Load PACS SPU OBS in instrument INIT mode
File: H_FCP_OBS_4210.xls
Author: Liviu Stefanov

Procedure Summary

Objectives

This Herschel OBSM nominal procedure is used to execute the PACS
SPU OBS full image upload in instrument INIT mode (DPU
Application SW running). It is called by the FOP PACS procedures
H_FCP_PAC_NLSM and H_FCP_PAC_RLSM.
The SPU OBS is loaded simultaneously into both SPU-SWL and SPU-
LWL memories.
The three OBS image segments (seg_rth, seg_init and seg_pmco) are
loaded into the PACS SPU EEPROM memory and the image integrity
after upload is checked via checksum calculation and
verification. The checksum calculation is commanded
simultaneously to both SPU-SWL and SPU-LWL memory.
The memory dumps are commanded separatelly for SPU-SWL and SPU-
LWL.

The SPU-SWL and SPU-LWL EEPROM OBS image checksum verification is
executed in the calling procedure H_FCP_PAC_NLSM or
H_FCP_PAC_RLSM.

This procedure assumes that the memory load and memory check
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 proc

Summary of Constraints

CDMU in Operational Mode
- PACS in INIT mode (DPU ASW running)
- SPU ON
- SPU-DMC communication established

Memory dumps must be commanded separatelly for SPU-SWL and SPU-
LWL. Patch and checksum calculation may use S&L MID.

Memory areas are Loaded through TC(6,5) 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
- PACS in INIT mode (DPU ASW running)
- SPU ON
- SPU-DMC communication established

End of Procedure

Same as start except:
- New PACS SPU OBS image loaded in DMC PM memory

Reference File(s)

Input Command Sequences

Status   : Version 2 - Unchanged
Last Checkin: 18/06/09

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File: H_FCP_OBS_4210.xls
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Output Command Sequences
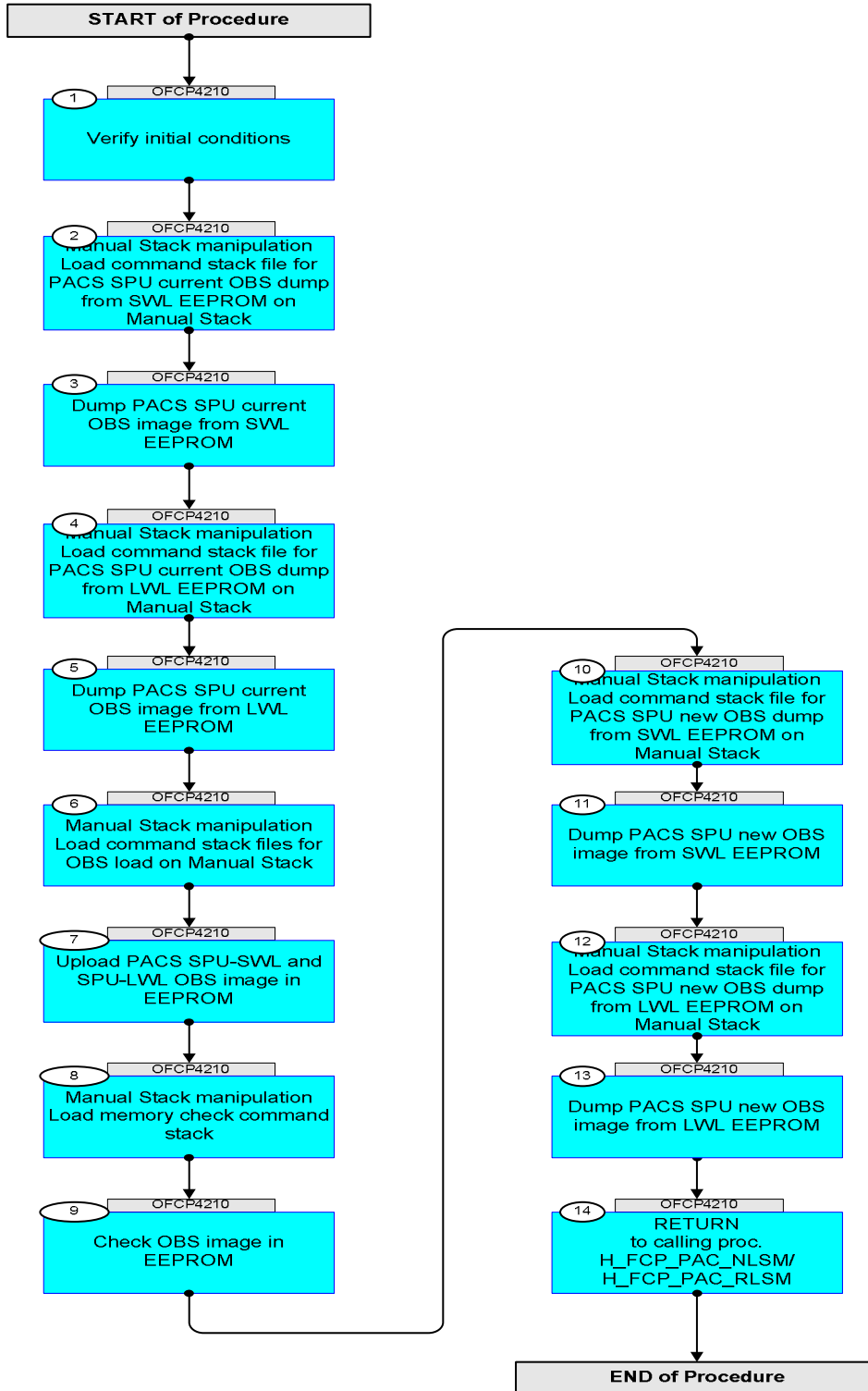
OFCP4210

Referenced Displays

ANDs	GRDs	SLDs
PA000380		
PA029380		

Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
30/01/08	1	1	Created	lstefanov-hp	
18/06/09	2.5	2	1. added current steps 2, 3, 4 and 5, with sub-steps, to dump the PACS SPU OBS image from EEPROM SWL and LWL before patch 2. step 6 and sub-steps updated to separate patch stack load for Prime and Redundant 3. step 6 updated for PACS SPU OBS v.13.96 4. added current step 8 to separate check stack load from patch stack load 5. added current steps 10, 11, 12 and 13, with sub-steps, to dump the PACS SPU OBS image from EEPROM SWL and LWL after patch 6. added current step 14 to include return to calling procedure 7. updated Attachment1 for SPU OBS v.13.96	lstefanov-hp	

