Normal MTL maintenance
File: H_FCP_DHS_3024.xls
Author: S. Manganelli

Procedure Summary

Objectives

This procedure describes the steps needed to perform one of the following actions related to the Mission Timeline:
- Insert a TC in the MTL;
- Delete TCs from the MTL;
- Delete TCs from the MTL over a time period;
- Acquire a summary or a detailed report;
- Acquire the status of the command schedule.

Summary of Constraints

Default status of the ASW function "On board Scheduling": "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).

Thus, if the function is stopped this procedure cannot be executed.

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

HFD3024E
HFD3024A
HFD3024B
HFD3024C

Referenced Displays

ANDs	GRDs	SLDs
ZAZAI999		
ZAZ7A999		(None)

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esa

Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
12/11/07		1	Created	cmevi-hp	
17/01/08	1	2	Batch update of TC flags	S. Manganelli	
23/11/08		3	Updated following industry inputs 16 oct 08	S. Manganelli	
11/12/08		4	Modified sequence names, corrected procedure references	S. Manganelli	
12/01/09	2	5	Updated following OBSW 3_8	S. Manganelli	
20/04/09	2.3	6	Instantiated ESOC TC modified for TC(11,5)	S. Manganelli	
07/10/09	2.5	7	Added step to check the event report issued by ASW after MTL TC deletion	S. Manganelli	

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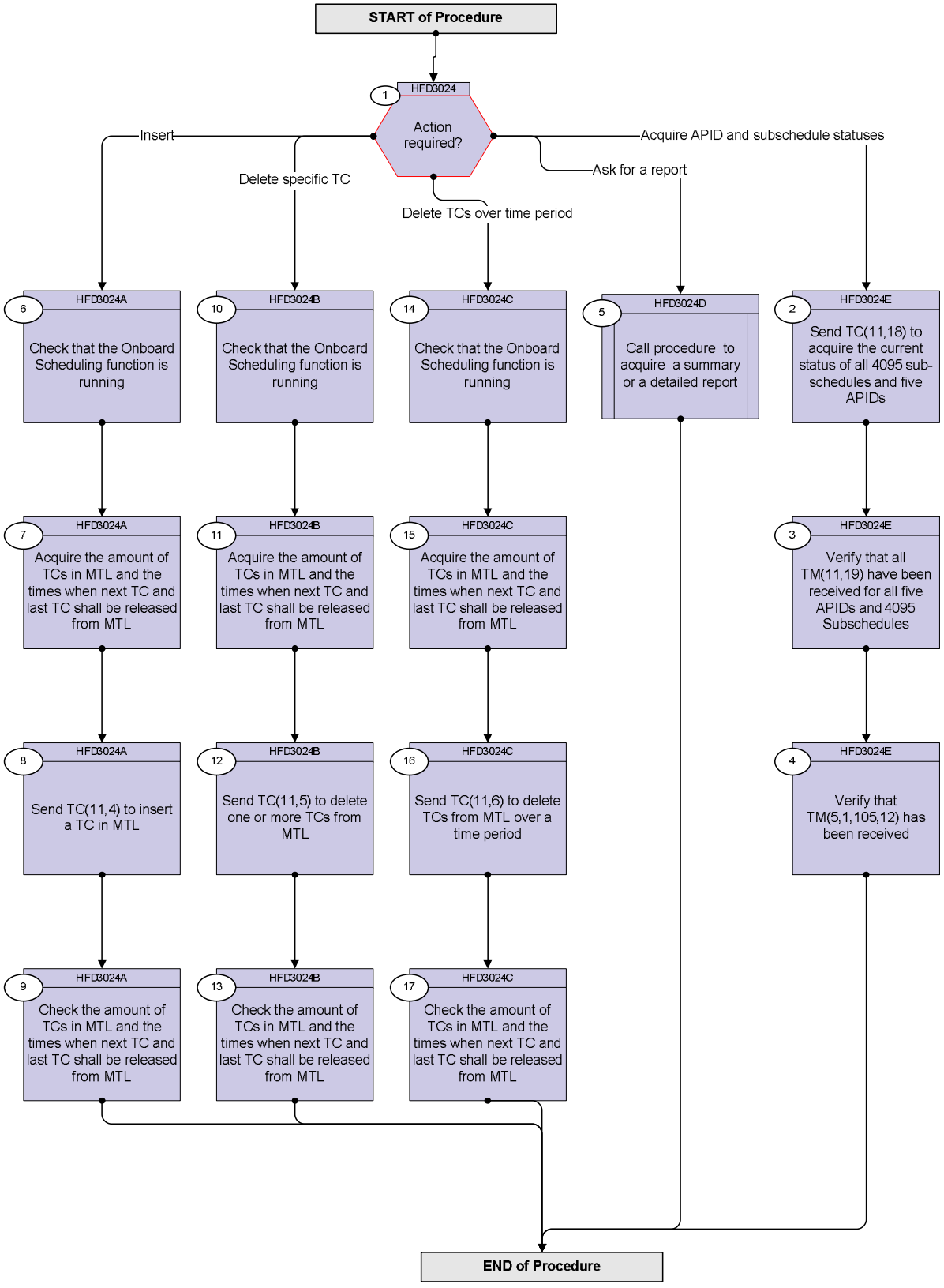
Procedure Flowchart Overview



