

Perform RWL biasing in SCM  
File: H\_FCP\_AOC\_4R20.xls  
Author: dsalt-hp



## Procedure Summary

### Objectives

The objective of this Herschel ACMS procedure is to update the Reaction Wheel Biasing using options available during nominal operations in SCM (wheel biasing in OCM is covered in procedure H\_FCP\_AOC\_4R34).

The procedure involves the following activities:

- setting up of DTM packets (pkt\_id=43/112/119)
- switch ON the RCS heating, as appropriate (calls H\_FCP\_AOC\_5CBH)
- checking of necessary pre-conditions for update
- update of RWL biasing total, via specific TPF
  - uplink of BiasPointing TC and Null Space Offset [RWO], as required
  - uplink of BiasPointing TC [RWB], as required
  - uplink of BiasLongSlew TC [RWS], as required
- verification of RWL biasing total update via TM
- Removal of DTM packets (pkt\_id=43/112/119)
- switch OFF the RCS heating, as appropriate

### Summary of Constraints

1. ACMS mode is SCM
2. If "bias point" is commanded, the ACMS must be in the pointing substate.
3. Sequence AERWO\_00 shall only be used with ACC ASWr4.1 or higher (i.e. after Null Space Offset was introduced)
4. For the "bias long slew" option, no other commands can be pending for execution during the next pointing (peak-up and SSO commands are not allowed).

#### NOTE:

Wheel angular momentum management in SCM can be carried out using two options within the total biasing function.

1. BiasPoint: can be used with either three or four wheel in the active control configuration. This option can be used only the ACMS is in the pointing submode of SCM.
2. BiasLongSlew: allowed only for configurations using three wheels. The biasing is executed during the slew to the next pointing after the reception of the biasing command. Biasing becomes active only during the coasting phase during the slew, which therefore must last sufficiently long to allow the ACMS to unload the required amount of angular momentum.

For both biasing options, the angular momentum target must be specified in the inertial frame.

### Spacecraft Configuration

#### Start of Procedure

n/a

#### End of Procedure

n/a

### Reference File(s)

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**Input Command Sequences**

**Output Command Sequences**

HFA4R20A  
 AERWO\_00  
 AERWB\_00  
 AERWS\_00  
 HFA4R20B  
 HFA4R20C

**Referenced Displays**

ANDs	GRDs	SLDs
ZAA01999		(None)
ZAA02999		
ZAA06999		
ZAA07999		
ZAZ30999		
ZAZ31999		
ZAZ80999		
ZAA04999		
ZAA05999		
ZAA51999		
AA01W109		
ZAAL6999		
ZAAF2999		
WALC1584		

**Configuration Control Information**

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
03/08/08	1	1	Created	dsalt-hp	
06/09/08		2	Fromal parameter corrected in Step 20, plus tidy-up of comments and step names from Step 11	dsalt-hp	
15/10/08		3	Modified TM checks for LCL and catbed heaters (Step 3-9, 23)	dsalt-hp	
02/12/08		4	Initial steps for RCS thruster catbed heater switching ON removed and replaced with call to procedure H_FCP_AOC_5CBH and sequence IDs rationalised. □ Comments added in Step 10 & 15 for NCR4546	dsalt-hp	
12/12/08		5	Additional DTM (id=43) included to enable check of commanded angular momentum in the Inertial Frame at Step 16.2	dsalt-hp	
12/12/08	2	6	Time interval for DTM (id=43) in Step 2 set to 256 (i.e. packet every 64 seconds). □ TCs at Step 10 & 15 now time-tagged (TR=+00.00.00) to enable loading on MTL	dsalt-hp	
02/07/09		7	New sequence added (AERWO_00) to enable update of Null Space Offset within the OBDB for ACC ASWr4.1	dsalt-hp	
06/07/09		8	Sequence name corrected to AERWO_00	dsalt-hp	

Status : Version 15 - Updated  
 Last Checkin: 04/03/10

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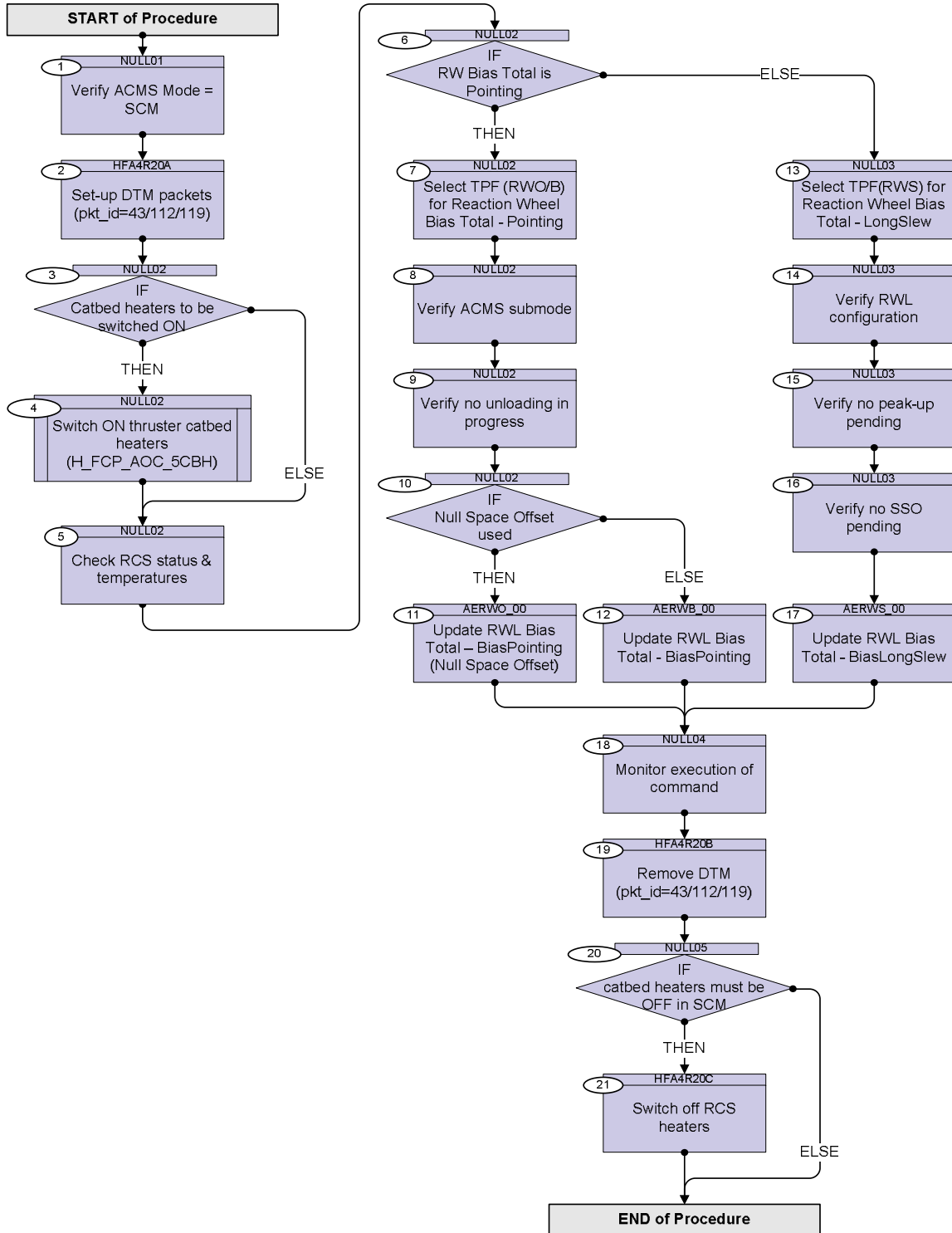


08/07/09		9	Planning flag in sequence AERWO_00 now set for all sources	dsalt-hp	
13/07/09		10	TC ordering within sequence AERWO_00 changed to reflect order of parameters in TPF	dsalt-hp	
16/07/09		11	Time-tags for TCs in Step 11 changed to standard delta to remove -ve values and ensure Null Space Offset is updated after the RWL bias has started	dsalt-hp	
22/07/09		12	Step 11.3 added to check updated value of Null Space offset in OBDB	dsalt-hp	
23/07/09		13	Time-tags of TCs in Step 11.2 now all set to +00.00.01	dsalt-hp	
06/10/09	2.5	14	Minor/editorial correction to Step 7 title	dsalt-hp	
04/03/10	3	15	Sequences now Plannable with SubScheduleID=20	dsalt-hp	

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**Procedure Flowchart Overview**



