

Recovery from Level 3a Trigger
File: H_CRP_AOC_03AH.xls
Author: dsalt-hp



Procedure Summary

Objectives

The objective of this Herschel ACMS contingency procedure is to recover from a Level 3a Trigger.

The procedure involves the following activities:

- check initial conditions
- enable low rate TM packet, as necessary
- verify completion of Sun acquisition
- check reconfiguration log data
- select appropriate RM Programming Set on relevant RM
- disable low rate TM packet, as necessary
- return to SCM (calls H_CRP_AOC_XA2C)

The procedure describes the steps necessary to bring the subsystem to nominal operation after a PM reset caused by a level 3a RM trigger.

The operator's actions following a PM reset on Herschel are similar to those carried out on Planck if the reset occurs in the high threshold phase. The steps include the control of low rate MTM packets, the resetting of some of the RM control registers as well as procedure calls to return the subsystem to science mode, which are similar to those carried out when the science mode is entered for the first time.

USAGE:

The procedure is applicable assuming that the level 3a trigger that caused the resetting of the PM was not due to a transient problem in either hardware or software so that the desired recovery is to return the ACMS to a condition which will allow the resumption of normal science operation. This should represent by far the most likely contingency case in flight. In a less probable case, the cause of the trigger may indicate that the hardware of the current PM has suffered a degradation and may be unreliable. The preferred response in this case will be configure both RM's to respond to the next internal alarm with a PM reconfiguration at level 3B. This alternative should be covered in a dedicated procedure.

Summary of Constraints

n/a

Spacecraft Configuration

Start of Procedure

Type Pre-condition Here

End of Procedure

Type Post-condition Here

Reference File(s)

Input Command Sequences

Recovery from Level 3a Trigger
 File: H_CRP_AOC_03AH.xls
 Author: dsalt-hp



HFAD3LW5
 HFADRM1
 HFADRM2
 HRAD2PS1
 HRAD2PS2
 HRAD2PS3
 HRAD2PS4
 HRAD2PS5
 HRAD2PS6
 HRAD2PS7
 HRAD2PS8

Output Command Sequences

NULLSEQ2
 NULLSEQ7
 NULLSEQ9
 NULLSEQA
 NULLSEQB
 NULLSEQC
 NULLSEQD
 NULLSEQE
 NULLSEQF
 NULLSEQG
 NULLSEQH
 NULLSEQI

Referenced Displays

ANDs	GRDs	SLDs
ZAA07999		
ZAA01999		
ZAA00999		
ZAD07999		
ZAAM2999		

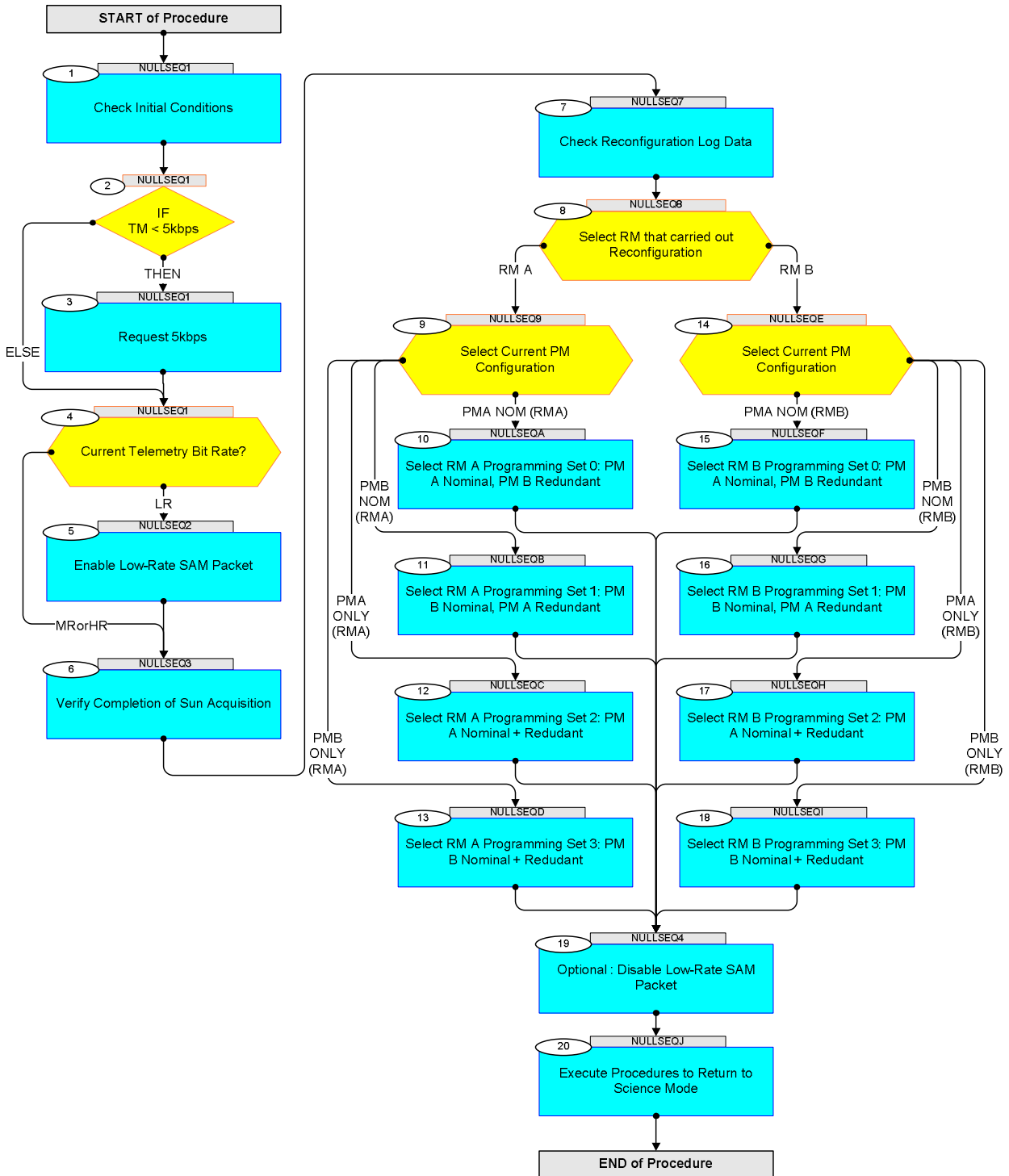
Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
13/01/09		1	Created	dsalt-hp	
18/01/09	2	2	Steps included to ensure downlink is 5kbps or more, plus associated warning comment	dsalt-hp	

