

Generic OBDB Dump Procedure
File: H_FCP_AOC_DODD.xls
Author: dsalt-hp



Procedure Summary

Objectives

This procedure describes 3 different ways of dumping the onboard database (OBDB):

1. Via diagnostic telemetry (DTM). The Herschel OBDB currently contains 2188 parameters (ASWr4.1) and there are 8 DTM packets defined that read the first 2000 (i.e. offset 0 to 1999).
2. Memory dump from SGM. But note that the onboard database in SGM contains only a subset of the onboard database parameters available in RAM.
3. Memory dump from RAM. Modifications are always made in the RAM copy of the onboard database but the absolute location is specific to each ASW release.

BACKGROUND:

The OBDB is a repository for semi-constants in the ACMS that can be maintained without modification of the executable. A set of default values is located in EEPROM, and is used at each reinitialisation of the ACC.

Modifications can only be made in the RAM copy of the OBDB, thereby ensuring that an incorrect modification of a parameter does not result in propagation of the error or an infinite loop of resets.

Summary of Constraints

Downlink rate has to be 150 kbps or higher, to allow for enabling non-essential telemetry (memory dumps, diagnostic packets, etc.). In 150 kbps downlink rate or higher, 2500 bps is allocated for ACMS non-essential telemetry.

Spacecraft Configuration

Start of Procedure

N/A

End of Procedure

N/A

Reference File(s)

Input Command Sequences

Output Command Sequences

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HFADODDA
 HFADODDB
 HFADODDC
 HFADODDD
 HFADODDE
 HFADODDF
 HFADODDG
 HFADODDH
 HFADODDI
 HFADODDJ
 HFADODDK
 HFADODDL

Referenced Displays

ANDs **GRDs** **SLDs**
 ZAD07999

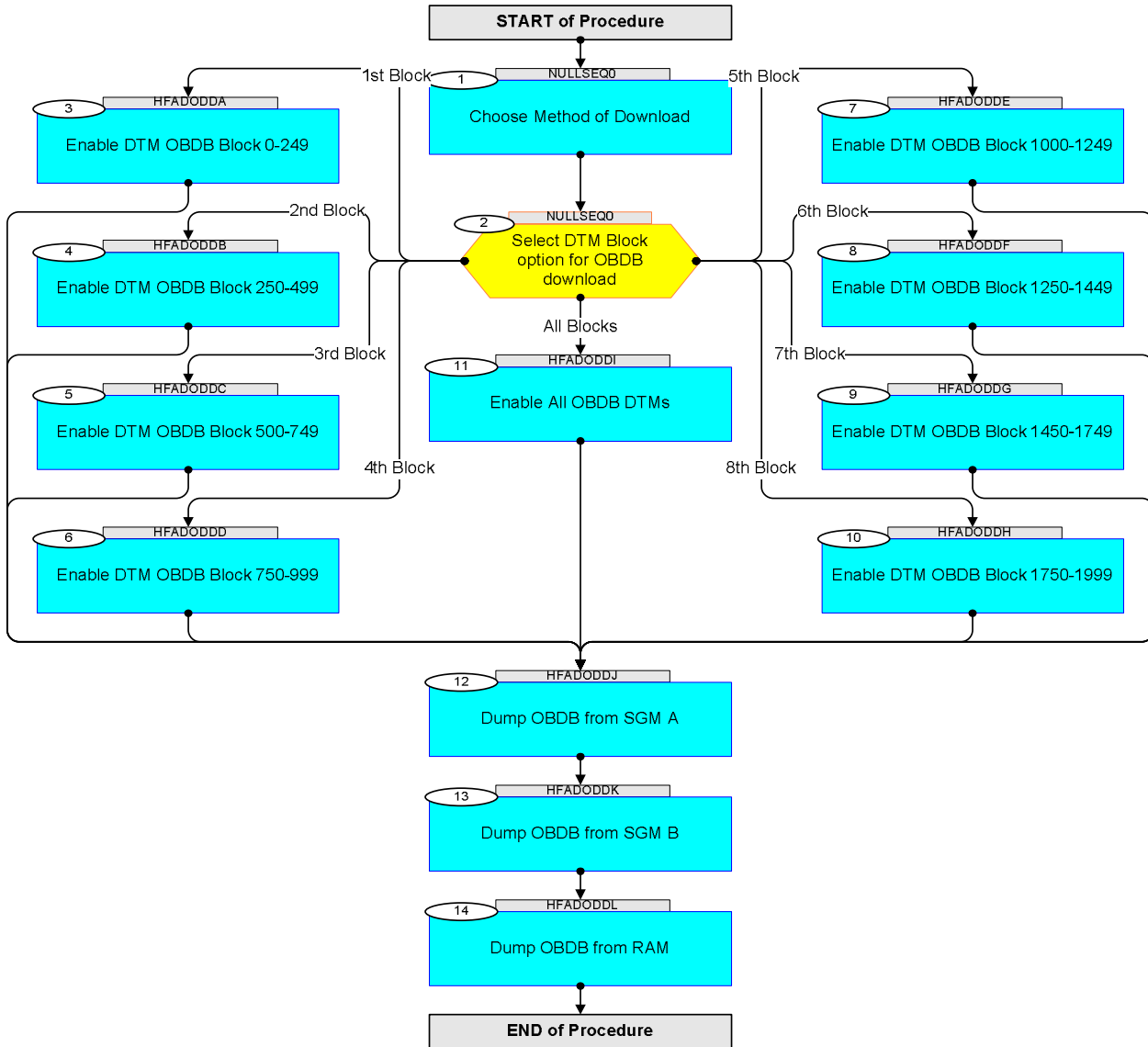
Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
03/08/08	1	1	Created	dsalt-hp	
16/07/09		2	TC in Step 14 updated for changes to absolute addresses required for ASWr4.1	dsalt-hp	
25/08/09	2.5	3	Correction of procedure title and references to sequence names in relevant substeps	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				
<p>TC Seq. Name :NULLSEQ0 ()</p> <p>TimeTag Type: Sub Schedule ID:</p> <p style="text-align: center;">□</p>				
1		Choose Method of Download		Next Step: 2
		<p>The onboard database can be dumped in 3 different ways:</p> <ol style="list-style-type: none"> 1. Via diagnostic telemetry. As the Herschel onboard database currently contains 2134 parameters there are 8 diagnostic packets defined that together cover the entire Herschel onboard database. 2. Memory dump from SGM. But note that the onboard database in SGM contains only a subset of the onboard database parameters available in RAM. 3. Memory dump from RAM. Modifications are always made in the RAM copy of the onboard database, that's why it is good practise to dump this area before and after doing an onboard database update. 		
		<p>To dump OBDB via diagnostic telemetry (DTM):</p> <pre> OBDB parameters 0-249 -> GO TO STEP 3 OBDB parameters 250-499 -> GO TO STEP 4 OBDB parameters 500-749 -> GO TO STEP 5 OBDB parameters 750-999 -> GO TO STEP 6 OBDB parameters 1000-1249 -> GO TO STEP 7 OBDB parameters 1250-1449 -> GO TO STEP 8 OBDB parameters 1250-1449 -> GO TO STEP 9 OBDB parameters 1500-1749 -> GO TO STEP 10 All OBDB parameters -> GO TO STEP 11 </pre>		
		<p>To dump OBDB from SGM:</p> <pre> SGM A -> GO TO STEP 12 SGM B -> GO TO STEP 13 </pre> <p>To dump OBDB from RAM:</p> <pre> RAM -> GO TO STEP 14 </pre>		
2		Select DTM Block option for OBDB download		Next Step: 1st Block 3 2nd Block 4 3rd Block 5 4th Block 6 5th Block 7 6th Block 8 7th Block 9 8th Block 10 All Blocks 11

