Load a new OBSM image from the BSW
File: H_FCP_SPI_NLBM.xls
Author: L.Lucas-hp

Procedure Summary

Objectives

The objective of this procedure is to load a new OBSW image via
the Boot Software for the Nominal DPU
This is done in a number of steps
- Check initial conditions (LCLs off)
- CDMS Routing
- Switch on DPU
    Disable FDIR & Enable RT Interrogations
    Power on DPU (LCLs on)
    Re-enable SDB FDIR
- Load new OBSW
    Boot DPU
    Verify
- Reneable FDIR

Summary of Constraints

INPUT:
- Has the software image been supplied?
- Expected ASW version?

Spacecraft Configuration

Start of Procedure

SPIRE is OFF

End of Procedure

SPIRE is in DPU_ON mode

Reference File(s)

Input Command Sequences

Output Command Sequences

HFSNLBM

Referenced Displays

ANDs **GRDs** **SLDs**

ZAZ96999

Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
18/01/08		1	Created	R. Biggins	
19/05/08	1	2	Updates due to SVT-1 testing: - TC to start RT interrogations updated (step 4.3) - TC to enable SDB FDIR moved from step 6 to step 4.5 - flags updated - comments added/updated - AND updated for all TM parameters	R. Biggins	
04/03/09		2.01	Validation : Checking if updates required?	L.Lucas-hp	

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04/03/09	2.1	3	Updated parameters in new SDB FDIR command	L.Lucas-hp	
06/04/09		4	FDIR switch off actions updated and re-enable FDIR added after DpU boot and verification	L.Lucas-hp	
20/04/09	2.3	5	FDIR updated	L.Lucas-hp	

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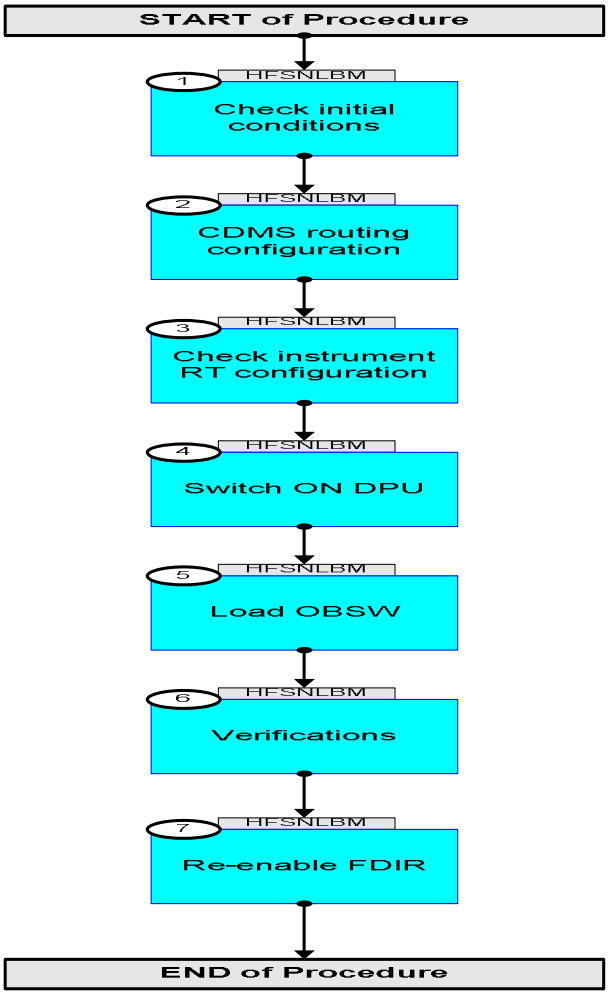
Procedure Flowchart Overview



