temp stow hook using handle and lock hook Remove used S054 by pressing button, turning handle CCW and then pulling	
CENTER BOOM - EXTEND as directed by EV2		
	Attach used S054 to boom and lock hook Remove S054 from VC temp stow hook	
CENTER BOOM - RETRACT to VF as directed by EV2		
Remove S054 from boom Place S054 on VC TREE and lock by pushing button and turning handle CW		
	Install S054, verify alignment stripes at base of mag and receptacle are flush Push button and turn handle CW to lock Verify mag LATCHED flag Close S054 door, lock and verify white flag visible	

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EV1	EV3	EV2
	Panel 122 Head wheel drive motor sw - OFF (Record, motor ON LTS - OFF)	
		Pnl 160, POWER (2) - ENABLE (if required) ROLL - ENABLE CANISTER ROTATION - RIGHT to ALIGN S056 ROLL - INHIBIT Pull S056 door launch lock D-ring and stow in clip Unlock and open S056 door Release S056 launch lock pin located at base of handle Remove S056
Pnl 321, CENTER BOOM - EXTEND to VC as directed by EV2		Lean back to clear boom
		Attach S056 to boom and lock hook
CENTER BOOM - RETRACT to VF as directed by EV2 Remove S056 from boom		Close S056 door, lock and verify white flag visible

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EV1	EV3	EV2
Place S056 on VC TREE and lock		Pnl 160, ROLL - ENABLE CANISTER ROTATION - RIGHT to ALIGN S052 ROLL - INHIBIT
Unstow S052 from VC TREE Attach S052 to boom and lock hook		Pull S052 door launch lock D-ring and stow in clip Unlock and open S052 doors (2)
Pnl 321, CENTER BOOM - EXTEND to VC as directed by EV2		Remove S052 from boom
CENTER BOOM - RETRACT as directed by EV2		Stow S052 on VC temp stow hook and lock hook Release S052 magazine launch lock by pulling T-handle Unlock used S052 and remove mag
CENTER BOOM - EXTEND as directed by EV2		Attach used S052 to boom and lock hook

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EV1	EV3	EV2
CENTER BOOM - RETRACT to VF as directed by EV2		
Remove S052 from boom		Remove S052 from VC temp stow hook
Place S052 on VC TREE and lock		Install S052 and lock by pushing lever up Verify white flag visible Close S052 doors (2), lock and verify white flag visible Pnl 160, ROLL - ENABLE CANISTER ROTATION - RIGHT to ALIGN H ALPHA 1 ROLL - INHIBIT Pull H ALPHA 1 door launch lock D-ring and stow in clip Unlock and open H ALPHA 1 door Release H ALPHA 1 launch lock pin located at base of handle Remove H ALPHA 1
Pnl 321, CENTER BOOM - EXTEND to VC as directed by EV2		Lean back to clear boom

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EV1	EV3	EV2
	Attach H ALPHA 1 to boom and lock hook	
CENTER BOOM - RETRACT to VF as directed by EV2 Remove H ALPHA 1 from boom		Close H Alpha 1 door, lock and verify white flag visible
Place H ALPHA 1 on VC TREE and lock		Pnl 160, ROLL - ENABLE CANISTER ROTATION - RIGHT to ALIGN SUN END ROLL - INHIBIT S082 DOORS - OPEN S082 DOORS lts (2) - OPEN (10 sec delay) (verify) POWER (2) - INHIBIT
CENTER BOOM - RETRACT fully and fold hook		Lean back and advise EV3 ready for magazine operation checks
DAC pb - off (push) Operate lt - out (verify) Reposition DAC on F5 aft of temp stow hook and lock (lock toward hatch)		

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EV1 EV3 EV2

Verify universal mount to yellow
marks (x=5, y=305, z=0)
(Day) F11, 500, 6 FPS, infinity, or
(night) F1.8, 60, 6 FPS, infinity

Pnl 130,
FILM RESET
FILM RESET sel - WLC
FILM RESET sw - RESET
WLC
FRAMES REMAINING ind - 8025
MAIN PWR sw - STBY then ON
MODE sel - STD
READY/OPR lt - off
START/STOP sw - START
FRAMES REMAINING ind - decreases
by 1 (verify)
START/STOP sw - STOP
MAIN PWR sw - STBY

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EV1 EV3 EV2

FILM RESET
FILM RESET sel - X-RAY SPECT
FILM RESET sw - RESET
X-RAY SPECT
FRAMES REMAINING ind - 6000
MAIN PWR sw - ON
PICTURE RATE sel - SINGLE
EXPOSURE RANGE sel - 16
READY/OPR lt - off
START/STOP sw - START
FRAMES REMAINING ind - decreases
by 6 (verify)
MAIN PWR sw - OFF

Unclamp own LSU

DAC pb - on (push)
Operate lt - on (verify)
Manage EV2 LSU

Egress VC and translate to VT

Panel 122
Head wheel drive motor sw - on
(motor ON LT - ON)
Tape drive sw - RECORD
(Record LT - ON)

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EV1	EV3	EV2
		VT AND VS OPERATION
		Rotate and ingress VT foot restraints using solar shield handrail to aid ingress
EMU status check (PCU warning lts) (Suit pressure)		EMU status check (PCU warning lts) (Suit pressure)
Pnl 321, SUN END BOOM - EXTEND approx one foot, deploy boom hook and verify boom hook unlocked		
Remove VS TREE from receptacle		
Attach VS TREE to boom and lock hook		
Pnl 321, SUN END BOOM - EXTEND to VT as directed by EV2		Remove VS TREE from boom
SUN END BOOM - RETRACT to VF as directed by EV2		Stow VS TREE in receptacle on solar shield and lock
Unclamp EV2 LSU, and provide slack for VS transfer		
		Egress VT foot restraints and ingress VS foot restraints
Remove slack and clamp EV2 LSU at approx 35 feet		

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EV1	EV3	EV2
DAC pb - off (push) Operate lt - out (verify)		
EMU status check (PCU warning lts) (Suit pressure)		
	EMU status check (PCU warning lts) (Suit pressure)	
	Unlock and open S082A container door	
	Open S082A ATM door, PUSH button and rotate handle to UNLOCK	
	Release S082A launch lock by rotating handle to unlock position	
	Move locking handle to release mag	
	Partially remove mag, fold handle by pressing release button and complete removal	
	Align container and mag arrows and insert mag in container	
	Verify handle on mag below container door seat	
	Close and lock S082A container door	
	Unlock and open S082B container door	

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EV1	EV3	EV2
	Move S082A ATM locking handle down	
	Close and lock S082A ATM door	
	Open S082B ATM door, PUSH button and rotate handle to UNLOCK	
	Release S082B launch lock by pulling D-ring to unlock position	
	Move locking handle left to release mag	
	Partially remove mag, fold handles (2) by pressing release buttons and complete removal	
	Align container and mag arrows and insert mag in container	
	Verify handle on mag below container door seat	
	Close and lock S082B container door	
	Move S082B ATM locking handle right to lock position	
	Close and lock S082B ATM door	
	Reposition clear of aperture doors and advise EV3 ready for door closure	

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EV1	EV3	EV2
	Pnl 130, XUV SPECT: PWR/DOOR sw - OFF: tb - remains white XUV SLIT: PWR/DOOR sw - OFF: tb - remains white TV: XUV MON DOORS sw - CLOSE; tb remains white	
		Verify 82A, 82B and XUV MON doors (3) closed
DAC pb - on (push) Operate lt - on (verify) Unclamp EV2 LSU		
		Egress VS foot restraints and ingress VT foot restraints
Remove slack, then clamp EV2 LSU at approx 31 feet EMU status check (PCU warning lts) (Suit pressure)		
		EMU status check (PCU warning lts) (Suit pressure)

2.1-16 Unstow VS TREE from receptacle

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EV1	EV3	EV2
Pnl 321, SUN END BOOM - EXTEND to VT as directed by EV2		
		Attach VS TREE to boom and lock hook
SUN END BOOM - RETRACT to VF as directed by EV2 Remove VS TREE from boom Install VS TREE in VF receptacle and lock SUN END BOOM - RETRACT fully and fold hook Unclamp and manage EV2 LSU by stowing behind EV1		
		Egress VT foot restraints and translate to D024 sample panel head first, face toward VF
	Panel 122 Head wheel drive motor sw - off (Record, motor ON LTS - OFF)	

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EV1	EV3	EV2
D024 SAMPLE RETRIEVAL		
	Remove container A pip-pin and verify container is not stuck	
	**********	
	* If container is restricted, *	
	* remove (A) strip and disk *	
	* samples and tether them *	
	**********	
	Lift latch handles (2) on container A, rotate CCW and lift cover	
	Pull strip panel A pip-pin and pull handle to release	
	Stow strip panel in container (large hole) handle first samples toward hinge	
	Pull disc panel A pip-pin and pull handle to release	
	Stow disc panel in container handle first samples toward hinge	
	Verify container seal clear	

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EV1	EV3	EV2
	Close container and rotate latches (2) CW Remove container from panel Tether container and replace pip-pins (3)	
DAC pb - off (push) Operate lt - out (verify) Reposition DAC on F7 handrail and lock		
Manage EV2 LSU		Translate to VF and ingress AM
		Stow D024 near VC receptacle
		Stow excess LSU in aft AM area

AM/VF OPERATION

Fold DAC to blue marks (x=180, y=100, z=0) Pass DAC to EV2		
		Stow DAC on handrail next to MDA hatch and lock
Unstow VC TREE and pass to EV2		
		Stow VC TREE in AM receptacle, and lock

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EV1	EV3	EV2
Unstow VS TREE and pass to EV2		
	Stow VS TREE in AM receptacle, and lock	

AM INGRESS

Check EVA hatch seal area for obstructions and verify hatch dogs are retracted Unclamp own LSU Egress VF foot restraints and ingress AM		
	Manage EV1 LSU	

NOTE
Go to EVA HATCH CLOSURE
POST EV3 (tab)

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POST EV3

EVA HATCH CLOSURE

EV1
(319) Disengage hold-open rod
Close hatch until retainer engaged
Place hold-open rod in spring clip & strap
Hatch handle - CLOSE
Hatch handle lock-engaged (Red not visible)

EV3
Voice record EVA elapsed time

AIRLOCK REPRESS

EV1
(318) LOCK COMP DEPRESS VLV - CLOSE

EV1
(316) Monitor PRESS LOCK for 2 min after closing LOCK COMP DEPRESS VLV to verify lock press integrity
After 2 min:
(316) PRESS LOCK ind approx 0.2

Note: During repress, EV1&2 SUIT PRESS lt will come on. C/W RAPID DELTA P will be activated. Cluster PRESS LO may be activated.

EV3
(311) PRESS EQUAL VLV - OPEN; CLOSE after 30 sec

EV1
(316) Monitor PRESS LOCK ind during repress

EV3
Emergency Klaxon delta P tone - on, RAPID DELTA P and CLUSTER PRESS LO lt - on

POST EV 3

Warning tone - on
(206) Master alarm bp/lt - push
When C/W RAPID DELTA P & CLUSTER PRESS LO lt go off
C/W (CLEAR) sw - CLEAR
C/W MEM RECALL lt - off

OWS HATCH OPENING

EV2
RELEASE HANDLE - UNLOCK
HATCH HANDLE - EQUALIZE PRESS

EV3
(225) When PRESS OWS equals PRESS LOCK:
(311) PRESS EQUAL VLV - OPEN

WARNING

EV3
(225) Verify PRESS OWS, PRESS FWD & PRESS LOCK equal before proceeding

EV2
RELEASE HANDLE - UNLOCK
HATCH HANDLE - OPEN
Push hatch open to engage hatch retainer
Move to suit donning sta & verify - Hi Intensity Lt - SYS 1&2 - ON

EV1
Remove VC tree from AM recept & hold

AM FORWARD HATCH OPENING

WARNING

VS tree may exceed allowable touch temp.

EV3
(311) Open hatch & secure
Obtain VC tree from EV1
Tether VC tree on ATM grid

EV1
Move to OWS

EV3
Manage EV1 LSU

EV1&2
Go to EV1 & 2 cue card

Deactivate Suit Cooling O2 And Comm

EV3
(217) SUS 1 HX COOLANT FLOW sw - BYPASS
SUS 1 HX COOLANT FLOW EVA lt (2) - off

SUS 2 HX COOLANT FLOW sw - BYPASS
SUS 2 HX COOLANT FLOW EVA lt (2) - off

When notified deactivate EVA panels as follows:

(317) SUS 2 LSU PWR sw - OFF
SUS 1 PUMP sw - OFF
SUS 1 O2 SUPPLY vlv - CLOSE
(323) SUS 2 LSU PWR - OFF
SUS 2 PUMP sw - OFF
SUS 2 O2 SUPPLY vlv - CLOSE
Call EV1&2 when complete

EMU DOFFING

CCA Doffing

(200) cb AUDIO SYS CCU A - open
Disconn CCA elec lead
Doff CCA and stow in accessory bag

PCU/LSU Doffing

Verify PRESS sel - OFF
MODE SEL - ABS
FLOW sel - OFF
Disconn elec from PGA
Disconn O2, R&B
Disconn water
Disconn waist belt

Disconn center strap
Temp stow PCU

(116) [RCD] sw - OFF
[RCD] lt - OFF

Unstow foot restraint from ATM grid if used
Move to AM with helmet & foot restraint
(318) Install depress vlv cap

(316) LTG EVA sws (3) - OFF

(520) Move to OWS and stow helmet and helmet bag
Stow foot restraint

Assist EV1&2 in PGA doffing

PGA Doffing

Unlock restraint zipper
Open vert zipper
Open horiz zipper

CAUTION

Do not pull red lanyard.

Unlock & open press sealing zipper
Doff upper PGA

Disconn LCG water connect
Doff lower PGA

Secure PGA in foot restraints
Voice record PRD reading

Remove cover from lower PGA elec harness
(E610A) Stow cover on CWG harness
Move to sleep compartment

Remove passive dosimeter & stow in TSB
Doff LCG & stow in towel holders
Attach UCTA clamp to UCTA if required
Doff UCTA & velcro to wall

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Doff FCS & stow in towel holders
Don inflight clothing and triangle shoes
Move to fwd compt with passive dosimeter

Don watch and dosimeter
Remove pen & pencil from PGA

PLT procedures next, CDR & SPT use cue cards, PLT use cl

PLT

Television Deactivation

(D416) Unstow utility gloves
TV Remote Control Panel
F/STOP - CLOSE (approx 7 sec or until monitor picture disappears)
POWER - OFF

TV Monitor
ON/OFF - OFF

(555) TV POWER sw - OFF

Common control panel:
POWER - ON
TRUNNION - DECR (Display - 000)
SHAFT - DECR (Display - 040)
POWER - OFF

WARNING

Rods may exceed touch temp.

WARNING

Do not stand in front of crank handle during following step.

CAUTION

Do not unscrew last rod until SAL door closed.

Don utility gloves
Rotate crank handle ccw

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until tension increases abruptly (approx 37 turns)

Open latch and retract rod C until rod handle attach mark is approx 5 inches from panel

Clamp rod brake

Stow crank handle

Attach rod handle to rod

Release rod brake

Retract rod until handle attach mark on next rod is approx 5 inches from panel

Clamp rod brake

Remove & stow rod

Attach rod handle to next rod

Remove remaining B rods (attach rod handle to A rod)

Release rod brake

Retract rod A until photometer is fully retracted

Clamp rod brake while pulling rod

Close SAL door & repress (decal)

Release rod brake and latch

Remove extension rod and stow (verify latch engages)
(D416) Stow utility gloves

OWS Ventilation Activation

Unstow OWS/AM VCS duct from fwd compt
Latch duct on OWS mixing

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chamber
Calfax (2) duct at hatch sill
Calfax (4) duct to AM supply duct

(393) Conn CNDST HOLDING TANK INLET hose qd to CNDST DUMP PORT qd

Unstow SOP from under aft AM hatch
(M165) Stow SOP & connect SOMA

Move to fwd lock compt

Remove ECS supply duct cap

Tape duct cap to fwd AM wall

(234) MOLE SV OUTLET vlv - OWS
(203)AM FANS DUCT sw - HI
(203) MOL SV HT EXCH OUT, ind - greater than 46 deg F (verify)

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Note: If MOL SV HT EXCH OUT temp less than or equal to 46 deg F, delay next two steps until temp increases.

(203)AM FANS CIRC 1, 2, 3 sw (3) - HI
(390)OWS HT EXCH FANS 1-4 sw (4) - OWS

LSU Disconnect From IVA Panel

(217) Disconn LSU hoses (3)
(225) Disconn LSU elec connector

Unstow jumper hoses (2) from TSB & install across SUS 1 & 2 LCG qds
Cap all qds and receptables

Replace caps (4) on LSU from MDA TSB
Replace caps (6) on PCU from MDA TSB

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Disconn LSU tether
Voice record PCU used

Stow LSU/PCU in bag
Secure bag

(200) cb AUDIO SYS INTERCOM A - open
(225) Disconn SIA elec cable from IVA CCU PWR CONNECTOR
(131) Remove cap from SIA and cap IVA CCU PWR CONNECTOR

Conn cable to SIA
(200) cb AUDIO SYS: INTERCOM A - close CCU A - close
(131) COMM CHAN sel - ON

O2/N2 Control Coolant Loops Reconfiguration

(225) OWS N2 vlv - OPEN (7-1/2 turns CCW)

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N2 SOLENOID VLV SEL - OFF
(200) cb O2/N2 GAS FILL PRI, SEC (2) - close
cb RAD FLOW PRI, SEC (2) - open

Terminate Recording

(204) TAPE RECORDING EXP 1 sw - OFF
TAPE RECORDING EXP 1 lt - off
TAPE RECORDING EXP 2 sw - OFF
TAPE RECORDING EXP 2 lt - off
TAPE RECORDING EKG/ZPN sw - OFF

EAT PERIOD, 1 HR

ATM RECONFIGURATION FOR STORAGE

See ATM EXP CL & DATA BOOK Section 5

Reconfigure Communications

(9) MODE sw - INTERCOM/PTT
S-BAND - OFF
INTERCOM - OFF
MASTER - 5

(6) S-BAND - T/R
INTERCOM - OFF
MASTER - 5

(102) CHAN A sel - OFF
(M124) Disconn CCU and stow

Obtain RSM and move to AM

(316) LTG METER sw - as required
LTG LOCK sw - as required

16MM DAC RECONFIGURE

EVA DAC Reconfigure

Unstow EVA DAC from AM and move to OWS, stow DAC on grid

Temp stow RSM

Remove XPT
Log film usage
(F510) Stow XPT
Remove DAC from universal mount
(F527) Stow 10mm lens
Stow DAC
Stow DAC EVA BRKT
(F550) Stow DAC PWR PACK
(F525) Stow Universal Mount

M151 DAC Reconfigure

Remove XPT from DAC (per PHOTO PAD)
Log film usage
(F510) Stow XPT
(E632) Stow RSM

UCTA DRAINING

(H835) Snap disposal bag below sink in WMC
Obtain UCTAs & velcro in WMC
Remove urine receiver from

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inlet hose
BLWR/SEPARATOR BUS 1 (2)
PWR - 1 (2,3) sw - ON

(H823) Obtain UCTA collection hose adapter
Insert hose adapter into urine receiver
Conn hose adapter to UCTA

Compress UCTA until all urine expelled

BLWR/SEPARATOR BUS 1 (2)
PWR - 1 (2,3) sw - OFF

Dispose of UCTA/hose adapter in disposal bag
Conn urine receiver to inlet hose
Stow urine receiver in drawer

Repeat for remaining UCTAs

Stow LCGs, FCSs & packaging (3) from sleep compt in disposal bag
Trash bag in lock

PGA Reconfigure

Secure elec harness in PGA

Unstow H2O plug & elec connector cover from accessory bag & install on PGA
Close press sealing and restraint zippers

Remove IV gloves from accessory bag
Install gloves on PGA
Install helmet on PGA
Remove feedport purge vlv from helmet & stow in PGA zip pkt; cap feedport (accessory bag)
Place helmet bag over helmet and secure draw strings

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POST EV 1&2

ALSA DEACTIVATION

EV1
DAC pb - on

EV1&2
PRESS sel - OFF (Tone, REG 1 LO FLOW and LO VENT FLO)
Doff one glove

Doff helmet & other glove
Stow gloves in helmet bag
Stow helmet/SEVA in SEVA bag
Doff wristlet & comfort gloves, stow in towel holders

Notify EV3 to deact EVA panels
Do not proceed until complete

EMU DOFFING

CCA Doffing

EV1&2
Disconn CCA elec lead
Doff CCA & snap around handrail

SOP O2 vlv - CLOSE
PRESS sel - BOTH, then OFF
FLOW sel - OFF

PCU/LSU Doffing

Unlock SOP hose
Disconn SOP hose
Disconn elec from PGA
Disconn O2 R&B
Disconn water
Release waist belt
Release center strap
Restrain PCU

SOP Doffing

Disconn leg straps
Disconn vert strap
Stow SOP on handrails

PGA Doffing

Unlock restraint zipper
Open vert zipper
Open horiz zipper

CAUTION

Do not pull red lanyard.

