

Switch to TM encoder B and OBT B
File: H_FCP_DHS_3007.xls
Author: S. Manganelli



Procedure Summary

Objectives

This procedure describes the steps needed to perform the switchover from TM encoder/OBT A to TM encoder/OBT B.

Summary of Constraints

Before switching from TM Encoder A to B it is necessary to disable the Event/Action Table (EAT) entries 56, 57, 64, 65, 86 and 87 and then, when the TM Encoder B has been selected, it is necessary to update the Unit In Use (UIU) table to mark the Encoder B as "Nominal" and re-enabled the EAT entries.

To enable/disable the EAT entries and to change the role of nominal/redundant in UIU table the status of the ASW functions "Event/Action Management" and "FDIR Management" have to be "running".

Moreover, when changing the TM encoder a glitch on the internal PPS lines of the OBT cannot be excluded, possibly causing the BSW to enter in free running mode; for this reason it is necessary to set the CTR (Central Time Reference) and synchronise the remote terminals.

Spacecraft Configuration

Start of Procedure

CDMU with the following configuration:

- PM A ON
- TM Encoder/OBT A active
- RM A and B enabled
- MM A and B ON
- TM/TC via umbilical connection

End of Procedure

CDMU with the following configuration:

- PM A ON
- TM Encoder/OBT B active
- RM A and B enabled
- MM A and B ON
- TM/TC via umbilical connection

Reference File(s)

Input Command Sequences

Output Command Sequences

HFD3007A
HFD3007B
HFD3007C
HFD3007E

Referenced Displays

ANDs GRDs SLDs

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ZAZAA999 (None)
 ZAZAB999
 ZAZAI999
 ZAZAN999

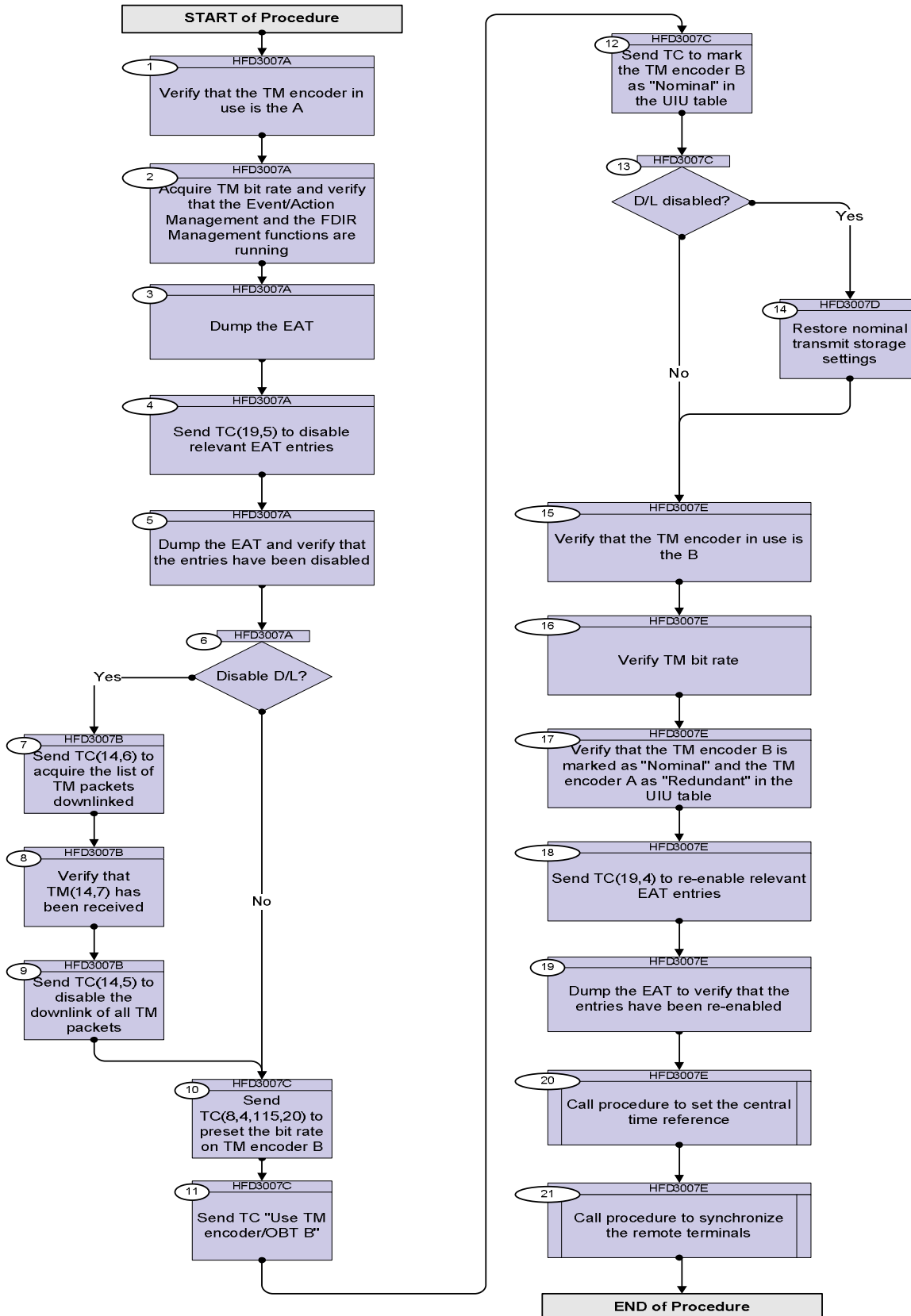
Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
15/11/07		1	Created	cmevi-hp	
16/01/08	1	2	Batch update of TC flags	S. Manganelli	
12/11/08		3	Procedure updated according to latest version received from industry on 09/09/2008	cmevi-hp	
12/01/09	2	4	Updated following OBSW 3_8	S. Manganelli	
13/02/09	2.1	5	Step to select bitrate on "next" encoder moved before the switchover, TC included in export, FP used.	S. Manganelli	
15/03/09		6	Fixed MOIS FP bug	S. Manganelli	
23/03/09	2.2	7	Calls to EAT dump procedure substituted with relevant TC Some comments added Added call to procedure to restore default Xmit Storage, deleted related non-instantiated TC steps	S. Manganelli	

