SPIRE-AST-REP-002631

Title: **SPIRE IMT PART 2**

CI-No: 153200

Prepared by:	S. Ilsen	Date: 2/11/2005
Checked by:	C. Schlosser	2.11.05
Product Assurance:	R. Stritter	2.11.05
Configuration Control:	W. Wietbrock	2.11.05
Project Management:	Dr. W. Fricke	07/11/05

Distribution: See Distribution List (last page)

Issue	Date	Sheet	Description of Change	Release
1	2/11/2005		First Issue	

Table of Content

Table of Figures

Error! No table of figures entries found.

List of Tables

1 Scope

1.1 Objective

This test report describes the results of the second part of IMT performed for the Herschel SPIRE Instrument. The first part of IMT stopped on 29.09.05 because the cooler recycle was not successful.

The test was performed at ASED in Ottobrunn from 24.11.05 to 29.11.05.

1.2 Summary

Detailed results are given in the as-run-procedure in Chapter 8

The following NCR's have been raised:

- N/A

The following NCR's have been altered:

- N/A

An overview can be found in chapter 11.2

Conclusion:

The test was completed successfully. All planned SPIRE tests have been executed and a first check of the results showed no major problems. Offline analysis will need to be done to analyse the data in more detail.

Extra Comments:

- Numerous TCL scripts were changed during the IMT. All of these changes are clearly identified in this report. Because of all these changes and the fact that the TCL scripts are just templates, the version control is done by SPIRE.

2 Documents/Drawings

2.1 Applicable Documents

INSTRUMENT PLM EQM LEVEL TEST PROCEDURE

HP-2-ASED-PR-0051, issue 1.1 from 24.06.2005

EGSE CONFIGURATION PROCEDURE

HP-2-ASED-PR-0035, Issue 4 from 03.08.2005

INSTRUMENT TEST PROCEDURE

SPIRE-RAL-PRC-002512, Issue 1.1 from 23.09.2005

2.2 Reference Documents

N/A

2.3 Other Documents

N/A

3 Configuration

3.1 PLM Configuration

SVM integrated with cryostat. Cryostat is at He II level (~1.7 K).

3.2 Environment

Environmental	Actual
Clean Room Class	100.000
Temperature	~21 °C
Rel. Humidity	~52.10 %
Pressure	~857 mbar

4 Conditions

4.1 Personnel

Responsibility	Name / Organization
Test Manager	S. Idler
Test Engineer	S. Ilsen
EGSE Operator	S. Ilsen
Instrument Engineer	A. Aramburu, S. Sidher
PA Responsible	D. Hendry / E. Lamprecht
ESA/Alcatel Representative	W. Pinter-Krainer, G. Doubrovik

4.2 Environmental

See chapter 3.2

4.3 General Precautions and Safety

N/A

4.3.1 General Safety Requirements, Precautions

N/A

4.3.2 ESD constraints

N/A

4.3.3 Special QA Requirements

N/A

4.4 EGSE

4.4.1 Hardware: CCS, EGSE's and DFE's

Item	Hardware Id	Serial No.
CCS	N/A	HPCCS 4
PLM SCOE	SE8426	03/001
CDMU DFE	SE8455	03/002
CRYO SCOE	EQM	N/A
IEGSE	N/A	N/A

4.4.2 Hardware: Prime Instrument: SPIRE

Item	Model	Remark
DPU	HSDPU AVM	
DRCU	HSDCU QM1 HSFCU QM1	

4.4.3 Software

Prime Instrument: SPIRE

SW Ident	Issue /Version	Responsible	Comment
Inst DPU OBS	2.0.A1	Inst	
Inst DRCU OBS	Boot SW June 2003	Inst	

Standby Instrument: PACS

SW Ident	Issue /Version	Responsible	Comment
Inst OBS SPU	11.7	Inst	
Inst SPU boot OBSW	1.4	Inst	
Inst OBS DECMEC	5.0.25 Version for Mech control cold	Inst	V 5.0.24 Mech controller hot
Inst DECMEC boot OBSW	1.1	Inst	
Inst OBS DPU	7.65	Inst	
Inst DPU Boot OBSW	1.0	Inst	

Standby Instrument: HIFI

SW Ident	Issue /Version	Responsible	Comment
Inst ICU OBS	2.22	Inst	18.05.2005

Inst LCU OBS	17.0	Inst	01.10.2004

IEGSE Configuration

SW Ident	Issue /Version	Responsible	Comment
MIB on I-EGSE	7_18	Inst	
HCSS Build Version	687	Inst	
PACS Build	20050706A	Inst	

CCS Configuration

SW Ident	Issue /Version	Responsible	Comment
TCL Scripts HIFI	ist_cus_0.7_tcl.zip	ASP	Delivered on 19.08.2005
TCL Scripts PACS	IMT_cus-shell-scripts_19092005.zip	ASP	Delivered on 19.09.2005
TCL Scripts SPIRE	SPIRE-SFTs-09092005.tar.gz + adapted script: SFT-SPIRE-CCS-DRCU-ON-STEP2.tcl	ASP	Delivered on 09.09.2005 (12.09.2005)
CCS MIB Bridge files	CCS_Her_PLM__01_v1_2.zip	ASP	2005-09-08
CCS S/W Release	2.0.637	Terma	Updated on 06.10.2005

CDMU DFE Configuration

SW Ident	Issue /Version	Responsible	Comment
CDMU DFE CMS	2.3.0.0	SSBV	Part of CDMU DFE Workstation
CDMU DFE Pipe I/F (IPC Handler P7001)	2.4.0.0	SSBV	Part of CDMU DFE Workstation
CDMU DFE Pipe I/F (IPC Handler Pipe P 7002)	1.2.1.0	SSBV	Part of CDMU DFE Workstation
CDMU archive Browser	2.2.2.72	SSBV	Part of CDMU DFE Workstation
Mil-STD-1553b BusMonitor	1.11.1.87	SSBV	Part of CDMU DFE Workstation
CDMU DFE IPC Handler object implementation	2.4.0.18	SSBV	Part of CDMU DFE Workstation
SimFE	1.5.0.0	SSBV	Part of CDMU DFE Platform
HLBC	1.07.00	SSBV	Part of CDMU DFE Platform

PLM SCOE Configuration

SW Ident	Issue /Version	Responsible	Comment
PLM SCOE CMS	1.5.0.0	SSBV	Part of PLM SCOE Workstation
PLM SCOE archive browser	2.2.1.70	SSBV	Part of PLM SCOE Workstation
PLM SCOE pipe I/F	1.3.0.0	SSBV	Part of PLM SCOE Workstation
PLM SCOE IPC Handler object implementation	2.1.0.7	SSBV	Part of PLM SCOE Workstation
PDU Controller	1.5.0.0	SSBV	Part of PLM SCOE Platform

Bus Profiles

The following bus profiles are loaded on the CDMU DFE. They are provided, checked and validated by Patrice Couzin (ASP). They were delivered by email on 01.09.2005

- PACS_prime_inst.PST
- SPIRE_prime_inst.PST
- HIFI_prime_inst.PST
- PACS_SPIRE_par.PST
- PACS_burst_mode.PST
- Inst_sdby.PST

The profiles allow one instrument in PRIME mode, while the others are in standby mode. This test will use only the following bus profile(s):

- SPIRE_prime_inst.PST (see Appendix 1)

4.4.4 Special Equipment

N/A

4.5 MIB

4.5.1 Version

The used MIB has reference: CCS_Her_PLM__01_v1_2.zip

And reference date: 2005-09-08

The MIB was received by email from Sonia Dos-Santos (ASP) on 08/09/2005

4.5.2 Configuration & Manual changes

The following files have been manually changed by Alcatel after the generation process (taken from the configuration.txt file included in the MIB):

- CDF.DAT

  HPSDB does not allows fixed counter flags (ie CDF_ELTYPR=F for counters) HPSDB NCR 478

- CDF.DAT

  Problem on the (PTC,PFC)=(7,0) Variable octect string (PP004380).

  PACS has the following data:

  PC010380 E 8 32 PP004380 R

  On HPSDB this line is generated

  PC010380 E 0 32 0 PP004380 R

  For now has been manually replaced.

- DPC.DAT

  Add the line

  HA000289 HU035197 63 1 Y N

  HPSDB NCR, not possible to add User parameters on an alphanumeric display (NCR 495)

  Note: The parameter HU035197 can not be loaded via S2K files, because is not associated to a Packet (NCR created 475)

  Error HPSDB Solution: The parameter as been loaded by the an XML file Add_Parameter_HU035197.xml, to correct this problem.

- PLF.DAT

  (HPSDB NCR 474) error when loading/generating SCOS TM packets has fixed and variable but with diferent definitions, (the following packet has the

parameter repeated 16 times on plf.dat, and repeated 0 times (variable) on the vpd.dat table)

The vpd.dat is corrected generated but not the plf.dat

replace the line (manual)

HM057190 80044289 0 0 1 0 0 0

by

HM056190 80044289 16 0 1 0 0 0

HM057190 80044289 17 0 64 0 0 0

- TCD.DAT

  Generated empty by HPSDB, NCR 497 replaced by the one used on the tests week 28

- SCO.DAT

  replaced by the one used on the tests week 28. This file shall be discussed with S. Ilsen because of the SCOE's names, HPSDB generates the names of the real elements.

- TMD.DAT

  Add packets sent by SPIRE team by email on 31/08/2005

- PCF.DAT

  Change PCF_VALPAR=0 on the parameter HU035197 inside of the pcf.dat. This was ok on HIFI, but not done on the XML file loaded

  Add_Parameter_HU035197.xml

- PLF.DAT

  Change the field PLF_LOGCC from NULL to 32 bits (see email from Luc Dubbeldam- HIFI on 06/09/2005)

  HM057190 80044289 17 0 64 32 0 0

The following files have been changed manually by ASED OTN (Stijn Ilsen):

- CAP.DAT – The decimal separator for the EQM CRYO SCOE calibration is manually changed from “,” to “.”. This also to solve problems with the EQM CRYO SCOE calibrations. EQM CRYO SCOE MIB will be updated by ASED to avoid this problem in the future.
- TMD.DAT – The EQM CRYO packets have been added to the tmd.dat file on the CCS to make sure all EQM CRYO SCOE packets are forwarded to the IEGSE.

Remark: Because of NCR 1482, a MIB change was necessary after the first day of IMT. The CDF.DAT file is changed. Command PC162420 allows 8 entries for parameter PP067420, this is changed into 9.

5 Step by Step Procedure: Configure CCS and EGSE

According to Procedure(s):

- **HP-2-ASED-PR-0035 (Chapter 3: Order of Execution - steps 1 to 9)**

Step #	Action	Comments	Check
1	Note Testsession	2005_10_24_07_53_ilsens_hpws42_REALTIME_S_IMT_2	**OK**
2	Power on CDMU DFE platform		**OK**
3	Power on PLM SCOE platform		**OK**
4	Power on the CDMU DFE workstation and wait for the BIST to finish.	Check: BIST successful?	**OK**
5	Power on the PLM SCOE workstation and wait for the BIST to finish.	Check: BIST successful?	**OK**
6	Execute “EGSE_CONFIG_AUTO.tcl” (see Appendix 2)	Check: PLM SCOE HK packets arriving	**OK**
		Check: CDMU DFE HK packets arriving	**OK**
		Check: Check name of bus profile (PST) in CDMU DFE HK or on CDMU DFE workstation **Result: SPIRE_prime_inst.pst**	**OK**
7	Execute “SubscribeParams.tcl”	Check: Wait until status of TCL file has changed to WAITING. This can take up to 10 minutes.	**OK**
8	Execute “Connect HIEGSE”	Check with IEGSE operators if IEGSE is connected.	**OK**
9	Execute “WARNING_LAMP_POWER_ON.tcl”	**Not done since warning lamp is broken.**	**N/A**
extra	Execute “connect EQMCRYO”		**OK**

6 Step by Step Procedure: Power On Instruments

6.1 Power on PACS to STANDBY Mode

The PACS instrument was already powered and configured into STANDBY mode from the PACS IMT. See report HP-2-ASED-TR-0102.

6.2 Power on HIFI to STANDBY Mode

According to Procedure(s):

- **HP-2-ASED-PR-0035 (Chapter 3: Order of Execution – Step 10)**
- **SRON-G/HIFI/PR/2005-101 chapter 2.4.1 & 2.4.5**

To automate the power on of HIFI, a new power on TCL script has been made. This script switches all LCL's, sends all TC's and returns all information in a log file. This script executed correct. The log file of this script can be found in Appendix 3.

Step #	Action	Comments	Check
1	Apply power to ICU	Select ICU_housekeeping AND	**OK**
		Check voltage in the range 26V – 29V Actual value = **27.93 V**	**OK**
		Check ICU current draw is TBD - TBD mA Actual value = **0.96 A**	**OK**
		Check for receipt of (5,2) event packet after power-on	**OK**
2	Command: HIFI_force_boot	Check for absence of (5,4) event packet after HIFI_force_boot command	**OK**
		Check for receipt of HK packets every 3 sec	**OK**
		Check OBS version **Result: 1.3dec**	**OK**
		Compare HK (secondary supply voltages) with previous results **Could not be done since HIFI is not present**	**OK**
3	Command: HIFI_Housekeeping_on HIF_HK_rate=1_pkt_per_sec	Check for HK updates every 1 sec	
4	Command: HIFI_notify_PDU_status HIF_FCU_s=on	*Select ICU_housekeeping and HRH_analog AND's*	**OK**
		Check FCU HK received and no limit errors	**NOK**
5	Apply power to HRH	*Select ICU_housekeeping and HRH_analog AND's*	**OK**
		Check voltage in the range 26V – 29V Actual value = **27.73 V**	**OK**
		Check HRH current draw is 2.2A – 2.5A Actual value = **2.43 A**	**OK**
6	Command: HIFI_notify_PDU_status HIF_FCU_s=on HIF_HRSH_s=on	Check HRH HK received and no limit errors	**OK**
7	Apply power to WEH	Select ICU_housekeeping and WBS_H AND's	**OK**

		Check voltage in the range 26V – 29V Actual value = **27.93 V**	**OK**
		Check WEH current draw is 0.9A – 1.0A Actual value = **0.94 A**	**OK**
8	Command: HIFI_notify_PDU_status HIF_FCU_s=on HIF_HRSH_s=on HIF_WBSH_s=on	Check WBS_H HK received and no limit errors	**OK**
9	Apply power to LCU	Select ICU_housekeeping and LCU_status AND's	**OK**
		Check voltage in the range 26V – 29V Actual value = **27.93 V**	**OK**
		Check WEH current draw is 0.69A – 0.75A Actual value = **0.72 A**	**OK**
10	Command: HIFI_notify_PDU_status HIF_FCU_s=on HIF_HRSH_s=on HIF_WBSH_s=on HIF_LCU_s=on	Check LCU HK received and no limit errors	**OK**

Remark: Since HIFI is is STANDY mode during the SPIRE IMT, the HK rate is reduced to once a second. This is done with command: HIFI_Housekeeping_on (HIF_HK_rate=1_pkt_per_5_s)

6.3 Power on SPIRE to PRIME Mode

According to Procedure(s):

- **HP-2-ASED-PR-0035 (Chapter 3: Order of Execution – Step 10)**
- **SPIRE-RAL-PRC-002494 (Issue 1.3 – 23/09/05)**

Step #	Action	Comments	Check
1	CCS 28V Power Supply to the DPU is available		**OK**
2	SPIRE MIB is imported in the CCS database.		**OK**
3	CCS is up and running (SCOS, TOPE and the CDMU Simulator)		**OK**
4	DPU AND OBS PARAMETERS display is selected on the CCS		**OK**

6.3.1 SFT-SPIRE-CCS-DPU-ON

Purpose: To switch on the SPIRE DPU and start generating housekeeping

Step #	Action	Comments	Check
1	Power on the SPIRE DPU using the CCS 28V Power Supply	**This action is performed from INSTR_POWER_ON.tcl (see Appendix 4)** **Result:** • **Voltage: 27.8 V** • **Current: 0.45 A** **(5,2) packet received**	**OK**
2	Execute TCL script SFT-SPIRE-CCS-DPU-ON.tcl		**OK**
3	Check that THSK parameter on the DPU AND OBS PARAMETERS display on SCOS is refreshing every second	THSK incrementing every second	**OK**
4	Check that TM2N parameter on the DPU AND OBS PARAMETERS display on SCOS is incrementing every second	TM2N incrementing every second	**OK**

Final Configuration: SPIRE DPU is on but the DRCU is still off

6.3.2 SFT-SPIRE-CCS-DRCU-ON

Purpose: To switch on the SPIRE DRCU and start generating housekeeping

Step #	Action	Comments	Check
1	Execute TCL script SFT-SPIRE-CCS-DRCU-ON-STEP1.tcl	**HK stopped as expected**	**OK**
2	Check that THSK parameter is not refreshing anymore		**OK**
3	Check that TM2N parameter is not incrementing anymore		**OK**
4	Ensure the SPIRE Power Bench is connected to the mains – see Figure 2.		**OK**
	Ensure all 5 remote DCU switches are in the off position – see Figures 3 & 4 below.		**OK**
	Switch on the Primary Power on the back of the SPIRE Power Bench (Figure 2).	**Prime power led becomes orange** **Main power led becomes green**	**OK**
	Switch on the Secondary Power on the front of the SPIRE Power Bench by pulling out and lifting up the switch (shown in yellow circle in Figure 5)	**Secondary power led becomes red**	**OK**
5	Execute TCL script SFT-SPIRE-CCS-DRCU-ON-STEP2.tcl		**OK**
6	Manual Switch on of the DRCU by the CCS staff step 2: • Switch on all 5 remote DCU		**OK**

	switches		
7	Check that THSK parameter is again refreshing every second	**THSK incrementing every second**	**OK**
8	Check that TM2N parameter is again incrementing every second	**TM2N incrementing every second**	**OK**

Final Configuration:

- SPIRE DPU and DRCU are both on
- HK generation is on

7 Step by Step Procedure: SPIRE SFT Cold He 2 results

According to Procedure(s):

- **HP-2-ASED-PR-0035 (Chapter 3: Order of Execution – Step 11)**
- **SPIRE-RAL-PRC-002494**

7.1 SFT-SPIRE-CCS-FUNC-SCU-01

Purpose: SCU science packet generation check

Preconditions:

Initial Configuration:

- SPIRE DPU is on and generating HK
- DRCU is switched ON
- SCU PARAMETERS display is selected on the CCS

Step #	Action	Comments			Check
1	Execute TCL script SFT-SPIRE-CCS-FUNC-SCU-01.tcl	Check if the following parameters change value:			
		Parameter	**Original Value**	**End Value**	
		SCUFRAMECNT[1]	0	31	**OK**
		Observed values	**0**		
		TM5N[2]	00003FFF	1	**OK**
		Observed values	**00003FFF**	**1**	

Final Configuration: Unchanged

[1] AND SA_4_559 (SCU Parameters)
[2] AND SA_1_559 (DCU and OBS parameters)

7.2 SFT-SPIRE-CCS-FUNC-DCU-01

Purpose: DCU science packet generation check for all Photometer and Spectrometer packet types (PF, PSW, PMW, PLW, SF, SSW and SLW)

Preconditions:

Initial Configuration:

- SPIRE DPU is on and generating HK
- DRCU is switched ON
- DCU PARAMETERS display is selected on the CCS

Step #	Action	Comments			Check
1	Execute TCL script SFT-SPIRE-CCS-FUNC-DCU-01.tcl	Check if the following parameters change value:			
		Parameter	**Original Value**	**End Value**	
		DCUFRAMECNT	0	700	**OK**

Final Configuration: Unchanged

7.3 SFT-SPIRE-CCS-FUNC-DCU-04-PS-ON

Purpose: Spectrometer and Photometer LIAs switch on

Preconditions: The Photometer and Spectrometer LIAs are switched off

Initial Configuration:

- SPIRE DPU is on and generating HK
- DRCU is switched ON
- SCU PARAMETERS display is selected on the CCS

Step #	Action	Comments			Check
1	Execute TCL script SFT-SPIRE-CCS-FUNC-DCU-04-PS-ON.tcl	Check if the following parameters change value:			
		Parameter	**Original Value**	**End Value**	
		SCUDCDCSTAT[3]	0	1	**OK**
2	**Manual step for the CCS staff: Check if the Over Current Limiter for the LIAs has triggered on the SPIRE Warm Electronics Power Bench. If it has, it will have to manually reset.**	Checked by S. ILSEN. No reset needed.			**OK**

Final Configuration: The Photometer and Spectrometer LIAs are on.

[3] AND SA_4_559 SCU PARAMETERS

7.4 SFT-SPIRE-CCS-FUNC-SCU-04

Purpose: SCU Photometer PCAL check

Preconditions: SPIRE CQM is electrically integrated with the Herschel EQM

Initial Configuration:

- SPIRE DPU is on and generating HK
- DRCU is switched ON
- SCU PARAMETERS display is selected on the CCS

Step #	Action	Comments				Check
1	Execute TCL script SFT-SPIRE-CCS-FUNC-SCU-04.tcl The expected values during the test should be monitored when parameter BBFULLTYPE in the SCU PARAMETERS display is set to PCAL_Check This usually happens about 30 seconds from the start of test execution.	Check if the following parameters change value:				
		Parameter	**Start**	**During**	**End**	
		PCALCURR – mA **Observed**	0.0 **0.0**	0.1 **0.1**	0.0 **0.0**	**OK**
		PCALV – V **Observed**	0.0 **0.0**	0.026 **0.026**	0.0 **0.0**	**OK**

Final Configuration: Unchanged

Remark: At this point SPIRE asked to change to order of execution (with respect to the order of execution in the SFT procedure). As a result of that, the following 2 scripts are executed now.

