

Load SPIRE OBS from BSW
File: H_FCP_OBS_5112.xls
Author: Liviu Stefanov



Procedure Summary

Objectives

This Herschel OBSM nominal procedure is used to execute the SPIRE OBS full image upload from the Boot Software (BSW). It is called by the FOP SPIRE procedures H_FCP_SPI_NLBM and H_FCP_SPI_RLBM. The OBS image is loaded into the SPIRE DPU DM memory. Note that memory check commands cannot be executed by BSW, therefore NO checksum calculation and verification is possible.

The copying of the OBS image from DM to PM-Low and OBS restart is executed in the calling procedure H_FCP_SPI_NLBM or H_FCP_SPI_RLBM. The calling procedure also includes the updated OBS version numbers verification.

This procedure assumes that the memory load 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.

Note: The SPIRE OBS upload from the ASW can be conducted via procedure H_FCP_OBS_5110.

Summary of Constraints

CDMU in Operational Mode
- SPIRE DPU is ON
- SPIRE BSW running

Memory areas are Loaded through TC(6,2); 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

CDMU in Operational Mode
- SPIRE DPU is ON
- SPIRE BSW running

End of Procedure

Same as start except:
- New SPIRE OBS image loaded in DPU DM memory

Reference File(s)

Input Command Sequences

Output Command Sequences

OFCP5112

Referenced Displays

Status : Version 4 - Updated
Last Checkin: 01/03/2011

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ANDs GRDs SLDs

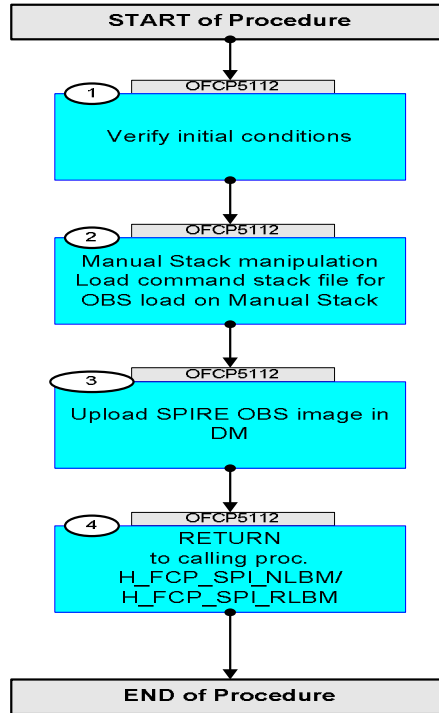
Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
30/01/2008	1	1	Created	lstefanov-hp	
07/10/2009	2.5	2	1. step 2 and sub-steps updated to separate patch stack load for Prime and Redundant 2. step 2 updated for SPIRE OBS v.3.0.B 3. added current step 4 to include return to calling procedure	lstefanov-hp	
16/02/2011		3	Changed for SPIRE OBS v.4.0.0 Filled "TBC" entries with values from SPIRE OBS v.4.0.0 stack	n.krusenstiern-hp	
01/03/2011	3.1	4	- Deleted check of TCEXEC SM03N500 incrementing, since it will not increment, since OBS is not running, as we upload vitez BSW. (Mail from S. Sidher.) - Updated file name examples and values to represent OBS 4.0.0.	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					
OFCP5112		TC Seq. Name :OFCP5112 () Load SPIRE OBS from BSW TimeTag Type: B Sub Schedule ID: <input type="checkbox"/>			
1		Verify initial conditions		Next Step: 2	
		Check: - SPIRE DPU ON - SPIRE BSW running less than ~ 3 minutes (otherwise the CDMS declares the RT unhealthy.)			
		Instrument SOE to confirm SPIRE instrument mode			
		Note: Initial conditions are verified in calling procedure H_FCP_SPI_NLBM or H_FCP_SPI_RLBM.			
2		Manual Stack manipulation Load command stack file for OBS load on Manual Stack		Next Step: 3	
		NOTE: The current procedure assumes that the memory load is performed using commands with immediate execution.			
		Select the File -> LoadStack option from the main menu of the Manual Stack window			
2.1		Load memory load command stack			
		NOTE: The current procedure assumes that the memory load is performed using commands with immediate execution.			
		Select the File -> LoadStack option from the main menu of the Manual Stack window			
2.2		IF SPIRE Nominal			
		Select file SPDBSWDM_PI_XXXXYYY_N_NoModel_NoModel_YYYY_DDDThhmmss.machine from directory /home/hmcsops/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/SPDBSWDM as indicated by the OBSM engineer			