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HERSCHEL
PLANCK

esa

Procedure Flowchart Overview

START of Procedure

1 OFCP4210
Verify initial conditions

2 OFCP4210
Manual Stack manipulation
Load command stack file for
PACS SPU current OBS dump
from SWL EEPROM on
Manual Stack

3 OFCP4210
Dump PACS SPU current
OBS image from SWL
EEPROM

4 OFCP4210
Manual Stack manipulation
Load command stack file for
PACS SPU current OBS dump
from LWL EEPROM on
Manual Stack

5 OFCP4210
Dump PACS SPU current
OBS image from LWL
EEPROM

6 OFCP4210
Manual Stack manipulation
Load command stack files for
OBS load on Manual Stack

7 OFCP4210
Upload PACS SPU-SWL and
SPU-LWL OBS image in
EEPROM

8 OFCP4210
Manual Stack manipulation
Load memory check command
stack

9 OFCP4210
Check OBS image in
EEPROM

10 OFCP4210
Manual Stack manipulation
Load command stack file for
PACS SPU new OBS dump
from SWL EEPROM on
Manual Stack

11 OFCP4210
Dump PACS SPU new OBS
image from SWL EEPROM

12 OFCP4210
Manual Stack manipulation
Load command stack file for
PACS SPU new OBS dump
from LWL EEPROM on
Manual Stack

13 OFCP4210
Dump PACS SPU new OBS
image from LWL EEPROM

14 OFCP4210
RETURN
to calling proc.
H_FCP_PAC_NLSM/
H_FCP_PAC_RLSM

END of Procedure

Load PACS SPU OBS in instrument INIT mode
File: H_FCP_OBS_4210.xls
Author: lstefanov-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		Beginning of Procedure			
	OFCP4210	*TC Seq. Name :*OFCP4210 ( ) Load PACS SPU OBS in INIT mode and check image *TimeTag Type:* B *Sub Schedule ID:*			
1		Verify initial conditions		Next Step: 2	
		Check: - PACS instrument in **INIT mode** (DPU ASW running) - SPU ON - DPU-SPU connection established			
		Instrument SOE to confirm PACS instrument mode and SPU status.			
		Note: Initial conditions are verified in calling procedure H_FCP_PAC_NLSM or H_FCP_PAC_RLSM.			
2		Manual Stack manipulation Load command stack file for PACS SPU current OBS dump from SWL EEPROM on Manual Stack		Next Step: 3	
		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			
2.1		IF PACS Nominal			
		Select file **PASPEPSW_DI_XXXXYYY_N_NoModel_NoModel_YYYY_DDDThhmmss.machine** from directory /home/hmcsops/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/PASPEPSW 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 SPU OBS in instrument INIT mode
File: H_FCP_OBS_4210.xls
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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:			
		PASPEPSW_DI_0002001_N_NoModel_NoModel_2007_254T123300.sun043			
		- CT PASPEPSW1, ID 0003, Version 001 associated to the memory image:			
		PASPEPSW_DI_0002001_C_PASPEPSW1_0003001_2007_337T093320.sun043			
2.2		ELSE PACS Redundant			
		Select file **PASEPSWR_DI_XXXXYYY_N_NoModel_NoModel_YYYY_DDDThhmmss.machine** from directory /home/hmcsops/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/PASEPSWR 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: PASEPSWR_DI_0002001_N_NoModel_NoModel_2007_254T123300.sun043 - CT PASEPSWR1, ID 0003, Version 001 associated to the memory image: PASEPSWR_DI_0002001_C_PASEPSWR1_0003001_2007_337T093320.sun043			
2.3		Check memory dump command stack loaded			
		Note: Following steps assume all 3 segments of the PACS SPU OBS image (**seg_rth**, **seg_init** and **seg_pmco)** are dumped.			
		For PACS SPU OBS **v.13.96**:			
		seg_rth **Start Address = 00.0100 hex** **End Address = 00.01FF hex** **Length = 100 hex**			

Status   : Version 2 – Unchanged
Last Checkin: 18/06/09

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Load PACS SPU OBS in instrument INIT mode
File: H_FCP_OBS_4210.xls
Author: lstefanov-hp
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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		seg_init **Start Address = 00.0300 hex** **End Address = 00.0523 hex** **Length = 224 hex**			
		seg_pmco **Start Address = 00.0A00 hex** **End Address = 00.859E hex** **Length = 7B9F hex**			
		IMPORTANT: **# of TCs**, **Address** and **Length** values in the following sub-steps are **applicable to** PACS SPU OBS **v.13.96**			
		Note: The '**Length**' parameter of the memory dump command is a 16-bit long parameter. A memory dump TC can cover a number of **65535 dec** (**FFFF hex**) **SAUs**.			
2.3.1		Check number of memory dump commands in the stack			
		Check that loaded stack contains: 3 TCs **PC028380**			
2.3.2		Check memory ID			
		Display the Manual Stack in 'Full mode' and check that the **Memory ID** parameter in the PC028380 commands is set to **43 hex**: **Memory ID = 43 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
		                              DPU_MEMORY_DUMP
		
		Command Parameter(s) :
		        DPU_MEMORY_BLOCK_ID PP009380
		          DPU_MEMORY_ADDR PP003380
		          DPU_DATA_LENGTH PP008380
		
		TC Control Flags :
		                              GBM IL DSE
		                              --Y -- ---
		Subsch. ID : 90
		Det. descr. : DUMP OF A DPU MEMORY AREA
		This Telecommand will not be included in the export
			PC028380
			
			43xx hex
			<hex> (Def)
			<hex> (Def)
				TC	

2.3.3		Check start address and length of first command in the stack			

Load PACS SPU OBS in instrument INIT mode
File: H_FCP_OBS_4210.xls
Author: lstefanov-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		With the Manual Stack in 'Full mode', check the **Start Address** and **Length** in the **first** PC028380 command: **Start Address = 00.0100 hex** **Length = 100 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
		                              DPU_MEMORY_DUMP
		
		Command Parameter(s) :
		        DPU_MEMORY_BLOCK_ID PP009380
		        DPU_MEMORY_ADDR PP003380
		        DPU_DATA_LENGTH PP008380
		
