Load PACS DPU OBS in instrument RESCUE mode
File: H_FCP_OBS_4112.xls
Author: Liviu Stefanov

Procedure Summary

Objectives

This Herschel OBSM nominal procedure is used to execute the PACS DPU OBS full image upload in instrument RESCUE mode (OBS upload from Boot SW). It is called by the FOP PACS procedures H_FCP_PAC_NRDM and H_FCP_PAC_RRDM.
The OBS image is loaded into the PACS DPU DRAM memory.
Note that memory dump and check commands cannot be executed by BSW, therefore image verification after load can only be done after DM to PM-Low copy.

The copying of the OBS image from DM to PM-Low and OBS restart is executed in the calling procedure H_FCP_PAC_NRDM or H_FCP_PAC_RRDM.
The checksums for PM-low and updated OBS version numbers are also verified in the calling procedure.

This procedure assumes that the memory load 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.

Note: The PACS DPU OBS upload in instrument INIT mode can be conducted via procedure H_FCP_OBS_4110.

Summary of Constraints

CDMU in Operational Mode
- PACS in RESCUE mode (DPU BSW running)

No memory load command shall patch accros a DM page boundary.

Memory areas are Loaded through TC(6,2); 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
- PACS in RESCUE mode (DPU BSW running)

End of Procedure

Same as start except:
- New PACS DPU OBS image loaded in DPU DRAM memory

Reference File(s)

Input Command Sequences

Output Command Sequences

OFCP4112

Referenced Displays

Load PACS DPU OBS in instrument RESCUE mode
File: H_FCP_OBS_4112.xls
Author: Liviu Stefanov

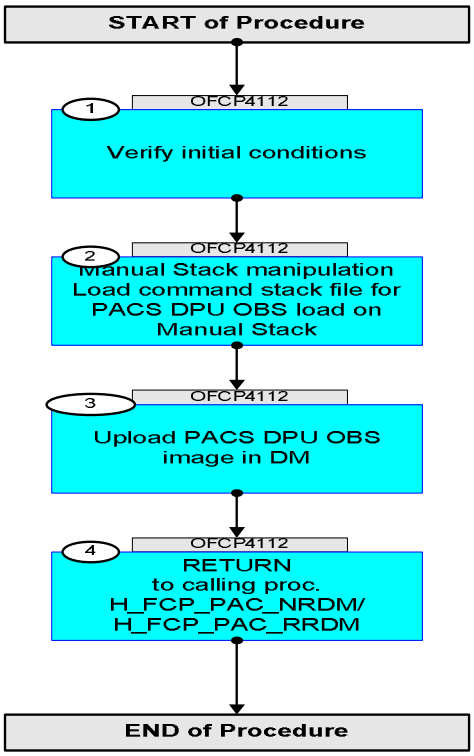
ANDs **GRDs** **SLDs**

Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
30/01/08	1	1	Created	lstefanov-hp	
17/06/09		2	1. step 2 and sub-steps updated to for PACS DPU OBS v.9.03 2. step 3 updated: replaced TM(1,1, and TM(1,7) by TM(5,1), in line with PACS's comment 3. added current step 4 to include return to calling procedure and instruct for OBS image dump from PM-Low	lstefanov-hp	
19/07/09	2.5	3	1. step 2.2 updated to indicate the latest PACS DPU OBS version 2. step 4 updated to include start addresses and lengths for PACS OBS v.9.04 image dump from PM-Low	lstefanov-hp	

Load PACS DPU OBS in instrument RESCUE mode
File: H_FCP_OBS_4112.xls
Author: lstefanov-hp

Procedure Flowchart Overview



Load PACS DPU OBS in instrument RESCUE mode
File: H_FCP_OBS_4112.xls
Author: lstefanov-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		Beginning of Procedure			
	OFCP4112	*TC Seq. Name :* OFCP4112 ( ) Load PACS DPU OBS from BSW and check image *TimeTag Type: B* *Sub Schedule ID:*			
1		Verify initial conditions		Next Step: 2	
		Check PACS instrument in **RESCUE mode** (DPU BSW running)			
		Instrument SOE to confirm PACS instrument mode			
		Note: Initial conditions are verified in calling procedure H_FCP_PAC_NRDM or H_FCP_PAC_RRDM.			
2		Manual Stack manipulation Load command stack file for PACS DPU OBS load 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 PACS Nominal			
		Select file **PADPRMDA_PI_XXXXYYY_N_NoModel_NoModel_YYYY_DDDThhmmss.machine** from directory /home/hmcsops/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/PADPRMDA 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			