7.5 SFT-SPIRE-CCS-FUNC-SCU-05

Purpose: SCU Photometer SCAL4 and SCAL2 check

Preconditions: SPIRE CQM is electrically integrated with the Herschel EQM

Initial Configuration:

- SPIRE DPU is on and generating HK
- DRCU is switched ON
- SCU PARAMETERS display is selected on the CCS

Step #	Action	Comments				Check
1	Execute TCL script SFT-SPIRE-CCS-FUNC-SCU-05.tcl					**OK**
2	Wait for the parameter BBFULLTYPE to get set to SCAL4_Check					**OK**
3	A few seconds later record the value of parameters SCAL4CURR and SCAL4V These parameters are set back to 0 after ~60 seconds	Check if the following parameters change value:				
		Parameter	**Start**	**During**	**End**	
		SCAL4CURR – mA **Observed**	0.0 **0.0**	0.1 **0.1**	0.0 **0.0**	**OK**
		SCAL4V – V **Observed**	0.0 **0.0**	0.05 **0.05**	0.0 **0.0**	**OK**
4	Wait for the parameter BBFULLTYPE to get set to SCAL2_Check					**OK**
5	A few seconds later record the value of parameters SCAL4CURR and SCAL4V These parameters are set back to 0 after ~60 seconds	Check if the following parameters change value:				
		Parameter	**Start**	**During**	**End**	
		SCAL2CURR – mA **Observed**	0.0 **0.0**	0.1 **0.1**	0.0 **0.0**	**OK**
		SCAL2V – V **Observed**	0.0 **0.0**	0.05 **0.05**	0.0 **0.0**	**OK**

Final Configuration: Unchanged

7.6 SFT-SPIRE-CCS-FUNC-SCU-07

Purpose: SCU cooler heaters check

Preconditions: SPIRE CQM is electrically integrated with the Herschel EQM

Initial Configuration:

- SPIRE DPU is on and generating HK
- DRCU is switched ON
- SCU PARAMETERS display is selected on the CCS

Step #	Action	Comments				Check
1	Execute TCL script SFT-SPIRE-CCS-FUNC-SCU-07.tcl					**OK**
2	Wait for the parameter BBFULLTYPE to get set to Cooler_Htr_Chk					**OK**
3	A few seconds later record the value of parameter EVHSV – the Evaporator Heat Switch Voltage. This voltage stays on for ~45 seconds.	Check if the following parameters change value:				
		Parameter	**Start**	**During**	**End**	
		EVHSV – mV **Observed**	0 **0**	~323 **325**	0 **0**	**OK**
4	A few seconds after the EVHSV parameter has been set back to 0, record the value of parameter SPHSV – the Sorption Pump Heat Switch Voltage. This voltage stays on for ~45 seconds.	Check if the following parameters change value:				
		Parameter	**Start**	**During**	**End**	
		SPHSV – mV **Observed**	0 **0**	~323 **325**	0 **0**	**OK**
5	A few seconds after the SPHSV parameter has been set back to 0, record the value of parameter SPHTRV – the Sorption Pump Heater Voltage. This voltage stays on for ~45 seconds.	Check if the following parameters change value:				
		Parameter	**Start**	**During**	**End**	
		SPHTRV – V **Observed**	0 **0**	~8.8 **8.77**	0 **0**	**OK**

Final Configuration: **Unchanged**

7.7 SFT-SPIRE-CCS-FUNC-SCU-03

Purpose: SCU DC thermometry check

<table>
<tr><th>Step #</th><th>Action</th><th colspan="5">Comments</th><th>Check</th></tr>
<tr><td>1</td><td>Execute TCL script SFT-SPIRE-CCS-FUNC-SCU-03.tcl</td><td colspan="5"></td><td>OK</td></tr>
<tr><td>2</td><td>Wait for the parameter BBFULLTYPE to get set to SCU_DC_Therm</td><td colspan="5"></td><td>OK</td></tr>
<tr><td rowspan="3">3</td><td rowspan="3">A few seconds later record the value of parameter SCUTEMPSTAT</td><td colspan="5">Check if the following parameters change value:</td><td></td></tr>
<tr><td>Parameter</td><td colspan="2">Start</td><td>During</td><td>End</td><td></td></tr>
<tr><td>SCUTEMPSTAT
Observed</td><td colspan="2">0
0000000</td><td>FFFF
0000FFFF</td><td>FFFF
0000FFFF</td><td>OK</td></tr>
<tr><td>4</td><td>Record the RAW values of SCU temperatures</td><td colspan="4">Parameter</td><td colspan="2">Value</td><td>OK</td></tr>
<tr><td colspan="4">PUMPHTRTEMP
PUMPHSTEMP
EVAPHSTEMP
SHUNTTEMP
SOBTEMP
SL0TEMP
PL0TEMP
OPTTEMP
BAFTEMP
BSMIFTEMP
SCAL2TEMP
SCAL4TEMP
SCALTEMP
SMECIFTEMP
SMECTEMP
BSMTEMP</td><td colspan="2">8.46
5.97
5.91
1.72
6.94
1.78
1.80
6.67
6.59
6.23
5.41
7.78
6.80
6.79
8.20
6.07</td><td></td></tr>
</table>

Final Configuration: Unchanged

7.8 SFT-SPIRE-CCS-FUNC-SCU-06

Purpose: SCU AC thermometry check

Preconditions: SPIRE CQM is electrically integrated with the Herschel EQM

Initial Configuration:

- SPIRE DPU is on and generating HK
- DRCU is switched ON
- SCU PARAMETERS display is selected on the CCS

Step #	Action	Comments				Check
1	Execute TCL script SFT-SPIRE-CCS-FUNC-SCU-06.tcl					**OK**
2	Wait for the parameter BBFULLTYPE to get set to SCU_AC_Therm					**OK**
3	A few seconds later record the value of parameter SUBKSTAT	Check if the following parameters change value:				
		Parameter	**Start**	**During**	**End**	
		SUBKSTAT	0	1	1	**OK**
		Observed values	**0**	**1**	**1**	
4	Record the RAW value of SUBKTEMP	Check if the following parameters change value:				
		Parameter	**Start**	**During**	**End**	
		SUBKTEMP	?		?	**OK**
		Observed values	**-**	**-**	**1.99**	
5	Note down the value of the MODE parameter on the DPU AND OBS PARAMETERS display	**Parameter**	**Start**	**During**	**End**	**OK**
		MODE	-	-	REDY	
		Observed values	**-**	**-**	**REDY**	

Final Configuration: Unchanged

Remark: The following script of the SFT are not executed since they would switch off SPIRE again which is not required because the SFT is followed by the IMT.

8 Step by Step Procedure: SPIRE IMT part 1 results

According to Procedure(s):

- **HP-2-ASED-PR-0035 (Chapter 3: Order of Execution – Step 11)**
- **SPIRE-RAL-PRC-002512**

Planning and sequence of this SPIRE IMT can be found in SPIRE-RAL-NOT-002284

8.1 SPIRE-IMT-CREC

Purpose: Cooler Recycle – same procedure to be run for all subsequent recycles. This procedure will be run manually from the CCS to determine the parameters needed to prepare an automated TCL script. This automated script can then be run overnight as necessary.

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	Level 0 Detector Box and Pump are at 2 K and the Level 0 Evaporator is at 1.85 K		**OK**

Initial Conditions:

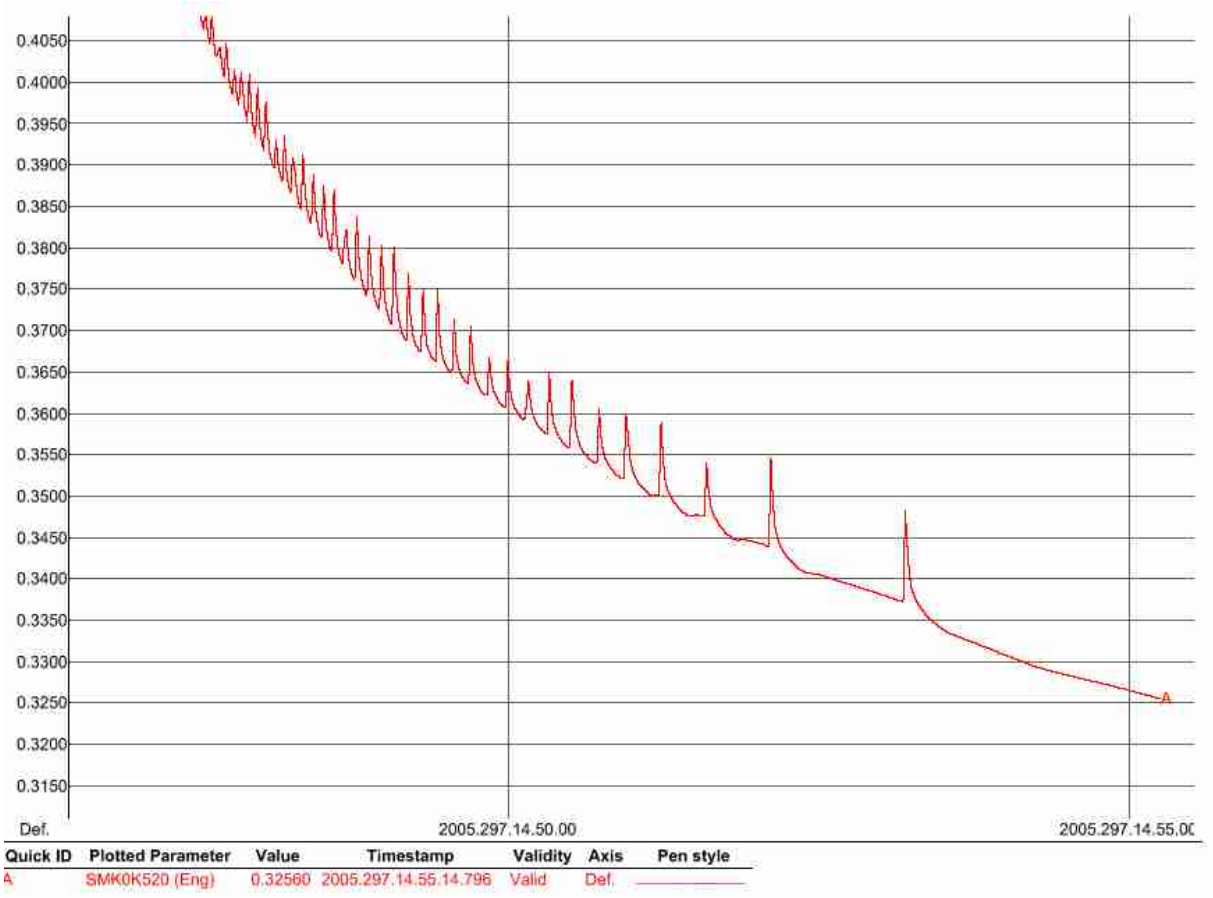
- SPIRE DPU is on and generating HK
- SCU PARAMETERS display is selected on the CCS

Step #	Action	Comments		Check
Extra	Execute: SPIRE-IMT-START-TEST.tcl	**This step was included on demand of SPIRE personnel**		**OK**
1	Execute: SPIRE-IMT-CREC.tcl	STEP Time (UT) SPHSV PUMPHSTEMP EVAPHSTEMP	**1** **13h33m30s** **565 mV** **~4.5 K** **~4.7 K**	**OK**
2	Wait for PUMPHSTEMP to go just below 12 K and then click on OK to apply	**This step is only needed in case the cooler has been recycled recently. In this case, the 300 mW can be applied to the pump heater immediately.**		**OK**

	300 mW power to Pump Heater	STEP Time (UT) ΔTime (minutes) SPHTRV	**2** **13h33m40s** **N/A** **565 mV**	
3	Wait for PUMPHTRTEMP to increase to 45 K and then click on OK to reduce power to Pump Heater to 40mW	STEP Time (UT) ΔTime (minutes) SPHTRV PUMPHTRTEMP	**3** **14h21m36s** **~52 minutes** **4 V** **45 K**	**OK**
4	Wait for SUBKTEMP to fall below 2 K and then click on OK to switch off power to the Pump Heater and Evaporator Heat Switch. IMPORTANT: This step should be executed even if SUBKTEMP is above 2 K but more than an hour has elapsed since the start of the recycle procedure.	STEP Time (UT) ΔTime (minutes) SPHSV SPHTRV PUMPHSTEMP EVAPHSTEMP	**4** **14h23m34s** **2 minutes** **0** **0** **5.15 K** **18.7 K**	**OK**
5	Wait for EVAPHSTEMP to fall below ~ 16 K and then click on OK to switch on power to the Pump Heat Switch The TCL script ends after execution of this step	STEP Time (UT) ΔTime (minutes) EVHSV SUBKTEMP PUMPHSTEMP	**5** **14h29m09s** **6 minutes** **565 mV** **1.88 K** **7.5 K**	**OK**
6	Monitor SUBKTEMP and PUMPHSTEMP. Cooler recycle procedure completes when SUBKTEMP reaches ~ 0.285 K and PUMPHSTEMP reaches ~16.5 K.	Time (UT) ΔTime (minutes) SUBKTEMP PUMPHSTEMP	**OK**	**OK**
Extra	Execute: SPIRE-IMT-END-TEST.tcl	**This step was included on demand of SPIRE personnel**		**OK**

Final Configuration: SPIRE is in REDY mode

Remark: During the test a strange repeating signal was measured on top of the SUBKTEMP. This signal disappeared in the end. It is believed that this was caused by a pump on the helium dewar. More analysis might confirm this. The strange signal can be seen in the figure below.



8.2 SPIRE-IMT-PHOTSTBY

Purpose: Switch on the Photometer detectors and reset offsets.

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	The Photometer detectors are off		**OK**
3	DPU and OBS PARAMETERS display is elected on the CCS		**OK**

Initial Conditions: SPIRE is in REDY mode

Step #	Action	Comments	Check
1	Execute: SPIRE-IMT-PDET-ON-STEP1.tcl	Check if the following parameters change value: SCUDCDCSTAT 0/1 (before/after) **Not done because LIA is still on from the SFT.**	**N/A**
2	Execute: SPIRE-IMT-PDET-ON-STEP2.tcl Wait for I-EGSE staff to execute manual procedure to set equivalent power in BSM coils	Check if the following parameters change value: MODE REDY/ PHOTSTBY (before/after) **Problems detected with the thermal load. SUBKTEMP temperature is increasing again. To fix this, the thermal load is shut down. Temperature is slowly levelling out.**	**OK**
Extra	Execute: SPIRE-IMT-NOMINAL-BIAS-P.tcl		**OK**
Extra	Execute: SPIRE-IMT-START-TEST.tcl		**OK**
	Instrument is left ON through the night.	**This is the end of day 1 (24/10/2005)**	**OK**
Extra	Execute: SPIRE-IMT-RESET-OFFSETS-P.tcl	**This is the beginning of day 2 (25/10/2005)** **In the morning it is noticed that the L1 temperature started rising at about 4 AM during the night**	**OK**
Extra	Execute: SPIRE-IMT-STOP-P.tcl		**OK**
Extra	Execute:	**The command SCV00500 (RUN_VM) failed**	**NOK**

	SPIRE-IMT-PCAL-FLASH.tcl	**execution. SPIRE indicates that this is because first a LOAD-COMMAND-LIST sequence should have been run.**	
Extra	Execute: SPIRE-IMT-LOAD-COMMAND-LIST.tcl		**OK**
Extra	Execute: SPIRE-IMT-PCAL-FLASH.tcl		**OK**

Final Configuration: SPIRE mode PHOTSTBY

8.3 SPIRE-IMT-LC-P

Purpose: Load curve at fixed frequency and phase

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	The Photometer detectors are on		**OK**
3	DPU and OBS PARAMETERS display is elected on the CCS		**OK**

Initial Conditions: SPIRE is in PHOTSTBY mode

Step #	Action	Comments	Check
Extra	Execute: SPIRE-IMT-STOP-P.tcl		**OK**
1	Execute: SPIRE-IMT-LC-P.tcl		**OK**
2	Wait for the I-EGSE staff to confirm the success or failure of this test		**OK**

Final Configuration: Unchanged

8.4 SPIRE-IMT-LC-P

Purpose: Load curve at fixed frequency and phase

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	The Photometer detectors are on		**OK**
3	DPU and OBS PARAMETERS display is elected on the CCS		**OK**

Initial Conditions: SPIRE is in PHOTSTBY mode

Remark: This test is repeated since the temperatures are not OK at the moment.

Step #	Action	Comments	Check
Extra	Execute: SPIRE-IMT-STOP-P.tcl		**OK**
Extra	Execute: SPIRE-IMT-SETUP-P.tcl		**OK**
1	Execute: SPIRE-IMT-LC-P.tcl		**OK**
2	Wait for the I-EGSE staff to confirm the success or failure of this test		**OK**

Final Configuration: Unchanged

Step #	Action	Comments	Check
Extra	Execute: SPIRE-IMT-STOP-P.tcl		**OK**
Extra	Execute: SPIRE-IMT-PCAL-FLASH.tcl		**OK**
Extra	Execute: SPIRE-IMT-RESET-OFFSET-P.tcl		**OK**
Extra	Execute: SPIRE-IMT-RESET-OFFSET-P.tcl		**OK**
Extra	Execute: SPIRE-IMT-RESET-		**OK**

	OFFSET-P.tcl		
Extra	Execute: SPIRE-IMT-STOP-P.tcl		**OK**
Extra	Execute: SPIRE-IMT-PCAL-FLASH.tcl		**OK**

8.5 SPIRE-IMT-LC-P

Purpose: Load curve at fixed frequency and phase

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	The Photometer detectors are on		**OK**
3	DPU and OBS PARAMETERS display is elected on the CCS		**OK**

Initial Conditions: SPIRE is in PHOTSTBY mode

Step #	Action	Comments	Check
Extra	Execute: SPIRE-IMT-STOP-P.tcl		**OK**
Extra	Execute: SPIRE-IMT-SETUP-P.tcl		**OK**
1	Execute: SPIRE-IMT-LC-P.tcl		**OK**
2	Wait for the I-EGSE staff to confirm the success or failure of this test		**OK**

Final Configuration: Unchanged

Important Remark: At this point new TCL files are provided by SPIRE:

- **SPIRE-IMT-PCAL-FLASH.tcl**
- **SPIRE-IMT-LC2-P.tcl**
- **SPIRE-IMT-LC1-P.tcl**
- **SPIRE-CCS-EMC-SWEEP.tcl (New TCL file)**
- **SPIRE-CCS-EMC-SPOT.tcl (New TCL file)**

Step #	Action	Comments	Check
Extra	Execute: SPIRE-IMT-STOP-P.tcl		**OK**
Extra	Execute: SPIRE-IMT-PCAL-FLASH.tcl		**OK**
Extra	Execute:		**OK**

	SPIRE-IMT-RESET-OFFSET-P.tcl		
Extra	Execute: SPIRE-IMT-RESET-OFFSET-P.tcl		**OK**
Extra	Execute: SPIRE-IMT-RESET-OFFSET-P.tcl		**OK**
Extra	Execute: SPIRE-IMT-STOP-P.tcl		**OK**
Extra	Execute: SPIRE-IMT-PCAL-FLASH.tcl		**OK**

8.6 SPIRE-IMT-LC-P

Purpose: Load curve at fixed frequency and phase

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	The Photometer detectors are on		**OK**
3	DPU and OBS PARAMETERS display is elected on the CCS		**OK**

Initial Conditions: SPIRE is in PHOTSTBY mode

Step #	Action	Comments	Check
Extra	Execute: SPIRE-IMT-STOP-P.tcl		**OK**
Extra	Execute: SPIRE-IMT-SETUP-P.tcl		**OK**
1	Execute: SPIRE-IMT-LC1-P.tcl		**OK**
1	Execute: SPIRE-IMT-LC2-P.tcl		**OK**
Extra	Execute: SPIRE-IMT-PCAL-FLASH.tcl		**OK**
2	Wait for the I-EGSE staff to confirm the success or failure of this test		**OK**

Final Configuration: Unchanged

Step #	Action	Comments	Check
Extra	Execute: SPIRE-IMT-STOP-P.tcl		**OK**
Extra	Execute: SPIRE-IMT-SETUP-P.tcl		**OK**

8.7 SPIRE-IMT-PHASEUP-P

Purpose: Phase up to maximum signal for optimum bias settings. Note that it may be necessary to repeat this test.

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	The Photometer detectors are on		**OK**
3	DPU and OBS PARAMETERS display is elected on the CCS		**OK**

Initial Conditions: SPIRE is in PHOTSTBY mode

Step #	Action	Comments	Check
1	Execute: SPIRE-IMT-PHASEUP-P.tcl		**OK**
2	Wait for the I-EGSE staff to confirm the success or failure of this test	**Test failed because default values were not set correctly on IEGSE**	**NOK**

Final Configuration: Unchanged

8.8 SPIRE-IMT-PHASEUP-P

Purpose: Phase up to maximum signal for optimum bias settings. Note that it may be necessary to repeat this test.

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	The Photometer detectors are on		**OK**
3	DPU and OBS PARAMETERS display is elected on the CCS		**OK**

Initial Conditions: SPIRE is in PHOTSTBY mode

Step #	Action	Comments	Check
1	Execute: SPIRE-IMT-PHASEUP-P.tcl		**OK**
2	Wait for the I-EGSE staff to confirm the success or failure of this test	**Test failed because TCL template is not compatible with new default values**	**NOK**

Final Configuration: Unchanged

Important Remark: SPIRE delivers a new version of TCL file : SPIRE-IMT-PHASEUP-P.tcl

8.9 SPIRE-IMT-PHASEUP-P

Purpose: Phase up to maximum signal for optimum bias settings. Note that it may be necessary to repeat this test.

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	The Photometer detectors are on		**OK**
3	DPU and OBS PARAMETERS display is elected on the CCS		**OK**

Initial Conditions: SPIRE is in PHOTSTBY mode

Step #	Action	Comments	Check
1	Execute: SPIRE-IMT-PHASEUP-P.tcl	**Script Failed because TCL is not compatible with IEGSE configuration of the specified TCL.**	**NOK**
2	Wait for the I-EGSE staff to confirm the success or failure of this test		**N/A**

Final Configuration: Unchanged

8.10 SPIRE-IMT-PHASEUP-P

Purpose: Phase up to maximum signal for optimum bias settings. Note that it may be necessary to repeat this test.

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	The Photometer detectors are on		**OK**
3	DPU and OBS PARAMETERS display is elected on the CCS		**OK**

Initial Conditions: SPIRE is in PHOTSTBY mode

Step #	Action	Comments	Check
1	Execute: SPIRE-IMT-PHASEUP-P.tcl		**OK**
2	Wait for the I-EGSE staff to confirm the success or failure of this test	**Test failed because of problems with the QLA**	**NOK**

Final Configuration: Unchanged

8.11 SPIRE-IMT-PHASEUP-P

Purpose: Phase up to maximum signal for optimum bias settings. Note that it may be necessary to repeat this test.

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	The Photometer detectors are on		**OK**
3	DPU and OBS PARAMETERS display is elected on the CCS		**OK**

Initial Conditions: SPIRE is in PHOTSTBY mode

Step #	Action	Comments	Check
1	Execute: SPIRE-IMT-PHASEUP-P.tcl	**Script Failed because TCL is not compatible with IEGSE configuration of the specified TCL.**	**NOK**
2	Wait for the I-EGSE staff to confirm the success or failure of this test		**N/A**

Final Configuration: Unchanged

8.12 SPIRE-IMT-PHASEUP-P

Purpose: Phase up to maximum signal for optimum bias settings. Note that it may be necessary to repeat this test.

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	The Photometer detectors are on		**OK**
3	DPU and OBS PARAMETERS display is elected on the CCS		**OK**

Initial Conditions: SPIRE is in PHOTSTBY mode

Step #	Action	Comments	Check
1	Execute: SPIRE-IMT-PHASEUP-P.tcl		**OK**
2	Wait for the I-EGSE staff to confirm the success or failure of this test		**OK**

Final Configuration: Unchanged

8.13 SPIRE-IMT-DNA-P

Purpose: To determine Photometer noise versus bias level and frequency

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	The Photometer detectors are on		**OK**
3	DPU and OBS PARAMETERS display is elected on the CCS		**OK**

Initial Conditions: SPIRE is in REDY mode

Step #	Action	Comments	Check
Extra	Execute: SPIRE-IMT-SETUP-P.tcl		**OK**
1	Execute: SPIRE-IMT-BIAS-FREQ-P.tcl	**Not executed at this time because it is included in the SPIRE-IMT-SETUP-P.tcl**	**OK**
2	Execute: SPIRE-IMT-BIAS-AMPL-P.tcl		**OK**
3	Execute: SPIRE-IMT-PHASEUP-P.tcl		**OK**
4	Execute: SPIRE-IMT-GET-P.tcl		**OK**
5	Note 1: Repeat steps 2-4 for as many bias amplitudes as required. Note 2: Repeat steps 1-4 for as many bias frequencies as required		
Extra	Execute: SPIRE-IMT-SETUP-P.tcl		**OK**
Extra	Execute: SPIRE-IMT-GET-P.tcl		**OK**
Extra	Execute: SPIRE-IMT-SETUP-P.tcl		**OK**
Extra	Execute: SPIRE-IMT-PHASEUP-		**OK**

	P.tcl		
Extra	Execute: SPIRE-IMT-PHASEUP-P.tcl		**OK**
Extra	Execute: SPIRE-IMT-SETUP-P.tcl		**OK**
Extra	Execute: SPIRE-IMT-GET-P.tcl		**OK**
Extra	Execute: SPIRE-IMT-SETUP-P.tcl	**Script Failed because TCL is not compatible with IEGSE configuration of the specified TCL.**	**NOK**
Extra	Execute: SPIRE-IMT-SETUP-P.tcl		**OK**
Extra	Execute: SPIRE-IMT-START-TEST.tcl		
Extra	Execute: SPIRE-IMT-START-P.tcl		
		Instrument is left in this state overnight. This ends day 2 (25/10/05).	

