

Procedure Summary

Objectiv	res
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The objective of this procedure is to load a new OBSW image via the Boot Software for the Redundant 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
- Re-enable 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 HFSRLBM

Referenced Displays

ANDS GRDS SLDS

Configuration Control Information

DATE	FOP ISSU	E 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 Updtes required	L.Lucas-hp	
Status	:	Version	5 - Unchanged		

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04/03/09		3	Amended FDIR command in light of SVT2	L.Lucas-hp	
04/03/09	2.1	3.01	Validation : Text checks	L.Lucas-hp	
06/04/09		4	Update of FDIR actions and added re-enable FDIR after boot PDU and verification.	L.Lucas-hp	
20/04/09	2.3	5	FDIR Updated	L.Lucas-hp	

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



Procedure Flowchart Overview



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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	<u> </u>	Beginning of Procedure		
		TC Seq. Name : HFSRLBM (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 suppried by the Srike ite (Step /)		
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		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





Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
1.4		Nominal instrument LCLs		
		Verify: DPU LCL status		
		SpirHsdN_L11_1S WM32C565	= OFF	AND=ZAZ96999
		Verify: FCU LCL status	= OFF	AND-73796999
		SpiinBin_131_13 MM42C303	- 017	
1.5		Temperature		
		TBD		
				Nevt Sten:
2		CDMS routing configuration		3
2.1		Verify Packet Routing		
	ET=+	Execute Telecommand RepDownlinkTMStorage	DC141160	
	UT=+00.00.00	Subsch. ID : 10		
		Det. descr. : Report Telemetry Packets Down-linking/ Storage Status		
		Verify Packet Reception Telemetry Packets DownLinking-Storage Status Report	(14,7)-1400	
		Packet Details: APID:	16	
		Type: Subtype:	14 7	
		PI1: PI2:		
				Next Step:
3		Check instrument RT configuration		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		
		Redundant units		
		Verify Telemetry SPIREB_OnOff DED21161	= OFF	AND=ZAZ96999



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		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
		Nominal units		
		Verify Telemetry SPIREA_OnOff DED1G161	= OFF	AND=ZAZ96999
		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
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></dec>	AND=ZAZ96999
4.2		Ddisable FDIR & Start instrument RT interrogations		

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Step No.	Time	Activity/Remarks		TC/TLM	Display/ Branch
		WARNING: The following TC disables the SDB FD	IR 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.			
		Execute Telecommand			
	ET=+	ConfigureSD	BFDIR	DC005161	
	UT=+00.00.00				
		Command Parameter(s) :			
		RTA DH0	11161	SPIRE B	
		MU DHO	30161	Update status	
			32161	Ignore Flag	
		M3 DH0	33161	Ignore Flag	
		M4 DH0	34161	Update status	
		M5 DH0	35161	Ignore Flag	
		M6 DH0	36161	Update status	
		M7 DH0	37161	Ignore Flag	
		F0 DH0	18161	ON Alimo	
		FI DHU	19101	ATIVE	
		F2 DH0	20161	Well TC	
		F3 DH0	21161	Well TM	
		F4 DH0	22161	Valid	
			23161	Non-vital	
		F7 DH0	25161	REDUNDANT	
		M12 DH0	51161	Ignore Flag	
		M_C DH0	43161	Ignore CNT	
		M8 DH0	38161	Ignore Flag	
		M9 DH0	39161	Ignore Flag	
		M10 DH0	40161	Ignore Flag	
			41161	Update status	
		CNT DH0	42161	ENABLED	
		F8 DH0	26161		
		E0 DU0	07161		
			27161	Healthy	
		F10 DH0	29161	Healtny	
				DISABLED	
		Subsch. ID : 10			
		Det. descr. : Configure SDB FDIR			
		Wait up to 1 minute for the generation of the $D_H_Hk_P64$ packet from the CDMU (APID = 18)			
		Verify: 1553 bus EDIR status			
		SDB_FDIR DEF	J4160	= DISABLED	AND=ZAZ96999
		Verify Telemetry			
		SPIRE_NomRed DED	53161	= REDUNDANT	AND=ZAZ96999
		Verify Telemetry			
		SPIREB_OnOff DED.	21161	= ON	AND=ZAZ96999
		Verify Telemetry SPIREB_ValidInv DED	25161	= Valid	AND=ZAZ96999
4.3		Power ON DPU			



