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

Verify this is the correct version for the pending operation (training, simulation or flight).
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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

Prepared by: _____ Book Manager _____ Lead, Cargo Support Operations Group

Approved by: _____ Chief, Cargo Integration and Operations Branch

Encl: 42 pages

File this PCN immediately behind the front cover as a permanent record

JSC–48068–107

MISSION OPERATIONS DIRECTORATE

PAYLOAD OPERATIONS CHECKLIST
STS–107

FINAL, REVISION A
June 7, 2002

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PL OPS/107/FIN A

Incorporates the following:			
482#:	PL OPS–1698A	PL OPS–1706	PL OPS–1712
	PL OPS–1699B	PL OPS–1707	PL OPS–1713
	PL OPS–1700C	PL OPS–1708	
	PL OPS–1703A	PL OPS–1709	
	PL OPS–1704B	PL OPS–1710	
	PL OPS–1705	PL OPS–1711	

AREAS OF TECHNICAL RESPONSIBILITY

Book Manager	DO53/T. Arnold	281–483–7431
FREESTAR	DO53/T. Arnold	281–483–7431
SPACEHAB	DO53/G. Humble	281–244–1070

PAYLOAD OPERATIONS CHECKLIST
STS–107

LIST OF EFFECTIVE PAGES

FINAL	04/12/02
REV A	06/07/02
PCN–1	06/25/02
PCN–2	11/15/02
PCN–3	12/20/02

* – Omit from flight book

PAYLOAD OPS CUE CARDS

– Color pages for crew copy only
* – Omit from flight book

CONTENTS PAGE

FREESTAR

FREESTAR

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
On MCC GO:

R1 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 ↑): *
* HITCHHIKER AV PWR tb fail, continue nominal ops *
* If PDI DECOM 2 – (↑): *
* 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 *

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

SOLSE PGSC/BIA SETUP

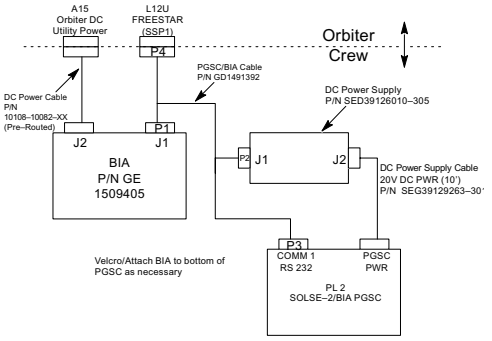
1. CONFIG PGSC/BIA
Unstow:

L11 BIA
PGSC/BIA cable
MF28O 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



4. BIA PWRUP

BIA 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 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

MF28O 9. Stow PL2 PGSC, DC Power Cable, DC Power Supply

L11 10. Stow BIA, PGSC/BIA cable

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

1. CHECK BIA CONFIG AND HRIU POWER

BIA
BIA PWR – ON
ENABLE 2 – ON
Log MET: ____/____:____:____

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
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

* 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

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 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

4. PWR HTR & DOOR POWER
Heater & Door Power – ENAB

After 45 sec,
Heater & Door Power – ON

5. 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

6. 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

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

1. CHECK BIA CONFIG AND HRIU POWER

BIA
BIA 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

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
PGSC 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

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)

* 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

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

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 *

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

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_Fltr 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 – 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 *

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

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

d. Dump Completion
00:00:00 L_Mode – Stby
S_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 *

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 *

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

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

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

PGSC SOLSE–2 software not on
BIA PWR – ON
ENABLE 2 – OFF (wait 5 sec)
ENABLE 2 – ON

Log MET:
____/____:____:____ ____/____:____:____ ____/____:____:____
____/____:____:____ ____/____:____:____ ____/____:____:____
____/____:____:____ ____/____:____:____ ____/____:____:____
____/____:____:____ ____/____:____:____ ____/____:____:____
____/____:____:____ ____/____:____:____ ____/____:____:____

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)

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

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

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 reqd

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)

8. SOLSE POWERUP & CALIBRATION

A4 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

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_Fltr 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 *

10. SOLSE DATA CHECK
Record number of SOLSE and LORE Packets Rcvd:

MET	SOLSE Packets Rcvd	LORE Packets Rcvd
___/____:____:____		
___/____:____:____		
___/____:____:____		
___/____:____:____		
___/____:____:____		
___/____:____:____		
___/____:____:____		
___/____:____:____		
___/____:____:____		
___/____:____:____		
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___/____:____:____		
___/____:____:____		
___/____:____:____		
___/____:____:____		
___/____:____:____		
___/____:____:____		
___/____:____:____		
___/____:____:____		
___/____:____:____		
___/____:____:____		

Voice number of SOLSE and LORE Data Packets Rcvd to ground

Press <ESC> to return to main menu

11. VENT VALVE CLOSING
HH–JR/SOLSE–2 Main Menu
Sel HH–JR/SOLSE–2 System Page

HH–JR/SOLSE–2 System Page

Vent Command – CLOSE

* If Vent Command – OPEN: *
* Vent Command – CLOSE (wait ≤ 45 sec, CLOSED) *

Press <ESC> to return to main menu

12. SOLSE FILTER TOGGLE
HH–JR/SOLSE–2 Main Menu
Sel SOLSE/LORE Telemetry Page
SOLSE/LORE Telemetry Page
Correct filter in place per Execute Package

If correct filter in place, notify MCC SOLSE SETUP complete and proceed to SOLSE SCIENCE

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

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

HH–JR/SOLSE–2 Command Page

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 degC, 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

HH–JR/SOLSE–2 Telemetry Page
After ~120 sec (VIS>UV) or ~290 sec (UV>VIS)
S_Filter – UV or VIS as reqd per Execute Package
S_Fltr_Stat – OK
S_Cmding – GO/OK

* If S_Filter – not UV or VIS as reqd per Execute Package *
* and S_Cmding – GO/OK: *
* Wait 60 sec *
* MCC *

Press <ESC> to return to main menu

Notify MCC SOLSE SETUP complete
Proceed to SOLSE SCIENCE

SOLSE SCIENCE

NOTE
Perform per Execute Package MET (NLT Terminator Rise (TR) –15 min (earth) and TR –10 (limb).

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 CONSTRAINT CHECK
Orbiter in attitude per Attitude Timeline
PLB lights OFF

2. 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) *

Heater & Door Power – ON
Commands transmitted incrementing

Press <ESC> to return to main menu

3. SOLSE/LORE SYNC CHECK
HH–JR/SOLSE–2 Main Menu
Sel SOLSE/LORE Telemetry Page

SOLSE/LORE Telemetry Page
SOLSE Status – In Sync
LORE Status – In Sync
SOLSE_Tec Temp: –10°C ± 1°C
S_Mode – Stby
L_Mode – Stby

Press <ESC> to return to main menu

4. SOLSE/LORE SCIENCE MODE INIT
HH–JR/SOLSE–2 Main Menu
Sel SOLSE/LORE Command Page

a. SOLSE Science Mode Init
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

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

b. LORE Science Mode Init
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

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

Press <ESC> to return to main menu

c. Science Mode Verification
HH–JR/SOLSE–2 Main Menu
Sel SOLSE/LORE Telemetry Page

SOLSE/LORE Telemetry Page
SOLSE Status – In Sync
LORE Status – In Sync
S_Mode – Sci
L_Mode – Sci

Press <ESC> to return to main menu

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) S_Execute Cmd Pending – Send (Sent) 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) S_Execute Cmd Pending – Send (Sent) 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) S_Execute Cmd Pending – Send (Sent) 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) S_Execute Cmd Pending – Send (Sent) 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) S_Execute Cmd Pending – Send (Sent) 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) S_Execute Cmd Pending – Send (Sent) 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) S_Execute Cmd Pending – Send (Sent) 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) L_Execute Cmd Pending – Send (Sent) 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) L_Execute Cmd Pending – Send (Sent) 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) L_Execute Cmd Pending – Send (Sent) 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) L_Execute Cmd Pending – Send (Sent) 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) L_Execute Cmd Pending – Send (Sent) 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) L_Execute Cmd Pending – Send (Sent) 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) L_Execute Cmd Pending – Send (Sent) wait ≤ 45 sec, L_Last Cmd Executed: L_Return to initial IT