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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 : NULLSEQ1 ()				
TimeTag Type: Sub Schedule ID: <input type="checkbox"/>				
1		Check Initial Conditions		Next Step: 2
		This step provides the initial telemetry checks for checking that a level 3a alarm has occurred.		
1.1		Pre-conditions (need to be TRUE in order to proceed)		<input type="checkbox"/>
		Verify Telemetry StartupSurvNom AEG44050 = Nominal		AND=ZAA07999
		Verify Telemetry PwrOnResetRegA AEG41050 = Warm Start		AND=ZAA07999
		Verify Telemetry PwrOnResetRegB AEG42050 = Warm Start		AND=ZAA07999
		Verify Telemetry AcmsMode AESMG002 = SAM		AND=ZAA01999
1.2		Check whether Sun acquisition is completed		<input type="checkbox"/>
		Verify Telemetry Sunvector X BRF AEUVX001 <to be read>		AND=ZAA00999
		Verify Telemetry Sunvector Y BRF AEUVY001 <to be read>		AND=ZAA00999
		Verify Telemetry Sunvector Z BRF AEUVZ001 <to be read>		AND=ZAA00999
		Verify Telemetry AcmsSubstate AESMF002 = SAM Sun Point		AND=ZAA01999
2		IF TM < 5kbps		Next Step: THEN 3 ELSE 4
3		Request 5kbps		Next Step: 4
		Request <u>CDMU SOE</u> to change the downlink data rate to 5kbps or greater and to inform the FCT when this rate is available.		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
4		Current Telemetry Bit Rate?		Next Step: LR 5 MRorHR 6
		Whether low rate mode telemetry needs to be enabled depends on what telemetry bit rate the spacecraft is configured for at this point in time. In response to the ACMS level 3a triggering the CDMU transitions to its SAM mode with the bit rate set to 5 kbps. By the time of exercising this procedure the TTC engineer may or may not have configured the spacecraft back to medium or high rate.		
4.1		Check telemetry bit rate		<input type="checkbox"/>
		Verify Telemetry TME_BITRATE DEMRF160	HR = 1.5 Mbps LR = 5 Kbps MR = 150 Kbps	AND=ZAD07999
4.2		Select appropriate branch		<input type="checkbox"/>
		Low bit rate -> GO TO STEP 3 Medium or high bit rate -> GO TO STEP 4		
TC Seq. Name : NULLSEQ2 () TimeTag Type: N Sub Schedule ID: <input type="checkbox"/>				
5		Enable Low-Rate SAM Packet		Next Step: 6
		This step enables the SAM low-rate mode packet: A3H_LR_MSAM {Herschel LowRate MTM SAM}. Its size and default settings: Packet size = 3552 bits Interval = 4 s (= 16 sampling periods) Packet rate = 3552 [bits] / 4 [s] = 888 [bps]		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch												
		<p>***** WARNING *****</p> <p>Do NOT uplink this TC sequence if current TM rate is below 5kbps, as this will cause blockage of the downlink.</p>														
5.1		Uplink Sequence HFAD3LW5		<input type="checkbox"/>												
		Execute Sequence HFAD3LW5 EnableLowRateSamPkt v07 Sequence Grouping = - SSID : 0		SEQ												
5.2		Verify Diagnostic Packet Enable		<input type="checkbox"/>												
		Verify Packet Reception Packet Details: <table style="margin-left: 20px;"> <tr> <td>Herschel LowRate MTM SAM</td> <td>A3H_LR_MSAM</td> </tr> <tr> <td>APID:</td> <td>512</td> </tr> <tr> <td>Type:</td> <td>3</td> </tr> <tr> <td>Subtype:</td> <td>25</td> </tr> <tr> <td>PI1:</td> <td>1000</td> </tr> <tr> <td>PI2:</td> <td></td> </tr> </table>	Herschel LowRate MTM SAM	A3H_LR_MSAM	APID:	512	Type:	3	Subtype:	25	PI1:	1000	PI2:			
Herschel LowRate MTM SAM	A3H_LR_MSAM															
APID:	512															
Type:	3															
Subtype:	25															
PI1:	1000															
PI2:																
TC Seq. Name : NULLSEQ3 () TimeTag Type: Sub Schedule ID: <input type="checkbox"/>																
6		Verify Completion of Sun Acquisition		Next Step: 7												
		Monitor the slew manoeuvre towards Sun pointing attitude, using the Sun sensors as input. Do not proceed with the procedure until the Sun pointing attitude is reached.														
		Verify Telemetry Sunvector X BRF AEUVX001	<to be read>	AND=ZAA00999												
		Verify Telemetry Sunvector Y BRF AEUVY001	<to be read>	AND=ZAA00999												
		Verify Telemetry Sunvector Z BRF AEUVZ001	<to be read>	AND=ZAA00999												
		Verify Telemetry AcmsMode AESMG002	= SAM	AND=ZAA01999												

