

Switch to TM encoder A and OBT A  
File: H\_FCP\_DHS\_3006.xls  
Author: S. Manganelli



## Procedure Summary

### Objectives

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

### Summary of Constraints

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

TM Encoder/OBT B active and marked as "Nominal" in Unit In Use (UIU) table;  
TM Encoder/OBT A not active and marked as "Redundant" in UIU.

#### End of Procedure

TM Encoder/OBT A active and marked as "Nominal" in Unit In Use (UIU) table;  
TM Encoder/OBT B not active and marked as "Redundant" in UIU.

### Reference File(s)

#### Input Command Sequences

#### Output Command Sequences

HFD3006A  
HFD3006B  
HFD3006C  
HFD3006E

### Referenced Displays

ANDs      GRDs      SLDs

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ZAZAA999  
 ZAZAB999  
 ZAZAI999  
 ZAZAN999

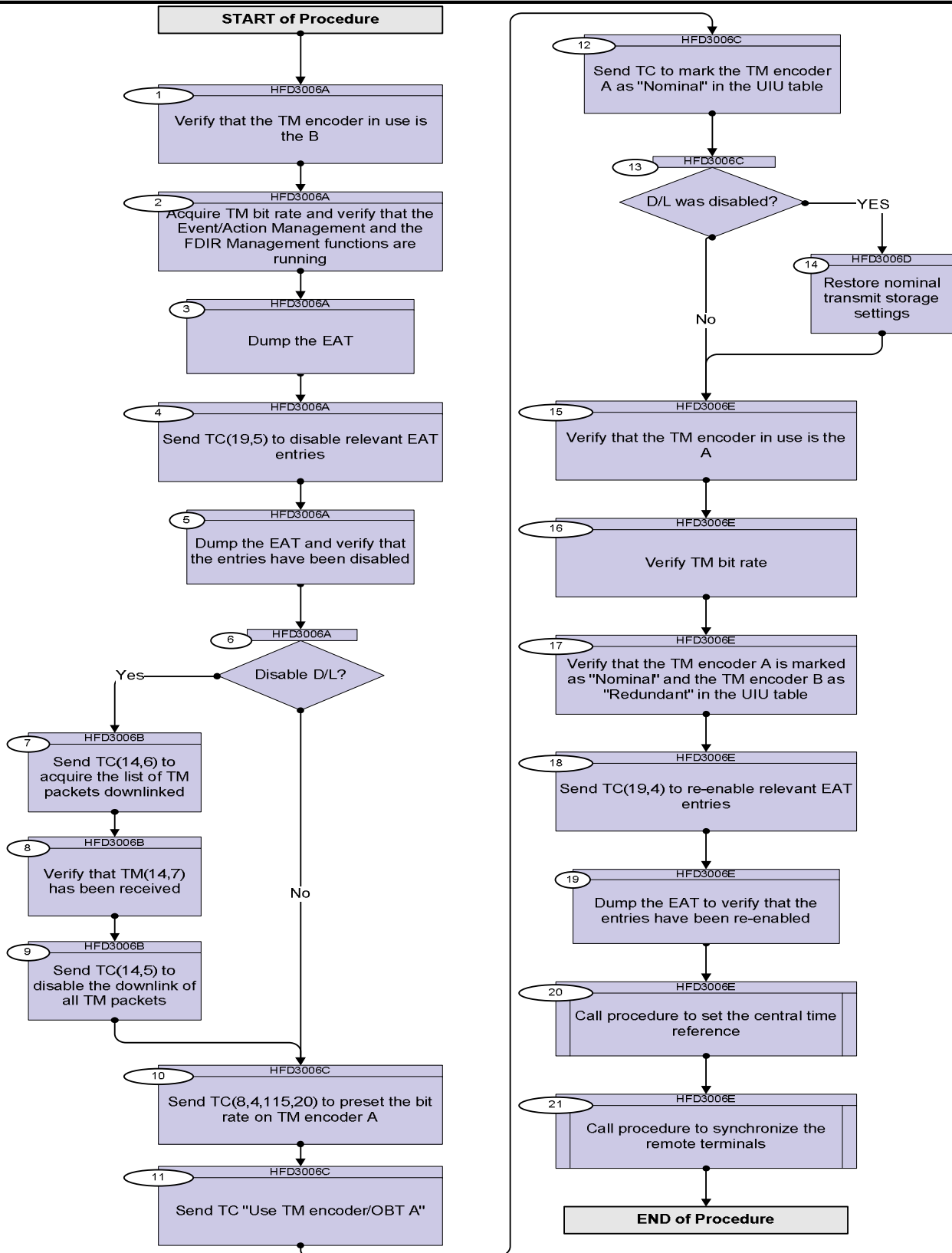
**Configuration Control Information**

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	
10/11/08		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
<b>Beginning of Procedure</b>				
<p><i>TC Seq. Name :HFD3006A (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 B		Next Step: 2
		Verify Telemetry <b>Active_TTRBoard</b> <b>DEDMG160</b>	<b>= B</b>	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 <b>TME_BITRATE</b> <b>DEMRF160</b>		AND=ZAZAB999
		Verify Telemetry <b>EaSts</b> <b>DEG19170</b>	<b>= Running</b>	AND=ZAZAI999
		Verify Telemetry <b>FdirSts</b> <b>DEG23170</b>	<b>= Running</b>	AND=ZAZAI999
3		Dump the EAT		Next Step: 4
		Execute Telecommand <b>ReptEvtActTable</b>	<b>DCT86170</b>	
		TC Control Flags : <b>GBM IL DSE</b> <b>--Y -- ---</b>		
		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><b>N</b>, number of events to be disabled; in this case equal to 6.</p> <p><b>APID</b>, repeated N times, identifier of the Application Process generating this event report; in this case equal to 16 (CDMU).</p> <p><b>Event ID</b>, 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;"><b>DisableActions</b></p> <p>Command Parameter(s) :</p> <table border="0"> <tr> <td style="padding-left: 40px;">N_Repetition</td> <td>DH041170</td> <td>6 &lt;dec&gt;</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 &lt;dec&gt;</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 &lt;dec&gt;</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 &lt;dec&gt;</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 &lt;dec&gt;</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 &lt;dec&gt;</td> </tr> <tr> <td colspan="3" style="padding-left: 40px;">APID_for_EAT_TC</td> <td>CDMS (Def)</td> </tr> <tr> <td colspan="3" style="padding-left: 80px;">EventId</td> <td>87 &lt;dec&gt;</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			CDMS (Def)	EventId			87 <dec>	DCT85170	
