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ASTP

REFERENCE

CSM SYSTEMS CHECKLIST

PREPARED BY
PROCEDURES BRANCH
CREW TRAINING & PROCEDURES DIVISION

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CHANGE CONTROL RECORD

APOLLO/SOYUZ TEST PROJECT — CSM SYSTEMS — CHECKLIST

CONTROL NO.	FDF EDITION INCORPORATED		DISAPPROVED OR OTHER DISPOSITION
	TITLE	DATE	
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4. EMERGENCY PROCEDURES

GENERAL SYSTEMS MANAGEMENT

PROPULSION SYSTEM

1 SPS MONITORING CHECK

SPS PRPLNT TANKS TEMP ind - +45-75 deg F
IF < 45 deg F, SPS LINE HTRS - A
WHEN > 75 deg F, SPS LINE HTRS - OFF (CNTR)
SPS PRESS IND sw - He, N2 A, & N2 B
SPS PRPLNT TANKS PRESS ind
He PRESS - 3750 psia max
N2 A&B PRESS (2) - 2900 psia max
SPS PRESS IND sw - He
SPS PRPLNT TANKS FUEL & OXID
PRESS ind - 170 to 195 psia
SPS ENG INJ VLVS ind (4) - CLOSE
SPS He VLV (2) - AUTO, tb - bp
SYS TEST - 5A (1.1-1.9)(+45-75 deg F SPS OXID
LINE TEMP)
SYS TEST - 7D (0.0-2.5)(0-100 deg F SPS He PRESS
PNL TEMP)
SYS TEST - 5B (BAT RLY BUS)

2 SM RCS MONITORING CHECK

Note: Data in < > applies to active PSM

SM RCS QUAD He tb (4) - gray <bp>
SM RCS PRPLNT tb (8) - gray <bp>
SM RCS PSM PRPLNT tb (4) - bp <gray>
SM RCS PSM He tb - bp <gray>
SM RCS PSM MANF ISOL tb - gray
RCS IND sel - SM A, B, C, D

SM RCS:
PKG TEMP - 115-175 deg F (C/W 75-205 deg)
He PRESS - log

QD A _____

QD B _____

BACK

COLOR_____

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SYSTEMS MANAGEMENT

QD C _____

QD D _____

SM RCS: SEC FUEL PRESS - 178-192 psia
SM RCS IND - PRPLNT/QTY

SM RCS: PRPLNT QTY ind - log%

QD A _____

QD B _____

QD C _____

QD D _____

SM RCS IND - He TK TEMP
SM RCS He TK TEMP - log

QD A _____

QD B _____

QD C _____

QD D _____

RCS IND sel - PSM
SM RCS:
PKG TEMP - 0
He PRESS - Log _____

SEC FUEL PRESS - 178-192 psia

He TK TEMP - Log _____
SM RCS IND - PRPLNT QTY
SM RCS PRPLNT QTY - Log _____

3 CM_RCS_MONITORING_CHECK

CM RCS PRPLNT tb (2) - gray

RCS IND sel - CM 1,2

He TEMP - 45-80 deg F

He PRESS - 3900-4300 psia

MANF PRESS - 80-105 psia (before activation)

287-302 psia (after activation)

4 QUAD-TO-PSM_TRANSFER

SC CNTL - CMC/FREE

SM RCS PSM He - OPEN; tb - gray

SM RCS PRPLNT A(B,C,D,) - CLOSE; tb(2) - bp

SM RCS PSM PRPLNT QUAD A(B,C,D,) - OPEN; tb - gray

SM RCS QUAD He A(B,C,D) - CLOSE; tb - bp

SC CNTL - CMC/AUTO

5 PSM-TO-QUAD_TRANSFER

SC CNTL - CMC/FREE

SM RCS QUAD He A(B,C,D) - OPEN; tb - gray

SM RCS PSM PRPLNT QUAD A(B,C,D) - CLOSE; tb - bp

SM RCS PRPLNT A(B,C,D) - OPEN; tb(2) - gray

If all quads transferred to quad propellants:

SM RCS PSM He - CLOSE; tb - bp

SC CNTL - CMC/AUTO

EPS MANAGEMENT

1 CRYOGENIC PRESSURE/QUANTITY CHECK

CRYO TANKS H2 PRESS ind (both) - 225-260 psia
CRYO PRESS IND sw - 1
CRYO TANKS: O2 PRESS ind (both) - 865-935 psia

: H2 QTY ind (both) - Log %

TNK 1 _____

TNK 2 _____

: O2 QTY ind (both) - Log %

TNK 1 _____

TNK 2 _____

CRYO PRESS IND sw - SRG

CRYO TANKS O2 PRESS 1/SRG ind - 865-935 psia

2 FC POWER PLANT CHECK

FC HTRS (3) - on (up)

FC RAD tb (3) - gray

FC REACS tb (3) - gray

FC IND sel - 1,2,3

FUEL CELL H2 FLOW ind - 0.03-0.15 lb/hr

O2 FLOW ind - 0.25-1.2 lb/hr

MCD SKIN TEMP ind - 390-440 deg F

MOD COND EXH TEMP ind - 150-175 deg F

FC pH HI tb - gray

FC RAD TEMP LOW tb- gray

3 DC_VOLT_AMP_CHECK

MN BUS TIE (2) - OFF (verify)
FUEL CELL 1,2,3 MNA tb - gray, gray, bp
FUEL CELL 1,2,3 MNB tb - bp, bp, gray
DC IND sel - FC 1,2,3;log amps

FC 1 _____

FC 2 _____

FC 3 _____

- MAIN BUS A, B (26.5-31 vdc - log)

MN A _____

MN B _____

- BAT BUS A, B & BAT C (31.5-38 vdc, <3.0 amp)

- PYRO BAT A, B (36.5-37.5 vdc)

- MNA

SYS TEST - 7A (BAT COMPT PRESS <2.3 vdc)

* If > 2.3 : Report STDN *

* If ~ 0 : BAT VENT vlv - CLOSED *
: Report STDN
* *

- 5B (3.4-4.1 vdc)(30.5 to 37.0 vdc BAT RLY BUS)

4 AC_VOLTS_CHECK

AC IND sel - BUS 1,2 (ph A,B,C)(113-117 vac)

5 BATTERY CHARGING BAT A (B,C)

MN BUS TIE (2) - OFF
cb BAT RLY BUS BAT A (B) - open
cb BAT BUS A&B TO PYRO BUS TIE (2) - open (verify)
cb BAT C TO BAT BUS A&B (2) - open (verify)
DC IND sel - BAT CHARGER
BAT CHARGE - A(B,C)
DC VOLTS - 37.5-39.5 vdc
BAT CHARGE - OFF at 39.5 vdc or 0.5 amp
cb BAT RLY BUS BAT A(B) - close
DC IND sel - MNA
SYS TEST - 7A (BAT COMPT PRESS <2.3)

* If > 2.3 : Report STDN *

* If ~ 0 : BAT VENT vlv - CLOSED *

* : Report STDN *

SYS TEST - 5B (BAT RLY BUS)

6 FUEL CELL POWER PLANT PURGING

A O2 Purging

FC IND sel - 1(2,3)
FC PURGE 1(2,3) - O2 (2 min)
FC FLOW - O2 Flow incr 0.6 lb/hr
FC PURGE - 1(2,3) - OFF

B H2 Purging

H2 PURGE LINE HTR - on(up);20 min prior to purge
FC IND sel - 1(2,3)
FC PURGE 1(2,3) - H2 (1 min, 20 sec)
FC H2 FLOW - Flow incr 0.67 lb/hr (pegged high)
M/A (FC 1(2,3) lt) - ON/RSET
FC PURGE 1 (2,3) - OFF
After 10 minutes:
H2 PURGE LINE HTR - OFF

7 H2_OR_O2_QUANTITY_BALANCE_CORRECTION

ON LOW Tank, H2 or O2 HEATER - OFF, THEN AUTO,
WHEN BALANCED

8 INVERTER_CHANGEOVER

One inverter on each AC bus at all
times (if available)
If all three AC bus ties for the same bus are on,
inverter power to that bus will be lost
When switching DC power on inverter 3,
pause in OFF position

8A SINGLE_INVERTER_(INV_1_<2>)_OPERATION

AC BUS 2 <1> RSET - OFF
AC INV 2 <1> - OFF
AC BUS 2 <1> INV 2 <1> - OFF
AC BUS 2 <1> INV 1 <2> - on (up)
AC BUS 2 <1> RSET - RSET
M/A pb/lt (3) - on - push
M/A pb/lt (3) - out
C/W lts (all) - out
AC IND sel - BUS 1,2 (ph A,B,C)
AC VOLTS ind - 113-117 vac

8B DUAL_INVERTER_REINITIATE

AC BUS 2 RSET - OFF
AC INV 2 - MNB
AC BUS 2 INV 1 - OFF
AC BUS 2 INV 2 - on (up)
AC BUS 2 RSET - RSET
M/A pb/lt (3) - on - push
M/A pb/lt (3) - out
C/W lts (all) - out
AC IND sel - BUS 1,2 (ph A,B,C)
AC VOLTS ind - 113-117 vac

9 CRYO_H2_MANUAL_FAN_OPERATION

CAUTION

If CRYO PRESS lt on, do not turn off fan until lt extinguishes

H2 FANS 1&2 - ON sequentially at 1 sec intervals for 1 min, then OFF sequentially

ECS PERIODIC VERIFICATION

1 ECS MONITORING CHECK

SUIT-CAB ΔP ind - -1 to -3.5 in. H2O
O2 FLOW ind - 0.2-0.45 lb/hr (after changeover)
CRYO PRESS IND sw - SRG
CRYO TANKS O2 PRESS 1/SRG ind - 865-935 psia
REPRESS O2 >865 psi
ECS RAD tb - gray

* If ECS RAD tb - 2 *
*
* ECS RAD FLOW CONT AUTO - 1 until *
* tb gray, then AUTO *

ECS IND sel - PRIM
ECS RAD TEMP PRIM IN - 60-90 deg F
ECS RAD TEMP PRIM OUT - -12 to +65 deg F
PRIM GLY EVAP TEMP OUT - 38-50.5 deg F (Evap - AUTO)
- 42-67 deg F (Evap - OFF)
PRIM GLY DISCH PRESS - 40-52 psig
SUIT TEMP - 45-70 deg F w/o evap; 45-55 deg F with evap
CABIN TEMP - 70-80 deg F
SUIT PRESS/CABIN PRESS - 4.7-5.3 psia
PART PRESS CO2 <7.6 mm Hg
SUIT COMPR ΔP - 0.3-0.4 psi
PRIM GLY ACCUM QTY - 30-65%

* If <30% : PRIM ACCUM FILL vlv - ON *
*
* (until 40-55%) *

H2O QTY - POT (10-100%)
- WASTE (15-85%, dump if >85%)

2 ECS_PERIODIC_REDUNDANT_COMPONENT_CK

Suit Compressor:
- Sw to other compr
- SUIT COMPR ΔP ind - 0.3-0.4 psi

Main O2 Regulators:
- MAIN REG B vlv - close
- EMER CABIN PRESS sel - 1
- EMER CAB PRESS TO TEST pb - PUSH (O2 flow inc)
- MAIN REG B vlv - OPEN
- MAIN REG A vlv - close
- EMER CABIN PRESS sel - 2
- EMER CAB PRESS TO TEST pb - PUSH (O2 flow inc)
- MAIN REG A vlv - OPEN
- EMER CABIN PRESS sel - BOTH (OFF if all suited)

Secondary Glycol Loop:
- Open cool atten panel (If req'd)
- EVAP H2O CONT SEC vlv - AUTO
- ECS IND sel - SEC
- SEC COOL LOOP PUMP - AC 1 (AC 2)
  - GLY DISCH SEC PRESS ind - 40-52 psig
  - ACCUM SEC QTY ind - 30-60%
- SEC COOL LOOP EVAP - EVAP

After 5 min,
- SEC GLY EVAP TEMP OUT ind - 38-50.5 deg F
- SEC COOL LOOP EVAP - RESET for 1 min minimum, then off (ctr)
- SEC COOL LOOP PUMP - off (ctr)(leave on if electrophoresis EXP still operating)

- EVAP H_2O CONT SEC vlv - OFF (CCW)
- ECS IND sel - PRIM

3 CO2 ABSORBER FILTER REPLACEMENT

Open CO2 Canister attenuation pnl (Tool E)
Obtain CO_2 Grounding Cable (L2)

CAUTION

Connect CO2 grounding cable when removing or replacing filter from canister or stowage

CO2 CSTR DIVERT vlv - up (or dn)

CAUTION

Apply pressure to latching handle to allow pressure interlock pin to withdraw, otherwise latching handle may not disengage

CANISTER MANUAL BLEED vlv - PRESS
COVER LATCHING HANDLE - UNLOCK
Replace used filter
COVER LATCHING HANDLE - LOCK
CO2 CSTR DIVERT vlv - ctr
Close CO2 Canister attenuation pnl

4 DEBRIS SCREEN CHECK

A SUIT CKT RET vlv screen:
Open coolant control atten pnl (Pnl 382) (Tool E)
SUIT CKT RET vlv - CLOSE (push)
Clean screen
SUIT CKT RET vlv - OPEN (pull)

B CABIN HT EXCH inlet screen:
CAB FAN - OFF
Clean Screen

5 HELMET AND GLOVE DOFFING

CABIN PRESS ind - Verify > 4.7 psia
EMER CAB PRESS sel - BOTH
Doff and stow gloves & helmets
SUIT CKT RET vlv - OPEN (pull)

6 PGA DONNING

NOTE: Apply anti-fog on helmets (R13) for extended suited operations or high work load tasks

POWER - OFF (6,9,10)
AUDIO CONT - NORM (6,9,10)(verify)
SUIT POWER - OFF (6,9,10)
If comm carrier or headset in use:
  Doff headset or comm carrier, stow in TSB
  Discon CM elect umbilical from CWG harness and stow
  Doff CWG harness (remove protective cap to use on PGA harness if OBS will not be worn)
  Stow CWG harness in U2 or temp stow in closeout bag

Remove pkt items from inflight clothes, stow in TSB top pkt
Doff inflight clothing, stow in U2 or TSB
Don CWG (A1)

OBS Donning:
  Snap biobelt (acessory bag) to CWG
  Apply tape ring and electrode sponges(R13-med. kit) to biosensors
  Position electrodes per figure (S/1-14)
  Cover electrodes with disk tape (R13-med. kit)
  Route wires through holes in CWG
  Conn yellow and blue connectors, white dot forward
  Verify all connections tight

Unstow roll-on cuffs (R13-med kit) and attach to UCTA
Don UCTA (accessory bags)

Install protective cap (from CWG harness) on lower lead of PGA harness if OBS not worn

Verify PGA elect lead secured at neckring and urine hose snapped in place
Don PGA - connect urine and electrical inside PGA
Retrieve pkt items - TSB top pkt

Stow CM umbilical screen caps and PGA elect connector covers in A5 or closeout bag
Suit Flow vlvs - OFF
Conn CM gas & elect umbilicals to PGA

Suit Flow vlvs - FULL FLOW
Don comm carrier, conn to PGA elect lead

POWER - AUDIO/TONE (6,9,10)
SUIT POWER - ON (up) (6,9,10)
SPKR/HDST - HEADSET (98)
Verify comm

Don wristlets and confort gloves (PGA zip pkt)
Don helmet and gloves
SUIT CIRCUIT RETURN VALVE - CLOSE (push)

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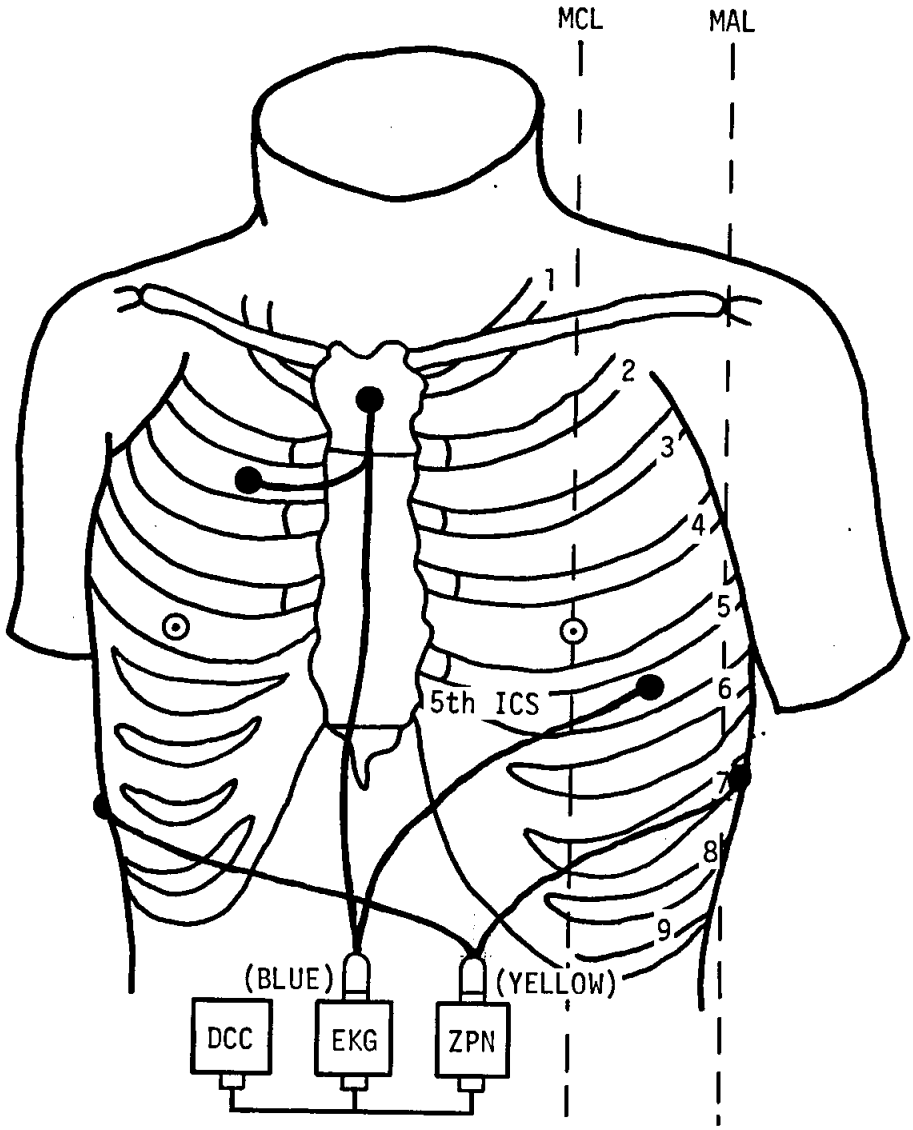


