

HIFI Recovery - ON-CALL SOE
 File: H_CRP_HIF_CALL.xls
 Author: R. Biggins



Procedure Summary

Objectives

The objective of this procedure is to recover from the case where the HIFI autonomous checks have detected a problem and have disabled communication between the ICU and LCU

It is intended that this procedure can be run by the on-call engineer, although the SPACON may perform the initial checks (although it is not required)

Summary of Constraints

Triggered by:
 TM(5,4) from HIFI [APID 1025]

This procedure is for the case when:
 - HIFI is in use
 - There are less than two working days before HIFI will be in use

If HIFI is not in use, or there is time to recover HIFI before commanding begins, the on-call engineer should NOT be called, and the procedure H_CRP_HIF_SPCN should be executed instead.

Spacecraft Configuration

Start of Procedure

Any CDMU bus profile may be used
 HIFI in Standby1 mode

End of Procedure

HIFI in DissipativeI or DissipativeII mode

Reference File(s)

Input Command Sequences

Output Command Sequences

HRHCALL1
 HRHCALL5
 HRHCALL3
 HRHCALL6
 HRHCALL4
 HRHCALL7

Referenced Displays

ANDs **GRDs** **SLDs**
 ZAZEB999
 W3004000

Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
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Status : Version 11 - Updated
 Last Checkin: 09/08/2011

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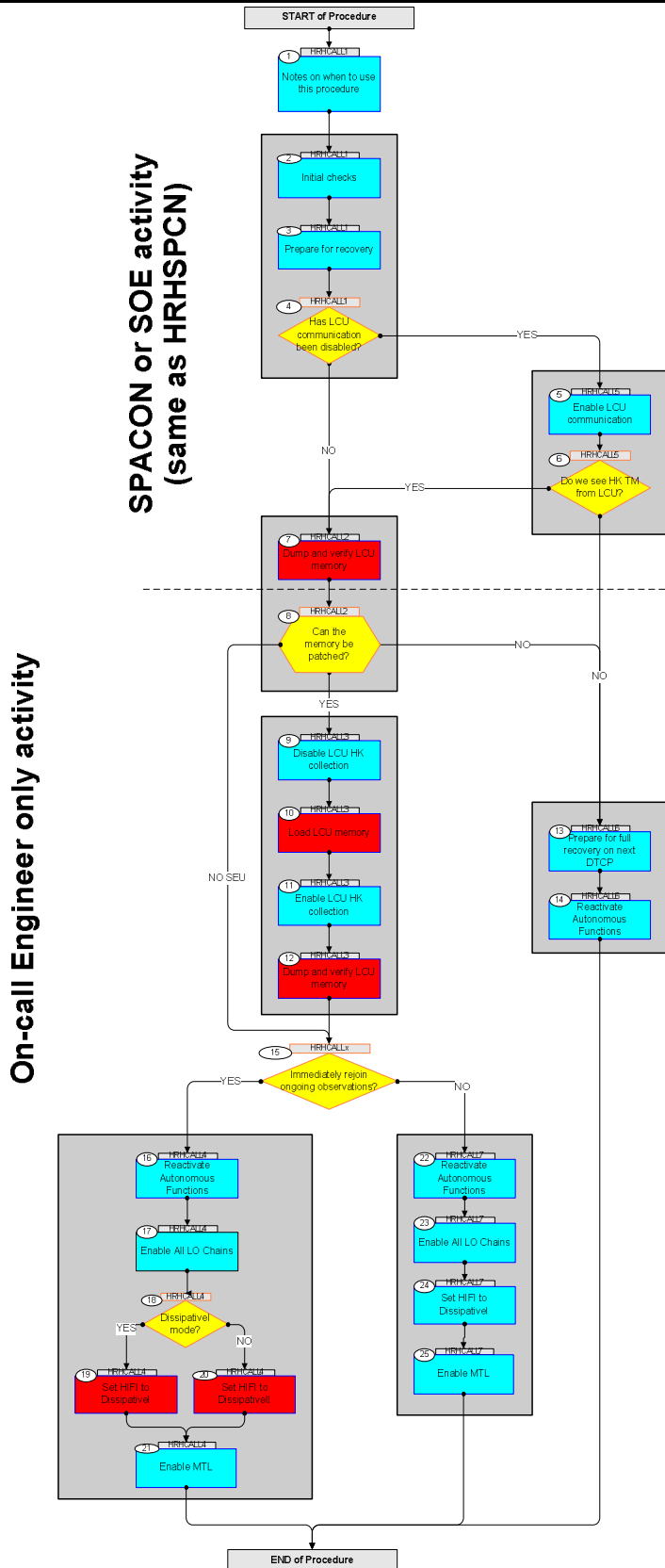