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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Beginning of Procedure		
		TC Seq. Name :HFD3024 (Dummy sequence) *TimeTag Type:* *Sub Schedule ID:*		
1		*Action required?*		Next Step: Acquire APID and subschedule statuses 2 Ask for a report 5 Insert 6 Delete specific TC 10 Delete TCs over time period 14
		TC Seq. Name :HFD3024E (Sched Status) *TimeTag Type: N* *Sub Schedule ID:*		
2		*Send TC(11,18) to acquire the current status of all 4095 sub-schedules and five APIDs*		Next Step: 3
		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.**		
		Execute Telecommand **RetStatusOfCmdSchedule** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 10* Det. descr. : ReportStatusOfCmdSchedule, TC(11,18)	**DC89F170**	
3		*Verify that all TM(11,19) have been received for all five APIDs and 4095 Subschedules*		Next Step: 4

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Packet Reception **TM 11-19 Command schedule status report - Subschedule and Apid** **CmdSchStRpt** *Packet Details:* **APID: 16** **Type: 11** **Subtype: 19** **PI1:** **PI2:**		
3.1		*Subschedules status report*		
		Verify Telemetry **N1 DE076170**		(None)
		The following 2 parameters are repeated N1 times		
		Verify Telemetry **SubscheduleId_A DE075170**	**1--4095**	(None)
		Verify Telemetry **SubschedStatus DE078170**	**Enabled or Disabled**	(None)
3.2		*APID status report*		
		Verify Telemetry **N2 DE077170**		(None)
		The following 2 parameters are repeated N2 times		
		Verify Telemetry **Apid DE053170**	**ACMS/CDMS/HFI/LFI/SCS**	(None)
		Verify Telemetry **ApidStatus DE079170**	**Enabled or Disabled**	(None)
4		*Verify that TM(5,1,105,12) has been received*		Next Step: END
		Verify Packet Reception **CdmuAsw Event 5-1 TM 11-19 Dump Ended** **D_EvRp_7042** *Packet Details:* **APID: 16** **Type: 5** **Subtype: 1** **PI1: 26892** **PI2: 0**		
		Verify Packet Telemetry **TM5xEventID DEZSJ170**	**= Tm11_19_DmpEnd**	(None)

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Packet Telemetry **NrOfTmPktIss** **DE100170**	**as many as the number of received TM(11,19) in previous step**	(None)
		TC Seq. Name :HFD3024D (Report) *TimeTag Type:* *Sub Schedule ID:* □		
5		*Call procedure to acquire a summary or a detailed report*		Next Step: END
		Execute procedure H_FCP_DHS_3027.		
		TC Seq. Name :HFD3024A (Insert MTL TC) *TimeTag Type: B* *Sub Schedule ID:* □		
6		*Check that the Onboard Scheduling function is running*		Next Step: 7
		Verify Telemetry **MtlSts** **DEH26170**	**= Running**	AND=ZAZAI999
7		*Acquire the amount of TCs in MTL and the times when next TC and last TC shall be released from MTL*		Next Step: 8
		Verify Telemetry **MtlTcCnt** **DE82F170**		AND=ZAZ7A999
		Verify Telemetry **MtlNextTcTime** **DEA73170**		AND=ZAZ7A999
		Verify Telemetry **MtlLastTcTime** **DEA72170**		AND=ZAZ7A999
8		*Send TC(11,4) to insert a TC in MTL*		Next Step: 9