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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
<b>Beginning of Procedure</b>				
<p><i>TC Seq. Name : NULL01 (Null Sequence 01)</i></p> <p><i>TimeTag Type:</i>  <i>Sub Schedule ID:</i></p> <p style="text-align: center;">□</p>				
1		Verify ACMS Mode = SCM		Next Step: 2
		Verify Telemetry  <b>AcmsMode                      AESMG002</b>	<b>= SCM</b>	AND=ZAA01999
		<p><b>A note on telemetry:</b>            Monitoring of the effect of wheel biasing requires angular momentum data in the inertial frame. The inertial angular momentum vector is calculated onboard, but it is not available in default HK TM and must be obtained through a diagnostic packet. Alternatively, the angular momentum can be calculated on ground from data available in the SCM mode TM packet. The use of diagnostic packets and routine operations is not recommended, and the procedure therefore assumes that the angular momentum will be calculated on ground from default TM data (possibly by implementing derived parameters in the mission database).</p>		
<p><i>TC Seq. Name : HFA4R20A (Setup DTM)</i></p> <p><i>TimeTag Type: N</i>  <i>Sub Schedule ID: 20</i></p> <p style="text-align: center;">□</p>				
2		Set-up DTM packets (pkt_id=43/112/119)		Next Step: 3
2.1		Set-up diagnostic TM packet (pkt_id=112)		□
2.1.1		Define new Diagnostic TM packet (3,26): A3DHRWLS - Spid 18012109 - SID 20012 pkt_id = 112		□

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand		
		TC32H RWL Data Super	ACZYW109	
		Command Parameter(s) :		
		HK Packet ID          AH3PK109	112 <dec> (Def)	
		TC3x_SID              AHW04109	DTM RwlProcDataS	
		Interval              AH3SA109	(Def)	
		DID number            AH3PA109	4 <dec> (Def)	
		DID number            AH3PA109	20751 <dec> (Def)	
		DID number            AH3PA109	20751 <dec> (Def)	
		DID number            AH3PA109	20751 <dec> (Def)	
		DID number            AH3PA109	20751 <dec> (Def)	
		DID number            AH3PA109	20752 <dec> (Def)	
		DID number            AH3PA109	20752 <dec> (Def)	
		DID number            AH3PA109	20752 <dec> (Def)	
		DID number            AH3PA109	20752 <dec> (Def)	
		DID number            AH3PA109	20753 <dec> (Def)	
		DID number            AH3PA109	20753 <dec> (Def)	
		DID number            AH3PA109	20753 <dec> (Def)	
		DID number            AH3PA109	20753 <dec> (Def)	
		DID number            AH3PA109	20754 <dec> (Def)	
		DID number            AH3PA109	20754 <dec> (Def)	
		DID number            AH3PA109	20754 <dec> (Def)	
		DID number            AH3PA109	20754 <dec> (Def)	
		DID number            AH3PA109	20754 <dec> (Def)	
		DID number            AH3PA109	20785 <dec> (Def)	
		DID number            AH3PA109	20785 <dec> (Def)	
		DID number            AH3PA109	20785 <dec> (Def)	
		DID number            AH3PA109	20785 <dec> (Def)	
		DID number            AH3PA109	20786 <dec> (Def)	
		DID number            AH3PA109	20786 <dec> (Def)	
		DID number            AH3PA109	20786 <dec> (Def)	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		DID number AH3PA109	20786 <dec> (Def)	
		DID number AH3PA109	20787 <dec> (Def)	
		DID number AH3PA109	20787 <dec> (Def)	
		DID number AH3PA109	20787 <dec> (Def)	
		DID number AH3PA109	20787 <dec> (Def)	
		DID number AH3PA109	20788 <dec> (Def)	
		DID number AH3PA109	20788 <dec> (Def)	
		DID number AH3PA109	20788 <dec> (Def)	
		DID number AH3PA109	20788 <dec> (Def)	
		DID number AH3PA109	20788 <dec> (Def)	
		DID number AH3PA109	20788 <dec> (Def)	
		DID number AH3PA109	20789 <dec> (Def)	
		DID number AH3PA109	20789 <dec> (Def)	
		DID number AH3PA109	20789 <dec> (Def)	
		DID number AH3PA109	20789 <dec> (Def)	
		DID number AH3PA109	20790 <dec> (Def)	
		DID number AH3PA109	20790 <dec> (Def)	
		DID number AH3PA109	20790 <dec> (Def)	
		DID number AH3PA109	20790 <dec> (Def)	
		DID number AH3PA109	20791 <dec> (Def)	
		DID number AH3PA109	20791 <dec> (Def)	
		DID number AH3PA109	20791 <dec> (Def)	
		DID number AH3PA109	20791 <dec> (Def)	
		DID number AH3PA109	20791 <dec> (Def)	
		DID number AH3PA109	20791 <dec> (Def)	
		DID number AH3PA109	18441 <dec> (Def)	
		DID number AH3PA109	18441 <dec> (Def)	
		DID number AH3PA109	18441 <dec> (Def)	
		DID number AH3PA109	18441 <dec> (Def)	
		DID number AH3PA109	18443 <dec> (Def)	
		DID number AH3PA109	18443 <dec> (Def)	
		DID number AH3PA109	18443 <dec> (Def)	
		DID number AH3PA109	18443 <dec> (Def)	
		DID number AH3PA109	18443 <dec> (Def)	
		DID number AH3PA109	18443 <dec> (Def)	
		DID number AH3PA109	18445 <dec> (Def)	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		DID number AH3PA109	18445 <dec> (Def)	
		DID number AH3PA109	18445 <dec> (Def)	
		DID number AH3PA109	18445 <dec> (Def)	
		DID number AH3PA109	18447 <dec> (Def)	
		DID number AH3PA109	18447 <dec> (Def)	
		DID number AH3PA109	18447 <dec> (Def)	
		DID number AH3PA109	18447 <dec> (Def)	
		DID number AH3PA109	18442 <dec> (Def)	
		DID number AH3PA109	18442 <dec> (Def)	
		DID number AH3PA109	18442 <dec> (Def)	
		DID number AH3PA109	18442 <dec> (Def)	
		DID number AH3PA109	18444 <dec> (Def)	
		DID number AH3PA109	18444 <dec> (Def)	
		DID number AH3PA109	18444 <dec> (Def)	
		DID number AH3PA109	18444 <dec> (Def)	
		DID number AH3PA109	18444 <dec> (Def)	
		DID number AH3PA109	18444 <dec> (Def)	
		DID number AH3PA109	18444 <dec> (Def)	
		DID number AH3PA109	18444 <dec> (Def)	
		DID number AH3PA109	18444 <dec> (Def)	
		DID number AH3PA109	18446 <dec> (Def)	
		DID number AH3PA109	18446 <dec> (Def)	
		DID number AH3PA109	18446 <dec> (Def)	
		DID number AH3PA109	18446 <dec> (Def)	
		DID number AH3PA109	18448 <dec> (Def)	
		DID number AH3PA109	18448 <dec> (Def)	
		DID number AH3PA109	18448 <dec> (Def)	
		DID number AH3PA109	18448 <dec> (Def)	
		DID number AH3PA109	18867 <dec> (Def)	
		DID number AH3PA109	18867 <dec> (Def)	
		DID number AH3PA109	18867 <dec> (Def)	
		DID number AH3PA109	18867 <dec> (Def)	
		DID number AH3PA109	18868 <dec> (Def)	
		DID number AH3PA109	18868 <dec> (Def)	
		DID number AH3PA109	18868 <dec> (Def)	



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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		DID number AH3PA109	18868 <dec> (Def)	
		DID number AH3PA109	18869 <dec> (Def)	
		DID number AH3PA109	18869 <dec> (Def)	
		DID number AH3PA109	18869 <dec> (Def)	
		DID number AH3PA109	18869 <dec> (Def)	
		DID number AH3PA109	18870 <dec> (Def)	
		DID number AH3PA109	18870 <dec> (Def)	
		DID number AH3PA109	18870 <dec> (Def)	
		DID number AH3PA109	18870 <dec> (Def)	
		DID number AH3PA109	18870 <dec> (Def)	
		DID number AH3PA109	18870 <dec> (Def)	
		DID number AH3PA109	18863 <dec> (Def)	
		DID number AH3PA109	18863 <dec> (Def)	
		DID number AH3PA109	18863 <dec> (Def)	
		DID number AH3PA109	18863 <dec> (Def)	
		DID number AH3PA109	18863 <dec> (Def)	
		DID number AH3PA109	18864 <dec> (Def)	
		DID number AH3PA109	18864 <dec> (Def)	
		DID number AH3PA109	18864 <dec> (Def)	
		DID number AH3PA109	18864 <dec> (Def)	
		DID number AH3PA109	18864 <dec> (Def)	
		DID number AH3PA109	18865 <dec> (Def)	
		DID number AH3PA109	18865 <dec> (Def)	
		DID number AH3PA109	18865 <dec> (Def)	
		DID number AH3PA109	18865 <dec> (Def)	
		DID number AH3PA109	18865 <dec> (Def)	
		DID number AH3PA109	18866 <dec> (Def)	
		DID number AH3PA109	18866 <dec> (Def)	
		DID number AH3PA109	18866 <dec> (Def)	
		DID number AH3PA109	18866 <dec> (Def)	
		DID number AH3PA109	18866 <dec> (Def)	
		DID number AH3PA109	18852 <dec> (Def)	
		DID number AH3PA109	18852 <dec> (Def)	
		DID number AH3PA109	18852 <dec> (Def)	
		DID number AH3PA109	18852 <dec> (Def)	
		DID number AH3PA109	18852 <dec> (Def)	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		TC Control Flags : <div style="text-align: right;">GBM IL DSE --Y -- ---</div> Subsch. ID : 20 Det. descr. : TC(3,2) Define H DTM RWL Process Data Supersampled		
2.1.2		Report Definition of new Diagnostic TM packet (3,26): A3DHRWLS - Spid 18012109 - SID 20012 pkt_id = 112		□
		Execute Telecommand <div style="text-align: right;"><b>ReportDiagPackDef</b></div> Command Parameter(s) : <div style="text-align: right;">N                    AH030070 HK_PKT_ID            AH031070</div> TC Control Flags : <div style="text-align: right;">GBM IL DSE --Y -- ---</div> Subsch. ID : 20 Det. descr. : Report Diagnostic Packet Definitions	AC303070  1 <dec> (Def) 112 <dec>	
2.1.3		Enable TM generation for Diagnostic TM packet (3,26): A3DHRWLS - Spid 18012109 - SID 20012 pkt_id = 112		□
		Execute Telecommand <div style="text-align: right;"><b>EnableTmGen</b></div> Command Parameter(s) : <div style="text-align: right;">N                    AH017070 Sub-Type            AH019070 Packet-ID           AH020070</div> TC Control Flags : <div style="text-align: right;">GBM IL DSE --Y -- ---</div> Subsch. ID : 20 Det. descr. : Enable Generation of Telemetry Packets	AC900070  1 <dec> (Def) Diag Report 112 <dec>	
2.2		Set-up diagnostic TM packet (pkt_id=119)		□
2.2.1		Define new Diagnostic TM packet (3,26): A3DHRWLTgts - Spid 18019109 - SID 20019 pkt_id = 119		□

