

Thermal Control Status Report
File: H_FCP_TCS_REPO.xls
Author: E. Picallo



Procedure Summary

Objectives

This procedure describes the steps needed to acquire the status of the ASW function "Thermal Control" (0xFF for running idle or 0x00 for stopped).

Moreover in each 54 TM packets describing each Control Loop are also reported the following information:

- Control loop index;
- Control loop status;
- Control loop class;
- Monitored thermistor parameter 1;
- Monitored thermistor parameter 2;
- Monitored thermistor parameter 3;
- Temperature monitoring frequency (for class A loops);
- FDIR unit Id of the unit connected to the loop;
- Class A/B temperature thresholds values;
- Class B coefficients;
- Class B TREF threshold value;
- Class B installed power;
- Nominal heater ID;
- Redundant heater ID;
- Tolerance.

Summary of Constraints

n/a

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

HFTREPO

Referenced Displays

ANDs GRDs SLDs
(None)

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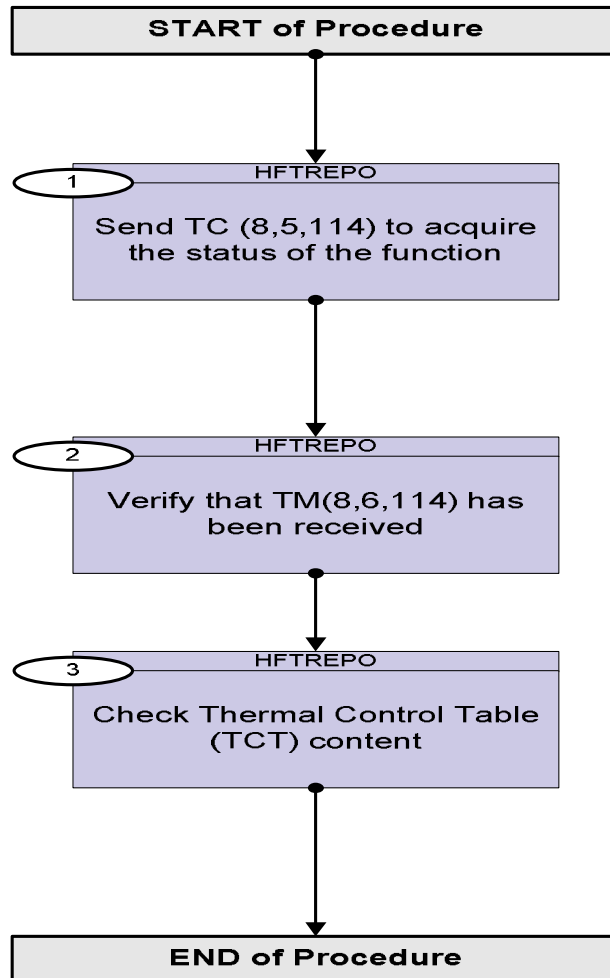
Configuration Control Information

DATE	FOP ISSUE	VERSION	MODIFICATION DESCRIPTION	AUTHOR	SPR REF
24/07/2008	1	1	Created	E. Picallo	
22/10/2008		2	CDMU ASW v3.6.2 and BSW v2.2 alignment	E. Picallo	
09/01/2009	2	3	CDMU ASW V3.8 and BSW V2.4 alignment	E. Picallo	
05/03/2009	2.1	4	Updated with CDMU ASW 3.8.2 TCT default values	E. Picallo	
23/03/2009	2.2	5	LOW NOP and cold start limit for STR-1 & 2 baffle should be -23°C on launch and in-flight	E. Picallo	
30/03/2009		6	Updated according to H-P-TN-AI-0151 V9 (editorial update Tmin e Tmax on/off for loop 40 & 48 updated to be in line with the XML files)	E. Picallo	
07/04/2009		7	Comment on LOW NOP and cold start limit for STR-1 & 2 baffle deleted	E. Picallo	
15/04/2009	2.3	8	TCT align to CDMU OBSW 3.10 default values	E. Picallo	
15/09/2009	2.5	9	Default FCCT table content align to CDMU ASW V 4.0 PACS CL# 11,13 & 15 TCT_ON thresholds changed to [1,2] degC	E. Picallo	
07/03/2011	3.1	10	control loop 15 (DECMEC) TCT Tmin_on/ Tmax_on thresholds updated to -1/0 °C	E. Picallo	