N_Repetition	DH041170	6 <dec>																																											
APID_for_EAT_TC	DH236170	CDMS (Def)																																											
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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;"><b>ReptEvtActTable</b></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 Trasmission, so go to step 10		
<p>TC Seq. Name :HFD3006B (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
		<b>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.</b>		
		Execute Telecommand <p style="text-align: right;"><b>RepDownlinkTMStorage</b></p> <p>TC Control Flags :</p> <p style="text-align: right;">GBM IL DSE --Y -- ---</p> <p>Subsch. ID : 10            Det. descr. : Report Telemetry Packets Down-linking/            Storage Status</p>	DC141160	
8		Verify that TM(14,7) has been received		Next Step: 9
		Verify Packet Reception <b>Telemetry Packets DownLinking-Storage Status Report</b> Packet Details:	(14,7)-1400	
		APID: 16 Type: 14 Subtype: 7 PI1: PI2:		
		Verify Packet Telemetry (Pkt = (14,7)-1400) <p style="text-align: right;">N DE042160</p>		
		Verify Packet Telemetry (Pkt = (14,7)-1400) <p style="text-align: right;">APID DE047160</p>		
		Verify Packet Telemetry (Pkt = (14,7)-1400) <p style="text-align: right;">Type DE043160</p>		
		Verify Packet Telemetry (Pkt = (14,7)-1400) <p style="text-align: right;">Sub-Type DE046160</p>		
		Verify Packet Telemetry (Pkt = (14,7)-1400) <p style="text-align: right;">Transmit_Flag DE048160</p>		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Packet Telemetry (Pkt = (14,7)-1400)  Storage_Flag DE049160		
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 :HFD3006C (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 A		Next Step: 11
		<b>WARNING:</b> the TM bit rate to be set has to be the same as the one currently used on TM encoder B		
		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 TmEncoderA (Def)	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
11		Send TC "Use TM encoder/OBT A"		Next Step: 12
		Execute Telecommand <p style="text-align: right;">Use_TM_Encoder_A</p> TC Control Flags : <p style="text-align: right;">GBM IL DSE --Y -- --</p> Subsch. ID : 10 Det. descr. : Use TM Encoder A - High Priority Standard	DCA48170	
		Expect Packet Reception CdmuBsw Event 5-4 TTR OBT Drift Detected Packet Details: <p style="text-align: right;">APID: 16 Type: 5 Subtype: 4 PI1: 46 PI2: 46</p>	D_EvRp_446	
12		Send TC to mark the TM encoder A as "Nominal" in the UIU table		Next Step: 13
		<b>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.</b>  <b>After the execution of this TC the other unit of the commanded unit pair is considered the redundant unit.</b>		