Unlock & open press sealing zipper, disconnect 2 donning hooks
Doff upper PGA

Disconn water
Disconn biomed
Doff lower PGA
Secure PGA in foot restraint
Voice record PRD readings (2)

Assist EV3 PGA doffing

EV1
DAC pb - off

EV2
Hi Intensity Lt POWER sw - OFF

EV1&2
Move to WMC

OBS/LCG Doffing

Doff LCG to waist
Remove electrodes
Discard overtapes, sponges, & adhesive rings
Clean electrodes with wetwipes
Slide electrodes thru hole in LCG
Unsnap biobelt & stow in container
Clean electrode sites with wetwipes
Blot sites with towel

Move to sleep compt, remove passive dosimeter from LCG; doff LCG, & stow in towel holders
Attach UCTA clamp before

doffing if required
Doff UCTA & velcro to wall

Doff FCS & stow in towel holders
Don inflight clothing and triangle shoes

EAT PERIOD, 1 HR

CDR/SPT procedures next, CDR & SPT use cue cards, PLT use C/L

SPT
(901) Conn M133 cable to SIA CHAN B

CDR
Unstow tool caddy and utility belt

(E624) Stow the following in caddy
(-1B) 3/16 blade driver
(-1D) 3/4 open end/box wrench

(W710) Unstow disposal bag

CDR/SPT
Move to suit donning sta with dosimeters
Don watch and dosimeters

CDR
Set up M516 DAC per photo pad:
Disconn rmt contl cable from D1 DAC
Move D1 DAC to M4 with universal mount & pwr cable
M4/DAC/5mm (F2.0, 1/60) 6 FPS
(140) Conn pwr cable
Universal mount x=250, y=0, z=330
XPT (per photo pad)
Camera test
Turn DAC on (10 min max)

ATM FILM RECONFIGURE

CDR
(M143) Snap disposal bag to vault

Unstow S054 from VC tree
Restrain S054 to ATM grid with long strap; allow access to end plate
(M162) Stow VC tree

Inspect S054 window & film footage ind at top of mag
Voice record status of both

S054 cassette removal:
Unscrew 12 screws on end of mag (3/16 in. blade)
Stow end plate in TSB
Release 6 bolts (3/4 in. wrench)
Remove xport mech

Cut film if required:
Hold spring loaded gear to prevent rotation when cutting film
Cut film at the supply cassette & takeup cassettes
Release spring loaded gear slowly
Leave cut film in xport mech

Remove cassette (see decal)
Stow cassette in disposal bag
Replace xport mech in S054 mag

Finger tighten S054 bolts (5)
Obtain S054 end plate and position on mag
Finger tighten screws

(M151) Unstow S054 return container & open

Install cassette in container

Close container, rotate handle CW to stop
Stow in disposal bag

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Turn DAC off

(M152) Stow empty S054 mag
(M152) Unstow S052 cover
Secure vault
Unstow S052 from tree
Place S052 cover on mag
Remove handle from S052

Stow handle in TSB bag
Stow S052 in disposal bag
(A8) Stow S052 & S054 in CM
Move to MDA & Snap bag to M143

Remove S056 handle
Stow handle in TSB

(M157) Unstow S056 & H alpha 1 return containers
Remove sealing tape from S056 container
Unstow S056 from VC tree
Cover aperature on mag with sealing tape
Insert mag in return container and secure flap

Stow mag in disposal bag

Repeat S056 procedure for H Alpha 1

Obtain D024 from AM
Stow D024 in disposal bag
Carry bag to CM
(A8) Stow S056 and H alpha 1
(A4) Stow D024
Snap disposal bag on M143

Cover VC tree with stowage bag

Unstow S082A from VS tree & move to CM
Unstow M071/73 return bag tiedown straps (4)
Place 2 M071/73 straps on S082A
(A3) Stow S082A

Repeat procedure for S082B except attach 2 PGA straps to the M071/73 tiedown straps

3.2-5

DATE _____

DATE _____

(A1) Stow S082B

(M170) Stow VS tree and lock

Stow chair on ATM grid
Stow ATM boards on console

Reconfigure MDA/STS lighting as required

Take disposal bag & tools & move M1 DAC to D1 & conn remote control cable
Return film to vault & log

(W710) Stow disposal bag

(E624) Stow tools
Stow utility belt & caddy in sleep compt

LSU DISCONN FROM EVA PANELS

LSU disconnect from PCU

SPT
Disconn LSU tether from PCU

Disconn LSU from PCU
Close and lock PCU locking handle

Stow LSU in stowage sphere

Repeat LSU disconnect from PCU for second LSU

LSU Disconn From EVA Panels

(317/323) Disconn LSU H20, O2, elec & tether
Cap all qds and receptacles

Unstow LSU container lid from aft compartment:

(A311/A310) Conn composite disconnect & elec to lid

Install lid
Repeat preceding operations for remaining LSU
Unstow scissors from AM pouch next to pnl 316

3.2-6

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PGA Configuration

CDR/SPT
Remove ISDD from PGA & log water usage
Stow in disposal bag
Snap elec harness inside PGA
Unstow H2O plug and elec connector cover from accessory bag and install on PGA
Close press sealing and restraint zippers

Install helmet/SEVA on PGA
Verify all visors open
Remove SEVA from helmet
Stow SEVA in SEVA bag

Install EV gloves on PGA
Remove feedport purge vlv from helmet & stow in PGA zip pkt; cap feedport (accessory bag)
Secure helmet bag on helmet

SUIT DRYING

CDR
Conn PGA hanger strap to D-ring on helmet bag (FMU1)

Tighten strap to hold PGA erect
(D424) Remove wrist tethers & stow

Suit Drying Operations

(D424) Blower unit sw - OFF

Unstow exhaust connector
Attach exhaust connector to PGA O2 connector B/B
Attach hose to PGA O2 connector R/R

Blower unit sw - ON (voice rcd time) (10 hours for suit drying)

Restrain remaining PGAs with bungees

3.2-7

DATE _____

DATE _____

CDR
Remove PRDs from PGAs (3) & voice record readings
Restow PRDs in PGAs

SPT
Unstow desiccants (2) and ISDDs (2) from disposal bag
Move to WMC, place ISDDs in disposal bag
Place desiccants in waste processor (1 per chamber, lower 2)
Process (heat/vacuum) desiccant containers for 10 hours

EMU STOWAGE

Obtain biobelt/containers (2) from WMC
Snap biobelt containers in sleep compt
Hang biobelt from loops on container
Collect all comfort gloves and wristlets

Dry gloves and wristlets in towel holders near -Z SAL

CDR/SPT
Replace caps (10) on PCU (accessory bag)
Voice record PCUs used
Stow PCUs in containers

Voice record SOP used & hi press
(E670/632) Stow SOPs in exp compt, connect SOMAs

Suit Drying Deactivation (After 10 hours)

CDR
Blower unit sw - OFF

Disconn suit drying hose and exhaust connector from PGA and temp stow

3.2-8

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SPT
Remove dry desiccants (2) from waste processor
Remove helmet & route desiccant through an arm & leg on each side of PGA
PGA

Install helmet & bag

When dry, stow all wristlets & comfort gloves in PGA zip pkt, CCAs (3) in accessory bags

Stow PGA out of way

Stow biobelts/containers (crew pref compt)

CDR/SPT
Repeat drying operations for remaining PGAs

Note: Following done after all suits dry.

(D424) Stow exhaust connector 3.2-9

Vacuum out filter on blower unit

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EMU DONNING FOR M509

EMU Prep
TP

(W710) Unstow disposal bag
Snap disposal bag on vert handrail next to -Z SIA

Position foot restraint

Obtain & transfer following to don sta:
LCG/FCS (on A1)
CCA for OBS
PGA
Temp stow LCG/FCS
Secure PGA in foot restraint

Configure PGA:
Snap helmet & bag to handrails
Snap own CCAs around handrails
Snap OBS's CCA next to +Z SAL
Stow IV gloves on T013

structure
Open all zippers
Stow desiccants (2) in disposal bag
Verify PGA urine hose snapped in place
Stow H20 plug & elec connector cap in accessory bag

Clean and antifog helmet (Maint Kit decal)

Lubricate PGA (Maint Kit decal): Lube & inspect press sealing zipper & 8 rings (4 02, 1 H20, 2 wrist & 1 neck ring

(F595) Unstow PCU from container (near DUCT 3)
Adjust PCU belt for PLT (6) & restrain to floor grid
Remove 10 dust caps from PCU and stow in accessory bag

4.1-1

LSU Connection to EVA Panel

(A310) Unstow LSU stowage sphere lid
Disconn all LSU connectors, composite disconnect first
Connect LSU tether to attach pt & lock
(314) Stow lid on bracket in AM aft compt
(323) SUS 2:
LSU POWER - OFF (verify)
PUMP - OFF (verify)
O2 SUPPLY vlv - CLOSE (verify)
Uncap SUS 2 O2 SUP qd, LCG qds (2) & EVA CCU AUDIO CHAN B recpt
SUS 2 O2 SUP vlv - OPEN
Verify flow
SUS O2 SUP vlv - CLOSE

(323) Conn LSU connectors (4) R/R, B/B
Verify connectors locked

(310) Route LSU to suit donning sta
(PCU) Verify the following:
PRESS sel - OFF
MODE SEL - ABS
FLOW sel - OFF
LCG FLO lever - 1
Conn LSU composite disconnect & lock
Conn LSU tether hook to PCU ring (left, forward)

SUS Cooling Activation

Note: The following will activate C/W EVA 2 indication. Notify all crewmen.

(323) SUS 2 PUMP - PRI (warn/MA/RECALL - on; EVA2 - on, then off)
(207) MASTER ALARM pb/lt - push
(206) C&W (CLEAR) sw - CLEAR (RECALL - OFF)

(203) RAD FLOW:

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PRI - NORM (verify)
SEC - NORM (verify)
(200) RAD FLOW:
cb PRI - close
cb SEC - close

(217) SUS 2:
HX COOLANT FLOW sw - EVA
HX COOLANT FLOW EVA lts (2) - on

Proceed to sleep compt with LCG/FCS

(901) Disconn M133 cable from SIA CHAN B

EMU DONNING IN OWS FOR IVA

Doff clothing & stow
Urinate
Shave electrode sites as required
Unstow LCG/FCS
Don FCS

LCG Donning

Don LCG, insert dosimeter from watch band in chest pocket

OBS Donning

(S920) Unstow biobelt/container
(S908) Unstow OBS electrode kit

Proceed to WMC with biobelt/containers and electrode kit

Secure items to wall

Snap biobelt to LCG

Route electrode harness through hole in LCG
Swab sites with wetwipes
Blot with tissues

Open electrolyte sponges
Stick attach rings to each electrode (5)

DATE _____

DATE_____

Insert electrolyte sponges
Remove covers from sternal harness, attach per diagram
Remove covers from axillary harness, attach per diagram
Place overtapes over each electrode

Don upper LCG
Verify biobelt connectors (8) - tight

SOP Unstowing

(E670) Unstow SOP
Disconn SOMA, stow SOP hose

Adjust straps to max length
Stow SOP on handrails next to suit don sta

(F599) Unstow PCU waist belt from second PCU
Route belt thru SOP rings (slider at top of SOP)

PGA Donning

Don lower PGA
Conn biomed
Conn LCG water connector & verify locked
Verify PGA harness snapped at neck ring

Don upper PGA (assist)
Engage donning hook to right PGA D-ring

CAUTION

Do not pull red lanyard.

Close press seal zipper

Engage & lock slider
Cover slide with flap

Close horiz restraint zipper
Disconn donning hook from PGA D-ring
Engage two donning aid hooks

4.1-4

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Close vert restraint zipper
Lock sliders together; Pull horiz zipper lanyard to verify lock (verify red tab flush with slider)
Close zipper cover
PGA diverter vlv - vert

PCU/LSU Donning

Conn water to PGA
Route cntr PCU strap under H2O hose & conn
Conn waist belt
Conn O2, R/R and B/B, and lock
Conn elec
Adjust cntr strap
Verify cooling
LCG FLO lever - as desired

Unsnap PGA elect harness from PGA and conn to CCA

Don comfort gloves & wristlets (PGA zip pkt)

SOP Donning

Place SOP under PCU & connect PCU belt to PGA D-ring (OBS assist)
Route SOP leg straps between legs & around thighs (as high as possible) & connect to SOP rings

Stow C/L & move to M509 donning sta, proceed with M509 DONNING & CHECKOUT

4.1-5

DATE_____

EMU DOFFING FOR M509

Doff comfort gloves & wristlets, stow in towel holders
Disconn CCA elec lead
Doff CCA & snap around handrail

SOP Doffing

Disconn PCU belt from PGA D-rings
Remove SOP & secure to handrail

PCU/LSU Doffing

Disconn elec from PGA
Disconn O2 R&B
Disconn water
Release waist belt
Release center strap
Restrain PCU

PGA Doffing

Unlock restraint zipper
Open vert zipper
Open horiz zipper

CAUTION

Do not pull red lanyard.

Unlock & open press sealing zipper, disconnect 2 donning hooks
Doff upper PGA

Disconn water connector
Disconn biomed
Doff lower PGA
Secure PGA in foot restraint (FMU 1)

OBS Doffing

Move to WMC
Doff LCG to waist
Remove electrodes
Discard overtapes, sponges, & adhesive rings
Clean electrodes with wet-

EMU DOFFING
FOR M509

EMU DOFFING
FOR M509

wipes
Slide electrodes thru hole in LCG
Unsnap biobelt & stow in container
Clean electrode sites with wetwipes
Blot sites with towel

LCG Doffing

Move to sleep compt, remove passive dosimeter from LCG
Doff LCG & stow in towel holders

Doff FCS & stow in towel holders
Tend to personal hygiene

Don inflight clothing and triangle shoes, place dosimeter on watch band

(901) Conn M133 cable to SIA CHAN B

LSU Disconn from EVA Panel

Stow LSU in stowage sphere
(323) Disconn LSU H20, O2, elec & tether
Cap all qds and receptacles

Unstow LSU container lid from aft compartment

(A311) Conn composite disconnect & elec to lid
Install lid
(200) cb RAD FLOW PRI, SEC (2) - open

Replace caps (10) on PCU (accessory bag)
Voice record PCU used
Stow PCU in container
Stow PCU belt in other container

PGA Reconfigure

Secure elec harness in PGA

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Unstow H2O plug & elec connector cover from accessory bag & install on PGA
Close press sealing and restraint zippers

Install gloves on PGA
Install helmet on PGA
Place helmet bag over helmet and secure draw strings

Suit Drying

Conn PGA hanger strap to D-ring on helmet bag

Tighten strap to hold PGA erect

(D424) Unstow exhaust connector
Attach exhaust connector to PGA O2 connector B/B
Attach hose to PGA O2 connector R/R

Blower unit sw - ON
(10 hours for suit drying)

Dry comfort gloves and wristlets in towel holders near -Z SAL

Restow EMU gear

Obtain SOP and disposal bag containing desiccants
Move to exp compt
(E670) Stow SOP

Place desiccants in waste processor (1 per chamber, lower 2)
Process (heat/vacuum) desiccants for 10 hours

Obtain biobelt/container & electrode kit from WMC
(S908) Stow electrode kit
Snap biobelt container in sleep compt
Hang biobelt from loops on container

4.2-3

DATE _____

DATE _____

Stow LCGs, FCSs & packaging from sleep compt in disposal bag
Trash bag in lock

Debrief per MANEUVERING C/L

Suit Drying Deactivation
(After 10 hours)
(S920) Stow biobelt/container
Remove dry desiccants (2) from waste processor, move to fwd compt

(D424) Blower unit sw - OFF

Disconn suit drying hose and exhaust connector from PGA & temporarily stow

Remove helmet & route desiccants through an arm & leg on each side of PGA

Install helmet & bag

When dry, stow wristlets & comfort gloves in PGA pocket, CCAs in accessory bag

(D424) Stow exhaust connector

Vacuum out filter on blower unit

Stow PGA on MDA radial hatch

4.2-4

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SWS HARDSUIT ACTIVATION

CM/MDA TUNNEL PPESS INTEGRITY CK

SPT
MDA TUNL VENT vlv - MDA/CM delta P (verify)
MDA/CM delta P ind - 4.0 psid (pegged)
PRESS EQUAL VLV - OPEN
MDA/CM delta P ind - 0.0 psid

* PRESS EQUAL VLV will not open *
* MDA TUNL VENT vlv - MDA PRESS for approx 15 min *

PRESS EQUAL VLV - CLOSE
Monitor MDA/CM delta P ind for 2 min and verify delta P stable
PRESS EQUAL VLV - OPEN

CABIN PREP FOR IVA

CDR

379 Adjust PRIM ACCU QTY, PRIM ACCUM FIL vlv - ON until 50-55%, then OFF

Stow optics

SPT
Retrieve the following:

A1 IVA umbilical (IVU) bag, snap to LEB above A9
1 pkg towels, stow in TSB
A8 PCU
Restow 10 dust caps in container
Adjust waist belt (EVA 1.1)
Stow under spring snap over B1
A7 SOP
High press gage 6000 +/- 500 psig
Adjust straps (EVA 1.1)
SPT
Stow under spring snap in LEB above B7

CENTER COUCH REMOVAL

5.1-1

SWS HARDSUIT ACTIVATION

SWS HARDSUIT ACTIVATION

Remove center couch
Close and lock clamp
Stow couch under CDR couch using 2 straps (R5)

PRESSURE GAGE INSTALLATION

SPT
Pass IVA pressure gage to CDR (IVU bag)

CDR
603 IVA O2 SUP vlv - OFF (verify)
Remove qd dust cover (TP 71)
Attach O2 pressure gage
Tape penlight to pnl 603 so light shines on O2 press gage (tape R5)

PRESSURE GAGE STATIC CHECK

CDR
2 O2 PRESS IND sw - SRG TK
603 IVA STA O2 SUPPLY - ON
IVA GAGE approx 900 psia
2 O2 PRESS 1 ind approx 900 psia
O2 PRESS ind sw - TK 1

603 IVA STA O2 SUPPLY - OFF

IVU INSTALLATION

Note: Audio center use:
CDR-pnl 9, PLT - pnl 6
SPT (IVA cmn - pnl 10)

SPT
10 SUIT PWR sw - OFF
PWR - OFF
AUDIO CONT - NORM (verify)

SPT
Disconn CWG electrical harness and headset from CCU and stow lt wt headset only
Remove CCU and control head from SPT O2 umbilical

CDR
604 IVA PWR - OFF (verify)
Remove all caps from pnl 603
603 Connect control head to IVA panel
Restrain CCU to top of couch XX strut with utility strap

5.1-2

603 Connect IVA elect and O2
Secure hook to couch ring and lock

EMU DONNING

ALL
R13 Unstow CM MEDICAL KIT for OBS donning
R13 Unstow PGA MAINT KIT
Clean and anti-fog 3 helmets (per instruction sheet, towels in TSB)
Don UCTA

OBS and CWG DONNING

ALL
Don lower CWG
Snap biobelt to CWG
Route electrode harness through hole in CWG
Swab sites with wet wipes
Blot with tissues
Open electrolyte sponges
Stick attach rings to each electrode (5)
Insert electrolyte sponges
Remove covers from sternal harness and attach
Remove covers from axillary harness and attach
Place overtapes over each electrode
Don upper CWG
Verify biobelt connects (8) - tight

ALL PGA DONNING (EVA 1.1)

Note: Verify LCG plug installed.

SPT
Verify O2 plugs (2) installed in outboard O2 connectors

UMBILICAL CONNECTIONS

CDR/PLT
6/9 SUIT PWR - OFF
PWR - OFF
AUDIO CONT - NORM (verify)
Disconnect CWG electrical harness from CCU and headset and stow (B2)

CDR/PLT

DATE _____

PGA Connect O2 hoses R/B & B/R

SPT
300/SUIT FLOW vlvs - FULL FLOW
301 (verify)

302 SUIT FLOW vlv - OFF
Attach interconnect to O2 umbilicals (B2)

SOP DONNING

SPT
Unstow SOP hose
Attach vertical strap hook to PGA
Attach leg straps

PCU DONNING

SPT
Conn center PCU strap to PGA
Conn waist belt
Conn O2, R/R and B/B, and lock
Conn elec

Secure PCU H2O under PCU center strap
Adjust center PCU strap
Route SOP hose under vert strap, conn and lock
Verify the following:
PCU PRESS sel - OFF
PCU MODE sel - ABS
Cycle FLOW sel to EVA HI FLO, then OFF
Conn IVU to PCU and lock
Conn IVU tether to left PGA D-ring

CCA DONNING

ALL
Unsnap PGA elect harness from PGA and conn to CCA
Donn CCA
Verify mike booms at corners of mouth, bend in middle, 80 deg max

6/9 PWR - AUDIO/TONE
SUIT PWR - on (up)
10 PWR - AUDIO
604 IVA PWR - on (up)

PCU ACTIVATION

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SPT
PCU Audio warning tone - on
SUIT PRESS lt - on
REG 1 LO FLOW lt - on
SOP FLO lt - on, then off
LO VENT FLO lt - on
Verify pnl ltg on

Note: Cabin press increases from PCU flow.

When cabin press increases to 5.6 psia, open side hatch dump valve to reduce press to 5.0 psia and close dump valve.

603 IVA STA 12 vlv - ON, install guard

SPT
PCU MODE SEL - ABS (verify)
FLOW sel - IVA
Verify PGA diverter vlv - vert
Don IV gloves, and lock
(Don helmet, align and lock, do not rotate helmet after attachment)

Verify O2 flow
REG 1 LO FLOW lt - off
LO VENT FLO lt - off

ALL
6/9/MODE - INTERCOM/PTT
10 S-BD - T/R
AUDIO CONT - NORM
VHF AM - OFF
INTERCOM - T/R

Note: For IVA crewman to xmit to STDN, non-IV man must depress pnl 10 CCU head sw - XMIT

SYSTEMS PREP FOR DEPRESS

CDR
325 CAB PRESS RELF vlv (2) - NORM
326 REPRESS PKG vlv - ON
SURGE TK vlv - ON (verify)
351 CAB REPRESS vlv - OFF
600 EMER O2 vlv - CLOSED (verify)
601 REPRESS O2 vlv - CLOSED (verify)
602 REPRESS O2 ind - approx 900 psia

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DATE _____

2 SURGE TK PRESS - approx 900
2 CAB FANS (2) - OFF
CDR/PLT
300/SUIT FLOW vlv - OFF, O2 hoses
301 R/R & B/B, then FULL FLOW
PGA diverter vlv - horiz
Don helmets and gloves
(do not rotate helmet after attachment)

PURGE SUIT CIRCUIT

CDR/PLT
7 DIRECT O2 vlv - OPEN (ccw) for 1 minute
2 O2 FLOW ind - 1.0 lb/hr (pegged)
O2 FLOW HI lt - on
M/A - on, reset
7 DIRECT O2 vlv - close (cw)
2 O2 FLOW HI lt - out
O2 FLOW ind - 0.2 lb/hr

INTEGRITY CHECK

CDR/PLT
380 SUIT CKT RETURN vlv - close (push)
2 SUIT PRESS ind - 4.7-5.3 psia

O2 FLOW ind - 0.2-0.4 lb/hr

CAUTION

SUIT TEST vlv should remain in the PRESS position until suit circuit pressure is stabilized to preclude seal scarring. If repositioning of SUIT TEST vlv from PRESS is required prior to suit pressure and O2 flow stabilization, perform the following:
1. O2 DEMAND REG vlv - OFF
2. Allow 15 sec (min) stabilization time
3. Reposition SUIT TEST vlv - DEPRESS or OFF as applicable
4. When suit pressure stabilized, O2 DEMAND REG vlv - BOTH

380 SUIT TEST vlv - PRESS
7 DIRECT O2 - OPEN
2 O2 FLOW ind - 1.0 lb/hr (pegged)
2 O2 FLOW HI lt - on

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M/A - on, reset

When SUIT PRESS ind 1.5-2.0 psi greater than CAB PRESS, SUIT CKT RETURN VLV - open then close

CDR/PLT

When SUIT PRESS ind 3.5 - 4.0 psi greater than CAB PRESS, side hatch dump vlv - CLOSE (verify)

7 DIRECT O2 vlv - close

SPT

PCU PRESS sel - OFF

Doff helmet

CDR/PLT

2 SUIT PRESS ind - 8.8-9.8 psia

Cuff gage - 4.1-4.5 psig

2 O2 FLOW HI lt - out

Allow O2 FLOW to stabilize 15 sec

O2 FLOW shall remain below 0.80 lb/hr for 30 sec after stabilization

* If O2 FLOW greater than 0.80 lb/hr reverify all connections and repeat CDR/SPT INTEGRITY CHECK. Continue after recheck if O2 FLOW less than 0.97 lb/hr for 30 sec after stabilization *

380 SUIT TEST vlv - DEPRESS

SPT Don helmet

PCU PRESS sel - BOTH

CDR/PLT

2 O2 FLOW ind - 0.2-0.4 lb/hr

SUIT PRESS ind - slightly greater than CABIN PRESS ind

380 SUIT TEST vlv - OFF

O2 DEMAND REG vlv - BOTH (verify)

PCU CHECKOUT

SPT

Note: Cuff gage inaccuracy +/- .15 psig max

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(Nominal +/- .04 psig). REG 1 LO FLOW and LO VENT FLO lts have 5 sec delay.