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Procedure Flowchart Overview



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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
Beginning of Procedure				
<p><i>TC Seq. Name :HFD3007A (Checks before switch)</i></p> <p><i>TimeTag Type: N</i> <i>Sub Schedule ID:</i></p> <p style="text-align: center;">□</p>				
1		Verify that the TM encoder in use is the A		Next Step: 2
		Verify Telemetry Active_TTRBoard DEDMG160	= A	AND=ZAZAA999
2		Acquire TM bit rate and verify that the Event/Action Management and the FDIR Management functions are running		Next Step: 3
		Verify Telemetry TME_BITRATE DEMRF160		AND=ZAZAB999
		Verify Telemetry EaSts DEG19170	= Running	AND=ZAZAI999
		Verify Telemetry FdirSts DEG23170	= Running	AND=ZAZAI999
3		Dump the EAT		Next Step: 4
		Execute Telecommand ReptEvtActTable	DCT86170	
		TC Control Flags : GBM IL DSE --Y -- --		
		Subsch. ID : 10 Det. descr. : TEMPLATE Report The contents of the event/action table TC(19,6)		
4		Send TC(19,5) to disable relevant EAT entries		Next Step: 5

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		<p>When this request is received, the action-telecommand associated with the events TM 5,2, 56 / 57 / 64 / 65 / 86 / 87 shall be disabled.</p> <p>In the TC(19,5) it is necessary to set the following parameters:</p> <p><u>N</u>, number of events to be disabled; in this case equal to 6.</p> <p><u>APID</u>, repeated N times, identifier of the Application Process generating this event report; in this case equal to 16 (CDMU).</p> <p><u>Event ID</u>, repeated N times, identifier of the event to be disabled; in this case equal to 56, 57, 64, 65, 86, 87.</p>																																													
		<p>Execute Telecommand</p> <p style="text-align: center;">DisableActions</p> <p>Command Parameter(s) :</p> <table border="0"> <tr> <td style="padding-left: 40px;">N_Repetition</td> <td>DH041170</td> <td>6 <dec></td> </tr> <tr> <td style="padding-left: 40px;">APID_for_EAT_TC</td> <td>DH236170</td> <td>CDMS (Def)</td> </tr> <tr> <td style="padding-left: 80px;">EventId</td> <td>DH146170</td> <td>56 <dec></td> </tr> <tr> <td style="padding-left: 40px;">APID_for_EAT_TC</td> <td>DH236170</td> <td>CDMS (Def)</td> </tr> <tr> <td style="padding-left: 80px;">EventId</td> <td>DH146170</td> <td>57 <dec></td> </tr> <tr> <td style="padding-left: 40px;">APID_for_EAT_TC</td> <td>DH236170</td> <td>CDMS (Def)</td> </tr> <tr> <td style="padding-left: 80px;">EventId</td> <td>DH146170</td> <td>64 <dec></td> </tr> <tr> <td style="padding-left: 40px;">APID_for_EAT_TC</td> <td>DH236170</td> <td>CDMS (Def)</td> </tr> <tr> <td style="padding-left: 80px;">EventId</td> <td>DH146170</td> <td>65 <dec></td> </tr> <tr> <td style="padding-left: 40px;">APID_for_EAT_TC</td> <td>DH236170</td> <td>CDMS (Def)</td> </tr> <tr> <td