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch										
		Verify Telemetry AcmsSubstate AESMF002	= SAM Sun Point	AND=ZAA01999										
<p>TC Seq. Name : NULLSEQ7 ()</p> <p>TimeTag Type: N Sub Schedule ID:</p> <p style="text-align: center;">□</p>														
7		Check Reconfiguration Log Data		Next Step: 8										
7.1		Check Reconfiguration Log via Boot Report retrieval		□										
		<p>Go through the steps below to retrieve the boot report and interpret it. Note that the boot report can only be retrieved in case the PM warm reset happened in visibility or the onboard stores have been downloaded.</p> <ol style="list-style-type: none"> 1. Filter in a TMPH on SPID 15534070, and retrieve the boot report from around the time of PM warm reset 2. Double-click on the boot report packet, a new window opens up displaying the packet content 3. Print the boot report to file and transfer the file to your office PC 4. Copy and paste the packet content to Silvano's spreadsheet "decoding Boot Report ACC.xls" 5. Follow the instructions in the spreadsheet to interpret the boot report, and read the reconfiguration log data 												
		Verify Packet Reception AccBsw Event 5-1 Boot Report and Reconfiguration Log Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>512</td></tr> <tr><td>Type:</td><td>5</td></tr> <tr><td>Subtype:</td><td>1</td></tr> <tr><td>PI1:</td><td>134</td></tr> <tr><td>PI2:</td><td>134</td></tr> </table>	APID:	512	Type:	5	Subtype:	1	PI1:	134	PI2:	134	A_EvRp_534	
APID:	512													
Type:	5													
Subtype:	1													
PI1:	134													
PI2:	134													
7.2		Check RM A Reconfiguration Log via RM Status Report		□										
7.2.1		Uplink Sequence HFADRMR1		□										

Recovery from Level 3a Trigger
 File: H_CRP_AOC_03AH.xls
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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Sequence HFADRRM1 GetRmAstatusReport v02 Sequence Grouping = - SSID : 0		SEQ
7.2.2		Check for new entries in the RM A Reconfiguration Log		<input type="checkbox"/>
		<p>It is recommended to maintain a reference image of the reconfiguration log for both RM's so that new entries can be identified immediately. Relying only the recorded time of reconfiguration in the log is not safe, because:</p> <ul style="list-style-type: none"> - ACC RM is not synchronised with the Central Reference Time (CRT). - Time format used by the RM (only 24 bits used to represent the number of seconds), the RM time counter wraps around after approximately 194 days. 		
		<p>The Reconfiguration Log of each RM can contain up to 32 entries maximum. Each entry is decoded by means of ~50 telemetry parameters in the spacecraft database. Because of the quantity of telemetry parameters involved the appropriate ANDs are referenced here, rather than the individual telemetry parameters. Going through the ANDs below it becomes clear immediately which entries are written to and which ones not.</p>		
		ZAAM4999 ACMS TM8-6 RMStatus - 5 of 36 ZAAM5999 ACMS TM8-6 RMStatus - 6 of 36 ZAAM6999 ACMS TM8-6 RMStatus - 7 of 36 ZAAM7999 ACMS TM8-6 RMStatus - 8 of 36 ZAAM8999 ACMS TM8-6 RMStatus - 9 of 36 ZAAM9999 ACMS TM8-6 RMStatus - 10 of 36 ZAAMA999 ACMS TM8-6 RMStatus - 11 of 36 ZAAMB999 ACMS TM8-6 RMStatus - 12 of 36 ZAAMC999 ACMS TM8-6 RMStatus - 13 of 36 ZAAMD999 ACMS TM8-6 RMStatus - 14 of 36 ZAAME999 ACMS TM8-6 RMStatus - 15 of 36 ZAAMF999 ACMS TM8-6 RMStatus - 16 of 36		

