Patch and dump SPIRE DPU PRAM memory
File: H_FCP_OBS_5122.xls
Author: lstefanov-hp

Procedure Summary

Objectives

This Herschel OBSM nominal procedure is used to patch SPIRE DPU PRAM memory areas. It can be used for small patches to be applied to the OBS, as an alternative to procedure H_FCP_OBS_5111.
Note: The OBS image has to be copied from PM-Low to PM-High prior to loading the patches into DPU PM-High. This can be done using procedure H_FCP_SPI_CPOM.

The patches are loaded into the SPIRE DPU PM-High memory and the verification of the patched areas is done by memory dump.

The copying of the OBS image from PM-High to PM-Low and OBS restart can be executed using procedure H_FCP_SPI_CPOM. This also includes the updated OBS version and release number verification.

This procedure assumes that the memory load and memory dump command stacks have already been generated using the OBSM system and are ready for loading on the Manual Stack. The command stack generation activity is not covered by this procedure.

Summary of Constraints

CDMU in Operational Mode
- SPIRE DPU is ON
- SPIRE ASW running

Memory areas are Loaded through TC(6,2) and Checked through TC(6,9); this TCs will be delayed when there is an ongoing:
- TC(6,2) Load Memory Using Absolute Addresses
- TC(6,5) Dump Memory Using Absolute Addresses
- TC(6,9) Check Memory Using Absolute Addresses
- TC(8,4,1,1) Copy Memory

Spacecraft Configuration

Start of Procedure

CDMU in Operational Mode
- SPIRE DPU is ON
- SPIRE ASW running

End of Procedure

Same as start except:
- New SPIRE OBS image loaded in DPU PM-High memory

Reference File(s)

Input Command Sequences

Output Command Sequences

OFCP5122

Referenced Displays

Status : Version 2 - Unchanged
Last Checkin: 27/08/08

Patch and dump SPIRE DPU PRAM memory
File: H_FCP_OBS_5122.xls
Author: lstefanov-hp

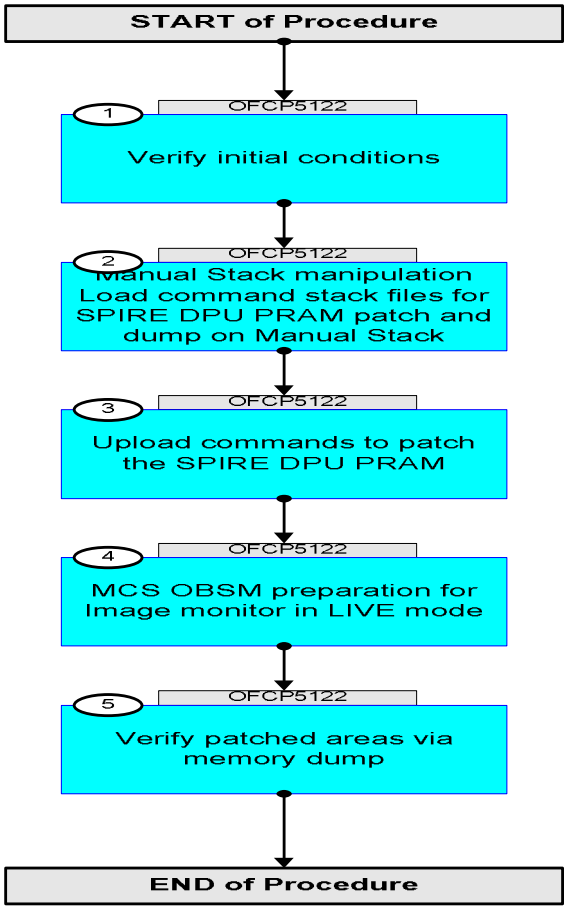
ANDs **GRDs** **SLDs**

Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
27/08/08		1	Created	lstefanov-hp	
27/08/08	2	2	1. steps 2.3.1 and 2.3.2 updated: corrected typos in file name examples in 3rd comment - PI replaced by DI 2. step 2.4 updated: changed 2nd comment to reflect the 16 bit length of the Mem ID param. of TC XC007998 3. added step 5.1 for mem. dump command(s) upload	lstefanov-hp	

Patch and dump SPIRE DPU PRAM memory
File: H_FCP_OBS_5122.xls
Author: lstefanov-hp