Load PACS DPU OBS in instrument RESCUE mode
File: H_FCP_OBS_4112.xls
Author: lstefanov-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		File name **example** PADPRMDA_PI_0002001_N_NoModel_NoModel_2007_254T123300.sun043			
2.1.2		ELSE PACS Redundant			
		Select file **PADPRMDR_PI_XXXXYYY_N_NoModel_NoModel_YYYY_DDDThhmmss.machine** from directory /home/hmcsops/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/PADPRMDR 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 **example** PADPRMDR_PI_0002001_N_NoModel_NoModel_2007_254T123300.sun043			
2.2		Check memory load command stack loaded			
		For PACS DPU OBSW **v.9.04**: The start address of the PADPRMDA memory image used for memory load command stack generation is **00.4000 hex**, and the last address in the image is **01.7FFF hex**. **NO offset** has to be applied to the memory image for OBS upload in DM. Consequently, the first address to be loaded is **00.4000 hex**, and the last address is **01.7FFF hex**: **Start Address** = **00.4000 hex** **End Address** = **01.7FFF hex** **Length** = **14000 hex**			
		IMPORTANT: # **of TCs**, **Address** and **Length** values in the following sub-steps are **applicable to** PACS DPU OBS **v.9.04**			
2.2.1		Check number of memory load commands in the stack			
		Check that loaded stack contains **1440** TCs **XC001998**			

Load PACS DPU OBS in instrument RESCUE mode
File: H_FCP_OBS_4112.xls
Author: lstefanov-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
2.2.2		Check Memory ID			
		Display the Manual Stack in 'Full mode' and check that the **Memory ID** parameter in the XC001998 commands is set to **11 hex**: **Memory ID = 11 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 **PACS Memory Load** **XC001998** *Command Parameter(s) :* **Memory ID** **XH000998** **11xx hex** **Start Address** **XH001998** **<hex>** (Def) **Length of Block** **XH003998** **<dec>** (Def) **Var length octet string** **XH004998** **<hex>** (Def) **Checksum** **XH005998** **<hex>** (Def) *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 30* Det. descr. : Load PACS Memory Using Absolute Addresses This Telecommand will not be included in the export		**TC**	
2.2.3		Check start address and length of first command in the stack			
		With the Manual Stack in 'Full mode', check the **Start Address** and **Length** in the **first** XC001998 command: **Start Address** = **00.4000 hex** **Length** = **57 dec** **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 **PACS Memory Load** **XC001998** *Command Parameter(s) :* **Memory ID** **XH000998** **1100 <hex>** **Start Address** **XH001998** **4000 <hex>** **Length of Block** **XH003998** **57 <dec>** **Var length octet string** **XH004998** **patch data** **Checksum** **XH005998** **calculated by OBSM** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 30* Det. descr. : Load PACS Memory Using Absolute Addresses This Telecommand will not be included in the export		**TC**	

Load PACS DPU OBS in instrument RESCUE mode
File: H_FCP_OBS_4112.xls
Author: lstefanov-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
2.2.4		Check start address and length of last command in the stack			
		With the Manual Stack in 'Full mode', check the **Start Address** and **Length** in the **last** XC001998 command: **Start Address** = **1.7FC9 hex** **Length** = **55 dec** **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 **PACS Memory Load** **XC001998** *Command Parameter(s) :* **Memory ID XH000998 1101 <hex>** **Start Address XH001998 7FC9 <hex>** **Length of Block XH003998 55 <dec>** **Var length octet string XH004998 patch data** **Checksum XH005998 calculated by OBSM** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 30* Det. descr. : Load PACS Memory Using Absolute Addresses This Telecommand will not be included in the export		**TC**	
2.2.5		Check DM page boundaries not violated by the memory load commands			
		IMPORTANT: Check that the OBSM generated memory load commands respect the **DM page boundaries**. A **DM page** is **1024 words** (**400 hex** words) large, where a **DM word** is **32-bit** long. The **DM starts** at address **00.0000 hex**.			
3		Upload PACS DPU OBS image in DM		Next Step: 4	
		Uplink the **XC001998** memory load commands with **ARM-GO**			
		For **each TC XC001998** successfuly executed on-board, **a TM(5,1)** packet from PACS shall be received on ground.			
4		RETURN to calling proc. H_FCP_PAC_NRDM/H_FCP_PAC_RRDM		Next Step: END	

Load PACS DPU OBS in instrument RESCUE mode
File: H_FCP_OBS_4112.xls
Author: lstefanov-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		IMPORTANT: After OBS image copy from DM to PM-Low executed in calling procedure H_FCP_PAC_NRDM/H_FCP_PAC_RRDM, **dump** the PACS DPU **new OBS image** from **PM-Low** using FOP procedure **H_FCP_OBS_4143**.			
		Note: For PACS DPU OBS **v.9.04**, the memory area to be dumped in **H_FCP_OBS_4143** is: **Start Address** = **00.0000 hex** **End Address** = **01.0CB4 hex** **Length** = **10CB5 hex**			
		Note: For PACS DPU OBS **v.9.04**, the **2** TCs **PC028380** used in **H_FCP_OBS_4143** to dump from **PM-Low** will have the following parameters: First TC **PC028380**: **Start Address** = **03.0000 hex** **Length** = **FFFF hex** Second TC **PC028380**: **Start Address** = **03.FFFF hex** **Length** = **CB6 hex**			
		End of Sequence			
		End of Procedure			