BIOSENSOR PLACEMENT CHART

7 SUIT_CKT_PURGE

DIRECT O2 vlv - OPEN for 1 min (CCW)
  O2 FLOW - 1.0 lb/hr (pegged)
  O2 FLOW HI lt - on
  MASTER ALARM pb/lt (3) - on, push
DIRECT O2 vlv - close (CW)
  O2 FLOW HI lt - out
  O2 FLOW - 0.2 lb/hr

8 SUIT_CKT/PGA_INTEGRITY_CHECK

Verify unsuited umbilicals interconnected and SUIT
  FLOW vlvs - OFF
DIRECT O2 vlv - close (CW)
SUIT PRESS - 4.7-5.3 psia
SUIT CKT RET vlv - close (push)
O2 FLOW - 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 press and O2 flow stabilization, perform the following:

a. O2 DEMAND REG vlv - OFF
b. Allow 15 sec (minimum) stabilization time
c. Reposition SUIT TEST vlv -
   DEPRESS or OFF as applicable
d. When suit pressure stabilized,
   O2 DEMAND REG vlv - BOTH

SUIT TEST vlv - PRESS
DIR O2 - OPEN
  O2 FLOW - 1.0 lb/hr (pegged)
  O2 FLOW HI lt - on
  M/A - ON, Reset
  When SUIT PRESS ind 1.5-2.0 psia > CAB PRESS
    ind SUIT CKT RET vlv - open then close
  At 4.0 psig, DIR O2 vlv - OFF
  SUIT PRESS - 8.8-9.8 psia
  PGA PRESS - 4.1-4.5 psig

O2 FLOW HI lt - out
Allow O2 flow to stabilize 15 sec
Verify O2 flow <0.80 lb/hr for 30 sec after stabilization

If O2 Flow >0.80 lb/hr - reverify
*
* all connections and repeat 8. *
* Continue after recheck if O2 *
* flow <0.97 lb/hr (not pegged) *
* for 30 sec after stabilization *
* If still >0.97 lb/hr, perform *
* PGA DECAY CHECK on each suit *

SUIT TEST vlv - DEPRESS
O2 FLOW - 0.2-0.4 lb/hr
SUIT PRESS - slightly > CAB PRESS
SUIT TEST vlv - OFF
O2 DEMAND REG vlv - BOTH (verify)

8A PGA DECAY CHECK (Perform only if SUIT CIRCUIT/PGA INTEGRITY CHECK fails)

WARNING

SUIT FLOW vlv(s) may remain in OFF position for no longer than one minute or asphyxiation may result. If all SUIT FLOW vlvs are closed simultaneously the suit compressors must be shut off to prevent compressor damage due to suit loop deadheading.

SUIT FLOW vlv - OFF
Monitor for <0.5 psi/min decay
SUIT FLOW vlv - SUIT FULL FLOW
SUIT TEST vlv - DEPRESS
O2 FLOW HI lt - out
O2 FLOW - 0.2-0.4 lb/hr
SUIT PRESS - slightly > CAB PRESS
SUIT TEST vlv - OFF

9 CM_PRESSURE_DUMP

REPRESS PKG vlv - FILL
SM SUPPLY - ON (verify)
SURGE TK vlv ON (VERIFY)
EMER CABIN PRESS sel - OFF (verify)
CAB REPRESS vlv - OFF (verify)
SUIT CKT RET vlv - closed (pushed) (verify)
EMER O2 vlv - CLOSED (verify)
REPRESS O2 vlv - CLOSED (verify)
REPRESS O2 ind - ~900 psia
PRESS CRYO IND sw - SRG
SURGE TK PRESS ind - ~900 psia
CABIN FANS - OFF (verify)
DIRECT O2 vlv - close (CW)
CAB PRESS REL vlv (RH) - DUMP (latch off)
CABIN PRESS - 3.0-3.25 psia
  CAB PRESS REL vlv (RH) - BOOST/ENTRY
  O2 FLOW - 0.24 lb/hr
  SUIT PRESS - 3.5-4.0 psia
CAB PRESS REL vlv (RH) - DUMP
  CABIN PRESS - 0.0 psia (within 6 min)
CAB PRESS REL vlv (2) - NORMAL (latch on)

10 ACTIVATE_CABIN_COLD_SOAK

SUIT HT EXCH SEC GLY vlv - BYPASS(CW)
EVAP H2O CONT SEC vlv - AUTO
CAB TEMP - MAN (verify)
PRIM CAB TEMP vlv - COLD(CW)
SEC CAB TEMP vlv - MAX COOL(CW)
GLY TO RAD SEC vlv - BYPASS (verify)(CCW)
ECS IND sel - SEC
SEC COOL LOOP PUMP - AC2
GLY DISCH SEC PRESS - 40-52 psig
SEC ACCUM QTY - 30-60%
SEC COOL LOOP EVAP - EVAP
SEC GLY EVAP OUT TEMP - 38-50.5 deg F
ECS IND - PRIM
PRIM ECS RAD OUT TEMP - >-20 deg F

* If < 20 F, DEACTIVATE *

CABIN FANS - ON (optional)
ELECTROPHORESIS COOLING vlv - BYPASS (verify)

11 ACTIVATE_PRIMARY_EVAP

GLY EVAP H2O FLOW - AUTO
GLY EVAP STM PRESS - AUTO

12 DEACTIVATE_PRIMARY_EVAP

GLY EVAP H2O FLOW - off (ctr)
GLY EVAP STM PRESS AUTO - MAN
GLY EVAP STM PRESS INCR - INCR for 1 min

13 PRIM_EVAP_RESERVICE

GLY EVAP STM PRESS AUTO - MAN
GLY EVAP STM PRESS INCR - INCR for 1 min

Wait 15 min,
GLY EVAP H2O FLOW - ON for 2 min, then AUTO

GLY EVAP STM PRESS AUTO - AUTO

14 ACTIVATE_SEC_EVAP

EVAP H_2O CONT SEC vlv - AUTO
SEC COOL LOOP EVAP - EVAP
SEC COOL LOOP PUMP - AC1

15 DEACTIVATE_SEC_EVAP

SEC COOL LOOP EVAP - RESET for 1 min
SEC COOL LOOP PUMP - OFF
EVAP H_2O CONT SEC vlv - OFF (CCW)

16 CABIN REPRESSURIZATION

A Normal, ~30 min

CAB PRESS REL vlv (2) - NORMAL (latch on)
REPRESS PKG vlv - FILL
CRYO PRESS IND - SRG
REPRESS O2 vlv - OPEN, CLOSED at 1 psia CAB PRESS
Monitor CABIN PRESS IND for 30 sec
  for gross leakage
REPRESS O2 vlv - OPEN
When SURGE TANK PRESS - 150 psia,
  REPRESS PKG vlv - OFF

CAB REPRESS vlv - OPEN (CW), Adjust to maintain
  ≥150 psia in SURGE TANK

REPRESS O2 ind - ~0 psia
  REPRESS O2 vlv - CLOSE
CAB PRESS - 4.7-5.3 psia
  CAB REPRESS vlv - OFF (CCW)
When SURGE TK >400 psia,
  REPRESS PKG vlv - FILL
EMER CAB PRESS sel - BOTH

B Alternate, ~52 min

CAB PRESS REL vlv (2) - NORMAL (Safety latch on)
EMER CAB PRESS vlv - BOTH
CAB REPRESS vlv - OPEN (CW)
MONITOR SURGE TANK PRESS
At 150 psia on SURGE TANK:
  EMER CAB PRESS vlv - OFF
  CAB REPRESS vlv - Adj to 150 psia on SURGE TK

WHEN CAB PRESS ≥4.7

  CAB REPRESS vlv - OFF
  SURGE TK >400 psi (verify)
  REPRESS PKG vlv - Fill (Pnl 326)

17 PGA DOFFING

CRYO PRESS IND - SRG
SURGE TK > 400 psi (verify)
REPRESS PGK vlv - FILL (326)
Cabin Press 4.7-5.3 PSIA
EMER CABIN PRESS sel - BOTH (351)
SUIT CIRCUIT RETURN VALVE - OPEN (pull)
Doff helmet & gloves

POWER - OFF (6,9,10)
AUDIO CONT - NORM (6,9,10)(verify)
SUIT POWER - OFF (6,9,10)

Doff comm carrier, stow in TSB
Discon all umbilicals from PGA & stow
Suit Flow Vlvs (3) - SUIT FULL FLOW (verify)

Unstow 3 O2 hose screen caps and 3 PGA elect
connector covers (A5)
Install screen caps on CM return hoses (red)
Install elect connector caps on PGAs

Stow life vests in F1
Stow loose shoulder and leg pkt items as desired in
in TSB top pkt
Stow wristlets and comfort gloves in PGA zipper pkt

Doff PGA - discon elect and urine connections
inside PGA

Secure PGA elect harness at neckring
Install helmets & gloves on PGA
Install helmet bags on helmets
Secure accessory bags to helmet bags

OBS doffing:
Discon connectors from signal conditioners
Remove electrodes from chest
Discard tape disks, tape rings, and electrode
sponges
Clean electodc cavities with tissue (A2)
Stow harness and biobelt in accessory bags

UCTA Doffing:
If unused, doff UCTA, discard cuff
If used, doff UCTA, install clamp(R11),
drain per S/1-27
Stow UCTAs in accessory bags

Stow PGAs in PGA bags (U2)
Stow PGAs: AC under left couch,
DP under rt couch, CP head of center couch under
side hatch

Don inflight clothing (U2 or TSB)
Obtain loose pkt items as required (TSB)

Configure comm:
For comm carrier or headset use -
Don CWG harness (U2 or temp stowed)
Conn CM elect to CWG harness
Don comm carrier or light wt headset as reqd.,
connect to CWG harness
SPKR/HDST - HEADSET (98) (verify)

For SPEAKER Box use, (Pnl 98) -
POWER - ON
SPK/HDST -SPEAKER
VOL tw - as desired

POWER - AUDIO/TONE (6,9,10)
SUIT POWER - ON (up) (6,9,10)

18 CM O2 SUPPLY REFILL

CRYO Press IND - SRG
SURGE TANK PRESS ≥400 psia

CAB REPRESS vlv - OFF
REPRESS O2 vlv - CLOSE
REPRESS PKG vlv FILL
SURGE TANK PRESS - 865-935 psia
REPRESS PKG vlv - OFF

19 POTABLE WATER CHLORINATION

POT TK IN vlv - OPEN (verify)
H2O QTY IND - WASTE
  Check WASTE TK qty; if <15%,
    no chlorination if evaporators operating.

H2O QTY IND - POT
  Check POT TK qty; if >90%,
    withdraw 8 oz of water

Unstow chlorination unit (B8)
Remove chlor port cap
Attach needle assembly to injection port
Insert chlorine ampoule into casing

Connect knob assembly & rotate (CW) until
  piston contacts ampoule firmly

Install ampoule assembly on needle assembly
  (push & turn CW)

Rotate knob 3 1/2 turns (CW) until ampoule is
  empty (2 times for half empty if H2O quantity
        <50%)

Disconnect ampoule assembly from needle assembly
Rotate knob CCW & stow used ampoule
Repeat above steps with buffer ampoule
Wait 10 min & remove ampoule of H2O by slowly
  rotating knob 3 turns (CCW)

Replace chlor port cap

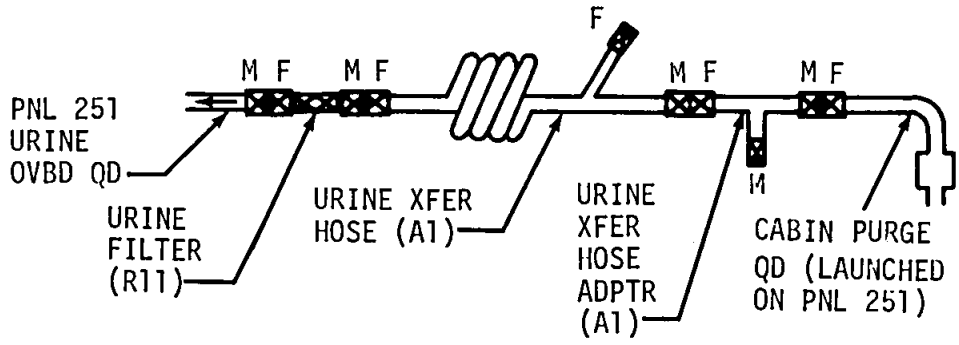
* If leaking tighten 1/4 turn with Tools W & 3 *
* (insert Tool 3 only 1/4 inch *

Stow chlorination unit (B8)
Do not drink for 30 min

20 CABIN_WATER_REMOVAL_(VACUUMING)

Connect plumbing per figure below:

WASTE MGT OVBD DRAIN vlv - DUMP
Collect water
After collection complete:
  Purge for 1-2 min
  WASTE MGT OVBD DRAIN vlv - OFF
Disconnect plumbing & stow



21 WATER/GAS_SEPARATOR_SERVICING

Remove separator from stowage (L2)
Attach separator to water pistol
Trigger water pistol in short pulses until water
  is observed at separator outlet port
Wait 10 minutes

CAUTION

Membrane can be damaged by pencils,
screwdrivers, and other pointed objects

Separator may be used on water pistol or on food
  prep unit as needed

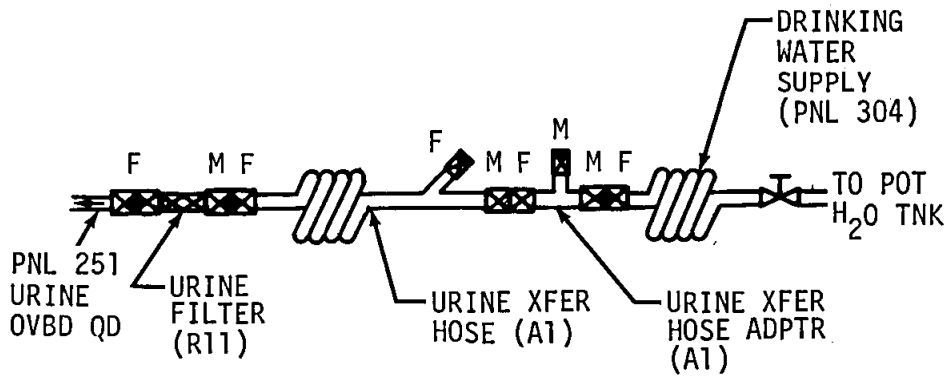
22 POTABLE WATER TANK DUMP

Note: Perform procedure only if Urine Transfer Hose & Adapter have not been used with any urine system.

POT TK IN vlv - CLOSE (Pnl 352)(Tool E)
DRINK H2O SUPPLY vlv - OFF (Pnl 304)
Disconnect & temporarily stow Drink Gun
Connect plumbing per figure below:

POT H2O HTR - OFF (only if dumping to 0%)
DRINK H2O SUPPLY vlv - ON (Pnl 304)
WASTE MGT OVBD DRAIN vlv - DUMP (~3% per min)

When dump complete
WASTE MGT OVBD DRAIN vlv - OFF (Pnl 251)
Disconnect & stow urine filter & Urine Transfer Hose & Adapter
Connect Drink Gun
POT TK IN vlv - OPEN (Pnl 352)(Tool E)
When POT H2O QTY ind - ~10%
POT H2O HTR - MNA



23 WASTE_WATER_TANK_DUMP

WASTE H2O DUMP - HTR A (verify)
BAT VENT vlv - CLOSED
H2O QTY IND - WASTE
WATER CONT PRESS REL vlv - DUMP A
Monitor WASTE H2O QTY ind - decreasing (~5% per min)
If read to dump to 0%
  POT TK IN vlv - open (verify)
  WASTE TK IN vlv - AUTO (verify)
When WASTE H2O QTY ind - 15%
  WATER CONT PRESS REL vlv - RELIEF 2
  BAT VENT vlv - VENT

WASTE MANAGEMENT PROCEDURES

1 URINE DUMP MODES

A UCTA (In PGA) DUMP

URINE DUMP - HTR A (verify)
Connect plumbing (figure A)
Verify UTS vlv - CLOSED
OVBD DRAIN vlv DUMP
Disconnect urine transfer hose from PGA
Replace cap on PGA thigh QD
Connect UTS
UTS vlv -OPEN
Purge dump line 2-5 min
OVBD DRAIN VLV - OFF
UTS VLV - CLOSED
Disconnect hose & stow

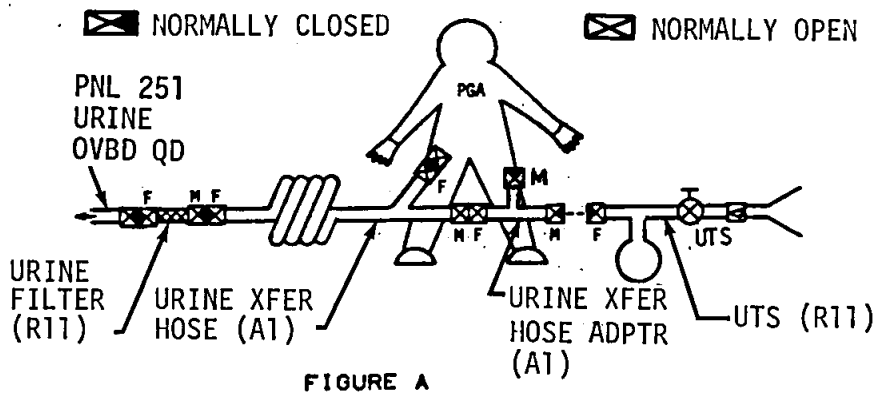


FIGURE A

B UCTA (Out PGA) DUMP

URINE DUMP - HTR A (verify)
Connect plumbing (figure B)
Verify UTCA Clamp attached
UTS vlv - CLOSED (verify)
OVBD DRAIN vlv - DUMP
When dump complete, disconnect
  UCTA Adaptor from urine
  transfer hose
UTS vlv - OPEN
Purge dump line 2-5 min
OVBD DRAIN vlv - OFF
UTS vlv - CLOSED
Disconnect hose & stow
Stow UCTA clamp(R11)
Discard cuff

