



# Volume II

## Appendix D.2

### Payload Checklist

This appendix is a reproduction of the Payload Operations Checklist used by the STS-107 crew during on-orbit operations. It is reproduced here – at smaller than normal page size – to show the level of detailed instruction provided to the crew during on-orbit payload operations.

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# Payload Checklist

Space Shuttle Program  
FLIGHT DATA FILE

JSC-48068-107

## Payload Operations Checklist

### STS-107

Mission Operations Directorate  
Operations Division

Final, Rev A  
June 7, 2002

National Aeronautics and  
Space Administration  
  
Lyndon B. Johnson Space Center  
Houston, Texas



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SSP Flight Data File **PAGE CHANGE NOTICE** JSC-48068-107

**PAYLOAD OPS C/L STS-107**

**FINAL, REV A (June 7, 2002)**

**PCN-3 (Dec 20, 2002) Sheet 1 of 1**

List of Implemented Change Requests (482s):

|             |             |
|-------------|-------------|
| PL OPS-1726 | PL OPS-1732 |
| PL OPS-1727 | PL OPS-1733 |
| PL OPS-1728 | PL OPS-1734 |
| PL OPS-1729 | PL OPS-1735 |
| PL OPS-1730 | PL OPS-1736 |
| PL OPS-1731 | PL OPS-1737 |

Incorporate the following:

1. Replace iii & iv
2. Replace 1-3 thru 1-6, 1-13 & 1-14, 1-63 thru 1-66, 1-75 & 1-76, 1-83 & 1-84
3. Replace 2-1 & 2-2
4. Replace 3-3 & 3-4
5. Replace 4-1 & 4-2
6. Replace 5-1 & 5-2
7. Replace section 6 (8 pgs)
8. Replace 8-1 & 8-2, 8-5 thru 8-8
9. Replace 9-3 & 9-4
10. Replace 10-3 & 10-4

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Approved by: \_\_\_\_\_  
   Chief, Cargo Integration and  
   Operations Branch

Encl: 42 pages

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JSC-48068-107

MISSION OPERATIONS DIRECTORATE

**PAYLOAD OPERATIONS CHECKLIST  
 STS-107**

FINAL, REVISION A  
 June 7, 2002

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**PAYLOAD OPERATIONS CHECKLIST  
 STS-107**

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| REV A | 06/07/02 |
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 - Omit from flight book

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**FREESTAR ACTIVATION**

**1. COMMAND CONFIG**

A1L S-BD PL CNTL – CMD  
PSP CMD OUTPUT – PL UMB  
PWR SEL – PSP  
SYS – 1

**2. DATA CONFIG**  
Verify PDI/PCMMU config 762  
**SM 62 PCMMU/PL COMM**  
TFL: 188  
DECOM INPUT FMT FDA ENA  
2 1 18  
FPM: 508

**NOTE**  
Expect 'S62 PDI DECOM FAIL' msg  
DECOM 2 FDA ENA – ITEM 15 EXEC

If reqd, perform LOAD PCMMU FORMAT and LOAD PDI DECOM FORMAT (ORB OPS FS, COMM/INST)

**3. PWR CONFIG**

R1 On MCC GO:  
PL PRI MNC – ON (tb-ON)  
CAB – MNA(MNB)

L12U cb DOOR PWR CONT PWR DN ENA – op  
HITCHHIKER AV PWR tb – bp  
EXP PWR tb – bp  
AV PWR – ON (mom) (tb-UP)

\* If HITCHHIKER AV PWR tb – bp: \*  
\* **SM 62 PCMMU/PL COMM** \*  
\* If PDI DECOM 2 – (no T): \*  
\* HITCHHIKER AV PWR tb fail, continue nominal ops \*  
\* If PDI DECOM 2 – (T): \*  
\* HITCHHIKER AV PWR – OFF (pause), ON (hold 5 sec) (tb-UP) \*  
\* If HITCHHIKER AV PWR tb – bp: \*  
\* MCC \*  
\* If HITCHHIKER AV PWR tb – UP: \*  
\* Transient error, continue nominal ops \*

HITCHHIKER EXP PWR – ON (mom) (tb-UP)

\* If HITCHHIKER EXP PWR tb – bp: \*  
\* MCC to verify POCC has exp pwr on indication \*  
\* If POCC has exp pwr on indication: \*  
\* HITCHHIKER EXP PWR tb fail, continue nominal ops \*  
\* If POCC does not have exp pwr on indication: \*  
\* HITCHHIKER EXP PWR – OFF (pause), ON (hold 5 sec) (tb-UP) \*  
\* If HITCHHIKER EXP PWR tb – bp: \*  
\* MCC \*  
\* If HITCHHIKER EXP PWR tb – UP: \*  
\* Transient error, continue nominal ops \*

1-2 PL OPS/107/FIN A

LPT PWR ENA 1 – ON (tb-bp)  
2 – ON (tb-bp)

**NOTE**  
Talkbacks will go gray when POCC cmds pwr to LPT (approximately 10-20 min after activation)

Notify MCC, FREESTAR activated

**FREESTAR DEACTIVATION**

On MCC GO:

L12U **1. CHECK PWR CONFIG**  
HITCHHIKER EXP PWR tb – UP  
AV PWR tb – UP

LPT PWR ENA 1 tb – bp  
2 tb – bp

**2. PWR OFF FREESTAR**  
LPT PWR ENA 2 – OFF  
1 – OFF

HITCHHIKER EXP PWR – OFF (mom) (tb-bp)

**NOTE**  
Expect 'PDI DECOM FAIL' msg

HITCHHIKER AV PWR – OFF (mom) (tb-bp)  
cb DOOR PWR CONT PWR DN ENA – op

**3. Notify MCC, FREESTAR deactivated**

1-3 PL OPS/107/FIN A,3

**SOLSE PGSC/BIA SETUP**

**1. CONFIG PGSC/BIA**

L11 Unstow:  
BIA  
PGSC/BIA cable  
DC Power Supply  
DC Power Supply cable  
PL2 SOLSE-2/BIA PGSC  
PCMCIA RF LANCard  
MF57K Late update PCMCIA card

Velcro/Attach BIA to bottom of PGSC as necessary

**2. VERIFYING SWITCH CONFIG**  
A15 DC UTIL PWR MNC – OFF

**3. CONFIGURING PGSC/BIA**  
Connect PGSC/BIA cable connectors per diagram

1-4 PL OPS/107/FIN A,3

**4. BIA PWRUP**  
BIA PWR – OFF  
ENABLE 1 – OFF  
2 – OFF

A15 DC UTIL PWR MNC – ON  
PWR SUPPLY – ON (lt green)

BIA BIA PWR – ON

**5. PGSC PWRUP**  
PGSC PWR – ON  
Windows initialized  
Insert late update PCMCIA card  
Run 'Shuttle Apps/Late PGSC Update'  
Shut down PGSC  
Remove late update card  
Insert PCMCIA RF LANCard into PGSC

**SOLSE PGSC/BIA STOW**

PGSC 1. Shut down Windows  
2. PGSC pwr – off  
3. DC PWR SUPPLY – OFF (lt not lt)

BIA 4. BIA PWR – OFF

A15 5. DC UTIL PWR MNC – OFF

A15/BIA 6. Disconnect DC pwr cable

L12U/ PGSC/BIA/ Pwr Adapter 7. Disconnect PGSC/BIA cable

8. Disconnect DC Power Supply cable

MF280 9. Stow PL2 PGSC, DC Power Cable, DC Power Supply

L11 10. Stow BIA, PGSC/BIA cable

1-5 PL OPS/107/FIN A,3

**SOLSE/HRIU ACTIVATION**

**NOTE**  
All SOLSE and HRIU commands require <CTRL-Y> following command selection to execute command.

To clear an error message from active screen, exit to main menu and return to desired screen

- \* If at any time during procedure execution error messages display in lower left corner of screen, \*
- \* it is possible that an HRIU reset has occurred. \*
- \* To determine if HRIU is reset, if not on \*
- \* HH-JR/SOLSE-2 System Page: \*
- \* Press <ESC> to return to main menu \*
- \* HH-JR/SOLSE-2 Main Menu \*
- \* Sel HH-JR/SOLSE-2 System Page \*
- \* HH-JR/SOLSE-2 System Page \*
- \* If HRIU Status – initialized: \*
- \* Return to nominal ops \*
- \* If HRIU Status – reset: \*
- \* Notify MCC \*
- \* Perform SOLSE CONTINGENCY \*
- \* RECOVERY \*

BIA

- CHECK BIA CONFIG AND HRIU POWER**  
BIA PWR – ON  
ENABLE 2 – ON  
Log MET: \_\_\_\_/\_\_\_\_:\_\_\_\_:\_\_\_\_
- SOFTWARE STARTUP**  
Start SOLSE software:  
Go to Shuttle Apps Folder  
Sel SOLSE-2 Icon  
Follow directions on screen  
  
[HH-JR/SOLSE-2 Main Menu]  
Sel Update MET/GMT  
  
[Update MET/GMT]  
Sel UPDATE MET  
Enter Current MET, press enter  
Press <ESC> to return to main menu  
  
[HH-JR/SOLSE-2 Main Menu]  
Sel Data Recording and Storage Setup  
  
[Data Recording and Storage Setup]  
HRIU Errors – ON  
HRIU Engineering Data – ON  
HRIU Diagnostic Data – ON  
HRIU Customer Data – ON

1-6 PL OPS/107/FIN A,1

- \* If HRIU Errors – OFF: \*
- \* HRIU Errors – ENAB ( ON) \*
- \* If HRIU Engineering Data – OFF: \*
- \* HRIU Engineering Data – ENAB ( ON) \*
- \* If HRIU Diagnostic Data – OFF: \*
- \* HRIU Diagnostic Data – ENAB ( ON) \*
- \* If HRIU Customer Data – OFF: \*
- \* HRIU Customer Data – ENAB ( ON) \*

Record PGSC Recording Status (File \_\_\_\_\_)  
Press <ESC> to return to main menu

- HH-JR STATUS ENABLE**  
[HH-JR/SOLSE-2 Main Menu]  
Sel HH-JR/SOLSE-2 System Page  
  
[HH-JR/SOLSE-2 System Page]  
HH-JR Polling – ENAB ( ON)
  - \* If HH-JR Polling OFF after enable attempt: \*
  - \* Retry two times \*
  - \* If still no joy: \*
  - \* Notify MCC \*
  - \* Press <ESC> to return to main menu \*
  - \* Sel Exit Program, follow directions on screen \*
  - \* BIA Enable 2 – OFF \*
  - \* Perform hard reboot of PGSC: \*
  - \* From Start Menu, Sel Shutdown \*
  - \* When Shutdown complete, PGSC pwr – on \*
  - \* BIA Enable 2 – ON \*
  - \* Repeat steps 1-3 \*
  - \* If no joy, MCC \*

Commands transmitted incrementing  
Data Storage Status = ENABLED

**NOTE**  
Engineering packets are transmitted from payload to PGSC once every 45 sec; depending upon when command is acknowledged during the cycle. It could take up to 45 sec to see a telemetry verification of command sent

After 45 sec:  
HRIU Status = initialized

- PWR HTR & DOOR POWER**  
Heater & Door Power – ENAB  
  
After 45 sec,  
Heater & Door Power – ON

1-7 PL OPS/107/FIN A

- RECORD PAYLOAD STATUS**  
Bus Voltage: > \_\_\_\_\_ Volts  
Bus Current: > \_\_\_\_\_ Amps  
Canister Pressure: \_\_\_\_\_ PSIA  
Door Position: (open/closed) \_\_\_\_\_ Volts  
HRIU temp: \_\_\_\_\_ °C  
HH-JR LEP: \_\_\_\_\_ °C  
Heat Pipe: \_\_\_\_\_ °C  
Bulkhead: \_\_\_\_\_ °C  
Heatsink: \_\_\_\_\_ °C

Voice payload status values to ground  
Notify MCC, SOLSE/HRIU ACTIVATION complete

- EXIT POLLING & SOFTWARE**  
HH-JR Polling – DISA (wait ≤ 45 sec, OFF)  
Press <ESC> to return to main menu  
  
[HH-JR/SOLSE-2 Main Menu]  
Sel Exit Program, follow directions on screen  
From Start Menu, Sel Shutdown

**NOTE**  
SOLSE PGSC may be deactivated when SOLSE software is not in use.

BIA power is reqd for SOLSE heater power. BIA must remain powered from SOLSE activation to SOLSE deactivation unless otherwise instructed

1-8 PL OPS/107/FIN A

**SOLSE HEALTH CHECK**

**NOTE**  
All SOLSE and HRIU commands require <CTRL-Y> following command selection to execute command.

Once every 30 sec there is a brief period in which commands to payload will not be accepted. If S\_CMD(L\_CMD) Status is NoGo/Wait, cannot send command to SOLSE(LORE) message appears at any time after executing S\_Cmd Execute or L\_Cmd Execute, resend rejected command.

To clear an error message from active screen, exit to main menu and return to desired screen

- \* If at any time during procedure execution error messages display in lower left corner of screen, \*
- \* it is possible that an HRIU reset has occurred. \*
- \* To determine if HRIU is reset, if not on \*
- \* HH-JR/SOLSE-2 System Page: \*
- \* Press <ESC> to return to main menu \*
- \* HH-JR/SOLSE-2 Main Menu \*
- \* Sel HH-JR/SOLSE-2 System Page \*
- \* HH-JR/SOLSE-2 System Page \*
- \* If HRIU Status – initialized: \*
- \* Return to nominal ops \*
- \* If HRIU Status – reset: \*
- \* Notify MCC \*
- \* Perform SOLSE CONTINGENCY \*
- \* RECOVERY \*

BIA

- CHECK BIA CONFIG AND HRIU POWER**  
BIA PWR – ON  
ENABLE 2 – ON
- SOFTWARE STARTUP**  
Start SOLSE software:  
Go to Shuttle Apps Folder  
Sel SOLSE-2 Icon  
Follow directions on screen  
  
[HH-JR/SOLSE-2 Main Menu]  
Software MET Time within 10 sec of actual MET
  - \* If Software MET Time > 10 sec off \*
  - \* actual MET: \*
  - \* Sel Update MET/GMT \*
  - \* [Update MET/GMT] \*
  - \* Sel UPDATE MET \*
  - \* Enter Current MET, press enter \*
  - \* Press <ESC> to return to main menu \*

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HH-JR/SOLSE-2 Main Menu  
Sel Data Recording and Storage Setup

HH-JR/SOLSE-2 Data Storage Setup

HRIU Errors - ON  
HRIU Engineering Data - ON  
HRIU Diagnostic Data - ON  
HRIU Customer Data - ON

- \* If HRIU Errors - OFF: \*
- \* HRIU Errors - ENAB ( ON) \*
- \* \*
- \* If HRIU Engineering Data - OFF: \*
- \* HRIU Engineering Data - ENAB ( ON) \*
- \* \*
- \* If HRIU Diagnostic Data - OFF: \*
- \* HRIU Diagnostic Data - ENAB ( ON) \*
- \* \*
- \* If HRIU Customer Data - OFF: \*
- \* HRIU Customer Data - ENAB ( ON) \*

3. SOLSE PGSC RECORDING STATUS AND STORAGE CHECK  
Record MET, PGSC Recording Status (File #), and Total Usage in table

| MET   | File Number | Total Usage | Percent Used |
|-------|-------------|-------------|--------------|
| / : / |             | MB          | % used       |
| / : / |             | MB          | % used       |
| / : / |             | MB          | % used       |
| / : / |             | MB          | % used       |
| / : / |             | MB          | % used       |
| / : / |             | MB          | % used       |
| / : / |             | MB          | % used       |
| / : / |             | MB          | % used       |
| / : / |             | MB          | % used       |
| / : / |             | MB          | % used       |
| / : / |             | MB          | % used       |
| / : / |             | MB          | % used       |
| / : / |             | MB          | % used       |
| / : / |             | MB          | % used       |
| / : / |             | MB          | % used       |
| / : / |             | MB          | % used       |
| / : / |             | MB          | % used       |
| / : / |             | MB          | % used       |
| / : / |             | MB          | % used       |
| / : / |             | MB          | % used       |
| / : / |             | MB          | % used       |
| / : / |             | MB          | % used       |

Press <ESC> to return to main menu

4. HH-JR STATUS ENABLE  
HH-JR/SOLSE-2 Main Menu  
Sel HH-JR/SOLSE-2 System Page

HH-JR/SOLSE-2 System Page  
HH-JR Polling - ENAB ( ON)

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- \* If HH-JR Polling OFF after enable attempt: \*
- \* Reattempt two times \*
- \* If still no joy: \*
- \* Notify MCC \*
- \* Press <ESC> to return to main menu \*
- \* Sel Exit Program, follow directions on screen \*
- \* BIA Enable 2 - OFF \*
- \* Perform hard reboot of PGSC: \*
- \* From Start Menu, Sel Shutdown \*
- \* When Shutdown complete, PGSC pwr - on \*
- \* BIA Enable 2 - ON \*
- \* Repeat steps 2-4 \*
- \* If no joy, MCC \*

Commands transmitted incrementing  
Data Storage Status - ENABLED  
After 45 sec:  
HRIU Status - initialized  
Heater & Door Power - ON

5. SOLSE STATUS CHECK  
HH-JR/SOLSE-2 System Page  
Record Payload Status and Voice Values to MCC

| Nominal Value Range (SOLSE Primary Pwr Off) |                   |
|---|-------------------|
| Bus Voltage:                                | 28 ± 1 V          |
| Bus Current:                                | 0.196 ± .05 Amps  |
| Canister Pressure:                          | 15.257 ± 0.6 PSIA |
| Door Position:                              | 0.840 ± 0.2 V     |
| HRIU Temp:                                  | 0-40°C            |
| HH-JR LEP:                                  | 0-40°C            |
| Heat Pipe:                                  | 0-40°C            |
| Bulkhead:                                   | 0-40°C            |
| Heatsink:                                   | 0-40°C            |

| MET                | / : /             | / : /             |
|--------------------|-------------------|-------------------|
| Bus Voltage:       | Volts             | Volts             |
| Bus Current:       | Amps              | Amps              |
| Canister Pressure: | PSIA              | PSIA              |
| Door Position:     | Open/Closed Volts | Open/Closed Volts |
| HRIU Temp:         | °C                | °C                |
| HH-JR LEP:         | °C                | °C                |
| Heat Pipe:         | °C                | °C                |
| Bulkhead:          | °C                | °C                |
| Heatsink:          | °C                | °C                |

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| MET                | / : /             | / : /             |
|--------------------|-------------------|-------------------|
| Bus Voltage:       | Volts             | Volts             |
| Bus Current:       | Amps              | Amps              |
| Canister Pressure: | PSIA              | PSIA              |
| Door Position:     | Open/Closed Volts | Open/Closed Volts |
| HRIU Temp:         | °C                | °C                |
| HH-JR LEP:         | °C                | °C                |
| Heat Pipe:         | °C                | °C                |
| Bulkhead:          | °C                | °C                |
| Heatsink:          | °C                | °C                |

| MET                | / : /             | / : /             |
|--------------------|-------------------|-------------------|
| Bus Voltage:       | Volts             | Volts             |
| Bus Current:       | Amps              | Amps              |
| Canister Pressure: | PSIA              | PSIA              |
| Door Position:     | Open/Closed Volts | Open/Closed Volts |
| HRIU Temp:         | °C                | °C                |
| HH-JR LEP:         | °C                | °C                |
| Heat Pipe:         | °C                | °C                |
| Bulkhead:          | °C                | °C                |
| Heatsink:          | °C                | °C                |

| MET                | / : /             | / : /             |
|--------------------|-------------------|-------------------|
| Bus Voltage:       | Volts             | Volts             |
| Bus Current:       | Amps              | Amps              |
| Canister Pressure: | PSIA              | PSIA              |
| Door Position:     | Open/Closed Volts | Open/Closed Volts |
| HRIU Temp:         | °C                | °C                |
| HH-JR LEP:         | °C                | °C                |
| Heat Pipe:         | °C                | °C                |
| Bulkhead:          | °C                | °C                |
| Heatsink:          | °C                | °C                |

| MET                | / : /             | / : /             |
|--------------------|-------------------|-------------------|
| Bus Voltage:       | Volts             | Volts             |
| Bus Current:       | Amps              | Amps              |
| Canister Pressure: | PSIA              | PSIA              |
| Door Position:     | Open/Closed Volts | Open/Closed Volts |
| HRIU Temp:         | °C                | °C                |
| HH-JR LEP:         | °C                | °C                |
| Heat Pipe:         | °C                | °C                |
| Bulkhead:          | °C                | °C                |
| Heatsink:          | °C                | °C                |

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| MET                | / : /             | / : /             |
|--------------------|-------------------|-------------------|
| Bus Voltage:       | Volts             | Volts             |
| Bus Current:       | Amps              | Amps              |
| Canister Pressure: | PSIA              | PSIA              |
| Door Position:     | Open/Closed Volts | Open/Closed Volts |
| HRIU Temp:         | °C                | °C                |
| HH-JR LEP:         | °C                | °C                |
| Heat Pipe:         | °C                | °C                |
| Bulkhead:          | °C                | °C                |
| Heatsink:          | °C                | °C                |

6. SOLSE POWERUP & CALIBRATION if reqd  
Execute Package if step 6 reqd  
If reqd, proceed with step 6; otherwise, go to step 10

**NOTE**  
SOLSE Health Calibration will be performed periodically during the mission when SOLSE operations are not planned for a span of three days or more. Door will not be opened during calibration

Set Egg Timer to 00:15:00  
HH-JR/SOLSE-2 System Page  
All temperatures (five) except TEC Temp: 0°-40°C

If temperatures - 0°-40°C:  
SOLSE Primary Power - ENAB (wait ≤ 45 sec, ON)

- \* If temperatures < 0° or > 40°C \*
- \* Notify MCC \*
- \* On MCC GO: \*
- \* SOLSE Primary Power - ENAB \*
- (wait 45 sec, ON) \*

- \* If after 45 sec, SOLSE Primary Power - OFF: \*
- \* Notify MCC \*
- \* Reattempt cmd \*
- \* If still no joy: \*
- \* Notify MCC \*
- \* HH-JR Polling - DISA (wait 45 sec, OFF) \*
- \* Press <ESC> to return to main menu \*
- \* Sel Exit Program, follow directions on screen \*
- \* BIA Enable 2 - OFF \*
- \* Perform hard reboot of PGSC: \*
- \* From Start Menu, Sel Shutdown \*
- \* When Shutdown complete, PGSC pwr - on \*
- \* BIA Enable 2 - ON \*
- \* Record MET / : / : \* \*
- \* Repeat steps 1,2,4,6 \*

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After 1 min,  
SOLSE Packets Rcvd – incremented to 2 or greater

- \* If after 1 min, SOLSE Packets Rcvd = 0 \*
- \* MCC \*

After 1 min 45 sec,  
LORE Packets Rcvd – incremented to 2 or greater

- \* If after 1 min 45 sec, LORE Packets Rcvd = 0 \*
- \* Notify MCC, continue \*

Press <ESC> to return to main menu

[HH-JR/SOLSE-2 Main Menu]  
Sel SOLSE/LORE Telemetry Page

[SOLSE/LORE Telemetry Page]  
SOLSE Status – In Sync  
LORE Status – In Sync

**NOTE**

S\_Mode will remain in Sby until four packets are received (at ~100 sec after command receipt). When four packets are received S\_Mode will indicate Cal

~100 sec after SOLSE Primary Power Enable,  
LORE Packets Rcvd ≥ 4  
SOLSE Packets Rcvd ≥ 4  
S\_Mode – Cal

00:15:00 Start Egg Timer

Notify MCC, SOLSE Cal Mode Initiated

SOLSE TEC Temp: -10°C ± 1°C  
S\_Filter: VIS (if UV, MCC)  
S\_Filtr Stat: OK (if ERROR, MCC)

**NOTE**

SOLSE Cal duration = 15 min. No payload commanding reqd during cal. After cal, SOLSE packets rcvd = ~68. Packets will continue to increment following conclusion of cal

00:00:00 SOLSE Status – In Sync  
SOLSE Packets Rcvd – ~68  
S\_Mode – Sby

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- \* If after 15 min, S\_Mode – Cal: \*
- \* Notify MCC \*
- \* Press <ESC> to return to main menu \*
- \* [HH-JR/SOLSE-2 Main Menu] \*
- \* Sel HH-JR/SOLSE-2 System Page \*
- \* [HH-JR/SOLSE-2 System Page] \*
- \* B2-Standby Mode – PULSE (wait ≤ 45 sec, ON) \*
- \* After 1 min, B2-Standby Mode – OFF \*
- \* Press <ESC> to return to main menu \*
- \* [HH-JR/SOLSE-2 Main Menu] \*
- \* Sel SOLSE/LORE Telemetry Page \*
- \* [SOLSE/LORE Telemetry Page] \*
- \* SOLSE Status – In Sync \*
- \* S\_Mode – Sby \*
- \* If S\_Mode – Cal: \*
- \* Notify MCC \*

Press <ESC> to return to main menu

7. SOLSE/LORE DATA DUMP, if reqd  
Execute Package if step 7 reqd  
If reqd, proceed with step 7; otherwise, go to step 8

**NOTE**

Data Dump will be performed following calibration

A4 Set Egg Timer to 00:08:00

[HH-JR/SOLSE-2 Main Menu]  
Sel SOLSE/LORE Command Page

a. LORE Data Dump  
[SOLSE/LORE Command Page]  
L\_Cmd Status – GO/OK  
L\_Enter Dump Mode – Send (wait ≤ 45 sec, Pending)  
L\_Execute Cmd Pending – Send ( Sent)  
Wait ≤ 45 sec, L\_Last Cmd Executed: L\_Enter Dump Mode

- \* If after 1 min cmd still pending, reattempt cmd \*

**NOTE**

LORE dark-image dump will complete in 8 min

b. SOLSE Data Dump  
S\_Cmd Status – GO/OK  
S\_Enter Dump Mode – Send (wait ≤ 45 sec, Pending)  
S\_Execute Cmd Pending – Send ( Sent)  
Wait ≤ 45 sec, S\_Last Cmd Executed: S\_Enter Dump Mode

- \* If after 1 min cmd still pending, reattempt cmd \*

**NOTE**

SOLSE post-calibration dump will complete in 4 min

00:08:00 Initiate Egg Timer

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c. Status Check  
Press <ESC> to return to main menu

[HH-JR/SOLSE-2 Main Menu]  
Sel SOLSE/LORE Telemetry Page

[SOLSE/LORE Telemetry Page]  
SOLSE Status – In Sync  
S\_Mode – Dump  
LORE Status – In Sync  
L\_Mode – Sci

**NOTE**

During dump mode, L\_Mode will always indicate Sci

00:00:00 d. Dump Completion  
L\_Mode – Sby  
S\_Mode – Sby

- \* If S\_Mode – Dump: \*
- \* Press <ESC> to return to main menu \*
- \* [HH-JR/SOLSE-2 Main Menu] \*
- \* Sel HH-JR/SOLSE-2 System Page \*
- \* [HH-JR/SOLSE-2 System Page] \*
- \* B2-Standby Mode – PULSE (wait ≤ 45 sec) ( ON) \*
- \* Press <ESC> to return to main menu \*
- \* [HH-JR/SOLSE-2 Main Menu] \*
- \* Sel SOLSE/LORE Telemetry Page \*
- \* [SOLSE/LORE Telemetry Page] \*
- \* SOLSE Status – In Sync \*
- \* S\_Mode – Sby \*

Press <ESC> to return to main menu

8. SOLSE/LORE SOFTWARE SHUTDOWN  
[HH-JR/SOLSE-2 Main Menu]  
Sel SOLSE/LORE Command Page

a. SOLSE Shutdown  
[SOLSE/LORE Command Page]  
S\_Cmd Status – GO/OK  
S\_Shutdown – Send (wait ≤ 45 sec, Pending)  
S\_Execute Cmd Pending – Send ( Sent)  
Wait ≤ 45 sec, S\_Last Cmd Executed: S\_Shutdown

- \* If after 1 min cmd still pending, reattempt cmd \*
- \* If after 1 min, still no joy: \*
- \* Notify MCC \*

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b. LORE Shutdown  
L\_Cmd Status – GO/OK  
L\_Shutdown – Send (wait ≤ 45 sec, Pending)  
L\_Execute Cmd Pending – Send ( Sent)  
Wait ≤ 45 sec, L\_Last Cmd Executed: L\_Shutdown

- \* If after 1 min cmd still pending, reattempt cmd \*
- \* If after 1 min, still no joy: \*
- \* Notify MCC \*

Press <ESC> to return to main menu

c. Shutdown Verification  
[HH-JR/SOLSE-2 Main Menu]  
Sel SOLSE/LORE Telemetry Page

**NOTE**

SOLSE and LORE Intensity Words progressively fill with asterisks after shutdown command is acknowledged. It may take up to 1 min for asterisks to begin to appear. Final shutdown is indicated when entire field is asterisks

[SOLSE/LORE Telemetry Page]  
SOLSE and LORE Intensity Words = all asterisks

- \* If after 90 sec, if SOLSE and LORE Intensity Words \*
- \* not all asterisks, repeat step 8a and/or 8b as reqd \*

Press <ESC> to return to main menu

9. SOLSE POWERDOWN  
Press <ESC> to return to main menu  
[HH-JR/SOLSE-2 Main Menu]  
Sel HH-JR/SOLSE-2 System Page

[HH-JR/SOLSE-2 System Page]  
HH-JR Polling – ON  
Commands transmitted incrementing  
HRIU Status = initialized

SOLSE Primary Power – DISA (wait ≤ 45 sec, OFF)

10. EXIT POLLING & SOFTWARE  
HH-JR Polling – DISA (wait ≤ 45 sec, OFF)  
Press <ESC> to return to main menu

[HH-JR/SOLSE-2 Main Menu]  
Sel Exit Program, follow directions on screen  
Return to Windows

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**11. FILE TRANSFER**

**NOTE**

Refer to step 3 for most recent data file

Copy most recent SOLSE data file (C:\solse\PGSCdata.00X) and log file (C:\solse2\solse.log) to OCA machine (STS-1) via network. Downlink location: C:\oca-down\payloads\solse

If network unavailable:

Use PCMCIA card to copy files to OCA machine (STS-1)  
Ref: OCA DOWNLINK VIA GROUND COMMAND (ORB OPS, PGSC)

From Start Menu, Sel Shutdown

**NOTE**

SOLSE PGSC may be deactivated when SOLSE software is not in use.