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		IMPORTANT: XXXXYYYY = Image ID(X) and Version(Y) - depend on image used for stack generation YYYY_DDD hhhmss - depend on stack generation time machine - depends on the name of the machine used for stack generation			
		File name examples SPDBSWDM_PI_0003001_N_NoModel_NoModel_2011_041T110244.ws044 SPDBSWDM, ID 0003, Version 001			
2.3		ELSE SPIRE Redundant			
		Select file SPDBSWDR_PI_XXXXYYYY_N_NoModel_NoModel_YYYY_DDDThhhmss.machine from directory /home/hmcsops/HPMCS/SESSION/current/data/CMD/STACKS/OBSM/SPDBSWDR as indicated by the OBSM engineer			
		IMPORTANT: XXXXYYYY = Image ID(X) and Version(Y) - depend on image used for stack generation YYYY_DDD hhhmss - depend on stack generation time machine - depends on the name of the machine used for stack generation			
		File name examples SPDBSWDR_PI_0003001_N_NoModel_NoModel_2011_041T110244.ws044 SPDBSWDR, ID 0003, Version 001			
2.4		Check memory load command stack loaded			
		For SPIRE OBS v.4.0.0 : The start address of the SPDBSWDM memory image used for memory load command stack generation is 00.4000 hex , and the last address in the image is 01.EC00 hex . NO offset has to be applied to the memory image for OBS upload in DM. Consequently, the first address to be loaded is 00.4000 hex , and the last address is 01.EBC9 hex .			



