



WORK ORDER

1161921



AWOPRNTA Ver 1.84 Printed: 05/07/2010 12:25

7 Attachments



Haz Ops: N

Work Type: TTC **Target Completion Date:** 30-APR-2010

W/O Pri: 5 **Eq Crit:**

Status: CLOSE 18-APR-10 05:56

PWO: J0057110A1

Reported Dt: 16-DEC-2009 **Reported By:** Short Janet F (JAN)

Phone: 321/861-0588

OPR: CCOP **ROR:** SHORTJF
Short Janet F (JAN)

Phone: 321/861-0588

Mission: STS-132 **Event:**

Frequency: N

Location: 17235 Launch Control Center 4, LCC4

Equipment:

Reference 1:

Reference 2:

TITLE/WORK DETAILS

JOBPLAN: 26780

Rev: 000

Work Order Description: FR4 LDB FEP Vehicle Safing Checkout

This WO will perform Safing Checkout for STS-132/ OV-104 in FR-4

Jobplan Description: LDB Vehicle Safing Checkout

LABOR: **LEAD SHOP:** CCOP

| <u>Labor Code:</u> | <u>Operation Step:</u> | <u>Estimated Hours:</u> | <u>Actual Hours:</u> | <u>Shop:</u> | <u>Name:</u> |
|--------------------|------------------------|-------------------------|----------------------|--------------|--------------|
|--------------------|------------------------|-------------------------|----------------------|--------------|--------------|

Total Actual hours for 1161921 1.1

Parent Work Order
1161920

CONSTRAINTS: NO ACTIVE CONSTRAINTS

CONSTRAINTS LIST:

| | | | |
|--------------------------|----------------------------------|----------------|-----------|
| Constraining Work Order: | 1161921 | Active? | N |
| Rationale: | No constraint, test support only | | |
| Modified By: | RICHARBA | Modified Date: | 15-APR-10 |
| | | Index: | 325255 |

Constraint To:

| | | |
|-------------------------|----------------|------|
| Constrained Work Order: | WAD Index No.: | Run: |
| Document Type: | Constrained: | STS: |
| Sequence/Operation: | Step: | |
| Subelement: | Element/Use: | |



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MAXIMO®

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ATTACHMENT LIST: 1161921

| <u>Document</u> | <u>Description</u> | <u>Disposition</u> |
|------------------|--|----------------------|
| 090024e187b1bdee | 1161921 sheet 1.xls | Attached with Report |
| 090024e187b1bdf2 | 1161921 sheet 2.xls | Attached with Report |
| 090024e187b1bdf3 | 1161921 sheet 3.xls | Attached with Report |
| 090024e187b1d2b8 | re gls vfy of lps hold ind - sts131s0044.htm | Attached with Report |
| 090024e1858980db | ldb safing fds.dot | Attached with Report |
| 090024e1879bc199 | rsi procedures.doc | Attached with Report |
| 090024e187ac4314 | safing checkout.doc | Attached with Report |



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MATERIALS - PLAN: NO MATERIALS

TOOLS - PLAN: NO TOOLS

SEQUENTIAL/NON-SEQUENTIAL ORDER

The Tasks in this Work Order may be worked out of sequence.

This Workorder Contains NO Lock Out Tag Out Procedures

Operations

SHOP: CCOP

STEP TASK DESCRIPTION

1 Safety Information

Performed Date
by

LEWISGJ 15-Apr-10

Reference Safety Documentation
Number Rev Title

KNPR 8715.3 LI KSC SAFETY PRACTICES PROCEDURAL REQUIREMENTS
USA006100 LI USA FLORIDA SAFETY OPERATING PLAN

2 Special Instructions

Performed Date
by

LEWISGJ 15-Apr-10

Standard:

1. List required approvals
2. List any steps that may be repeated, with rationale
3. List any steps that may be worked out of order, with rationale

Specific:

APPROVALS:

1. After creating a Work Order change the Status to 'TCREAD', click save;
An LPS TC must change Status to 'TCAPPR', click save; change Status to 'SSOERVW', click save
2. An LPS/Analyst will change the Status to 'SSOEAPR', click save; change Status to 'NASAREAD', click save



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3. NASA will change the Status to 'NASAAPPR', click save
4. Any LPS/ Analyst will change the Status to 'APPR' then to 'INPRG', which saves automatically

Note: To view the Status changes: From the toolbar, click 'Actions'; click 'View Status History'

REPEATABLE STEPS:
NONE

FILL INS:
NONE

4 No OIR required

Performed Date
by

LEWISGJ 15-Apr-10

5 Processing Notes:

Performed Date
by

LEWISGJ 15-Apr-10

Standard:

1. Identify any constraints to the task, as well as what the task constrains
2. List required media and verify it is on hand
3. Verify the task is properly scheduled
4. Verified required personnel have proper certifications
5. Verify required documents are attached to WO (templates, release letters, post-freeze authorization, etc.)
6. List any required PPE

Specific:

1. This can be worked out of sequence.
 2. This Work Plan checks out each FEP (0682/10482, 0687/10487, 0661/10461, and 0660/10460) as the LDBA
 3. Quality Verify (QV) is required prior to support for all patching as second set of eyes.
-



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9 Verify Task Team briefing complete.

Performed Date
by

BIGELOPR 15-Apr-10

Standard:

1. List all participants in task and verify they are present at the briefing
2. List all affected systems, groups, customers
3. List all required work authorizers (CCMS TC, RPS TC, SDC TC, Manager)
4. Review WO with Team
5. Re-perform and re-sign briefing at all shift change/handoffs

Specific:

1. Position Personnel (with headsets):
LDBA FEP under test
INTG Console 0655A12/10455A11
Console Safing Switch under test

Note: The MSTR Console can be used for everything with the exception of the LDB switch indicators, whenever INTG is unavailable.

2. The test is started with LDB FEPs 0682/10482, 0687/10487 to allow the main LDB FEPs 0660/10460, 0661/10461 to be cabled last to the VSB, ideally to keep the connection through launch
3. The following Templates for configuring the Set are in the Template folder of this Work Plan:
RSI Procedures
LDB Vehicle Safing FD List
4. This procedure may be run during NON Hazardous GSE support
5. PDR tapes should have the same numbering system as everyday support and should be taken to OSF at completion of test.

Observation: see LD
Observation Long: M Morrison C Kantaras P Bigelow

10 Create THREE PATCH SHEETS and attach them to this WO in the DS folder

Performed Date
by

BIGELOPR 15-Apr-10

Note: PATCH SHEET ONE: sub-steps one through four support vehicle safing checkout for LDB/PCM FEPs 0682/10482 and 0687/10487 (patches RSI in Main and LDB FEPs in Local)

1. Delete LDB/PCM 128 KB support patching in the Main patch rack
2. Add LDB/PCM 128 KB patching to RSI in the Main patch rack
3. Delete patching for LDB FEPs 0660/10460, 0661/10461 in the Local patch rack
4. Add patching for LDB FEPs 0682/10482, 0687/10487 in the Local patch rack



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Note: PATCH SHEET TWO: sub-steps five and six support vehicle safing checkout for LDB FEPs 0660/10460 and 0661/10461 (LDBs in Local to original)

5. Delete patching for LDB FEPs 0682/10482 , 0687/10487 in the Local patch rack
6. Add patching for LDB FEPs 0660/10460, 0661/10461 in the Local patch rack

Note: PATCH SHEET THREE: sub-steps seven and eight place the LDB/PCM FEPs to original support (RSI in Main to original)

7. Delete LDB/PCM 128 KB patching to RSI in the Main patch rack
8. Add LDB/PCM 128 KB support patching in the Main patch

Observation: see LD
Observation Long: Patch Sheets written by J Short

| | | |
|----|--|---------------------------|
| 20 | Have second person check patch sheet(s) | Performed Date by |
| | | <u>BIGELOPR 15-Apr-10</u> |
| 30 | Print the attached Vehicle Safing FD list in the Templates folder, for System Engineers to check retrievals on each FEP | Performed Date by |
| | | <u>BIGELOPR 15-Apr-10</u> |
| 40 | Perform Lamp Test from INTG Console | Performed Date by |
| | | <u>KANTARCM 15-Apr-10</u> |

Note: The LPS hold indicator is connected to the VSB FEP lamp test circuit.