Recovery from Level 3a Trigger
 File: H_CRP_AOC_03AH.xls
 Author: dsalt-hp



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		ZAAMG999 ACMS TM8-6 RMStatus - 17 of 36 ZAAMH999 ACMS TM8-6 RMStatus - 18 of 36 ZAAMJ999 ACMS TM8-6 RMStatus - 19 of 36 ZAAMK999 ACMS TM8-6 RMStatus - 20 of 36 ZAAML999 ACMS TM8-6 RMStatus - 21 of 36 ZAAMM999 ACMS TM8-6 RMStatus - 22 of 36 ZAAMN999 ACMS TM8-6 RMStatus - 23 of 36 ZAAMP999 ACMS TM8-6 RMStatus - 24 of 36 ZAAMR999 ACMS TM8-6 RMStatus - 25 of 36 ZAAMS999 ACMS TM8-6 RMStatus - 26 of 36 ZAAMT999 ACMS TM8-6 RMStatus - 27 of 36 ZAAMU999 ACMS TM8-6 RMStatus - 28 of 36		
		ZAAMV999 ACMS TM8-6 RMStatus - 29 of 36 ZAAMW999 ACMS TM8-6 RMStatus - 30 of 36 ZAAMX999 ACMS TM8-6 RMStatus - 31 of 36 ZAAMY999 ACMS TM8-6 RMStatus - 32 of 36 ZAAMZ999 ACMS TM8-6 RMStatus - 33 of 36 ZAAN0999 ACMS TM8-6 RMStatus - 34 of 36 ZAAN1999 ACMS TM8-6 RMStatus - 35 of 36 ZAAN2999 ACMS TM8-6 RMStatus - 36 of 36		
7.3		Check RM B Reconfiguration Log via RM Status Report		<input type="checkbox"/>
7.3.1		Uplink Sequence HFADRM2		<input type="checkbox"/>
		Execute Sequence HFADRM2 GetRmBstatusReport v02 Sequence Grouping = - SSID : 0		SEQ
7.3.2		Check for new entries in the RM B Reconfiguration Log		<input type="checkbox"/>
		<p>It is recommended to maintain a reference image of the reconfiguration log for both RM's so that new entries can be identified immediately. Relying only the recorded time of reconfiguration in the log is not safe, because:</p> <ul style="list-style-type: none"> - ACC RM is not synchronised with the Central Reference Time (CRT). - Time format used by the RM (only 24 bits used to represent the number of seconds), the RM time counter wraps around after approximately 194 days. 		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		<p>The Reconfiguration Log of each RM can contain up to 32 entries maximum. Each entry is decoded by means of ~50 telemetry parameters in the spacecraft database. Because of the quantity of telemetry parameters involved the appropriate ANDs are referenced here, rather than the individual telemetry parameters. Going through the ANDs below it becomes clear immediately which entries are written to and which ones not.</p>		
		<p>ZAAM4999 ACMS TM8-6 RMStatus - 5 of 36 ZAAM5999 ACMS TM8-6 RMStatus - 6 of 36 ZAAM6999 ACMS TM8-6 RMStatus - 7 of 36 ZAAM7999 ACMS TM8-6 RMStatus - 8 of 36 ZAAM8999 ACMS TM8-6 RMStatus - 9 of 36 ZAAM9999 ACMS TM8-6 RMStatus - 10 of 36 ZAAMA999 ACMS TM8-6 RMStatus - 11 of 36 ZAAMB999 ACMS TM8-6 RMStatus - 12 of 36 ZAAMC999 ACMS TM8-6 RMStatus - 13 of 36 ZAAMD999 ACMS TM8-6 RMStatus - 14 of 36 ZAAME999 ACMS TM8-6 RMStatus - 15 of 36 ZAAMF999 ACMS TM8-6 RMStatus - 16 of 36</p>		
		<p>ZAAMG999 ACMS TM8-6 RMStatus - 17 of 36 ZAAMH999 ACMS TM8-6 RMStatus - 18 of 36 ZAAMJ999 ACMS TM8-6 RMStatus - 19 of 36 ZAAMK999 ACMS TM8-6 RMStatus - 20 of 36 ZAAML999 ACMS TM8-6 RMStatus - 21 of 36 ZAAMM999 ACMS TM8-6 RMStatus - 22 of 36 ZAAMN999 ACMS TM8-6 RMStatus - 23 of 36 ZAAMP999 ACMS TM8-6 RMStatus - 24 of 36 ZAAMR999 ACMS TM8-6 RMStatus - 25 of 36 ZAAMS999 ACMS TM8-6 RMStatus - 26 of 36 ZAAMT999 ACMS TM8-6 RMStatus - 27 of 36 ZAAMU999 ACMS TM8-6 RMStatus - 28 of 36</p>		
		<p>ZAAMV999 ACMS TM8-6 RMStatus - 29 of 36 ZAAMW999 ACMS TM8-6 RMStatus - 30 of 36 ZAAMX999 ACMS TM8-6 RMStatus - 31 of 36 ZAAMY999 ACMS TM8-6 RMStatus - 32 of 36 ZAAMZ999 ACMS TM8-6 RMStatus - 33 of 36 ZAAN0999 ACMS TM8-6 RMStatus - 34 of 36 ZAAN1999 ACMS TM8-6 RMStatus - 35 of 36 ZAAN2999 ACMS TM8-6 RMStatus - 36 of 36</p>		
<p>TC Seq. Name : NULLSEQ8 ()</p> <p>TimeTag Type: Sub Schedule ID:</p> <p>□</p>				

