

Procedure for SCM Fine Pointing
File: H_FCP_AOC_OSCM.xls
Author: dsalt-hp



Procedure Summary

Objectives

The objective of this Herschel ACMS procedure is for the routine execution of single target pointings in SCM.

The procedure involves the following activities:

- check ACMS configuration
- disable TC checks on RCS mode and GYR health
- select & uplink the Fine Pointing command
- verify slew start
- verify pointing an interlacing, if necessary
- enable TC checks on RCS mode and GYR health

NOTE: Procedures for first entry into SCM and return to SCM after an orbit correction manoeuvre are specified separately and call this procedure to execute the necessary command.

Summary of Constraints

Prior to execution in routine operations, the ACMS must be in conditions which will prevent the triggering of TC execution checks.

All necessary conditions are verified by calling procedure Verify SCM Configuration, which carries out the following checks:

1. ACMS in SCM and pointing.
2. ACMS configuration allows execution of SCM pointing commands; i.e., the following conditions must be satisfied:
 - 2.1. No SIR
 - 2.2. No CIR
 - 2.3. No critical TC flag raised.
3. Unit configuration is sufficient to carry out an SCM pointing. The procedure accepts any valid unit configuration for SCM and is not limited to the defaults (RWL 1-2-3-4, GYR 1-2-3, STR1),
 - 3.1 One STR in active configuration, powered and healthy. STR mode = AAD, STR submode = ATFAD.
 - 3.2 At least three wheels in active configuration, powered and healthy
 - 3.3 One GYRE selected, powered and healthy.
 - 3.4 Three GYR sensors in active configuration are healthy

[N.B. Flight Dynamics ensure no wheel unloading when defining their TC inputs]

Spacecraft Configuration

Start of Procedure

Type Pre-condition Here

End of Procedure

Type Post-condition Here

Reference File(s)