1. PULL LAMP TEST SWITCH UP AND HOLD
2. Verify the following indicators are on:

| Console | Indicator |
|------------------|------------------|
| 0655A12/10455A11 | CMD ENABLE |
| | LDB-A ENABLE |
| | LDB-B ENABLE |
| | LDB-A READY/ACT |
| | LDB-B READY/ACT |
| | LDB-A ACT/STDBY |
| | LDB-B ACT/STDBY |
| 0639A2/10439A6 | VEH SAF ON |
| 0623A1/10423A3 | VENT SAF ENABLE |
| 0616A2/10416A6 | LDB CMDS ENABLED |
| 0615A2/10415A6 | LDB CMDS ENABLE |
| 0648A2/10448A6 | APU CMD ENABLE |
| 0631A2/10431A6 | APU CMD ENABLE |



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0631A3/10431A10 APU CMD ENABLE
3. PULL LAMP TEST SWITCH DOWN

50 Verify LPS can Support Model Safing Checkout

Performed Date
by

KANTARCM 15-Apr-10

1. Verify you DO NOT have Orbiter support on the same CDBFR as the Model
2. Verify OIA/S, GPCA/S and PLDA/S FEP's ARE NOT activated during this task
3. Verify any GSE support on the same CDBFR, is NON-HAZARDOUS
4. Verify PDR/SPA are in support and recording for SPA retrievals

60 [QA] Perform patching per previously created PATCH SHEET ONE

Performed Date
by

KANTARCM 15-Apr-10

QV Date

ROBERRA1 15-Apr-10

Note: QA will sign this as second set of eyes

70 [MAINT] If FEP is LDB/GSE, Then ask Maintenance to verify FEP status

Performed Date
by

NP 15-Apr-10

1. Verify LDB PROM is active
2. Verify in extended memory
3. Record FEP(s) Ref Des in Observation column

Note: This step will be Not Performed if FEP is in configuration



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80 [MAINT, QA] If in FR3, Then ask Maintenance to perform the following cabling in front of VSB FEP 0683A1

**Performed Date
by**

NP 15-Apr-10

QV Date

NP 15-Apr-10

1. Swap cable 0660A1W1 at 0683A1A31J1 with cable 0682A1W5 at 0683A1A31J3
2. Swap cable 0661A1W1 at 0683A1A31J2 with cable 0687A1W6 at 0683A1A31J4

Note: QA will sign this step as second set of eyes

Note: This step will be Not Performed if in FR4

90 [MAINT, QA] If in FR4, Then ask Maintenance to perform the following cabling in front of VSB FEP 10483A1

**Performed Date
by**

KINCAIJM 15-Apr-10

QV Date

ROBERRA1 15-Apr-10

1. Swap cable 10460A1W2 at 10483A1A31J1 with cable 10482A1W2 at 10483A1A31J3
2. Swap cable 10461A1W2 at 10483A1A31J2 with cable 10487A1W2 at 10483A1A31J4

Note: QA will sign this step as second set of eyes

Note: This step will be Not Performed if in FR3

100 Configure FEP's at CDBFR & CDBFR Switch

**Performed Date
by**

MORRISML 15-Apr-10

1. Halt, master clear 0660/10460 and 0661/10461, deselect from CDBFR
2. Switch FEP's 0682/10482 and 0687/10487 at CDBFR switch
3. Select BAC's on CDBFR
4. Enter PWA's for 0682/10482 (LDBA) and 0687/10487 (LDBS)
5. Boot FEP's #0012



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110 Setup Model

Performed Date
by

MORRISML 15-Apr-10

1. Bring up current 'FV' model
2. Type: P SPP50; in SMC Window
3. Press ENTER
4. Type: A xxx.U QGMTDAY ; (where x=Julian Date)
5. Press ENTER (There's a 2 to 3 minute delay before a response)
6. Verify response: **SAFING MODEL INITIALIZED**

120 Configure VSB FEP from Touch Screen on FEP or MSTR Console

Performed Date
by

BIGELOPR 15-Apr-10

1. Verify: MAIN MENU
2. Select:
 - Display
 - System Information
 - Lamp Test (wait 20 seconds)
 - Exit
 - Return
 - Execute
 - Mac
 - Low rate
 - Source 1
3. Verify:
 - Packet errs - 0000
 - Frame sync - increments 128K
 - OI TFL - 129
 - GPC TFL - Any Valid Format (42, 44, 21)

130 Initialize FEP's and set pseudos from MSTR Console

Performed Date
by

BIGELOPR 15-Apr-10

1. Perform C PP LDBA 3 5, C PP LDBS 0 6
2. Perform \$CLAI for LDBA 0x82 and LDBS 0x87
3. Set Pseudos:
 - ISSU NGPCLMCNFG #0009
 - ISSU NGPC1MCNFG #8009
 - ISSU NGPC2MCNFG #8009
 - ISSU NGPC3MCNFG #8009
 - ISSU NGPC4MCNFG #8009



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ISSU NGPC5MCNFG #8009

3. Perform A DA LDBA GPC, A RS LDBA

**140 Change switch at ORB Elect Safing PNL at Console
0639A2/10439A6**

**Performed Date
by**

KANTARCM 15-Apr-10

1. Pull FUEL CELL ARM SWITCH to the ARM or ON position
2. Verify FC CMD Enable Indicator is ON

150 Bring up Safing Program from MSTR/INTG Console

**Performed Date
by**

KANTARCM 15-Apr-10

1. Perform SLPP1 in TCB 1 or TCB 2 (To allow TCB'S for \$CLAI)
2. Verify prompt: Select site KSCA - Kennedy Pad A/KSCB - Kennedy Pad B
3. Respond to prompt with: KSCA (for Pad A) or KSCB (for Pad B)
4. Select Application page B
5. Transmit cursor on Hardwire Safing block
6. Verify display: SAP91 (load LDB-FEP Safing Seq's)
7. Select all Seq's
8. Verify targets are solid yellow for Seq's 0 - 24 (EXCLUDING 1,15,17,19)
9. Press PFP SLPP1
10. Press PFPK1 (Execute)
11. Verify SDP91 targets are solid green for Seq's 0 - 24 (EXCLUDING 1,15,17,19)
12. Verify \$SYS, LDBA subpage green up arrow appears under the loaded safing seq's 0 - 24 (EXCLUDING 1,15,17,19)
13. Verify \$SYS, LDBS subpage green up arrow appears under the loaded safing seq's 0 - 24 (EXCLUDING 1,15,17,19)

160 Configure Vehicle Safing at INTG and FEP's

**Performed Date
by**

KANTARCM 15-Apr-10

1. Press RESET SWITCH on FEP 0682A1/10482A1 Vehicle Safing Interrupt Panel
2. Verify RDY indicator is ON, all others are OFF
3. Switch CMD Enable to LDB-A at INTG panel 0655A12/10455A11
4. Verify the following indicators are ON:
 - LDB-A Enabled
 - LDB-A Ready
 - LDB-B Ready



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LDB-A ACT

LDB-B STDBY

5. Verify the following indicators are ON:

Console Indicator

0639A2/10439A6 Veh Saf On

0623A1/10423A3 Vent Saf Enabled

0616A2/10416A6 LDB CMD Enabled

0615A2/10415A6 LDB CMD Enabled

0648A2/10448A6 APU CMD Enabled

0631A2/10431A6 APU CMD Enabled

0631A3/10431A10 APU CMD Enabled

6. Verify FEP 0682/10482 Vehicle Safing I/F Panel LED's are ON:

RDY

ENA

LATCHED ENA

170 DELETE

**Performed Date
by**

BIGELOPR 15-Apr-10

Observation: Step Deleted
Observation Long: Pressure meters will not cycle until
Model upgrade.
B. Richardson 04/15/10.