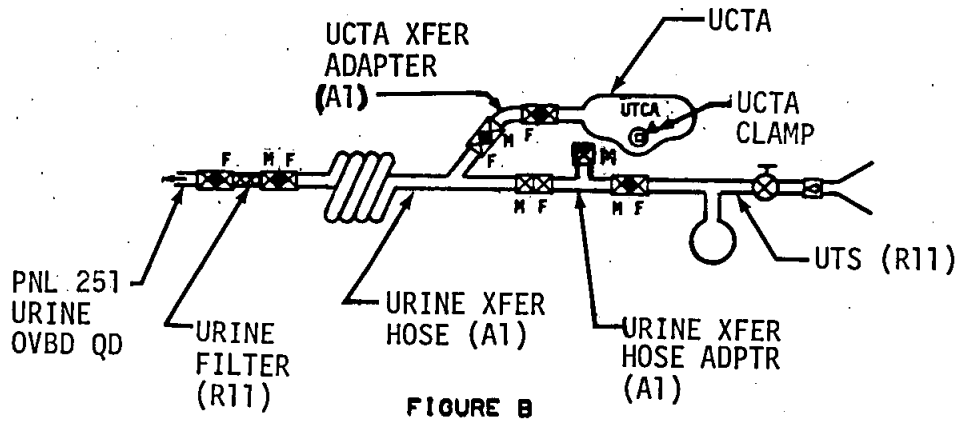


FIGURE B

C UTS_COLLECTION

Obtain UTS (R11) & verify vlv - CLOSED
Attach UTS - open vlv - Perform task
UTS vlv - CLOSED
Disconnect UTS & stow

D UTS/URINE_BAG_TRANSFER

UTS vlv - CLOSED (verify)
Connect UTS to Urine Bag (U1)
Roll UTS Bag to transfer urine
When transfer complete, disconnect
UTS from Urine Bag & stow

E URINE_BAG_DUMP

Connect plumbing (figure C)
OVBD DRAIN vlv - DUMP
When urine dump complete, disconnect
urine bag & HI capacity filter & stow
Purge urine transfer hose:
Disconnect Urine Transfer Hose Adapter
from Transfer Hose
Purge 2-5 min
OVBD DRAIN vlv - OFF
Connect urine xfer hose adptr to UT hose

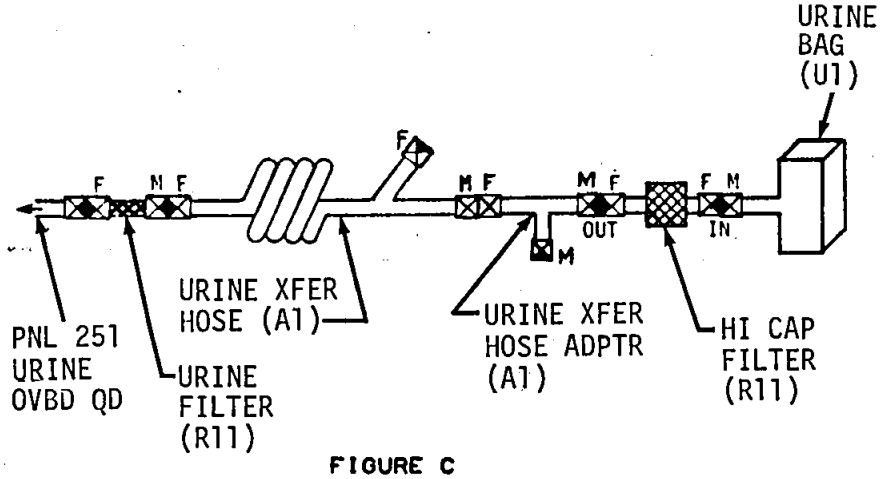


FIGURE C

F URINE_RECEPTACLE_ASSY_USE_(URA)

Connect plumbing (figure D)
URA vlv - VENT
Remove receptacle cover
OVBD DRAIN vlv - DUMP

NOTE: Direct stream parallel to honeycomb to prevent splash-back. Avoid acceleration to URA during use. Remove last drop by touching screen at top of URA.

Perform task
Flush screen and honeycomb with water gun (10 sec max)
Replace receptacle cover after liquid has cleared from URA
URA vlv - VENT (verify)
Purge URA 2-5 min
URA vlv - CLOSED
Stow Urine Receptacle Assy (Retainer strap-A1) for next use with urine transfer hose connected and OVBD DRAIN vlv - DUMP (verify)

For stowage prior to entry:
OVBD DRAIN vlv - OFF
Remove and stow URA, urine transfer hose, and urine filter

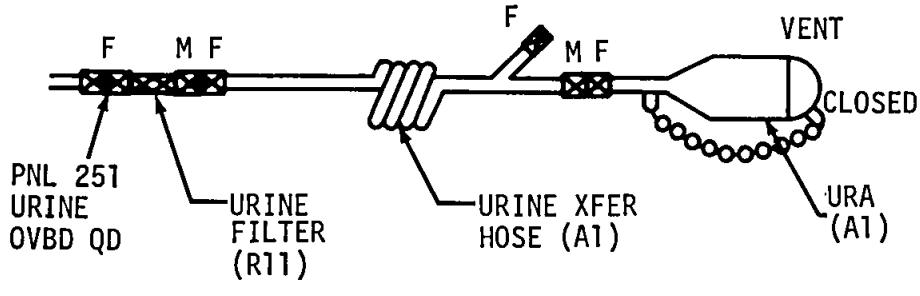


FIGURE D

2 SIDE HATCH URINE/WATER DUMP

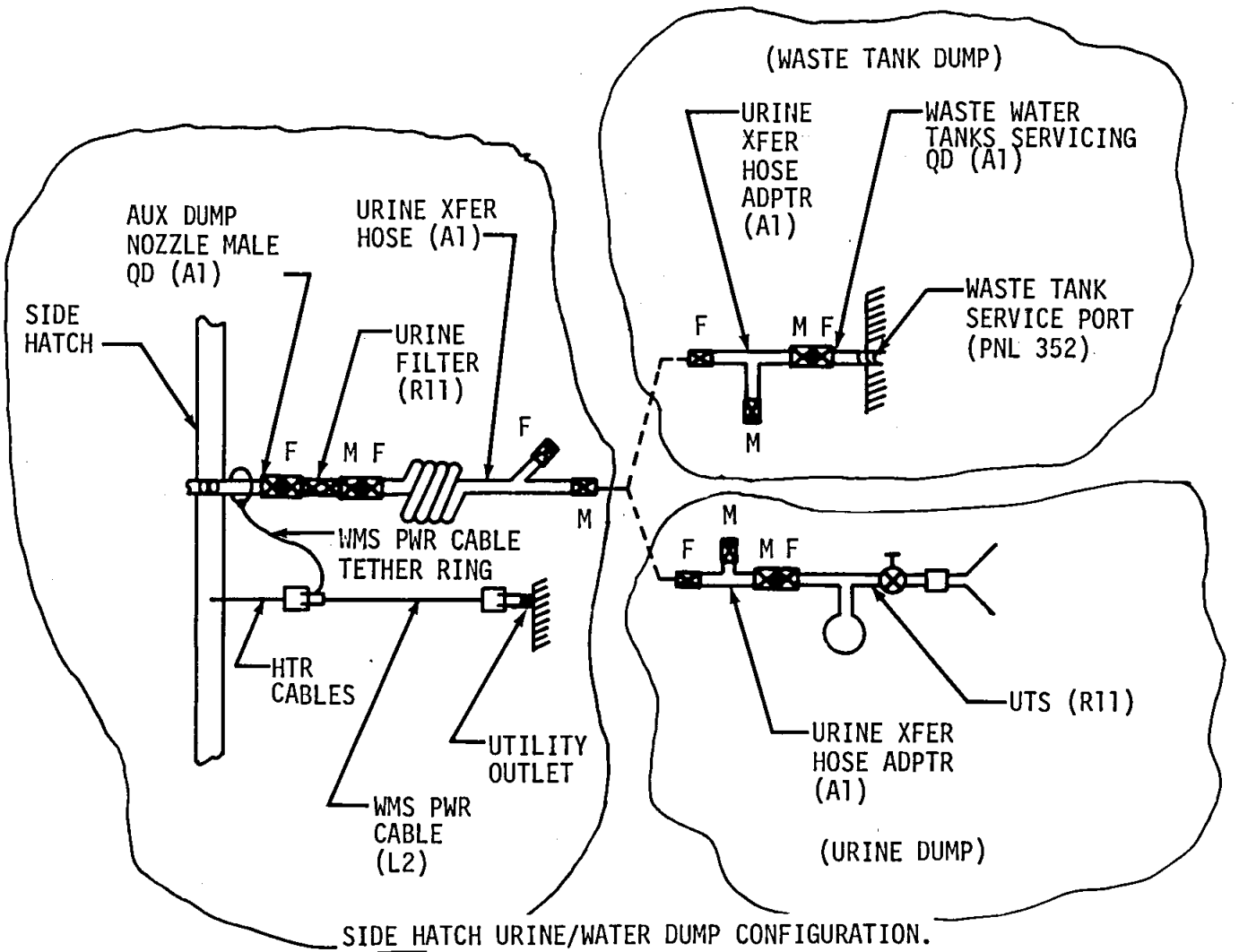
NOTE: See next page for plumbing and cable connections

Obtain WMS POWER CABLE (L2)
Obtain WMS BACKUP CONTAINER (A1) containing:
  Auxillary dump nozzle QD (male),
  Waste Water Tanks Servicing QD (female) (if Waste Tank Dump)
  AUX DUMP NOZZLE QD press cap
Remove Dump Nozzle Conn Cover on Side Hatch (Tool E)
Remove Plug on Side Hatch & Stow
Install Aux Dump Nozzle male QD ASAP with WMS POWER Cable tether ring over QD Threads
Withdraw Wire Guard & Wires from conn cover
Connect cable to heater connector (as required)
UTIL POWER - OFF
Connect cable to utility outlet
UTIL - POWER
Connect Urine transfer hose/filter to Aux Dump Nozzle QD

IF WASTE TANK DUMP -
  Remove conn cap on WASTE TANK SERVICING Port (Tool L) (upper-left corner of PNL352)
  Install Waste Water Tanks Servicing QD (Female) on Waste Tank Service Port
  Connect Urine transfer hose (T-Adapter attached) to Female QD on Waste Tank Service Port
  Waste Tank Serv vlv-OPEN untill WASTE H2O QTY Ind 15%, then CLOSE (Tool E)

IF URINE DUMP -
  Connect Urine transfer hose (T-Adapter attached) to UTS and dump UTS

PURGE URINE TRANSFER HOSE -
  Disconnet Urine transfer hose from T-Adaptc.' and purge (30 sec minimum)
  Disconnect UT Hose from AUX Dump Nozzle & Stow
  UTIL POWER - OFF
  Disconnect Cable from heater & outlet & stow
  Install Press Cap on AUX Dump Nozzle QD



SIDE HATCH URINE/WATER DUMP CONFIGURATION.

S
1-31

DATE 2/6/75

3 DEFECATION

Obtain Fecal Bag Container (U1) (A2)
Remove defecation collection device
Remove germicide pouch & protective cover
Insert germicide pouch into inner fecal bag

WARNING

If germicide pouch is ruptured:
- Germicide on CM surface or hardware; wipe with tissue
- Germicide on crewman's skin; blot with tissue and flush with water
- Germicide in crewman's eyes; irrigate with water from water gun
- Germicide ingested; take magnesium compound and/or high protein food - do not induce vomiting.

Remove the protective covering from the lip of inner fecal bag and place in bag
Perform task
Seal inner fecal bag (remove air prior to sealing)
Rupture the germicide pouch
Knead contents (4 min)
Insert into the outer fecal bag & seal outer bag

To Vent odors from Waste Stowage container:
- Connect UT hose/filter to WASTE STOWAGE QD (PNL 251)
- Connect UT hose to Fecal stowage bag container (A1)
- WASTE STOWAGE VENT vlv - VENT (30 sec) - CLOSED

Stow fecal bag in waste stowage container

C/W OPERATIONAL CHECKS

1 C/W SYSTEM OPERATIONAL CHECK

C/W LAMP TEST - 1 (LH MA & 16 lts)
C/W LAMP TEST - 2 (RH MA & 19 lts)
C/W CSM - CM (CM RCS lt (2) - on)
C/W CSM - CSM (CM RCS lt (2) - out)

2 ACKNOWLEDGE/RESET MASTER ALARM INDICATION

A Normal mode

MA tone/lt (3) - on
MA pb/lt (1) - push
MA tone/lt (3) - out
applicable C/W lt remains on

B Acknowledge mode (C/W NORM in ACK)

MA tone/lt (3) - on
MA pb/lt (1) - push & hold
MA tone/lt (3) - out
applicable C/W lt remains on for
malfunction indication
MA pb/lt - release applicable C/W lt - out

3 MASTER ALARM TONE HEADSET CONTROL

Inhibit tone: PWR (3) - AUDIO
Permit tone: PWR (3) - AUDIO/TONE

4 PANEL 98 CONFIGURATION

POWER - ON
SPEAKER/HEADSET - SPEAKER
VOLUME tw - as required

TELECOM MODES

1 BASIC SWITCH CONFIGURATION

PNL 4
- TELCOM GRP 1 - AC 1
- TELCOM GRP 2 - AC 2

PNL 9, 10, 6
- MODE (3) - INTERCOM/PTT
- VHF FM (3) - T/R
- VHF FM tw (3) as desired
- S-BD (3) - T/R
- S-BD tw (3) - as desired
- POWER (3) - AUDIO /TONE
- MASTER tw (3) - as desired
- INTERCOM (3) - T/R
- INTERCOM tw (3) - as desired
- VHF AM (3) - T/R
- VHF AM tw (3) - as desired
- AUDIO CONTROL (3) - NORM
- SUIT POWER (3) - OFF
- VHF RNG (PNL9) - NORM
- PHONE/MIC CONNECT (PNL10) - OFF

PNL98
- XMIT/ICOM - ctr
- POWER - ON
- SPKR/HDST - SPEAKER
- VOL tw - as desired

PNL 3
- S-BD XPNDR - PRIM
- S-BD PWR AMPL PRIM - PRIM
- S-BD PWR AMPL HI - HIGH
- S-BD MODE VOICE - VOICE
- S-BD MODE PCM - PCM
- S-BD MODE RNG - RANGING
- S-BD AUX TAPE - off (center)
- S-BD AUX TV - off (center)
- UP TLM DATA - DATA
- UP TLM CMD - NORM
- PWR AMPL tb - gray
- TAPE MOTION tb - gray
- S-BD ANT OMNI A - A
- S-BD ANT A/C - A/C
- VHF AM SQLCH tw (2) - noise + 1
- VHF AM A - off (ctr)
- VHF AM B - off (ctr)
- VHF AM RCV - off (ctr)
- VHF BCN - OFF
- VHF RNG - OFF
- S-BD SQLCH - ENABLE
- TAPE RCDR PCM - PCM/ANLG
- TAPE RCDR RCD - RCD
- TAPE RCDR FWD - FWD
- SCE PWR - NORM
- PMP PWR - NORM
- PCM BIT RATE - HIGH
- VHF ANT - LEFT

PNL 181
- CM/DM CAMR POWER - on(up)
- TV AMPL - ON
- TV STA SEL CM - UP TLM
- TV STA SEL CM1 - UP TLM
- CM1 TV POWER - ON
- CM2 TV POWER - ON
- TV MON POWER - OFF

PNL 225
- cb ATSF SYSTEM (2) - closed

PNL 230
XPNDR - PRIM
PWR AMPL - 1
HGA SCAN - NORMAL (When undocked from SOYUZ)
- INHIBIT (When docked with SOYUZ)
HGA POWER - on(up)
HGA SERVO - PRIM
HGA BEAM - NARROW
HGA TRACK - REACQ
PITCH POSITION - as required
YAW POSITION - as required
OMNI SEL - UP TLM
TRDC - ON
UP TLM - UP TLM (ctr)
PCM RELAY - ON
RELAY MODE TV - UP TLM (ctr)
RELAY MODE TV REALTIME - UP TLM (ctr)
RELAY MODE DATA PCM - UP TLM (ctr)
RELAY MODE DATA REALTIME - UP TLM (ctr)
PWR AMPL CONT - UP TLM
SQUELCH - ON

PNL 400
POWER TELEMETRY - ON
POWER INTERLEAVER - ON
POWER VTR - ON
TAPE HEAD CLEAN - NORMAL
LAMP TEST - STATUS

PNL 808
DM 1 TV POWER - ON
DM 2 TV POWER - ON
CAMR SYNC - SOYUZ
TV STA SEL DM - UP TLM
TV STA SEL DM 1 - UP TLM

PNL 815
cb VHF FM XCVR DM A - closed

PNL 860
XMIT/ICOM - ctr
POWER - ON
SIGNAL - ON (up)
VOL tw - as desired

2 ATS - 6 RELAY MODES

A VOICE AND REALTIME DATA--MANUAL SELECT

Select BASIC, except:

RELAY MODE TV - DATA
RELAY MODE DATA PCM - PCM
RELAY MODE DATA REALTIME - REALTIME

B VOICE AND REALTIME EXPERIMENT DATA--MANUAL SELECT

Select BASIC, except:

RELAY MODE TV - DATA
RELAY MODE DATA PCM - PCM/SCI
RELAY MODE DATA REALTIME - REALTIME

C VOICE AND DRR PLAYBACK--MANUAL SELECT

Select BASIC, except:

RELAY MODE TV - DATA
RELAY MODE DATA REALTIME - PLAYBACK
TAPE RCDR RCD - PLAY

D TV MODES--MANUAL SELECT

(See S/1-44)

3 STDN_DIRECT_MODES

A VOICE, RANGING, AND RT-HBR DATA--MANUAL SELECT

Select BASIC

B VOICE, RANGING, AND RT-LBR DATA--MANUAL SELECT

Select BASIC, except:
PCM BIT RATE - LOW

C VOICE, RT-HBR DATA--MANUAL SELECT

Select BASIC, except:
S-BD MODE RNG - OFF

D VOICE, RT-LBR DATA--MANUAL SELECT

Select BASIC, except:
S-BD MODE RNG - OFF
PCM BIT RATE - LOW

E VOICE AND RANGING--MANUAL SELECT

Select BASIC,except:
S-BD MODE PCM - off (ctr)

F VOICE ONLY

Select Basic, except:
S-BD MODE PCM - off (ctr)
S-BD MODE RNG - OFF

G TV MODES--MANUAL SELECT

(See S/1-44)

4 VHF_MODES

A VHF AM SIMPLEX

Select BASIC, except:
VHF AM A - SIMPLEX

B VHF FM SIMPLEX

Select BASIC

C VHF FM/AM DUPLEX

Select BASIC, except:
VHF AM A - SIMPLEX
VHF AM (3) - RCV
VHF FM tw (3) - full decrease

D VHF RANGING MODE

Select BASIC, except:
VHF AM B - DUPLEX
VHF RANGING - on (up)
EMS FUNC - ΔV SET/VHF RNG
EMS MODE - BACKUP/VHF RNG
VHF RNG - RESET

NOTE: NO VHF AM voice transmission for ~ 12 sec following VHF RNG - RESET.