Recovery from Level 3a Trigger
 File: H_CRP_AOC_03AH.xls
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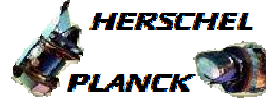
Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
8		Select RM that carried out Reconfiguration		Next Step: RM A 9 RM B 14
		Based on the check for new entries in the RM Reconfiguration Log (RM A check in step 7.2.2, and RM B check in step 7.2.3) the operator can determine which RM carried out the reconfiguration: RM A -> GO TO STEP 7 RM B -> GO TO STEP 12		
TC Seq. Name : NULLSEQ9 () TimeTag Type: Sub Schedule ID: <input type="checkbox"/>				
9		Select Current PM Configuration		Next Step: PMA NOM (RMA) 10 PMB NOM (RMA) 11 PMA ONLY (RMA) 12 PMB ONLY (RMA) 13
		To reset the RM attempt counters and last change register, one has to know the current PM configuration. In the unlikely case that the current PM configuration is unknown exercise steps 9.1 to 9.4. Select current PM configuration: PM A nominal, PM B redundant -> GO TO STEP 8 PM B nominal, PM A redundant -> GO TO STEP 9 PM A only, PM B defect -> GO TO STEP 10 PM B only, PM A defect -> GO TO STEP 11		
9.1		Uplink Sequence HFADRMRI		<input type="checkbox"/>

Recovery from Level 3a Trigger
 File: H_CRP_AOC_03AH.xls
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		<p><i>This step reenforces the selection of the RM Programming Set that corresponds to current PM configuration: PM A nominal, PM B redundant.</i></p> <p><i>In the process of doing that the RM Attempt Counters and the Last Chance Register get reset autonomously. This mechanism is the easiest way to restore the configuration of RM registers which control the response to the next trigger.</i></p>		
10.1		Uplink Sequence HRAD2PS1		<input type="checkbox"/>
		Execute Sequence HRAD2PS1 SelRmAprogSetPmAnom v03 Sequence Grouping = - SSID : 0		SEQ
10.2		Verify Updated RM Status		<input type="checkbox"/>
		Verify Telemetry <div style="text-align: right;"> RMH_PAPTR AEW1Z109 </div>	= PMA=N__PMB=R	AND=ZAAM2999
		Verify Telemetry <div style="text-align: right;"> RMH_ATPTR AEW1Y109 </div>	= PMA=N__PMB=R	AND=ZAAM2999
		Verify Telemetry <div style="text-align: right;"> RMH_ATCNT0 AEW2G109 </div>	= 0 <dec>	AND=ZAAM2999
		Verify Telemetry <div style="text-align: right;"> RMH_ATCNT1 AEW2H109 </div>	= 0 <dec>	AND=ZAAM2999
		Verify Telemetry <div style="text-align: right;"> RMH_ATCNT2 AEW2J109 </div>	= 0 <dec>	AND=ZAAM2999
		Verify Telemetry <div style="text-align: right;"> RMH_ATCNT3 AEW2K109 </div>	= 0 <dec>	AND=ZAAM2999
		Verify Telemetry <div style="text-align: right;"> RMA_fromTTR-RMA AEE91050 </div>	= ENABLED	AND=ZAA07999
		Verify Telemetry <div style="text-align: right;"> RMA_fromTTR-RMB AEE92050 </div>	= ENABLED	AND=ZAA07999
		Verify Telemetry <div style="text-align: right;"> RMB_fromTTR-RMA AEE93050 </div>	= ENABLED	AND=ZAA07999
		Verify Telemetry <div style="text-align: right;"> RMB_fromTTR-RMB AEE94050 </div>	= ENABLED	AND=ZAA07999

Recovery from Level 3a Trigger
 File: H_CRP_AOC_03AH.xls
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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
TC Seq. Name : NULLSEQB () TimeTag Type: N Sub Schedule ID: <input type="checkbox"/>				
11		Select RM A Programming Set 1: PM B Nominal, PM A Redundant		Next Step: 19
		This step reenforces the selection of the RM Programming Set that corresponds to current PM configuration: PM B nominal, PM A redundant. In the process of doing that the RM Attempt Counters and the Last Chance Register get reset autonomously. This mechanism is the easiest way to restore the configuration of RM registers which control the response to the next trigger.		
11.1		Uplink Sequence HRAD2PS2		<input type="checkbox"/>
		Execute Sequence HRAD2PS2 SelRmAprogSetPmBnom v03 Sequence Grouping = - SSID : 0		SEQ
11.2		Verify Updated RM Status		<input type="checkbox"/>
		Verify Telemetry RMH_PAPPTR AEW1Z109 = PMB=N__PMA=R		AND=ZAAM2999
		Verify Telemetry RMH_ATPTR AEW1Y109 = PMB=N__PMA=R		AND=ZAAM2999
		Verify Telemetry RMH_ATCNT0 AEW2G109 = 0 <dec>		AND=ZAAM2999
		Verify Telemetry RMH_ATCNT1 AEW2H109 = 0 <dec>		AND=ZAAM2999
		Verify Telemetry RMH_ATCNT2 AEW2J109 = 0 <dec>		AND=ZAAM2999
		Verify Telemetry RMH_ATCNT3 AEW2K109 = 0 <dec>		AND=ZAAM2999
		Verify Telemetry RMA_fromTTR-RMA AEE91050 = ENABLED		AND=ZAA07999
		Verify Telemetry RMA_fromTTR-RMB AEE92050 = ENABLED		AND=ZAA07999