Input Command Sequences

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Output Command Sequences

HFA0SCMA
 NULL02
 HFA0SCMX
 HFA0SCMB

Referenced Displays

ANDs	GRDs	SLDs
ZAA06999		(None)
ZAZ6C999		
ZAA01999		
ZAA50999		
ZAA52999		

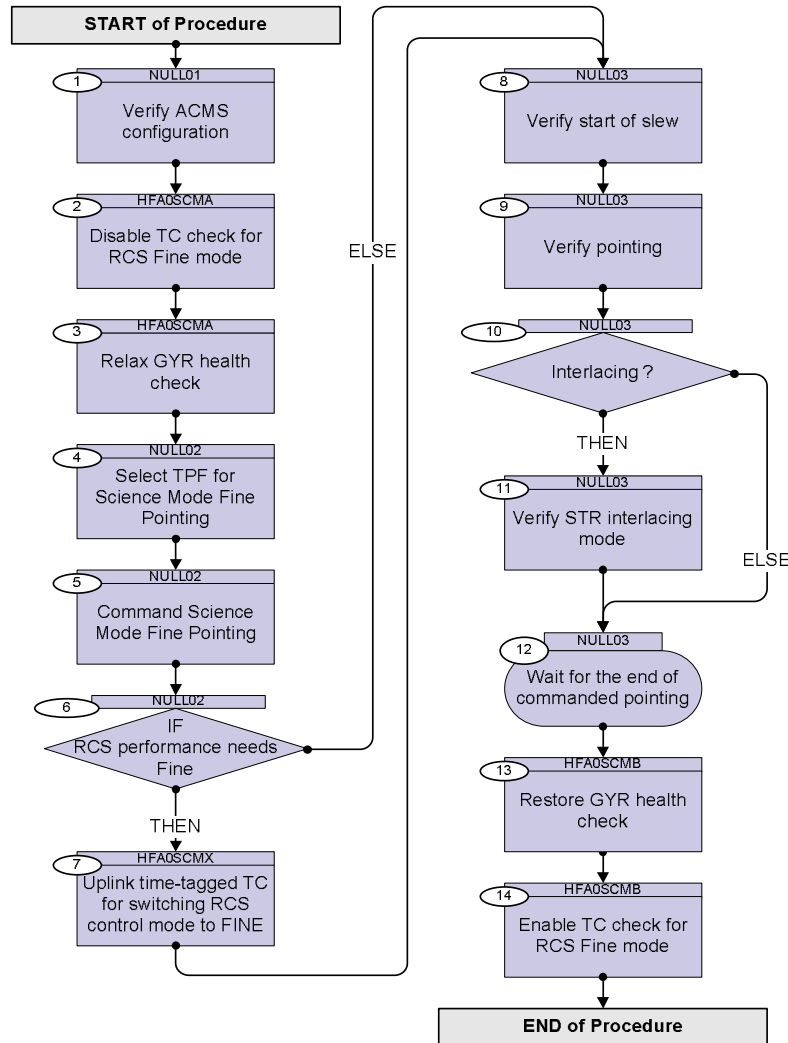
Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
24/03/09		1	Created	dsalt-hp	
24/03/09	2.2	2	Procedure name change only	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 : NULL01 (Null Sequence 01) TimeTag Type: Sub Schedule ID: <input type="checkbox"/>				
1		Verify ACMS configuration		Next Step: 2
		Check suitable configuration for SCM pointing by calling procedure Verify SCM Configuration		
		Execute Procedure: H_FCP_AOC_3001 Verify SCM Configuration		
TC Seq. Name : HFA0SCMA (DisableTC_GYRcheck) TimeTag Type: N Sub Schedule ID: <input type="checkbox"/>				
2		Disable TC check for RCS Fine mode		Next Step: 3
		NOTE: The following TCs are part of the set to allow direct transition to SCM from OCM Coarse mode		
		Verify Telemetry SGM TC Chk Sts AE3U0002	<to be read>	AND=ZAA06999
		Execute Telecommand DisChkMode-StateFID 101 Command Parameter(s) : DisChk DF86Cmd AH8C1001 Enable 86 DisChk DD86Cmd AH8C2001 Enable 86 TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 20 Det. descr. : TC(8,1) - Disable Command check - DisChkMode-StateFID 101	ACY8P109	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand <div style="text-align: right;">Fire Disable Check</div> Command Parameter(s) : FireFun DF86Cmd AH8F1001 Enable 86 FireFun DD86Cmd AH8F2001 Enable 86 TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 20 Det. descr. : TC(8,4) Fire Command - Fire Disable Check	ACZ7M109	
		Verify Telemetry <div style="text-align: center;">SGM TC Chk Sts AE3U0002</div>	<note change>	AND-ZAA06999
3		Relax GYR health check		Next Step: 4
		NOTE: The following TCs are part of the set to allow direct transition to SCM from OCM Coarse mode		
3.1		Uplink commands to restore default OBDB values for the GYR health check parameters		<input type="checkbox"/>
		NOTE: These OBDB parameters and their updated values are specified in Step 19 in Section 2.1.2.7 of H-P-4-DS-MA-007 (Issue 2, Rev.5)		
3.1.1		Activate loading		<input type="checkbox"/>
		Execute Telecommand <div style="text-align: right;">Start database loading</div> Command Parameter(s) : ASW Function ID AHFUN001 DB loading (Def) DbLoad DF86 Cmd AH8D1001 Enable 86 DbLoad DD86 Cmd AH8D2001 Enable 86 DbLoad Nr Cmds AHFDL001 2 <dec> TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 20 Det. descr. : TC_START_DATABASE_LOAD	ACDS1001	
		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.		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
3.1.2		Load values		<input type="checkbox"/>
		Execute Telecommand <p style="text-align: right;">Load databaseReal</p> ACZTY109 <i>Command Parameter(s) :</i> DbLoad DF86 Cmd AH8D1001 Enable 86 DbLoad DD86 Cmd AH8D2001 Enable 86 DbLoad StartInd AHFDS001 757 <dec> DbLoad Nr Wrds AHFDN001 1 <dec> (Def) DbLoad Dwd Real AHFDZ001 0.011 <dec> <i>TC Control Flags :</i> <p style="text-align: right;">GBM IL DSE --Y -- ---</p> Subsch. ID : 20 Det. descr. : TC(8,4) - Load database Real		
		Execute Telecommand <p style="text-align: right;">Load databaseReal</p> ACZTY109 <i>Command Parameter(s) :</i> DbLoad DF86 Cmd AH8D1001 Enable 86 DbLoad DD86 Cmd AH8D2001 Enable 86 DbLoad StartInd AHFDS001 758 <dec> DbLoad Nr Wrds AHFDN001 1 <dec> (Def) DbLoad Dwd Real AHFDZ001 0.0062 <dec> <i>TC Control Flags :</i> <p style="text-align: right;">GBM IL DSE --Y -- ---</p> Subsch. ID : 20 Det. descr. : TC(8,4) - Load database Real		
3.1.3		Activate values		<input type="checkbox"/>
		Execute Telecommand <p style="text-align: right;">Fire critical command</p> ACFC1001 <i>Command Parameter(s) :</i> FireFun DF86Cmd AH8F1001 Enable 86 FireFun DD86Cmd AH8F2001 Enable 86 FireFun CritFID AHFFH001 201 <dec> <i>TC Control Flags :</i> <p style="text-align: right;">GBM IL DSE --Y -- ---</p> Subsch. ID : 20 Det. descr. : TC_FIRE_COMMAND		
3.2		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>NOTE: 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 3 G), this procedure loads the following parameters into specific OBDB offset locations in RAM:</p> <p>H_SCM_FDIR_GYR_MAX_INCR_UNH_RWL is at OBDB offset 757</p> <p>H_SCM_FDIR_GYR_MAX_INCR_UNAV_RWL is at OBDB offset 758</p> <p>These are located in Block 4 of the OBDB</p> <p>It also copies the following parameters into specific OBDB offset locations in SGM</p> <p>H_SCM_FDIR_GYR_MAX_INCR_UNH_RWL to offset 149</p> <p>H_SCM_FDIR_GYR_MAX_INCR_UNAV_RWL to offset 148</p>		
3.2.1		Dump via DTM		□
		<p><u>Relevant details for use with H FCP AOC DODD</u></p> <p>The following parameters</p> <p>H_SCM_FDIR_GYR_MAX_INCR_UNH_RWL is at OBDB offset 757</p> <p>H_SCM_FDIR_GYR_MAX_INCR_UNAV_RWL is at OBDB offset 758</p> <p>These are located in Block 4 of the OBDB</p>		
		<u>Use sequence HFADODDD</u>		
		<p>NOTE: The contents of diagnostic packet A3DH0BDB4109 {DTM with Herschel OBDB data4} are spread over a group of 4 monitoring displays:</p> <p>ZAZ6C999 DTMOBDB4_1 <- values are in this display ZAZ6D999 DTMOBDB4_2 ZAZ6E999 DTMOBDB4_3 ZAZ6F999 DTMOBDB4_4</p>		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		<p>NOTE: 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>		
		<p>Verify Telemetry HScmGyrUnhRwl AEDYU002</p>	= 0.011 <dec>	AND=ZAZ6C999
		<p>Verify Telemetry HScmGyrUnavRwl AEDYV002</p>	= 0.0062 <dec>	AND=ZAZ6C999
3.2.2		Dump from RAM		☐
		<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 3 G), this procedure loads the following parameters into specific OBDB offset locations in RAM:</p> <p>H_SCM_FDIR_GYR_MAX_INCR_UNH_RWL is at OBDB offset 757</p> <p>H_SCM_FDIR_GYR_MAX_INCR_UNAV_RWL is at OBDB offset 758</p> <p>The <u>absolute address</u> of offset 757 is therefore: 020A = Memory ID DAEC = Start Address</p> <p>The <u>absolute address</u> of offset 758 is therefore: 020A = Memory ID DAF0 = Start Address</p>		
		<p><u>Use sequence HFADODDL</u> to dump <u>all</u> the OBDB in RAM, or edit: Start Address = CF18 Length = 8552</p>		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		<p>NOTE: 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>		
3.2.3		Dump from SGM		□
		<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 3 G), this procedure copies the following parameters into specific OBDB offset locations in SGM</p> <p>H_SCM_FDIR_GYR_MAX_INCR_UNH_RWL to offset 149</p> <p>H_SCM_FDIR_GYR_MAX_INCR_UNAV_RWL to offset 148</p> <p>The <u>absolute address</u> of offset 149 is therefore: BA0250 in SGA EA0250 in SGB</p> <p>The <u>absolute address</u> of offset 148 is therefore: BA024C in SGA EA024C in SGB</p>		
		<p><u>Use sequences HFADODDJ & HFADODDK</u> to dump <u>all</u> the OBDB in SGMA & SGMB, or edit: Start Address = BA08C / EA008C Length = 224</p>		
		<p>NOTE: The address of a parameter with a given ID can be calculated as follows:</p> <p>SGMA Address = 0xBA0000 + (ParamID-1) * 4</p> <p>SGMB 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 : NULL02 (Null Sequence 02)</p> <p>TimeTag Type: B Sub Schedule ID: Formal Parameter List :</p> <pre> AcmsH STR IL STRILACE= AcmsH Cmd TQ1r Q_FIN_X= <dec> AcmsH Cmd TQ2r Q_FIN_Y= <dec> AcmsH Cmd TQ3r Q_FIN_Z= <dec> AcmsH Cmd TQ4r Q_FIN_S= <dec> AcmsH T_slew T_SLEW= s AcmsH T_p T_POINT= s </pre>				
4		Select TPF for Science Mode Fine Pointing		Next Step: 5
		Check with Flight Dynamics the exact name of the TPF instance to be uplinked		
		<p>NOTE: The decision whether or not interlacing is to be used is taken off-line and is defined within the TPF instance delivered by Flight Dynamics.</p> <p>The selection defined within the TPF determines the execution of some verification steps.</p>		
		<p>NOTE: Flight Dynamics check that RWL profiles will not exceed any constraints during the manoeuvre (i.e. the wheel momenta should be sufficient to stay within allowed boundaries during the entire operation) when generating this TPF.</p> <p>If there is a likelihood of this happening, they will also provide an associated wheel bias TPF (RWB), to be applied beforehand (i.e. via H_SVT_AOC_4R20)</p>		
5		Command Science Mode Fine Pointing		Next Step: 6
		<p>Execute Telecommand</p> <p style="text-align: center;">SCM Fine pointing</p> <p>Command Parameter(s) :</p> <pre> ASW Function ID AHFUN002 ACMSMain (Def) AcmsH AID Cmd AHHF0002 SCM prep pnt AcmsH DF86 Cmd AH8G1002 (Def) AcmsH DD86 Cmd AH8G2002 Enable 86 AcmsH STR IL AHXL002 Enable 86 AcmsH Cmd TQ1r AHHC6002 STRILACE AcmsH Cmd TQ2r AHHC7002 Q_FIN_X AcmsH Cmd TQ3r AHHC8002 Q_FIN_Y AcmsH Cmd TQ4r AHHC9002 Q_FIN_Z AcmsH T_slew AHHD1002 Q_FIN_S AcmsH T_p AHHD2002 T_SLEW AHHD2002 T_POINT </pre>	ACAF1002	