BIA power is reqd for SOLSE heater power. BIA must remain powered from SOLSE activation to SOLSE Deactivation unless otherwise instructed

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**SOLSE SETUP**

**NOTE**

Setup must be initiated NLT Terminator Rise – 50 min (per Execute Package).

All SOLSE and HRIU commands require <CTRL-Y> following command selection to execute command.

Once every 30 sec, there is a brief period in which commands to payload will not be accepted. If ‘S\_CMD(L\_CMD) Status is NoGo/Wait. Cannot send command to SOLSE(LORE)’ message appears at any time after executing S\_Cmd Execute or L\_Cmd Execute, resend rejected command.

To clear error message from active screen, exit to main menu and return to desired screen

- \* If at any time during procedure execution error messages
- \* display in lower left corner of screen, it is possible that an
- \* HRIU reset has occurred. To determine if HRIU is reset,
- \* if not on HH-JR/SOLSE-2 System Page:
- \* Press <ESC> to return to main menu
- \* HH-JR/SOLSE-2 Main Menu
- \* Sel HH-JR/SOLSE-2 System Page
- \* HH-JR/SOLSE-2 System Page
- \* If HRIU Status – initialized:
- \* Return to nominal ops
- \* If HRIU Status – reset:
- \* Notify MCC
- \* Perform SOLSE CONTINGENCY RECOVERY

1. P/TV CHECK, if reqd  
Execute Pack if step 1 reqd  
If reqd, P/TV11 SOLSE, SETUP (PHOTO/TV FS, SCENES) complete; otherwise, proceed to step 2

2. ATTITUDE CHECK  
Time reqd to be in attitude for SOLSE SCIENCE per Attitude Timeline

3. CONFIG BIA & FLUSH HRIU BUFFER  
SOLSE-2 software not on  
PWR – ON  
ENABLE 2 – OFF (wait 5 sec)  
ENABLE 2 – ON

PGSC  
BIA

Log MET:

|      |       |      |       |      |       |
|------|-------|------|-------|------|-------|
| _/ / | : : : | _/ / | : : : | _/ / | : : : |
| _/ / | : : : | _/ / | : : : | _/ / | : : : |
| _/ / | : : : | _/ / | : : : | _/ / | : : : |
| _/ / | : : : | _/ / | : : : | _/ / | : : : |

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**PGSC 4. SOFTWARE STARTUP**

Start SOLSE software  
Go to Shuttle Apps Folder  
Sel SOLSE-2 Icon  
Follow directions on screen

HH-JR/SOLSE-2 Main Menu

Software MET Time within 10 sec of actual MET

- \* If Software MET Time > 10 sec off actual MET:
- \* Sel Update MET/GMT
- \* Update MET/GMT
- \* Sel UPDATE MET
- \* Enter Current MET, press enter
- \* Press <ESC> to return to main menu

HH-JR/SOLSE-2 Main Menu

Sel Data Recording and Storage Setup

HH-JR/SOLSE-2 Data Storage Setup Page

HRIU Errors – ON  
HRIU Engineering Data – ON  
HRIU Diagnostic Data – ON  
HRIU Customer Data – ON

- \* If HRIU Errors – OFF:
- \* HRIU Errors – ENAB ( ON)
- \* If HRIU Engineering Data – OFF:
- \* HRIU Engineering Data – ENAB ( ON)
- \* If HRIU Diagnostic Data – OFF:
- \* HRIU Diagnostic Data – ENAB ( ON)
- \* If HRIU Customer Data – OFF:
- \* HRIU Customer Data – ENAB ( ON)

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Record MET and PGSC Recording Status (File #) in table

| MET  | File Number | MET  | File Number |
|------|-------------|------|-------------|
| _/ / | : : :       | _/ / | : : :       |
| _/ / | : : :       | _/ / | : : :       |
| _/ / | : : :       | _/ / | : : :       |
| _/ / | : : :       | _/ / | : : :       |
| _/ / | : : :       | _/ / | : : :       |
| _/ / | : : :       | _/ / | : : :       |
| _/ / | : : :       | _/ / | : : :       |
| _/ / | : : :       | _/ / | : : :       |
| _/ / | : : :       | _/ / | : : :       |
| _/ / | : : :       | _/ / | : : :       |

Press <ESC> to return to main menu

5. HH-JR STATUS ENABLE  
HH-JR/SOLSE-2 Main Menu  
Sel HH-JR/SOLSE-2 System Page  
HH-JR/SOLSE-2 System Page  
HH-JR Polling – ENAB ( ON)

- \* If HH-JR Polling – OFF after enable attempt:
- \* Reattempt two times
- \* If still no joy:
- \* Notify MCC
- \* Press <ESC> to return to main menu
- \* Sel Exit Program, follow directions on screen
- \* BIA Enable 2 – OFF
- \* Perform hard reboot of PGSC:
- \* From Start Menu, Sel Shutdown
- \* When Shutdown complete, PGSC pwr – on
- \* BIA Enable 2 – ON
- \* Repeat steps 4-5
- \* If still no joy, MCC

Commands transmitted incrementing  
Data Storage Status – ENABLED  
After 45 sec:  
HRIU Status – initialized  
Heater & Door Power – ON

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6. SOLSE STATUS CHECK

[HH-JR/SOLSE-2 System Page]  
Record Payload Status in Table

| Nominal Value Range (SOLSE Primary Pwr Off) |                   |
|---|-------------------|
| Bus Voltage:                                | 28 ± 1 V          |
| Bus Current:                                | 0.196 ± .05 Amps  |
| Canister Pressure:                          | 15.257 ± 0.6 PSIA |
| Door Position:                              | 2.5 Volts         |
| HRIU Temp:                                  | 0-40°C            |
| HH-JR LEP:                                  | 0-40°C            |
| Heat Pipe:                                  | 0-40°C            |
| Bulkhead:                                   | 0-40°C            |
| Heatsink:                                   | 0-40°C            |

| MET                | _____       | _____ | _____       | _____ |
|--------------------|-------------|-------|-------------|-------|
| Bus Voltage:       | _____       | Volts | _____       | Volts |
| Bus Current:       | _____       | Amps  | _____       | Amps  |
| Canister Pressure: | _____       | PSIA  | _____       | PSIA  |
| Door Position:     | Open/Closed | Volts | Open/Closed | Volts |
| HRIU Temp:         | _____       | °C    | _____       | °C    |
| HH-JR LEP:         | _____       | °C    | _____       | °C    |
| Heat Pipe:         | _____       | °C    | _____       | °C    |
| Bulkhead:          | _____       | °C    | _____       | °C    |
| Heatsink:          | _____       | °C    | _____       | °C    |

| MET                | _____       | _____ | _____       | _____ |
|--------------------|-------------|-------|-------------|-------|
| Bus Voltage:       | _____       | Volts | _____       | Volts |
| Bus Current:       | _____       | Amps  | _____       | Amps  |
| Canister Pressure: | _____       | PSIA  | _____       | PSIA  |
| Door Position:     | Open/Closed | Volts | Open/Closed | Volts |
| HRIU Temp:         | _____       | °C    | _____       | °C    |
| HH-JR LEP:         | _____       | °C    | _____       | °C    |
| Heat Pipe:         | _____       | °C    | _____       | °C    |
| Bulkhead:          | _____       | °C    | _____       | °C    |
| Heatsink:          | _____       | °C    | _____       | °C    |

| MET                | _____       | _____ | _____       | _____ |
|--------------------|-------------|-------|-------------|-------|
| Bus Voltage:       | _____       | Volts | _____       | Volts |
| Bus Current:       | _____       | Amps  | _____       | Amps  |
| Canister Pressure: | _____       | PSIA  | _____       | PSIA  |
| Door Position:     | Open/Closed | Volts | Open/Closed | Volts |
| HRIU Temp:         | _____       | °C    | _____       | °C    |
| HH-JR LEP:         | _____       | °C    | _____       | °C    |
| Heat Pipe:         | _____       | °C    | _____       | °C    |
| Bulkhead:          | _____       | °C    | _____       | °C    |
| Heatsink:          | _____       | °C    | _____       | °C    |

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| MET                | _____       | _____ | _____       | _____ |
|--------------------|-------------|-------|-------------|-------|
| Bus Voltage:       | _____       | Volts | _____       | Volts |
| Bus Current:       | _____       | Amps  | _____       | Amps  |
| Canister Pressure: | _____       | PSIA  | _____       | PSIA  |
| Door Position:     | Open/Closed | Volts | Open/Closed | Volts |
| HRIU Temp:         | _____       | °C    | _____       | °C    |
| HH-JR LEP:         | _____       | °C    | _____       | °C    |
| Heat Pipe:         | _____       | °C    | _____       | °C    |
| Bulkhead:          | _____       | °C    | _____       | °C    |
| Heatsink:          | _____       | °C    | _____       | °C    |

| MET                | _____       | _____ | _____       | _____ |
|--------------------|-------------|-------|-------------|-------|
| Bus Voltage:       | _____       | Volts | _____       | Volts |
| Bus Current:       | _____       | Amps  | _____       | Amps  |
| Canister Pressure: | _____       | PSIA  | _____       | PSIA  |
| Door Position:     | Open/Closed | Volts | Open/Closed | Volts |
| HRIU Temp:         | _____       | °C    | _____       | °C    |
| HH-JR LEP:         | _____       | °C    | _____       | °C    |
| Heat Pipe:         | _____       | °C    | _____       | °C    |
| Bulkhead:          | _____       | °C    | _____       | °C    |
| Heatsink:          | _____       | °C    | _____       | °C    |

| MET                | _____       | _____ | _____       | _____ |
|--------------------|-------------|-------|-------------|-------|
| Bus Voltage:       | _____       | Volts | _____       | Volts |
| Bus Current:       | _____       | Amps  | _____       | Amps  |
| Canister Pressure: | _____       | PSIA  | _____       | PSIA  |
| Door Position:     | Open/Closed | Volts | Open/Closed | Volts |
| HRIU Temp:         | _____       | °C    | _____       | °C    |
| HH-JR LEP:         | _____       | °C    | _____       | °C    |
| Heat Pipe:         | _____       | °C    | _____       | °C    |
| Bulkhead:          | _____       | °C    | _____       | °C    |
| Heatsink:          | _____       | °C    | _____       | °C    |

Voice telemetry values from table to MCC

7. VENT VALVE OPENING, if read  
If first door opening, proceed with step 7; otherwise, go to step 8  
[HH-JR/SOLSE-2 System Page]  
Vent Command = OPEN (wait 45 sec, OPEN)

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A4 8. SOLSE POWERUP & CALIBRATION  
Set Egg Timer to 00:15:00

[HH-JR/SOLSE-2 System Page]  
All temperatures (five) except TEC Temp: 0°C-40°C

If temperatures = 0°C-40°C,  
SOLSE Primary Power = ENAB (wait 45 sec, ON)

- \* If temperatures < 0°C or > 40°C, \*
- \* Notify MCC \*
- \* On MCC GO: \*
- \* SOLSE Primary Power = ENAB ( ON ) \*
- \* If after 45 sec, SOLSE Primary Power = OFF: \*
- \* Notify MCC \*
- \* Reattempt cmd \*
- \* If still no joy: \*
- \* Notify MCC \*
- \* HH-JR Polling = DISA (wait ≤ 45 sec, OFF) \*
- \* Press <ESC> to return to main menu \*
- \* Sel Exit Program, follow directions on screen \*
- \* BIA Enable 2 = OFF \*
- \* Perform hard reboot of PGSC: \*
- \* From Start Menu, Sel Shutdown \*
- \* When Shutdown complete, PGSC pwr = on \*
- \* BIA Enable 2 = ON \*
- \* Repeat steps 4,5,8 \*

After 1 min,  
SOLSE Packets Rcvd = incremented to 2 or greater

- \* If after 1 min, SOLSE Packets Rcvd = 0: \*
- \* MCC \*

After 1 min 45 sec,  
LORE Packets Rcvd = incremented to 2 or greater

- \* If after 1 min 45 sec, LORE Packets Rcvd = 0: \*
- \* Notify MCC, continue \*

Press <ESC> to return to main menu

[HH-JR/SOLSE-2 Main Menu]  
Sel SOLSE/LORE Telemetry Page

[SOLSE/LORE Telemetry Page]  
SOLSE Status = In Sync  
LORE Status = In Sync

**NOTE**

S\_Mode will remain in Stby until four packets are received (at ~100 sec after command receipt). When four packets are received S\_Mode will indicate Cal  
-100 sec after SOLSE Primary Power Enable:  
LORE Packets Rcvd ≥ 4  
SOLSE Packets Rcvd ≥ 4  
S\_Mode = Cal

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00:15:00 Start Egg Timer  
Notify MCC, SOLSE Cal Mode Initiated  
SOLSE TEC Temp: -10°C ± 1°C  
S\_Filter: VIS (if UV, MCC)  
S\_Filtr Stat: OK (if ERROR, MCC)

9. SOLSE CALIBRATION END

**NOTE**  
SOLSE Cal duration = 15 min. No payload commanding reqd during cal. After cal, SOLSE Packets Rcvd = ~68. Packets will continue to increment following conclusion of cal

00:00:00 SOLSE Status = In Sync  
SOLSE Packets Rcvd = ~68  
S\_Mode = Stby

- \* If after 15 min S\_Mode = Cal: \*
- \* Notify MCC \*
- \* Press <ESC> to return to main menu \*
- \* [HH-JR/SOLSE-2 Main Menu] \*
- \* Sel HH-JR/SOLSE-2 System Page \*
- \* [HH-JR/SOLSE-2 System Page] \*
- \* B2-Standby Mode = PULSE (wait ≤ 45 sec, ON) \*
- \* After 1 min, B2-Standby Mode = OFF \*
- \* Press <ESC> to return to main menu \*
- \* [HH-JR/SOLSE-2 Main Menu] \*
- \* Sel SOLSE/LORE Telemetry Page \*
- \* [SOLSE/LORE Telemetry Page] \*
- \* SOLSE Status = In Sync \*
- \* S\_Mode = Stby \*
- \* If S\_Mode = Cal: \*
- \* Notify MCC \*

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5. **COMMAND SOLSE/LORE IT SETTINGS, if reqd**  
Execute Pack if step 5 commands reqd  
If reqd, proceed with step 5; otherwise, go to step 6

HH-JR/SOLSE-2 Main Menu  
Sel SOLSE/LORE Command Page

SOLSE/LORE Command Page  
Command Instrument Settings per Table as Reqd per Execute Package

| # | Command Name           | Execution Steps  |
|---|------------------------|--|
| A | S_Forward IT 1         | S_Forward IT 1 – Send (wait ≤ 45 sec., Pending)<br>S_Execute Cmd Pending – Send ( Sent)<br>wait ≤ 45 sec., S_Last Cmd Executed: S_Forward IT 1                 |
| B | S_Forward IT 2         | S_Forward IT 2 – Send (wait ≤ 45 sec., Pending)<br>S_Execute Cmd Pending – Send ( Sent)<br>wait ≤ 45 sec., S_Last Cmd Executed: S_Forward IT 2                 |
| C | S_Forward IT 3         | S_Forward IT 3 – Send (wait ≤ 45 sec., Pending)<br>S_Execute Cmd Pending – Send ( Sent)<br>wait ≤ 45 sec., S_Last Cmd Executed: S_Forward IT 3                 |
| D | S_Back IT 1            | S_Back IT 1 – Send (wait ≤ 45 sec., Pending)<br>S_Execute Cmd Pending – Send ( Sent)<br>wait ≤ 45 sec., S_Last Cmd Executed: S_Back IT 1                       |
| E | S_Back IT 2            | S_Back IT 2 – Send (wait ≤ 45 sec., Pending)<br>S_Execute Cmd Pending – Send ( Sent)<br>wait ≤ 45 sec., S_Last Cmd Executed: S_Back IT 2                       |
| F | S_Back IT 3            | S_Back IT 3 – Send (wait ≤ 45 sec., Pending)<br>S_Execute Cmd Pending – Send ( Sent)<br>wait ≤ 45 sec., S_Last Cmd Executed: S_Back IT 3                       |
| G | S_Return to initial IT | S_Return to initial IT – Send (wait ≤ 45 sec., Pending)<br>S_Execute Cmd Pending – Send ( Sent)<br>wait ≤ 45 sec., S_Last Cmd Executed: S_Return to initial IT |
| H | L_Forward IT 1         | L_Forward IT 1 – Send (wait ≤ 5 sec., Pending)<br>L_Execute Cmd Pending – Send ( Sent)<br>wait ≤ 45 sec., L_Last Cmd Executed: L_Forward IT 1                  |
| I | L_Forward IT 2         | L_Forward IT 2 – Send (wait ≤ 45 sec., Pending)<br>L_Execute Cmd Pending – Send ( Sent)<br>wait ≤ 45 sec., L_Last Cmd Executed: L_Forward IT 2                 |
| J | L_Forward IT 3         | L_Forward IT 3 – Send (wait ≤ 45 sec., Pending)<br>L_Execute Cmd Pending – Send ( Sent)<br>wait ≤ 45 sec., L_Last Cmd Executed: L_Forward IT 3                 |
| K | L_Back IT 1            | L_Back IT 1 – Send (wait ≤ 45 sec., Pending)<br>L_Execute Cmd Pending – Send ( Sent)<br>wait ≤ 45 sec., L_Last Cmd Executed: L_Back IT 1                       |
| L | L_Back IT 2            | L_Back IT 2 – Send (wait ≤ 45 sec., Pending)<br>L_Execute Cmd Pending – Send ( Sent)<br>wait ≤ 45 sec., L_Last Cmd Executed: L_Back IT 2                       |
| M | L_Back IT 3            | L_Back IT 3 – Send (wait ≤ 45 sec., Pending)<br>L_Execute Cmd Pending – Send ( Sent)<br>wait ≤ 45 sec., L_Last Cmd Executed: L_Back IT 3                       |
| N | L_Return to initial IT | L_Return to initial IT – Send (wait ≤ 45 sec., Pending)<br>L_Execute Cmd Pending – Send ( Sent)<br>wait ≤ 45 sec., L_Last Cmd Executed: L_Return to initial IT |

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\* If after 1 min any cmd still pending, reattempt cmd \*

Press <ESC> to return to main menu

6. **DOOR OPENING**  
Perform Per Execute Package MET (NLT TR –4 min (Earth) and TR (limb))

**NOTE**  
Door may be opened early on MCC GO

PGSC HH-JR/SOLSE-2 Main Menu  
Sel HH-JR SOLSE-2 System Page

HH-JR/SOLSE-2 System Page  
HH-JR Polling – ON

\* If HH-JR Polling – OFF:  
\* HH-JR Polling – ENAB (wait ≤ 45 sec., ON) \*

HRIU Status – initialized  
Door Command – OPEN (wait ≤ 45 sec., OPEN)

**NOTE**  
SOLSE door dual motor opening time = ~35 sec,  
single motor = ~70 sec

~35 sec after sending Door Command Open:  
Door Position – OPEN

Press <ESC> to return to main menu  
HH-JR/SOLSE-2 Main Menu  
Sel SOLSE/LORE Telemetry Page  
SOLSE/LORE Telemetry Page  
S\_Door – Open

Press <ESC> to return to main menu

PGSC HH-JR/SOLSE-2 SYSTEM PAGE  
Heater & Door Power – DISA (wait ≤ 45 sec., OFF)

**NOTE**  
Disabling Heater & Door Power ensures that SOLSE door  
will not close inadvertently in case of an HRIU reset

Press <ESC> to return to main menu  
Proceed to SOLSE MONITOR

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**SOLSE MONITOR**

**NOTE**

All SOLSE and HRIU commands require <CTRL-Y> following  
command Selection to execute command.

Once every 30 sec there is a brief period in which commands to  
payload will not be accepted. If S\_CMD/L\_CMD Status is  
NoGo/Wait. Cannot send command to SOLSE(LORE)  
message appears at any time after executing S\_Cmd Execute  
or L\_Cmd Execute, resend rejected command.

To clear error message from active screen, exit to main menu  
and return to desired screen

- \* If at any time during procedure execution error messages \*
- \* display in lower left corner of screen, it is possible that \*
- \* HRIU reset has occurred. To determine if HRIU is reset: \*
- \* If not on HH-JR/SOLSE-2 System Page: \*
- \* Press <ESC> to return to main menu \*
- \* HH-JR/SOLSE-2 Main Menu \*
- \* Sel HH-JR/SOLSE-2 System Page \*
- \* HH-JR/SOLSE-2 System Page \*
- \* If HRIU Status – initialized: \*
- \* Return to nominal ops \*
- \* If HRIU Status – reset: \*
- \* Notify MCC \*
- \* Perform SOLSE CONTINGENCY RECOVERY \*

1. **SOLSE OBSERVATION**

Perform INTEGRATION COMMANDING, step 1a as reqd per Execute  
Package and perform SOLSE MONITOR, step 1b, as time allows  
(every 10 min if possible)

a. **Integration Commanding, if reqd**

HH-JR/SOLSE-2 Main Menu  
Sel SOLSE/LORE Command Page

SOLSE/LORE Command Page  
Command Instrument Settings as reqd per Exec Pack

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| # | Command Name           | Execution Steps  |
|---|------------------------|--|
| A | S_Forward IT 1         | S_Forward IT 1 – Send (wait ≤ 45 sec., Pending)<br>S_Execute Cmd Pending – Send ( Sent)<br>wait ≤ 45 sec., S_Last Cmd Executed: Forward IT 1                 |
| B | S_Forward IT 2         | S_Forward IT 2 – Send (wait ≤ 45 sec., Pending)<br>S_Execute Cmd Pending – Send ( Sent)<br>wait ≤ 45 sec., S_Last Cmd Executed: Forward IT 2                 |
| C | S_Forward IT 3         | S_Forward IT 3 – Send (wait ≤ 45 sec., Pending)<br>S_Execute Cmd Pending – Send ( Sent)<br>wait ≤ 45 sec., S_Last Cmd Executed: Forward IT 3                 |
| D | S_Back IT 1            | S_Back IT 1 – Send (wait ≤ 45 sec., Pending)<br>S_Execute Cmd Pending – Send ( Sent)<br>wait ≤ 45 sec., S_Last Cmd Executed: Back IT 1                       |
| E | S_Back IT 2            | S_Back IT 2 – Send (wait ≤ 45 sec., Pending)<br>S_Execute Cmd Pending – Send ( Sent)<br>wait ≤ 45 sec., S_Last Cmd Executed: Back IT 2                       |
| F | S_Back IT 3            | S_Back IT 3 – Send (wait ≤ 45 sec., Pending)<br>S_Execute Cmd Pending – Send ( Sent)<br>wait ≤ 45 sec., S_Last Cmd Executed: Back IT 3                       |
| G | S_Return to initial IT | S_Return to initial IT – Send (wait ≤ 45 sec., Pending)<br>S_Execute Cmd Pending – Send ( Sent)<br>wait ≤ 45 sec., S_Last Cmd Executed: Return to initial IT |
| H | L_Forward IT 1         | L_Forward IT 1 – Send (wait ≤ 45 sec., Pending)<br>L_Execute Cmd Pending – Send ( Sent)<br>wait ≤ 45 sec., L_Last Cmd Executed: Forward IT 1                 |
| I | L_Forward IT 2         | L_Forward IT 2 – Send (wait ≤ 45 sec., Pending)<br>L_Execute Cmd Pending – Send ( Sent)<br>wait ≤ 45 sec., L_Last Cmd Executed: Forward IT 2                 |
| J | L_Forward IT 3         | L_Forward IT 3 – Send (wait ≤ 45 sec., Pending)<br>L_Execute Cmd Pending – Send ( Sent)<br>wait ≤ 45 sec., L_Last Cmd Executed: Forward IT 3                 |
| K | L_Back IT 1            | L_Back IT 1 – Send (wait ≤ 45 sec., Pending)<br>L_Execute Cmd Pending – Send ( Sent)<br>wait ≤ 45 sec., L_Last Cmd Executed: Back IT 1                       |
| L | L_Back IT 2            | L_Back IT 2 – Send (wait ≤ 45 sec., Pending)<br>L_Execute Cmd Pending – Send ( Sent)<br>wait ≤ 45 sec., L_Last Cmd Executed: Back IT 2                       |
| M | L_Back IT 3            | L_Back IT 3 – Send (wait ≤ 45 sec., Pending)<br>L_Execute Cmd Pending – Send ( Sent)<br>wait ≤ 45 sec., L_Last Cmd Executed: Back IT 3                       |
| N | L_Return to initial IT | L_Return to initial IT – Send (wait ≤ 45 sec., Pending)<br>L_Execute Cmd Pending – Send ( Sent)<br>wait ≤ 45 sec., L_Last Cmd Executed: Return to initial IT |

Press <ESC> to return to main menu

b. **SOLSE Monitor**

HH-JR/SOLSE-2 Main Menu  
Sel SOLSE/LORE Telemetry Page

SOLSE/LORE Telemetry Page  
If available, check SOLSE/LORE telemetry for error status every 10 min  
through observation conclusion

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If Limb View,  
If S\_Filter = VIS, LORE Target Distance < |10| (if > |10|, notify MCC)  
If S\_Filter = UV, LORE Target Distance < |17| (if > |17|, notify MCC)  
SOLSE/LORE Packets Rcvd incrementing at least once per min  
SOLSE Status and LORE Status – In Sync  
S\_Mode and L\_Mode – Sci  
SOLSE and LORE Intensity Words ≤ 4 asterisks (if > 4 asterisks, notify MCC) |

**NOTE**

S\_LORE will nominally alternate between "LORE" and "NoLORE" as LORE only handshakes with SOLSE every other frame. S\_Cmding and L\_Cmding will also nominally alternate between GO OK and NoGo/Wait

- \* If SOLSE/LORE packets not incrementing for > 1 min: \*
- \* Notify MCC \*
- \* Perform SOLSE CONTINGENCY RECOVERY \*
- \* If SOLSE (LORE) Status – NoSync: \*
- \* Notify MCC \*
- \* Perform SOLSE CONTINGENCY RECOVERY \*
- \* If L\_Mode ≠ Sci: \*
- \* Notify MCC \*
- \* Press <ESC> to return to main menu \*
- \* Sel SOLSE/LORE Command Page \*
- \* [SOLSE/LORE Command Page] \*
- \* L\_Cmd Status – GO/OK \*
- \* L\_Enter Science Mode – Send (wait ≤ 45 sec, Pending) \*
- \* L\_Execute Cmd Pending – Send ( Send) \*
- \* Wait ≤ 45 sec, L\_Last Cmd Executed: L\_Enter Science Mode \*
- \* Press <ESC> to return to main menu \*
- \* [HH-JR/SOLSE-2 Main Menu] \*
- \* Sel SOLSE/LORE Telemetry Page \*
- \* [SOLSE/LORE Telemetry Page] \*
- \* SOLSE and LORE Status – In Sync \*
- \* L\_Mode – Sci \*
- \* If S\_Mode ≠ Sci: \*
- \* Notify MCC \*
- \* Press <ESC> to return to main menu \*
- \* [HH-JR/SOLSE-2 Main Menu] \*
- \* Sel HH-JR System Page \*
- \* [HH-JR/SOLSE-2 System Page] \*
- \* B3-Science Mode – PULSE (wait ≤ 45 sec, ON) \*
- \* After 1 min, B3-Science Mode – OFF \*
- \* Press <ESC> to return to main menu \*
- \* [HH-JR/SOLSE-2 Main Menu] \*
- \* Sel SOLSE/LORE Telemetry Page \*
- \* [SOLSE/LORE Telemetry Page] \*
- \* SOLSE and LORE Status – In Sync \*
- \* S\_Mode – Sci \*
- \* If S\_Mode ≠ Sci: \*
- \* MCC \*

**2. OBSERVATION CONCLUSION**

Press <ESC> to return to main menu  
Proceed to SOLSE CLOSEOUT per Execute Package MET

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**SOLSE CLOSEOUT**

**NOTE**

All SOLSE and HRIU commands require <CTRL-Y> following command selection to execute command.