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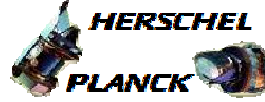
Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry RMB_fromTTR-RMA AEE93050	= ENABLED	AND=ZAA07999
		Verify Telemetry RMB_fromTTR-RMB AEE94050	= ENABLED	AND=ZAA07999
<p>TC Seq. Name : NULLSEQC ()</p> <p>TimeTag Type: N Sub Schedule ID:</p> <p><input type="checkbox"/></p>				
12		Select RM A Programming Set 2: PM A Nominal + Redudant		Next Step: 19
		<p>This step reenforces the selection of the RM Programming Set that corresponds to current PM configuration: PM A nominal, PM B defect.</p> <p>In the process of doing that the RM Attempt Counters and the Last Chance Register get reset autonomously. This mechanism is the easiest way to restore the configuration of RM registers which control the response to the next trigger.</p>		
12.1		Uplink Sequence HRAD2PS3		<input type="checkbox"/>
		Execute Sequence HRAD2PS3 SelRmAprogSetPmAonly v03 Sequence Grouping = - SSID : 0		SEQ
12.2		Verify Updated RM Status		<input type="checkbox"/>
		Verify Telemetry RMH_PAPPTR AEW1Z109	= PMA_only	AND=ZAAM2999
		Verify Telemetry RMH_ATPTR AEW1Y109	= PMA_only	AND=ZAAM2999
		Verify Telemetry RMH_ATCNT0 AEW2G109	= 0 <dec>	AND=ZAAM2999
		Verify Telemetry RMH_ATCNT1 AEW2H109	= 0 <dec>	AND=ZAAM2999
		Verify Telemetry RMH_ATCNT2 AEW2J109	= 0 <dec>	AND=ZAAM2999

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry RMH_ATCNT3 AEW2K109	= 0 <dec>	AND=ZAAM2999
		Verify Telemetry RMA_fromTTR-RMA AEE91050	= ENABLED	AND=ZAA07999
		Verify Telemetry RMA_fromTTR-RMB AEE92050	= ENABLED	AND=ZAA07999
		Verify Telemetry RMB_fromTTR-RMA AEE93050	= ENABLED	AND=ZAA07999
		Verify Telemetry RMB_fromTTR-RMB AEE94050	= ENABLED	AND=ZAA07999
<p>TC Seq. Name : NULLSEQD ()</p> <p>TimeTag Type: N Sub Schedule ID:</p> <p><input type="checkbox"/></p>				
13		Select RM A Programming Set 3: PM B Nominal + Redudant		Next Step: 19
		<p><i>This step reenforces the selection of the RM Programming Set that corresponds to current PM configuration: PM B nominal, PM A defect.</i></p> <p><i>In the process of doing that the RM Attempt Counters and the Last Chance Register get reset autonomously. This mechanism is the easiest way to restore the configuration of RM registers which control the response to the next trigger.</i></p>		
13.1		Uplink Sequence HRAD2PS4		<input type="checkbox"/>
		Execute Sequence HRAD2PS4 SelRmAprogSetPmBonly v03 Sequence Grouping = - SSID : 0		SEQ
13.2		Verify Updated RM Status		<input type="checkbox"/>
		Verify Telemetry RMH_PAPPTR AEW1Z109	= PMB_only	AND=ZAAM2999
		Verify Telemetry RMH_ATPTR AEW1Y109	= PMB_only	AND=ZAAM2999

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry RMH_ATCNT0 AEW2G109	= 0 <dec>	AND=ZAAM2999
		Verify Telemetry RMH_ATCNT1 AEW2H109	= 0 <dec>	AND=ZAAM2999
		Verify Telemetry RMH_ATCNT2 AEW2J109	= 0 <dec>	AND=ZAAM2999
		Verify Telemetry RMH_ATCNT3 AEW2K109	= 0 <dec>	AND=ZAAM2999
		Verify Telemetry RMA_fromTTR-RMA AEE91050	= ENABLED	AND=ZAA07999
		Verify Telemetry RMA_fromTTR-RMB AEE92050	= ENABLED	AND=ZAA07999
		Verify Telemetry RMB_fromTTR-RMA AEE93050	= ENABLED	AND=ZAA07999
		Verify Telemetry RMB_fromTTR-RMB AEE94050	= ENABLED	AND=ZAA07999
TC Seq. Name : NULLSEQE () TimeTag Type: Sub Schedule ID: <input type="checkbox"/>				
14		Select Current PM Configuration		Next Step: PMA NOM (RMB) 15 PMB NOM (RMB) 16 PMA ONLY (RMB) 17 PMB ONLY (RMB) 18

Recovery from Level 3a Trigger
 File: H_CRP_AOC_03AH.xls
 Author: dsalt-hp



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		<p>To reset the RM attempt counters and last change register, one has to know the current PM configuration. In the unlikely case that the current PM configuration is unknown exercise steps 14.1 to 14.4.</p> <p>Select current PM configuration:</p> <p>PM A nominal, PM B redundant -> GO TO STEP 13</p> <p>PM B nominal, PM A redundant -> GO TO STEP 14</p> <p>PM A only, PM B defect -> GO TO STEP 15</p> <p>PM B only, PM A defect -> GO TO STEP 16</p>		
14.1		Uplink Sequence HFADRM1		<input type="checkbox"/>
		<p>Execute Sequence</p> <p>HFADRM1 GetRmAstatusReport v02</p> <p>Sequence Grouping = -</p> <p>SSID : 0</p>		SEQ
14.2		Verify current PM configuration		<input type="checkbox"/>
		<p>The setting of the Attempt Pointer Register and the PAP Pointer Register tells you what the PM configuration currently is.</p>		
		<p>Verify Telemetry</p> <p>RMH_PAPTR AEW1Z109</p>	<to be read>	AND=ZAAM2999
		<p>Verify Telemetry</p> <p>RMH_ATPTR AEW1Y109</p>	<to be read>	AND=ZAAM2999
14.3		Uplink Sequence HFADRM2		<input type="checkbox"/>
		<p>Execute Sequence</p> <p>HFADRM2 GetRmBstatusReport v02</p> <p>Sequence Grouping = -</p> <p>SSID : 0</p>		SEQ
14.4		Verify current PM configuration		<input type="checkbox"/>