5. RELAY MODE (VHF FM to MCC-H via S-BD)

Select BASIC, except:

PANEL 10
MODE - VOX
VOX SENS - 8
VHF FM - RCV
VHF FM tw- 7
S BD - T/R
S BD tw - full decrease
POWER - AUDIO
MASTER tw - 7.5
INTERCOM - T/R
INTERCOM tw - full decrease
VHF AM - OFF
AUDIO CONTROL - BACKUP
PHONE/MIC CONNECT - ON

Route CDR CCU (Pnl 9) to vicinity of speaker box and secure.

-NOTE-

Speaker box intercom is fully functional. For A/G transmission, speaker box and CCU PTT switches must be simultaneously depressed.

6 COMM SLEEP CONFIGURATION (JOINT OPERATIONS)

A PRESLEEP

Select BASIC, except:
- Verify RELAY MODE (S/1-40)
- S BD - OFF (PNL 6)
- VHF FM - RCV (PNL 9)
- INTERCOM - RCV (PNL 9)
- VHF AM - OFF (PNL 9)
- HGA TRACK - REACQ

SET HGA PITCH _____, YAW _____ per FLT PLAN

If comm is required prior to POSTSLEEP reconfiguration, reconfigure Panel 9 AS required and utilize speaker box.

B POSTSLEEP

Select PRESLEEP, except:
- S BD - T/R (PNL 6)
- VHF FM - T/R (PNL 9)
- INTERCOM - T/R (PNL 9)

7 ATS-6 HGA OPERATION

PNL 225: cb ATS-F SYS: FLT BUS - closed
: GROUP 2 - closed

HGA TRACK - MAN
HGA SERVO ELEC - PRIM
HGA SCAN - NORMAL (When undocked from SOYUZ)

- INHIBIT (When docked with SOYUZ)

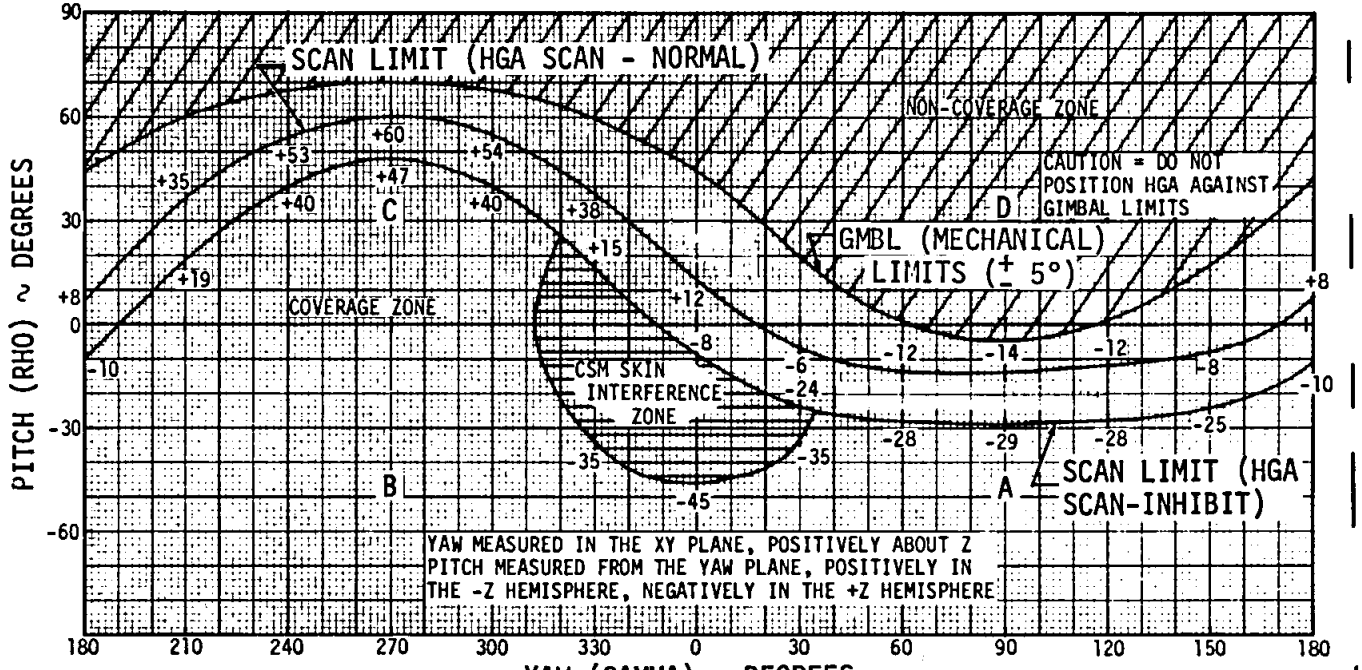
HGA BEAM - WIDE
HGA PWR - on (up)
Obtain ATS-6 pointing coordinates from flight plan or EMP ASTP-75 (G/1-36)
Verify required coordinates within coverage region (S/1-43)

* If required coordinates are inside the scan limit zone or skin interference zone, one or more of the following may be done:
*
* a. Change CSM attitude to provide antenna coordinates in the full coverage region
*
* b. Allow up to 60 seconds for the expected CSM attitude variation to alleviate the condition
*
* c. If required coordinates are within the skin interference zone, proceed with normal acquisition. Side lobe lock is indicated by HGA ind - <1/2 when in narrow beam.

HGA PITCH & YAW POS (2) - Set in required coordinates
HGA ind - >1/3 scale
HGA TRACK - REACQ
HGA BEAM - NARROW
HGA ind - >1/2 scale

-NOTE-

The HGA will track into the skin interference zone when properly locked in the narrow beam.



HIGH-GAIN ANTENNA SCAN LIMITS
YAW-PITCH COORDINATES (CSM)

S 1-43

DATE 2/6/75

8 TV MODES

A STDN REALTIME TV--MANUAL SELECT

Select BASIC, except:
S-BD AUX TV - TV
TV STA SEL CM - as required
TV STA SEL CM 1 - as required
RELAY MODE TV REALTIME - PLAYBACK
CAMR SYNC - as required (SOYUZ if Soyuz camera is operating)
TV STA SEL DM - as required
TV STA SEL DM 1 - as required
MODE (3) - VOX
VOX SENS - as required (~7)

B ATS-6 REALTIME TV--MANUAL SELECT

Select BASIC, except:

TV STA SEL CM - as required
TV STA SEL CM 1 - as required
RELAY MODE TV - TV
RELAY MODE TV REALTIME - REALTIME
CAMR SYNC - as required (SOYUZ if Soyuz camera is operating)
TV STA SEL DM - as required
TV STA SEL DM 1 - as required
MODE (3) - VOX
VOX SENS - as required (~7)

C STDN PLAYBACK TV--MANUAL SELECT

Select BASIC, except:
S-BD AUX TV - TV
RELAY MODE TV REALTIME - REALTIME
HEAD WHEEL DRIVE MOTOR - ON (MOTOR ON LT - on)
TAPE MODE - PLAY (PLAYBACK LT - on)

NOTE: Tape will stop automatically when end-of-tape is reached (MOTOR ON and PLAY lts will go off)

D ATS-6 PLAYBACK TV--MANUAL SELECT

Select BASIC, except:

RELAY MODE TV - TV
RELAY MODE TV REALTIME - PLAYBACK
HEAD WHEEL DRIVE MOTOR - ON (MOTOR ON LT-on)
TAPE MODE - PLAY (PLAY BACK LT - on)

Note: Tape will stop automatically when end-of-tape is reached (MOTOR ON and PLAY lts will go off)

E RECORD TV--MANUAL SELECT

Select BASIC, except:
SLAVE - as required (One camera must be selected MASTER - - all other operating cameras must be SLAVE. If the SOyuz camera is operating, it must be MASTER
TV STA SEL CM - as required
TV STA SEL CM 1 - as required
HEAD WHEEL DRIVE MOTOR - ON
(MOTOR ON lt - on)
TAPE MODE - RECORD (RECORD lt - on)

Note: If lights go off during recording, VTR is at end-of-tape.

CAMR SYNC - as required (SOYUZ if Soyuz camera is operating)
TV STA SEL DM - as required
TV STA SEL DM 1 - as required
MODE (3) - VOX
VOX SENS - as required (~7)

F VTR STANDBY--MANUAL SELECT

HEAD WHEEL DRIVE MOTOR - OFF
(RECORD, MOTOR ON lts - out)

G VTR REWIND--MANUAL SELECT

HEAD WHEEL DRIVE MOTOR - ON
(MOTOR ON 1t - on)
TAPE DRIVE - REWIND

Note: Tape will stop automatically and MOTOR lt will go off when beginning-of-tape is reached. Full tape rewind requires 7-1/2 minutes.

H VTR FAST FORWARD--MANUAL SELECT

HEAD WHEEL DRIVE MOTOR - ON (MOTOR ON 1t - on)
TAPE DRIVE - FAST FORWARD

Note: Tape will stop and MOTOR ON 1t will go off when end-of-tape is reached. Full tape fast forward requires 7-1/2 min..

I VTR LAMP TEST--MANUAL SELECT

LAMP - TEST and hold (PLAYBACK, MOTOR ON, RECORD, CLEAN HEADS 1ts - on)
LAMP - release (1t (4) - out)

J VTR TAPE HEAD CLEANING--MANUAL SELECT

At MCC-H direction:
TAPE HEAD - CLEAN
(CLEAN HEADS 1t - on)

Note: MCC-H will control VTR and will direct further action.

K VTR ACTIVATION--MANUAL SELECT

TELEMETRY POWER - ON
INTERLEAVER POWER - ON
VTR POWER - ON

L VTR DEACTIVATION - - MANUAL SELECT

HEAD WHEEL DRIVE MOTOR - OFF
(RECORD, MOTOR ON 1ts - out)
VTR POWER - OFF
INTELEAVER POWER - OFF
TELEMETRY POWER - OFF

9 VIDEO TAPE RECORDER (VTR) COOLING ACTIVATION

SUIT FLOW vlv - FULL FLOW (PNL 301) (verifY)
Connect supply hose (blue) to center
hose fitting on top of VTR

-NOTE-
If additional VTR cooling required
(per MCC-H direction), connect
center (PNL 302) suit supply hose (blue)
to hose fitting on side of VTR

10 VIDEO TAPE RECORDER (VTR) COOLING DEACTIVATION

Disconnect supply hose (blue) from VTR

11 VTR_VIDEO_BYPASS

Verify VTR and TV cameras (4) -OFF
Obtain tools W and 3 (U3-TOOL KIT
Obtain 3 inches of gray tape
Remove the three accessible high torque screws
  from the VTR connector cover plate
Stow loose screws by sticking to tape
Rotate the cover plate CCW about the remaining
  screw to expose the cable accesss hole
Remove the coax connector from J6 and connect to
  the left connector of the bypass adapter (upper
  edge of access hole)

To transmit TV to ATS-6:
  Remove the coax connector from J14 and connect
    to the unused end of the bypass adapter

To transmit TV to STDN:
  Remove the coax connector from J7 and connect
    to the unused end of the bypass adapter

Rotate the access cover plate CW and replace the
  three high torque screws

12 UNIFIED_S-BAND_EQUIPMENT_(USBE)_COOLING_ACTIVATION

Suit Flow vlv - FULL FLOW (PN1 300) (verify)
Remove hose screen & stow (A5)
Connect supply (blue) & Return (red) hoses
  to the USBE hose fittings (R/R) (B/B)
Secure O2 hoses with retention strap

13 UNIFIED_S-BAND_EQUIPMENT_(USBE)_COOLING_DEACT

Remove retention strap from O2 hoses
Disconnect Supply (blue) & return (red) hoses
  from USBE
Install hose screen (A5) on return hose (red)

GENERAL

1 PRESLEEP CHECKLIST

CREW STATUS REPORT (MEDICATION) (See FLT PLAN SUPP)
ONBOARD READOUTS
CYCLE H2 FANS (S/1-8)
CHLORINATE POTABLE WATER (if req'd) (S/1-22)
CLEAN SUIT CIRCUIT RETURN vlv screen behind Pnl 382
CLEAN SUIT HOSE screens

CABIN FANS - OFF
Clean CABIN H/X inlet screens
CABIN FANS - ON (as required)

VERIFY:
- WASTE MNGMT OVBD DRAIN - OFF
- WASTE STOW VENT vlv - CLOSED
- EMERGENCY CABIN PRESS - BOTH
- SURGE TANK 02 vlv - ON
- REPRESS PKG 02 vlv - OFF
- CABIN PRESS RELF vlv (RH/LH) - NORMAL
- PRESS EQUAL vlv - CLOSE
- DM TUNNEL VENT vlv - DM/CM ΔP
- E-MEMORY DUMP
- PRESLEEP COMM CONFIG (S/1-41)

2 POSTSLEEP CHECKLIST

CREW STATUS REPORT (SLEEP & RADIATION) (See FLT PLAN SUPP)

CONSUMABLES UPDATE
POSTSLEEP COMM CONFIG (S/1-41)

DM/CM INTERFACE

POST DOCKING PROCEDURES (CM/DM)

1 HATCH NO. 1 REMOVAL (Decal)

PRESS EQUAL vlv - OPEN (CCW)

* PRESS EQUAL vlv will not open *
* *
* TUNL VENT vlv - DM PRESS *

ACTR HNDL - unstow, pull to stop, set to U

- push to stop

* *
Malf HATCH 1
* *

Verify GEARBOX DISCONNECT SOCKET - U

ACTR HNDL sel - STOW, push handle to stow

Remove hatch, stow

2 DOCKING LATCH VERIFICATION (12 LATCHES) (Decal)

(Figure on S/2-13)

LATCH HNDL - Pull lightly to verify hook engaged (12 latches)

* Not Engaged - Attempt to engage before releasing *

LATCH IND BUTTON (Red) - Flush (12 latches)

POWER BUNGEE FAIRING - Parallel to +X

* Not parallel - Push +X end of bungee before releasing *

* Unlocked Latches -
*
*
* Release (cock) Latches
*
* * Latch Hook does not dis-engage
* *
* * AUX REL (yellow) -push
* * Release (cock) Latch
*
* Engage Latch - push Man-Release *

Verify PROBE EXTEND LATCH engaged indicator (red) not visible

GN2 BLEED button (red) - press(10 sec)

3 DM_UMBILICAL_CONNECTION (Decal)

DM connector fairings (CM tunnel-2 orange) - open
PROBE/DM conn fairings(CM tunnel-2 yellow) - open
Disconnect PROBE UMBILICALS (2-yellow) and stow
on probe

Unstow one connector (yellow) from DM tunnel
Connect to yellow receptacle and lock
Pos umbilical in slot, close fairng
Repeat for orange umbilical to orange receptacle,
lock, position and close fairing

Repeat for orange and yellow umbilicals on
opposite side of tunnel

4 PROBE_REMOVAL (Decal) (Figure on S/2-11,12)

Verify EXTEND LATCH engaged indicator (red)
not visible

* EXTEND_LATCH_not_engaged - *
*
* PRELOAD SEL LEVER-rotate CW(toward *
* orange stripe) *
* PRELOAD HNDL - Torque CCW to engage *
* extend latch (red ind. not visible) *

GN2 BLEED button (red) - press (10 sec)

PRELOAD SEL LEVER - rotate CCW (parallel
to orange stripe)

PRELOAD HNDL - Torque CW to unload support beams

PROBE UMIBLICALS (2)(yellow) - disconnect and stow
Elec connector covers (2)(yellow) - close
PRELOAD HNDL - pos against umbilical connector
PRELOAD SEL LEVER - mid position

INSTALLATION STRUT - unstow, position on tunnel
wall (yellow marks)

RATCHET HNDL - unstow to full extension (green band)
- push to first detent (red band)

WARNING: Left hand on blue handle

- push outbd and hold to fold probe * Malf DOCK 1 *

- pull to full extension (green band)
- ratchet one stroke only

Restow RATCHET HANDLE and INSTALLATION STRUT

CAPTURE LATCH RLSE TOOL (TOOL 7) (L2) - Insert in pyro cover ("7" aligned w/yellow support beam)
- Rotate 180 Deg CW and hold to unlock

Remove PROBE - pull aft to release (25 lbs)

* Capture latches will not release - *
*
* Unstow Ratchet Hndl to full extension (green band) *
* Ratchet probe forward to orange hash mark *
* Preload Sel Lever - rotate CCW (parallel to orange stripe) *
* Torque Preload Hndl CW until latches release *
* Push Ratchet Hndl to first detent (red band), push outbd and hold to fold Probe (Loose) *
* Remove Probe to Couch *
* Pull Ratchet Hndl to full extension & ratchet one stroke *
* Restow Ratchet Hndl & Installation Strut *