Once every 30 sec there is a brief period in which commands to payload will not be accepted. If "S\_CMD(L\_CMD) Status is NoGo/Wait. Cannot send command to SOLSE(LORE)" message appears at any time after executing S\_Cmd Execute or L\_Cmd Execute, resend rejected command.

To clear error message from active screen, exit to main menu and return to desired screen

- \* If at any time during procedure execution error messages \*
- \* display in lower left corner of screen, it is possible that \*
- \* HRIU reset has occurred. To determine if HRIU is reset: \*
- \* If not on HH-JR/SOLSE-2 System Page: \*
- \* Press <ESC> to return to main menu \*
- \* [HH-JR/SOLSE-2 Main Menu] \*
- \* Sel HH-JR/SOLSE-2 System Page \*
- \* [HH-JR/SOLSE-2 System Page] \*
- \* If HRIU Status – initialized: \*
- \* Return to nominal ops \*
- \* If HRIU Status – reset: \*
- \* Notify MCC \*
- \* Perform SOLSE CONTINGENCY RECOVERY \*

1. **POLLING CHECK**  
PGSC [HH-JR/SOLSE-2 Main Menu]  
Sel HH-JR SOLSE-2 System Page

[HH-JR/SOLSE-2 System Page]  
HH-JR Polling – ON

- \* If HH-JR Polling – OFF: \*
- \* HH-JR Polling – ENAB ( ON) \*

Commands transmitted incrementing  
Press <ESC> to return to main menu

2. **SOLSE/LORE DATA DUMP INITIATION**

A4 Set Egg Timer to 00:15:00

PGSC [HH-JR/SOLSE-2 Main Menu]  
Sel SOLSE/LORE Command Page

[SOLSE/LORE Command Page]  
S\_Cmd Status – GO/OK

S\_Enter Dump Mode – Send (wait ≤ 45 sec, Pending)  
S\_Execute Cmd Pending – Send ( Send)

Wait ≤ 45 sec, S\_Last Cmd Executed: S\_Enter Dump Mode

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- \* If following message appears: "S\_CMD Status is NoGo/Wait. \*
  - \* Cannot send command to SOLSE.:" \*
  - \* Reattempt cmd \*
- L\_Cmd Status – GO/OK  
L\_Enter Dump Mode – Send (wait ≤ 45 sec, Pending)  
L\_Execute Cmd Pending – Send ( Send)  
Wait ≤ 45 sec, L\_Last Cmd Executed: L\_Enter Dump Mode
- \* If after 1 min cmd still pending, reattempt cmd \*
- 00:15:00 Initiate Egg Timer
- Press <ESC> to return to main menu  
[HH-JR/SOLSE-2 Main Menu]  
Sel SOLSE/LORE Telemetry Page
- [SOLSE/LORE Telemetry Page]  
SOLSE Status – In Sync  
S\_Mode – Dump  
S\_Cmding – No Go/Wait  
LORE Status – In Sync  
L\_Mode – Sci  
L\_Cmding – NoGo/Wait

**NOTE**  
L\_Mode will indicate Sci during dump mode

Press <ESC> to return to main menu

**3. DOOR CLOSURE**

Execute Package if step 3 reqd

PGSC [HH-JR/SOLSE-2 Main Menu]  
Sel HH-JR/SOLSE-2 System Page  
[HH-JR/SOLSE-2 System Page]  
Heater & Door Power – ENAB (wait ≤ 45 sec) ( ON)

Door Command – CLOSE (wait ≤ 45 sec, CLOSE)

**NOTE**  
SOLSE door dual motor closing time = ~35 sec;  
single motor = ~70 sec

After ~35 sec:  
Door position – CLOSED

MON 1 Visually verify SOLSE door position closed

Press <ESC> to return to main menu  
[HH-JR/SOLSE-2 Main Menu]  
Sel SOLSE/LORE Telemetry Page

[SOLSE/LORE Telemetry Page]  
S\_Door – Closed

Press <ESC> to return to main menu

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**4. SOLSE STATUS CHECK**

Sel HH-JR/SOLSE-2 System Page

[HH-JR/SOLSE-2 System Page]

Record Payload Status and Voice Values to MCC

| Nominal Value Range (SOLSE Primary Pwr On) |                   |
|--|-------------------|
| Bus Voltage:                               | 28 ± 1 V          |
| Bus Current:                               | 2.0 ± 0.7 Amps    |
| Canister Pressure:                         | 15.257 ± 0.6 PSIA |
| Door Position:                             | ≤ 2.5 Volts       |
| HRIU Temp:                                 | 0-40° C           |
| HH-JR LEP:                                 | 0-40° C           |
| Heat Pipe:                                 | 0-40° C           |
| Bulkhead:                                  | 0-40° C           |
| Heatsink:                                  | 0-40° C           |
| TEC Temp:                                  | -10° C ± 1        |

| MET                | _____       | _____ | _____       | _____ |
|--------------------|-------------|-------|-------------|-------|
| Bus Voltage:       | _____       | Volts | _____       | Volts |
| Bus Current:       | _____       | Amps  | _____       | Amps  |
| Canister Pressure: | _____       | PSIA  | _____       | PSIA  |
| Door Position:     | Open/Closed | Volts | Open/Closed | Volts |
| HRIU Temp:         | _____       | °C    | _____       | °C    |
| HH-JR LEP:         | _____       | °C    | _____       | °C    |
| Heat Pipe:         | _____       | °C    | _____       | °C    |
| Bulkhead:          | _____       | °C    | _____       | °C    |
| Heatsink:          | _____       | °C    | _____       | °C    |
| TEC Temp:          | _____       | °C    | _____       | °C    |

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|                    |             |       |             |
|--------------------|-------------|-------|-------------|
| MET                |             |       |             |
| Bus Voltage:       | Volts       | Volts |             |
| Bus Current:       | Amps        | Amps  |             |
| Canister Pressure: | PSIA        | PSIA  |             |
| Door Position:     | Open/Closed | Volts | Open/Closed |
| HRIU Temp:         | °C          | °C    |             |
| HH-JR LEP:         | °C          | °C    |             |
| Heat Pipe:         | °C          | °C    |             |
| Bulkhead:          | °C          | °C    |             |
| Heatsink:          | °C          | °C    |             |
| TEC Temp:          | °C          | °C    |             |

|                    |             |       |             |
|--------------------|-------------|-------|-------------|
| MET                |             |       |             |
| Bus Voltage:       | Volts       | Volts |             |
| Bus Current:       | Amps        | Amps  |             |
| Canister Pressure: | PSIA        | PSIA  |             |
| Door Position:     | Open/Closed | Volts | Open/Closed |
| HRIU Temp:         | °C          | °C    |             |
| HH-JR LEP:         | °C          | °C    |             |
| Heat Pipe:         | °C          | °C    |             |
| Bulkhead:          | °C          | °C    |             |
| Heatsink:          | °C          | °C    |             |
| TEC Temp:          | °C          | °C    |             |

|                    |             |       |             |
|--------------------|-------------|-------|-------------|
| MET                |             |       |             |
| Bus Voltage:       | Volts       | Volts |             |
| Bus Current:       | Amps        | Amps  |             |
| Canister Pressure: | PSIA        | PSIA  |             |
| Door Position:     | Open/Closed | Volts | Open/Closed |
| HRIU Temp:         | °C          | °C    |             |
| HH-JR LEP:         | °C          | °C    |             |
| Heat Pipe:         | °C          | °C    |             |
| Bulkhead:          | °C          | °C    |             |
| Heatsink:          | °C          | °C    |             |
| TEC Temp:          | °C          | °C    |             |

|                    |             |       |             |
|--------------------|-------------|-------|-------------|
| MET                |             |       |             |
| Bus Voltage:       | Volts       | Volts |             |
| Bus Current:       | Amps        | Amps  |             |
| Canister Pressure: | PSIA        | PSIA  |             |
| Door Position:     | Open/Closed | Volts | Open/Closed |
| HRIU Temp:         | °C          | °C    |             |
| HH-JR LEP:         | °C          | °C    |             |
| Heat Pipe:         | °C          | °C    |             |
| Bulkhead:          | °C          | °C    |             |
| Heatsink:          | °C          | °C    |             |
| TEC Temp:          | °C          | °C    |             |

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|                    |             |       |             |
|--------------------|-------------|-------|-------------|
| MET                |             |       |             |
| Bus Voltage:       | Volts       | Volts |             |
| Bus Current:       | Amps        | Amps  |             |
| Canister Pressure: | PSIA        | PSIA  |             |
| Door Position:     | Open/Closed | Volts | Open/Closed |
| HRIU Temp:         | °C          | °C    |             |
| HH-JR LEP:         | °C          | °C    |             |
| Heat Pipe:         | °C          | °C    |             |
| Bulkhead:          | °C          | °C    |             |
| Heatsink:          | °C          | °C    |             |
| TEC Temp:          | °C          | °C    |             |

|                    |             |       |             |
|--------------------|-------------|-------|-------------|
| MET                |             |       |             |
| Bus Voltage:       | Volts       | Volts |             |
| Bus Current:       | Amps        | Amps  |             |
| Canister Pressure: | PSIA        | PSIA  |             |
| Door Position:     | Open/Closed | Volts | Open/Closed |
| HRIU Temp:         | °C          | °C    |             |
| HH-JR LEP:         | °C          | °C    |             |
| Heat Pipe:         | °C          | °C    |             |
| Bulkhead:          | °C          | °C    |             |
| Heatsink:          | °C          | °C    |             |
| TEC Temp:          | °C          | °C    |             |

|                    |             |       |             |
|--------------------|-------------|-------|-------------|
| MET                |             |       |             |
| Bus Voltage:       | Volts       | Volts |             |
| Bus Current:       | Amps        | Amps  |             |
| Canister Pressure: | PSIA        | PSIA  |             |
| Door Position:     | Open/Closed | Volts | Open/Closed |
| HRIU Temp:         | °C          | °C    |             |
| HH-JR LEP:         | °C          | °C    |             |
| Heat Pipe:         | °C          | °C    |             |
| Bulkhead:          | °C          | °C    |             |
| Heatsink:          | °C          | °C    |             |
| TEC Temp:          | °C          | °C    |             |

|                    |             |       |             |
|--------------------|-------------|-------|-------------|
| MET                |             |       |             |
| Bus Voltage:       | Volts       | Volts |             |
| Bus Current:       | Amps        | Amps  |             |
| Canister Pressure: | PSIA        | PSIA  |             |
| Door Position:     | Open/Closed | Volts | Open/Closed |
| HRIU Temp:         | °C          | °C    |             |
| HH-JR LEP:         | °C          | °C    |             |
| Heat Pipe:         | °C          | °C    |             |
| Bulkhead:          | °C          | °C    |             |
| Heatsink:          | °C          | °C    |             |
| TEC Temp:          | °C          | °C    |             |

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|                    |             |       |             |
|--------------------|-------------|-------|-------------|
| MET                |             |       |             |
| Bus Voltage:       | Volts       | Volts |             |
| Bus Current:       | Amps        | Amps  |             |
| Canister Pressure: | PSIA        | PSIA  |             |
| Door Position:     | Open/Closed | Volts | Open/Closed |
| HRIU Temp:         | °C          | °C    |             |
| HH-JR LEP:         | °C          | °C    |             |
| Heat Pipe:         | °C          | °C    |             |
| Bulkhead:          | °C          | °C    |             |
| Heatsink:          | °C          | °C    |             |
| TEC Temp:          | °C          | °C    |             |

Press <ESC> to return to main menu

5. SOLSE/LORE DATA DUMP COMPLETION

[HH-JR/SOLSE-2 Main Menu]  
Sel SOLSE/LORE Telemetry Page  
[SOLSE/LORE Telemetry Page]

00:00:00 S\_Mode - Stby  
L\_Mode - Stby

- \* If S\_Mode - Dump: \*
- \* Press <ESC> to return to main menu \*
- \* [HH-JR/SOLSE-2 Main Menu] \*
- \* Sel HH-JR/SOLSE-2 System Page \*
- \* [HH-JR/SOLSE-2 System Page] \*
- \* B2-Standby Mode - PULSE (wait ≤ 45 sec, ON) \*
- \* Press <ESC> to return to main menu \*
- \* [HH-JR/SOLSE-2 Main Menu] \*
- \* Sel SOLSE/LORE Telemetry Page \*
- \* [SOLSE/LORE Telemetry Page] \*
- \* SOLSE Status - In Sync \*
- \* S\_Mode - Stby \*
- \* S\_Cmding - GO/OK \*

NOTE

L\_Mode cannot be commanded via B1-B4 commands on System Page

Press <ESC> to return to main menu

6. SOLSE CALIBRATION. If step 6 reqd  
Execute Package if step 6 reqd  
If reqd, proceed with step 6; otherwise, go to step 7

NOTE

Step 6 will only be executed at conclusion of observation sequence

Reset Egg Timer to 00:15:00

[HH-JR/SOLSE-2 Main Menu]  
Sel SOLSE/LORE Command Page  
[SOLSE/LORE Command Page]  
S\_Cmd Status - GO/OK  
S\_Enter Cal Mode - Send (wait ≤ 45 sec, Pending)

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S\_Execute Cmd Pending - Send (Sent)  
Wait ≤ 45 sec, S\_Last Cmd Executed: S\_Enter Cal Mode

- \* If after 1 min cmd still pending, reattempt cmd \*

Press <ESC> to return to main menu

[HH-JR/SOLSE-2 Main Menu]  
Sel SOLSE/LORE Telemetry Page

[SOLSE/LORE Telemetry Page]

After 1 min:  
SOLSE Packets Rcvd - incremented to 2 or greater  
LORE Packets Rcvd - incremented to 2 or greater  
SOLSE Status - In Sync

NOTE

S\_Mode will remain in Stby until four packets are received (at ~100 sec after command receipt). When four packets are received, S\_Mode will indicate Cal.

When S\_Mode - Cal, notify MCC, SOLSE Cal Mode Initiated

00:15:00 Start Egg Timer

NOTE

SOLSE Cal duration = 15 min. No payload commanding reqd during cal. After cal, SOLSE Packets Rcvd = ~68. Packets will continue to increment following conclusion of cal

00:00:00 SOLSE Status - In Sync  
S\_Mode - Stby

- \* If S\_Mode - Cal after 15 min: \*
- \* Notify MCC \*
- \* Press <ESC> to return to main menu \*
- \* [HH-JR/SOLSE-2 Main Menu] \*
- \* Sel HH-JR System Page \*
- \* [HH-JR/SOLSE-2 System Page] \*
- \* B2-Standby Mode - PULSE (wait ≤ 45 sec, ON) \*
- \* After 1 min, B2-Standby Mode - OFF \*
- \* Press <ESC> to return to main menu \*
- \* [HH-JR/SOLSE-2 Main Menu] \*
- \* Sel SOLSE/LORE Telemetry Page \*
- \* [SOLSE/LORE Telemetry Page] \*
- \* SOLSE Status - In Sync \*
- \* S\_Mode - Stby \*
- \* If S\_Mode - Cal: \*
- \* Notify MCC \*

Notify MCC, SOLSE Cal complete

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**7. SOLSE FILTER POSITION CHECK**

**NOTE**  
At conclusion of observation series, filter should always be in VIS position

**SOLSE/LORE Telemetry Page**  
Correct Filter in Place per Execute Package

If incorrect filter in place:  
Press <ESC> to return to main menu

**HH-JR/SOLSE-2 Main Menu**  
Sel SOLSE/LORE Command Page

**SOLSE/LORE Command Page**  
S\_Cmd Status – GO/OK  
S\_Toggle Filter – Send (wait ≤ 45 sec, Pending)  
S\_Execute Cmd Pending – Send ( Sent)  
Wait ≤ 45 sec, S\_Last Cmd Executed: S\_Toggle Filter

**NOTE**  
Timing of filter transition depends on start temperature and direction of motion. For nominal cases at 20 °C, VIS > UV total process takes 120 sec, UV > VIS takes 290 sec. Process will take shorter or longer at a rate of ~4 sec/deg

Press <ESC> to return to main menu  
**HH-JR/SOLSE-2 Main Menu**  
Sel SOLSE/LORE Telemetry Page  
**SOLSE/LORE Telemetry Page**

After ~120 sec (VIS > UV) or ~290 sec (UV > VIS)  
S\_Filter – UV or VIS as reqd  
S\_Filtr\_Stat – OK  
S\_Cmding – GO/OK

If S\_Filter not as reqd and S\_Cmding – GO/OK, wait 60 sec prior to proceeding

Press <ESC> to return to main menu

Notify MCC SOLSE CLOSEOUT complete

Proceed to SOLSE SCIENCE or SOLSE IDLE as reqd per Execute Package

**SOLSE IDLE**

**NOTE**  
All SOLSE and HRIU commands require <CTRL-Y> following command selection to execute command.

Once every 30 sec there is a brief period in which commands to payload will not be accepted. If "S\_CMD(L\_CMD) Status is NoGo/Wait. Cannot send command to SOLSE(LORE)" message appears at any time after executing S\_Cmd Execute or L\_Cmd Execute, resend rejected command.

To clear error message from active screen, exit to main menu and return to desired screen

- \* If at any time during procedure execution error messages \*
- \* display in lower left corner of screen, it is possible that an \*
- \* HRIU reset has occurred. To determine if HRIU is reset: \*
- \* If not on HH-JR/SOLSE-2 System Page: \*
- \* Press <ESC> to return to main menu \*
- \* **HH-JR/SOLSE-2 Main Menu** \*
- \* Sel HH-JR/SOLSE-2 System Page \*
- \* **HH-JR/SOLSE-2 System Page** \*
- \* If HRIU Status – initialized: \*
- \* Return to nominal ops \*
- \* If HRIU Status – reset: \*
- \* Notify MCC \*
- \* Perform SOLSE CONTINGENCY RECOVERY \*

**PGSC** 1. **POLLING CHECK**  
**HH-JR/SOLSE-2 Main Menu**  
Sel HH-JR/SOLSE-2 System Page  
**HH-JR/SOLSE-2 System Page**  
HH-JR Polling – ON

- \* If HH-JR Polling – OFF: \*
- \* HH-JR Polling – ENAB ( ON) \*

Commands transmitted incrementing

**2. DATA CHECK**

Record number of SOLSE and LORE Packets Rcvd

| MET | SOLSE Packets Rcvd | LORE Packets Rcvd |
|-----|--------------------|-------------------|
| 1   | 0                  | 0                 |
| 2   | 0                  | 0                 |
| 3   | 0                  | 0                 |
| 4   | 0                  | 0                 |
| 5   | 0                  | 0                 |
| 6   | 0                  | 0                 |
| 7   | 0                  | 0                 |
| 8   | 0                  | 0                 |
| 9   | 0                  | 0                 |
| 10  | 0                  | 0                 |
| 11  | 0                  | 0                 |
| 12  | 0                  | 0                 |
| 13  | 0                  | 0                 |
| 14  | 0                  | 0                 |
| 15  | 0                  | 0                 |
| 16  | 0                  | 0                 |
| 17  | 0                  | 0                 |
| 18  | 0                  | 0                 |
| 19  | 0                  | 0                 |
| 20  | 0                  | 0                 |
| 21  | 0                  | 0                 |
| 22  | 0                  | 0                 |
| 23  | 0                  | 0                 |
| 24  | 0                  | 0                 |
| 25  | 0                  | 0                 |
| 26  | 0                  | 0                 |
| 27  | 0                  | 0                 |
| 28  | 0                  | 0                 |
| 29  | 0                  | 0                 |
| 30  | 0                  | 0                 |
| 31  | 0                  | 0                 |
| 32  | 0                  | 0                 |
| 33  | 0                  | 0                 |
| 34  | 0                  | 0                 |
| 35  | 0                  | 0                 |
| 36  | 0                  | 0                 |
| 37  | 0                  | 0                 |
| 38  | 0                  | 0                 |
| 39  | 0                  | 0                 |
| 40  | 0                  | 0                 |
| 41  | 0                  | 0                 |
| 42  | 0                  | 0                 |
| 43  | 0                  | 0                 |
| 44  | 0                  | 0                 |
| 45  | 0                  | 0                 |
| 46  | 0                  | 0                 |
| 47  | 0                  | 0                 |
| 48  | 0                  | 0                 |
| 49  | 0                  | 0                 |
| 50  | 0                  | 0                 |
| 51  | 0                  | 0                 |
| 52  | 0                  | 0                 |
| 53  | 0                  | 0                 |
| 54  | 0                  | 0                 |
| 55  | 0                  | 0                 |
| 56  | 0                  | 0                 |
| 57  | 0                  | 0                 |
| 58  | 0                  | 0                 |
| 59  | 0                  | 0                 |
| 60  | 0                  | 0                 |
| 61  | 0                  | 0                 |
| 62  | 0                  | 0                 |
| 63  | 0                  | 0                 |
| 64  | 0                  | 0                 |
| 65  | 0                  | 0                 |
| 66  | 0                  | 0                 |
| 67  | 0                  | 0                 |
| 68  | 0                  | 0                 |
| 69  | 0                  | 0                 |
| 70  | 0                  | 0                 |
| 71  | 0                  | 0                 |
| 72  | 0                  | 0                 |
| 73  | 0                  | 0                 |
| 74  | 0                  | 0                 |
| 75  | 0                  | 0                 |
| 76  | 0                  | 0                 |
| 77  | 0                  | 0                 |
| 78  | 0                  | 0                 |
| 79  | 0                  | 0                 |
| 80  | 0                  | 0                 |
| 81  | 0                  | 0                 |
| 82  | 0                  | 0                 |
| 83  | 0                  | 0                 |
| 84  | 0                  | 0                 |
| 85  | 0                  | 0                 |
| 86  | 0                  | 0                 |
| 87  | 0                  | 0                 |
| 88  | 0                  | 0                 |
| 89  | 0                  | 0                 |
| 90  | 0                  | 0                 |
| 91  | 0                  | 0                 |
| 92  | 0                  | 0                 |
| 93  | 0                  | 0                 |
| 94  | 0                  | 0                 |
| 95  | 0                  | 0                 |
| 96  | 0                  | 0                 |
| 97  | 0                  | 0                 |
| 98  | 0                  | 0                 |
| 99  | 0                  | 0                 |
| 100 | 0                  | 0                 |

Voice number of SOLSE and LORE Data Packets Rcvd to ground

Press <ESC> to return to main menu

**3. SOLSE/LORE SOFTWARE SHUTDOWN**

a. **SOLSE Shutdown**  
**HH-JR/SOLSE-2 Main Menu**  
Sel SOLSE/LORE Command Page

**SOLSE & LORE Command Page**  
S\_Cmd Status – GO/OK  
S\_Shutdown – Send (wait ≤ 45 sec, Pending)  
S\_Execute Cmd Pending – Send ( Sent)  
Wait ≤ 45 sec, S\_Last Cmd Executed: S\_Shutdown

b. **LORE Shutdown**  
L\_Cmd Status – GO/OK  
L\_Shutdown – Send (wait ≤ 45 sec, Pending)  
L\_Execute Cmd Pending – Send ( Sent)  
Wait ≤ 45 sec, L\_Last Cmd Executed: L\_Shutdown

Press <ESC> to return to main menu

c. **Shutdown Verification**  
**HH-JR/SOLSE-2 Main Menu**  
Sel SOLSE/LORE Telemetry Page  
**SOLSE/LORE Telemetry Page**

**NOTE**  
SOLSE and LORE Intensity Words progressively fill with asterisks after shutdown command is acknowledged (may take > 1 min for asterisks to begin to appear). Final shutdown is indicated when entire field is asterisks

SOLSE and LORE Intensity Words – all asterisks

- \* If after 90 sec, SOLSE and LORE Intensity Words \*
- \* not all asterisks: \*
- \* Repeat step 3 \*

Press <ESC> to return to the main menu

4. **SOLSE POWERDOWN**  
**HH-JR/SOLSE-2 Main Menu**  
Sel HH-JR/SOLSE-2 System Page

**HH-JR/SOLSE-2 System Page**  
HH-JR Polling – ON  
SOLSE Primary Power – DISA (wait ≤ 45 sec, OFF)

5. **EXIT POLLING & SOFTWARE**  
HH-JR Polling – DISA (wait ≤ 45 sec, OFF)  
Press <ESC> to return to main menu

**HH-JR/SOLSE-2 Main Menu**  
Sel Exit Program, follow directions on screen

6. **FILE TRANSFER**

**NOTE**  
Refer to SOLSE SETUP step 5 for most recent data file

Copy most recent SOLSE data file (C:\solse\PGSCdata.00X) and log file (C:\solse\solse.log) to OCA machine (STS-1) downlink location: C:\oca-down\payloads via network

If network unavailable:  
Use PCMCIA card to transfer files to OCA machine (STS-1)  
Ref OCA DOWNLINK VIA GROUND COMMAND (ORB OPS, PGSC)

From Start Menu, Sel Shutdown

**NOTE**  
SOLSE PGSC may be deactivated when SOLSE software is not in use. BIA power is reqd for SOLSE heater power. BIA must remain powered from SOLSE activation to SOLSE Deactivation unless otherwise instructed

Notify MCC, SOLSE IDLE complete



**SOLSE/HRIU DEACT**

**NOTE**

All SOLSE and HRIU commands require <CTRL-Y> following command selection to execute command.

Once every 30 sec there is a brief period in which commands to payload will not be accepted. If "S\_CMD(L\_CMD) Status is NoGo/Wait. Cannot send command to SOLSE(LORE)" message appears at any time after executing S\_Cmd Execute or L\_Cmd Execute, resend rejected command.

