

LCU memory patch
 File: H_FCP_HIF_LCU.xls
 Author: R. Biggins



Procedure Summary

Objectives

The objective of this procedure is to patch the LCU memory as part of a standard load, primarily for the table loads.

Summary of Constraints

HIFI is not in use

Spacecraft Configuration

Start of Procedure

Any CDMU bus profile may be used
 HIFI in DissipativeI mode

End of Procedure

HIFI in DissipativeI

Reference File(s)

Input Command Sequences

Output Command Sequences

HFHLCU

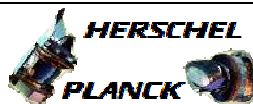
Referenced Displays

ANDs **GRDs** **SLDs**
 ZAZEB999

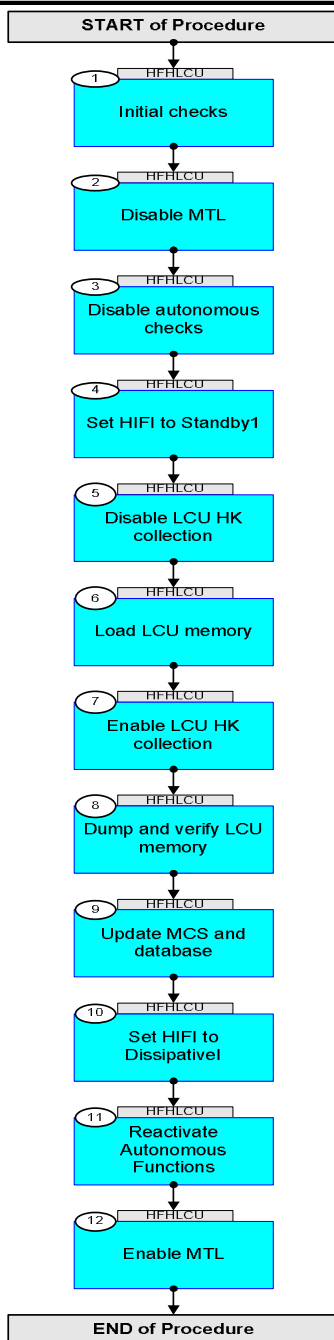
Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
01/06/2011	3.1	1	Created	R. Biggins	

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Procedure Flowchart Overview



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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
Beginning of Procedure				
<p><i>TC Seq. Name : HFHLCU (LCU memory patch)</i></p> <p><i>TimeTag Type: N</i> <i>Sub Schedule ID:</i></p> <p style="text-align: center;">□</p>				
1		Initial checks		Next Step: 2
		Note: HIFI mode <div style="display: flex; justify-content: space-around;"> HL_MODE_S HM258194 = dissipative </div>		AND=ZAZEB999
2		Disable MTL		Next Step: 3
	ET=+ UT=+00.00.00	Execute Telecommand <div style="display: flex; justify-content: space-around;"> DisableRelOfTcs_Templ DCT23170 </div> <p><i>Command Parameter(s) :</i></p> <div style="display: flex; justify-content: space-between;"> <div> <p>N_Repetition DH041170</p> <p>SubscheduleId DH053170</p> <p>M_nrOfApidS DH054170</p> </div> <div> <p>1 <dec> (Def)</p> <p>70 <dec></p> <p>0 <dec></p> </div> </div> <p><i>TC Control Flags :</i></p> <div style="display: flex; justify-content: space-around;"> GBM IL DSE --Y -- --- </div> <p><i>Subsch. ID : 10</i> <i>Det. descr. : TEMPLATE DisableReleaseOfTcs, TC(11,2)</i></p>		
	ET=+ UT=+00.00.05	Execute Telecommand <div style="display: flex; justify-content: space-around;"> RetStatusOfCmdSchedule DCT25170 </div> <p><i>Subsch. ID : 10</i> <i>Det. descr. : TEMPLATE ReportStatusOfCmdSchedule, TC(11,18), no appl. data</i></p>		
		Verify: Using the OBQD , verify that subschedule 70 is disabled		
3		Disable autonomous checks		Next Step: 4
		Verify Telemetry <div style="display: flex; justify-content: space-around;"> HI_au_LCU_mem_S HM123190 = ON </div>		AND=ZAZEB999
		Verify Telemetry <div style="display: flex; justify-content: space-around;"> HI_au_LCUmode_S HM124190 = ON </div>		AND=ZAZEB999
		Verify Telemetry <div style="display: flex; justify-content: space-around;"> HI_au_LCUresp_S HM125190 = ON </div>		AND=ZAZEB999