Note: At 5.0 psia cabin press, vehicle O2 supply may not be adequate to maintain SPT suit press greater than approx 3.4 psig. Cabin will be depressurized to 3.0 psia to complete EMU checkout

SPT

351 EMER CAB PRESS sel - OFF

PCU PRESS sel - REG 2 (Tone, SUIT PRESS, REG 1 LO FLOW and possibly LO VENT FLO)

MODE SEL - delta P, monitor cuff gage, verify SUIT PRESS lt off 2.8-3.1 psig and LO VENT FLO - off

REDUCE CABIN PRESS

CDR

SIDE HATCH DUMP vlv - open

2 Monitor CAB PRESS ind to 3.0 - 3.25 psig, then SIDE HATCH DUMP vlv - close and adjust as required to maintain CAB PRESS approx 3.0 - 3.25 psig

O2 FLOW ind - 0.5 lb/hr

CDR/PLT

2 Verify SUIT PRESS 3.5-4.0 psia

SPT

Verify cuff gage stable 3.2 to 3.5 psig

PRESS sel - REG 1 (REG 1 LO FLOW - off)

Verify cuff gage stable 3.6 to 3.9 psig and all lts off

PRESS sel - BOTH, verify no change in cuff gage or displays

EMU INTEGRITY CHECK

Note: Following sequence terminates O2 flow to SPT for press decay check. REG 1 LO FLOW and LO VENT FLO lts will light. Monitor cuff gage for max decay of 0.8 psig.

SPT
PCU FLOW sel - OFF, then
PRESS sel - OFF for 1 min

PRESS sel - BOTH, then
FLOW sel - IVA (all lts off)

Note: If SUIT PRESS decays 0.3 - 0.8 psig, verify helmet, wrist rings, and gas connectors locked, before continuing.

* If decay greater than 0.8, obtain other PCU and REPEAT EMU INTEGRITY CHECK

SPT SOP FLOW CHECK

SOP SOP O2 vlv - OPEN

Note: Perform following SOP FLOW CHECK rapidly to conserve SOP O2.

603 O2 SUP - OFF (Tone, SOP FLO)
SOP Med press gage - 27 to 45 psig
Possible slight cuff gage decrease
603 O2 SUP - ON (SOP FLO lt off)
install guard
SOP SOP O2 vlv - CLOSE

MODE SEL - ABS (Tone, SUIT PRESS)

Note: Cabin press will increase due to PCU flow during following tunnel operations.

5.1-9

EQUALIZE CM/MDA TUNNEL PRESS

CDR
FWD
HATCH PRESS EQUAL vlv - OPEN (verify)
MDA/CM delta P ind - 0.0 psid
2 TUNNEL LIGHTS - ON (up)

CM FORWARD HATCH REMOVAL (decal)
Stow under RH couch

DOCKING LATCH VERIFICATION (decal)

PROBE REMOVAL (decal)
Stow under RH couch

DROGUE REMOVAL (decal)
Stow under RH couch

380 SUIT CKT RETURN VLV - open, then close (CSM 116 only)

SPT CM DEPRESS

PCU PRESS sel - REG 1
MODE SEL - delta P (SUIT PRESS may not stabilize 3.6-3.9 psig until cabin depressed to approx 3.0)

Note: If PCU LO VENT FLOW lt comes on before depress complete, FLOW sel - EVA NORM. During depress cuff gage may read 4.1 max in delta P mode.

CDR SIDE HATCH DUMP vlv - OPEN
2 Monitor CAB PRESS to 3.0, then DUMP vlv - CLOSE
SPT SOP O2 vlv - OPEN
PCU PRESS sel - BOTH
Cuff gage stable 3.6 to 3.9
CDR/PLT
2 Verify SUIT PRESS 3.5 to 4.0

Note: Selection of EVA HI FLO may result in SOP flow due to limited CM O2 flow.

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SPT EQUALIZE CSM/MDA PRESSURE
Remove PRESS EQUAL VLV cap on MDA hatch
PRESS EQUAL VLV - OPEN
CSM/MDA delta P ind - 0.0
MODE SEL - ABS (Possible cuff gage depress)
Note: If SWS partially pressurized, cuff gage will read lower in ABS mode

PRESS sel - BOTH (verify)
FLOW sel - EVA NORM
Cuff gage stable 3.6 to 3.9
All lts off

OPEN MDA HATCH
Release handle safety trigger - lift and rotate 90 deg toward hatch
Release handle - OPEN
Push hatch open
Secure hatch in detent lock

INSPECT/CONFIGURE MDA/AM
101 INTERIOR LTS sw - ON
Seal MDA vent (SL2 only)
Inspect MDA

ACTIVATE STS
207 LTG PANEL sel - FIXED
LTG METER sel - FIXED
Loosen Calfax and open PPO2 sensor cover (SL2 only)
Inspect STS and AM FWD compartment
Repair leak(s) as required (repair kit in M144)

COMPLETE AM INSPECTION AND CONFIGURATION
300 CABIN PRESS RELIEF VLV - CLOSE
Note: On SL-2 only:
PRESS EQUAL VLV - OPEN (verify)
Valve cap - stowed (verify)
Forward hatch handle - OPEN
Open hatch and secure with velcro straps (2)
316 LTG METER sw - ON
313 CABIN PRESS RELIEF VLV - CLOSE

AM AFT HATCH CLOSE

Note: On SL2 hatch will be closed. Close PRESS EQUAL VLV only.

325 Release aft hatch
Equal vlv cap - stowed (verify)
Inspect hatch seal for obstruction
Close hatch
Hatch handle - CLOSE
PRESS EQUAL VLV - CLOSE

200 INSTR SYS DISP CONV (5) close

Cap ECS supply and return ducts in FWD AM compt

INITIATE MDA/AM PRESSURIZATION
225 OWS FILL PRI, SEC sw (2) - CLOSE
N2 FILL PRI, SEC sw (2) - CLOSE
O2 FILL PRI, SEC sw (2) - OPEN
AM FILL PRI, SEC sw (2) - OPEN
CAB PRESS REG A, B tgl vlv (2) - OPEN

217 Uncap SUS 1, 2 O2 SUP qd (3)
SUS 1, 2 O2 SUP vlv (2) - OPEN
317 Uncap SUS 1, 2 O2 SUP qd (2)
SUS 1, 2 O2 SUP vlv (2) - OPEN
323 Uncap SUS 1, 2 O2 SUP qd (2)
SUS 1, 2 O2 SUP vlv (2) - OPEN

225 Monitor PRESS FWD approx 5 min to determine if MDA is pressurizing

Note: When MDA press greater than 3.9 psia (approx 40 min), terminate O2 PRESS and top off to 5.0 psia with N2.

SOP O2 vlv - CLOSE (at 3.0 psia)

TERMINATE MDA/AM PRESSURIZATION
225 O2/N2 CONTR PPO2 1 ind - 3.85 psi min (verify)
217 SUS 1&2 O2 SUP vlv (2) - CLOSE
Cap SUS 1&2 O2 SUP qd (2)
317 SUS 1&2 O2 SUP vlv (2) - CLOSE

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Cap SUS 1&2 O2 SUP qd (2-)
323 SUS 1&2 O2 SUP vlv (2) - CLOSE
Cap SUS 1&2 O2 SUP qd (2)
225 AM FILL PRI, SEC sw (2) - CMD
O2 FILL PRI, SEC sw (2) - CMD
N2 FILL PRI, SEC sw (2) - CMD
CDR/PLT
Doff gloves and helmets
380 SUIT CKT RTN VLV - open (pull)

ALSA DEACTIVATION

SPT
603 IVA STA O2 - OFF
Doff helmet and gloves
PCU PRESS sel - OFF (Tone, REG 1 LO FLOW, LO VENT FLO)

RECONFIGURE COMM

SPT
98 SPKR/HDST sw - SPEAKER
CALL/SLEEP sw - ON
VOL tw - as required
10 PWR - AUDIO/TONE
MASTER tw - as required

Note: All CMN use speaker box for comm with STDN.

CDR/PLT
6/9 SUIT PWR - OFF
PWR - OFF
AUDIO CONT - NORM (verify)
Disconn control head from PGA and stow out of way

SPT
10 SUIT PWR - OFF
PWR - OFF
AUDIO CONT - NORM (verify)
604 IVA PWR - OFF
Disconn control head from pnl 603 and stow out of way
10 PWR - AUDIO/TONE
Disconn IVU from pnl 603 and PCU and stow

CCA DOFFING

ALL
Disconn CCA elec lead
Doff CCA and stow

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SPT PCU DOFFING (EVA 3.2)

SPT SOP DOFFING (EVA 3.2)

ALL PGA DOFFING (EVA 3.2)

CM ECS O2 EQUALIZATION

2 SUIT CKT H2O ACCUM AUTO - ctr
201 C/W INPUTS 9D - INHIBIT
4 SUIT COMPR (2) - OFF
300/301/302
SUIT FLOW vlv (3) - FULL FLOW
380 SUIT CKT RETURN vlv - CLOSE (push)
Install O2 umbilical interconnects (B2)

Note: OWS will take over 12 hours to fill. STDN will direct course of action.

Return to normal ACTIVATION C/L

* If OWS is leaking, CDR & * PLT perform IVT to OWS * using lock, pnls 317 & 323 *

IVT TO OWS

Perform:
COOLANT LOOP CONFIGURATION (EVA 1.2)

O2/N2 SYSTEM VERIFICATION (EVA 1.2)

LSU CONNECTION TO EVA PANEL (EVA 1.1)

Obtain 2 PCUs and 2 SOPs from CM (A7, A8, and temp restraint)

LSU CONNECTION TO PCU (EVA 1.1)

SUS SUIT COOLING ACTIVATION (EVA 1.2)

Obtain 2 LCG/FCSs (A8, U1)

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Don FCS
Don UCTA (A6)
Don LCG

PGA DONNING (EVA 1.1)

SOP DONNING (EVA 1.1)

PCU/LSU DONNING (EVA 1.1)

CCA DONNING (EVA 1.1)

SUS POWER ACTIVATION (EVA 1.2)

PCU ACTIVATION (EVA 1.1)

PCU CHECKOUT (EVA 1.1)

EMU INTEGRITY CHECK (EVA 1.1)

AM FWD HATCH CLOSE (EVA 1.2)

AM DEPRESS (EVA 1.2)

AM AFT HATCH OPENING
PRESS EQUAL VLV - OPEN
(verify)
Valve cap - stowed (verify)
Aft hatch handle - OPEN
Open hatch and secure

390 LTS AFT sw - BRIGHT
391 CABIN PRESS RELIEF VLV - CLOSE
Inspect aft compt

OWS HATCH OPENING (SL2 only) (EVA 3.1)
Inspect OWS
403 Close vent vlv
Repair leak(s) as required (repair kit in E610)

AM AFT HATCH CLOSE
325 Release aft hatch
PRESS EQUAL VLV - OPEN (verify)
Inspect hatch seal for obstructions
Close hatch
Hatch handle - CLOSE
PRESS EQUAL VLV - CLOSE

AM REPRESS
318 LOCK COMPT DEPRESS vlv - CLOSE

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Note: Bring lock up to 3.3 psia with PCU vent (approx 9 min) before pressuring from MDA.

316 When PRESS lock ind - 3.3,
311 Fwd hatch PRESS EQUAL VLV - OPEN
312 Fwd hatch handle - OPEN

AM FWD HATCH OPENING (EVA 3.1)

ALSA DEACTIVATION (EVA 3.2)

DEACTIVATE SUIT COOLING, O2 AND COMM (EVA 3.1)

CCA DOFFING (EVA 3.2)

PCU/LSU DOFFING (EVA 3.2)

SOP DOFFING (EVA 3.2)

PGA DOFFING (EVA 3.2)

Doff LCG
Attach clamp to UCTA if required
Doff UCTA
Doff FCS
Don inflight clothing

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AM REPRESS FAILURE

PREP MDA/STS FOR DEPRESS

318 PRESS EQUAL vlv - OPEN if reqd to support MDA depress

EV3 225 CAB PRESS REG A, B tgl vlv (2) - CLOSE

203 MDA FANS 1,2 sw (2) - OFF
MDA FANS CSM sw - OFF
MOL SV A (B) TMRS sw - OFF
MOL SV A FANS PWR sw - OFF
MOL SV B FANS PWR sw - OFF

207 CLSTR PRESS sw - inhibit
CNDST TANK delta P sw - inhibit

216 CNDST TANK PRESS vlv - PRESS
230/232 Loosen Calfax (4) and open MOL SV A, B solids trap access doors
Close solid trap lids and secure with velcro straps
Close MOL SV A, B solids trap access doors and tighten Calfax (4)

EV3 CHAMBER REPRESS vlv - OPEN (M512)
WORK CHAMBER hatch - OPEN (Restrain with long strap)
CHAMBER REPRESS vlv - CLOSED

PREPARE CM FOR DEPRESSURIZATION

EV3 CM351 CABIN REPRESS vlv - OFF
CM351 MN REG A, B vlv (2) - close (verify)
Unstow SOP (CM) remove SOMA

SOP DONNING

EV3 Adjust SOP straps (Ref EVA sect 1.1)

Attach SOP vert strap to PGA

Attach SOP leg straps
Connect SOP hose to PCU. Route hose under vert strap
Lock SOP connector

SOP High pressure gage - 6000 +/-500 psi

ALSA CHECKOUT

EV3 Verify EV1&2 not in EVA HI FLO

PCU MODE SEL - ABS (verify)
Cycle FLOW sel to EVA HI FLO, then IVA
PRESS sel - OFF (verify)

217 SUS 1 02 SUP vlv - OPEN

Don comfort gloves & wristlets

PGA PGA diverter vlv - vert (verify)
Don IV gloves & lock
Don helmet, align & lock (do not rotate helmet after attachment)
(verify purge vlv closed)

PCU PRESS sel - BOTH
Verify 02 flow
REG 1 LO FLOW lt - off
LO VENT FLO lt - off

PCU Checkout

Note: Cuff gage inaccuracy +/- .15 psig max, (Nominal +/- .04 psig). REG 1 LO FLOW and LO VENT FLO lts have 5 sec delay.

PCU PRESS sel - REG 2 (Tone, SUIT PRESS, REG 1 LO FLOW and possible LO VENT FLO)

MODE SEL - delta P. monitor cuff gage, verify SUIT PRESS lt off 2.8-3.1 psig and LO VENT FLO - off
Verify cuff gage stable 3.2 to 3.5 psig
MODE SEL - ABS (Tone, SUIT PRESS)
When suit depressed:
PRESS sel - REG 1 (REG 1 LO FLOW - off)
MODE SEL - delta P
Verify cuff gage stable 3.6 to 3.9 psig and all lts off

PRESS sel - BOTH, verify no change in cuff gage or displays

SOP FLOW CHECK

SOP SOP O2 vlv - OPEN

Note: Perform following SOP FLOW CHECK rapidly to conserve SOP O2.

217 SUS 1 O2 SUP vlv - CLOSE (Tone and SOP FLO)
Med press gage - 27 to 45 psig
Possible slight cuff gage decrease

217 SUS 1 O2 SUP vlv - OPEN (SOP FLO-off)

EMU Integrity Check

Note: Next sequence terminates O2 flow to PGA. REG 1 LO FLOW and LO VENT FLO lts will light. Monitor cuff gage for max decay of 0.8 psig.

PCU FLOW sel - OFF, then
PRESS sel - OFF for 1 min

PRESS sel - BOTH, then
FLOW sel - IVA

Note: If suit press decays 0.3 to 0.8 verify helmet, wrist rings, & gas connectors locked before proceeding.

* If decay greater then 0.8 psig, EV3 will wait inside CM until EV1&EV2 transfer to the MDA. Activate CM ECS per EMERGENCY OA UNDOCKING (CSM SYS C/L) *

Cuff gage stable 3.6 to 3.9 psig & all lts off

PREPARE AIRLOCK FOR CM/MDA/AM DEPRESSURIZATION

EV1 & 2 Close EVA hatch until hatch retainer is engaged

Note: If hatch retainer cannot be engaged, secure hatch in fully opened position with hatch hold-open rod assembly to preclude having hatch swing free.

316 LTG EVA sw (3) - OFF

EV3 207 RAPID delta P 1,2 sw (2) - inhibit
PPO2 CONT sw - inhibit
PPO2 MON sw - inhibit

Note: EV2 will not have water cooling following LSU transfer to pnl 217. If cmn is hot, he should remove heat load now by increasing LCG diverter vlv.

CM/MDA/AM DEPRESSURIZATION

WARNING

EV3 If suit pressure drops below 3.5 psig during CM/MDA/AM depressurization, position fwd hatch PRESS EQUAL VLV - CLOSE.

Note: If LO VENT FLO lt comes on before depress complete, FLOW sel - EVA NORM. During depress cuff gage may read 4.1 deg max in delta P mode

Notify EV1 & 2 ready to commence depressurization

311 PRESS EQUAL VLV - OPEN

225 When PRESS FWD ind - 1.0 psia,
113 WORK CHAMBER VENT vlv - OPEN (M512) (CCW)
114 BULKHEAD VENT vlv - OPEN (CCW)
PGA Cuff gage - monitor

PCU When depress is complete:
MODE SEL - ABS (possible gage decrease)
PRESS sel - BOTH (verify)
FLOW sel - EVA NORM
Cuff gage stable 3.6 to 3.9 psig
All PCU lights off

AM FORWARD HATCH OPENING

EV2 Hold VC tree until EV3 opens hatch

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EV3 311 Open hatch and secure with velcro straps (2)

EV2 Pass VC TREE, VS TREE, EVA DAC, D024 & S230 to EV3

EV3 Stow trees/EVA data in MDA (M512 grid)

EV1 LSU TRANSFER TO 217

SOP Flow Check

EV1 SOP SOP O2 vlv - OPEN (verify)
317 SUS 1 O2 SUP vlv - CLOSE (Tone & SOP FLO)
317 SUS 1 O2 SUP vlv - OPEN (SOP FLO off)
Insure adequate LSU available for transfer
Inform EV3 ready to deactivate LSU

EV3 217 SUS 1&2 HX COOLANT FLOW sw (2) - BYPASS (SUS 1&2 HX COOLANT FLOW EVA lts (4) - off)

EV1 317 SUS 1 PUMP sw - OFF
323 SUS 2 PUMP sw - OFF

EV2 Get into position to pass EV1's LSU to EV3

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EV3 217 SUS 2 O2 vlv - CLOSE (verify)
Remove all caps from SUS 2

EV1 Disconn LSU tether
317 Disconn LSU water hoses from pnl
Note: EV1 will lose comm following next step. Comm will be restored after LSU transfer. Read next few steps before proceeding.