		TC Control Flags :
		                          GBM IL DSE
		                          --Y -- ---
		
		Subsch. ID : 90
		Det. descr. : DUMP OF A DPU MEMORY AREA
		This Telecommand will not be included in the export
			PC028380
			
			4300 <hex>
			0100 <hex>
			100 <hex>
				TC	

2.3.4		Check start address and length of second command in the stack			
		With the Manual Stack in 'Full mode', check the **Start Address** and **Length** in the **second** PC028380 command: **Start Address = 00.0300 hex** **Length = 224 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
		                              DPU_MEMORY_DUMP
		
		Command Parameter(s) :
		        DPU_MEMORY_BLOCK_ID PP009380
		        DPU_MEMORY_ADDR PP003380
		        DPU_DATA_LENGTH PP008380
		
		TC Control Flags :
		                          GBM IL DSE
		                          --Y -- ---
		
		Subsch. ID : 90
		Det. descr. : DUMP OF A DPU MEMORY AREA
		This Telecommand will not be included in the export
			PC028380
			
			4300 <hex>
			0300 <hex>
			224 <hex>
				TC	

2.3.5		Check start address and length of third command in the stack			

Load PACS SPU OBS in instrument INIT mode
File: H_FCP_OBS_4210.xls
Author: lstefanov-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		With the Manual Stack in 'Full mode', check the **Start Address** and **Length** in the **third** PC028380 command: **Start Address = 00.0A00 hex** **Length = 7B9F 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
		                          DPU_MEMORY_DUMP
		
		Command Parameter(s) :
		     DPU_MEMORY_BLOCK_ID PP009380
		          DPU_MEMORY_ADDR PP003380
		          DPU_DATA_LENGTH PP008380
		
		TC Control Flags :
		                         GBM IL DSE
		                         --Y -- ---
		
		Subsch. ID : 90
		Det. descr. : DUMP OF A DPU MEMORY AREA
		This Telecommand will not be included in the export
			PC028380
			
			4300 <hex>
			0A00 <hex>
			7B9F <hex>
				TC	

3		Dump PACS SPU current OBS image from SWL EEPROM		Next Step: 4	
		Note: Following steps assume all 3 segments of the PACS SPU OBS image (**seg_rth**, **seg_init** and **seg_pmco)** are dumped.			
3.1		MCS OBSM preparation for Image update in LIVE mode			
		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.			
3.1.1		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.			
3.1.2		Select image to be updated			

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
3.1.2.1		IF PACS Nominal			
		Select the image to be updated for the memory device **PASPEPSW.** The 'Image UPDATE' window opens.			
3.1.2.2		ELSE PACS Redundant			
		Select the image to be updated for the memory device **PASEPSWR.** The 'Image UPDATE' window opens.			
3.1.3		Start dump TM processing			
		In **LIVE** mode, processing of incoming real-time telemetry starts automatically after the image selection.			
3.2		Upload commands to dump the PACS SPU current OBS image			
		Uplink the **PC028380** memory dump commands with **ARM-GO**			
		For each command, several TM(6,6) packets must be received on ground.			
3.3		Verify reception of TM(6,6)			
		Note: One or more TM(6,6) packets will be received for each memory dump command uplinked.			
3.3.1		IF PACS Nominal			
		Verify Packet Reception PACS_MEMORY_DUMP Packet Mnemonic : MEMORY_DUMP APID : 1152 Type : 6 Subtype : 6 PI1 : PI2 :			

Load PACS SPU OBS in instrument INIT mode
File: H_FCP_OBS_4210.xls
Author: lstefanov-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
3.3.2		ELSE PACS Redundant			
		Verify Packet Reception PACS_MEMORY_DUMP Packet Mnemonic : MEMORY_DUMP APID : 1153 Type : 6 Subtype : 6 PI1 : PI2 :			
3.4		Check OBSM dump packet processing			
		Check that the OBSM is processing the incoming memory dump packets.			
3.5		Save merged image			
		Save merged image with **new ID**.			
4		Manual Stack manipulation Load command stack file for PACS SPU current OBS dump from LWL EEPROM on Manual Stack		Next Step: 5	
		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			
4.1		IF PACS Nominal			
		Select file **PASPEPLW_DI_XXXXYYY_N_NoModel_NoModel_YYYY_DDDThhmmss.machine** from directory /home/hmcsops/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/PASPEPLW as indicated by the OBSM engineer			

Load PACS SPU OBS in instrument INIT mode
File: H_FCP_OBS_4210.xls
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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		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: PASPEPLW_DI_0002001_N_NoModel_NoModel_2007_254T123300.sun043 - CT PASPEPLW1, ID 0003, Version 001 associated to the memory image: PASPEPLW_DI_0002001_C_PASPEPLW1_0003001_2007_337T093320.sun043			
4.2		ELSE PACS Redundant			
		Select file **PASEPLWR_DI_XXXXYYY_N_NoModel_NoModel_YYYY_DDDThhmmss.machine** from directory /home/hmcsops/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/PASEPLWR 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: PASEPLWR_DI_0002001_N_NoModel_NoModel_2007_254T123300.sun043 - CT PASEPLWR1, ID 0003, Version 001 associated to the memory image: PASEPLWR_DI_0002001_C_PASEPLWR1_0003001_2007_337T093320.sun043			
4.3		Check memory dump command stack loaded			
		Note: Following steps assume all 3 segments of the PACS SPU OBS image (**seg_rth**, **seg_init** and **seg_pmco**) are dumped.			
		For PACS SPU OBS **v.13.96**:			

Load PACS SPU OBS in instrument INIT mode
File: H_FCP_OBS_4210.xls
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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		seg_rth **Start Address = 00.0100 hex** **End Address = 00.01FF hex** **Length = 100 hex**			
		seg_init **Start Address = 00.0300 hex** **End Address = 00.0523 hex** **Length = 224 hex**			
		seg_pmco **Start Address = 00.0A00 hex** **End Address = 00.859E hex** **Length = 7B9F hex**			
		IMPORTANT: **# of TCs**, **Address** and **Length** values in the following sub-steps are **applicable to** PACS SPU OBS **v.13.96**			
		Note: The '**Length**' parameter of the memory dump command is a 16-bit long parameter. A memory dump TC can cover a number of **65535 dec** (**FFFF hex**) SAUs.			
4.3.1		Check number of memory dump commands in the stack			
		Check that loaded stack contains: 3 TCs **PC028380**			
4.3.2		Check memory ID			
		Display the Manual Stack in 'Full mode' and check that the **Memory ID** parameter in the PC028380 commands is set to **63 hex**: **Memory ID = 63 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
		                         DPU_MEMORY_DUMP
		