To clear error message from active screen, exit to main menu and return to desired screen

- \* If at any time during procedure execution error messages \*
- \* display in lower left corner of screen, it is possible that \*
- \* HRIU reset has occurred. To determine if HRIU is reset: \*
- \* If not on HH-JR/SOLSE-2 System Page: \*
- \* Press <ESC> to return to main menu \*
- \* HH-JR/SOLSE-2 Main Menu \*
- \* Sel HH-JR/SOLSE-2 System Page \*
- \* HH-JR/SOLSE-2 System Page \*
- \* If HRIU Status - initialized: \*
- \* Return to nominal ops \*
- \* If HRIU Status - reset: \*
- \* Notify MCC \*
- \* Perform SOLSE CONTINGENCY RECOVERY \*

1. **CONFIG BIA BUFFER**  
PWR - ON  
ENABLE 2 - ON

2. **SOFTWARE STARTUP**  
Start SOLSE software:  
Go to Shuttle Apps Folder  
Sel SOLSE-2 icon  
Follow directions on screen

HH-JR/SOLSE-2 Main Menu  
Software MET time within 10 sec of actual MET

- \* If Software MET Time > 10 sec off actual \*
- \* MET: Sel Update MET/GMT: \*
- \* Update MET/GMT \*
- \* Sel UPDATE MET \*
- \* Enter Current MET, press enter \*
- \* Press <ESC> to return to main menu \*

HH-JR/SOLSE-2 Main Menu  
Sel Data Recording and Storage Setup

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HH-JR/SOLSE-2 Data Storage Setup Page

- \* HRIU Errors - ON \*
- \* HRIU Engineering Data - ON \*
- \* HRIU Diagnostic Data - ON \*
- \* HRIU Customer Data - ON \*

- \* If HRIU Errors - OFF: \*
- \* HRIU Errors - ENAB ( ON) \*

- \* If HRIU Engineering Data - OFF: \*
- \* HRIU Engineering Data - ENAB ( ON) \*

- \* If HRIU Diagnostic Data - OFF: \*
- \* HRIU Diagnostic Data - ENAB ( ON) \*

- \* If HRIU Customer Data - OFF: \*
- \* HRIU Customer Data - ENAB ( ON) \*

Log MET and PGSC Recording Status (File #) below

|          |             |
|----------|-------------|
| MET      | File Number |
| _/ : : : | _____       |

Press <ESC> to return to main menu

3. **HH-JR STATUS ENABLE**  
HH-JR/SOLSE-2 Main Menu  
Sel HH-JR/SOLSE-2 System Page

HH-JR/SOLSE-2 System Page  
HH-JR Polling - ENAB ( ON)

- \* If HH-JR Polling - OFF after enable attempt: \*
- \* Reattempt two times \*
- \* If still no joy: \*
- \* Notify MCC \*
- \* Press <ESC> to return to main menu \*
- \* Sel Exit Program, follow directions on screen \*
- \* BIA Enable 2 - OFF \*
- \* Perform hard reboot of PGSC: \*
- \* From Start Menu, Sel Shutdown \*
- \* When shutdown complete, PGSC pwr - on \*
- \* BIA Enable 2 - ON \*
- \* Repeat steps 2-3 \*
- \* If no joy, MCC \*

Commands transmitted incrementing  
Data Storage Status - ENABLED  
After 45 sec:  
HRIU Status - initialized  
Heater & Door Power - ON

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4. **SOLSE DEACTIVATION**  
Door Position - CLOSED

PGSC SOLSE Primary Power - OFF

- \* If SOLSE Primary Power - ON: \*
- \* Execute SOLSE Idle, steps 3 & 4 \*

Vent Command - CLOSE  
Door Command - CLOSE

Heater & Door Power - DISA ( OFF)  
HH-JR Polling - DISA ( OFF)

Press <ESC> to return to main menu

HH-JR/SOLSE-2 Main Menu  
Sel Exit Program  
Follow Directions on Screen  
From Start Menu, Sel Shutdown

BIA 5. **BIA DEACT**  
ENABLE 2 - OFF  
BIA PWR - OFF

Log MET: \_\_\_\_/\_\_\_\_:\_\_\_\_:\_\_\_\_

Notify MCC, SOLSE/HRIU DEACT complete  
Go to SOLSE PGSC/BIA STOW

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**SOLSE CONTINGENCY RECOVERY**

**NOTE**

This procedure may be requested if SOLSE and LORE payloads lose sync or communications to HRIU during operations. Initiation of this procedure may be delayed depending on where anomaly occurs during data take.

All SOLSE and HRIU commands require <CTRL-Y> following command selection to execute command.

Once every 30 sec there is a brief period in which commands to payload will not be accepted. If "S\_CMD(L\_CMD) Status is NoGo/Wait. Cannot send command to SOLSE(LORE)" message appears at any time after executing S\_Cmd Execute or L\_Cmd Execute, resend rejected command.

To clear an error message from active screen, exit to main menu and return to desired screen

BIA 1. **RECOVERY SETUP**  
PWR - ON  
ENABLE 2 - ON

HH-JR/SOLSE-2 Main Menu  
Sel HH-JR/SOLSE-2 System Page

HH-JR/SOLSE-2 System Page  
HH-JR Polling - ON

- \* If HH-JR Polling - OFF: \*
- \* HH-JR Polling - ENAB ( ON) \*

Press <ESC> to return to main menu

2. **SOLSE DATA CHECK**  
HH-JR/SOLSE-2 Main Menu  
Sel SOLSE/LORE Telemetry Page

SOLSE/LORE Telemetry Page  
SOLSE Status - In Sync

- \* If SOLSE Status - No Sync: \*
- \* Notify MCC \*
- \* Press <ESC> to return to main menu \*
- \* HH-JR/SOLSE-2 Main Menu \*
- \* Sel HH-JR/SOLSE-2 System Page \*
- \* HH-JR/SOLSE-2 System Page \*
- \* B2-Standby Mode - PULSE (wait ≤ 45 sec, ON) \*
- \* After 1 min, B2-Standby Mode - OFF \*
- \* Press <ESC> to return to main menu \*
- \* Go to step 4 \*

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3. **SOLSE SOFTWARE SHUTDOWN**  
Press <ESC> to return to main menu

[HH-JR/SOLSE-2 Main Menu]  
Sel SOLSE/LORE Command Page

[SOLSE/LORE Command Page]  
S\_Cmd Status - GO/OK  
S\_Shutdown - Send (wait ≤ 45 sec, Pending)  
S\_Execute Cmd Pending - Send ( Sent)  
Wait ≤ 45 sec, S\_Last Cmd Executed: S\_Shutdown

- \* If after 1 min, command still pending: \*
- \* S\_Execute Cmd Pending - Send ( Sent) \*
- \* Wait ≤ 30 sec, S\_Last Cmd Executed: S\_Shutdown \*
- \* If after 1 min, command still pending: \*
- \* Notify MCC \*
- \* Press <ESC> to return to main menu \*
- \* [HH-JR/SOLSE-2 Main Menu] \*
- \* Sel HH-JR/SOLSE-2 System Page \*
- \* [HH-JR/SOLSE-2 System Page] \*
- \* B2-Standby Mode - PULSE (wait ≤ 45 sec, ON) \*
- \* After 1 min, B2-Standby Mode - OFF \*
- \* Press <ESC> to return to main menu \*
- \* Go to step 4 \*

Press <ESC> to return to main menu

[HH-JR/SOLSE-2 Main Menu]  
Sel SOLSE/LORE Telemetry Page

[SOLSE/LORE Telemetry Page]  
When SOLSE Intensity Words (A through P) - \*,  
proceed to step 4

4. **LORE DATA CHECK**  
[SOLSE/LORE Telemetry Page]  
LORE Status - In Sync

- \* If LORE Status - No Sync: \*
- \* Go to step 6 \*

5. **LORE SOFTWARE SHUTDOWN**  
Press <ESC> to return to main menu

[HH-JR/SOLSE-2 Main Menu]  
Sel SOLSE/LORE Command Page

[SOLSE/LORE Command Page]  
L\_Cmd Status - GO/OK

L\_Shutdown - Send (wait ≤ 45 sec, Pending)  
L\_Execute Cmd Pending - Send ( Sent)  
Wait ≤ 45 sec, L\_Last Cmd Executed: L\_Shutdown

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- \* If after 1 min cmd still pending, reattempt cmd \*
- \* If after 1 min, still no joy: \*
- \* Go to step 6 \*

[HH-JR/SOLSE-2 Main Menu]  
Sel SOLSE/LORE Telemetry Page

[SOLSE/LORE Telemetry Page]  
When LORE Intensity Words (A through P) - \*,  
proceed to step 6

6. **SOLSE POWERDOWN**  
Press <ESC> to return to main menu

[HH-JR/SOLSE-2 Main Menu]  
Sel HH-JR/SOLSE-2 System Page

[HH-JR/SOLSE-2 System Page]  
SOLSE Primary Power - DISA (wait 45 sec, OFF)  
HH-JR Polling - DISA ( OFF)

Press <ESC> to return to main menu

[HH-JR/SOLSE-2 Main Menu]  
Sel Exit Program  
Follow directions on screen

**NOTE**  
PGSC may remain ON during BIA power cycle

7. **BIA CYCLE**  
ENABLE 2 - OFF  
PWR - OFF

BIA

Verify cables securely configured per SOLSE PGSC/BIA SETUP

Wait 5 sec

PWR - ON  
ENABLE 2 - ON

Log MET:

|     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|
| --- | --- | --- | --- | --- | --- |
| --- | --- | --- | --- | --- | --- |
| --- | --- | --- | --- | --- | --- |
| --- | --- | --- | --- | --- | --- |

8. **SOLSE SYSTEM RECOVERY**  
PGSC - ON

PGSC

Start SOLSE software:  
Go to Shuttle Apps Folder  
Sel SOLSE-2 Icon  
Follow directions on screen

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[HH-JR/SOLSE-2 Main Menu]  
Software MET time within 10 sec of actual MET

- \* If software MET time > 10 sec off actual MET: \*
- \* Sel Update MET/GMT \*
- \* [Update MET/GMT] \*
- \* Sel UPDATE MET \*
- \* Enter Current MET, press enter \*
- \* Press <ESC> to return to main menu \*

9. **HH-JR STATUS ENABLE**  
[HH-JR/SOLSE-2 Main Menu]  
Sel HH-JR System Page

[HH-JR/SOLSE-2 System Page]  
HH-JR Polling - ENAB ( ON)

- \* If HH-JR Polling - OFF: \*
- \* Reattempt cmd \*
- \* If still no joy, MCC \*

Commands transmitted incrementing  
Data Storage Status - ENABLED  
After 45 sec:  
HRIU Status - initialized

10. **SOLSE POWERUP**  
[HH-JR/SOLSE-2 System Page]  
SOLSE Primary Power - ENAB

After 45 sec, SOLSE Primary Power - ON

- \* If after 45 sec, SOLSE Primary Power - OFF: \*
- \* Notify MCC \*
- \* Reattempt cmd \*
- \* If still no joy: \*
- \* MCC \*

Press <ESC> to return to main menu

[HH-JR/SOLSE-2 Main Menu]  
Sel SOLSE/LORE Telemetry Page

[SOLSE/LORE Telemetry Page]  
After 1 min:  
SOLSE Packets Rcvd - incremented to 2 or greater  
SOLSE Status - In sync  
After 1 min 30 sec:  
LORE Packets Rcvd - incremented to 2 or greater  
LORE Status - In Sync

**NOTE**  
SOLSE will remain in Stby mode until four packets are received.  
When four packets are received it will indicate Cal mode.  
When S-Mode - Cal, notify MCC, SOLSE Cal Mode Initiated

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SOLSE\_TEC Temp: -10°C ± 1°C  
S\_Filter Position - VIS (if UV, MCC)  
S\_Flr Status - OK (if ERROR, MCC)

Press <ESC> to return to main menu

11. **STATUS CHECK, if reqd**  
MCC if reqd

[HH-JR/SOLSE-2 Main Menu]  
Sel HH-JR/SOLSE-2 System Page

[HH-JR/SOLSE-2 System Page]  
Record Payload Status in table below and voice values to ground

| Nominal Value Range (SOLSE Primary Pwr On) |                   |
|--|-------------------|
| Bus Voltage:                               | 28 ± 1 V          |
| Bus Current:                               | 0.196 ± .05 Amps  |
| Canister Pressure:                         | 15.257 ± 0.6 PSIA |
| Door Position:                             | 2.5 Volts         |
| HRIU Temp:                                 | 0-40°C            |
| HH-JR LEP:                                 | 0-40°C            |
| Heat Pipe:                                 | 0-40°C            |
| Bulkhead:                                  | 0-40°C            |
| Heatsink:                                  | 0-40°C            |
| TEC Temp:                                  | -10°C ± 1         |

| MET                |             |       |
|--------------------|-------------|-------|
| Bus Voltage:       | Volts       | Volts |
| Bus Current:       | Amps        | Amps  |
| Canister Pressure: | PSIA        | PSIA  |
| Door Position:     | Open/Closed | Volts |
| HRIU Temp:         | °C          | °C    |
| HH-JR LEP:         | °C          | °C    |
| Heat Pipe:         | °C          | °C    |
| Bulkhead:          | °C          | °C    |
| Heatsink:          | °C          | °C    |
| TEC Temp:          | °C          | °C    |

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|                    |                         |                         |
|--------------------|-------------------------|-------------------------|
| MET                | ___/___:___:___         | ___/___:___:___         |
| Bus Voltage:       | _____ Volts             | _____ Volts             |
| Bus Current:       | _____ Amps              | _____ Amps              |
| Canister Pressure: | _____ PSIA              | _____ PSIA              |
| Door Position:     | Open/Closed _____ Volts | Open/Closed _____ Volts |
| HRIU Temp:         | _____ °C                | _____ °C                |
| HH-JR LEP:         | _____ °C                | _____ °C                |
| Heat Pipe:         | _____ °C                | _____ °C                |
| Bulkhead:          | _____ °C                | _____ °C                |
| Heatsink:          | _____ °C                | _____ °C                |
| TEC Temp:          | _____ °C                | _____ °C                |

|                    |                         |                         |
|--------------------|-------------------------|-------------------------|
| IMET               | ___/___:___:___         | ___/___:___:___         |
| Bus Voltage:       | _____ Volts             | _____ Volts             |
| Bus Current:       | _____ Amps              | _____ Amps              |
| Canister Pressure: | _____ PSIA              | _____ PSIA              |
| Door Position:     | Open/Closed _____ Volts | Open/Closed _____ Volts |
| HRIU Temp:         | _____ °C                | _____ °C                |
| HH-JR LEP:         | _____ °C                | _____ °C                |
| Heat Pipe:         | _____ °C                | _____ °C                |
| Bulkhead:          | _____ °C                | _____ °C                |
| Heatsink:          | _____ °C                | _____ °C                |
| TEC Temp:          | _____ °C                | _____ °C                |

Press <ESC> to return to main menu

**12. SOLSE SCIENCE RECOVERY, if read**  
On MCC GO:

[HH-JR/SOLSE-2 Main Menu]  
Sel SOLSE/LORE Command Page

[SOLSE/LORE Command Page]

S\_Cmd Status – GO/OK  
S\_Enter Science Mode – Send (wait ≤ 45 sec, Pending)  
S\_Execute Cmd Pending – Send ( Sent)  
Wait ≤ 45 sec, S\_Last Cmd Executed: S\_Enter Science Mode

L\_Cmd Status – GO/OK  
L\_Enter Science Mode – Send (wait ≤ 45 sec, Pending)  
L\_Execute Cmd Pending – Send ( Sent)  
Wait ≤ 45 sec, L\_Last Cmd Executed: L\_Enter Science Mode

Press <ESC> to return to main menu

[HH-JR/SOLSE-2 Main Menu]  
Sel SOLSE/LORE Telemetry Page

[SOLSE/LORE Telemetry Page]

After 1 min:  
SOLSE Status – In Sync  
LORE Status – In Sync  
S\_Mode – Sci  
L\_Mode – Sci

Press <ESC> to return to main menu

Notify MCC, SOLSE CONTINGENCY RECOVERY complete

**SOLSE CONTINGENCY SHUTDOWN**

**NOTE**

All SOLSE and HRIU commands require <CTRL-Y> following command selection to execute command.

Once every 30 sec there is a brief period in which commands to payload will not be accepted. If "S\_CMD(L\_CMD) Status is NoGo/Wait. Cannot send command to SOLSE(LORE)" message appears at any time after executing S\_Cmd Execute or L\_Cmd Execute, resend rejected command.

To clear an error message from active screen, exit to main menu and return to desired screen

- \* If at any time during procedure execution error
- \* messages display in lower left corner of screen,
- \* it is possible that an HRIU reset has occurred.
- \* To determine if HRIU is reset, if not on
- \* HH-JR/SOLSE-2 System Page:
- \* Press <ESC> to return to main menu
- \* [HH-JR/SOLSE-2 Main Menu]
- \* Sel HH-JR/SOLSE-2 System Page
- \* [HH-JR/SOLSE-2 System Page]
- \* If HRIU Status – initialized:
- \* Return to nominal ops
- \* If HRIU Status – reset:
- \* Notify MCC
- \* Perform SOLSE CONTINGENCY RECOVERY \*

**1. SOLSE SOFTWARE SHUTDOWN**

Press <ESC> to return to main menu

[HH-JR/SOLSE-2 Main Menu]  
Sel SOLSE/LORE Command Page

[SOLSE/LORE Command Page]

S\_Cmd Status – GO/OK  
S\_Shutdown – Send (wait ≤ 45 sec, Pending)  
S\_Execute Cmd Pending – Send ( Sent)  
Wait ≤ 45 sec, S\_Last Cmd Executed: S\_Shutdown

- \* If after 1 min cmd still pending, reattempt cmd:
- \* If still no joy:
- \* Notify MCC
- \* Press <ESC> to return to main menu
- \* [HH-JR/SOLSE-2 System Page]
- \* Sel HH-JR/SOLSE-2 System Page
- \* [HH-JR/SOLSE-2 System Page]
- \* B2-Standby Mode – PULSE (wait ≤ 45 sec, ON)
- \* After 1 min, B2-Standby Mode – OFF
- \* Press <ESC> to return to main menu

Press <ESC> to return to main menu

[HH-JR/SOLSE-2 Main Menu]  
Sel SOLSE/LORE Telemetry Page

**NOTE**

SOLSE and LORE Intensity Words progressively fill with asterisks after shutdown command is acknowledged. It may take up to 1 min for asterisks to begin to appear. Final shutdown is indicated when entire field is asterisks

[SOLSE/LORE Telemetry Page]  
SOLSE Intensity Words – all asterisks

- \* If after 90 sec, SOLSE Intensity Words not all asterisks, \*
- \* Repeat step 1

**2. LORE SOFTWARE SHUTDOWN**  
Press <ESC> to return to main menu

[HH-JR/SOLSE-2 Main Menu]  
Sel SOLSE/LORE Command Page

[SOLSE/LORE Command Page]

L\_Cmd Status – GO/OK  
L\_Shutdown – Send (wait ≤ 45 sec, Pending)  
L\_Execute Cmd Pending – Send ( Sent)  
Wait ≤ 45 sec, L\_Last Cmd Executed: L\_Shutdown

- \* If after 1 min cmd still pending, reattempt cmd \*
- \* If after 1 min, still no joy: \*
- \* Notify MCC \*

Press <ESC> to return to Main Menu

[HH-JR/SOLSE-2 Main Menu]  
Sel SOLSE/LORE Telemetry Page

**NOTE**

SOLSE and LORE Intensity Words progressively fill with asterisks after shutdown command is acknowledged. It may take up to 1 min for asterisks to begin to appear. Final shutdown is indicated when entire field is asterisks

[SOLSE/LORE Telemetry Page]  
LORE Intensity Words – all asterisks

- \* If after 90 sec, if LORE Intensity Words not all asterisks, \*
- \* repeat step 2

Press <ESC> to return to main menu

[HH-JR/SOLSE-2 Main Menu]  
Sel HH-JR System Page

**3. SOLSE DOOR CLOSURE, if read**  
[HH-JR/SOLSE-2 System Page]

Heater & Door Power – ENAB (wait ≤ 45 sec, ON)

Door Command – CLOSE (wait ≤ 45 sec, CLOSE)

**NOTE**

SOLSE dual motor operating time = ~35 sec; single motor = ~70 sec

After ~35 sec:  
Door Command – CLOSED

**4. SOLSE POWERDOWN**

[HH-JR/SOLSE-2 System Page]  
SOLSE Primary Power – DISA (wait 45 sec, OFF)  
HH-JR Polling – DISA ( OFF)

Notify MCC, SOLSE CONTINGENCY SHUTDOWN complete  
MCC for further action

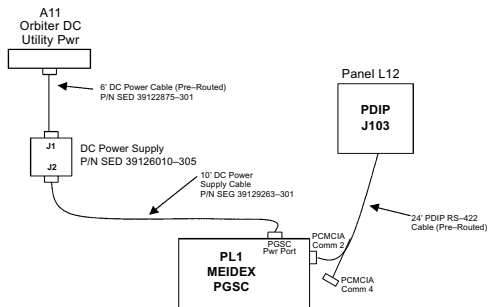
**MEIDEX PGSC SETUP**

**1. UNSTOW**

- Unstow:  
 MF280 PL1 MEIDEX PGSC  
 PCMCIA RS422 Comm Card  
 PCMCIA RF LAN Card  
 DC/DC Power Supply  
 PGSC DC Power Supply Cable  
 MF57K Late update PCMCIA card

**2. CONFIG PGSC**

Insert PCMCIA RS422 Comm Card into PGSC; then connect PGSC data and power cables per diagram



**3. PGSC PWR ON**

- A11 DC UTIL PWR MNC - ON  
 DC PWR SUPPLY - ON (lt green)

PGSC PGSC pwr - on

- \* If pwr to PL1 fails: \*
- \* Check pwr cable connection \*
- \* Press pwr sw again (both) \*

Allow 'Windows' to start

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- Insert late update PCMCIA card  
 Run 'Shuttle Apps/Late PGSC Update'  
 Shutdown PGSC  
 Remove late update card  
 Insert PCMCIA RF LAN card into PGSC  
 PGSC pwr - on  
 Allow 'Windows' to start

**4. MEIDEX SOFTWARE ACTIVATION**

- Start MEIDEX software:  
 Open Shuttle Apps Folder  
 Sel MEIDEX icon

**5. MEIDEX TLM CONFIG**

- MEIDEX\_PGSC\_V4\_15\_0  
 Sel OpenComm ( green)  
 Sel AutoTlm ( green)

GoTo Pages/Cmd Generator Display:

- Command Control  
 Sel IMTAKINGOVER  
 Sel Xmit  
 Sel OK  
 Sel Close (Close Command Control)  
 MEIDEX\_PGSC\_V4\_15\_0  
 On lower status bar, PGSC\_Cntrl

**6. MEIDEX EVENT LOG CONFIG**

Sel Event (brings up Event Page)

Event page

- Log to File -
- Report Limits -
- Show Auto TLM - no

Sel Event (closes Event Page)

MEIDEX\_PGSC\_V4\_15\_0

No Red/Yellow limit violations (limit check boxes in upper right of display = 0,0)

- \* If Red/Yellow limit violations: \*
- \* Sel Event (brings up Event Page) \*
- \* Determine red/yellow limit violation \*
- \* Voice to MCC \*

Notify MCC, MEIDEX PGSC SETUP complete

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**MEIDEX HEATER ACT/HEALTH CHECK**

- \* If at any time during procedure lower status bar \*
- \* reads PGSC Not\_Cntrl, perform the following: \*
- \* Go to Pages/Cmd Generator Display \*
- \* Command Control \*
- \* Sel IMTAKINGOVER \*
- \* Sel Xmit \*
- \* Sel OK \*
- \* Sel Close (Close Command Control) \*
- \* MEIDEX\_PGSC\_V4\_V15\_0 \*
- \* On lower status bar, PGSC\_Cntrl \*

**NOTE**

Heater activation will nominally be performed by POCC.  
 Crew will only be req'd to execute if cmd and/or telemetry capability at POCC is lost

**1. PGSC CONFIG**

PGSC powered up and MEIDEX software active

- \* If PGSC OFF: \*
- \* Laptop pwr (side) - on \*
- \* If MEIDEX software not ON start MEIDEX software: \*
- \* Open Shuttle Apps Folder \*
- \* Sel MEIDEX icon \*

**2. TLM CONFIG**

- MEIDEX\_PGSC\_V4\_15\_0  
 OpenComm - green  
 AutoTlm - green

**3. EVENT LOG CONFIG**

Sel Event (brings up Event Page)

Event page

- Configure as follows:  
 Log to File -  
 Report Limits -  
 Show Auto TLM - no

Sel Event (closes Event Page)

MEIDEX\_PGSC\_V4\_15\_0

No Red/Yellow limit violations (limit check boxes in upper right of display = 0,0)

- \* If Red/Yellow limit violations: \*
- \* Sel Event (brings up Event Page) \*
- \* Determine red/yellow limit violation \*
- \* Voice to ground \*

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**4. TELEMETRY CHECK**

Sel DigTlm (brings up Digital Telemetry Page)

DigitalTelemetry

Control:

- PGSC in Cntrl - green
- Truss:
  - Forward Direction or Reverse Direction - green
  - All other indicators - white

Sel DigTlm (closes Digital Telemetry Page)

**5. TEMPERATURE CHECK**

Sel Temps (brings up Temperatures (Deg C) Page)

Temperatures (Deg C)

- Htr2: 20°-60°
- All other Temperatures: 20°-40°

- \* If Temps out of range: \*
- \* Report to MCC \*

Sel Temps (closes Temperatures (Deg C) Page)

**6. HEATER ACTIVATION CHECK**

Sel RelayCmds (brings up Relay Commanding Page)

Relay Commanding

If Heater1 - white:

- Sel Heater1 - On ( RELAY K20 ON)
- Sel Xmit
- Heater1 - green

Sel RelayCmds (closes Relay Commanding Page)

**7. TRUSS CONTROL CHECK**

Sel TrussCntrl (brings up Truss Pointing Display)

Truss Pointing Display

- Limit Switch1 - Not Limit
- Limit Switch2 - Not Limit
- Rvrs Lim Violat - No
- Fwrd Lim Violat - No
- OverCurr Violat - No

- \* If out of range: \*
- \* Report to MCC \*

Sel TrussCntrl (closes Truss Pointing Display)

Report to MCC, MEIDEX HEALTH CHECK complete

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**MEIDEX CHECKOUT**

- \* If at any time during procedure lower status bar \*
- \* reads PGSC, Not\_Cntrl, perform the following: \*
- \* Go to Pages/Cmd Generator Display \*
- \* Command Control \*
- \* Sel IMTAKINGOVER \*
- \* Sel Xmit \*
- \* Sel OK \*
- \* Sel Close (Close Command Control) \*
- \* MEIDEX\_PGSC\_V4\_V15\_0 \*
- \* On lower status bar, PGSC\_Cntrl \*

1. **READINESS CHECK**  
P/TV10 MEIDEX OPS, SETUP (PHOTO/TV FS, SCENES) complete

**NOTE**  
MON 1 is used for CCTV and Sekai video.  
MON 2 is used for Xybion video

2. **TLM CONFIG**  
MEIDEX\_PGSC\_V4\_15\_0  
OpenComm – green  
AutoTlm – green

3. **EVENT LOG CONFIG**  
Sel Event (brings up Event Page)

Event Page  
Configure as follows:  
Log to File –  
Report Limits –  
Show Auto TLM – no

Sel Event (closes Event Page)  
MEIDEX\_PGSC\_V4\_15\_0  
No Red/Yellow limit violations (limit check boxes in upper right of display = 0,0)

- \* If Red/Yellow limit violations: \*
- \* Sel Event (brings up Event Page) \*
- \* Determine red/yellow limit violation \*
- \* Report to MCC \*

4. **DOOR OPENING**  
cb DOOR PWR CONT PWR DN ENA – cl

L12U Camera D Illuminator ON, if reqd (TV Cue Card, ILLUMINATOR OPS)

R14 VID OUT pb – MON 1

A7 IN pb – D  
ALC pb – press  
AVG pb – press  
VID OUT pb – ANALOG DNK  
IN pb – D  
PAN (TILT,ZOOM) as reqd to view MEIDEX Door

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V10 PWR – ON  
Verify tape installed  
REC pb (two simo) – press ( red dot displayed)

**NOTE**  
MEIDEX door requires ~35 sec to open with dual motor operations; ~70 sec to open with single motor ops. tb will read gray when door is > -94 deg open

L12U MEIDEX DOOR – OPEN  
After 35 sec,  
MEIDEX DOOR FULL OPEN tb – gray

MON 1 Visually verify MEIDEX Door Full Open  
Report door position to MCC

V10 STOP pb – press  
R14 Camera D Illuminator OFF, if reqd (TV Cue Card, ILLUMINATOR OPS)  
A7 VID OUT pb – MON 1  
IN pb – SEKAI/PAO (FD)  
OUT pb – DTVMON 2  
IN pb – XYBION (MD)

5. **SEKAI POWERUP**  
Sel Relay/Cmds (brings up Relay Commanding Page)  
Relay Commanding  
Sel Sekai – On ( RELAYK4 ON)  
Sel Xmit  
Sekai – green

MON 1 If Sekai video signal not displayed:  
A7 VID OUT pb – MON 1  
IN pb – SEKAI/PAO (FD)

6. **DSR-20 RECORD**  
L10(MUX) VTR/CC PWR – on (LED on)  
MUX/VTR/CC PWR – on (LED on)  
MUX BYPASS – VTR DNK  
(VIP) PWR – on (LED on)  
VTR/DSR-20 ON/STANDBY LED green  
Verify tape installed  
REC pb – press, hold  
PLAY pb – press simo ( red dot displayed)

7. **XYBION PWR CHECK**  
Relay Commanding  
Xybion – green  
Xybion video signal displayed