EV1 317 SUS 2 LSU PWR sw - OFF
PCU Panel and warning lighting - off

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	317	Disconn elec connector from pnl 02 SUP vlv - CLOSE Disconn 02 hose from pnl Hand LSU 02 connector to EV2 to pass to EV3
EV3	217	Conn 02 hose (SUS 2) 02 vlv - OPEN (SUS 2)
		Conn elec connector to SUS 2 AUDIO CHAN B SUS 2 LSU PWR sw - ON Verify comm restored; PCU pnl ltg on; SOP FLO off
EV3		Conn tether to panel guard
	217	Conn LSU water hoses to SUS 2 (R/R, B/B) Verify all connectors locked SUS 2 PUMP sw - ON
		EV2 LSU TRANSFER TO 217 Note: Following transfer, EV2 hot mike to EV1&3. To xmit to STDN use CCU control head sw.
		SOP Flow Check
EV2	SOP	SOP 02 vlv - OPEN (verify)
	323	SUS 2 02 SUP vlv - CLOSE (Tone & SOP FLO)
	323	SUS 2 02 SUP vlv - OPEN (SOP FLO off) Insure adequate LSU available for transfer
EV2		Inform EV3 ready to transfer
EV1	323	Disconn LSU tether Disconn LSU water hoses from pnl

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EV3	217	Remove cap from SUS 1 CCU AUDIO CHAN A
		Note: EV2 will lose comm following next step. Comm will be restored after LSU transfer.
EV1	323	SUS 2 LSU PWR sw - OFF Panel and warning lighting - off Disconn elec connector from pnl SUS 2 02 SUP vlv - CLOSE Disconn 02 hose from pnl Hand 02 connector to EV2 to pass to EV3
		Note: Following step will terminate EV3s 02 flow.
EV3	217	SUS 1 02 SUP vlv - CLOSE (SOP FLO on) Uncap SUS 1 02 SUP vlv
	217	Conn 02 hose to 02 SUP qd (SUS 1) 02 SUP vlv - OPEN (SOP FLO - off)
	217	Conn elec connector to SUS 1 CCU AUDIO CHAN A SUS 1 LSU PWR sw - ON
EV2		Verify comm restored; PCU panel lighting on, SOP FLO off
EV1	323/317	Cap 02 qds (2)
EV3		Conn tether to panel guard Verify all connectors locked
	217	SUS 1 PUMP sw - ON SUS 1&2 HX COOLANT FLOW sw - EVA SUS 1&2 HX COOLANT FLOW EVA lts (4) - on
EV2		Transfer to MDA

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EV3		Pull both LSUs into MDA/STS
EV1		Manage LSUs from Airlock Retrieve SOP (under aft hatch) pass to EV3
		DEACTIVATE LOCK COMPARTMENT LIGHTING
EV1	316	LTG METER sw - OFF LTG LOCK sw - OFF
EV1		Transfer to MDA/STS
		AM FORWARD HATCH CLOSURE
EV1	311	Release fwd hatch from STS wall PRESS EQUAL VLV cap - stowed (verify) PRESS EQUAL VLV - OPEN (verify) Inspect hatch seal for obstructions Push hatch closed
	312	Forward hatch handle - CLOSE (CW)
		CM/MDA/STS PRESSURIZATION
	311	PRESS EQUAL VLV - CLOSE
EV3	113	WORK CHAMBER VENT vlv - CLOSE (M512) (CW)
	114	BULKHEAD VENT vlv - CLOSE (CW) Work chamber hatch - close & latch
EV3	216	CNDST TANK PRESS vlv - CLOSED CNDST TANK H2O vlv - OFF
		Note: PCU SUIT PRESS light will be initiated during pressurization.
	225	When PRESS FWD ind - 3.0 psia:
	SOP	SOP O2 vlv - CLOSE

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		O2/N2 RECONFIGURATION
	225	O2/N2 CONTR PPO2 1 ind - 3.85 psia min (verify) (approx 1-1/2 hrs)
EV3	200	cb O2/N2 GAS FILL PRI, SEC (2) - CLOSE
	225	N2 FILL PRI, SEC sw (2) - OPEN AM FILL PRI, SEC sw (2) - OPEN CAB PRESS REG A, B tgl vlv (2) - OPEN
		ALSA DEACTIVATION
ALL	PCU	PRESS sel - OFF Doff one glove Doff helmet & other glove and temp stow
	PCU	FLOW sel - OFF
		Deactivate Suit Cooling, O2 and Comm
EV3	217	SUS 1&2 HX COOLANT FLOW sw (2) - BYPASS (SUS 1&2 HX COOLANT FLOW EVA lts (4) - off)
	217	SUS 1&2 LSU POWER sw (2) - OFF SUS 1&2 PUMP sw (2) - OFF SUS 1&2 O2 SUP vlv (2) - CLOSE PRESS sel - BOTH, then OFF
	200	cb AUDIO SYS CCU A - open
		CCA DOFFING
ALL		Disconnect CCA electrical lead Unsnap chin strap Doff CCA and stow in helmet

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		PCU/LSU DOFFING
ALL	PCU	Unlock SOP hose
		Disconn SOP hose
	PGA	Disconn elec
		Disconn O2 (R&B)
		Disconn water
		Disconn waist belt
		Disconn center strap
		Restrain PCU/LSU
		SOP DOFFING
ALL		Disconn leg straps
		Disconn vert strap
		Restrain SOP
		PGA DOFFING
ALL	PGA	Unlock restraint zipper
		Open vert zipper
		Open horiz zipper
		Unlock & open press sealing zipper
		Disconn 2 donning hooks
		Doff upper PGA
		Disconn water connector
		Doff lower PGA
		Restrain PGAs
	217	Disconn LSUs (3) & secure in MDA
		Unstow 2 jumpers (TSB) install on SUS 1 & 2 qds
		COOLANT LOOP RECONFIGURATION
EV3	200	cb RAD FLOW PRI, SEC (2) - open
		ENABLE C/W PARAMETERS
EV3	207	RAPID delta P 1, 2 sw (2) - enable
		PPO2 CONT sw - enable
		PPO2 MON sw - enable
		CLSTR PRESS sw - enable
		CNDST TANK delta P sw - enable

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		VENTILATION ACTIVATION
EV3	230/ 232	Loosen Calfax (4) and open MOL SV A, B solids trap access doors
		Loosen velcro strap and open solids trap lids
		CLOSE MOL SV A, B solids trap access doors and tighten Calfax (4)
	203	MOL SV A FANS PWR sw - PRI
		MOL SV B FANS PWR sw - SEC
		MDA FANS 1, 2, CSM sw (3) - HI
		MOL SV HT EXCH OUT ind - greater than 46 deg F (verify)
		Note: If MOL SV HT EXCH OUT temperature less than or equal to 46 deg F, delay next operation only, until temperature increases.
		AM FANS CIRC 1, 2, 3 sw (3) - HI
		INITIATE MOLECULAR SIEVE BED CYCLING
EV3	203	MOL SV A (B) TMRS sw - PRI
		INITIATE CONDENSATE REMOVAL
EV3		Note: Initiation of condensate removal should not be attempted until MOL SV HT EXCH OUT temperature is 47 deg F or greater. The following operation may activate the C/W CNDST TANK delta P indication if condensing heat exchanger H2O separator plates are not sufficiently wetted.
	216	CNDST TANK H2O vlv - FILL

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		TERMINATE RECORDING
	200	cb AUDIO SYS: INTERCOM A - open
EV3	131	CHAN A sel - OFF (verify) Disconnect electrical cable from IVA CCU POWER CONNECTOR Cap IVA CCU POWER CONNECTOR
	131	Connect electrical cable to intercom box receptacle outlined in blue
	200	cb AUDIO SYS: INTERCOM A - close CCU A - close
	131	COMM CHAN sel - ON
		RCD sw - OFF (lt-off)
	204	TAPE RECORDING EXP 1 sw - OFF (EXP 1 lt-off) TAPE RECORDING EXP 2 sw - OFF (EXP 2 lt-off) TAPE RECORDING EKG/ZPN sw - OFF
		CM RECONFIGURATION
EV3	CM351	CABIN REPRESS vlv - ON
		COMPLETE O2/N2 RECONFIGURATION
EV3	225	AM FILL PRI, SEC sw (2) - CMD O2 FILL PRI, SEC sw (2) - CMD N2 FILL PRI, SEC sw (2) - CMD
EV2		ATM FILM RECONFIGURE (Ref EVA sect 3.1)
		Stow S230, D024 & EVA DAC film in CM as required

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		OWS SUITED DATA RETRIEVAL
	207	MOL SV B FANS PWR sw - OFF CNDST TANK delta P sw - inhibit
		Note: Before beginning procedures verify
	216	CNDST TANK PRESS vlv - PRESS
	230/ 232	Loosen Calfax (4) and open MOL SV A, B SOLIDS TRAP access doors
		(1) OWS PRESS equals Airlock PRESS &
		(2) DATA RETRIEVAL PAD UPDATE has been received
		Close solid trap lids and secure with velcro straps
		PREPARE CM FOR DEPRESS
		Close MOL SV A, B SOLIDS TRAP access doors and tighten Calfax (4)
CDR		
CM 351		CABIN REPRESS vlv - OFF
CM R13		Unstow CM MEDICAL KIT for OBS donning
CM R13		Unstow PGA MAINT KIT
CM A1		Unstow 1 pkg towels
CM TSB		Retrieve CDR/SPT IV gloves
		MDA/STS SYSTEMS PREP
PLT 203		MOL SV A (B) TMRS sw - OFF
		MOL SV A FANS PWR sw - OFF
		CHAMBER REPRESS vlv - OPEN (M512)
		WORK CHAMBER hatch - OPEN (restrain with long strap)
		CHAMBER REPRESS vlv - CLOSED
		COOLANT LOOP CONFIGURATION
	PLT 203	RAD FLOW PRI, SEC (2) sw - NORM (verify)
	200	cb RAD FLOW PRI,SEC (2) - close

O2/N2 SYSTEM VERIFICATION

PLT
200 cb O2/N2 GAS FILL PRI, SEC (2) - open

225 120 PSI REG A, B tgl vlv (2) - OPEN (verify)
5 PSI REG A, B tgl vlv (2) - OPEN (verify)
CAB PRESS REG A, B tgl vlv (2) - CLOSE
O2 ind (reg) - 115 to 135 psia (verify)

217 Uncap SUS 1 & 2 O2 SUP qds and O2 SUP qd on side of panel
SUS 1 & 2 O2 SUP vlvs - OPEN
Verify flow (3 places)
SUS 1 & 2 O2 SUP vlvs - CLOSE

LSU CONNECTION TO IVA PANEL

PLT
217 SUS 1 LSU POWER sw - OFF (verify)
SUS 1 PUMP sw - OFF (verify)
SUS 1 O2 SUP vlv - CLOSE (verify)
Repeat above operations for SUS 2

Remove jumpers (2) from SUS 1&2 LCG qds and stow in TSB
Remove LSU connectors from plenum bag
Remove caps from connectors (4) stow in TSB

225 Remove cap and conn elec connector to IVA CCU AUDIO CHAN A connector
217 Conn O2 hose to SUS 1 O2 SUP on side of panel

Attach tether to accessible point

Note: Attach CDR LSU to SUS 1.

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217 Uncap SUS 1 O2 SUP vlv
Conn O2 hose to O2 SUP qd
Conn elec connector to SUS 1 CCU AUDIO CHAN A
Conn LCG hoses to SUS 1 R/R, B/B
Attach tether to pnl guard
Repeat above operations for SUS 2

COMM CONNECTION

PLT
131 CHAN A sel - OFF (verify)
200 cb AUDIO SYS:
INTERCOM A - open
CCU A - open
131 Disconnect blue elec cable from SIA
225 Uncap IVA CCU PWR CONNECTOR and cap SIA connector
Conn SIA cable to IVA CCU POWER CONNECTOR
200 cb AUDIO SYS:
INTERCOM A - close

M124 Unstow CCU or use avail LCCU
102 CHAN A sw - OFF
Conn CCU to CHAN A
CHAN A sw - PTT
Route CCU to STS, secure with straps

RECORDING CONFIGURATION

PLT
204 TAPE RECORDING EKG/ZPN sw - ENABLE
TAPE RECORDING EXP 1 sw - RECORD, TAPE RECORDING EXP 1 lt - on
TAPE RECORDING EXP 2 sw - RECORD, TAPE RECORDING EXP 2 lt - on

LSU CONNECTION TO PCU

ALL
Verify following:
PRESS sel - OFF
MODE SEL - ABS
Cycle FLOW sel to EVA HI FLO, then OFF
LCG FLO lever - 1

	Verify SOP connector unlocked
	Conn LSU composite disconnect and lock
	Conn LSU tether hook to PCU ring (left, forward)
	EMU DONNING (EVA 1.1)
ALL	Clean and anti-fog 3 helmets (per instruction sheet)
	Don FCS
	Don UCTA
	Note: CDR & SPT will perform IVA transfer. PLT will have neither biomed nor water cooling.
CDR/ SPT	OBS AND LCG DONNING (EVA 1.1)
PLT	LCG DONNING (crew option)
ALL	PGA DONNING (EVA 1.1)
ALL	SOP DONNING (EVA 1.1)
	Adjust SOP straps
ALL	PCU/LSU DONNING (EVA 1.1)
ALL	CCA DONNING (EVA 1.1)
CDR/ PLT	PCU ACTIVATION
PCU	Audio warning tone - on
	SUIT PRESS lt - on
	REG 1 LO FLOW lt - on
	SOP FLO lt - on, then off
	LO VENT FLO lt - on
	Pnl ltg - on
PCU	MODE SEL - ABS (verify)
	PRESS sel - OFF (verify)
	FLOW sel - IVA
	Wrist disconnect - ENGAGE
	Don IV gloves and lock

	Verify PGA diverter vlv - vert
	Don helmet, align, & lock (do not rotate helmet after attachment)
	PRESS sel - BOTH
	Verify O2 flow
	REG 1 LO FLOW lt - off
	LO VENT FLO lt - off
	CONFIGURE CSM COMMUNICATIONS
SPT	
116	[RCD] sw - RECORD
	[RCD lt] - on
	Move to CM, configure comm, and verify comm:
6	MODE sw - VOX
	VOX SENS adjust for proper keying of CDR/SPT voice:
	INTERCOM - T/R
	MASTER - as desired
	S-BAND - T/R
9	INTERCOMM - T/R
	S-BAND - T/R
	MASTER VOLUME - as desired

Note:(1)See diagram in EVA C/L 1.2 for resulting comm configuration.

(2)Do not use CSM or SWS call. Full conference exists between cmn and STDN. SPT & PLT must use "ICOM/ XMIT" sw on MDA/CCU to communicate with STDN.

(3)Do not conn headset to CDR or PLT CCU.

If comm inoperative, go to
CSM SYSTEMS C/L, section 4
*for alternate EVA *
*configurations *

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CDR/ PLT

PCU CHECKOUT

Note: Cuff gage inaccuracy +/- .15 psig max, (Nominal +/- .04 psig), REG 1 LO FLOW and LO VENT FLO lts have 5 sec delay.

PRESS sel - REG 2 (Tone, SUIT PRESS, REG 1 LO FLOW and possible LO VENT FLO)
MODE SEL - delta P, monitor cuff gage, verify SUIT PRESS lt off 2.8-3.1 psig and LO VENT FLO - off

Verify cuff gage stable 3.2 to 3.5 psig

MODE SEL - ABS (Tone, SUIT PRESS at 3.1 to 2.8 psig)

When suit depressurized
PRESS sel - REG 1 (REG 1 LO FLOW off)
MODE SEL - delta P

Verify cuff gage stable 3.6 to 3.9 psig and all lts off

PRESS sel - BOTH, verify no change in cuff gage or displays

CDR/ PLT

EMU INTEGRITY CHECK

Note: Next sequence terminates O2 flow to PGA, REG 1 LO FLOW and LO VENT FLO lts will light, Monitor cuff gage for max decay of 0.8 psig.

FLOW sel - OFF, then
PRESS sel - OFF for 1 min

PRESS sel - BOTH, then
FLOW sel - IVA

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Note: If suit press decays 0.3 to 0.8 verify helmet, wrist rings, and gas connectors locked before proceeding.

If decay greater than 0.8 psig, crewman will wait inside CM until after MDA is repressurized. Activate CM ECS per EMERGENCY OA UNDOCKING (CSM SYSTEMS C/L

Cuff gage stable 3.6 to 3.9 psig and all lts off

SOP FLOW CHECK

CDR/ PLT

SOP O2 vlv - OPEN

Note: Perform SOP FLOW CHECK rapidly to conserve SOP O2.

225 SUS 1 O2 SUP vlv - CLOSE (Tone and SOP flow)
Med press gage - 27 to 45 psig
Possible slight cuff gage decrease

225 SUS 1 O2 SUP vlv - OPEN (SOP FLO - off)

MODE SEL - ABS (Tone, SUIT PRESS)

SPT

Perform PCU ACTIVATION, PCU CHECKOUT, EMU INTEGRITY CHECK, and SOP FLOW CHECK

PREPARE MDA/STS FOR DEPRESSURIZATION

PLT
203 MDA FANS 1, 2 sw (2) - OFF
MDA FANS CSM sw - OFF

207 RAPID delta P 1, 2 sw (2) - inhibit
PPO2 CONT sw - inhibit

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PPO2 MON sw - inhibit
CLSTR PRESS sw - inhibit

PLT — CM/MDA/AM DEPRESSURIZATION

WARNING
If suit pressure drops below 3.6 psig during CM/MDA/AM depress, fwd hatch PRESS EQUAL VLV - CLOSE

ALL — Note: If LO VENT FLO lt comes on before depress complete, FLOW sel - EVA NORM. During depress cuff gage may read 4.1 max in delta P mode.

PLT — Notify CDR, SPT ready to commence depress

311 — PRESS EQUAL VLV - OPEN

225 — When PRESS FWD ind 3.0 psig,

ALL
PCU — MODE SEL - delta P
Verify cuff gage stable 3.6 - 3.9 psig

SPT
225 — When PRESS FWD ind - 1.0 psia,
113 — WORK CHAMBER VENT vlv - OPEN (M512)
114 — BULKHEAD VENT vlv - OPEN

ALL
PGA — Cuff gage - monitor

PCU — When depress is complete:
MODE SEL - ABS (possible cuff gage decrease)
PRESS sel - BOTH (verify)
FLOW sel - EVA NORM
Cuff gage stable 3.6 to 3.9 psig
All PCU lights off

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AM FORWARD HATCH OPENING

CDR
Open hatch and secure with velcro straps (2)

316 — LTG METER sw - ON
LTG LOCK sw - ON

OWS HATCH OPENING

CDR
RELEASE HANDLE - UNLOCK
HATCH HANDLE - EQUALIZE PRESS

PLT
225 — Note: Verify PRESS OWS equals PRESS LOCK before proceeding.

CDR
RELEASE HANDLE - UNLOCK
HATCH HANDLE - OPEN
Push hatch open to engage hatch retainer

CDR/SPT — RETRIEVE DATA PER PAD
UPDATE

OWS HATCH CLOSURE

CDR
Inspect hatch seal for obstructions
HATCH HANDLE - OPEN (verify)
Release OWS hatch from wall
Close hatch while entering aft lock
RELEASE HANDLE - UNLOCK
HATCH HANDLE - CLOSE
RELEASE HANDLE - LOCK (verify)

DEACTIVATE LOCK COMPARTMENT LIGHTING

CDR
316 — LTG METER sw - OFF
LTG LOCK sw - OFF

TRANSFER to MDA/STS

AM FORWARD HATCH CLOSURE

CDR
311 — Release fwd hatch from STS wall
Equal vlv cap - stowed (verify)

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PRESS EQUAL VLV - OPEN (verify)
Inspect hatch seal for obstructions
Push hatch closed
312 Forward hatch handle - CLOSE (cw)

CM/MDA/STS PRESSURIZATION

CDR
311 PRESS EQUAL VLV - CLOSE

SPT
113 WORK CHAMBER VENT vlv - CLOSE (M512) (cw)
114 BULKHEAD VENT vlv - CLOSE (cw)
Work chamber hatch - close and latch

216 CNDST TANK PRESS vlv - CLOSED
CNDST TANK H2O vlv - OFF

Note: PCU SUIT PRESS light will be initiated during repress

225 When PRESS FWD ind passes 3.0 psia:

ALL
SOP O2 vlv - CLOSE

PLT O2/N2 RECONFIGURATION (EVA 5.2)

ALSA DEACTIVATION

ALL
PCU PRESS sel - OFF
Doff one glove
Doff helmet and other glove and temp stow

SUIT COOLING, O2 AND COMM DEACTIVATION

PLT
217 SUS 1&2 HX COOLANT FLOW sw - BYPASS
SUS 1&2 HX COOLANT FLOW EVA lt (4) - off
SUS 1&2 LSU PWR sw (2) - OFF

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SUS 1&2 PUMP sw (2) - OFF
SUS 1&2 O2 SUPPLY vlv (2) - CLOSE
200 cb AUDIO SYS CCU A - open

ALL
PCU PRESS sel - BOTH, then OFF
FLOW sel - OFF

CCA DOFFING (EVA 5.2)

SPT
116 [RCD] sw - OFF
[RCD] lt - OFF

ALL PCU/LSU DOFFING (EVA 5.2)

SOP DOFFING (EVA 5.2)

PGA DOFFING (EVA 5.2)

Disconn LSUs (3) and secure in MDA
Unstow 2 jumpers (TSB) and install on SUS 1 & 2 qds

COOLANT LOOP RECONFIGURATION

PLT
200 cb RAD FLOW PRI, SEC (2) - open

RECORDING TERMINATION

PLT
204 TAPE RECORDING EXP 1 sw - OFF
TAPE RECORDING EXP 1 lt - off
TAPE RECORDING EXP 2 sw - OFF
TAPE RECORDING EXP 2 lt - off
TAPE RECORDING EXG/ZPN sw - OFF

PLT ENABLE C/W PARAMETERS (EVA 5.2)

PLT VENTILATION ACTIVATION (EVA 5.2)

DATE_____

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INITIATE MOLECULAR SIEVE BED CYCLING

PLT
203 MOL SV A (B) TMRS sw - PRI

PLT INITIATE CONDENSATE REMOVAL (EVA 5.2)

CM RECONFIGURATION

CDR
CM 351 CABIN REPRESS vlv - ON

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EV1	EV3	EV2
AM/VF OPERATIONS		
Fold boom hooks away from hatch (if required) Egress VF foot restraints and ingress VR foot restraints		
Assist EV2		Partially close AM hatch (if required)
Pull velcro strap on VC clothesline container, retrieve clothesline hook and attach hook to inside hatch handle and lock hook Pull velcro strap on VS clothesline container, retrieve clothesline hook and attach hook to inside hatch handle and lock hook		
		Open hatch and engage hold-open rod assembly (if required)
Egress VR foot restraints and ingress VF foot restraints Fold boom hooks toward hatch		
		Unstow VS TREE and pass to EV1
Stow VS TREE in VF receptacle (F15) and lock		

6.1-1

BACKUP EVA CLOTHESLINE

BACKUP EVA
CLOTHESLINE

EV1	EV3	EV2
		Unstow VC TREE and pass to EV1
Stow VC TREE in VF receptacle (F7) and lock		
		Unstow DAC and pass to EV1
Verify (day) F11, 500, 6 FPS, infinity or (night) F1.8, 60, 6 FPS, infinity		
Install DAC on F6 below clothesline clip and lock (lock toward EV1)		
Adjust universal mount to red marks (x=350, y=320, z=10)		Retrieve VC clothesline hook Attach to right glove and lock
DAC pb - on (push) Operate lt - on (verify)		
		Egress AM and translate to VC
Assist EV2 in translation and manage EV2 LSU and clothesline		

6.1-2

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EV1	EV3	EV2
	Panel 122 Head wheel drive motor SW - ON (motor ON LT - ON)	
	Tape drive SW - RECORD (Record LT - ON)	
	NOTE Limit TV record time at VC to ~ 10 min.	
	VC OPERATIONS	
		Ingress VC foot restraints Deploy VC clothesline attach bracket Attach clothesline hook to bracket and lock hook Clamp own LSU at approx 9 feet
Remove slack and clamp EV2 LSU in fwd clamp at approx 31 feet		
Assist EV2		Straighten clothesline