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch												
<p>TC Seq. Name : HFADODDA (ObdbDtmlenable)</p> <p>TimeTag Type: Sub Schedule ID:</p> <p style="text-align: center;">□</p>																
3		Enable DTM OBDB Block 0-249		Next Step: 12												
		This step enables the diagnostic packet that contains the 1st block of 250 onboard database parameters. As the Herschel onboard database currently contains 2134 parameters there are 8 diagnostic packets defined that together cover the entire Herschel onboard database. In H-P-4-TASW-IF-0002 {ACC ASW_ICD} section 6.1 you can find a list of Herschel OBDB parameters ordered by offset.														
		CONSTRAINTS: 1. Pre-condition for any diagnostic packet to be enabled is that the spacecraft has to be configured for 150 kbps downlink rate or higher. 2. In 150 kbps downlink rate or higher, 2500 bps is allocated ACMS non-essential telemetry.														
		Verify Telemetry <div style="display: flex; justify-content: space-around;"> TME_BITRATE DEMRF160 </div>	>= 150 Kbps	AND=ZAD07999												
		A3DHOBB1109 {DTM with Herschel OBDB data} size and default settings: Packet size = 8160 bits Interval = 30 s (= 120 sampling periods) Packet rate = 8160 [bits] / 30 [s] = 272 [bps]														
3.1		Uplink 1st part of Sequence HFADODDA		□												
		Execute Telecommand <div style="display: flex; justify-content: space-around;"> TC32H ASOBB01 AC3D1109 </div> <p>Command Parameter(s) :</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right;">HK Packet ID</td> <td>AH3PK109</td> <td>4501 <dec></td> </tr> <tr> <td style="text-align: right;">Structure ID HK</td> <td>AH3SD109</td> <td>DTM OBDB01 (Def)</td> </tr> <tr> <td style="text-align: right;">Interval</td> <td>AH3SA109</td> <td>128 <dec></td> </tr> <tr> <td style="text-align: right;">DID number</td> <td>AH3PA109</td> <td>24833 <dec> (Def)</td> </tr> </table> <p>TC Control Flags :</p> <div style="display: flex; justify-content: space-around;"> GBM IL DSE </div> <p style="text-align: center;">--Y -- --</p> <p>Subsch. ID : 20 Det. descr. : TC(3,2) Define H ASOBB01</p>	HK Packet ID	AH3PK109	4501 <dec>	Structure ID HK	AH3SD109	DTM OBDB01 (Def)	Interval	AH3SA109	128 <dec>	DID number	AH3PA109	24833 <dec> (Def)		
HK Packet ID	AH3PK109	4501 <dec>														
Structure ID HK	AH3SD109	DTM OBDB01 (Def)														
Interval	AH3SA109	128 <dec>														
DID number	AH3PA109	24833 <dec> (Def)														

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand <p style="text-align: right;">Report Diag Report Def</p> Command Parameter(s) : Number of pkts AH3NP109 HK Packet ID AH3PK109 TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 20 Det. descr. : TC(3,11) Report Diagnostic Parameter Report Definitions	AC311109 1 <dec> (Def) 4501 <dec>	
		Execute Telecommand <p style="text-align: right;">EnableTmGen</p> 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 4501 <dec>	
3.2		Verify OBDB DTM Enable		<input type="checkbox"/>
		Verify Packet Reception <p style="text-align: right;">DTM with Herschel OBDB datal</p> Packet Details: APID: 514 Type: 3 Subtype: 26 PI1: 4501 PI2:	A3DH0BDB1109	
		NOTE: The contents of diagnostic packet A3DH0BDB1109 {DTM with Herschel OBDB datal} are spread over a group of 4 monitoring displays: ZAZ60999 DTMOBDB1_1 ZAZ61999 DTMOBDB1_2 ZAZ62999 DTMOBDB1_3 ZAZ63999 DTMOBDB1_4		
3.3		Uplink 2nd part of Sequence HFADODDA		<input type="checkbox"/>

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		A3DHOBDB2109 {DTM with Herschel OBDB data2} size and default settings: Packet size = 8160 bits Interval = 30 s (= 120 sampling periods) Packet rate = 8160 [bits] / 30 [s] = 272 [bps]		
4.1		Uplink 1st part of Sequence HFADODDB		□
		Execute Telecommand TC32H ASOBDB02 Command Parameter(s) : HK Packet ID AH3PK109 Structure ID HK AH3SD109 Interval AH3SA109 DID number AH3PA109 TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 20 Det. descr. : TC(3,2) Define H ASOBDB02	AC3D2109 4502 <dec> DTM OBDB02 (Def) 128 <dec> 24834 <dec> (Def)	
		Execute Telecommand Report Diag Report Def Command Parameter(s) : Number of pkts AH3NP109 HK Packet ID AH3PK109 TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 20 Det. descr. : TC(3,11) Report Diagnostic Parameter Report Definitions	AC311109 1 <dec> (Def) 4502 <dec>	
		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 4502 <dec>	
4.2		Verify OBDB DTM Enable		□

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
5		Enable DTM OBDB Block 500-749		Next Step: 12
		This step enables the diagnostic packet that contains the 3rd block of 250 onboard database parameters. As the Herschel onboard database currently contains 2134 parameters there are 8 diagnostic packets defined that together cover the entire Herschel onboard database. In H-P-4-TASW-IF-0002 {ACC ASW_ICD} section 6.1 you can find a list of Herschel OBDB parameters ordered by offset.		
		CONSTRAINTS: 1. Pre-condition for any diagnostic packet to be enabled is that the spacecraft has to be configured for 150 kbps downlink rate or higher. 2. In 150 kbps downlink rate or higher, 2500 bps is allocated ACMS non-essential telemetry.		
		Verify Telemetry <p style="text-align: center;">TME_BITRATE DEMRF160</p>	>= 150 Kbps	AND=ZAD07999
		A3DHOBDB3109 {DTM with Herschel OBDB data3} size and default settings: Packet size = 8160 bits Interval = 30 s (= 120 sampling periods) Packet rate = 8160 [bits] / 30 [s] = 272 [bps]		
5.1		Uplink 1st part of Sequence HFADODDC		□
		Execute Telecommand <p style="text-align: right;">TC32H ASOBDB03</p> Command Parameter(s) : <p style="text-align: right;"> HK Packet ID AH3PK109 4503 <dec> Structure ID HK AH3SD109 DTM OBDB03 (Def) Interval AH3SA109 128 <dec> DID number AH3PA109 24835 <dec> (Def) </p> TC Control Flags : <p style="text-align: right;">GBM IL DSE --Y -- --</p> Subsch. ID : 20 Det. descr. : TC(3,2) Define H ASOBDB03	AC3D3109	
		Execute Telecommand <p style="text-align: right;">Report Diag Report Def</p> Command Parameter(s) : <p style="text-align: right;"> Number of pkts AH3NP109 1 <dec> (Def) HK Packet ID AH3PK109 4503 <dec> </p> TC Control Flags : <p style="text-align: right;">GBM IL DSE --Y -- --</p> Subsch. ID : 20 Det. descr. : TC(3,11) Report Diagnostic Parameter Report Definitions	AC311109	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand <p style="text-align: center;">Clear Diagnostic Report</p> Command Parameter(s) : Number of pkts AH3NP109 HK Packet ID AH3PK109 TC Control Flags : GBM IL DSE --Y -- -- Subsch. ID : 20 Det. descr. : TC(3,4) Clear Diagnostic Parameter Report Definitions	AC034109 1 <dec> (Def) 4503 <dec>	
TC Seq. Name : HFADODDD (ObdbDtm4enable) TimeTag Type: Sub Schedule ID: <input type="checkbox"/>				
6		Enable DTM OBDB Block 750-999		Next Step: 12
		This step enables the diagnostic packet that contains the 4th block of 250 onboard database parameters. As the Herschel onboard database currently contains 2134 parameters there are 8 diagnostic packets defined that together cover the entire Herschel onboard database. In H-P-4-TASW-IF-0002 {ACC ASW_ICD} section 6.1 you can find a list of Herschel OBDB parameters ordered by offset.		
		CONSTRAINTS: 1. Pre-condition for any diagnostic packet to be enabled is that the spacecraft has to be configured for 150 kbps downlink rate or higher. 2. In 150 kbps downlink rate or higher, 2500 bps is allocated ACMS non-essential telemetry.		
		Verify Telemetry <p style="text-align: center;">TME_BITRATE DEMRF160</p>	>= 150 Kbps	AND=ZAD07999
		A3DHOBDB4109 {DTM with Herschel OBDB data4} size and default settings: Packet size = 8160 bits Interval = 30 s (= 120 sampling periods) Packet rate = 8160 [bits] / 30 [s] = 272 [bps]		
6.1		Uplink 1st part of Sequence HFADODDD		<input type="checkbox"/>