**180 Record start time for retrieval, which is performed
at the end of safing switch test**

**Performed Date
by**

KANTARCM 15-Apr-10

Observation: 2102z

**190 Run Safing Checkout on 0682/10482, per attachment in
Templates folder**

**Performed Date
by**

KANTARCM 15-Apr-10

200 Record stop time, plus two (2) minutes

**Performed Date
by**

KANTARCM 15-Apr-10

Note: The extra two minutes allows the last sequence time to record the
Data



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Observation: 2116z

210 Verify all Safing Sequences ran for 0682/10482 successfully and without System Message errors

**Performed Date
by**

KANTARCM 15-Apr-10

220 PRESS RESET ON LDBA FEP 0682/10482 VEHICLE SAFING INTERRUPT PANEL

**Performed Date
by**

BIGELOPR 15-Apr-10

Verify NO Safing Seq indicators are on

230 Perform \$SPRDR \$SPLDUP, using start/stop times previously recorded (Option Req = LDB ALL ALL)

**Performed Date
by**

BIGELOPR 15-Apr-10

240 [SE] Ask System Engineer to verify proper safing sequences were issued, using the FD List attached in the Template folder

**Performed Date
by**

NIMEML 15-Apr-10

Observation Long: verified \$SPLDUP for FEP 10482

250 Initialize FEP's and Vehicle Safing

**Performed Date
by**

MORRISML 15-Apr-10

1. Halt LDBA FEP 0682A1/10482A1, boot #0012
2. Verify successful redundant switch occurs
3. Perform \$CLAI FEP 0682A1/10482A1 as LDBS
4. Perform A DA LDBS GPC, A RS LDBA
5. Press Reset switch on FEP 0687A1/10487A1 Vehicle Safing Interrupt Panel
6. Verify indicator RDY is on all others are off
7. Switch CMD Enable to LDB-B at INTG panel 0655A12/10455A11
8. Verify the following indicators are ON:
 - LDB-B Enabled
 - LDB-A Ready
 - LDB-B Ready
 - LDB-A STDBY



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LDB-B ACT

9. Verify FEP 0687A1/10487A1 Vehicle Safing I/F Panel LED's are ON:

RDY

ENA

Latched ENA

10. Press Reset switch on FEP 0682A1/10482A1 Vehicle Safing Interrupt Panel

11. Verify indicator RDY is on all others are off

260 Record start time for retrieval, which is performed at the end of safing switch test

Performed Date by

KANTARCM 15-Apr-10

Observation: 2129z

270 Run Safing Checkout on 0687/10487, per attachment in Template folder

Performed Date by

KANTARCM 15-Apr-10

280 Record stop time, plus two (2) minutes

Performed Date by

KANTARCM 15-Apr-10

Note: The two extra minutes allow the last sequence time to record the data

Observation: 2141z

290 Verify all Safing Sequences for 0687/10487 ran successfully and without System Message errors

Performed Date by

KANTARCM 15-Apr-10



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300 PRESS RESET ON LDBA FEP 0687/10487 VEHICLE SAFING INTERRUPT PANEL

Performed Date
by

BIGELOPR 15-Apr-10

Verify NO Safing Seq indicators are on

310 Perform \$SPRDR \$SPLDUP, using start/stop times previously recorded (Option Req = LDB ALL ALL)

Performed Date
by

BIGELOPR 15-Apr-10

320 [SE] Ask System Engineer to verify proper safing sequences were issued, using the FD List attached in the Template folder

Performed Date
by

VERHAGWB 15-Apr-10

Observation: FEP 10487 - good

330 Configure 0661/10461 and 0660/10460 FEP's

Performed Date
by

BIGELOPR 15-Apr-10

1. Perform I DA / I RS LDBA
2. Perform \$TERM LDBA 0687/10487, LDBS 0682/10482
3. Halt and master clear FEPs 0682/10482, 0687/10487
4. Deselect BACs from CDBFR

Note: At this point, the CDBFR Pseudo shows the LDBA/LDBS FEP's are redundantly switched.

5. Enter PWA's for 0661/10461 (LDBA with Stand-by limits) and 0660/10460 (LDBS with Active limits)
6. Select BAC's on CDBFR
7. Boot FEP's 0661/10461, 0660/10460 #0012



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340 [MAINT, QA] If in FR3, Then ask Maintenance to perform the following cabling in front of VSB FEP 0683A1

**Performed Date
by**

NP 15-Apr-10

QV Date

NP 15-Apr-10

1. Swap cable 0660A1W1 at 0683A1A31J3 with cable 0682A1W5 at 0683A1A31J1
2. Swap cable 0661A1W1 at 0683A1A31J4 with cable 0687A1W6 at 0683A1A31J2

Note: This step will be Not Performed if in FR4

Note: QA will sign this step as second set of eyes

350 [MAINT, QA] If in FR4, Then ask Maintenance to perform the following cabling in front of VSB FEP10483A1

**Performed Date
by**

KINCAIJM 15-Apr-10

QV Date

ROBERRA1 15-Apr-10

1. Swap cable 10460A1W2 at 10483A1A31J3 with cable 10482A1W2 at 10483A1A31J1
2. Swap cable 10461A1W2 at 10483A1A31J4 with cable 10487A1W2 at 10483A1A31J2

Note: QA will sign this step as second set of eyes

Note: This step will be Not Performed if in FR3

360 [QA] Perform patching, per PATCH SHEET TWO

**Performed Date
by**

KANTARCM 15-Apr-10

QV Date

ROBERRA1 15-Apr-10

Note: QA will sign this as second set of eyes



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370 Intialize FEP's at MSTR

Performed Date
by

BIGELOPR 15-Apr-10

1. Perform C PP LDBA 2 5, C PP LDBS 1 5
2. Perform \$CLAI LDBA 0661/10461, LDBS 0660/10460
3. Perform A DA LDBA GPC, A RS LDBA

380 Reinitialize Safing Program at MSTR/INTG Console

Performed Date
by

KANTARCM 15-Apr-10

Note: If SAP91 is still active, perform the next substep to reload it and avoid receiving stale data. Use TCB1 or TCB2

1. Select program SLPP1/SAP91 (pg-B)
2. Transmit cursor on Terminate Program
3. Select Application page B
4. Transmit cursor on Hardwire Safing block
5. Verify display: SAP91 (load LDB-FEP Safing Seq's)
6. Select all Seq's
7. Verify targets are solid yellow for Seq's 0 - 24 (excluding 1,15,17,19)
8. Press PFP SLPP1
9. Press PFPK1 (Execute)
10. Verify SDP91 targets are solid green for Seq's 0 - 24 (excluding 1,15,17,19)
11. Verify \$SYS, LDBA subpage green up arrow appears under the loadedsafing seq's 0 - 24 (excluding 1,15,17,19)
12. Verify \$SYS, LDBS subpage green up arrow appears under the loadedsafing seq's 0 - 24 (excluding 1,15,17,19)

390 Configure Vehicle Safing at INTG and FEP's

Performed Date
by

KANTARCM 15-Apr-10

1. Verify CMD Enable to LDB-B at INTG panel 0655A12/10455A11
2. Verify following indicators are ON:
 - LDB-B Enabled
 - LDB-A Ready
 - LDB-B Ready
 - LDB-A STDBY
 - LDB-B ACT
3. Verify FEP 0661A1/10461A1 Vehicle Safing I/F Panel LED's are ON:
 - RDY