Final Configuration: Unchanged

8.14 SPIRE-IMT-STOP-P

At this point day 3 starts (26/10/05).

Purpose: Stop the DCU frame generation

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	The Photometer detectors are off		**OK**
3	DPU and OBS PARAMETERS display is selected on the CCS		**OK**

Initial Conditions: SPIRE is in PHOTSTBY-TEST mode

Step #	Action	Comments	Check
1	Execute: SPIRE-IMT-STOP-P.tcl	DCUFRAMESTAT should change from “CONTINUOUS” to “OFF”	**OK**
2	Wait for the I-EGSE staff to confirm the success or failure of this test		**OK**

8.15 Problems with PACS HK

In the morning of day 3 (26/10/05), problems are detected on the PACS HK data. These problems started just minutes before coming in.

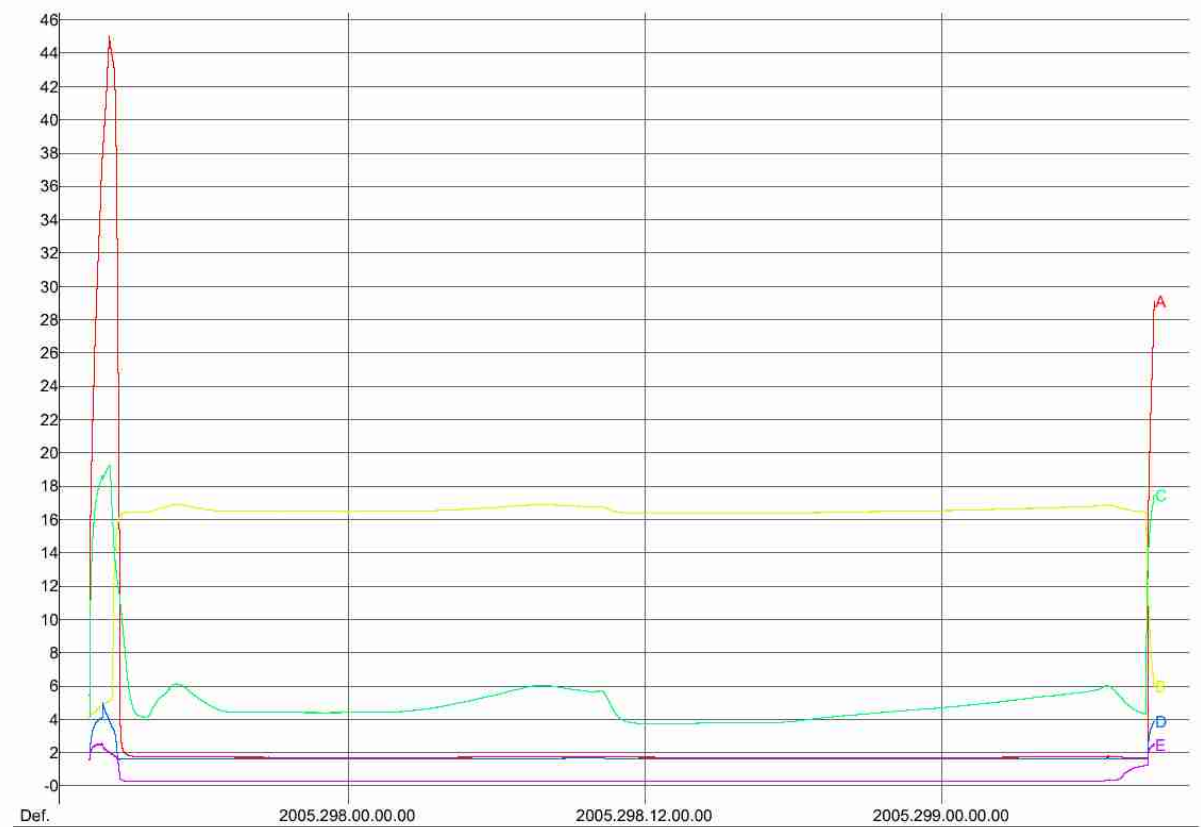
The problem involves both HK packets (ESSENTIAL_HK and NO_PRIME_HK). The ESSENTIAL_HK packet is received twice (two times the same generation time and SSC). When this happens, the NO_PRIME_HK packet is missing one SSC. More information can be seen in Appendix 9.

PACS is contacted (Dr Otto Bauer) and it is decided to power down PACS, wait 15 minutes and power it up again. These actions are performed with the specific PACS TCL script (PACS_POWER_ON.tcl and PACS_POWER_OFF.tcl).

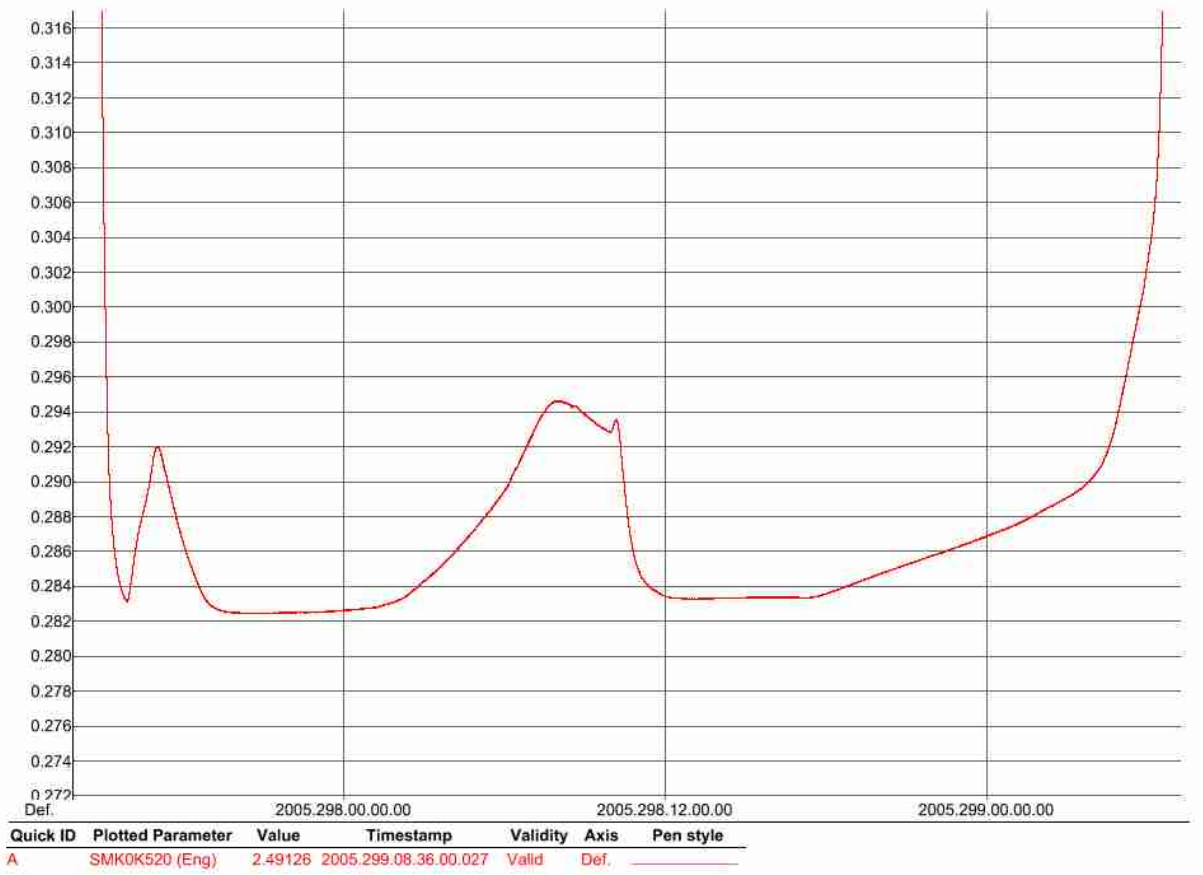
Both script completed successfully and the problem was not seen after restart.

8.16 SPIRE-IMT-CREC

In the morning of day 3 (26/10/05), the cooler recycle was exhausted. Graphs of the related temperatures over the complete cooler recycle period are shown below. The total time was ~ 40 hours.



Quick ID	Plotted Parameter	Value	Timestamp	Validity	Axis	Pen style
A	SMF0K520 (Eng)	29.11196	2005.299.08.35.11.027	Valid	Def.	
B	SMF1K520 (Eng)	5.95702	2005.299.08.35.11.027	Valid	Def.	
C	SMF2K520 (Eng)	17.47512	2005.299.08.35.11.027	Valid	Def.	
D	SMF3K520 (Eng)	3.86479	2005.299.08.35.11.027	Valid	Def.	
E	SMK0K520 (Eng)	2.49126	2005.299.08.35.11.027	Valid	Def.	



Purpose: Cooler Recycle – same procedure to be run for all subsequent recycles. This procedure will be run manually from the CCS to determine the parameters needed to prepare an automated TCL script. This automated script can then be run overnight as necessary.

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	Level 0 Detector Box and Pump are at 2 K and the Level 0 Evaporator is at 1.85 K		**OK**

Initial Conditions:

- SPIRE DPU is on and generating HK
- SCU PARAMETERS display is selected on the CCS

Step #	Action	Comments	Check

Extra	Execute: SPIRE-IMT-START-TEST.tcl	**This step was included on demand of SPIRE personnel**		**OK**
1	Execute: SPIRE-IMT-CREC.tcl	STEP Time (UT) SPHSV PUMPHSTEMP EVAPHSTEMP	**1** **08h14m21s** **565 mV** **16.45 K** **4.3 K**	**OK**
2	Wait for PUMPHSTEMP to go just below 12 K and then click on OK to apply 300 mW power to Pump Heater	**This step is only needed in case the cooler has been recycled recently. In this case, the 300 mW can be applied to the pump heater immediately.**		**OK**
		STEP Time (UT) ΔTime (minutes) SPHTRV	**2** **08h19m40s** **5 minutes** **10.9 K**	
3	Wait for PUMPHTRTEMP to increase to 45 K and then click on OK to reduce power to Pump Heater to 40mW	STEP Time (UT) ΔTime (minutes) SPHTRV PUMPHTRTEMP	**3** **09h06m11s** **47 minutes** **4.01 K** **45 K**	**OK**
4	Wait for SUBKTEMP to fall below 2 K and then click on OK to switch off power to the Pump Heater and Evaporator Heat Switch. IMPORTANT: This step should be executed even if SUBKTEMP is above 2 K but more than an hour has elapsed since the start of the recycle procedure.	STEP Time (UT) ΔTime (minutes) SPHSV SPHTRV PUMPHSTEMP EVAPHSTEMP	**4** **09h07m34s** **1 minute** **0** **0** **4.94 K** **19 K**	**OK**
5	Wait for EVAPHSTEMP to fall below ~ 16 K and then click on OK to switch on power to the Pump Heat Switch The TCL script ends after execution of this step	STEP Time (UT) ΔTime (minutes) EVHSV SUBKTEMP PUMPHSTEMP	**5** **09h12m58s** **5 minutes** **565 mV** **1.87 K** **5 K (too low!)** **This is because step 4 was executed directly**	**OK**

			after step 3 (subKtemp was already below 2K).	
6	Monitor SUBKTEMP and PUMPHSTEMP. Cooler recycle procedure completes when SUBKTEMP reaches ~ 0.285 K and PUMPHSTEMP reaches ~16.5 K.	Time (UT) ∆Time (minutes) SUBKTEMP PUMPHSTEMP	**11h00m00s** **~ 2 hours** **0.280 K** **16.3 K**	**OK**
Extra	Execute: SPIRE-IMT-END-TEST.tcl	**This step was included on demand of SPIRE personnel**		**OK**

Final Configuration: SPIRE is in REDY mode

8.17 SPIRE-IMT-SETUP-P

Important Remark: SPIRE delivers a new version of TCL file : SPIRE-IMT-SETUP-P.tcl

Purpose: Setup the DCU frame generation for a particular bias and sampling frequencies

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	The Photometer detectors are off		**OK**
3	DPU and OBS PARAMETERS display is selected on the CCS		**OK**

Initial Conditions: SPIRE is in PHOTSTBY mode

Step #	Action	Comments	Check
1	Execute: SPIRE-IMT-SETUP-P.tcl		**OK**
2	Wait for the I-EGSE staff to confirm the success or failure of this test		**OK**

8.18 SPIRE-IMT-START-P

Purpose: Start the DCU frame generation

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	The Photometer detectors are off		**OK**
3	DPU and OBS PARAMETERS display is selected on the CCS		**OK**

Initial Conditions: SPIRE is in PHOTSTBY mode

Step #	Action	Comments	Check
1	Execute: SPIRE-IMT-START-P.tcl	DCUFRAMESTAT should change from “OFF” to “CONTINUOUS”	**OK**
2	Wait for the I-EGSE staff to confirm the success or failure of this test		**OK**

8.19 SPIRE-IMT-STOP-P

Purpose: Stop the DCU frame generation

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	The Photometer detectors are off		**OK**
3	DPU and OBS PARAMETERS display is selected on the CCS		**OK**

Initial Conditions: SPIRE is in PHOTSTBY-TEST mode

Step #	Action	Comments	Check
1	Execute: SPIRE-IMT-STOP-P.tcl	DCUFRAMESTAT should change from “CONTINUOUS” to “OFF”	**OK**
2	Wait for the I-EGSE staff to confirm the success or failure of this test		**OK**

8.20 SPIRE-IMT-PCAL-FLASH

Purpose: Run PCAL Flash

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	The Photometer detectors are on		**OK**
3	DPU and OBS PARAMETERS display is elected on the CCS		**OK**

Initial Conditions: SPIRE is in PHOTSTBY mode

Step #	Action	Comments	Check
1	Execute: SPIRE-IMT-PCAL-FLASH.tcl		**OK**
2	Wait for the I-EGSE staff to confirm the success or failure of this test		**OK**

Final Configuration: Unchanged

8.21 SPIRE-IMT-STOP-P

Purpose: Stop the DCU frame generation

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	The Photometer detectors are off		**OK**
3	DPU and OBS PARAMETERS display is selected on the CCS		**OK**

Initial Conditions: SPIRE is in PHOTSTBY-TEST mode

Step #	Action	Comments	Check
1	Execute: SPIRE-IMT-STOP-P.tcl	DCUFRAMESTAT should change from “CONTINUOUS” to “OFF”	**OK**
2	Wait for the I-EGSE staff to confirm the success or failure of this test		**OK**

8.22 SPIRE-IMT-DNA-P

Purpose: To determine Photometer noise versus bias level and frequency

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	The Photometer detectors are on		**OK**
3	DPU and OBS PARAMETERS display is elected on the CCS		**OK**

Initial Conditions: SPIRE is in REDY mode

Step #	Action	Comments	Check
1	Execute: SPIRE-IMT-BIAS-FREQ-P.tcl	**Not Executed on request of SPIRE personal**	**N/A**
2	Execute: SPIRE-IMT-BIAS-AMPL-P.tcl		**OK**
3	Execute: SPIRE-IMT-PHASEUP-P.tcl		**OK**
Extra	Execute: SPIRE-IMT-SETUP-P.tcl		**OK**
4	Execute: SPIRE-IMT-GET-P.tcl		**OK**
5	Note 1: Repeat steps 2-4 for as many bias amplitudes as required. Note 2: Repeat steps 1-4 for as many bias frequencies as required		**OK**
Extra	Execute: SPIRE-IMT-SETUP-P.tcl		**OK**
Extra	Execute: SPIRE-IMT-PHASEUP-P.tcl		**OK**
Extra	Execute: SPIRE-IMT-SETUP-P.tcl		**OK**
Extra	Execute:		**OK**

	SPIRE-IMT-GET-P.tcl		
Extra	Execute: SPIRE-IMT-BIAS-AMPL-P.tcl		**OK**
Extra	Execute: SPIRE-IMT-PHASEUP-P.tcl		**OK**
Extra	Execute: SPIRE-IMT-SETUP-P.tcl		**OK**
Extra	Execute: SPIRE-IMT-GET-P.tcl		**OK**
6	Wait for the I-EGSE staff to confirm the success or failure of this test		**OK**

Final Configuration: Unchanged

8.23 SPIRE-IMT-PCAL-FLASH

Purpose: Run PCAL Flash

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	The Photometer detectors are on		**OK**
3	DPU and OBS PARAMETERS display is elected on the CCS		**OK**

Initial Conditions: SPIRE is in PHOTSTBY mode

Step #	Action	Comments	Check
1	Execute: SPIRE-IMT-PCAL-FLASH.tcl		**OK**
2	Wait for the I-EGSE staff to confirm the success or failure of this test		**OK**

Final Configuration: Unchanged

8.24 SPIRE-IMT-SETUP-P

Purpose: Setup the DCU frame generation for a particular bias and sampling frequencies

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	The Photometer detectors are off		**OK**
3	DPU and OBS PARAMETERS display is selected on the CCS		**OK**

Initial Conditions: SPIRE is in PHOTSTBY mode

Step #	Action	Comments	Check
1	Execute: SPIRE-IMT-SETUP-P.tcl		**OK**
2	Wait for the I-EGSE staff to confirm the success or failure of this test		**OK**

8.25 SPIRE-IMT-LC-P

Purpose: Load curve at fixed frequency and phase

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	The Photometer detectors are on		**OK**
3	DPU and OBS PARAMETERS display is elected on the CCS		**OK**

Initial Conditions: SPIRE is in PHOTSTBY mode

Step #	Action	Comments	Check
1	Execute: SPIRE-IMT-LC1-P.tcl		**OK**
2	Execute: SPIRE-IMT-LC2-P.tcl		**OK**
3	Wait for the I-EGSE staff to confirm the success or failure of this test		**OK**

Final Configuration: Unchanged

8.26 SPIRE-IMT-PCAL-FLASH

Purpose: Run PCAL Flash

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	The Photometer detectors are on		**OK**
3	DPU and OBS PARAMETERS display is elected on the CCS		**OK**

Initial Conditions: SPIRE is in PHOTSTBY mode

Step #	Action	Comments	Check
1	Execute: SPIRE-IMT-PCAL-FLASH.tcl		**OK**
2	Wait for the I-EGSE staff to confirm the success or failure of this test		**OK**

Final Configuration: Unchanged

8.27 SPIRE-IMT-STOP-P

Purpose: Stop the DCU frame generation

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	The Photometer detectors are off		**OK**
3	DPU and OBS PARAMETERS display is selected on the CCS		**OK**

Initial Conditions: SPIRE is in PHOTSTBY-TEST mode

Step #	Action	Comments	Check
1	Execute: SPIRE-IMT-STOP-P.tcl	DCUFRAMESTAT should change from “CONTINUOUS” to “OFF”	**OK**
2	Wait for the I-EGSE staff to confirm the success or failure of this test		**OK**

8.28 SPIRE-IMT-SETUP-P

Purpose: Setup the DCU frame generation for a particular bias and sampling frequencies

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	The Photometer detectors are off		**OK**
3	DPU and OBS PARAMETERS display is selected on the CCS		**OK**

Initial Conditions: SPIRE is in PHOTSTBY mode

Step #	Action	Comments	Check
1	Execute: SPIRE-IMT-SETUP-P.tcl		**OK**
2	Wait for the I-EGSE staff to confirm the success or failure of this test		**OK**

8.29 SPIRE-IMT-LC-P

Purpose: Load curve at fixed frequency and phase

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	The Photometer detectors are on		**OK**
3	DPU and OBS PARAMETERS display is elected on the CCS		**OK**

Initial Conditions: SPIRE is in PHOTSTBY mode

Step #	Action	Comments	Check
1	Execute: SPIRE-IMT-LC1-P.tcl		**OK**
2	Execute: SPIRE-IMT-LC2-P.tcl		**OK**
3	Wait for the I-EGSE staff to confirm the success or failure of this test		**OK**

Final Configuration: Unchanged

8.30 SPIRE-IMT-PCAL-FLASH

Purpose: Run PCAL Flash

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	The Photometer detectors are on		**OK**
3	DPU and OBS PARAMETERS display is elected on the CCS		**OK**

Initial Conditions: SPIRE is in PHOTSTBY mode

Step #	Action	Comments	Check
1	Execute: SPIRE-IMT-PCAL-FLASH.tcl		**OK**
2	Wait for the I-EGSE staff to confirm the success or failure of this test		**OK**

Final Configuration: Unchanged

8.31 SPIRE-IMT-STOP-P

Purpose: Stop the DCU frame generation

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	The Photometer detectors are off		**OK**
3	DPU and OBS PARAMETERS display is selected on the CCS		**OK**

Initial Conditions: SPIRE is in PHOTSTBY-TEST mode

Step #	Action	Comments	Check
1	Execute: SPIRE-IMT-STOP-P.tcl	DCUFRAMESTAT should change from “CONTINUOUS” to “OFF”	**OK**
2	Wait for the I-EGSE staff to confirm the success or failure of this test		**OK**

8.32 SPIRE-IMT-SETUP-P

Purpose: Setup the DCU frame generation for a particular bias and sampling frequencies

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	The Photometer detectors are off		**OK**
3	DPU and OBS PARAMETERS display is selected on the CCS		**OK**

Initial Conditions: SPIRE is in PHOTSTBY mode

Step #	Action	Comments	Check
1	Execute: SPIRE-IMT-SETUP-P.tcl		**OK**
2	Wait for the I-EGSE staff to confirm the success or failure of this test		**OK**

8.33 SPIRE-IMT-STOP-P

Purpose: Stop the DCU frame generation

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	The Photometer detectors are off		**OK**
3	DPU and OBS PARAMETERS display is selected on the CCS		**OK**

Initial Conditions: SPIRE is in PHOTSTBY-TEST mode

Step #	Action	Comments	Check
1	Execute: SPIRE-IMT-STOP-P.tcl	DCUFRAMESTAT should change from “CONTINUOUS” to “OFF”	**OK**
2	Wait for the I-EGSE staff to confirm the success or failure of this test		**OK**

8.34 SPIRE-IMT-START-P

Purpose: Start the DCU frame generation

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	The Photometer detectors are off		**OK**
3	DPU and OBS PARAMETERS display is selected on the CCS		**OK**

Initial Conditions: SPIRE is in PHOTSTBY mode

Step #	Action	Comments	Check
Extra	Execute: SPIRE-IMT-START-TEST.tcl		**OK**
1	Execute: SPIRE-IMT-START-P.tcl	DCUFRAMESTAT should change from “OFF” to “CONTINUOUS”	**OK**
2	Wait for the I-EGSE staff to confirm the success or failure of this test		**OK**

This is the end of day 3 (26/10/2005).

8.35 SPIRE-IMT-END-TEST & SPIRE-IMT-START-TEST

This is the start of day 4 (27/10/2005).

To flag the data of last night the SPIRE-IMT-END-TEST.tcl is executed.
To flag the data of todays thermal test, a SPIRE-IMT-START-TEST.tcl is executed.