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand		
		TC32H RWL TrqTgt Data S	ACZYX109	
		Command Parameter(s) :		
		HK Packet ID AH3PK109	119 <dec> (Def)	
		TC3x_SID AHW04109	DTM RwlTrqTgts	
		Interval AH3SA109	(Def)	
		DID number AH3PA109	4 <dec> (Def)	
		DID number AH3PA109	20782 <dec> (Def)	
		DID number AH3PA109	20782 <dec> (Def)	
		DID number AH3PA109	20782 <dec> (Def)	
		DID number AH3PA109	20782 <dec> (Def)	
		DID number AH3PA109	20783 <dec> (Def)	
		DID number AH3PA109	20783 <dec> (Def)	
		DID number AH3PA109	20783 <dec> (Def)	
		DID number AH3PA109	20783 <dec> (Def)	
		DID number AH3PA109	20784 <dec> (Def)	
		DID number AH3PA109	20784 <dec> (Def)	
		DID number AH3PA109	20784 <dec> (Def)	
		DID number AH3PA109	20784 <dec> (Def)	
		DID number AH3PA109	20755 <dec> (Def)	
		DID number AH3PA109	20755 <dec> (Def)	
		DID number AH3PA109	20755 <dec> (Def)	
		DID number AH3PA109	20755 <dec> (Def)	
		DID number AH3PA109	20756 <dec> (Def)	
		DID number AH3PA109	20756 <dec> (Def)	
		DID number AH3PA109	20756 <dec> (Def)	
		DID number AH3PA109	20756 <dec> (Def)	
		DID number AH3PA109	20756 <dec> (Def)	
		DID number AH3PA109	20757 <dec> (Def)	
		DID number AH3PA109	20757 <dec> (Def)	
		DID number AH3PA109	20757 <dec> (Def)	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		DID number AH3PA109 DID number AH3PA109 DID number AH3PA109 DID number AH3PA109 DID number AH3PA109  TC Control Flags :  GBM IL DSE --Y -- ---  Subsch. ID : 20 Det. descr. : TC(3,2) Define H DTM RWL Process TrqTg Data Supersampled	20757 <dec> (Def) 20758 <dec> (Def) 20758 <dec> (Def) 20758 <dec> (Def) 20758 <dec> (Def)	
2.2.2		Report Definition of new Diagnostic TM packet (3,26): A3DHRWLTgts - Spid 18019109 - SID 20019 pkt_id = 119 <input type="checkbox"/>		<input type="checkbox"/>
		Execute Telecommand  ReportDiagPackDef  Command Parameter(s) :  N AH030070 HK_PKT_ID AH031070  TC Control Flags :  GBM IL DSE --Y -- ---  Subsch. ID : 20 Det. descr. : Report Diagnostic Packet Definitions	AC303070  1 <dec> (Def) 119 <dec>	
2.2.3		Enable TM generation for Diagnostic TM packet (3,26): A3DHRWLTgts - Spid 18019109 - SID 20019 pkt_id = 119 <input type="checkbox"/>		<input type="checkbox"/>
		Execute Telecommand  EnableTmGen  Command Parameter(s) :  N AH017070 Sub-Type AH019070 Packet-ID AH020070  TC Control Flags :  GBM IL DSE --Y -- ---  Subsch. ID : 20 Det. descr. : Enable Generation of Telemetry Packets	AC900070  1 <dec> (Def) Diag Report 119 <dec>	
2.3		Set-up diagnostic TM packet (pkt_id=43)		<input type="checkbox"/>

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch																																	
		NOTE: This diagnostic TM packet contains RWL total angular momentum expressed in the Inertial Frame: AESHX001 AESHY001 AESHZ001																																			
2.3.1		Define new Diagnostic TM packet (3,26): TC32H PERF AIT 1 - Spid 11691109 - SID 4016 pkt_id = 43		<input type="checkbox"/>																																	
		Execute Telecommand  TC32H PERF AIT 1  Command Parameter(s) : <table border="0" style="width: 100%;"> <tr> <td style="text-align: right;">HK Packet ID</td> <td>AH3PK109</td> <td>43 &lt;dec&gt; (Def)</td> </tr> <tr> <td style="text-align: right;">Structure ID HK</td> <td>AH3SD109</td> <td>DTM PERF (Def)</td> </tr> <tr> <td style="text-align: right;">Interval</td> <td>AH3SA109</td> <td>256 &lt;dec&gt;</td> </tr> <tr> <td style="text-align: right;">DID number</td> <td>AH3PA109</td> <td>18899 &lt;dec&gt; (Def)</td> </tr> <tr> <td style="text-align: right;">DID number</td> <td>AH3PA109</td> <td>18898 &lt;dec&gt; (Def)</td> </tr> <tr> <td style="text-align: right;">DID number</td> <td>AH3PA109</td> <td>18897 &lt;dec&gt; (Def)</td> </tr> <tr> <td style="text-align: right;">DID number</td> <td>AH3PA109</td> <td>18803 &lt;dec&gt; (Def)</td> </tr> <tr> <td style="text-align: right;">DID number</td> <td>AH3PA109</td> <td>18804 &lt;dec&gt; (Def)</td> </tr> <tr> <td style="text-align: right;">DID number</td> <td>AH3PA109</td> <td>18859 &lt;dec&gt; (Def)</td> </tr> <tr> <td style="text-align: right;">DID number</td> <td>AH3PA109</td> <td>18854 &lt;dec&gt; (Def)</td> </tr> <tr> <td style="text-align: right;">DID number</td> <td>AH3PA109</td> <td>18855 &lt;dec&gt; (Def)</td> </tr> </table>	HK Packet ID	AH3PK109	43 <dec> (Def)	Structure ID HK	AH3SD109	DTM PERF (Def)	Interval	AH3SA109	256 <dec>	DID number	AH3PA109	18899 <dec> (Def)	DID number	AH3PA109	18898 <dec> (Def)	DID number	AH3PA109	18897 <dec> (Def)	DID number	AH3PA109	18803 <dec> (Def)	DID number	AH3PA109	18804 <dec> (Def)	DID number	AH3PA109	18859 <dec> (Def)	DID number	AH3PA109	18854 <dec> (Def)	DID number	AH3PA109	18855 <dec> (Def)	AC3P1109	
HK Packet ID	AH3PK109	43 <dec> (Def)																																			
Structure ID HK	AH3SD109	DTM PERF (Def)																																			
Interval	AH3SA109	256 <dec>																																			
DID number	AH3PA109	18899 <dec> (Def)																																			
DID number	AH3PA109	18898 <dec> (Def)																																			
DID number	AH3PA109	18897 <dec> (Def)																																			
DID number	AH3PA109	18803 <dec> (Def)																																			
DID number	AH3PA109	18804 <dec> (Def)																																			
DID number	AH3PA109	18859 <dec> (Def)																																			
DID number	AH3PA109	18854 <dec> (Def)																																			
DID number	AH3PA109	18855 <dec> (Def)																																			