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand <p style="text-align: right;">TC32H ASOBDB04</p> Command Parameter(s) : HK Packet ID AH3PK109 4504 <dec> Structure ID HK AH3SD109 DTM OBDB04 (Def) Interval AH3SA109 128 <dec> DID number AH3PA109 24836 <dec> (Def) TC Control Flags : <p style="text-align: right;">GBM IL DSE --Y -- --</p> Subsch. ID : 20 Det. descr. : TC(3,2) Define H ASOBDB04	AC3D4109	
		Execute Telecommand <p style="text-align: right;">Report Diag Report Def</p> Command Parameter(s) : Number of pkts AH3NP109 1 <dec> (Def) HK Packet ID AH3PK109 4504 <dec> TC Control Flags : <p style="text-align: right;">GBM IL DSE --Y -- --</p> Subsch. ID : 20 Det. descr. : TC(3,11) Report Diagnostic Parameter Report Definitions	AC311109	
		Execute Telecommand <p style="text-align: right;">EnableTmGen</p> Command Parameter(s) : N AH017070 1 <dec> (Def) Sub-Type AH019070 Diag Report Packet-ID AH020070 4504 <dec> TC Control Flags : <p style="text-align: right;">GBM IL DSE --Y -- --</p> Subsch. ID : 20 Det. descr. : Enable Generation of Telemetry Packets	AC900070	
6.2		Verify OBDB DTM Enable		<input type="checkbox"/>
		Verify Packet Reception <p style="text-align: right;">DTM with Herschel OBDB data4</p> Packet Details: <p style="text-align: right;">APID: 514 Type: 3 Subtype: 26 PI1: 4504 PI2:</p>	A3DH0BDB4109	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		This step enables the diagnostic packet that contains the 5th block of 250 onboard database parameters. As the Herschel onboard database currently contains 2134 parameters there are 8 diagnostic packets defined that together cover the entire Herschel onboard database. In H-P-4-TASW-IF-0002 {ACC ASW_ICD} section 6.1 you can find a list of Herschel OBDB parameters ordered by offset.		
		CONSTRAINTS: 1. Pre-condition for any diagnostic packet to be enabled is that the spacecraft has to be configured for 150 kbps downlink rate or higher. 2. In 150 kbps downlink rate or higher, 2500 bps is allocated ACMS non-essential telemetry.		
		Verify Telemetry <div style="text-align: center;"> TME_BITRATE DEMRF160 </div>	>= 150 Kbps	AND=ZAD07999
		A3DHOBDB5109 {DTM with Herschel OBDB data5} size and default settings: Packet size = 8160 bits Interval = 30 s (= 120 sampling periods) Packet rate = 8160 [bits] / 30 [s] = 272 [bps]		
7.1		Uplink 1st part of Sequence HFADODDE		□
		Execute Telecommand <div style="text-align: right; margin-right: 100px;">TC32H ASOBDB05</div> <div style="text-align: right;">AC3D5109</div> Command Parameter(s) : <div style="display: flex; justify-content: space-between;"> <div style="width: 40%;"> HK Packet ID Structure ID HK Interval DID number </div> <div style="width: 30%;"> AH3PK109 AH3SD109 AH3SA109 AH3PA109 </div> <div style="width: 30%;"> 4505 <dec> DTM OBDB05 (Def) 128 <dec> 24837 <dec> (Def) </div> </div> TC Control Flags : <div style="text-align: right; margin-right: 100px;"> GBM IL DSE --Y -- --- </div> Subsch. ID : 20 Det. descr. : TC(3,2) Define H ASOBDB05		
		Execute Telecommand <div style="text-align: right; margin-right: 100px;">Report Diag Report Def</div> <div style="text-align: right;">AC311109</div> Command Parameter(s) : <div style="display: flex; justify-content: space-between;"> <div style="width: 40%;"> Number of pkts HK Packet ID </div> <div style="width: 30%;"> AH3NP109 AH3PK109 </div> <div style="width: 30%;"> 1 <dec> (Def) 4505 <dec> </div> </div> TC Control Flags : <div style="text-align: right; margin-right: 100px;"> GBM IL DSE --Y -- --- </div> Subsch. ID : 20 Det. descr. : TC(3,11) Report Diagnostic Parameter Report Definitions		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand <p style="text-align: center;">Clear Diagnostic Report</p> Command Parameter(s) : Number of pkts AH3NP109 HK Packet ID AH3PK109 TC Control Flags : GBM IL DSE --Y -- -- Subsch. ID : 20 Det. descr. : TC(3,4) Clear Diagnostic Parameter Report Definitions	AC034109 1 <dec> (Def) 4505 <dec>	
TC Seq. Name : HFADODDF (ObdbDtm6enable) TimeTag Type: Sub Schedule ID: <input type="checkbox"/>				
8		Enable DTM OBDB Block 1250-1449 This step enables the diagnostic packet that contains the 6th block of 250 onboard database parameters. As the Herschel onboard database currently contains 2134 parameters there are 8 diagnostic packets defined that together cover the entire Herschel onboard database. In H-P-4-TASW-IF-0002 {ACC ASW_ICD} section 6.1 you can find a list of Herschel OBDB parameters ordered by offset. CONSTRAINTS: 1. Pre-condition for any diagnostic packet to be enabled is that the spacecraft has to be configured for 150 kbps downlink rate or higher. 2. In 150 kbps downlink rate or higher, 2500 bps is allocated ACMS non-essential telemetry.		Next Step: 12
		Verify Telemetry <p style="text-align: center;">TME_BITRATE DEMRF160</p>	>= 150 Kbps	AND=ZAD07999
		A3DHOBD5109 {DTM with Herschel OBDB data5} size and default settings: Packet size = 8160 bits Interval = 30 s (= 120 sampling periods) Packet rate = 8160 [bits] / 30 [s] = 272 [bps]		
8.1		Uplink 1st part of Sequence HFADODDF		<input type="checkbox"/>

