

Switch PM B ON or OFF
File: H_FCP_DHS_3009.xls
Author: S. Manganelli



Procedure Summary

Objectives

This procedure describes the steps needed to switch ON or OFF the Processor Module B and is provided for reference only: no use case has been identified yet. It has been derived from the PM A ON procedure, intended to be part of the "main" SC power on procedure that has to be executed with the S/C on the launch pad. Not all needed steps are covered by this procedure (e.g. Survival Register updating) and the configuration and power ON of ACC is just represented by placeholder steps.

The branch "PM B switch ON" is intended to be executed to switch ON and properly configure the S/C.

The branch "PM B switch OFF" is intended to be executed if it is necessary to switch OFF the S/C.

Summary of Constraints

If the branch "PMB switch ON" is chosen, considering t_0 the time at which the PMB is powered ON, the ACC has to be powered ON, closing the relevant LCLs, in the window t_0+15 sec - t_0+25 sec, with some margin it is suggested t_0+15 - t_0+20 .

In fact the DLL FDIR for ACC will be triggered as soon as the CDMU BSW will operate the 1553 S/C bus at t_0+15 sec. N seconds (currently set to 20 sec) will be waited by CDMU BC since an ACC reconfiguration is assumed. The ACC will then complete its bootstrap and the BC, when resuming it, will find the ACC correctly running.

Note that some ACC TM data could be generated while CDMU is waiting for ACC to be ready on the S/C bus; those data will be stored in the ACC datapool

Spacecraft Configuration

Start of Procedure

If it is chosen the branch "PM B switch ON", all FCLs ON, in particular TTR boards powered ON via FCLs 1 and 2 (through the "External Power SCOE").

If it is chosen the branch "PM B switch OFF", CDMU in default configuration, that is:

- PM B ON
- TM Encoder/OBT A active
- RM A and B enabled
- MM A and B ON
- TM/TC via umbilical connection

End of Procedure

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If it is chosen the branch "PM B switch ON", CDMU in default configuration, that is:

- PM B ON
- TM Encoder/OBT A active
- RM A and B enabled
- MM A and B ON
- TM/TC via umbilical connection

If it is chosen the branch "PM B switch OFF", all FCLs OFF (S/C switched OFF).

Reference File(s)

Input Command Sequences

Output Command Sequences

HFD3009A
 HFD3009B

Referenced Displays

ANDs **GRDs** **SLDs**
 (None)

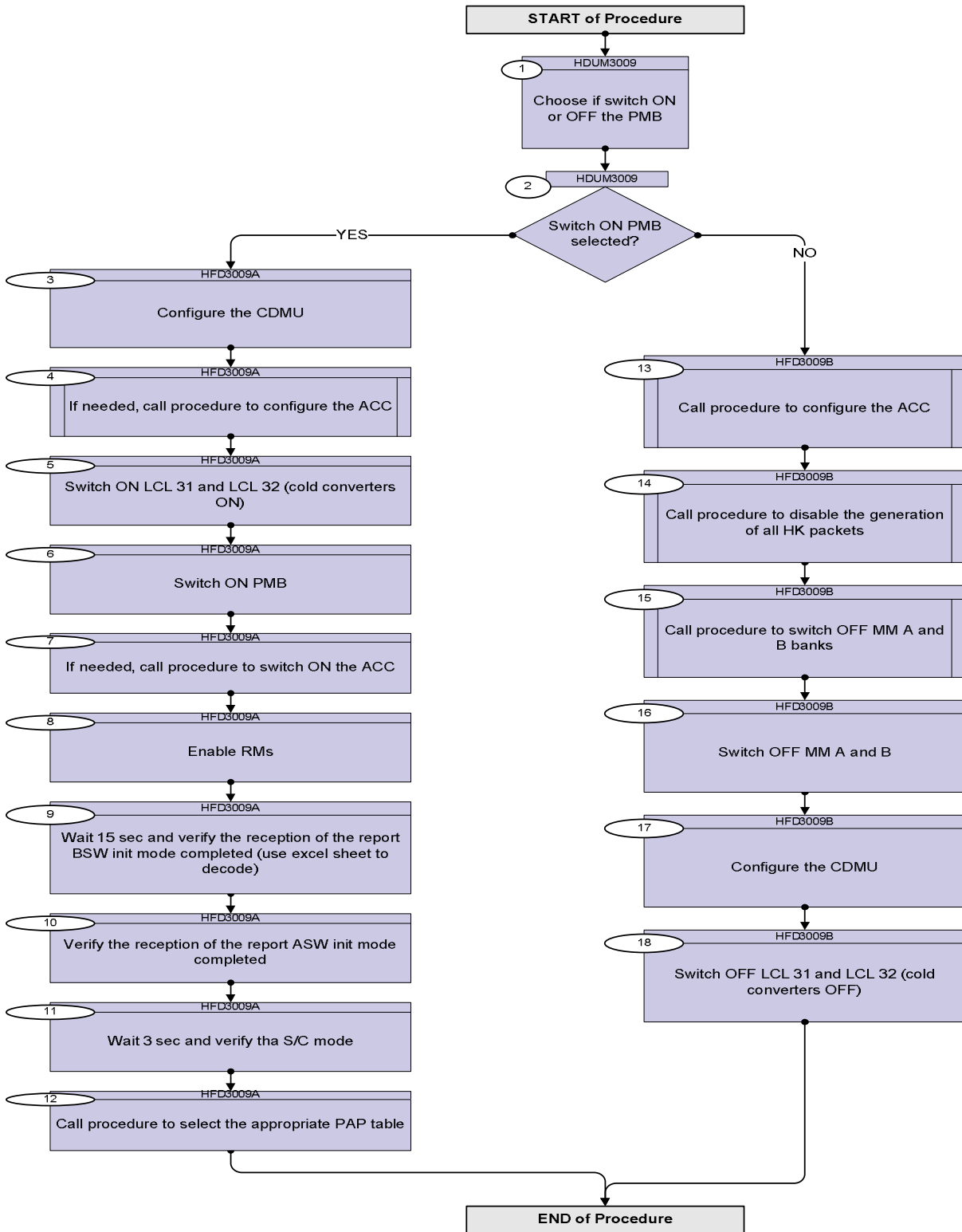
Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
12/11/07		1	Created	cmevi-hp	
16/01/08	1	2	Batch update of TC flags	S. Manganelli	
02/01/09		3	Added comment on minimum time between MM OFF and MM ON Deleted direct execution calls not applicable to ESOC	S. Manganelli	
12/01/09	2	4	Updated following OBSW 3_8	S. Manganelli	
14/04/09	2.3	5	TAS comments to FOP 2.2 taken into account (added placeholder steps for ACC power on, selection of PAP table, procedure cover modified)	S. Manganelli	

