

Procedure for planning transition to SCM
File: H_FCP_AOC_0SFX.xls
Author: dsalt-hp



Procedure Summary

Objectives

The objective of this Herschel ACMS procedure is to enable a planned transition from OCM to SCM after planned execution of a routine delta-V.

The procedure involves the following activities:

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

NOTE1: This procedure is a copy of H_FCP_AOC_0SCM but with the steps for RCS Fine mode removed. It was created in order to define a TC sequence (AESFX_00) that executes TPF=SFX, which is used to plan the transition from OCM back to SCM using RCS Coarse mode after a routine delta-v

NOTE2: 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

S/C in OCM with RCS Coarse mode

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End of Procedure

S/C in SCM Fine Pointing

Reference File(s)

Input Command Sequences

Output Command Sequences

AESFX_00

Referenced Displays

| | | |
|-------------|-------------|-------------|
| ANDs | GRDs | SLDs |
| ZAA06999 | | (None) |
| ZAZ6C999 | | |
| ZAALH999 | | |
| ZAA50999 | | |
| ZAA01999 | | |
| ZAA52999 | | |

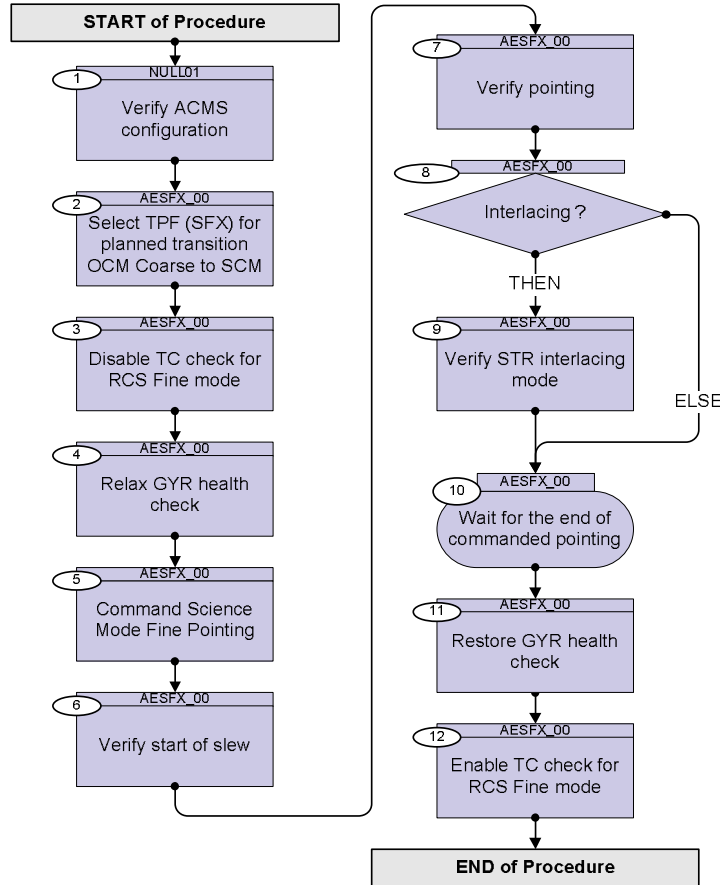
Configuration Control Information

| DATE | FOP ISSUE | VERSION | MODIFICATION DESCRIPTION | AUTHOR | SPR REF |
|----------|-----------|---------|---|----------|---------|
| 19/04/09 | | 1 | Created | dsalt-hp | |
| 19/04/09 | 2.3 | 2 | Small change to order of steps (old Step 4 now Step 2) to improve activity flow | dsalt-hp | |
| 04/03/10 | 3 | 3 | Sequence now 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 |
|---|------|--|--------|-----------------|
| Beginning of Procedure | | | | |
| <p>TC Seq. Name : NULL01 (Null Sequence 01)</p> <p>TimeTag Type: Sub Schedule ID:</p> <p style="text-align: center;">□</p> | | | | |
| 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 | | |
| <p>TC Seq. Name : AESFX_00 (AESFX_00)</p> <p>TimeTag Type: B Sub Schedule ID: 20</p> <p style="text-align: center;">□</p> | | | | |
| 2 | | Select TPF (SFX) for planned transition OCM Coarse to SCM | | Next Step: 3 |
| | | Check with Flight Dynamics the exact name of the TPF instance to be uplinked | | |
| | | 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. The selection defined within the TPF determines the execution of some verification steps. | | |
| | | 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. 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) | | |
| 3 | | Disable TC check for RCS Fine mode | | Next Step: 4 |