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand <p style="text-align: right;">TC32H ASOBDB06</p> Command Parameter(s) : HK Packet ID AH3PK109 4506 <dec> Structure ID HK AH3SD109 DTM OBDB06 (Def) Interval AH3SA109 128 <dec> DID number AH3PA109 24838 <dec> (Def) TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 20 Det. descr. : TC(3,2) Define H ASOBDB06	AC3D6109	
		Execute Telecommand <p style="text-align: right;">Report Diag Report Def</p> Command Parameter(s) : Number of pkts AH3NP109 1 <dec> (Def) HK Packet ID AH3PK109 4506 <dec> TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 20 Det. descr. : TC(3,11) Report Diagnostic Parameter Report Definitions	AC311109	
		Execute Telecommand <p style="text-align: right;">EnableTmGen</p> Command Parameter(s) : N AH017070 1 <dec> (Def) Sub-Type AH019070 Diag Report Packet-ID AH020070 4506 <dec> TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 20 Det. descr. : Enable Generation of Telemetry Packets	AC900070	
8.2		Verify OBDB DTM Enable		☐
		Verify Packet Reception <p style="text-align: right;">DTM with Herschel OBDB data6</p> Packet Details: APID: 514 Type: 3 Subtype: 26 PI1: 4506 PI2:	A3DH0BDB6109	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		This step enables the diagnostic packet that contains the 7th block of 250 onboard database parameters. As the Herschel onboard database currently contains 2134 parameters there are 8 diagnostic packets defined that together cover the entire Herschel onboard database. In H-P-4-TASW-IF-0002 {ACC ASW_ICD} section 6.1 you can find a list of Herschel OBDB parameters ordered by offset.		
		CONSTRAINTS: 1. Pre-condition for any diagnostic packet to be enabled is that the spacecraft has to be configured for 150 kbps downlink rate or higher. 2. In 150 kbps downlink rate or higher, 2500 bps is allocated ACMS non-essential telemetry.		
		Verify Telemetry <p style="text-align: center;">TME_BITRATE DEMRF160</p>	>= 150 Kbps	AND=ZAD07999
		A3DHOBDB5109 {DTM with Herschel OBDB data5} size and default settings: <p style="margin-left: 40px;">Packet size = 8160 bits Interval = 30 s (= 120 sampling periods) Packet rate = 8160 [bits] / 30 [s] = 272 [bps]</p>		
9.1		<i>Uplink 1st part of Sequence HFADODDG</i>		□
		Execute Telecommand <p style="text-align: right;">TC32H ASOBDB07</p> <p><i>Command Parameter(s) :</i> HK Packet ID AH3PK109 Structure ID HK AH3SD109 Interval AH3SA109 DID number AH3PA109</p> <p><i>TC Control Flags :</i> GBM IL DSE --Y -- ---</p> <p><i>Subsch. ID : 20</i> <i>Det. descr. : TC(3,2) Define H ASOBDB07</i></p>	AC3D7109	
		Execute Telecommand <p style="text-align: right;">Report Diag Report Def</p> <p><i>Command Parameter(s) :</i> Number of pkts AH3NP109 HK Packet ID AH3PK109</p> <p><i>TC Control Flags :</i> GBM IL DSE --Y -- ---</p> <p><i>Subsch. ID : 20</i> <i>Det. descr. : TC(3,11) Report Diagnostic Parameter Report Definitions</i></p>	AC311109	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand <p style="text-align: center;">Clear Diagnostic Report</p> Command Parameter(s) : Number of pkts AH3NP109 HK Packet ID AH3PK109 TC Control Flags : GBM IL DSE --Y -- -- Subsch. ID : 20 Det. descr. : TC(3,4) Clear Diagnostic Parameter Report Definitions	AC034109 1 <dec> (Def) 4507 <dec>	
TC Seq. Name : HFADODDH (ObdbDtm8enable) TimeTag Type: Sub Schedule ID: <input type="checkbox"/>				
10		Enable DTM OBDB Block 1750-1999		Next Step: 12
		This step enables the diagnostic packet that contains the 8th block of 250 onboard database parameters. As the Herschel onboard database currently contains 2134 parameters there are 8 diagnostic packets defined that together cover the entire Herschel onboard database. In H-P-4-TASW-IF-0002 {ACC ASW_ICD} section 6.1 you can find a list of Herschel OBDB parameters ordered by offset.		
		CONSTRAINTS: 1. Pre-condition for any diagnostic packet to be enabled is that the spacecraft has to be configured for 150 kbps downlink rate or higher. 2. In 150 kbps downlink rate or higher, 2500 bps is allocated ACMS non-essential telemetry.		
		Verify Telemetry <p style="text-align: center;">TME_BITRATE DEMRF160</p> <p style="text-align: right;">>= 150 Kbps</p>		AND=ZAD07999
		A3DHOBD5109 {DTM with Herschel OBDB data5} size and default settings: Packet size = 8160 bits Interval = 30 s (= 120 sampling periods) Packet rate = 8160 [bits] / 30 [s] = 272 [bps]		
10.1		Uplink 1st part of Sequence HFADODDH		<input type="checkbox"/>

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand <p style="text-align: right;">TC32H ASOBDB08</p> Command Parameter(s) : HK Packet ID AH3PK109 4508 <dec> Structure ID HK AH3SD109 DTM OBDB08 (Def) Interval AH3SA109 128 <dec> DID number AH3PA109 24840 <dec> (Def) TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 20 Det. descr. : TC(3,2) Define H ASOBDB08	AC3D8109	
		Execute Telecommand <p style="text-align: right;">Report Diag Report Def</p> Command Parameter(s) : Number of pkts AH3NP109 1 <dec> (Def) HK Packet ID AH3PK109 4508 <dec> TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 20 Det. descr. : TC(3,11) Report Diagnostic Parameter Report Definitions	AC311109	
		Execute Telecommand <p style="text-align: right;">EnableTmGen</p> Command Parameter(s) : N AH017070 1 <dec> (Def) Sub-Type AH019070 Diag Report Packet-ID AH020070 4508 <dec> TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 20 Det. descr. : Enable Generation of Telemetry Packets	AC900070	
10.2		Verify OBDB DTM Enable		☐
		Verify Packet Reception <p style="text-align: right;">DTM with Herschel OBDB data8</p> Packet Details: APID: 514 Type: 3 Subtype: 26 PI1: 4508 PI2:	A3DH0BDB8109	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		NOTE: The contents of diagnostic packet A3DH0BDB8109 {DTM with Herschel OBDB data8} are spread over a group of 4 monitoring displays: ZAZ6S999 DTMOBDB8_1 ZAZ6T999 DTMOBDB8_2 ZAZ6U999 DTMOBDB8_3 ZAZ6V999 DTMOBDB8_4		
10.3		Uplink 2nd part of Sequence HFADODDH		□
		Execute Telecommand <div style="text-align: right;">DisableTmGen</div> Command Parameter(s) : <div style="text-align: right;">N AH017070</div> <div style="text-align: right;">Sub-Type AH019070</div> <div style="text-align: right;">Packet-ID AH020070</div> TC Control Flags : <div style="text-align: right;">GBM IL DSE</div> <div style="text-align: right;">--Y -- ---</div> Subsch. ID : 20 Det. descr. : Disable Generation of Telemetry Packets	AC902070 1 <dec> (Def) Diag Report 4508 <dec>	
		Execute Telecommand <div style="text-align: right;">Clear Diagnostic Report</div> Command Parameter(s) : <div style="text-align: right;">Number of pkts AH3NP109</div> <div style="text-align: right;">HK Packet ID AH3PK109</div> TC Control Flags : <div style="text-align: right;">GBM IL DSE</div> <div style="text-align: right;">--Y -- ---</div> Subsch. ID : 20 Det. descr. : TC(3,4) Clear Diagnostic Parameter Report Definitions	AC034109 1 <dec> (Def) 4508 <dec>	
TC Seq. Name : HFADODDI (ObdbDtmAllEnable) TimeTag Type: Sub Schedule ID: □				
11		Enable All OBDB DTMs		Next Step: 12