Perform RWL biasing in SCM  
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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		DID number AH3PA109	18856 <dec> (Def)	
		DID number AH3PA109	22789 <dec> (Def)	
		DID number AH3PA109	18857 <dec> (Def)	
		DID number AH3PA109	18703 <dec> (Def)	
		DID number AH3PA109	18858 <dec> (Def)	
		DID number AH3PA109	20671 <dec> (Def)	
		DID number AH3PA109	20672 <dec> (Def)	
		DID number AH3PA109	20673 <dec> (Def)	
		DID number AH3PA109	20674 <dec> (Def)	
		DID number AH3PA109	20517 <dec> (Def)	
		DID number AH3PA109	20518 <dec> (Def)	
		DID number AH3PA109	20519 <dec> (Def)	
		DID number AH3PA109	20651 <dec> (Def)	
		DID number AH3PA109	20652 <dec> (Def)	
		DID number AH3PA109	20653 <dec> (Def)	
		DID number AH3PA109	20614 <dec> (Def)	
		DID number AH3PA109	20615 <dec> (Def)	
		DID number AH3PA109	20616 <dec> (Def)	
		DID number AH3PA109	20493 <dec> (Def)	
		DID number AH3PA109	20494 <dec> (Def)	
		DID number AH3PA109	20495 <dec> (Def)	
		DID number AH3PA109	20683 <dec> (Def)	
		DID number AH3PA109	20684 <dec> (Def)	
		DID number AH3PA109	20685 <dec> (Def)	
		DID number AH3PA109	20661 <dec> (Def)	
		DID number AH3PA109	20662 <dec> (Def)	
		DID number AH3PA109	20663 <dec> (Def)	
		DID number AH3PA109	18741 <dec> (Def)	
		DID number AH3PA109	18777 <dec> (Def)	
		DID number AH3PA109	20621 <dec> (Def)	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		DID number AH3PA109	20622 <dec> (Def)	
		DID number AH3PA109	20623 <dec> (Def)	
		DID number AH3PA109	20624 <dec> (Def)	
		DID number AH3PA109	20675 <dec> (Def)	
		DID number AH3PA109	20676 <dec> (Def)	
		DID number AH3PA109	20677 <dec> (Def)	
		DID number AH3PA109	20678 <dec> (Def)	
		DID number AH3PA109	20489 <dec> (Def)	
		DID number AH3PA109	20490 <dec> (Def)	
		DID number AH3PA109	20491 <dec> (Def)	
		DID number AH3PA109	20492 <dec> (Def)	
		DID number AH3PA109	20480 <dec> (Def)	
		DID number AH3PA109	20481 <dec> (Def)	
		DID number AH3PA109	20482 <dec> (Def)	
		DID number AH3PA109	20483 <dec> (Def)	
		DID number AH3PA109	20484 <dec> (Def)	
		DID number AH3PA109	20485 <dec> (Def)	
		DID number AH3PA109	20654 <dec> (Def)	
		DID number AH3PA109	20655 <dec> (Def)	
		DID number AH3PA109	20656 <dec> (Def)	
		DID number AH3PA109	20597 <dec> (Def)	
		DID number AH3PA109	20598 <dec> (Def)	
		DID number AH3PA109	20737 <dec> (Def)	
		DID number AH3PA109	18853 <dec> (Def)	
		DID number AH3PA109	20800 <dec> (Def)	
		DID number AH3PA109	20801 <dec> (Def)	
		DID number AH3PA109	20802 <dec> (Def)	
		DID number AH3PA109	17124 <dec> (Def)	
		DID number AH3PA109	17314 <dec> (Def)	
		DID number AH3PA109	18705 <dec> (Def)	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		DID number AH3PA109	18706 <dec> (Def)	
		DID number AH3PA109	18707 <dec> (Def)	
		DID number AH3PA109	18708 <dec> (Def)	
		DID number AH3PA109	18709 <dec> (Def)	
		DID number AH3PA109	18710 <dec> (Def)	
		DID number AH3PA109	20645 <dec> (Def)	
		DID number AH3PA109	20646 <dec> (Def)	
		DID number AH3PA109	20647 <dec> (Def)	
		DID number AH3PA109	20648 <dec> (Def)	
		DID number AH3PA109	20649 <dec> (Def)	
		DID number AH3PA109	20650 <dec> (Def)	
		DID number AH3PA109	20599 <dec> (Def)	
		DID number AH3PA109	20748 <dec> (Def)	
		DID number AH3PA109	20749 <dec> (Def)	
		DID number AH3PA109	20750 <dec> (Def)	
		DID number AH3PA109	20720 <dec> (Def)	
		DID number AH3PA109	22795 <dec> (Def)	
		DID number AH3PA109	20557 <dec> (Def)	
		DID number AH3PA109	20558 <dec> (Def)	
		DID number AH3PA109	20559 <dec> (Def)	
		DID number AH3PA109	20560 <dec> (Def)	
		DID number AH3PA109	20792 <dec> (Def)	
		DID number AH3PA109	20793 <dec> (Def)	
		DID number AH3PA109	20794 <dec> (Def)	
		DID number AH3PA109	20795 <dec> (Def)	
		DID number AH3PA109	20803 <dec> (Def)	
		DID number AH3PA109	18874 <dec> (Def)	
		DID number AH3PA109	18875 <dec> (Def)	
		DID number AH3PA109	18876 <dec> (Def)	
		DID number AH3PA109	18877 <dec> (Def)	



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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		DID number AH3PA109 DID number AH3PA109 DID number AH3PA109 DID number AH3PA109 DID number AH3PA109 DID number AH3PA109  TC Control Flags :  GBM IL DSE --Y -- --  Subsch. ID : 20 Det. descr. : TC(3,2) Define H DTM PERF AIT 1	20499 <dec> (Def) 20500 <dec> (Def) 20501 <dec> (Def) 20502 <dec> (Def) 20503 <dec> (Def) 20504 <dec> (Def)	
		Execute Telecommand  TC32H PERF AIT 2  Command Parameter(s) : HK Packet ID AH3PK109 Structure ID HK AH3SD109 Interval AH3SA109 DID number AH3PA109 DID number AH3PA109 DID number AH3PA109 DID number AH3PA109 DID number AH3PA109 DID number AH3PA109 DID number AH3PA109 DID number AH3PA109 DID number AH3PA109	AC3P2109  43 <dec> (Def) DTM PERF (Def) 256 <dec> 18449 <dec> (Def) 18450 <dec> (Def) 18451 <dec> (Def) 18452 <dec> (Def) 18457 <dec> (Def) 18458 <dec> (Def) 18459 <dec> (Def) 18460 <dec> (Def)	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		DID number AH3PA109	18453 <dec> (Def)	
		DID number AH3PA109	18454 <dec> (Def)	
		DID number AH3PA109	18455 <dec> (Def)	
		DID number AH3PA109	18456 <dec> (Def)	
		DID number AH3PA109	18461 <dec> (Def)	
		DID number AH3PA109	18462 <dec> (Def)	
		DID number AH3PA109	18463 <dec> (Def)	
		DID number AH3PA109	18464 <dec> (Def)	
		DID number AH3PA109	18464 <dec> (Def)	
		DID number AH3PA109	18848 <dec> (Def)	
		DID number AH3PA109	18849 <dec> (Def)	
		DID number AH3PA109	18850 <dec> (Def)	
		DID number AH3PA109	18851 <dec> (Def)	
		DID number AH3PA109	18688 <dec> (Def)	
		DID number AH3PA109	18689 <dec> (Def)	
		DID number AH3PA109	18690 <dec> (Def)	
		DID number AH3PA109	18691 <dec> (Def)	
		DID number AH3PA109	18692 <dec> (Def)	
		DID number AH3PA109	18693 <dec> (Def)	
		DID number AH3PA109	16447 <dec> (Def)	
		DID number AH3PA109	18871 <dec> (Def)	
		DID number AH3PA109	18863 <dec> (Def)	
		DID number AH3PA109	18864 <dec> (Def)	
		DID number AH3PA109	18865 <dec> (Def)	
		DID number AH3PA109	18866 <dec> (Def)	
		DID number AH3PA109	20751 <dec> (Def)	
		DID number AH3PA109	20752 <dec> (Def)	
		DID number AH3PA109	20753 <dec> (Def)	
		DID number AH3PA109	20754 <dec> (Def)	
		DID number AH3PA109	20755 <dec> (Def)	
		DID number AH3PA109	20756 <dec> (Def)	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		DID number AH3PA109	20757 <dec> (Def)	
		DID number AH3PA109	20758 <dec> (Def)	
		DID number AH3PA109	20763 <dec> (Def)	
		DID number AH3PA109	20764 <dec> (Def)	
		DID number AH3PA109	20765 <dec> (Def)	
		DID number AH3PA109	20766 <dec> (Def)	
		DID number AH3PA109	20759 <dec> (Def)	
		DID number AH3PA109	20760 <dec> (Def)	
		DID number AH3PA109	20761 <dec> (Def)	
		DID number AH3PA109	20762 <dec> (Def)	
		DID number AH3PA109	20774 <dec> (Def)	
		DID number AH3PA109	20775 <dec> (Def)	
		DID number AH3PA109	20776 <dec> (Def)	
		DID number AH3PA109	20777 <dec> (Def)	
		DID number AH3PA109	20660 <dec> (Def)	
		DID number AH3PA109	20521 <dec> (Def)	
		DID number AH3PA109	20522 <dec> (Def)	
		DID number AH3PA109	20523 <dec> (Def)	
		DID number AH3PA109	20524 <dec> (Def)	
		DID number AH3PA109	20525 <dec> (Def)	
		DID number AH3PA109	20526 <dec> (Def)	
		DID number AH3PA109	18711 <dec> (Def)	
		DID number AH3PA109	18712 <dec> (Def)	
		DID number AH3PA109	18713 <dec> (Def)	
		DID number AH3PA109	18714 <dec> (Def)	
		DID number AH3PA109	18715 <dec> (Def)	
		DID number AH3PA109	18716 <dec> (Def)	
		DID number AH3PA109	18731 <dec> (Def)	
		DID number AH3PA109	18434 <dec> (Def)	
		DID number AH3PA109	18435 <dec> (Def)	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		DID number AH3PA109 DID number AH3PA109  TC Control Flags :  GBM IL DSE --Y -- ---  Subsch. ID : 20 Det. descr. : TC(3,2) Define H DTM PERF AIT 2	18437 <dec> (Def) 18438 <dec> (Def)	
		Execute Telecommand  TC32H PERF AIT C  Command Parameter(s) : HK Packet ID AH3PK109 Structure ID HK AH3SD109 Interval AH3SA109  TC Control Flags :  GBM IL DSE --Y -- ---  Subsch. ID : 20 Det. descr. : TC(3,2) Define H DTM PERF AIT C	AC3PZ109  43 <dec> (Def) DTM PERF (Def) 256 <dec>	
2.3.2		Report Definition of new Diagnostic TM packet (3,26): TC32H PERF AIT 1 - Spid 11691109 - SID 4016 pkt_id = 43		□
		Execute Telecommand  ReportDiagPackDef  Command Parameter(s) : N AH030070 HK_PKT_ID AH031070  TC Control Flags :  GBM IL DSE --Y -- ---  Subsch. ID : 20 Det. descr. : Report Diagnostic Packet Definitions	AC303070  1 <dec> (Def) 43 <dec>	
2.3.3		Enable TM generation for Diagnostic TM packet (3,26): TC32H PERF AIT 1 - Spid 11691109 - SID 4016 pkt_id = 43		□