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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 : HFTREPO (TCS Function Report) Report thermal control function and loop parameters TimeTag Type: N Sub Schedule ID: <input type="checkbox"/>														
1		Send TC (8,5,114) to acquire the status of the function		Next Step: 2										
		Report Thermal Control Status telecommand is used for requiring the status of the function as a telemetry packet. Default status of the function: "started".												
		Execute Telecommand <div style="text-align: right;">ReportThCtrlManagSts</div> TC Control Flags : <div style="text-align: right;">GBM IL DSE --Y -- ---</div> Subsch. ID : 10 Det. descr. : Report Thermal Control Management Status, TC(8,5,114)	DCN11170											
2		Verify that TM(8,6,114) has been received		Next Step: 3										
2.1		First TM packet of the sequence		<input type="checkbox"/>										
		The first TM packet of the sequence is one of the following two types of TM packets:												
		- If the function is started:												
		Verify Packet Reception TM 8-6-114 Thermal Control Status Report - running Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29439</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29439	PI2:	0	ThCtrlStsRun	
APID:	16													
Type:	8													
Subtype:	6													
PI1:	29439													
PI2:	0													
		Verify Function ID Telemetry <div style="text-align: right;">Function_ID DE008170</div>	= ThermalControl	(None)										
		Verify Activity ID Telemetry <div style="text-align: right;">MonitStsActId DE067170</div>	= RunningIdle	(None)										
		Verify SID Telemetry <div style="text-align: right;">SID DE010170</div>	= 0 <dec>	(None)										
		- If the function is stopped:												

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Packet Reception TM 8-6-114 Thermal Control Status Report - Stopped Packet Details: APID: 16 Type: 8 Subtype: 6 PI1: 29184 PI2: 0	ThCtrlStsStp	
		Verify Function ID Telemetry Function_ID DE008170	= ThermalControl	(None)
		Verify Activity ID Telemetry MonitStsActId DE067170	= Stopped	(None)
		Verify SID Telemetry SID DE010170	= 0 <dec>	(None)
2.2		Remaining 54 TM packets (one per control Loop)		<input type="checkbox"/>
		The following 54 packets will have activity ID from 1 to 54 and will contain the data for the thermal control loop having ID equal to the packet activity ID.		
		Verify Packet Reception TM 8-6-114-1 Thermal Control Status Report - Loop 1 Packet Details: APID: 16 Type: 8 Subtype: 6 PI1: 29185 PI2: 0	ThCtrlSts1	
		Verify Function ID Telemetry Function_ID DE008170	= ThermalControl	(None)
		Verify Activity ID = Control Loop Index Telemetry MonitStsActId DE067170		(None)
		Verify SID Telemetry SID DE010170	= 0 <dec>	(None)
		Verify Control loop status Telemetry LoopStatus1 DEP00170		(None)
		Verify Control loop class Telemetry LoopClass1 DEP01170		(None)
		Verify Monitored Thermistor Parameter 1 Telemetry MonThrmstPar1_1 DEP02170		(None)
		Verify Monitored Thermistor Parameter 2 Telemetry MonThrmstPar2_1 DEP03170		(None)
		Verify Monitored Thermistor Parameter 3 Telemetry MonThrmstPar3_1 DEP04170		(None)
		Verify Temperature Monitoring Frequency Telemetry TempMonFreq1 DEP05170		(None)

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify FDIR Unit Id of the unit connected to the loop FdirUnitId1 DEP07170		(None)
		Verify Tmax-on (Class A) or HighTrefThreshold (Class B) Tmax_on1 DEP08170		(None)
		Verify Tmin-on (Class A) or LowTrefThreshold (Class B) Tmin_on1 DEP09170		(None)
		Verify Tmax-off (Class A) Telemetry Tmax_off1 DEP0A170		(None)
		Verify Tmin-off (Class A) Telemetry Tmin_off1 DEP0B170		(None)
		Verify Class B coefficients (ALPHA) Telemetry ALPHA1 DEP0C170		(None)
		Verify Class B coefficients (BETA) Telemetry BETA1 DEP0D170		(None)
		Verify Class B coefficients (GAMMA) Telemetry GAMMA1 DEP0E170		(None)
		Verify Class B coefficients (DELTA) Telemetry DELTA1 DEP0F170		(None)
		Verify Class B coefficients (LAMBDA) Telemetry LAMBDA1 DEP0G170		(None)
		Verify Class B Threshold value (TREF) Telemetry TREF1 DEP0H170		(None)
		Verify Class B Qinst Telemetry QINST1 DEP0J170		(None)
		Verify Nominal heater ID Telemetry NominalHtrId1 DEP0K170		(None)
		Verify Nominal heater ID HPS number (1-18) Telemetry NomHtr1D1 DEY50170		(None)
		Verify Nominal heater ID HCS number (1-6) Telemetry NomHtr1D2 DEY51170		(None)
		Verify Redundant heater ID Telemetry RedundantHtrId1 DEP0L170		(None)
		Verify Redundant heater ID HPS number (1-18) Telemetry RedHtr1D1 DEY52170		(None)
		Verify Redundant heater ID HCS number (1-6) Telemetry RedHtr1D2 DEY53170		(None)
		Verify Tolerance (°Celsius) Telemetry ToleranceTctLp01 DER2U170		(None)