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ENA

Latched ENA

4. Press Reset switch on FEP 0687A1/10487A1 Vehicle Safing Interrupt Panel

5. Verify RDY indicator is on, all others are off

400 Record start time for retrieval, which is performed at the end of safing switch test

Performed Date by

BIGELOPR 15-Apr-10

Observation: 2257z

410 Run Safing Checkout on 0661/10461, per attachment in Template folder

Performed Date by

KANTARCM 15-Apr-10

420 Record stop time, plus two (2) minutes

Performed Date by

BIGELOPR 15-Apr-10

Note: The two extra minutes allow the last sequence time to record the data

Observation: 2308z

430 Verify all Safing Sequences ran for 661/10461 successfully and without error

Performed Date by

KANTARCM 15-Apr-10

440 PRESS RESET ON LDBA FEP 0661/10461 VEHICLE SAFING INTERRUPT PANEL

Performed Date by

BIGELOPR 15-Apr-10

Verify NO Safing Seq indicators are on



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-
- 450 Perform \$SPRDR \$SPLDUP, using start/stop times previously recorded (Option Req = LDB ALL ALL)** **Performed Date by**
- BIGELOPR 15-Apr-10
-
- 460 [SE] Ask System Engineer to verify proper safing sequences were issued, using the FD List attached in Template folder** **Performed Date by**
- VERHAGWB 15-Apr-10
- Observation:** FEP 10461 - good
-
- 470 Initialize FEP's and Vehicle Safing** **Performed Date by**
- BIGELOPR 15-Apr-10
1. Halt FEP 0661A1/10461A1, boot to #0012
 2. Verify successful redundant switch occurs
 3. Perform \$CLAI FEP 0661A1/10461A1 as LDBS
 4. Perform A DA LDBS GPC, A RS LDBA
- Note: At this point, the CDBFR PWA's and FEP's are correct:
 LDBA/0660/10460, Active PWA
 LDBS/0661/10461, Stand-by PWA
5. Press Reset switch on FEP 0660A1/10460A1 Vehicle Safing Interrupt Panel
 6. Verify indicator RDY is on all others are off
 7. Switch CMD Enable to LDB-A at INTG panel 0655A12/10455A11
 8. Verify the following indicators are ON:
 LDB-A Enabled
 LDB-A Ready
 LDB-B Ready
 LDB-A ACT
 LDB-B STDBY
 9. Verify FEP 0660A1/10460A1 Vehicle Safing I/F Panel LED's are ON:
 RDY
 ENA
 Latched ENA
 10. Press Reset switch on FEP 0661A1/10461A1 Vehicle Safing Interrupt Panel
 11. Verify indicator RDY is on all others are off
-



WORK ORDER

1161921

AWOPRNTA Ver 1.84 Printed: 05/07/2010 12:25

480 Record start time for retrieval, which is performed at the end of safing switch test

**Performed Date
by**

BIGELOPR 15-Apr-10

Observation: 2317Z

490 Run Safing Checkout on 0660/10460, per attachment in Template folder

**Performed Date
by**

KANTARCM 15-Apr-10

500 Record stop time, plus two (2) minutes

**Performed Date
by**

BIGELOPR 15-Apr-10

Note: The two extra minutes allow the last sequence time to record the data

Observation: 2326z

510 Verify all Safing Sequences ran for 0660/10460 successfully and without System Message errors

**Performed Date
by**

KANTARCM 15-Apr-10

520 PRESS RESET ON LDBA FEP 0660/10460 VEHICLE SAFING INTERRUPT PANEL

**Performed Date
by**

BIGELOPR 15-Apr-10

Verify NO Safing Seq indicators are on



WORK ORDER

1161921

AWOPRNTA Ver 1.84 Printed: 05/07/2010 12:25

-
- 530 Perform \$SPRDR \$SPLDUP, using start/stop times previously recorded (Option Req = LDB ALL ALL)**
- Performed Date by**
BIGELOPR 15-Apr-10
- Observation:** FEP 10460
-
- 540 [SE] Ask System Engineer to verify proper safing sequences were issued, using the FD List attached in the Template folder**
- Performed Date by**
VERHAGWB 15-Apr-10
- Observation:** FEP 10460 - good
-
- 550 Change switch at ORB Elect Safing PNL at Console 0639A2/10439A6)**
- Performed Date by**
BIGELOPR 15-Apr-10
1. Pull FUEL CELL ARM SWITCH to the DISARM or OFF position
2. Verify FC CMD Enable indicator is OFF
-
- 560 Switch CMD Enable to OFF (MIDDLE POSITION) at INTG panel 0655A12/10455A11**
- Performed Date by**
BIGELOPR 15-Apr-10
1. Press Reset switch on FEP 0660A1/10460A1 Vehicle Safing Interrupt Panel
2. Verify indicator RDY is on all others are off
-
- 570 [QA] Perform patching per PATCH SHEET THREE**
- Performed Date by**
KANTARCM 15-Apr-10
- QV Date**
ROBERRA1 15-Apr-10

Note: QA will sign this step as second set of eyes



WORK ORDER

1161921

AWOPRNTA Ver 1.84 Printed: 05/07/2010 12:25

580 Configure Back to Original at MSTR/INTG Console

Performed Date
by

KANTARCM 15-Apr-10

1. Select program SLPP1/SAP91 (pg-B)
2. Transmit cursor on Terminate Program
3. Select SLPP1 (pg-B)
4. Transmit cursor on Terminate
5. Perform I DA LDBA, I RS LDBA
6. Perform \$TERM on LDBA, LDBS

590 PRESS RESET ON ALL LDB FEP VEHICLE SAFING INTERRUPT PANEL's

Performed Date
by

BIGELOPR 15-Apr-10

600 Kill Model

Performed Date
by

BIGELOPR 15-Apr-10

1. Select Kill Model Option in SMC window
2. Verify Model is down
3. Close all model windows
4. Terminate X-server session

610 Configure VSB FEP from Touch Screen on FEP or MSTR Console

Performed Date
by

BIGELOPR 15-Apr-10

1. Verify: Main Menu
2. Select:
 - Terminate
 - Yes
 - Exit
 - Display
 - System Information
 - Lamp Test (wait 20 seconds)
 - Exit
 - Return
3. Verify: Main Menu



WORK ORDER

1161921

AWOPRNTA Ver 1.84 Printed: 05/07/2010 12:25

620 Hang FEP Retrievals on System Message rack after System Engineers have verified each FEP

**Performed Date
by**

BIGELOPR 15-Apr-10

Write on each retrieval:
FEP REF DES
LDB Vehicle Safing
Date

630 Verify successful checkout of the LPS Hold Indicator by GLS.

**Performed Date
by**

LEWISGJ 15-Apr-10

Verify that GLS has provided written acknowledgement of successful LPS Hold indicator light operation at console 0655A12/10455A11. This checkout is performed during OMI S0044 for this flow. Attach a copy of the e-mail confirmation to this Work Order in the DS folder.

Observation Long: Performed/verified during S0044 4/14/10.