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		With this command one Telecommand for a certain end-user, identified by its APID, can be added to the onboard Mission Timeline, together with the time of release. **When this request is received, the Telecommand in the request shall be checked for consistency with the rest of the MTL and, if no error is detected, it is added to the Command Schedule.** **The actual size of executable Telecommands is limited to 228 octets (216 octets for the data field) because the data space available to end-users is reduced by the schedule control parameters.**		
		In the TC(11,4) it is necessary to set the following parameters: **- Absolute Time Tag: The Absolute Time Tag is the on-board CUC time of the Central Time Reference, at which the Telecommand packet is to be sent to its Application Process ID.** **Note the 16 LSB corresponding to the Fine Time need to be set to 0, otherwise the TC is rejected and a TM(1,2) event is raised with failure code 0x8046.** **- Subschedule ID: The Subschedule Identifier allows to identify a set of Telecommands for one or several Applications/ users, and to distinguish them from the rest of the MTL.** **- Telecommand Packet: This is a standard Telecommand packet of any Type/Subtype. The source of the Telecommand packet is indicated in the Source Part of the Packet Sequence Control field, its value shall be 010 (i.e. Telecommand from the on-board MTL). The length of this field is defined by the Length-field of the Packet-Header of the Telecommand.**		
		It should never be necessary for ESOC to use the following command because the MCS uses a TC(11,4) (statically configured) everytime a TT command is sent from the command sources.		
		Execute Telecommand **Insert_Tc_InSchedule** *Command Parameter(s) :* **AbsTime** **SubscheduleId** **VarblOctetStr** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 10* Det. descr. : TEMPLATE InsertTcInSchedule, TC(11,4) This Telecommand will not be included in the export	**DC79F170** **DHA56170** **DH053170** **DH060170**	**Absolute_time** **Subschedule_ID** **Command to be sent in hex**

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
9		*Check the amount of TCs in MTL and the times when next TC and last TC shall be released from MTL*		Next Step: END
		Verify TC count has increased by one **MtlTcCnt DE82F170**	**> previous MTL TC counter reading**	AND=ZAZ7A999
		TC Seq. Name :HFD3024B (Delete MTL TC) *TimeTag Type: B* *Sub Schedule ID:*		
10		*Check that the Onboard Scheduling function is running*		Next Step: 11
		Verify Telemetry **MtlSts DEH26170**	**= Running**	AND=ZAZ7A999
11		*Acquire the amount of TCs in MTL and the times when next TC and last TC shall be released from MTL*		Next Step: 12
		Verify Telemetry **MtlTcCnt DE82F170**		AND=ZAZ7A999
		Verify Telemetry **MtlNextTcTime DEA73170**		AND=ZAZ7A999
		Verify Telemetry **MtlLastTcTime DEA72170**		AND=ZAZ7A999
12		*Send TC(11,5) to delete one or more TCs from MTL*		Next Step: 13
		When this request is received, the Telecommand which satisfy the selection criteria defined by the Subschedule-ID, the Application Process ID, the Absolute Time Tag and the Sequence Count shall be deleted as well as the [Number of Telecommands-1] Telecommands that follow in the identified subschedule.		