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Packet Reception TM 8-6-114-2 Thermal Control Status Report - Loop 2 Packet Details: <p style="margin-left: 200px;"> APID: 16 Type: 8 Subtype: 6 PI1: 29186 PI2: 0 </p>	ThCtrlSts2	
		Verify Packet Reception TM 8-6-114-3 Thermal Control Status Report - Loop 3 Packet Details: <p style="margin-left: 200px;"> APID: 16 Type: 8 Subtype: 6 PI1: 29187 PI2: 0 </p>	ThCtrlSts3	
		Verify Packet Reception TM 8-6-114-4 Thermal Control Status Report - Loop 4 Packet Details: <p style="margin-left: 200px;"> APID: 16 Type: 8 Subtype: 6 PI1: 29188 PI2: 0 </p>	ThCtrlSts4	
		Verify Packet Reception TM 8-6-114-5 Thermal Control Status Report - Loop 5 Packet Details: <p style="margin-left: 200px;"> APID: 16 Type: 8 Subtype: 6 PI1: 29189 PI2: 0 </p>	ThCtrlSts5	
		Verify Packet Reception TM 8-6-114-6 Thermal Control Status Report - Loop 6 Packet Details: <p style="margin-left: 200px;"> APID: 16 Type: 8 Subtype: 6 PI1: 29190 PI2: 0 </p>	ThCtrlSts6	
		Verify Packet Reception TM 8-6-114-7 Thermal Control Status Report - Loop 7 Packet Details: <p style="margin-left: 200px;"> APID: 16 Type: 8 Subtype: 6 PI1: 29191 PI2: 0 </p>	ThCtrlSts7	
		Verify Packet Reception TM 8-6-114-8 Thermal Control Status Report - Loop 8 Packet Details: <p style="margin-left: 200px;"> APID: 16 Type: 8 Subtype: 6 PI1: 29192 PI2: 0 </p>	ThCtrlSts8	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		Verify Packet Reception TM 8-6-114-9 Thermal Control Status Report - Loop 9 Packet Details: APID: 16 Type: 8 Subtype: 6 PI1: 29193 PI2: 0	ThCtrlSts9	
		Verify Packet Reception TM 8-6-114-10 Thermal Control Status Report - Loop 10 Packet Details: APID: 16 Type: 8 Subtype: 6 PI1: 29194 PI2: 0	ThCtrlSts10	
		Verify Packet Reception TM 8-6-114-11 Thermal Control Status Report - Loop 11 Packet Details: APID: 16 Type: 8 Subtype: 6 PI1: 29195 PI2: 0	ThCtrlSts11	
		Verify Packet Reception TM 8-6-114-12 Thermal Control Status Report - Loop 12 Packet Details: APID: 16 Type: 8 Subtype: 6 PI1: 29196 PI2: 0	ThCtrlSts12	
		Verify Packet Reception TM 8-6-114-13 Thermal Control Status Report - Loop 13 Packet Details: APID: 16 Type: 8 Subtype: 6 PI1: 29197 PI2: 0	ThCtrlSts13	
		Verify Packet Reception TM 8-6-114-14 Thermal Control Status Report - Loop 14 Packet Details: APID: 16 Type: 8 Subtype: 6 PI1: 29198 PI2: 0	ThCtrlSts14	

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch										
		Verify Packet Reception TM 8-6-114-15 Thermal Control Status Report - Loop 15 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29199</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29199	PI2:	0	ThCtrlSts15	
APID:	16													
Type:	8													
Subtype:	6													
PI1:	29199													
PI2:	0													
		Verify Packet Reception TM 8-6-114-16 Thermal Control Status Report - Loop 16 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29200</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29200	PI2:	0	ThCtrlSts16	
APID:	16													
Type:	8													
Subtype:	6													
PI1:	29200													
PI2:	0													
		Verify Packet Reception TM 8-6-114-17 Thermal Control Status Report - Loop 17 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29201</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29201	PI2:	0	ThCtrlSts17	
APID:	16													
Type:	8													
Subtype:	6													
PI1:	29201													
PI2:	0													
		Verify Packet Reception TM 8-6-114-18 Thermal Control Status Report - Loop 18 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29202</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29202	PI2:	0	ThCtrlSts18	
APID:	16													
Type:	8													
Subtype:	6													
PI1:	29202													
PI2:	0													
		Verify Packet Reception TM 8-6-114-19 Thermal Control Status Report - Loop 19 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29203</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29203	PI2:	0	ThCtrlSts19	
APID:	16													
Type:	8													
Subtype:	6													
PI1:	29203													
PI2:	0													
		Verify Packet Reception TM 8-6-114-20 Thermal Control Status Report - Loop 20 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29204</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29204	PI2:	0	ThCtrlSts20	
APID:	16													
Type:	8													
Subtype:	6													
PI1:	29204													
PI2:	0													