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		TC Control Flags : <div style="text-align: right;">GBM IL DSE --Y -- ---</div> Subsch. ID : 20 Det. descr. : TC_PERFORM_SCM_FINE_POINTING This Telecommand will not be included in the export		
6		IF RCS performance needs Fine		Next Step: THEN 7 ELSE 8
TC Seq. Name : HFA0SCMX (RCSto FineMode) TimeTag Type: N Sub Schedule ID: <input type="checkbox"/>				
7		Uplink time-tagged TC for switching RCS control mode to FINE		Next Step: 8
		WARNING: The following TC must be time-tagged with an execution time at least <u>exactly 21 seconds before</u> the time-tag given in the TPF=SFP, used in the previous step. These TCs are <u>uplinked in reverse Execution Time (ET) order</u> to avoid having the S/C stay in OCM with RCS in Fine mode, should the TC link drop before both can be uplinked. N.B. Staying in OCM with RCS in Fine pointing will cause severe use of propellant and so end the mission!		
		Execute Telecommand <div style="text-align: right;">Set RCS control fine</div> Command Parameter(s) : <div style="display: flex; justify-content: space-between;"> <div>RCSCtlSelDF86Cm</div> <div>AH8H1002</div> <div>Enable 86</div> </div> <div style="display: flex; justify-content: space-between;"> <div>RCSCtlSelDD86Cm</div> <div>AH8H2002</div> <div>Enable 86</div> </div> TC Control Flags : <div style="text-align: right;">GBM IL DSE --Y -- ---</div> Subsch. ID : 20 Det. descr. : TC(8,1) - Set RCS control fine	ACZ6Z109	
		Wait 30 seconds to allow the RCS control status to be reflected in telemetry		
		Verify Telemetry <div style="display: flex; justify-content: space-between;"> <div>AcmsMain AID</div> <div>AESM3002</div> <div>= OCM point fine</div> </div>		AND=ZAA01999

