Execute HIFI LCU DUMP in case of SEU
File: H_CRP_OBS_LCUD.xls
Author: n.krusenstiern-hp

Procedure Summary

Objectives

This Herschel OBSM procedure is used to dump the HIFI LCU, then perform a comparison of the dump data versus the reference image. It is not intended as a stand alone procedure, but as a step in the HIFI SEU recovery sequence.

The memory dump is commanded using TC(6,5) and the memory locations content is received on ground in TM(6,6) packets.

This procedure assumes that the memory load and memory dump 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 procedure.

Summary of Constraints

CDMU in Operational Mode
- HIFI in Stand-by I mode
- HIFI LCU in Stand-by (waiting for Nominal Mode)

Memory areas are patched via TC(6,2) and dumped through TC(6,5); 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
- HIFI in Stand-by I mode

End of Procedure

Same as start except:
-HIFI LCU memory dump executed

Reference File(s)

Input Command Sequences

Output Command Sequences

OCRPLCUD

Referenced Displays

ANDs **GRDs** **SLDs**

Configuration Control Information

Status : Version 11 - Updated
Last Checkin: 14/04/2011

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DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
01/02/2010		1	Created	m.baker-hp	
11/02/2010		2	Updated step 2.1 with note on stack naming and filter, and added note on dump stack with 6 second spacing as a contingency option.	m.baker-hp	
11/03/2010		3	Updated for OBSW T231P22 delivery, for upload to spacecraft 11/03/10.	m.baker-hp	
24/03/2010	3	4	Updated for software version T233P24, to be uploaded 30-Mar-10.	m.baker-hp	
23/04/2010		5	Updated for software version T234P24.	m.baker-hp	
17/05/2010		6	Updated for software version T235P24	n.krusenstiern-hp	
06/07/2010		7	Updated for Software version T236P24	n.krusenstiern-hp	
09/07/2010		8	Correted Typo in Filename of Stack	n.krusenstiern-hp	
14/07/2010		9	Corrected Parameter Type (Dec->Hex)	n.krusenstiern-hp	
09/12/2010		10	Updated for new version T237P24	n.krusenstiern-hp	
14/04/2011	3.1	11	Update for new version T238P24	n.krusenstiern-hp	

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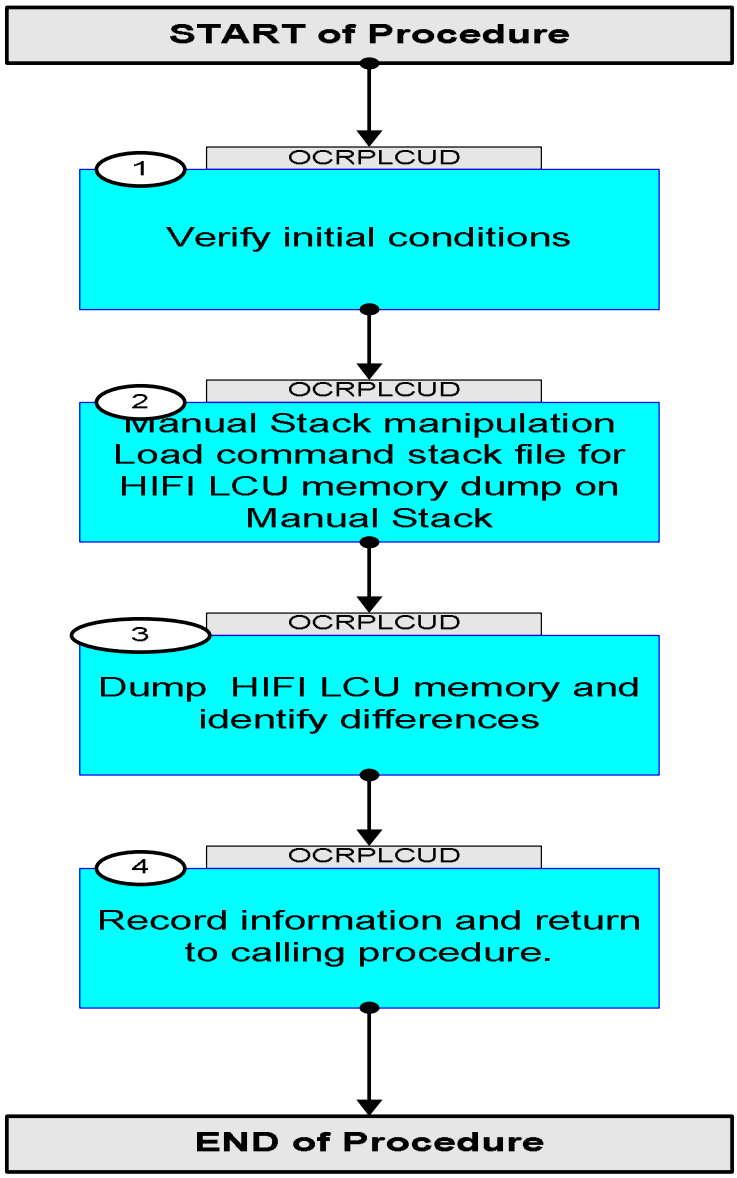
Procedure Flowchart Overview



