

Starting or stopping the MTL function
File: H_FCP_DHS_3025.xls
Author: S. Manganelli



Procedure Summary

Objectives

This procedure describes the steps needed to switch ON or OFF the ASW function "On board Scheduling".

The "On board Scheduling" service provides the capabilities to execute a sequence of time-tagged TCs from a Mission Timeline (MTL).

Summary of Constraints

Default status of the function: "Stopped".

When the function is stopped, it does not accept any other telecommands than the:

- Start Function TC(8,1,105);
- Report Function Status TC(8,5,105);
- Reset Command Schedule TC(11,3).

Spacecraft Configuration

Start of Procedure

- CDMU in default configuration, that is:
- PM A or B ON (nominally A)
 - TM Encoder/OBT A or B active (nominally A)
 - RM A and B enabled
 - MM A and B ON

End of Procedure

- CDMU in default configuration, that is:
- PM A or B ON (nominally A)
 - TM Encoder/OBT A or B active (nominally A)
 - RM A and B enabled
 - MM A and B ON

Reference File(s)

Input Command Sequences

Output Command Sequences

HFD3025B
HFD3025C
HFD3025D
HFD3025E
HFD3025H
HFD3025G

Referenced Displays

ANDs	GRDs	SLDs
ZAZAI999		(None)
ZAZAQ999		

Configuration Control Information

Status : Version 11 - Unchanged
Last Checkin: 19/03/09

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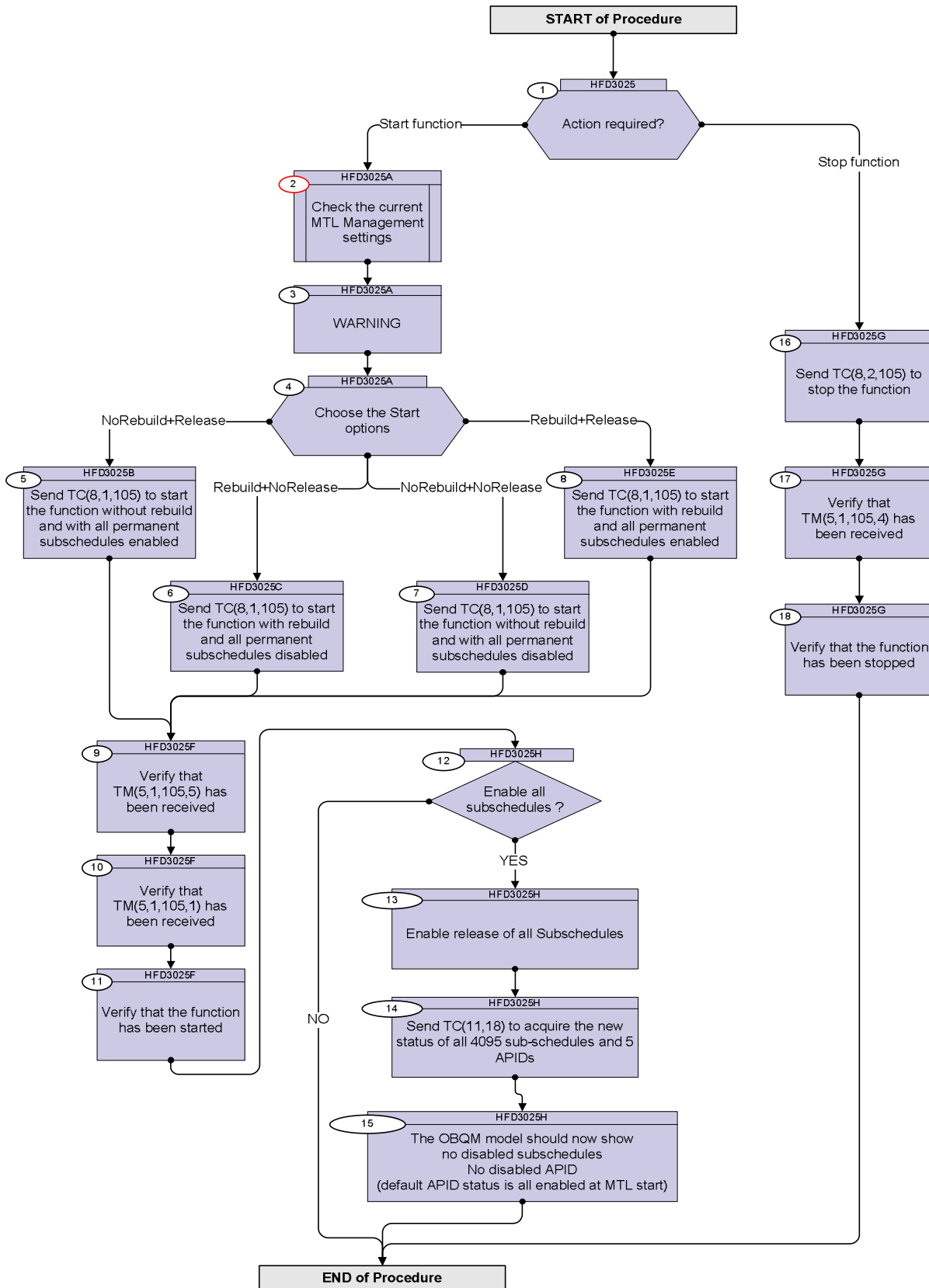


DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
12/11/07		1	Created	cmevi-hp	
10/06/08		2	TC flags / Seq type modification	S. Manganelli	
20/06/08		3	Structure completely revised for the use of dedicated TC(8,1,105) to start MTL and use of MTL Reset flag	S. Manganelli	
23/06/08		4	Added comments	S. Manganelli	
04/08/08		5	Changed structure in case "clear all MTL TC" is selected	S. Manganelli	
04/08/08	1	6	Editorial	S. Manganelli	
24/10/08		7	DB update for OBSW 3_6_2	S. Manganelli	
28/11/08		8	Procedure updated according to latest version received from industry on 29/09/2008	cmevi-hp	
02/12/08		9	Added option to enable all subschedules, new seq description	S. Manganelli	
02/01/09	2	10	Changed TC for enable all subschedules at step 14, modified comments and Visio	S. Manganelli	
19/03/09	2.2	11	Added second flow chart <input type="checkbox"/> Added start flags TM parameter check <input type="checkbox"/> DB changed due to OBSW 8_3_2	S. Manganelli	

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Procedure Flowchart Overview



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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
Beginning of Procedure					
HFD3025 <i>TC Seq. Name :HFD3025 (Dummy sequence)</i> <i>TimeTag Type:</i> <i>Sub Schedule ID:</i> <input type="checkbox"/>					
1		Action required? type: [Switch]		Next Step: Start function 2 Stop function 16	
1.1		Start			
		Verify Telemetry Mtl1Sts DEH26170	= Stopped	AND=ZAZAI999	
		Verify Telemetry MtlFirstStrtSts DENAE170		AND=ZAZAQ999	
		Verify Telemetry MtlResetStatus DENAD170		AND=ZAZAQ999	
		Verify Telemetry MtlInitInProgr DENAC170		AND=ZAZAQ999	
		DENAE170 MtlFirstStrtSts Y = The MTL has never been started since last software boot. DENAD170 MtlResetStatus Y = The TC to reset the MTL has been previously received (see H_FCP_DHS_3023). This will cause the whole buffer to be deleted, independently from the flag in the TC used in this procedure to start the MTL. No TC will be found in the buffer. DENAC170 MtlInitInProgr Y = the initialization of the MTL buffers is in progress. The "rebuild" flag in the start MTL TC indicates whether or not the MTL index (B-Tree) in RAM has to be rebuilt taking the information from the MTL buffers in SSMM. SEE FLOW CHARTS AT END OF PROCEDURE			
1.2		Stop			
		Verify Telemetry Mtl1Sts DEH26170	= Running	AND=ZAZAI999	
End of Sequence					
HFD3025A <i>TC Seq. Name :HFD3025A (Check MTL status)</i> <i>TimeTag Type:</i> <i>Sub Schedule ID:</i> <input type="checkbox"/>					

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
2		Check the current MTL Management settings type: [Proc]		Next Step: 3	
		Execute procedure H_FCP_DHS_3026.			
3		WARNING		Next Step: 4	
		Note that a the first starting of the function after software reboot or if a rebuild was forced, the execution of this TC takes longer than usual, since the SSMM buffers are created and initialised. If no rebuild is forced the existing buffers are simply read through to see what is in them. WARNING: In case a Reset Command Schedule telecommand TC(11,3) was sent, all entries in the MTL for all applications were removed and therefore a rebuild of the buffers is required.			
4		Choose the Start options type: [Switch]		Next Step: NoRebuild+Release 5 Rebuild+NoRelease 6 NoRebuild+NoRelease 7 Rebuild+Release 8	
End of Sequence					
	HFD3025B	TC Seq. Name :HFD3025B (Start MTL RBn_RLy) TimeTag Type: Sub Schedule ID: <input type="checkbox"/>			
5		Send TC(8,1,105) to start the function without rebuild and with all permanent subschedules enabled		Next Step: 9	
		Execute Telecommand StartOnBoardSched_Rb0R11 TC Control Flags : Subsch. ID : 10 Det. descr. : StartOnBoardScheduling TC(8,1,105) + Rebuild = 0 + Release = 1	DCS0F170	TC	
End of Sequence					