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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 : HDUM3009 (Dummy sequence)</i></p> <p><i>TimeTag Type:</i> <i>Sub Schedule ID:</i></p> <p style="text-align: center;">□</p>				
1		Choose if switch ON or OFF the PMB		Next Step: 2
2		Switch ON PMB selected?		Next Step: YES 3 NO 13
<p><i>TC Seq. Name : HFD3009A (Switch PM B ON)</i></p> <p><i>TimeTag Type:</i> <i>Sub Schedule ID:</i></p> <p style="text-align: center;">□</p>				
3		Configure the CDMU		Next Step: 4
WARNING: command to be sent with MAP ID = 0				
		Execute Telecommand <div style="text-align: right;">RM_A_Disable</div> TC Control Flags : <div style="text-align: right;">GBM IL DSE --Y -- --</div> Subsch. ID : 10 Det. descr. : RM A Disable - High Priority Standard	DCA11170	
		Execute Telecommand <div style="text-align: right;">RM_B_Disable</div> TC Control Flags : <div style="text-align: right;">GBM IL DSE --Y -- --</div> Subsch. ID : 10 Det. descr. : RM B Disable - High Priority Standard	DCA12170	
		Execute Telecommand <div style="text-align: right;">PM_A_off</div> TC Control Flags : <div style="text-align: right;">GBM IL DSE --Y -- --</div> Subsch. ID : 10 Det. descr. : PM A off - High Priority Standard	DCA51170	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand <div style="text-align: right;">PM_B_off</div> TC Control Flags : <div style="text-align: right;">GBM IL DSE --Y -- ---</div> Subsch. ID : 10 Det. descr. : PM B off - High Priority Standard	DCA67170	
		Execute Telecommand <div style="text-align: right;">Reset_PM_A_bit_0</div> TC Control Flags : <div style="text-align: right;">GBM IL DSE --Y -- ---</div> Subsch. ID : 10 Det. descr. : Reset PM A bit 0 - Mission Specific	DCM57170	
		Execute Telecommand <div style="text-align: right;">PM_A_bit_1_SW_Image_1</div> TC Control Flags : <div style="text-align: right;">GBM IL DSE --Y -- ---</div> Subsch. ID : 10 Det. descr. : Set PM A bit 1 = Select SW Image 1 - High Priority Standard	DCA58170	
		Execute Telecommand <div style="text-align: right;">Reset_PM_B_bit_0</div> TC Control Flags : <div style="text-align: right;">GBM IL DSE --Y -- ---</div> Subsch. ID : 10 Det. descr. : Reset PM B bit 0 - High Priority Standard	DCA61170	
		Execute Telecommand <div style="text-align: right;">PM_B_bit_1_SW_Image_1</div> TC Control Flags : <div style="text-align: right;">GBM IL DSE --Y -- ---</div> Subsch. ID : 10 Det. descr. : Set PM B bit 1 = Select SW Image 1 - High Priority Standard	DCA62170	
		Execute Telecommand <div style="text-align: right;">Use_PM_B</div> TC Control Flags : <div style="text-align: right;">GBM IL DSE --Y -- ---</div> Subsch. ID : 10 Det. descr. : Use PM B - High Priority Standard	DCA65170	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand <p style="text-align: right;">Use_TM_Encoder_A</p> TC Control Flags : <p style="text-align: right;">GBM IL DSE --Y -- --</p> Subsch. ID : 10 Det. descr. : Use TM Encoder A - High Priority Standard	DCA48170	
		WARNING Observe minimum time between MM OFF and MM ON as described in INFO sheet at end of procedure		
		Execute Telecommand <p style="text-align: right;">MM_A_on-MM_A_Reset</p> TC Control Flags : <p style="text-align: right;">GBM IL DSE --Y -- --</p> Subsch. ID : 10 Det. descr. : MM A on / MM A Reset - High Priority Standard	DCA53170	
		Execute Telecommand <p style="text-align: right;">MM_B_on-MM_B_Reset</p> TC Control Flags : <p style="text-align: right;">GBM IL DSE --Y -- --</p> Subsch. ID : 10 Det. descr. : MM B on / MM B Reset - High Priority Standard	DCA69170	
4		<i>If needed, call procedure to configure the ACC</i>		Next Step: 5
		To be inserted link to the procedure.		
5		<i>Switch ON LCL 31 and LCL 32 (cold converters ON)</i>		Next Step: 6
		Execute Telecommand <p style="text-align: right;">LCL_31_CDMU_Cold_A_ON</p> TC Control Flags : <p style="text-align: right;">GBM IL DSE --Y -- --</p> Subsch. ID : 10 Det. descr. : LCL 31-CDMU Cold A- ON - High Priority Standard	DCA18170	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand <p style="text-align: right;">LCL_32_CDMU_Cold_B_ON</p> TC Control Flags : <p style="text-align: right;">GBM IL DSE ---Y -- ---</p> Subsch. ID : 10 Det. descr. : LCL 32-CDMU Cold B- ON - High Priority Standard	DCA39170	
6		Switch ON PMB		Next Step: 7
		Execute Telecommand <p style="text-align: right;">PM_B_on</p> TC Control Flags : <p style="text-align: right;">GBM IL DSE ---Y -- ---</p> Subsch. ID : 10 Det. descr. : PM B on - High Priority Standard	DCA66170	
7		If needed, call procedure to switch ON the ACC		Next Step: 8
8		Enable RMs		Next Step: 9
		Execute Telecommand <p style="text-align: right;">RM_A_enable</p> TC Control Flags : <p style="text-align: right;">GBM IL DSE ---Y -- ---</p> Subsch. ID : 10 Det. descr. : RM A enable - High Priority Standard	DCA14170	
		Execute Telecommand <p style="text-align: right;">RM_B_enable</p> TC Control Flags : <p style="text-align: right;">GBM IL DSE ---Y -- ---</p> Subsch. ID : 10 Det. descr. : RM B enable - High Priority Standard	DCA15170	
9		Wait 15 sec and verify the reception of the report BSW init mode completed (use excel sheet to decode)		Next Step: 10