		Command Parameter(s) :
		       DPU_MEMORY_BLOCK_ID **PP009380**
		            DPU_MEMORY_ADDR **PP003380**
		            DPU_DATA_LENGTH **PP008380**
		
		TC Control Flags :
		                         GBM IL DSE
		                         --Y -- ---
		Subsch. ID : 90
		Det. descr. : DUMP OF A DPU MEMORY AREA
		This Telecommand will not be included in the export
			PC028380
			
			63xx hex
			<hex> (Def)
			<hex> (Def)
				TC	

4.3.3		Check start address and length of first command in the stack			

Load PACS SPU OBS in instrument INIT mode
File: H_FCP_OBS_4210.xls
Author: lstefanov-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		With the Manual Stack in 'Full mode', check the **Start Address** and **Length** in the **first** PC028380 command: **Start Address = 00.0100 hex** **Length = 100 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
		                              DPU_MEMORY_DUMP
		
		Command Parameter(s) :
		        DPU_MEMORY_BLOCK_ID PP009380
		        DPU_MEMORY_ADDR PP003380
		        DPU_DATA_LENGTH PP008380
		
		TC Control Flags :
		                              GBM IL DSE
		                              --Y -- ---
		
		Subsch. ID : 90
		Det. descr. : DUMP OF A DPU MEMORY AREA
		This Telecommand will not be included in the export
			PC028380
			
			6300 <hex>
			0100 <hex>
			100 <hex>
				TC	

4.3.4		Check start address and length of second command in the stack			
		With the Manual Stack in 'Full mode', check the **Start Address** and **Length** in the **second** PC028380 command: **Start Address = 00.0300 hex** **Length = 224 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
		                              DPU_MEMORY_DUMP
		
		Command Parameter(s) :
		        DPU_MEMORY_BLOCK_ID PP009380
		        DPU_MEMORY_ADDR PP003380
		        DPU_DATA_LENGTH PP008380
		
		TC Control Flags :
		                              GBM IL DSE
		                              --Y -- ---
		
		Subsch. ID : 90
		Det. descr. : DUMP OF A DPU MEMORY AREA
		This Telecommand will not be included in the export
			PC028380
			
			6300 <hex>
			0300 <hex>
			224 <hex>
				TC	

4.3.5		Check start address and length of third command in the stack			

Load PACS SPU OBS in instrument INIT mode
File: H_FCP_OBS_4210.xls
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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		With the Manual Stack in 'Full mode', check the **Start Address** and **Length** in the **third** PC028380 command: **Start Address = 00.0A00 hex** **Length = 7B9F 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
		                              DPU_MEMORY_DUMP
		
		Command Parameter(s) :
		        DPU_MEMORY_BLOCK_ID **PP009380**
		            DPU_MEMORY_ADDR **PP003380**
		            DPU_DATA_LENGTH **PP008380**
		
		TC Control Flags :
		                              GBM IL DSE
		                              --Y -- ---
		
		Subsch. ID : 90
		Det. descr. : DUMP OF A DPU MEMORY AREA
		This Telecommand will not be included in the export
			PC028380
			
			6300 <hex>
			0A00 <hex>
			7B9F <hex>
				TC	

5		Dump PACS SPU current OBS image from LWL EEPROM		Next Step: 6	
		Note: Following steps assume all 3 segments of the PACS SPU OBS image (**seg_rth**, **seg_init** and **seg_pmco)** are dumped.			
5.1		MCS OBSM preparation for Image update in LIVE mode			
		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.			
5.1.1		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.			
5.1.2		Select image to be updated			

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
5.1.2.1		IF PACS Nominal			
		Select the image to be updated for the memory device **PASPEPLW.** The 'Image UPDATE' window opens.			
5.1.2.2		ELSE PACS Redundant			
		Select the image to be updated for the memory device **PASEPLWR.** The 'Image UPDATE' window opens.			
5.1.3		Start dump TM processing			
		In **LIVE** mode, processing of incoming real-time telemetry starts automatically after the image selection.			
5.2		Upload commands to dump the PACS SPU current OBS image			
		Uplink the **PC028380** memory dump commands with **ARM-GO**			
		For each command, several TM(6,6) packets must be received on ground.			
5.3		Verify reception of TM(6,6)			
		Note: One or more TM(6,6) packets will be received for each memory dump command uplinked.			
5.3.1		IF PACS Nominal			
		Verify Packet Reception PACS_MEMORY_DUMP Packet Mnemonic : MEMORY_DUMP APID : 1152 Type : 6 Subtype : 6 PI1 : PI2 :			

Load PACS SPU OBS in instrument INIT mode
File: H_FCP_OBS_4210.xls
Author: lstefanov-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
5.3.2		ELSE PACS Redundant			
		Verify Packet Reception PACS_MEMORY_DUMP Packet Mnemonic : MEMORY_DUMP APID : 1153 Type : 6 Subtype : 6 PI1 : PI2 :			
5.4		Check OBSM dump packet processing			
		Check that the OBSM is processing the incoming memory dump packets.			
5.5		Save merged image			
		Save merged image with **new ID**.			
6		Manual Stack manipulation Load command stack files for OBS load on Manual Stack		Next Step: 7	
6.1		Load memory load command stack			
		IMPORTANT: The OBS image is delivered in three separate image files, one for each of the segments **seg_rth**, **seg_init** and **seg_pmco**. The current procedure assumes that the three images have been **merged** and saved in a single PACS SPU EEPROM image, and a **single** memory load command **stack** was generated for the SPU OBS upload.			
		Note: PACS SPU EEPROM **SWL** and **LWL** memories are **loaded simultaneously** using the EEPROM S&L MID.			
		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			