		Execute Telecommand <p style="text-align: right;">FdirSelNomUnit_Templ</p> Command Parameter(s) : <p style="text-align: right;">FdirUnitAorB                    DH064170</p> TC Control Flags : <p style="text-align: right;">GBM IL DSE --Y -- --</p> Subsch. ID : 10 Det. descr. : TEMPLATE Fdir Select Nominal Unit TC(8,4,116,19)	DCT31170  TTR_TmEncObtA	
13		D/L was 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 :HFD3006D (Enable D/L)  TimeTag Type: N Sub Schedule ID:  <input type="checkbox"/>				
14		Restore nominal transmit storage settings		Next Step: 15
		Execute Procedure: <b>H_FCP_DHS_1003</b> Nominal TRANSMIT/STORAGE settings		
TC Seq. Name :HFD3006E (Checks after switch )  TimeTag Type: N Sub Schedule ID:  <input type="checkbox"/>				
15		Verify that the TM encoder in use is the A		Next Step: 16
		Verify Telemetry <b>Active_TTRBoard</b> <b>DEDMG160</b> = A		AND=ZAZAA999
16		Verify TM bit rate		Next Step: 17
		Verify Telemetry <b>TME_BITRATE</b> <b>DEMRF160</b>		AND=ZAZAB999
17		Verify that the TM encoder A is marked as "Nominal" and the TM encoder B as "Redundant" in the UIU table		Next Step: 18
		Verify Telemetry <b>Ttr1LogSts</b> <b>DEL11170</b> = Nominal		AND=ZAZAN999
		Verify Telemetry <b>Ttr2LogSts</b> <b>DEL15170</b> = Redundant		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><b>56 / 57 / 64 / 65 / 86 / 87</b></p> <p>shall be enabled.</p> <p>In the TC(19,5) it is necessary to set the following parameters:</p> <p><b>N</b>, number of events to be enabled; in this case equal to 6.</p> <p><b>APID</b>, repeated N times, identifier of the Application Process generating this event report; in this case equal to 16 (CDMU).</p> <p><b>Event ID</b>, 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;"><b>EnableActions</b></p> <p>Command Parameter(s) :</p> <table border="0"> <tr> <td style="padding-left: 40px;">N_Repetition</td> <td>DH041170</td> <td>6 &lt;dec&gt;</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 &lt;dec&gt;</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 &lt;dec&gt;</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 &lt;dec&gt;</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 &lt;dec&gt;</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 &lt;dec&gt;</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 &lt;dec&gt;</td> </tr> </table> <p>TC Control Flags :</p> <p style="text-align: right;"><b>GBM IL DSE</b> --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;"><b>ReptEvtActTable</b></p> <p>TC Control Flags :</p> <p style="text-align: right;"><b>GBM IL DSE</b> --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
		<b>Execute procedure H_FCP_DHS_3021.</b>		
21		<i>Call procedure to synchronize the remote terminals</i>		Next Step: END
		<b>Execute procedure H_FCP_DHS_3019.</b>		
<b>End of Procedure</b>				