640 Work Order Complete

**Performed Date
by**

BIGELOPR 15-Apr-10

| FR 4A PATCH CHANGE | | | | |
|--------------------|--------------|-------------|-----------------|-----------------|
| | From Ref Des | To Ref Des | Data From | To |
| DEL | 158A2A27J1 | 158A2A11J21 | VAB-1 LDB 1 U/L | FR 4A LDB 1 U/L |
| DEL | 158A2A27J2 | 158A2A11J22 | VAB-1 LDB 1 D/L | FR 4A LDB 1 D/L |
| DEL | 158A2A27J3 | 158A2A11J23 | VAB-1 LDB 2 U/L | FR 4A LDB 2 U/L |
| DEL | 158A2A27J4 | 158A2A11J24 | VAB-1 LDB 2 D/L | FR 4A LDB 2 D/L |
| DEL | 158A2A27J5 | 158A2A11J25 | VAB-1 PCM 1 D/L | FR 4A PCM 1 D/L |
| DEL | | | | |
| DEL | 492A3A13J1 | 492A3A13J21 | 10460 | SU A10A3 |
| DEL | 492A3A13J2 | 492A3A13J22 | SA A10A4 | 10460 |
| DEL | 492A3A13J3 | 492A3A13J23 | 10460 | SU A15A3 |
| DEL | 492A3A13J4 | 492A3A13J24 | SA A15A4 | 10460 |
| DEL | | | | |
| DEL | | | | |
| DEL | | | | |
| | From Ref Des | To Ref Des | Data From | To |
| ADD | 158A2A09J21 | 158A2A11J21 | RSI 6 LDB 1 U/L | FR 4A LDB 1 U/L |
| ADD | 158A2A09J22 | 158A2A11J22 | RSI 6 LDB 1 D/L | FR 4A LDB 1 D/L |
| ADD | 158A2A09J23 | 158A2A11J23 | RSI 6 LDB 2 U/L | FR 4A LDB 2 U/L |
| ADD | 158A2A09J24 | 158A2A11J24 | RSI 6 LDB 2 D/L | FR 4A LDB 2 D/L |
| ADD | 158A2A09J25 | 158A2A11J25 | RSI 6 PCM 1 D/L | FR 4A PCM 1 D/L |
| ADD | | | | |
| ADD | 492A3A13J1 | 492A3A22J29 | 10487 | SU A10A3 |
| ADD | 492A3A13J2 | 492A3A22J30 | SA A10A4 | 10487 |
| ADD | 492A3A13J3 | 492A3A22J31 | 10487 | SU A15A3 |
| ADD | 492A3A13J4 | 492A3A22J32 | SA A15A4 | 10487 |
| ADD | | | | |
| ADD | | | | |
| ADD | | | | |

Notes:

All Patches will be documented per a MWO.
 Notify all LPS TCs prior to making changes.
 All entries must be checked by another person.
 All patch changes must be visually confirmed at the patch panel by QA.

Reason:

FR 4A

TTC 1161921
 Sheet 1

From: Pandelos, Alexander N
Sent: Thursday, April 15, 2010 12:55 PM
To: Pandelos, Alexander N; 52300 First Line Mgrs; 52300 Test Conductors
Cc: Hensley, Jennifer I; Thomas, George H; Pape, Janiene L
Subject: RE: GLS VFY of LPS Hold Ind - STS131/S0044
Sorry, Subject should have been 132, not 131.

From: Pandelos, Alexander N
Sent: Thursday, April 15, 2010 12:54
To: 52300 First Line Mgrs; 52300 Test Conductors
Cc: Hensley, Jennifer I; Pandelos, Alexander N; Thomas, George H; Pape, Janiene L
Subject: GLS VFY of LPS Hold Ind - STS131/S0044

The LPS Hold Indicator light on the LDB Hardwire Safing Sequence Panel at the Integration Console (0655A12/10455A11) was verified to be operating as expected during the STS132/S0044 exercise. This supports Step 630 of Job Plan #26780.

Alex Pandelos
United Space Alliance
LPS Applications Software - GLS
USK-284 / (321) 861-7584
alexander.n.pandelos@usa-spaceops.com

LDB Vehicle Safing FD List:

Note: Sequence 0 is performed from INTG Console, one time. Sequence 2 & 3 are one switch, performed from C11 Console. The LDBA Vehicle Safing Panel will be reset. Sequence 2 will be performed from C8 Console, as well as Sequence 3.

SEQUENCE 0:

CMD LS HOLD

CMD LS RECYCLE

RUN 1 OF SEQUENCE 2:

UNLOCK SRB MDM FOR <B75K3067XL>

UNLOCK SRB MDM FOR <B75K3068XL>

UNLOCK SRB MDM FOR <B75K4067XL>

UNLOCK SRB MDM FOR <B75K4068XL>

UNLOCK SRB MDM FOR <B75K3065XL>

UNLOCK SRB MDM FOR <B75K3066XL>

UNLOCK SRB MDM FOR <B75K4065XL>

UNLOCK SRB MDM FOR <B75K4066XL>

SET <B58K3017XL> TO OFF

SET <B58K3019XL> TO OFF

SET <B58K4017XL> TO OFF

SET <B58K4019XL> TO OFF

SET <B58K3016XL> TO OFF

SET <B58K3018XL> TO OFF

SET <B58K4016XL> TO OFF

SET <B58K4018XL> TO OFF

SET <B58K3020XL> TO OFF

SET <B58K3021XL> TO OFF

SET <B58K4020XL> TO OFF

SET <B58K4021XL> TO OFF

RUN 1 OF SEQUENCE 3:

SET <V46K0126NL> TO OFF

SET <V46K0226NL> TO OFF

SET <V46K0326NL> TO OFF

SET <V46K0121NL> TO OFF

SET <V46K0131NL> TO OFF

SET <V46K0221NL> TO OFF

SET <V46K0231NL> TO OFF

SET <V46K0321NL> TO OFF

SET <V46K0331NL> TO OFF

SET <V46K0177NL> TO OFF

SET <V46K0277NL> TO OFF

SET <V46K0377NL> TO OFF

SET <V46K0178NL> TO OFF

SET <V46K0278NL> TO OFF

SET <V46K0378NL> TO OFF

RUN 2 OF SEQUENCE 2:

UNLOCK SRB MDM FOR <B75K3067XL>
UNLOCK SRB MDM FOR <B75K3068XL>
UNLOCK SRB MDM FOR <B75K4067XL>
UNLOCK SRB MDM FOR <B75K4068XL>
UNLOCK SRB MDM FOR <B75K3065XL>
UNLOCK SRB MDM FOR <B75K3066XL>
UNLOCK SRB MDM FOR <B75K4065XL>
UNLOCK SRB MDM FOR <B75K4066XL>

SET <B58K3017XL> TO OFF
SET <B58K3019XL> TO OFF
SET <B58K4017XL> TO OFF
SET <B58K4019XL> TO OFF
SET <B58K3016XL> TO OFF
SET <B58K3018XL> TO OFF
SET <B58K4016XL> TO OFF
SET <B58K4018XL> TO OFF
SET <B58K3020XL> TO OFF
SET <B58K3021XL> TO OFF
SET <B58K4020XL> TO OFF
SET <B58K4021XL> TO OFF

RUN 2 OF SEQUENCE 3:

SET <V46K0126NL> TO OFF

SET <V46K0226NL> TO OFF

SET <V46K0326NL> TO OFF

SET <V46K0121NL> TO OFF

SET <V46K0131NL> TO OFF

SET <V46K0221NL> TO OFF

SET <V46K0231NL> TO OFF

SET <V46K0321NL> TO OFF

SET <V46K0331NL> TO OFF

SET <V46K0177NL> TO OFF

SET <V46K0277NL> TO OFF

SET <V46K0377NL> TO OFF

SET <V46K0178NL> TO OFF

SET <V46K0278NL> TO OFF

SET <V46K0378NL> TO OFF

SEQUENCE 4:

SET <V41K1518XL> TO ON

SET <V41K1518NL> TO ON

SET <V41K1515XL> TO OFF

SEQUENCE 5:

SET <V41K1515XL> TO ON

SET <V41K1518XL> TO OFF

SET <V41K1518NL> TO OFF

SEQUENCE 6:

SET <V41K1501XL> TO ON

SET <V41K1502XL> TO ON

SET <V41K1503NL> TO ON

SET <V41K1512XL> TO OFF

SEQUENCE 7:

SET <V41K1512XL> TO ON
SET <V41K1501XL> TO OFF
SET <V41K1502XL> TO OFF
SET <V41K1503NL> TO OFF

SEQUENCE 8:

SET <V41K1391XL> TO ON
SET <V41K1391NL> TO ON
SET <V41K1393XL> TO OFF

SEQUENCE 9:

SET <V41K1393XL> TO ON
SET <V41K1391XL> TO OFF
SET <V41K1391NL> TO OFF

SEQUENCE 10:

SET <V41K1401XL> TO ON
SET <V41K1402XL> TO ON
SET <V41K1403NL> TO ON
SET <V41K1412XL> TO OFF

SEQUENCE 11:

SET <V41K1412XL> TO ON
SET <V41K1401XL> TO OFF
SET <V41K1402XL> TO OFF
SET <V41K1403NL> TO OFF

SEQUENCE 12:

SET <V41K1411XL> TO ON

SEQUENCE 13:

SET <V41K1411XL> TO OFF

SEQUENCE 14:

SET <V76K0161NL> TO OFF

SET <V76K0162NL> TO ON (For a one second Delay)

SEQUENCE 16:

SET <V76K0261NL> TO OFF

SET <V76K0262NL> TO ON (For a one second Delay)

SEQUENCE 18:

SET <V76K0361NL> TO OFF

SET <V76K0362NL> TO ON (For a one second Delay)

SEQUENCE 20:

THE FOLLOWING FD'S SHOULD BE SET TO OFF:

- | | |
|------------------|------------------|
| SET <V59K3250XL> | SET <V59K4450XL> |
| SET <V59K3251XL> | SET <V59K4451XL> |
| SET <V59K3260XL> | SET <V59K4460XL> |
| SET <V59K3261XL> | SET <V59K4461XL> |
| SET <V59K4250XL> | SET <V59K3550XL> |
| SET <V59K4251XL> | SET <V59K3551XL> |
| SET <V59K4260XL> | SET <V59K3560XL> |
| SET <V59K4261XL> | SET <V59K3561XL> |
| SET <V59K3450XL> | SET <V59K4550XL> |
| SET (V59K3451XL> | SET <V59K4551XL> |
| SET <V59K3460XL> | SET <V59K4560XL> |
| SET <V59K3461XL> | SET <V59K4561XL> |

THE FOLLOWING FD'S SHOULD BE SET TO ON:

| | |
|------------------|------------------|
| SET <V59K3200XL> | SET <V59K4400XL> |
| SET <V59K3201XL> | SET <V59K4401XL> |
| SET <V59K3210XL> | SET <V59K4410XL> |
| SET <V59K3211XL> | SET <V59K4411XL> |
| SET <V59K4200XL> | SET <V59K3500XL> |
| SET <V59K4201XL> | SET <V59K3501XL> |
| SET <V59K4210XL> | SET <V59K3510XL> |
| SET <V59K4211XL> | SET <V59K3511XL> |
| SET <V59K3400XL> | SET <V59K4500XL> |
| SET <V59K3401XL> | SET <V59K4501XL> |
| SET <V59K3410XL> | SET <V59K4510XL> |
| SET <V59K3411XL> | SET <V59K4511XL> |

SEQUENCE 21:

THE FOLLOWING FD'S SHOULD BE SET TO OFF:

| | |
|------------------|------------------|
| SET <V59K3050XL> | SET <V59K3850XL> |
| SET <V59K3051XL> | SET <V59K3851XL> |
| SET <V59K3060XL> | SET <V59K3860XL> |
| SET <V59K3061XL> | SET <V59K3861XL> |
| SET <V59K4050XL> | SET <V59K4850XL> |
| SET <V59K4051XL> | SET <V59K4851XL> |
| SET <V59K4060XL> | SET <V59K4860XL> |
| SET <V59K4061XL> | SET <V59K4861XL> |

THE FOLLOWING FD'S SHOULD BE SET TO ON:

| | |
|------------------|------------------|
| SET <V59K3100XL> | SET <V59K3900XL> |
| SET <V59K3101XL> | SET <V59K3901XL> |
| SET <V59K3110XL> | SET <V59K3910XL> |
| SET <V59K3111XL> | SET <V59K3911XL> |
| SET <V59K4100XL> | SET <V59K4900XL> |
| SET <V59K4101XL> | SET <V59K4901XL> |
| SET <V59K4110XL> | SET <V59K4910XL> |
| SET <V59K4111XL> | SET <V59K4911XL> |

SEQUENCE 22:

THE FOLLOWING FD'S SHOULD BE SET TO OFF:

| | |
|------------------|------------------|
| SET <V59K3200XL> | SET <V59K4500XL> |
| SET <V59K3201XL> | SET <V59K4501XL> |
| SET <V59K3210XL> | SET <V59K4510XL> |
| SET <V59K3211XL> | SET <V59K4511XL> |
| SET <V59K4200XL> | SET <V59K3100XL> |
| SET <V59K4201XL> | SET <V59K4110XL> |
| SET <V59K4210XL> | SET <V59K3101XL> |
| SET <V59K4211XL> | SET <V59K4111XL> |
| SET <V59K3400XL> | SET <V59K3110XL> |
| SET <V59K3401XL> | SET <V59K3111XL> |
| SET <V59K3410XL> | SET <V59K4100XL> |
| SET <V59K3411XL> | SET <V59K4101XL> |
| SET <V59K4400XL> | SET <V59K3900XL> |
| SET <V59K4401XL> | SET <V59K4910XL> |
| SET <V59K4410XL> | SET <V59K3901XL> |
| SET <V59K4411XL> | SET <V59K4911XL> |
| SET <V59K3500XL> | SET <V59K3910XL> |
| SET <V59K3501XL> | SET <V59K3911XL> |
| SET <V59K3510XL> | SET <V59K4900XL> |
| SET <V59K3511XL> | SET <V59K4901XL> |

SEQUENCE 23:

SET <V41K1584XL> TO OFF
 SET <V41K1585XL> TO OFF
 SET <V41K1586XL> TO OFF

SEQUENCE 24:

SET <V41K1584XL> TO ON
 SET <V41K1585XL> TO ON
 SET <V41K1586XL> TO ON

RSI PROCEDURES (10/06/09)

For additional information refer to Desk Instruction LPSO-CCMS-651

1. CONNECT TO A RSI FROM A MSTR CONSOLE BASIS WORKSTATION

Note 1: This procedure uses the BASIS IP address followed by a colon and then a display number of 0 (zero). [i.e.:xxx.xxxx.xxx.xxx:0]

- a. Log into the BASIS workstation with your standard USAFL NTID and password.
- b. Click on the <Start Button>
 - Select <Programs>
 - Select <Hummingbird Connectivity 2008>
 - Select <Exceed>

This will open up the Exceed X-windows application which will show on your task bar along the bottom of the screen.

- c. Select <Start Button> and then select <Run> (this will bring up the Run window).
- d. Type **telnet xxx.xxx.xxx.xxx 2525** <Enter>
(Where xxx.xxx.xxx.xxx = IP address of required RSI) and select <OK>.
- e. This will bring up a telnet window, with the following prompt:
xxx.xxx.xxx.xxx has CMM permission.
Enter the X-display address:
- f. In the telnet window, type xxx.xxx.xxx.xxx:**0** <Enter>
(Where xxx.xxx.xxx.xxx = the IP address displayed before “has CMM permission” inside the window, followed by a colon and 0 ‘zero’)
- g. Verify RSI’s CMMON window displays.
- h. Close the telnet window.

2. LOAD (AND INITIALIZE) A MODEL ON AN RSI

- a. Verify the RSix Chassis Manager window displays.
- b. Confirm connection to the correct RSI.
- c. Verify the Release is correct. (If not, see section 6.11 “Update/Change Release” steps of LPSO-CCMS-651).
- d. Select <SimMaster> in the left hand display.
- e. Select <Load Model> button in the Actions block in right hand display.
- f. Verify the “RSix Load Form” displays.

