Update HIFI DPU PRAM ground image from memory dump
File: H_FCP_OBS_3143.xls
Author: Liviu Stefanov

Procedure Summary

Objectives

This Herschel OBSM nominal procedure is used to perform a HIFI
DPU PRAM ground image update from memory dump of one or several
HIFI DPU PRAM memory areas. The memory dump is commanded using
TC(6,5) and the memory locations content is received on ground in
TM(6,6) packets.

The procedure assumes that the command stack has already been
generated using the OBSM system and is 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
- HIFI in Intermediate mode (ASW running)

Memory areas are dumped through TC(6,5); this TC 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
- HIFI in Intermediate mode (ASW running)

End of Procedure

Same as start except:
- HIFI DPU PRAM dump executed

Reference File(s)

Input Command Sequences

Output Command Sequences

OFCP3143

Referenced Displays

ANDs   GRDs   SLDs

Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
30/01/2008		1	Created	lstefanov-hp	
30/01/2008	1	2	corrected typo in TC Sequence Name	lstefanov-hp	

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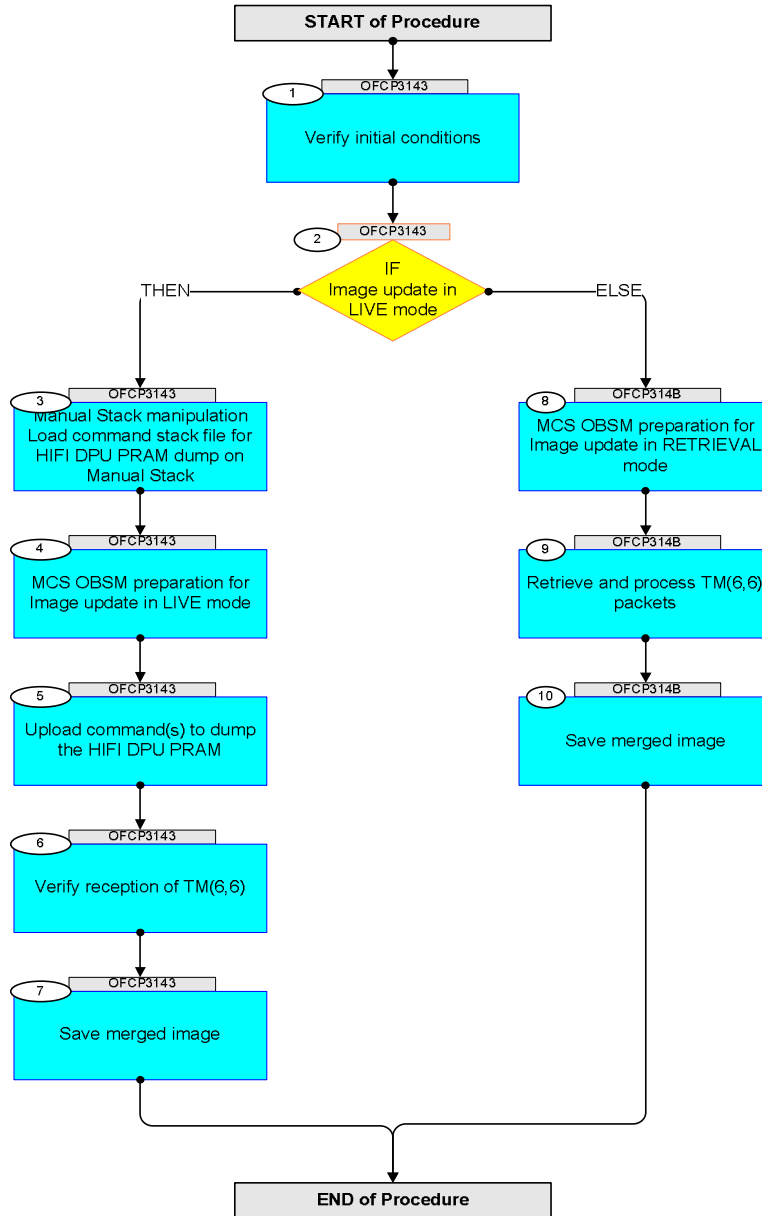|					
27/08/2008		3	1. added current steps 3.1 and 3.2 to separate dump stack load for HIFI Nom and Red 2. current step 3.3 updated: TC HC004289 replaced by ESOC HIFI mem. dump TC XC005998 3. added steps 4.2.1 and 4.2.2 to separate image selection for HIFI Nom and Red 4. added steps 8.2.1 and 8.2.2 to separate image selection for HIFI Nom and Red	lstefanov-hp	
27/08/2008		4	1. steps 3.1 and 3.2 updated: corrected typos in file name examples in 3rd comment - PI replaced by DI 2. step 3.3 updated: changed 2nd comment to reflect the 16 bit length of the Mem ID param. of TC XC005998	lstefanov-hp	
04/09/2008	2	5	1. steps 4.2.1, 4.2.2, 8.2.1 and 8.2.2 changed: "monitored" replaced by "updated" in comment statement	lstefanov-hp	
13/04/2009	2.3	6	1. corrected typo in steps 3.1, 3.2: 'pmcsops' replaced by 'hmcsops' 2. step 3.3 updated: added comment to indicate the size of the whole memory area	lstefanov-hp	
10/06/2009		7	1. step 3.3 updated: added comments indicating start and end address for OBS image dump from PM-Low and PM-High	lstefanov-hp	
16/06/2009		8	1. corrected typo in 2nd comment in step 3.3: 8000 hex replaced by 1852C hex, in line with Luc Dubbeldam's comment, e-mail 11/06/2009	lstefanov-hp	
08/09/2009	2.5	9	1. step 3.3 updated to instruct the operator to exclude the runtime header memory area from OBSM Monitor/Comparison (for OBS image dumps), as advised by Luc Dubbeldam in e-mail from 23/06/2009	lstefanov-hp	
11/02/2010		10	Updated step 3.3 with details of OBS 3.4.3 length	m.baker-hp	
11/02/2010	3	11	Updated typo in memory end address in step 3.3.	m.baker-hp	
22/04/2010		12	Updated to include software length for version 6.4.1.	m.baker-hp	
27/01/2011		13	Updated to include software length for version 6.5.2.	n.krusenstiern-hp	
14/04/2011	3.1	14	Updated for HIFI OBS 6.5.3	n.krusenstiern-hp	

