

Switch PM A ON or OFF  
File: H\_FCP\_DHS\_3008.xls  
Author: S. Manganelli



## Procedure Summary

### Objectives

This procedure describes the steps needed to switch ON or OFF the Processor Module A.

This procedure is intended to be part of the "main" procedure that has to be executed with the S/C on the launch pad; thus not all needed steps are covered by this procedure (e.g. Survival Register updating).

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

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

### Summary of Constraints

If the branch "PMA switch ON" is chosen, considering  $t_0$  the time at which the PMA 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 A 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 A switch OFF", CDMU in default configuration, that is:

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

#### End of Procedure

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

- PM A 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 A switch OFF", all FCLs OFF (S/C switched OFF).

### Reference File(s)

Status : Version 6 - Unchanged  
Last Checkin: 24/03/09

Switch PM A ON or OFF  
 File: H\_FCP\_DHS\_3008.xls  
 Author: S. Manganelli



**Input Command Sequences**

**Output Command Sequences**

HFD3008A  
 HFD3008B

**Referenced Displays**

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

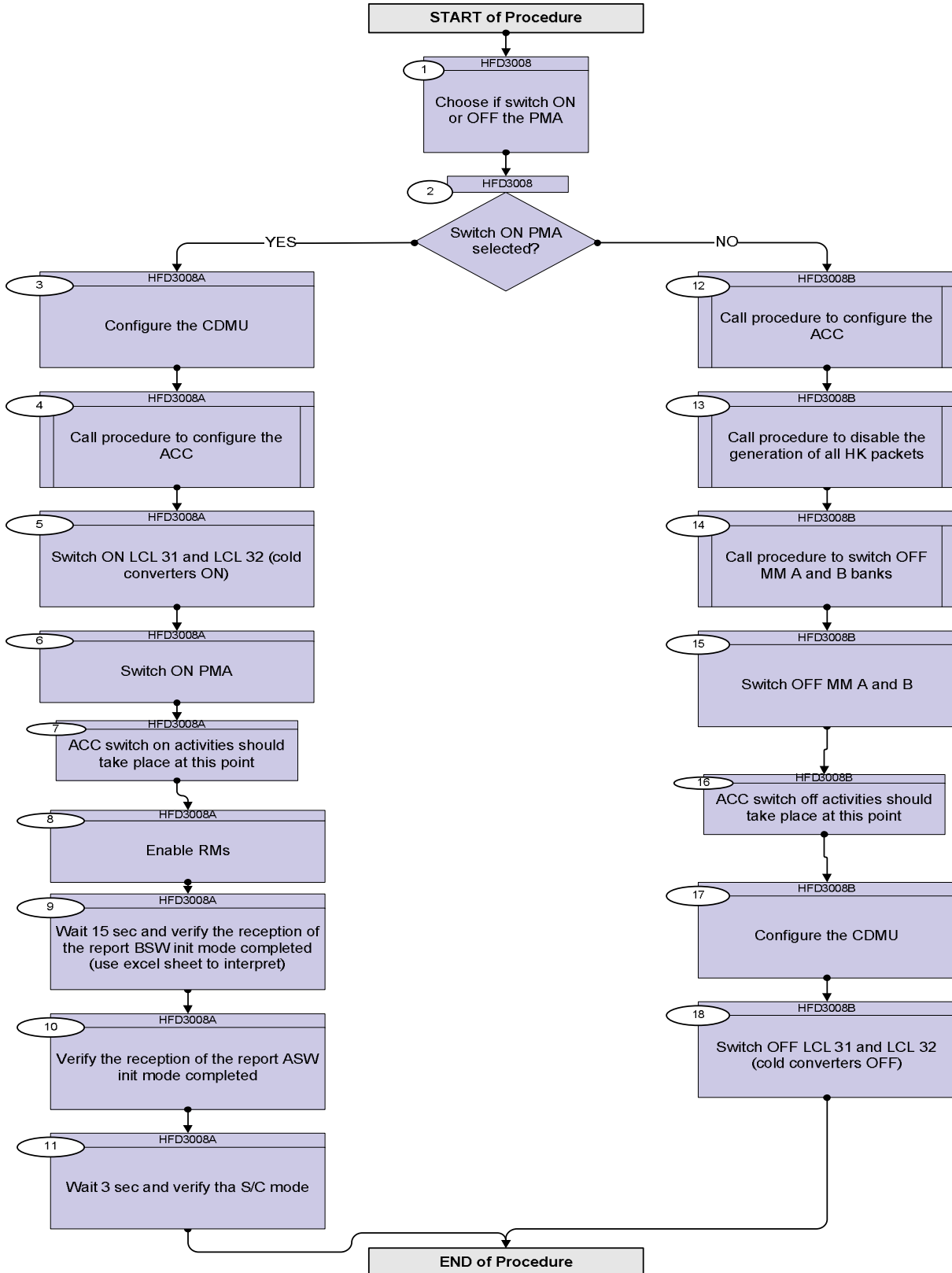
**Configuration Control Information**

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	S. Manganelli	
02/01/09		4	Deleted direct execution calls not applicable to ESOC	S. Manganelli	
12/01/09	2	5	Updated following OBSW 3_8	S. Manganelli	
24/03/09	2.2	6	Inserted placeholder steps for ACC activities as clarification, following TAS-I inputs 3 march 09	S. Manganelli	

Switch PM A ON or OFF  
 File: H\_FCP\_DHS\_3008.xls  
 Author: S. Manganelli



### Procedure Flowchart Overview



Switch PM A ON or OFF  
 File: H\_FCP\_DHS\_3008.xls  
 Author: S. Manganelli



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
<b>Beginning of Procedure</b>				
TC Seq. Name :HFD3008 (Dummy sequence)  TimeTag Type: Sub Schedule ID:  <input type="checkbox"/>				
1		Choose if switch ON or OFF the PMA		Next Step: 2
2		Switch ON PMA selected?		Next Step: YES 3 NO 12
TC Seq. Name :HFD3008A (Switch PMA ON)  TimeTag Type: Sub Schedule ID:  <input type="checkbox"/>				
3		Configure the CDMU		Next Step: 4