26/02/2010		1	Created	R. Biggins	
08/04/2010	3	2	Updated due to initial testing	R. Biggins	
07/05/2010		3	Complete rewrite due to new HIFI software	R. Biggins	
08/06/2010		4	Update due to comments by D. Teyssier and C. Risacher	R. Biggins	
29/06/2010		5	Update to correct ET/UT problems	R. Biggins	
02/07/2010		6	- Step 17: TM check added <input type="checkbox"/> - Step 17: TC rate updated to 1 packet per second for last TC	R. Biggins	
10/02/2011		7	Update due to results of operational use	R. Biggins	
09/03/2011		8	Update to remove LCU reset command and to update error conditions	R. Biggins	
03/05/2011		9	Update to add IF statement to go to Dissipativel or Dissipativell at end of procedure	R. Biggins	
01/06/2011		10	Update to add step to enable all LO bands	R. Biggins	
09/08/2011		11	Return to nominal operations branching (IF step at HRHCALLX) added.	R. Biggins	
11/08/2011	3.1	11.01	Validation : Comment in step 3 updated	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				
TC Seq. Name :HRHCALL1 (Recovery - Block 1.1) TimeTag Type: N Sub Schedule ID: <input type="checkbox"/>				
1		Notes on when to use this procedure		Next Step: 2
		This procedure is for the case when: - HIFI is in use - There are less than two working days before HIFI will be in use If HIFI is not in use, or there is time to recover HIFI before commanding begins, the on-call engineer should NOT be called, and the procedure H_CRP_HIF_SPCN should be executed instead.		
2		Initial checks		Next Step: 3
		Note: LCU current <div style="text-align: center;"> HiFiLCU_R_L54_I WM409565 </div>	see below	AND=ZAZEB999
		Note: LCU commanding <div style="text-align: center;"> HI_LCU_commands HM049190 </div>		AND=ZAZEB999
		Note: HIFI mode <div style="text-align: center;"> HL_MODE_S HM258194 </div>		AND=ZAZEB999
		NOTE: - Find the TM(5,4) [APID 1025] which identifies which autonomous action has stopped communication.		
		CALL - HIFI communication: Call the HIFI on-call representative and inform him that a TM(5,4) packet has been recieved, and provide the above details (including the time of the packet).		
		SPACON: CALL: Call the on-call SOE and inform him/her that a TM(5,4) packet has been received from HIFI.		
3		Prepare for recovery		Next Step: 4
		WARNING: No commanding should begin until at least AOS+10min to ensure that the HK is enabled (disabled during special HK collection at start of DTCP)		
3.1		Disable MTL		<input type="checkbox"/>