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Procedure Flowchart Overview

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		Beginning of Procedure			
	OFCP3143	*TC Seq. Name :* OFCP3143 ( ) HIFI DPU PRAM image update in Live mode *TimeTag Type:* B *Sub Schedule ID:*			
1		Verify initial conditions		Next Step: 2	
		Check HIFI instrument in **Intermediate mode** (ASW running)			
		Instrument SOE to confirm HIFI instrument mode			
2		IF Image update in LIVE mode type: [If]		Next Step: THEN 3 ELSE 8	
3		Manual Stack manipulation Load command stack file for HIFI DPU PRAM dump on Manual Stack		Next Step: 4	
		NOTE: The current procedure assumes that the memory dump in Live mode is performed using commands with immediate execution.			
		Select the File -> **LoadStack** option from the main menu of the Manual Stack window			
3.1		IF HIFI Nominal			
		Select file **HIDPRMPG_DI_XXXXYYY_N_NoModel_NoModel_YYYY_DDDThhmmss.machine** from directory /home/hmcsops/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/HIDPRMPG 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			

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		File name **examples** - No model associated to the memory image: HIDPRMPG_DI_0004001_N_NoModel_NoModel_2011_101T172257.ws044 - CT HIDPRMPG1, ID 0003, Version 001 associated to the memory image: HIDPRMPG_DI_0002001_C_HIDPRMPG1_0003001_2007_337T093320.sun043			
3.2		ELSE HIFI Redundant			
		Select file **HIDPRMPR_DI_XXXXYYY_N_NoModel_NoModel_YYYY_DDDThhmmss.machine** from directory /home/hmcsops/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/HIDPRMPR as indicated by the OBSM engineer			
		IMPORTANT: XXXXYYY = 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: HIDPRMPR_DI_0004001_N_NoModel_NoModel_2011_101T172257.ws044 - CT HIDPRMPR1, ID 0003, Version 001 associated to the memory image: HIDPRMPR_DI_0002001_C_HIDPRMPR1_0003001_2007_337T093320.sun043			
3.3		Check memory dump command stack loaded			
		Note: for the whole **HIFI DPU PRAM** dump: **MemID** = **00** hex **Start Address** = **00.0000** hex **End Address** = **07.FFFF** hex **Length** = 0**8.0000** hex			