Recovery from Level 3a Trigger
 File: H_CRP_AOC_03AH.xls
 Author: dsalt-hp



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		<i>The setting of the Attempt Pointer Register and the PAP Pointer Register tells you what the PM configuration currently is.</i>		
		Verify Telemetry RMH_PAPPTR AEW1Z109	<to be read>	AND=ZAAM2999
		Verify Telemetry RMH_ATPTR AEW1Y109	<to be read>	AND=ZAAM2999
TC Seq. Name : NULLSEQF () TimeTag Type: N Sub Schedule ID: <input type="checkbox"/>				
15		Select RM B Programming Set 0: PM A Nominal, PM B Redundant		Next Step: 19
		<i>This step reenforces the selection of the RM Programming Set that corresponds to current PM configuration: PM A nominal, PM B redundant.</i> <i>In the process of doing that the RM Attempt Counters and the Last Chance Register get reset autonomously. This mechanism is the easiest way to restore the configuration of RM registers which control the response to the next trigger.</i>		
15.1		Uplink Sequence HRAD2PS5		<input type="checkbox"/>
		Execute Sequence HRAD2PS5 SelRmBprogSetPmAnom v03 Sequence Grouping = - SSID : 0		SEQ
15.2		Verify Updated RM Status		<input type="checkbox"/>
		Verify Telemetry RMH_PAPPTR AEW1Z109	= PMA=N_PMB=R	AND=ZAAM2999
		Verify Telemetry RMH_ATPTR AEW1Y109	= PMA=N_PMB=R	AND=ZAAM2999
		Verify Telemetry RMH_ATCNT0 AEW2G109	= 0 <dec>	AND=ZAAM2999

Recovery from Level 3a Trigger
 File: H_CRP_AOC_03AH.xls
 Author: dsalt-hp



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry RMH_ATCNT1 AEW2H109	= 0 <dec>	AND=ZAAM2999
		Verify Telemetry RMH_ATCNT2 AEW2J109	= 0 <dec>	AND=ZAAM2999
		Verify Telemetry RMH_ATCNT3 AEW2K109	= 0 <dec>	AND=ZAAM2999
		Verify Telemetry RMA_fromTTR-RMA AEE91050	= ENABLED	AND=ZAA07999
		Verify Telemetry RMA_fromTTR-RMB AEE92050	= ENABLED	AND=ZAA07999
		Verify Telemetry RMB_fromTTR-RMA AEE93050	= ENABLED	AND=ZAA07999
		Verify Telemetry RMB_fromTTR-RMB AEE94050	= ENABLED	AND=ZAA07999
<p>TC Seq. Name :NULLSEQG ()</p> <p>TimeTag Type: N Sub Schedule ID:</p> <p><input type="checkbox"/></p>				
16		Select RM B Programming Set 1: PM B Nominal, PM A Redundant		Next Step: 19
		<p>This step reenforces the selection of the RM Programming Set that corresponds to current PM configuration: PM B nominal, PM A redundant.</p> <p>In the process of doing that the RM Attempt Counters and the Last Chance Register get reset autonomously. This mechanism is the easiest way to restore the configuration of RM registers which control the response to the next trigger.</p>		
16.1		Uplink Sequence HRAD2PS6		<input type="checkbox"/>
		Execute Sequence HRAD2PS6 SelRmBprogSetPmBnom v03 Sequence Grouping = - SSID : 0		SEQ
16.2		Verify Updated RM Status		<input type="checkbox"/>

Recovery from Level 3a Trigger
 File: H_CRP_AOC_03AH.xls
 Author: dsalt-hp



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry RMH_PAPPTR AEW1Z109	= PMB=N_PMA=R	AND=ZAAM2999
		Verify Telemetry RMH_ATPTR AEW1Y109	= PMB=N_PMA=R	AND=ZAAM2999
		Verify Telemetry RMH_ATCNT0 AEW2G109	= 0 <dec>	AND=ZAAM2999
		Verify Telemetry RMH_ATCNT1 AEW2H109	= 0 <dec>	AND=ZAAM2999
		Verify Telemetry RMH_ATCNT2 AEW2J109	= 0 <dec>	AND=ZAAM2999
		Verify Telemetry RMH_ATCNT3 AEW2K109	= 0 <dec>	AND=ZAAM2999
		Verify Telemetry RMA_fromTTR-RMA AEE91050	= ENABLED	AND=ZAA07999
		Verify Telemetry RMA_fromTTR-RMB AEE92050	= ENABLED	AND=ZAA07999
		Verify Telemetry RMB_fromTTR-RMA AEE93050	= ENABLED	AND=ZAA07999
		Verify Telemetry RMB_fromTTR-RMB AEE94050	= ENABLED	AND=ZAA07999
<p>TC Seq. Name : NULLSEQH ()</p> <p>TimeTag Type: N Sub Schedule ID: <input type="checkbox"/></p>				
17		Select RM B Programming Set 2: PM A Nominal + Redudant		Next Step: 19
		<p><i>This step reenforces the selection of the RM Programming Set that corresponds to current PM configuration: PM A nominal, PM B defect.</i></p> <p><i>In the process of doing that the RM Attempt Counters and the Last Chance Register get reset autonomously. This mechanism is the easiest way to restore the configuration of RM registers which control the response to the next trigger.</i></p>		
17.1		Uplink Sequence HRAD2PS7		<input type="checkbox"/>