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
HFD3025C <i>TC Seq. Name : HFD3025C (Start MTL RBy_RLn)</i> <i>TimeTag Type:</i> <i>Sub Schedule ID:</i> <input type="checkbox"/>					
6		Send TC(8,1,105) to start the function with rebuild and all permanent subschedules disabled		Next Step: 9	
		Execute Telecommand StartOnBoardSched_Rb1R10 <i>TC Control Flags :</i> <div style="text-align: right;"> GBM IL DSE --Y -- --- </div> <i>Subsch. ID : 10</i> <i>Det. descr. : StartOnBoardScheduling TC(8,1,105) +</i> <i>Rebuild = 1 + Release = 0</i>	DCS0E170	TC	
End of Sequence					
HFD3025D <i>TC Seq. Name : HFD3025D (Start MTL RBn_RLn)</i> <i>TimeTag Type:</i> <i>Sub Schedule ID:</i> <input type="checkbox"/>					
7		Send TC(8,1,105) to start the function without rebuild and with all permanent subschedules disabled		Next Step: 9	
		Execute Telecommand StartOnBoardSched_Rb0R10 <i>TC Control Flags :</i> <div style="text-align: right;"> GBM IL DSE --Y -- --- </div> <i>Subsch. ID : 10</i> <i>Det. descr. : StartOnBoardScheduling TC(8,1,105) +</i> <i>Rebuild = 0 + Release = 0</i>	DCS0G170	TC	
End of Sequence					
HFD3025E <i>TC Seq. Name : HFD3025E (Start MTL RBy_RLy)</i> <i>TimeTag Type:</i> <i>Sub Schedule ID:</i> <input type="checkbox"/>					
8		Send TC(8,1,105) to start the function with rebuild and all permanent subschedules enabled		Next Step: 9	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		Verify Packet Telemetry Status_16bit DE099170	= Disabled = Enabled	(None)	
		Verify Packet Telemetry SubScStsChReas DE287170	= Tc8_1or2_105	(None)	
		Verify Packet Telemetry EventSeqCounter DE069170			
		Verify Packet Telemetry Time DELA1170			
11		Verify that the function has been started		Next Step: 12	
		Verify Telemetry MtlSts DEH26170	= Running	AND=ZAZAI999	
End of Sequence					
	HFD3025H	TC Seq. Name :HFD3025H (Ena rel all MTL TC) TimeTag Type: N Sub Schedule ID: <input type="checkbox"/>			
12		Enable all subschedules ? type: [If]		Next Step: YES 13 NO END	
13		Enable release of all Subschedules		Next Step: 14	
		Execute Telecommand EnRelOfAllSsIdTcs DC75F170 TC Control Flags : GBM IL DSE --Y -- -- Subsch. ID : 10 Det. descr. : EnableReleaseOfTcs from all subschedules TC(11,1)		TC	
14		Send TC(11,18) to acquire the new status of all 4095 sub-schedules and 5 APIDs		Next Step: 15	
		When this request is received, a Command Schedule Status Report (set of TM(11,19) packets) will be generated containing the release status (enabled or disabled) of all five Application Processes and of all 4095 Subschedules. When the dump of TM(11,19) has ended, an Event Report TM(5,1,105,12) indicating the number of reported TM(11,19) is issued.			

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
		Execute Telecommand RetStatusOfCmdSchedule <i>TC Control Flags :</i> <p style="text-align: right;">GBM IL DSE --Y -- ---</p> <i>Subsch. ID : 10</i> <i>Det. descr. : ReportStatusOfCmdSchedule, TC(11,18)</i>	DC89F170	TC	
15		The OBQM model should now show no disabled subschedules No disabled APID (default APID status is all enabled at MTL start)		Next Step: END	
End of Sequence					
	HFD3025G	<i>TC Seq. Name : HFD3025G (Stop MTL funct)</i> <i>TimeTag Type:</i> <i>Sub Schedule ID:</i> <input type="checkbox"/>			
16		Send TC(8,2,105) to stop the function		Next Step: 17	
		The distinction between stopping the function and disabling all the subschedules is that when the function is restarted with TC(8,1,105) after it has been stopped with TC(8,2,105), the enable/disable status of the subschedules are maintained. WARNING: when the function is stopped, it does not accept any other telecommands than the Start Function, Reset Command Schedule and Report Function Status.			
		Execute Telecommand StopOnBoardSched <i>TC Control Flags :</i> <p style="text-align: right;">GBM IL DSE --Y -- ---</p> <i>Subsch. ID : 10</i> <i>Det. descr. : StopOnBoardScheduling TC(8,2,105)</i>	DC91F170	TC	
17		Verify that TM(5,1,105,4) has been received		Next Step: 18	
		Verify Packet Reception CdmuAsw Event 5-1 MTL Function Stopped Packet Mnemonic : D_EvRp_7039 APID : 16 Type : 5 Subtype : 1 PI1 : 26884 PI2 : 0			
		Verify Packet Telemetry TM5xEventID DEZSJ170 = MtlFuncStopped		(None)	
		Verify Packet Telemetry EventSeqCounter DE069170		(None)	