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	ET=+ UT=+00.00.00	Execute Telecommand DisableRelOfTcs_Templ Command Parameter(s) : N_Repetition DH041170 SubscheduleId DH053170 M_nrOfApid DH054170 TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 10 Det. descr. : TEMPLATE DisableReleaseOfTcs, TC(11,2)	DCT23170 1 <dec> (Def) 70 <dec> 0 <dec>	
	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 disabled		
3.2		Disable autonomous checks		<input type="checkbox"/>
		Verify Telemetry HI_au_LCU_mem_S HM123190	= ON or OFF	AND=ZAZEB999
		Verify Telemetry HI_au_LCUmode_S HM124190	= ON	AND=ZAZEB999
		Verify Telemetry HI_au_LCUresp_S HM125190	= ON	AND=ZAZEB999
	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	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	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_LCUnonresp_chck_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		<i>Has LCU communication been disabled?</i>		Next Step: NO 7 YES 5
		Verify: LCU commanding HI_LCU_commands HM049190	= DISABLED	AND=ZAZEB999
		WARNING: - [ENABLED = NO] If TM is received from the LCU, the LCU can be dumped - [DISABLED = YES] If no TM is received from the LCU, then LCU communications should be restarted		
<p>TC Seq. Name :HRHCALL5 (Recovery - Block 1.3)</p> <p>TimeTag Type: N Sub Schedule ID: □</p>				
5		Enable LCU communication		Next Step: 6
		CALL - HIFI communication: Inform the HIFI representative that the LCU has been disabled and that communication will be restarted and the LCU reset.		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	ET=+ UT=+00.00.00	Execute Telecommand HIFI_clear_LCU_comm_lock TC Control Flags : Subsch. ID : 70 Det. descr. : Resets the LCU communication lock status GBM IL DSE --Y -- --	HC200289	
		Verify: LCU commanding HI_LCU_commands HM049190	= ENABLED	AND=ZAZEB999
		Verify: PTV checksum OOL HL_ptv_checksum HD247194	OOL	AND=ZAZEB999
		WARNING: If there are multiple HIFI OOLs, or the LCU telemetry is still invalid, then this procedure should be stopped. The On-call SOE and HIFI should be informed immediately.		
		WARNING: - If TM has restarted from the LCU, the LCU memory can be dumped - If no TM is received from the LCU, then the LCU should be reset (part of the H_CRP_HIF_XPRT procedure to be executed by the HIFI SOE)		
6		Do we see HK TM from LCU?		Next Step: NO 13 YES 7
		Verify: HIFI mode HL_MODE_S HM258194	<valid>	AND=ZAZEB999
TC Seq. Name :HRHCALL2 (Recovery - Block 1.2)				
TimeTag Type: Sub Schedule ID: □				
7		Dump and verify LCU memory		Next Step: 8
		Memory dump: Execute the following procedure PROCEDURE: H_CRP_OBS_LCUD		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		<p>CALL - HIFI communication:</p> <p>After the LCU memory has been dumped, HIFI should be informed as to which memory area(s) have been affected by an SEU. Note that if the problem was resolved by a software reset of the LCU, there may not be any SEU</p> <p>HIFI to confirm whether the memory image should be uplinked</p>		
		<p><i>NOTE: Based on the LCU Memory Map, a patch may not be possible if it is in a critical (red) area.</i></p>		
8		Can the memory be patched?		Next Step: YES 9 NO 13 NO SEU 15
8.1		YES		<input type="checkbox"/>
		The SEU is in a non-critical area and can be patched		
8.2		NO		<input type="checkbox"/>
		The SEU is in a critical area and cannot be patched.		
8.3		NO SEU		<input type="checkbox"/>
		There is no SEU, therefore the error was not caused by an SEU but by either an internal LCU error or a communications problem to the LCU.		
<p>TC Seq. Name :HRHCALL3 (Recovery - Block 2.1)</p> <p>TimeTag Type: N</p> <p>Sub Schedule ID:</p> <p><input type="checkbox"/></p>				
9		Disable LCU HK collection		Next Step: 10