Step #	Action	Comments	Check
Extra	Execute: SPIRE-IMT-END-TEST.tcl	**To flag the data of last night the SPIRE-IMT-END-TEST.tcl is executed.**	**OK**
Extra	Manual Stack Command: SCD00505 (RESET_DRCU_COUNTERS)		**OK**
Extra	Execute: SPIRE-IMT-RESET-OFFSET-P.tcl		**OK**
Extra	Execute: SPIRE-IMT-START-TEST.tcl		**OK**

8.36 SPIRE-IMT-END-TEST & SPIRE-IMT-START-TEST

Step #	Action	Comments	Check
1	Execute: SPIRE-IMT-END-TEST.tcl		**OK**
2	Execute: SPIRE-IMT-START-TEST.tcl		**OK**

8.37 SPIRE-IMT-END-TEST & SPIRE-IMT-START-TEST

Step #	Action	Comments	Check
1	Execute: SPIRE-IMT-END-TEST.tcl		**OK**
2	Execute: SPIRE-IMT-START-TEST.tcl		**OK**

8.38 SPIRE-CCS-EMC-SWEEP

Important Remark: The 2 EMC script delivered by SPIRE at the beginning of IMT are changed to be compatible with the TCL/Tk CCS environment. A line with "package require Tk" is added at the top of the script and an "exit" statement is added at the end. This is done for both SPIRE-CCS-EMC-SWEEP.tcl and SPIRE-CCS-EMC-SPOT.tcl

Step #	Action	Comments	Check
1	Execute: SPIRE-IMT-END-TEST.tcl		**OK**
2	Execute: SPIRE-IMT-START-TEST.tcl		**OK**
3	Execute: SPIRE-IMT-STOP-P.tcl		**OK**
4	Execute: SPIRE-IMT-START-TEST.tcl		**OK**
5	Execute: SPIRE-IMT-START-P.tcl		**OK**
6	Execute: SPIRE-CCS-EMC-SWEEP.tcl		**OK**
6	Execute: SPIRE-CCS-EMC-SWEEP.tcl		**OK**

8.39 SPIRE-CCS-EMC-SPOT

Important Remark: The 2 EMC script delivered by SPIRE at the beginning of IMT are changed to be compatible with the TCL/Tk CCS environment. A line with "package require Tk" is added at the top of the script and an "exit" statement is added at the end. This is done for both SPIRE-CCS-EMC-SWEEP.tcl and SPIRE-CCS-EMC-SPOT.tcl

Step #	Action	Comments	Check
1	Execute: SPIRE-IMT-STOP-P.tcl		**OK**
extra	Execute: SPIRE-IMT-STOP-P.tcl	**This script was executed twice because of a mistake on the CCS. This has however no influence on the test.**	**OK**
2	Execute: SPIRE-IMT-START-TEST.tcl		**OK**
3	Execute: SPIRE-IMT-START-P.tcl		**OK**
4	Execute: SPIRE-CCS-EMC-SPOT.tcl	**2 steps were executed**	**OK**

8.40 SPIRE-IMT-STOP-P

Purpose: Stop the DCU frame generation

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	The Photometer detectors are off		**OK**
3	DPU and OBS PARAMETERS display is selected on the CCS		**OK**

Initial Conditions: SPIRE is in PHOTSTBY-TEST mode

Step #	Action	Comments	Check
1	Execute: SPIRE-IMT-STOP-P.tcl	DCUFRAMESTAT should change from “CONTINUOUS” to “OFF”	**OK**
2	Wait for the I-EGSE staff to confirm the success or failure of this test		**OK**

8.41 SPIRE-IMT-PCAL-FLASH

Purpose: Run PCAL Flash

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	The Photometer detectors are on		**OK**
3	DPU and OBS PARAMETERS display is elected on the CCS		**OK**

Initial Conditions: SPIRE is in PHOTSTBY mode

Step #	Action	Comments	Check
1	Execute: SPIRE-IMT-PCAL-FLASH.tcl		**OK**
2	Wait for the I-EGSE staff to confirm the success or failure of this test		**OK**

Final Configuration: Unchanged

8.42 SPIRE-IMT-STOP-P

Purpose: Stop the DCU frame generation

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	The Photometer detectors are off		**OK**
3	DPU and OBS PARAMETERS display is selected on the CCS		**OK**

Initial Conditions: SPIRE is in PHOTSTBY-TEST mode

Step #	Action	Comments	Check
1	Execute: SPIRE-IMT-STOP-P.tcl	DCUFRAMESTAT should change from “CONTINUOUS” to “OFF”	**OK**
2	Wait for the I-EGSE staff to confirm the success or failure of this test		**OK**

8.43 SPIRE-IMT-SETUP-P

Purpose: Setup the DCU frame generation for a particular bias and sampling frequencies

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	The Photometer detectors are off		**OK**
3	DPU and OBS PARAMETERS display is selected on the CCS		**OK**

Initial Conditions: SPIRE is in PHOTSTBY mode

Step #	Action	Comments	Check
1	Execute: SPIRE-IMT-SETUP-P.tcl		**OK**
2	Wait for the I-EGSE staff to confirm the success or failure of this test		**OK**

8.44 SPIRE-IMT-LC-P

Purpose: Load curve at fixed frequency and phase

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	The Photometer detectors are on		**OK**
3	DPU and OBS PARAMETERS display is elected on the CCS		**OK**

Initial Conditions: SPIRE is in PHOTSTBY mode

Step #	Action	Comments	Check
1	Execute: SPIRE-IMT-LC1-P.tcl		**OK**
1	Execute: SPIRE-IMT-LC2-P.tcl		**OK**
2	Wait for the I-EGSE staff to confirm the success or failure of this test		**OK**

Final Configuration: Unchanged

8.45 SPIRE-IMT-SETUP-P

Purpose: Setup the DCU frame generation for a particular bias and sampling frequencies

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	The Photometer detectors are off		**OK**
3	DPU and OBS PARAMETERS display is selected on the CCS		**OK**

Initial Conditions: SPIRE is in PHOTSTBY mode

Step #	Action	Comments	Check
1	Execute: SPIRE-IMT-SETUP-P.tcl		**OK**
Extra	Execute: SPIRE-IMT-START-TEST.tcl		**OK**
2	Wait for the I-EGSE staff to confirm the success or failure of this test		**OK**

This step end day 4 (27/10/05).

8.46 SPIRE-IMT-STOP-P

This step starts day 5 (28/10/05).

Purpose: Stop the DCU frame generation

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	The Photometer detectors are off		**OK**
3	DPU and OBS PARAMETERS display is selected on the CCS		**OK**

Initial Conditions: SPIRE is in PHOTSTBY-TEST mode

Step #	Action	Comments	Check
1	Execute: SPIRE-IMT-STOP-P.tcl	DCUFRAMESTAT should change from “CONTINUOUS” to “OFF”	**OK**
2	Wait for the I-EGSE staff to confirm the success or failure of this test		**OK**

8.47 SPIRE-IMT-PUMP-CHAR

Purpose: Cooler sorption pump characterisation test

Preconditions:

Step #	Action	Comments	Check
1	SCU AC and DC thermometry is on		**OK**
2	Level 0 Detector Box and Pump are at 2 K and the Level 0 Evaporator is at 1.85 K		**OK**

Initial Conditions:

- SPIRE DPU is on and generating HK
- SCU PARAMETERS display is selected on the CCS
- SPIRE is in REDY mode

Step #	Action	Comments	Check
Extra	Execute: SPIRE-IMT-PDET-OFF.tcl		**OK**
1	Execute: SPIRE-IMT-START-TEST.tcl		**OK**
extra	Manual Stack Command: TC: SCD06505 With oxA0C50DEB		**OK**
2	Execute: SPIRE-IMT-PUMP-CHAR.tcl	Check if the following parameters change value: SPHSV ~565 mV SPHTRV ~ 4 V	**OK**
Extra	Execute Manual Stack commands: SCD06505 with parameter: A0C70339 SC003500 with parameter: 2	**Because of an error on the CCS, the test was stopped just after it started. This is solved by sending the 2 manual stack commands.**	**OK**
Extra	Execute Manual Stack commands: SCD06505 with parameter: A0C70000 SC003500 with		**OK**

	parameter: FFFF		
3	Wait for the I-EGSE staff to confirm the success or failure of this test		
4	Execute: SPIRE-IMT-END-TEST.tcl	Write down value of the following parameters: PUMPHTRTEMP:	

Final Configuration: Unchanged

8.48 SPIRE-IMT-END-TEST

Step #	Action	Comments	Check
Extra	Manual Stack Command: TC: SCD06505 With oxA0C40000		**OK**
Extra	Manual Stack Command: TC: SCD06505 With oxA0C50000		**OK**
extra	Execute: SPIRE-IMT-END-TEST.tcl		**OK**

9 Step by Step Procedure: Switch Off Instruments

9.1 Switch Off HIFI

According to Procedure(s):

- **HP-2-ASED-PR-0035 (Chapter 3: Order of Execution – Step 12)**
- **SRON-G/HIFI/PR/2005-101 chapter 2.4.3**

The following steps are executed automatically by the TCL script HIFI_POWER_OFF.tcl (see Appendix 6)

Step #	Action	Comments	Check
1	Select LCU_status AND	Verify LCU is in standby mode. Do not continue if this is not so!	**N/A**
2	Switch off power to LCU	Check voltage and current go to zero.	**OK**
3	Switch off power to WEH	Check voltage and current go to zero.	**OK**
4	Switch off power to HRH	Check voltage and current go to zero.	**OK**
5	Switch off power to ICU	Check voltage and current go to zero.	**OK**

9.2 Switch Off PACS

According to Procedure(s):

- **HP-2-ASED-PR-0035 (Chapter 3: Order of Execution – Step 10)**
- **PACS-ME-TP-026 (Issue 1.0 – 29/08/05)**

Step #	Action	Comments	Check
1	Execute: PACS_POWER_OFF.tcl (see Appendix 5)	PACS is sending no TM packets anymore	**OK**
		28 V power is off	**OK**

9.3 Switch Off SPIRE

Remark: SPIRE was left on another night from 27/10/05 to 28/10/05. The switch off occurred on Saturday afternoon (28/10/05).

According to Procedure(s):

- **HP-2-ASED-PR-0035 (Chapter 3: Order of Execution – Step 10)**
- **SPIRE-RAL-PRC-002494 (Issue 1.1 Appendix 2 – 09/09/05)**

9.3.1 SFT-SPIRE-CCS-FUNC-THO

Purpose: Switch off SCU DC and AC thermometry – if necessary

Step #	Action	Comments				Check
1	Execute TCL script SFT-SPIRE-CCS-FUNC-THO.tcl					**OK**
2	A few seconds later record the value of parameter SCUTEMPSTAT	Check if the following parameters change value:				
		Parameter	**Start**	**During**	**End**	
		SCUTEMPSTAT	FFFF	-	0	**OK**
3	A few seconds later record the value of parameter SUBKSTAT	Check if the following parameters change value:				
		Parameter	**Start**	**During**	**End**	
		SUBKSTAT	1	-	0	**OK**
4	Note down the value of the MODE parameter on the DPU AND OBS PARAMETERS Display	Check if the following parameters change value:				
		Parameter	**Start**	**During**	**End**	
		MODE	REDY	-	ON	**OK**

9.3.2 SFT-SPIRE-CCS-DRCU-OFF

Purpose: Switch off the DRCU

Step #	Action	Comments	Check
1	Execute TCL script SFT-SPIRE-CCS-DRCU-ON-STEP1.tcl		**OK**
2	Check that THSK parameter is not refreshing anymore		**OK**
3	Check that TM2N parameter is not incrementing anymore		**OK**
4	Manual Switch off of the DRCU by the I-EGSE staff: • Switch off all 5 remote DCU switches in ANY order (see Figure 4) • Switch off secondary power to the SPIRE Power Bench (see Figure 5) • Switch off primary power to the SPIRE Power Bench (see Figure 2)		**OK**

9.3.3 SFT-SPIRE-CCS-DPU-OFF

Purpose: Switch off the DPU

Step #	Action	Comments	Check
1	Request the CCS staff to power off the SPIRE DPU using the CCS 28V Power Supply	**This action is performed with INST_POWER_OFF.tcl (see Appendix 7)**	**OK**

10 Step by Step Procedure: Set EGSE to OFFLINE

According to Procedure(s):

- **HP-2-ASED-PR-0035 (Chapter 3: Order of Execution – Step 13 to 15)**

Remark: This step is done manually.

Step #	Action	Comments	Check
1	Execute: "WARNING_LAMP_POWER_OFF.tcl"		**N/A**
2	Execute: "EGSE_OFFLINE_AUTO.tcl" (see Appendix 8)	Check: PLM SCOE HK packets stopped	**OK**
		Check: CDMU DFE HK packets stopped	**OK**
3	Shut down PLM EGSE		**OK**

11 Summary Sheets

11.1 Procedure Variation Summary

	Test Change	Curr. No.: Date Page of	
Test designation	Test Procedure	Issue	Rev.
Test step changed	Reason for Change		
Prepared by:	Resp. Test Leader	Project Engineer	
PA/QA	Prime	Customer	

Table 11.1-1: Procedure Variation Sheet

11.2 Non Conformance Report (NCR) Summary

NCR - No.	NCR - Title	Date	Open Closed	PA sig.

Table 11.2-1: Non-Conformance Record Sheet

11.3 Sign-off Sheet

	Name	Date	Signature
Test Manager	S. Idler	2.11.05	
Operator	S. Ilsen	2.11.05	
PA Responsible	D. Hendry	2.11.05	

Appendix 1: SPIRE Nominal Bus Profile (SPIRE_prime_inst.PST)

```
;Nominal HERSCHEL/SPIRE Prime bus profile
;SPIRE is RT 21: 25TM, 2TC
;PACS is RT 25: 2TM, 1TC
;HIFI is RT 16: 2TM, 1TC

[Config]
NumberOfSubFrames=64

[SubFrame1]
1=RTaccessSA

[SubFrame2]
1=RTaccessSA

[SubFrame3]
1=RTaccessSA

[SubFrame4]
1=TMpoll,25     ;TM poll from: PACS
2=RTaccessSA

[SubFrame5]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,16    ;TM poll from: HIFI
3=RTaccessSA

[SubFrame6]
1=TMpacket,16  ;TM packet from: HIFI
2=TMpoll,21    ;TM poll from: SPIRE
3=RTaccessSA

[SubFrame7]
1=TMpacket,21  ;TM packet from: SPIRE
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame8]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,16    ;TM poll from: HIFI
3=RTaccessSA

[SubFrame9]
1=TMpacket,16  ;TM packet from: HIFI
2=TMpoll,21    ;TM poll from: SPIRE
3=RTaccessSA

[SubFrame10]
1=TMpacket,21  ;TM packet from: SPIRE
2=RTaccessSA

[SubFrame11]
1=TMpoll,21    ;TM poll from: SPIRE
2=RTaccessSA

[SubFrame12]
1=TMpacket,21  ;TM packet from: SPIRE
2=RTaccessSA

[SubFrame13]
1=TMpoll,21    ;TM poll from: SPIRE
2=RTaccessSA

[SubFrame14]
1=TMpacket,21  ;TM packet from: SPIRE
2=RTaccessSA

[SubFrame15]
```

```
1=TMpoll,21    ;TM poll from: SPIRE
2=RTaccessSA

[SubFrame16]
1=TMpacket,21  ;TM packet from: SPIRE
2=RTaccessSA

[SubFrame17]
1=TCpacket     ;TC packet to: SPIRE
2=RTaccessSA

[SubFrame18]
1=TCpacket     ;TC packet to: PACS
2=TMpoll,21    ;TM poll from: SPIRE
3=RTaccessSA

[SubFrame19]
1=TMpacket,21  ;TM packet from: SPIRE
2=RTaccessSA

[SubFrame20]
1=TMpoll,21    ;TM poll from: SPIRE
2=RTaccessSA

[SubFrame21]
1=TMpacket,21  ;TM packet from: SPIRE
2=RTaccessSA

[SubFrame22]
1=TMpoll,21    ;TM poll from: SPIRE
2=RTaccessSA

[SubFrame23]
1=TMpacket,21  ;TM packet from: SPIRE
2=RTaccessSA

[SubFrame24]
1=TMpoll,21    ;TM poll from: SPIRE
2=RTaccessSA

[SubFrame25]
1=TMpacket,21  ;TM packet from: SPIRE
2=RTaccessSA

[SubFrame26]
1=TMpoll,21    ;TM poll from: SPIRE
2=RTaccessSA

[SubFrame27]
1=TMpacket,21  ;TM packet from: SPIRE
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame28]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,21    ;TM poll from: SPIRE
3=RTaccessSA

[SubFrame29]
1=TMpacket,21  ;TM packet from: SPIRE
2=RTaccessSA

[SubFrame30]
1=TMpoll,21    ;TM poll from: SPIRE
2=RTaccessSA

[SubFrame31]
1=TMpacket,21  ;TM packet from: SPIRE
2=TMpoll,16    ;TM poll from: HIFI
3=RTaccessSA
```

```
[SubFrame32]
1=TMpacket,16  ;TM packet from: HIFI
2=RTaccessSA

[SubFrame33]
1=TimeSync     ;Time distribution broadcast
2=TCpacket     ;TC packet to: SPIRE
3=TMpoll,21    ;TM poll from: SPIRE
4=RTaccessSA

[SubFrame34]
1=TMpacket,21  ;TM packet from: SPIRE
2=RTaccessSA

[SubFrame35]
1=TMpoll,21    ;TM poll from: SPIRE
2=RTaccessSA

[SubFrame36]
1=TMpacket,21  ;TM packet from: SPIRE
2=RTaccessSA

[SubFrame37]
1=TMpoll,21    ;TM poll from: SPIRE
2=RTaccessSA

[SubFrame38]
1=TMpacket,21  ;TM packet from: SPIRE
2=RTaccessSA

[SubFrame39]
1=TMpoll,21    ;TM poll from: SPIRE
2=RTaccessSA

[SubFrame40]
1=TMpacket,21  ;TM packet from: SPIRE
2=RTaccessSA

[SubFrame41]
1=TMpoll,21    ;TM poll from: SPIRE
2=RTaccessSA

[SubFrame42]
1=TMpacket,21  ;TM packet from: SPIRE
2=RTaccessSA

[SubFrame43]
1=TMpoll,21    ;TM poll from: SPIRE
2=RTaccessSA

[SubFrame44]
1=TMpacket,21  ;TM packet from: SPIRE
2=RTaccessSA

[SubFrame45]
1=TMpoll,21    ;TM poll from: SPIRE
2=RTaccessSA

[SubFrame46]
1=TMpacket,21  ;TM packet from: SPIRE
2=RTaccessSA

[SubFrame47]
1=TMpoll,21    ;TM poll from: SPIRE
2=RTaccessSA

[SubFrame48]
1=TMpacket,21  ;TM packet from: SPIRE
2=RTaccessSA

[SubFrame49]
```

```
1=TCpacket  ;TC packet to: HIFI
2=TMpoll,21    ;TM poll from: SPIRE
3=RTaccessSA

[SubFrame50]
1=TMpacket,21  ;TM packet from: SPIRE
2=RTaccessSA

[SubFrame51]
1=TMpoll,21    ;TM poll from: SPIRE
2=RTaccessSA

[SubFrame52]
1=TMpacket,21  ;TM packet from: SPIRE
2=RTaccessSA

[SubFrame53]
1=TMpoll,21    ;TM poll from: SPIRE
2=RTaccessSA

[SubFrame54]
1=TMpacket,21  ;TM packet from: SPIRE
2=RTaccessSA

[SubFrame55]
1=TMpoll,21    ;TM poll from: SPIRE
2=RTaccessSA

[SubFrame56]
1=TMpacket,21  ;TM packet from: SPIRE
2=RTaccessSA

[SubFrame57]
1=TMpoll,21    ;TM poll from: SPIRE
2=RTaccessSA

[SubFrame58]
1=TMpacket,21  ;TM packet from: SPIRE
2=RTaccessSA

[SubFrame59]
1=TMpoll,21    ;TM poll from: SPIRE
2=RTaccessSA

[SubFrame60]
1=TMpacket,21  ;TM packet from: SPIRE
2=RTaccessSA

[SubFrame61]
1=RTreadSA,21,1 ;RT status from: SPIRE
2=TMpoll,21    ;TM poll from: SPIRE

[SubFrame62]
1=RTreadSA,25,1 ;RT status from: PACS
2=TMpacket,21  ;TM packet from: SPIRE

[SubFrame63]
1=RTreadSA,16,1 ;RT status from: HIFI
```