style="padding-left: 80px;">EventId</td> <td>DH146170</td> <td>86 <dec></td> </tr> <tr> <td colspan="3" style="padding-top: 20px;">APID_for_EAT_TC</td> <td></td> </tr> <tr> <td style="padding-left: 80px;">EventId</td> <td>DH146170</td> <td>CDMS (Def)</td> </tr> <tr> <td style="padding-left: 80px;">EventId</td> <td>DH146170</td> <td>87 <dec></td> </tr> </table> <p>TC Control Flags :</p> <p style="text-align: center;">GBM IL DSE --Y -- ---</p> <p>Subsch. ID : 10 Det. descr. : TEMPLATE Disable Actions TC(19,5)</p>	N_Repetition	DH041170	6 <dec>	APID_for_EAT_TC	DH236170	CDMS (Def)	EventId	DH146170	56 <dec>	APID_for_EAT_TC	DH236170	CDMS (Def)	EventId	DH146170	57 <dec>	APID_for_EAT_TC	DH236170	CDMS (Def)	EventId	DH146170	64 <dec>	APID_for_EAT_TC	DH236170	CDMS (Def)	EventId	DH146170	65 <dec>	APID_for_EAT_TC	DH236170	CDMS (Def)	EventId	DH146170	86 <dec>	APID_for_EAT_TC				EventId	DH146170	CDMS (Def)	EventId	DH146170	87 <dec>	DCT85170	
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5		<p>Dump the EAT and verify that the entries have been disabled</p>		Next Step: 6																																											
		<p>Execute Telecommand</p> <p style="text-align: center;">ReptEvtActTable</p> <p>TC Control Flags :</p> <p style="text-align: center;">GBM IL DSE --Y -- ---</p> <p>Subsch. ID : 10 Det. descr. : TEMPLATE Report The contents of the event/action table TC(19,6)</p>	DCT86170																																												

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
6		Disable D/L?		Next Step: Yes 7 No 10
		Our operational approach is NOT disabling Transmission, so go to step 10		
<p>TC Seq. Name :HFD3007B (Disable D/L)</p> <p>TimeTag Type: N Sub Schedule ID: <input type="checkbox"/></p>				
7		Send TC(14,6) to acquire the list of TM packets downlinked		Next Step: 8
		When CDMU receives this request, the real time down-linking and SSMM storage status are determined for all telemetry packet {Application ID, Type, Sub-Type} and a report (14,7) is generated.		
		Execute Telecommand <p style="text-align: center;">RepDownlinkTMStorage</p> TC Control Flags : <p style="text-align: right;">GBM IL DSE --Y -- --</p> Subsch. ID : 10 Det. descr. : Report Telemetry Packets Down-linking/ Storage Status	DC141160	
8		Verify that TM(14,7) has been received		Next Step: 9
		Verify Packet Reception Telemetry Packets DownLinking-Storage Status Report Packet Details: <p style="text-align: right;">APID: 16 Type: 14 Subtype: 7 PI1: PI2:</p>	(14,7)-1400	
		Verify Telemetry <p style="text-align: center;">N DE042160</p>		(None)
		The following parameters are repeated N times		
		Verify Telemetry <p style="text-align: center;">APID DE047160</p>		(None)
		Verify Telemetry <p style="text-align: center;">Type DE043160</p>		(None)
		Verify Telemetry <p style="text-align: center;">Sub-Type DE046160</p>		(None)