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch										
<p><i>TC Seq. Name :NULL03 (Null Sequence 03)</i></p> <p><i>TimeTag Type:</i> <i>Sub Schedule ID:</i></p> <p style="text-align: center;">□</p>														
8		Verify start of slew		Next Step: 9										
		Verify Packet Reception AccAsw TM_5_1_16427 - New mode_state Packet Details: <table style="margin-left: 20px;"> <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>16427</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	512	Type:	5	Subtype:	1	PI1:	16427	PI2:	0	A51CSTATE109	
APID:	512													
Type:	5													
Subtype:	1													
PI1:	16427													
PI2:	0													
		Verify Packet Telemetry (Pkt = A51CSTATE109) <table style="margin-left: 20px;"> <tr> <td>Substate Event</td> <td>AE5ST109</td> <td>= SCM Tracking</td> <td>AND=ZAALH999</td> </tr> </table>	Substate Event	AE5ST109	= SCM Tracking	AND=ZAALH999								
Substate Event	AE5ST109	= SCM Tracking	AND=ZAALH999											
		<p><i>The event packet indicates the start of slew as a change of substate.</i></p> <p><i>The change of substate occurs as soon as the slew path has been calculated by the path planner.</i></p> <p><i>The verification of the reception of the event packet may therefore be omitted and verification steps below can be executed as soon as the TC is acknowledged through TM(1,1).</i></p>												
9		Verify pointing		Next Step: 10										
		Verify Telemetry <table style="margin-left: 20px;"> <tr> <td>AcmsSubstate</td> <td>AESMF002</td> <td>= SCM Pointing</td> <td>AND=ZAA50999</td> </tr> </table>	AcmsSubstate	AESMF002	= SCM Pointing	AND=ZAA50999								
AcmsSubstate	AESMF002	= SCM Pointing	AND=ZAA50999											
		Verify Telemetry <table style="margin-left: 20px;"> <tr> <td>AcmsMain AID</td> <td>AESM3002</td> <td>= SCM pnt F rdy</td> <td>AND=ZAA01999</td> </tr> </table>	AcmsMain AID	AESM3002	= SCM pnt F rdy	AND=ZAA01999								
AcmsMain AID	AESM3002	= SCM pnt F rdy	AND=ZAA01999											
		Verify Telemetry <table style="margin-left: 20px;"> <tr> <td>ScmType</td> <td>AESMC002</td> <td>= Point</td> <td>AND=ZAA50999</td> </tr> </table>	ScmType	AESMC002	= Point	AND=ZAA50999								
ScmType	AESMC002	= Point	AND=ZAA50999											
		Verify Telemetry <table style="margin-left: 20px;"> <tr> <td>OnTargetFlag</td> <td>AESM0002</td> <td>= HIGH</td> <td>AND=ZAA50999</td> </tr> </table>	OnTargetFlag	AESM0002	= HIGH	AND=ZAA50999								
OnTargetFlag	AESM0002	= HIGH	AND=ZAA50999											
		Verify Telemetry <table style="margin-left: 20px;"> <tr> <td>ACMS Main AID</td> <td>AE5A0001</td> <td>= SCM Point Fine</td> <td>(None)</td> </tr> </table>	ACMS Main AID	AE5A0001	= SCM Point Fine	(None)								
ACMS Main AID	AE5A0001	= SCM Point Fine	(None)											