Appendix 2: Log of EGSE_CONFIG_AUTO.tcl

```
*******************************************************************************
2005.297.08.10.24.063381 EGSE CONFIG Sequence
*******************************************************************************
2005.297.08.10.24.063832
*******************************************************************************
2005.297.08.10.24.064419 Check of CDMU DFE and PLM SCOE
*******************************************************************************
2005.297.08.10.24.064727
2005.297.08.10.24.064953
2005.297.08.10.24.065176 Connecting to CDMU DFE
2005.297.08.10.26.072471 Attaching to CMDU DFE
2005.297.08.10.27.077995
2005.297.08.10.27.078357 Checking if CDMU DFE BIST was OK
2005.297.08.10.29.083186
2005.297.08.10.29.174932 >>> RESULT : CDMU DFE BIST OK, continuing EGSE_CONFIG.
2005.297.08.10.31.176333
2005.297.08.10.31.176689 Connecting to PLM SCOE
2005.297.08.10.33.179580 Attaching to PLM SCOE
2005.297.08.10.34.183171
2005.297.08.10.34.183534 Checking if PLM SCOE BIST was OK
2005.297.08.10.36.186455
2005.297.08.10.36.236048 >>> RESULT : PLM SCOE BIST OK, continuing EGSE_CONFIG.
*******************************************************************************
2005.297.08.10.38.239017 Configuring CDMU DFE
*******************************************************************************
2005.297.08.10.38.239406
2005.297.08.10.38.239924 Switching CDMUDFE to ONLINE mode
2005.297.08.10.39.294842
2005.297.08.10.39.295234
2005.297.08.10.39.295836
2005.297.08.10.39.296377 Available PST tables:
2005.297.08.10.39.296923 1. HIFI_prime_inst.PST
2005.297.08.10.39.297546 2. SPIRE_prime_inst.PST
2005.297.08.10.39.298141 3. PACS_prime_inst.PST
2005.297.08.10.39.298721 4. PACS_burst_mode.PST
2005.297.08.10.39.299303 5. PACS_SPIRE_par.PST
2005.297.08.10.39.299870
2005.297.08.10.39.330272  >>> Please enter the number of the required PST table. Enter 0 for
an unlisted.
2005.297.08.10.42.841010
2005.297.08.10.42.841359 You have selected 2 : SPIRE_prime_inst.PST
2005.297.08.10.42.841952
2005.297.08.10.42.842750 Loading SPIRE_prime_inst.PST file on CDMU DFE
2005.297.08.10.42.843378
2005.297.08.10.47.918733 The PST table is loaded on the CDMU DFE.
2005.297.08.10.47.919165
2005.297.08.10.47.919801 Enabling PST file execution.
2005.297.08.10.49.026078
2005.297.08.10.49.026441 Enabling TM Queue.
2005.297.08.10.50.127308
2005.297.08.10.50.127668 Enabling TM Polling.
2005.297.08.10.51.162142
2005.297.08.10.51.162505 Enabling TC Queue.
2005.297.08.10.52.196982
2005.297.08.10.52.197343 Enabling SA Queue.
2005.297.08.10.53.231813
2005.297.08.10.53.232175 Enabling SA Reading.
2005.297.08.10.54.266666
2005.297.08.10.54.267026 Enabling Low Level Time Synchronisation.
2005.297.08.10.55.338569
2005.297.08.10.55.365501 ******************* USER INFORMATION *******************
2005.297.08.10.55.366217 User Info>: >>> Please Enable the Busmonitor (Set Online Mode and
Start New Acquisition) and press OK.
2005.297.08.10.55.366834 *********************************************************
2005.297.08.11.43.247865 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.297.08.11.43.248247 >>>>>>>>  Reading out CDMUDFE Settings
2005.297.08.11.43.248831 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
```

```
2005.297.08.11.43.249411
2005.297.08.11.43.251832 Status_CDMU_OnLine is 1 (extracted from TLM YM777944)
2005.297.08.11.43.254063 Status_CDMU_TMpolling is 1 (extracted from TLM YM780944)
2005.297.08.11.43.256332 Status_CDMU_SAreadActive is 1 (extracted from TLM YM781944)
2005.297.08.11.43.258542 Status_CDMU_SAqueueActive is 1 (extracted from TLM YM782944)
2005.297.08.11.43.260716 Status_CDMU_TMqueueActive is 1 (extracted from TLM YM783944)
2005.297.08.11.43.262914 Status_CDMU_TCqueueActive is 1 (extracted from TLM YM784944)
2005.297.08.11.43.264005 Status_CDMU_PSTfileName is SPIRE_prime_inst... (extracted from TLM
YM809944)
2005.297.08.11.43.266255 Status_CDMU_PSTrunning is 1 (extracted from TLM YM829944)
********************************************************************************
2005.297.08.11.46.268865 Configuring PLM SCOE
********************************************************************************
2005.297.08.11.46.269314
2005.297.08.11.46.269926 Switching PLM SCOE to ONLINE mode
2005.297.08.11.47.389203
2005.297.08.11.52.391503 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.297.08.11.52.391881 >>>>>>>>  Reading out PLM SCOE Settings
2005.297.08.11.52.392502 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.297.08.11.52.393095
2005.297.08.11.52.396076 Status_PLM_OnLine is 1 (extracted from TLM YM018942)
2005.297.08.11.52.398419 Status_PLM_PSU1_Master is currently 0 (extracted from TLM YM129942)
2005.297.08.11.52.400641 Status_PLM_PSU1_Slave is currently 0 (extracted from TLM YM145942)
2005.297.08.11.52.402833 Status_PLM_PSU2_Master is currently 1 (extracted from TLM YM177942)
2005.297.08.11.52.405026 Status_PLM_PSU2_Slave is currently 1 (extracted from TLM YM193942)
2005.297.08.11.52.409607 Status_PLM_LCL1_V is currently 0.00697093131021 (extracted from TLM
YM228942)
2005.297.08.11.52.412829 Status_PLM_LCL1_I is currently 0.000101930265373 (extracted from TLM
YM232942)
2005.297.08.11.52.417079 Status_PLM_LCL2_V is currently 0.0650620236993 (extracted from TLM
YM244942)
2005.297.08.11.52.420678 Status_PLM_LCL2_I is currently 0.000506599550135 (extracted from TLM
YM248942)
2005.297.08.11.52.424872 Status_PLM_LCL3_V is currently 0.00929457508028 (extracted from TLM
YM260942)
2005.297.08.11.52.428032 Status_PLM_LCL3_I is currently 0.000506599550135 (extracted from TLM
YM264942)
2005.297.08.11.52.432276 Status_PLM_LCL4_V is currently 0.0325310118496 (extracted from TLM
YM276942)
2005.297.08.11.52.435483 Status_PLM_LCL4_I is currently 0.000506599550135 (extracted from TLM
YM280942)
2005.297.08.11.52.439680 Status_PLM_LCL5_V is currently 0.0325310118496 (extracted from TLM
YM292942)
2005.297.08.11.52.442993 Status_PLM_LCL5_I is currently 0.000253299775068 (extracted from TLM
YM296942)
2005.297.08.11.52.447242 Status_PLM_LCL6_V is currently 0.0766802430153 (extracted from TLM
YM308942)
2005.297.08.11.52.450479 Status_PLM_LCL6_I is currently 0.000253299775068 (extracted from TLM
YM312942)
2005.297.08.11.52.454882 Status_PLM_LCL7_V is currently 0.034854657948 (extracted from TLM
YM324942)
2005.297.08.11.52.458184 Status_PLM_LCL7_I is currently 0.000506599550135 (extracted from TLM
YM328942)
2005.297.08.11.52.462515 Status_PLM_LCL8_V is currently 0.00929457508028 (extracted from TLM
YM340942)
2005.297.08.11.52.465766 Status_PLM_LCL8_I is currently 0.00405279640108 (extracted from TLM
YM344942)
2005.297.08.11.52.471212 Status_PLM_LCL9_V is currently 0.00697093131021 (extracted from TLM
YM356942)
2005.297.08.11.52.474681 Status_PLM_LCL9_I is currently 0.00253299763426 (extracted from TLM
YM360942)
2005.297.08.11.52.479424 Status_PLM_LCL10_V is currently 0.00929457508028 (extracted from TLM
YM372942)
2005.297.08.11.52.483111 Status_PLM_LCL10_I is currently 0.00278629735112 (extracted from TLM
YM376942)
2005.297.08.11.52.487867 Status_PLM_LCL11_V is currently 27.967376709 (extracted from TLM
YM388942)
2005.297.08.11.52.491554 Status_PLM_LCL11_I is currently 0.0448340587318 (extracted from TLM
YM392942)
2005.297.08.11.52.496319 Status_PLM_LCL12_V is currently 27.8883743286 (extracted from TLM
YM404942)
```

```
2005.297.08.11.52.499891 Status_PLM_LCL12_I is currently 0.761925697327 (extracted from TLM
YM408942)
2005.297.08.11.52.504642 Status_PLM_LCL13_V is currently 27.9534358978 (extracted from TLM
YM420942)
2005.297.08.11.52.508314 Status_PLM_LCL13_I is currently 0.4295963943 (extracted from TLM
YM424942)
2005.297.08.11.52.513080 Status_PLM_LCL14_V is currently 28.0254669189 (extracted from TLM
YM436942)
2005.297.08.11.52.516763 Status_PLM_LCL14_I is currently 0.742928206921 (extracted from TLM
YM440942)
```

Appendix 3: Log of HIFI_POWER_ON.tcl

```
2005.297.08.23.20.722494
********************************************************************************
2005.297.08.23.20.723474 Start of HIFI POWER ON sequence.
********************************************************************************
2005.297.08.23.20.723806
2005.297.08.23.20.724039 To run this script, the CDMU DFE and PLM SCOE should be
2005.297.08.23.20.724279 powered and configured.
2005.297.08.23.20.724510 To initiate, this script will connect and attach to the CDMUDFE
2005.297.08.23.20.724745 and PLM SCOE.
2005.297.08.23.20.724971
2005.297.08.23.20.725196 >>> Connecting to CDMU DFE.
2005.297.08.23.23.730649 >>> Attaching to CDMU DFE.
2005.297.08.23.26.739440
2005.297.08.23.26.739804 >>> Connecting to PLM SCOE.
2005.297.08.23.29.742519 >>> Attaching to PLM SCOE.
2005.297.08.23.32.745498
2005.297.08.23.32.745882 >>> Reading out CDMUDFE Settings
2005.297.08.23.32.746304
2005.297.08.23.32.873961 Status_CDMU_OnLine is 1 (extracted from TLM YM777944)
2005.297.08.23.32.875995 Status_CDMU_TMpolling is 1 (extracted from TLM YM780944)
2005.297.08.23.32.877981 Status_CDMU_SAreadActive is 1 (extracted from TLM YM781944)
2005.297.08.23.32.879984 Status_CDMU_SAqueueActive is 1 (extracted from TLM YM782944)
2005.297.08.23.32.881993 Status_CDMU_TMqueueActive is 1 (extracted from TLM YM783944)
2005.297.08.23.32.884061 Status_CDMU_TCqueueActive is 1 (extracted from TLM YM784944)
2005.297.08.23.32.885967 Status_CDMU_PSTfileName is SPIRE_prime_inst... (extracted from TLM
YM809944)
2005.297.08.23.32.888016 Status_CDMU_PSTrunning is 1 (extracted from TLM YM829944)
2005.297.08.23.32.888622
2005.297.08.23.32.889118 >>> Reading out PLM SCOE Settings
2005.297.08.23.32.889635
2005.297.08.23.33.136071 Status_PLM_OnLine is 1 (extracted from TLM YM018942)
2005.297.08.23.33.138214 Status_PLM_PSU1_Master is currently 0 (extracted from TLM YM129942)
2005.297.08.23.33.140296 Status_PLM_PSU1_Slave is currently 0 (extracted from TLM YM145942)
2005.297.08.23.33.142386 Status_PLM_PSU2_Master is currently 1 (extracted from TLM YM177942)
2005.297.08.23.33.144507 Status_PLM_PSU2_Slave is currently 1 (extracted from TLM YM193942)
2005.297.08.23.33.147834 Status_PLM_LCL1_V is currently 0.00697093131021 (extracted from TLM
YM228942)
2005.297.08.23.33.150793 Status_PLM_LCL1_I is currently 0.000101930265373 (extracted from TLM
YM232942)
2005.297.08.23.33.154225 Status_PLM_LCL2_V is currently 0.0627383813262 (extracted from TLM
YM244942)
2005.297.08.23.33.157219 Status_PLM_LCL2_I is currently 0.000506599550135 (extracted from TLM
YM248942)
2005.297.08.23.33.160683 Status_PLM_LCL3_V is currently 0.00929457508028 (extracted from TLM
YM260942)
2005.297.08.23.33.163687 Status_PLM_LCL3_I is currently 0.000506599550135 (extracted from TLM
YM264942)
2005.297.08.23.33.167100 Status_PLM_LCL4_V is currently 0.034854657948 (extracted from TLM
YM276942)
2005.297.08.23.33.170125 Status_PLM_LCL4_I is currently 0.000506599550135 (extracted from TLM
YM280942)
2005.297.08.23.33.173595 Status_PLM_LCL5_V is currently 0.0325310118496 (extracted from TLM
YM292942)
2005.297.08.23.33.176606 Status_PLM_LCL5_I is currently 0.000253299775068 (extracted from TLM
YM296942)
2005.297.08.23.33.180048 Status_PLM_LCL6_V is currently 0.0766802430153 (extracted from TLM
YM308942)
2005.297.08.23.33.183068 Status_PLM_LCL6_I is currently 0.000253299775068 (extracted from TLM
YM312942)
2005.297.08.23.33.186583 Status_PLM_LCL7_V is currently 0.034854657948 (extracted from TLM
YM324942)
2005.297.08.23.33.189614 Status_PLM_LCL7_I is currently 0.00101319910027 (extracted from TLM
YM328942)
2005.297.08.23.33.193116 Status_PLM_LCL8_V is currently 0.00929457508028 (extracted from TLM
YM340942)
2005.297.08.23.33.196173 Status_PLM_LCL8_I is currently 0.00405279640108 (extracted from TLM
YM344942)
```

```
2005.297.08.23.33.199658 Status_PLM_LCL9_V is currently 0.00697093131021 (extracted from TLM
YM356942)
2005.297.08.23.33.202798 Status_PLM_LCL9_I is currently 0.00253299763426 (extracted from TLM
YM360942)
2005.297.08.23.33.206307 Status_PLM_LCL10_V is currently 0.00929457508028 (extracted from TLM
YM372942)
2005.297.08.23.33.209654 Status_PLM_LCL10_I is currently 0.00303959730081 (extracted from TLM
YM376942)
2005.297.08.23.33.213217 Status_PLM_LCL11_V is currently 27.967376709 (extracted from TLM
YM388942)
2005.297.08.23.33.216357 Status_PLM_LCL11_I is currently 0.0448340587318 (extracted from TLM
YM392942)
2005.297.08.23.33.219973 Status_PLM_LCL12_V is currently 27.8930225372 (extracted from TLM
YM404942)
2005.297.08.23.33.223081 Status_PLM_LCL12_I is currently 0.744194746017 (extracted from TLM
YM408942)
2005.297.08.23.33.226668 Status_PLM_LCL13_V is currently 27.9580821991 (extracted from TLM
YM420942)
2005.297.08.23.33.229825 Status_PLM_LCL13_I is currently 0.429343104362 (extracted from TLM
YM424942)
2005.297.08.23.33.233661 Status_PLM_LCL14_V is currently 28.0254669189 (extracted from TLM
YM436942)
2005.297.08.23.33.236816 Status_PLM_LCL14_I is currently 0.743434786797 (extracted from TLM
YM440942)
2005.297.08.23.33.237572
2005.297.08.23.33.238190 >>> Switch ON PSU(s)
2005.297.08.23.33.238832
2005.297.08.23.33.289034 >>> Sending Telecommand YC036942
2005.297.08.23.33.289410
2005.297.08.23.33.290063 >>> Checking
2005.297.08.23.39.293387 PSU 1 Master status is currently 1 (from YM129942)
2005.297.08.23.39.293776 PSU 1 Slave status is currently 1 (from YM145942)
2005.297.08.23.39.294437
2005.297.08.23.39.295051 >>> Switch ON ICU
2005.297.08.23.39.295673
2005.297.08.23.39.394380 >>> Sending Telecommand YC040942 to Enable Limiter 3 -> HIFI ICU
2005.297.08.23.39.394763
2005.297.08.23.39.461256 >>> Sending Telecommand YC043942 to Set Limiter 3 -> HIFI ICU
2005.297.08.23.39.461644
2005.297.08.23.39.462296 >>> Checking
2005.297.08.23.45.465181 LCL 3 has currently a voltage of 27.8999919891.(from YM260942)
2005.297.08.23.45.465588 LCL 3 has currently a current of 0.936195969582.(from YM264942)
2005.297.08.23.45.466252
2005.297.08.23.50.468567 Send Force Boot to ICU
2005.297.08.23.55.609169 ******************** USER INFORMATION ********************
2005.297.08.23.55.609617 User Info>: Please check if the force boot has been executed
correctly and press OK.
2005.297.08.23.55.610277 ************************************************************
2005.297.08.24.01.343995
2005.297.08.24.01.344359
2005.297.08.24.01.344981 Setting HK rate to 1 per second
2005.297.08.24.06.441508
2005.297.08.24.06.441885 Notify ICU that FCU is on
2005.297.08.24.11.654894
2005.297.08.24.11.655277 >>> Switch ON HRH
2005.297.08.24.11.655928
2005.297.08.24.11.726193 >>> Sending Telecommand YC040942 to Enable Limiter 7 -> HIFI HRH
2005.297.08.24.11.726587
2005.297.08.24.11.829408 >>> Sending Telecommand YC043942 to Set Limiter 7 -> HIFI HRH
2005.297.08.24.11.829794
2005.297.08.24.11.830389 >>> Checking
2005.297.08.24.17.835490 LCL 7 has currently a voltage of 27.7373371124.(from YM324942)
2005.297.08.24.17.835898 LCL 7 has currently a current of 2.43117117882.(from YM328942)
2005.297.08.24.17.836564
2005.297.08.24.17.837143 Notify ICU that FCU and HRH are on
2005.297.08.24.22.975522
2005.297.08.24.22.975905 >>> Switch ON WEH
2005.297.08.24.22.976485
2005.297.08.24.23.011789 >>> Sending Telecommand YC040942 to Enable Limiter 5 -> HIFI WEH
2005.297.08.24.23.012175
2005.297.08.24.23.114902 >>> Sending Telecommand YC043942 to Set Limiter 5 -> HIFI WEH
```

```
2005.297.08.24.23.115287
2005.297.08.24.23.115868 >>> Checking
2005.297.08.24.29.121049 LCL 5 has currently a voltage of 27.9394931793.(from YM292942)
2005.297.08.24.29.121450 LCL 5 has currently a current of 0.947594463825.(from YM296942)
2005.297.08.24.29.122062
2005.297.08.24.29.122626 Notify ICU that FCU, HRH and WEH are on
2005.297.08.24.34.261124
2005.297.08.24.34.261492 >>> Switch ON LCU
2005.297.08.24.34.262069
2005.297.08.24.34.331859 >>> Sending Telecommand YC040942 to Enable Limiter 4 -> HIFI LCU
2005.297.08.24.34.332235
2005.297.08.24.34.399440 >>> Sending Telecommand YC043942 to Set Limiter 4 -> HIFI LCU
2005.297.08.24.34.399984
2005.297.08.24.34.400644 >>> Checking
2005.297.08.24.40.404911 LCL 4 has currently a voltage of 27.9371700287.(from YM276942)
2005.297.08.24.40.405312 LCL 4 has currently a current of 0.752300322056.(from YM280942)
2005.297.08.24.40.405993
2005.297.08.24.40.406553 Notify ICU that FCU, HRH, WEH and LCU are on
2005.297.08.24.45.511538
2005.297.08.24.45.511889 ###################################
2005.297.08.24.45.512467 #HIFI swith on is complete
2005.297.08.24.45.513045 ###################################
2005.297.08.24.45.513614
2005.297.08.24.45.514171 >>> Reading out CDMUDFE Settings
2005.297.08.24.45.514745
2005.297.08.24.45.515967 Status_CDMU_OnLine is 1 (extracted from TLM YM777944)
2005.297.08.24.45.517200 Status_CDMU_TMpolling is 1 (extracted from TLM YM780944)
2005.297.08.24.45.518429 Status_CDMU_SAreadActive is 1 (extracted from TLM YM781944)
2005.297.08.24.45.519674 Status_CDMU_SAqueueActive is 1 (extracted from TLM YM782944)
2005.297.08.24.45.520913 Status_CDMU_TMqueueActive is 1 (extracted from TLM YM783944)
2005.297.08.24.45.522141 Status_CDMU_TCqueueActive is 1 (extracted from TLM YM784944)
2005.297.08.24.45.523409 Status_CDMU_PSTfileName is SPIRE_prime_inst... (extracted from TLM
YM809944)
2005.297.08.24.45.524646 Status_CDMU_PSTrunning is 1 (extracted from TLM YM829944)
2005.297.08.24.45.525304
2005.297.08.24.45.525879 >>> Reading out PLM SCOE Settings
2005.297.08.24.45.526469
2005.297.08.24.45.527608 Status_PLM_OnLine is 1 (extracted from TLM YM018942)
2005.297.08.24.45.528844 Status_PLM_PSU1_Master is currently 1 (extracted from TLM YM129942)
2005.297.08.24.45.530082 Status_PLM_PSU1_Slave is currently 1 (extracted from TLM YM145942)
2005.297.08.24.45.531317 Status_PLM_PSU2_Master is currently 1 (extracted from TLM YM177942)
2005.297.08.24.45.532551 Status_PLM_PSU2_Slave is currently 1 (extracted from TLM YM193942)
2005.297.08.24.45.533829 Status_PLM_LCL1_V is currently 0.00697093131021 (extracted from TLM
YM228942)
2005.297.08.24.45.535129 Status_PLM_LCL1_I is currently 0.000917372351978 (extracted from TLM
YM232942)
2005.297.08.24.45.544210 Status_PLM_LCL2_V is currently 0.0650620236993 (extracted from TLM
YM244942)
2005.297.08.24.45.545489 Status_PLM_LCL2_I is currently 0.00607919460163 (extracted from TLM
YM248942)
2005.297.08.24.45.546755 Status_PLM_LCL3_V is currently 27.9023151398 (extracted from TLM
YM260942)
2005.297.08.24.45.548090 Status_PLM_LCL3_I is currently 0.914412200451 (extracted from TLM
YM264942)
2005.297.08.24.45.549360 Status_PLM_LCL4_V is currently 27.9371700287 (extracted from TLM
YM276942)
2005.297.08.24.45.550646 Status_PLM_LCL4_I is currently 0.729503333569 (extracted from TLM
YM280942)
2005.297.08.24.45.551918 Status_PLM_LCL5_V is currently 27.9394931793 (extracted from TLM
YM292942)
2005.297.08.24.45.553218 Status_PLM_LCL5_I is currently 0.949114203453 (extracted from TLM
YM296942)
2005.297.08.24.45.554505 Status_PLM_LCL6_V is currently 0.0766802430153 (extracted from TLM
YM308942)
2005.297.08.24.45.555792 Status_PLM_LCL6_I is currently 0.00379949645139 (extracted from TLM
YM312942)
2005.297.08.24.45.557074 Status_PLM_LCL7_V is currently 27.7326889038 (extracted from TLM
YM324942)
2005.297.08.24.45.558461 Status_PLM_LCL7_I is currently 2.4676463604 (extracted from TLM
YM328942)
```

```
2005.297.08.24.45.559694 Status_PLM_LCL8_V is currently 0.00929457508028 (extracted from TLM
YM340942)
2005.297.08.24.45.560853 Status_PLM_LCL8_I is currently 0.00405279640108 (extracted from TLM
YM344942)
2005.297.08.24.45.561970 Status_PLM_LCL9_V is currently 0.00697093131021 (extracted from TLM
YM356942)
2005.297.08.24.45.563142 Status_PLM_LCL9_I is currently 0.00253299763426 (extracted from TLM
YM360942)
2005.297.08.24.45.564290 Status_PLM_LCL10_V is currently 0.00929457508028 (extracted from TLM
YM372942)
2005.297.08.24.45.565381 Status_PLM_LCL10_I is currently 0.00278629735112 (extracted from TLM
YM376942)
2005.297.08.24.45.566566 Status_PLM_LCL11_V is currently 27.967376709 (extracted from TLM
YM388942)
2005.297.08.24.45.567689 Status_PLM_LCL11_I is currently 0.0448340587318 (extracted from TLM
YM392942)
2005.297.08.24.45.568796 Status_PLM_LCL12_V is currently 27.8906974792 (extracted from TLM
YM404942)
2005.297.08.24.45.569937 Status_PLM_LCL12_I is currently 0.774590671062 (extracted from TLM
YM408942)
2005.297.08.24.45.571133 Status_PLM_LCL13_V is currently 27.9534358978 (extracted from TLM
YM420942)
2005.297.08.24.45.572278 Status_PLM_LCL13_I is currently 0.429849714041 (extracted from TLM
YM424942)
2005.297.08.24.45.573429 Status_PLM_LCL14_V is currently 28.0254669189 (extracted from TLM
YM436942)
2005.297.08.24.45.574545 Status_PLM_LCL14_I is currently 0.742928206921 (extracted from TLM
YM440942)
2005.297.08.24.45.575226
2005.297.08.24.45.575860
*********************************************************************************
2005.297.08.24.45.576873 HIFI Power On Sequence has ended
*********************************************************************************
2005.297.08.24.45.577610
```