Verify CAPTURE LATCH cocked - plunger recessed below probe head cap

Remove and stow TOOL 7 (L2)

5 DROGUE_REMOVAL (Decal)

LOCK LEVER - Pull, rotate 90 Deg CCW

DROGUE - rotate CW, push clear of support, remove from tunnel

6 HATCH_NO._1_INSTALLATION (Decal)

Align Hatch in tunnel

ACTR HNDL - unstow, pull to stop, Set to L

- push to stop

* Malf HATCH 2 *

Verify gearbox disconnect socket - L

ACTR HNDL sel - STOW, push handle to stow

HATCH PRESS EQUAL vlv - CLOSED (CW)

* Pressure_Equalization_Valve_Will_Not_Close *

Remove Hatch

Use Tool B In External Tool Interface for additional leverage

PRE-UNDOCKING PROCEDURES (DM/CM)

1 INSTALL DROGUE (Decal)

DROGUE - Align Lugs with fittings, rotate CCW to stops
LOCK LEVER - Rotate 90 deg CW to detent

2 INSTALL PROBE (Decal) (Figure on S/2-11,12)

Push PROBE into DROGUE

Verify capture latches engaged (PULL AFT WITH FORCE)

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

-ratchet probe fwd to orange hash mark

* Pushing Ratchet Handle Outboard Does Not *
*
* Ratchet Probe Forward - *
*
* Push ratchet handle to first detent (red band) *
* Slowly push ratchet handle outboard ~25 deg until audible click. (If pushed outboard past point of click, probe will release) *
* Repeat until orange hash mark is visible *

Restow RATCHET HNDL and INSTALLATION STRUT

CAUTION: For stowage-adjust PRELOAD HNDL until probe loose in tunnel and pos at 45 deg to support beam

Verify RATCHET PAWL ind (red) flush with housing

```
* Ratchet pawl indicator not flush -     *
*                                        *
*  Hold RATCHET HANDLE full outboard     *
*  Press Pawl indicator to seat (flush)  *
*  Release RATCHET HANDLE                *
```

PRELOAD SHAFT - push up into detent
PROBE UMBILICALS(2)(yellow) - connect to dock ring

NOTE: For stowage, umbilical connection not required

GN2 BLEED button (red) - press (10 sec)

3 PRELOAD PROBE (Decal)

PRELOAD SEL LEVER - rotate CCW(parallel to orange stripe)
PRELOAD HNDL - torque CW to release
Verify capture latches engaged (gap between cap & cylinder)
PRELOAD HNDL - Push inboard to detent, pos 45 deg to support beam
PRELOAD SEL LEVER - mid position

4 PROBE UMBILICAL VERIFICATION

Release (cock) Docking Latch #1 & 7
cb DOCKING PROBE (2) - close
DOCK PROBE RETR (2) - OFF (verify)
PROBE EXTD/REL - RETR
PROBE EXTD/REL tb(2) - bp (verify)
cb DOCKING PROBE (2) - open
PROBE EXTD/REL - OFF
Verify Probe Extend Latch engaged Indicator (red) not visible

5 DOCKING LATCH RELEASE (Decal) (PERFORM SUITED)
(Figure on S/2-13)

RELEASE BUTTON - depress to release
LATCH HNDL - pull one or two strokes until bungee recocks

Cannot Release Docking Latch By Pulling

* Handle (Resistance to stroke) *

* Depress aft end of RH no-back pawl *
* while pulling on latch handle. *
* If unsuccessful, use tools E&R to *
* depress LH no-back pawl through *
* hole in fairing cover while *
* pulling on Latch Handle *

*Cannot Perform Second Stroke *

* (Handle freewheeling) *
* Remove LH fairing cover (Tools E&R) *
* Depress driving pawl while pulling handle *

Verify LATCH HOOK rotated inboard to clear DM RING

Hook does not dis-engage-

* AUX REL(yellow)-push *
* Release (cock) Latch *

*Hook does not stand-off from ring *

* Pull handle rearward and hold *
* Jam Tool 1 behind hook *
* Release handle slowly *
* Verify hook clear of ring *

Verify/push LATCH HNDL outboard against LATCH HOOK

*High O2 Flow While Releasing Docking Latches *

* Re-engage/verify 3 latches ~120 deg apart *
* are engaged *
* Slowly torque PRELOAD HNDL (CW) until *
* breakout releases: repeat (3) times *
* Release docking latches *

6 HATCH NO. 1 INSTALLATION (Decal)

Align Hatch in tunnel
Actr Hndl - unstow, pull to stop, set to L
- push to stop
Verify gearbox disconnect socket - L

Malf HATCH 2

ACTR HNDL sel - stow, push handle to stow
HATCH PRESS EQUAL vlv - CLOSED (CW)

*Pressure Equalization Valve Will *
* Not Close - *
* Remove Hatch *
* Use Tool B In External Tool Inter-*
* face For Additional Leverage *

7 HATCH NO.1 PRESSURE INTEGRITY CHECK (Decal)

Verify CABIN PRESS ind - 4.7-5.3 psi (Panel 2)

TUNL VENT vlv - VENT for 30 sec (Panel 12)

- DM/CM ΔP ind, check ΔP

- Recycle to TUNL VENT until ΔP>-3.5 (~8 1/2 min)

Verify DM/CM ΔP ind constant (+/-.2) at last value for 2 min

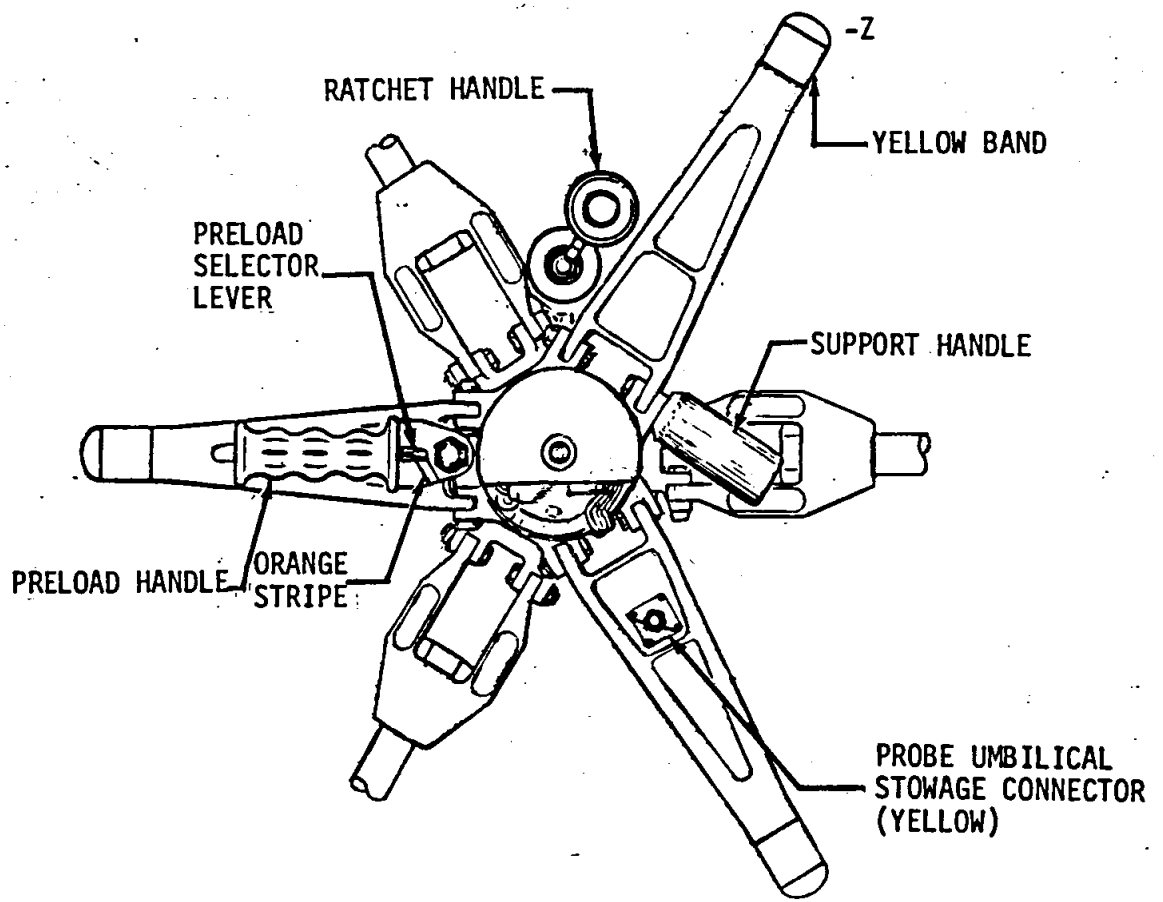
Verify O2 FLOW ind - no increase

DM ΔP changes and/or O2 FLOW incr
*
* PRESS EQUAL vlv - OPEN *
* When DM ΔP~0, Remove hatch *
* Check hatch seals for *
* foreign objects and damage *
* Install hatch *
* PRESS EQUAL vlv - CLOSE *
* Repeat hatch integrity check *

*DM ΔP still changes and/or O2 *
*
* FLOW incr- *
*
* PRESS EQUAL vlv - OPEN *
* When DM ΔP~0, Remove hatch *
* Re-engage/verify 3 latches ~120 deg*
* apart are engaged *
* Remove probe & drogue *
* Check DM hatch seals for *
* foreign objects and damage *
* Reseat DM hatch *
* Reinstall drogue & probe *
* Release 3 latches *
* Reseat CM hatch *
* PRESS EQUAL vlv - CLOSE *
* Repeat hatch integrity check *

Before Undock or Jettison:

DM TUNL VENT vlv - VENT for 10 min
DM/CM ΔP ind - verify >-4.0 (pegged)
DM TUNL VENT vlv - OFF
TUNNEL LIGHTS - OFF



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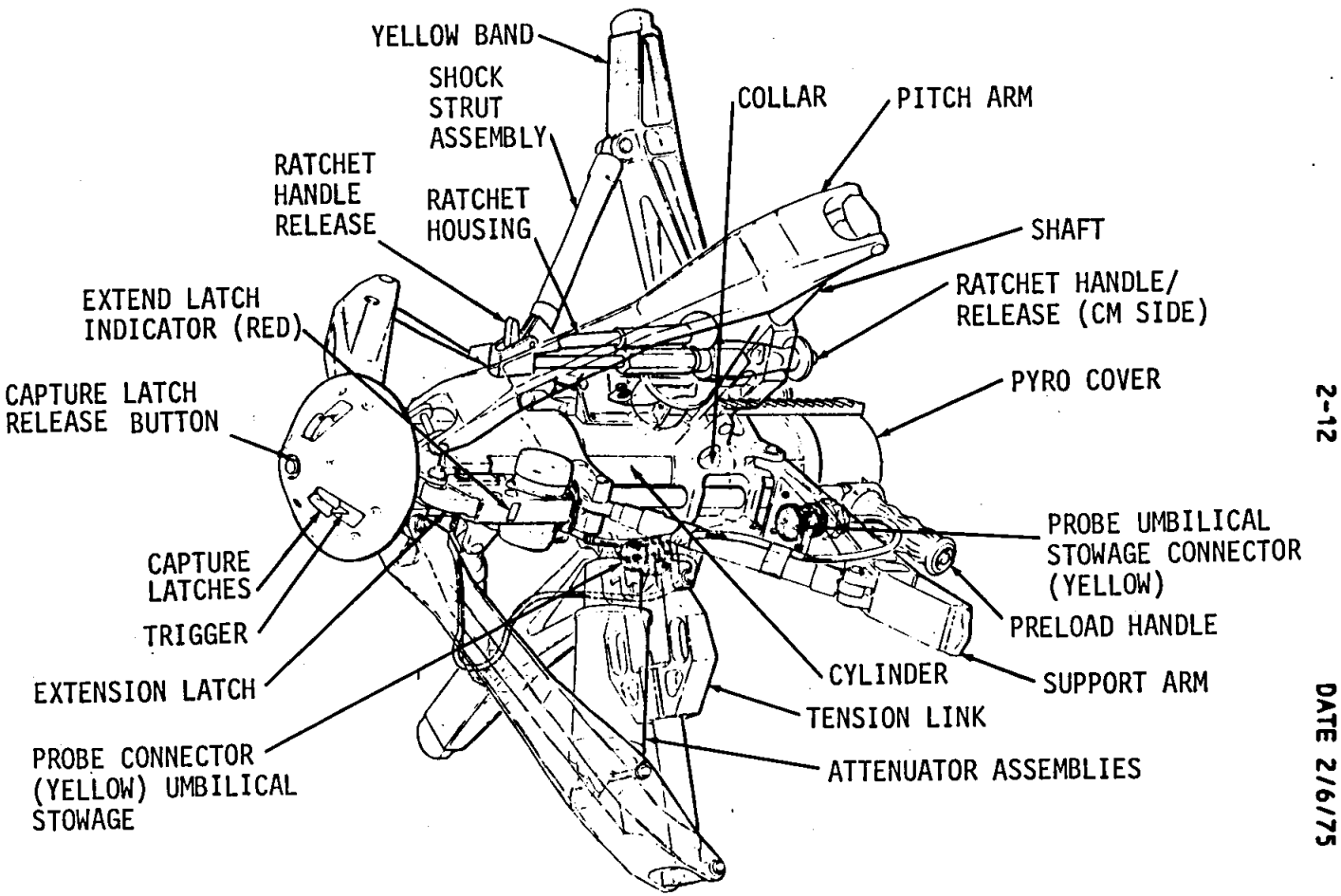

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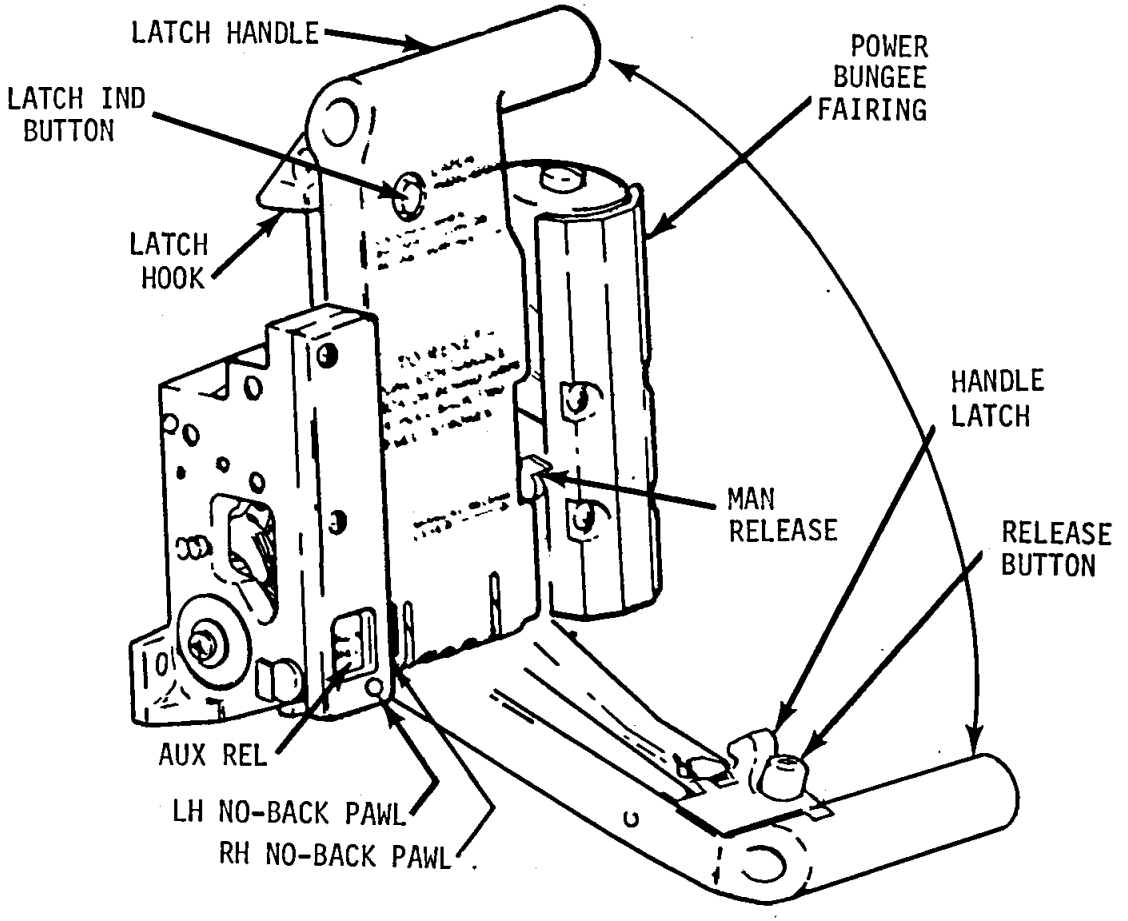

DOCKING LATCH

S
2-13

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BACKUP DOCKING PROCEDURES (CM/DM)

1 SECOND DOCKING ATTEMPT

Positive Indication Of No Capture

THC -X, withdraw to formation flight distance

PROBE EXTD/REL - EXTD/REL for 5 sec

- RETR

PROBE EXTD/REL tb (2) - gray (verify)

Attempt redocking as before

At contact THC +X until capture

2 THIRD DOCKING ATTEMPT

Still Positive Indication Of No Capture

THC -X withdraw to formation flight distance

Attempt redocking as before and
PROBE EXTD/REL - EXTD/REL (hold)
during final phase prior to contact

At contact
THC +X until capture or 10 sec max
AFTER 6 sec, PROBE EXTD/REL - RETR

3 FINAL DOCKING ATTEMPT

SECS PYRO ARM (2) - SAFE

SECS LOGIC (2) - OFF

cb SECS ARM (2) - open

THC, RHC - locked

Remove both access pnls below pnl 276

Top panel - calfax
Bottom panel - Tool E

Unstow combined WMS Power Cable and
Docking Probe Aux Cable (L2)

UTIL PWR - OFF (verify)(Pnl 15)

Connect WMS Backup Cable to UTIL PWR connector

Route cable to RHEB

Remove cover from conn J5 on LDEC
System B box (lower box) and connect
docking Probe Aux Cable