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
12		Call procedure to select the appropriate PAP table		Next Step: END
		Execute Procedure: H_CRP_DHS_PAP_A Choose new PAP set for RM A		
		Execute Procedure: H_CRP_DHS_PAP_B Choose new PAP set for RM B		
<p>TC Seq. Name :HFD3009B (Switch PM B OFF)</p> <p>TimeTag Type: Sub Schedule ID: □</p>				
13		Call procedure to configure the ACC		Next Step: 14
		To be inserted link to the procedure.		
14		Call procedure to disable the generation of all HK packets		Next Step: 15
		Execute procedure H_FCP_DHS_3033		
15		Call procedure to switch OFF MM A and B banks		Next Step: 16
		Execute procedure H_FCP_DHS_3017		
16		Switch OFF MM A and B		Next Step: 17
		Execute Telecommand MM_A_off TC Control Flags : Subsch. ID : 10 Det. descr. : MM A off - High Priority Standard	DCA54170	
		GBM IL DSE --Y -- --		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand <p style="text-align: right;">MM_B_off</p> TC Control Flags : <p style="text-align: right;">GBM IL DSE --Y -- ---</p> Subsch. ID : 10 Det. descr. : MM B off - High Priority Standard	DCA70170	
17		Configure the CDMU		Next Step: 18
		WARNING: command to be sent with MAP ID = 0		
		Execute Telecommand <p style="text-align: right;">Reset_PM_A_bit_0</p> TC Control Flags : <p style="text-align: right;">GBM IL DSE --Y -- ---</p> Subsch. ID : 10 Det. descr. : Reset PM A bit 0 - Mission Specific	DCM57170	
		Execute Telecommand <p style="text-align: right;">PM_A_bit_1_SW_Image_1</p> TC Control Flags : <p style="text-align: right;">GBM IL DSE --Y -- ---</p> Subsch. ID : 10 Det. descr. : Set PM A bit 1 = Select SW Image 1 - High Priority Standard	DCA58170	
		Execute Telecommand <p style="text-align: right;">Reset_PM_B_bit_0</p> TC Control Flags : <p style="text-align: right;">GBM IL DSE --Y -- ---</p> Subsch. ID : 10 Det. descr. : Reset PM B bit 0 - High Priority Standard	DCA61170	
		Execute Telecommand <p style="text-align: right;">PM_B_bit_1_SW_Image_1</p> TC Control Flags : <p style="text-align: right;">GBM IL DSE --Y -- ---</p> Subsch. ID : 10 Det. descr. : Set PM B bit 1 = Select SW Image 1 - High Priority Standard	DCA62170	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand <div style="text-align: right;">RM_A_Disable</div> TC Control Flags : <div style="text-align: right;">GBM IL DSE --Y -- --</div> Subsch. ID : 10 Det. descr. : RM A Disable - High Priority Standard	DCA11170	
		Execute Telecommand <div style="text-align: right;">RM_B_Disable</div> TC Control Flags : <div style="text-align: right;">GBM IL DSE --Y -- --</div> Subsch. ID : 10 Det. descr. : RM B Disable - High Priority Standard	DCA12170	
		Execute Telecommand <div style="text-align: right;">PM_A_off</div> TC Control Flags : <div style="text-align: right;">GBM IL DSE --Y -- --</div> Subsch. ID : 10 Det. descr. : PM A off - High Priority Standard	DCA51170	
		Execute Telecommand <div style="text-align: right;">PM_B_off</div> TC Control Flags : <div style="text-align: right;">GBM IL DSE --Y -- --</div> Subsch. ID : 10 Det. descr. : PM B off - High Priority Standard	DCA67170	
		Execute Telecommand <div style="text-align: right;">Use_PM_A</div> TC Control Flags : <div style="text-align: right;">GBM IL DSE --Y -- --</div> Subsch. ID : 10 Det. descr. : Use PM A - High Priority Standard	DCA49170	
		Execute Telecommand <div style="text-align: right;">Use_TM_Encoder_A</div> TC Control Flags : <div style="text-align: right;">GBM IL DSE --Y -- --</div> Subsch. ID : 10 Det. descr. : Use TM Encoder A - High Priority Standard	DCA48170	
18		Switch OFF LCL 31 and LCL 32 (cold converters OFF)		Next Step: END