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| Step No. | Time | Activity/Remarks | TC/TLM | Display/ Branch |
|----------|----------------------------|--|--|--------------------------|
| | | 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 |
| | ET=TR- 00.00.20 UT=+ | Execute Telecommand DisChkMode-StateFID 101 Command Parameter(s) : DisChk DF86Cmd AH8C1001 DisChk DD86Cmd AH8C2001 TC Control Flags : GBM IL DSE --Y -- -- Subsch. ID : 20 Det. descr. : TC(8,1) - Disable Command check - DisChkMode-StateFID 101 | ACY8P109 Enable 86 Enable 86 | |
| | ET=TR- 00.00.18 UT=+ | Execute Telecommand Fire Disable Check Command Parameter(s) : FireFun DF86Cmd AH8F1001 FireFun DD86Cmd AH8F2001 TC Control Flags : GBM IL DSE --Y -- -- Subsch. ID : 20 Det. descr. : TC(8,4) Fire Command - Fire Disable Check | ACZ7M109 Enable 86 Enable 86 | |
| | | Verify Telemetry SGM TC Chk Sts AE3U0002 | <note change> | AND=ZAA06999 |
| 4 | | Relax GYR health check | | Next Step: 5 |
| | | NOTE: The following TCs are part of the set to allow direct transition to SCM from OCM Coarse mode | | |
| 4.1 | | 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) | | |

Procedure for planning transition to SCM
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| Step No. | Time | Activity/Remarks | TC/TLM | Display/ Branch |
|----------|----------------------------|---|--|--------------------------|
| 4.1.1 | | Activate loading | | <input type="checkbox"/> |
| | ET=TR- 00.00.16 UT=+ | Execute Telecommand <p style="text-align: center;">Start database loading</p> Command Parameter(s) : ASW Function ID AHFUN001 DbLoad DF86 Cmd AH8D1001 DbLoad DD86 Cmd AH8D2001 DbLoad Nr Cmds AHFDL001 TC Control Flags : <p style="text-align: right;">GBM IL DSE --Y -- ---</p> 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. | | |
| 4.1.2 | | Load values | | <input type="checkbox"/> |
| | ET=TR- 00.00.14 UT=+ | Execute Telecommand <p style="text-align: center;">Load databaseReal</p> 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 : <p style="text-align: right;">GBM IL DSE --Y -- ---</p> Subsch. ID : 20 Det. descr. : TC(8,4) - Load database Real | ACZTY109 Enable 86 Enable 86 757 <dec> 1 <dec> (Def) 0.011 <dec> | |
| | ET=TR- 00.00.12 UT=+ | Execute Telecommand <p style="text-align: center;">Load databaseReal</p> 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 : <p style="text-align: right;">GBM IL DSE --Y -- ---</p> Subsch. ID : 20 Det. descr. : TC(8,4) - Load database Real | ACZTY109 Enable 86 Enable 86 758 <dec> 1 <dec> (Def) 0.0062 <dec> | |
| 4.1.3 | | Activate values | | <input type="checkbox"/> |