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	ET=+ UT=+00.00.00	Execute Telecommand HIFI_Housekeeping_on Command Parameter(s) : HIF_HK_rate HP012197 1_pkt_per_s HIF_FCU_S HP006197 ON (Def) HIF_LCU_S HP007197 OFF HIF_WBSV_S HP009197 ON (Def) HIF_WBSH_S HP008197 ON (Def) HIF_HRSV_S HP011197 ON (Def) HIF_HRSH_S HP010197 ON (Def) TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 70 Det. descr. : Sets periodic housekeeping packet generation period	HC016289	
10		Load LCU memory		Next Step: 11
		Memory load: Execute the following procedure PROCEDURE: H_CRP_OBS_LCUP		
11		Enable LCU HK collection		Next Step: 12
	ET=+ UT=+00.00.00	Execute Telecommand HIFI_Housekeeping_on Command Parameter(s) : HIF_HK_rate HP012197 1_pkt_per_s HIF_FCU_S HP006197 ON (Def) HIF_LCU_S HP007197 ON (Def) HIF_WBSV_S HP009197 ON (Def) HIF_WBSH_S HP008197 ON (Def) HIF_HRSV_S HP011197 ON (Def) HIF_HRSH_S HP010197 ON (Def) TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 70 Det. descr. : Sets periodic housekeeping packet generation period	HC016289	
12		Dump and verify LCU memory		Next Step: 15
		Memory dump: Execute the following procedure PROCEDURE: H_CRP_OBS_LCUD		

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		Ensure that there are no changes between the dumped image and the uplinked image.																							
<p>TC Seq. Name :HRHCALL6 (Recovery - Failed)</p> <p>TimeTag Type: N Sub Schedule ID: <input type="checkbox"/></p>																									
13		Prepare for full recovery on next DTCP		Next Step: 14																					
		Inform the HIFI representative that HIFI needs to be power recycled (to be done by HIFI expert only)																							
14		Reactivate Autonomous Functions		Next Step: END																					
		<p>Formal Parameter value: The value for the FP should be taken from ZAZEB999: HD246194 HL_exp_checksum</p>																							
		<p>Verify: HC205289 has the correct value for the HIF_check_CRC</p> <p>Verify: verify parameter radix is correct</p>																							
	ET=+ UT=+00.00.00	<p>Execute Telecommand</p> <p style="text-align: center;">HIFI_Housekeeping_on</p> <p>Command Parameter(s) :</p> <table border="0"> <tr> <td>HIF_HK_rate</td> <td>HP012197</td> <td>1_pkt_per_3_s</td> </tr> <tr> <td>HIF_FCU_S</td> <td>HP006197</td> <td>ON (Def)</td> </tr> <tr> <td>HIF_LCU_S</td> <td>HP007197</td> <td>ON (Def)</td> </tr> <tr> <td>HIF_WBSV_S</td> <td>HP009197</td> <td>ON (Def)</td> </tr> <tr> <td>HIF_WBSH_S</td> <td>HP008197</td> <td>ON (Def)</td> </tr> <tr> <td>HIF_HRSV_S</td> <td>HP011197</td> <td>ON (Def)</td> </tr> <tr> <td>HIF_HRSH_S</td> <td>HP010197</td> <td>ON (Def)</td> </tr> </table> <p>TC Control Flags :</p> <p style="text-align: right;">GBM IL DSE --Y -- ---</p> <p>Subsch. ID : 70 Det. descr. : Sets periodic housekeeping packet generation period</p>	HIF_HK_rate	HP012197	1_pkt_per_3_s	HIF_FCU_S	HP006197	ON (Def)	HIF_LCU_S	HP007197	ON (Def)	HIF_WBSV_S	HP009197	ON (Def)	HIF_WBSH_S	HP008197	ON (Def)	HIF_HRSV_S	HP011197	ON (Def)	HIF_HRSH_S	HP010197	ON (Def)	HC016289	
HIF_HK_rate	HP012197	1_pkt_per_3_s																							
HIF_FCU_S	HP006197	ON (Def)																							
HIF_LCU_S	HP007197	ON (Def)																							
HIF_WBSV_S	HP009197	ON (Def)																							
HIF_WBSH_S	HP008197	ON (Def)																							
HIF_HRSV_S	HP011197	ON (Def)																							
HIF_HRSH_S	HP010197	ON (Def)																							