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch										
		Verify Packet Reception TM 8-6-114-21 Thermal Control Status Report - Loop 21 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29205</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29205	PI2:	0	ThCtrlSts21	
APID:	16													
Type:	8													
Subtype:	6													
PI1:	29205													
PI2:	0													
		Verify Packet Reception TM 8-6-114-22 Thermal Control Status Report - Loop 22 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29206</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29206	PI2:	0	ThCtrlSts22	
APID:	16													
Type:	8													
Subtype:	6													
PI1:	29206													
PI2:	0													
		Verify Packet Reception TM 8-6-114-23 Thermal Control Status Report - Loop 23 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29207</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29207	PI2:	0	ThCtrlSts23	
APID:	16													
Type:	8													
Subtype:	6													
PI1:	29207													
PI2:	0													
		Verify Packet Reception TM 8-6-114-24 Thermal Control Status Report - Loop 24 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29208</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29208	PI2:	0	ThCtrlSts24	
APID:	16													
Type:	8													
Subtype:	6													
PI1:	29208													
PI2:	0													
		Verify Packet Reception TM 8-6-114-25 Thermal Control Status Report - Loop 25 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29209</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29209	PI2:	0	ThCtrlSts25	
APID:	16													
Type:	8													
Subtype:	6													
PI1:	29209													
PI2:	0													
		Verify Packet Reception TM 8-6-114-26 Thermal Control Status Report - Loop 26 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29210</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29210	PI2:	0	ThCtrlSts26	
APID:	16													
Type:	8													
Subtype:	6													
PI1:	29210													
PI2:	0													

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch										
		Verify Packet Reception TM 8-6-114-27 Thermal Control Status Report - Loop 27 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29211</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29211	PI2:	0	ThCtrlSts27	
APID:	16													
Type:	8													
Subtype:	6													
PI1:	29211													
PI2:	0													
		Verify Packet Reception TM 8-6-114-28 Thermal Control Status Report - Loop 28 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29212</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29212	PI2:	0	ThCtrlSts28	
APID:	16													
Type:	8													
Subtype:	6													
PI1:	29212													
PI2:	0													
		Verify Packet Reception TM 8-6-114-29 Thermal Control Status Report - Loop 29 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29213</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29213	PI2:	0	ThCtrlSts29	
APID:	16													
Type:	8													
Subtype:	6													
PI1:	29213													
PI2:	0													
		Verify Packet Reception TM 8-6-114-30 Thermal Control Status Report - Loop 30 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29214</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29214	PI2:	0	ThCtrlSts30	
APID:	16													
Type:	8													
Subtype:	6													
PI1:	29214													
PI2:	0													
		Verify Packet Reception TM 8-6-114-31 Thermal Control Status Report - Loop 31 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29215</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29215	PI2:	0	ThCtrlSts31	
APID:	16													
Type:	8													
Subtype:	6													
PI1:	29215													
PI2:	0													
		Verify Packet Reception TM 8-6-114-32 Thermal Control Status Report - Loop 32 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29216</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29216	PI2:	0	ThCtrlSts32	
APID:	16													
Type:	8													
Subtype:	6													
PI1:	29216													
PI2:	0													

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch										
		Verify Packet Reception TM 8-6-114-33 Thermal Control Status Report - Loop 33 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29217</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29217	PI2:	0	ThCtrlSts33	
APID:	16													
Type:	8													
Subtype:	6													
PI1:	29217													
PI2:	0													
		Verify Packet Reception TM 8-6-114-34 Thermal Control Status Report - Loop 34 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29218</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29218	PI2:	0	ThCtrlSts34	
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Subtype:	6													
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PI2:	0													
		Verify Packet Reception TM 8-6-114-35 Thermal Control Status Report - Loop 35 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29219</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29219	PI2:	0	ThCtrlSts35	
APID:	16													
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		Verify Packet Reception TM 8-6-114-36 Thermal Control Status Report - Loop 36 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29220</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29220	PI2:	0	ThCtrlSts36	
APID:	16													
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Subtype:	6													
PI1:	29220													
PI2:	0													
		Verify Packet Reception TM 8-6-114-37 Thermal Control Status Report - Loop 37 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29221</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29221	PI2:	0	ThCtrlSts37	
APID:	16													
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Subtype:	6													
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PI2:	0													
		Verify Packet Reception TM 8-6-114-38 Thermal Control Status Report - Loop 38 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29222</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29222	PI2:	0	ThCtrlSts38	
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Type:	8													
Subtype:	6													
PI1:	29222													
PI2:	0													