* 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

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

#	Command Name	Execution Steps
A	S_Forward IT 1	S_Forward IT 1 – Send (wait ≤ 45 sec, Pending) S_Execute Cmd Pending – Send (Sent) wait ≤ 45 sec, S_Last Cmd Executed: Forward IT 1
B	S_Forward IT 2	S_Forward IT 2 – Send (wait ≤ 45 sec, Pending) S_Execute Cmd Pending – Send (Sent) wait ≤ 45 sec, S_Last Cmd Executed: Forward IT 2
C	S_Forward IT 3	S_Forward IT 3 – Send (wait ≤ 45 sec, Pending) S_Execute Cmd Pending – Send (Sent) wait ≤ 45 sec, S_Last Cmd Executed: Forward IT 3
D	S_Back IT 1	S_Back IT 1 – Send (wait ≤ 45 sec, Pending) S_Execute Cmd Pending – Send (Sent) wait ≤ 45 sec, S_Last Cmd Executed: Back IT 1
E	S_Back IT 2	S_Back IT 2 – Send (wait ≤ 45 sec, Pending) S_Execute Cmd Pending – Send (Sent) wait ≤ 45 sec, S_Last Cmd Executed: Back IT 2
F	S_Back IT 3	S_Back IT 3 – Send (wait ≤ 45 sec, Pending) S_Execute Cmd Pending – Send (Sent) 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) S_Execute Cmd Pending – Send (Sent) 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) L_Execute Cmd Pending – Send (Sent) wait ≤ 45 sec, L_Last Cmd Executed: Forward IT 1
I	L_Forward IT 2	L_Forward IT 2 – Send (wait ≤ 45 sec, Pending) L_Execute Cmd Pending – Send (Sent) wait ≤ 45 sec, L_Last Cmd Executed: Forward IT 2
J	L_Forward IT 3	L_Forward IT 3 – Send (wait ≤ 45 sec, Pending) L_Execute Cmd Pending – Send (Sent) wait ≤ 45 sec, L_Last Cmd Executed: Forward IT 3
K	L_Back IT 1	L_Back IT 1 – Send (wait ≤ 45 sec, Pending) L_Execute Cmd Pending – Send (Sent) wait ≤ 45 sec, L_Last Cmd Executed: Back IT 1
L	L_Back IT 2	L_Back IT 2 – Send (wait ≤ 45 sec, Pending) L_Execute Cmd Pending – Send (Sent) wait ≤ 45 sec, L_Last Cmd Executed: Back IT 2
M	L_Back IT 3	L_Back IT 3 – Send (wait ≤ 45 sec, Pending) L_Execute Cmd Pending – Send (Sent) 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) L_Execute Cmd Pending – Send (Sent) 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

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 (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 *
* 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 *
* 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

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 (Sent)
Wait ≤ 45 sec, S_Last Cmd Executed: S_Enter Dump Mode

* 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 (Sent)
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

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

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

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

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

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

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

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

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

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

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

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 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)

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

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_Fltr_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 *

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

2. DATA CHECK
Record number of SOLSE and LORE Packets Rcvd

MET	SOLSE Packets Rcvd	LORE Packets Rcvd
___/___:___:___		
___/___:___:___		
___/___:___:___		
___/___:___:___		
___/___:___:___		
___/___:___:___		
___/___:___:___		
___/___:___:___		
___/___:___:___		
___/___:___:___		
___/___:___:___		
___/___:___:___		
___/___:___:___		
___/___:___:___		
___/___:___:___		
___/___:___:___		

