

Update S/C orbital velocity in STR
 File: H_FCP_AOC_4S4X.xls
 Author: dsalt-hp



Procedure Summary

Objectives

The objective of this Herschel ACMS procedure is to update the spacecraft orbital velocity in the STR using a TC single sequence (AEXVV).

The procedure involves the following activities:

- sending values to the STR to update the velocity used by the correction algorithm
- update values stored in the OBDB (sent autonomously to the STR by the ASW in case of STR reset)

Note that the procedure only updates the Main STR.

The software of the STR corrects stellar position for the effect of annual aberration. The correction relies on values of spacecraft orbit velocity provided by the user.

Summary of Constraints

- Main constraints:
- STR Main in STB mode or in ATFAD/AAD

Spacecraft Configuration

Start of Procedure

- Spacecraft initial conditions:
- n/a

End of Procedure

- Spacecraft final conditions:
- n/a

Reference File(s)

Input Command Sequences

Output Command Sequences

AEXVV_00

Referenced Displays

ANDs GRDs SLDs
 ZAA05999

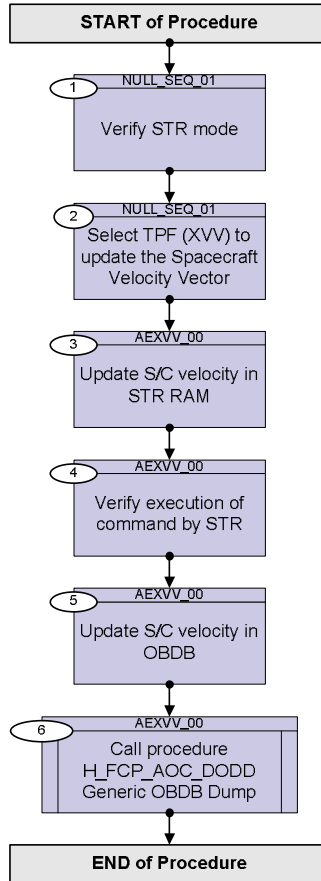
Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
08/09/09	2.5	1	Created	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 :NULL_SEQ_01 (Null Sequence 01) TimeTag Type: Sub Schedule ID: <input type="checkbox"/>				
1		Verify STR mode		Next Step: 2
		Verify Telemetry STRM Mode AEX04001	= Standby	AND=ZAA05999
		OR Verify Telemetry STRM Mode AEX04001	= Auto attdetect	AND=ZAA05999
2		Select TPF (XVV) to update the Spacecraft Velocity Vector		Next Step: 3
		Check with Flight Dynamics the <u>exact name of the TPF instance</u> to be uplinked		
TC Seq. Name :AEXVV_00 (Update S/C velocity) TimeTag Type: B Sub Schedule ID: Formal Parameter List : STR_VEL_X SC_VV_X= m/s STR_VEL_Y SC_VV_Y= m/s STR_VEL_Z SC_VV_Z= m/s STR_VEL_X SC_OV_X= m/s STR_VEL_Y SC_OV_Y= m/s STR_VEL_Z SC_OV_Z= m/s				
3		Update S/C velocity in STR RAM		Next Step: 4
3.1		Load new S/C velocity vector in STR		<input type="checkbox"/>

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	ET=+00.00.00 UT=+	Execute Telecommand STRmain SC Velocity Command Parameter(s) : STRCfG DF86 Cmd AH8J3001 STRCfG DD86 Cmd AH8J4001 STR_VEL_X AHFXC001 STR_VEL_Y AHFXE001 STR_VEL_Z AHFXF001 TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 20 Det. descr. : TC(8,1) Command STR config - STRmain SC Velocity - ModTAS-F	ACYJU109 Enable 86 (Def) Enable 86 (Def) SC_VV_X SC_VV_Y SC_VV_Z	
3.2		Activate new values with the fire command		<input type="checkbox"/>
	ET=+00.00.01 UT=+	Execute Telecommand Fire Cmd STR config 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 Cmd STR config	ACZ4M109 Enable 86 Enable 86	
4		Verify execution of command by STR		Next Step: 5
		Wait 30 seconds to allow STR data to be updated in essential HK TM.		
		Verify Telemetry STRM lastTC sts AEX0G001	= No failure	AND=ZAA05999
5		Update S/C velocity in OBDB		Next Step: 6
		Modify OBDB loading new values for parameters G_DB_V_ALL_AUX_STR_ORBIT_VEL_[XYZ]		
5.1		Activate update		<input type="checkbox"/>

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
	ET=+00.00.01 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 : GBM IL DSE --Y -- --- Subsch. ID : 20 Det. descr. : TC_START_DATABASE_LOAD	ACDS1001 DB loading (Def) Enable 86 Enable 86 1 <dec>	
5.2		Load new S/C velocity vector in OBDB		□
	ET=+00.00.01 UT=+	Execute Telecommand OBDB_STR_VEL Command Parameter(s) : DbLoad DF86 Cmd XH191990 DbLoad DD86 Cmd XH192990 STR_VEL_X XH198990 STR_VEL_Y XH199990 STR_VEL_Z XH200990 TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 20 Det. descr. :	XC033990 Enable 86 (Def) Enable 86 (Def) SC_OV_X SC_OV_Y SC_OV_Z	
5.3		Activate new values with the fire command		□
	ET=+00.00.01 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>	
6		Call procedure H_FCP_AOC_DODD Generic OBDB Dump		Next Step: END

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		<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 F), the current procedure loads the following parameters into specific OBDB offset locations in RAM: G_DB_V_ALL_AUX_STR_ORBIT_VEL_* at offsets 1853-1855 These are located in Block 8 of the OBDB</p> <p>None of these parameters are copied to SGM</p>		
6.1		<p>Dump via DTM</p>		<input type="checkbox"/>
		<p><u>Relevant details for use with H FCP AOC DODD</u></p> <p>The following parameters G_DB_V_ALL_AUX_STR_ORBIT_VEL_* are located in Block 8 of the OBDB</p>		
		<p><u>Use sequence HFADODDH</u></p>		
		<p>NOTE: The contents of diagnostic packet A3DH0BDB8109 {DTM with Herschel OBDB data8} are spread over a group of 4 monitoring displays:</p> <p>ZAZ6S999 DTMOBDB8_1 ZAZ6T999 DTMOBDB8_2 <- values are in this display ZAZ6U999 DTMOBDB8_3 ZAZ6V999 DTMOBDB8_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>		
6.2		<p>Dump from RAM</p>		<input type="checkbox"/>

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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 F), this procedure loads the following parameters into specific OBDB offset locations in RAM: G_DB_V_ALL_AUX_STR_ORBIT_VEL_* at offsets 1853-1855</p> <p>The <u>absolute address</u> of offset 1853 is therefore: 020A = Memory ID EC0C = Start Address</p>		
		<p><u>Use sequence HFADODDL</u> to dump <u>all</u> the OBDB in RAM, or edit: Start Address = EC0C Length = 16</p>		
		<p><i>NOTE:</i> 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>		
6.3		<p>Dump from SGM</p>		☐
		<p><u>Relevant details for use with H FCP AOC DODD</u></p> <p>This step can be ignored - parameter not copied to SGM</p>		
		<p><i>NOTE:</i> 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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		End of Procedure		