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch										
		Verify Packet Reception TM 8-6-114-39 Thermal Control Status Report - Loop 39 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29223</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29223	PI2:	0	ThCtrlSts39	
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Subtype:	6													
PI1:	29223													
PI2:	0													
		Verify Packet Reception TM 8-6-114-40 Thermal Control Status Report - Loop 40 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29224</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29224	PI2:	0	ThCtrlSts40	
APID:	16													
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Subtype:	6													
PI1:	29224													
PI2:	0													
		Verify Packet Reception TM 8-6-114-41 Thermal Control Status Report - Loop 41 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29225</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29225	PI2:	0	ThCtrlSts41	
APID:	16													
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PI1:	29225													
PI2:	0													
		Verify Packet Reception TM 8-6-114-42 Thermal Control Status Report - Loop 42 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29226</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29226	PI2:	0	ThCtrlSts42	
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Subtype:	6													
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PI2:	0													
		Verify Packet Reception TM 8-6-114-43 Thermal Control Status Report - Loop 43 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29227</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29227	PI2:	0	ThCtrlSts43	
APID:	16													
Type:	8													
Subtype:	6													
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		Verify Packet Reception TM 8-6-114-44 Thermal Control Status Report - Loop 44 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29228</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29228	PI2:	0	ThCtrlSts44	
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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch										
		Verify Packet Reception TM 8-6-114-45 Thermal Control Status Report - Loop 45 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29229</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29229	PI2:	0	ThCtrlSts45	
APID:	16													
Type:	8													
Subtype:	6													
PI1:	29229													
PI2:	0													
		Verify Packet Reception TM 8-6-114-46 Thermal Control Status Report - Loop 46 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29230</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29230	PI2:	0	ThCtrlSts46	
APID:	16													
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		Verify Packet Reception TM 8-6-114-47 Thermal Control Status Report - Loop 47 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29231</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29231	PI2:	0	ThCtrlSts47	
APID:	16													
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		Verify Packet Reception TM 8-6-114-48 Thermal Control Status Report - Loop 48 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29232</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29232	PI2:	0	ThCtrlSts48	
APID:	16													
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		Verify Packet Reception TM 8-6-114-49 Thermal Control Status Report - Loop 49 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29233</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29233	PI2:	0	ThCtrlSts49	
APID:	16													
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		Verify Packet Reception TM 8-6-114-50 Thermal Control Status Report - Loop 50 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29234</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29234	PI2:	0	ThCtrlSts50	
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Type:	8													
Subtype:	6													
PI1:	29234													
PI2:	0													

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch										
		Verify Packet Reception TM 8-6-114-51 Thermal Control Status Report - Loop 51 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29235</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29235	PI2:	0	ThCtrlSts51	
APID:	16													
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Subtype:	6													
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PI2:	0													
		Verify Packet Reception TM 8-6-114-52 Thermal Control Status Report - Loop 52 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29236</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29236	PI2:	0	ThCtrlSts52	
APID:	16													
Type:	8													
Subtype:	6													
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PI2:	0													
		Verify Packet Reception TM 8-6-114-53 Thermal Control Status Report - Loop 53 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29237</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29237	PI2:	0	ThCtrlSts53	
APID:	16													
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Subtype:	6													
PI1:	29237													
PI2:	0													
		Verify Packet Reception TM 8-6-114-54 Thermal Control Status Report - Loop 54 Packet Details: <table style="margin-left: 200px;"> <tr><td>APID:</td><td>16</td></tr> <tr><td>Type:</td><td>8</td></tr> <tr><td>Subtype:</td><td>6</td></tr> <tr><td>PI1:</td><td>29238</td></tr> <tr><td>PI2:</td><td>0</td></tr> </table>	APID:	16	Type:	8	Subtype:	6	PI1:	29238	PI2:	0	ThCtrlSts54	
APID:	16													
Type:	8													
Subtype:	6													
PI1:	29238													
PI2:	0													
3		Check Thermal Control Table (TCT) content		Next Step: END										
		Each thermal control loop contains the following parameters:												
		Control loop status It defines the enabled / disabled status for each TCS control loop Control loop class It defines the TCS control loop class that can be either Class A or Class B Monitored Thermistors 1/2/3 These three parameters provide the three thermistors associated to each TCS control loop.												