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		This step enables all diagnostic packets related to the 2134 onboard database parameters on Herschel. As the Herschel onboard database currently contains 2134 parameters there are 8 diagnostic packets defined that together cover the entire Herschel onboard database. In H-P-4-TASW-IF-0002 {ACC ASW_ICD} section 6.1 you can find a list of Herschel OBDB parameters ordered by offset.		
		CONSTRAINTS: 1. Pre-condition for any diagnostic packet to be enabled is that the spacecraft has to be configured for 150 kbps downlink rate or higher. 2. In 150 kbps downlink rate or higher, 2500 bps is allocated ACMS non-essential telemetry.		
		Verify Telemetry <div style="text-align: center;"> TME_BITRATE DEMRF160 </div>	>= 150 Kbps	AND=ZAD07999
		Packets to be enabled: A3DHOBDB1109 {DTM with Herschel OBDB data1} A3DHOBDB2109 {DTM with Herschel OBDB data2} A3DHOBDB3109 {DTM with Herschel OBDB data3} A3DHOBDB4109 {DTM with Herschel OBDB data4} A3DHOBDB5109 {DTM with Herschel OBDB data5} A3DHOBDB6109 {DTM with Herschel OBDB data6} A3DHOBDB7109 {DTM with Herschel OBDB data7} A3DHOBDB8109 {DTM with Herschel OBDB data8}		
		Per packet (default settings): Packet size = 8160 bits Interval = 30 s (= 120 sampling periods) Packet rate = 8160 [bits] / 30 [s] = 272 [bps] Total: Total DTM packet rate = 5 * 272 [bps] = 1360 [bps]		
11.1		<i>Uplink 1st part of Sequence HFADODDI</i>		□
		Execute Telecommand <div style="text-align: center;"> TC32H ASOBDB01 </div> Command Parameter(s) : <div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> HK Packet ID Structure ID HK Interval DID number </div> <div style="width: 30%;"> AH3PK109 AH3SD109 AH3SA109 AH3PA109 </div> <div style="width: 30%;"> 4501 <dec> DTM OBDB01 (Def) 128 <dec> 24833 <dec> (Def) </div> </div> TC Control Flags : <div style="text-align: center;"> GBM IL DSE ---Y --- --- </div> Subsch. ID : 20 Det. descr. : TC(3,2) Define H ASOBDB01	AC3D1109	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand <p style="text-align: right;">TC32H ASOBDB02</p> Command Parameter(s) : HK Packet ID AH3PK109 Structure ID HK AH3SD109 Interval AH3SA109 DID number AH3PA109 TC Control Flags : <p style="text-align: right;">GBM IL DSE --Y -- --</p> Subsch. ID : 20 Det. descr. : TC(3,2) Define H ASOBDB02	AC3D2109	
		Execute Telecommand <p style="text-align: right;">TC32H ASOBDB03</p> Command Parameter(s) : HK Packet ID AH3PK109 Structure ID HK AH3SD109 Interval AH3SA109 DID number AH3PA109 TC Control Flags : <p style="text-align: right;">GBM IL DSE --Y -- --</p> Subsch. ID : 20 Det. descr. : TC(3,2) Define H ASOBDB03	AC3D3109	
		Execute Telecommand <p style="text-align: right;">TC32H ASOBDB04</p> Command Parameter(s) : HK Packet ID AH3PK109 Structure ID HK AH3SD109 Interval AH3SA109 DID number AH3PA109 TC Control Flags : <p style="text-align: right;">GBM IL DSE --Y -- --</p> Subsch. ID : 20 Det. descr. : TC(3,2) Define H ASOBDB04	AC3D4109	
		Execute Telecommand <p style="text-align: right;">TC32H ASOBDB05</p> Command Parameter(s) : HK Packet ID AH3PK109 Structure ID HK AH3SD109 Interval AH3SA109 DID number AH3PA109 TC Control Flags : <p style="text-align: right;">GBM IL DSE --Y -- --</p> Subsch. ID : 20 Det. descr. : TC(3,2) Define H ASOBDB05	AC3D5109	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand <p style="text-align: right;">TC32H ASOBDB06</p> Command Parameter(s) : HK Packet ID AH3PK109 4506 <dec> Structure ID HK AH3SD109 DTM OBDB06 (Def) Interval AH3SA109 128 <dec> DID number AH3PA109 24838 <dec> (Def) TC Control Flags : <p style="text-align: right;">GBM IL DSE --Y -- --</p> Subsch. ID : 20 Det. descr. : TC(3,2) Define H ASOBDB06	AC3D6109	
		Execute Telecommand <p style="text-align: right;">TC32H ASOBDB07</p> Command Parameter(s) : HK Packet ID AH3PK109 4507 <dec> Structure ID HK AH3SD109 DTM OBDB07 (Def) Interval AH3SA109 128 <dec> DID number AH3PA109 24839 <dec> (Def) TC Control Flags : <p style="text-align: right;">GBM IL DSE --Y -- --</p> Subsch. ID : 20 Det. descr. : TC(3,2) Define H ASOBDB07	AC3D7109	
		Execute Telecommand <p style="text-align: right;">TC32H ASOBDB08</p> Command Parameter(s) : HK Packet ID AH3PK109 4508 <dec> Structure ID HK AH3SD109 DTM OBDB08 (Def) Interval AH3SA109 128 <dec> DID number AH3PA109 24840 <dec> (Def) TC Control Flags : <p style="text-align: right;">GBM IL DSE --Y -- --</p> Subsch. ID : 20 Det. descr. : TC(3,2) Define H ASOBDB08	AC3D8109	
		Execute Telecommand <p style="text-align: right;">Report Diag Report Def</p> Command Parameter(s) : Number of pkts AH3NP109 8 <dec> HK Packet ID AH3PK109 4501 <dec> HK Packet ID AH3PK109 4502 <dec> HK Packet ID AH3PK109 4503 <dec> HK Packet ID AH3PK109 4504 <dec> HK Packet ID AH3PK109 4505 <dec> HK Packet ID AH3PK109 4506 <dec> HK Packet ID AH3PK109 4507 <dec> HK Packet ID AH3PK109 4508 <dec> TC Control Flags :	AC311109	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		<p style="text-align: right;">GBM IL DSE --Y -- ---</p> <p>Subsch. ID : 20 Det. descr. : TC(3,11) Report Diagnostic Parameter Report Definitions</p>		
		<p>Execute Telecommand</p> <p style="text-align: right;">EnableTmGen</p> <p>Command Parameter(s) :</p> <p style="text-align: right;">N AH017070 Sub-Type AH019070 Packet-ID AH020070</p> <p>TC Control Flags :</p> <p style="text-align: right;">GBM IL DSE --Y -- ---</p> <p>Subsch. ID : 20 Det. descr. : Enable Generation of Telemetry Packets</p>	AC900070	
		<p>Execute Telecommand</p> <p style="text-align: right;">EnableTmGen</p> <p>Command Parameter(s) :</p> <p style="text-align: right;">N AH017070 Sub-Type AH019070 Packet-ID AH020070</p> <p>TC Control Flags :</p> <p style="text-align: right;">GBM IL DSE --Y -- ---</p> <p>Subsch. ID : 20 Det. descr. : Enable Generation of Telemetry Packets</p>	AC900070	
		<p>Execute Telecommand</p> <p style="text-align: right;">EnableTmGen</p> <p>Command Parameter(s) :</p> <p style="text-align: right;">N AH017070 Sub-Type AH019070 Packet-ID AH020070</p> <p>TC Control Flags :</p> <p style="text-align: right;">GBM IL DSE --Y -- ---</p> <p>Subsch. ID : 20 Det. descr. : Enable Generation of Telemetry Packets</p>	AC900070	
		<p>Execute Telecommand</p> <p style="text-align: right;">EnableTmGen</p> <p>Command Parameter(s) :</p> <p style="text-align: right;">N AH017070 Sub-Type AH019070 Packet-ID AH020070</p> <p>TC Control Flags :</p> <p style="text-align: right;">GBM IL DSE --Y -- ---</p> <p>Subsch. ID : 20 Det. descr. : Enable Generation of Telemetry Packets</p>	AC900070	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Packet Reception DTM with Herschel OBDB data1 Packet Details: <p style="text-align: right;"> APID: 514 Type: 3 Subtype: 26 PI1: 4501 PI2: </p>	A3DH0BDB1109	
		NOTE: The contents of diagnostic packet A3DH0BDB1109 {DTM with Herschel OBDB data1} are spread over a group of 4 monitoring displays: <p style="text-align: center;"> ZAZ60999 DTMOBDB1_1 ZAZ61999 DTMOBDB1_2 ZAZ62999 DTMOBDB1_3 ZAZ63999 DTMOBDB1_4 </p>		
		Verify Packet Reception DTM with Herschel OBDB data2 Packet Details: <p style="text-align: right;"> APID: 514 Type: 3 Subtype: 26 PI1: 4502 PI2: </p>	A3DH0BDB2109	
		NOTE: The contents of diagnostic packet A3DH0BDB2109 {DTM with Herschel OBDB data2} are spread over a group of 4 monitoring displays: <p style="text-align: center;"> ZAZ64999 DTMOBDB2_1 ZAZ65999 DTMOBDB2_2 ZAZ66999 DTMOBDB2_3 ZAZ67999 DTMOBDB2_4 </p>		
		Verify Packet Reception DTM with Herschel OBDB data3 Packet Details: <p style="text-align: right;"> APID: 514 Type: 3 Subtype: 26 PI1: 4503 PI2: </p>	A3DH0BDB3109	
		NOTE: The contents of diagnostic packet A3DH0BDB3109 {DTM with Herschel OBDB data3} are spread over a group of 4 monitoring displays: <p style="text-align: center;"> ZAZ68999 DTMOBDB3_1 ZAZ69999 DTMOBDB3_2 ZAZ6A999 DTMOBDB3_3 ZAZ6B999 DTMOBDB3_4 </p>		
		Verify Packet Reception DTM with Herschel OBDB data4 Packet Details: <p style="text-align: right;"> APID: 514 Type: 3 Subtype: 26 PI1: 4504 PI2: </p>	A3DH0BDB4109	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		NOTE: The contents of diagnostic packet A3DH0BDB4109 {DTM with Herschel OBDB data4} are spread over a group of 4 monitoring displays: ZAZ6C999 DTMOBDB4_1 ZAZ6D999 DTMOBDB4_2 ZAZ6E999 DTMOBDB4_3 ZAZ6F999 DTMOBDB4_4		
		Verify Packet Reception DTM with Herschel OBDB data5 Packet Details: APID: 514 Type: 3 Subtype: 26 PI1: 4505 PI2:	A3DH0BDB5109	
		NOTE: The contents of diagnostic packet A3DH0BDB5109 {DTM with Herschel OBDB data5} are spread over a group of 4 monitoring displays: ZAZ6G999 DTMOBDB5_1 ZAZ6H999 DTMOBDB5_2 ZAZ6I999 DTMOBDB5_3 ZAZ6J999 DTMOBDB5_4		
		Verify Packet Reception DTM with Herschel OBDB data6 Packet Details: APID: 514 Type: 3 Subtype: 26 PI1: 4506 PI2:	A3DH0BDB6109	
		NOTE: The contents of diagnostic packet A3DH0BDB6109 {DTM with Herschel OBDB data6} are spread over a group of 4 monitoring displays: ZAZ6K999 DTMOBDB6_1 ZAZ6L999 DTMOBDB6_2 ZAZ6M999 DTMOBDB6_3 ZAZ6N999 DTMOBDB6_4		
		Verify Packet Reception DTM with Herschel OBDB data7 Packet Details: APID: 514 Type: 3 Subtype: 26 PI1: 4507 PI2:	A3DH0BDB7109	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		NOTE: The contents of diagnostic packet A3DH0BDB7109 {DTM with Herschel OBDB data7} are spread over a group of 4 monitoring displays: ZAZ6O999 DTMOBDB7_1 ZAZ6P999 DTMOBDB7_2 ZAZ6Q999 DTMOBDB7_3 ZAZ6R999 DTMOBDB7_4		
		Verify Packet Reception DTM with Herschel OBDB data8 Packet Details: APID: 514 Type: 3 Subtype: 26 PI1: 4508 PI2:	A3DH0BDB8109	
		NOTE: The contents of diagnostic packet A3DH0BDB8109 {DTM with Herschel OBDB data8} are spread over a group of 4 monitoring displays: ZAZ6S999 DTMOBDB8_1 ZAZ6T999 DTMOBDB8_2 ZAZ6U999 DTMOBDB8_3 ZAZ6V999 DTMOBDB8_4		
11.3		Uplink 2nd part of Sequence HFADODDI		<input type="checkbox"/>
		Execute Telecommand DisableTmGen Command Parameter(s) : N AH017070 8 <dec> Sub-Type AH019070 Diag Report Packet-ID AH020070 4501 <dec> Sub-Type AH019070 Diag Report Packet-ID AH020070 4502 <dec> Sub-Type AH019070 Diag Report Packet-ID AH020070 4503 <dec> Sub-Type AH019070 Diag Report Packet-ID AH020070 4504 <dec> Sub-Type AH019070 Diag Report Packet-ID AH020070 4505 <dec> Sub-Type AH019070 Diag Report Packet-ID AH020070 4506 <dec> Sub-Type AH019070 Diag Report Packet-ID AH020070 4507 <dec> Sub-Type AH019070 Diag Report Packet-ID AH020070 4508 <dec> TC Control Flags : GBM IL DSE --Y -- -- Subsch. ID : 20 Det. descr. : Disable Generation of Telemetry Packets	AC902070	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch																											
		Execute Telecommand <p style="text-align: center;">Clear Diagnostic Report</p> AC034109 Command Parameter(s) : <table border="0"> <tr> <td style="padding-left: 40px;">Number of pkts</td> <td>AH3NP109</td> <td>8 <dec></td> </tr> <tr> <td style="padding-left: 40px;">HK Packet ID</td> <td>AH3PK109</td> <td>4501 <dec></td> </tr> <tr> <td style="padding-left: 40px;">HK Packet ID</td> <td>AH3PK109</td> <td>4502 <dec></td> </tr> <tr> <td style="padding-left: 40px;">HK Packet ID</td> <td>AH3PK109</td> <td>4503 <dec></td> </tr> <tr> <td style="padding-left: 40px;">HK Packet ID</td> <td>AH3PK109</td> <td>4504 <dec></td> </tr> <tr> <td style="padding-left: 40px;">HK Packet ID</td> <td>AH3PK109</td> <td>4505 <dec></td> </tr> <tr> <td style="padding-left: 40px;">HK Packet ID</td> <td>AH3PK109</td> <td>4506 <dec></td> </tr> <tr> <td style="padding-left: 40px;">HK Packet ID</td> <td>AH3PK109</td> <td>4507 <dec></td> </tr> <tr> <td style="padding-left: 40px;">HK Packet ID</td> <td>AH3PK109</td> <td>4508 <dec></td> </tr> </table> TC Control Flags : <p style="text-align: center;">GBM IL DSE --Y -- ---</p> Subsch. ID : 20 Det. descr. : TC(3,4) Clear Diagnostic Parameter Report Definitions	Number of pkts	AH3NP109	8 <dec>	HK Packet ID	AH3PK109	4501 <dec>	HK Packet ID	AH3PK109	4502 <dec>	HK Packet ID	AH3PK109	4503 <dec>	HK Packet ID	AH3PK109	4504 <dec>	HK Packet ID	AH3PK109	4505 <dec>	HK Packet ID	AH3PK109	4506 <dec>	HK Packet ID	AH3PK109	4507 <dec>	HK Packet ID	AH3PK109	4508 <dec>		
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HK Packet ID	AH3PK109	4506 <dec>																													
HK Packet ID	AH3PK109	4507 <dec>																													
HK Packet ID	AH3PK109	4508 <dec>																													
TC Seq. Name : HFADODDJ (ObdbDumpFromSgmA)																															
TimeTag Type: Sub Schedule ID: <input type="checkbox"/>																															
12		Dump OBDB from SGM A		Next Step: 13																											
		This step dumps the onboard database area in non-protected SGM A. The onboard database in SGM contains only a subset of the onboard database parameters available in RAM. BACKGROUND: The absolute address of the start of the onboard database area within SGM A is 0xBA0000 and within SGM B it is 0xEA0000. The database parameters stored are mission-specific. Each parameter occupies 32 bits as in the onboard database in RAM. H-P-4-TASW-IF-0002 {ACC ASW ICD}, section 3.2.4, contains a table with the subset of the onboard database parameters available in non-protected SGM.																													
		NOTE: The address of a parameter with a given ID can be calculated as follows: SGMA Address = 0xBA0000 + (ParamID-1) * 4 SGMB Address = 0xEA0000 + (ParamID-1) * 4 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 .																													