6.1-3

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EV1	EV3	EV2
EMU status check (PCU warning lts) (Suit pressure)		EMU status check (PCU warning lts) (Suit pressure)
Verify clothesline hooks at VF and unlocked		Verify ATM positioned to S054
		**********
		If ATM not positioned to S054:
		*Pnl 160, *
		* POWER (2) - ENABLE *
		* ROLL - ENABLE *
		* CANISTER ROTATION - RIGHT or*
		* LEFT to ALIGN S054 *
		* ROLL - INHIBIT *
		**********
Attach one clothesline hook to S054 tether ring and lock hook		
		Pull S054 door launch lock D-ring and stow in clip
Unstow S054 from VC TREE by pushing button and turning handle CCW		Push S054 handle to unlock door
		Open door

6.1-4

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EV1	EV3	EV2
Attach second clothesline hook to lanyard on bottom corner and lock hook		
Assist EV2 in transfer		Transfer S054 to VC
		Remove one clothesline hook from S054
		Stow S054 on VC temp stow hook using handle and lock hook
		Release second clothesline hook
		Attach one clothesline hook to used S054 tether ring and lock
		Remove used S054 by pressing button turning handle CCW and then pulling
		Attach second clothesline hook to lanyard on bottom corner and lock hook
Transfer S054 to VF		Assist EV1 in transfer
Remove hook from lanyard		Remove S054 from VC temp stow hook
Place S054 on VC TREE and lock		Install S054, verify alignment stripes at base of mag and receptacle are flush

6.1-5

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EV1	EV3	EV2
Release second clothesline hook		
		Push button and turn handle CW to lock Verify mag LATCHED flag Close S054 door, lock and verify white flag visible
	Panel 122 Head wheel drive motor SW - OFF (Record, motor ON LTS - OFF)	
		Pnl 160, POWER (2) - ENABLE (if required) ROLL - ENABLE CANISTER ROTATION - RIGHT to ALIGN S056 ROLL - INHIBIT
Transfer empty clothesline hooks to VC		
		Pull S056 door launch lock D-ring and stow in clip Unlock and open S056 door Release S056 launch lock pin located at base of handle Attach one clothesline hook to S056 and lock hook Remove S056
	6.1-6	

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EV1	EV3	EV2
		Attach second clothesline hook to S056 and lock hook
Transfer S056 to VF		Assist EV1 in transfer
		Close S056 door, lock and verify white flag visible
Place S056 on VC TREE and lock Remove both clothesline hooks		Pnl 160, ROLL - ENABLE CANISTER ROTATION - RIGHT to ALIGN S052 ROLL - INHIBIT
Attach both clothesline hooks to S052 and lock hooks Unstow S052 from VC TREE Assist EV2 in transfer		Pull S052 door launch lock D-ring and stow in clip Unlock and open S052 doors (2) Transfer S052 to VC
		Remove one clothesline hook from S052 Stow S052 on VC temp stow hook using tether ring and lock hook Release second clothesline hook Attach one clothesline hook to used S052 and lock hook
	6.1-7	

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EV1	EV3	EV2
		Release S052 magazine launch lock by pulling T-handle
		Unlock used S052 and remove mag
		Attach second clothesline hook to used S052 and lock hook
Transfer S052 to VF		Assist EV1 in transfer
		Remove S052 from VC temp stow hook
Place S052 on VC TREE and lock Remove both clothesline hooks		
		Install S052 and lock by pushing lever up
		Verify S052 white flag visible
		Close S052 doors (2), lock and verify white flag visible
		Pnl 160, ROLL - ENABLE CANISTER ROTATION - RIGHT to ALIGN H ALPHA 1 ROLL - INHIBIT
Transfer empty clothesline hooks to VC		
		Pull H ALPHA 1 door launch lock D-ring and stow in clip

6.1-8

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EV1	EV3	EV2
		Unlock and open H ALPHA 1 door
		Release H ALPHA 1 launch lock pin located at base of handle
		Attach one clothesline hook to H ALPHA 1 and lock hook
		Remove H ALPHA 1
		Attach second clothesline hook to H ALPHA 1 and lock hook
Transfer H ALPHA 1 to VF		Assist EV1 in transfer
		Close H ALPHA 1 door, lock and verify white flag visible
Place H ALPHA 1 on VC TREE and lock Remove both clothesline hooks		
		Pnl 160, ROLL - ENABLE CANISTER ROTATION - RIGHT to ALIGN SUN END ROLL - INHIBIT S082 DOORS - OPEN S082 DOORS lts (2) - OPEN (10 sec delay) (verify) POWER (2) - INHIBIT
DAC ph - off (push) Operate lt - out (verify) Reposition DAC on F5 aft of temp stow hook and lock (lock toward hatch)		Lean back and advise EV3 ready for magazine operation checks

6.1-9

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EV1	EV3	EV2
Verify universal mount to yellow marks (x=5, y=305, z=0) (Day) F11, 500, 6 FPS, infinity, or (night) F1.8, 60, 6 FPS, infinity		
	Pnl 130, FILM RESET FILM RESET sel - WLC FILM RESET sw - RESET WLC FRAMES REMAINING ind - 8025 MAIN PWR sw - STBY, then ON MODE sel - STD READY/OPR lt - off START/STOP sw - START FRAMES REMAINING ind - decreases by 1 (verify) START/STOP sw - STOP MAIN PWR sw - STBY	

6.1-10

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EV1	EV3	EV2
	FILM RESET FILM RESET sel - X-RAY SPECT FILM RESET sw - RESET X-RAY SPECT FRAMES REMAINING ind - 6000 MAIN PWR sw - ON PICTURE RATE sel - SINGLE EXPOSURE RANGE sel - 16 READY/OPR lt - off START/STOP sw - START FRAMES REMAINING ind - decreases by 6 (verify) MAIN PWR sw - OFF	
Retrieve VS clothesline hook from inside hatch handle Connect VC clothesline hooks (2) to VS clothesline ring and lock both hooks, (verify VC clothesline under VS clothesline) Assist EV2 in transfer		Transfer VS clothesline to VC Connect VS clothesline hook to right glove

6.1-11

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EV1	EV3	EV2
		Release hooks from VS clothesline Connect VC clothesline hooks together Restow VC clothesline bracket
Assist EV2		Straighten VS clothesline
Clip VC clothesline under clip on F5 DAC pb - on (push) Operate lt - on (verify)		
		Unclamp own LSU Egress VC and translate to VT
Manage EV2 LSU and clothesline		

Panel 122
Head wheel drive motor SW - ON
(motor ON LT - ON)

Tape drive SW - RECORD
(Record LT - ON)

6.1-12

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EV1	EV3	EV2

VT AND VS OPERATIONS

		Rotate and ingress VT foot restraints using solar shield handrail to aid ingress
EMU status check (PCU warning lts) (Suit pressure)		EMU status check (PCU warning lts) (Suit pressure)
		Pull pip pin (1) to release VS clothesline attach bracket Rotate end link approx 220 deg to lock in place
		Attach clothesline hook to bracket and lock hook Straighten clothesline Rotate base link until locked
Verify VS clothesline hooks at VF and unlocked Attach one clothesline hook to VS TREE handle and lock hook Remove VS TREE from receptacle Attach second clothesline hook to opposite end of VS TREE and lock hook		

6.1-13

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EV1	EV3	EV2
Assist EV2 in transfer		Transfer VS TREE to VT
		Remove clothesline hook from container door end of VS TREE
		Stow VS TREE in receptacle on solar shield and lock
		Release second clothesline hook
		Clip hooks together and position clothesline out of way behind head for VS transfer
Unclamp EV2 LSU, provide slack for VS transfer		
		Egress VT foot restraints and ingress VS foot restraints
Remove slack and clamp EV2 LSU at approx 35 feet		
DAC pb - off (push)		
Operate lt - out (verify)		
EMU status check		EMU status check
(PCU warning lts)		(PCU warning lts)
(Suit pressure)		(Suit pressure)
		Unlock and open S082A container door
		Open S082A ATM door, PUSH button and rotate handle to UNLOCK

6.1-14

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EV1	EV3	EV2
		Release S082A launch lock by rotating handle to unlock position
		Move locking handle to release mag
		Partially remove mag, fold handle by pressing release button and complete removal
		Align container and mag arrows and insert mag in container
		Verify handle on mag below container door seat
		Close and lock S082A container door
		Unlock and open S082B container door
		Move S082A ATM locking handle down
		Close and lock S082A ATM door
		Open S082B ATM door, PUSH button and rotate handle to UNLOCK
		Release S082B launch lock by pulling D-ring to unlock position

6.1-15

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EV1	EV3	EV2
		Move locking handle left to release mag
		Partially remove mag, fold handles (2) by pressing release buttons and complete removal
		Align container and mag arrows and insert mag in container
		Verify handle on mag below container door seat
		Close and lock S082B container door
		Move S082B ATM locking handle right to lock position
		Close and lock S082B ATM door
		Reposition clear of aperture doors and advise EV3 ready for door closure
	Pnl 130, XUV SPECT: PWR/DOOR sw - OFF: tb - remains white XUV SLIT: PWR/DOOR sw - OFF: tb - remains white	

6.1-16

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EV1	EV3	EV2
	TV: XUV MON DOORS sw - CLOSE; tb - remains white	
		Verify 82A, 82B, and XUV MON doors (3) closed
DAC pb - on (push) Operate lt - on (verify)		
		Egress VS foot restraints and ingress VT foot restraints
Unclamp EV2 LSU, remove slack and then reclamp EV2 LSU at approx 31 feet		
EMU status check (PCU warning lts) (Suit pressure)		EMU status check (PCU warning lts) (Suit pressure)
		Attach one clothesline hook to VS TREE handle and lock hook
		Unstow VS TREE
		Attach second clothesline hook to opposite end of VS TREE and lock hook
Transfer VS TREE to VF		Assist EV1 in transfer

6.1-17

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EV1	EV3	EV2
Remove clothesline hook from container door end of VS TREE		
Install VS TREE in VF receptacle and lock		
Release second clothesline hook		
Connect hooks together and clip clothesline out of way on F6		
Unclamp EV2 LSU		
		Egress VT foot restraints and translate to D024 sample panel head first, face toward VF
Manage EV2 LSU by stowing behind EV1		

Panel 122
Head wheel drive motor SW - OFF
(Record, motor ON LTS - OFF)

6.1-18

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EV1	EV3	EV2

D024 SAMPLE RETRIEVAL

Remove container A pip pin and verify container is not stuck

****
* If container is restricted,*
* remove (A) strip and disk *
* samples and tether them *
****

Lift latch handles on container A, rotate CCW and lift cover
Pull strip panel A pip-pin and pull handle to release
Stow strip panel in container (large hole) handle first, samples toward hinge
Pull disc panel A pip-pin and pull handle to release
Stow disc panel in container, handle first samples toward hinge
Verify container seal clear

6.1-19

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EV1	EV3	EV2
		Close container and rotate latches (2) CW Remove container from panel Tether container and replace pip pins (3)
DAC pb - off (push) Operate lt - out (verify) Reposition DAC on F7 handrail and lock		
		Translate to VF and ingress AM
Manage EV2 LSU		
		Stow D024 near VC receptacle
		Stow excess LSU in aft AM area

AM/VF OPERATION

Fold DAC to blue marks (x=180, y=100, z=0) Pass DAC to EV2	Stow DAC on handrail next to MDA hatch and lock
Unstow VC TREE and pass to EV2	
	Stow VC TREE in AM receptacle and lock
Unstow VS TREE and pass to EV2	

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EV1	EV3	EV2
		Stow VS TREE in AM receptacle and lock

AM INGRESS

Verify clotheslines are stowed properly and EVA area secure Check EVA hatch seal area for obstructions and verify hatch dogs are retracted Unclamp own LSU Egress VF foot restraints and ingress AM	
	Manage EV1 LSU

NOTE
Go to EVA Hatch closure
POST EV3 (tab)

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EV1 EV3 EV2

FAILED BOOM ELECTRICAL BUS REPLACEMENT PROCEDURES

Egress VF foot restraints and ingress VR foot restraints (if required)

Pnl 202 cb ext boom (2) - OPEN

Change electrical connector from BUS 1 to BUS 2

Pnl 202 cb ext boom (2) - CLOSE

Pnl 321 Verify Boom operational

****
* NOTE *
* If operational return to nominal EVA *
****

EVA OPERATIONAL CONTINGENCIES

EV1 EV3 EV2

BOOM MANUAL EXTEND/RETRACT PROCEDURES

Egress VF foot restraints and ingress VR foot restraints (if required)

Pnl 202, cb ext boom (2) - OPEN

Partially close hatch (if required)

Disconnect electrical connector from side of failed BOOM

Place boom control lever in MANUAL EXTEND (pull position) or MANUAL RETRACT (push position)

Actuate boom manual retraction handle and retract or extend boom with pumping action

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EV1	EV3	EV2
Verify boom fully retracted or extended (as required)		
********** * If unable to retract, go to * * BOOM JETTISON PROCEDURE * **********		

BOOM REPLACEMENT PROCEDURES

Egress VF foot restraints and ingress VR foot restraints (if required)		
	PNL 202, cb ext boom (2) - OPEN (if required)	
Partically close hatch (if required)		
Disconnect electrical connector from side of failed boom		

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EV1	EV3	EV2
Remove failed boom by unlocking thumb lock squeezing handle and pulling boom out of receptacle	********** * If located anywhere except * * the AM, translate to VF * * area and stop on D1 * **********	
Hand failed boom to EV2	Hold failed boom (temporarily)	
Remove replacement boom from stowage position by unlocking thumb lock squeezing handle and pulling boom out of receptacle		
Position replacement boom in receptacle		
Squeeze latch handle and push boom into receptacle Release handle when boom bottoms out		
Lock thumb lock		
Pull boom launch lock D-ring		

DATE 3/22/73

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EV1 EV3 EV2

Connect electrical connector on side of replacement boom

Hand failed boom to EV1

Position failed boom in spare stowage position and lock

Open hatch (if required)

Egress VR foot restraints and ingress VF foot restraints

Pnl 202, cb ext boom (2) - close

Pnl 321, EXTENDIBLE BOOM - EXTEND/ RETRACT to verify boom operational

Pnl 321, BOOM EXTEND approx 6 inches

Unlock boom hook storage box and open

Remove hook and close box

6.2-5

DATE _____

DATE _____

EV1 EV3 EV2

Verify quick disconnect marks aligned
Install by aligning marks on boom and hook, pushing and rotating cover ring 90 deg

****
* NOTE *
* Return to normal boom procedures.*
****

VC BOOM JETTISON PROCEDURES

WARNING
Failed boom could have sharp edges. Care should be given not to damage suit.

Translate to appropriate position for grasping end of boom

Egress VF foot restraints and ingress VR foot restraints (if required)

6.2-6

DATE 3/22/73

EV1	EV3	EV2
	Pnl 202, cb ext boom (2) - OPEN (if required)	
Disconnect electrical connector from side of failed boom (if required)		
Remove failed boom by unlocking thumb lock, squeezing handle and pulling boom out of receptacle		
Maneuver VC boom towards EV2		Grasp end of VC boom and stabilize
Egress VR foot restraints (if required)		
Unclamp and deploy required amount of own LSU		
Grasp boom housing and stabilize (attach tether if required)		

DATE _____

EV1	EV3	EV2
	**********	
	*PERFORM THE FOLLOWING ONLY IF BOOM HAS FAILED WITH MAG ATTACHED *	
	* Unlock boom hook and remove mag *	
	* If near VF, attach mag to VF temp stow hook and lock *	
	* If near VC, attach mag to VC temp stow hook and lock *	
	**********	
	Grasp end of VC boom and stabilize (attach tether if required)	

EV1 AND EV2 - Maneuver VC boom between the solar panels and towards the SUN END

Assist with boom as required		Ingress VT foot restraints

DATE 3/22/73

EV1	EV3	EV2
	WARNING Failed boom could have sharp edges. Care should be given not to damage suit.	
Disconnect tether (if used)		Disconnect tether (if used) and maneuver boom on out towards the sun end with a right hand to left hand motion until boom housing is reached
Translate to VF and ingress VF foot restraints		
		Stabilize self firmly in VT foot restraints
Manage own LSU and clamp at approx 9 feet		
		Jettison boom in a retrograde direction

6.2-9

DATE _____

DATE _____

EV1	EV3	EV2
	Egress VT foot restraints and translate to VF area	
Manage EV2 LSU		
	Stop on D1	

****
* NOTE *
* Go to boom replacement operation or clothesline operation *
****

VS BOOM JETTISON PROCEDURES

WARNING

Failed boom could have sharp edges. Care should be given not to damage suit.

Translate to appropriate position for grasping end of boom

6.2-10

DATE 3/22/73

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EV1	EV3	EV2
Egress VF foot restraints and ingress VR foot restraints (if required)	********** *PERFORM THE FOLLOWING ONLY IF BOOM HAS FAILED SHORT WITH TREE ATTACHED * * Remove tree from boom * Stow tree in VF receptacle and lock **********	
	Pnl 202, cb ext boom (2) - OPEN (If required)	
Disconnect electrical connector from side of failed boom (if required)		
Remove failed boom by unlocking thumb lock, squeezing handle and pulling boom out of receptable		
Maneuver VS boom towards EV2		Grasp end of VS boom and stabilize (attach tether if required)

DATE _____

DATE _____

EV1	EV3	EV2
Egress VR foot restraints (if required)		
Unclamp and deploy required amount of own LSU Grasp boom housing and stabilize (attach tether if required)		
EV1 AND EV2 - Maneuver VS boom between the solar panel and towards SUN END		
Assist with boom as required		

DATE 3/22/73

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EV1	EV3	EV2
	Ingress VT foot restraints	
	Perform the following only if tree still attached to boom Remove TREE from boom Stow TREE in receptable on solar shield, and lock	
	WARNING Failed boom could have sharp edges. Care should be given not to damage suit.	
Disconnect tether (if used)	Disconnect tether (if used) and maneuver boom on out towards the sun end with a right hand to left hand motion until boom housing is reached	

DATE _____

DATE _____

EV1	EV3	EV2
Translate to VF and ingress VF foot restraints		
	Stabilize self firmly in VT foot restraints	
Manage own LSU and clamp at approx 9 feet		
	Jettison boom in a retrograde direction	
	Egress VT foot restraints and translate to VF area and stop on D1	
Manage EV2 LSU		
NOTE Go to boom replacement operation or clothesline operation.		

DATE 3/22/73

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EV1 EV3 EV2

MANUAL ACTIVATION OF APERTURE DOOR PROCEDURES

```
**************************************
*              NOTE                  *
*Assumed EV1 is in the VF, EV2 is     *
*  in the VS and EV3 is at the        *
*  C/D panel (130)                    *
**************************************
```

Reposition clear of aperture doors and advise EV3 ready for canister rotation

Pnl 130, roll ATM canister to that position which will allow access to the failed aperture door
Roll right or left as directed by EV2

DATE _____

DATE _____

EV1 EV3 EV2

Retract the manual aperture release pin from the failed door by turning CCW until free and pull

Manually move failed door clear of aperture

Repeat above steps for each failed aperture door

S052 MIRROR REPOSITIONING PROCEDURES

```
**************************************
*              NOTE                  *
*Assumed EV1 is in the VF, EV2 is in*
*  the VC and EV3 is at the C/D      *
*  panel (130)                       *
**************************************
```

Pnl 130, WLC
MAIN PWR sw - OFF

DATE 3/22/73

DATE 3/22/73

EV1	EV3	EV2
	Pnl 160, ROLL - ENABLE CANISTER ROTATION - RIGHT TO ALIGN S052 ROLL - INHIBIT	
	Unlock and open S052 DOORS (2)	
	Grasp TV monitor manual release handle marked PUSH-TURN located in NORMAL position	
	Push in approximately 1/8 inch, rotate CW to FILM ONLY position and pull out approx 1/2 inch	

6.2-17

DATE _____

DATE _____

EV1	EV3	EV2
	Close S052 door, lock and verify white flag visible	

****
* NOTE *
* This procedure mechanically places the TV monitor mirror *
* in the film camera position. Once it has been accomplished *
* the handle should not be removed from the FILM ONLY position.*
****

6.2-18

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EV1 EV3 EV2

ATM CANISTER POSITIONING FROM PNL 130

For center work station access:

S054	+4392
S056	+0852
S052	-1788
H≪1	-3708
Sun End	-6768

For Sun End access:

S082A	
S082B (SPECT)	-4200
H≪1	
H≪1	
S082B (MON)	0°
S055A	
S052	
S056	+7200
S054	
FSS	

6.2-19

DATE _____

CSM RESCUE

7.1-1

CSM RESCUE (Summary Sheet)

DATE 3/22/73

7.1-2

GET	GMT	MO/DOY	HOUSTON DATE	REV	BETA ∢	MOON PHASE
-18:00 - -12:00						

SWS

MCC | GET | SAV ATE ATN T | CDR | SPT | PLT | A T M 1 2 | RCDR E A X D M P S 1 1 2 E | UN-ATT'D EXPS

GET scale: -18:00, :40, :20, -17:00, :40, :20, -16:00, :40, :20, -15:00, :40, :20, -14:00, :40, :20, -13:00, :40, :20, -12:00

Stations: CRO, HSK, HAW, GDS, MAD, BDA, ACN, CRO, GWM, GDS, TEX, BDA, MIL, CRO, GWM, GDS, TEX, MIL, VAN, GDS

PRE SLEEP ACTIVITIES

8 HOUR SLEEP

MISSION	EDITION	PUBLICATION DATE
SL 1/2 RESCUE		

S A L | SOL | A-SOL

7.1-3

GET	GMT	MO/DOY	HOUSTON DATE	REV	BETA ∢	MOON PHASE
-12:00 - -06:00						

SWS

GET | SAV ATE ATN T | CDR | SPT | PLT | A T M 1 2 | RCDR E A X D M P S 1 1 2 E | UN-ATT'D EXPS

GET scale: -12:00, :40, :20, -11:00, :40, :20, -10:00, :40, :20, -09:00, :40, :20, -08:00, :40, :20, -07:00, :40, :20, -06:00

Stations: VAN, HAW, VAN, HAW, VAN, VAN, ACN

8 HOUR SLEEP (CONT'D)

SWS DEACTIVATION CHECKLIST

POST SLEEP ACTIVITIES [1-1]

MISSION	EDITION	PUBLICATION DATE
SL 1/2 RESCUE		

S A L | SOL | A-SOL

7.1-4

GET	GMT	MO/DOY	HOUSTON DATE	REV	BETA ∢	MOON PHASE
-06:00 - -03:00						

SWS

GET | SAV ATE ATN T | CDR | SPT | PLT | A T M 1 2 | RCDR E A X D M P S 1 1 2 E | UN-ATT'D EXPS

GET scale: -06:00, :50, :40, :30, :20, :10, -05:00, :50, :40, :30, :20, :10, -04:00, :50, :40, :30, :20, :10, -03:00