MON 2 \* If Xybion – white: \*  
\* Perform XYBION ACTIVATION, 1-83 \*

8. **DSR-20 RECORD CHECK**  
VTR/DSR-20 STOP pb – press  
REW pb – press (to tape start)  
PLAY pb – press

MON 2 Verify signal is correctly displayed  
VTR/DSR-20 STOP pb – press  
REW pb – press (to tape start)  
REC pb – press, hold  
PLAY pb – press, simo ( red dot displayed)

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9. **XYBION TIME CONFIG**  
Sel XybCmd (brings up Xybion CmdForm Display)  
Sel XybTlm (brings up Xybion Camera Display)

MON 2 a. **Date Check**  
Date not 00/00/00

- \* If Date is 00/00/00: \*
- \* Perform XYBION ACTIVATION step 2a, 1-83 \*

MON 2 b. **MET "Time" Check**  
Time offset between Xybion MET Video signal and MET clock ≤ 3 sec

- \* If time offset > 3 sec: \*
- \* Perform XYBION ACTIVATION step 2b, 1-83 \*

PGSC 10. **XYBION CAMERA CONFIG**

a. **Current Settings Report**  
XybionCmdForm  
Sel Report Current Settings ( T C)  
Sel Xmit

Xybion Camera Display  
Wait 30 sec (until IMC > appears)  
CCD Temperature: 20°-40°

- \* If CCD temperature out of range: \*
- \* Report to MCC \*

b. **Enter Lock Settings**  
XybionCmdForm  
Enter Lock = 3  
Sel Lock ( L 3)  
Sel Xmit

Xybion Camera Display  
IMC > L3  
Filter: 3

MON 2

PGSC c. **Enter Gain Settings**  
XybionCmdForm  
Enter Gain = 70  
Sel Gain ( G 70)  
Sel Xmit

MON 2 Gain: 70% ± 1

PGSC d. **Return to Gain Settings**  
XybionCmdForm  
Enter Gain = 65  
Sel Gain ( G 65)  
Sel Xmit

MON 2 Gain: 65% ± 1

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PGSC e. **Enter Exposure Mode**  
XybionCmdForm  
Sel Exposure Video Mode Average Video ( EVA)  
Sel Xmit  
Sel Report Current Settings ( T C)  
Sel Xmit

Xybion Camera Display  
Wait 30 sec (until IMC > appears)  
Auto Exposure Mode: Average

f. **Return to Unlocked Filter**  
XybionCmdForm  
Sel Run ( R)  
Sel Xmit

Xybion Camera Display  
IMC > R  
Filter and display changing

MON 2

g. **Return to Nominal Exposure Mode**  
XybionCmdForm  
Sel Exposure Video Mode Peak Video ( EVP)  
Sel Xmit

Sel Report Current Settings ( TC)  
Sel Xmit

Xybion Camera Display  
Wait 30 sec (until IMC> appears)  
Auto Exposure Mode: Peak

MEIDEX\_PGSC\_V4\_15\_0  
Sel XybCmd (closes XybionCmdForm Page)  
Sel XybTlm (closes Xybion Camera Display Page)

11. **DSR 20 RECORD STOP**  
VTR/DSR-20 STOP pb – press  
L10(VIP) ON/STANDBY pb – press (red LED on)  
(MUX) PWR – OFF (LED off)  
VTR/CC – off (LED off)  
MUX BYPASS – SH PL DATA  
MUX/VTR/CC-PWR – off (LED off)

Perform **MEIDEX RECORDING LOG** (Cue Card)  
Enter Tape # and VTR/DSR-20 Time Remaining for current tape

12. **VCR1 CONFIG**  
Sel Relay/Cmds (brings up Relay Commanding Page)  
Sel DigTlm (brings up Digital Telemetry Page)

a. **VCR Record On**  
Relay Commanding  
Sel VCR1 – On ( RELAYK1 ON)  
Sel Xmit  
VCR1 – green

Sel Record1 – On ( RELAYK2 ON)  
Sel Xmit

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**Digital Telemetry**  
VCR1 Record – green  
VCR1 Standby – white  
Verify VCR Elapsed Secs increasing by steps of 10–20 sec

b. **VCR Record Off**

**NOTE**  
MEIDEX has a limited amount of VCR recording space. If VCR Recording is left ON inadvertently, all of available tape will be used

**Relay Commanding**  
Sel Record1 – Off ( RELAYK2 OFF)  
Sel Xmit

**Digital Telemetry**  
VCR1 Standby – green  
VCR1 Record – white  
Record Elapsed Secs: \_\_\_\_\_

**Relay Commanding**  
Sel Unthrd1 – On ( RELAYK3 ON)  
Sel Xmit  
Unthrd1 – green

Sel VCR1 – Off ( RELAYK1 OFF)  
Sel Xmit  
VCR1 – white

Sel Unthrd1 – Off ( RELAYK3 OFF)  
Sel Xmit  
Unthrd1 – white

13. **VCR2 CONFIG**

a. **VCR Record On**  
Sel VCR2 – On ( RELAYK9 ON)  
Sel Xmit  
VCR2 – green

Sel Record2 – On ( RELAYK10 ON)  
Sel Xmit

**Digital Telemetry**  
VCR2 Record – green  
VCR2 Standby – white  
Verify VCR Elapsed Secs increasing by steps of 10–20 secs

b. **VCR Record Off**

**NOTE**  
MEIDEX has a limited amount of VCR recording space. If VCR Recording is left ON inadvertently, all of available tape will be used

**Relay Commanding**  
Sel Record2 – Off ( RELAYK10 OFF)  
Sel Xmit

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**Digital Telemetry**  
VCR2 Standby – green  
VCR2 Record – white  
Record Elapsed Secs: \_\_\_\_\_

**Relay Commanding**  
Sel Unthrd2 – On ( RELAYK11 ON)  
Sel Xmit  
Unthrd2 – green

Sel VCR2 – Off ( RELAYK9 OFF)  
Sel Xmit  
VCR2 – white

Sel Unthrd2 – Off ( RELAYK11 OFF)  
Sel Xmit  
Unthrd2 – white

14. **VCR3 CONFIG**

a. **VCR Record On**

**Relay Commanding**  
Sel VCR3 – On ( RELAYK17 ON)  
Sel Xmit  
VCR3 – green

Sel Record3 – On ( RELAYK18 ON)  
Sel Xmit

**Digital Telemetry**  
VCR3 Record – green  
VCR3 Standby – white  
Verify VCR Elapsed Secs increasing by steps of 10–20 sec

b. **VCR Record Off**

**NOTE**  
MEIDEX has a limited amount of VCR recording space. If VCR Recording is left ON inadvertently, all of available tape will be used

**Relay Commanding**  
Sel Record3 – Off ( RELAYK18 OFF)  
Sel Xmit

**Digital Telemetry**  
VCR3 Standby – green  
VCR3 Record – white  
Record Elapsed Secs: \_\_\_\_\_

**Relay Commanding**  
Sel Unthrd3 – On ( RELAYK19 ON)  
Sel Xmit  
Unthrd3 – green

Sel VCR3 – Off ( RELAYK17 OFF)  
Sel Xmit  
VCR3 – white

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Sel Unthrd3 – Off ( RELAYK19 OFF)  
Sel Xmit  
Unthrd3 – white

Enter VCR1,2,3 Elapsed Sec in **MEIDEX RECORDING LOG** (Cue Card)  
Voice VCR 1,2,3 Elapsed Sec to ground

Sel RelayCmds (closes Relay Commanding Page)  
Sel DigTim (closes Digital Telemetry Page)

V10 15. **V10 CONFIG**

PWR – ON  
REC pb (two simo) – press ( red dot displayed)  
Wait 10 sec  
STOP pb – press  
REW pb – press (to start of tape)  
PLAY pb – press  
Verify signal is correctly displayed on V10 Display  
STOP pb – press  
REW pb – press (to start of tape)  
PWR – OFF

16. **TRUSS POINTING CONFIG**  
Sel TrussCntrl (brings up Truss Pointing Display)

**CAUTION**  
Truss movement is + to orbiter port and – to orbiter starboard. Limits are ± 22 deg

**Truss Pointing Display**  
Record Truss Angle: \_\_\_\_\_  
If Truss Angle > |2|. Enter Truss Pointing commanding:  
X (X = ± value reqd to return to 0)  
Sel Xmit  
Verify truss moving on monitors  
Truss angle = 0 deg ± 2.0  
Enter Truss Point Commanding: –5  
Sel Xmit

MON1(2) Verify truss moving  
PGSC Truss angle = –5 deg ± 2.0  
Enter Truss Point Commanding: 5  
Sel Xmit

MON1(2) Verify truss moving  
PGSC Truss angle = 0 deg ± 2.0  
Enter Truss Point Commanding: 5  
Sel Xmit

MON1(2) Verify truss moving  
PGSC Truss angle = 5 deg ± 2.0  
Enter Truss Point Commanding: –5  
Sel Xmit

MON1(2) Verify truss moving  
PGSC If Truss Angle > |2|:  
Enter Truss Point Commanding: X (X = ± value reqd to return to 0)  
Sel Xmit  
Verify truss moving on monitors  
Truss angle = 0 deg ± 2.0  
Sel TrussCntrl (closes Truss Pointing Display)

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PGSC 17. **CAMERA DEFACT**  
Sel XybCmd (brings up XybionCmdForm display)  
Sel XybTim (brings up Xybion Camera Display)

**Xybion CmdForm**  
Sel Report Current Settings ( TC)  
Sel Xmit

**Xybion Camera Display**  
Wait 30 sec (until IMC+ appears)  
Sel XybCmd (closes XybionCmdForm Display)  
Sel XybTim (closes Xybion Camera Display)  
Sel RelayCmds (brings up Relay Commanding Page)

**Relay Commanding**  
Sel Sekai – Off ( RELAYK4 OFF)  
Sel Xmit  
Sekai – white

Sel Xybion – Off ( RELAYK5 OFF)  
Sel Xmit  
Xybion – white

Sel VideoBuff – Off ( RELAYK8 OFF)  
Sel Xmit  
Video Buff – white

Sel RelayCmds (closes Relay Commanding Page)

18. **DOOR CLOSURE, if reqd**  
Execute Package if step 18 reqd

**NOTE**  
MEIDEX door requires ~35 sec to close with dual motor operations, ~70 sec to close with single motor ops. tb will read bp when door is < –94 deg open

L12U MEIDEX DOOR – CLOSE  
DOOR FULL OP tb – bp

Camera D On visual confirmation of door full closed:  
cb DOOR PWR CONT PWR DN ENA – op

19. **FILE TRANSFER**  
Exit MEIDEX software  
Copy most recent MEIDEX data files to OCA machine (STS–1) downlink  
location:  
c:\oca-down\payloads via network

Files reqd:  
c:\meidex\RawTimData<MMDDYYYYhhmm>.bin (211 kb) – Downlink  
all RawTimData files from current observation set  
c:\meidex\EventLog<MMDDYYYYhhmm>.txt, variable size – Downlink  
EventLog from current observation set  
c:\meidex\XybionLog<MMDDYYYYhhmm>.txt, variable size – Downlink  
XybionLog from current observation set

If network unavailable:  
Use PCMCIA card to transfer files to OCA machine (STS–1)  
Ref: OCA DOWNLINK VIA GROUND COMMAND (ORB OPS, PGSC)

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Open Shuttle Apps Folder  
Sel MEIDEX icon  
MEIDEX\_PGSC\_V4\_15\_0  
Sel OpenComm ( green)  
Sel AutoTIm ( green)

Notify MCC when PGSC file ready for OCA downlink, MEIDEX CHECKOUT complete

**NOTE**  
MEIDEX PGSC must remain ON with AUTOTLM enabled in order to ensure steady telemetry downlinked to ground

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**MEIDEX SETUP**

- \* If at any time during procedure lower status bar \*
- \* reads PGSC\_Not\_Cntrl, perform the following: \*
- \* Go to Pages/Cmd Generator Display \*
- \* Command Control \*
- \* Sel IMTAKINGOVER \*
- \* Sel Xmit \*
- \* Sel OK \*
- \* Sel Close (Close Command Control) \*
- \* MEIDEX\_PGSC\_V4\_V15\_0 \*
- \* On lower status bar, PGSC\_Cntrl \*

**NOTE**  
Setup must be initiated 45 min prior to observation start (T) as documented in Execute Package

A4 1. **TIMER SETUP**  
Determine time until observation Start (T)  
Set Egg Timer  
Initiate Egg Timer

2. **P/TV CHECK**  
P/TV10 MEIDEX OPS, SETUP (PHOTO/TV FS, SCENES) complete

3. **TAPE VERIFICATION**  
Go to MEIDEX RECORDING LOG (Cue Card)  
Check tapes, replace and log if necessary

| Observation Type | Replace Criteria                        |
|------------------|---|
| ROI/Moon Cal     | replace tape if time remaining < 15 min |
| Sprite           | replace tape                            |

4. **TLM CONFIG**  
NLT T-40 min MEIDEX\_PGSC\_V4\_15\_0  
OpenComm - Green  
Auto TIm - Green

5. **EVENT LOG CONFIG**  
Sel Event (brings up Event Page)

**Event Page**

Configure as follows:  
Log to File -  
Report Limits -  
Show Auto TLM - no  
Sel Event (closes Event Page)

MEIDEX\_PGSC\_V4\_15\_0  
No Red/Yellow limit violations (limit check boxes in upper right of display = 0, 0)

- \* If Red/Yellow limit violations: \*
- \* Sel Event (brings up Event Page) \*
- \* Determine red/yellow limit violation \*
- \* Report to MCC \*

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6. **PLD VCR ACTIVATION**  
PGSC Execute Package if step 6 reqd

Sel RelayCmds  
Relay Commanding  
Sel VCR3(2,1) - On ( RELAYK17(K9,K1) ON)  
Sel Xmit  
VCR3(2,1) - green

7. **SEKAI ACTIVATION**  
Execute Package if step 7 reqd  
Relay Commanding  
Sel Sekai - On (RELAYK4 ON)  
Sel Xmit  
Sekai - green

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**MEIDEX SCIENCE**

- \* If at any time during procedure lower status bar \*
- \* reads PGSC\_Not\_Cntrl, perform the following: \*
- \* Go to Pages/Cmd Generator Display \*
- \* Command Control \*
- \* Sel IMTAKINGOVER \*
- \* Sel Xmit \*
- \* Sel OK \*
- \* Sel Close (Close Command Control) \*
- \* MEIDEX\_PGSC\_V4\_V15\_0 \*
- \* On lower status bar, PGSC\_Cntrl \*

T-15 1. **XYBION PWR CHECK**  
On MCC GO:  
PGSC MEIDEX\_PGSC\_V4\_15\_0  
OpenComm - green  
AutoTIm - green

Sel RelayCmds (brings up Relay Commanding Page)  
Relay Commanding  
Xybion - green

- \* If Xybion - white: \*
- \* Perform XYBION ACTIVATION, 1-83 \*

2. **XYBION TIME/DATE CHECK**  
Sel XybCmd (brings up XybionCmdForm Page)  
Sel XybTim (brings up Xybion Camera Display)

MON 2 a. **Date Check**  
Date not 00/00/00

- \* If Data is 00/00/00: \*
- \* Perform XYBION ACTIVATION step 2a, 1-83 \*

b. **MET "Time" Check**  
Time offset between Xybion MET Video signal and MET clock ≤ 3 sec

- \* If time offset > 3 sec: \*
- \* Perform XYBION ACTIVATION step 2b, 1-83 \*

T-10 L12U 3. **DOOR OPENING** if reqd  
If MEIDEX DOOR FULL OPEN tb - gray, proceed to step 4

Execute Package for Door Open Time  
Continue with MEIDEX SCIENCE and perform step 3a per Execute Package MET

**NOTE**  
MEIDEX Door will nominally be opened at T-10; however opening may be delayed per Execute Package instructions during some operations to protect against violation of sun/ram constraints

a. **Door Opening**  
cb DOOR PWR CONT PWR DN ENA - cl  
MEIDEX DOOR - OPEN

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**NOTE**  
MEIDEX door requires ~35 sec to open with dual motor operations, ~70 sec to open with single motor ops. tb will read gray when door is > -94 deg open

MON 1 After 35 sec, MEIDEX DOOR FULL OPEN tb – gray  
Visually verify MEIDEX door open  
Report door position to MCC

4. **XYBION CAMERA CONFIG**  
Execute Package if step 4 reqd and determine Payload Setup

Sel XybCmd (brings up XybionCmdForm display)  
Sel XybionTim (brings up Xybion Camera display)  
Perform following PGSC cmds and checks per table:

**NOTE**  
Press Xmit button to transmit each cmd in table below

| Command/Check   | PAYLOAD SETUP     |                   |                   |
|---|-------------------|-------------------|-------------------|
|   | ROI               | MOON CAL          | SPRITE            |
| Lock  |                   |                   | 5 ( L 5)          |
| Gain  | 65 ( G 65)        | 65 ( G 65)        | 80 ( G 80)        |
| Exposure Video Mode   | Peak Video ( EVP) | Peak Video ( EVP) | Peak Video ( EVP) |
| Configuration Peak Video Level                              | 180 ( C P 180)    | 120 ( C P 120)    | 120 ( C P 120)    |
| Report Current Settings                                     | T C               | T C               | T C               |
| On Xybion Camera Display, wait 30 sec (until IMC > appears) |                   |                   |                   |
| Target Levels, Peak   | 180               | 120               | 120               |

5. **MONITOR 2 CHECKS**  
Perform following Monitor 2 checks per table:

| Check        | PAYLOAD SETUP               |                             |                             |
|--------------|-----------------------------|-----------------------------|-----------------------------|
|              | ROI                         | MOON CAL                    | SPRITE                      |
| Filter       | Variable (changing rapidly) | Variable (changing rapidly) | 5                           |
| Gain         | 65% ± 1                     | 65% ± 1                     | 80% ± 1                     |
| Exp          | Variable (changing rapidly) | Variable (changing rapidly) | Variable (changing rapidly) |
| Temp         | 20° – 40°                   | 20° – 40°                   | 20° – 40°                   |
| Current Date | 01/DD/01 (DD = MET day)     | 01/DD/01 (DD = MET day)     | 01/DD/01 (DD = MET day)     |
| Current MET  | HH:MM:SS (± 3 sec)          | HH:MM:SS (± 3 sec)          | HH:MM:SS (± 3 sec)          |

\* If Filter not variable (ROI/MOON CAL only): \*

- \* XybCmdForm
- \* Sel Run ( R)
- \* Sel Xmit
- \* Xybion Camera Display
- \* MCC-R
- \* On Monitor 2, Filter variable

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- \* If Gain not as expected:
- \* XybCmdForm
- \* Enter Gain = XX
- \* Sel Gain ( G XX)
- \* Sel Xmit
- \* Xybion Camera Display
- \* IMC>G XX
- \* On Monitor 2, Gain = XX ± 1 \*

- \* If Exp not variable:
- \* Notify MCC and continue \*

Sel XybCmd (closes XybionCmdForm display)  
Sel XybionTim (closes Xybion Camera display)

6. **TRUSS POINTING CONFIG**  
Execute Package if step 6 reqd

MEIDEX PGSC V4 15 0  
Sel TrussCntrl (brings up Truss Pointing display)  
Truss Pointing Display  
If Truss Angle > 2 deg off reqd angle:

**NOTE**  
Truss movement is “+” to orbiter port and “-” to orbiter starboard.  
Limits are ± 22 deg

Enter Truss Point Commanding: X (X = value necessary to get to reqd truss position per Execute Package)  
Sel Xmit

AFD Verify Truss moving on monitors (1,2)

PGSC Truss Pointing Display  
Truss angle = reqd angle ± 2.0 deg  
Sel TrussCntrl (closes Truss Pointing display)

T-6 7. **IN CABIN RECORD START**  
L10(MUX) VTR/CC PWR – on (LED on)  
Execute Package, if real time digital dnk:  
MUX/VTR/CC PWR – on (LED on)  
MUX BYPASS – VTR DNK  
PWR – on (LED on)  
ON/STANDBY LED green  
REC pb – press, hold  
PLAY pb – press simo ( red dot displayed)

(VIP) DSR-20 PWR – ON  
REC pb (two simo) – press ( red dot displayed)

V10 PWR – ON  
REC pb (two simo) – press ( red dot displayed)

A7 VID OUT pb – MON 1  
IN pb – SEKA/PAO (FD)

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T-1 8. **PLD VCR ACTIVATION, if reqd**  
Execute Package if step 8 reqd

**NOTE**  
Payload VCRs will not nominally be used during Sprite observations

PGSC Sel RelayCmds (brings up Relay Commanding Page)  
Sel DigTim (brings up Digital Telemetry Page)

Relay Commanding  
Sel Record3(2,1) – On ( RELAYK18(K10,K2) ON)  
Sel Xmit

Digital Telemetry  
VCR3(2,1) Record – green  
VCR3(2,1) Standby – white

9. **MEIDEX OBSERVATION**  
Sel TrussCntrl (brings up Truss Pointing display)  
Adjust truss towards target as reqd per visual  
If Truss Pointing Angle adjustments reqd:  
Truss Pointing Display  
Enter Truss Point Commanding = X (as reqd to track target)  
Sel Xmit

Voice observations to MCC per table:

| Dust  | Sprite  | Moon   |
|---|---|--|
| 1) If Sea Surface: note presence of small clouds (scattered/gathered, % sea obscured)?<br>2) Are narrow, long dust streaks/plumes evident at land sea interface (average width = 1/10 of length)? Note number | 1) Intensity of lightning activity (high/moderate/low)<br>2) Sprites visible above lightning (yes/no)?<br>3) Color of Sprite(s) (red/blue)? | Moon outside Xybion FOV? If yes, note location of moon on Sekai (Xybion FOV = ~1/3 of Sekai FOV) |

At observation end:  
Sel TrussCntrl (closes Truss Pointing display)

**NOTE**  
Step 10 will not be performed until observation end per execute package

10. **PLD VCR RECORD STOP**

**NOTE**  
MEIDEX has a limited amount of PLD VCR recording space. If PLD VCR Recording is left ON inadvertently, all of available tape will be used

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Perform per Execute Package MET:

Relay Commanding  
If Record3(2,1) – On  
Sel Record3(2,1) – Off (RELAYK18(K10,K2) OFF)  
Sel Xmit

Digital Telemetry  
VCR3(2,1) Record – white  
VCR3(2,1) Standby – green

V10 11. **IN CABIN RECORD STOP**  
VTR/ STOP pb – press  
DSR-20 STOP pb – press

Voice PLD VCR Elapsed Sec to ground

Go to MEIDEX RECORDING LOG (Cue Card):  
Enter Obs Type (D = Dust, S = Sprite, M = Moon Cal)  
Enter Orbit # and V10 Time Remaining for current tape  
Enter VTR/DSR-20 Time Remaining for current tape  
Enter VCR3(2,1) Elapsed Sec

Replace tapes if necessary

| Observation Type | Replace Criteria                        |
|------------------|---|
| ROI/Moon Cal     | replace tape if time remaining < 15 min |
| Sprite           | replace tape                            |

V10 12. **P/TV PWRDN**  
VTR/ Execute Package if step 12 reqd  
DSR-20 ON/STANDBY – press (red LED on)  
V10 PWR – OFF  
L10 PWR – off (LED off)  
(VIP) VTR/CC PWR – off (LED off)  
(MUX)

If MUX powered:  
MUX BYPASS – SH PL DATA  
MUX/VTR/CC PWR – off (LED off)

13. **DOOR CLOSE**  
Execute Package if step 13 reqd

L12U MEIDEX DOOR – CLOSE  
DOOR FULL OPEN tb – bp

MON 1 On visual verification of door fully closed:  
L12U cb DOOR PWR CONT PWR DN ENA – op  
Notify MCC door closed

1-77 PL OPS/107/FIN A,2



14. **PLD VCR SWAP**  
Execute Package if step 14 reqd

Sel Unthrd3(2,1) – On ( RELAYK19(K11,K3) ON)  
Sel Xmit  
Unthrd3(2,1) – green

Sel VCR3(2,1) – Off ( RELAYK17(K9,K1) OFF)  
Sel Xmit  
VCR3(2,1) – white  
Sel Unthrd3(2,1) – Off ( RELAYK19(K11,K3) OFF)  
Sel Xmit  
Unthrd3(2,1) – white

Execute Package for alt. VCR

Sel VCR3(2,1) – On ( RELAYK17(K9,K1) ON)  
Sel Xmit  
VCR3(2,1) – green

15. **STATUS CHECK**  
Execute Package if step 15 reqd

Sel XybCmd (brings up XybionCmdForm Page)  
Sel XybTlm (brings up Xybion Camera Display)

XybionCmdForm  
Sel Report Current Settings ( T C)  
Sel Xmit

Xybion Camera Display  
Wait 30 sec (until IMC > appears)

Sel XybCmd (closes XybionCmdForm Page)  
Sel XybTlm (closes Xybion Camera Display)

16. **TRUSS RECONFIG**  
Execute Package if step 16 reqd

PGSC Sel TrussCntrl (brings up Truss Pointing Display)  
Truss Pointing Display  
If Truss Angle > |2|:  
Enter Truss Point Commanding: X (X = ± value reqd to return to 0)  
Sel Xmit  
Verify truss moving on monitors  
Truss Angle = 0 deg ± 2.0  
Sel TrussCntrl (closes Truss Pointing Display)

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**MEIDEX CLOSEOUT**

1. **PLD VCR DEACT**  
PGSC Sel RelayCmds (opens Relay Commanding Page)

Relay Commanding  
Sel Unthrd3(2,1) – On ( RELAYK19(K11,K3) ON)  
Sel Xmit  
Unthrd3(2,1) – green

Sel VCR3(2,1) – Off ( RELAYK17(K9,K1) OFF)  
Sel Xmit  
VCR3(2,1) – white

Sel Unthrd3(2,1) – Off ( RELAYK19(K11,K3) OFF)  
Sel Xmit  
Unthrd3(2,1) – white

2. **SEKAI DEACT**  
Relay Commanding  
Sel Sekai – Off ( RELAYK4 OFF)  
Sel Xmit  
Sekai – white

3. **XYBION DEACT**  
Sel XybCmd (brings up XybionCmdForm Page)  
Sel XybTlm (brings up Xybion Camera Display)

XybionCmdForm  
Sel Report Current Settings ( T C)  
Sel Xmit

Xybion Camera Display  
Wait 30 sec (until IMC > appears)

Sel XybCmd (closes XybionCmdForm Page)  
Sel XybTlm (closes Xybion Camera Display)

Relay Commanding  
Sel Xybio – Off ( RELAYK5 OFF)  
Sel Xmit  
Xybio – white

Sel VideoBuff – Off ( RELAYK8 OFF)  
Sel Xmit  
Video Buff – white

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4. **TRUSS RECONFIG**  
Sel TrussCntrl (brings up Truss Pointing Display)  
Truss Pointing Display  
If Truss Angle > |2|:  
Enter Truss Point Commanding: X (X = ± value reqd to return to 0)  
Sel Xmit  
Verify truss moving on monitors  
Truss Angle = 0 deg ± 2.0  
Sel Truss Cntrl (closes Truss Pointing Display)

5. **FILE TRANSFER**  
Exit MEIDEX software  
Copy most recent MEIDEX data files to OCA machine (STS-1) via network; downlink location: c:\oca-down\payloads

Files reqd:  
c:\meidex\RawTlmData <MMDDYYhhmm>.bin (211 kb) –  
Downlink all RawTlmData files from current observation set  
c:\meidex\EventLog <MMDDYYhhmm>.txt, variable size –  
Downlink EventLog from current observation set  
c:\meidex\XybionLog <MMDDYYhhmm>.txt, variable size –  
Downlink XybionLog from current observation set

If network unavailable:  
Use PDMCIA card to transfer files to OCA machine (STS-1)  
Ref: OCA DOWNLINK VIA GROUND COMMAND (ORB OPS, PGSC)

Open Shuttle Apps Folder  
Sel MEIDEX icon  
MEIDEX PGSC V4 15 0  
Sel OpenComm ( green)  
Sel AutoTlm ( green)

Notify MCC when PGSC file ready for OCA downlink

**NOTE**  
MEIDEX PGSC must remain ON with AUTO TLM enabled to ensure steady telemetry downlinked to ground

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**MEIDEX PRE-DEACTIVATION HEALTH CHECK**

- \* If at any time during procedure lower status bar \*
- \* reads PGSC\_Not\_Cntrl, perform the following: \*
- \* Go to Pages/Cmd Generator Display \*
- \* Command Control \*
- \* Sel IMTAKINGOVER \*
- \* Sel Xmit \*
- \* Sel CK \*
- \* Sel Close (Close Command Control) \*
- \* MEIDEX PGSC V4 V15 0 \*
- \* On lower status bar, PGSC\_Cntrl \*