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Telemetry Transmit_Flag DE048160		(None)
		Verify Telemetry Storage_Flag DE049160		(None)
9		Send TC(14,5) to disable the downlink of all TM packets		Next Step: 10
		Execute Telecommand SelDownlinkTMStorage Command Parameter(s) : N DH019160 Application_ID DH058160 Type DH020160 Sub-Type DH021160 Keep_Transmit DH070160 Transmit_Flag DH059160 Keep_Storage DH071160 Storage_Flag DH060160 TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 10 Det. descr. : Select Down-linking/ Storage of Telemetry Packets	DC140160 1 <dec> (Def) 0 <dec> 0 <dec> 0 <dec> Update DISABLED Keep ENABLED	
TC Seq. Name :HFD3007C (Switch to TM encoder)				
TimeTag Type: N Sub Schedule ID: Formal Parameter List : Tm_Enc_Conf_Id BitRate=				
10		Send TC(8,4,115,20) to preset the bit rate on TM encoder B		Next Step: 11
		WARNING: the TM bit rate to be set has to be the same as the one currently used on TM encoder A		
		Execute Telecommand TtcConfigTmEnc_Templ Command Parameter(s) : Tm_Enc_Conf_Id DH034170 TmEncoderId DH033170 TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 10 Det. descr. : TEMPLATE TTC: Config TM Enc, TC(8,4,115,20)	DCT21170 BitRate TmEncoderB	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
11		Send TC "Use TM encoder/OBT B"		Next Step: 12
		Execute Telecommand Use_TM_Encoder_B TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 10 Det. descr. : Use TM Encoder B - High Priority Standard	DCA64170	
		Expect Packet Reception CdmuBsw Event 5-4 TTR OBT Drift Detected Packet Details: APID: 16 Type: 5 Subtype: 4 PI1: 46 PI2: 46	D_EvRp_446	
12		Send TC to mark the TM encoder B as "Nominal" in the UIU table		Next Step: 13
		Select Nominal Unit telecommand is used for choosing the unit A (1) or unit B (2) of a redundant unit pair to be considered as the nominal unit. After the execution of this TC the other unit of the commanded unit pair is considered the redundant unit.		
		Execute Telecommand FdirSelNomUnit_Templ Command Parameter(s) : FdirUnitAorB DH064170 TC Control Flags : GBM IL DSE --Y -- --- Subsch. ID : 10 Det. descr. : TEMPLATE Fdir Select Nominal Unit TC(8,4,116,19)	DCT31170 TTR_TmEncObtB	
13		D/L disabled?		Next Step: No 15 Yes 14
		If Transmission was NOT disabled at step 6 (default) then go to step 17.		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
TC Seq. Name :HFD3007D (Enable D/L) TimeTag Type: N Sub Schedule ID: <input type="checkbox"/>				
14		Restore nominal transmit storage settings		Next Step: 15
		Execute Procedure: H_FCP_DHS_1003 Nominal TRANSMIT/STORAGE settings		
TC Seq. Name :HFD3007E (Checks after switch) TimeTag Type: N Sub Schedule ID: <input type="checkbox"/>				
15		Verify that the TM encoder in use is the B		Next Step: 16
		Verify Telemetry Active_TTRBoard DEDMG160 = B		AND=ZAZAA999
16		Verify TM bit rate		Next Step: 17
		Verify Telemetry TME_BITRATE DEMRF160		AND=ZAZAB999
17		Verify that the TM encoder B is marked as "Nominal" and the TM encoder A as "Redundant" in the UIU table		Next Step: 18
		Verify Telemetry Ttr1LogSts DEL11170 = Redundant		AND=ZAZAN999
		Verify Telemetry Ttr2LogSts DEL15170 = Nominal		AND=ZAZAN999
18		Send TC(19,4) to re-enable relevant EAT entries		Next Step: 19