Recovery from Level 3a Trigger
 File: H_CRP_AOC_03AH.xls
 Author: dsalt-hp



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Sequence HRAD2PS7 SelRmBprogSetPmAonly v03 Sequence Grouping = - <i>SSID : 0</i>		SEQ
17.2		Verify Updated RM Status		<input type="checkbox"/>
		Verify Telemetry RMH_PAPPTR AEW1Z109	= PMA_only	AND=ZAAM2999
		Verify Telemetry RMH_ATPTR AEW1Y109	= PMA_only	AND=ZAAM2999
		Verify Telemetry RMH_ATCNT0 AEW2G109	= 0 <dec>	AND=ZAAM2999
		Verify Telemetry RMH_ATCNT1 AEW2H109	= 0 <dec>	AND=ZAAM2999
		Verify Telemetry RMH_ATCNT2 AEW2J109	= 0 <dec>	AND=ZAAM2999
		Verify Telemetry RMH_ATCNT3 AEW2K109	= 0 <dec>	AND=ZAAM2999
		Verify Telemetry RMA_fromTTR-RMA AEE91050	= ENABLED	AND=ZAA07999
		Verify Telemetry RMA_fromTTR-RMB AEE92050	= ENABLED	AND=ZAA07999
		Verify Telemetry RMB_fromTTR-RMA AEE93050	= ENABLED	AND=ZAA07999
		Verify Telemetry RMB_fromTTR-RMB AEE94050	= ENABLED	AND=ZAA07999
TC Seq. Name : NULLSEQI () TimeTag Type: N Sub Schedule ID: <input type="checkbox"/>				
18		Select RM B Programming Set 3: PM B Nominal + Redudant		Next Step: 19

Recovery from Level 3a Trigger
 File: H_CRP_AOC_03AH.xls
 Author: dsalt-hp



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	
		<p><i>This step reenforces the selection of the RM Programming Set that corresponds to current PM configuration: PM B nominal, PM A defect.</i></p> <p><i>In the process of doing that the RM Attempt Counters and the Last Chance Register get reset autonomously. This mechanism is the easiest way to restore the configuration of RM registers which control the response to the next trigger.</i></p>			
18.1		Uplink Sequence HRAD2PS8		<input type="checkbox"/>	
		Execute Sequence HRAD2PS8 SelRmBprogSetPmBonly v03 Sequence Grouping = - SSID : 0		SEQ	
18.2		Verify Updated RM Status		<input type="checkbox"/>	
		Verify Telemetry			
		RMH_PAPTR	AEW1Z109	= PMB_only	AND=ZAAM2999
		Verify Telemetry			
		RMH_ATPTR	AEW1Y109	= PMB_only	AND=ZAAM2999
		Verify Telemetry			
		RMH_ATCNT0	AEW2G109	= 0 <dec>	AND=ZAAM2999
		Verify Telemetry			
		RMH_ATCNT1	AEW2H109	= 0 <dec>	AND=ZAAM2999
		Verify Telemetry			
		RMH_ATCNT2	AEW2J109	= 0 <dec>	AND=ZAAM2999
		Verify Telemetry			
		RMH_ATCNT3	AEW2K109	= 0 <dec>	AND=ZAAM2999
		Verify Telemetry			
		RMA_fromTTR-RMA	AEE91050	= ENABLED	AND=ZAA07999
		Verify Telemetry			
		RMA_fromTTR-RMB	AEE92050	= ENABLED	AND=ZAA07999
		Verify Telemetry			
		RMB_fromTTR-RMA	AEE93050	= ENABLED	AND=ZAA07999
		Verify Telemetry			
		RMB_fromTTR-RMB	AEE94050	= ENABLED	AND=ZAA07999

Recovery from Level 3a Trigger
 File: H_CRP_AOC_03AH.xls
 Author: dsalt-hp



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
<p><i>TC Seq. Name :NULLSEQ4 ()</i></p> <p><i>TimeTag Type: N</i> <i>Sub Schedule ID:</i></p> <p style="text-align: center;">□</p>				
19		<i>Optional : Disable Low-Rate SAM Packet</i>		Next Step: 20
19.1		<i>Uplink Sequence HFAD3LW6</i>		□
		<i>Execute Sequence</i> HFAS3LW6 DisableLowRateSamPkt		
<p><i>TC Seq. Name :NULLSEQJ ()</i></p> <p><i>TimeTag Type:</i> <i>Sub Schedule ID:</i></p> <p style="text-align: center;">□</p>				
20		<i>Execute Procedures to Return to Science Mode</i>		Next Step: END
		<i>Execute Procedure:</i> H_CRP_AOC_XA20 Recovery from SIR		
End of Procedure				