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand <p style="text-align: right;">LCL_31_CDMU_Cold_A_OFF</p> TC Control Flags : <p style="text-align: right;">GBM IL DSE ---Y --- ---</p> Subsch. ID : 10 Det. descr. : LCL 31-CDMU Cold A- OFF - High Priority Standard	DCA00170	
		Execute Telecommand <p style="text-align: right;">LCL_32_CDMU_Cold_B_OFF</p> TC Control Flags : <p style="text-align: right;">GBM IL DSE ---Y --- ---</p> Subsch. ID : 10 Det. descr. : LCL 32-CDMU Cold B- OFF - High Priority Standard	DCA01170	
End of Procedure				

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INFO

10.7.2.5 Mass memory power-off/power-on sequencing.

The Mass Memory board is switched ON/OFF by means of HPC commands from the TTR.

Constraint:

It is not allowed to send an ON HP command earlier than T seconds after the same MM board has been switched OFF. It doesn't matter if it was an MM OFF HP, an FCL switch off or a MM current limiter switch off. If this is not respected the on-board current limiters may immediately switch off again. No permanent damage will however occur.

The time T is temperature dependant as follows (figures taken from ACTEL PCN# 0304, "RT54SX-S ICCI Inrush Current")

Temp (°C)	Time (sec.)
-45	22260
-15	2700
10	258
25	72
50	10

Table 10-2 MM OFF-to-ON delay time

The table gives the unit temperature which is assumed to be 15 degrees lower than the FPGA temperature.