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		In the TC(11,5) it is necessary to set the following parameters: **- Subschedule-ID: The Subschedule Identifier identifies a set of Telecommands for one or several Applications/users.** **In this TC, Subschedule-ID identifies the subschedule to which belongs a telecommand sequence that shall be deleted. If SSID=0, TCs belonging to any Subschedule are deleted** **- Application-ID: The APID identifies the Application affected. In this TC, APID identifies the destination Application Process of the first Telecommand packet belonging to the sequence that shall be deleted.** **- Absolute Time Tag: The Absolute Time Tag indicates the date of release (in CTR) of the first Telecommand packet belonging to the sequence that shall be deleted.**		
		- Sequence Count: The Sequence Count is the Packet Sequence Control field of the first Telecommand packet belonging to the sequence that shall be deleted. As a consequence to the allocation for Source Part of the Packet Sequence Control field, its five first bits shall be 11010b. **The instantiated ESOC TC is built so that the sequence count to be used is the one read for that TC in the OBQD display.** **- Number of Telecommands: The number of (successive in date of release order) Telecommand packets that shall be deleted from the specified MTL subschedule (regardless of their destination APID).**		
		Execute Telecommand **DelSetOfCdmsTCs_Templ** *Command Parameter(s) :* **N_Repetition XH006999** **SubscheduleId XH007999** **Apid XH009999** **Absolute Time-Tag XH023999** **SeqCnt-counter XH022999** **NrOfTcs XH013999** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 30*	**XC009999** **1 <dec>** (Def) **SSId for all TC** **Apid of 1st TC** **AbsTime of 1st TC** **for1stTC (OBQD)** **NrofTC to be del**	
		Det. descr. : TEMPLATE DeleteSetOf Cdms TCs TC(11,5) This Telecommand will not be included in the export		
		or the following command if no valid TCO is available		

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand **DelSetOfCdmsTCs_Templ**	**XC325991**	
		Command Parameter(s) : **N_Repetition** **XH306991** **SubscheduleId** **XH307991** **Apid** **XH305991** **Coarse Time** **XH310991** **Fine Time** **XH311991** **SeqCnt-counter** **XH295991** **NrOfTcs** **XH303991**	**1 <dec>** (Def) **SSId for all TC** **APID of 1st TC** **CoarsT of 1st TC** **always 0000** **for1stTC (OBQD)** **NrofTC to be del**	
		TC Control Flags : **GBM IL DSE** **--Y -- ---**		
		Subsch. ID : 30 Det. descr. : TEMPLATE DeleteSetOf Cdms TCs TC(11,5) This Telecommand will not be included in the export		
12.1		*Check deletion event report*		
		Verify Packet Reception **CdmuAsw Event 5-1 MTL Delete TC Success** **D_EvRp_365** *Packet Details:* **APID:** **16** **Type:** **5** **Subtype:** **1** **PI1:** **26900** **PI2:** **0**		
		Verify Packet Telemetry (Pkt = D_EvRp_365) **SSC APID16** **XM920991**		
		Verify Packet Telemetry (Pkt = D_EvRp_365) **PktType** **XM922991**		
		Verify Packet Telemetry (Pkt = D_EvRp_365) **PktStype** **XM923991**		
		Verify Packet Telemetry (Pkt = D_EvRp_365) **Function_ID** **DE008170**		
		Verify Packet Telemetry (Pkt = D_EvRp_365) **TM5xEventID** **DEZSJ170**		
		Verify Packet Telemetry (Pkt = D_EvRp_365) **LsbEvtId** **DE098170**		
		Verify Packet Telemetry (Pkt = D_EvRp_365) **SID** **DE010170**		
		Verify Packet Telemetry (Pkt = D_EvRp_365) **NrOfTcDeleted** **DEV00170**	**The number of TCs actually deleted on board** (None)	
		Verify Packet Telemetry (Pkt = D_EvRp_365) **EventSeqCounter** **DE069170**		