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

BIA
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

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

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

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                               *
```

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

* 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
BIA
ENABLE 2 – OFF
PWR – OFF

Verify cables securely configured per SOLSE PGSC/BIA SETUP

Wait 5 sec

PWR – ON
ENABLE 2 – ON

Log MET:
____/____:____:____ ____/____:____:____
____/____:____:____ ____/____:____:____
____/____:____:____ ____/____:____:____
____/____:____:____ ____/____:____:____

8. SOLSE SYSTEM RECOVERY
PGSC
PGSC – ON

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 *

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

SOLSE_TEC Temp: –10°C ± 1°C
S_Filter Position – VIS (if UV, MCC)
S_Fltr 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	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

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

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

Press <ESC> to return to main menu

12. SOLSE SCIENCE RECOVERY, if reqd
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 reqd
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

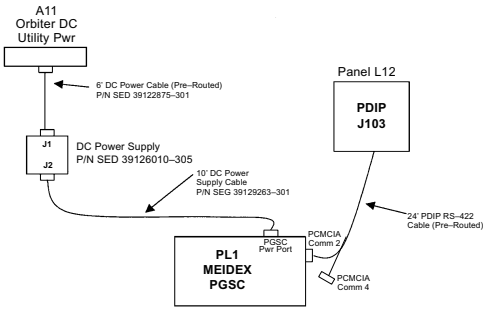
4. SOLSE POWERDOWN
HH–JR/SOLSE–2 System Page
SOLSE Primary Power – DISA (wait 45 sec, OFF)
HH–JR Polling – DISA (OFF)

Notify MCC, SOLSE CONTINGENCY SHUTDOWN complete
MCC for further action

MEIDEX PGSC SETUP

1. UNSTOW
Unstow:
MF28O PL 1 MEIDEX PGSC
PCMCIA RS422 Comm Card
PCMCIA RF LANCard
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

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
PGSC 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

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 reqd to execute if cmd and/or telemetry capability at POCC is lost

1. PGSC CONFIG
PGSC 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 *

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

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
L12U cb DOOR PWR CONT PWR DN ENA – cl

R14 Camera D Illuminator ON, if reqd (TV Cue Card, ILLUMINATOR OPS)
A7 VID OUT pb – MON 1
IN pb – D
ALC pb – press
AVG pb – press
VID OUT pb – ANALOG DNLK
IN pb – D
PAN (TILT,ZOOM) as reqd to view MEIDEX Door

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 – DTV/MON 2
IN pb – XYBION (MD)

5. SEKAI POWERUP
PGSC Sel RelayCmds (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 DNLK
(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
MON 2 Xybion video signal displayed

* 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)

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

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

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

b. MET "Time" Check
MON 2 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
MON 2 Filter: 3

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

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
MON 2 Filter and display changing

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
ON/STANDBY pb – press (red LED on)
L10(VIP) PWR – OFF (LED off)
(MUX) 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 RelayCmds (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

DigitalTelemetry
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

DigitalTelemetry
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

DigitalTelemetry
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

DigitalTelemetry
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

DigitalTelemetry
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

DigitalTelemetry
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

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 DigTlm (closes Digital Telemetry Page)

15. V10 CONFIG
V10 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
If Truss Angle > | 2 |:
Enter Truss Point Commanding: X (X = ± value reqd to return to 0)
Sel Xmit
Verify truss moving on monitors
PGSC Truss angle = 0 deg ± 2.0

Sel TrussCntrl (closes Truss Pointing Display)

PGSC 17. CAMERA DEACT
Sel XybCmd (brings up XybionCmdForm display)
Sel XybTlm (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 XybTlm (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\RawTlmData<MMDDYYYYhhmm>.bin (211 kb) – Downlink all RawTlmData 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)

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, MEIDEX CHECKOUT complete

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

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

1. TIMER SETUP
A4 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 Tlm – 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

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

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
AutoTlm – 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 XybTlm (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 3. DOOR OPENING, if reqd
L12U 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

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

After 35 sec, MEIDEX DOOR FULL OPEN tb – gray
MON 1 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 XybionTlm (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 *
* IMC>R *
* On Monitor 2, Filter variable *

* 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 XybionTlm (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)

Truss Pointing Display
PGSC 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 dnlk:
MUX/VTR/CC PWR – on (LED on)
MUX BYPASS – VTR DNLK
(VIP) PWR – on (LED on)
DSR–20 ON/STANDBY LED green
REC pb – press, hold
PLAY pb – press simo (red dot displayed)

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

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

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 DigTlm (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)? 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) 2) Sprites visible above lightning (yes/no)? 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

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

11. IN CABIN RECORD STOP
V10 STOP pb – press
VTR/ 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

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

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

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)

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

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

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 <MMDDYYYYhhmm>.bin (211 kb) –
Downlink all RawTlmData 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)