Note: If TCID or Model name displays red with (UPDATE), it means a newer version is available on the Model server. Load the newer version, unless instructed otherwise. (To load it, see section 6.15 or 6.16 “To pull TCID or Model from Model server of LPSO-CCMS-651.”)

- f. Select <TCID, Model, Configuration> (This may have been changed and must be verified every time) and <Load Options> (if required by users).

- g. Select <Load Model> button.
- h. Verify “Load Model Confirmation” dialog box displays and information is correct.
- i. Enter Start Up Procedure, if supplied by user, in dialog box or leave blank.
- j. Select <Proceed> button.
- k. Verify “Log” window displays with several messages and pausing on “Starting mcs...”
(Takes several minutes)
- l. Watch the RSIX Chassis Manager display for each required SPU and loaded GSC to turn green.
- m. Close the “RSIX Load Form” window.
- n. Verify RSI is operational.
- o. Minimize (don't close) the SMC window that popped up (this is the Master SMC window).

1 Start Safing Seq 0:

1. Perform from INTG Console 0655A12/10455A11
Toggle the LPS HOLD SWITCH: UP and RELEASE
Verify Ready Indicator ACK light comes ON, then goes OFF after approximately 2 seconds
2. Observe LDBA FEP Vehicle Safing Interrupt Panel
Verify Safing Seq 0 Indicator comes ON
Verify ACK light comes ON, then goes OFF after approximately 2 seconds
3. Verify NO Safing Seq errors reported on system message page at MSTR Console

2 Start Safing Seq's 2 and 3:

1. Perform from Flight Control Console 0648A2/10448A6
Toggle the APU OFF SWITCH: UP and RELEASE
2. Observe INTG Console 0655A12/10455A11
Verify Ready Indicator ACK light comes ON, then goes OFF After approximately 2 seconds
3. Observe LDBA FEP Vehicle Safing Interrupt Panel
Verify Safing Seq 2 Indicator and Safing Seq 3 Indicator comes ON
Verify ACK comes ON, then goes OFF after about 2 seconds
4. Verify NO Safing Seq errors reported on system message page at MSTR Console

3 PRESS RESET ON LDBA FEP VEHICLE SAFING INTERRUPT PANEL

Verify NO Safing Seq indicators are on

4 Start Safing Seq 2 (Different console than previous Seq 2)

1. Perform from ORB APU/HYD Console 0631A3/10431A6
Toggle APU OFF SWITCH: UP and RELEASE
2. Perform from INTG Console 0655A12/10455A11
Verify Ready Indicator ACK light comes ON, then goes OFF after approximately 2 seconds
3. Observe LDBA FEP Vehicle Safing Interrupt Panel
Verify Safing Seq 2 Indicator comes ON
Verify ACK light comes ON, then goes OFF after approximately 2 seconds
4. Verify NO Safing Seq errors reported on system message page at MSTR Console

5 Start Safing Seq 3(Different console than previous Seq 3)

1. Perform from ORB HYD/APU Console 0631A2/10431A10
Toggle APU OFF SWITCH: UP and RELEASE
2. Observe from INTG Console 0655A12/10455A11
Verify Ready Indicator ACK light comes ON, then goes OFF after approximately 2 seconds
3. Observe from LDBA FEP Vehicle Safing Interrupt Panel
Verify Safing Seq 3 Indicator comes ON
Verify ACK light comes ON, then goes OFF after approximately 2 seconds
4. Verify NO Safing Seq errors reported on system message page at MSTR Console

6 Start Safing Seq 4

1. Perform from MPS L02 Console 0616A2/10416A6
Toggle OUTBD FILL VALVE SWITCH: UP (OPEN) and to the MIDDLE (OFF)
Verify OUTBD FILL VALVE OPEN INDICATOR is ON
2. Observe from INTG Console 0655A12/10455A11
Verify Ready Indicator ACK light comes ON, then goes OFF after approximately 2 seconds
3. Observe from LDBA FEP Vehicle Safing Interrupt Panel
Verify Safing Seq 4 Indicator comes ON
Verify ACK light comes ON, then goes OFF after approximately 2 seconds
4. Verify NO Safing Seq errors reported on system message page at MSTR Console

7 Start Safing Seq 5

1. Perform from MPS L02 Console 0616A2/10416A6
Toggle OUTBD FILL VALVE SWITCH: Down (CLOSED) and to the MIDDLE (OFF)
Verify OUTBD FILL VALVE CLOSED INDICATOR is ON
2. Observe from INTG Console 0655A12/10455A11
Verify Ready Indicator ACK light comes ON, then goes OFF after approximately 2 seconds
3. Observe from LDBA FEP Vehicle Safing Interrupt Panel
Verify Safing Seq 5 Indicator comes ON
Verify ACK light comes ON, then goes OFF after approximately 2 seconds
4. Verify NO Safing Seq errors reported on system message page at MSTR Console

8 Start Safing Seq 6

1. MPS L02 Console 0616A2/10416A6
Toggle INBD FILL VALVE SWITCH: UP (OPEN) and to the MIDDLE (OFF)
Verify INBD FILL VALVE OPEN INDICATOR is ON
2. Observe from INTG Console 0655A12/10455A11
Verify Ready Indicator ACK light comes ON, then goes OFF after approximately 2 seconds
3. Observe from LDBA FEP Vehicle Safing Interrupt Panel
Verify Safing Seq 6 Indicator is ON
Verify ACK light comes ON, then goes OFF after approximately 2 seconds
4. Verify NO Safing Seq errors reported on system message page at MSTR Console

9 Start Safing Seq 7

1. Perform from MPS L02 Console 0616A2/10416A6
Toggle INBD FILL VALVE SWITCH: DOWN (CLOSED) and to the MIDDLE (OFF)
Verify INBD FILL VALVE CLOSED INDICATOR is ON
2. Observe from INTG Console 0655A12/10455A11
Verify Ready Indicator ACK light comes ON, then goes OFF after approximately 2 seconds
3. Observe from LDBA FEP Vehicle Safing Interrupt Panel
Verify Safing Seq 7 Indicator comes ON
Verify ACK light comes ON, then goes OFF after approximately 2 seconds
4. Verify NO Safing Seq errors reported on system message page at MSTR Console

10 Start Safing Seq 8

1. Perform from MPS LH2 Console 0615A2/10415A6
Toggle OUTBD FILL VALVE SWITCH: UP (OPEN) and to the MIDDLE (OFF)
Verify OUTBD FILL VALVE OPEN INDICATOR is ON
2. Observe from INTG Console 0655A12/10455A11
Verify Ready Indicator ACK light comes ON, then goes OFF after approximately 2 seconds
3. Observe from LDBA FEP Vehicle Safing Interrupt Panel
Verify Safing Seq 8 indicator comes ON
Verify ACK light comes ON, then goes OFF after approximately 2 seconds
4. Verify NO Safing Seq errors reported on system message page at MSTR Console

11 Start Safing Seq 9

1. Perform from MPS LH2 Console 0615A2/10415A6
Toggle OUTBD FILL VALVE SWITCH: DOWN (CLOSED) and to the MIDDLE (OFF)
Verify OUTBD FILL VALVE CLOSED INDICATOR is ON
2. Observe from INTG Console 0615A12/10455A11
Verify Ready Indicator ACK light comes ON, then goes OFF after approximately 2 seconds
3. Observe from LDBA FEP Vehicle Safing Interrupt Panel
Verify Safing Seq 9 indicator comes ON
Verify ACK light comes ON, then goes OFF after approximately 2 seconds.
4. Verify NO Safing Seq errors reported on system message page at MSTR Console