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch													
12.1		<i>Prepare OBSM Desktop</i>		<input type="checkbox"/>													
		<p>Prepare the OBSM desktop application for the memory download, by executing the following steps:</p> <ul style="list-style-type: none"> -> Open 'OBSM Desktop' -> Select 'Image' in menubar -> Select 'Monitor' in pulldown menu -> New window opens, called 'Image Catalog' -> In the new window, press the 'Device' button in the 'Filter' toolbar (bottom left corner) 															
		<ul style="list-style-type: none"> -> New window opens, called 'Device Catalog' -> Select ASGAOBDB 'ACC SGM A OBDB'. Hit OK. -> Now all available memory images for the selected device appear in the 'Image Catalog'. Select the image that relates to the onboard image that is to be dumped, this is generally the last entry in the list. Hit OK. -> Another window will appear that will display all mismatches between dumped values and the ground image, once the download is running. Check the 'LIVE' button is highlighted. 															
12.2		<i>Uplink Sequence HFADODDJ</i>		<input type="checkbox"/>													
		<p>Execute Telecommand</p> <p style="text-align: right;">Dump Memory</p> <p>Command Parameter(s) :</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right;">Memory ID</td> <td>AH6M0109</td> <td>00BA <hex></td> </tr> <tr> <td style="text-align: right;">Start Address</td> <td>AH6M1109</td> <td>0000 <hex> (Def)</td> </tr> <tr> <td style="text-align: right;">Length SAU</td> <td>AH6M3109</td> <td>1688 <dec></td> </tr> </table> <p>TC Control Flags :</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right;">GBM IL DSE</td> <td></td> </tr> <tr> <td style="text-align: right;">--Y -- --</td> <td></td> </tr> </table> <p>Subsch. ID : 20 Det. descr. : TC(6,5) Dump Memory Using Absolute Addresses</p>	Memory ID	AH6M0109	00BA <hex>	Start Address	AH6M1109	0000 <hex> (Def)	Length SAU	AH6M3109	1688 <dec>	GBM IL DSE		--Y -- --		AC063109	
Memory ID	AH6M0109	00BA <hex>															
Start Address	AH6M1109	0000 <hex> (Def)															
Length SAU	AH6M3109	1688 <dec>															
GBM IL DSE																	
--Y -- --																	
		<p>NOTE: This instance of the TC dumps all parameters in SGMA (i.e. position 1 to 422)</p>															