Load PACS SPU OBS in instrument INIT mode
File: H_FCP_OBS_4210.xls
Author: lstefanov-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
6.2		IF PACS Nominal			
		Select file **PASPEPSL_PI_XXXXYYY_N_NoModel_NoModel_YYYY_DDDThhmmss.machine** from directory /home/hmcsops/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/PASPEPSL 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** PASPEPSL_PI_0002001_N_NoModel_NoModel_2007_254T123300.sun043			
6.3		ELSE PACS Redundant			
		Select file **PASEPSLR_PI_XXXXYYY_N_NoModel_NoModel_YYYY_DDDThhmmss.machine** from directory /home/hmcsops/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/PASEPSLR 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** PASEPSLR_PI_0002001_N_NoModel_NoModel_2007_254T123300.sun043			
6.4		Check memory load command stack loaded			

Load PACS SPU OBS in instrument INIT mode
File: H_FCP_OBS_4210.xls
Author: lstefanov-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		For PACS SPU OBSW **v.13.96**: - the start address of the PASPEPSL **seg_rth** segment memory image is **00.0100 hex**, and the last address in the image is **00.01FF hex** - the start address of the PASPEPSL **seg_init** segment memory image is **00.0300 hex**, and the last address in the image is **00.0523 hex** - the start address of the PASPEPSL **seg_pmco** segment memory image is **00.0A00 hex**, and the last address in the image is **00.859E hex** NO **offset** is applied to the memory image for OBS upload in PM. Consequently, the first address to be loaded is **00.0100 hex**, and the last address is **00.859E hex**.			
6.4.1		Check number of memory load commands in the stack			
		Check that loaded stack contains **855 TCs XC001998**			
6.4.2		Check Memory ID			
		Display the Manual Stack in 'Full mode' and check that the **Memory ID** parameter in the XC001998 commands is set to **83 hex**: **Memory ID = 83 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
		
		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 PACS Memory Using Absolute Addresses
		
		This Telecommand will not be included in the export
			XC001998
			
			83xx hex
			<hex> (Def)
			<dec> (Def)
			<hex> (Def)
			<hex> (Def)
				TC	

6.4.3		Check start address and length of first command in the stack			

Load PACS SPU OBS in instrument INIT mode
File: H_FCP_OBS_4210.xls
Author: lstefanov-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		With the Manual Stack in 'Full mode', check the **Start Address** and **Length** in the **first** XC001998 command: **Start Address = 00.0100 hex** **Length = 38 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
		
		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 PACS Memory Using Absolute Addresses
		
		This Telecommand will not be included in the export
			XC001998
			
			8300 **<hex>**
			0100 **<hex>**
			38 **<dec>**
			 <hex> (Def)
			 <hex> (Def)
				TC	

6.4.4		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 = 8580 hex** **Length = 31 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
		
		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 PACS Memory Using Absolute Addresses
		
		This Telecommand will not be included in the export
			XC001998
			
			8300 **<hex>**
			8580 **<hex>**
			31 **<dec>**
			 <hex> (Def)
			 <hex> (Def)
				TC	

7		Upload PACS SPU-SWL and SPU-LWL OBS image in EEPROM		Next Step: 8	
		Uplink the **XC001998** memory load commands with **ARM-GO**			

Load PACS SPU OBS in instrument INIT mode
File: H_FCP_OBS_4210.xls
Author: lstefanov-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		For **each TC XC001998** successfuly executed on-board, the DPU HK counter **DP_COM_REC_DPU** should be **incremented by one**. After all XC001998 TCs have been sent, the value of the counter should be: **incremented by 855**			
		Verify Telemetry **DP_COM_REC_DPU** **PM056380**	**= incremented by 855 dec**	AND=PA000380	
		Each TC XC001998 is converted inside the DPU into two memory load commands, one for SPU-SWL and one for SPU-LWL. Therefore, **for each TC XC001998** successfuly executed on-board, **two TM(1,1)** and **two TM(1,7)** packets shall be received on ground.			
7.1		IF PACS Prime			
		Verify Packet Reception PACS_TC_ACP_OK Packet Mnemonic : TC_ACP_OK APID : 1152 Type : 1 Subtype : 1 PI1 : PI2 :			
		Verify Packet Reception PACS_TC_EXE_COMPL Packet Mnemonic : TC_EXE_COMPL APID : 1152 Type : 1 Subtype : 7 PI1 : PI2 :			
7.2		IF PACS Redundant			
		Verify Packet Reception PACS_TC_ACP_OK Packet Mnemonic : TC_ACP_OK APID : 1153 Type : 1 Subtype : 1 PI1 : PI2 :			
		Verify Packet Reception PACS_TC_EXE_COMPL Packet Mnemonic : TC_EXE_COMPL APID : 1153 Type : 1 Subtype : 7 PI1 : PI2 :			
8		Manual Stack manipulation Load memory check command stack		Next Step: 9	

Load PACS SPU OBS in instrument INIT mode
File: H_FCP_OBS_4210.xls
Author: lstefanov-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		Note: PACS SPU EEPROM **SWL** and **LWL** memories are **checked simultaneously** using the EEPROM S&L MID.			
		Select the File -> **LoadStack** option from the main menu of the Manual Stack window			
8.1		IF PACS Nominal			
		Select file **PASPEPSL_CI_XXXXYYY_N_NoModel_NoModel_YYYY_DDD**T**hhmmss.machine** from directory /home/hmcsops/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/PASPEPSL 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** PASPEPSL_CI_0002001_N_NoModel_NoModel_2007_254T123300.sun043			
8.2		ELSE PACS Redundant			
		Select file **PASEPSLR_CI_XXXXYYY_N_NoModel_NoModel_YYYY_DDD**T**hhmmss.machine** from directory /home/hmcsops/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/PASEPSLR 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** PASEPSLR_CI_0002001_N_NoModel_NoModel_2007_254T123300.sun043			

Load PACS SPU OBS in instrument INIT mode
File: H_FCP_OBS_4210.xls
Author: lstefanov-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
8.3		Check memory check command stack loaded			
		Note: The seg_pmco area is checked in successive 2048 dec SAU pages. The start address, length and corresponding checksum for each segment and each page of se_pmco are summarised in **Attachment1.** All values correspond to **PACS SPU OBS v.13.8.**			
		Check that **18 PC029380** memory check commands have been loaded on the Manual Stack.			
		Display the Manual Stack in 'Full mode' and check the following addresses and lengths are covered by the PC029380 commands:			
		See tables in **Attachment1** for start address, length and checksum values. **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.			
9		Check OBS image in EEPROM		Next Step: 10	
		Uplink the **PC029380** memory check commands one by one with **ARM-GO** and verify the received **checksums** against the corresponding expected values in **Attachment1.**			
		IMPORTANT: **For each TC(6,9)**, **two TM(6,10) packets** shall be received on ground.			
9.1		Verify reception and contents of TM(6,10)			
		Verify the TM(6,10) packet contents for each memory check command uplinked, using the tables in **Attachment1.**			
9.1.1		IF PACS Prime			
		Verify Packet Reception PACS_MEMORY_CRC Packet Mnemonic : MEMORY_CRC APID : 1152 Type : 6 Subtype : 10 PI1 : PI2 :			
		Verify Telemetry **MEMORY_ID** **PM129380**		AND=PA029380	