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
13		*Check the amount of TCs in MTL and the times when next TC and last TC shall be released from MTL*		Next Step: END
		Verify TC count has increased by one **MtlTcCnt DE82F170**	**< previous MTL TC counter reading**	AND=ZAZ7A999
		TC Seq. Name :HFD3024C (Del MTLTC over time) *TimeTag Type: B* *Sub Schedule ID:* □		
14		*Check that the Onboard Scheduling function is running*		Next Step: 15
		Verify Telemetry **MtlSts DEH26170**	**= Running**	AND=ZAZ7A999
15		*Acquire the amount of TCs in MTL and the times when next TC and last TC shall be released from MTL*		Next Step: 16
		Verify Telemetry **MtlTcCnt DE82F170**		AND=ZAZ7A999
		Verify Telemetry **MtlNextTcTime DEA73170**		AND=ZAZ7A999
		Verify Telemetry **MtlLastTcTime DEA72170**		AND=ZAZ7A999
16		*Send TC(11,6) to delete TCs from MTL over a time period*		Next Step: 17
		When this request is received, the specified Telecommands between Time Tag 1 and Time Tag 2 are deleted from the Command Schedule.		
		WARNING: the following TC is a variable length TC which does not allow the definition of a generic procedure. **The following is therefore only an example.**		

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		In the TC(11,6) it is necessary to set the following parameters: **- Time Tag 1: All Telecommands selected by APID and Sub Schedule-ID with an execution time equal or larger than Time Tag 1, up to including Time Tag 2, shall be deleted.** **- Time Tag 2: Time Tag 2 determines the latest absolute time for which Telecommands shall be deleted from the current MTL.** **- Subschedule ID: The Subschedule Identifier allows to identify a set of Telecommands for one or several Applications/users that shall be deleted.** **If Telecommands from all Subschedule shall be deleted, this field shall be set to zero.** **- N: This field specifies the number of Applications for which a sequence of Telecommands shall be deleted.** **If N is set to zero all Telecommands between Time Tag 1 and 2 (for the identified Subschedule) shall be deleted.** **- Application Process ID: The APID is the identification of the destination Application Process from which Telecommands are to be deleted.**		
		WARNING: the following TCs are intended to be just examples.		
16.1		*Delete in all Subschedules and for all APID*		
		Execute Telecommand **DeleteTcs_OverTimePeriod** *Command Parameter(s) :* **AbsTime DHA56170** **AbsTime2 DHA61170** **SubscheduleId DH053170** **N_Repetition DH041170** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 10* Det. descr. : TEMPLATE DeleteTcsOverTimePeriod, TC(11,6) This Telecommand will not be included in the export	**DC82F170** **Absolute_time_1** **Absolute_time_2** **0 <dec>** (Def) **0 <dec>**	
		or the following command if no valid TCO is available		

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand **DeleteTcs_OverTimePeriod** *Command Parameter(s) :* **Coarse Time XH027991** **Fine Time XH028991** **Coarse Time XH027991** **Fine Time XH028991** **SubscheduleId XH009991** **N_Repetition XH008991** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 10* Det. descr. : TEMPLATE DeleteTcsOverTimePeriod, TC(11,6) This Telecommand will not be included in the export	**XC315991** **start coarse time** **always 0000** **end coarse time** **always 0000** **0 <dec>** (Def) **0 <dec>**	
16.2		*Delete in all Subschedules for a specific APID*		
		Execute Telecommand **DeleteTcs_OverTimePeriod** *Command Parameter(s) :* **AbsTime DHA56170** **AbsTime2 DHA61170** **SubscheduleId DH053170** **N_Repetition DH041170** **APID_for_TC_11-x DH235170** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 10* Det. descr. : TEMPLATE DeleteTcsOverTimePeriod, TC(11,6)	**DC82F170** **Absolute_time_1** **Absolute_time_2** **0 <dec>** (Def) **1 <dec>** (Def) **Apid**	
		This Telecommand will not be included in the export		
		or the following command if no valid TCO is available		
		Execute Telecommand **DeleteTcs_OverTimePeriod** *Command Parameter(s) :* **Coarse Time XH027991** **Fine Time XH028991** **Coarse Time XH027991** **Fine Time XH028991** **SubscheduleId XH009991** **N_Repetition XH008991** **Apid XH010991** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 10* Det. descr. : TEMPLATE DeleteTcsOverTimePeriod, TC(11,6) This Telecommand will not be included in the export	**XC315991** **start coarse time** **always 0000** **end coarse time** **always 0000** **0 <dec>** (Def) **1 <dec>** (Def) **APID of deleted TC**	