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		<p>Temperature monitoring frequency It defines the temperature monitoring frequency for each Class A loops, as a multiple of 10 seconds. Setting it to 0 induces no control (i.e. spare loop). This parameter is not applicable to Class B as these have a fixed frequency of 10 seconds.</p> <p>FDIR Unit Id (Unit Status from UIU Table) It provides the link between the TCT and the UIU Table, providing the TCS controlled units on/off status to correctly select the heater thresholds [Tmin-on, Tmax-on] and [Tmin-off, Tmax-off].</p> <p>When the linked unit is OFF the Class B are replaced by Class A and the Monitoring Frequency, TminOff and TmaxOff are taken into account.</p> <p>In case of loops 17 and 37 the FDIR unit is hard coded ie the contents of the TCT is not taken into account and can not be changed.</p> <p>In case of units CRS 1 and 2, PACS (FPDU-FPSPU), PACS (FPBOLC), PACS (FPDEC-MEC), CCU A and B, HIFI (FHWOH), HIFI (FHHRV), HIFI (FHWEV-FHICU), HIFI (LSU), HIFI (FHIFV) it is up to Ground to keep the UiU with the commanded configuration.</p>		
		<p>Class A threshold values Each control loop is provided with two pairs of values based on the relevant unit status [Tmin-on, Tmax-on] and [Tmin-off, Tmax-off].</p> <p>Note that the Tmin-on and Tmax-On are also used to indicate the TrefMin and TrefMax for class B control loops. It provides the possibility to set, if needed, an asymmetric threshold control.</p> <p>Class B Coefficients ALPHA, BETA, GAMMA, DELTA, LAMBDA provides the control loop class B coefficients. TREF indicated the Threshold value. Qinst provides the power installed on control loop.</p>		
		<p>Nominal heater ID 8 bits (MSB) indicated the HPS number (1-18) 8 bits (LSB) indicated the HCS number (1-6)</p> <p>Redundant heater ID 8 bits (MSB) indicated the HPS number (1-18) 8 bits (LSB) indicated the HCS number (1-6)</p>		
		<p>Tolerance Provides for each control loop, the reference tolerance to be applied to the algorithm applied in order to detect the thermistor failures.</p>		
		<p>The CDMU ASW nominally uses the default TCT that is loaded from EEPROM to RAM during the initialization phase. However, it is possible to modify all the parameters of each TCT entry.</p>		

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Step No.	Time	Activity/Remarks	TC/TLM	Display/ Branch
		<p>The content of the Herschel TCT applicable to CDMU OBSW V4.0 is attached at the end of the procedure.</p> <p>The changes respect to these defaults values are described here bellow:</p>		
		<p>During commisioning the PACS thermal control loops were updated:</p> <ul style="list-style-type: none"> - Control Loop 11 (close to FPSPU/DPU) , - Control Loop 13 (close to FPBOLC) , - Control Loop 15 (close to FPDECMEC) <p>The TCT Tmin_on/ Tmax_on thresholds have been changed from the default values [-14,-11]°C to [1,2]°C as a greed in MRB related to AR- H_SC-29.</p> <p>Furthermore in DTCP-531 the TCT thresholds for the control loop 15 (DECMEC) have been reduced by 2 degC:</p> <ul style="list-style-type: none"> - Old loop 15 thresholds: Ton-min=1degC/Ton-max=2degC - New loop 15 thresholds: Ton-min=-1degC/Ton-max =0degC 		
		<p>Notes:</p> <ul style="list-style-type: none"> - the link between the nominal and the redundant HPS is HPS [n] = HPS [19-n]. - the link between the nominal and the redundant loop is driven by the HPS, and the commands are always sent to the HPS in use (according to the status stored in the UIU). - the HCS numbering is the same for the nominal and the redundant HPS. - the unit ID 0317 coming from UIU table does not correspond to any actual unit. <p>It is used for the RCS units that are not provided with an ON/OFF status, to select two different sets of thresholds if the S/C Mode is Survival (OFF thresholds) or not (ON thresholds).</p> <p>If this unit ID is marked ON, the nominal thresholds are in use. The status of this unit ID is modified by all mode transitions (not depending on the transition trigger). It is marked OFF when survival mode is entered, and ON otherwise.</p> <ul style="list-style-type: none"> - The unit ID for CCU and STR (loop indexes 17, 37) are considered ON, for thermal control purposes, when at least one of the two units is ON. 		
End of Procedure				