Load PACS SPU OBS in instrument INIT mode
File: H_FCP_OBS_4210.xls
Author: lstefanov-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		Verify Telemetry **START_ADDRESS** **PM130380**		AND=PA029380	
		Verify Telemetry **LENGTH** **PM131380**		AND=PA029380	
		Verify Telemetry **CHECKSUM** **PM132380**		AND=PA029380	
9.1.2		ELSE PACS Redundant			
		Verify Packet Reception PACS_MEMORY_CRC Packet Mnemonic : MEMORY_CRC APID : 1153 Type : 6 Subtype : 10 PI1 : PI2 :			
		Verify Telemetry **MEMORY_ID** **PM129380**		AND=PA029380	
		Verify Telemetry **START_ADDRESS** **PM130380**		AND=PA029380	
		Verify Telemetry **LENGTH** **PM131380**		AND=PA029380	
		Verify Telemetry **CHECKSUM** **PM132380**		AND=PA029380	
10		Manual Stack manipulation Load command stack file for PACS SPU new OBS dump from SWL EEPROM on Manual Stack		Next Step: 11	
		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			
10.1		IF PACS Nominal			
		Select file **PASPEPSW_DI_XXXXYYY_N_NoModel_NoModel_YYYY_DDDThhmmss.machine** from directory /home/hmcsops/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/PASPEPSW as indicated by the OBSM engineer			

Load PACS SPU OBS in instrument INIT mode
File: H_FCP_OBS_4210.xls
Author: lstefanov-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		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: PASPEPSW_DI_0002001_N_NoModel_NoModel_2007_254T123300.sun043 - CT PASPEPSW1, ID 0003, Version 001 associated to the memory image: PASPEPSW_DI_0002001_C_PASPEPSW1_0003001_2007_337T093320.sun043			
10.2		ELSE PACS Redundant			
		Select file **PASEPSWR_DI_XXXXYYY_N_NoModel_NoModel_YYYY_DDDThhmmss.machine** from directory /home/hmcsops/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/PASEPSWR 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: PASEPSWR_DI_0002001_N_NoModel_NoModel_2007_254T123300.sun043 - CT PASEPSWR1, ID 0003, Version 001 associated to the memory image: PASEPSWR_DI_0002001_C_PASEPSWR1_0003001_2007_337T093320.sun043			
10.3		Check memory dump command stack loaded			
		Note: Following steps assume all 3 segments of the PACS SPU OBS image (**seg_rth**, **seg_init** and **seg_pmco**) are dumped.			
		For PACS SPU OBS **v.13.96**:			

Load PACS SPU OBS in instrument INIT mode
File: H_FCP_OBS_4210.xls
Author: lstefanov-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		seg_rth **Start Address = 00.0100 hex** **End Address = 00.01FF hex** **Length = 100 hex**			
		seg_init **Start Address = 00.0300 hex** **End Address = 00.0523 hex** **Length = 224 hex**			
		seg_pmco **Start Address = 00.0A00 hex** **End Address = 00.859E hex** **Length = 7B9F hex**			
		IMPORTANT: **# of TCs**, **Address** and **Length** values in the following sub-steps are **applicable to** PACS SPU OBS **v.13.96**			
		Note: The '**Length**' parameter of the memory dump command is a 16-bit long parameter. A memory dump TC can cover a number of **65535 dec** (**FFFF hex**) SAUs.			
10.3.1		Check number of memory dump commands in the stack			
		Check that loaded stack contains: **3 TCs PC028380**			
10.3.2		Check memory ID			
		Display the Manual Stack in 'Full mode' and check that the **Memory ID** parameter in the PC028380 commands is set to **43 hex**: **Memory ID = 43 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
		                          DPU_MEMORY_DUMP
		
		Command Parameter(s) :
		      DPU_MEMORY_BLOCK_ID **PP009380**
		         DPU_MEMORY_ADDR **PP003380**
		         DPU_DATA_LENGTH **PP008380**
		
		TC Control Flags :
		                          GBM IL DSE
		                          --Y -- ---
		Subsch. ID : 90
		Det. descr. : DUMP OF A DPU MEMORY AREA
		This Telecommand will not be included in the export
			PC028380
			
			43xx hex
			<hex> (Def)
			<hex> (Def)
				TC	

10.3.3		Check start address and length of first command in the stack			

Load PACS SPU OBS in instrument INIT mode
File: H_FCP_OBS_4210.xls
Author: lstefanov-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		With the Manual Stack in 'Full mode', check the **Start Address** and **Length** in the **first** PC028380 command: **Start Address = 00.0100 hex** **Length = 100 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
		              DPU_MEMORY_DUMP
		
		Command Parameter(s) :
		    DPU_MEMORY_BLOCK_ID PP009380
		    DPU_MEMORY_ADDR PP003380
		    DPU_DATA_LENGTH PP008380
		
		TC Control Flags :
		              GBM IL DSE
		              --Y -- ---
		
		Subsch. ID : 90
		Det. descr. : DUMP OF A DPU MEMORY AREA
		This Telecommand will not be included in the export
			PC028380
			
			4300 <hex>
			0100 <hex>
			100 <hex>
				TC	

10.3.4		Check start address and length of second command in the stack			
		With the Manual Stack in 'Full mode', check the **Start Address** and **Length** in the **second** PC028380 command: **Start Address = 00.0300 hex** **Length = 224 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
		              DPU_MEMORY_DUMP
		
		Command Parameter(s) :
		    DPU_MEMORY_BLOCK_ID PP009380
		    DPU_MEMORY_ADDR PP003380
		    DPU_DATA_LENGTH PP008380
		