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand <p style="text-align: right;"><b>EnableTmGen</b></p> Command Parameter(s) : N                  AH017070 Sub-Type      AH019070 Packet-ID    AH020070 TC Control Flags : <p style="text-align: right;"><b>GBM IL DSE</b>                                              --Y -- ---</p> Subsch. ID : 20 Det. descr. : Enable Generation of Telemetry Packets	AC900070  1 <dec> (Def) Diag Report 43 <dec>	
TC Seq. Name :NULL02 (Null Sequence 02)  TimeTag Type: Sub Schedule ID:  <input type="checkbox"/>				
3		IF Catbed heaters to be switched ON		Next Step: THEN 4 ELSE 5
4		Switch ON thruster catbed heaters (H_FCP_AOC_5CBH)  Execute Procedure: <b>H_FCP_AOC_5CBH</b> <b>Switch ON thruster catbed heaters</b>		Next Step: 5
5		Check RCS status & temperatures		Next Step: 6
5.1		Verify nominal RCS branch  Verify Telemetry <p style="text-align: right;"><b>Nom Conf RCS                  AESCF002</b></p>	= RCS-A = RCS-B	<input type="checkbox"/> AND=ZAA01999
5.1.1		Check RCS-A health, if flagged as nominal branch  Verify Telemetry <p style="text-align: right;"><b>RCSA Health Sts                  AESK1002</b></p>	= Healthy	<input type="checkbox"/> AND=ZAA02999
5.1.2		Check RCS-B health, if flagged as nominal branch  Verify Telemetry <p style="text-align: right;"><b>RCSB Health Sts                  AESK2002</b></p>	= Healthy	<input type="checkbox"/> AND=ZAA02999

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
5.2		Verify LV status for MAIN branch RCS		<input type="checkbox"/>
5.2.1		Verify LV status for RCS-A, if MAIN branch		<input type="checkbox"/>
		Verify Telemetry RCS-A LV closed                      AMTL2109	= FALSE	AND=ZAA06999
		Verify Telemetry RCS-A LV open                            AMTL1109	= TRUE	AND=ZAA06999
5.2.2		Verify LV status for RCS-B, if MAIN branch		<input type="checkbox"/>
		Verify Telemetry RCS-B LV open                            AMTL3109	= TRUE	AND=ZAA07999
		Verify Telemetry RCS-B LV closed                        AMTL4109	= FALSE	AND=ZAA07999
5.3		Verify FCV temps for MAIN branch RCS		<input type="checkbox"/>
5.3.1		Verify FCV temps for RCS-A, if MAIN branch		<input type="checkbox"/>
		NOTE: The temperatures used in the verification criteria above are those the CDMU ASW derives by averaging data from three individual thermistors mounted on the same thermal node.  The positions of the nodes are as follows: #22 - FCV A1A #42 - FCV A2A #41 - FCV C1A #23 - FCV C2A #44 - FCV C3A #51 - FCV C4A		
		Verify Telemetry ATemp22_FCV_A1A                      DEA8D170	< 65.0 deg C > 10.0 deg C	AND=ZAZ30999
		Verify Telemetry ATemp42_FCV_A2A                      DEEA1170	< 65.0 deg C > 10.0 deg C	AND=ZAZ31999
		Verify Telemetry ATemp41_FCV_C1A                      DEEA0170	< 65.0 deg C > 10.0 deg C	AND=ZAZ31999
		Verify Telemetry ATemp23_FCV_C2A                      DEA8E170	< 65.0 deg C > 10.0 deg C	AND=ZAZ30999

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry <b>ATemp44_FCV_C3A</b> <b>DEAA3170</b>	< 65.0 deg C > 10.0 deg C	AND=ZAZ31999
		Verify Telemetry <b>ATemp51_FCV_C4A</b> <b>DEAAA170</b>	< 65.0 deg C > 10.0 deg C	AND=ZAZ31999
5.3.2		Verify FCV temps for RCS-B, if MAIN branch		□
		NOTE: The temperatures used in the verification criteria above are those the CDMU ASW derives by averaging data from three individual thermistors mounted on the same thermal node.  The positions of the nodes are as follows: #03 - FCV A1B #09 - FCV A2B #08 - FCV C1B #04 - FCV C2B #28 - FCV C3B #10 - FCV C4B		
		Verify Telemetry <b>ATemp03_FCV_A1B</b> <b>DEA7A170</b>	< 65.0 deg C > 10.0 deg C	AND=ZAZ30999
		Verify Telemetry <b>ATemp09_FCV_A2B</b> <b>DEA80170</b>	< 65.0 deg C > 10.0 deg C	AND=ZAZ30999
		Verify Telemetry <b>ATemp08_FCV_C1B</b> <b>DEA7F170</b>	< 65.0 deg C > 10.0 deg C	AND=ZAZ30999
		Verify Telemetry <b>ATemp04_FCV_C2B</b> <b>DEA7B170</b>	< 65.0 deg C > 10.0 deg C	AND=ZAZ30999
		Verify Telemetry <b>ATemp28_FCV_C3B</b> <b>DEA93170</b>	< 65.0 deg C > 10.0 deg C	AND=ZAZ30999
		Verify Telemetry <b>ATemp10_FCV_C4B</b> <b>DEA81170</b>	< 65.0 deg C > 10.0 deg C	AND=ZAZ30999
6		IF RW Bias Total is Pointing		Next Step: THEN 7 ELSE 13
7		Select TPF (RWO/B) for Reaction Wheel Bias Total - Pointing		Next Step: 8

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Check with Flight Dynamics the <b>exact name of the <u>TPF instance</u></b> to be uplinked		
8		Verify ACMS submode		Next Step: 9
		Verify Telemetry  <b>AcmsSubstate</b> <b>AESMF002</b>	<b>= SCM Pointing</b>	AND=ZAA01999
9		Verify no unloading in progress		Next Step: 10
		Verify Telemetry  <b>SCMUnldingActive</b> <b>AESM8002</b>	<b>= FALSE</b>	AND=ZAA01999
10		IF Null Space Offset used		Next Step: THEN 11 ELSE 12
<p>TC Seq. Name :AERWO_00 (Update RW Bias NSoff)</p> <p>TimeTag Type: B                  Sub Schedule ID: 20                  Formal Parameter List :                  Biasing H_RWS X HT_X= Nms                  Biasing H_RWS Y HT_Y= Nms                  Biasing H_RWS Z HT_Z= Nms                  DbLoad Dwd Real V0_OFF= &lt;dec&gt;</p>				
11		Update RWL Bias Total - BiasPointing (Null Space Offset)		Next Step: 18
11.1		Update RWL Bias Total - BiasPointing		□
	ET=+00.00.00 UT=+	Execute Telecommand  <b>Bias total RWS pointing</b>  Command Parameter(s) : ASW Function ID                      AHFUN002 Biasing AID Cmd                      AHFWB002 Bias DF86 Cmd                      AH8E1002 Bias DD86 Cmd                      AH8E2002 Biasing H_RWS X                      AHFWX002 Biasing H_RWS Y                      AHFWY002 Biasing H_RWS Z                      AHFWZ002  TC Control Flags :  GBM IL DSE --Y -- --  Subsch. ID : 20 Det. descr. : TC_BIAS_TOTAL_RWS_point	<b>ACWP1002</b>  Biasing (Def) BiasPointing (Def) Enable 86 Enable 86 HT_X HT_Y HT_Z	