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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> | | |
| 4.2.3 | | Dump from SGM | | <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 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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|-----------------|-----------------------------|--|-----------------|-----------------|----------------|---------------|----------|--------------|----------------|----------|-------|----------------|----------|-----------|--------------|---------|-----------|----------------|----------|----------|----------------|----------|---------|----------------|----------|---------|----------------|----------|---------|--------------|----------|---------|-----------|----------|--------|--|--|---------|----------|--|
| 5 | | Command Science Mode Fine Pointing | | Next Step: 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | ET=TR+00.00.00 0 UT=+ | Execute Telecommand <p style="text-align: center;">SCM Fine pointing</p> Command Parameter(s) : <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">ASW Function ID</td> <td style="width: 30%;">AHFUN002</td> <td style="width: 40%;">ACMSMain (Def)</td> </tr> <tr> <td>AcmsH AID Cmd</td> <td>AHHF0002</td> <td>SCM prep pnt</td> </tr> <tr> <td>AcmsH DF86 Cmd</td> <td>AH8G1002</td> <td>(Def)</td> </tr> <tr> <td>AcmsH DD86 Cmd</td> <td>AH8G2002</td> <td>Enable 86</td> </tr> <tr> <td>AcmsH STR IL</td> <td>AHXL002</td> <td>Enable 86</td> </tr> <tr> <td>AcmsH Cmd TQ1r</td> <td>AHHC6002</td> <td>STRILACE</td> </tr> <tr> <td>AcmsH Cmd TQ2r</td> <td>AHHC7002</td> <td>Q_FIN_X</td> </tr> <tr> <td>AcmsH Cmd TQ3r</td> <td>AHHC8002</td> <td>Q_FIN_Y</td> </tr> <tr> <td>AcmsH Cmd TQ4r</td> <td>AHHC9002</td> <td>Q_FIN_Z</td> </tr> <tr> <td>AcmsH T_slew</td> <td>AHHD1002</td> <td>Q_FIN_S</td> </tr> <tr> <td>AcmsH T_p</td> <td>AHHD2002</td> <td>T_SLEW</td> </tr> <tr> <td></td> <td></td> <td>T_POINT</td> </tr> </table> TC Control Flags : <p style="text-align: right;">GBM IL DSE --Y -- ---</p> Subsch. ID : 20 Det. descr. : TC_PERFORM_SCM_FINE_POINTING | 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 | | | T_POINT | ACAF1002 | |
| 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 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | T_POINT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | | Verify start of slew | | Next Step: 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Verify Packet Reception AccAsw TM_5_1_16427 - New mode_state Packet Details: <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">APID:</td> <td style="width: 30%;">512</td> <td style="width: 40%;">A51CSTATE109</td> </tr> <tr> <td>Type:</td> <td>5</td> <td></td> </tr> <tr> <td>Subtype:</td> <td>1</td> <td></td> </tr> <tr> <td>PI1:</td> <td>16427</td> <td></td> </tr> <tr> <td>PI2:</td> <td>0</td> <td></td> </tr> </table> | APID: | 512 | A51CSTATE109 | Type: | 5 | | Subtype: | 1 | | PI1: | 16427 | | PI2: | 0 | | | | | | | | | | | | | | | | | | | | | | | | |
| APID: | 512 | A51CSTATE109 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Type: | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Subtype: | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PI1: | 16427 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PI2: | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Verify Packet Telemetry (Pkt = A51CSTATE109) <p style="text-align: center;">Substate Event AE5ST109</p> <p style="text-align: center;">= SCM Tracking</p> | | AND=ZAALH999 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | The event packet indicates the start of slew as a change of substate. The change of substate occurs as soon as the slew path has been calculated by the path planner. 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). | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | | Verify pointing | | Next Step: 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Verify Telemetry <p style="text-align: center;">AcmsSubstate AESMF002</p> <p style="text-align: center;">= SCM Pointing</p> | | AND=ZAA50999 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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|----------|------|---|------------------|---------------------------------|
| | | Verify Telemetry AcmsMain AID AESM3002 | = SCM pnt F rdy | AND=ZAA01999 |
| | | Verify Telemetry ScmType AESMC002 | = Point | AND=ZAA50999 |
| | | Verify Telemetry OnTargetFlag AESM0002 | = HIGH | AND=ZAA50999 |
| | | Verify Telemetry ACMS Main AID AE5A0001 | = SCM Point Fine | (None) |
| | | 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 |
| 8 | | Interlacing ? | | Next Step: THEN 9 ELSE 10 |
| 9 | | Verify STR interlacing mode | | Next Step: 10 |
| | | Verify Telemetry InterlacingSts AESMX002 | = Interlacing ON | AND=ZAA50999 |
| | | Verify Telemetry STRM IL sts AEXJ1002 | = IL active | AND=ZAA52999 |
| 10 | | Wait for the end of commanded pointing | | Next Step: 11 |
| | | 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 |