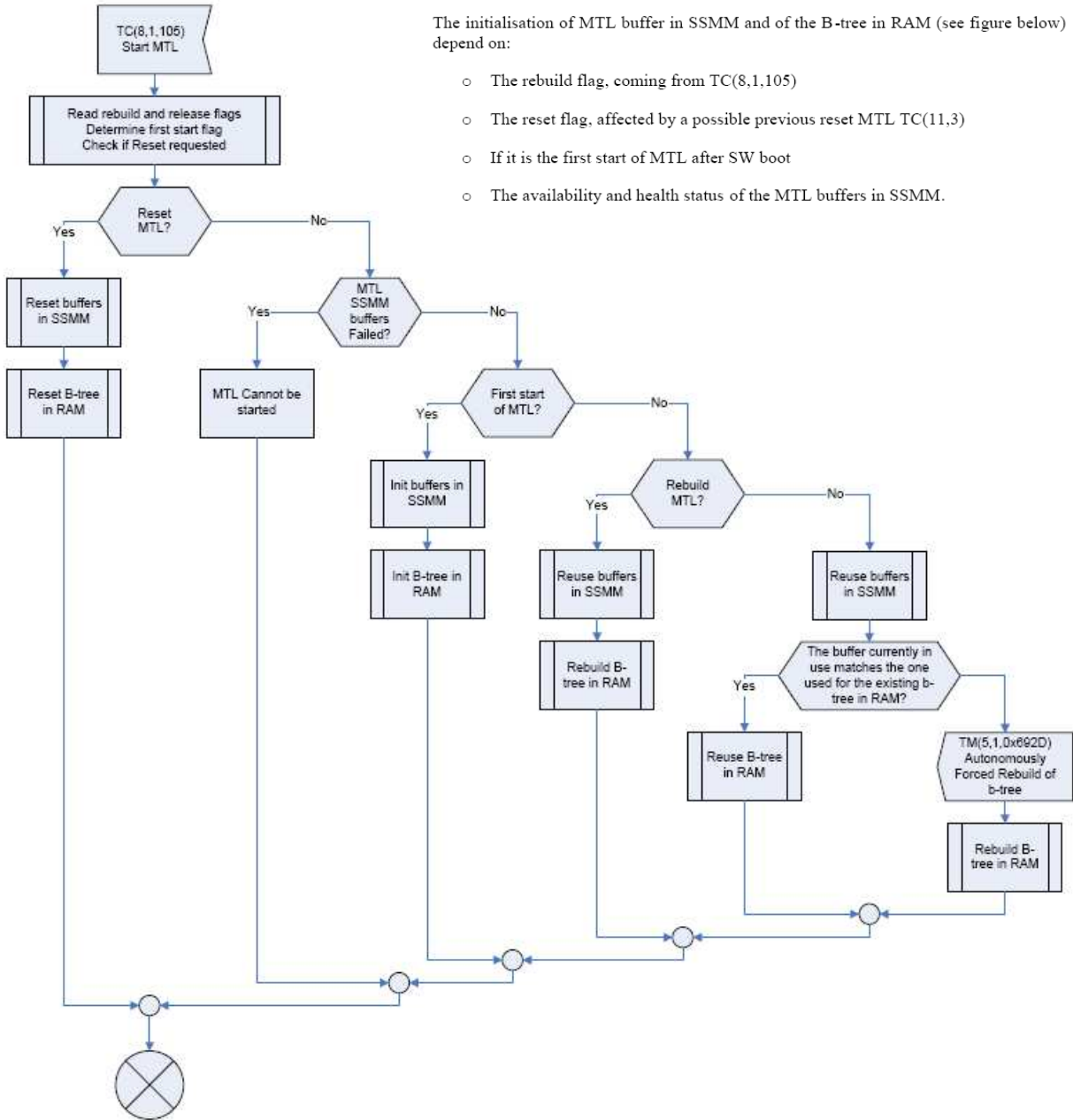
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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch	AIT Comment
18		Verify that the function has been stopped		Next Step: END	
		Verify Telemetry Mtl1sts DEH26170	= Stopped	AND=ZAZAI999	
End of Sequence					
End of Procedure					

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Overview of MTL start



The initialisation of MTL buffer in SSMM and of the B-tree in RAM (see figure below) depend on:

- The rebuild flag, coming from TC(8,1,105)
- The reset flag, affected by a possible previous reset MTL TC(11,3)
- If it is the first start of MTL after SW boot
- The availability and health status of the MTL buffers in SSMM.

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Detailed flow of MTL start