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	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>	
	ET=+ UT=+00.00.02	Execute Telecommand HIFI_LCUonresp_chck_on Command Parameter(s) : HIF_N_breach HP013197 Subsch. ID : 70 Det. descr. : Enables autonomous function to check LCU HouseKeeping responses	HC201289 700 <dec>	
		Verify Telemetry HI_au_LCU_mem_S HM123190	= ON	AND=ZAZEB999
		Verify Telemetry HI_au_LCUmode_S HM124190	= ON	AND=ZAZEB999
		Verify Telemetry HI_au_LCUresp_S HM125190	= ON	AND=ZAZEB999
		WARNING: In the case that the problem is due to being unable to recover an SEU in a critical area, the LCU will be disabled and a TM(5,4) generated. This TM(5,4) is expected and should be noted, but otherwise ignored.		
TC Seq. Name :HRHCALLx (Rejoin decision)				
TimeTag Type: Sub Schedule ID: □				
15		Immediately rejoin ongoing observations?		Next Step: NO 22 YES 16

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch																					
		If HIFI is the prime instrument then the MTL should be rejoined at a suitable point, otherwise HIFI should be set to DissipativeI mode and all autonomous functions activated.																							
<p>TC Seq. Name :HRHCALL4 (Recovery - Block 4)</p> <p>TimeTag Type: N Sub Schedule ID:</p> <p style="text-align: center;">□</p>																									
16		Reactivate Autonomous Functions		Next Step: 17																					
		<p>This section is for the case when HIFI must immediately rejoin on-going HIFI operations ONLY!</p> <p>CONFIRM with HIFI:</p> <ul style="list-style-type: none"> - LCU autonomous memory checks to be left disabled - Transition to DissipativeI OR Dissipative II - Time to rejoin MTL 																							
	ET=+ UT=+00.00.00	<p>Execute Telecommand</p> <p style="text-align: right;">HIFI_Housekeeping_on</p> <p>Command Parameter(s) :</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right;">HIF_HK_rate</td> <td style="text-align: right;">HP012197</td> <td style="text-align: right;">1_pkt_per_10_s</td> </tr> <tr> <td style="text-align: right;">HIF_FCU_S</td> <td style="text-align: right;">HP006197</td> <td style="text-align: right;">ON (Def)</td> </tr> <tr> <td style="text-align: right;">HIF_LCU_S</td> <td style="text-align: right;">HP007197</td> <td style="text-align: right;">ON (Def)</td> </tr> <tr> <td style="text-align: right;">HIF_WBSV_S</td> <td style="text-align: right;">HP009197</td> <td style="text-align: right;">ON (Def)</td> </tr> <tr> <td style="text-align: right;">HIF_WBSH_S</td> <td style="text-align: right;">HP008197</td> <td style="text-align: right;">ON (Def)</td> </tr> <tr> <td style="text-align: right;">HIF_HRSV_S</td> <td style="text-align: right;">HP011197</td> <td style="text-align: right;">ON (Def)</td> </tr> <tr> <td style="text-align: right;">HIF_HRSH_S</td> <td style="text-align: right;">HP010197</td> <td style="text-align: right;">ON (Def)</td> </tr> </table> <p>TC Control Flags :</p> <p style="text-align: right;">GBM IL DSE --Y -- ---</p> <p>Subsch. ID : 70 Det. descr. : Sets periodic housekeeping packet generation period</p>	HIF_HK_rate	HP012197	1_pkt_per_10_s	HIF_FCU_S	HP006197	ON (Def)	HIF_LCU_S	HP007197	ON (Def)	HIF_WBSV_S	HP009197	ON (Def)	HIF_WBSH_S	HP008197	ON (Def)	HIF_HRSV_S	HP011197	ON (Def)	HIF_HRSH_S	HP010197	ON (Def)	HC016289	
HIF_HK_rate	HP012197	1_pkt_per_10_s																							
HIF_FCU_S	HP006197	ON (Def)																							
HIF_LCU_S	HP007197	ON (Def)																							
HIF_WBSV_S	HP009197	ON (Def)																							
HIF_WBSH_S	HP008197	ON (Def)																							
HIF_HRSV_S	HP011197	ON (Def)																							
HIF_HRSH_S	HP010197	ON (Def)																							
	ET=+ UT=+00.00.02	<p>Execute Telecommand</p> <p style="text-align: right;">HIFI_LCUmode_check_on</p> <p>Command Parameter(s) :</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right;">HIF_N_breach</td> <td style="text-align: right;">HP013197</td> <td style="text-align: right;">1 <dec></td> </tr> </table> <p>Subsch. ID : 70 Det. descr. : Enables autonomous function to check LCU standby0 mode</p>	HIF_N_breach	HP013197	1 <dec>	HC203289																			
HIF_N_breach	HP013197	1 <dec>																							