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Step No.	Time	Activity/Remarks		TC/TLM	Display/ Branch
		Execute Telecommand			
	ET=+ UT=+00 00 00	SwOn_Spir	eHSPDU_R_L12	DC12D170	
		Subsch. ID : 10			
		Det. descr. : PCDU: TC(8,4,112,5) SPIR	E HSDPU Red -		
		switch LCL_12 on			
		Verify: DPU LCL status	MM92CECE	- ON	AND-77796999
		Spirhsdk_Liz_is	WM02C505	- 01	AND-ZAZ90999
		Verity: DPU LCL current		- 0 54 3	AND-73706000
		Spilensuk_Liz_1	WH008363	- 0.54 A	AND-ZAZ90999
4 4		Po orable CDR EDIR			
1.1		Re-enable SDB FDIR			
	ET=+	Execute Telecommand	igureSDBEDTR	DC005161	
	UT=+00.00.00	Colif	- JUL CODBEDIK	2000101	
		Command Parameter(s) :			
		RTA	DH011161	SPIRE B	
		MO	DH030161	Ignore Flag	
		MI	DH031161	Ignore Flag	
		M2 M2	DH032161	Ignore Flag	
		M3 M4	DH033161 DH034161	Ignore Flag	
		M5	DH035161	Ignore Flag	
		Мб	DH036161	Ignore Flag	
		M7	DH037161	Ignore Flag	
		FO	DH018161	ON	
		Fl	DH019161	Alive	
		F2	DH020161	Well TC	
		F3	DH021161	Well TM	
		F4	DH022161	Valid	
		FG	DH023161 DH024161	Non-vital	
		F7	DH025161	ON	
		M12	DH051161	Update status	
		M_C	DH043161	Ignore CNT	
		M8	DH038161	Ignore Flag	
		M9 M10	DH039161	Ignore Flag	
		M10 M11	DH040161	Ignore Flag	
		F12	DH050161	DISABLED	
		CNT	DH042161	LoopCnt1	
		F8	DH026161	Bus A	
		64	DH027161	Teelthr	
		F10	DH028161	Healthy	
		F11	DH029161	ENABLED	
		Subsch. ID : 10			
		Det. descr. : Configure SDB FDIR			
		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	SCD11505	
		Subsch. ID : 370 Det. descr. : LOAD OBS USING TELECOMMANDS AND BOOT		
		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		Set Mode		
	ET=+ UT=+00.00.02	SET_OBS_MODE Command Parameter(s) : OBSERVING_MODE SP02N500 Subsch. ID : 370 Det. descr. : SET OBSERVING MODE	SC002500 0 <hex></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.		





Step No.	Time	Activity/Remarks		TC/TLM	Display/ Branch
		Verify Telemetry			
		OBSVED1 SMOR	W500	Version	AND=78796999
		ODDVERT DAVE	11300	Verbion	
		Verify Telemetry			
		OBSVER2 SM0F	'N500	Sub-version	AND=ZAZ96999
		Verify Telemetry			
		OBSVER3 SM05	F500	Revision	AND=ZAZ96999
			1 500	nevi bion	
		Verify that the following parameter is increme	nteng		
		once per second		incrementing	AND=ZAZ96999
		TM2N SMT1	N500		
		Verify that the following parameter is increme	nteng		
		once per second		incrementing	AND=ZAZ96999
		THSK SM00	т500	5	
					Next Step:
7		Re-enable FDIR			END
		Execute Telecommand			
		ConfigureSDB	FDIR	DC005161	
		-			
		Command Parameter(s) :			
		RTA DH01	1161	SPIRE B	
		MO DH03	0161	Ignore Flag	
		M1 DH03	1161	Ignore Flag	
		M2 DH03	2161	Ignore Flag	
		M3 DH03	3161	Ignore Flag	
		M4 DH03	4161	Ignore Flag	
		M5 DH03	5161	Ignore Flag	
		M6 DH03	6161	Ignore Flag	
		M7 DH03	7161	Ignore Flag	
		F0 DH01	.8161	ON	
		F1 DH01	.9161	Alive	
		F2 DH02	0161	w-11 mg	
		F3 DH02	1161	Well IC	
		F4 DH02	2161	Well IM Valid	
		F5 DH02	3161	Non-wital	
		F6 DH02	4161	REDUNDANT	
		F7 DH02	5161	ON	
		M12 DH05	1161	Update status	
		M_C DH04	3161	Ignore CNT	
		M8 DH03	8161	Ignore Flag	
		M9 DH03	9161	Ignore Flag	
		M10 DH04	0161	Ignore Flag	
		M11 DH04	1161	Ignore Flag	
		F12 DH05	0161	ENABLED	
		CNT DH04	2161	LoopCnt1	
		F8 DH02	6161	Bus A	
		EQ DU02	7161		
		לא DHU2 דוח דו DHU2	8161	Healthy	
		דיט DHU2 דוו דיט DHU2	9161	Healthy	
		LII DHUZ		ENABLED	
		TC Control Flags :			
		CRM TT.	DSE		
		Y			
		Subsch. ID : 10			
		Det. descr. : Configure SDB FDIR			
		_			

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Step No.	Time	Activity/Remarks	TC/TLM	Display/	Branch
		End of Procedure			