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		The checks above are specified assuming that the commanded slew time was sufficient to cover the duration of both the rotation determined by the ASW path planner and the settling of the controller. If mission planners specify pointings with shorter slew times <u>only the check on AcmsSubstate should be executed</u> and all other checks should be omitted (AcmsSubstate is switched at the end of the path planner-controlled phase of the slew and all other status indicators change value only after settling).		
		Verify Telemetry STRM Mode AEX04001	= Auto attdetect	AND=ZAA50999
		Verify Telemetry STRM Submode AEX03001	= STB nom ATFAD	AND=ZAA50999
10		<i>Interlacing ?</i>		Next Step: THEN 11 ELSE 12
11		<i>Verify STR interlacing mode</i>		Next Step: 12
		Verify Telemetry InterlacingSts AESMX002	= Interlacing ON	AND=ZAA50999
		Verify Telemetry STRM IL sts AEXJ1002	= IL active	AND=ZAA52999
12		<i>Wait for the end of commanded pointing</i>		Next Step: 13
		Verify Packet Reception AccAsw TM_5_1_16441 - Mode Timedevent Packet Details: APID: 512 Type: 5 Subtype: 1 PI1: 16441 PI2: 0	A51T1MEVE109	
		Verify Packet Telemetry (Pkt = A51T1MEVE109) Time_Id AE5FG109	= Time Id Tp	AND=ZAALH999
TC Seq. Name :HFA0SCMB (EnableTC_GYRcheck)				
TimeTag Type: Y Sub Schedule ID: <input type="checkbox"/>				
13		<i>Restore GYR health check</i>		Next Step: 14