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	ET=+ UT=+00.00.00	HIFI_Conf_LCU_internal HIFI_Conf_LCU_internal Command Parameter(s) : HIFI_BB_ID HP001197 HL_bandmask HP444194 HL_ign_lsu_ftm HP445194 HL_ign_lsu_lck HP446194 HL_LSU_delta_f HP443194 TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 70 Det. descr. : Commands Internal parameters (bandmask, ign-flags delta_f)	HC034289 0EB90001 <hex> 3FFF <hex> RESET (Def) RESET (Def) 100 <hex>	
18		DissipativeI mode?		Next Step: NO 20 YES 19
		CALL - HIFI communication: Confirm with the HIFI representative whether HIFI is required to be set into DissipativeI mode or directly to DissipativeII.		
		Note: General rule: IF HIFI will be in use - go to DissipativeII IF HIFI will not be in use - go to DissipativeI		
		Note: If HIFI was previously in DissipativeII mode, a return to DissipativeI will turn off the Lasers. If HIFI is required to return to Dissipative II mode, the Lasers are required to be on and warmed up. Even a short duration will require several hours for the lasers to warm-up.		
19		Set HIFI to DissipativeI		Next Step: 21
		Set HIFI to DissipativeI mode: Execute the following procedure PROCEDURE: H_FCP_HIF_R2D1 [HFHR2D1] FPs: OBSID = 999 <hex> HEATER = 6v		
		Verify Telemetry HL_MODE_S HM258194	= dissipative	AND=ZAZEB999
20		Set HIFI to DissipativeII		Next Step: 21