12 Start Safing Seq 10

1. Perform from MPS LH2 Console 0615A2/10415A6
Toggle INBD FILL VALVE SWITCH: UP (OPEN) and to the MIDDLE (OFF)
Verify INBD FILL VALVE OPEN INDICATOR is ON
2. Observe from INTG Console 0655A12/10455A11
Verify Ready Indicator ACK light comes ON, then goes OFF after approximately 2 seconds
3. Observe from LDBA FEP Vehicle Safing Interrupt Panel
Verify Safing Seq 10 indicator comes ON
Verify ACK light comes ON, then goes OFF after approximately 2 seconds
4. Verify NO Safing Seq errors reported on system message page at MSTR Console

13 Start Safing Seq 11

1. MPS LH2 Console 0615A2/10415A6
Toggle INBD FILL VALVE SWITCH: DOWN (CLOSED) and to the MIDDLE (OFF)
Verify INBD FILL VALVE CLOSED INDICATOR is ON
2. Observe from INTG Console 0655A12/10455A11
Verify Ready Indicator ACK light comes ON, then goes OFF after approximately 2 seconds
3. Observe from LDBA FEP Vehicle Safing Interrupt Panel
Verify Safing Seq 11 indicator comes ON
Verify ACK light comes ON, then goes OFF after approximately 2 seconds
4. Verify NO Safing Seq errors reported on system message page at MSTR Console

14 Start Safing Seq 12

1. Perform from MPS LH2 Console 0615A2/10415A6
Toggle TOPPING VALVE SWITCH: UP (OPEN) and to the MIDDLE (OFF)
Verify TOPPING VALVE OPEN INDICATOR is ON
2. Observe from INTG Console 0655A12/10455A11
Verify Ready Indicator ACK light comes ON, then goes OFF after approximately 2 seconds
3. Observe from LDBA FEP Vehicle Safing Interrupt Panel
Verify Safing Seq 12 indicator comes ON
Verify ACK light comes ON, then goes OFF after approximately 2 seconds
4. Verify NO Safing Seq errors reported on system message page at MSTR Console

15 Start Safing Seq 13

1. Perform from MPS LH2 Console 0615A2/10415A6
Toggle TOPPING VALVE SWITCH: DOWN (CLOSED) and to the MIDDLE (OFF)
Verify TOPPING VALVE CLOSED INDICATOR is ON
2. Observe from INTG Console 0655A12/10455A11
Verify Ready Indicator ACK light comes ON, then goes OFF after approximately 2 seconds
3. Observe from LDBA FEP Vehicle Safing interrupt Panel
Verify Safing Seq 13 indicator comes ON
Verify ACK light comes ON, then goes OFF after approximately 2 seconds
4. Verify NO Safing Seq errors reported on system message page at MSTR Console

16 Start Safing Seq 14

1. Perform from ORB ELEC Console 0639A2/10439A6
Toggle FUEL CELL 1 SWITCH: UP (OFF) and then DOWN
2. Observe from INTG Console 0655A12/10455A11
Verify Ready Indicator ACK light comes ON, then goes OFF after approximately 2 seconds
3. Observe from LDBA FEP Vehicle Safing Interrupt Panel
Verify Safing Seq 14 indicator comes ON
Verify Ready Indicator ACK light comes ON, then goes OFF after approximately 2 seconds
4. Verify no Safing Seq errors reported on system message page at MSTR Console

17 Start Safing Seq 16

1. Perform from ORB ELEC Console 0639A2/10439A6
Toggle FUEL CELL 2 Switch: UP (OFF) and then DOWN

2. Observe from INTG Console 0655A12/10455A11
Verify Ready Indicator ACK light comes ON, then goes OFF
after approximately 2 seconds
3. Observe from LDBA FEP Vehicle Safing Interrupt Panel
Verify Safing Seq 16 indicator comes ON
Verify ACK light comes ON, then goes OFF after
approximately 2 seconds
4. Verify NO Safing Seq errors reported on system message
page at MSTR Console

18 Start Safing Seq 18

1. Perform from ORB ELEC Console 0639A2/10439A6
Toggle FUEL CELL 3 SWITCH: UP (OFF) and then DOWN
2. Observe from INTG Console 0655A12/10455A11
Verify Ready Indicator ACK light comes ON, then goes OFF
after approximately 2 seconds
3. Observe from LDBA FEP Vehicle Safing Interrupt Panel
Verify Safing Seq 18 indicator comes ON
Verify ACK light comes ON, then goes OFF after
approximately 2 seconds
4. Verify no Safing Seq errors reported on system message
page at MSTR Console

19 Start Safing Seq 20

1. Perform from ECS Console 0623A1/10423A3
Toggle ORB VENT DOOR (DR) 3, 5 & 6 Safe Switch: UP and then
RELEASE
2. Observe from INTG Console 0655A12/10455A11
Verify Ready Indicator ACK light comes ON, then goes OFF
after approximately 2 seconds
3. Observe from LDBA FEP Vehicle Safing Interrupt Panel
Verify Safing Seq 20 indicator comes ON
Verify ACK light comes ON, then goes OFF after
approximately 2 seconds
4. Verify NO Safing Seq errors reported on system message
page at MSTR Console

20 Start Safing Seq 21

1. Perform from ECS Console 0623A1/10423A3
Toggle ORB VENT DOORS (DRS) 1 & 2/8 & 9 SAFE SWITCH: UP and
then RELEASE
2. Observe from INTG Console 0655A12/10455A11
Verify Ready Indicator ACK light comes ON, then goes OFF
after approximately 2 seconds
3. Observe from LDBA FEP Vehicle Safing Interrupt Panel
Verify Safing Seq 21 indicator comes ON

Verify ACK light comes ON, then goes OFF after approximately 2 seconds
4. Verify NO Safing Seq errors reported on system message page at MSTR Console

21 Start Safing Seq 22

1. Perform from ECS Console 0623A1/10423A3
Toggle DOORS CMD RESET SWITCH: UP and then RELEASE
2. Observe from INTG Console 0655A12/10455A11
Verify Ready Indicator ACK light comes ON, then goes OFF after approximately 2 seconds
3. Observe from LDBA FEP Vehicle Safing Interrupt Panel
Verify Safing Seq 22 indicator comes ON
Verify ACK light comes ON, then goes OFF after approximately 2 seconds
4. Verify NO Safing Seq errors reported on system message page at MSTR Console

22 Start Safing Seq 23

1. Perform from MPS L02 Console 0616A2/10416A6
Toggle OVERBD BLEED VALVE SWITCH: UP (OPEN) and to the MIDDLE (OFF)
Verify OVERBD BLEED VALVE OPEN INDICATOR is ON
2. Observe from INTG Console 0655A12/10455A11
Verify Ready Indicator ACK light comes ON, then goes OFF after approximately 2 seconds
3. Observe from LDBA FEP Vehicle Safing Interrupt Panel
Verify Safing Seq 23 indicator comes ON
Verify ACK light comes ON, then goes OFF after approximately 2 seconds
4. Verify NO Safing Seq errors reported on system message page at MSTR Console

23 Start Safing Seq 24

1. Perform from MPS L02 Console 0616A2/10416A6
Toggle OVERBD BLEED VALVE SWITCH: DOWN (CLOSED) and to the MIDDLE (OFF)
Verify OVERBD BLEED VALVE CLOSED INDICATOR is ON
2. Observe from INTG Console 0655A12/10455A11
Verify Ready Indicator ACK light comes ON, then goes OFF after approximately 2 seconds
3. Observe from LDBA FEP Vehicle Safing Interrupt Panel
Verify Safing Seq 24 indicator comes ON
Verify ACK light comes ON, then goes OFF after

approximately 2 seconds

4. Verify NO Safing Seq errors reported on system message page at MSTR Console

24 PRESS RESET ON LDBA FEP VEHICLE SAFING INTERRUPT PANEL

Verify NO Safing Seq indicators are on