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

Procedure Summary

Objectives

This Herschel OBSM procedure is used to patch the HIFI LCU. It is not intended as a stand alone procedure, but as a step in the HIFI SEU recovery sequence.

The patches are loaded using TC(6,2) and the verification of the patched areas is done by memory dump. 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 and optional patch and dump executed

Reference File(s)

Input Command Sequences

Output Command Sequences

OCRPLCUP

Referenced Displays

ANDs **GRDs** **SLDs**

Configuration Control Information

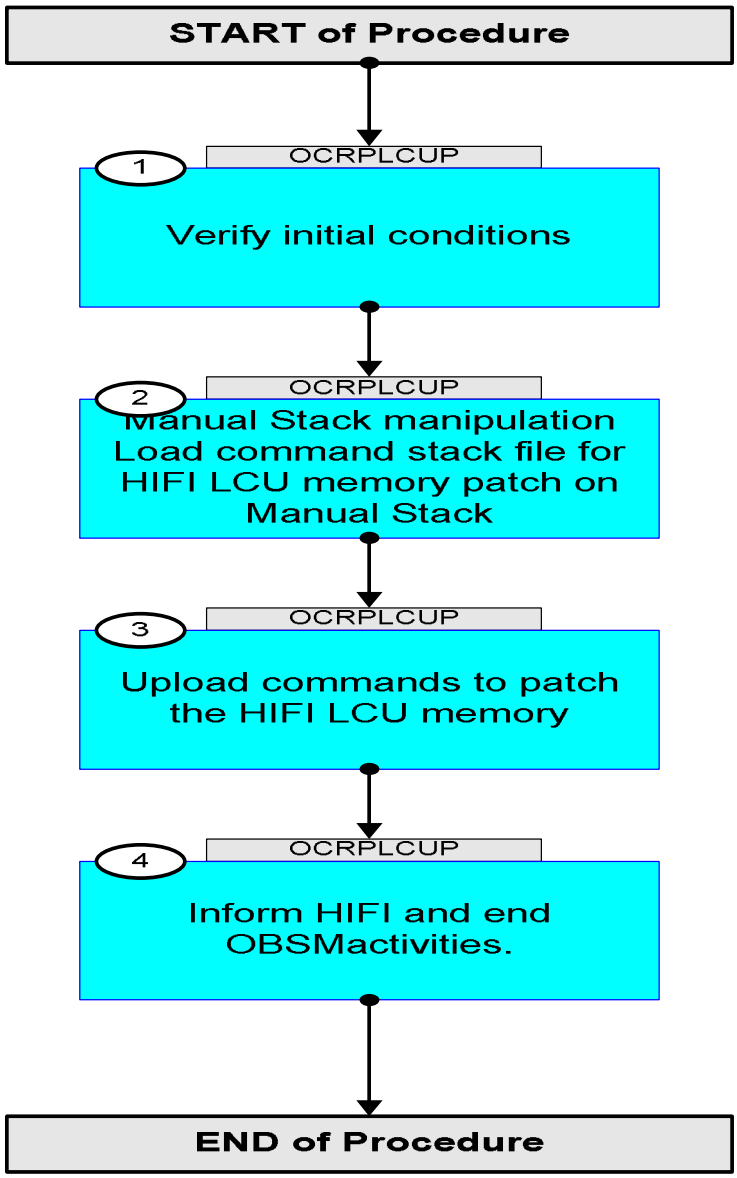
Status : Version 8 - Updated
Last Checkin: 14/04/2011

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

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
01/02/2010		1	Created	m.baker-hp	
11/03/2010		2	Updated for OBSW T231P22 delivery, for upload to spacecraft 11/03/10.	m.baker-hp	
24/03/2010	3	3	Updated for software version T233P24, to be uploaded 30-Mar-10.	m.baker-hp	
23/04/2010		4	Updated for software version T234P24.	m.baker-hp	
17/05/2010		5	Updated for software version T235P24	n.krusenstiern-hp	
06/07/2010		6	Updated to software version T236P24	n.krusenstiern-hp	
27/10/2010		7	Updated to software version T237P24	n.krusenstiern-hp	
14/04/2011	3.1	8	Update for version T238P24	n.krusenstiern-hp	

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

Procedure Flowchart Overview



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

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		Beginning of Procedure			
	OCRPLCUP	*TC Seq. Name :* OCRPLCUP (HIFI LCU Patch) Patch HIFI LCU memory as part of SEU recovery procedure. *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 patch on Manual Stack		Next Step: 3	
		NOTE: The current procedure assumes that the memory load is performed using commands with immediate execution.			
2.1		Load command stack file for HIFI LCU memory patch on Manual Stack			
		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. - No model associated to the memory image: HILCUMER_PI_0016001_N_NoModel_NoModel_2011_101T172237.ws044 ***NB:** You may have to remove the filter on the file suffix to see the stack.*			
2.2		Check memory load command stack loaded			

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

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		Note: The current procedure assumes that **entire image** is patched 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 487 TCs, which are 244 TCs **XC000998** and 243 HIFI_NOOP TCs **HC179289**. Note: There is one NOOP TC between any one Patch TC, to ensure a 2 sec separation at radiation.			
		Display the Manual Stack in 'Full mode' and check the first XC000998 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 Load**	**XC000998**	**TC**	
		Command Parameter(s) : **Memory ID XH000998 0400 <hex>** **Start Address XH001998 0 <hex>** **Length of Block XH003998 64 <dec>** **Var length octet string XH004998 (Def)** **Checksum XH005998 EE56** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 30* Det. descr. : Load HIFI Memory Using Absolute Addresses This Telecommand will not be included in the export			
		Display the Manual Stack in 'Full mode' and check the last XC000998 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 Load**	**XC000998**	**TC**	
		Command Parameter(s) : **Memory ID XH000998 0400 <hex>** **Start Address XH001998 7980 <hex>** **Length of Block XH003998 60 <dec>** **Var length octet string XH004998 (Def)** **Checksum XH005998 34EF** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 30* Det. descr. : Load HIFI Memory Using Absolute Addresses This Telecommand will not be included in the export			
3		Upload commands to patch the HIFI LCU memory		Next Step: 4	

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

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		Uplink the 244 **XC000998** memory load commands with **ARM-GO.** (2s command separation.)			
3.1		Check packet reception			
		Verify Packet Reception HIFI_R_TC_acceptance_OK Packet Mnemonic : H_Accepted APID : 1025 Type : 1 Subtype : 1 PI1 : PI2 :			
		Verify Packet Reception HIFI_R_TC_execution_OK Packet Mnemonic : H_Completed APID : 1025 Type : 1 Subtype : 7 PI1 : PI2 :			
		For a TC XC000998 successfuly executed on-board, a TM(1,1) and TM(1,7) packet shall be received on ground.			
4		Inform HIFI and end OBSMactivities.		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			