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		<p>When this request is received, the action-telecommand associated with the events TM 5,2,</p> <p>56 / 57 / 64 / 65 / 86 / 87</p> <p>shall be enabled.</p> <p>In the TC(19,5) it is necessary to set the following parameters:</p> <p>N, number of events to be enabled; in this case equal to 6.</p> <p>APID, repeated N times, identifier of the Application Process generating this event report; in this case equal to 16 (CDMU).</p> <p>Event ID, repeated N times, identifier of the event to be enabled; in this case equal to 56, 57, 64, 65, 86, 87.</p>																																									
		<p>Execute Telecommand</p> <p style="text-align: right;">EnableActions</p> <p>Command Parameter(s) :</p> <table border="0"> <tr> <td style="padding-left: 40px;">N_Repetition</td> <td>DH041170</td> <td>6 <dec></td> </tr> <tr> <td style="padding-left: 40px;">APID_for_EAT_TC</td> <td>DH236170</td> <td>CDMS (Def)</td> </tr> <tr> <td style="padding-left: 80px;">EventId</td> <td>DH146170</td> <td>56 <dec></td> </tr> <tr> <td style="padding-left: 40px;">APID_for_EAT_TC</td> <td>DH236170</td> <td>CDMS (Def)</td> </tr> <tr> <td style="padding-left: 80px;">EventId</td> <td>DH146170</td> <td>57 <dec></td> </tr> <tr> <td style="padding-left: 40px;">APID_for_EAT_TC</td> <td>DH236170</td> <td>CDMS (Def)</td> </tr> <tr> <td style="padding-left: 80px;">EventId</td> <td>DH146170</td> <td>64 <dec></td> </tr> <tr> <td style="padding-left: 40px;">APID_for_EAT_TC</td> <td>DH236170</td> <td>CDMS (Def)</td> </tr> <tr> <td style="padding-left: 80px;">EventId</td> <td>DH146170</td> <td>65 <dec></td> </tr> <tr> <td style="padding-left: 40px;">APID_for_EAT_TC</td> <td>DH236170</td> <td>CDMS (Def)</td> </tr> <tr> <td style="padding-left: 80px;">EventId</td> <td>DH146170</td> <td>86 <dec></td> </tr> <tr> <td style="padding-left: 40px;">APID_for_EAT_TC</td> <td>DH236170</td> <td>CDMS (Def)</td> </tr> <tr> <td style="padding-left: 80px;">EventId</td> <td>DH146170</td> <td>87 <dec></td> </tr> </table> <p>TC Control Flags :</p> <p style="text-align: right;">GBM IL DSE --Y -- ---</p> <p>Subsch. ID : 10 Det. descr. : TEMPLATE Enable Actions TC(19,4)</p>	N_Repetition	DH041170	6 <dec>	APID_for_EAT_TC	DH236170	CDMS (Def)	EventId	DH146170	56 <dec>	APID_for_EAT_TC	DH236170	CDMS (Def)	EventId	DH146170	57 <dec>	APID_for_EAT_TC	DH236170	CDMS (Def)	EventId	DH146170	64 <dec>	APID_for_EAT_TC	DH236170	CDMS (Def)	EventId	DH146170	65 <dec>	APID_for_EAT_TC	DH236170	CDMS (Def)	EventId	DH146170	86 <dec>	APID_for_EAT_TC	DH236170	CDMS (Def)	EventId	DH146170	87 <dec>	DCT84170	
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19		<p>Dump the EAT to verify that the entries have been re-enabled</p>		Next Step: 20																																							
		<p>Execute Telecommand</p> <p style="text-align: right;">ReptEvtActTable</p> <p>TC Control Flags :</p> <p style="text-align: right;">GBM IL DSE --Y -- ---</p> <p>Subsch. ID : 10 Det. descr. : TEMPLATE Report The contents of the event/action table TC(19,6)</p>	DCT86170																																								

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20		<i>Call procedure to set the central time reference</i>		Next Step: 21
		Execute procedure H_FCP_DHS_3021.		
21		<i>Call procedure to synchronize the remote terminals</i>		Next Step: END
		Execute procedure H_FCP_DHS_3019.		
End of Procedure				