<b>WARNING: command to be sent with MAP ID = 0</b>				
		Execute Telecommand <div style="text-align: right;"><b>RM_A_Disable</b></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;"><b>RM_B_Disable</b></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;"><b>PM_A_off</b></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	

Switch PM A ON or OFF  
 File: H\_FCP\_DHS\_3008.xls  
 Author: S. Manganelli



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_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	

Switch PM A ON or OFF  
 File: H\_FCP\_DHS\_3008.xls  
 Author: S. Manganelli



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

Switch PM A ON or OFF  
 File: H\_FCP\_DHS\_3008.xls  
 Author: S. Manganelli



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 PMA		Next Step: 7
		Execute Telecommand <p style="text-align: right;">PM_A_on</p> TC Control Flags : <p style="text-align: right;">GBM IL DSE              --Y -- --</p> Subsch. ID : 10 Det. descr. : PM A on - High Priority Standard	DCA50170	
7		ACC switch on activities should take place at this point		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 interpret)		Next Step: 10





Switch PM A ON or OFF  
 File: H\_FCP\_DHS\_3008.xls  
 Author: S. Manganelli



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
<p><i>TC Seq. Name :HFD3008B (Switch PMA OFF)</i></p> <p><i>TimeTag Type:</i>  <i>Sub Schedule ID:</i></p> <p>□</p>				
12		Call procedure to configure the ACC		Next Step: 13
		<b>To be inserted link to the procedure.</b>		
13		Call procedure to disable the generation of all HK packets		Next Step: 14
		<b>Execute procedure H_FCP_DHS_3033</b>		
14		Call procedure to switch OFF MM A and B banks		Next Step: 15
		<b>Execute procedure H_FCP_DHS_3017</b>		
15		Switch OFF MM A and B		Next Step: 16
		Execute Telecommand <div style="text-align: right;"><b>MM_A_off</b></div> TC Control Flags : <div style="text-align: right;">GBM IL DSE --Y -- ---</div> Subsch. ID : 10 Det. descr. : MM A off - High Priority Standard	DCA54170	
		Execute Telecommand <div style="text-align: right;"><b>MM_B_off</b></div> TC Control Flags : <div style="text-align: right;">GBM IL DSE --Y -- ---</div> Subsch. ID : 10 Det. descr. : MM B off - High Priority Standard	DCA70170	
16		ACC switch off activities should take place at this point		Next Step: 17
17		Configure the CDMU		Next Step: 18
		<b>WARNING: command to be sent with MAP ID = 0</b>		