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

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 OK *
* 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

1. DOOR POSITION CHECK
L12U 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)

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

XYBION ACTIVATION

1. XYBION PWRUP
Sel RelayCmds (brings up Relay Commanding Page)

PGSC Relay Commanding
Sel VideoBuff – On (RELAYK8 ON)
Sel Xmit
VideoBuff – green

Sel Xybion – On (RELAYK5 ON)
Sel Xmit
Xybion – green

MON 2 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 XybTlm (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

Sel XMIT

Xybion Camera Display
Prompt reads IMC>C D 01 DD 02
No error messages

MON 2 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

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 XybTlm (closes Xybion Camera Display)

MEIDEX PGSC STOW

1. POWER OFF PGSC AND UTILITY PANEL

PGSC Laptop pwr (side) – OFF
DC PWR SUPPLY – OFF (lt 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
Pwr cable from DC Power Supply J1
A11 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

MF28O 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

OARE

OARE

OARE ACT

L12U cb OARE PWR CAB P/L BUS CB3 – cl

cb OARE PWR CAB P/L BUS CB1 – cl
OARE PWR – ON

OARE DEACT

L12U OARE PWR – OFF
cb OARE PWR CAB P/L BUS CB1 – op

cb OARE PWR CAB P/L BUS CB3 – op

DEORBIT PREP

DEORBIT PREP

PAYLOAD DEACT

N/A

PAYLOAD REACT

On MCC GO:
L1 FLOW PROP VLV LOOP 1 – PL HX (tb–PL)

DEORBIT WAVEOFF

Perform FREESTAR ACTIVATION (FREESTAR)

Perform SOLSE PGSC/BIA SETUP (FREESTAR)

Go to SOLSE/HRIU ACTIVATION (FREESTAR)

PAYLOAD ENT SW LIST/VERIF

PAYLOAD PWR CONFIG
R1 PL CAB – MNA(MNB)
PRI MNB – ctr (tb–OFF)
FC3 – ctr (tb–OFF)
MNC – ctr (tb–ON)
AUX – ON
AFT MNB – ON
MNC – OFF

MA73C:E cb AC2 PL 3Φ – cl
AC3 PL 3Φ – cl

L12U (OARE)
OARE PWR – OFF
cb OARE PWR CAB P/L BUS CB1 – op
SW PWR – op

(FREESTAR)
HITCHHIKER AV PWR – ctr (tb–bp)
EXP PWR – ctr (tb–bp)
LPT PWR ENA 1 – OFF (tb–bp)
2 – OFF (tb–bp)

MEIDEX DOOR – CLOSE (tb–bp)
cb DOOR PWR/CONT PWR DN ENA – op
OARE PWR CAB P/L BUS CB3 – op

L12L (SSP–2)
ORB H2O LN HTR – ctr
cb PDIP PWR 1 – op

(SPACEHAB)
FIRE SUPPR FSCU (two) – ctr (tb–DN)
CAB DEPRESS VLV ARM/SAFE – SAFE (tb–bp)
OP/CL – CL
FULL OPEN tb – bp
NOT CL tb – bp
SMOKE SNSR RESET/TEST – ctr
A – ENA (tb–gray)
B – ENA (tb–gray)

MN PWR – NO–OP
PDU SS DC BUS – ctr (tb–gray)
PDU MN DC BUS – ON (tb–gray)
FWD INV – NO–OP (tb–gray)
PDU EXP DC BUS – ctr (tb–gray)
cb SW PWR – cl
ORB H2O LN HTR PWR – op

C3A5 SH FIRE SPPR MCP – SAFE
MCP – NO–OP
FSCU – SAFE
FSCU – NO–OP
H2O LINE HTRS – OFF

ML86B:E cb MNB MAR 1 – cl
2 – cl

ML85E
AC S1 – OFF
cb AC CB1 – op
DC 10 AMP MNB S2,S3 (two) – ON
cb DC 10 AMP MNB CB2,CB3 (two) – cl
DC 10 AMP MNB S4,S5 (two) – OFF
cb DC 10 AMP MNB CB4,CB5 (two) – op
PUMPS S6 – OFF
cb PUMPS CB6 – op
PUMPS CB7 – op

MO13Q
DC UTIL PWR MNB – ON

MIDDECK
(TEPC)
SW–1 – OFF

(Biopack)
MF28G/H
CENTRIF 1,2,3 (three) – ON
INCUB – ctr
RESET – ctr
COOLER – ctr
FREEZER ON/OFF – ctr
COOL/FREEZE – ctr
ETL – ctr
rotary sw – T COOLER
UP/DOWN – ctr
MAIN POWER – ON
POWER MAIN FAN – ON
COOLER/FREEZER – ON
INCUBATOR – ON
BIOPACK ELECTRONICS – ON
EXPERIMENT ELECTRONICS – ON
AUXILIARY – OFF

(CEBAS)
MF71C
cb PWR – on
PWR lt – on
RECORD lt – off

(OSTEO)
MF71G
cb CB1 – cl
S1 (four) – OFF (dn)
L1 lt (four) – off

(BRIC)
MF71O
cb CB1 – op (out)
POWER lt – off

(CMPCG)
MA16D
cb MAIN – cl
FAN – cl
BATT – cl
28V – cl
LCD – not blank
pb (four) – not blinking
FAN – running

CONTINGENCY EVA PL CONFIG

CONT EVA PL CONFIG

PRE–EVA PL CONFIG

SPACEHAB PREP
If Spacehab to remain isolated for remainder of mission:
Perform ENTRY PREP (RDM OPS)
If Spacehab will be reentered:
Perform SPACEHAB PREP FOR EVA (RDM OPS, CONTINGENCY PROCEDURES)

FREESTAR PREP
Visually verify MEIDEX, SOLSE, and SOLCON doors closed
MCC pwr removed from MEIDEX, SOLSE, and SOLCON doors

L12U
LPT PWR ENA 1 – OFF (tb–bp)
2 – OFF (tb–bp)

POST–EVA PL CONFIG

SPACEHAB RECONFIG
If Spacehab will be reentered:
Perform SPACEHAB RECONFIG POST EVA (RDM OPS, CONTINGENCY PROCEDURES)
Else, no actions reqd
Spacehab configured for entry

L12U
FREESTAR RECONFIG
LPT PWR ENA 1 – ON (tb–gray)
2 – ON (tb–gray)

CONT EVA PL CONFIG

ASC PWRDN RECOVERY

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

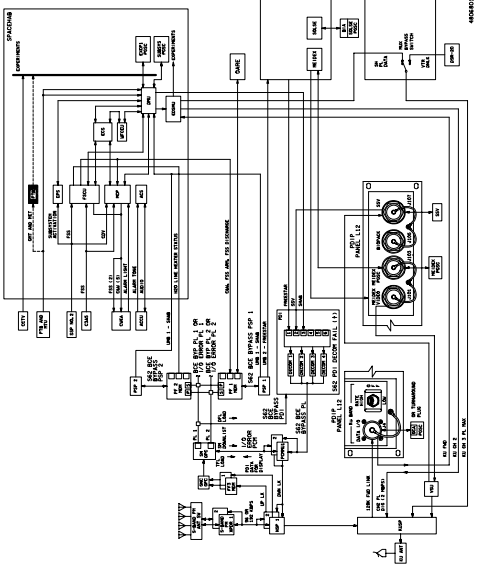
L12L 2. MN PWR – KILL

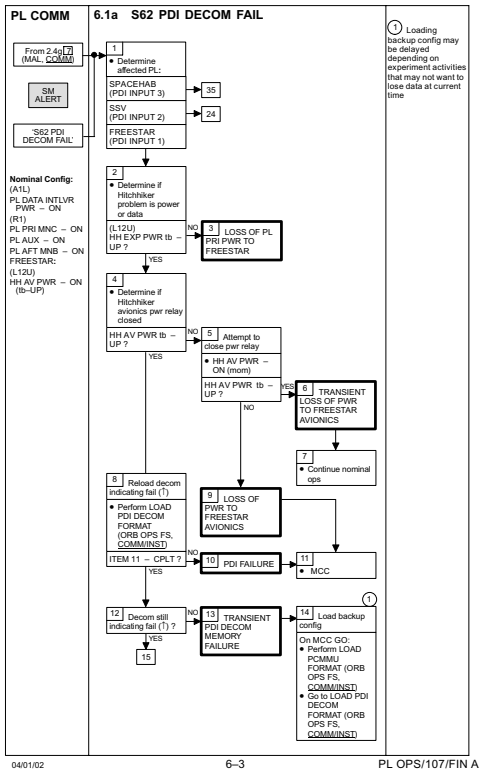
R1 3. PL PRI MNC – ON (tb–ON)

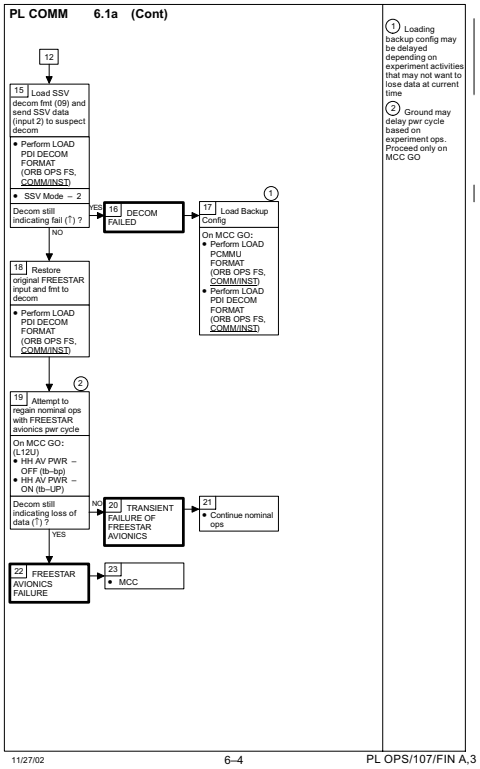
L12L 4. cb ORB H2O LN HTR PWR – cl
ORB H2O LN HTR – A
C3A5 H2O LN HTRS – ON

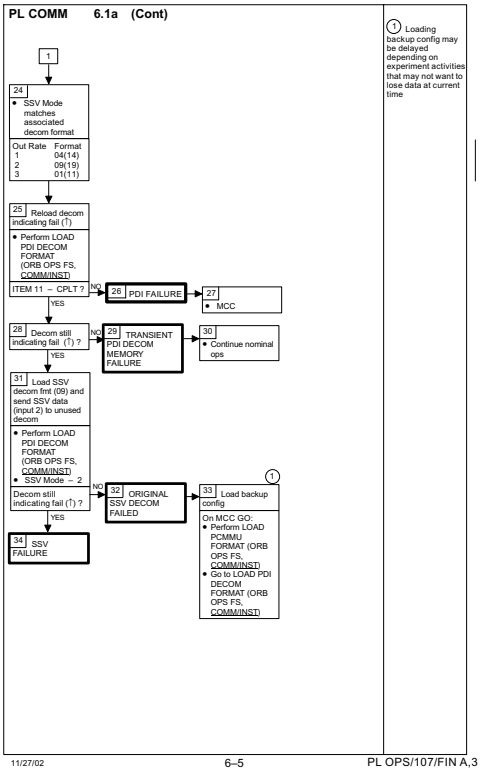
PAYLOAD COMM MALFUNCTIONS

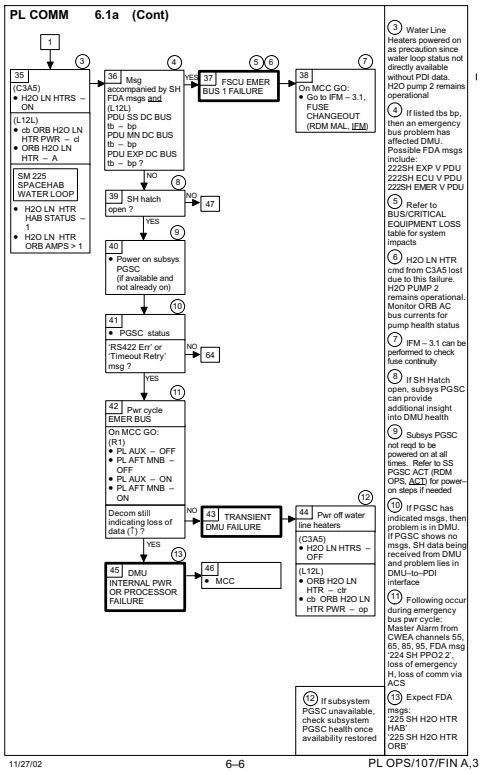
STS–107 COMM MALFUNCTION POINTS

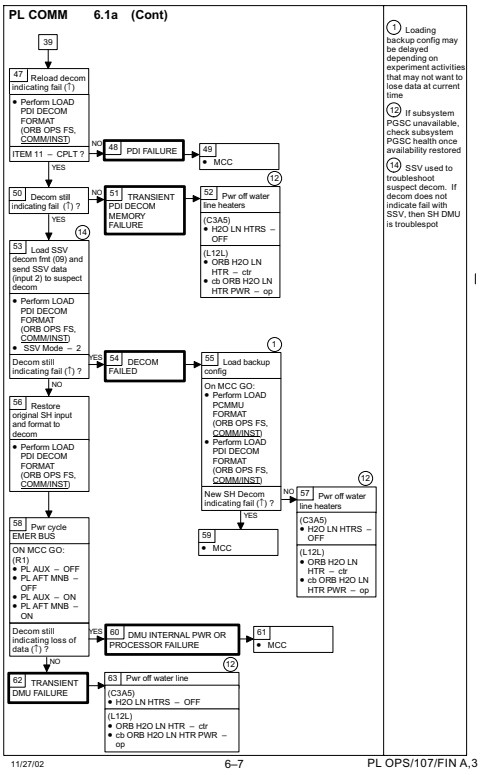


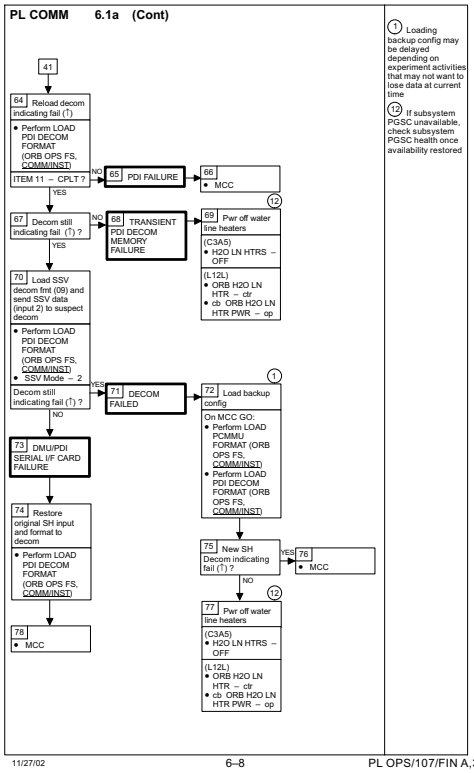



PL COMM 6.1a (Cont)
12
15 Load SSV decom fmt (09) and send SSV data (input 2) to suspect decom
• Perform LOAD PDI DECOM FORMAT (ORB OPS FS, COMM/INST)
• SSV Mode – 2
Decom still indicating fail (↑) ?
YES
16 DECOM FAILED
17 Load Backup Config
On MCC GO:
• Perform LOAD PCMMU FORMAT (ORB OPS FS, COMM/INST)
• Perform LOAD PDI DECOM FORMAT (ORB OPS FS, COMM/INST)
NO
18 Restore original FREESTAR input and fmt to decom
• Perform LOAD PDI DECOM FORMAT (ORB OPS FS, COMM/INST)
19 Attempt to regain nominal ops with FREESTAR avionics pwr cycle
On MCC GO: (L12U)
• HH AV PWR – OFF (tb–bp)
• HH AV PWR – ON (tb–UP)
Decom still indicating loss of data (↑) ?
NO
20 TRANSIENT FAILURE OF FREESTAR AVIONICS
21
• Continue nominal ops
YES
22 FREESTAR AVIONICS FAILURE
23
• MCC
1 Loading backup config may be delayed depending on experiment activities that may not want to lose data at current time
2 Ground may delay pwr cycle based on experiment ops. Proceed only on MCC GO
11/27/02
6–4
PL OPS/107/FIN A,3


PL COMM 6.1a (Cont)
1
24
• SSV Mode matches associated decom format
Out Rate Format
1 04(14)
2 09(19)
3 01(11)
25 Reload decom indicating fail (↑)
• Perform LOAD PDI DECOM FORMAT (ORB OPS FS, COMM/INST)
ITEM 11 – CPLT ?
NO
26 PDI FAILURE
27
• MCC
YES
28 Decom still indicating fail (↑) ?
NO
29 TRANSIENT PDI DECOM MEMORY FAILURE
30
• Continue nominal ops
YES
31 Load SSV decom fmt (09) and send SSV data (input 2) to unused decom
• Perform LOAD PDI DECOM FORMAT (ORB OPS FS, COMM/INST)
• SSV Mode – 2
Decom still indicating fail (↑) ?
NO
32 ORIGINAL SSV DECOM FAILED
33 Load backup config
On MCC GO:
• Perform LOAD PCMMU FORMAT (ORB OPS FS, COMM/INST)
• Go to LOAD PDI DECOM FORMAT (ORB OPS FS, COMM/INST)
YES
34 SSV FAILURE
1 Loading backup config may be delayed depending on experiment activities that may not want to lose data at current time
11/27/02
6–5
PL OPS/107/FIN A,3


PL COMM 6.1a (Cont)
1
3
35
(C3A5)
• H2O LN HTRS – ON
(L12L)
• cb ORB H2O LN HTR PWR – cl
• ORB H2O LN HTR – A