Stations: GWM, VAN, ACN, CYI, MAD, GWM, HSK, VAN, CYI, MAD

POST SLEEP ACTIVITIES (CONT'D) [1-1]

MISC ACTIVITIES [1-4]
- STOWAGE XFER [EVA C/L 7-1]
- TRIANGLE SHOE XFER [1-9]
- CLOTHING MODULE XFER [1-9]
- WMC FILTERS REPLACE [1-10]
- OWS LIGHTING CK [1-12]
- FROZEN FOOD XFER [EVA C/L 7-1]
- WMC VENT FILTER REPLACE [1-14]

GENERAL HOUSEKEEPING TASKS [1-17]

SWS CLOSEOUT PHOTO PREP [1-17]

MISSION	EDITION	PUBLICATION DATE
SL-1/2 RESCUE		

S A L | SOL | A-SOL

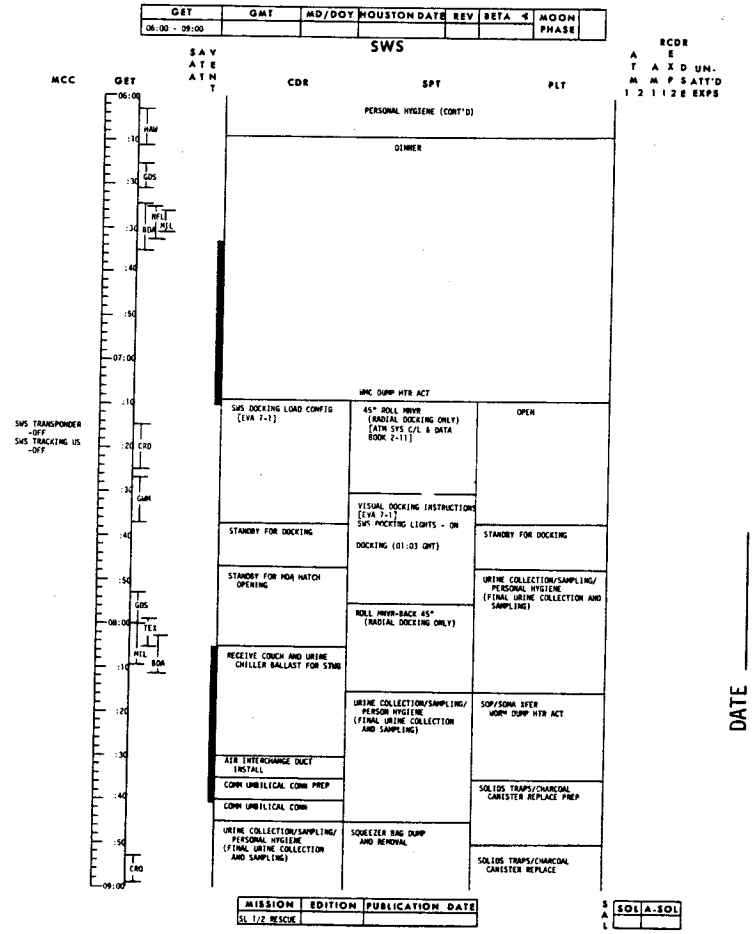
DCSM TO STOWAGE TRANSFERS

1. Unstow all experiment data and film transferred to the DCSM. Restow in original SWS locations or in temporary stowage, i.e., disposal bags, temporary stowage bags, etc. Use transfer list in stowage book in reverse order. Record all non-nominal stowage locations.

2. Unstow and transfer the following non-experiment items from the DCSM to the SWS: (Locations shown are entry locations in DCSM)

ITEM	DCSM LOCATION	(QTY)	SWS LOCATION (QTY)
LH HEEL RESTRAINT	B1	(3)	*
RH HEEL RESTRAINT	B1	(3)	*
HEEL CLIP BAG	B1	(1)	*
PGA BAG L,R,C,	AFTBKH	(3)	*
PGA CKLT POCKET	F2	(3)	*
PGA SCISSORS POCKET	F2	(3)	*
WRIST DAMS	F2	(6)	*
NECK DAMS	F2	(3)	*
LIFE VEST	U2	(3)	*
BOOTS	U2	(3)	*
JACKET	U2	(3)	*
TOWELS	B1	(1)	*
APK	R13	(3)	*
CWG ELECTRICAL HARNESS	R6	(3)	*
CWG ELECTRICAL CONNECTOR COVER	R6	(3)	*
	R6	(3)	*
FCS	A8	(1)	*
	U1	(2)	
GARMET RESTRAINING STRAP	ON A1	(2)	*
	ON A4	(2)	*
	ON A6	(2)	*

DATE _____ DATE 3/22/73



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ITEM	DCSM LOCATION	(QTY)	SWS LOCATION (QTY)
COUNTER PRESSURE GARMET	AFTBKH	(3)	*
UTS	R11	(3)	*
ROLL ON CUFF	R11	(3)	*
WINDOW SHADES	UEB	(5)	*
OFK	TBD	(1)	*
SOP	CM	(1)	MDA (1)SWS
SOMA	CM	(1)	MDA (1)

*Place all items in plenum bags and tie to floor in SWS.

3. Stow any loose, non-returnable items in lockers A2, A7, A8, and A9 in volumes F1 and F2, and in the LEB closeout curtain.

4. Any items too large to fit in above areas should be transferred to the SWS for stowage or place in disposal bags and securely stowed in the DCSM.

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STOWAGE XFER (75 min)

FDF DEACT XFER

OWS/RCSM TRANSFER

1 Obtain 1 disposal bag (W705) & load per table:
("Return" items have yellow stripe)

FROM	ITEM	QTY	SIZE
W742	CREW LOGS	3	SM
W742	DATA CARD KIT - XFER (TP MESSAGES & NOTES) (35MM PHOTO LOG - 1) (70MM PHOTO LOG - 1) (CSM STOWAGE MAP)	1	--
F510	PHOTO OPS BOOK	1	LG

MDA/RCSM TRANSFER

2 Load disposal bag per table:
("Return" items have yellow stripe)

FROM	ITEM	QTY	SIZE
M126	ATM LOG	1	LG

3 Remove CSM ENTRY C/L from R2 and temp restrain

4 Remove "return" items (yellow stripe) from disposal bag, load R2 and restow CSM ENTRY C/L in R2

RCSM/SWS TRANSFER

5 Load disposal bag per table for transfer to OWS (W743):

FROM	ITEM	QTY	SIZE
F2	LAUNCH C/L's	2	SM
F2	CSM RENDEZVOUS BK	1	LG
R1	CSM RENDEZVOUS CHARTS	1	LG

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INTERNAL SWS TRANSFER

6 Load disposal bag per table for transfer to OWS (W743):

FROM	ITEM	QTY	SIZE
M126	EREP C/L	2	SM
M126	NOTE TABLET	1	LG
M126	ATM EXP C/L & DATA BK	1	SM
M126	ATM SYS C/L & DATA BK	1	LG
M126	ATM EXP REF BK	1	LG
M126	MDA EXPS C/L & LOG	1	SM
M126	ALL CUE CARDS	ALL	--
130	JOP SUMMARY SHEETS	ALL	--
130	ALL CUE CARDS	ALL	--
M208	SWS SYSTEMS C/L	1	SM
M208	SWS C&D C/L	1	SM
F502	MNVR EXPS C/L & LOG	1	SM
F502	SAL EXPS C/L	1	SM
617	BIOMED EXPS C/L & LOG	1	SM
	BIOMED CUE CARDS (Except M131 TALLY & L, R)	6	--
H825	URINE LOG CUE CARD	1	--
W748	PLTS FOOD LOG	1	SM
W700	SPTS FOOD LOG	1	SM
W772	CDRS FOOD LOG	1	SM

7 Remove remaining FDF items (less pens & pencils) from W742 & place in disposal bag

8 Remove all SL-3 books from W743 & stow in W742

9 Remove FDF items from disposal bag & fill W743

10 Seal disposal bag and secure in FWD compartment behind FOOD lockers

MDA/OWS

MDA Obtain LSU/PCU in plenum bag below ATM C&D panel (including equipment restraint)

FWD Xfer to OWS FWD & secure near ±Z SAL with equipment restraint

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FROZEN FOOD XFER (35 min)

Note: Defrost freezer as required using the following tools:
KNIFE 2C
GRID SNAP STOWAGE PLATE 2D

W705 1 Obtain disposal bag and snap on locker W763

E621 Obtain equipment restraint

W755 2 Remove food bundle (two overcans, one with IMSS heat sinks remain)

W755 Remove overcans and stow in WARDROOM FREEZER 1

Collapse empty food bundle by removing pip pins (8) and tubes (4)'

Discard pip pins in trash bag

Tape food bundle racks together with tubes in middle and secure to celing grid (equipment restraint)

W756 3 Remove full food bundle from WARDROOM FREEZER 2

W755 Stow full food bundle in WARDROOM FREEZER 1 & stow overcans in WARDROOM FREEZER 2

WDRM F554 4 Release food bundle racks from grid and stow in F554 (forward compt)

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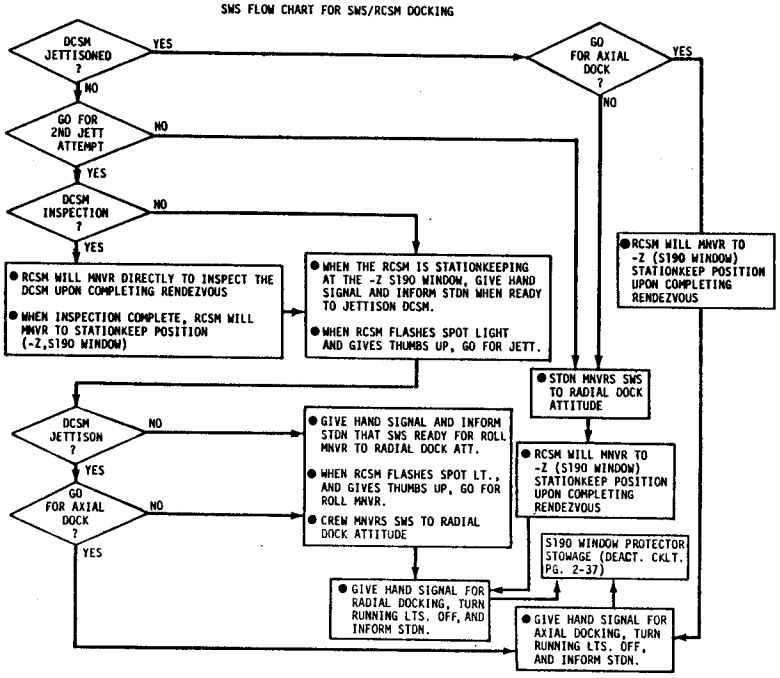
SWS FLOW CHART FOR SWS/RCSM DOCKING



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DATE_____

7.1-17

SWS DOCKING LOAD CONDIGURATION

325	1	Verify: Aft internal hatch securely held against tunnel wall by 2 vlecro straps Maximum engagement of velcro Mating velcro pressed together as tight as possible
MDA	2	Unstow SOP/SOMA and snap to food locker in forward compartment
	3	Verify ATM chair collapsed and stowed on M512 foot restraint in MDA
	4	Survey SWS for any loose items and secure

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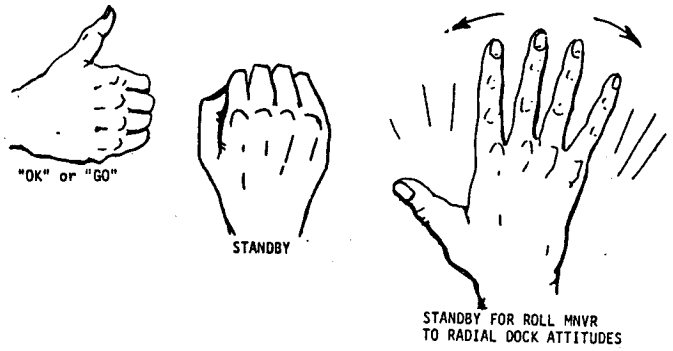

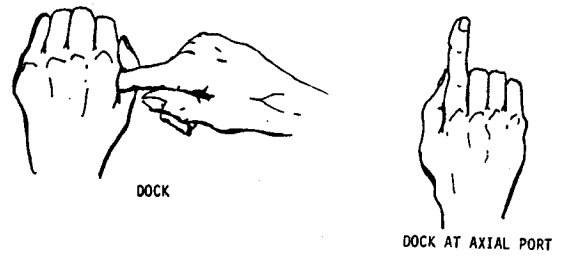

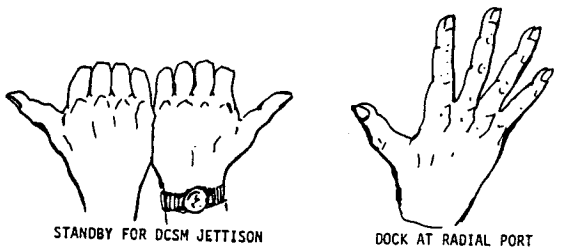

SWS/RCSM HAND SIGNALS

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CSM JETTISON SPT/PLT PREP

Note: CDR should remove his section from the C/L & work independently of SPT/PLT.

OWS COMPT PREP FOR IVA

SPT/PLT
- Unstow PRDs (3): 1 from sleep compt, 1 from EXP compt, and 1 from above +Z SAL
- Temp stow PRDs near suit donning station

SPT
- Transfer the following to fwd compt:
  - TSBs from sleep compt (3)
  - W710 Disposal bags (2)
  - E621 Bungees (2)
- F540 Snap TSBs on F557, F561 and F563; snap disposal bag on vert handrail right side of SIA
- Stow bungees on F555

PLT
- Install emer egress cover
- Stow S183 bumper guard on grid between S190B and S149
- Position 3 foot restraints

SPT
- Obtain the following (put in disposal bag):
  - IV gloves (CM TSB)
  - A8,U1 LCG/FCS (3)
- Transfer PGAs & disposal bag to suit donning sta
- Secure PGAs in foot restraints
- Stow IV gloves on T013 structure

SPT
- Remove EV gloves from PGAs stow in disposal bag

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SPT/PLT — Configure PGAs:
- Snap SPT/PLT's helmet and bag to handrails
- Snap CDR's helmet & bag to F520
- Snap CCAs around handrails
- Open all zippers
- Stow desiccant containers (2) in disposal bag
- Verify PGA urine hose snapped in place
- Stow H2O plug and elec connector cap in accessory bags

Voice record PRD readings (3)
Stow PRDs in PGA pockets

SPT — Lubricate 3 PGAs (Maint Kit decal):
- Remove feedport cap from helmet
- Lube projection & install
- Lube & inspect press sealing zipper & 8 rings, (4 02, 1 H2O, 2 wrist, 1 neck)

PLT — Clean and antifog helmets (3) (Maint Kit decal)
Unstow feedport purge vlv from PGA zip pocket & install in helmet; stow cap in accessory bag
Stow helmets in helmet bags

SPT/ F595/ PLT F599 — Unstow 2 PCUs from containers

Adjust belt and restrain to floor grid (Ref EVA C/L sect 1.1)

Remove 10 dust caps from each PCU and stow in each accessory bag

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Unstow the following and place in applicable TSB
- D426 UCTA (3) and clamps (3) w/o box

ATM C&D CONFIGURATION

SPT — Configure ATM C&D for STORAGE per ATM C/L & DATA BOOK sec 5

COOLANT LOOP CONFIGURATION

PLT 203 — RAD FLOW PRI, SEC sw (2) - NORM (verify)
200 — cb RAD FLOW PRI, SEC (2) - close

02/N2 SYSTEM VERIFICATION

200 — cb 02/N2 GAS FILL PRI, SEC (2) - open

225 — CAB PRESS REG A, B(2) - CLOSE
120 PSI REG A, B tgl vlv (2) - OPEN (verify)
5 PSI REG A, B tgl vlv (2) - OPEN (verify)
02 ind (reg) - 115 to 135 psia (verify)
OWS N2 vlv - CLOSE (7-1/2 turns CW)

217 — Uncap SUS 1 & 2 02 SUP qds & 02 SUP qd on side of panel
SUS 1 & 2 02 SUP vlvs - OPEN
Verify flow (3 places)
SUS 1 & 2 02 SUP vlvs - CLOSE
Cap SUS 1 & 2 02 SUP qds (3)

317 — Uncap SUS 1 & 2 02 SUP qds
SUS 1 & 2 02 SUP vlvs - OPEN
Verify flow
SUS 1 & 2 02 SUP vlvs - CLOSE
Cap SUS 1 & 2 02 SUP qds (2)

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323 Repeat flow check on pnl 323

LSU CONNECTION TO IVA PANEL

PLT 217 SUS 1 LSU POWER sw - OFF (verify)
SUS 1 PUMP sw - OFF (verify)
SUS 1 02 SUP vlv - CLOSE (verify)
Repeat above operations for SUS 2

Uncap SUS 1 02 SUPPLY qd on side of panel
217 Stow 2 jumpers from SUS 1,2 LCG qds in TSB

Remove caps from LSU connectors (4) stow in TSB
225 Remove cap and conn elec connector to IVA CCU AUDIO CHAN A connector
217 Conn 02 hose to SUS 1 02 SUP on side of panel
Conn LCG hoses to SUS 1 R/R, B/B
Attach tether to accessible point
131 CHAN A sel - OFF (verify)
200 cb AUDIO SYS:
INTERCOMM A - open
CCU A - open
131 Disconn blue elec cable from SIA
225 Uncap IVA CCU POWER CONNECTOR and cap SIA connector
Conn SIA cable to IVA CCU POWER CONNECTOR
200 cb AUDIO SYS:
INTERCOM A - close

Verify connectors locked
Restrain LSU in Plenum bag and attach tether to panel 217 switch guard or accessible point

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Secure PCU waist belt around STS handrail and hook to PCU. Restrain LSU with long strap
PCU LCG FLO lever - 1

LSU CONNECTION TO EVA PANEL

PLT A310 Unstow LSU stowage sphere lid
Disconn all LSU connectors (composite disconnect first)

314/315 Stow lids on brackets in AM aft comp
Conn LSU tether to attach pt & lock
Snap strap around tether hook & LSU
311 Repeat for remaining LSU

317 SUS 1 LSU POWER sw - OFF (verify)
SUS 1 PUMP sw - OFF (verify)
SUS 1 02 SUPPLY vlv - CLOSE (verify)
Uncap SUS 1 02 SUPPLY qd, LCG qd (2), and SUS 1 EVA CCU AUDIO CHAN A receptacle

317 Conn LSU connectors (4) R/R, B/B
Verify connectors locked

323 SUS 1 LSU POWER sw - OFF (verify)
SUS 2 PUMP sw - OFF (verify)
SUS 2 02 SUPPLY vlv - CLOSE (verify)
Uncap SUS 2 02 SUPPLY qd, LCG qds (2), and SUS 1 EVA CCU AUDIO CHAN A receptacles

323 Conn LSU connectors (4) R/R, B/B
Verify connectors locked

Route LSUs to OWS suit donning station (note LSU I.D.); SPT (317) ___; PLT (323) ___

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PLT — LSU CONNECTION TO PCU
Verify following:
- PRESS sel - OFF
- MODE SEL - ABS
- Cycle FLOW sel to EVA HI FLOW, then OFF
- LCG FLO lever - 1
- Verify SOP connector unlocked

Conn LSU (SPT(317)___) composite disconnect & lock
Conn LSU tether hook to PCU ring (left, forward)
Repeat LSU CONNECTION TO PCU for second LSU

PLT — OWS VENTILATION DEACTIVATION (EVA 1.2)

PLT — SUS SUIT COOLING ACTIVATION (EVA 1.2)

MOL SV DEACTIVATION

SPT 203 — MDA FANS 1,2 & CSM sw (3) - OFF
MOL SV A (B) TMRS sw - OFF
MOL SV A FANS PWR sw - OFF
MOL SV B FANS PWR sw - OFF
230 (232) — Loosen Calfax fasteners (2) and open MOL SV A&B solids traps access door
MOL SV A HT EXCH A CNDST isolation vlv (1) - CLOSE (2-1/2 turns CW)
MOL SV B HT EXCH A CNDST isolation vlv (1) - CLOSE (2-1/2 turns CW)
Close solids trap lid and secure with velcro strap (A&B)
CLOSE MOL SV A&B solids trap access door and tighten Calfax fasteners (2)

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SPT/PLT — Note: All procedures from this point through jettison appear only in CDR's C/L Assist CDR or wait for him before pressing on.

Place C/L near suit donning station

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CSM JETTISON CDR PREP

Note: CDR should remove this section from the C/L so he can work independently of SPT/PLT.