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
16.3		*Delete in a specific Subschedule*		
16.3.1		*All APIDs*		
		Execute Telecommand **DeleteTcs_OverTimePeriod** *Command Parameter(s) :* **AbsTime DHA56170** **AbsTime2 DHA61170** **SubscheduleId DH053170** **N_Repetition DH041170** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 10* Det. descr. : TEMPLATE DeleteTcsOverTimePeriod, TC(11,6) This Telecommand will not be included in the export	**DC82F170** **Absolute_time_1** **Absolute_time_2** **Subschedule_ID** **0 <dec>**	
		or the following command if no valid TCO is available		
		Execute Telecommand **DeleteTcs_OverTimePeriod** *Command Parameter(s) :* **Coarse Time XH027991** **Fine Time XH028991** **Coarse Time XH027991** **Fine Time XH028991** **SubscheduleId XH009991** **N_Repetition XH008991** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 10* Det. descr. : TEMPLATE DeleteTcsOverTimePeriod, TC(11,6) This Telecommand will not be included in the export	**XC315991** **start coarse time** **always 0000** **end coarse time** **always 0000** **any** **0 <dec>**	
16.3.2		*A specific APID for a specific Subschedule*		

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Execute Telecommand **DeleteTcs_OverTimePeriod** *Command Parameter(s) :* **AbsTime DHA56170** **AbsTime2 DHA61170** **SubscheduleId DH053170** **N_Repetition DH041170** **APID_for_TC_11-x DH235170** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 10* Det. descr. : TEMPLATE DeleteTcsOverTimePeriod, TC(11,6)	**DC82F170** **Absolute_time_1** **Absolute_time_2** **Subschedule_ID** **1 <dec>** (Def) **Apid**	
		This Telecommand will not be included in the export		
		or the following command if no valid TCO is available		
		Execute Telecommand **DeleteTcs_OverTimePeriod** *Command Parameter(s) :* **Coarse Time XH027991** **Fine Time XH028991** **Coarse Time XH027991** **Fine Time XH028991** **SubscheduleId XH009991** **N_Repetition XH008991** **Apid XH010991** *TC Control Flags :* **GBM IL DSE** **--Y -- ---** *Subsch. ID : 10* Det. descr. : TEMPLATE DeleteTcsOverTimePeriod, TC(11,6) This Telecommand will not be included in the export	**XC315991** **start coarse time** **always 0000** **end coarse time** **always 0000** **any** **1 <dec>** (Def) **APID of deleted TC**	
16.4		*Check deletion event report*		
		Verify Packet Reception **CdmuAsw Event 5-1 MTL Delete TC Success** *Packet Details:* **APID:** **Type:** **Subtype:** **PI1:** **PI2:**	**D_EvRp_365** **16** **5** **1** **26900** **0**	
		Verify Packet Telemetry (Pkt = D_EvRp_365) **SSC APID16 XM920991**		
		Verify Packet Telemetry (Pkt = D_EvRp_365) **PktType XM922991**		
		Verify Packet Telemetry (Pkt = D_EvRp_365) **PktStype XM923991**		

Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Packet Telemetry (Pkt = D_EvRp_365) **Function_ID** **DE008170**		
		Verify Packet Telemetry (Pkt = D_EvRp_365) **TM5xEventID** **DEZSJ170**		
		Verify Packet Telemetry (Pkt = D_EvRp_365) **LsbEvtId** **DE098170**		
		Verify Packet Telemetry (Pkt = D_EvRp_365) **SID** **DE010170**		
		Verify Packet Telemetry (Pkt = D_EvRp_365) **NrOfTcDeleted** **DEV00170**	**The number of TCs actually deleted on board**	(None)
		Verify Packet Telemetry (Pkt = D_EvRp_365) **EventSeqCounter** **DE069170**		
17		*Check the amount of TCs in MTL and the times when next TC and last TC shall be released from MTL*		Next Step: END
		Verify TC count has decreased **MtlTcCnt** **DE82F170**	**< previous MTL TC counter**	AND=ZAZ7A999
		End of Procedure		