THC, RHC - unlock

Attemot docking as before and
At contact
THC +X until hard dock or 10 sec max
UTIL PWR - on (up) while thrusting
UTIL PWR - OFF, after probe retract

After hard dock:
CMC MODE - FREE

CONTINGENCY PROCEDURES

1 DOCKING INTERFACE ROLL MNVR

COMPLETE IVT & CLOSEOUT

All crewmen transfer to CSM (w/PGAs)
Close DM hatch
Install drogue (decal) (S/2-6)
Install probe (decal) (S/2-6)
Preload probe (decal) (S/2-7)
Connect to Suit Loop (R/R, B/B)
Don helmet & gloves
Verify CM Suit Check complete
Release docking latches (decal) (S/2-8)
Install Hatch No 1 (decal) (S/2-9)
Perform hatch integrity check (decal) (S/2-9)

SOFT UNDOCKING SWITCH CONFIGURATION

RHC PWR NORM (2) - AC/DC
RHC PWR DIR (2) - OFF
MAN ATT : ROLL - MIN IMP
: PITCH, YAW - RATE CMD
LIMIT CYCLE - OFF
DBD/RATE - MIN/LOW
THC PWR - on (up)
RHC, THC - ARMED
cb DOCKING PROBE (2) - close
AUTO RCS : B/D ROLL (4) - MNA or MNB
: A/C ROLL (4) - OFF
: PITCH A3, C4 - MNA or MNB
: YAW B3, D4 - MNA or MNB
SC CONT - SCS
PROBE RETR (2) - OFF (verify)

CONTINGENCY PROCEDURES

SOFT_UNDOCK

PROBE EXTD/REL - RETR
PROBE EXTD/REL tb (2) - bp (verify, 1 req'd)
PROBE EXTD/REL - OFF
cb SECS LOGIC (2) - close (verify)
cb SECS ARM (2) - close
CUE STDN for LOGIC ARM
  SECS LOGIC (2) - on (up)
STDN go for PYRO ARM
  SECS PYRO ARM (2) - on (up)
PROBE EXT/REL - EXT/REL (mom)
Verify Probe extend, DM attached

ROLL_MNVR_&_HARD_DOCK

Allow Motion to Damp (5 sec)
CSM Roll to Optimum Position
At Completion of Roll Mnvr
  Allow motion to damp (5 sec)
  PROBE EXTD/REL - RETRACT
  PROBE RETRACT - SEC 1 (PRIM 2)
At Dock Latch
  PROBE EXTD/REL tb (2) - gray
After Hard Dock
  SECS PYRO ARM (2) - SAFE
  SECS LOGIC (2) - OFF
  cb SECS ARM (2) - open
  cb DOCK PROBE (2) - open
  SC CONT - CMC
  THC/RHC - LOCKED
  PROBE EXT/REL - OFF
  THC PWR - OFF
  RHC PWR NORM (2) - OFF
  RHC PWR DIR (2) - OFF (verify)
AUTO RCS SEL A3, B3, C4, D4, - OFF
MAN ATT: ROLL - RT CMD
CABIN FANS - ON
Equalize CM/DM Pressure (decal)
Remove Hatch 1 (decal) (S/2-1)
Verify Docking Latches (decal) (S/2-2)
Remove and stow probe & drogue (decal)(S/2-3,4,5)
Open Hatch 2

2 CSM_UNDOCKING_FROM_DM

Verify_CSM/DM_pwr_interface_deactivated

UVA drag-thru cable removed
cb DM FURNACE/CRYSTAL GROWTH (3) - open

cb DM PWR (2) - open
cb DS A (6) - open
cb DS B (6) -open
cb DOCK PROBE (2) - open

All_crewmen_transfer_to_CSM

Perform_prep_for_CSM/DM_sep

TUNL LTS - on (up)

Disconnect & stow DM umbilicals (4)

INSTALL DROGUE (Decal) (S/2-6)

INSTALL PROBE (Decal) (S/2-6)

DONN PGAs (S/1-12)

SUIT CIRCUIT/PGA INTEGRITY CK (S/1-15)

PRELOAD PROBE (Decal) (S/2-7)

PROBE UMBILICAL VERIFICATION (S/2-7)

DOCKING LATCH RELEASE (Decal) (S/2-8)

HATCH NO. 1 INSTALLATION (Decal) (S/2-9)

HATCH NO. 1 PRESSURE INTEGRITY CHECK (Decal) (S/2-9)

TUNL LTS - OFF (verify)

Perform_sys_prep

cb A/C ROLL, B/D ROLL, P, Y (8) - close (verify)

MAN ATT (3) - RATE CMD

ATT DBD - MIN

RATE - HI

THC PWR - on (up)

RHC PWR NORM (both) - AC/DC

RHC PWR DIR (both) - MNA/MNB

AUTO RCS (16) - MNA/MNB

SC cont - CMC/AUTO

BMAG MODE (3) - RATE 2

ΔV Setup

Set ΔV ind +100.0 fps

cb DOCK PROBE (2) - close

PROBE EXTD/REL - RETR

PROBE EXTD/REL tb (2) - bp (verify)

PROBE EXTD/REL - OFF

SPOT LIGHT - ON

Perform_final_prep_panel_oper

Set Evnt Tmr _____:_____

EVNT TMR START - START

(00:30) EMS MODE - NORM

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Undocking/Seperation

At 00:00

PROBE EXTD/REL - EXTD/REL & hold
for DM sep +5 sec

PROBE EXTD/REL tb (2) - gray to bp to gray

Monitor DM sep, Record Δv_c

SPOT LIGHT - OFF

EMS - STBY/OFF

3 CO2 PURGING

CABIN PRESSURE RELIEF VALVE METHOD

Pn1 326 SURGE TK O2 vlv - ON (verify)
Repress PKG vlv - OFF (verify)
Pn1 325 Cab Press RELF vlv (2) - NORMAL (verify)
Pn1 351 CAB Repress vlv -OPEN (CW)
O2 Flow - 1.0 lb/hr (pegged)
O2 Flow Hi lt - ON
MONITOR Cabin Press for CPRV crack
(5.8 - 6.3 psia)
Verify Cabin Press remains between
5.8 - 6.3 psia

FWD HATCH PRESS EQUAL VALVE METHOD

Pn1 326 SURGE TK O2 vlv - ON (verify)
REPRESS PKG vlv - OFF (verify)
Pn1 351 CAB REPRESS vlv - OPEN (CW)
O2 Flow - 1.0 lb/hr (pegged)
O2 Flow Hi Lt - ON
Fwd Hatch PRESS EQUAL vlv - open
(ccw ~ 50 deg Turn/5 notches)
Monitor Cabin Press & Maintain
between 4.7 - 5.6 psia
* Increasing Press - *
* Inc. Equal vlv ccw one notch *
* Decreasing Press - *
* Dec. Equal vlv cw one notch *

DECOMPRESS CABIN CO2 PURGE FOR SUIT LOOP

Pn1 326 SURGE TK O2 vlv - ON (verify)
REPRESS PKG vlv -OFF (verify)
Pn1 7 Direct O2 vlv - OPEN (ccw)
Adjust Direct O2 vlv to obtain
c steady surge tank pressure
of 600 - 650 psia
At CM/SM SEPARATION
REPRESS PKG vlv - ON

4 BACKUP PROBE RETRACT (Prim - 2 bottle

WARNING

Time critical procedure due to imminent ENTRY interface

Remove upper access panel below pn1 276(calfax) and temporarily stow
Unstow combined WMS Power Cable and Docking Probe Aux Cable (L2)
UTIL PWR - off (verify) (Pn1 15)
Remove cover from conn J5 on top LDEC System A box and connect combined cable
Route cable to UEB and connect to UTIL PWR connector (Pn1 15)
UTIL PWR - ON (up)
UTIL PWR - OFF (after probe retract)
Disconnect combined cable and stow (L2)
Replace covers on connectors J5 (LDEC) and UTIL PWR receptacle (Pn1 15)

5 SIDE HATCH OPERATIONS (For SEVA Only)

Hatch Opening - SEVA

GN2 vlv HANDLE - PULL to vent
GAGE READS - MIN
Verify/install alignment marks on counterbalance
Disconnect hatch counterbalance lock pin (Tool B, turn CCW to stop
LOCK PIN RELEASE KNOB - UNLOCK
LOCK PIN INDICATOR - released(white to yellow)
GEAR BOX SEL - UNLATCH
ACTR HANDLE SEL - U
UNSTOW ACTR HANDLE
UNLOCK HATCH
ACTR HANDLE SEL - L
STOW ACTR HANDLE
OPEN HATCH
Verify hex clears
Verify hatch full open
SIDE HATCH DUMP vlv - CLOSE

Hatch Closing

Verify hatch clear of obstructions
Unstow lanyard
Pull and close hatch
Verify hex clears
CLOSE HATCH
GEAR BOX SEL - LATCH
Unstow ACTR handle
LOCK HATCH
Verify LOCK PIN dropped in (white to white)
STOW ACTR HANDLE
ACTR HANDLE SELECT - N
GEAR BOX SEL - LATCH (verify)

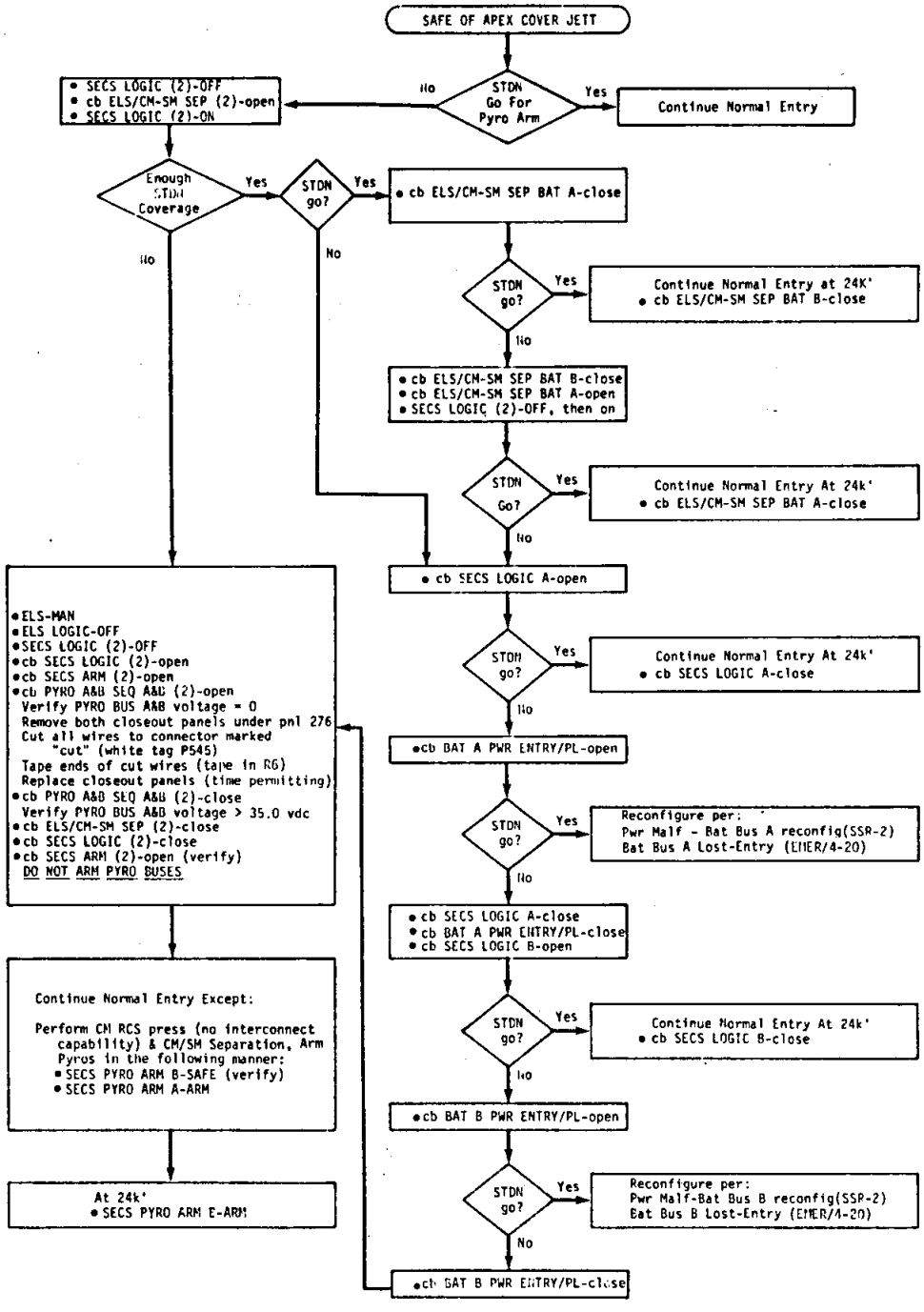
* Hatch will not latch (frozen gearbox)- *
* *
* Install (3) jackscrews to restrain hatch *
* in closed position *
* Use tool B to remove (2) clevis pins con- *
* necting linkage to gearbox and (1) clevis *
* pin from linkage in upper LH corner. *
* Tighten jackscrews to close hatch as far *
* as possible. *
* Use tool F on flats of latch bellcrank *
* to drive latch to over-center closed *
* position (Apply tool F to upper two *
* latches on hinge side to drive the lower *
* and hinge side linkage closed). Apply *
* tool F to center latch to drive upper *
* linkage closed. Gearbox side linkage may *
* not close if gearbox is in full open *
* position. *
* Install clevis pins in threaded hole *
* in linkage bell cranks at upper LH *
* corner & lower RH corner (Clevis pin *
* installed when approx half the threads are *
* visible). *

6 FUEL_CELL_SHUTDOWN (Applicable FC)

FC HTR - OFF
FC REAC - OFF, tb-bp
FC RAD tb - gray
FC PUMP - off (center)
cb FC PUMPS AC - open
At Tskin <200 deg F
  H2 PURGE LINE HTR - ON (for 20 min)
  FC PURGE - O2
  FC PURGE - H2 (After O2 PRESS stabilizes)
  FC PURGE - OFF (After H2 PRESS stabilizes)
  H2 PURGE LINE HTR - OFF
  cb FC RAD/REACS - open

S
3-10

DATE 2/6/75



CONTENTS

BACK

COLOR_____

SCS LOGIC BUS LOSS

EMER
4-2

DATE 2/6/75

SCS LOGIC BUS LOSS (LAUNCH PHASE)

LOGIC BUS 1 LOST

BMAG MODE (3) - RATE 2 or ATT 1 RATE 2 (AS READ)
SPS THRUST - DIRECT (AS REQD)

LOGIC BUS 2 LOST

CK FDAI SEL- 1/2
CK BMAG MODE (ROLL) - RATE 1

LOGIC BUS 3 LOST

TRANS CONTR - CW
CK BMAG MODE P, Y (2) - RATE 1
SCS TVC (2) - RATE CMD

LOGIC BUS 4 LOST

FDAI SEL - 1

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EMERGENCY CSM/LV SEP

V37E 47E

cb SECS ARM (2) - close

SECS LOGIC (2) - on (up)

SECS PYRO ARM (2) - ARM

THC PWR - on (up)

THC - ARMED

BMAG MODE (3) - ATT 1/RATE 2

If before T,D & E:
THC - CCW (4 sec)
THC - NEUTRAL, then +X (43 sec)

If after T,D & E (DM Umbilicals connected):
SIVB/DM SEP - on (UP)
SC CONT - CMC/AUTO
Thrust -X (53 sec)

V82E, Check HA & HP

BACK

COLOR_____

EMER
4-4

DATE 2/6/75

ECS

SUIT_COMPRESSOR_LITE_-_CLOSED_SUIT_LOOP

SWITCH TO OTHER COMPRESSOR ON OTHER BUS
SEE ECS 9

O2_FLOW_HI_+_RAPID_LOSS_OF_SURGE_TK_PRESS

+_CABIN_PRESS_<4.6_PSI

ECS

CABIN PRESS RELF vlvs (2) - CLOSE
CK TUNNEL EQUALIZATION vlv - CLOSED
REPRESS PKG vlv - ON (WHEN SURGE TK PRESS <150 PSI)
CK EMERG CABIN PRESS REGS - BOTH
DON SUITS

CONTAMINATION_IN_CM

DON O2 MASKS

CONTAMINATION_IN_CLOSED_SUIT_LOOP

CHANGE TO OTHER SUIT COMPR
DIRECT O2 vlv - FULL OPEN THEN ADJUST FOR SUIT
TO CABIN ΔP OF 2 IN OF H2O

IF CONDITION PERSISTS

SUIT COMPR (2) - OFF
DOFF HELMETS
DIRECT O2 vlv - CLOSE
DON O2 MASKS

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SMOKE/FIRE IN CM (UNDOCKED)

MONITOR DC FOR HI CURRENT - REMOVE
POWER FROM ASSOCIATED INVERTER

IF CURRENT REMAINS HI - REMOVE

POWER FROM ASSOCIATED DC BUS

IF CLOSED SUIT LOOP, SWITCH SUIT COMPR

TO GOOD AC BUS

IF HELMET OFF, SUIT COMPR (2) - OFF

CABIN FANS OFF

RECONFIGURE INVERTER 3 ON LOST AC BUS
VERIFY RCS CONTROL POWER CONFIGURATION

IF HELMETS OFF,

EMER O2 - ON (600)
DON O2 MASKS
USE FIRE EXTINGUISHER OR H2O GUN (optional)

IF CLOSED SUIT LOOP

USE FIRE EXTINGUISHER OR H2O GUN (optional)