Procedure Flowchart Overview



Patch and dump SPIRE DPU PRAM memory
File: H_FCP_OBS_5122.xls
Author: lstefanov-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		Beginning of Procedure			
	OFCP5122	*TC Seq. Name :* OFCP5122 ( ) Patch and dump SPIRE DPU PRAM memory *TimeTag Type: B* *Sub Schedule ID:*			
1		Verify initial conditions		Next Step: 2	
		Check: - SPIRE DPU ON - SPIRE ASW running			
		Instrument SOE to confirm SPIRE instrument mode			
		Note: Initial conditions are verified in calling procedure H_FCP_SPI_CPOM.			
2		Manual Stack manipulation Load command stack files for SPIRE DPU PRAM patch and dump on Manual Stack		Next Step: 3	
2.1		Load memory load command stack			
		NOTE: The current procedure assumes that the memory load is performed using commands with immediate execution.			
		Select the File -> **LoadStack** option from the main menu of the Manual Stack window			
2.1.1		IF SPIRE Nominal			
		Select file **SPDPRMPG_PI_XXXXYYY_N_NoModel_NoModel_YYYY_DDDThhmmss.machine** from directory /home/pmcsops/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/SPDPRMPG as indicated by the OBSM engineer			
		IMPORTANT: XXXXYYYY = Image ID(X) and Version(Y) - depend on image used for stack generation YYYY_DDD hhmmss - depend on stack generation time machine - depends on the name of the machine used for stack generation			

Patch and dump SPIRE DPU PRAM memory
File: H_FCP_OBS_5122.xls
Author: lstefanov-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		File name **examples** - No model associated to the memory image: SPDPRMPG_PI_0002001_N_NoModel_NoModel_2007_254T123300.sun043 - CT SPDPRMPG1, ID 0003, Version 001 associated to the memory image: SPDPRMPG_PI_0002001_C_SPDPRMPG1_0003001_2007_337T093320.sun043			
2.1.2		ELSE SPIRE Redundant			
		Select file **SPDPRMPR_PI_XXXXYYY_N_NoModel_NoModel_YYYY_DDDThhmmss.machine** from directory /home/pmcsops/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/SPDPRMPR as indicated by the OBSM engineer			
		IMPORTANT: XXXXYYYY = Image ID(X) and Version(Y) - depend on image used for stack generation YYYY_DDD hhmmss - depend on stack generation time machine - depends on the name of the machine used for stack generation			
		File name **examples** - No model associated to the memory image: SPDPRMPR_PI_0002001_N_NoModel_NoModel_2007_254T123300.sun043 - CT SPDPRMPR1, ID 0003, Version 001 associated to the memory image: SPDPRMPR_PI_0002001_C_SPDPRMPR1_0003001_2007_337T093320.sun043			
2.2		Check memory load command stack loaded			
		Check that loaded stack contains one or more TCs **XC002998**.			
		Display the Manual Stack in 'Full mode' and check that the **Memory ID** parameter in the XC000298 commands is set to **00 hex**: **Memory ID = 00 hex** **Note**: The Memory ID of the target memory device is stored in the MSB of the 16-bit long Mem ID TC parameter. The LSB of the same parameter carries the most significant 8 bits of the Start Address.			

Patch and dump SPIRE DPU PRAM memory
File: H_FCP_OBS_5122.xls
Author: lstefanov-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		Execute Telecommand **SPIRE Memory Load** *Command Parameter(s) :* **Memory ID** **XH000998** **Start Address** **XH001998** **Length of Block** **XH003998** **Var length octet string** **XH004998** **Checksum** **XH005998** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 30* Det. descr. : Load SPIRE Memory Using Absolute Addresses This Telecommand will not be included in the export	**XC002998** **00xx <hex>** **<hex>** (Def) **<dec>** (Def) **<hex>** (Def) **<hex>** (Def)	**TC**	
2.3		Load memory dump command stack			
		Select the File -> **LoadStack** option from the main menu of the Manual Stack window			
2.3.1		IF SPIRE Nominal			
		Select file **SPDPRMPG_DI_XXXXYYY_N_NoModel_NoModel_YYYY_DDDThhmmss.machine** from directory /home/pmcsops/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/SPDPRMPG as indicated by the OBSM engineer			
		IMPORTANT: XXXXYYYY = Image ID(X) and Version(Y) - depend on image used for stack generation YYYY_DDD hhmmss - depend on stack generation time machine - depends on the name of the machine used for stack generation			
		File name **examples** - No model associated to the memory image: SPDPRMPG_DI_0002001_N_NoModel_NoModel_2007_254T123300.sun043 - CT SPDPRMPG1, ID 0003, Version 001 associated to the memory image: SPDPRMPG_DI_0002001_C_SPDPRMPG1_0003001_2007_337T093320.sun043			
2.3.2		ELSE SPIRE Redundant			

