Perform a standard patch
File: H_CRP_DHS_3035.xls
Author: S. Manganelli

Procedure Summary

Objectives

This procedure describes the steps needed to perform a "Standard Patch" on EEPROM (code plus data).
The procedure foresees to start the new uploaded SW image through a forced SW alarm (level 3 failure). At the end, the relevant attempt counter will be reset to have still two attempts, for level 3 alarms, available.

Summary of Constraints

A "Standard patch" is requested whenever the CDMU OBSW has to be changed, either ASW or BSW, without impacting the definitions of the data structures stored in SGM. This means that the SW can reboot using the critical data stored in SGM.

Spacecraft Configuration

Start of Procedure

S/C in Nominal mode

End of Procedure

S/C in Earth Acquisition mode

Reference File(s)

Input Command Sequences

Output Command Sequences

HRD3035C
HRD3035E

Referenced Displays

ANDs	GRDs	SLDs
ZAZ1Q999		
ZAZAA999		
ZAZ2T999		

Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
08/12/08	2	1	Created	S. Manganelli	

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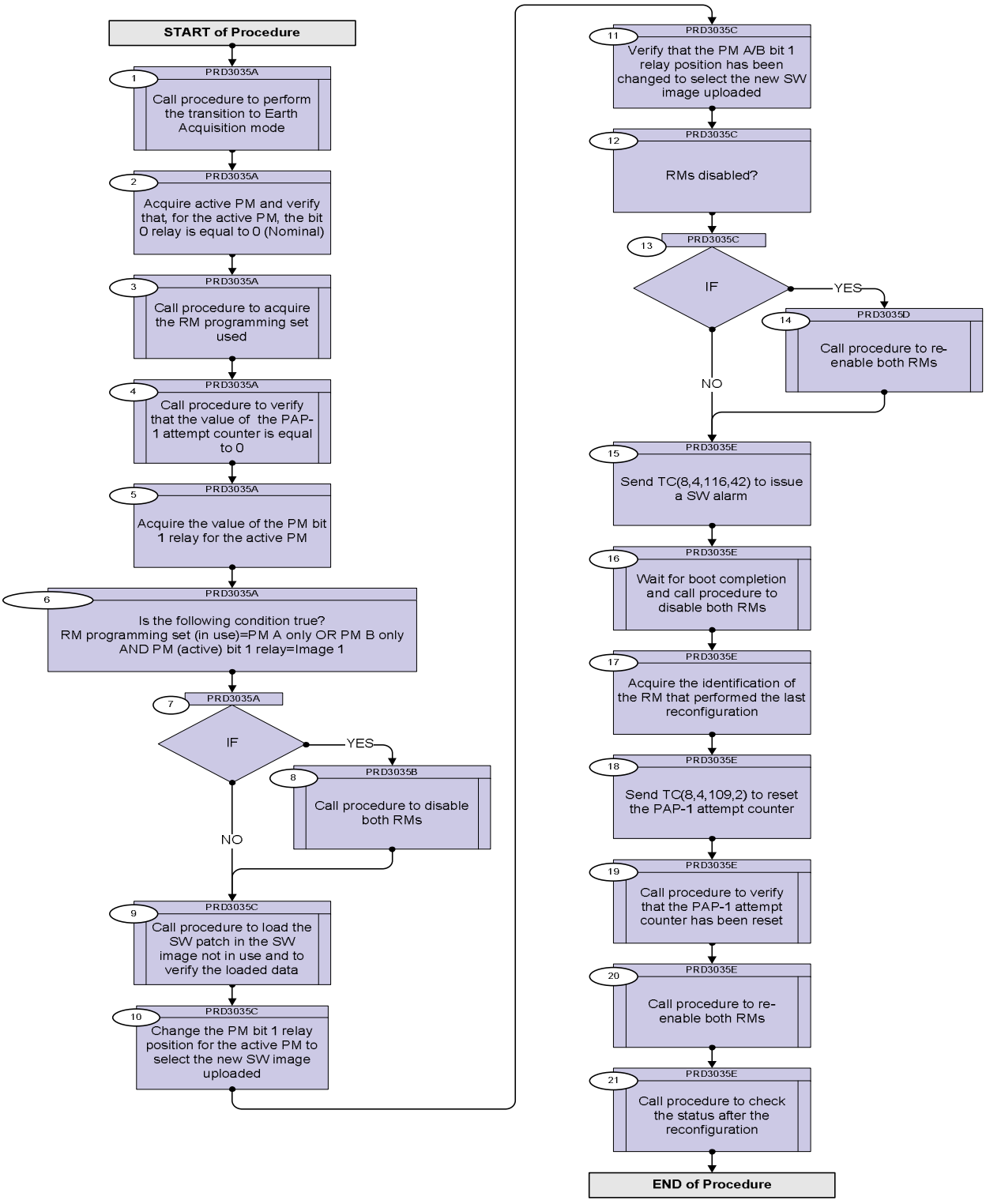
Procedure Flowchart Overview