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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		NOTE: ACMS ASW Release 4.0 has an error that returns the (8,6) packet with the FID=101 (ACMSMain) but should be FID=105 (Biasing).  This is not a problem and should be fixed in any future release.		
11.2		Update H_NOM_AUX_NULL_SPACE_OFFSET		<input type="checkbox"/>
	ET=+00.00.01 UT=+	Execute Telecommand  <b>Start database loading</b>  Command Parameter(s) : DbLoad Nr Cmds                  AHFDL001  TC Control Flags :  GBM IL DSE --Y -- ---  Subsch. ID : 20 Det. descr. : TC_START_DATABASE_LOAD	ACDS1001  1 <dec>	
		Following the Start_database_loading command the following commands must each be sent within C_ALL_OPS_ASW_CRIT_CMD_TIMEOUT (=180 seconds default) of the previous command to avoid the started status of the function timing-out.		
	ET=+00.00.01 UT=+	Execute Telecommand  <b>Load databaseReal</b>  Command Parameter(s) : DbLoad DF86 Cmd                  AH8D1001          Enable 86 DbLoad DD86 Cmd                  AH8D2001          Enable 86 DbLoad StartInd                  AHFDS001          1031 <dec> DbLoad Nr Wrds                  AHFDN001          1 <dec> (Def) DbLoad Dwd Real                  AHFDZ001          V0_OFF  TC Control Flags :  GBM IL DSE --Y -- ---  Subsch. ID : 20 Det. descr. : TC(8,4) - Load database Real	ACZTY109  Enable 86 Enable 86 1031 <dec> 1 <dec> (Def) V0_OFF	
	ET=+00.00.01 UT=+	Execute Telecommand  <b>Fire Start DB loading</b>  TC Control Flags :  GBM IL DSE --Y -- ---  Subsch. ID : 20 Det. descr. : TC(8,4) Fire Command - Fire Start DB loading	ACZ5L109	
11.3		Call procedure H_FCP_AOC_DODD Generic OBDB Dump		<input type="checkbox"/>

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		<p><i>NOTE:</i>            This procedure enables a direct dump of the OBDB from RAM or Safe-Guard Memory (SGM), as well as reading the OBDB via diagnostic telemetry (DTM) packets</p>		
		<p><u>Relevant details for use with H_FCP_AOC_DODD</u></p> <p>Based upon the latest ASW ICD (H-P-4-TASW-IF-0002, Issue 4 B), this procedure loads the following parameters into specific OBDB offset locations in <b>RAM</b>:</p> <p><b>H_NOM_AUX_NULL_SPACE_OFFSET</b>            is at OBDB offset <b>1031</b>            This is located in <b>Block 5</b> of the OBDB</p> <p>This parameter is <b>not copied in SGM</b></p>		
11.3.1		Dump via DTM		<input type="checkbox"/>
		<p><u>Relevant details for use with H_FCP_AOC_DODD</u></p> <p>The following parameter  <b>H_NOM_AUX_NULL_SPACE_OFFSET</b>            is at OBDB offset <b>1031</b>            This is located in <b>Block 5</b> of the OBDB</p>		
		<u>Use sequence HFADODDE</u>		
		<p><i>NOTE:</i>            The contents of diagnostic packet A3DH0BDB5109 {DTM with Herschel OBDB data5} are spread over a group of 4 monitoring displays:</p> <p><b>ZAZ6G999 DTMOBDB5_1</b> &lt;- value is in this display            ZAZ6H999 DTMOBDB5_2            ZAZ6I999 DTMOBDB5_3            ZAZ6J999 DTMOBDB5_4</p>		
		<p><i>NOTE:</i>            This step enables diagnostic packets that contain data from specific blocks of the OBDB, where each block contains 250 onboard database parameters.</p> <p>The Herschel onboard database currently contains 2134 parameters and there are 8 diagnostic packets defined to cover the first 2000 entries. In HP-4-TASW-IF-0002 (ACC ASW_ICD) section 6.1 you can find a list of Herschel OBDB parameters ordered by offset.</p>		
11.3.2		Dump from RAM		<input type="checkbox"/>

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		<p>Relevant details for use with H FCP AOC DODD</p> <p>Based upon the latest ASW ICD (H-P-4-TASW-IF-0002, Issue 4 B), this procedure loads the following parameters into specific OBDB offset locations in RAM:</p> <p><b>H_NOM_AUX_NULL_SPACE_OFFSET</b>  is at OBDB offset 1031</p> <p>The <u>absolute address</u> of offset 1031 is therefore:  <b>020C = Memory ID</b>  <b>223C = Start Address</b></p>		
		<p><b>Use sequence HFADODDL</b>  to dump <u>all</u> the OBDB in RAM, or edit:  Start Address = <b>CF18</b>  Length = <b>8552</b></p>		
		<p><b>NOTE:</b>  The RAM memory address for a parameter with a given OBDB ID can be calculated as follows:  RAM address = OBDB start address + parameter offset;  OBDB start address = address of  Asw_DatabaseManager_Obj + 12;  parameter offset = OBDB ID * 4.</p> <p>Parameter ID's are listed in the ASW ICD (H-P-4-TASW-IF-002).</p> <p>Asw_Databasemanager_Obj is an ASW container structure used in the management of the OBDB and its address has to be obtained from the linker memory map valid for the software build currently used onboard.</p>		
11.3.3		Dump from SGM		□
		<p>Relevant details for use with H FCP AOC DODD</p> <p><b>This step can be ignored</b> - parameter not copied to SGM</p>		
		<p><b>NOTE:</b>  The address of a parameter with a given ID can be calculated as follows:</p> <p><b>SGMA</b>  Address = 0xBA0000 + (ParamID-1) * 4</p> <p><b>SGMB</b>  Address = 0xEA0000 + (ParamID-1) * 4</p> <p>Parameter ID's refer to the listing of SGM OBDB parameters in the ASW ICD (H-P-4-TASW-IF-0002) and are not the same as the ID's in the RAM OBDB.</p>		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch																								
<p>TC Seq. Name : AERWB_00 (Update RW Biasing)</p> <p>TimeTag Type: B            Sub Schedule ID: 20            Formal Parameter List :            Biasing H_RWS X HT_X= Nms            Biasing H_RWS Y HT_Y= Nms            Biasing H_RWS Z HT_Z= Nms</p>																												
12		Update RWL Bias Total - BiasPointing		Next Step: 18																								
	ET=TR+00.00.0 0 UT=+	<p>Execute Telecommand</p> <p style="text-align: center;"><b>Bias total RWS pointing</b></p> <p>Command Parameter(s) :</p> <table border="0"> <tr> <td>ASW Function ID</td> <td>AHFUN002</td> <td>Biasing (Def)</td> </tr> <tr> <td>Biasing AID Cmd</td> <td>AHFWB002</td> <td>BiasPointing</td> </tr> <tr> <td>Bias DF86 Cmd</td> <td>AH8E1002</td> <td>(Def)</td> </tr> <tr> <td>Bias DD86 Cmd</td> <td>AH8E2002</td> <td>Enable 86</td> </tr> <tr> <td>Biasing H_RWS X</td> <td>AHFWX002</td> <td>Enable 86</td> </tr> <tr> <td>Biasing H_RWS Y</td> <td>AHFWY002</td> <td>HT_X</td> </tr> <tr> <td>Biasing H_RWS Z</td> <td>AHFWZ002</td> <td>HT_Y</td> </tr> <tr> <td></td> <td></td> <td>HT_Z</td> </tr> </table> <p>TC Control Flags :</p> <p style="text-align: center;">GBM IL DSE --Y -- --</p> <p>Subsch. ID : 20            Det. descr. : TC_BIAS_TOTAL_RWS_point</p>	ASW Function ID	AHFUN002	Biasing (Def)	Biasing AID Cmd	AHFWB002	BiasPointing	Bias DF86 Cmd	AH8E1002	(Def)	Bias DD86 Cmd	AH8E2002	Enable 86	Biasing H_RWS X	AHFWX002	Enable 86	Biasing H_RWS Y	AHFWY002	HT_X	Biasing H_RWS Z	AHFWZ002	HT_Y			HT_Z	ACWP1002	
ASW Function ID	AHFUN002	Biasing (Def)																										
Biasing AID Cmd	AHFWB002	BiasPointing																										
Bias DF86 Cmd	AH8E1002	(Def)																										
Bias DD86 Cmd	AH8E2002	Enable 86																										
Biasing H_RWS X	AHFWX002	Enable 86																										
Biasing H_RWS Y	AHFWY002	HT_X																										
Biasing H_RWS Z	AHFWZ002	HT_Y																										
		HT_Z																										
		<p>NOTE:            ACMS ASW Release 4.0 has an error that returns the (8,6) packet with the FID=101 (ACMSMain) but should be FID=105 (Biasing).</p> <p>This is not a problem and should be fixed in any future release.</p>																										
<p>TC Seq. Name : NULL03 (Null Sequence 03)</p> <p>TimeTag Type:            Sub Schedule ID:            □</p>																												
13		Select TPF(RWS) for Reaction Wheel Bias Total - LongSlew		Next Step: 14																								
		Check with Flight Dynamics the <u>exact name of the TPF instance</u> to be unlinked																										
14		Verify RWL configuration		Next Step: 15																								