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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Beginning of Procedure		
		TC Seq. Name :HFSNLBM (Load OBSM - BSW) *TimeTag Type: N* *Sub Schedule ID:*		
1		*Check initial conditions*		Next Step: 2
1.1		*SPIRE input*		
		Verify that the correct information has been supplied by the ICC: **Software Image** *(verify with OBSM engineer)*		
		Verify that the expected DPU software version number has been supplied by the SPIRE ICC (Step 7)		
1.2		*Bus status*		
		Verify Bus configuration		
		Verify: Active 1553 bus **Active_Bus_A_B** **DEFJ1160**	**= BUS_A**	AND=ZAZ96999
		Verify: 1553 bus FDIR status **SDB_FDIR** **DEFJ4160**	**= ENABLED**	AND=ZAZ96999
		Verify: SDB handling status **BSW_SDB_ENAB** **DEF60160**	**= ENABLED**	AND=ZAZ96999
		Verify bus health status		
		Verify: Bus (side A) health status **BusA_HealthySts** **DEFJ2160**	**= Healthy**	AND=ZAZ96999
		Verify: Bus (side B) health status **BusB_HealthySts** **DEFJ3160**	**= Healthy**	AND=ZAZ96999
1.3		*Nominal instrument LCLs*		
		Verify: DPU LCL status **SpirHsdN_L11_1S** **WM32C565**	**= OFF**	AND=ZAZ96999
		Verify: FCU LCL status **SpirHsfN_L51_1S** **WM42C565**	**= OFF**	AND=ZAZ96999

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
1.4		*Redundant instrument LCLs*		
		Verify: DPU LCL status **SpirHsdR_L12_1S** **WM82C565**	**= OFF**	AND=ZAZ96999
		Verify: FCU LCL status **SpirHsfR_L52_1S** **WM72C565**	**= OFF**	AND=ZAZ96999
1.5		*Temperature*		
		TBD		
2		*CDMS routing configuration*		Next Step: 3
2.1		*Verify Packet Routing*		
	ET=+ UT=+00.00.00	Execute Telecommand **RepDownlinkTMStorage** *Subsch. ID : 10* Det. descr. : Report Telemetry Packets Down-linking/ Storage Status	**DC141160**	
		Verify Packet Reception **Telemetry Packets DownLinking-Storage Status Report** *Packet Details:* **APID:** **Type:** **Subtype:** **PI1:** **PI2:**	**(14,7)-1400** **16** **14** **7**	
3		*Check instrument RT configuration*		Next Step: 4
3.1		*Remote Terminal configuration*		
		Verify Telemetry **SPIRE_VitalNonV** **DED52161**	**= NonVital**	AND=ZAZ96999
		Verify Telemetry **SPIRE_TmRetry** **DED54161**	**= ON**	AND=ZAZ96999
3.2		*Remote Terminal Status*		
		Nominal units		
		Verify Telemetry **SPIREA_OnOff** **DED1G161**	**= OFF**	AND=ZAZ96999