CK EMERG CABIN PRESS REGS - OFF

IF FIRE PERSISTS - DUMP CABIN

COLOR_____

EMER
4-6

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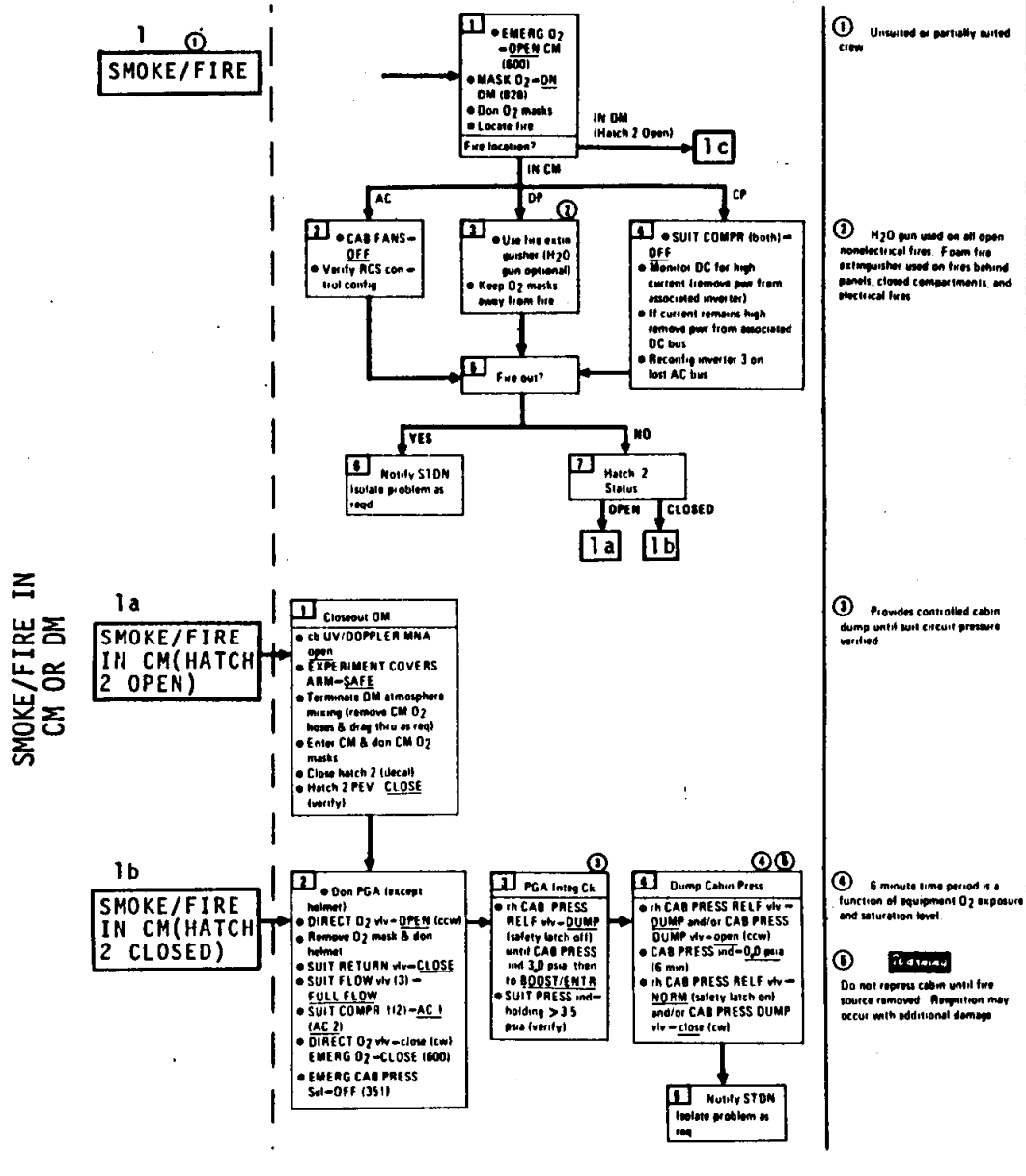
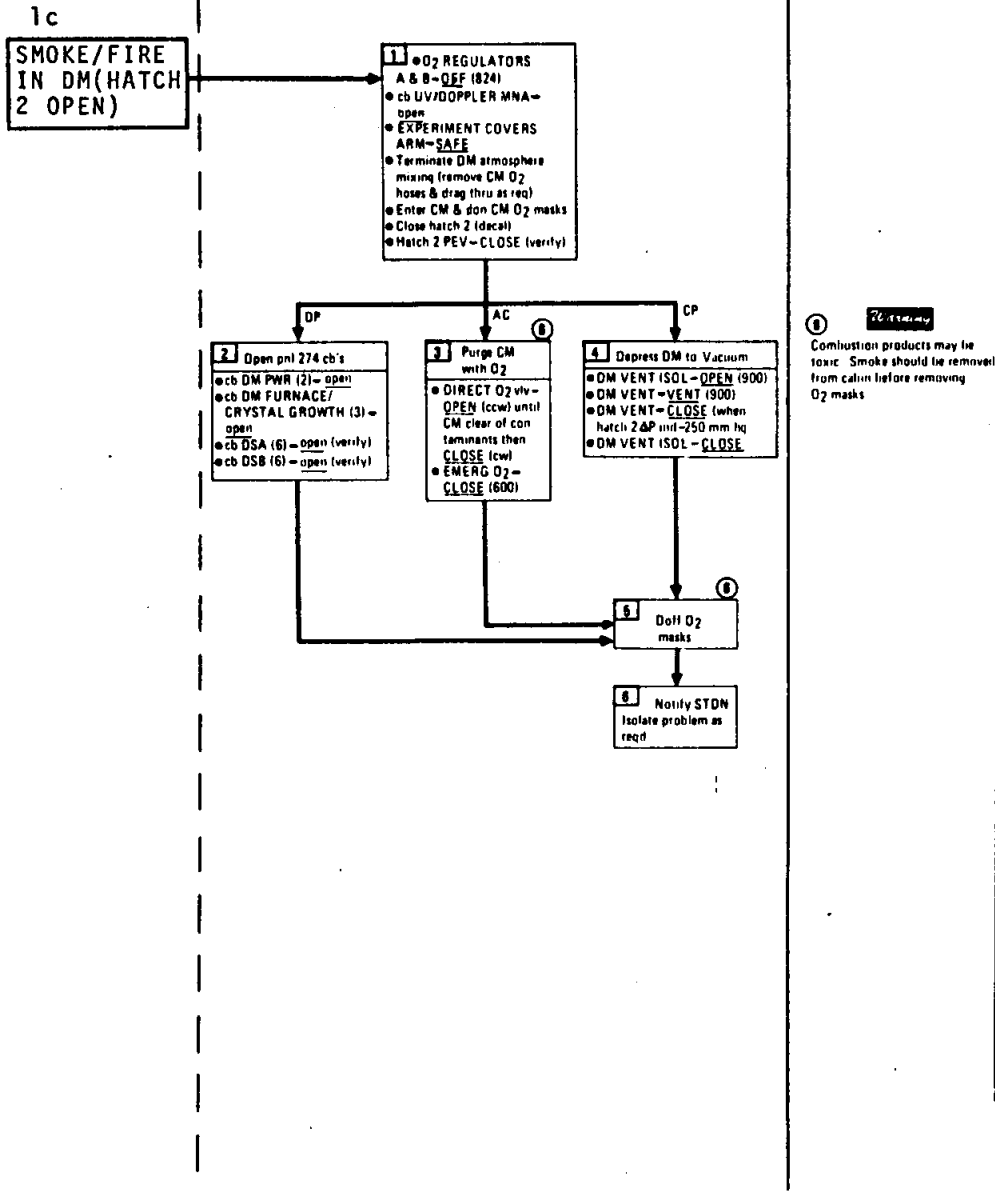
SMOKE/FIRE IN CM OR DM



SMOKE/FIRE IN CM OR DM (cont)



SMOKE/FIRE IN CM (DOCKED WITH DM & SOYUZ)

MONITOR DC FOR HI CURRENT - REMOVE POWER
FROM ASSOCIATED INVERTER

IF CURRENT REMAINS HI - REMOVE POWER
FROM ASSOCIATED DC BUS

SUIT COMPR (2) - OFF
CABIN FANS - OFF
RECONFIGURE INVERTER 3 ON LOST
AC BUS
VERIFY RCS CONTROL POWER CONFIGURATION
EMER O2 - ON (600)
DON O2 MASKS
USE FIRE EXTINGUISHER OR H2O GUN (OPTIONAL)
COSMONAUT TRANSFER TO DM &
DON O2 MASK (IF MIXED CREW)

SMOKE/FIRE IN DM OR OM

PNL 274:
cb DM FURNACE/CRYSTAL GROWTH (3) - open
cb DS A LOGIC-IND-PWR (2) - open (verify)
cb DS B LOGIC-IND-PWR (2) - open (verify)

INFORM SOYUZ TO SWITCH TO VHF AM SIMPLEX
PANEL 9: VHF AM - T/R (verify)
PANEL 3: VHF AM A - SIMPLEX
STANDBY WITH 2 O2 MASKS FOR DM CREW
MASK O2 - ON (600)
SUIT FLOW vlvs (2) - OFF (301,302)

G&N CRITICAL BURNS

IF NO START OR ISS LITE + PROG LITE
IF CMC LITE, PROG ALARM 1407 OR EARLY CUTOFF

SCS TVC (2) - AUTO
SC CONT - SCS
CK ATTITUDE
SPS THRUST - DIRECT (MOMENTARY), IF REQ'd

IF ABNORMAL DYNAMICS

THC CW, control rates by MTVC
After SHUTDOWN, AUTO RCS (16) - OFF

SCS CRITICAL BURN

IF NO START OR EARLY CUTOFF

SPS THRUST - DIRECT (MOMENTARY)

IF RATE NEEDLE HARDOVER & FDAIs DIVERGE OPPOSITE

BMAG MODE (3) - RATE 1
THC - CW, use MTVC

IF ABNORMAL DYNAMICS IN AUTO MODE

THC - CW, use MTVC
BMAG MODE (3) - RATE 2

IF ABNORMAL DYNAMICS IN MTVC MODE

THC - CW
IF PROBLEM PERSISTS, SHUTDOWN
AUTO RCS (16) - OFF

COLOR_____

EMER
4-10

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SCS DOCKED ATT CONTROL

SCS DOCKED (CSM/DM/SOYUZ) ATTITUDE CONTROL

SC CONT - SCS

AUTO RCS SEL (PITCH A4,C3/YAW B4,D3) - MNA/MNB

(PITCH A3, C4/YAW B3,D4) - OFF

(ROLL B1,B2,D1,D2) - OFF

DBD/RATE - MIN/HIGH (verify)

MAN ATT (ROLL) - MIN IMP (verify)

RHC PWR NORM 2 - AC/DC

MNVR CSM/SOYUZ BACK TO SI ATTITUDE

WHEN AT SI ATTITUDE

MAN ATT (3) - RATE CMD

BMAG MODE (3) - ATT 1/RATE 2

SPS

IF NO CUTOFF AFTER ΔV THRUST (BOTH) = OFF

cb SPS PILOT VLVS - open

IF EMS & N40 (R3) STILL COUNTING AFTER SHUTDOWN

SC CONT - SCS
TRANS CONT PWR - OFF
cb DIR ULLAGE (2) - open
IF CONDITION PERSISTS, AUTO RCS SEL (16) - OFF
SM RCS PRPLNT (AFFECTED QUAD) - OFF

ISPS PRESS LITE

CONTINUE CRITICAL BURN

IF FUEL & OX PRESS (BOTH) > 200 PSI

SPS HE vlvs (2) - OFF, THEN CONTROL MANUALLY BETWEEN 170-200 PSI

IF FUEL/OX ΔP > 20 PSI

SPS HE vlvs (2) - ON
IF CONDITION PERSISTS, SPS HE vlvs(2)-OFF (Until Pc <70)

SPS G & C

G&C (COASTING, ENTRY)

ICMC LITE

SC CONT - SCS, SEE G&N 5

ISS LITE + PROG ALARM LITE

SC CONT - SCS, SEE G&N 6

COLOR_____

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EMER POWER DOWN

EMERGENCY POWER DOWN

Note: Below tabulation of loads to be powered down in listed order with systems blocks (see EMER/4-13,14) inserted as appropriate to situation

INSURE DRR IS RECORDING	DC AMPS
VTR POWER - OFF.	5.2 MAX
IF UNSUITED, SUIT COMP (2) - OFF	4.0
FC PUMPS (3) - OFF (Until Tskin > 475 deg)	8.7 TOTAL
cb G&N OPTICS MNA & MNB (2)- OPEN (Pnl 5).	3.1
G&N PWR (AC) - OFF (Pnl 100)	0.9
O2 HTRS (2) - OFF (CTR).	11.4
H2 HTRS (2) - OFF (CTR).	1.4 TOTAL
H2 FANS (2) - OFF (CTR).	1.0
C/W NORMAL - ACK	
POT H2O HTR - OFF.	1.6 MAX
SM RCS QUAD HTRS (4) - OFF (PNL 274) . . .	21.4 MAX
SM RCS ENG PKG HTRS (4) - OFF.	3.3 MAX EA
LIGHTS - Min Reqd.	5.3 MAX
EXT LTS - OFF.	4.6
HGA POWER - OFF (PNL 230).	2.3
PWR AMPL - OFF (ctr) (PNL 230)	11.8
XPNDR - off (ctr) (PNL 230).	0.8
CM/DM CAMR PWR - OFF	1.1 EA CAMR
TV AMPL - OFF.	0.1
VHF RANGING - OFF.	1.4
S BD AUX TV - OFF (CTR).	5.3
SIG CONDR/DRIVER BIAS PWR (2) - OFF	
SECURE ONE BMAG.	2.6
SELECT SINGLE JET CONTROL	
EMS FUNC - OFF	
RHC PWR DIRECT (2) - OFF	
THC PWR - OFF	
CONFIGURE FOR SINGLE INVERTER OPERATION	
TURN OTHER INVERTER OFF.	4.0 MAX
BAT CHGR - OFF	
NOTE MISSION TIME	
cb TIMERS (2) - OPEN (Pnl 229)	
AC INVERTER (9) - OFF	
CM RCS HTRS - OFF	
ISOLATE FAILED FC's from MAIN BUSES	

ECS POWER DOWN	13.7 TOTAL
ECS GLY PUMP sel - OFF (ISS LIMIT 2.5 HRS)	2.6
ECS RAD FLOW CONT PWR - off (CTR)	0.7
GLY EVAP TEMP IN - MAN	
GLYCOL EVAP H2O FLOW - OFF	~0.1
GLYCOL EVAP STEAM PRESS - MAN	~0.2

COMM POWER DOWN	13.0 TOTAL
IF VOICE DESIRED	
UP TLM CMD RESET - RESET then OFF	
S-BD AUX TAPE - DN VOICE BU	
S-BD MODE PCM - OFF	
PCM BIT RATE - HIGH	
S-BD PWR AMP - OFF (CTR)	4.0
TAPE RCDR - OFF (CTR)	1.6
TRDC - BYPASS	~0.1
SCE PWR - OFF (CTR)	0.7
cb INSTR ESS MNA & MNB (2) - OPEN (Pnl 5)	4.9
TELCOM GRP 1 & 2 (2) - OFF	1.6

CMC/IMU POWER DOWN	6.0 IMU
COMPLETE ALIGNMENT TRANSFER	
CMC MODE - FREE PROVIDES CMC MIN IMP	
cb G&N IMU MNA & MNB (2) - OPEN (Pnl 5)	
V37E06E	3.0 CMC
F V50 N25, 00062, CMC PWR DN	
PRO, HOLD (~5 SEC) UNTIL STBY LT - ON	

SCS POWER DOWN | 6.0

ACCEPTABLE S/C ATTITUDE
BMAG PWR (2) - OFF
FDAI/GPI PWR - OFF — PROVIDES MIN IMP
SCS ELECTRONICS PWR - ECA — (REQUIRES AC1 & MNB)
ORDEAL PWR & LIGHTING - OFF

cb SCS LOGIC BUS (4) - OPEN (Pnl 8) | 2.0
SCS ELECTRONICS PWR - OFF
RHC PWR NORM (2) - OFF

Below minimum Main Bus voltage to be maintained
to be compatable with critical online equipment:

CMC (G&N)	-25.5 vdc	DIRECT SM-RCS	-21.0 vdc
SPS	-24.5 vdc	INVERTERS	-19.0 vdc
AUTO SM-RCS	-22.0 vdc	DIRECT CM-RCS	-17.0 vdc
AUTO CM-RCS	-21.0 vdc		

LAUNCH BUS LOSS

MN BUS A LOST - LAUNCH

EDS AUTO/OFF - OFF
AUTO RCS SEL (RING 1) - MNB
AUTO RCS SEL (RING 1) - OFF (BEFORE CM/SM SEP)
TVC GMBL DR (P,Y) - 2
SCS TVC (P,Y) - RATE CMD
BMAG MODE (3) - RATE 2
FDAI SEL - 2
cb SPS PITCH 2 & YAW 2 (Pnl 8) - OPEN
(AFTER GIMBAL MOTORS ON)

AC INV 3 - MNB
AC INV 3 AC BUS 1 - ON
AC INV 1 AC BUS 1 - OFF
All FUEL CELL MNA - OFF
All FUEL CELL MNB - MNB (BEFORE CM/SM SEP)
cb MNA BAT BUS A (Pnl 275) - OPEN
cb MNB BAT C (Pnl 275) - CLOSED

MN BUS B LOST - LAUNCH

EDS AUTO/OFF - OFF
AUTO RCS SEL (RING 2) - MNA
AUTO RCS SEL (RING 2) - OFF (BEFORE CM/SM SEP)
TVC GMBL DR (P,Y) - 1
SPS TVC (P,Y) - RATE CMD
CK BMAG MODE (3) - RATE 1
FDAI SEL - 1
cb SPS PITCH 1 & YAW 1 (Pnl 8) - OPEN
(AFTER GIMBAL MOTORS ON)

AC INV 3 - MNA
AC INV 3 AC BUS 2 - ON
AC INV 2 AC BUS 2 - OFF
All FUEL CELL MNB - OFF
All FUEL CELL MNA - MNA (BEFORE CM/SM SEP)
cb MNB BAT BUS B (Pnl 275) - OPEN
cb MNA BAT C (Pnl 275) - CLOSED

AC BUS 1 LOST - LAUNCH

BMAG MODE (3) - RATE 2
FDAI SEL - 2
TVC SERVO PWR 1 - AC2/MNB
SCS TVC PITCH, YAW - RATE CMD

AC INV 1 MNA - OFF
SUIT COMPR - AC 2
ECS GLY PUMP - AC 2
S BD NORM XPNDR - SEC
S BD NORM PWR AMP - SEC

[AC BUS 2 LOST - LAUNCH]