SM 225 SPACEHAB WATER LOOP
• H2O LN HTR HAB STATUS – 1
• H2O LN HTR ORB AMPS > 1
4
36 Msg accompanied by SH FDA msgs and (L12L) PDU SS DC BUS tb – bp PDU MN DC BUS tb – bp PDU EXP DC BUS tb – bp ?
YES
5 6
37 FSCU EMER BUS 1 FAILURE
7
38 On MCC GO:
• Go to IFM – 3.1, FUSE CHANGEOUT (RDM MAL, IFM)
NO
8
39 SH hatch open ?
YES
NO
47
9
40
• Power on subsys PGSC (if available and not already on)
10
41
• PGSC status
'RS422 Err' or 'Timeout Retry' msg ?
NO
64
YES
11
42 Pwr cycle EMER BUS
On MCC GO: (R1)
• PL AUX – OFF
• PL AFT MNB – OFF
• PL AUX – ON
• PL AFT MNB – ON
Decom still indicating loss of data (↑) ?
NO
43 TRANSIENT DMU FAILURE
12
44 Pwr off water line heaters
(C3A5)
• H2O LN HTRS – OFF
(L12L)
• ORB H2O LN HTR – ctr
• cb ORB H2O LN HTR PWR – op
YES
13
45 DMU INTERNAL PWR OR PROCESSOR FAILURE
46
• MCC
3 Water Line Heaters powered on as precaution since water loop status not directly available without PDI data. H2O pump 2 remains operational
4 If listed tbs bp, then an emergency bus problem has affected DMU. Possible FDA msgs include: 222SH EXP V PDU 222SH ECU V PDU 222SH EMER V PDU
5 Refer to BUS/CRITICAL EQUIPMENT LOSS table for system impacts
6 H2O LN HTR cmd from C3A5 lost due to this failure. H2O PUMP 2 remains operational. Monitor ORB AC bus currents for pump health status
7 IFM – 3.1 can be performed to check fuse continuity
8 If SH Hatch open, subsys PGSC can provide additional insight into DMU health
9 Subsys PGSC not reqd to be powered on at all times. Refer to SS PGSC ACT (RDM OPS_ACT) for power–on steps if needed
10 If PGSC has indicated msgs, then problem is in DMU. If PGSC shows no msgs, SH data being received from DMU and problem lies in DMU–to–PDI interface
11 Following occur during emergency bus pwr cycle: Master Alarm from CWEA channels 55, 65, 85, 95, FDA msg '224 SH PPO2 2', loss of emergency H, loss of comm via ACS
12 If subsystem PGSC unavailable, check subsystem PGSC health once availability restored
13 Expect FDA msgs: '225 SH H2O HTR HAB' '225 SH H2O HTR ORB'
11/27/02
6–6
PL OPS/107/FIN A,3


PL COMM 6.1a (Cont)
39
47 Reload decom indicating fail (↑)
• Perform LOAD PDI DECOM FORMAT (ORB OPS FS, COMM/INST)
ITEM 11 – CPLT ?
NO
48 PDI FAILURE
49
• MCC
YES
50 Decom still indicating fail (↑) ?
NO
51 TRANSIENT PDI DECOM MEMORY FAILURE
12
52 Pwr off water line heaters
(C3A5)
• H2O LN HTRS – OFF
(L12L)
• ORB H2O LN HTR – ctr
• cb ORB H2O LN HTR PWR – op
YES
14
53 Load SSV decom fmt (09) and send SSV data (input 2) to suspect decom
• Perform LOAD PDI DECOM FORMAT (ORB OPS FS, COMM/INST)
• SSV Mode – 2
Decom still indicating fail (↑) ?
YES
54 DECOM FAILED
1
55 Load backup config
On MCC GO:
• Perform LOAD PCMMU FORMAT (ORB OPS FS, COMM/INST)
• Perform LOAD PDI DECOM FORMAT (ORB OPS FS, COMM/INST)
NO
56 Restore original SH input and format to decom
• Perform LOAD PDI DECOM FORMAT (ORB OPS FS, COMM/INST)
New SH Decom indicating fail (↑) ?
NO
57 Pwr off water line heaters
12
(C3A5)
• H2O LN HTRS – OFF
(L12L)
• ORB H2O LN HTR – ctr
• cb ORB H2O LN HTR PWR – op
YES
58 Pwr cycle EMER BUS
ON MCC GO: (R1)
• PL AUX – OFF
• PL AFT MNB – OFF
• PL AUX – ON
• PL AFT MNB – ON
59
• MCC
Decom still indicating loss of data (↑) ?
YES
60 DMU INTERNAL PWR OR PROCESSOR FAILURE
61
• MCC
NO
62 TRANSIENT DMU FAILURE
63 Pwr off water line
12
(C3A5)
• H2O LN HTRS – OFF
(L12L)
• ORB H2O LN HTR – ctr
• cb ORB H2O LN HTR PWR – op
1 Loading backup config may be delayed depending on experiment activities that may not want to lose data at current time
12 If subsystem PGSC unavailable, check subsystem PGSC health once availability restored
14 SSV used to troubleshoot suspect decom. If decom does not indicate fail with SSV, then SH DMU is troublespot
11/27/02
6–7
PL OPS/107/FIN A,3



PL/DPS RECONFIG

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	
5.3f BCE BYP FLEX (MAL, DPS)	N/A	N/A	
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

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 PL1 tlm 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

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IN–FLIGHT MAINTENANCE (IFM)

IFM

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

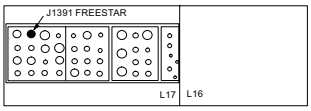
Expect 'S62 BCE BYPASS PSP 1' msg

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)

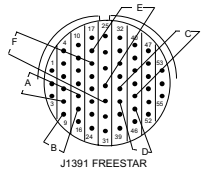
6. Obtain 22–ga Wire (flap 3) and 22–ga pins (four) (flap 6) and fabricate two, 5–in (22 ga) Pin/Pin Test Jumper Leads for a total of six, 5–in Pin/Pin Test Jumper Leads. Place Gray Tape over collar of pins for strain relief and insulation

IFM

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

ORBITER SIGNAL		J1391 FREESTAR sockets		FREESTAR
PTB (MET 1 HI)	8	A	14	MET +
PTB (MET 1 LO)	9	B	15	MET –
PDI (TLM 1)	36	C	44	LOW RATE DATA +
PDI (RTN)	37	D	45	LOW RATE DATA –
PSP 2 (CMD 1 OUT)	28	E	18	COMMAND DATA +
PSP 2 (RTN)	29	F	19	COMMAND DATA –

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

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) HITCHHIKER EXP PWR (S14)	J2	PL PRI MNC – OFF (tb – OFF) cb DOOR PWR CONT PWR DN ENA – op HH EXP PWR – OFF (tb –bp) HH AV PWR – OFF (tb – bp) OARE PWR – OFF cb OARE PWR CAB PL BUS (two) – op	Swap J2,J6 cables	PL PRI MN C – ON (tb – ON) HH AV PWR – ON (tb – UP) HH EXP PWR – ON (tb – UP) cb OARE PWR CAB PL BUS (two) – cl OARE PWR – ON	S13 function on S1 S14 function on S2 S11 function on S23
	OARE PWR (S11)	J6				
	LPT PWR ENA 1 (S15) LPT PWR ENA 2 (S19) MEIDEX DOOR (S18) cb DOOR PWR CONT PWR DN ENA	J8	HH POCC pwrs down LPT LPT PWR ENA 1 – OFF (tb – bp) LPT PWR ENA 2 – OFF (tb – bp) cb DOOR PWR CONT PWR DN ENA – op MEIDEX DOOR – CLOSE	Swap J8, J12 cables	LPT PWR ENA 1 – ON LPT PWR ENA 2 – ON HH POCC pwrs on LPT	S15 function on S3 S19 function on S7 S18 function on S6 cb4 function on cb2
	N/A	J12				
	HITCHHIKER AV PWR tb (DS13) HITCHHIKER EXP PWR tb (DS14) LPT PWR ENA 1 tb (DS15) MEITDEX DOOR tb (DS18) LPT PWR ENA 2 tb (DS19)	J1	HH EXP PWR – OFF (tb –bp) HH AV PWR – OFF (tb – bp) HH POCC pwrs down LPT LPT PWR ENA 2 – OFF (tb – bp) LPT PWR ENA 1 – OFF (tb – bp) cb DOOR PWR CONT PWR DN ENA – op MEIDEX DOOR – CLOSE	Swap J1, J5 cables	HH AV PWR – ON (tb – UP) HH EXP PWR – ON (tb – UP) LPT PWR ENA 1 – ON LPT PWR ENA 2 – ON HH POCC pwrs on LPT	DS13 function on DS1 DS14 function on DS2 DS15 function on DS3 DS18 function on DS6 DS19 function on DS7
	N/A	J5				
	GAS/FREESTAR connector (J14)	J13	Perform SOLSE/HRIU DEACT (FREESTAR)	Remove J13 cable, connect to L12L J13	Perform SOLSE/HRIU ACT (FREESTAR)	GAS/FREESTAR connector function on L12L AUX I/O (J14) connector