**NOTE**  
Procedure will nominally be performed by POCC and will only be reqd if cmd capability from ground is lost

L12U 1. **DOOR POSITION CHECK**  
MEIDEX DOOR – CLOSE  
DOOR FULL OPEN tb – bp

2. **TLM CONFIG**  
MEIDEX PGSC V4 15 0  
OpenComm – green  
AutoTlm – green

3. **EVENT LOG CONFIG**  
Sel Event (brings up Event Page)

Event Page  
Configure as follows:  
Log to File –  
Report Limits –  
Show Auto TLM – no

Sel Event (closes Event Page)  
MEIDEX PGSC V4 15 0  
No Red/Yellow limit violations (limit check boxes in upper right of display = 0,0)

- \* If Red/Yellow limit violations: \*
- \* Sel Event (brings up Event Page) \*
- \* Determine red/yellow limit violation \*
- \* Report to MCC \*

4. **PRE-DEACT CONFIG CHECK**  
Sel RelayCmds (brings up Relay Commanding Page)  
Relay Commanding

If Heater1 – green  
Sel Heater1 – Off ( RELAYK20 OFF)  
Sel Xmit  
Heater1 – white

All relays – white  
Sel RelayCmds (closes Relay Commanding Page)

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5. **TRUSS POSITION CHECK**  
Sel TrussCntrl (brings up Truss Pointing Display)

Truss Pointing Display  
Limit Switch1 – Not Limit  
Limit Switch2 – Not Limit  
Rvrs Lim Violat – No  
Fwrd Lim Violat – No  
OverCurr Violat – No

If Truss Angle > |2| :  
Enter Truss Point Commanding: X (X = ± value reqd to return to 0)  
Sel Xmit  
Verify Truss moving on monitors  
Truss angle = 0 deg ± 2.0

Sel TrussCntrl (closes Truss Pointing Display)

Report Status to MCC

Exit PGSC software

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**XYBION ACTIVATION**

1. **XYBION PWRUP**  
Sel RelayCmds (brings up Relay Commanding Page)  
PGSC Relay Commanding  
Sel VideoBuff – On ( RELAYK8 ON)  
Sel Xmit  
VideoBuff – green

MON 2 Sel Xybion – On ( RELAYK5 ON)  
Sel Xmit  
Xybion – green  
Xybion video signal displayed

- \* If errors on Xybion video signal: \*
- \* Notify MCC \*
- \* Once problem resolved, continue \*

Sel RelayCmds (closes Relay Commanding Page)

2. **TIME/DATE CONFIG**  
PGSC Sel XybCmd (brings up XybionCmdForm Page)  
Sel XybTim (brings up Xybion Camera Display)

a. **Date Check**

**NOTE**  
If MET day is "00", enter "31", as Xybion will not accept an entry of "00" in this field

XybCmdForm  
In cursor field above and to left of XMIT button, complete as follows, with "DD" = current MET day: C D 01 DD 02

MON 2 Sel XMIT

Xybion Camera Display  
Prompt reads IMC>C D 01 DD 02  
No error messages  
Date updated within Xybion video signal

b. **MET "Time" Update**

**NOTE**  
MEIDEX requires highly accurate time stamping on Xybion video. As ~4 sec lag is encountered during command acceptance sequence, MET time keyed in must be 4 sec later than actual time at command transmission

PGSC XybionCmdForm  
In cursor field above and to left of XMIT button, complete as follows, with "HH", "MM" and "SS" as current MET time, hr, min, sec:  
C T HH MM SS

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Sel XMIT 4 sec prior to target time  
Xybion Camera Display  
Prompt reads IMC>C T HH MM SS  
No error messages

MON 2 If time offset between Xybion video signal and MET clock >3 sec:  
Repeat step 2b

PGSC Sel XybCmd (closes XybionCmdForm Page)  
Sel XybTim (closes Xybion Camera Display)

**MEIDEX PGSC STOW**

1. **POWER OFF PGSC AND UTILITY PANEL**  
PGSC Laptop pwr (side) – OFF  
DC PWR SUPPLY – OFF (It not lit)  
A11 DC UTIL PWR MNC – OFF

2. **DISCONNECT CABLES**  
PDIP Disconnect: Data cable from MEIDEX PGSC outlet  
PGSC Data cable from Comm 2 port  
Pwr cable from PGSC Power Port  
Pwr cable from DC Power Supply J2  
A11 Pwr cable from DC Power Supply J1  
Pwr cable from DC UTIL PWR MNC

PGSC Remove PCMCIA RS422 Comm Card from PGSC  
Remove PCMCIA RF LANCard from PGSC

3. **STOW MEIDEX PGSC**  
MF280 Stow:  
PL1 MEIDEX PGSC  
PCMCIA RS422 Comm Card  
PCMCIA RF LANCard  
DC/DC Power Supply  
DC Power Supply Cable  
PGSC DC Power Supply Cable

Notify MCC, MEIDEX PGSC STOW complete

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**OARE**

OARE ACT ..... 2-2  
DEACT ..... 2-2

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|      |                   |                                  |
|------|-------------------|----------------------------------|
| OARE | <b>OARE ACT</b>   |                                  |
|      | L12U              | cb OARE PWR CAB P/L BUS CB3 - cl |
|      |                   | cb OARE PWR CAB P/L BUS CB1 - cl |
|      |                   | OARE PWR - ON                    |
|      | <b>OARE DEACT</b> |                                  |
|      | L12U              | OARE PWR - OFF                   |
|      |                   | cb OARE PWR CAB P/L BUS CB1 - op |
|      |                   | cb OARE PWR CAB P/L BUS CB3 - op |
|      | 2-2               | PL OPS/107/FIN A,3               |

|                                 |                  |
|---------------------------------|------------------|
| <b>DEORBIT PREP</b>             |                  |
| PAYLOAD DEACT .....             | 3-2              |
| REACT .....                     | 3-2              |
| DEORBIT WAVEOFF .....           | 3-2              |
| PAYLOAD ENT SW LIST/VERIF ..... | 3-3              |
| 3-1                             | PL OPS/107/FIN A |

|              |                        |  |
|--------------|------------------------|--|
| DEORBIT PREP | <b>PAYLOAD DEACT</b>   |  |
|              | N/A                    |  |
|              | <b>PAYLOAD REACT</b>   |  |
|              | L1                     | On MCC GO:<br>FLOW PROP VLV LOOP 1 - PL HX (tb-PL) |
|              | <b>DEORBIT WAVEOFF</b> |  |
|              |                        | Perform FREESTAR ACTIVATION ( <u>FREESTAR</u> )    |
|              |                        | Perform SOLSE PGSC/BIA SETUP ( <u>FREESTAR</u> )   |
|              |                        | Go to SOLSE/HRIU ACTIVATION ( <u>FREESTAR</u> )    |
|              | 3-2                    | PL OPS/107/FIN A,1                                 |

|                                  |  |
|----------------------------------|--|
| <b>PAYLOAD ENT SW LIST/VERIF</b> |  |
| R1                               | <u>PAYLOAD PWR CONFIG</u><br>PL CAB - MNA(MNB)<br>PRI MNB - ctr (tb-OFF)<br>FC3 - ctr (tb-OFF)<br>MNC - ctr (tb-ON)<br>AUX - ON<br>AFT MNB - ON<br>MNC - OFF   |
| MA73C:E                          | cb AC2 PL 3Φ - cl<br>AC3 PL 3Φ - cl  |
| L12U                             | (OARE)<br>OARE PWR - OFF  <br>cb OARE PWR CAB P/L BUS CB1 - op  <br>SW PWR - op  |
|                                  | (FREESTAR)<br>HITCHHIKER AV PWR - ctr (tb-bp)  <br>HITCHHIKER EXP PWR - ctr (tb-bp)  |
|                                  | LPT PWR ENA 1 - OFF (tb-bp)<br>2 - OFF (tb-bp)   |
|                                  | MEIDEX DOOR - CLOSE (tb-bp)<br>cb DOOR PWR/CONT PWR DN ENA - op<br>OARE PWR CAB P/L BUS CB3 - op   |
| L12L                             | (SSP-2)<br>ORB H2O LN HTR - ctr  <br>cb PDIP PWR 1 - op  |
|                                  | (SPACEHAB)<br>FIRE SUPPR FSCU (two) - ctr (tb-DN)  <br>FIRE SUPPR VLV ARM/SAFE - SAFE (tb-bp)  <br>CAB DEPRESS VLV ARM/SAFE - CL (tb-bp)<br>OP/CL - CL<br>FULL OPEN tb - bp<br>NOT CL tb - bp<br>SMOKE SNSR RESET/TEST - ctr<br>A - ENA (tb-gray)<br>B - ENA (tb-gray) |
|                                  | MN PWR - NO-OP<br>PDU SS DC BUS - ctr (tb-gray)<br>PDU MN DC BUS - ON (tb-gray)<br>FWD INV - NO-OP (tb-gray)<br>PDU EXP DC BUS - ctr (tb-gray)<br>cb SW PWR - cl<br>ORB H2O LN HTR PWR - op  |
| C3A5                             | SH FIRE SPPR MCP - SAFE<br>MCP - NO-OP<br>FSCU - SAFE<br>FSCU - NO-OP<br>H2O LINE HTRS - OFF   |
| ML86B:E                          | cb MNB MAR 1 - cl<br>2 - cl  |
| 3-3                              | PL OPS/107/FIN A,3   |

|         |   |                    |
|---------|---|--------------------|
| ML85E   | AC S1 - OFF<br>cb AC CB1 - op<br>DC 10 AMP MNB S2,S3 (two) - ON<br>cb DC 10 AMP MNB CB2,CB3 (two) - cl<br>DC 10 AMP MNB S4,S5 (two) - OFF<br>cb DC 10 AMP MNB CB4,CB5 (two) - op<br>PUMPS S6 - OFF<br>cb PUMPS CB6 - op<br>PUMPS CB7 - op   |                    |
| MO13Q   | DC UTIL PWR MNB - ON  |                    |
| MIDDECK | (TEPC)<br>SW-1 - OFF  |                    |
| MF28G/H | (Biopack)<br>CENTRIF 1,2,3 (three) - ON<br>INCUB - ctr<br>RESET - ctr<br>COOLER - ctr<br>FREEZER ON/OFF - ctr<br>COOL/FREEZE - ctr<br>ETL - ctr<br>rotary sw - T COOLER<br>UP/DOWN - ctr<br>MAIN POWER - ON<br>POWER MAIN FAN - ON<br>COOLER/FREEZER - ON<br>INCUBATOR - ON<br>BIOPACK ELECTRONICS - ON<br>EXPERIMENT ELECTRONICS - ON<br>AUXILIARY - OFF |                    |
| MF71C   | (CEBAS)<br>cb PWR - on<br>PWR It - on<br>RECORD It - off  |                    |
| MF71G   | (OSTEO)<br>cb CB1 - cl<br>S1 (four) - OFF (dn)<br>L1 It (four) - off  |                    |
| MF71O   | (BRIC)<br>cb CB1 - op (out)<br>POWER It - off   |                    |
| MA16D   | (CMPCG)<br>cb MAIN - cl<br>FAN - cl<br>BATT - cl<br>28V - cl<br>LCD - not blank<br>pb (four) - not blinking<br>FAN - running  |                    |
|         | 3-4   | PL OPS/107/FIN A,3 |

|                                  |                  |
|----------------------------------|------------------|
| <u>CONTINGENCY EVA PL CONFIG</u> |                  |
| PRE-EVA PL CONFIG .....          | 4-2              |
| POST-EVA PL CONFIG .....         | 4-2              |
|                                  | 4-1              |
|                                  | PL OPS/107/FIN A |

CONT EVA  
PL CONFIG

|   |  |                    |
|---|--|--------------------|
| <u>PRE-EVA PL CONFIG</u>  |  |                    |
| <u>SPACEHAB PREP</u><br>If Spacehab to remain isolated for remainder of mission:<br>Perform <u>ENTRY PREP</u> (RDM OPS)   |  |                    |
| If Spacehab will be reentered:<br>Perform <u>SPACEHAB PREP FOR EVA</u> (RDM OPS, <u>CONTINGENCY PROCEDURES</u> )  |  |                    |
| <u>FREESTAR PREP</u><br>Visually verify MEIDEX, SOLSE, and SOLCON doors closed<br>MCC pwr removed from MEIDEX, SOLSE, and SOLCON doors  |  |                    |
| L12U  | LPT PWR ENA 1 - OFF (tb-bp)<br>2 - OFF (tb-bp)                               |                    |
| <u>POST-EVA PL CONFIG</u>   |  |                    |
| <u>SPACEHAB RECONFIG</u><br>If Spacehab will be reentered:<br>Perform <u>SPACEHAB RECONFIG POST EVA</u> (RDM OPS, <u>CONTINGENCY PROCEDURES</u> )<br>Else, no actions reqd<br>Spacehab configured for entry |  |                    |
| L12U  | <u>FREESTAR RECONFIG</u><br>LPT PWR ENA 1 - ON (tb-gray)<br>2 - ON (tb-gray) |                    |
|   | 4-2  | PL OPS/107/FIN A,3 |

CONT EVA  
PL CONFIG

|                           |                  |
|---------------------------|------------------|
| <u>ASC PWRDN RECOVERY</u> |                  |
| MIDDECK (A PWRDN) .....   | 5-2              |
| SPACEHAB (B PWRDN) .....  | 5-2              |
|                           | 5-1              |
|                           | PL OPS/107/FIN A |

ASC PWRDN  
RECOVERY

**MIDDECK (A PWRDN)**

**NOTE**  
When orbiter pwr removed, science degradation will occur to Biopack, BRIC, CEBAS, OSTEO, and CMPCG

1. Perform MIDDECK EXPERIMENT POWER LOSS CONFIGURATION (SH EH, EXPERIMENT POWER LOSS CONFIGURATION)

ML86B:E 2. cb MNB MAR 1,2 (two) - cl

MO13Q 3. DC UTIL PWR MNB - ON

4. Go to MIDDECK EXPERIMENT RECOVERY AFTER POWER LOSS (SH EH, EXPERIMENT RECOVERY AFTER POWER LOSS)

**SPACEHAB (B PWRDN)**

R1 1. PL CAB - MNA  
AFT MNB - ON  
AUX - ON

L12L 2. MN PWR - KILL

R1 3. PL PRI MNC - ON (tb-ON)

L12L 4. cb ORB H2O LN HTR PWR - cl  
ORB H2O LN HTR - A  
C3A5 H2O LN HTRS - ON

ASC PWRDN RECOVERY

PL OPS/107/FIN A.3

**PAYLOAD COMM MALFUNCTIONS**

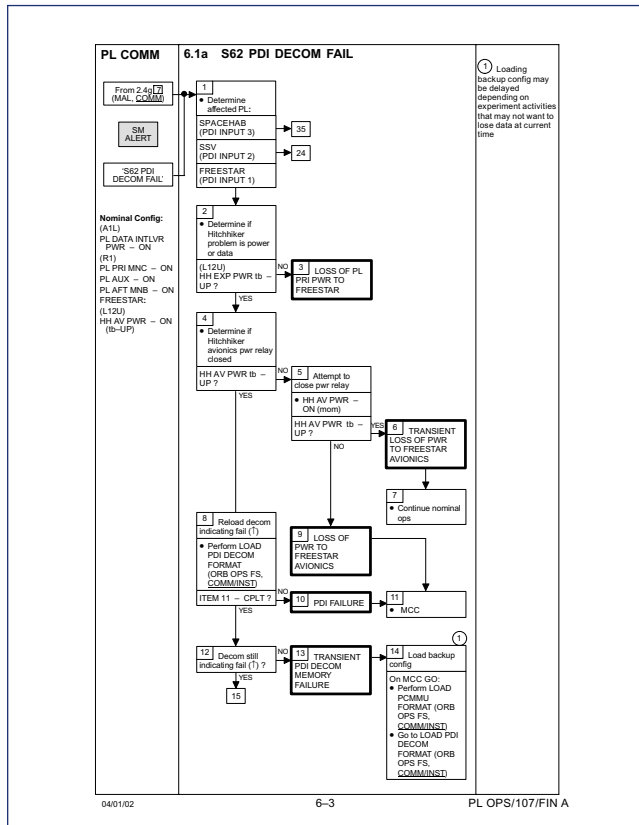
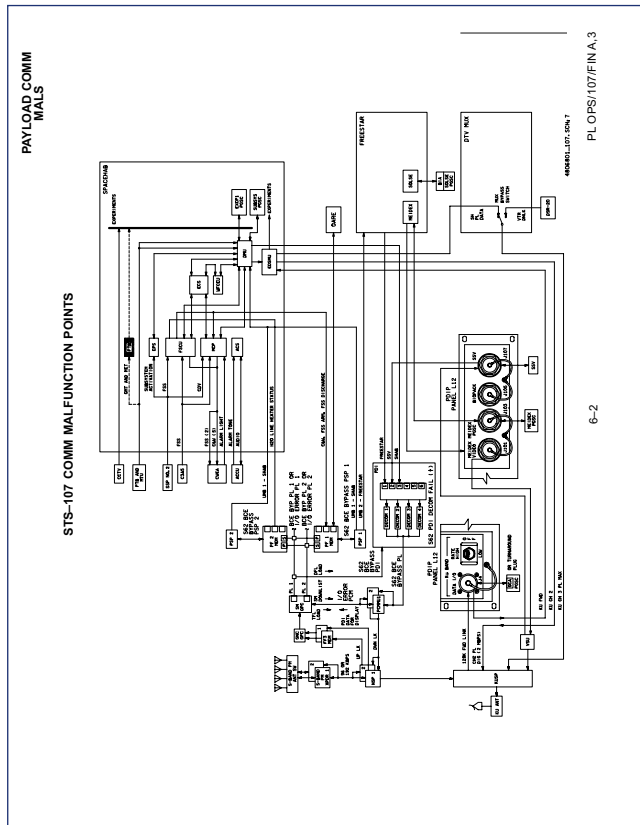
**6.1 PL COMM**

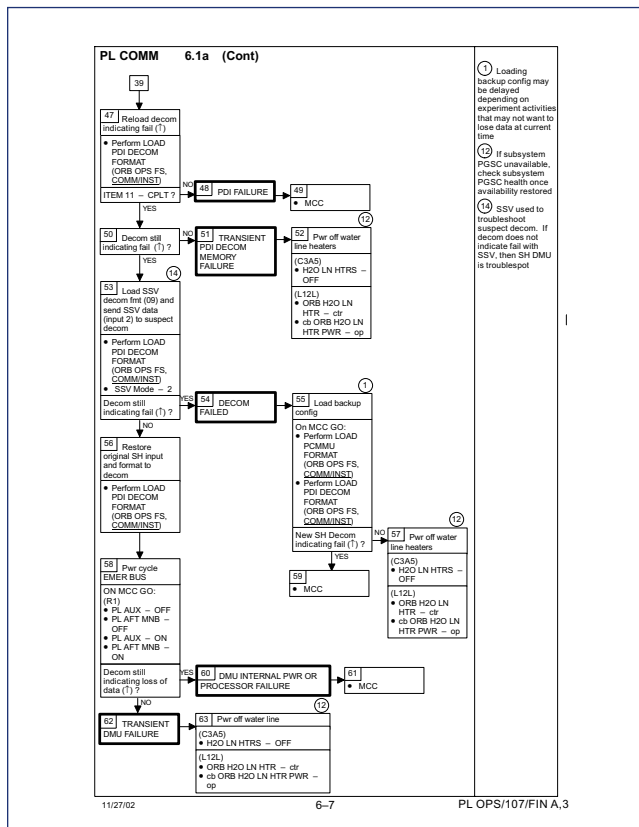
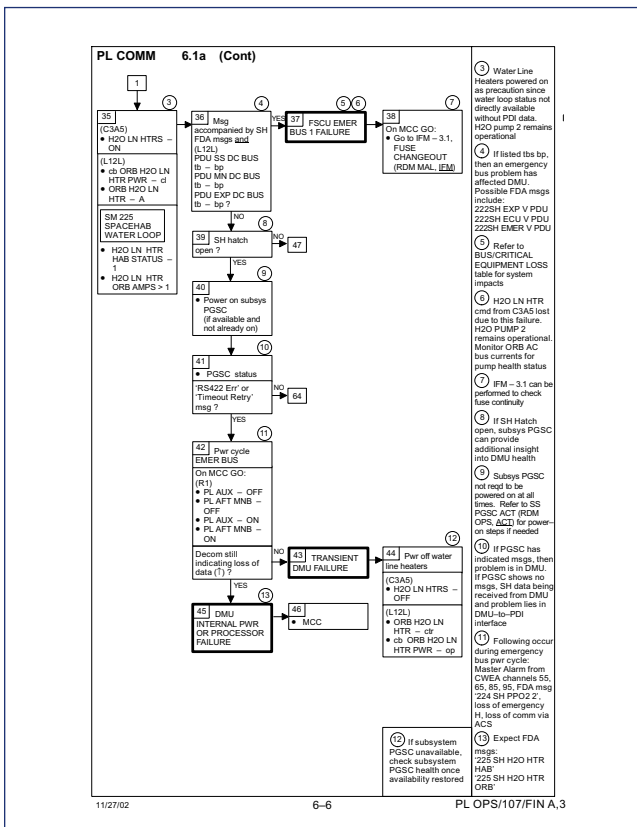
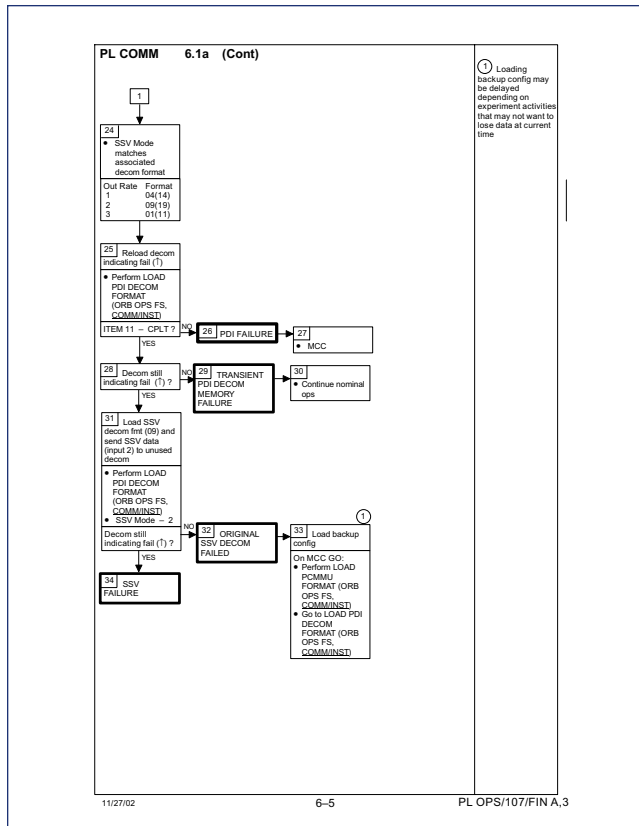
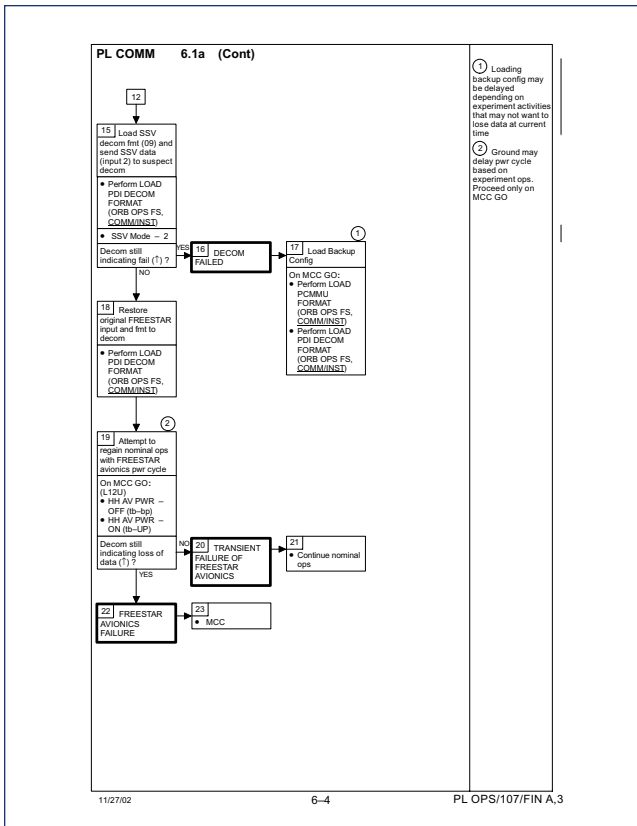
STS-107 COMM MALFUNCTION POINTS ..... 6-2

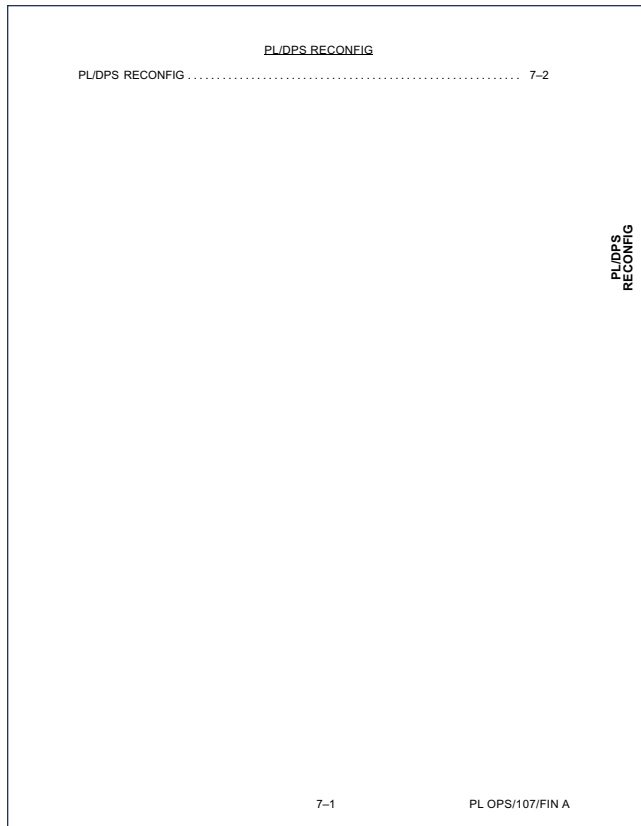
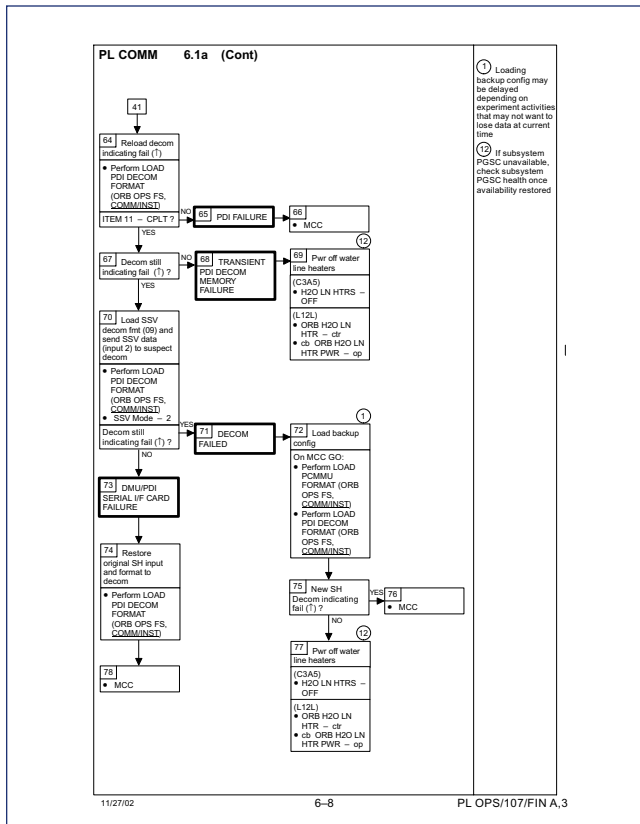
6.1a S62 PDI DECOM FAIL ..... 6-3