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		Note: for the HIFI OBS **v.6.5.3** image dump from PM-Low : **MemID** = **00** hex **Start Address** = **00.0000** hex **End Address** = **01.8E1E** hex **Length** = 0**1.8E1F** hex			
		Note: The HIFI OBS image delivered in ICD-14 format consists of one block. The block contains **three segments** (PM-Low addresses following): - the **runtime header** starts at 0x00, length= 0x100 - the **init-segemnt** starts at 0x4000 - the **PM-code** segment. The regions **between segments** are filled with **0x00**.			
		IMPORTANT: The **runtime header** in PM-Low changes continuously. A **memory model** (CT) shall be used **to exclude** this memory area from OBSM Image Monitor or Image Compare against an OBSM Base Image.			
		Check that loaded stack contains one or several TCs **XC005998**			
		Display the Manual Stack in 'Full mode' and check that the **Memory ID** parameter in the XC005998 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
		                              HIFI Memory Dump
		
		Command Parameter(s) :
		                    Memory ID XH008998
		                 Start Address XH009998
		                        Length XH010998
		
		TC Control Flags :
		                               GBM IL DSE
		                               --Y -- ---
		Subsch. ID : 70
		Det. descr. : Dump HIFI Memory Using Absolute Addresses
		This Telecommand will not be included in the export
			XC005998
			
			00xx <hex>
			 <hex> (Def)
			 <hex> (Def)
				TC	

4		MCS OBSM preparation for Image update 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.			

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
4.1		Select 'Image UPDATE' from the menu			
		Select the **Image** menu of the *OBSM Desktop*. From the Image menu, select **Update.** The 'Image Catalog' window opens.			
4.2		Select image to be updated			
4.2.1		IF HIFI Nominal			
		Select the image to be updated for the memory device **HIDPRMPG.** The 'Image UPDATE' window opens.			
4.2.2		ELSE HIFI Redundant			
		Select the image to be updated for the memory device **HIDPRMPR.** The 'Image UPDATE' window opens.			
4.3		Start dump TM processing			
		In **LIVE** mode, processing of incoming real-time telemetry starts automatically after the image selection.			
5		Upload command(s) to dump the HIFI DPU PRAM		Next Step: 6	
		Uplink the **XC005998** memory dump command(s) with **ARM-GO**			
		For each command, one or more TM(6,6) packets must be received on ground.			
6		Verify reception of TM(6,6)		Next Step: 7	
		Note: One or more TM(6,6) packets will be received for each memory dump command uplinked.			

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
6.1		IF HIFI Prime			
		Verify Packet Reception HIFI_memory_dump Packet Mnemonic : H_mem_dump APID : 1024 Type : 6 Subtype : 6 PI1 : PI2 :			
6.2		ELSE HIFI Redundant			
		Verify Packet Reception HIFI_R_memory_dump Packet Mnemonic : H_mem_dump APID : 1025 Type : 6 Subtype : 6 PI1 : PI2 :			
6.3		Check OBSM dump packet processing			
		Check that the OBSM is processing the incoming memory dump packets.			
7		Save merged image		Next Step: END	
		Save merged image with **new ID**.			
		End of Sequence			
OFCP314B		*TC Seq. Name :* OFCP314B ( ) HIFI DPU PRAM image update in Retrieval mode *TimeTag Type:* *Sub Schedule ID:*			
8		MCS OBSM preparation for Image update in RETRIEVAL mode		Next Step: 9	
		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.			

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
8.1		Select 'Image UPDATE' from the menu			
		Select the **Image** menu of the *OBSM Desktop*. From the Image menu, select **Update.** The 'Image Catalog' window opens.			
8.2		Select image to be updated			
8.2.1		IF HIFI Nominal			
		Select the image to be updated for the memory device **HIDPRMPG.** The 'Image UPDATE' window opens.			
8.2.2		ELSE HIFI Redundant			
		Select the image to be updated for the memory device **HIDPRMPR.** The 'Image UPDATE' window opens.			
8.3		Start dump TM packets processing			
		Set **retrieval start** and **stop time** and start retrieval of TM packets using the **PLAY buttons**.			
9		Retrieve and process TM(6,6) packets		Next Step: 10	
		Use the **STEP** button to retrieve and process the TM(6,6) packets, packet by packet and starting from the time shown in the packet time field.			
		OR			
		Use the **PLAY** button to retrieve and process the TM(6,6) packets in automated mode. Pressing the PLAY button, the display will start to retrieve and process packets, starting from the time shown in the packet time field. This processing will stop automatically when a packet is received which creation time is greater than the one contained in the end time field.			

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
10		Save merged image		Next Step: END	
		Save merged image with **new ID**.			
		End of Sequence			
End of Procedure					