Update PACS DPU PRAM ground image via memory dump
File: H_FCP_OBS_4143.xls
Author: lstefanov-hp

# Procedure Summary

## Objectives

This Herschel OBSM nominal procedure is used to perform a PACS DPU PRAM ground image update from memory dump of one or several PACS 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
- PACS in INIT mode (DPU 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
- PACS in INIT mode (DPU ASW running)

**End of Procedure**

Same as start except:
- PACS DPU PRAM dump executed

## Reference File(s)

**Input Command Sequences**

**Output Command Sequences**

OFCP4143

## Referenced Displays

**ANDs** **GRDs** **SLDs**

## Configuration Control Information

| DATE | FOP ISSUE | VERSION | MODIFICATION DESCRIPTION | AUTHOR | SPR REF |
|---|---|---|---|---|---|
| 01/09/08 | | 1 | Created | lstefanov-hp | |
| 01/09/08 | | 2 | 1. step 3.3 updated: corrected typo in 2nd comment - TM param. replaced by TC param. | lstefanov-hp | |
| 04/09/08 | 2 | 3 | 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 | |

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| | | | | | |
|---|---|---|---|---|---|
| 19/07/09 | | 4 | 1. step3 updated to include addresses and lengths for PACS DPU OBS v.9.04 image dump from PM-Low | lstefanov-hp | |
| 24/07/09 | 2.5 | 5 | 1. step 3.3 updated: corrected typo in start address values for OBS image dump from PM-Low<br>2. step 3.3: added comment indicating the OBSM CT used to monitor only seg_init and seg_pmco dump | lstefanov-hp | |

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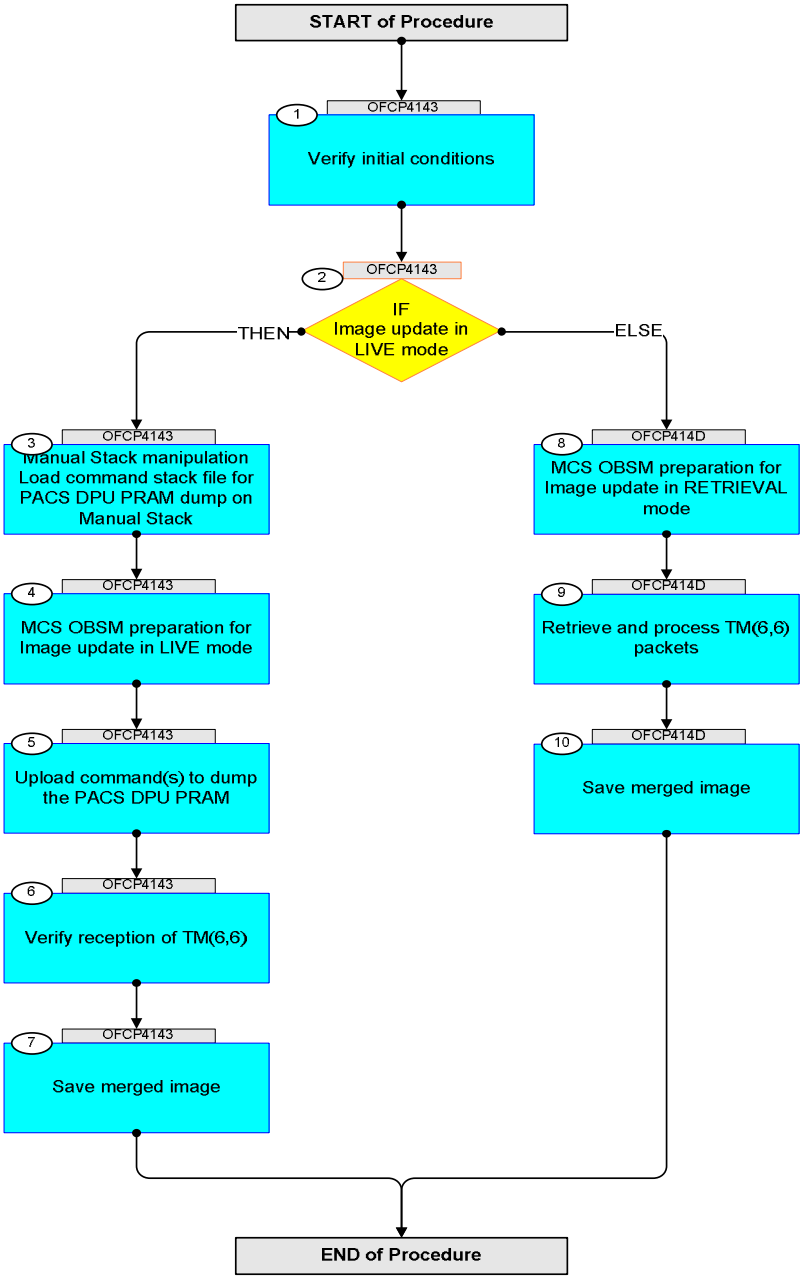
# Procedure Flowchart Overview