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	ET=+ UT=+00.00.00	Execute Telecommand HIFI_Set_OBS_ID Command Parameter(s) : HIFI_BB_ID HP001197 HIFI_OBS_ID HP000197 TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 70 Det. descr. : Set Observation-ID and Building-Block-ID	HC014289 0 <hex> (Def) 00000999 <hex>	
	ET=+ UT=+00.00.02	Execute Telecommand HIFI_LCU_mem_check_off Subsch. ID : 70 Det. descr. : Disables autonomous function to check LCU-checksum	HC206289	
	ET=+ UT=+00.00.02	Execute Telecommand HIFI_LCUmode_check_off Subsch. ID : 70 Det. descr. : Disables autonomous function to check LCU-standby0 mode	HC204289	
	ET=+ UT=+00.00.02	Execute Telecommand HIFI_LCUonresp_chk_off Subsch. ID : 70 Det. descr. : Disables autonomous function to check LCU-HouseKeeping responses	HC202289	
		Verify Telemetry HI_au_LCU_mem_S HM123190	= OFF	AND=ZAZEB999
		Verify Telemetry HI_au_LCUmode_S HM124190	= OFF	AND=ZAZEB999
		Verify Telemetry HI_au_LCUresp_S HM125190	= OFF	AND=ZAZEB999
4		Set HIFI to Standby1		Next Step: 5
	ET=+ UT=+00.00.00	Execute Telecommand HIFI_HL_Standby Command Parameter(s) : HIFI_BB_ID HP001197 TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 70 Det. descr. : Send single command to switch LCU to standby	HC081289 0.0 <dec> (Def)	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry HL_MODE_S HM258194	= standby1	AND=ZAZEB999
5		Disable LCU HK collection		Next Step: 6
	ET=+ UT=+00.00.00	Execute Telecommand HIFI_Housekeeping_on Command Parameter(s) : HIF_HK_rate HP012197 HIF_FCU_S HP006197 HIF_LCU_S HP007197 HIF_WBSV_S HP009197 HIF_WBSH_S HP008197 HIF_HRSV_S HP011197 HIF_HRSH_S HP010197 TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 70 Det. descr. : Sets periodic housekeeping packet generation period	HC016289 1_pkt_per_s ON (Def) OFF ON (Def) ON (Def) ON (Def) ON (Def)	
6		Load LCU memory		Next Step: 7
		Memory load: Execute the following procedure PROCEDURE: H_CRP_OBS_LCUP		
7		Enable LCU HK collection		Next Step: 8
	ET=+ UT=+00.00.00	Execute Telecommand HIFI_Housekeeping_on Command Parameter(s) : HIF_HK_rate HP012197 HIF_FCU_S HP006197 HIF_LCU_S HP007197 HIF_WBSV_S HP009197 HIF_WBSH_S HP008197 HIF_HRSV_S HP011197 HIF_HRSH_S HP010197 TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 70 Det. descr. : Sets periodic housekeeping packet generation period	HC016289 1_pkt_per_s ON (Def) ON (Def) ON (Def) ON (Def) ON (Def) ON (Def)	
8		Dump and verify LCU memory		Next Step: 9