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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		Beginning of Procedure			
	OCRPLCUD	*TC Seq. Name :* OCRPLCUD (HIFI LCU SEU recover) Dump HIFI LCU memory and compare it against a reference image. *TimeTag Type: B* *Sub Schedule ID:* □			
1		Verify initial conditions		Next Step: 2	
		Check: - HIFI LCU in Stand-by I mode.			
		Instrument SOE to confirm HIFI instrument mode			
2		Manual Stack manipulation Load command stack file for HIFI LCU memory dump on Manual Stack		Next Step: 3	
		NOTE: The current procedure assumes that the memory load is performed using commands with immediate execution.			
2.1		HIFI Redundant LCU dump stack load			
		Select the File -> **LoadStack** option from the main menu of the Manual Stack window and choose the directory: .../CMD/STACKS/OBSM/HILCUMER			
		File name **for version T238P24, response to checksum anomaly** This patch sequence is separated by 2 seconds immediate commanding: HILCUMER_DI_0016001_N_NoModel_NoModel_2011_101T171931.ws044 ***NOTE*** You may have to remove the filter, which is usually set to *.wsxxx where xxx is the current workstation.			
2.2		Check command stack loaded			

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		Note: The current procedure assumes that **entire image** is patched and dumped in the **HIFI LCU patch area memory buffer**: **MemID = 04 hex** **Start Address = 00.0000 hex** **End Address = 00.79F7 hex** **Length = 79F8 hex**			
		Check that loaded stack contains **122** TCs **XC005998, separated by 2 seconds, of length 128.**			
		Display the Manual Stack in 'Full mode' and check the XC005998 first command loaded: **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** **0400 <hex>** **0000 <hex>** **0080 <hex>**	**TC**	
		Display the Manual Stack in 'Full mode' and check the XC005998 last command loaded: **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** **0400 <hex>** **7900 <hex>** **007C <hex>**	**TC**	
3		Dump HIFI LCU memory and identify differences		Next Step: 4	
3.1		MCS OBSM preparation for Image Monitor in LIVE mode			

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		Note: It is assumed that the OBSM application is already running and the OBSM Desktop is displayed on the MCS client. The client can also be started under the "Others" application tab.			
3.1.1		Select 'Image MONITOR' from the menu			
		Select the **Image** menu of the ***OBSM Desktop***. From the Image menu, select **Monitor**. The 'Image Catalog' window opens.			
3.1.2		Select image to be updated			
		The 'Image MONITOR' window opens. Select the image to be updated for the memory device **HILCUMER.** **Choose: REFERENCE** image **0016002** description: **HIFI LCU OBSW v T238P24 2011 DOY 101** Click on the REC button so that the text appears green; it will now process incoming TM.			
3.2		Command memory dump			
		Uplink the 122 **XC005998** memory dump commands with **ARM-GO**			
		For the uplinked command, TM(6,6) packets shall be received on ground.			
3.3		Verify reception of TM(6,6)			
		Note: TM(6,6) packets will be received for the memory dump command uplinked.			
		Verify Packet Reception HIFI_R_memory_dump Packet Mnemonic : H_mem_dump APID : 1025 Type : 6 Subtype : 6 PI1 : PI2 :			
3.4		Monitor dump processing			

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		Check that the OBSM is processing the incoming memory dump packets. **NOTE:** The checksum in the packet produced by HIFI is not consistent with the OBSM checksum, so an **error message** will be generated for each packet. "Calculated checksum on received packet differs from checksum value in packet" **This should be ignored.** Click on Ok for each packet. Once all packets are ingested any differences will show in the monitor display.			
3.5		Identify differences			
		Identify address of word which has changed; this will show on the monitor screen, with the total number of differences given in the dedicated box. If no differences are seen the memory area table will remain blank.			
		Print monitor display to ASCII text file, name: **HILCUMER_comparison_dumpx_YYMMDD.txt** where x is 1 if this is the first dump of the DTCP, 2 if it's the 2nd etc. This will be saved in folder: ~/HPMCS/SESSION/current/PRINT/OBSM			
4		Record information and return to calling procedure.		Next Step: END	
		Record information regarding differences for assessment, and return to HIFI calling procedure. The comparison file should be sent to HIFI for further information.			
		End of Sequence			
		End of Procedure			