Appendix 4: Log of INSTR_POWER_ON.tcl (Used for SPIRE power on)

```
2005.297.08.46.21.261471
********************************************************************************
2005.297.08.46.21.262421 Start of Instrument POWER ON sequence.
********************************************************************************
2005.297.08.46.21.262740
2005.297.08.46.21.262966  To run this script, the CDMU DFE and PLM SCOE should be
2005.297.08.46.21.263200  powered and configured.
2005.297.08.46.21.263429  To initiate, this script will connect and attach to the CDMUDFE
2005.297.08.46.21.263664  and PLM SCOE.
2005.297.08.46.21.263885
2005.297.08.46.21.264107 Connecting to CDMU DFE
2005.297.08.46.23.269970 Attaching to CMDU DFE
2005.297.08.46.24.275466
2005.297.08.46.24.275822 Connecting to PLM SCOE
2005.297.08.46.26.280747 Attaching to PLM SCOE
2005.297.08.46.27.284341 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.297.08.46.27.284723 >>>>>>>>  Reading out CDMUDFE Settings
2005.297.08.46.27.285149 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.297.08.46.27.285597
2005.297.08.46.27.378100 Status_CDMU_OnLine is 1 (extracted from TLM YM777944)
2005.297.08.46.27.380134 Status_CDMU_TMpolling is 1 (extracted from TLM YM780944)
2005.297.08.46.27.382127 Status_CDMU_SAreadActive is 1 (extracted from TLM YM781944)
2005.297.08.46.27.384135 Status_CDMU_SAqueueActive is 1 (extracted from TLM YM782944)
2005.297.08.46.27.386135 Status_CDMU_TMqueueActive is 1 (extracted from TLM YM783944)
2005.297.08.46.27.388188 Status_CDMU_TCqueueActive is 1 (extracted from TLM YM784944)
2005.297.08.46.27.390081 Status_CDMU_PSTfileName is SPIRE_prime_inst... (extracted from TLM
YM809944)
2005.297.08.46.27.392148 Status_CDMU_PSTrunning is 1 (extracted from TLM YM829944)
2005.297.08.46.27.392761
2005.297.08.46.27.393259 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.297.08.46.27.393772 >>>>>>>>  Reading out PLM SCOE Settings
2005.297.08.46.27.394296 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.297.08.46.27.394844
2005.297.08.46.27.522008 Status_PLM_OnLine is 1 (extracted from TLM YM018942)
2005.297.08.46.27.524145 Status_PLM_PSU1_Master is currently 1 (extracted from TLM YM129942)
2005.297.08.46.27.526289 Status_PLM_PSU1_Slave is currently 1 (extracted from TLM YM145942)
2005.297.08.46.27.528428 Status_PLM_PSU2_Master is currently 1 (extracted from TLM YM177942)
2005.297.08.46.27.530566 Status_PLM_PSU2_Slave is currently 1 (extracted from TLM YM193942)
2005.297.08.46.27.533978 Status_PLM_LCL1_V is currently 0.00697093131021 (extracted from TLM
YM228942)
2005.297.08.46.27.537033 Status_PLM_LCL1_I is currently 0.000917372351978 (extracted from TLM
YM232942)
2005.297.08.46.27.540435 Status_PLM_LCL2_V is currently 0.0627383813262 (extracted from TLM
YM244942)
2005.297.08.46.27.543568 Status_PLM_LCL2_I is currently 0.00557259470224 (extracted from TLM
YM248942)
2005.297.08.46.27.547010 Status_PLM_LCL3_V is currently 27.9046401978 (extracted from TLM
YM260942)
2005.297.08.46.27.550032 Status_PLM_LCL3_I is currently 0.914412200451 (extracted from TLM
YM264942)
2005.297.08.46.27.553459 Status_PLM_LCL4_V is currently 27.9394931793 (extracted from TLM
YM276942)
2005.297.08.46.27.556478 Status_PLM_LCL4_I is currently 0.721904337406 (extracted from TLM
YM280942)
2005.297.08.46.27.559923 Status_PLM_LCL5_V is currently 27.9418182373 (extracted from TLM
YM292942)
2005.297.08.46.27.562934 Status_PLM_LCL5_I is currently 0.949874103069 (extracted from TLM
YM296942)
2005.297.08.46.27.566528 Status_PLM_LCL6_V is currently 0.0766802430153 (extracted from TLM
YM308942)
2005.297.08.46.27.569711 Status_PLM_LCL6_I is currently 0.00379949645139 (extracted from TLM
YM312942)
2005.297.08.46.27.573208 Status_PLM_LCL7_V is currently 27.7257175446 (extracted from TLM
YM324942)
```

```
2005.297.08.46.27.576261 Status_PLM_LCL7_I is currently 2.55224847794 (extracted from TLM
YM328942)
2005.297.08.46.27.579817 Status_PLM_LCL8_V is currently 0.00929457508028 (extracted from TLM
YM340942)
2005.297.08.46.27.582905 Status_PLM_LCL8_I is currently 0.00405279640108 (extracted from TLM
YM344942)
2005.297.08.46.27.586418 Status_PLM_LCL9_V is currently 0.00697093131021 (extracted from TLM
YM356942)
2005.297.08.46.27.589587 Status_PLM_LCL9_I is currently 0.00253299763426 (extracted from TLM
YM360942)
2005.297.08.46.27.593141 Status_PLM_LCL10_V is currently 0.00929457508028 (extracted from TLM
YM372942)
2005.297.08.46.27.596255 Status_PLM_LCL10_I is currently 0.00278629735112 (extracted from TLM
YM376942)
2005.297.08.46.27.599816 Status_PLM_LCL11_V is currently 27.967376709 (extracted from TLM
YM388942)
2005.297.08.46.27.602974 Status_PLM_LCL11_I is currently 0.0448340587318 (extracted from TLM
YM392942)
2005.297.08.46.27.606587 Status_PLM_LCL12_V is currently 27.8883743286 (extracted from TLM
YM404942)
2005.297.08.46.27.609777 Status_PLM_LCL12_I is currently 0.777630269527 (extracted from TLM
YM408942)
2005.297.08.46.27.613382 Status_PLM_LCL13_V is currently 27.9534358978 (extracted from TLM
YM420942)
2005.297.08.46.27.616520 Status_PLM_LCL13_I is currently 0.4295963943 (extracted from TLM
YM424942)
2005.297.08.46.27.620224 Status_PLM_LCL14_V is currently 28.0254669189 (extracted from TLM
YM436942)
2005.297.08.46.27.623545 Status_PLM_LCL14_I is currently 0.74267488718 (extracted from TLM
YM440942)
2005.297.08.46.27.624307
2005.297.08.46.27.624934
********************************************************************************
2005.297.08.46.27.625932 Power On Instruments
********************************************************************************
2005.297.08.46.27.626679
2005.297.08.46.27.627314
2005.297.08.46.27.627923
2005.297.08.46.27.628543 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.297.08.46.27.629180 >>>>>>>>  Start Up Instruments
2005.297.08.46.27.629807 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.297.08.46.27.630438
2005.297.08.46.27.661123  Which instrument needs to be Powered? PACS, SPIRE, HIFI, CCU?
2005.297.08.46.32.853204  You have selected to power SPIRE.
2005.297.08.46.32.853799
2005.297.08.46.32.854460  The current power on order is:
2005.297.08.46.32.855088  --------------------------------
2005.297.08.46.32.856786  1. LCL 1    SPIRE HSDPU    Primary    Voltage: 0.00697093131021 V
Current: 0.000917372351978 A
2005.297.08.46.32.857563  2. LCL 0    N/A    Primary    Voltage: N/A V     Current: N/A A
2005.297.08.46.32.858234
2005.297.08.46.32.887162  Do you want to change this order? : Choose Yes or No
2005.297.08.46.34.388503  User has chosen NO
2005.297.08.46.36.392939
2005.297.08.46.36.422881  Do you want to enable the PSU(s)? : Choose Yes or No
2005.297.08.46.37.869792  User has chosen YES
2005.297.08.46.39.874284
2005.297.08.46.39.960525  Sending Telecommand YC036942
2005.297.08.46.39.960892  Synchronizing on SEV...
2005.297.08.46.39.963849  Synchronised on SEV for TC(s): YC036942
2005.297.08.46.39.964199
2005.297.08.46.39.964807  >>> Checking
2005.297.08.46.45.970944  PSU 1 Master status is currently 1 (from YM129942)
2005.297.08.46.45.971335  PSU 1 Slave status is currently 1 (from YM145942)
2005.297.08.46.45.971987
2005.297.08.46.46.020468 ******************** USER INFORMATION ********************
2005.297.08.46.46.021299 User Info>: Check Successful! PSU 1 has been enabled.
2005.297.08.46.46.021941 ************************************************************
2005.297.08.46.47.541126
2005.297.08.46.47.541517  >>> Start Enabling LCL's
2005.297.08.46.47.542124
```

```
2005.297.08.46.47.570344  Do you want to enable LCL 1? : Choose Yes or No
2005.297.08.46.49.008152  User has chosen YES
2005.297.08.46.51.011414
2005.297.08.46.51.136646  Sending Telecommand YC040942 to Enable Limiter
2005.297.08.46.51.137014  Synchronizing on SEV...
2005.297.08.46.51.151046  Synchronised on SEV for TC(s): YC040942
2005.297.08.46.51.151534
2005.297.08.46.51.203647  Sending Telecommand YC043942 to Set Limiter
2005.297.08.46.51.204013  Synchronizing on SEV...
2005.297.08.46.51.213750  Synchronised on SEV for TC(s): YC043942
2005.297.08.46.51.214133
2005.297.08.46.51.214707  >>> Checking
2005.297.08.46.57.219322  LCL 1 has currently a voltage of 27.858165741.(from YM228942)
2005.297.08.46.57.219730  LCL 1 has currently a current of 0.457157224417.(from YM232942)
2005.297.08.46.57.220419
2005.297.08.46.57.246731 ******************* USER INFORMATION *******************
2005.297.08.46.57.247492 User Info>: Check Successful! LCL 1 has been enabled.
2005.297.08.46.57.248082 ********************************************************
2005.297.08.47.07.519267
2005.297.08.47.07.545170 ******************* USER INFORMATION *******************
2005.297.08.47.07.545900 User Info>: No LCL is selected to be switched on as second
2005.297.08.47.07.546507 ********************************************************
2005.297.08.47.08.213483
2005.297.08.47.08.213875
2005.297.08.47.08.214464  All selected LCL's for SPIRE are powered.
2005.297.08.47.08.215032
2005.297.08.47.08.242515  Do you want to power on another instrument? : Choose Yes or No
2005.297.08.47.09.729279  User has chosen NO
2005.297.08.47.11.733464
2005.297.08.47.11.734156 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.297.08.47.11.734767 >>>>>>>>  Reading out PLM SCOE Settings
2005.297.08.47.11.735347 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.297.08.47.11.735922
2005.297.08.47.11.737116 Status_PLM_OnLine is 1 (extracted from TLM YM018942)
2005.297.08.47.11.738159 Status_PLM_PSU1_Master is currently 1 (extracted from TLM YM129942)
2005.297.08.47.11.739198 Status_PLM_PSU1_Slave is currently 1 (extracted from TLM YM145942)
2005.297.08.47.11.740223 Status_PLM_PSU2_Master is currently 1 (extracted from TLM YM177942)
2005.297.08.47.11.741253 Status_PLM_PSU2_Slave is currently 1 (extracted from TLM YM193942)
2005.297.08.47.11.742327 Status_PLM_LCL1_V is currently 27.8604888916 (extracted from TLM
YM228942)
2005.297.08.47.11.743432 Status_PLM_LCL1_I is currently 0.438402056694 (extracted from TLM
YM232942)
2005.297.08.47.11.744508 Status_PLM_LCL2_V is currently 0.0650620236993 (extracted from TLM
YM244942)
2005.297.08.47.11.745593 Status_PLM_LCL2_I is currently 0.00557259470224 (extracted from TLM
YM248942)
2005.297.08.47.11.746698 Status_PLM_LCL3_V is currently 27.9023151398 (extracted from TLM
YM260942)
2005.297.08.47.11.747775 Status_PLM_LCL3_I is currently 0.914918780327 (extracted from TLM
YM264942)
2005.297.08.47.11.748938 Status_PLM_LCL4_V is currently 27.9418182373 (extracted from TLM
YM276942)
2005.297.08.47.11.750044 Status_PLM_LCL4_I is currently 0.721904337406 (extracted from TLM
YM280942)
2005.297.08.47.11.751132 Status_PLM_LCL5_V is currently 27.9418182373 (extracted from TLM
YM292942)
2005.297.08.47.11.752213 Status_PLM_LCL5_I is currently 0.95012742281 (extracted from TLM
YM296942)
2005.297.08.47.11.753284 Status_PLM_LCL6_V is currently 0.079003892839 (extracted from TLM
YM308942)
2005.297.08.47.11.754366 Status_PLM_LCL6_I is currently 0.00379949645139 (extracted from TLM
YM312942)
2005.297.08.47.11.755451 Status_PLM_LCL7_V is currently 27.7233943939 (extracted from TLM
YM324942)
2005.297.08.47.11.756545 Status_PLM_LCL7_I is currently 2.5532617569 (extracted from TLM
YM328942)
2005.297.08.47.11.757637 Status_PLM_LCL8_V is currently 0.00929457508028 (extracted from TLM
YM340942)
2005.297.08.47.11.758739 Status_PLM_LCL8_I is currently 0.00405279640108 (extracted from TLM
YM344942)
```

```
2005.297.08.47.11.759850 Status_PLM_LCL9_V is currently 0.00697093131021 (extracted from TLM
YM356942)
2005.297.08.47.11.760977 Status_PLM_LCL9_I is currently 0.00253299763426 (extracted from TLM
YM360942)
2005.297.08.47.11.762099 Status_PLM_LCL10_V is currently 0.00929457508028 (extracted from TLM
YM372942)
2005.297.08.47.11.763183 Status_PLM_LCL10_I is currently 0.00278629735112 (extracted from TLM
YM376942)
2005.297.08.47.11.764322 Status_PLM_LCL11_V is currently 27.9650535583 (extracted from TLM
YM388942)
2005.297.08.47.11.765422 Status_PLM_LCL11_I is currently 0.0448340587318 (extracted from TLM
YM392942)
2005.297.08.47.11.766536 Status_PLM_LCL12_V is currently 27.8930225372 (extracted from TLM
YM404942)
2005.297.08.47.11.767707 Status_PLM_LCL12_I is currently 0.757366299629 (extracted from TLM
YM408942)
2005.297.08.47.11.768855 Status_PLM_LCL13_V is currently 27.9557590485 (extracted from TLM
YM420942)
2005.297.08.47.11.770086 Status_PLM_LCL13_I is currently 0.429343104362 (extracted from TLM
YM424942)
2005.297.08.47.11.771263 Status_PLM_LCL14_V is currently 28.0231437683 (extracted from TLM
YM436942)
2005.297.08.47.11.772392 Status_PLM_LCL14_I is currently 0.743434786797 (extracted from TLM
YM440942)
2005.297.08.47.11.773160 <<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<
2005.297.08.47.11.773854 <<<<<<<  Power Sequence Ended!
2005.297.08.47.11.775735 <<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<
```

Appendix 5: Log of PACS_POWER_OFF.tcl

```
2005.301.14.13.10.254267
*******************************************************************************
2005.301.14.13.10.255227 Start of PACS POWER OFF sequence.
*******************************************************************************
2005.301.14.13.10.255538
2005.301.14.13.10.255764 To run this script, the CDMU DFE and PLM SCOE should be
2005.301.14.13.10.256000 powered and configured.
2005.301.14.13.10.256222 To initiate, this script will connect and attach to the CDMUDFE
2005.301.14.13.10.256451 and PLM SCOE.
2005.301.14.13.10.256671
2005.301.14.13.10.256889 >>> Connecting to CDMU DFE.
2005.301.14.13.13.261946 >>> Attaching to CDMU DFE.
2005.301.14.13.16.268761
2005.301.14.13.16.269119 >>> Connecting to PLM SCOE.
2005.301.14.13.19.271704 >>> Attaching to PLM SCOE.
2005.301.14.13.22.274645
2005.301.14.13.22.275008 >>> Reading out CDMUDFE Settings
2005.301.14.13.22.275439
2005.301.14.13.22.473154 Status_CDMU_OnLine is 1 (extracted from TLM YM777944)
2005.301.14.13.22.475020 Status_CDMU_TMpolling is 1 (extracted from TLM YM780944)
2005.301.14.13.22.476635 Status_CDMU_SAreadActive is 1 (extracted from TLM YM781944)
2005.301.14.13.22.478250 Status_CDMU_SAqueueActive is 1 (extracted from TLM YM782944)
2005.301.14.13.22.479894 Status_CDMU_TMqueueActive is 1 (extracted from TLM YM783944)
2005.301.14.13.22.481562 Status_CDMU_TCqueueActive is 1 (extracted from TLM YM784944)
2005.301.14.13.22.483090 Status_CDMU_PSTfileName is SPIRE_prime_inst... (extracted from TLM
YM809944)
2005.301.14.13.22.484751 Status_CDMU_PSTrunning is 1 (extracted from TLM YM829944)
2005.301.14.13.22.485287
2005.301.14.13.22.485779 >>> Reading out PLM SCOE Settings
2005.301.14.13.22.486278
2005.301.14.13.22.708467 Status_PLM_OnLine is 1 (extracted from TLM YM018942)
2005.301.14.13.22.710498 Status_PLM_PSU1_Master is currently 1 (extracted from TLM YM129942)
2005.301.14.13.22.712505 Status_PLM_PSU1_Slave is currently 1 (extracted from TLM YM145942)
2005.301.14.13.22.714295 Status_PLM_PSU2_Master is currently 1 (extracted from TLM YM177942)
2005.301.14.13.22.716046 Status_PLM_PSU2_Slave is currently 1 (extracted from TLM YM193942)
2005.301.14.13.22.719103 Status_PLM_LCL1_V is currently 27.8628120422 (extracted from TLM
YM228942)
2005.301.14.13.22.721703 Status_PLM_LCL1_I is currently 0.435038357973 (extracted from TLM
YM232942)
2005.301.14.13.22.724770 Status_PLM_LCL2_V is currently 0.0673856735229 (extracted from TLM
YM244942)
2005.301.14.13.22.727798 Status_PLM_LCL2_I is currently 0.00607919460163 (extracted from TLM
YM248942)
2005.301.14.13.22.731384 Status_PLM_LCL3_V is currently 27.9046401978 (extracted from TLM
YM260942)
2005.301.14.13.22.734323 Status_PLM_LCL3_I is currently 0.909852802753 (extracted from TLM
YM264942)
2005.301.14.13.22.737472 Status_PLM_LCL4_V is currently 27.9418182373 (extracted from TLM
YM276942)
2005.301.14.13.22.740210 Status_PLM_LCL4_I is currently 0.72139775753 (extracted from TLM
YM280942)
2005.301.14.13.22.743469 Status_PLM_LCL5_V is currently 27.9418182373 (extracted from TLM
YM292942)
2005.301.14.13.22.747429 Status_PLM_LCL5_I is currently 0.951647222042 (extracted from TLM
YM296942)
2005.301.14.13.22.751715 Status_PLM_LCL6_V is currently 0.0766802430153 (extracted from TLM
YM308942)
2005.301.14.13.22.754902 Status_PLM_LCL6_I is currently 0.00379949645139 (extracted from TLM
YM312942)
2005.301.14.13.22.758176 Status_PLM_LCL7_V is currently 27.7164230347 (extracted from TLM
YM324942)
2005.301.14.13.22.760895 Status_PLM_LCL7_I is currently 2.62823843956 (extracted from TLM
YM328942)
2005.301.14.13.22.764217 Status_PLM_LCL8_V is currently 0.00929457508028 (extracted from TLM
YM340942)
2005.301.14.13.22.766952 Status_PLM_LCL8_I is currently 0.00405279640108 (extracted from TLM
YM344942)
```

```
2005.301.14.13.22.770142 Status_PLM_LCL9_V is currently 0.00697093131021 (extracted from TLM
YM356942)
2005.301.14.13.22.772864 Status_PLM_LCL9_I is currently 0.00253299763426 (extracted from TLM
YM360942)
2005.301.14.13.22.776161 Status_PLM_LCL10_V is currently 0.00929457508028 (extracted from TLM
YM372942)
2005.301.14.13.22.778930 Status_PLM_LCL10_I is currently 0.00278629735112 (extracted from TLM
YM376942)
2005.301.14.13.22.782288 Status_PLM_LCL11_V is currently 27.967376709 (extracted from TLM
YM388942)
2005.301.14.13.22.785055 Status_PLM_LCL11_I is currently 0.0448340587318 (extracted from TLM
YM392942)
2005.301.14.13.22.788361 Status_PLM_LCL12_V is currently 27.8953456879 (extracted from TLM
YM404942)
2005.301.14.13.22.791177 Status_PLM_LCL12_I is currently 0.758379518986 (extracted from TLM
YM408942)
2005.301.14.13.22.794433 Status_PLM_LCL13_V is currently 27.9534358978 (extracted from TLM
YM420942)
2005.301.14.13.22.797240 Status_PLM_LCL13_I is currently 0.428583234549 (extracted from TLM
YM424942)
2005.301.14.13.22.800546 Status_PLM_LCL14_V is currently 28.0231437683 (extracted from TLM
YM436942)
2005.301.14.13.22.803368 Status_PLM_LCL14_I is currently 0.742928206921 (extracted from TLM
YM440942)
2005.301.14.13.22.804063
2005.301.14.13.22.804698 Reset bias for all groups sequentially
2005.301.14.13.35.992884 BOL biases are set to zero
2005.301.14.13.35.993265 Now BOLC is prepared for switch-off
2005.301.14.13.35.993956 Set temperature probes off
2005.301.14.13.36.512270 Set all groups to OFF
2005.301.14.13.38.529525 >>> Switch OFF SPU
2005.301.14.13.38.529904
2005.301.14.13.38.633235  Sending Telecommand YC041942 to Disable Limiter 14 PACS SPU
2005.301.14.13.38.633619
2005.301.14.13.38.634260 >>> Checking
2005.301.14.13.44.637761 LCL 14 has currently a voltage of 0.092945754528.(from YM436942)
2005.301.14.13.44.638191 LCL 14 has currently a current of 0.00430609611794.(from YM440942)
2005.301.14.13.44.638894
2005.301.14.13.45.142383 >>> Switch OFF BOLC
2005.301.14.13.45.142760
2005.301.14.13.45.223285  Sending Telecommand YC041942 to Disable Limiter 11 PACS BOLC
2005.301.14.13.45.223670
2005.301.14.13.45.224281 >>> Checking
2005.301.14.13.51.229204 LCL 11 has currently a voltage of 0.00929457508028.(from YM388942)
2005.301.14.13.51.229611 LCL 11 has currently a current of 0.00379949645139.(from YM392942)
2005.301.14.13.51.230280
2005.301.14.13.51.733951 >>> Switch OFF DECMEC
2005.301.14.13.51.734326
2005.301.14.13.51.878987  Sending Telecommand YC041942 to Disable Limiter 12 PACS DECMEC
2005.301.14.13.51.879358
2005.301.14.13.51.879949 >>> Checking
2005.301.14.13.57.883376 LCL 12 has currently a voltage of 0.00697093131021.(from YM404942)
2005.301.14.13.57.883780 LCL 12 has currently a current of 0.0116517897695.(from YM408942)
2005.301.14.13.57.884387
2005.301.14.13.58.388091 >>> Switch OFF DPU
2005.301.14.13.58.388464
2005.301.14.13.58.502307  Sending Telecommand YC041942 to Disable Limiter 13 PACS DPU
2005.301.14.13.58.502925
2005.301.14.13.58.503689 >>> Checking
2005.301.14.14.04.509512 LCL 13 has currently a voltage of 0.0185891501606.(from YM420942)
2005.301.14.14.04.509920 LCL 13 has currently a current of 0.00151979865041.(from YM424942)
2005.301.14.14.04.510510
2005.301.14.14.05.012856 PACS is off
2005.301.14.14.05.013220 >>> Reading out CDMUDFE Settings
2005.301.14.14.05.013801
2005.301.14.14.05.014997 Status_CDMU_OnLine is 1 (extracted from TLM YM777944)
2005.301.14.14.05.016049 Status_CDMU_TMpolling is 1 (extracted from TLM YM780944)
2005.301.14.14.05.017142 Status_CDMU_SAreadActive is 1 (extracted from TLM YM781944)
2005.301.14.14.05.018182 Status_CDMU_SAqueueActive is 1 (extracted from TLM YM782944)
2005.301.14.14.05.019197 Status_CDMU_TMqueueActive is 1 (extracted from TLM YM783944)
2005.301.14.14.05.020231 Status_CDMU_TCqueueActive is 1 (extracted from TLM YM784944)
```

```
2005.301.14.14.05.021315 Status_CDMU_PSTfileName is SPIRE_prime_inst... (extracted from TLM
YM809944)
2005.301.14.14.05.022352 Status_CDMU_PSTrunning is 1 (extracted from TLM YM829944)
2005.301.14.14.05.022973
2005.301.14.14.05.023537 >>> Reading out PLM SCOE Settings
2005.301.14.14.05.024125
2005.301.14.14.05.025077 Status_PLM_OnLine is 1 (extracted from TLM YM018942)
2005.301.14.14.05.026127 Status_PLM_PSU1_Master is currently 1 (extracted from TLM YM129942)
2005.301.14.14.05.027144 Status_PLM_PSU1_Slave is currently 1 (extracted from TLM YM145942)
2005.301.14.14.05.028268 Status_PLM_PSU2_Master is currently 1 (extracted from TLM YM177942)
2005.301.14.14.05.029291 Status_PLM_PSU2_Slave is currently 1 (extracted from TLM YM193942)
2005.301.14.14.05.030359 Status_PLM_LCL1_V is currently 27.8604888916 (extracted from TLM
YM228942)
2005.301.14.14.05.031448 Status_PLM_LCL1_I is currently 0.433509409428 (extracted from TLM
YM232942)
2005.301.14.14.05.032811 Status_PLM_LCL2_V is currently 0.0650620236993 (extracted from TLM
YM244942)
2005.301.14.14.05.033887 Status_PLM_LCL2_I is currently 0.00607919460163 (extracted from TLM
YM248942)
2005.301.14.14.05.034967 Status_PLM_LCL3_V is currently 27.9069633484 (extracted from TLM
YM260942)
2005.301.14.14.05.036036 Status_PLM_LCL3_I is currently 0.926570594311 (extracted from TLM
YM264942)
2005.301.14.14.05.037107 Status_PLM_LCL4_V is currently 27.9418182373 (extracted from TLM
YM276942)
2005.301.14.14.05.038241 Status_PLM_LCL4_I is currently 0.720384538174 (extracted from TLM
YM280942)
2005.301.14.14.05.039333 Status_PLM_LCL5_V is currently 27.9418182373 (extracted from TLM
YM292942)
2005.301.14.14.05.040399 Status_PLM_LCL5_I is currently 0.952660441399 (extracted from TLM
YM296942)
2005.301.14.14.05.041527 Status_PLM_LCL6_V is currently 0.0766802430153 (extracted from TLM
YM308942)
2005.301.14.14.05.042622 Status_PLM_LCL6_I is currently 0.00379949645139 (extracted from TLM
YM312942)
2005.301.14.14.05.043707 Status_PLM_LCL7_V is currently 27.7164230347 (extracted from TLM
YM324942)
2005.301.14.14.05.044804 Status_PLM_LCL7_I is currently 2.62823843956 (extracted from TLM
YM328942)
2005.301.14.14.05.045899 Status_PLM_LCL8_V is currently 0.00929457508028 (extracted from TLM
YM340942)
2005.301.14.14.05.047007 Status_PLM_LCL8_I is currently 0.0045593958348 (extracted from TLM
YM344942)
2005.301.14.14.05.048163 Status_PLM_LCL9_V is currently 0.00697093131021 (extracted from TLM
YM356942)
2005.301.14.14.05.049277 Status_PLM_LCL9_I is currently 0.00253299763426 (extracted from TLM
YM360942)
2005.301.14.14.05.050378 Status_PLM_LCL10_V is currently 0.00929457508028 (extracted from TLM
YM372942)
2005.301.14.14.05.051473 Status_PLM_LCL10_I is currently 0.00278629735112 (extracted from TLM
YM376942)
2005.301.14.14.05.052576 Status_PLM_LCL11_V is currently 0.00929457508028 (extracted from TLM
YM388942)
2005.301.14.14.05.053713 Status_PLM_LCL11_I is currently 0.00379949645139 (extracted from TLM
YM392942)
2005.301.14.14.05.054884 Status_PLM_LCL12_V is currently 0.00697093131021 (extracted from TLM
YM404942)
2005.301.14.14.05.056001 Status_PLM_LCL12_I is currently 0.0116517897695 (extracted from TLM
YM408942)
2005.301.14.14.05.057118 Status_PLM_LCL13_V is currently 0.0185891501606 (extracted from TLM
YM420942)
2005.301.14.14.05.058271 Status_PLM_LCL13_I is currently 0.00151979865041 (extracted from TLM
YM424942)
2005.301.14.14.05.059387 Status_PLM_LCL14_V is currently 0.090622112155 (extracted from TLM
YM436942)
2005.301.14.14.05.060494 Status_PLM_LCL14_I is currently 0.00430609611794 (extracted from TLM
YM440942)
2005.301.14.14.05.061179
2005.301.14.14.05.061803
*******************************************************************************
2005.301.14.14.05.062803 PACS Power Off Sequence has ended
```

```
********************************************************************************
2005.301.14.14.05.063511
```