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Set HIFI to DissipativeII mode: Execute the following procedure PROCEDURE: H_FCP_HIF_2Dxx [HFH2Dxx] FPs: OBSID = 999 <hex> xx = band indicated by HIFI		
		Verify Telemetry HL_MODE_S HM258194	= dissipative	AND=ZAZEB999
21		Enable MTL		Next Step: END
		WARNING - HIFI communication: The following TCs should be executed at the end of the DTCP only at a time agreed with the HIFI representative to ensure no conflicts between MTL commanding		
	ET=+ UT=+00.00.00	Execute Telecommand EnableRelOfTcs_Templ Command Parameter(s) : N_Repetition DH041170 SubscheduleId DH053170 M_nrOfApid DH054170 TC Control Flags : GBM IL DSE --Y -- -- Subsch. ID : 10 Det. descr. : TEMPLATE EnableReleaseOfTcs, TC(11,1)	DCT22170	
	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		
TC Seq. Name :HRHCALL7 (Recovery - Block 4) TimeTag Type: N Sub Schedule ID: <input type="checkbox"/>				
22		Reactivate Autonomous Functions		Next Step: 23
		This section is for the case when HIFI is NOT the active instrument!		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Formal Parameter value: The value for the FP should be taken from ZAZE999: HD246194 HL_exp_checksum		
		WARNING: <i>It is very important to ensure that the value entered is correct - if it is not then HIFI will disable the LCU again, and the procedure will have to be restarted from the beginning.</i>		
		Verify: HC205289 and HC168289 have the correct value for the HIF_check_CRC Verify: verify parameter radix is correct		
	ET=+ UT=+00.00.00	HIFI_check_LCU_memory HIFI_check_LCU_memory Command Parameter(s) : HIFI_BB_ID HP001197 517996545 <dec> HIF_step_time_ms HP079197 3000 ms HIF_check_crc HP233197 LCU_CRC TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 70 Det. descr. : Compares checksum of LCU with specified value	HC168289	
		Verify Telemetry HL_checksum HM245194	LCU_CRC	AND=HA004289
	ET=+ UT=+00.00.02	Execute Telecommand HIFI_Housekeeping_on Command Parameter(s) : HIF_HK_rate HP012197 1_pkt_per_10_s HIF_FCU_S HP006197 ON (Def) HIF_LCU_S HP007197 ON (Def) HIF_WBSV_S HP009197 ON (Def) HIF_WBSH_S HP008197 ON (Def) HIF_HRSV_S HP011197 ON (Def) HIF_HRSH_S HP010197 ON (Def) TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 70 Det. descr. : Sets periodic housekeeping packet generation period	HC016289	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	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>	
	ET=+ UT=+00.00.02	Execute Telecommand HIFI_LCUonresp_chck_on Command Parameter(s) : HIF_N_breach HP013197 Subsch. ID : 70 Det. descr. : Enables autonomous function to check LCU HouseKeeping responses	HC201289 700 <dec>	
	ET=+ UT=+00.00.02	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 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)	
		Verify Telemetry HI_au_LCU_mem_S HM123190	= ON	AND=ZAZEB999
		Verify Telemetry HI_au_LCUmode_S HM124190	= ON	AND=ZAZEB999
		Verify Telemetry HI_au_LCUresp_S HM125190	= ON	AND=ZAZEB999
23		Enable All LO Chains		Next Step: 24

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch																			
		<p>CALL - HIFI communication: Confirm with the HIFI representative whether all LO bands should be re-enabled. If the LO band should NOT be enabled, delete the command from the stack, otherwise execute.</p>																					
		<p>Note: An LO band is only disabled if an SEU is found during an observation block. This should be re-enabled if no functional tests are required. This may also be executed if the SEU occurs outside of an observation block.</p>																					
	ET=+ UT=+00.00.00	<p>HIFI_Conf_LCU_internal</p> <p style="text-align: center;">HIFI_Conf_LCU_internal</p> <p>Command Parameter(s) :</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">HIFI_BB_ID</td> <td style="width: 20%;">HP001197</td> <td style="width: 50%;">0EB90001 <hex></td> </tr> <tr> <td>HL_bandmask</td> <td>HP444194</td> <td>3FFF <hex></td> </tr> <tr> <td>HL_ign_lsu_ftm</td> <td>HP445194</td> <td>RESET (Def)</td> </tr> <tr> <td>HL_ign_lsu_lck</td> <td>HP446194</td> <td>RESET (Def)</td> </tr> <tr> <td>HL_LSU_delta_f</td> <td>HP443194</td> <td>100 <hex></td> </tr> </table> <p>TC Control Flags :</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;"></td> <td style="width: 40%;">GBM IL DSE</td> </tr> <tr> <td></td> <td>--Y -- --</td> </tr> </table> <p>Subsch. ID : 70 Det. descr. : Commands Internal parameters (bandmask, ign-flags delta_f)</p>	HIFI_BB_ID	HP001197	0EB90001 <hex>	HL_bandmask	HP444194	3FFF <hex>	HL_ign_lsu_ftm	HP445194	RESET (Def)	HL_ign_lsu_lck	HP446194	RESET (Def)	HL_LSU_delta_f	HP443194	100 <hex>		GBM IL DSE		--Y -- --	HC034289	
HIFI_BB_ID	HP001197	0EB90001 <hex>																					
HL_bandmask	HP444194	3FFF <hex>																					
HL_ign_lsu_ftm	HP445194	RESET (Def)																					
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HL_LSU_delta_f	HP443194	100 <hex>																					
	GBM IL DSE																						
	--Y -- --																						
24		Set HIFI to DissipativeI		Next Step: 25																			
		<p>Set HIFI to DissipativeI mode: Execute the following procedure</p> <p>PROCEDURE: H_FCP_HIF_R2D1 [HFHR2D1]</p> <p>FPs: OBSID = 999 <hex> HEATER = 6v</p>																					
		<p>Verify Telemetry</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;"></td> <td style="width: 20%; text-align: center;">HL_MODE_S</td> <td style="width: 50%; text-align: center;">HM258194</td> <td style="width: 10%;"></td> <td style="width: 10%; text-align: center;">= dissipative</td> </tr> </table>		HL_MODE_S	HM258194		= dissipative	AND=ZAZEB999															
	HL_MODE_S	HM258194		= dissipative																			
25		Enable MTL		Next Step: END																			
		<p>WARNING - HIFI communication: The following TCs can be sent at any time since HIFI is not active and there should be no HIFI commanding on the MTL. HIFI should confirm whether or not to enable the MTL.</p>																					

