Update ACC CPU RAM ground image from memory dump
File: H_FCP_OBS_2245.xls
Author: lstefanov-hp

Procedure Summary

Objectives

This Herschel OBSM nominal procedure is used to perform an ACC CPU RAM ground image update from memory dump of one or several ACC CPU RAM 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

ACC in Operational Mode

The ACC CPU RAM dump request may not cross the border between Write Protected (WP) and Not Protected (NP) areas. If the border is violated, the command is rejected.

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

ACC in Operational Mode

End of Procedure

Same as start, except:
- ACC CPU RAM memory dump executed

Reference File(s)

Input Command Sequences

Output Command Sequences

OFCP2245

Referenced Displays

ANDs **GRDs** **SLDs**

Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
13/01/09		1	Created	lstefanov-hp	

Status : Version 4 - Unchanged
Last Checkin: 21/04/09

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29/01/09	2	2	1. 'Summary of Constraints' on cover page updated to include the constraint to separate WP and NP area dump 2. step 3.3 updated: added comments describing the CPU RAM allocation between Write Protecte and Not Protected areas and the address range for the OBS image dump from RAM	lstefanov-hp	
08/04/09		3	1. step 3.3 updated: added comment to emphasize that the OBSM Engineer must check the dump commands in the OBSM generated command stack for WP memory boundary violation - in line with TAS-I (GC) comment from FOP 2.2 Review	lstefanov-hp	
21/04/09	2.3	4	1. corrected error in TC Sequence name: OFCP224F replaced by OFCP224L	lstefanov-hp	

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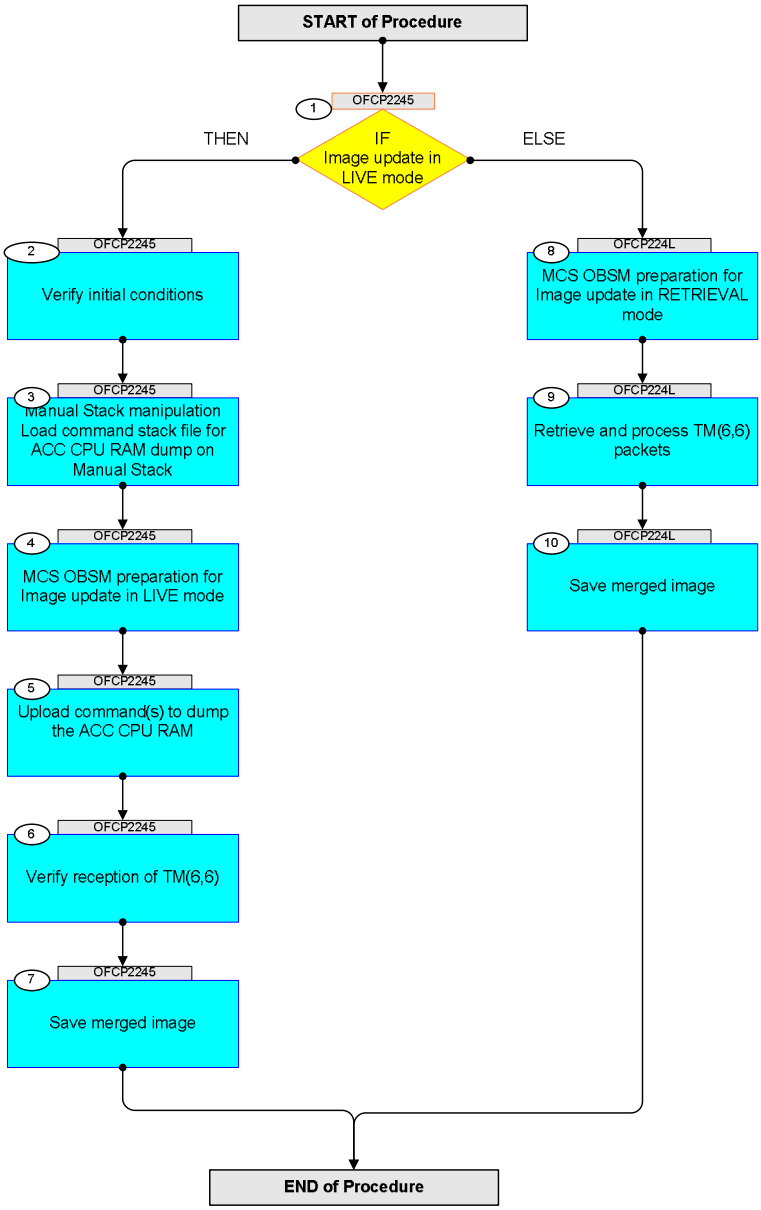
Procedure Flowchart Overview