PAYLOAD COMM  
MALFUNCTIONS

PL OPS/107/FIN A







**PL/DPS RECONFIG**

| PROCEDURE   | SECURE ACTION | RECOVERY ACTION | INFO ONLY |
|---|---------------|-----------------|-----------|
| PL 1(2) MDM I/O ERROR; PL 1(2) MDM OUTPUT (ORB PKT, DPS)                    | N/A           | N/A             | C         |
| 5.3c I/O ERROR PL 1(2); MDM OUTPUT PL 1(2) (MAL, DPS)                       | N/A*          | N/A             | C         |
| PASS SM GPC FAIL (ORB PKT, DPS)   | N/A           | B               | D         |
| GNC RECOVERY VIA G2FD (ORB PKT, DPS)  | N/A           | A,B             | D         |
| 5.1a CS SPLIT (MAL, DPS)  | N/A           | A,B**           | D         |
| 5.3e BCE I/O ERROR FLEX (MAL, DPS)  | N/A           | N/A             | D         |
| 5.3f BCE BYP FLEX (MAL, DPS)  | N/A           | N/A             | D         |
| 5.3g BCE BYP PL 1(2) (MAL, DPS)   | N/A*          | N/A**           | C         |
| GPC FRP-4 PASS RECOVERY AFTER BFS ENGAGE (ASCENT/ORBIT/ENTRY) (MAL, DPS)    | N/A*          | A,B**           | D         |
| GPC FRP-7 DPS RECONFIG FOR LOSS OF AV BAY COOLING (ASCENT/ORBIT) (MAL, DPS) | N/A           | A,B**           | D         |
| DPS SSR-3 GNC REASSIGNMENT (MAL, DPS)                                       | N/A*          | N/A             | D         |
| DPS SSR-4 SM REASSIGNMENT (MAL, DPS)  | N/A           | A,B             | D         |
| ECLS SSR-10 H2O PUMP OPS VIA GPC (MAL, ECLS)                                | N/A           | A,B**           | D         |

\*Note: Procedure does not call out PL/DPS RECONFIG, Secure  
\*\*Note: Procedure does not call out PL/DPS RECONFIG, Recovery

**ACTION A**

If PSP I/O reset not previously performed:  
SM 62 PCMMU/PL COMM  
I/O RESET PSP 1(2) - ITEM 6(7) EXEC  
Notify MCC when complete

**ACTION B**

Reload PDI DECOM FORMAT (ORB OPS FS, COMM/INST)  
Re-enable PDI DECOM FDA as reqd  
Resume SPEC 62

7-2 PL OPS/107/FIN A

**INFO C**

If I/O ERROR PL1' msg:  
Loss of cmd capability (onboard and ground) and telemetry via PL comm string 1 for SPACEHAB, FREESTAR. (MCC will consider PSP COMMAND SIGNAL BYPASS IFM)  
Loss of PL 1 tm on SPECS 206, 222, 223, 224, 225 denoted by 'M'. Failed IOM can be determined using chart from PF MDM CHANNELIZATION (RDM MAL, CRITICAL EQUIP LOSS)  
Loss of command to Ku Band  
Loss of command to OARE and PLR  
Failure at IOP XMTR/RCVR at SM GPC recovered via port mode to PL2

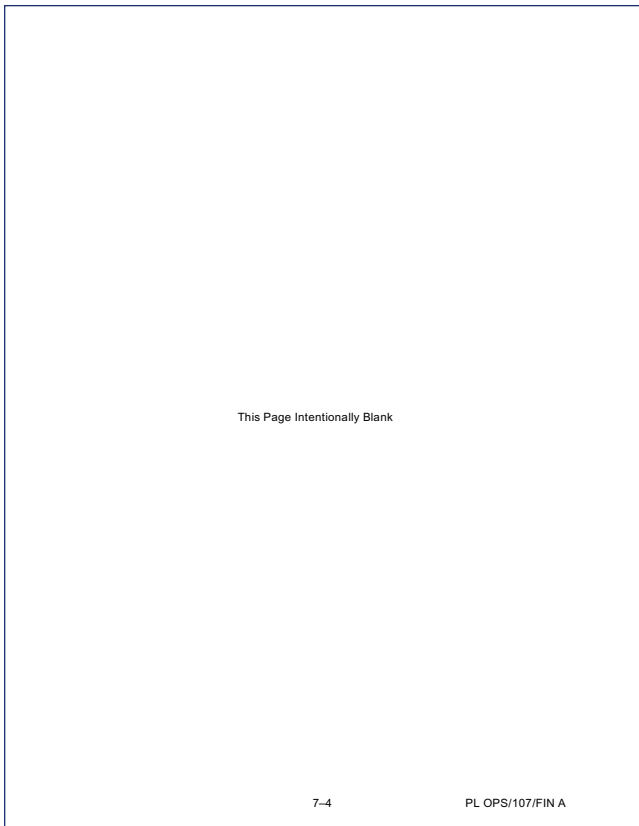
If I/O ERROR PL2' msg:  
Loss of cmd capability (onboard and ground) and telemetry via PL comm string 2 for SPACEHAB (FREESTAR if PSP COMMAND SIGNAL BYPASS IFM previously performed)  
Note associated loss H2O LN HTR HAB status and Orbiter H2O LN HTR current on SPEC 225 denoted by 'M'  
Loss of SPACEHAB FSS DISCHARGE (FSCU) onboard and ground discrete cmd via PL2  
Loss of ground command to the CCTV system  
Failure at IOP XMTR/RCVR at SM GPC recovered via port mode to PL1

**INFO D**

If affected GPC SM:  
Loss of command capability (onboard and ground) via SM GPC until SM GPC restored and/or PL 1(2) I/F restored

If affected GPC GNC:  
Loss of ground command capability until GNC GPC restored

7-3 PL OPS/107/FIN A



**IN-FLIGHT MAINTENANCE (IFM)**

|   |     |
|---|-----|
| PSP 1 COMMAND SIGNAL BYPASS .....                     | 8-2 |
| SSP 1 RECOVERY TABLE .....                            | 8-4 |
| 2 RECOVERY TABLE .....                                | 8-5 |
| KU BAND SIGNAL PROCESSOR BYPASS FOR PL DIG DATA ..... | 8-6 |
| SH PL MAX DATA RECOVERY .....                         | 8-6 |

IFM

8-1 PL OPS/107/FIN A,1

**PSP 1 COMMAND SIGNAL BYPASS** (1:00 hr)

**OBJECTIVE:** To recover payload commands lost due to PSP 1 failure by rerouting signal to PSP 2 with test jumper leads

**LOCATION:** J1391 FREESTAR on Payload Station Distribution Panel (PSDP) behind L17

**TOOLS REQD:** Gray Tape  
Power Screwdriver  
Torque Wrench  
5/32-in Allen Head Driver  
Pin Kit  
Connector Strap Wrench

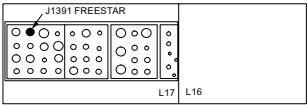
Expect 'S62 BCE BYPASS PSP 1' msg

A1L 1. S-BD PL CNTL - PNL  
PWR SYS - OFF

L17 2. Remove pnl L17 (seventeen fasteners, 5/32-in Allen Head Driver)

3. Demate Connector Plug P1 from J1391 FREESTAR on Payload Station Distribution Panel

**PAYLOAD STATION DISTRIBUTION PANEL**  
(Looking through pnl L17 opening)



4. Position Gray Tape over face of Connector Plug P1 FREESTAR. Place in Ziplock Bag from Post Insertion locker MF43G. Label Ziplock as PSDP P1. Stow Ziplock in FDF locker MF57K

5. Obtain four 5-in (22 ga) Pin/Pin Test Jumper Leads from Pin Kit (insert)

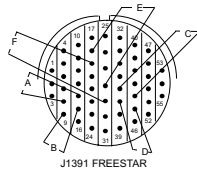
6. Obtain 22-ga Wire (flap 3) and 22-ga pins (four) (flap 6) and fabricate two, 5-in (22 ga) Pin/Pin Test Jumper Leads for a total of six, 5-in Pin/Pin Test Jumper Leads. Place Gray Tape over collar of pins for strain relief and insulation

8-2 PL OPS/107/FIN A,3

7. Install Pin/Pin Test Jumper Leads into following socket positions as indicated:

| ORBITER SIGNAL    | J1391 FREESTAR sockets | FREESTAR |
|-------------------|------------------------|----------|
| PTB (MET 1 HI)    | 8                      | 14       |
| PTB (MET 1 LO)    | 9                      | 15       |
| PDI (TLM 1)       | 36                     | 44       |
| PDI (RTN)         | 37                     | 45       |
| PSP 2 (CMD 1 OUT) | 28                     | 18       |
| PSP 2 (RTN)       | 29                     | 19       |

**NOTE:** (22 ga) 5-in Pin/Pin Test Jumper Leads



**J1391 FREESTAR**

**NOTE:** J1391 FREESTAR row type connector.  
Pins/sockets numbered at top, bottom of each row

A1L 8. S-BD PL PWR SEL - PSP  
SYS - 2  
CNTL - CMD  
SM 62 PCMMU/PL COMM  
ITEM 7 - EXEC

9. Report results to MCC

L17 10. Reinstall pnl L17, torque fasteners (25 in-lb)

11. Stow tools, Gray Tape

8-3 PL OPS/107/FIN A



**SSP 1 RECOVERY TABLE**

Note: This table will be used in conjunction with SSP CABLE CHANGEOUT (IFM) to regain functionality of failed L12U control.

| PANEL | FAILED CONTROL   | WIRED THRU | POWERDOWN ACTION  | SWAP ACTION                           | RECOVERY ACTION   | IMPACT OF ACTION   |
|-------|--|------------|---|---------------------------------------|---|--|
| L12U  | HITCHHIKER AV PWR (S13)<br>HITCHHIKER EXP PWR (S14)<br>OARE PWR (S11)  | J2         | PL PRI MMC - OFF (lb - OFF)<br>cb DOOR PWR CONT PWR DN ENA - op<br>HH EXP PWR - OFF (lb - bp)<br>HH AV PWR - OFF (lb - bp)<br>OARE PWR - OFF<br>cb OARE PWR CAB PL BUS (WEL) - op                           | Swap J2, J6 cables                    | PL PRI MN C - ON (lb - ON)<br>HH AV PWR - ON (lb - UP)<br>HH EXP PWR - ON (lb - UP)<br>cb OARE PWR CAB PL BUS (WEL) - cl<br>OARE PWR - ON | S13 function on S1<br>S14 function on S2<br>S11 function on S23  |
|       | LPT PWR ENA 1 (S19)<br>LPT PWR ENA 2 (S19)<br>MEDEX DOOR (S18)<br>cb DOOR PWR CONT PWR DN ENA - op<br>MEDEX DOOR - CLOSE<br>N/A  | J8         | HH POCC pwr down LPT<br>LPT PWR ENA 1 - OFF (lb - bp)<br>LPT PWR ENA 2 - OFF (lb - bp)<br>cb DOOR PWR CONT PWR DN ENA - op<br>MEDEX DOOR - CLOSE  | Swap J8, J12 cables                   | LPT PWR ENA 1 - ON<br>LPT PWR ENA 2 - ON<br>HH POCC pwr on LPT  | S15 function on S3<br>S19 function on S7<br>S18 function on S6<br>cb4 function on cb2                                |
|       | HITCHHIKER AV PWR (S13)<br>HITCHHIKER EXP PWR (S14)<br>LPT PWR ENA 1 (S19)<br>LPT PWR ENA 2 (S19)<br>MEDEX DOOR (S18)<br>cb DOOR PWR CONT PWR DN ENA - op<br>MEDEX DOOR - CLOSE<br>N/A | J1         | HH EXP PWR - OFF (lb - bp)<br>HH AV PWR - OFF (lb - bp)<br>HH POCC pwr down LPT<br>LPT PWR ENA 2 - OFF (lb - bp)<br>LPT PWR ENA 1 - OFF (lb - bp)<br>cb DOOR PWR CONT PWR DN ENA - op<br>MEDEX DOOR - CLOSE | Swap J1, J5 cables                    | HH AV PWR - ON (lb - UP)<br>HH EXP PWR - ON (lb - UP)<br>LPT PWR ENA 1 - ON<br>LPT PWR ENA 2 - ON<br>HH POCC pwr on LPT                   | DS13 function on DS1<br>DS14 function on DS2<br>DS15 function on DS3<br>DS18 function on DS6<br>DS19 function on DS7 |
|       | GASPREESTAR connector (J14)  | J5         | Perform SOLSE/HRIU DEACT (E6E8E2A0)   | Remove J13 cable, connect to L12L J13 | Perform SOLSE/HRIU ACT (E6E8E2A0)   | GASPREESTAR connector function on L12L AUX I/O (J14) connector   |

8-4

PL OPS/107/FIN A,1

**SSP 2 RECOVERY TABLE**

Note: This table will be used in conjunction with SSP CABLE CHANGEOUT (IFM) to regain functionality of failed L12L control.

| PANEL | FAILED CONTROL  | WIRED THRU | POWERDOWN ACTION   | SWAP ACTION                               | RECOVERY ACTION   | IMPACT OF ACTION   |
|-------|---|------------|--|---|---|--|
| L12L  | FIRE SUPPR FSCU ARM (S15)<br>FIRE SUPPR FSCU DISCH (S16)<br>MAIN PWR KILL (S20)<br>PSU S3 DC BUS (S21)<br>FWD INVERTER (S23)<br>PSU EXP DC BUS (S24)<br>ORBITER H2O LN HTR (S12)<br>CAB DEPRESS VLV (S19)<br>CAB DEPRESS VLV OPEN (S18)<br>SMOKE SENSOR RESET (S17)<br>SMOKE SENSOR A (S18)<br>SMOKE SENSOR B (S19)<br>PSU/MN DC BUS (S22)<br>N/A | J2         | PL AUX - OFF<br>PL ART B - OFF<br>cb ORBITER H2O LN HTR PWR - op<br>cb SW PWR - op | Swap J2, J6 cables<br>Swap J8, J12 cables | PL AUX - On cables<br>PL ART B - On<br>cb ORBITER H2O LN HTR PWR - cl<br>cb SW PWR - cl | S12 function on S24<br>S13 function on S1<br>S14 function on S2<br>S15 function on S3<br>S16 function on S4<br>S17 function on S5<br>S18 function on S6<br>S19 function on S7<br>S20 function on S8<br>S21 function on S9<br>S22 function on S10<br>S23 function on S11<br>S24 function on S12 |
|       |   | J8         |  |   |   |  |
|       |   | J8         |  |   |   |  |
|       |   | J12        |  |   |   |  |

8-5

PL OPS/107/FIN A,1

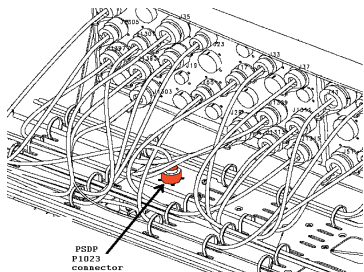
**KU BAND SIGNAL PROCESSOR BYPASS FOR PL DIG DATA** (1:30 hr)

**OBJECTIVE:** Recover realtime data for SH PL DIG DATA by routing signal through S Band FM Signal Processor

**LOCATION:** Connector J1023 on wire tray running in front of Payload Station Distribution Panel (PSDP) panel behind L14

**TOOLS REQD:** Gray Tape  
Pin Kit (for Test Jumper Leads and Minigrabber)  
Pwr Screwdriver  
5/32-in Allen Head Driver  
Connector Strap Wrench (if reqd)  
Torque Wrench  
#10 Torque Tip  
-in to 3/8-in Adapter

- MCC  
S-Band FM Sys - OFF
- Remove panel L14 (six, #10 Torque Tip, twelve, 5/32-in Allen Head Driver)
- Locate, demate connector 38P77W469P1023 from J1023 on PSDP wire tray (see diagram for connector location)



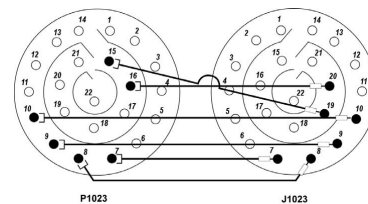
- Position connector 38P77W469P1023 onto wire tray pointing connector face inboard; secure with Gray Tape

8-6

PL OPS/107/FIN A,3

- Obtain four, 5-in (22-ga) pin/socket Test Jumper Leads from Pin Kit and two, 24-in (22-ga) pin/socket Test Jumper Leads from Fuse and Test Jumper Lead Container Assy inside Pin Kit. Install into following pin/socket positions on J1023 and P1023:

| SPACEHAB            | PINS (P1023) | TO | SOCKETS (J1023) | ORBITER               |
|---------------------|--------------|----|-----------------|-----------------------|
| Ku Fwd Link Data -  | 7            |    | 7               | Ku Fwd Link Data -    |
| Ku Fwd Link Data +  | 8            |    | 8               | Ku Fwd Link Data +    |
| Ku Fwd Link Clock - | 9            |    | 9               | Ku Fwd Link Clock -   |
| Ku Fwd Link Clock + | 10           |    | 10              | Ku Fwd Link Clock +   |
| Ku Chan 2 Data +    | 15           |    | 19              | S BAND FMSP W/B DIG + |
| Ku Chan 2 Data -    | 16           |    | 20              | S BAND FMSP W/B DIG - |



- Obtain one 24-in Minigrabber, install between connector shells (from P1023 to J1023) for chassis ground; secure with Gray Tape
- Reinstall pnl L14, torque fasteners (30 in-lb)
- Stow tools, Gray Tape

8-7

PL OPS/107/FIN A,3



**STS-107 BUS LOSS MATRIX (Cont)**

| Component                         | MNA DA1 |    | MNA DA2 |    | MNA DA3 |    | MNA DA4 |    | MNA DA5 |    | MNA DA6 |    | MNA DA7 |    | MNA DA8 |    | MNA DA9 |    | MNA DA10 |    |
|-----------------------------------|---------|----|---------|----|---------|----|---------|----|---------|----|---------|----|---------|----|---------|----|---------|----|----------|----|
|                                   | PL      | RP | PL      | RP | PL      | RP | PL      | RP | PL      | RP | PL      | RP | PL      | RP | PL      | RP | PL      | RP | PL       | RP |
| ORBITER H2O LN HTR                |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |          |    |
| ORBITER H2O LN HTR CURRENT SENSOR |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |          |    |
| FREESTAR CONT PWR DN ENA          |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |          |    |
| HMDA OPEN/CLOSE                   |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |          |    |
| CAB DEPRESS VLV OPEN/CLOSE        |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |          |    |
| SMOKE SENSOR TEST/RESET           |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |          |    |
| SMOKE SENSOR A ENA/INH            |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |          |    |
| SEC DC BUS                        |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |          |    |
| SPACEHAB FSCU EMER 1 BUS          |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |          |    |
| SPACEHAB MCP EMER 2 BUS           |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |          |    |
| FIRE SUPPR FSCU ARM/SAFE          |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |          |    |
| FIRE SUPPR FSCU DISCH             |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |          |    |
| MAIN PWR KILL                     |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |          |    |
| PDU SS DC BUS ON/OFF              |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |          |    |
| FWD INVERTER ON                   |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |          |    |
| PDU EXP DC BUS ON/OFF             |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |          |    |
| SPACEHAB MCP EMER 2 BUS           |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |          |    |
| CAB DEPRESS VLV ARM               |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |          |    |
| SMOKE SENSOR B ENA                |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |          |    |
| DTV MUX & VTR                     |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |          |    |
| VSU                               |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |         |    |          |    |

PL OPS/107/FIN A,3

**ELECTRICAL BUS LOSS IMPACTS**

**MNA DA1**

- MNA FPC1
- FDI (REDUN POWER)
- PCMMU (REDUN POWER)
- AC1
- PL RCDR (REDUN PWR)

**MNA O14**

- DC UTIL PWR O19/MO52J

**MNA MPC1**

- CABIN PL2 (REDUN POWER AVAILABLE)
- SSP 1
  - CB 1
    - OARE PWR (REDUN POWER)
  - CB 3
    - OARE PWR (REDUN POWER)
- SSP 2
  - CB 1
    - PDIP PWR 1
  - CB 3
    - S12 – ORBITER H2O LN HTR
    - ORBITER H2O LN HTR CURRENT SENSOR

**CABIN PL3 (REDUN POWER AVAILABLE)**

- SSP 1
  - CB 4
    - FREESTAR CONT PWR DN ENA
  - S18 – HMDA OPEN/CLOSE
- SSP 2
  - CB 4
    - S16 – CAB DEPRESS VLV OPEN/CLOSE
    - S17 – SMOKE SENSOR TEST/RESET
    - S18 – SMOKE SENSOR A ENA/INH
    - S22 – SEC DC BUS

**F1**

- PAYLOAD TIMING BUFFER
- PDIP – S2 DC PWR 2
- PDIP – S3 KUBAND RATE

**AUX PL A**

- SPACEHAB FSCU EMER 1 BUS (REDUN PWR)
- SSP 2
  - S13 – FIRE SUPPR FSCU ARM/SAFE
  - S14 – FIRE SUPPR FSCU DISCH
  - S20 – MAIN PWR KILL
  - S21 – PDU SS DC BUS ON/OFF
  - S23 – FWD INVERTER ON
  - S24 – PDU EXP DC BUS ON/OFF
- SPACEHAB MCP EMER 2 BUS (REDUN PWR)
- SSP 2
  - S15 – CAB DEPRESS VLV ARM
  - S19 – SMOKE SENSOR B ENA

**MNA R14**

- CCTV – VSU

9-5 PL OPS/107/FIN A,2

**MNB DA2**

- MNB MPC2
- CABIN PL1 (REDUN POWER AVAILABLE)
- CABIN PL2 (REDUN POWER AVAILABLE)
- CABIN PL3 (REDUN POWER AVAILABLE)

**MNB APC 5**

- MNB APC 2
- AFT PL B
- SPACEHAB FSCU EMER 1 BUS (REDUN POWER)
- SPACEHAB MCP EMER 2 BUS (REDUN POWER)

**MNB FPC 2**

- AC2
- DTV VIP
- PCMMU 2 (REDUN POWER)
- MNB FLC 2
- RSP 1

**MNB ML86B (MUP DC)**

- ML85E (MUP)
- BRIC PWR
- BIOPACK PWR
- OSTEO PWR

**MNB R14**

- KU BAND – SPA

**MNB O15**

- DC UTIL PWR F1/MO13Q
- CMPG PWR
- CEBAS PWR
- PL PRI (REDUN POWER AVAIL)

**MNC DA3**

- MNC FPC 2
- PL RCDR (REDUN POWER)
- PCMMU 1 (REDUN POWER)
- FDI (REDUN POWER)
- AC3
- MNC FLC 3
- PSP 2
- MNC R14
- KU BAND – EA1 AND DA
- MNC O16
- PL AFT MNB CNTRL PWR (REDUN POWER AVAILABLE)
- DC UTIL PWR A11A15/MO38F
- SOLSE PGSC/BIA (LOSS OF OPERATIONAL POWER)
- MEIDEX PGSC (LOSS OF REDUNDANT CONTROL POWER)
- PL PRI (REDUN POWER AVAILABLE)
- SPACEHAB MAIN PWR
- FREESTAR EXP & AV PWR

9-6 PL OPS/107/FIN A,1

**MDM LOSS IMPACTS**

**FF1**

- Uplink Through NSP 1 (Secondary)

**FF3**

- Uplink Through NSP 2 (Primary)

**PF1(PL1)**

- Spacehab Cmd Path via PSP 1
- FREESTAR Cmd Path via PSP1
- Ku-Band Antenna Cntl
- OARE Discrete Commands
- Record Ready
- Quiet Mode
- Re-entry Mode
- Spacehab Discrete Commands
- Water Pump 2 to Orbiter
- Water Pump 2 to Inverter
- Water Pump 1 On/Water Pump 2 Off
- Water Pump 2 On/Water Pump 1 Off
- FSS Arm (MCP)
- FSS Safe (MCP)
- ARS Fan On
- ARS Fan Off
- HFA Fan #1 Off
- HFA Fan #2 On
- Spacehab Discrete Monitors
- Smoke Sensor A Alarm
- Smoke Sensor B Alarm
- Water Pump 1 Off/On
- Water Pump 2 Off/On
- FSS Discharged
- FSS Arm/Safe (MCP)
- FSS Arm/Safe (FSCU)
- Multi-Bottle Halon Discharge
- Spacehab Analog Monitors
- PP02 #2
- PPCO2 #2
- Orbiter Water Line Htr Current

**PF2(PL2)**

- Uplink cmd to CCTV – VSU AND CCTV CAMERAS
- Spacehab Redundant Command Path via PSP 2
- Spacehab Analog Monitor
- Orbiter Waterline Htr Status
- Spacehab Discrete Command
- FSS Discharge (FSCU)
- C/W Annunciation (PL CAUTION Alarm)

**OF1**

- Ku-Band Gyro Temp
- PCMMU 1 FORMAT mon
- PCMMU PWR 1,2 mon
- BFS Auto TFL
- PL AUX A RPC ON mon

**DSC OF1**

- Ku-Band Gyro Temp
- PCMMU 1 – Mode Select

9-7 PL OPS/107/FIN A

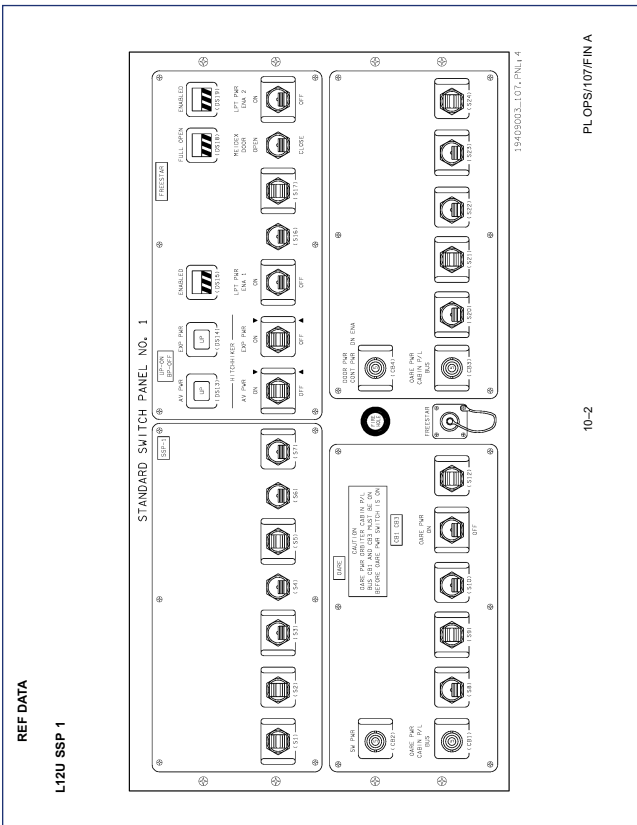
|                |   |
|----------------|---|
| <b>OF2</b>     | PSP 1,2 – Bit & Frame Sync<br>PCMMU 2 FORMAT mon<br>PL AUX B RPC ON/OFF mon   |
| <b>DSC OF2</b> | PCMMU 2 – Mode Select   |
| <b>OF3</b>     | Orbiter Comm Telemetry (S-Band PM/FM, Ku-Band, UHF, NSP 1&2, COMSEC)<br>GCIL Telemetry (revert to panel)<br>PL PRI FC3 ON tim<br>MNB ON tim<br>MNC ON tim<br>Ku-Band Alpha/Beta Gimbal Temp   |
| <b>DSC OF3</b> | Ku-Band Alpha Gimbal Temp   |
| <b>OF4</b>     | KU-BAND RADAR PWR mon<br>S-BAND (P/L, PM, FM) & KU-BAND CONTROL mon<br>Orbiter Comm – GCIL Driver Telemetry (S-Band PM, P/L, FM, Ku-Band, CCTV)<br>PSP, PI, GCIL, COMSEC – ON/OFF Telemetry<br>CAB P/L MNA(MNB) ON tim<br>PL AUX ON tim |
| <b>DSC OF4</b> | No P/L impacts  |
| <b>DSC OM2</b> | Ku-Band Beta Gimbal Temp  |
| <b>OA1</b>     | No P/L impacts  |
| <b>DSC OA1</b> | No P/L impacts  |
| <b>OA2</b>     | PL AFT MNB PWR ON mon<br>PL AFT MNB AMPS mon  |
| <b>DSC OA2</b> | No P/L impacts  |
| <b>OA3</b>     | PL AFT MNC ON mon<br>PL AFT MNC AMPS mon  |
| <b>DSC OA3</b> | No P/L impacts  |