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| Step No. | Time | Activity/Remarks | TC/TLM | Display/ Branch | AIT Comment |
|---|---|---|---|---|---|
| | | **Beginning of Procedure** | | | |
| | OFCP4143 | *TC Seq. Name :* OFCP4143 ( )<br>PACS DPU PRAM image update in Live mode<br><br>*TimeTag Type: B*<br>*Sub Schedule ID:* | | | |
| 1 | | Verify initial conditions | | Next Step:<br>2 | |
| | | Check PACS instrument in **INIT mode** (DPU ASW running) | | | |
| | | Instrument SOE to confirm PACS instrument mode | | | |
| 2 | | IF<br>Image update in LIVE mode<br><br>type: [If] | | Next Step:<br>THEN 3<br>ELSE 8 | |
| 3 | | Manual Stack manipulation<br>Load command stack file for PACS DPU PRAM dump on Manual Stack | | Next Step:<br>4 | |
| | | **NOTE:**<br>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<br>PACS Nominal | | | |
| | | Select file<br><br>**PADPRMPR_DI_XXXXYYY_N_NoModel_NoModel_YYYY_DDDThhmmss.machine**<br><br>from directory<br><br>/home/hmcsops/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/PADPRMPR<br><br>as indicated by the OBSM engineer | | | |
| | | IMPORTANT:<br><br>XXXXYYYY = Image ID(X) and Version(Y) - depend on image used for stack generation<br><br>YYYY_DDD hhmmss - depend on stack generation time<br><br>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**<br><br>- No model associated to the memory image:<br><br>PADPRMPR_DI_0002001_N_NoModel_NoModel_2007_254T123300.sun043<br><br>- CT PADPRMPR1, ID 0003, Version 001 associated to the memory image:<br><br>PADPRMPR_DI_0002001_C_PADPRMPR1_0003001_2007_337T093320.sun043 | | | |
| | | | | | |
| 3.2 | | ELSE<br>PACS Redundant | | | |
| | | Select file<br><br>**PADRMPRR_DI_XXXXYYY_N_NoModel_NoModel_YYYY_DDDThhmmss.machine**<br><br>from directory<br><br>/home/hmcsops/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/PADRMPRR<br><br>as indicated by the OBSM engineer | | | |
| | | IMPORTANT:<br><br>XXXXYYYY = Image ID(X) and Version(Y) - depend on image used for stack generation<br><br>YYYY_DDD hhmmss - depend on stack generation time<br><br>machine - depends on the name of the machine used for stack generation | | | |
| | | File name **examples**<br><br>- No model associated to the memory image:<br><br>PADRMPRR_DI_0002001_N_NoModel_NoModel_2007_254T123300.sun043<br><br>- CT PADRMPRR1, ID 0003, Version 001 associated to the memory image:<br><br>PADRMPRR_DI_0002001_C_PADRMPRR1_0003001_2007_337T093320.sun043 | | | |
| | | | | | |
| 3.3 | | Check command stack loaded | | | |
| | | Check that loaded stack contains one or several TCs<br>**PC028380** | | | |
| | | **Note**:<br>For PACS DPU OBS **v.9.04**, the memory area to be dumped for **PM-Low** image is:<br><br>**Start Address = 00.0000 hex**<br>**End Address = 01.0CB4 hex**<br>**Length = 10CB5 hex** | | | |