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry Curr RWLs use AES21002	<> RWL 1-2-3-4	AND=ZAA01999
		The long slew biasing option can only be used with configurations including three RWL's.		
15		Verify no peak-up pending		Next Step: 16
		Verify Telemetry Peak-upPending AESM2002	= FALSE	AND=ZAA01999
16		Verify no SSO pending		Next Step: 17
		Verify Telemetry SsoTrkPending AESM4002	= FALSE	AND=ZAA01999
<p>TC Seq. Name :AERWS_00 (RW BiasLongSlew)</p> <p>TimeTag Type: B            Sub Schedule ID: 20            Formal Parameter List :            Biasing H_RWS X HT_X= Nms            Biasing H_RWS Y HT_Y= Nms            Biasing H_RWS Z HT_Z= Nms</p>				
17		Update RWL Bias Total - BiasLongSlew		Next Step: 18
	ET=TR+00.00.00 UT=+	Execute Telecommand Bias total RWS long slw Command Parameter(s) : ASW Function ID AHFUN002 Biasing AID Cmd AHFWB002 Bias DF86 Cmd AH8E1002 Bias DD86 Cmd AH8E2002 Biasing H_RWS X AHFWX002 Biasing H_RWS Y AHFWY002 Biasing H_RWS Z AHFWZ002 TC Control Flags : GBM IL DSE --Y -- -- Subsch. ID : 20 Det. descr. : TC_BIAS_TOTAL_RWS_slew	ACWS1002	
		NOTE: ACMS ASW Release 4.0 has an error that returns the (8,6) packet with the FID=101 (ACMSMain) but should be FID=105 (Biasing). This is not a problem and should be fixed in any future release.		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
<p><i>TC Seq. Name :NULL04 (Null Sequence 04)</i></p> <p><i>TimeTag Type:</i>  <i>Sub Schedule ID:</i></p> <p>□</p>				
18		Monitor execution of command		Next Step: 19
		<p>For <u>bias during pointing</u> (BiasPointing), wait 30 seconds to allow the status of wheel biasing function to be reflected in TM</p> <p><b>OR</b></p> <p>For <u>bias during large slews</u> (BiasLongSlew) Wait until the coasting of the slew executed in response to the next pointing command</p>		
		Verify Telemetry <b>SCMBiasActive                      AESM7002</b>	<b>= TRUE</b>	AND=ZAA01999
		Progress of unloading can be monitored by checking the value of inertial angular momentum derived from SCM MTM data, which should converge towards the commanded angular momentum target.		
18.1		Verify RWLs data validity		□
		Verify Telemetry <b>RWL 1                      AES5K002</b>	<b>= TRUE</b>	AND=ZAZ80999
		Verify Telemetry <b>RWL 2                      AES5L002</b>	<b>= TRUE</b>	AND=ZAZ80999
		Verify Telemetry <b>RWL 3                      AES5M002</b>	<b>= TRUE</b>	AND=ZAZ80999
		Verify Telemetry <b>RWL 4                      AES5N002</b>	<b>= TRUE</b>	AND=ZAZ80999
18.2		Verify RWLs biasing as commanded (total RWL angular momentum in Inertial Frame)		□
		Verify Telemetry <b>Est total H X                      AESHX001</b>	<b>(as commanded)</b>	(None)
		Verify Telemetry <b>Est total H Y                      AESHY001</b>	<b>(as commanded)</b>	(None)
		Verify Telemetry <b>Est total H Z                      AESHZ001</b>	<b>(as commanded)</b>	(None)

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
18.3		Verify RWLs biasing as commanded (speed, direction, current etc)		<input type="checkbox"/>
		Verify Telemetry RWL1 Health Sts                    AES45002	= Healthy	AND=ZAA02999
		Verify Telemetry RWL2 Health Sts                    AES46002	= Healthy	AND=ZAA02999
		Verify Telemetry RWL3 Health Sts                    AES47002	= Healthy	AND=ZAA02999
		Verify Telemetry RWL4 Health Sts                    AES48002	= Healthy	AND=ZAA02999
		Verify Telemetry RWL1 tacho ovr                    AEW1C002	= NO OVERFLOW	AND=ZAA04999
		Verify Telemetry RWL2 tacho ovr                    AEW2C002	= NO OVERFLOW	AND=ZAA04999
		Verify Telemetry RWL3 tacho ovr                    AEW3C002	= NO OVERFLOW	AND=ZAA05999
		Verify Telemetry RWL4 tacho ovr                    AEW4C002	= NO OVERFLOW	AND=ZAA05999
		Verify Telemetry RWL1 tacho Sign                    AEW1B002	= CW	AND=ZAA04999
		Verify Telemetry RWL2 tacho Sign                    AEW2B002	= CW	AND=ZAA05999
		Verify Telemetry RWL3 tacho Sign                    AEW3B002	= CCW	AND=ZAA05999
		Verify Telemetry RWL4 tacho Sign                    AEW4B002	= CCW	AND=ZAA05999
		Verify Telemetry RWL1 tacho spd                    AEW1A002		AND=ZAA04999
		Verify Telemetry RWL2 tacho spd                    AEW2A002		AND=ZAA05999
		Verify Telemetry RWL3 tacho spd                    AEW3A002		AND=ZAA05999
		Verify Telemetry RWL4 tacho spd                    AEW4A002		AND=ZAA05999
		NOTE: The following TM is only visible in SCM and so are not applicable if the procedure is run in other operative modes (e.g. OCM)		
		Verify Telemetry RWL1 Treq torq                    AEWTE002		AND=ZAA51999

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry RWL2 Treq torq AEWTH002		AND=ZAA51999
		Verify Telemetry RWL3 Treq torq AEWTL002		AND=ZAA51999
		Verify Telemetry RWL4 Treq torq AEWTP002		AND=ZAA51999
		Verify Telemetry RWL1 torque req AEWT1002		AND=ZAA51999
		Verify Telemetry RWL2 torque req AEWT2002		AND=ZAA51999
		Verify Telemetry RWL3 torque req AEWT3002		AND=ZAA51999
		Verify Telemetry RWL4 torque req AEWT4002		AND=ZAA51999
		Verify Telemetry RWL1 Treq dir AEWTF002		AND=ZAA51999
		Verify Telemetry RWL2 Treq dir AEWTJ002		AND=ZAA51999
		Verify Telemetry RWL3 Treq dir AEWTM002		AND=ZAA51999
		Verify Telemetry RWL4 Treq dir AEWTR002		AND=ZAA51999
		NOTE: The following TM is only visible if DTM is enabled		
		Verify Telemetry RWL1 motor cur AMWC1091		AND=AA01W109
		Verify Telemetry RWL2 motor cur AMWC2092		AND=AA01W109
		Verify Telemetry RWL3 motor cur AMWC3093		AND=AA01W109
		Verify Telemetry RWL4 motor cur AMWC4094		AND=AA01W109
		Verify Telemetry RWLTorq 1 sign AEFW1002	= CW	AND=ZAAL6999
		Verify Telemetry RWLTorq 2 sign AEFW3002	= CW	AND=ZAAL6999
		Verify Telemetry RWLTorq 3 sign AEFW5002	= CCW	AND=ZAAL6999
		Verify Telemetry RWLTorq 4 sign AEFW7002	= CCW	AND=ZAAL6999