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Memory dump: Execute the following procedure PROCEDURE: H_CRP_OBS_LCUD		
		<i>Ensure that there are no changes between the dumped image and the uplinked image.</i>		
9		Update MCS and database		Next Step: 10
		UPDATE: Update the OL for the parameter HL_exp_checksum. This should be done primarily on the A-chain, and later on the B-chain		
		UPDATE: Create a new database change request to update the OL to be included in the next database update.		
10		Set HIFI to DissipativeI		Next Step: 11
		Set HIFI to DissipativeI mode: Execute the following procedure PROCEDURE: H_FCP_HIF_R2D1 [HFHR2D1] FPs: OBSID = 999 <hex>		
		Verify Telemetry <div style="display: flex; justify-content: space-around;"> HL_MODE_S HM258194 = dissipative </div>		AND=ZAZEB999
11		Reactivate Autonomous Functions		Next Step: 12
		Formal Parameter value: The value for the FP should be taken from the e-mail from HIFI.		
		WARNING: <i>It is very important to ensure that the value entered is correct - if it is not then HIFI will disable the LCU, and the recovery procedure (H_CRP_HIF_SPCN) procedure will have to be executed.</i>		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	ET=+ UT=+00.00.00	HIFI_check_LCU_memory HIFI_check_LCU_memory Command Parameter(s) : HIFI_BB_ID HP001197 HIF_step_time_ms HP079197 HIF_check_crc HP233197 TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 70 Det. descr. : Compares checksum of LCU with specified value	HC168289 517996545 <dec> 3000 ms LCU_CRC	
		Verify Telemetry HL_checksum HM245194	LCU_CRC	AND=ZAZEB999
	ET=+ UT=+00.00.00	Execute Telecommand HIFI_Housekeeping_on Command Parameter(s) : HIF_HK_rate HP012197 HIF_FCU_S HP006197 HIF_LCU_S HP007197 HIF_WBSV_S HP009197 HIF_WBSH_S HP008197 HIF_HRSV_S HP011197 HIF_HRSH_S HP010197 TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 70 Det. descr. : Sets periodic housekeeping packet generation period	HC016289 1_pkt_per_10_s ON (Def) ON (Def) ON (Def) ON (Def) ON (Def) ON (Def)	
	ET=+ UT=+00.00.02	Execute Telecommand HIFI_LCU_mem_check_on Command Parameter(s) : HIFI_BB_ID HP001197 HIF_step_time_ms HP079197 HIF_check_crc HP233197 HIF_step_time_s HP462197 Subsch. ID : 70 Det. descr. : Enables autonomous function to check LCU checksum	HC205289 0F130001 <hex> 3000 ms LCU_CRC 3600 s (Def)	
	ET=+ UT=+00.00.02	Execute Telecommand HIFI_LCUmode_check_on Command Parameter(s) : HIF_N_breach HP013197 Subsch. ID : 70 Det. descr. : Enables autonomous function to check LCU standby0 mode	HC203289 1 <dec>	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	ET=+ UT=+00.00.02	Execute Telecommand <p style="text-align: center;">HIFI_LCUonresp_chk_on</p> Command Parameter(s) : <p style="margin-left: 40px;">HIF_N_breach HP013197</p> Subsch. ID : 70 Det. descr. : Enables autonomous function to check LCU HouseKeeping responses	HC201289 700 <dec>	
	ET=+ UT=+00.00.00	Execute Telecommand <p style="text-align: center;">HIFI_Housekeeping_on</p> Command Parameter(s) : <p style="margin-left: 40px;">HIF_HK_rate HP012197 1_pkt_per_3_s</p> <p style="margin-left: 40px;">HIF_FCU_S HP006197 ON (Def)</p> <p style="margin-left: 40px;">HIF_LCU_S HP007197 ON (Def)</p> <p style="margin-left: 40px;">HIF_WBSV_S HP009197 ON (Def)</p> <p style="margin-left: 40px;">HIF_WBSH_S HP008197 ON (Def)</p> <p style="margin-left: 40px;">HIF_HRSV_S HP011197 ON (Def)</p> <p style="margin-left: 40px;">HIF_HRSH_S HP010197 ON (Def)</p> TC Control Flags : <p style="margin-left: 40px;">GBM IL DSE --Y -- ---</p> Subsch. ID : 70 Det. descr. : Sets periodic housekeeping packet generation period	HC016289	
		Verify Telemetry <p style="margin-left: 40px;">HI_au_LCU_mem_S HM123190</p>	= ON	AND=ZAZEB999
		Verify Telemetry <p style="margin-left: 40px;">HI_au_LCUmode_S HM124190</p>	= ON	AND=ZAZEB999
		Verify Telemetry <p style="margin-left: 40px;">HI_au_LCUresp_S HM125190</p>	= ON	AND=ZAZEB999
12		Enable MTL		Next Step: END
	ET=+ UT=+00.00.00	Execute Telecommand <p style="text-align: center;">EnableRelOfTcs_Templ</p> Command Parameter(s) : <p style="margin-left: 40px;">N_Repetition DH041170 1 <dec> (Def)</p> <p style="margin-left: 40px;">SubscheduleId DH053170 70 <dec></p> <p style="margin-left: 40px;">M_nrOfApid DH054170 0 <dec></p> TC Control Flags : <p style="margin-left: 40px;">GBM IL DSE --Y -- ---</p> Subsch. ID : 10 Det. descr. : TEMPLATE EnableReleaseOfTcs, TC(11,1)	DCT22170	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	ET=+ UT=+00.00.05	Execute Telecommand RetStatusOfCmdSchedule Subsch. ID : 10 Det. descr. : TEMPLATE ReportStatusOfCmdSchedule, TC(11,18), no appl. data	DCT25170	
		Verify: Using the OBQD, verify that subschedule 70 is enabled		
End of Procedure				