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Loop Index	Heater's location Herschel	Control Loop Status	THM 1 Used	THM 2 Used	THM 3 Used	Control Loop Loss Class	Temperature Monitoring Frequency	Unit Status Column From Unit in use in Table (hex)	Unit ID (memo nic as in the HPSDB Calibrati on curve)	Tmin-on/TreMin	Tmax-on/TreMax	Tmin-off	Tmax-off	QINST @27V (W)	Tref (Class B only)	Tolerance	Class-B Thermal loop constant (W/C) ALPHA, BETA, GAMMA, DELTA, LAMBDA	Nominal Heater HPS (HCS)	Redundant Heater HPS (HCS)	TCS line number (ref. H.P.-AL-TN-0069)
1	Decontamination Heating 1	Disabled	N/A	N/A	N/A	A	0 sec	N/A	N/A	N/A	N/A	N/A	N/A	0	N/A	0.7	This line controls the whole XPND2 (Rx + Tx), then due to the Rx status (always ON), the two ON thresholds are always enable. Ground can change the thresholds in case of RX (less of power (FCI open))	1(1)	18(1)	Spare
2	close to XPND2	Enabled	THM-50	THM-98	THM-146	A	60 sec	0x401		-9	-6	-9	-6	11.39	N/A	0.7		1(2)	18(2)	Tcsl.ine02
3	on FCV A1B	Enabled	THM-87	THM-135	THM-183	A	60 sec	0x317	XpndRxB NormSurv Thresh	11	17	11	17	1.43	N/A	2.5		1(3)	18(3)	Tcsl.ine39
4	on FCV C2B	Enabled	THM-88	THM-136	THM-184	A	60 sec	0x317	NormSurv Thresh	11	17	11	17	1.43	N/A	2.5		1(4)	18(4)	Tcsl.ine40
5	RCS PIPES	Enabled	THM-59	THM-107	THM-155	A	60 sec	0x317	NormSurv Thresh	23	24	23	24	5.84	N/A	0.7		1(5)	18(5)	Tcsl.ine11
6	close to XPND1	Enabled	THM-49	THM-97	THM-145	A	60 sec	0x201		-9	-6	-9	-6	11.39	N/A	0.7	This line controls the whole XPND1 (Rx + Tx), then due to the Rx status (always ON), the two ON thresholds are always enable. Ground can change the thresholds in case of RX (less of power (FCI open))	1(6)	18(6)	Tcsl.ine01
7	Decontamination Heating 3	Disabled	N/A	N/A	N/A	A	0 sec	N/A	N/A	N/A	N/A	N/A	N/A	0	N/A	0.7		2(1)	17(1)	Spare
8	on FCV C1B	Enabled	THM-89	THM-137	THM-185	A	60 sec	0x317	NormSurv Thresh	11	17	11	17	1.43	N/A	2.5		2(2)	17(2)	Tcsl.ine41
9	on FCV A2B	Enabled	THM-90	THM-138	THM-186	A	60 sec	0x317	NormSurv Thresh	11	17	11	17	1.43	N/A	2.5		2(3)	17(3)	Tcsl.ine42
10	on FCV C4B	Enabled	THM-91	THM-139	THM-187	A	60 sec	0x317	NormSurv Thresh	11	17	11	17	1.43	N/A	2.5		2(4)	17(4)	Tcsl.ine43
11	close to FPSPU-FPDPU	Enabled	THM-53	THM-101	THM-149	A	60 sec	0x30B	PacsDnu	-14	-11	-14	-11	31.02	N/A	0.7		2(5)	17(5)	Tcsl.ine05
12	Propellant tanks	Disabled	N/A	N/A	N/A	A	0 sec	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.7		2(6)	17(6)	Spare
13	close to FPBOLC	Enabled	THM-54	THM-102	THM-150	A	60 sec	0x309	PacsBolic	-14	-11	-14	-11	9.41	N/A	0.7		3(1)	16(1)	Tcsl.ine06

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Loop Index	Heater's location Herschel	Control Loop Status	THM 1 Used	THM 2 Used	THM 3 Used	Control of Loss Class	Temperature Monitoring Frequency	Unit Status Column in use Table (hex)	Unit ID (mnemonic as in the HPSDB Calibration curve)	Tmin-on/TrefMin	Tmax-on/TrefMax	Tmin-off	Tmax-off	QINST @22V (W)	Tref (Class B only)	Tolerance	Class-B Thermal loop constant (W/C) ALPHA, BETA, GAMMA, DELTA, LAMBDA	Nominal Heater HPS (HCS)	Redundant Heater HPS (HCS)	TCS line number (ref. H.P.AL-TN-0069)
14	CRS-1	Enabled	THM-55	THM-103	THM-151	A	10 sec	0x308	Crst	46	46.5	46	46.5	24.3	N/A	0.7	CRS-1 is always ON and cannot be switched OFF by the ACMS.	3(2)	16(2)	TcsLine07
15	close to FDEC MEC	Enabled	THM-56	THM-104	THM-152	A	60 sec	0x30A	PacsDec	-14	-11	-14	-11	27.48	N/A	0.7		3(3)	16(3)	TcsLine08
16	RCS PIPES	Enabled	THM-57	THM-105	THM-153	A	60 sec	0x317	NomSurv Thresh	23	24	23	24	5.46	N/A	0.7		3(4)	16(4)	TcsLine09
17	close to CGU-HSDCU-HFCU	Enabled	THM-58	THM-106	THM-154	A	60 sec	0x316 OR 0x516	CcuA OR CcuB	14	17	14	17	44.5	N/A	0.7		3(5)	16(5)	TcsLine10
18	close to GYRO Decontamination Heating 5	Enabled	THM-86	THM-134	THM-182	A	10 sec	0x303	Gyro	10	15	10	15	45.22	N/A	0.7		3(6)	16(6)	TcsLine38
19		Disabled	N/A	N/A	N/A	A	0 sec	N/A	N/A	N/A	N/A	N/A	N/A	0	N/A	0.7	ALPHA=0.75631; BETA=0.000453786; GAMMA=-0.756856214; DELTA=0.0045; LAMBDA=-1.9045;	4(1)	15(1)	Spare
20	close to FHWCV	Enabled	THM-60	THM-108	THM-156	B	10sec	0x30C	HfWcv	2.5	6.5	-2.5	0.5	23.84	4.5	2		4(2)	15(2)	TcsLine12
21	on RCS PIPES	Enabled	THM-83	THM-141	THM-189	A	60 sec	0x317	NomSurv Thresh	23	24	23	24	5.70	N/A	0.7		4(3)	15(3)	TcsLine45
22	on FCV A1A	Enabled	THM-77	THM-125	THM-173	A	60 sec	0x317	NomSurv Thresh	11	17	11	17	1.43	N/A	2.5		4(4)	15(4)	TcsLine29
23	on FCV C2A	Enabled	THM-78	THM-126	THM-174	A	60 sec	0x317	NomSurv Thresh	11	17	11	17	1.43	N/A	2.5		4(5)	15(5)	TcsLine30
24	on RCS PIPES	Enabled	THM-84	THM-142	THM-190	A	60 sec	0x317	NomSurv Thresh	23	24	23	24	4.68	N/A	0.7		4(6)	15(6)	TcsLine46
25	CRS-2	Enabled	THM-12	THM-20	THM-36	A	10 sec	0x315	Crst	46	46.5	46	46.5	24.3	N/A	0.7	CRS-2 is always ON and cannot be switched OFF by the ACMS.	5(1)	14(1)	TcsLine49
26	close to FHRH	Enabled	THM-66	THM-114	THM-162	B	10 sec	0x311	HfHm	26	30	-9	-6	38.86	28	0.7	ALPHA=1.237765; BETA=0.001200824; GAMMA=-1.236474; DELTA=0.004540; LAMBDA=-1.904540;	5(2)	14(2)	TcsLine18
27	close FHWCV-FHCU	Enabled	THM-63	THM-111	THM-159	A	60 sec	0x30E	HfWcv	1	4	1	4	35.7	N/A	0.7		5(3)	14(3)	TcsLine15
28	on FCV C3B	Enabled	THM-82	THM-140	THM-188	A	60 sec	0x317	NomSurv Thresh	11	17	11	17	1.43	N/A	2.5		5(4)	14(4)	TcsLine44
29	on RCS PIPES	Enabled	THM-85	THM-143	THM-191	A	60 sec	0x317	NomSurv Thresh	23	24	23	24	4.54	N/A	0.7		5(5)	14(5)	TcsLine47
30	on PT-LF-LV1-LV2	Enabled	THM-86	THM-144	THM-192	A	60 sec	0x317	NomSurv Thresh	23	24	23	24	4.9	N/A	0.7		5(6)	14(6)	TcsLine48