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|  |       |
|--|-------|
| <b>REFERENCE DATA</b>                      |       |
| L12U SSP 1 .....                           | 10-2  |
| FREESTAR SSP L12U SWITCH ASSIGNMENTS ..... | 10-3  |
| L12L SSP 2 .....                           | 10-5  |
| SPACEHAB SSP L12L SWITCH ASSIGNMENTS ..... | 10-6  |
| C3A5 PAYLOAD SAFING .....                  | 10-10 |
| SPACEHAB C3A5 SWITCH ASSIGNMENTS .....     | 10-10 |
| PGSC FAILURE RECOVERY OPTIONS .....        | 10-11 |

10-1 PL OPS/107/FIN A

REF DATA



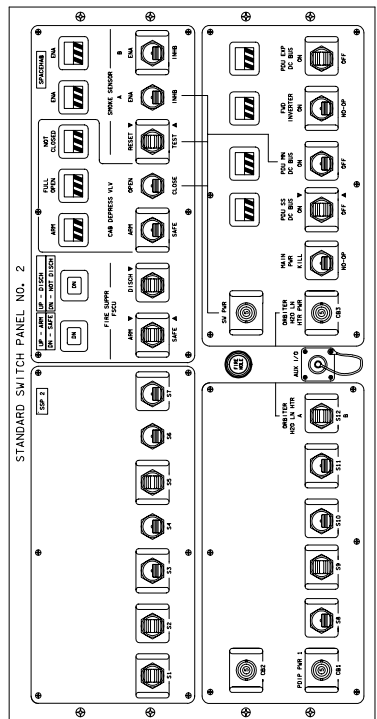
| <b>FREESTAR SSP L12U SWITCH ASSIGNMENTS</b> |                    |   |   |
|---|--------------------|---|---|
| CONTROL LABEL                               | DEVICE TYPE        | POSITION - FUNCTION   | USAGE (TIME AND FREQUENCY)  |
| S13   | HITCHHIKER AV PWR  | Three-position toggle switch with wicket cover: (up, down – momentary, center – maintained) | ON (up) – Closes latching relay K9 applying PL PRI power to HH avionics during activation and deactivation<br>Not labeled (center) – Not wired<br>OFF (down) – Opens latching relay K9 unpowering HH avionics |
| DS13  |                    | Three-position talkback   | UP – Indicates relay K9 closed, PL PRI power supplied to HH avionics<br>bp – Indicates power not supplied to the HH avionics<br>DN – not wired  |
| S14   | HITCHHIKER EXP PWR | Three-position toggle switch with wicket cover: (up, down – momentary, center – maintained) | ON (up) – Closes latching relay ZL applying PL PRI power to HH experiment power bus<br>Not labeled (center) – Not wired<br>OFF (down) – Opens latching relay K9 unpowering HH experiment power bus            |
| DS14  |                    | Three-position talkback   | UP – Indicates relay ZL closed, PL PRI power supplied to experiment power bus<br>bp – Indicates power not supplied to power bus<br>DN – not wired   |
| S15   | LPT PWR ENA 1      | Two-position toggle switch: (up, down – maintained)   | ON (up) – Removes one of the LPT transmitter inhibits<br>OFF (down) – Applies one of the LPT transmitter inhibits   |
| DS15  | ENABLED            | Two-position talkback   | gray – Indicates that one of the LPT transmitter inhibits has been removed<br>bp – Indicates that one of the LPT transmitter inhibits is in place   |
| S18   | MEIDEX DOOR        | Two-position toggle switch: (up, down – maintained)   | OPEN (up) – Provides power to open the MEIDEX HMDA<br>CLOSE (down) – Provides power to close the MEIDEX HMDA  |
| DS18  | FULL OPEN          | Two-position talkback   | gray – Indicates that the HMDA open limit switch has been tripped<br>bp – Indicates that the HMDA open limit switch has not been tripped  |
| S19   | LPT PWR ENA 2      | Two-position toggle switch: (up, down – maintained)   | ON (up) – Removes one of the LPT transmitter inhibits<br>OFF (down) – Applies one of the LPT transmitter inhibits   |

10-3 PL OPS/107/FIN A

FREESTAR SSP L12U SWITCH ASSIGNMENTS (Cont)

| CONTROLLABEL                        | DEVICE TYPE  | POSITION - FUNCTION   | USAGE (TIME AND FREQUENCY)  |
|-------------------------------------|--|---|---|
| DS19<br>ENABLED                     | Two-position talkback                                  | gray - Indicates that one of the LPT transmitter inhibits has been removed<br>bp - Indicates that one of the LPT transmitter inhibits is in place                     |   |
| CB4<br>DOOR PWR/CONT PWR<br>DN ENA  | Two-position circuit breaker                           | cl - Provides CAB PL3 power MEIDEX HMDA and to ZL relay open coil controlled by EXP PWR switch<br>op - Interrupts CAB PL3 power to ZL relay open coil and MEIDEX HMDA | Used to provide power to the MEIDEX HMDA during experiment ops. Also used to open the ZL relay and safe the HH experiment power bus in contingency situations when PRI PL power has been temporarily lost |
| J14<br>FREESTAR                     | Connector  | FGSC/Bus Interface Adapter (BIA) connection for command and data bus interface to SOLSE   |   |
| CB 1<br>OARE PWR<br>CABIN PL<br>BUS | Two-position circuit breaker                           | cl - Provides CAB PL 2 power to OARE via S11. This is 1 of 2 req'd feeds for OARE power<br>op - Removes 1 of 2 power feeds to OARE via S11                            | Closed during ascent and opened after reaching orbit and then closed a 2nd time prior to SOFBALL ops  |
| CB 3<br>OARE PWR<br>CABIN PL<br>BUS | Two-position circuit breaker                           | cl - Provides CAB PL 2 power to OARE via S11. This is 1 of 2 req'd feeds for OARE power<br>op - Removes 1 of 2 power feeds to OARE via S11                            | Closed during ascent and opened after reaching orbit and then closed a 2nd time prior to SOFBALL ops  |
| S11<br>OARE PWR<br>ON               | Two-position toggle switch:<br>(up, down - maintained) | ON (up) - Provides CAB PL 2 power to OARE<br>OFF (down) - Removes CAB PL 2 power from OARE  | On during ascent and Off after reaching orbit and then On a 2nd time prior to SOFBALL ops   |

10-4 PL OPS/107/FIN A,3



L12L SSP 2

4686802-107L\_PNL 2

10-5

PL OPS/107/FIN A,2

SPACEHAB SSP L12L SWITCH ASSIGNMENTS

| ITEM  | TYPE DEVICE  | FUNCTION   | USAGE (TIME AND FREQUENCY)   |
|---|--|--|--|
| CB1<br>PDIP PWR 1                                       | Circuit breaker, 5-ampere:<br>IN - closed<br>OUT - open with wickets     | IN - Applies orbiter pwr to PDIP DC PWR 1 SW and J2 connector<br>OUT - Removes orbiter pwr from PDIP DC PWR 1 SW and J2 connector  |  |
| S12<br>ORBITER H2O<br>LN HTR<br>A<br>(not labeled)<br>B | Three position sw:<br>(Maintained-Maintained-Maintained)<br>with wickets | A - Applies pwr to ORBITER H2O LN HTR, sys A<br>Center - Turns off heaters<br>B - Applies pwr to ORBITER H2O LN HTR, sys B   | Used to prevent line freezing after failure results in H2O flow being lost to PHX<br>This is normal sw position<br>Used to prevent water line freezing after failure of orbiter heater set A                           |
| CB3<br>ORBITER H2O<br>LN HTR PWR                        | Circuit breaker, 5-ampere:<br>IN - closed<br>OUT - open with wickets     | IN - Applies 28 VDC pwr to ORBITER H2O LN HTR sw (S12) and heater current sensor<br>OUT - Removes 28 VDC pwr from ORBITER H2O LN HTR sw (S12) and sensor   | Used to prevent line freezing after failure results in H2O flow being lost to PHX<br>This is normal cb position  |
| S13<br>FIRE SUPPR FSCU ARM                              | Momentary sw, 3 positions  | ARM - Applies 28 VDC command to FSS discharge logic within FSCU. This command combined with DISCHARGE command, detonates Halon bottles<br>SAFE - Removes 28 VDC command above, which interrupts ARM command or DISCHARGE command | Used when extinguishing confirmed fire during orbit or manned ground operations<br>Used when safing firing circuitry after an inadvertent ARM command or discharge of bottles during orbit or manned ground operations |
| DS13<br>FIRE SUPPR FSCU ARM                             | Event indicator, 3 positions:<br>Down<br>Up<br>bp - unpowered            | Provides status of FSS firing circuitry in FSCU<br>Down - SAFE<br>Up - ARM<br>bp - unpowered   | Used when preparing to fire Halon bottles to extinguish a fire   |
| S14<br>FIRE SUPPR FSCU DISCH                            | Momentary sw, 3 positions  | DISCHARGE - Applies 28 VDC command to FSS discharge logic within FSCU. This command detonates Halon bottles once ARM command is present<br>Other two switch positions not used   | Used when extinguishing confirmed fire during orbit or manned ground operations  |
| DS14<br>FIRE SUPPR FSCU DISCH                           | Event indicator, 3 positions:<br>Up<br>Down<br>bp                        | Provides status of Halon bottles<br>Up - 9 bottles have discharged<br>Down - Less than 9 bottles have discharged<br>bp - unpowered   | Used after DISCHARGE command has been issued to determine if enough bottles have discharged to extinguish fire   |

10-6 PL OPS/107/FIN A,2

SPACEHAB SSP L12L SWITCH ASSIGNMENTS (Cont)

| ITEM                               | TYPE DEVICE  | FUNCTION   | USAGE (TIME AND FREQUENCY)  |
|------------------------------------|--|--|---|
| S15<br>CAB DEPRESS VLV             | Toggle sw, 2 positions:<br>(Maintained-Maintained) | ARM - Applies 28 VDC command to CDV control logic within MCP. This command combined with OPEN command from S16 opens CDV<br>SAFE - Removes 28 VDC pwr from CDV control logic. This position not electrically wired                 | Used when venting SH module to extinguish a fire after FSS has failed, or when toxic agents are present in SH module, during orbit operations<br>Used when safing CDV control logic after an inadvertent ARM command. This is normal position of switch         |
| DS15<br>CAB DEPRESS VLV ARM        | Event indicator, 2 positions:<br>gray<br>bp        | gray - (ARM) indicates CDV control logic has been armed<br>bp - (SAFE) indicates CDV control logic has not received power and valve is safed   | Indicates status in response to command from S15  |
| S16<br>CAB DEPRESS VLV             | Toggle sw, 2 positions:<br>(Maintained-Maintained) | OPEN - Applies 28 VDC command to CDV control logic in MCP which opens CDV if ARM command from S15 present<br>CLOSED - Applies 28 VDC command to CDV control logic in MCP which closes CDV if ARM command present                   | Used when venting SH module to extinguish a fire after FSS has failed, or when toxic agents are present in SH module, during orbit operations<br>Used after CDV has been opened (see above) to close valve and status module. This is normal position of switch |
| DS16<br>CAB DEPRESS VLV FULL OPEN  | Event indicator, 2 positions:<br>gray<br>bp        | gray - (Full open) indicates CDV has reached full open position<br>bp - (Not full open) indicates CDV has not reached full open position   | Used to indicate status of CDV in response to command from S16  |
| DS17<br>CAB DEPRESS VLV NOT CLOSED | Event indicator, 2 positions:<br>gray<br>bp        | gray - (Not closed) indicates CDV not closed (partially open)<br>bp - (Closed) indicates CDV closed  | Used to indicate status of CDV in response to cabin pressure alarm or command from S16  |
| S17<br>SMOKE SENSOR                | Momentary sw, 3 positions                          | TEST - Applies 28 VDC test input to both smoke sensors causing them to produce an alarm signal if sensors checkout<br>RESET - Applies 28 VDC signal to reset input of both smoke sensors returning them to normal operational mode | Verification of smoke sensors during module activation or fire suppression procedures<br>Used after verification of smoke sensors during module activation and to confirm smoke alarm once it has occurred during orbital operations                            |

10-7 PL OPS/107/FIN A

**SPACEHAB SSP L12L SWITCH ASSIGNMENTS (Cont)**

| ITEM                       | TYPE DEVICE  | FUNCTION   | USAGE<br>(TIME AND FREQUENCY)   |
|----------------------------|--|--|---|
| S18<br>SMOKE SENSOR A      | Toggle sw, 2 positions:<br>(Maintained-Maintained)     | ENA – Applies 28 VDC to relay inside FSCU which allows Smoke Sensor A alarm signal to travel to the CWEA and the MDM<br><br>INH-B – Other switch position not wired to the SH. However, inhibit signal occurs by removing 28 VDC from above relay at this switch position  | Used to return Smoke Sensor A to its normal operational state, after it has been inhibited. This is normal position of switch<br><br>Used to verify Smoke Sensor B during module activation and to confirm smoke alarm, once it has occurred, during orbit operations |
| DS18<br>SMOKE SENSOR A ENA | Event indicator, 2 positions:<br>gray<br>bp            | ENA – Smoke Sensor A Enabled<br>bp – Smoke Sensor A is Inhibited   | Used to verify Smoke Sensor A status during SH activation and to confirm smoke alarm during orbit operations  |
| S19<br>SMOKE SENSOR B      | Toggle sw, 2 positions:<br>(Maintained-Maintained)     | ENA – Applies 28 VDC to relay inside the MCP which allows Smoke Sensor B alarm signal to travel to the CWEA and the MDM<br><br>INH-B – Other switch position not wired to SH. However, inhibit signal occurs by removing 28 VDC from above relay at this switch position   | Used to return Smoke Sensor B to its normal operational state, after it has been inhibited. This is normal position of switch<br><br>Used to verify Smoke Sensor A during module activation and to confirm smoke alarm, once it has occurred, during orbit operations |
| DS19<br>SMOKE SENSOR B ENA | Event indicator, 2 positions:<br>gray<br>bp            | ENA – Smoke Sensor B Enabled<br>bp – Smoke Sensor B Inhibited  | Used to verify Smoke Sensor B status during SH activation and to confirm smoke alarm during orbit operations  |
| CB4<br>SW PWR              | Circuit Breaker—5 ampere:<br>IN – closed<br>OUT – open | IN – Applies orbiter power to CAB DEPRESS VLV (S16), SMOKE SENSOR (S17), SMOKE SENSOR A (S18), PDU MN DC BUS (S22)<br><br>OUT – Removes power from CAB DEPRESS VLV (S16), SMOKE SENSOR (S17), SMOKE SENSOR A (S18), PDU MN DC BUS (S22)  | This is normal cb position<br><br>This is normal position of switch   |
| S20<br>MAIN PWR            | Toggle sw, 2 positions:<br>(Maintained-Maintained)     | KILL – Applies 28 VDC command to open PDU relays K1, K13, K14, K15, K16, K18, K21, and APOU relays AK1-AK20, AK31, and AK32 pwr contactors 1,2. This effectively removes AC and DC pwr from all SH subsystem and experiment equipment except ARS fan, Water Pump 2, and emergency bus powered equipment<br><br>NO-OP – not wired to SH | Used to remove pwr from SH module after confirmed fire or during contingency safing operations<br><br>This is normal position of switch   |

10-8

PL OPS/107/FIN A

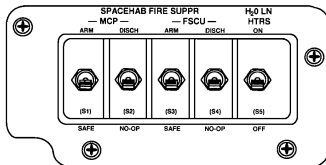
**SPACEHAB SSP L12L SWITCH ASSIGNMENTS (Cont)**

| ITEM                   | TYPE DEVICE  | FUNCTION   | USAGE<br>(TIME AND FREQUENCY)   |
|------------------------|--|--|---|
| S21<br>PDU SS DC BUS   | Momentary sw, 3 positions                          | ON – Applies 28 VDC command to close PDU relays K13,K14 which enables distribution of DC pwr to SH subsystem<br><br>Not wired<br><br>OFF – Applies 28 VDC command to open above relays removing pwr from SH subsystem equipment<br><br>gray – Indicates both PDU relays K13,K14 closed | Subsystem will remain ON for duration of mission<br><br>Nominal position<br><br>Used during off nominal total module deactivation                       |
| DS21<br>SS DC BUS      | Event indicator, 2 positions:<br>gray<br>bp        | gray – Indicates both PDU relays K13,K14, or both open<br>bp – Indicates both PDU relays K13,K14, or both open   | Indicates status in response to command from S21  |
| S22<br>PDU MN DC BUS   | Toggle sw, 2 positions:<br>(Maintained-Maintained) | ON – Used to activate PDU pwr contactor 1 and relay K15 which allow distribution of main DC feed<br><br>OFF – Applies 28 VDC command to open above relays removing main DC power from subsystems and experiments   | Used during SH module activation. Switch will remain in ON position for duration of mission<br><br>Used during off nominal total SH module deactivation |
| DS22<br>PDU MN DC BUS  | Event indicator, 2 positions:<br>gray<br>bp        | gray – Indicates PDU pwr contactor 1 open<br>bp – Indicates PDU pwr contactor 1 closed   | Indicates status in response to command from S22. PDU relay K15 not statused by this indicator  |
| S23<br>FWD INVERTER    | Toggle sw, 2 positions:<br>(Maintained-Maintained) | ON – Applies 28 VDC command to close PDU relay K1 which sends DC pwr to inverter for AC conversion<br><br>NO-OP – Switch position not wired to SH  | Redundant method to turn ON inverter, with MCDS being primary method<br><br>This is normal position of switch   |
| DS23<br>FWD INVERTER   | Event indicator, 2 positions:<br>gray<br>bp        | gray – Indicates PDU relay K1 closed<br>bp – Indicates PDU relay K1 open   | Indicates status in response to command from S23 or MCDS  |
| S24<br>PDU EXP DC BUS  | Toggle sw, 3 positions:<br>(Maintained-Maintained) | ON – Applies 28 VDC command to close PDU pwr contactor 2 and relay K16 which allow distribution of DC pwr to locker and rack experiments<br><br>Not wired<br><br>OFF – Applies 28 VDC command to above relays removing DC pwr from all experiments                                     | Left ON for duration of mission<br><br>Used during off nominal total SH module deactivation   |
| DS24<br>PDU EXP DC BUS | Event indicator, 2 positions:<br>gray<br>bp        | gray – Indicates PDU pwr contactor 2 closed<br>bp – Indicates PDU pwr contactor 2 open   | Indicates status in response to command from S24 or MCDS. PDU relay K16 not statused by this indicator  |

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PL OPS/107/FIN A

**C3A5 PAYLOAD SAFING**



**SPACEHAB C3A5 SWITCH ASSIGNMENTS**

| ITEM                                     | TYPE DEVICE   | FUNCTION  | USAGE<br>(TIME AND FREQUENCY) |
|--|---|---|-------------------------------|
| S1<br>SPACEHAB FIR SUPPR MCP ARMSAFE     | Two-position toggle switch: (up, down – maintained) | ARM (up) – Sends Arming signal to MCP FSS Discharge Circuitry which closes ground path for pyro circuit<br>SAFE (down) – Sends Safing signal to MCP FSS Discharge Circuitry | Contingency use only          |
| S2<br>SPACEHAB FIR SUPPR MCP DISCHNO-OP  | Two-position toggle switch: (up, down – maintained) | DISCH (up) – Sends Fire signal to MCP FSS Discharge circuitry. If circuit is armed, will send firing pulses to pyro circuits<br>NO-OP (down) – not wired                    | Contingency use only          |
| S3<br>SPACEHAB FIR SUPPR FSCU ARMSAFE    | Two-position toggle switch: (up, down – maintained) | ARM (up) – Sends arm signal to FSCU FSS Discharge Circuitry, and closing ground path for pyro circuit<br>SAFE (down) – Removes arm signal from FSCU FSS Discharge Circuitry | Contingency use only          |
| S4<br>SPACEHAB FIR SUPPR FSCU DISCHNO-OP | Two-position toggle switch: (up, down – maintained) | DISCH (up) – Sends Fire signal to FSCU FSS Discharge circuitry. If circuit is armed, will send firing pulses to pyro circuits<br>NO-OP (down) – not wired                   | Contingency use only          |
| S5<br>H <sub>2</sub> O LN HTRS           | Two-position toggle switch: (up, down – maintained) | ON (up) – Closes relays allowing PL AFT B to power SH Water Line heaters.<br>OFF (down) – not wired   | Contingency use only          |

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PL OPS/107/FIN A

**PGSC FAILURE RECOVERY OPTIONS**

| PGSC | FUNCTION                                 | CONFIGURATION [1]  | BACKUP HARDWARE (AS REQUIRED) [2]                       |
|------|--|--|---|
| ST51 | OCA                                      | 760XD PGSC ON SINGLE SLOT AC EXPANSION UNIT CONFIGURED WITH OCA PC MOD BOARD | 760XD PGSC, OCA PC BOARD, OCA HARDDRIVE, EXPANSION UNIT |
| ST52 | WINDECOM                                 | 760XD PGSC ON SINGLE SLOT AC EXPANSION UNIT CONFIGURED WITH PCMMU BOARD      | 760XD PGSC, EXPANSION UNIT, STS HARDDRIVE               |
| ST53 | PROSHARE                                 | 760XD PGSC ON SINGLE SLOT AC EXPANSION UNIT CONFIGURED WITH PROSHARE BOARD   | 760XD PGSC, EXPANSION UNIT, STS HARDDRIVE [3]           |
| ST54 | WORLDMAP                                 | 760XD PGSC WITHOUT EXPANSION UNIT, DC POWER                                  | 760XD PGSC, STS HARDDRIVE                               |
| PL1  | MEIDEX                                   | 760XD PGSC WITHOUT EXPANSION UNIT, DC POWER                                  | 760XD PGSC, STS HARDDRIVE                               |
| PL2  | SOLSE-2                                  | 760XD PGSC WITHOUT EXPANSION UNIT, DC POWER                                  | 760XD PGSC, STS HARDDRIVE, BIA                          |
| PL3  | SH SUBSYSTEM, HLS PHAB-4 BAR CODE READER | 760XD PGSC ON SINGLE SLOT AC EXPANSION UNIT WITH RS-422 BOARD                | 760XD PGSC, EXPANSION UNIT, STS HARDDRIVE [4]           |
| PL4  | AST, MGM, BDS-65, & ZCG                  | 760XD PGSC WITHOUT EXPANSION UNIT, DC POWER                                  | 760XD PGSC, STS HARDDRIVE                               |
| PL5  | CM-2                                     | 760XD PGSC WITHOUT EXPANSION UNIT, DC POWER (WINDOWS 95 OS)                  | 760XD PGSC [5], CM-2 HARDDRIVE                          |
| PL6  | VCD FE                                   | 760XD PGSC WITHOUT EXPANSION UNIT, DC POWER (WINDOWS 95 OS)                  | 760XD PGSC [5], VCD-FE HARDDRIVE                        |
| HLS  | HLS MPFE                                 | CUSTOMER SUPPLIED 75SC THINKPAD WITHOUT EXPANSION UNIT, DC POWER             | N/A   |
| ARMS | ARMS                                     | CUSTOMER SUPPLIED 760ED THINKPAD WITHOUT EXPANSION UNIT, DC POWER            | 760XD PGSC, ARMS HARDDRIVE                              |

[1] All PGSCs are loaded with Microsoft Windows '98 OS unless specified otherwise

[2] On-board backup PGSC hardware includes:  
Two IBM Thinkpad 760XD laptops with STS load harddrives  
Single Slot AC Expansion Unit with PCMMU board  
OCA PC MOD board  
OCA load harddrive (has STS load on separate partition)  
STS load harddrive  
Spare BIA  
CM-2 harddrive (Windows '95)  
VCD-FE harddrive (Windows'95)  
ARMS harddrive

[3] There is no backup Proshare board. The Proshare board provides video teleconferencing capability

[4] There is no backup RS-422 board. The RS-422 board provides capabilities for SH subsystem monitoring and SH video system control. Subsystem monitoring capability is also available to the crew via the orbiter SPEC pages. Backup for SH video system control is only available via ground command

[5] May require CMOS reconfig using Windows 95 OS CMOS Flash diskette

10-11

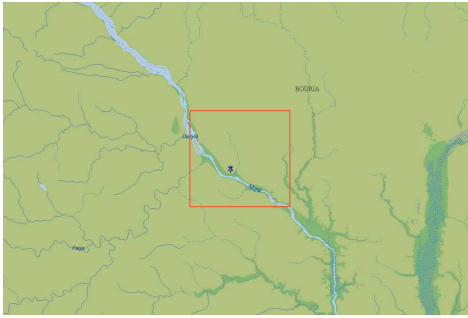
PL OPS/107/FIN A



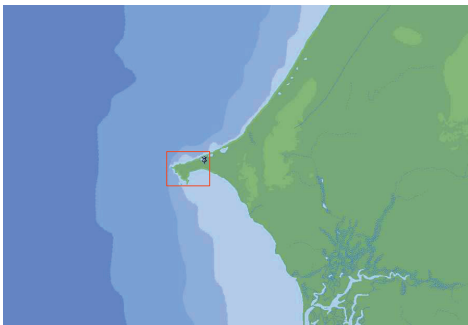




5. Niger River  
Lat.13°32'N, Long.2°40'E



6. Dakar, Coast Line  
Lat.14°44'N, Long.17°31'W



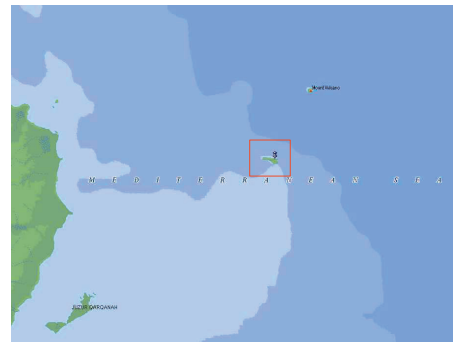
11-8

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7. Azores, Island  
Lat.38°32'N, Long.28°38'W



8. Lampedusa Island, Med.  
Lat.35°31'N, Long.12°38'E



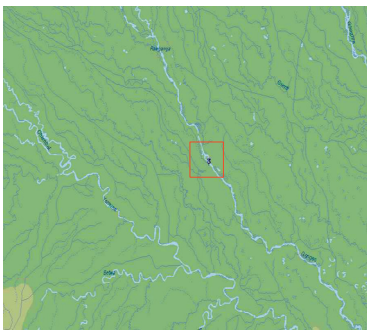
11-9

PL OPS/107/FIN A

9. Avignon, River Rhone  
Lat.43°23'N, Long.4°49'E



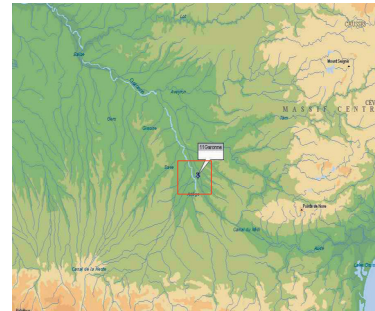
10. Kanpur, India, River Ganges  
Lat.26°45'N, Long.80°20'E



11-10

PL OPS/107/FIN A

11. Toulouse, River Garonne  
Lat.43°36'N, Long.1°25'E



12. Bermuda Island  
Lat.32°37'N, Long.64°47'W



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PL OPS/107/FIN A



TOP  
BACK OF 'MEIDEX RECORDING LOG'

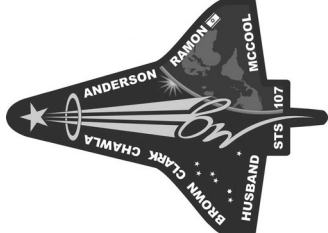
| HOOK<br>VELCRO |          | V10       |              | VTR/DSR-20 |              | MEIDEX VCR OFFSETS      |                         |                         | HOOK<br>VELCRO |  |
|----------------|----------|-----------|--------------|------------|--------------|-------------------------|-------------------------|-------------------------|----------------|--|
| Obs.<br>Type   | Orb<br># | Tape<br># | Time<br>Rem. | Tape<br>#  | Time<br>Rem. | VCR 1<br>Elapsed<br>Sec | VCR 2<br>Elapsed<br>Sec | VCR 3<br>Elapsed<br>Sec |                |  |
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**NOTE:** 2 copies reqd for flight  
PL OPS-1b/107/O/A

FAB USE ONLY                      (reduced copy)                      CC 12-4                      PL OPS/107/FIN A

Space Shuttle Program  
**FLIGHT DATA FILE**

JSC-48068-107  
FINAL REV A



**PAYLOAD OPS CHECKLIST**

**STS 107**

Flight Cover (firm bottom to expose tabs)

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