Patch and dump SPIRE DPU PRAM memory
File: H_FCP_OBS_5122.xls
Author: lstefanov-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		Select file **SPDPRMPR_DI_XXXXYYY_N_NoModel_NoModel_YYYY_DDDThhmmss.machine** from directory /home/pmcsops/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/SPDPRMPR as indicated by the OBSM engineer			
		IMPORTANT: XXXXYYYY = Image ID(X) and Version(Y) - depend on image used for stack generation YYYY_DDD hhmmss - depend on stack generation time machine - depends on the name of the machine used for stack generation			
		File name **examples** - No model associated to the memory image: SPDPRMPR_DI_0002001_N_NoModel_NoModel_2007_254T123300.sun043 - CT SPDPRMPR1, ID 0003, Version 001 associated to the memory image: SPDPRMPR_DI_0002001_C_SPDPRMPR1_0003001_2007_337T093320.sun043			
2.4		Check memory dump command stack loaded			
		Check that loaded stack contains one or several TCs **XC007998**			
		Display the Manual Stack in 'Full mode' and check that the **Memory ID** parameter in the XC007998 command(s) is set to **00 hex**: **Memory ID = 00 hex** **Note**: The Memory ID of the target memory device is stored in the MSB of the 16-bit long Mem ID TC parameter. The LSB of the same parameter carries the most significant 8 bits of the Start Address.			
		Execute Telecommand **SPIRE Memory Dump** *Command Parameter(s) :* **Memory ID** **XH011998** **Start Address** **XH012998** **Length** **XH013998** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 370* Det. descr. : Dump SPIRE Memory Using Absolute Addresses This Telecommand will not be included in the export	**XC007998** **00xx <hex>** **<hex>** (Def) **<hex>** (Def)	**TC**	

Patch and dump SPIRE DPU PRAM memory
File: H_FCP_OBS_5122.xls
Author: lstefanov-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
3		Upload commands to patch the SPIRE DPU PRAM		Next Step: 4	
		Uplink the **XC002998** memory load command(s) with **ARM-GO**			
		For each TC XC002998 successfuly executed on-board, a TM(1,1) and TM(1,7) packet shall be received on ground.			
3.1		IF SPIRE Prime			
		Verify Packet Reception P_TC_Acceptance_Report Packet Mnemonic : SP11TCAR0500 APID : 1280 Type : 1 Subtype : 1 PI1 : PI2 :			
		Verify Packet Reception R_TC_Execution_Completed_Report Packet Mnemonic : SP15TCECR500 APID : 1281 Type : 1 Subtype : 7 PI1 : PI2 :			
3.2		ELSE SPIRE Redundant			
		Verify Packet Reception R_TC_Acceptance_Report Packet Mnemonic : SP11TCAR0500 APID : 1281 Type : 1 Subtype : 1 PI1 : PI2 :			
		Verify Packet Reception R_TC_Execution_Completed_Report Packet Mnemonic : SP15TCECR500 APID : 1281 Type : 1 Subtype : 7 PI1 : PI2 :			
4		MCS OBSM preparation for Image monitor in LIVE mode		Next Step: 5	
		Note: It is assumed that the OBSM application is already running and the OBSM Desktop is displayed on the MCS client. Starting the OBSM application is not covered by the current procedure.			

Patch and dump SPIRE DPU PRAM memory
File: H_FCP_OBS_5122.xls
Author: lstefanov-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
4.1		Select 'Image MONITOR' from the menu			
		Select the **Image** menu of the ***OBSM Desktop***. From the Image menu, select **Monitor**. The 'Image Catalog' window opens.			
4.2		Select image to be monitored			
4.2.1		IF SPIRE Nominal			
		Select the image to be monitored for the memory device **SPDPRMPG.** The 'Image MONITOR' window opens.			
4.2.2		ELSE SPIRE Redundant			
		Select the image to be monitored for the memory device **SPDPRMPR.** The 'Image MONITOR' window opens.			
4.3		Start dump TM processing			
		In **LIVE** mode, processing of incoming real-time telemetry starts automatically after the image selection.			
5		Verify patched areas via memory dump		Next Step: END	
5.1		Upload command(s) to dump the SPIRE DPU PRAM			
		Uplink the **XC007998** memory dump command(s) with **ARM-GO**			
		For each command, one or more TM(6,6) packets must be received on ground.			

Patch and dump SPIRE DPU PRAM memory
File: H_FCP_OBS_5122.xls
Author: lstefanov-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
5.2		Verify reception of TM(6,6)			
		Note: One or more TM(6,6) packets will be received for each memory dump command uplinked.			
5.2.1		IF SPIRE Prime			
		Verify Packet Reception Memory_Dump_Absolute_Addresses Packet Mnemonic : SMEMDUMP0500 APID : 1280 Type : 6 Subtype : 6 PI1 : PI2 :			
5.2.2		ELSE SPIRE Redundant			
		Verify Packet Reception R_Memory_Dump_Absolute_Addresses Packet Mnemonic : SMEMDUMP0500 APID : 1281 Type : 6 Subtype : 6 PI1 : PI2 :			
5.3		Check contents of memory dump packets			
		Verify that there are **NO OBSM reported differences** between the memory dump data and the ground image used for monitoring. **Note:** The ground memory image used for dump monitoring is the same image used for patch command stack generation.			
5.3.1		Save merged image			
		IF there are **mismatches** reported by OBSM, save merged image with **new ID**. Conduct off-line analysis of the reported mismatches.			
		End of Sequence			
		End of Procedure			