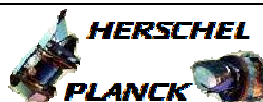


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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry RWLTorq 1 size                    AEFW2002		AND=ZAAL6999
		Verify Telemetry RWLTorq 2 size                    AEFW4002		AND=ZAAL6999
		Verify Telemetry RWLTorq 3 size                    AEFW6002		AND=ZAAL6999
		Verify Telemetry RWLTorq 4 size                    AEFW8002		AND=ZAAL6999
		Verify Telemetry RWL1 TrqTgt Nm                    AE3EG002		AND=ZAAF2999
		Verify Telemetry RWL2 TrqTgt Nm                    AE3EH002		AND=ZAAF2999
		Verify Telemetry RWL3 TrqTgt Nm                    AE3EJ002		AND=ZAAF2999
		Verify Telemetry RWL4 TrqTgt Nm                    AE3EK002		AND=ZAAF2999
		Verify Telemetry RWL1 Unl MomTgt                    AE3EU002		AND=ZAZ80999
		Verify Telemetry RWL2 Unl MomTgt                    AE3EV002		AND=ZAZ80999
		Verify Telemetry RWL3 Unl MomTgt                    AE3EW002		AND=ZAZ80999
		Verify Telemetry RWL4 Unl MomTgt                    AE3EX002		AND=ZAZ80999
<p>TC Seq. Name :HFA4R20B (Remove DTM)</p> <p>TimeTag Type: N            Sub Schedule ID: 20</p> <p style="text-align: center;">□</p>				
19		Remove DTM (pkt_id=43/112/119)		Next Step: 20
19.1		Remove DTM (pkt_id=112)		□
19.1.1		Disable TM generation for Diagnostic TM packet (3,26): A3DHRWLS - Spid 18012109 - SID 20012 pkt_id = 112		□

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand <b>DisableTmGen</b>  Command Parameter(s) : N          AH017070 Sub-Type      AH019070 Packet-ID      AH020070  TC Control Flags :  GBM IL DSE --Y -- ---  Subsch. ID : 20 Det. descr. : Disable Generation of Telemetry Packets	AC902070  1 <dec> (Def) Diag Report 112 <dec>	
19.1.2		Clear Definition of Diagnostic TM packet (3,26): A3DHRWLS - Spid 18012109 - SID 20012 pkt_id = 112		<input type="checkbox"/>
		Execute Telecommand <b>ClearDiagParReportDef</b>  Command Parameter(s) : N          AH030070 HK_PKT_ID      AH031070  TC Control Flags :  GBM IL DSE --Y -- ---  Subsch. ID : 20 Det. descr. : Clear Diagnostic Parameter Report Definitions	AC301070  1 <dec> (Def) 112 <dec>	
19.2		Remove DTM (pkt_id=119)		<input type="checkbox"/>
19.2.1		Disable TM generation for Diagnostic TM packet (3,26): A3DHRWLTgts - Spid 18019109 - SID 20019 pkt_id = 119  <input type="checkbox"/>		<input type="checkbox"/>
		Execute Telecommand <b>DisableTmGen</b>  Command Parameter(s) : N          AH017070 Sub-Type      AH019070 Packet-ID      AH020070  TC Control Flags :  GBM IL DSE --Y -- ---  Subsch. ID : 20 Det. descr. : Disable Generation of Telemetry Packets	AC902070  1 <dec> (Def) Diag Report 119 <dec>	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
19.2.2		Clear Definition of Diagnostic TM packet (3,26): A3DHRWLTgts - Spid 18019109 - SID 20019 pkt_id = 119  <input type="checkbox"/>		<input type="checkbox"/>
		Execute Telecommand  ClearDiagParReportDef  Command Parameter(s) : N                  AH030070 HK_PKT_ID          AH031070  TC Control Flags :  GBM IL DSE --Y -- ---  Subsch. ID : 20 Det. descr. : Clear Diagnostic Parameter Report Definitions	AC301070  1 <dec> (Def) 119 <dec>	
19.3		Remove DTM (pkt_id=43)		<input type="checkbox"/>
19.3.1		Disable TM generation for Diagnostic TM packet (3,26): TC32H PERF AIT 1 - Spid 11691109 - SID 4016 pkt_id = 43		<input type="checkbox"/>
		Execute Telecommand  DisableTmGen  Command Parameter(s) : N                  AH017070 Sub-Type          AH019070 Packet-ID          AH020070  TC Control Flags :  GBM IL DSE --Y -- ---  Subsch. ID : 20 Det. descr. : Disable Generation of Telemetry Packets	AC902070  1 <dec> (Def) Diag Report 43 <dec>	
19.3.2		Clear Definition of Diagnostic TM packet (3,26): TC32H PERF AIT 1 - Spid 11691109 - SID 4016 pkt_id = 43		<input type="checkbox"/>

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand <p style="text-align: right;"><b>ClearDiagParReportDef</b></p> Command Parameter(s) : N                  AH030070 HK_PKT_ID      AH031070  TC Control Flags : GBM IL DSE --Y -- ---  Subsch. ID : 20 Det. descr. : Clear Diagnostic Parameter Report Definitions	AC301070  1 <dec> (Def) 43 <dec>	
TC Seq. Name : NULL05 (Null Sequence 05)				
TimeTag Type: Sub Schedule ID:  <input type="checkbox"/>				
20		IF catbed heaters must be OFF in SCM		Next Step: THEN 21 ELSE END
TC Seq. Name : HFA4R20C (RCS heat OFF)				
TimeTag Type: Sub Schedule ID: 20  <input type="checkbox"/>				
21		Switch off RCS heaters		Next Step: END
		Verify Telemetry <p style="text-align: center;">Nom Conf RCS                  AESCf002</p> = RCS-A = RCS-B		AND=ZAA01999
21.1		Switch OFF thruster heaters for RCS-A, if used		<input type="checkbox"/>
		Execute Telecommand <p style="text-align: right;"><b>All HTR RCS-A OFF</b></p> Command Parameter(s) : RCSCfg DF86 Cmd          AH8R3001 RCSCfg DD86 Cmd          AH8R4001  TC Control Flags : GBM IL DSE --Y -- ---  Subsch. ID : 20 Det. descr. : TC(8,1) Command RCS config - Herschel All HTR RCS-A OFF	ACZE6109  Enable 86 Enable 86	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand  <b>Fire Cmd RCS config</b>  Command Parameter(s) : <b>FireFun DF86Cmd</b> <b>AH8F1001</b> <b>FireFun DD86Cmd</b> <b>AH8F2001</b>  TC Control Flags : <b>GBM IL DSE</b> <b>--Y -- ---</b>  Subsch. ID : 20 Det. descr. : TC(8,4) Fire Command - Fire Cmd RCS config	<b>ACZ2M109</b>  <b>Enable 86</b> <b>Enable 86</b>	
21.2		Switch OFF thruster heaters for RCS-B, if used		<input type="checkbox"/>
		Execute Telecommand  <b>All HTR RCS-B OFF</b>  Command Parameter(s) : <b>RCSCfg DF86 Cmd</b> <b>AH8R3001</b> <b>RCSCfg DD86 Cmd</b> <b>AH8R4001</b>  TC Control Flags : <b>GBM IL DSE</b> <b>--Y -- ---</b>  Subsch. ID : 20 Det. descr. : TC(8,1) Command RCS config - Herschel All HTR RCS-B OFF	<b>ACZE7109</b>  <b>Enable 86</b> <b>Enable 86</b>	
		Execute Telecommand  <b>Fire Cmd RCS config</b>  Command Parameter(s) : <b>FireFun DF86Cmd</b> <b>AH8F1001</b> <b>FireFun DD86Cmd</b> <b>AH8F2001</b>  TC Control Flags : <b>GBM IL DSE</b> <b>--Y -- ---</b>  Subsch. ID : 20 Det. descr. : TC(8,4) Fire Command - Fire Cmd RCS config	<b>ACZ2M109</b>  <b>Enable 86</b> <b>Enable 86</b>	
21.3		Check RCS catbed heater status & current		<input type="checkbox"/>
		Verify Telemetry  <b>CBH_N_L17_S</b> <b>WMA2H565</b>	<b>= ON</b>	<b>AND=WALC1584</b>
		Verify Telemetry  <b>CBH_N_L17_I</b> <b>WMA13565</b>	<b>(value reduces)</b>	<b>AND=WALC1584</b>
		Verify Telemetry  <b>CBH_R_L18_S</b> <b>WM12H565</b>	<b>= ON</b>	<b>AND=WALC1584</b>
		Verify Telemetry  <b>CBH_R_L18_I</b> <b>WM113565</b>	<b>(value reduces)</b>	<b>AND=WALC1584</b>

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
21.4		Verify decreasing catbed temps for MAIN branch		□
		Observe <u>decreasing values</u> of the catbed temperatures		
		Verify Telemetry A1D1 Ttemp act                    AETTA001		AND=ZAA04999
		Verify Telemetry A2D2 Ttemp act                    AETTB001		AND=ZAA04999
		Verify Telemetry C1F1 Ttemp act                    AETTC001		AND=ZAA04999
		Verify Telemetry C2F2 Ttemp act                    AETTD001		AND=ZAA04999
		Verify Telemetry C3U1 Ttemp act                    AETTE001		AND=ZAA04999
		Verify Telemetry C4U2 Ttemp act                    AETTF001		AND=ZAA04999
<b>End of Procedure</b>				