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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment															
2.4.1		Check number of memory load commands in the stack																		
		Check that loaded stack contains: 1926 TCs XC002998 for OBS v.4.0.0																		
2.4.2		Check Memory ID																		
		Display the Manual Stack in 'Full mode' and check that the Memory ID parameter in the XC002998 commands is set to 11 hex : Memory ID = 11 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 <div style="text-align: center;">SPIRE Memory Load</div> XC002998 TC																		
		Command Parameter(s) : <table style="width:100%; border: none;"> <tr> <td style="padding-left: 40px;">Memory ID</td> <td style="padding-left: 20px;">XH000998</td> <td style="padding-left: 20px;">11xx hex</td> </tr> <tr> <td style="padding-left: 40px;">Start Address</td> <td style="padding-left: 20px;">XH001998</td> <td style="padding-left: 20px;"><hex> (Def)</td> </tr> <tr> <td style="padding-left: 40px;">Length of Block</td> <td style="padding-left: 20px;">XH003998</td> <td style="padding-left: 20px;"><dec> (Def)</td> </tr> <tr> <td style="padding-left: 40px;">Var length octet string</td> <td style="padding-left: 20px;">XH004998</td> <td style="padding-left: 20px;"><hex> (Def)</td> </tr> <tr> <td style="padding-left: 40px;">Checksum</td> <td style="padding-left: 20px;">XH005998</td> <td style="padding-left: 20px;"><hex> (Def)</td> </tr> </table> TC Control Flags : <div style="text-align: center;"> GBM IL DSE --Y -- --- </div> Subsch. ID : 30 Det. descr. : Load SPIRE Memory Using Absolute Addresses This Telecommand will not be included in the export	Memory ID	XH000998	11xx hex	Start Address	XH001998	<hex> (Def)	Length of Block	XH003998	<dec> (Def)	Var length octet string	XH004998	<hex> (Def)	Checksum	XH005998	<hex> (Def)			
Memory ID	XH000998	11xx hex																		
Start Address	XH001998	<hex> (Def)																		
Length of Block	XH003998	<dec> (Def)																		
Var length octet string	XH004998	<hex> (Def)																		
Checksum	XH005998	<hex> (Def)																		
2.4.3		Check start address and length of first command in the stack																		
		With the Manual Stack in 'Full mode', check the Start Address and Length in the first XC002998 command: Start Address = 4000 hex Length = 57 dec 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.																		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment																			
		Execute Telecommand <p style="text-align: center;">SPIRE Memory Load</p> <p>Command Parameter(s) :</p> <table border="0"> <tr><td>Memory ID</td><td>XH000998</td><td>1100 <hex></td></tr> <tr><td>Start Address</td><td>XH001998</td><td>4000 <hex></td></tr> <tr><td>Length of Block</td><td>XH003998</td><td>57 <dec></td></tr> <tr><td>Var length octet string</td><td>XH004998</td><td><hex> (Def)</td></tr> <tr><td>Checksum</td><td>XH005998</td><td><hex> (Def)</td></tr> </table> <p>TC Control Flags :</p> <table border="0"> <tr><td>GBM IL DSE</td><td></td></tr> <tr><td>--Y -- ---</td><td></td></tr> </table> <p>Subsch. ID : 30 Det. descr. : Load SPIRE Memory Using Absolute Addresses</p> <p>This Telecommand will not be included in the export</p>	Memory ID	XH000998	1100 <hex>	Start Address	XH001998	4000 <hex>	Length of Block	XH003998	57 <dec>	Var length octet string	XH004998	<hex> (Def)	Checksum	XH005998	<hex> (Def)	GBM IL DSE		--Y -- ---		XC002998	TC	
Memory ID	XH000998	1100 <hex>																						
Start Address	XH001998	4000 <hex>																						
Length of Block	XH003998	57 <dec>																						
Var length octet string	XH004998	<hex> (Def)																						
Checksum	XH005998	<hex> (Def)																						
GBM IL DSE																								
--Y -- ---																								
2.4.4		Check start address and length of last command in the stack																						
		With the Manual Stack in 'Full mode', check the Start Address and Length in the last XC002998 command: For SPIRE OBS v.4.0.0: Start Address = EBC9 hex Length = 55 dec 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 <p style="text-align: center;">SPIRE Memory Load</p> <p>Command Parameter(s) :</p> <table border="0"> <tr><td>Memory ID</td><td>XH000998</td><td>1101 <hex></td></tr> <tr><td>Start Address</td><td>XH001998</td><td><hex> (Def)</td></tr> <tr><td>Length of Block</td><td>XH003998</td><td><dec> (Def)</td></tr> <tr><td>Var length octet string</td><td>XH004998</td><td><hex> (Def)</td></tr> <tr><td>Checksum</td><td>XH005998</td><td><hex> (Def)</td></tr> </table> <p>TC Control Flags :</p> <table border="0"> <tr><td>GBM IL DSE</td><td></td></tr> <tr><td>--Y -- ---</td><td></td></tr> </table> <p>Subsch. ID : 30 Det. descr. : Load SPIRE Memory Using Absolute Addresses</p> <p>This Telecommand will not be included in the export</p>	Memory ID	XH000998	1101 <hex>	Start Address	XH001998	<hex> (Def)	Length of Block	XH003998	<dec> (Def)	Var length octet string	XH004998	<hex> (Def)	Checksum	XH005998	<hex> (Def)	GBM IL DSE		--Y -- ---		XC002998	TC	
Memory ID	XH000998	1101 <hex>																						
Start Address	XH001998	<hex> (Def)																						
Length of Block	XH003998	<dec> (Def)																						
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Checksum	XH005998	<hex> (Def)																						
GBM IL DSE																								
--Y -- ---																								
2.4.5		Check DM page boundaries not violated by the memory load commands																						
		IMPORTANT: Check that the OBSM generated memory load commands respect the DM page boundaries . A DM page is 1024 words large, where a DM word is 32-bit long. The DM starts at address 00.0000 hex.																						

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
3		Upload SPIRE OBS image in DM		Next Step: 4	
		Uplink the XC002998 memory load commands with ARM-GO			
		For each TC XC002998 successfully executed on-board, a TM(1,1) and TM(1,7) packet shall be received on ground.			
3.1		IF SPIRE Prime			
		Verify Packet Reception P_TC_Acceptance_Report Packet Mnemonic : SP11TCAR0500 APID : 1280 Type : 1 Subtype : 1 PI1 : PI2 :			
		Verify Packet Reception P_TC_Execution_Completed_Report Packet Mnemonic : SP15TCECR500 APID : 1280 Type : 1 Subtype : 7 PI1 : PI2 :			
3.2		IF SPIRE Redundant			
		Verify Packet Reception R_TC_Acceptance_Report Packet Mnemonic : SP11TCAR0500 APID : 1281 Type : 1 Subtype : 1 PI1 : PI2 :			
		Verify Packet Reception R_TC_Execution_Completed_Report Packet Mnemonic : SP15TCECR500 APID : 1281 Type : 1 Subtype : 7 PI1 : PI2 :			
4		RETURN to calling proc. H_FCP_SPI_NLBM/H_FCP_SPI_RLBM		Next Step: END	
		Return to calling procedure H_FCP_SPI_NLBM or H_FCP_SPI_RLBM			
End of Sequence					
End of Procedure					