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|-----------------|----------------------|--|-----------------|--------------------------|------------------|-----------------|----------|-----------|-----------------|----------|-----------|----------------|----------|---------|--|------------|--|------------|----------|--|
| | | <p>***** ALERT *****</p> <p>The following TCs assume that the slew is completed in less than <u>10 minutes</u></p> | | | | | | | | | | | | | | | | | | |
| 11 | | Restore GYR health check | | Next Step: 12 | | | | | | | | | | | | | | | | |
| 11.1 | | Uplink commands to restore default OBDB values for the GYR health check parameters | | <input type="checkbox"/> | | | | | | | | | | | | | | | | |
| | | <p>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)</p> | | | | | | | | | | | | | | | | | | |
| 11.1.1 | | Activate loading | | <input type="checkbox"/> | | | | | | | | | | | | | | | | |
| | ET=+00.10.02 UT=+ | <p>Execute Telecommand</p> <p style="text-align: center;">Start database loading</p> <p>Command Parameter(s) :</p> <table border="0"> <tr> <td>ASW Function ID</td> <td>AHFUN001</td> <td>DB loading (Def)</td> </tr> <tr> <td>DbLoad DF86 Cmd</td> <td>AH8D1001</td> <td>Enable 86</td> </tr> <tr> <td>DbLoad DD86 Cmd</td> <td>AH8D2001</td> <td>Enable 86</td> </tr> <tr> <td>DbLoad Nr Cmds</td> <td>AHFDL001</td> <td>2 <dec></td> </tr> </table> <p>TC Control Flags :</p> <table border="0"> <tr> <td></td> <td>GBM IL DSE</td> </tr> <tr> <td></td> <td>--Y -- ---</td> </tr> </table> <p>Subsch. ID : 20 Det. descr. : TC_START_DATABASE_LOAD</p> | 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> | | GBM IL DSE | | --Y -- --- | ACDS1001 | |
| 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> | | | | | | | | | | | | | | | | | | |
| | GBM IL DSE | | | | | | | | | | | | | | | | | | | |
| | --Y -- --- | | | | | | | | | | | | | | | | | | | |
| | | 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. | | | | | | | | | | | | | | | | | | |
| 11.1.2 | | Load values | | <input type="checkbox"/> | | | | | | | | | | | | | | | | |

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|----------|----------------------|--|--|--------------------------|
| | ET=+00.00.02 UT=+ | 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 : GBM IL DSE --Y -- --- Subsch. ID : 20 Det. descr. : TC(8,4) - Load database Real | ACZTY109 Enable 86 Enable 86 757 <dec> 1 <dec> (Def) 0.00011 <dec> | |
| | ET=+00.00.02 UT=+ | 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 : GBM IL DSE --Y -- --- Subsch. ID : 20 Det. descr. : TC(8,4) - Load database Real | ACZTY109 Enable 86 Enable 86 758 <dec> 1 <dec> (Def) 0.000066 <dec> | |
| 11.1.3 | | Activate values | | <input type="checkbox"/> |
| | ET=+00.00.02 UT=+ | Execute Telecommand Fire critical command Command Parameter(s) : FireFun DF86Cmd AH8F1001 FireFun DD86Cmd AH8F2001 FireFun CritFID AHFFH001 TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 20 Det. descr. : TC_FIRE_COMMAND | ACFC1001 Enable 86 Enable 86 201 <dec> | |
| 11.2 | | Call procedure H_FCP_AOC_DODD Generic OBDB Dump | | <input type="checkbox"/> |
| | | 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 | | |

Procedure for planning transition to SCM
 File: H_FCP_AOC_OSFX.xls
 Author: dsalt-hp



| 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> | | |
| 11.2.1 | | 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 planning transition to SCM
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| Step No. | Time | Activity/Remarks | TC/TLM | Display/ Branch |
|----------|------|---|------------------|--------------------------|
| | | Verify Telemetry HScmGyrUnavRwl AEDYV002 | = 0.000066 <dec> | AND=ZAZ6C999 |
| 11.2.2 | | 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> | | |
| 11.2.3 | | Dump from SGM | | <input type="checkbox"/> |

Procedure for planning transition to SCM
 File: H_FCP_AOC_OSFX.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> | | |
| 12 | | <p>Enable TC check for RCS Fine mode</p> | | Next Step: END |
| | ET=+00.00.02 UT=+ | <p>Execute Telecommand</p> <p style="text-align: right;">EnaChkMode-StateFID 101</p> <p>Command Parameter(s) :</p> <p style="text-align: right;">EnaChck DF86Cmd AH8F3001 Enable 86 EnaChck DD86Cmd AH8F4001 Enable 86</p> <p>TC Control Flags :</p> <p style="text-align: right;">GBM IL DSE --Y -- --</p> <p>Subsch. ID : 20 Det. descr. : TC(8,1) - Enable Command check - EnaChkMode-StateFID 101</p> | ACZDL109 | |
| | | <p>Verify Telemetry</p> <p style="text-align: right;">SGM TC Chk Sts AE3U0002</p> | <as original value in Step 2> | AND=ZAA06999 |

Procedure for planning transition to SCM
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| Step No. | Time | Activity/Remarks | TC/TLM | Display/ Branch |
|-------------------------|------|------------------|--------|-----------------|
| End of Procedure | | | | |