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|---|---|---|---|---|---|
| | | **Note**:<br>For PACS DPU OBS **v.9.04**, the **2** TCs **PC028380** used to dump the OBS image from **PM-Low** will have the following parameters:<br><br>First TC **PC028380**:<br>**Start Address** = **00.0000 hex**<br>**Length** = **FFFF hex**<br><br>Second TC **PC028380**:<br>**Start Address** = **00.FFFF hex**<br>**Length** = **CB6 hex** | | | |
| | | **Note**:<br>**Only** the **seg_init** and **seg_pmco** memory areas will be **monitored** against the ground reference image.<br><br>An OBSM **Configuration Table** memory model will be used to declare the following PACS DPU PRAM areas "**To Be Monitored**":<br><br>For PACS DPU OBS **v.9.04**:<br><br>seg_init<br>**Start Address** = **00.4000 hex**<br>**Length** = **1551 hex**<br><br>seg_pmco<br>**Start Address** = **00.5551 hex**<br>**Length** = **B764 hex** | | | |
| | | Display the Manual Stack in 'Full mode' and check that the **Memory ID** parameter in the PC028380 command(s) is set to **01 hex**:<br><br>**Memory ID = 01 hex**<br><br>**Note**:<br>The Memory ID of the target memory device is stored in the MSB of the 16-bit long Mem ID TC parameter.<br>The LSB of the same parameter carries the most significant 8 bits of the Start Address. | | | |
| | | Execute Telecommand<br>**DPU_MEMORY_DUMP**<br><br>*Command Parameter(s) :*<br>**DPU_MEMORY_BLOCK_ID** **PP009380**<br>**DPU_MEMORY_ADDR** **PP003380**<br>**DPU_DATA_LENGTH** **PP008380**<br><br>*TC Control Flags :*<br>**GBM IL DSE**<br>**--Y -- ---**<br>*Subsch. ID : 90*<br>Det. descr. : DUMP OF A DPU MEMORY AREA<br>This Telecommand will not be included in the export | **PC028380**<br><br>**01xx hex**<br>**<hex>** (Def)<br>**<dec>** (Def) | **TC** | |
| | | | | | |
| 4 | | MCS OBSM preparation for Image update in LIVE mode | | Next Step:<br>5 | |
| | | **Note:**<br>It is assumed that the OBSM application is already running and the OBSM Desktop is displayed on the MCS client.<br>Starting the OBSM application is not covered by the current procedure. | | | |
| | | | | | |
| 4.1 | | Select 'Image UPDATE' from the menu | | | |

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| Step No. | Time | Activity/Remarks | TC/TLM | Display/ Branch | AIT Comment |
|---|---|---|---|---|---|
| | | Select the **Image** menu of the ***OBSM Desktop***.<br><br>From the Image menu, select **Update**.<br><br>The 'Image Catalog' window opens. | | | |
| | | | | | |
| 4.2 | | Select image to be updated | | | |
| | | | | | |
| 4.2.1 | | IF<br>PACS Nominal | | | |
| | | Select the image to be updated for the memory device **PADPRMPR.**<br><br>The 'Image UPDATE' window opens. | | | |
| | | | | | |
| 4.2.2 | | ELSE<br>PACS Redundant | | | |
| | | Select the image to be updated for the memory device **PADRMPRR.**<br><br>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 PACS DPU PRAM | | Next Step:<br>6 | |
| | | **Uplink** the **PC028380** 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:<br>7 | |
| | | **Note:**<br>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<br>PACS Nominal | | | |
| | | Verify Packet Reception<br><br>PACS_MEMORY_DUMP<br>Packet Mnemonic : MEMORY_DUMP<br>APID : 1152<br>Type : 6<br>Subtype : 6<br>PI1 :<br>PI2 : | | | |
| 6.2 | | ELSE<br>PACS Redundant | | | |
| | | Verify Packet Reception<br><br>PACS_MEMORY_DUMP<br>Packet Mnemonic : MEMORY_DUMP<br>APID : 1153<br>Type : 6<br>Subtype : 6<br>PI1 :<br>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:<br>END | |
| | | Save merged image with **new ID**. | | | |
| | | End of Sequence | | | |
| | OFCP414D | *TC Seq. Name :* OFCP414D ( )<br>PACS DPU PRAM image update in Retrieval mode<br><br>*TimeTag Type:*<br>*Sub Schedule ID:*<br><br>□ | | | |
| 8 | | MCS OBSM preparation for Image update in RETRIEVAL mode | | Next Step:<br>9 | |
| | | **Note:**<br>It is assumed that the OBSM application is already running and the OBSM Desktop is displayed on the MCS client.<br>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***.<br><br>From the Image menu, select **Update**.<br><br>The 'Image Catalog' window opens. | | | |
| | | | | | |
| 8.2 | | Select image to be updated | | | |
| | | | | | |
| 8.2.1 | | IF<br>PACS Nominal | | | |
| | | Select the image to be updated for the memory device **PADPRMPR.**<br><br>The 'Image UPDATE' window opens. | | | |
| | | | | | |
| 8.2.2 | | ELSE<br>PACS Redundant | | | |
| | | Select the image to be monitored for the memory device **PADRMPRR.**<br><br>The 'Image MONITOR' 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:<br>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.<br><br>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** | | | |