Generic OBDB Dump Procedure
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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
12.3		Monitor Memory Download		<input type="checkbox"/>
		Verify Packet Reception Memory Dump - Absolute Addresses - SAU 8 Packet Details: <div style="text-align: right; margin-right: 20px;"> APID: 512 Type: 6 Subtype: 6 PI1: PI2: </div>	MemDmpAbsAdd	
		NOTE 1: While the monitor screen is up, any areas of memory which are declared monitorable shall trigger an alarm if they are different in the dump packet to the ground image. This will be displayed in the EVENT window at the bottom of the screens and audibly. NOTE 2: All differences will appear in the gridded area. However the refresh of this screen is poor. After all the dump packets are down, hit the STOP and then the LIVE button. All the mismatches found so far will be displayed.		
		NOTE 3: Only data declared monitorable in the MODEL will trigger an alarm. NOTE 4: If it is wanted to dump the same areas of memory several times, or process in retrieval areas of memory several times, it is advisable to close and restart the MONITOR window between each task, as the comparison base image is often updated with the differences.		
12.4		Update Ground Image		<input type="checkbox"/>
		If it desired to store the image updated with the mismatches for reference or later analysis then continue here. WARNING: In a lot of cases where there are no mismatches or only mismatches in variable data areas it is not worth saving the image.		
		-> On the MONITOR window, displaying the mismatches, enter a correct description in the description area. More detailed text can be added by hitting the description button. -> Check the model is correct. -> Goto Image, Save New ID		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
<p><i>TC Seq. Name : HFADODDK (ObddbDumpFromSgmB)</i></p> <p><i>TimeTag Type:</i> <i>Sub Schedule ID:</i></p> <p><input type="checkbox"/></p>				
13		Dump OBDB from SGM B		Next Step: 14
		<p>This step dumps the onboard database area in non-protected SGM B. The onboard database in SGM contains only a subset of the onboard database parameters available in RAM.</p> <p>BACKGROUND: The absolute address of the start of the onboard database area within SGM A is 0xBA0000 and within SGM B it is 0xEA0000. The database parameters stored are mission-specific. Each parameter occupies 32 bits as in the onboard database in RAM. H-P-4-TASW-IF-0002 {ACC ASW ICD}, section 3.2.4, contains a table with the subset of the onboard database parameters available in non-protected SGM.</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>		
13.1		Prepare OBSM Desktop		<input type="checkbox"/>
		<p>Prepare the OBSM desktop application for the memory download, by executing the following steps:</p> <ul style="list-style-type: none"> -> Open 'OBSM Desktop' -> Select 'Image' in menubar -> Select 'Monitor' in pulldown menu -> New window opens, called 'Image Catalog' -> In the new window, press the 'Device' button in the 'Filter' toolbar (bottom left corner) 		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch													
		<p>-> New window opens, called 'Device Catalog'</p> <p>-> Select ASGBOBDB 'ACC SGM B OBDB'. Hit OK.</p> <p>-> Now all available memory images for the selected device appear in the 'Image Catalog'. Select the image that relates to the onboard image that is to be dumped, this is generally the last entry in the list. Hit OK.</p> <p>-> Another window will appear that will display all mismatches between dumped values and the ground image, once the download is running. Check the 'LIVE' button is highlighted.</p>															
13.2		Uplink Sequence HFADODDK		<input type="checkbox"/>													
		<p>Execute Telecommand</p> <p style="text-align: right;">Dump Memory</p> <p>AC063109</p> <p>Command Parameter(s) :</p> <table style="width: 100%; border: none;"> <tr> <td style="text-align: right;">Memory ID</td> <td>AH6M0109</td> <td>00EA <hex></td> </tr> <tr> <td style="text-align: right;">Start Address</td> <td>AH6M1109</td> <td>0000 <hex> (Def)</td> </tr> <tr> <td style="text-align: right;">Length SAU</td> <td>AH6M3109</td> <td>1688 <dec></td> </tr> </table> <p>TC Control Flags :</p> <table style="width: 100%; border: none;"> <tr> <td style="text-align: right;">GBM IL DSE</td> <td></td> </tr> <tr> <td style="text-align: right;">--Y -- --</td> <td></td> </tr> </table> <p>Subsch. ID : 20 Det. descr. : TC(6,5) Dump Memory Using Absolute Addresses</p>	Memory ID	AH6M0109	00EA <hex>	Start Address	AH6M1109	0000 <hex> (Def)	Length SAU	AH6M3109	1688 <dec>	GBM IL DSE		--Y -- --			
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Length SAU	AH6M3109	1688 <dec>															
GBM IL DSE																	
--Y -- --																	
		<p>NOTE: This instance of the TC dumps all parameters in SGMB (i.e. position 1 to 422)</p>															
13.3		Monitor Memory Download		<input type="checkbox"/>													
		<p>Verify Packet Reception</p> <p style="text-align: center;">Memory Dump - Absolute Addresses - SAU 8</p> <p>Packet Details:</p> <table style="width: 100%; border: none;"> <tr> <td style="text-align: right;">APID:</td> <td>512</td> </tr> <tr> <td style="text-align: right;">Type:</td> <td>6</td> </tr> <tr> <td style="text-align: right;">Subtype:</td> <td>6</td> </tr> <tr> <td style="text-align: right;">PI1:</td> <td></td> </tr> <tr> <td style="text-align: right;">PI2:</td> <td></td> </tr> </table>	APID:	512	Type:	6	Subtype:	6	PI1:		PI2:		MemDmpAbsAdd				
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 File: H_FCP_AOC_DODD.xls
 Author: dsalt-hp



Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		<p>NOTE 1: While the monitor screen is up, any areas of memory which are declared monitorable shall trigger an alarm if they are different in the dump packet to the ground image. This will be displayed in the EVENT window at the bottom of the screens and audibly.</p> <p>NOTE 2: All differences will appear in the gridded area. However the refresh of this screen is poor. After all the dump packets are down, hit the STOP and then the LIVE button. All the mismatches found so far will be displayed.</p>		
		<p>NOTE 3: Only data declared monitorable in the MODEL will trigger an alarm.</p> <p>NOTE 4: If it is wanted to dump the same areas of memory several times, or process in retrieval areas of memory several times, it is advisable to close and restart the MONITOR window between each task, as the comparison base image is often updated with the differences.</p>		
13.4		Update Ground Image		<input type="checkbox"/>
		<p>If it desired to store the image updated with the mismatches for reference or later analysis then continue here.</p> <p>WARNING: In a lot of cases where there are no mismatches or only mismatches in variable data areas it is not worth saving the image.</p>		
		<p>-> On the MONITOR window, displaying the mismatches, enter a correct description in the description area. More detailed text can be added by hitting the description button.</p> <p>-> Check the model is correct.</p> <p>-> Goto Image, Save New ID</p>		
<p>TC Seq. Name : HFADODDL (ObdbDumpFromRam)</p> <p>TimeTag Type: N Sub Schedule ID:</p> <p><input type="checkbox"/></p>				
14		Dump OBDB from RAM		Next Step: END

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		<p>This step dumps the onboard database area in RAM. Modifications are always made in the RAM copy of the onboard database, that's why it is good practise to dump this area before and after doing an onboard database update.</p> <p>BACKGROUND: H-P-4-TASW-IF-0002 {ACC ASW ICD}, section 6.1, contains the table of Herschel onboard database parameters available in RAM. The location of the onboard database in RAM is tied to the location of the ASW_DatabaseManagerObj variable to be found in image.syms file of the software build (under \ACMS\ASW_3.4_b2\Code\OBSP_3_4\B002\AAE\image.syms). Add 12 locations to obtain the offset for the index 0 parameter. Use this as the start address of the dump.</p>		
		<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>		
14.1		<p>Prepare OBSM Desktop</p>		□
		<p>Prepare the OBSM desktop application for the memory download, by executing the following steps:</p> <ul style="list-style-type: none"> -> Open 'OBSM Desktop' -> Select 'Image' in menubar -> Select 'Monitor' in pulldown menu -> New window opens, called 'Image Catalog' -> In the new window, press the 'Device' button in the 'Filter' toolbar (bottom left corner) 		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		-> New window opens, called 'Device Catalog' -> Select ACCROBDB 'ACC RAM OBDB'. Hit OK. -> Now all available memory images for the selected device appear in the 'Image Catalog'. Select the image that relates to the onboard image that is to be dumped, this is generally the last entry in the list. Hit OK. -> Another window will appear that will display all mismatches between dumped values and the ground image, once the download is running. Check the 'LIVE' button is highlighted.		
14.2		Uplink Sequence HFADODDL		<input type="checkbox"/>
		Execute Telecommand <div style="text-align: right;">Dump Memory</div> AC063109 Command Parameter(s) : <div style="display: flex; justify-content: space-between;"> <div>Memory ID</div> <div>AH6M0109</div> <div>020C <hex></div> </div> <div style="display: flex; justify-content: space-between;"> <div>Start Address</div> <div>AH6M1109</div> <div>1220 <hex></div> </div> <div style="display: flex; justify-content: space-between;"> <div>Length SAU</div> <div>AH6M3109</div> <div>8752 <dec></div> </div> TC Control Flags : <div style="text-align: right;">GBM IL DSE</div> <div style="text-align: right;">--Y -- --</div> Subsch. ID : 20 Det. descr. : TC(6,5) Dump Memory Using Absolute Addresses		
		NOTE: This instance of the TC dumps all parameters in OBDB (i.e. parameter offset 0 to 2187 for <u>ASWr4.1</u>)		
14.3		Monitor Memory Download		<input type="checkbox"/>
		Verify Packet Reception Memory Dump - Absolute Addresses - SAU 8 Packet Details: <div style="display: flex; justify-content: space-between;"> <div>APID:</div> <div>512</div> </div> <div style="display: flex; justify-content: space-between;"> <div>Type:</div> <div>6</div> </div> <div style="display: flex; justify-content: space-between;"> <div>Subtype:</div> <div>6</div> </div> <div style="display: flex; justify-content: space-between;"> <div>PI1:</div> <div>6</div> </div> <div style="display: flex; justify-content: space-between;"> <div>PI2:</div> <div></div> </div>	MemDmpAbsAdd	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		<p>NOTE 1: While the monitor screen is up, any areas of memory which are declared monitorable shall trigger an alarm if they are different in the dump packet to the ground image. This will be displayed in the EVENT window at the bottom of the screens and audibly.</p> <p>NOTE 2: All differences will appear in the gridded area. However the refresh of this screen is poor. After all the dump packets are down, hit the STOP and then the LIVE button. All the mismatches found so far will be displayed.</p>		
		<p>NOTE 3: Only data declared monitorable in the MODEL will trigger an alarm.</p> <p>NOTE 4: If it is wanted to dump the same areas of memory several times, or process in retrieval areas of memory several times, it is advisable to close and restart the MONITOR window between each task, as the comparison base image is often updated with the differences.</p>		
14.4		Update Ground Image		<input type="checkbox"/>
		<p>If it desired to store the image updated with the mismatches for reference or later analysis then continue here.</p> <p>WARNING: In a lot of cases where there are no mismatches or only mismatches in variable data areas it is not worth saving the image.</p>		
		<p>-> On the MONITOR window, displaying the mismatches, enter a correct description in the description area. More detailed text can be added by hitting the description button.</p> <p>-> Check the model is correct.</p> <p>-> Goto Image, Save New ID</p>		

End of Procedure