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	ET=+ UT=+00.00.00	Execute Telecommand EnableRelOfTcs_Templ <i>Command Parameter(s) :</i> N_Repetition DH041170 SubscheduleId DH053170 M_nrOfApid DH054170 <i>TC Control Flags :</i> GBM IL DSE --Y -- -- <i>Subsch. ID : 10</i> Det. descr. : TEMPLATE EnableReleaseOfTcs, TC(11,1)	DCT22170 1 <dec> (Def) 70 <dec> 0 <dec>	
	ET=+ UT=+00.00.05	Execute Telecommand RetStatusOfCmdSchedule <i>Subsch. ID : 10</i> Det. descr. : TEMPLATE ReportStatusOfCmdSchedule, TC(11,18), no appl. data	DCT25170	
		Verify: Using the OBQD , verify that subschedule 70 is enabled		
End of Procedure				

Expected state of HIFI based on TM(5,4) packet

<p>TM(5,4) HIFI_LCU_nonresponse</p> <p>The LCU is not responding; there has been a communications problem between the ICU and LCU</p> <p><i>Expected state:</i></p> <ul style="list-style-type: none">- HIFI set to Standby1 mode (not visible)- LCU commanding disabled
<p>TM(5,4) HIFI_R_LCU_in_standby0</p> <p>HIFI has been found in an unexpected mode</p> <p><i>Expected state:</i></p> <ul style="list-style-type: none">- HIFI set to Standby0 mode (not visible)- LCU commanding disabled
<p>TM(5,4) HIFI_R_LCUCRC_mismatch</p> <p>An SEU has been detected in an unknown area of the memory.</p> <p><i>Expected state:</i></p> <ul style="list-style-type: none">- HIFI set to Standby1 mode (not visible)- LCU commanding disabled
<p>TM(5,4) HIFI_LCUCRC_mismatch_table</p> <p>An SEU has been detected in the tables area of the memory.</p> <p><i>Expected state:</i></p> <ul style="list-style-type: none">- HIFI set to Standby1 mode
<p>TM(5,4) HIFI_LCUCRC_mismatch_safe</p> <p>An SEU has been detected in a safe area of the memory</p> <p><i>Expected state:</i></p> <ul style="list-style-type: none">- HIFI set to Standby1 mode (may or may not be visible)- LCU commanding may or may not be disabled
<p>TM(5,4) HIFI_LCUCRC_mismatch_critical</p> <p>An SEU has been detected in a critical area of the memory.</p> <p><i>Expected state:</i></p> <ul style="list-style-type: none">- HIFI set to Standby1 mode (not visible)- LCU commanding disabled

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Fop Issue : 3.1
Issue Date: 05/09/11

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