		TC Control Flags :
		              GBM IL DSE
		              --Y -- ---
		
		Subsch. ID : 90
		Det. descr. : DUMP OF A DPU MEMORY AREA
		This Telecommand will not be included in the export
			PC028380
			
			4300 <hex>
			0300 <hex>
			224 <hex>
				TC	

10.3.5		Check start address and length of third command in the stack			

Load PACS SPU OBS in instrument INIT mode
File: H_FCP_OBS_4210.xls
Author: lstefanov-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		With the Manual Stack in 'Full mode', check the **Start Address** and **Length** in the **third** PC028380 command: **Start Address = 00.0A00 hex** **Length = 7B9F 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
		                          DPU_MEMORY_DUMP
		
		Command Parameter(s) :
		        DPU_MEMORY_BLOCK_ID PP009380
		          DPU_MEMORY_ADDR PP003380
		          DPU_DATA_LENGTH PP008380
		
		TC Control Flags :
		                          GBM IL DSE
		                          --Y -- ---
		
		Subsch. ID : 90
		Det. descr. : DUMP OF A DPU MEMORY AREA
		This Telecommand will not be included in the export
			PC028380
			
			4300 <hex>
			0A00 <hex>
			7B9F <hex>
				TC	

11		Dump PACS SPU new OBS image from SWL EEPROM		Next Step: 12	
		Note: Following steps assume all 3 segments of the PACS SPU OBS image (**seg_rth**, **seg_init** and **seg_pmco)** are dumped.			
11.1		MCS OBSM preparation for Image update in LIVE mode			
		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.			
11.1.1		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.			
11.1.2		Select image to be updated			

Load PACS SPU OBS in instrument INIT mode
File: H_FCP_OBS_4210.xls
Author: lstefanov-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
11.1.2.1		IF PACS Nominal			
		Select the image to be updated for the memory device **PASPEPSW.** The 'Image UPDATE' window opens.			
11.1.2.2		ELSE PACS Redundant			
		Select the image to be updated for the memory device **PASEPSWR.** The 'Image UPDATE' window opens.			
11.1.3		Start dump TM processing			
		In **LIVE** mode, processing of incoming real-time telemetry starts automatically after the image selection.			
11.2		Upload commands to dump the PACS SPU current OBS image			
		Uplink the **PC028380** memory dump commands with **ARM-GO**			
		For each command, several TM(6,6) packets must be received on ground.			
11.3		Verify reception of TM(6,6)			
		Note: One or more TM(6,6) packets will be received for each memory dump command uplinked.			
11.3.1		IF PACS Nominal			
		Verify Packet Reception PACS_MEMORY_DUMP Packet Mnemonic : MEMORY_DUMP APID : 1152 Type : 6 Subtype : 6 PI1 : PI2 :			

Load PACS SPU OBS in instrument INIT mode
File: H_FCP_OBS_4210.xls
Author: lstefanov-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
11.3.2		ELSE PACS Redundant			
		Verify Packet Reception PACS_MEMORY_DUMP Packet Mnemonic : MEMORY_DUMP APID : 1153 Type : 6 Subtype : 6 PI1 : PI2 :			
11.4		Check OBSM dump packet processing			
		Check that the OBSM is processing the incoming memory dump packets.			
11.5		Save merged image			
		Save merged image with **new ID**.			
12		Manual Stack manipulation Load command stack file for PACS SPU new OBS dump from LWL EEPROM on Manual Stack		Next Step: 13	
		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			
12.1		IF PACS Nominal			
		Select file **PASPEPLW_DI_XXXXYYY_N_NoModel_NoModel_YYYY_DDDThhmmss.machine** from directory /home/hmcsops/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/PASPEPLW as indicated by the OBSM engineer			

Load PACS SPU OBS in instrument INIT mode
File: H_FCP_OBS_4210.xls
Author: lstefanov-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		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: PASPEPLW_DI_0002001_N_NoModel_NoModel_2007_254T123300.sun043 - CT PASPEPLW1, ID 0003, Version 001 associated to the memory image: PASPEPLW_DI_0002001_C_PASPEPLW1_0003001_2007_337T093320.sun043			
12.2		ELSE PACS Redundant			
		Select file **PASEPLWR_DI_XXXXYYY_N_NoModel_NoModel_YYYY_DDDThhmmss.machine** from directory /home/hmcsops/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/PASEPLWR 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: PASEPLWR_DI_0002001_N_NoModel_NoModel_2007_254T123300.sun043 - CT PASEPLWR1, ID 0003, Version 001 associated to the memory image: PASEPLWR_DI_0002001_C_PASEPLWR1_0003001_2007_337T093320.sun043			
12.3		Check memory dump command stack loaded			
		Note: Following steps assume all 3 segments of the PACS SPU OBS image (**seg_rth**, **seg_init** and **seg_pmco)** are dumped.			
		For PACS SPU OBS **v.13.96**:			

Load PACS SPU OBS in instrument INIT mode
File: H_FCP_OBS_4210.xls
Author: lstefanov-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		seg_rth **Start Address = 00.0100 hex** **End Address = 00.01FF hex** **Length = 100 hex**			
		seg_init **Start Address = 00.0300 hex** **End Address = 00.0523 hex** **Length = 224 hex**			
		seg_pmco **Start Address = 00.0A00 hex** **End Address = 00.859E hex** **Length = 7B9F hex**			
		IMPORTANT: **# of TCs**, **Address** and **Length** values in the following sub-steps are **applicable to** PACS SPU OBS **v.13.96**			
		Note: The '**Length**' parameter of the memory dump command is a 16-bit long parameter. A memory dump TC can cover a number of **65535 dec** (**FFFF hex**) SAUs.			
12.3.1		Check number of memory dump commands in the stack			
		Check that loaded stack contains: 3 TCs **PC028380**			
12.3.2		Check memory ID			
		Display the Manual Stack in 'Full mode' and check that the **Memory ID** parameter in the PC028380 commands is set to **63 hex**: **Memory ID = 63 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
		                          DPU_MEMORY_DUMP
		
		Command Parameter(s) :
		      DPU_MEMORY_BLOCK_ID **PP009380**
		            DPU_MEMORY_ADDR **PP003380**
		            DPU_DATA_LENGTH **PP008380**
		