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 (S13) FIRE SUPPR FSCU DISCH (S14) MAIN PWR KILL (S20) PDU SS DC BUS (S21) FWD INVERTER (S23) PDU EXP DC BUS (S24)	J2	PL AUX – OFF PL AFT B – OFF cb ORBITER H2O LN HTR PWR – op cb SW PWR – op	Swap J2, J6 cables Swap J8, J12 cables	PL AUX – On PL AFT B – On cb ORBITER H2O LN HTR PWR – cl cb SW PWR – cl	S12 function on S24 S13 function on S1 S14 function on S2 S15 function on S3 S16 function on S4 S17 function on S5 S18 function on S6 S19 function on S7 S20 function on S8 S21 function on S9 S22 function on S10 S23 function on S11 S24 function on S12
	ORBITER H2O LN HTR (S12)	J6				
	CAB DEPRESS VLV ARM (S15) CAB DEPRESS VLV OPEN (S16) SMOKE SENSOR RESET (S17) SMOKE SENSOR A (S18) SMOKE SENSOR B (S19) PDU MN DC BUS (S22)	J8				
	N/A	J12				

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

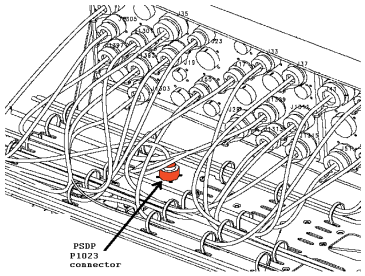
LOCATION: Connector J1023 on wire tray running in front of Payload Station Distribution Panel (PSDP) panel behind L14

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

1. MCC
   S–Band FM Sys – OFF

L14 2. Remove panel L14 (six, #10 Torque Tip; twelve, 5/32–in Allen Head Driver)

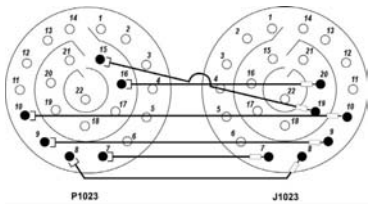
3. Locate, demate connector 38P77W469P1023 from J1023 on PSDP wire tray (see diagram for connector location)



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

5. 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 –



6. Obtain one 24–in Minigrabber, install between connector shells (from P1023 to J1023) for chassis ground; secure with Gray Tape

7. Reinstall pnl L14, torque fasteners (30 in–lb)

8. Stow tools, Gray Tape

SH PL MAX DATA RECOVERY

OBJECTIVE: Recover SH PL MAX Data

LOCATION: Payload Station Distribution Panel (PSDP)

TOOLS REQD: 5/32–in Allen Head Driver
Gray Tape
Pwr Screwdriver
Torque Wrench
Wire Cutters

CHCK DTV Cables (two, V710–743700–001 DATA CABLE
and V710–743700–002 CLOCK CABLE)

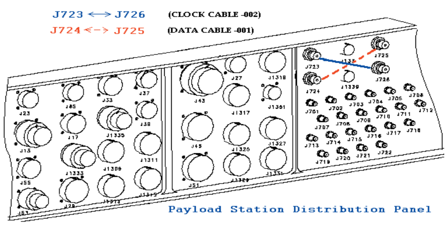
L10 1. MUX/VTR/CC – OFF (0), VTR/CC – OFF (0)

2. Remove L16 closeout panel (seventeen fasteners, 5/32–in Allen Head Driver)

3. Demate PSDP Coax Cables connected to J723, J724, J725, and J726
Cut safety wire as reqd

4. Tape face of Coax Cable (4) connectors; secure cables to structure
(Gray Tape)

5. As shown below, install V710–743700–001 DTV Data Cable between J724 and J725, and install V710–743700–002 DTV Clock Cable between J723 and J726



6. Install closeout panel (torque fasteners, 30 in–lb)

L10 7. VTR/CC – ON (1)

8. Stow tools

CRITICAL EQUIPMENT LOST

CRITICAL
EQUIP LOST

CRITICAL
EQUIP LOST

STS–107 BUS LOSS MATRIX

ORBITER EPS BUSES	ESS						MNA DA1						MNB DA 2											FC 3	MNC DA3					
	1BC	2CA		3AB			FPC 1		R14	O14	MPC 1		MPC 2			FPC 2			R14	O15	APC 5					FPC 3			R14	O16
		APC5		APC6	O13						AUX PLA	P	(R)		AUX PLB	AC 2	FLC 2				APC 2		(R)	(R)	P	AC 3	FLC 3			
		AP& LC2	O13 & R14	AP & LC3			AC1					CABIN									AFT PL B		PL PRIMARY			A15				
												PL1	PL2	PL3																
ORBITER																														
PDI								R																				R		
PCMMU 1								R																				R		
PCMMU 2								R									R													
PL RCDR								R																				R		
PSP 1																X														
PSP 2																										X				
PL TIMING BUFFER														X																
CCTV – VSU									X																					
KU BAND									R										R										R	
PDIP PWR 2 & KU BAND RELAY														X																
DTV MUX & VTR											X																			
DTV VIP																X														
019 & MO52J										X																				
F1 & MO13Q																				X										
A11 & A15 & MO30F																														X
MUP J11, J12, J13, J5																						X								
MUP J21, J22, J23, J5																						X								
FREESTAR																														
AV & EXP PWR																								X						
MEIDEX DOOR PWR/CONT PWR DN ENA														X																
MEIDEX HMDA OPEN/CLOSE														X																
MEIDEX PGSC																														XRC
SOLSE PGSC/BIA																														X,XC
OARE																														
OARE PWR													X																	
SPACEHAB MIDDECK																														
CMPCG																				X										
CEBAS																				X										
BIOPACK																						X								
BRIC																						X								
OSTEO																						X								

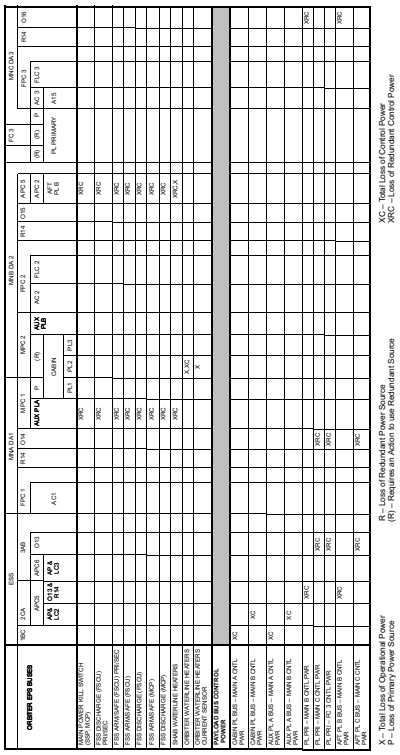
X – Total Loss of Operational Power
P – Loss of Primary Power Source
R – Loss of Redundant Power Source
(R) – Requires an Action to use Redundant Source
XC – Total Loss of Control Power
XRC – Loss of Redundant Control Power

STS–107 BUS LOSS MATRIX (Cont)

ORBITER EPS BUSES	ESS						MNA DA1						MNB DA 2											FC 3	MNC DA3					
	1BC	2CA		3AB			FPC 1		R14	O14	MPC 1		MPC 2			FPC 2			R14	O15	APC 5					FPC 3			R14	O16
		APC5		APC6	O13						AUX PLA	P	(R)		AUX PLB	AC 2	FLC 2				APC 2		(R)	(R)	P	AC 3	FLC 3			
		AP& LC2	O13 & R14	AP & LC3			AC1					CABIN									AFT PL B		PL PRIMARY			A15				
												PL1	PL2	PL3																
SPACEHAB SUBSYSTEMS																														
PDU MAIN DC BUS														XC										X						
APDU DC BUS																								X						
FSCU EMER 1 BUS											R										R									
MCP EMER 2 BUS											R										R									
APDU EMER BUS											R										R									
SS DC BUS											XRC										XRC			X						
EXP DC BUS											XRC										XRC			X						
FWD INVERTER											XRC										XRC			X						
AFT INVERTER																								X						
HFA FAN 1																R								P						
HFA FAN 2																P								R						
ARS FAN																								R		P				
SS WATER PUMP 1																								X						
SS WATER PUMP 2																								R		P				
ROTARY SEPARATOR 1																R								P						
ROTARY SEPARATOR 2																P								R						
CE WATER PUMP 1																P								R						
CE WATER PUMP 2																R								P						
DATA MANAGEMENT UNIT (DMU)											R										R									
AUDIO CONTROL SYSTEM PANEL (ACS)											R										R									
CCTV																								X						
WFCEU ECU																								X						
MCP (LIGHTS ONLY) FWD & AFT MODULE LIGHTS																								X						
EMERGENCY LIGHT											R										R									
CABIN DEPRESS VALVE OPEN/CLOSE											R			XC							R									
CABIN DEPRESS VALVE ARM/SAFE											XRC										XRC									
SMOKE SENSOR A ENABLE											R			XC							R									
SMOKE SENSOR B ENABLE											XRC, R										XRC, R									
SMOKE SENSOR TEST/RESET SWITCH														XC																

X – Total Loss of Operational Power
P – Loss of Primary Power Source
R – Loss of Redundant Power Source
(R) – Requires an Action to use Redundant Source
XC – Total Loss of Control Power
XRC – Loss of Redundant Control Power

STS–107 BUS LOSS MATRIX (Cont)



ELECTRICAL BUS LOSS IMPACTS

MNA DA1
- MNA FPC1
  - PDI (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/INHB
        - 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