Thermal Control Status Report
 File: H_FCP_TCS_REPO.xls
 Author: E. Picallo

Loop Index	Heater's location Herschel	Control Loop Status	THM 1 Used	THM 2 Used	THM 3 Used	Control Class	Temperature Monitoring Frequency	Unit Status Column from Unit in use in Table (hex)	Unit ID (mnemonic as in the HPSDB Calibrati on curve)	Tmin on/ Tref/Min	Tmax on/ Tref/Max	Tmin -off	Tmax -off	QINST @27V (W)	Tref (Class B only)	Tolerance	Class-B Thermal loop constant (1W/C)ALPHA, BETA, GAMMA, DELTA, LAMBDA	Nominal Heater HPS (HCS)	Redundant Heater HPS (HCS)	TCS line number (ref: H.P.-AL-TN-0069)
48	close FHLCU-FHIFH Decontamination Heating 8	Enabled	THM-67	THM-115	THM-163	A	60 sec	0x0312	HifLCU	11	14	11	14	20.9	N/A	0.7		8(6)	11(6)	Tcsl.me19
49	on TANK-Y	Disabled	N/A	N/A	N/A	A	0 sec	N/A	N/A	N/A	N/A	N/A	N/A		N/A	0.7		9(1)	10(1)	Spare
50	on FCV C4A	Enabled	THM-74	THM-122	THM-170	A	60 sec	0x317	NomSurv Thresh	11	14	11	14	5.4	N/A	0.7		9(2)	10(2)	Tcsl.me26
51	close to FHLSU	Enabled	THM-81	THM-129	THM-177	A	60 sec	0x317	NomSurv Thresh	11	17	11	17	1.43	N/A	2.5		9(3)	10(3)	Tcsl.me33
52	STR1 Primary Baffle	Enabled	THM-68	THM-116	THM-164	A	60 sec	0x314	HifLSU	11	14	11	14	29	N/A	0.7		9(4)	10(4)	Tcsl.me20
53	on TANK-Y	Enabled	THM-62	THM-110	THM-158	A	10 sec	0x32C	SirBaffle	14	14.5	-20.5	-20	7.05	N/A	0.7	This loop depends on STR1 status.	9(5)	10(5)	Tcsl.me14
54	on TANK-Y	Enabled	THM-73	THM-121	THM-169	A	60 sec	0x317	NomSurv Thresh	11	14	11	14	5.4	N/A	0.7		9(6)	10(6)	Tcsl.me25