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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Beginning of Procedure		
		TC Seq. Name :HRD3035A (EAM Transition) *TimeTag Type: N* *Sub Schedule ID:*		
1		*Call procedure to perform the transition to Earth Acquisition mode*		Next Step: 2
		Execute procedure H_FCP_DHS_4005.		
2		*Acquire active PM and verify that, for the active PM, the bit 0 relay is equal to 0 (Nominal)*		Next Step: 3
		Verify Telemetry **Active_PM_Board DEDM1160**		AND=ZAZAA999
		Verify Telemetry **PMA_R0_TTR-RM_A DEEX1160**		AND=ZAZAA999
		Verify Telemetry **PMB_R0_TTR-RM_B DEEX3160**		AND=ZAZAA999
3		*Call procedure to acquire the RM programming set used*		Next Step: 4
		WARNING: the following procedure has to be executed twice to check both the CROMEs. **In the called procedure, at the step 2, it is necessary to choose the CROME ID and the CROME Register Address (0700_5830).**		
		Use procedure H_FCP_DHS_3010.		
4		*Call procedure to verify that the value of the PAP-1 attempt counter is equal to 0*		Next Step: 5
		WARNING: the following procedure has to be executed twice to check both the CROMEs. **In the called procedure, at the step 2, it is necessary to choose the CROME ID and the CROME Register Address (0700_5A80+4N, N=1).**		
		Use procedure H_FCP_DHS_3010.		
5		*Acquire the value of the PM bit 1 relay for the active PM*		Next Step: 6