    - DTV MUX & VTR
  - MNA R14
    - CCTV – VSU

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
    - PSP 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
    - CMPCG PWR
    - CEBAS PWR
- PL PRI (REDUN POWER AVAIL)

MNC DA3
- MNC FPC 2
  - PL RCDR (REDUN POWER)
  - PCMMU 1 (REDUN POWER)
  - PDI (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 A11/A15/MO30F
    - 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

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
  - PPO2 #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

OF2
PSP 1,2 – Bit & Frame Sync
PCMMU 2 FORMAT mon
PL AUX B RPC ON/OFF mon

DSC OF2
PCMMU 2 – Mode Select

OF3
Orbiter Comm Telemetry (S–Band PM/FM,Ku–Band,UHF,NSP 1&2,COMSEC)
GCIL Telemetry (revert to panel)
PL PRI FC3 ON tlm
MNB ON tlm
MNC ON tlm
Ku–Band Alpha/Beta Gimbal Temp

DSC OF3
Ku–Band Alpha Gimbal Temp

OF4
KU–BAND RADAR PWR mon
S–BAND (P/L,PM,FM) & KU–BAND CONTROL mon
Orbiter Comm – GCIL Driver Telemetry (S–Band PM,P/L,FM,Ku–Band,CCTV)
PSP, PL GCIL, COMSEC – ON/OFF Telemetry
CAB P/L MNA(MNB) ON tlm
PL AUX ON tlm

DSC OF4
No P/L impacts

DSC OM2
Ku–Band Beta Gimbal Temp

OA1
No P/L impacts

DSC OA1
No P/L impacts

OA2
PL AFT MNB PWR ON mon
PL AFT MNB AMPS mon

DSC OA2
No P/L impacts

OA3
PL AFT MNC ON mon
PL AFT MNC AMPS mon

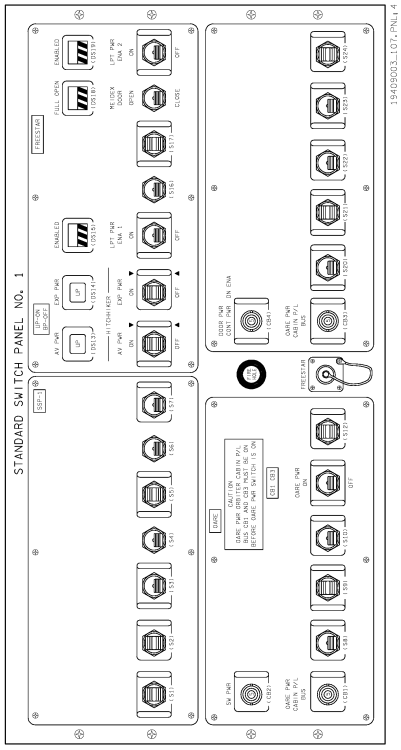
DSC OA3
No P/L impacts

REFERENCE DATA

REF DATA

REF DATA

L12U SSP 1



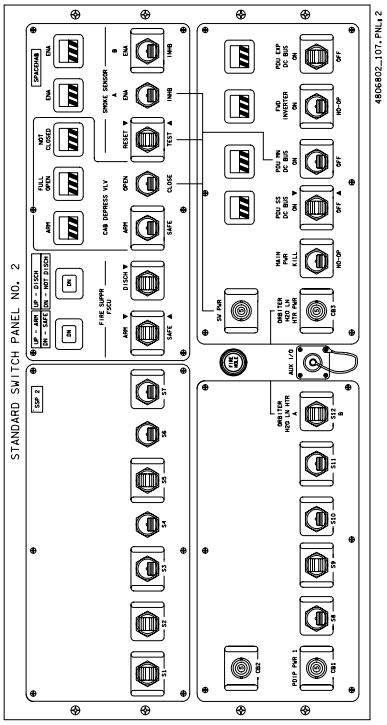
PL OPS/107/FIN A

FREESTAR SSP L12U SWITCH ASSIGNMENTS

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 Not labeled (center) – Not wired OFF (down) – Opens latching relay K9 unpowering HH avionics	Used to control power to HH Avionics during activation and deactivation
DS13	Three–position talkback	UP – Indicates relay K9 closed, PL PRI power supplied to HH avionics bp – Indicates power not supplied to the HH avionics 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 Not labeled (center) – Not wired OFF (down) – Opens latching relay K9 unpowering HH experiment power bus	Used to control power to HH experiment bus during activation and deactivation
DS14	Three–position talkback	UP – Indicates relay ZL closed, PL PRI power supplied to experiment power bus bp – Indicates power not supplied to power bus DN – not wired	
S15 LPT PWR ENA 1	Two–position toggle switch: (up, down – maintained)	ON (up) – Removes one of the LPT transmitter inhibits OFF (down) – Applies one of the LPT transmitter inhibits	Used during activation and deactivation to remove and provide inhibits to LPT transmission. Also used to provide tranmission inhibits during a contingency EVA
DS15 ENABLED	Two–position talkback	gray – Indicates that one of the LPT transmitter inhibits has been removed 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 CLOSE (down) – Provides power to close the MEIDEX HDMA	Used to open and close MEIDEX HMDA during experiment ops
DS18 FULL OPEN	Two–position talkback	gray – Indicates that the HDMA open limit switch has been tripped bp – Indicates that the HDMA 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 OFF (down) – Applies one of the LPT transmitter inhibits	Used during activation and deactivation to remove and provide inhibits to LPT transmission. Also used to provide tranmission inhibits during a contingency EVA

FREESTAR SSP L12U SWITCH ASSIGNMENTS (Cont)

CONTROL/LABEL	DEVICE TYPE	POSITION – FUNCTION	USAGE (TIME AND FREQUENCY)
DS19 ENABLED	Two–position talkback	gray – Indicates that one of the LPT transmitter inhibits has been removed bp – Indicates that one of the LPT transmitter inhibits is in place	
CB4 DOOR PWR/CONT PWR DN ENA	Two–position circuit breaker	cl – Provides CAB PL3 power MEIDEX HMDA and to ZL relay open coil controlled by EXP PWR switch 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 FREESTAR	Connector	PGSC/Bus Interface Adapter (BIA) connection for command and data bus interface to SOLSE	
CB 1 OARE PWR CABIN P/L BUS	Two–position circuit breaker	cl – Provides CAB PL 2 power to OARE via S11. This is 1 of 2 reqd feeds for OARE power 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 OARE PWR CABIN P/L BUS	Two–position circuit breaker	cl – Provides CAB PL 2 power to OARE via S11. This is 1 of 2 reqd feeds for OARE power 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 OARE PWR ON	Two–position toggle switch: (up, down – maintained)	ON (up) – Provides CAB PL 2 power to OARE 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



L12L SSP 2

SPACEHAB SSP L12L SWITCH ASSIGNMENTS

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

SPACEHAB SSP L12L SWITCH ASSIGNMENTS (Cont)

ITEM	TYPE DEVICE	FUNCTION	USAGE (TIME AND FREQUENCY)
S15 CAB DEPRESS VLV	Toggle sw, 2 positions: (Maintained–Maintained)	ARM – Applies 28 VDC command to CDV control logic within MCP. This command combined with OPEN command from S16 opens CDV 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 Used when safing CDV control logic after an inadvertent ARM command. This is normal position of switch
DS15 CAB DEPRESS VLV ARM	Event indicator, 2 positions: gray bp	gray – (ARM) indicates CDV control logic has been armed bp – (SAFE) indicates CDV control logic has not received power and valve is safed	Indicates status in response to command from S15
S16 CAB DEPRESS VLV	Toggle sw, 2 positions: (Maintained–Maintained)	OPEN – Applies 28 VDC command to CDV control logic in MCP which opens CDV if ARM command from S15 present 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 Used after CDV has been opened (see above) to close valve and safe module. This is normal position of switch
DS16 CAB DEPRESS VLV FULL OPEN	Event indicator, 2 positions: gray bp	gray – (Full open) indicates CDV has reached full open position 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 CAB DEPRESS VLV NOT CLOSED	Event indicator, 2 positions: gray bp	gray – (Not closed) indicates CDV not closed (partially open) bp – (Closed) indicates CDV closed	Used to indicate status of CDV in response to cabin pressure alarm or command from S16
S17 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 RESET – Applies 28 VDC signal to reset input cf both smoke sensors returning them to normal operational mode	Verification of smoke sensors during module activation or fire suppression procedures Used after verification of smoke sensors during module activation and to confirm smoke alarm once it has occurred during orbital operations

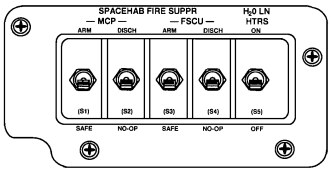
SPACEHAB SSP L12L SWITCH ASSIGNMENTS (Cont)

ITEM	TYPE DEVICE	FUNCTION	USAGE (TIME AND FREQUENCY)
S18 SMOKE SENSOR A	Toggle sw, 2 positions: (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 INHB – 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 Used to verify Smoke Sensor B during module activation and to confirm smoke alarm, once it has occurred, during orbit operations