Appendix 6: Log of HIFI_POWER_OFF.tcl

```
2005.301.14.14.17.929013
*******************************************************************************
2005.301.14.14.17.929910 Start of HIFI POWER OFF sequence.
*******************************************************************************
2005.301.14.14.17.930220
2005.301.14.14.17.930450 To run this script, the CDMU DFE and PLM SCOE should be
2005.301.14.14.17.930688 powered and configured.
2005.301.14.14.17.930915 To initiate, this script will connect and attach to the CDMUDFE
2005.301.14.14.17.931148 and PLM SCOE.
2005.301.14.14.17.931372
2005.301.14.14.17.931597 >>> Connecting to CDMU DFE.
2005.301.14.14.20.937386 >>> Attaching to CDMU DFE.
2005.301.14.14.23.942269
2005.301.14.14.23.942630 >>> Connecting to PLM SCOE.
2005.301.14.14.26.945381 >>> Attaching to PLM SCOE.
2005.301.14.14.29.948189
2005.301.14.14.29.948556 >>> Reading out CDMUDFE Settings
2005.301.14.14.29.948974
2005.301.14.14.30.078588 Status_CDMU_OnLine is 1 (extracted from TLM YM777944)
2005.301.14.14.30.080413 Status_CDMU_TMpolling is 1 (extracted from TLM YM780944)
2005.301.14.14.30.082064 Status_CDMU_SAreadActive is 1 (extracted from TLM YM781944)
2005.301.14.14.30.083687 Status_CDMU_SAqueueActive is 1 (extracted from TLM YM782944)
2005.301.14.14.30.085315 Status_CDMU_TMqueueActive is 1 (extracted from TLM YM783944)
2005.301.14.14.30.087234 Status_CDMU_TCqueueActive is 1 (extracted from TLM YM784944)
2005.301.14.14.30.088894 Status_CDMU_PSTfileName is SPIRE_prime_inst... (extracted from TLM
YM809944)
2005.301.14.14.30.090633 Status_CDMU_PSTrunning is 1 (extracted from TLM YM829944)
2005.301.14.14.30.091187
2005.301.14.14.30.091680 >>> Reading out PLM SCOE Settings
2005.301.14.14.30.092187
2005.301.14.14.30.224483 Status_PLM_OnLine is 1 (extracted from TLM YM018942)
2005.301.14.14.30.226330 Status_PLM_PSU1_Master is currently 1 (extracted from TLM YM129942)
2005.301.14.14.30.228077 Status_PLM_PSU1_Slave is currently 1 (extracted from TLM YM145942)
2005.301.14.14.30.229832 Status_PLM_PSU2_Master is currently 1 (extracted from TLM YM177942)
2005.301.14.14.30.231581 Status_PLM_PSU2_Slave is currently 1 (extracted from TLM YM193942)
2005.301.14.14.30.234643 Status_PLM_LCL1_V is currently 27.8604888916 (extracted from TLM
YM228942)
2005.301.14.14.30.237327 Status_PLM_LCL1_I is currently 0.433713287115 (extracted from TLM
YM232942)
2005.301.14.14.30.240382 Status_PLM_LCL2_V is currently 0.0650620236993 (extracted from TLM
YM244942)
2005.301.14.14.30.243018 Status_PLM_LCL2_I is currently 0.00557259470224 (extracted from TLM
YM248942)
2005.301.14.14.30.246172 Status_PLM_LCL3_V is currently 27.9046401978 (extracted from TLM
YM260942)
2005.301.14.14.30.248863 Status_PLM_LCL3_I is currently 0.912385761738 (extracted from TLM
YM264942)
2005.301.14.14.30.251990 Status_PLM_LCL4_V is currently 27.9418182373 (extracted from TLM
YM276942)
2005.301.14.14.30.254692 Status_PLM_LCL4_I is currently 0.722917497158 (extracted from TLM
YM280942)
2005.301.14.14.30.257863 Status_PLM_LCL5_V is currently 27.9418182373 (extracted from TLM
YM292942)
2005.301.14.14.30.260618 Status_PLM_LCL5_I is currently 0.952913701534 (extracted from TLM
YM296942)
2005.301.14.14.30.263742 Status_PLM_LCL6_V is currently 0.0766802430153 (extracted from TLM
YM308942)
2005.301.14.14.30.266418 Status_PLM_LCL6_I is currently 0.00379949645139 (extracted from TLM
YM312942)
2005.301.14.14.30.269598 Status_PLM_LCL7_V is currently 27.7164230347 (extracted from TLM
YM324942)
2005.301.14.14.30.272338 Status_PLM_LCL7_I is currently 2.62823843956 (extracted from TLM
YM328942)
2005.301.14.14.30.275539 Status_PLM_LCL8_V is currently 0.00929457508028 (extracted from TLM
YM340942)
2005.301.14.14.30.278265 Status_PLM_LCL8_I is currently 0.00405279640108 (extracted from TLM
YM344942)
```

```
2005.301.14.14.30.281537 Status_PLM_LCL9_V is currently 0.00697093131021 (extracted from TLM
YM356942)
2005.301.14.14.30.284301 Status_PLM_LCL9_I is currently 0.00253299763426 (extracted from TLM
YM360942)
2005.301.14.14.30.287513 Status_PLM_LCL10_V is currently 0.00929457508028 (extracted from TLM
YM372942)
2005.301.14.14.30.290252 Status_PLM_LCL10_I is currently 0.00278629735112 (extracted from TLM
YM376942)
2005.301.14.14.30.293574 Status_PLM_LCL11_V is currently 0.00929457508028 (extracted from TLM
YM388942)
2005.301.14.14.30.296391 Status_PLM_LCL11_I is currently 0.00379949645139 (extracted from TLM
YM392942)
2005.301.14.14.30.299656 Status_PLM_LCL12_V is currently 0.00697093131021 (extracted from TLM
YM404942)
2005.301.14.14.30.302436 Status_PLM_LCL12_I is currently 0.0116517897695 (extracted from TLM
YM408942)
2005.301.14.14.30.305720 Status_PLM_LCL13_V is currently 0.0185891501606 (extracted from TLM
YM420942)
2005.301.14.14.30.308538 Status_PLM_LCL13_I is currently 0.00151979865041 (extracted from TLM
YM424942)
2005.301.14.14.30.311830 Status_PLM_LCL14_V is currently 0.0952693969011 (extracted from TLM
YM436942)
2005.301.14.14.30.314690 Status_PLM_LCL14_I is currently 0.00430609611794 (extracted from TLM
YM440942)
2005.301.14.14.30.315396
2005.301.14.14.30.373507 ******************** USER INFORMATION ********************
2005.301.14.14.30.374374 User Info>: Please make sure that the LCU status is STANDBY and press
OK.
2005.301.14.14.30.375041 ************************************************************
2005.301.14.14.52.533693
2005.301.14.14.52.534045
2005.301.14.14.52.534684 >>> Switch OFF LCU
2005.301.14.14.52.535318
2005.301.14.14.52.624970  Sending Telecommand YC041942 to Disable Limiter 4 HIFI LCU
2005.301.14.14.52.625344
2005.301.14.14.52.625996 >>> Checking
2005.301.14.14.58.629426 LCL 4 has currently a voltage of 0.034854657948.(from YM276942)
2005.301.14.14.58.629886 LCL 4 has currently a current of 0.00607919460163.(from YM280942)
2005.301.14.14.58.630538
2005.301.14.14.58.631162 >>> Switch OFF WEH
2005.301.14.14.58.631878
2005.301.14.14.58.732504  Sending Telecommand YC041942 to Disable Limiter 5 HIFI WEH
2005.301.14.14.58.732877
2005.301.14.14.58.733502 >>> Checking
2005.301.14.15.04.736836 LCL 5 has currently a voltage of 0.0325310118496.(from YM292942)
2005.301.14.15.04.737243 LCL 5 has currently a current of 0.000759899325203.(from YM296942)
2005.301.14.15.04.737891
2005.301.14.15.04.738486 >>> Switch OFF HRH
2005.301.14.15.04.739100
2005.301.14.15.04.803373  Sending Telecommand YC041942 to Disable Limiter 7 HIFI HRH
2005.301.14.15.04.803776
2005.301.14.15.04.804390 >>> Checking
2005.301.14.15.10.806993 LCL 7 has currently a voltage of 0.034854657948.(from YM324942)
2005.301.14.15.10.807387 LCL 7 has currently a current of 0.00506599526852.(from YM328942)
2005.301.14.15.10.808009
2005.301.14.15.10.808603 >>> Switch OFF ICU
2005.301.14.15.10.809191
2005.301.14.15.10.945005  Sending Telecommand YC041942 to Disable Limiter 3 HIFI ICU
2005.301.14.15.10.945381
2005.301.14.15.10.945967 >>> Checking
2005.301.14.15.16.951180 LCL 3 has currently a voltage of 0.00929457508028.(from YM260942)
2005.301.14.15.16.951577 LCL 3 has currently a current of 0.00759899290279.(from YM264942)
2005.301.14.15.16.952234
2005.301.14.15.17.455902 HIFI is off
2005.301.14.15.17.456263 >>> Reading out CDMUDFE Settings
2005.301.14.15.17.456838
2005.301.14.15.17.458044 Status_CDMU_OnLine is 1 (extracted from TLM YM777944)
2005.301.14.15.17.459080 Status_CDMU_TMpolling is 1 (extracted from TLM YM780944)
2005.301.14.15.17.460139 Status_CDMU_SAreadActive is 1 (extracted from TLM YM781944)
2005.301.14.15.17.461349 Status_CDMU_SAqueueActive is 1 (extracted from TLM YM782944)
2005.301.14.15.17.463219 Status_CDMU_TMqueueActive is 1 (extracted from TLM YM783944)
```

```
2005.301.14.15.17.464410 Status_CDMU_TCqueueActive is 1 (extracted from TLM YM784944)
2005.301.14.15.17.465678 Status_CDMU_PSTfileName is SPIRE_prime_inst... (extracted from TLM
YM809944)
2005.301.14.15.17.467771 Status_CDMU_PSTrunning is 1 (extracted from TLM YM829944)
2005.301.14.15.17.468520
2005.301.14.15.17.469118 >>> Reading out PLM SCOE Settings
2005.301.14.15.17.469701
2005.301.14.15.17.470689 Status_PLM_OnLine is 1 (extracted from TLM YM018942)
2005.301.14.15.17.471720 Status_PLM_PSU1_Master is currently 1 (extracted from TLM YM129942)
2005.301.14.15.17.472750 Status_PLM_PSU1_Slave is currently 1 (extracted from TLM YM145942)
2005.301.14.15.17.473914 Status_PLM_PSU2_Master is currently 1 (extracted from TLM YM177942)
2005.301.14.15.17.474961 Status_PLM_PSU2_Slave is currently 1 (extracted from TLM YM193942)
2005.301.14.15.17.476048 Status_PLM_LCL1_V is currently 27.8604888916 (extracted from TLM
YM228942)
2005.301.14.15.17.477126 Status_PLM_LCL1_I is currently 0.434732556343 (extracted from TLM
YM232942)
2005.301.14.15.17.478199 Status_PLM_LCL2_V is currently 0.0627383813262 (extracted from TLM
YM244942)
2005.301.14.15.17.479284 Status_PLM_LCL2_I is currently 0.00607919460163 (extracted from TLM
YM248942)
2005.301.14.15.17.480358 Status_PLM_LCL3_V is currently 0.00929457508028 (extracted from TLM
YM260942)
2005.301.14.15.17.481444 Status_PLM_LCL3_I is currently 0.00759899290279 (extracted from TLM
YM264942)
2005.301.14.15.17.482519 Status_PLM_LCL4_V is currently 0.0371783003211 (extracted from TLM
YM276942)
2005.301.14.15.17.483604 Status_PLM_LCL4_I is currently 0.00607919460163 (extracted from TLM
YM280942)
2005.301.14.15.17.484696 Status_PLM_LCL5_V is currently 0.0325310118496 (extracted from TLM
YM292942)
2005.301.14.15.17.485788 Status_PLM_LCL5_I is currently 0.000759899325203 (extracted from TLM
YM296942)
2005.301.14.15.17.486892 Status_PLM_LCL6_V is currently 0.079003892839 (extracted from TLM
YM308942)
2005.301.14.15.17.488004 Status_PLM_LCL6_I is currently 0.00379949645139 (extracted from TLM
YM312942)
2005.301.14.15.17.489113 Status_PLM_LCL7_V is currently 0.034854657948 (extracted from TLM
YM324942)
2005.301.14.15.17.490210 Status_PLM_LCL7_I is currently 0.00506599526852 (extracted from TLM
YM328942)
2005.301.14.15.17.491304 Status_PLM_LCL8_V is currently 0.00929457508028 (extracted from TLM
YM340942)
2005.301.14.15.17.494738 Status_PLM_LCL8_I is currently 0.00405279640108 (extracted from TLM
YM344942)
2005.301.14.15.17.507506 Status_PLM_LCL9_V is currently 0.00697093131021 (extracted from TLM
YM356942)
2005.301.14.15.17.508731 Status_PLM_LCL9_I is currently 0.00253299763426 (extracted from TLM
YM360942)
2005.301.14.15.17.509844 Status_PLM_LCL10_V is currently 0.00929457508028 (extracted from TLM
YM372942)
2005.301.14.15.17.510973 Status_PLM_LCL10_I is currently 0.00278629735112 (extracted from TLM
YM376942)
2005.301.14.15.17.512086 Status_PLM_LCL11_V is currently 0.00929457508028 (extracted from TLM
YM388942)
2005.301.14.15.17.513249 Status_PLM_LCL11_I is currently 0.00354619673453 (extracted from TLM
YM392942)
2005.301.14.15.17.514428 Status_PLM_LCL12_V is currently 0.00697093131021 (extracted from TLM
YM404942)
2005.301.14.15.17.515571 Status_PLM_LCL12_I is currently 0.0116517897695 (extracted from TLM
YM408942)
2005.301.14.15.17.517313 Status_PLM_LCL13_V is currently 0.0185891501606 (extracted from TLM
YM420942)
2005.301.14.15.17.518813 Status_PLM_LCL13_I is currently 0.00151979865041 (extracted from TLM
YM424942)
2005.301.14.15.17.520050 Status_PLM_LCL14_V is currently 0.0952693969011 (extracted from TLM
YM436942)
2005.301.14.15.17.521355 Status_PLM_LCL14_I is currently 0.00430609611794 (extracted from TLM
YM440942)
2005.301.14.15.17.522949
2005.301.14.15.17.523664
********************************************************************************
```

```
2005.301.14.15.17.524725 PACS Power Off Sequence has ended
********************************************************************************
2005.301.14.15.17.525438
```