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		Verify Telemetry **SPIREA_DeadAliv** **DED1H161**	**= Alive**	AND=ZAZ96999
		Verify Telemetry **SPIREA_WellSiTC** **DED1Z161**	**= Well**	AND=ZAZ96999
		Verify Telemetry **SPIREA_WellSiTM** **DED1J161**	**= Well**	AND=ZAZ96999
		Verify Telemetry **SPIREA_ValidInv** **DED1K161**	**= Invalid**	AND=ZAZ96999
		Redundant units		
		Verify Telemetry **SPIREB_OnOff** **DED21161**	**= OFF**	AND=ZAZ96999
		Verify Telemetry **SPIREB_DeadAliv** **DED22161**	**= Alive**	AND=ZAZ96999
		Verify Telemetry **SPIREB_WellSiTC** **DED23161**	**= Well**	AND=ZAZ96999
		Verify Telemetry **SPIREB_WellSiTM** **DED24161**	**= Well**	AND=ZAZ96999
		Verify Telemetry **SPIREB_ValidInv** **DED25161**	**= Invalid**	AND=ZAZ96999
4		*Switch ON DPU*		Next Step: 5
		WARNING: Before continuing the procedure **H_FCP_OBS_5112** (as defined in step 5) should be loaded onto the stack so that the BOOT_DPU telecommand executes 10 seconds after the last MEMORY_LOAD telecommand is sent.		
4.1		*Set Bus Profile*		
	ET=+ UT=+00.00.00	Execute Telecommand **SelectActiveSCBP**	**DC819160**	
		Command Parameter(s) : **SCBP** **DH049160**	**SCBP_03**	
		Subsch. ID : 10 Det. descr. : Select Active SCBP from SCBP Table		
		Verify Telemetry **BSW_SDB_ActProf** **DEF5F160**	**= 3 <dec>**	AND=ZAZ96999
4.2		*Disable FDIR & Enable RT Interrogations*		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	ET=+ UT=+00.00.00	Execute Telecommand **ConfigureSDBFDIR** *Command Parameter(s) :* **RTA DH011161** **M0 DH030161** **M1 DH031161** **M2 DH032161** **M3 DH033161** **M4 DH034161** **M5 DH035161** **M6 DH036161** **M7 DH037161** **F0 DH018161** **F1 DH019161** **F2 DH020161** **F3 DH021161** **F4 DH022161** **F5 DH023161** **F6 DH024161** **F7 DH025161** **M12 DH051161** **M_C DH043161** **M8 DH038161** **M9 DH039161** **M10 DH040161** **M11 DH041161** **F12 DH050161** **CNT DH042161** **F8 DH026161** **F9 DH027161** **F10 DH028161** **F11 DH029161** *Subsch. ID : 10* Det. descr. : Configure SDB FDIR	**DC005161** **SPIRE A** **Update status** **Ignore Flag** **Ignore Flag** **Ignore Flag** **Update status** **Ignore Flag** **Update status** **Ignore Flag** **ON** **Alive** **Well TC** **Well TM** **Valid** **Non-vital** **NOMINAL** **ON** **Ignore Flag** **Ignore CNT** **Ignore Flag** **Ignore Flag** **Ignore Flag** **Update status** **ENABLED** **LoopCnt1** **Bus A** **Healthy** **Healthy** **DISABLED**	
		WARNING: The following TC **disables the SDB FDIR for the WHOLE spacecraft**. Since there is no other alternative to the switch on sequence, it is vital that the FDIR is disabled for as short a time as possible.		
		Wait up to 1 minute for the generation of the D_H_Hk_P64 packet from the CDMU (APID = 18)		
		Verify: 1553 bus FDIR status **SDB_FDIR DEFJ4160**	**= DISABLED**	AND=ZAZ96999
		Verify Telemetry **SPIRE_NomRed DED53161**	**= NOMINAL**	AND=ZAZ96999
		Verify Telemetry **SPIREA_OnOff DED1G161**	**= ON**	AND=ZAZ96999
		Verify Telemetry **SPIREA_ValidInv DED1K161**	**= Valid**	AND=ZAZ96999
4.3		*Power ON DPU*		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	ET=+ UT=+00.00.00	Execute Telecommand **SwOn_SpireHSPDU_N_L11** *Subsch. ID : 10* Det. descr. : PCDU: TC(8,4,112,5) SPIRE HSDPU Nom - switch LCL_11 on	**DC11D170**	
		Verify: DPU LCL status **SpirHsdN_L11_1S** **WM32C565**	**= ON**	AND=ZAZ96999
		Verify: DPU LCL current **SpireHsN_L11_I** **WM308565**	**= 0.54 A**	AND=ZAZ96999
4.4		*Re-enable SDB FDIR*		
	ET=+ UT=+00.00.00	Execute Telecommand **ConfigureSDBFDIR** *Command Parameter(s) :* **RTA** **DH011161** **M0** **DH030161** **M1** **DH031161** **M2** **DH032161** **M3** **DH033161** **M4** **DH034161** **M5** **DH035161** **M6** **DH036161** **M7** **DH037161** **F0** **DH018161** **F1** **DH019161**	**DC005161** **SPIRE A** **Ignore Flag** **Ignore Flag** **Ignore Flag** **Ignore Flag** **Ignore Flag** **Ignore Flag** **Ignore Flag** **ON** **Alive**	
		F2 **DH020161** **F3** **DH021161** **F4** **DH022161** **F5** **DH023161** **F6** **DH024161** **F7** **DH025161** **M12** **DH051161** **M_C** **DH043161** **M8** **DH038161** **M9** **DH039161** **M10** **DH040161** **M11** **DH041161** **F12** **DH050161** **CNT** **DH042161** **F8** **DH026161**	**Well TC** **Well TM** **Valid** **Non-vital** **NOMINAL** **ON** **Update status** **Ignore CNT** **Ignore Flag** **Ignore Flag** **Ignore Flag** **Update status** **DISABLED** **LoopCnt1** **Bus A**	
		F9 **DH027161** **F10** **DH028161** **F11** **DH029161** *Subsch. ID : 10* Det. descr. : Configure SDB FDIR	**Healthy** **Healthy** **ENABLED**	
		Wait up to 1 minute for the generation of the D_H_Hk_P64 packet from the CDMU (APID = 18)		
		Verify: 1553 bus FDIR status **SDB_FDIR** **DEFJ4160**	**= ENABLED**	AND=ZAZ96999