Switch PM A ON or OFF  
 File: H\_FCP\_DHS\_3008.xls  
 Author: S. Manganelli



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand <p style="text-align: right;"><b>Reset_PM_A_bit_0</b></p> <i>TC Control Flags :</i> <p style="text-align: right;">GBM IL DSE            --Y -- ---</p> <i>Subsch. ID : 10</i> Det. descr. : Reset PM A bit 0 - Mission Specific	DCM57170	
		Execute Telecommand <p style="text-align: right;"><b>PM_A_bit_1_SW_Image_1</b></p> <i>TC Control Flags :</i> <p style="text-align: right;">GBM IL DSE            --Y -- ---</p> <i>Subsch. ID : 10</i> Det. descr. : Set PM A bit 1 = Select SW Image 1 - High Priority Standard	DCA58170	
		Execute Telecommand <p style="text-align: right;"><b>Reset_PM_B_bit_0</b></p> <i>TC Control Flags :</i> <p style="text-align: right;">GBM IL DSE            --Y -- ---</p> <i>Subsch. ID : 10</i> Det. descr. : Reset PM B bit 0 - High Priority Standard	DCA61170	
		Execute Telecommand <p style="text-align: right;"><b>PM_B_bit_1_SW_Image_1</b></p> <i>TC Control Flags :</i> <p style="text-align: right;">GBM IL DSE            --Y -- ---</p> <i>Subsch. ID : 10</i> Det. descr. : Set PM B bit 1 = Select SW Image 1 - High Priority Standard	DCA62170	
		Execute Telecommand <p style="text-align: right;"><b>RM_A_Disable</b></p> <i>TC Control Flags :</i> <p style="text-align: right;">GBM IL DSE            --Y -- ---</p> <i>Subsch. ID : 10</i> Det. descr. : RM A Disable - High Priority Standard	DCA11170	
		Execute Telecommand <p style="text-align: right;"><b>RM_B_Disable</b></p> <i>TC Control Flags :</i> <p style="text-align: right;">GBM IL DSE            --Y -- ---</p> <i>Subsch. ID : 10</i> Det. descr. : RM B Disable - High Priority Standard	DCA12170	

Switch PM A ON or OFF  
 File: H\_FCP\_DHS\_3008.xls  
 Author: S. Manganelli



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand  PM_A_off  <i>TC Control Flags :</i>  GBM IL DSE --Y -- ---  <i>Subsch. ID : 10</i> Det. descr. : PM A off - High Priority Standard	DCA51170	
		Execute Telecommand  PM_B_off  <i>TC Control Flags :</i>  GBM IL DSE --Y -- ---  <i>Subsch. ID : 10</i> Det. descr. : PM B off - High Priority Standard	DCA67170	
		Execute Telecommand  Use_PM_A  <i>TC Control Flags :</i>  GBM IL DSE --Y -- ---  <i>Subsch. ID : 10</i> Det. descr. : Use PM A - High Priority Standard	DCA49170	
		Execute Telecommand  Use_TM_Encoder_A  <i>TC Control Flags :</i>  GBM IL DSE --Y -- ---  <i>Subsch. ID : 10</i> Det. descr. : Use TM Encoder A - High Priority Standard	DCA48170	
18		Switch OFF LCL 31 and LCL 32 (cold converters OFF)		Next Step: END
		Execute Telecommand  LCL_31_CDMU_Cold_A_OFF  <i>TC Control Flags :</i>  GBM IL DSE --Y -- ---  <i>Subsch. ID : 10</i> Det. descr. : LCL 31-CDMU Cold A- OFF - High Priority Standard	DCA00170	
		Execute Telecommand  LCL_32_CDMU_Cold_B_OFF  <i>TC Control Flags :</i>  GBM IL DSE --Y -- ---  <i>Subsch. ID : 10</i> Det. descr. : LCL 32-CDMU Cold B- OFF - High Priority Standard	DCA01170	

Switch PM A ON or OFF  
 File: H\_FCP\_DHS\_3008.xls  
 Author: S. Manganelli



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
<i>TC Seq. Name :HFD3008X (Dummy sequence)</i>				
<p data-bbox="378 472 544 495"><i>TimeTag Type:</i></p> <p data-bbox="378 495 576 517"><i>Sub Schedule ID:</i></p> <p data-bbox="392 539 408 562" style="text-align: center;">□</p>				
<b>End of Procedure</b>				

Switch PM A ON or OFF  
File: H\_FCP\_DHS\_3008.xls  
Author: S. Manganelli



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.