		TC Control Flags :
		                          GBM IL DSE
		                          --Y -- ---
		Subsch. ID : 90
		Det. descr. : DUMP OF A DPU MEMORY AREA
		This Telecommand will not be included in the export
			PC028380
			
			63xx hex
			<hex> (Def)
			<hex> (Def)
				TC	

12.3.3		Check start address and length of first command in the stack			

Load PACS SPU OBS in instrument INIT mode
File: H_FCP_OBS_4210.xls
Author: lstefanov-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		With the Manual Stack in 'Full mode', check the **Start Address** and **Length** in the **first** PC028380 command: **Start Address = 00.0100 hex** **Length = 100 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
		                                    DPU_MEMORY_DUMP
		
		Command Parameter(s) :
		    DPU_MEMORY_BLOCK_ID PP009380
		    DPU_MEMORY_ADDR PP003380
		    DPU_DATA_LENGTH PP008380
		
		TC Control Flags :
		                          GBM IL DSE
		                          --Y -- ---
		
		Subsch. ID : 90
		Det. descr. : DUMP OF A DPU MEMORY AREA
		This Telecommand will not be included in the export
			PC028380
			
			6300 \<hex>
			0100 \<hex>
			100 \<hex>
				TC	

12.3.4		Check start address and length of second command in the stack			
		With the Manual Stack in 'Full mode', check the **Start Address** and **Length** in the **second** PC028380 command: **Start Address = 00.0300 hex** **Length = 224 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
		                                    DPU_MEMORY_DUMP
		
		Command Parameter(s) :
		    DPU_MEMORY_BLOCK_ID PP009380
		    DPU_MEMORY_ADDR PP003380
		    DPU_DATA_LENGTH PP008380
		
		TC Control Flags :
		                          GBM IL DSE
		                          --Y -- ---
		
		Subsch. ID : 90
		Det. descr. : DUMP OF A DPU MEMORY AREA
		This Telecommand will not be included in the export
			PC028380
			
			6300 \<hex>
			0300 \<hex>
			224 \<hex>
				TC	

12.3.5		Check start address and length of third command in the stack			

Load PACS SPU OBS in instrument INIT mode
File: H_FCP_OBS_4210.xls
Author: lstefanov-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		With the Manual Stack in 'Full mode', check the **Start Address** and **Length** in the **third** PC028380 command: **Start Address = 00.0A00 hex** **Length = 7B9F 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
		                                     DPU_MEMORY_DUMP
		
		Command Parameter(s) :
		          DPU_MEMORY_BLOCK_ID PP009380
		              DPU_MEMORY_ADDR PP003380
		              DPU_DATA_LENGTH PP008380
		
		TC Control Flags :
		                                    GBM IL DSE
		                                    --Y -- ---
		
		Subsch. ID : 90
		Det. descr. : DUMP OF A DPU MEMORY AREA
		This Telecommand will not be included in the export
			PC028380
			
			6300 **<hex>**
			0A00 **<hex>**
			7B9F **<hex>**
				TC	

13		Dump PACS SPU new OBS image from LWL EEPROM		Next Step: 14	
		Note: Following steps assume all 3 segments of the PACS SPU OBS image (**seg_rth**, **seg_init** and **seg_pmco)** are dumped.			
13.1		MCS OBSM preparation for Image update in LIVE mode			
		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.			
13.1.1		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.			
13.1.2		Select image to be updated			

Load PACS SPU OBS in instrument INIT mode
File: H_FCP_OBS_4210.xls
Author: lstefanov-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
13.1.2. 1		IF PACS Nominal			
		Select the image to be updated for the memory device **PASPEPLW.** The 'Image UPDATE' window opens.			
13.1.2. 2		ELSE PACS Redundant			
		Select the image to be updated for the memory device **PASEPLWR.** The 'Image UPDATE' window opens.			
13.1.3		Start dump TM processing			
		In **LIVE** mode, processing of incoming real-time telemetry starts automatically after the image selection.			
13.2		Upload commands to dump the PACS SPU current OBS image			
		Uplink the **PC028380** memory dump commands with **ARM-GO**			
		For each command, several TM(6,6) packets must be received on ground.			
13.3		Verify reception of TM(6,6)			
		Note: One or more TM(6,6) packets will be received for each memory dump command uplinked.			
13.3.1		IF PACS Nominal			
		Verify Packet Reception PACS_MEMORY_DUMP Packet Mnemonic : MEMORY_DUMP APID : 1152 Type : 6 Subtype : 6 PI1 : PI2 :			

Load PACS SPU OBS in instrument INIT mode
File: H_FCP_OBS_4210.xls
Author: lstefanov-hp

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
13.3.2		ELSE PACS Redundant			
		Verify Packet Reception PACS_MEMORY_DUMP Packet Mnemonic : MEMORY_DUMP APID : 1153 Type : 6 Subtype : 6 PI1 : PI2 :			
13.4		Check OBSM dump packet processing			
		Check that the OBSM is processing the incoming memory dump packets.			
13.5		Save merged image			
		Save merged image with **new ID**.			
14		RETURN to calling proc. H_FCP_PAC_NLSM/H_FCP_PAC_RLSM		Next Step: END	
		Return to calling procedure H_FCP_PAC_NLSM or H_FCP_PAC_RLSM			
		End of Sequence			
		End of Procedure			

Attachment1

Checksums for step 4

PACS SPU OBS v.13.96

Start address [hex]	Length [dec / hex]	Checsum [hex]	
00.0100	256 / 100	FEB0	seg_rth
00.0300	548 / 224	DDCD	seg_init
00.0A00	2048 / 800	F921	seg_pmco
00.1200	2048 / 800	6B58	
00.1A00	2048 / 800	19D7	
00.2200	2048 / 800	A26B	
00.2A00	2048 / 800	21F8	
00.3200	2048 / 800	3FF2	
00.3A00	2048 / 800	4118	
00.4200	2048 / 800	6FB8	
00.4A00	2048 / 800	092F	
00.5200	2048 / 800	5D08	
00.5A00	2048 / 800	CACF	
00.6200	2048 / 800	CBFD	
00.6A00	2048 / 800	FDEE	
00.7200	2048 / 800	3B4F	
00.7A00	2048 / 800	EC6B	
00.8200	927 / 39F	2AB0	

Load PACS SPU OBS in instrument INIT mode
File: H_FCP_OBS_4210.xls
Author: lstefanov-hp

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