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
13.1		Uplink commands to restore default OBDB values for the GYR health check parameters		<input type="checkbox"/>
		NOTE: These OBDB parameters and their updated values are specified in Step 19 in Section 2.1.2.7 of H-P-4-DS-MA-007 (Issue 2, Rev.5)		
13.1.1		Activate loading		<input type="checkbox"/>
	ET=TR+01.00.00 UT=+	Execute Telecommand Start database loading Command Parameter(s) : ASW Function ID AHFUN001 DbLoad DF86 Cmd AH8D1001 DbLoad DD86 Cmd AH8D2001 DbLoad Nr Cmds AHFDL001 TC Control Flags : Subsch. ID : 20 Det. descr. : TC_START_DATABASE_LOAD	ACDS1001 DB loading (Def) Enable 86 Enable 86 2 <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.		
13.1.2		Load values		<input type="checkbox"/>
		Execute Telecommand Load databaseReal Command Parameter(s) : DbLoad DF86 Cmd AH8D1001 DbLoad DD86 Cmd AH8D2001 DbLoad StartInd AHFDS001 DbLoad Nr Wrds AHFDN001 DbLoad Dwd Real AHFDZ001 TC Control Flags : Subsch. ID : 20 Det. descr. : TC(8,4) - Load database Real	ACZTY109 Enable 86 Enable 86 757 <dec> 1 <dec> (Def) 0.00011 <dec>	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand <p style="text-align: right;">Load databaseReal</p> Command Parameter(s) : DbLoad DF86 Cmd AH8D1001 Enable 86 DbLoad DD86 Cmd AH8D2001 Enable 86 DbLoad StartInd AHFDS001 758 <dec> DbLoad Nr Wrds AHFDN001 1 <dec> (Def) DbLoad Dwd Real AHFDZ001 0.000066 <dec>	ACZTY109	
		TC Control Flags : <p style="text-align: right;">GBM IL DSE --Y -- ---</p> Subsch. ID : 20 Det. descr. : TC(8,4) - Load database Real		
13.1.3		Activate values		□
		Execute Telecommand <p style="text-align: right;">Fire critical command</p> Command Parameter(s) : FireFun DF86Cmd AH8F1001 Enable 86 FireFun DD86Cmd AH8F2001 Enable 86 FireFun CritFID AHFFH001 201 <dec>	ACFC1001	
		TC Control Flags : <p style="text-align: right;">GBM IL DSE --Y -- ---</p> Subsch. ID : 20 Det. descr. : TC_FIRE_COMMAND		
13.2		Call procedure H_FCP_AOC_DODD Generic OBDB Dump		□
		NOTE: 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		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		<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 3 G), this procedure loads the following parameters into specific OBDB offset locations in RAM:</p> <p>H_SCM_FDIR_GYR_MAX_INCR_UNH_RWL is at OBDB offset 757</p> <p>H_SCM_FDIR_GYR_MAX_INCR_UNAV_RWL is at OBDB offset 758</p> <p>These are located in Block 4 of the OBDB</p> <p>It also copies the following parameters into specific OBDB offset locations in SGM</p> <p>H_SCM_FDIR_GYR_MAX_INCR_UNH_RWL to offset 149</p> <p>H_SCM_FDIR_GYR_MAX_INCR_UNAV_RWL to offset 148</p>		
13.2.1		Dump via DTM		□
		<p><u>Relevant details for use with H FCP AOC DODD</u></p> <p>The following parameters</p> <p>H_SCM_FDIR_GYR_MAX_INCR_UNH_RWL is at OBDB offset 757</p> <p>H_SCM_FDIR_GYR_MAX_INCR_UNAV_RWL is at OBDB offset 758</p> <p>These are located in Block 4 of the OBDB</p>		
		<u>Use sequence HFADODDD</u>		
		<p>NOTE: The contents of diagnostic packet A3DH0BDB4109 {DTM with Herschel OBDB data4} are spread over a group of 4 monitoring displays:</p> <p>ZAZ6C999 DTMOBDB4_1 <- values are in this display ZAZ6D999 DTMOBDB4_2 ZAZ6E999 DTMOBDB4_3 ZAZ6F999 DTMOBDB4_4</p>		
		<p>NOTE: 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>		
		<p>Verify Telemetry</p> <p style="text-align: center;">HScmGyrUnhRwl AEDYU002</p>	= 0.00011 <dec>	AND=ZAZ6C999