CK BMAG MODE (3) - RATE 1
FDAI SEL - 1
TVC SERVO PWR 2 - AC1/MNA
MTVC WITH THUMBWHEELS (MODE III OR IV)

AC INV 2 MNB - OFF
CK SUIT COMPR - AC 1
CK ECS GLY PUMP - AC 1

[BAT BUS A LOST - LAUNCH]

EDS AUTO/OFF - OFF
AUTO RCS SEL (RING 1) - OFF (BEFORE CM/SM SEP)
IF BUS LOST BEFORE GMBL MTRS ON
  TVC GMBL DR (P,Y) - 2
  cb SPS P2 & Y2 (Pnl 8) - OPEN
    (AFTER SEC GIMBAL MOTORS ON)

cb MNA BAT C (Pnl 275) - CLOSED

[BAT BUS B LOST - LAUNCH]

EDS AUTO/OFF - OFF
AUTO RCS SEL (RING 2) - OFF (BEFORE CM/SM SEP)
IF BUS LOST BEFORE GMBL MTRS ON
  TVC GMBL DR (P,Y) - 1
  cb SPS P1 & Y1 (Pnl 8) - OPEN
    (AFTER PRI GIMBAL MOTORS ON)

cb MNB BAT C (Pnl 275) - CLOSED

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SPS BURN BUS LOSS

IMN BUS A LOST - SPS BURN

TVC GMBL DR (P,Y) - 2
SCS TVC (P,Y) - RATE CMD
cb SPS P2 & Y2 (Pn1 8) - OPEN
(AFTER GMBL MTRS ON)
FDAI SEL - 2
CK FDAI SOURCE - CMC
RHC PWR DIRECT 2 - MNB
BMAG MODE (3) - RATE 2
CK ΔV THRUST B - NORM
AUTO RCS SEL - MNB
AC INV 3 - MNB
AC INV 3 AC BUS 1 - ON
AC INV 1 AC BUS 1 - OFF
All FUEL CELL MNA - OFF
All FUEL CELL MNB - MNB
cb MNA BAT BUS A (Pnl 275) - OPEN

IMN BUS B LOST - SPS BURNS

SCS TVC (P,Y) - RATE CMD
TVC GMBL DR (P,Y) - 1
cb SPS P1 & Y1 (Pnl 8) - OPEN
(AFTER GMBL MTRS ON)
FDAI SEL - 1

CK FDAI SOURCE - CMC
RHC PWR DIRECT 1 - MNA
BMAG MODE (3) - RATE 1
CK ΔV THRUST A- NORM
AUTO RCS SEL - MNA

AC INV 3 - MNA
AC INV 3 AC 2 - ON
AC INV 2 AC 2 - OFF
All FUEL CELL MNB - OFF
All FUEL CELL MNA - MNA
cb MNB BAT BUS B (Pnl 275) - OPEN

SPS BURN BUS LOSS

IAC BUS 1 LOST - SPS BURNS

TVC SERVO PWR 1 - AC2/MNB
SCS TVC (P&Y) - RATE CMD
BMAG MODE (3) - RATE 2
FDAI SEL - 2
CK FDAI SOURCE - CMC
AC INV 1 MNA - OFF
SUIT COMPR - AC 2
ECS GLY PUMP - AC 2
S BD NORM XPNDR - SEC
S BD NORM PWR AMP - SEC

IAC BUS 2 LOST - SPS BURNS

TVC SERVO PWR 2 - AC1/MNA
BMAG MODE (3) - RATE 1
SCS TVC (P&Y) - AUTO
MTVC WITH TRIM THUMBWHEELS (SCS BURN ONLY)
FDAI SEL - 1
CK FDAI SOURCE - CMC
AC INV 2 MNB - OFF
CK SUIT COMPR - AC 1
CK ECS GLY PUMP - AC 1

IBAT BUS A LOST - SPS BURNS

TVC GMBL DR (P,Y) - 2
(IF BUS LOST BEFORE GMBL MTRS ON)
cb SPS P2 & Y2 (Pnl 8) - OPEN
(AFTER GMBL MTRS ON)

cb MNA BAT C (Pnl 275) - CLOSED

IBAT BUS B LOST - SPS BURNS

TVC GMBL DR (P,Y) - 1
(IF BUS LOST BEFORE GMBL MTRS ON)
cb SPS P1 & Y1 (Pnl 8) - OPEN
(AFTER GMBL MTRS ON)

cb MNB BAT C (Pnl 275) - CLOSED

ENTRY BUS LOSS

MN BUS A LOST - ENTRY

BMAG MODE (3) - RATE 2
FDAI SEL - 2
CK FDAI SOURCE - CMC
AUTO RCS SEL (AS REQ) - MNB
AUTO RCS SEL (RING 1) - OFF (BEFORE CM/SM SEP)
AUTO RCS SEL (12) - MNB (ONLY IF BUS LOST AFTER SM SEP)

AC INV 3 - MNB
AC INV 3 AC BUS 1 - ON
AC INV 1 AC BUS 1 - OFF
All FUEL CELL MNA - OFF (BEFORE CM/SM SEP)
All FUEL CELL MNB - MNB (BEFORE CM/SM SEP)
cb MNA BAT BUS A (Pnl 275) - OPEN
cb MNB BAT C (Pnl 275) - CLOSED
cb MNA BAT C (Pnl 275) - OPEN

MN BUS B LOST - ENTRY

BMAG MODE (3) - RATE 1
FDAI SEL - 1
CK FDAI SOURCE - CMC
AUTO RCS SEL (AS REQ) - MNA
AUTO RCS SEL (RING 2) - OFF (BEFORE CM/SM SEP)
AUTO RCS SEL (12) - MNA (ONLY IF BUS LOST AFTER SM SEP)

AC INV 3 - MNA
AC INV 3 AC BUS 2 - ON
AC INV 2 AC BUS 2 - OFF
All FUEL CELL MNB - OFF (BEFORE CM/SM SEP)
All FUEL CELL MNA - MNA (BEFORE CM/SM SEP)
cb MNB BAT BUS B (Pnl 275) - OPEN
cb MNA BAT C (Pnl 275) - CLOSED
cb MNB BAT C (Pnl 275) - OPEN

COLOR_____

EMER
4-20

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ENTRY BUS LOSS

[AC BUS 1 LOST - ENTRY]

BMAG MODE (3) - RATE 2
FDAI SEL - 2
CK FDAI SOURCE - CMC
AC INV 1 MNA - OFF
SUIT COMPR - AC 2
ECS GLY PUMP - AC 2
S BD NORM XPNDR - SEC
S BD NORM PWR AMP - SEC

[AC BUS 2 LOST - ENTRY]

BMAG MODE (3) - RATE 1
FDAI SEL - 1
CK FDAI SOURCE - CMC
AC INV 2 MNB - OFF
CK SUIT COMPR - AC 1
CK ECS GLY PUMP - AC 1

[BAT BUS A LOST - ENTRY]

cb SCS B/D ROLL, P&Y (MNA) (3) (Pnl 8)
Before CM/SM SEP - OPEN
After RCS transfer to CM - CLOSE
cb SCS CONTR/AUTO (2) (Pnl 8) - OPEN
(AFTER APEX COVER JET)

cb MNA BAT C (Pnl 275) - CLOSED
(CLOSED AT PYRO BATT CK)
cb BAT A PWR ENTRY/POST LANDING (Pnl 250) - OPEN

[BAT BUS B LOST - ENTRY]

cb SCS B/D ROLL, P&Y (MNB) (3) (Pnl 8)
Before CM/SM SEP - OPEN
After RCS transfer to CM - CLOSE
cb SCS CONTR/AUTO (2) (Pnl 8) - OPEN
(AFTER APEX COVER JET)

cb MNB BAT C (Pnl 275) - CLOSED
(CLOSED AT PYRO BATT CHK)
cb BAT B PWR ENTRY/POST LANDING (Pnl 250) - OPEN

ALL FC'S DISCONNECTED - POWERED FLT

ATTEMPT FC RECONNECT (ONE BUS AT A TIME)

IIF RECONNECT NOT SUCCESSFUL|

FC 1 - MNB
FC 2 - MNB
FC 3 - MNA

IIF STILL NO SUCCESS|

SCE PWR - AUX
EDS AUTO/OFF - OFF
cb MNA BAT C (Pnl 275) - CLOSED
cb MNB BAT C (Pnl 275) - CLOSED

AC BUS + AC BUS OVERLD LITES

AFFECTED AC BUS - OFF (REASON - AC BUS SHORT)

FC + AC BUS + MN BUS UNDER V LITES

AFFECTED AC BUS - OFF (AC BUS SHORT)

IIF FC CURRENT STILL HI|

FC(S) - DISCONNECT (BUS SHORT)
EPS - MALF SSR-2

FC 1 (2,3) LITE

VERIFY FC 1 (2,3) REAC tb - gray

IIF tb BP|

FC 1 (2,3) REAC vlv - OPEN (up)

IIF tb STILL BP & REAC FLOW ~0|

OPEN CIRCUIT FC 1 (2,3)

SM RCS

SM_RCS_THRUSTER_FAILED_ON

CHG TO OTHER SC CONT MODE
AUTO RCS SEL (16) - OFF (AS REQD)
ROT CONT PWR DIR (2) - MNA/MNB
STOP SPACECRAFT RATES WITH DIRECT RCS

IIF_CONDITION_PERSISTS_|

AUTO RCS SEL (16) - ON (AS REQ'D)
MAN ATT (3) - ACCEL CMD
STOP SPACECRAFT RATES
cb SCS DIR ULL (2)(Pnl 8) - open
ROT CONT PWR DIR (2) - OFF

IIF_CONDITION_PERSISTS_|

NEUTRALIZE RHC
SM RCS PRPLNT (AFFECTED QUAD) - CLOSE

SM_RCS_LITE

SM RCS QUAD He (AFFECTED QUAD) - CLOSE
See RCS 1

SM_RCS_QUAD_SECURE

SM RCS QUAD He (AFFECTED QUAD) - CLOSE
SM RCS PRPLNT (AFFECTED QUAD) - CLOSE
Fire one jet in affected quad - 2 sec continuously
AUTO RCS SELECT (AFFECTED QUAD) (4) - OFF (except BOOST)

SM_RCS_PSM_LITE

SM RCS PSM He - CLOSE
See RCS 3

CM RCS FAILS TO PRESSURIZE OR FEED PRPLNT

IIF NO PRESSURIZATION

CK cb EPS BAT BUS (2) (Pnl 229) - CLOSE
CK cb PYRO A&B SEQ A&B (2) (Pnl 250) - CLOSE
CK cb SECS ARM (2) (Pnl 8) - CLOSE
CK SECS PYRO ARM (2) (Pnl 8) - on/(up)
CK SECS LOGIC (BOTH) (Pnl 8) - on (up)
CM RCS PRESS - on (UP)

IIF NO RCS PRPLNT FEED

CK cb EPS GRP 1 & 3 (4) (Pnl 229) - CLOSE
CK cb RCS PRPLNT ISOL (2) (Pnl 8) - CLOSE
CM RCS PRPLNT (BOTH) (Pnl 2) - on (up)

IIF STILL NO FEED

cb EPS GRP 5 (2) (Pnl 229) - CLOSE
cb RCS LOGIC (2) (Pnl 8) - CLOSE
CM RCS LOGIC (Pnl 1) - on (up)
CM PRPLNT DUMP - on (up), THEN OFF

CM RCS THRUSTER FAILED ON

CHG TO OTHER SC CONT MODE
AUTO RCS SEL (16) - OFF (AS REQD)
RHC PWR DIR (2) - MNA/MNB
STOP S/C RATES WITH DIRECT
(If Time Permits, Go to G&C - A, Step 7)

IIF CONDITION PERSISTS

RHC - NEUTRAL
CM RCS PRPLNT (AFFECTED RING) - OFF
AUTO RCS SEL RING 2 (1) - MNB (MNA)
RETURN TO ORIGINAL CONTROL SYSTEM

ALARM CODES

V05 N09 ALARM CODES

00107 Star tracker angles out of limits (P55).

00110 MARK REJECT has been entered but ignored.
Continue

00113 No inbits (Chan 16).
Continue; if alarm recurs use MDC DSKY.

00114 More marks made than desired.
Continue

00115 V41 N91 keyed with OPTICS MODE not in CMC.
OPTICS MODE - CMC and OPTICS ZERO - OFF

00116 Optics switch altered before 15 sec zero time elapsed.
OPTICS ZERO - ZERO (15 sec)

00117 V41 N91 keyed but CMC has reserved OCDU.
Consult STDN (Alarm should not occur)

00120 Optics torque has been requested but optics have not been zeroed since last FRESH START or RESTART.
OPTICS ZERO - OFF, then ZERO (15 sec)

00121 In 0.05 sec following mark, an ICDU changed by more than 0.033 degree.
Repeat MARK

(m)00205 PIPA saturated.
Use SCS control (G&N 12)

00206 The IMU zero routine has been entered with both the GMBL LOCK lt and NO ATT lt on.
Coarse align to 0,0,0; reselect V40E

(m)00207 ISS turn-on request not present for 90 sec (G&N 7a/3).

(m)00210 The IMU is not operating (G&N 12).

(m)00211 Coarse align error > 2 deg.
If P52 or P54 in progress, wait for F 50 25 00015 (CMC will pulse torque IMU at 0.5 deg/sec), then continue; if V41 N20, repeat. (G&N 12)

(m)00212 PIPA fail, but PIPA is not being used.
PIPA Check (G&N 6/7)

(m)00213 IMU not operating with turn-on request.
(G&N 7a/11)

00214 Program using IMU when turned off.
Exit program

(m)00217 IMU coarse align or pulse torque difficulty has occurred.
If code 00211 also, perform 00211 cure only; then reinitiate current program.
If alarm recurs, terminate use of ISS (G&N 12)

00220 IMU orientation unknown.
Align IMU, or if aligned set REFSMFLG.

00401 Desired middle gimbal angle is excessive.
Call N22 - maneuver if MGA <85 deg, or realign IMU

00402 Second MINKEY pulse torque must be done.

00404 Target out of view (90 deg test).

00405 Acceptable star pair is not available.

00406 Rend navigation not operating.
Select P20 (Opt 0 or 4) or continue

00421 W-matrix overflow.
Notify STDN but continue (W-matrix automatically reinitialized at next mark)

00500 Not enough jets for Pitch/Yaw (Docked).

00501 Not enough jets for Roll (Docked).

00600 Failure in Phase Match Iteration (P31,P32).

00601 Failure in Height Mnvr Iteration (P31,P32).

00602 Failure in Outer Loop Iteration (P31,P32).

00603 Failure in ORDTPI iteration (P31,P32,P33).

00611 No TIG for given ELEV Angle.

(m)00777 ISS warning caused by PIPA fail.
Perform 'CMC RECOVERY' (G/1-14) (G&N 6)

01102 CMC Self-Test error.

(m)01105 Downlink too fast.
RSET; if alarm recurs, Downlink Failure. (G&N 12)

(m)01106 Uplink too fast.
RSET; if alarm recurs, Uplink Failure. (G&N 12)

(m)01107 Phase-Table failure.
Assume Eras-Memory is destroyed (G&N SSR-3)
If Comm: 1. Contact STDN
2. V74E (erasable dump downlink) (42 sec - HBR)
3. Do P27 (as necessary)
4. V37E 51E, PRO, V37E 00E
5. V46E (V45E docked)
6. OPTICS ZERO - OFF, ZERO
7. 'REASONABLENESS CHECK' (G/1-14)
If alarm recurs, CMC Failure

01301 Arcsin or arccos input is greater than one.
Notify STDN, continue
(m)01407 VG increasing (G&N 12).
01426 IMU unsatisfactory (entry).
Realign or use SCS
01427 IMU reversed (entry).
Note FDAI operation is inverted
01520 V37 request not permitted at this time.
Wait till COMP ACTY lt not on continuously - reselect V37 or if P62-P67, select P00 and then desired program
01600 Overflow in drift test (gnd test alarm only)
01601 Bad IMU torque abort (gnd test alarm only)
01703 Insufficient time for integration.
TIG slipped
(m)03777 ISS warning caused by ICDU fail (G&N 6)
(m)04777 ISS warning caused by ICDU & PIPA fails (G&N 6)
(m)07777 ISS warning caused by IMU fail (G&N 6)
(m)10777 ISS warning caused by IMU & PIPA fails (G&N 6)
(m)13777 ISS warning caused by IMU & ICDU fails (G&N 6)
(m)14777 ISS warning caused by IMU, ICDU, & PIPA fails (G&N 6)
**20430 Orbital integration has been terminated to avoid possible infinite loop.
Notify STDN
Probable S.V. uplink required
**20607 No solution to conic subroutine.
Reselect program
**21204 Negative or zero time Waitlist call.
If Ave-G or extended verb on, continue; otherwise reselect program
**21206 Second job attempts to go to sleep via keyboard and display program.
See 21204
**21210 Second attempt is made to stall IMU.
Reselect program
Do not attempt use of IMU while CMC is using it
**21302 SQRT called with negative argument.
See 21204
**21501 Keyboard & Display alarm during internal use
See 21204

**21502 Illegal flashing display.
See 21204

**21521 P01 selected and P11 has already been performed.
Select correct program

*31104 Delay routine busy.
Reselect extended verb or continue with program

*31201 Executive overflow - no VAC Area.
Reselect extended verb and/or continue program

*31202 Executive overflow - no Core Sets.
See 31201

*31203 Waitlist overflow - too many tasks.
See 31201

*31211 Illegal interrupt of extended verb.
Reselect extended verb after optics marking is completed.

*32000 Docked DAP cycles overlap.

(m) - Malfunction Procedure indicated

**(2xxxx) - Generates restart (no lt), F V37 (P00D00)

*(3xxxx) - Restart (no lt) and program continues (i.e., attempted recovery) (BAILOUT)

NOTE - All ** alarms act as * type if they occur when Ave-G is on or display type extended verb is active

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