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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		Beginning of Procedure			
	OFCP2245	*TC Seq. Name :* OFCP2245 (AcCPU RAM GI update) ACC CPU RAM Gnd image update in LIVE mode *TimeTag Type: B* *Sub Schedule ID:*			
1		IF Image update in LIVE mode type: [If]		Next Step: THEN 2 ELSE 8	
2		Verify initial conditions		Next Step: 3	
		Check: - ACC in Operational mode			
		ACMS SOE to confirm ACC mode			
3		Manual Stack manipulation Load command stack file for ACC CPU RAM 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 ACC PM A			
		Select file **ACCRMCPU_DI_XXXXYYY_N_NoModel_NoModel_YYYY_DDDThhmmss.machine** from directory /home/hmcsops/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/ACCRMCPU 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: ACCRMCPU_DI_0002001_N_NoModel_NoModel_2007_254T123300.sun043 - CT ACCRMCPU1, ID 0003, Version 001 associated to the memory image: ACCRMCPU_DI_0002001_C_ACCRMCPU1_0003001_2007_337T093320.sun043			
3.2		ELSE ACC PM B			
		Select file **ACCRMCPB_DI_XXXXYYY_N_NoModel_NoModel_YYYY_DDDThhmmss.machine** from directory /home/hmcsops/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/ACCRMCPB 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: ACCRMCPB_DI_0002001_N_NoModel_NoModel_2007_254T123300.sun043 - CT ACCRMCPB1, ID 0003, Version 001 associated to the memory image: ACCRMCPB_DI_0002001_C_ACCRMCPB1_0003001_2007_337T093320.sun043			
3.3		Check memory dump command stack loaded			
		Check that loaded stack contains one or several TCs **AC063109**			
		Note: For a **full dump** of the ACC CPU RAM (**Memory ID** = **02** included in the address): **Start Address** = **0200.0000** hex **End Address** = **023F.FFFF** hex			

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		Note: For a **dump** of the ACC CPU RAM **OBS image** (**Memory ID** = **02** included in the address): **Start Address** = **0200.0000** hex **End Address** = **020F.FFFF** hex			
		IMPORTANT: The ACC CPU RAM dump request may not cross the border between Write Protected (WP) and Not Protected (NP) areas. If the border is violated, the command is rejected. The allocation of ACC RAM between WP and NP memory is defined at link time. The BSW constant, WriteProtectedRamEndAddr_C, points to the first byte of the unprotected RAM. For ACC **OBS v.4.0.4 AAE** **WriteProtectedRamEndAddr_C** = **020A.CB98 hex**			
		IMPORTANT: It is **OBSM Engineer's responsability to verify** the OBSM generated **dump commands**. In case a memory dump across the boundary between Write Protected and Not Protected RAM is required, the **OBSM Engineer shall check** that **no single command** in the stack tries to **dump accross** the memory address indicated by the BSW constant **WriteProtectedRamEndAddr_C.**			
		Display the Manual Stack in 'Full mode' and check that the **Memory ID** parameter in the AC063109 command(s) is set to **02 hex**: **Memory ID = 02 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 **Dump Memory** *Command Parameter(s) :* **Memory ID** **AH6M0109** **Start Address** **AH6M1109** **Length SAU** **AH6M3109** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 20* Det. descr. : TC(6,5) Dump Memory Using Absolute Addresses This Telecommand will not be included in the export	**AC063109** **02xx <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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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 ACC PM A			
		Select the image to be updated for the memory device **ACCRMCPU.** The 'Image UPDATE' window opens.			
4.2.2		ELSE ACC PM B			
		Select the image to be updated for the memory device **ACCRMCPB.** 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 ACC CPU RAM		Next Step: 6	
		Uplink the **AC063109** memory dump command(s) with **ARM-GO**			
		After successful execution of the command, one or several TM(6,6) packets must be received on ground.			
6		Verify reception of TM(6,6)		Next Step: 7	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		Note: One or several TM(6,6) packets will be received for the memory dump command(s) uplinked.			
		Verify Packet Reception Memory Dump - Absolute Addresses - SAU 8 Packet Mnemonic : MemDmpAbsAdd APID : 512 Type : 6 Subtype : 6 PI1 : PI2 :			
6.1		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			
	OFCP224L	*TC Seq. Name :* OFCP224L (AcCPU RAM GI updateR) ACC CPU RAM Gnd 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.			
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			

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
8.2.1		IF ACC PM A			
		Select the image to be updated for the memory device **ACCRMCPU.** The 'Image UPDATE' window opens.			
8.2.2		ELSE ACC PM B			
		Select the image to be updated for the memory device **ACCRMCPB.** 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.			
10		Save merged image		Next Step: END	
		Save merged image with **new ID**.			
		End of Sequence			
		End of Procedure			