Procedure for SCM Fine Pointing
 File: H_FCP_AOC_OSCM.xls
 Author: dsalt-hp



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry HScmGyrUnavRwl AEDYV002	= 0.000066 <dec>	AND=ZAZ6C999
13.2.2		Dump from RAM		<input type="checkbox"/>
		<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 3 G), this procedure loads the following parameters into specific OBDB offset locations in RAM:</p> <p>H_SCM_FDIR_GYR_MAX_INCR_UNH_RWL is at OBDB offset 757</p> <p>H_SCM_FDIR_GYR_MAX_INCR_UNAV_RWL is at OBDB offset 758</p> <p>The <u>absolute address</u> of offset 757 is therefore: 020A = Memory ID DAEC = Start Address</p> <p>The <u>absolute address</u> of offset 758 is therefore: 020A = Memory ID DAF0 = Start Address</p>		
		<p><u>Use sequence HFADODDL</u></p> <p>to dump <u>all</u> the OBDB in RAM, or edit: Start Address = CF18 Length = 8552</p>		
		<p>NOTE:</p> <p>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>		
13.2.3		Dump from SGM		<input type="checkbox"/>

Procedure for SCM Fine Pointing
 File: H_FCP_AOC_OSCM.xls
 Author: dsalt-hp



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 3 G), this procedure copies the following parameters into specific OBDB offset locations in SGM</p> <p>H_SCM_FDIR_GYR_MAX_INCR_UNH_RWL to offset 149</p> <p>H_SCM_FDIR_GYR_MAX_INCR_UNAV_RWL to offset 148</p> <p>The <u>absolute address</u> of offset 149 is therefore: BA0250 in SGA EA0250 in SGB</p> <p>The <u>absolute address</u> of offset 148 is therefore: BA024C in SGA EA024C in SGB</p>										
		<p>Use sequences HFADODDJ & HFADODDK to dump <u>all</u> the OBDB in SGMA & SGMB, or edit: Start Address = BA08C / EA008C Length = 224</p>										
		<p>NOTE: The address of a parameter with a given ID can be calculated as follows:</p> <p>SGMA Address = $0xBA0000 + (ParamID-1) * 4$</p> <p>SGMB 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>										
14		<p>Enable TC check for RCS Fine mode</p>		Next Step: END								
		<p>Execute Telecommand</p> <p style="text-align: right;">EnaChkMode-StateFID 101</p> <p>Command Parameter(s) :</p> <table style="width: 100%; border: none;"> <tr> <td style="text-align: right;">EnaChck DF86Cmd</td> <td style="text-align: right;">AH8F3001</td> <td style="text-align: right;">Enable 86</td> </tr> <tr> <td style="text-align: right;">EnaChck DD86Cmd</td> <td style="text-align: right;">AH8F4001</td> <td style="text-align: right;">Enable 86</td> </tr> </table> <p>TC Control Flags :</p> <table style="width: 100%; border: none;"> <tr> <td style="text-align: right;">GBM IL DSE</td> </tr> <tr> <td style="text-align: right;">--Y -- --</td> </tr> </table> <p>Subsch. ID : 20 Det. descr. : TC(8,1) - Enable Command check - EnaChkMode-StateFID 101</p>	EnaChck DF86Cmd	AH8F3001	Enable 86	EnaChck DD86Cmd	AH8F4001	Enable 86	GBM IL DSE	--Y -- --	ACZDL109	
EnaChck DF86Cmd	AH8F3001	Enable 86										
EnaChck DD86Cmd	AH8F4001	Enable 86										
GBM IL DSE												
--Y -- --												
		<p>Verify Telemetry</p> <table style="width: 100%; border: none;"> <tr> <td style="text-align: right;">SGM TC Chk Sts</td> <td style="text-align: right;">AE3U0002</td> <td style="text-align: right;"><as original value in Step 2></td> </tr> </table>	SGM TC Chk Sts	AE3U0002	<as original value in Step 2>		AND=ZAA06999					
SGM TC Chk Sts	AE3U0002	<as original value in Step 2>										

Procedure for SCM Fine Pointing
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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
End of Procedure				