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
5		*Load OBSW*		Next Step: 6
		OBSM engineer to run the procedure **H_FCP_OBS_5112** to generate the saved stack files for upload.		
		The OBSM procedure will generate a saved stack file and uplink the patch commands to SPIRE. It will also verify that the patch is successful by checksum verification of the on-board image.		
5.1		*Boot DPU*		□
	ET=+ UT=+00.00.10	Execute Telecommand **LOAD_TC_AND_BOOT** *Subsch. ID : 370* Det. descr. : LOAD OBS USING TELECOMMANDS AND BOOT	**SCD11505**	
		Verify Packet Reception **Nominal_HK_Parameter_Report** *Packet Details:* **APID:** **Type:** **Subtype:** **PI1:** **PI2:**	**SNOMHK000559** **1282** **3** **25** **769**	
		Verify Packet Reception **Critical_HK_Parameter_Report** *Packet Details:* **APID:** **Type:** **Subtype:** **PI1:** **PI2:**	**SCRITHK00559** **1280** **3** **25** **768**	
5.2		*Verify DPU has booted*		□
	ET=+ UT=+00.00.02	SET_OBS_MODE **SET_OBS_MODE** *Command Parameter(s) :* **OBSERVING_MODE** **SP02N500** *Subsch. ID : 370* Det. descr. : SET OBSERVING MODE	**SC002500** **0 <hex>**	
		Verify Telemetry **MODE** **SM00M500**	**= DPU_ON**	AND=ZAZ96999
6		*Verifications*		Next Step: 7
		The following version check should ensure that the expected software version is running.		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry **OBSVER1** **SM0EN500**	**Version**	AND=ZAZ96999
		Verify Telemetry **OBSVER2** **SM0FN500**	**Sub-version**	AND=ZAZ96999
		Verify Telemetry **OBSVER3** **SM05F500**	**Revision**	AND=ZAZ96999
		Verify that the following parameter is incrementeng once per second **TM2N** **SMT1N500**	**incrementing**	AND=ZAZ96999
		Verify that the following parameter is incrementeng once per second **THSK** **SM00T500**	**incrementing**	AND=ZAZ96999
7		*Re-enable FDIR*		Next Step: END
		Execute Telecommand **ConfigureSDBFDIR**	**DC005161**	
		Command Parameter(s) : **RTA** **DH011161**	**SPIRE A**	
		M0 **DH030161**	**Ignore Flag**	
		M1 **DH031161**	**Ignore Flag**	
		M2 **DH032161**	**Ignore Flag**	
		M3 **DH033161**	**Ignore Flag**	
		M4 **DH034161**	**Ignore Flag**	
		M5 **DH035161**	**Ignore Flag**	
		M6 **DH036161**	**Ignore Flag**	
		M7 **DH037161**	**Ignore Flag**	
		F0 **DH018161**	**ON**	
		F1 **DH019161**	**Alive**	
		F2 **DH020161**	**Well TC**	
		F3 **DH021161**	**Well TM**	
		F4 **DH022161**	**Valid**	
		F5 **DH023161**	**Non-vital**	
		F6 **DH024161**	**NOMINAL**	
		F7 **DH025161**	**ON**	
		M12 **DH051161**	**Update status**	
		M_C **DH043161**	**Ignore CNT**	
		M8 **DH038161**	**Ignore Flag**	
		M9 **DH039161**	**Ignore Flag**	
		M10 **DH040161**	**Ignore Flag**	
		M11 **DH041161**	**Ignore Flag**	
		F12 **DH050161**	**ENABLED**	
		CNT **DH042161**	**LoopCnt1**	
		F8 **DH026161**	**Bus A**	
		F9 **DH027161**	**Healthy**	
		F10 **DH028161**	**Healthy**	
		F11 **DH029161**	**ENABLED**	
		TC Control Flags : **GBM IL DSE** **--Y -- ---**		
		Subsch. ID : 10 Det. descr. : Configure SDB FDIR		

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		End of Procedure		