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		If PM A/B bit 1 relay = 1 the image selected is "Image 1" while if it is equal to 0 the image selected is "Image 2".		
		Verify Telemetry **PMA_R1_TTR-RM_A DEEX2160**		AND=ZAZAA999
		Verify Telemetry **PMB_R1_TTR-RM_B DEEX4160**		AND=ZAZAA999
6		*Is the following condition true?* *RM programming set (in use)=PM A only OR PM B only* *AND PM (active) bit 1 relay=Image 1*		Next Step: 7
7		*IF*		Next Step: YES 8 NO 9
		TC Seq. Name :HRD3035B (Disable both RMs) *TimeTag Type:* *Sub Schedule ID:*		
8		*Call procedure to disable both RMs*		Next Step: 9
		This step will prevent the possibility to select automatically the SW Image 2 and run it while patching.		
		WARNING: the called procedure must be executed 4 times; in fact it is necessary to disable both RMs sending the TC(2,3) ("Standard") via CPDU A and B. **In the called procedure, at the step 3 choose "disable" and then at the step 10 choose the RM.**		
		Use procedure H_CRP_DHS_3011.		
		TC Seq. Name :HRD3035C (Load SW patch) *TimeTag Type:* *Sub Schedule ID:*		
9		*Call procedure to load the SW patch in the SW image not in use and to verify the loaded data*		Next Step: 10
		In the called procedure, at the step 3, choose the "EEPROM" branch.		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Use procedure H_CRP_DHS_3023.		
10		*Change the PM bit 1 relay position for the active PM to select the new SW image uploaded*		Next Step: 11
		WARNING: only one of the following telecommand must be sent according to the telemetry acquired in steps 2 and 5. Moreover, each TC must be sent twice, via CPDU A and B.		
		IF **PM in use=PM A AND** **SW Image in use=SW Image 2** **must be sent the following TC:**		
		Execute Telecommand **PM_A_bit_1_SW_Image_1** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 10* Det. descr. : Set PM A bit 1 = Select SW Image 1 - High Priority Standard	**DCA58170**	
		IF **PM in use=PM A AND** **SW Image in use=SW Image 1** **must be sent the following TC:**		
		Execute Telecommand **PM_A_bit_1_SW_Image_2** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 10* Det. descr. : Reset PM A bit 1 = Select SW Image 2 - High Priority Standard	**DCA59170**	
		IF **PM in use=PM B AND** **SW Image in use=SW Image 2** **must be sent the following TC:**		
		Execute Telecommand **PM_B_bit_1_SW_Image_1** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *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
		IF **PM in use=PM B AND** **SW Image in use=SW Image 1** **must be sent the following TC:**		
		Execute Telecommand **PM_B_bit_1_SW_Image_2** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 10* Det. descr. : Reset PM B bit 1 = Select SW Image 2 - High Priority Standard	**DCA63170**	
11		*Verify that the PM A/B bit 1 relay position has been changed to select the new SW image uploaded*		Next Step: 12
		Verify Telemetry **PMA_R1_TTR-RM_A** **DEEX2160**		AND=ZAZAA999
		Verify Telemetry **PMB_R1_TTR-RM_B** **DEEX4160**		AND=ZAZAA999
12		*RMs disabled?*		Next Step: 13
		If the RMs have been previously disabled choose "YES" else "NO".		
13		*IF*		Next Step: YES 14 NO 15
		TC Seq. Name :HRD3035D (Re-enable both RMs) *TimeTag Type:* *Sub Schedule ID:*		
14		*Call procedure to re-enable both RMs*		Next Step: 15
		This step is needed to ensure that next step is properly executed.		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		WARNING: the called procedure must be executed 4 times; in fact it is necessary to re-enable both RMs sending the TC(2,3) ("Standard") via CPDU A and B. **In the called procedure, at the step 3 choose "enabled" and then at the step 4 choose the RM.**		
		Use procedure H_CRP_DHS_3011.		
		TC Seq. Name :HRD3035E (Trigger reconfigurat) *TimeTag Type:* N *Sub Schedule ID:* <dec> *Formal Parameter List :* RM=		
15		*Send TC(8,4,116,42) to issue a SW alarm*		Next Step: 16
		This step will trigger the PAP-1.		
		Execute Telecommand **FdirSwAlarm** *Command Parameter(s) :* **SwAlarmParam DH153170** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 10* Det. descr. : FDIR Recovery: SW Alarm TC(8,4,116,42)	**DCN36170** **TaskCrFail**	
16		*Wait for boot completion and call procedure to disable both RMs*		Next Step: 17
		This step is neede because next step relies on BswSvc_Rm_SetAttemptCnt, working with RM disabled.		
		WARNING: the called procedure must be executed 4 times; in fact it is necessary to disable both RMs sending the TC(2,3) ("Standard") via CPDU A and B. **In the called procedure, at the step 3 choose "disable" and then at the step 10 choose the RM.**		
		Use procedure H_CRP_DHS_3011.		
17		*Acquire the identification of the RM that performed the last reconfiguration*		Next Step: 18
		Verify Telemetry **RM_SELECTION DEKT0160**		AND=ZAZ2T999

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
18		*Send TC(8,4,109,2) to reset the PAP-1 attempt counter*		Next Step: 19
		In the TC(8,4,109,2) it is necessary to set the following parameters: **-RM ID (according to the RM acquired at step 17)** **1=RM A** **2=RM B** **-PAP number=1** **-Attempt counter=0**		
		Execute Telecommand **SetPapAttCntr** *Command Parameter(s) :* **RmId DH093170** **PapNr DH094170** **PapAttCnt DH095170** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 10* Det. descr. : TEMPLATE Set PAP Attempt Counter TC(8,4,109,2)	**DCT56170** **RM** **1 <dec>** **0 <dec>**	
19		*Call procedure to verify that the PAP-1 attempt counter has been reset*		Next Step: 20
		In the called procedure, at step 2 it is necessary to choose the CROME ID (according to the RM acquired at step 17) and the CROME Register address (0700_5A80+4N, N=1).		
		Use procedure H_FCP_DHS_3010.		
20		*Call procedure to re-enable both RMs*		Next Step: 21
		WARNING: the called procedure must be executed 4 times; in fact it is necessary to re-enable both RMs sending the TC(2,3) ("Standard") via CPDU A and B. **In the called procedure, at the step 3 choose "enable" and then at the step 4 choose the RM.**		
		Use procedure H_CRP_DHS_3011.		
21		*Call procedure to check the status after the reconfiguration*		Next Step: END

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Use procedure H_FCP_DHS_4004.		
		End of Procedure		