CDR — Obtain: tool caddy (from sleep compt - don)
E621 — short strap
E623 — cutter pliers
D440 — probe manual release mechanism
Obtain: TRIPOD DROGUE and COCKING ASSIST tool from OWS fwd compt and stow on grid using short strap

CONFIGURE LIGHTING

CDR 316 — LTG METER sw - ON
LTG LOCK sw - BRIGHT
390 — LTS AFT sw - BRIGHT
207 — Configure MDA/STS lighting as required

VERIFY CSM PWR SOURCES ISOLATED

CDR CM3 — SM PWR SOURCE 1,2 & 3 main bus A&B sws (6) - OFF (verify)
SM PWR SOURCE 1,2 & 3 main bus A&B tbs (6) - bp (verify)
CM275 — cb BAT BUS A&B BAT A&B(2) - open (verify)
cb BAT BUS A&B BAT C(2) - open (verify)
cb Main A&B BAT C (2) - open (verify)

CSM JETTISON CDR

Obtain tool kit from CM (U3) and snap on M124

CM/MDA AIR INTERCHANGE DUCT REMOVAL

CDR
Rotate S190 to intermediate position
Remove straps (2) in CM from AID
Disconnect AID from CSM FAN
Route AID into MDA
Calfax fan end to stowage rack
Release straps (4) and strap AID in stowage rack

CHAMBER REPRESS vlv - OPEN (M512)
WORK CHAMBER hatch - OPEN (restrain with long strap)
CHAMBER REPRESS vlv - CLOSED

SWS/CSM EPS CONFIGURATION

CDR 201
cb XFER 1/CSM MN A FEEDERS (5) - open
cb XFER 2/CSM MN B FEEDERS (5) - open

CONFIGURE FOR DOWNLINK VOICE TO STDN

CDR 200
cb AUDIO SYSTEM CREW ALERT CALL 1, 2 (2) - open

M157
Obtain EMERGENCY COMM SHORTING PLUGS (2)

Open MDA UMB CONN fairings (2) (orange & white) (in tunnel)
Remove AUDIO A & B umbilicals (2)
Install the EMERGENCY COMM SHORTING PLUGS to the AUDIO A and AUDIO B connectors in the MDA tunnel (red to red dot and green to green dot)

M157
Temp stow umbilicals next to tunnel

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CDR

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204
TAPE RCDRS 1, 2 or 3 sel (whichever is selected to EXP 2) - OFF
TAPE RCDRS CONT sw - MANUAL SELECT

131
COMM CHAN sel - A ON
[RCD/OFF] sw - OFF
RCD lt - off (verify)
Open AM tape recorder access panel (in AM fwd comp) (6 Calfax)

Disconn elect cable at connector bracket 1, 2 or 3 (depending upon which tape recorder was selected for EXP 2)

M307
Obtain EMERGENCY COMM PLUG
Install EMERGENCY COMM PLUG on connector bracket 1, 2 or 3 (depending upon which tape recorder was selected for EXP 2)
Close access panel cover and calfax (2)

204
TAPE RCDRS CONT sw - CMD
TAPE RCDRS 1, 2 or 3 sel (whichever was selected to OFF) - EXP 2
TAPE RCDRS CONT sw - MANUAL SELECT
RCDR AUDIO sw - A

131
[RCD/OFF] sw - RECORD
Rcd lt - on

204
XMTRS sw - OFF
XMTR INPUT A sel - REAL TIME
XMTR INPUT B sel - EXP 2
XMTR INPUT C sel - OFF
XMTRS sw - ON

Note: Use of lt wt headsets for intercom may result in marginal audio levels.

After STDN direction:

204
TAPE RCDRS CONT sw - CMD
XMTRS sw - CMD

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XMTR INPUT A sel - OFF
XMTR INPUT B sel - OFF

MDA POWER UMBILICAL REMOVAL

206 PWR SYS LTS BUS 1, 2 sw (2) - STATUS
205 All green status lights - on
206
206 ELEC GND sw - AIRLOCK
ELEC GND CSM lt - off
ELEC GND AIRLOCK lt - on
PWR SYS LTS BUS 1, 2 sw (2) - OFF
205 All EPS status lights - off
206

Remove MDA power umbilical from MDA tunnel
M157 Stow power umbilical
Obtain dust cap and install on POWER TRANSFER connector in MDA tunnel

MDA HATCH CONFIGURE

CDR Inspect MDA axial hatch latches to assure proper operation
Inspect hatch seal for obstruction
Cycle and inspect PRESS EQUAL VLV
Install the bayonet cap

DROGUE/LATCH CONFIGURATION

Obtain TRIPOD DROGUE
TRIPOD DROGUE - Align lugs with fittings in MDA tunnel, rotate CW to stop
LOCK LEVER - Rotate 90 deg CCW to detent
M130 Obtain tape

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Mark with tape three latch handles (120 deg apart) that can be cocked during the suited operations with cocking assist tool (verify adequate tool clearance)
LOCK LEVER - Push, rotate 90 deg CW
TRIPOD DROGUE remove and stow in MDA

WARNING

To avoid possible injury to fingers. Do not place fingers under or near the latch hook of a cocked latch.

Tape the 3 marked latch handle release buttons in a released position. Cock each latch two full strokes, force a wad of tape under the fulcrum of each release button, and wrap tape all the way around the latch (Holds the latch handles in a released position during the suited operations)
Engage the 3 latches - push man-release (CSM side) (verify engaged)

Cock the unmarked 9 latches from CSM side:
RELEASE BUTTON - depress
LATCH HNDL - pull one or two strokes until bungee recocks
Verify LATCH HOOK rotated inboard to clear MDA RING

* Hook does not disengage *
* AUX REL (yellow) - push *
* Release latch *

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Verify/push LATCH HNDL outboard against LATCH HOOK

Repeat cocking procedure for 9 unmarked latches

PROBE PREP

CDR

CAUTION
Work from side of probe during prep due to possibility of inadvertant probe extension.

Unstow PROBE and restrain with bungee
Obtain tape
Tape firmly over indicator slot in extend latch housing

Note: Prevents inadvertant probe extension.

Cut lockwire on each of 3 screws on solenoid with cutter pliers (i.e., solenoid next to ratchet handle)

Remove lockwire, collect and stow loose pieces in tool caddy
Remove 3 screws (2 screws have washers and one screw has a small plate - remove all 6 items) (use tool #6 and W) and stow in tool caddy

CAUTION
Do not rotate solenoid while withdrawing or probe may extend.

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Carefully lift solenoid straight up from latch housing and allow to hang on wire bundle

CAUTION
Do not rotate release mechanism while installing or probe may extend.

Install release mechanism by positioning locating flange on top of latch housing

Install captive screws (3) torque hand tight (use tool #6)
Remove tape from indicator slot

Docking PROBE Preparation and Installation

CDR

Remove PROBE from temp stow
CAPTURE LATCH RLSE HNDL - pull and rotate CW 150 deg to cock position
RATCHET HNDL - Unstow to full extension (green band)
PRELOAD SEL LEVER - PRELOAD (CCW & parallel to orange stripe)
PRELOAD HANDLE - extend

RATCHET HNDL - ratchet 4 strokes (partially extends probe prior to installation)
RATCHET HNDL - Restow
Position PROBE in tunnel

INSTALLATION STRUT - Unstow and position on tunnel wall (yellow marks)
RATCHET HNDL - Unstow to full extension (green band)

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RATCHET HNDL (MDA side) - ratchet inboard until ratchet releases (PROBE support beams (3) engage in docking ring sockets. PROBE should be loose in docking ring sockets)

Verify RATCHET PAWL indicator is flush with ratchet housing

* RATCHET PAWL indicator NOT FLUSH:
* Hold RATCHET HANDLE full outboard
* Press PAWL indicator to seat (flush)
* Release RATCHET HANDLE

Slide RATCHET ASSY toward MDA (provide clearance to position RATCHET HANDLE in retract position)
Position RATCHET HNDL in full retracted position
Restore RATCHET HNDL and INSTALLATION STRUT

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DROGUE Installation

Obtain TRIPOD DROGUE from temp stow
Align drogue lugs (3) with support fittings
Engage DROGUE on probe head capture latches - Push DROGUE against probe head until capture latches engage and lock (verify probe capture latches locked - button flush or protrudes slightly above probe head)

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Note: DROGUE and PROBE should be loose to allow for free floating DROGUE rotation and installation in MDA fittings.

* If DROGUE will not rotate into MDA fittings, adjust PRELOAD as required
* To extend PROBE:
* PRELOAD SEL LEVER - Rotate CCW (MDA side)
* PRELOAD HANDLE - Torque CW (MDA side)
* To retract PROBE:
* PRELOAD SEL LEVER - Rotate CW (MDA side)
* PRELOAD HANDLE - Torque CCW (MDA side)

PUSH drogue lugs into MDA tunnel fittings and rotate (CW) to stop

LOCK LEVER - Rotate 90 deg CCW to detent
Verify probe head capture latches secure in DROGUE (capture latch button protrudes above probe head)

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Preload PROBE

PRELOAD SEL LEVER - Rotate CW (MDA side)
PRELOAD HNDL - Ratchet until Ratchet releases (torque CCW for MDA side)
Use COCKING ASSIST TOOL to verify 3 marked latches can be cocked later (leave ASSIST TOOL attached to latch which is most difficult to reach & secure with tape)

CDR

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Obtain tools B&R from CM tool kit
and tape together
Temp stow tools

SECURE SIAS

CDR 102/ COMM CHANNEL - SLEEP
116/
131

M208 Verify SWS MALF PROCEDURES accessible

M157 Obtain comm carrier filter by-pass adapters (3)
Install comm carrier filter by-pass adapters on CCAs in OWS

Note: Procedures from this point to JETTISON will take approx 2-1/2 hrs. Check flight plan to assure jettison window can be met. If 1st window can not be met, pick up procedures at this point 2-1/2 hrs before second window.

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Note: The following part of this checklist is to be used by all cmn.

EMU DONNING IN OWS FOR IVA

ALL Proceed to sleep compartment with TSBs

ALL Doff clothing and stow
Tend to personal hygiene
Unstow LCG/FCS from sleep compt
Don FCS
Don UCTA
Don LCGs

Remove dosimeters from watchband & place in chest pkt of LCG's
Hand watches to CDR to install on PGAs

SPT/ E670/ Unstow SOPs (2)
PLT E632

Adjust SOP straps for SPT/PLT (EVA 1.1)

High press gage - 6000 +/- 500 psi
Restrain SOPs next to donning stations (2)

CDR E610A Obtain covers (3) from long leads of CWG harnesses
Move to suit donning station and connect CWG electrical harness covers to lower leads of PGA harnesses (3)
Strap watches to PGAs

ALL PGA Donning (EVA 1.1)

SOP Donning

SPT/ PGA Attach SOP vert strap to PGA
PLT Attach SOP leg straps

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SPT/PLT — PCU/LSU Donning (EVA 1.1)

CCA Donning
Don CCA

SPT/PLT — Unsnap PGA elec harness from PGA & conn to CCA/filter bypass adapter

Verify mike booms at corners of mouth, bend in middle, 80 deg max

Note: CDR will read all procedures for ALSA CK OUT and PRESS INTEGRITY CK to SPT/PLT.

CDR — Move to AM with helmet, helmet bag & complete EVA C/L

318 — Stow depress vlv cap on side of panel 317
Stow helmet & bag in MDA

Obtain SOP (MDA) & adjust straps (EVA 1.1)
High press gage 6000 +/-500 psi

SOP Donning

CDR PGA — Attach SOP vert strap to PGA
Attach SOP leg straps

CCA Donning (CDR)

CDR — Obtain CCA from helmet & don
Unsnap PGA elec harness from PGA liner and conn to CCA/filter bypass adapter
Verify mike booms are at corners of mouth, bend in middle 80 deg max

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CDR — PCU/LSU DONNING
Remove caps (6) from PCU & stow in TSB
Adjust waist belt
Conn water to PGA
Route center PCU strap under water hose & conn
Conn waist belt
Conn O2 R/R and B/B, and lock
Adjust center PCU strap
Conn elec
Verify LSU tether hook conn to PCU ring (left, forward)
Verify cooling
LCG FLO lever - as desired

200 — cb AUDIO SYS CCU A - close
Verify comm, pnl ltg, & PCU displays

116 — [RCD] sw - RECORD (RCD lt on)
PRESS sel - REG 1, then OFF
SOP O2 vlv - OPEN
Med press gage-27-55 psig
SOP O2 vlv - CLOSE

ALSA CHECKOUT & PRESS INTEGRITY CK

SUS Power/O2 Activation

CDR 317 — SUS 1 LSU PWR - ON
SUS 1 O2 SUP vlv - OPEN

323 — SUS 1 LSU PWR - ON
SUS 2 O2 SUP vlv - OPEN

SPT/PLT PCU — Audio warning tone - on
SUIT PRESS lt - on
REG 1 LO FLOW lt - on
SOP FLO lt - on, then off
LO VENT FLO lt - on
Pnl ltg - on

SPT/PLT PCU — MODE SEL - ABS (verify)
PRESS sel - OFF (verify)
FLOW sel - IVA

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Don comfort gloves and wristlets as desired (in PGA pocket)

PGA
Wrist disconnect - ENGAGE
Obtain IV gloves
Don gloves and lock
Verify PGA diverter vlv - vert

Don helmet, align, and lock (do not rotate helmet after attachment)

PCU
PRESS sel - BOTH
Verify O2 flow
REG 1 LO FLOW lt - off
LO VENT FLO lt - off

PCU Checkout

SPT/ PLT
Note: Cuff gage inaccuracy +/- .15 psig max. (Nominal +/- .04 psig) REG 1 LO FLOW and LO VENT FLO lts have 5 sec delay.

PCU
PRESS sel - REG 2 (Tone, SUIT PRESS, REG 1 LO FLOW and possible LO VENT FLO)
MODE SEL - delta P, monitor cuff gage, verify SUIT PRESS lt off 2.8-3.1 psig and LO VENT FLO - off
Verify cuff gage stable 3.2 to 3.5 psig
PRESS sel - REG 1 (REG 1 LO FLOW - off)
Verify cuff gage stable 3.6 to 3.9 psig and all lts off
PRESS sel - BOTH, verify no change in cuff gage or displays

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EMU INTEGRITY CHECK

Note: Next sequence terminates O2 flow to PGA. REG 1 LO FLOW and LO VENT FLO lts will light. Monitor cuff gage for max decay of 0.8 psig.

FLOW sel - OFF, then
PRESS sel - OFF for 1 min

PRESS sel - BOTH, then
FLOW sel - IVA

Note: If suit press decays 0.3 to 0.8 verify helmet, wrist rings, & gas connectors locked before proceeding.

* If decay greater than 0.8 psig, exchange PCUs between cmn & repeat EMU INTEGRITY CHECK. If PCU leak, obtain new PCU; if PGA leak, that cmn will remain in OWS *

Cuff gage stable 3.6 to 3.9 psig & all lts off

MODE SEL - ABS (Tone, SUIT PRESS)

VEHICLE O2 REG CHECK

CDR 225
O2 ind (reg) - 115 to 135 psia
120 PSI REG B tgl vlv - CLOSE
O2 ind (reg) - verify press drop less than 10 psia

SPT/ PCU PLT
LO VENT FLO lt - off (verify)

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CDR	225	120 PSI REG B tgl vlv - OPEN 120 PSI REG A tgl vlv - CLOSE O2 ind (reg) - verify press drop less than 10 psia
SPT/ PLT	PCU	LO VENT FLO lt - off (verify)
CDR	225	120 PSI REG A tgl vlv - OPEN
SPT		Proceed to lock compt with PGA foot restraint
CDR		Restow LSU as SPT transfers to AM
PLT		Move to OWS hatch
CDR		Manage PLT LSU; stow in aft compt Move to STS Stow PGA foot restraint on M512 grid
		OWS HATCH CLOSURE
PLT	400	Inspect hatch seal for obstructions HATCH HANDLE - OPEN (verify) Release OWS hatch from wall Close hatch while entering aft lock HATCH HANDLE - EQUALIZE PRESSURE RELEASE HANDLE - UNLOCK HATCH HANDLE - CLOSE RELEASE HANDLE - LOCK (verify)
SPT/ PLT		PRESS sel - REG 1
		MODE SEL - delta P (verify SUIT PRESS lt off 2.8-3.1 psig) Verify cuff gage stable 3.6 to 3.9 psig PRESS sel - BOTH, verify no change in cuff gage or displays

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		SOP Flow Check
SPT/ PLT		SOP O2 vlv - OPEN
		Note: Perform next sequence rapidly to conserve SOP O2.
SPT	317	SUS 1 O2 SUP vlv - CLOSE (Tone and SOP FLO)
	SOP	Med press gage - 27 to 45 psig Possible slight cuff gage decrease
	317	SUS 1 O2 SUP vlv - OPEN (SOP FLO - off)
PLT	323	Repeat SOP FLOW CHECK for SUS 2
SPT/ PLT		SOP O2 valve - CLOSE
	PCU	MODE SEL - ABS (Tone, SUIT PRESS)
SPT		Transfer to STS, assist CDR in ALSA Checkout
		ALSA Activation (CDR)
	217	SUS 1 O2 SUP vlv - OPEN
CDR	PCU	MODE SEL - ABS (verify) Cycle FLOW sel EVA HI FLO, then IVA PRESS sel - OFF (verify) Verify diverter vlv - vert Don gloves and helmet (do not rotate helmet after attachment)
		PRESS sel - BOTH Verify O2 flow REG 1 LO FLOW lt - off LO VENT FLO lt - off

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PCU Checkout

CDR Note: Cuff gage inaccuracy +/- .15 psig max. (Nominal +/- .04 psig) REG 1 LO FLOW and LO VENT FLO lts have 5 sec delay.

PRESS sel - REG 2 (Tone, SUIT PRESS, REG 1 LO FLOW, possible LO VENT FLO)
MODE SEL - delta P (SUIT PRESS - off 2.8-3.1; LO VENT FLO - off)
Cuff gage stable 3.2-3.5 psig
MODE SEL - ABS (Tone, SUIT PRESS)
After suit depressurized,
PRESS sel - REG 1 (REG 1 LO FLOW - off)
MODE SEL - delta P
Cuff gage stable 3.6-3.9
All lts off
PRESS sel - BOTH (no change in cuff gage or displays)

EMU Integrity Check

Note: Next sequence terminates 02 flow to PGA. REG 1 LO FLOW and LO VENT FLO lts will light. Monitor cuff gage for max decay of 0.8 psig.

FLOW sel - OFF, then
PRESS sel - OFF for 1 min

PRESS sel - BOTH, then
FLOW sel - IVA

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Note: If suit press decays 0.3 to 0.8 verify helmet, wrist rings, & gas connectors locked before proceeding.

* If decay greater than 0.8 psig, exchange PCUs between cmn & repeat EMU Integrity Ck. If PCU leak, obtain new PCU; if PGA leak, return to OWS until jettison complete. *

Cuff gage stable 3.6 to 3.9 psig & all lts off

SOP FLOW CHECK

CDR SOP 02 vlv - OPEN

Note: Perform next sequence rapidly to conserve SOP 02.

217 SUS 1 02 vlv - CLOSE (Tone & SOP FLO lt)
SOP Med press gage - 27 to 45 psig
Possible slight cuff gage decrease
SUS 1 02 vlv - OPEN (SOP FLO - off)
SOP 02 vlv - CLOSE
PCU MODE SEL - ABS (Tone, SUIT PRESS)

PREP FOR MDA/AM DEPRESSURIZATION

SPT 207 RAPID delta P 1, 2 sw (2) - inhibit
PPO2 CONT sw - inhibit
PPO2 MON sw - inhibit
CLSTR PRESS sw - inhibit

MDA/AM DEPRESS

PLT 318 LOCK COMPT DEPRESS vlv - OPEN
316 PRESS LOCK ind - monitor for pressure decrease

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When PRESS LOCK ind - 3.0 psia,
LOCK COMPT DEPRESS vlv - CLOSE

Cock Remaining Three Docking Latches

CDR — Obtain tool tether from CM tool kit & fasten to wrist
Hook tool tether to cocking assist tool
LATCH HNDL (marked) - push 2 complete strokes with assist tool

SPT — Note: Support and stabilize CDR as required.

CDR — Verify LATCH HOOK rotated inboard to clear MDA ring
Repeat above steps to disengage and cock remaining two marked latches
Verify all latches disengaged and cocked
Remove assist tool from tether and temp stow

COMPLETE MDA/AM DEPRESS

225 — PRESS FWD ind - 3.0 psia (verify)
ALL PCU — MODE SEL - delta P
Flow sel - IVA (verify)
ALL PGA — Verify cuff gage stable 3.6-3.9
SOP O2 vlv - OPEN

Note: If LO VENT FLO lt comes on during depress, FLOW sel - EVA NORM. During depress cuff gage may read 4.1 max in delta P mode.

PLT — LOCK COMPT DEPRESS vlv - OPEN
316 — PRESS LOCK ind - monitor

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When PRESS LOCK ind - 1.0 psia,
113 — WORK CHAMBER VENT vlv - OPEN (M512)
114 — BULKHEAD VENT vlv - OPEN

When depress is complete:
ALL — MODE SEL - ABS (possible cuff gage decrease)

FLOW sel - EVA NORM
PRESS sel - BOTH (verify)

CSM JETTISON

CDR — Obtain tool "B/R" from CM tool kit and attach to tool tether
Carefully remove lock pin from release mechanism and stow

CAUTION
In the following procedure the probe plunger button must be held firmly depressed with tool until crewman verifies that CSM has completely separated and is moving away from the drogue. Read next few steps before proceeding.

To jettison the CSM, position tip of tool R on the probe plunger button.

Pull lanyard (to unlock extend latch)
Release lanyard and depress capture latch plunger button. Continue depressing button firmly until probe is clear of drogue
Stow tools & tether in CM tool kit

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		REMOVE TRIPOD DROGUE
CDR		LOCK LEVER - Push, rotate 90 deg CW
		TRIPOD DROGUE - Rotate CCW, pull clear of support, remove from tunnel
		Stow TRIPOD DROGUE
		INSTALL FLIGHT DROGUE
CDR		Obtain flight DROGUE
		DROGUE - Align lugs with fittings in MDA tunnel, rotate CW to stops
		LOCK LEVER - Rotate 90 deg CCW to detent
		CLOSE MDA AXIAL HATCH
CDR		Inspect hatch seal area for obstructions
		Release MDA axial hatch from detent lock
		Close MDA hatch
		RELEASE HANDLE - CLOSE
		PRESS EQUAL VLV - CLOSE (verify)
		MDA/AM REPRESS
		Note: During repress SUIT PRESS lt will come on
SPT	318	LOCK COMPT DEPRESS vlv - CLOSE
	113	WORK CHAMBER vent vlv - CLOSE (M512) (CW)
	114	BULKHEAD VENT vlv - CLOSE (CW)
		Work chamber hatch - close & latch
	216	CNDST TANK PRESS vlv - CLOSED
		CNDST TANK H2O vlv - OFF
	316	When PRESS ind - 3.0
ALL	SOP	SOP O2 vlv - CLOSE

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SPT	225	O2/N2 CONTR PPO2 1 ind - 3.85 psia min (verify)
	200	cb O2/N2 GAS FILL PRI, SEC (2) - CLOSE
		N2 FILL PRI, SEC sw - OPEN
		AM FILL PRI, SEC sw - OPEN
		CAB PRESS REGS A, B (2) - OPEN
		ENABLE C/W PARAMETERS
SPT	207	RAPID delta P 1, 2 sw (2) - enable
		PPO2 CONT sw - enable
		PPO2 MON sw - enable
		CLSTR PRESS sw - enable
		ALSA DEACTIVATION
ALL	PCU	PRESS sel - OFF (Tone, REG 1 LO FLOW, and LO VENT FLO)
		Doff one glove
		Doff helmet and other glove
		O2/N2 RECONFIGURATION
SPT	225	When PRESS FWD ind - 4.8 to 5.2 psia (approx 1-1/2 hrs)
		AM FILL PRI, SEC sw - CMD
		O2 FILL PRI, SEC sw - CMD
		N2 FILL PRI, SEC sw - CMD
		OWS HATCH OPENING
PLT		RELEASE HANDLE - UNLOCK
		HATCH HANDLE - EQUALIZE PRESS
		WARNING
CDR		Verify PRESS OWS equals PRESS LOCK.
PLT	400	RELEASE HANDLE - UNLOCK
		HATCH HANDLE - OPEN
		Push hatch open to engage hatch retainer
PLT		Move to suit donning sta with C/L
SPT		Move to suit donning sta with PGA foot restraints

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Deactivate Suit Cooling, O2 and Comm

SPT/PLT — Standby until EVA panel deact complete

CDR 217 — SUS 1&2 HX COOLANT FLOW sw (2) - BYPASS
SUS 1&2 HX COOLANT FLOW EVA lts (4) - off
317 — SUS 1 LSU POWER sw - OFF
SUS 1 PUMP sw - OFF
SUS 1 O2 SUPPLY vlv - CLOSE
323 — SUS 1 LSU POWER sw - OFF
SUS 2 PUMP sw - OFF
SUS 2 O2 SUPPLY vlv - CLOSE

SPT/PLT — Go to CSM JETTISON, SPT/PLT POST section of C/L

CDR 217 — SUS 1 O2 SUPPLY vlv - CLOSE
200 — cb AUDIO SYS: CCU A - open

CCA DOFFING

CDR — Disconn CCA electrical lead
Unsnap chin strap
Doff CCA and stow in accessory bag

PCU/LSU/DOFFING

CDR — Verify PRESS sel - OFF
MODE SEL - ABS
FLOW sel - OFF
Disconn elec connector
Disconn O2 (R&B)
Disconn water connector
Disconn waist belt
Disconn center strap
Stow PCU/LSU temporarily in STS

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318 — Move to AM with helmet and install depress vlv cap
520 — Move to OWS and stow helmet and helmet bag

SOP Doffing

CDR — Disconn leg straps
Disconn vert strap
Stow on grid
Assist SPT/PLT in PGA doffing

PGA Doffing

CDR PGA — Open zipper cover

CAUTION
Do not pull red lanyard.