DS18 SMOKE SENSOR A ENA	Event indicator, 2 positions: gray bp	Provides status of Smoke Sensor A gray – Smoke Sensor A ENABLED 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 SMOKE SENSOR B	Toggle sw, 2 positions: (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 INHB – 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 Used to verify Smoke Sensor A during module activation and to confirm smoke alarm, once it has occurred, during orbit operations
DS19 SMOKE SENSOR B ENA	Event indicator, 2 positions: gray bp	Provides status of Smoke Sensor B gray – Smoke Sensor B ENABLED bp – Smoke Sensor B INHIBITED	Used to verify Smoke Sensor B status during SH activation and to confirm smoke alarm during orbit operations
CB4 SW PWR	Circuit Breaker—5 ampere: IN – closed OUT – open	IN – Applies orbiter power to CAB DEPRESS VLV (S16), SMOKE SENSOR (S17), SMOKE SENSOR A (S18), PDU MN DC BUS (S22) OUT – Removes power from to CAB DEPRESS VLV (S16), SMOKE SENSOR (S17), SMOKE SENSOR A (S18), PDU MN DC BUS (S22)	This is normal cb position
S20 MAIN PWR	Toggle sw, 2 positions: (Maintained–Maintained)	KILL – Applies 28 VDC command to open PDU relays K1, K13, K14, K15, K16, K18, K21, and APDU 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 NO–OP – not wired to SH	Used to remove pwr from SH module after confirmed fire or during contingency safing operations This is normal position of switch

SPACEHAB SSP L12L SWITCH ASSIGNMENTS (Cont)

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

C3A5 PAYLOAD SAFING



SPACEHAB C3A5 SWITCH ASSIGNMENTS

ITEM	TYPE DEVICE	FUNCTION	USAGE (TIME AND FREQUENCY)
S1 SPACEHAB FIR SUPPR MCP ARM/SAFE	Two–position toggle switch: (up, down – maintained)	ARM (up) – Sends Arming signal to MCP FSS Discharge Circuitry which closes ground path for pyro circuit SAFE (down) – Sends Safing signal to MCP FSS Discharge Circuitry	Contingency use only
S2 SPACEHAB FIR SUPPR MCP DISCH/NO–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 NO–OP (down) – not wired	Contingency use only
S3 SPACEHAB FIR SUPPR FSCU ARM/SAFE	Two–position toggle switch: (up, down – maintained)	ARM (up) – Sends arm signal to FSCU FSS Discharge Circuitry, and closing ground path for pyro circuit SAFE (down) – Removes arm signal from FSCU FSS Discharge Circuitry	Contingency use only
S4 SPACEHAB FIR SUPPR FSCU DISCH/NO–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 NO–OP (down) – not wired	Contingency use only
S5 H_2O LN HTRS	Two–position toggle switch: (up, down – maintained)	ON (up) – Closes relays allowing PL AFT B to power SH Water Line heaters. OFF (down) – not wired	Contingency use only

PGSC FAILURE RECOVERY OPTIONS

PGSC	FUNCTION	CONFIGURATION [1]	BACKUP HARDWARE (AS REQUIRED) [2]
STS1	OCA	760XD PGSC ON SINGLE SLOT AC EXPANSION UNIT CONFIGURED WITH OCA PC MOD BOARD	760XD PGSC, OCA PC BOARD, OCA HARDDRIVE, EXPANSION UNIT
STS2	WINDECOM	760XD PGSC ON SINGLE SLOT AC EXPANSION UNIT CONFIGURED WITH PCMMU BOARD	760XD PGSC, EXPANSION UNIT, STS HARDDRIVE
STS3	PROSHARE	760XD PGSC ON SINGLE SLOT AC EXPANSION UNIT CONFIGURED WITH PROSHARE BOARD	760XD PGSC, EXPANSION UNIT, STS HARDDRIVE [3]
STS4	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–05, & 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 755C 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

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MEIDEX REFERENCE DATA

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MEIDEX SLANT VISIBILITY OBSERVATION FORM

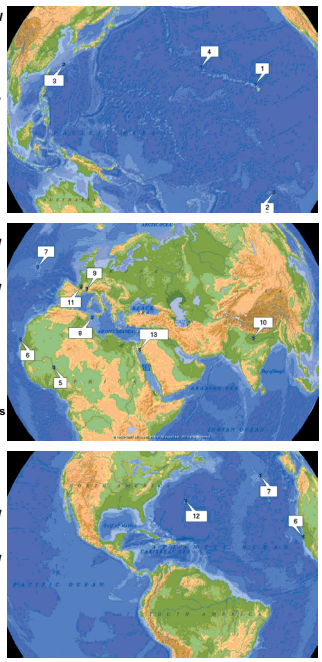
Orbit #	Target Name	Target AOS Time Acquired	Target AOS Window Used	Target LOS Time Lost	Target LOS Window Used	Comments	Crewmember

MEIDEX SLANT VISIBILITY OBSERVATION FORM (Cont)

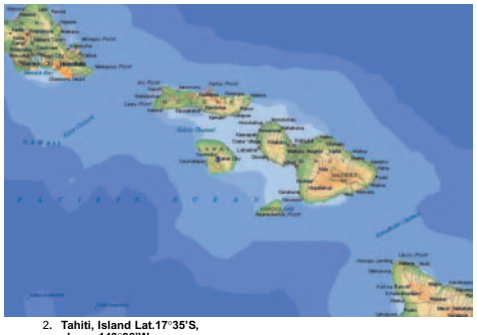
Orbit #	Target Name	Target AOS: Time Acquired	Target AOS: Window Used	Target LOS: Time Lost	Target LOS: Window Used	Comments	Crewmember

MEIDEX SLANT VISIBILITY TARGETS

1. **Lanai, Hawaii, Coast Line Lat.20°50'N, Long.156°59'W**
2. **Tahiti, Island Lat.17°35'S, Long.149°36'W**
3. **Okinawa, Island Lat.23°34'S, Long.127°46'E**
4. **Midway Island Lat.28°13'N, Long.177°23'W**
5. **Niger, River Lat.13°32'N, Long.2°40'E**
6. **Dakar, Coast Line Lat.14°44'N, Long.17°31'W**
7. **Azores, Island Lat.38°32'N, Long.28°38'W**
8. **Lampedusa Island, Med. Lat.35°31'N, Long.12°38'E**
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. **Toulouse, River Garonne Lat.43°36'N, Long.1°25'E**
12. **Bermuda Island Lat.32°37'N, Long.64°47'W**
13. **Strait of Tiran Lat.28°18'N, Long.34°32'W**

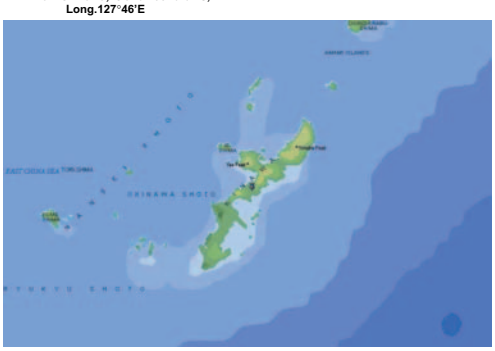


1. **Lanai, Hawaii, Coast Line Lat.20°50'N, Long.156°59'W**

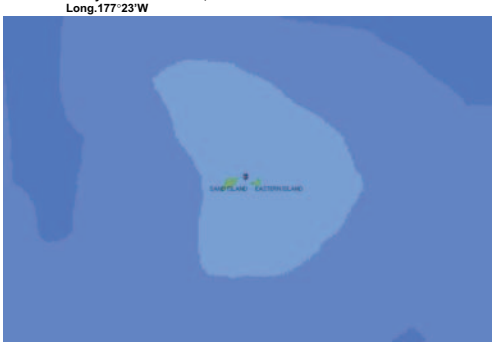


2. **Tahiti, Island Lat.17°35'S, Long.149°36'W**

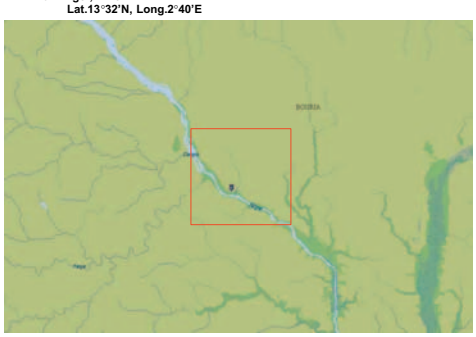
3. **Okinawa, Island Lat.23°34'S, Long.127°46'E**



4. **Midway Island Lat.28°13'N, Long.177°23'W**



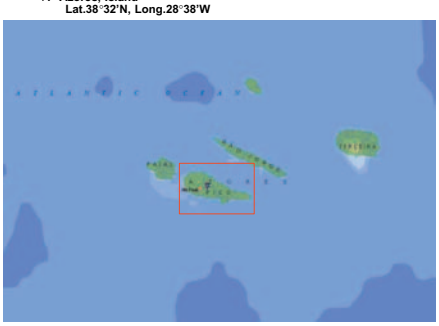
5. **Niger, River**
Lat.13°32'N, Long.2°40'E



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

11–8 PL OPS/107/FIN A

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

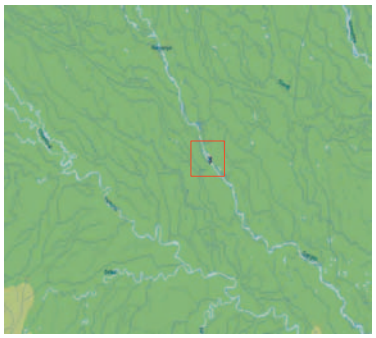


8. **Lampedusa Island, Med.**
Lat.35°31'N, Long.12°38'E

11–9 PL OPS/107/FIN A

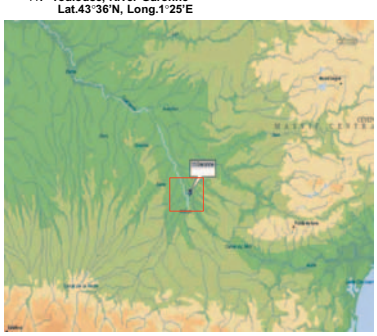
9. **Avignon, River Rhone**
Lat.43°23'N, Long.4°49'E

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

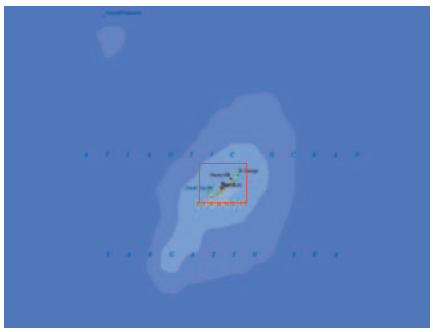


11–10 PL OPS/107/FIN A

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



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



11–11 PL OPS/107/FIN A

13. **Strait of Tiran**
Lat.28°18'N, Long.34°32'W

11–12 PL OPS/107/FIN A

CUE CARD CONFIG

CUE CARD CONFIGURATION

FAB USE ONLY 12–1 PL OPS/107/FIN A

CUE CARD CONFIG

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FAB USE ONLY 12–2 PL OPS/107/FIN A

TOP

HOOK VELCRO

HOOK VELCRO

MEIDEX RECORDING LOG

Obs. Type	Orb #	V10 Tape #	V10 Time Rem.	VTR/DSR–20 Tape #	VTR/DSR–20 Time Rem.	MEIDEX VCR OFFSETS VCR 1 Elapsed Sec	VCR 2 Elapsed Sec	VCR 3 Elapsed Sec

PL OPS–1a/107/O/A

NOTE: 2 copies reqd for flight

(reduced copy)

FAB USE ONLY CC 12–3 PL OPS/107/FIN A

TOP
BACK OF 'MEIDEX RECORDING LOG'

HOOK VELCRO

HOOK VELCRO

Obs. Type	Orb #	V10 Tape #	V10 Time Rem.	VTR/DSR–20 Tape #	VTR/DSR–20 Time Rem.	MEIDEX VCR OFFSETS VCR 1 Elapsed Sec	VCR 2 Elapsed Sec	VCR 3 Elapsed Sec

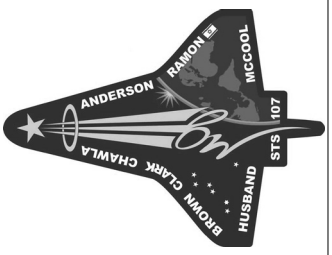
PL OPS–1b/107/O/A

NOTE: 2 copies reqd for flight

(reduced copy)

FAB USE ONLY CC 12–4 PL OPS/107/FIN A

JSC–48068–107
FINAL, REV A



Space Shuttle Program
FLIGHT DATA FILE

PAYLOAD OPS CHECKLIST

STS 107

Flight Cover (trim bottom to expose tabs)

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