Unlock & open vert zipper
Open horiz zipper
Unlock & open press sealing zipper
Doff upper PGA

Disconn LCG water connector
Doff lower PGA
Secure PGA in foot restraints

Remove cover from lower PGA elec harness
E610A — Stow electrical harness cover on CWG harness
Move to sleep compartment

Remove dosimeter from LCG chest pkt
Doff LCG and stow in TSB
Attach UCTA clamp to UCTA if reqd
Doff UCTA and stow
Doff FCS and stow
Don inflight clothing
Don triangle shoes

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OWS Ventilation Activation

CDR — Unstow OWS/AM VCS duct from fwd compt
Latch duct on OWS mixing chamber
Calfax (2) duct at hatch sill
Calfax (4) duct to AM supply duct

D393 — Conn CNDST HOLDING TANK INLET hose qd to CONDENSATE DUMP PORT qd

Move to fwd lock compt
AM FANS DUCT sw - HI
MDA FANS 1, 2, CSM sw (3) - HI

203 — MOL SV HT EXCH OUT. ind - greater than 46 deg F (verify)

Note: If MOL SV HT EXCH OUT temperature less than or equal to 47 deg F, delay next 2 steps until temperature increases.

AM FANS CIRC 1, 2, 3 sw (3) - HI
390 — OWS HT EXCH FANS 1-4 sw (4) - OWS

Coolant Loop Reconfiguration

CDR 200 — cb RAD FLOW PRI, SEC (2) - open
OWS N2 vlv - OPEN (7-1/2 turns ccw)

Reconfigure Lighting

CDR 207 — MDA ltg - as required
316 — LTG METER sw - as required
LTG LOCK sw - as required

PGA Reconfigure

CDR — Secure elec harness inside PGA
Unstow H2O plug and elec connector cover from accessory bag and install on PGA
Close press sealing and restraint zippers

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Remove IV gloves from accessory bag & install on PGA
Install helmet on PGA and lock
Remove feedport purge vlv from helmet & stow in PGA zip pkt; cap feedport (accessory bag)
Place helmet bag over helmet and secure draw strings

M157 — Stow CCA filter by pass adapters (3) in MDA

Voice rcd PRDs & restow in PGA's

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7.4-1

CSM JETTISON SPT/PLT POST

SPT/ PLT		CCA DOFFING (EVA 3.2)
SPT/ PLT		PCU/LSU Doffing (EVA 3.2)
SPT/ PLT		SOP Doffing (EVA 3.2)
SPT/		PGA Doffing (EVA 3.2)
PLT		Remove cover from lower PGA elect harness
	E610	Stow elec harness cover on CWG harness
SPT/ PLT		LSU Disconnect from PCU (EVA 3.2)
SPT/ PLT		LSU Disconnect From EVA Panels (EVA 3.2)
SPT		LSU STOWAGE (EVA 3.2)
PLT		LSU Disconnect From IVA Panel (EVA 3.1)
SPT/ PLT		PGA Configuration (EVA 3.2)
SPT/ PLT		EMU STOWAGE (EVA 3.2)
PLT		UCTA DRAINING (EVA 3.1)

DATE 3/22/73

CSM JETTISON SPT/PLT POST

CSM JETTISON SPT/PLT POST

7.4-2

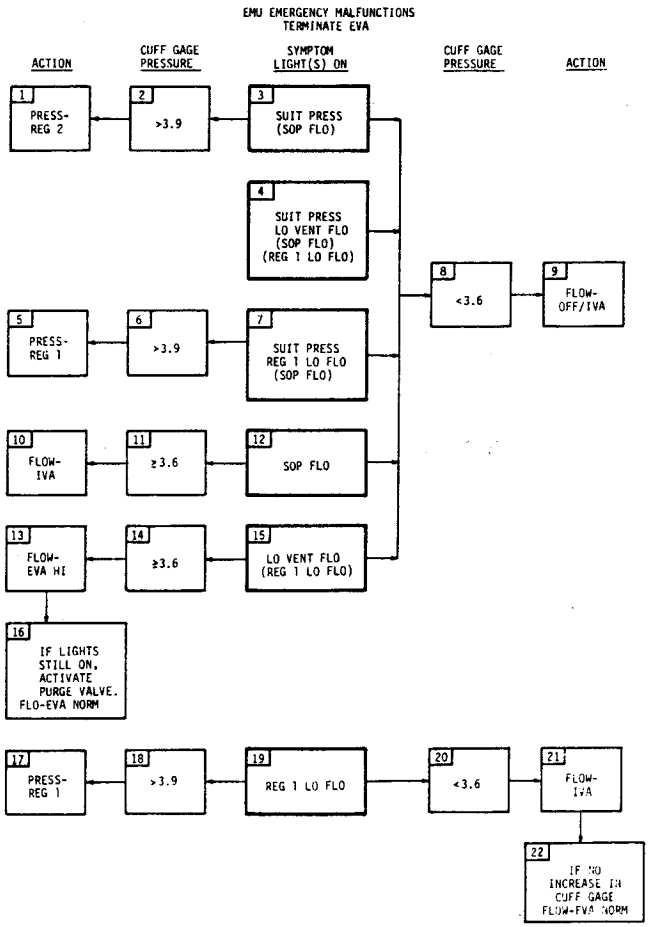
SPT COMM RECONFIGURE (CDR's)

200	cb AUDIO SYS: INTERCOM A - open
131	chan A sel - OFF (verify) Disconn elec cable from IVA CCU POWER CONNECTOR Cap IVA CCU POWER CONNECTOR
131	Conn elec cable to intercom box receptacle outlined in blue
200	cb AUDIO SYS: INTERCOM A - close CCU A - close
131	COMM CHAN sel - ON [RCD] sw - OFF (RCD lt off)

DATE 3/22/73

8.1-1

EMU EMERGENCY MALFUNCTIONS



DATE 3/22/73

104

EMU EMERGENCY MALFUNCTIONS

a

FLIGHT PLAN

GET	GMT	MD/DOY	HOUSTON DATE	REV	BETA °	MOON PHASE
24:18:01/24:21:01	11:00 - 14:00	26/160	JUNE 9, 1973	373		

SL-2 EVA

MCC GMT SAVATE ATNT CDR SPT PLT ATM V1 RCDR AMP 1-1 EXP 1-2 DSE UNSCH EXPS

UPLINK: GENERAL MESSAGE (COOLANT LOOP CONFIGURATION)

11:00 :10 :20 :30 :40 373 12:00 :10 :20 :30 :40 :50 13:00 :10 :20 374 :30 :40 :50 14:00

POST SLEEP ACTIVITY

S/HK 1B

EVA CHECKLIST
PREP CDR/SPT (1.1-1)
OWS COMPT PREP FOR EVA

EVA CHECKLIST
PREP PLT (1.2-1)
CM/MDA/STS SYSTEMS PREP
ATM C&D PANEL CONFIGURATION
COOLANT LOOP CONFIGURATION
O2/N2 SYSTEM VERIFICATION (1.2-3)
DAC PREP (M151)
DAC PREP (EVA)
TV PREP (EVA)

D024 S009 S015 E076

SAL

MISSION	EDITION	PUBLICATION DATE
SL-2	FINAL	APRIL 11, 1973

FLIGHT PLANNING BRANCH

SOL	A-SOL
TV	5183

b

FLIGHT PLAN

GET	GMT	MD/DOY	HOUSTON DATE	REV	BETA ∢	MOON PHASE
24:21:01/25:00:01	14:00 - 17:00	26/160	JUNE 9, 1973	375		

SL-2 EVA

MCC | GMT | SAA / VTE / ATN / T | CDR | SPT | PLT | TV | ATM 1 2 | AMP 1 1 2 | EXP 1 2 | RCDR D S E | UN-ATT'D EXPS

UPLINK: BLOCK DATA

- 14:00 — CDR/SPT: EVA PREP (CONT'D) — PLT: CAMERA PREP (CONT'D)
- :20 — CDR: PREP ATM FILM — SPT: UNSTOW LSU FROM STORAGE SPHERE; CONNECT LSU'S TO EVA PANEL & PCU — PLT: OWS SYSTEM PREP; OWS VENTILATION DEACTIVATION (1,2-6); ACTIVATE RECORDERS
- :40 — PREP OBS/LCG DONNING; DON OBS/LCG
- 15:00 — PLT: SUS SUIT COOLING ACTIVATION
- 375
- :10 — DON PGA'S; ▲ M151 - DAC - ON — PLT: DON LCG/PGA (1,2-9)
- :30 — ▲ M151 - DAC - OFF; DON SOP; DON PCU; DON CCA
- :50 — ALSA CHECKOUT AND PRESSURE INTEGRITY CHECK (1,2-11)
- 16:10 — TRANSFER TO AM
- :20 — CDR: ASSIST EV3 — SPT: CLOSE OWS HATCH — PLT: CLOSE AM FWD HATCH
- COMM CHECK AND SOP FLOW CHECK — PLT: CONFIGURE CSM COMM; DON PCU/LSU
- 376
- :50 — AM DEPRESS — PLT: MONITOR AM DEPRESS; MONITOR RADIATION
- AM EVA HATCH OPEN
- 17:00

EVA

D024 S009 S015 E076

S183

MISSION	EDITION	PUBLICATION DATE
SL-2	FINAL	APRIL 11, 1973

FLIGHT PLANNING BRANCH

SAL | SOL TV | A-SOL S183

c

FLIGHT PLAN

GET	GMT	MD/DOY	HOUSTON DATE	REV	BETA ∢	MOON PHASE
25:00:01/25:03:01	17:00 - 20:00	26/146	MAY 26, 1973	377	14.91	

SL-2 EVA

MCC | GMT | SAA / VTE / ATN / T | CDR | SPT | PLT | TV | ATM 1 2 | AMP 1 1 2 | EXP 1 2 | RCDR D S E | UN-ATT'D EXPS

- 17:00 — CDR: EV-1 EGRESS AM; INGRESS VF — SPT: EV-2 — PLT: EV-3 MONITOR EVA OPERATIONS AND CHECKLIST PROCEDURES FOR EV1 AND EV2
- :10 — CDR: VERIFY BOOMS (2) OPERATIONAL; INSTALL HOOKS ON BOOM; STOW TREES — SPT: UNSTOW VS AND VC TREE; UNSTOW DAC; EGRESS AM; INSTALL DAC AND CONFIG FOR NIGHT PHOTOS; TRANSLATE TO VC; INGRESS VC
- :20 — CDR: ▲ DAC ON; UNSTOW AND TRANSFER S054 TO EV2; STOW USED S054 ON VC TREE — SPT: REMOVE USED S054; TRANSFER TO EV1; INSTALL S054
- :30 — SPT: ROTATE CANISTER; REMOVE USED S056; TRANSFER TO EV1
- :40 — CDR: STOW USED S056 ON VC TREE
- CDR: UNSTOW AND TRANSFER S052 TO EV2 — SPT: ROTATE CANISTER
- :50 — CDR: STOW USED S052 ON VC TREE; RECONFIG DAC FOR DAY PHOTOS — SPT: REMOVE USED S052; TRANSFER TO EV1; INSTALL S052
- 18:00 — CDR: STOW USED HA1 ON VC TREE — SPT: ROTATE CANISTER; REMOVE USED HA1; TRANSFER TO EV1; ROTATE CANISTER TO ALIGN SUN END; OPEN S082 DOORS
- :10 — CDR: ▲ DAC OFF — SPT: ADVISE EV3 READY FOR MAG OPS CHECKS — PLT: VERIFY ATM OPERATIONAL (PNL 130)
- :20 — CDR: REMOVE DAC AND ▲ REPOSITION DAC ON; TRANSFER VS TREE TO EV2 — SPT: TRANSLATE TO VT; STOW VS TREE ON SOLAR SHIELD
- 377
- :30 — SPT: TRANSLATE TO VS
- :40 — CDR: ▲ DAC OFF; RECONFIG DAC FOR NIGHT PHOTOS — SPT: REMOVE USED S082A AND S082B AND STOW IN VS TREE; ADVISE EV3 READY FOR DOOR CLOSURE — PLT: CLOSE APERTURE DOORS (PNL 130)
- :50 — CDR: ▲ DAC ON; STOW VS TREE IN VF — SPT: TRANSLATE TO VT; UNSTOW AND TRANSFER VS TREE TO EV1
- 19:00
- :10 — CDR: STOW D024 SAMPLES ON VF TEMP STOW HOOK; ▲ DAC OFF; PASS DAC, VC TREE, VS TREE AND D024 TO EV2 — SPT: TRANSLATE TO D024 AREA; RETRIEVE D024 SAMPLES AND PASS TO EV1
- :20 — SPT: TRANSLATE TO AND INGRESS AM; STOW DAC, VC, AND VS TREE AND D024; ASSIST EV1
- CDR: INGRESS AM
- :30 — POST EVA; CLOSE AM HATCH — PLT: POST EVA
- REPRESS AIRLOCK
- :40
- CDR: OPEN AM FWD HATCH — SPT: OPEN OWS HATCH — PLT: ASSIST EV1
- :50 — TRANSFER TO OWS AND DEACTIVATE ALSA — PLT: DEACTIVATE SUS, O2, AND COMM
- DOFF PCU AND SOP — PLT: DOFF PCU
- 20:00

D024 S009 S015 E076

MISSION	EDITION	PUBLICATION DATE
SL-2	PRELIMINARY	DECEMBER 15, 1972

FLIGHT PLANNING BRANCH

3-203

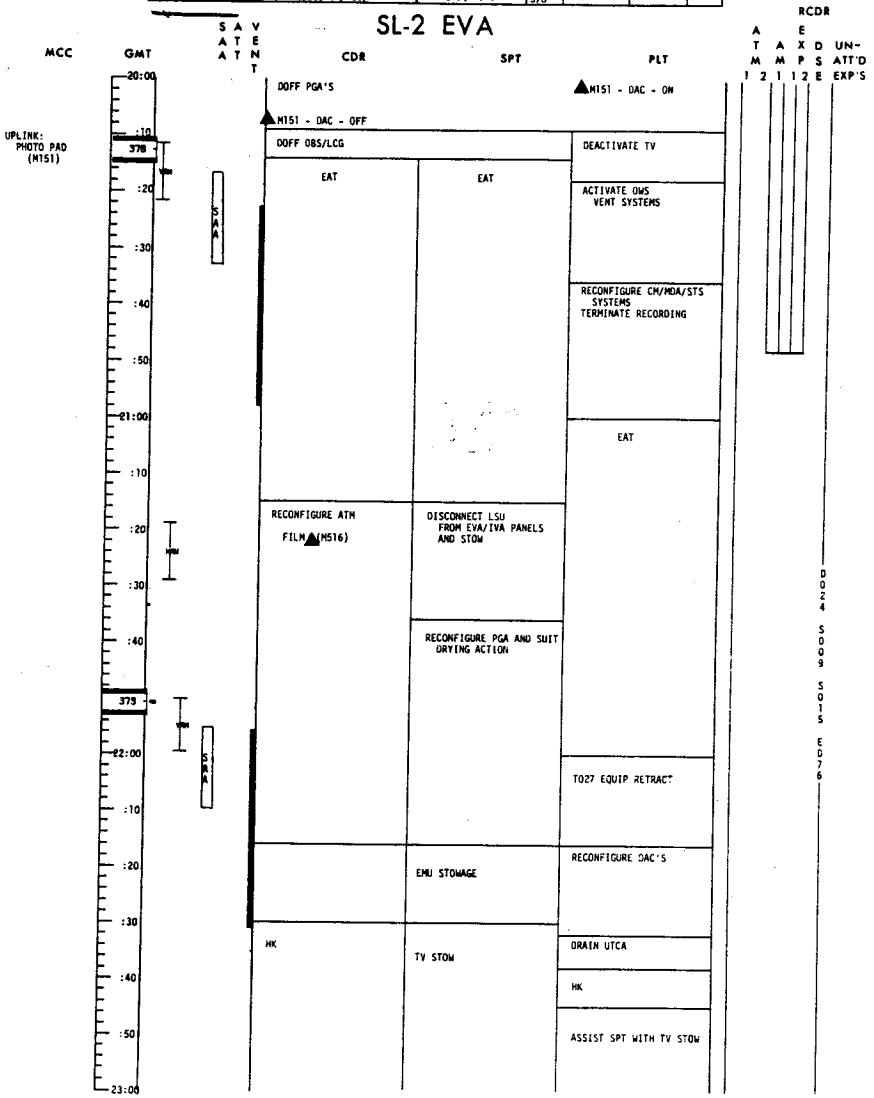
SAL | SOL TV | A-SOL S183

d

FLIGHT PLAN

GET	GMT	MD/DOY	HOUSTON DATE	REV	BETA ϕ	MOON PHASE	
25:03:01/25:06:01	20:00 - 23:00	26/160	JUNE 9, 1973	378			

SL-2 EVA



MISSION	EDITION	PUBLICATION DATE
SL-2	FINAL	APRIL 11, 1973

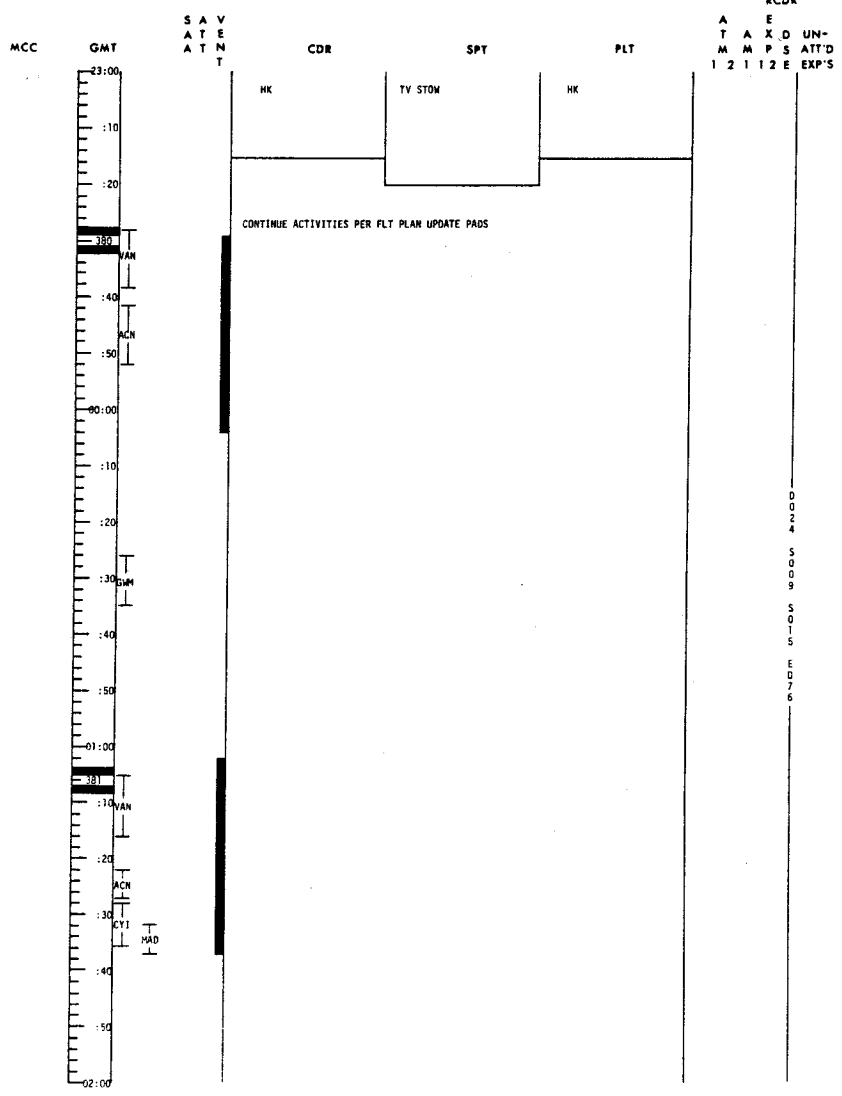
SAL	SOL	A-SOL
		S183

FLIGHT PLANNING BRANCH

e

FLIGHT PLAN

GET	GMT	MD/DOY	HOUSTON DATE	REV	BETA ϕ	MOON PHASE	
25:06:01/25:09:01	23:00 - 02:00	26/160	JUNE 9, 1973	379			



MISSION	EDITION	PUBLICATION DATE
SL-2	FINAL	APRIL 11, 1973

SAL	SOL	A-SOL
		S183

FLIGHT PLANNING BRANCH