Appendix 7: Log of INST_POWER_OFF.tcl (used for SPIRE power off)

```
2005.302.13.37.27.453452
*****************************************************************************
2005.302.13.37.27.454392 Start of Instrument POWER OFF sequence.
*****************************************************************************
2005.302.13.37.27.454705
2005.302.13.37.27.454933  To run this script, the CDMU DFE and PLM SCOE should be
2005.302.13.37.27.455170  powered and configured.
2005.302.13.37.27.455404  To initiate, this script will connect and attach to the CDMUDFE
2005.302.13.37.27.455638  and PLM SCOE.
2005.302.13.37.27.455863
2005.302.13.37.27.456084 Connecting to CDMU DFE
2005.302.13.37.29.460906 Attaching to CMDU DFE
2005.302.13.37.30.466465
2005.302.13.37.30.466824 Connecting to PLM SCOE
2005.302.13.37.32.469722 Attaching to PLM SCOE
2005.302.13.37.33.473297 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.302.13.37.33.473671 >>>>>>>>  Reading out CDMUDFE Settings
2005.302.13.37.33.474097 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.302.13.37.33.474539
2005.302.13.37.33.594894 Status_CDMU_OnLine is 1 (extracted from TLM YM777944)
2005.302.13.37.33.604119 Status_CDMU_TMpolling is 1 (extracted from TLM YM780944)
2005.302.13.37.33.607469 Status_CDMU_SAreadActive is 1 (extracted from TLM YM781944)
2005.302.13.37.33.617247 Status_CDMU_SAqueueActive is 1 (extracted from TLM YM782944)
2005.302.13.37.33.619418 Status_CDMU_TMqueueActive is 1 (extracted from TLM YM783944)
2005.302.13.37.33.621573 Status_CDMU_TCqueueActive is 1 (extracted from TLM YM784944)
2005.302.13.37.33.624326 Status_CDMU_PSTfileName is SPIRE_prime_inst... (extracted from TLM
YM809944)
2005.302.13.37.33.640006 Status_CDMU_PSTrunning is 1 (extracted from TLM YM829944)
2005.302.13.37.33.640630
2005.302.13.37.33.641136 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.302.13.37.33.641663 >>>>>>>>  Reading out PLM SCOE Settings
2005.302.13.37.33.642185 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.302.13.37.33.642730
2005.302.13.37.33.738622 Status_PLM_OnLine is 1 (extracted from TLM YM018942)
2005.302.13.37.33.740493 Status_PLM_PSU1_Master is currently 1 (extracted from TLM YM129942)
2005.302.13.37.33.742263 Status_PLM_PSU1_Slave is currently 1 (extracted from TLM YM145942)
2005.302.13.37.33.745424 Status_PLM_PSU2_Master is currently 1 (extracted from TLM YM177942)
2005.302.13.37.33.747785 Status_PLM_PSU2_Slave is currently 1 (extracted from TLM YM193942)
2005.302.13.37.33.754858 Status_PLM_LCL1_V is currently 27.8628120422 (extracted from TLM
YM228942)
2005.302.13.37.33.764349 Status_PLM_LCL1_I is currently 0.433713287115 (extracted from TLM
YM232942)
2005.302.13.37.33.767421 Status_PLM_LCL2_V is currently 0.0604147389531 (extracted from TLM
YM244942)
2005.302.13.37.33.770074 Status_PLM_LCL2_I is currently 0.00607919460163 (extracted from TLM
YM248942)
2005.302.13.37.33.778433 Status_PLM_LCL3_V is currently 0.00929457508028 (extracted from TLM
YM260942)
2005.302.13.37.33.781763 Status_PLM_LCL3_I is currently 0.00709239346907 (extracted from TLM
YM264942)
2005.302.13.37.33.792817 Status_PLM_LCL4_V is currently 0.034854657948 (extracted from TLM
YM276942)
2005.302.13.37.33.795962 Status_PLM_LCL4_I is currently 0.00607919460163 (extracted from TLM
YM280942)
2005.302.13.37.33.799538 Status_PLM_LCL5_V is currently 0.0302073694766 (extracted from TLM
YM292942)
2005.302.13.37.33.802729 Status_PLM_LCL5_I is currently 0.000759899325203 (extracted from TLM
YM296942)
2005.302.13.37.33.806145 Status_PLM_LCL6_V is currently 0.0766802430153 (extracted from TLM
YM308942)
2005.302.13.37.33.809480 Status_PLM_LCL6_I is currently 0.00379949645139 (extracted from TLM
YM312942)
2005.302.13.37.33.813661 Status_PLM_LCL7_V is currently 0.0371783003211 (extracted from TLM
YM324942)
```

```
2005.302.13.37.33.816740 Status_PLM_LCL7_I is currently 0.00506599526852 (extracted from TLM
YM328942)
2005.302.13.37.33.820537 Status_PLM_LCL8_V is currently 0.00929457508028 (extracted from TLM
YM340942)
2005.302.13.37.33.823259 Status_PLM_LCL8_I is currently 0.00405279640108 (extracted from TLM
YM344942)
2005.302.13.37.33.826447 Status_PLM_LCL9_V is currently 0.00697093131021 (extracted from TLM
YM356942)
2005.302.13.37.33.831835 Status_PLM_LCL9_I is currently 0.00253299763426 (extracted from TLM
YM360942)
2005.302.13.37.33.835689 Status_PLM_LCL10_V is currently 0.00929457508028 (extracted from TLM
YM372942)
2005.302.13.37.33.838470 Status_PLM_LCL10_I is currently 0.00278629735112 (extracted from TLM
YM376942)
2005.302.13.37.33.848913 Status_PLM_LCL11_V is currently 0.00929457508028 (extracted from TLM
YM388942)
2005.302.13.37.33.854519 Status_PLM_LCL11_I is currently 0.00354619673453 (extracted from TLM
YM392942)
2005.302.13.37.33.858567 Status_PLM_LCL12_V is currently 0.00697093131021 (extracted from TLM
YM404942)
2005.302.13.37.33.862115 Status_PLM_LCL12_I is currently 0.0116517897695 (extracted from TLM
YM408942)
2005.302.13.37.33.865464 Status_PLM_LCL13_V is currently 0.0185891501606 (extracted from TLM
YM420942)
2005.302.13.37.33.868315 Status_PLM_LCL13_I is currently 0.00151979865041 (extracted from TLM
YM424942)
2005.302.13.37.33.871633 Status_PLM_LCL14_V is currently 0.0952693969011 (extracted from TLM
YM436942)
2005.302.13.37.33.875143 Status_PLM_LCL14_I is currently 0.00430609611794 (extracted from TLM
YM440942)
2005.302.13.37.33.875854
2005.302.13.37.33.876474
*********************************************************************************
2005.302.13.37.33.877474 Power On Instruments
*********************************************************************************
2005.302.13.37.33.878207
2005.302.13.37.33.878837
2005.302.13.37.33.879454
2005.302.13.37.33.880082 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.302.13.37.33.880709 >>>>>>>>  Start Up Instruments
2005.302.13.37.33.881333 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.302.13.37.33.882010
2005.302.13.37.33.938710  Which instrument needs to be Powered down? PACS, SPIRE, HIFI, CCU?
2005.302.13.37.45.428185  You have selected to power down SPIRE.
2005.302.13.37.45.428776
2005.302.13.37.45.429426  The current power down order is:
2005.302.13.37.45.430051  --------------------------------
2005.302.13.37.45.431691  1. LCL 1    SPIRE HSDPU     Voltage: 27.8604888916 V     Current:
0.434834480286 A
2005.302.13.37.45.433795  2. LCL 0    N/A     Voltage: N/A V     Current: N/A A
2005.302.13.37.45.434493
2005.302.13.37.45.470889  Do you want to change this order? : Choose Yes or No
2005.302.13.37.47.682701  User has chosen NO
2005.302.13.37.49.686917
2005.302.13.37.49.687302  >>> Disable LCL's
2005.302.13.37.49.687943
2005.302.13.37.49.725223  Do you want to disable LCL 1? : Choose Yes or No
2005.302.13.37.54.856618  User has chosen YES
2005.302.13.37.56.860474
2005.302.13.37.56.942976  Sending Telecommand YC041942 to Disable Limiter
2005.302.13.37.56.943347  Synchronizing on SEV...
2005.302.13.37.56.967742  Synchronised on SEV for TC(s): YC041942
2005.302.13.37.56.968092
2005.302.13.37.56.968698  >>> Checking
2005.302.13.38.02.974603  LCL 1 has currently a voltage of 0.00697093131021.(from YM228942)
2005.302.13.38.02.975036  LCL 1 has currently a current of 0.00101930263918.(from YM232942)
2005.302.13.38.02.975684
2005.302.13.38.03.009777 ******************* USER INFORMATION *******************
2005.302.13.38.03.010627 User Info>: Check Successful! LCL 1 has been disabled.
2005.302.13.38.03.011331 *********************************************************
2005.302.13.38.19.434323
```

```
2005.302.13.38.19.475166 ******************* USER INFORMATION *******************
2005.302.13.38.19.475900 User Info>: No LCL is selected to be switched on as second
2005.302.13.38.19.476564 *********************************************************
2005.302.13.38.20.927995
2005.302.13.38.20.969144  Do you want to disable PSU(s)? : Choose Yes or No
2005.302.13.38.32.035178  User has chosen NO
2005.302.13.38.34.039949
2005.302.13.38.34.041493  PSU 1 Master status is currently 1 (from YM129942)
2005.302.13.38.34.042232  PSU 1 Slave status is currently 1 (from YM145942)
2005.302.13.38.34.043932  PSU 2 Master status is currently 1 (from YM177942)
2005.302.13.38.34.044581  PSU 2 Slave status is currently 1 (from YM193942)
2005.302.13.38.34.045231
2005.302.13.38.34.045806  Power down of SPIRE is done.
2005.302.13.38.34.046368
2005.302.13.38.34.092312  Do you want to power down another instrument? : Choose Yes or No
2005.302.13.38.35.402476  User has chosen NO
2005.302.13.38.37.406040
2005.302.13.38.37.406710 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.302.13.38.37.407310 >>>>>>>>  Reading out PLM SCOE Settings
2005.302.13.38.37.407885 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.302.13.38.37.408448
2005.302.13.38.37.409630 Status_PLM_OnLine is 1 (extracted from TLM YM018942)
2005.302.13.38.37.410669 Status_PLM_PSU1_Master is currently 1 (extracted from TLM YM129942)
2005.302.13.38.37.411728 Status_PLM_PSU1_Slave is currently 1 (extracted from TLM YM145942)
2005.302.13.38.37.412765 Status_PLM_PSU2_Master is currently 1 (extracted from TLM YM177942)
2005.302.13.38.37.413824 Status_PLM_PSU2_Slave is currently 1 (extracted from TLM YM193942)
2005.302.13.38.37.414900 Status_PLM_LCL1_V is currently 0.00697093131021 (extracted from TLM
YM228942)
2005.302.13.38.37.415990 Status_PLM_LCL1_I is currently 0.000917372351978 (extracted from TLM
YM232942)
2005.302.13.38.37.417055 Status_PLM_LCL2_V is currently 0.0604147389531 (extracted from TLM
YM244942)
2005.302.13.38.37.418236 Status_PLM_LCL2_I is currently 0.00557259470224 (extracted from TLM
YM248942)
2005.302.13.38.37.419560 Status_PLM_LCL3_V is currently 0.00929457508028 (extracted from TLM
YM260942)
2005.302.13.38.37.420725 Status_PLM_LCL3_I is currently 0.00709239346907 (extracted from TLM
YM264942)
2005.302.13.38.37.421814 Status_PLM_LCL4_V is currently 0.034854657948 (extracted from TLM
YM276942)
2005.302.13.38.37.422893 Status_PLM_LCL4_I is currently 0.00607919460163 (extracted from TLM
YM280942)
2005.302.13.38.37.424208 Status_PLM_LCL5_V is currently 0.0325310118496 (extracted from TLM
YM292942)
2005.302.13.38.37.425579 Status_PLM_LCL5_I is currently 0.000759899325203 (extracted from TLM
YM296942)
2005.302.13.38.37.426886 Status_PLM_LCL6_V is currently 0.0766802430153 (extracted from TLM
YM308942)
2005.302.13.38.37.428148 Status_PLM_LCL6_I is currently 0.00379949645139 (extracted from TLM
YM312942)
2005.302.13.38.37.429466 Status_PLM_LCL7_V is currently 0.034854657948 (extracted from TLM
YM324942)
2005.302.13.38.37.430699 Status_PLM_LCL7_I is currently 0.00506599526852 (extracted from TLM
YM328942)
2005.302.13.38.37.431912 Status_PLM_LCL8_V is currently 0.00929457508028 (extracted from TLM
YM340942)
2005.302.13.38.37.433055 Status_PLM_LCL8_I is currently 0.00405279640108 (extracted from TLM
YM344942)
2005.302.13.38.37.434147 Status_PLM_LCL9_V is currently 0.00697093131021 (extracted from TLM
YM356942)
2005.302.13.38.37.435238 Status_PLM_LCL9_I is currently 0.00253299763426 (extracted from TLM
YM360942)
2005.302.13.38.37.436335 Status_PLM_LCL10_V is currently 0.00929457508028 (extracted from TLM
YM372942)
2005.302.13.38.37.437651 Status_PLM_LCL10_I is currently 0.00278629735112 (extracted from TLM
YM376942)
2005.302.13.38.37.438795 Status_PLM_LCL11_V is currently 0.00929457508028 (extracted from TLM
YM388942)
2005.302.13.38.37.439905 Status_PLM_LCL11_I is currently 0.00354619673453 (extracted from TLM
YM392942)
```

```
2005.302.13.38.37.441075 Status_PLM_LCL12_V is currently 0.00697093131021 (extracted from TLM
YM404942)
2005.302.13.38.37.442186 Status_PLM_LCL12_I is currently 0.0116517897695 (extracted from TLM
YM408942)
2005.302.13.38.37.443297 Status_PLM_LCL13_V is currently 0.0185891501606 (extracted from TLM
YM420942)
2005.302.13.38.37.444409 Status_PLM_LCL13_I is currently 0.00151979865041 (extracted from TLM
YM424942)
2005.302.13.38.37.445556 Status_PLM_LCL14_V is currently 0.092945754528 (extracted from TLM
YM436942)
2005.302.13.38.37.446671 Status_PLM_LCL14_I is currently 0.00430609611794 (extracted from TLM
YM440942)
2005.302.13.38.37.447351 <<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<
2005.302.13.38.37.447982 <<<<<<<  Power Sequence Ended!
2005.302.13.38.37.448672 <<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<
```

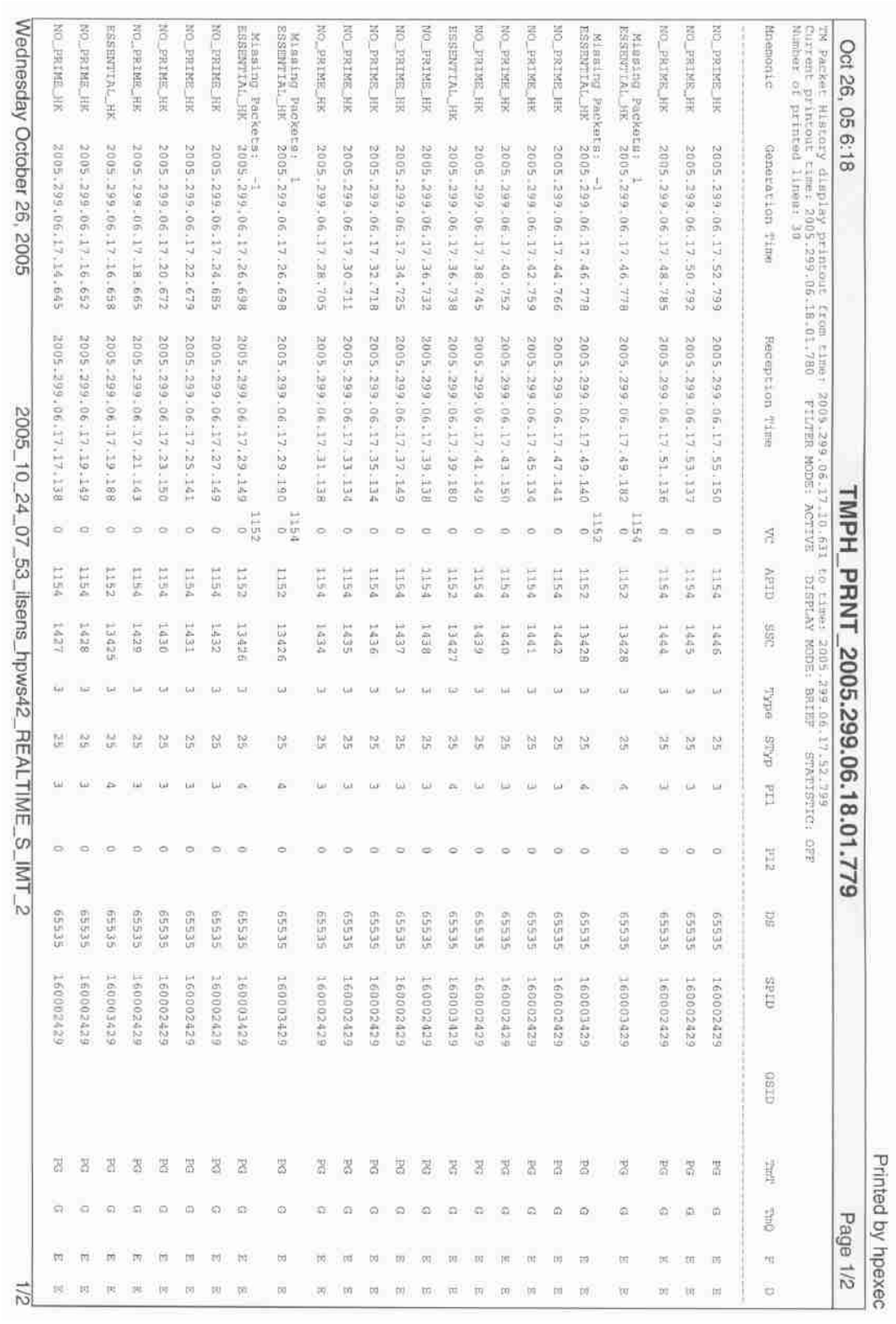
Appendix 8: Log of EGSE_OFFLINE_AUTO.tcl

```
*******************************************************************************
2005.302.13.38.59.214222 EGSE OFFLINE Sequence
*******************************************************************************
2005.302.13.38.59.214682
*******************************************************************************
2005.302.13.38.59.215278 Connect and attach to CDMU DFE and PLM SCOE
*******************************************************************************
2005.302.13.38.59.215590
2005.302.13.38.59.215813
2005.302.13.38.59.216035 Connecting to CDMU DFE
2005.302.13.39.01.220608 Attaching to CMDU DFE
2005.302.13.39.02.226086
2005.302.13.39.02.226446 Connecting to PLM SCOE
2005.302.13.39.04.229375 Attaching to PLM SCOE
2005.302.13.39.05.232932
2005.302.13.39.05.233298
2005.302.13.39.05.233698 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.302.13.39.05.234107 >>>>>>>>  Reading out CDMUDFE Settings
2005.302.13.39.05.234519 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.302.13.39.05.234940
2005.302.13.39.05.340924 Status_CDMU_OnLine is 1 (extracted from TLM YM777944)
2005.302.13.39.05.343017 Status_CDMU_TMpolling is 1 (extracted from TLM YM780944)
2005.302.13.39.05.345065 Status_CDMU_SAreadActive is 1 (extracted from TLM YM781944)
2005.302.13.39.05.347141 Status_CDMU_SAqueueActive is 1 (extracted from TLM YM782944)
2005.302.13.39.05.349821 Status_CDMU_TMqueueActive is 1 (extracted from TLM YM783944)
2005.302.13.39.05.351939 Status_CDMU_TCqueueActive is 1 (extracted from TLM YM784944)
2005.302.13.39.05.353921 Status_CDMU_PSTfileName is SPIRE_prime_inst... (extracted from TLM
YM809944)
2005.302.13.39.05.356039 Status_CDMU_PSTrunning is 1 (extracted from TLM YM829944)
2005.302.13.39.05.356663
2005.302.13.39.05.357174 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.302.13.39.05.357697 >>>>>>>>  Reading out PLM SCOE Settings
2005.302.13.39.05.358260 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.302.13.39.05.358802
2005.302.13.39.05.493381 Status_PLM_OnLine is 1 (extracted from TLM YM018942)
2005.302.13.39.05.495573 Status_PLM_PSU1_Master is currently 1 (extracted from TLM YM129942)
2005.302.13.39.05.497756 Status_PLM_PSU1_Slave is currently 1 (extracted from TLM YM145942)
2005.302.13.39.05.507194 Status_PLM_PSU2_Master is currently 1 (extracted from TLM YM177942)
2005.302.13.39.05.509457 Status_PLM_PSU2_Slave is currently 1 (extracted from TLM YM193942)
2005.302.13.39.05.512920 Status_PLM_LCL1_V is currently 0.00697093131021 (extracted from TLM
YM228942)
2005.302.13.39.05.515996 Status_PLM_LCL1_I is currently 0.000917372351978 (extracted from TLM
YM232942)
2005.302.13.39.05.519472 Status_PLM_LCL2_V is currently 0.0627383813262 (extracted from TLM
YM244942)
2005.302.13.39.05.522691 Status_PLM_LCL2_I is currently 0.00607919460163 (extracted from TLM
YM248942)
2005.302.13.39.05.526274 Status_PLM_LCL3_V is currently 0.00929457508028 (extracted from TLM
YM260942)
2005.302.13.39.05.529367 Status_PLM_LCL3_I is currently 0.00709239346907 (extracted from TLM
YM264942)
2005.302.13.39.05.532886 Status_PLM_LCL4_V is currently 0.034854657948 (extracted from TLM
YM276942)
2005.302.13.39.05.535990 Status_PLM_LCL4_I is currently 0.00607919460163 (extracted from TLM
YM280942)
2005.302.13.39.05.539556 Status_PLM_LCL5_V is currently 0.0325310118496 (extracted from TLM
YM292942)
2005.302.13.39.05.543233 Status_PLM_LCL5_I is currently 0.000759899325203 (extracted from TLM
YM296942)
2005.302.13.39.05.546804 Status_PLM_LCL6_V is currently 0.0766802430153 (extracted from TLM
YM308942)
2005.302.13.39.05.549937 Status_PLM_LCL6_I is currently 0.00379949645139 (extracted from TLM
YM312942)
2005.302.13.39.05.553516 Status_PLM_LCL7_V is currently 0.034854657948 (extracted from TLM
YM324942)
2005.302.13.39.05.556636 Status_PLM_LCL7_I is currently 0.00506599526852 (extracted from TLM
YM328942)
```

```
2005.302.13.39.05.560860 Status_PLM_LCL8_V is currently 0.00929457508028 (extracted from TLM
YM340942)
2005.302.13.39.05.564460 Status_PLM_LCL8_I is currently 0.00405279640108 (extracted from TLM
YM344942)
2005.302.13.39.05.568251 Status_PLM_LCL9_V is currently 0.00697093131021 (extracted from TLM
YM356942)
2005.302.13.39.05.571411 Status_PLM_LCL9_I is currently 0.00253299763426 (extracted from TLM
YM360942)
2005.302.13.39.05.576001 Status_PLM_LCL10_V is currently 0.00929457508028 (extracted from TLM
YM372942)
2005.302.13.39.05.579235 Status_PLM_LCL10_I is currently 0.00278629735112 (extracted from TLM
YM376942)
2005.302.13.39.05.584003 Status_PLM_LCL11_V is currently 0.00697093131021 (extracted from TLM
YM388942)
2005.302.13.39.05.587225 Status_PLM_LCL11_I is currently 0.00354619673453 (extracted from TLM
YM392942)
2005.302.13.39.05.591284 Status_PLM_LCL12_V is currently 0.00697093131021 (extracted from TLM
YM404942)
2005.302.13.39.05.594643 Status_PLM_LCL12_I is currently 0.0116517897695 (extracted from TLM
YM408942)
2005.302.13.39.05.598740 Status_PLM_LCL13_V is currently 0.0185891501606 (extracted from TLM
YM420942)
2005.302.13.39.05.602065 Status_PLM_LCL13_I is currently 0.00151979865041 (extracted from TLM
YM424942)
2005.302.13.39.05.606090 Status_PLM_LCL14_V is currently 0.092945754528 (extracted from TLM
YM436942)
2005.302.13.39.05.609388 Status_PLM_LCL14_I is currently 0.00430609611794 (extracted from TLM
YM440942)
*********************************************************************************
2005.302.13.39.05.610545 Switch Off PLM SCOE
*********************************************************************************
2005.302.13.39.05.611312
2005.302.13.39.05.613886 Checking current PLM SCOE status
2005.302.13.39.07.617003
2005.302.13.39.07.617513
2005.302.13.39.07.660634  >>> One (or both) PSU's is still powered. Are you sure to power down
the PLM SCOE? : Choose Yes or No
2005.302.13.39.38.138021  User has chosen YES
2005.302.13.39.40.139759
2005.302.13.39.40.140152
2005.302.13.39.40.140788 Switching PLM SCOE to OFFLINE mode.
*********************************************************************************
2005.302.13.39.43.223156 Switch Off PLM SCOE
*********************************************************************************
2005.302.13.39.44.226311
2005.302.13.39.44.226681 Switching CDMU DFE to OFFLINE mode.
2005.302.13.39.47.326818
2005.302.13.39.47.327190 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.302.13.39.47.327836 >>>>>>>>  Reading out CDMUDFE Settings
2005.302.13.39.47.328462 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.302.13.39.47.329078
2005.302.13.39.47.330296 Status_CDMU_OnLine is 0 (extracted from TLM YM777944)
2005.302.13.39.47.331394 Status_CDMU_TMpolling is 0 (extracted from TLM YM780944)
2005.302.13.39.47.332513 Status_CDMU_SAreadActive is 0 (extracted from TLM YM781944)
2005.302.13.39.47.333611 Status_CDMU_SAqueueActive is 0 (extracted from TLM YM782944)
2005.302.13.39.47.334685 Status_CDMU_TMqueueActive is 0 (extracted from TLM YM783944)
2005.302.13.39.47.335751 Status_CDMU_TCqueueActive is 0 (extracted from TLM YM784944)
2005.302.13.39.47.336894 Status_CDMU_PSTfileName is Empty.PST (extracted from TLM YM809944)
2005.302.13.39.47.337961 Status_CDMU_PSTrunning is 0 (extracted from TLM YM829944)
2005.302.13.39.47.338687
2005.302.13.39.47.339294 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.302.13.39.47.339892 >>>>>>>>  Reading out PLM SCOE Settings
2005.302.13.39.47.340522 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.302.13.39.47.341120
2005.302.13.39.47.342131 Status_PLM_OnLine is 0 (extracted from TLM YM018942)
2005.302.13.39.47.343202 Status_PLM_PSU1_Master is currently 0 (extracted from TLM YM129942)
2005.302.13.39.47.344274 Status_PLM_PSU1_Slave is currently 0 (extracted from TLM YM145942)
2005.302.13.39.47.345347 Status_PLM_PSU2_Master is currently 0 (extracted from TLM YM177942)
2005.302.13.39.47.346505 Status_PLM_PSU2_Slave is currently 0 (extracted from TLM YM193942)
2005.302.13.39.47.347643 Status_PLM_LCL1_V is currently 0.00697093131021 (extracted from TLM
YM228942)
```

```
2005.302.13.39.47.348794 Status_PLM_LCL1_I is currently 0.000101930265373 (extracted from TLM
YM232942)
2005.302.13.39.47.349916 Status_PLM_LCL2_V is currently 0.0627383813262 (extracted from TLM
YM244942)
2005.302.13.39.47.351170 Status_PLM_LCL2_I is currently 0.000506599550135 (extracted from TLM
YM248942)
2005.302.13.39.47.352307 Status_PLM_LCL3_V is currently 0.00929457508028 (extracted from TLM
YM260942)
2005.302.13.39.47.353421 Status_PLM_LCL3_I is currently 0.000506599550135 (extracted from TLM
YM264942)
2005.302.13.39.47.354535 Status_PLM_LCL4_V is currently 0.034854657948 (extracted from TLM
YM276942)
2005.302.13.39.47.355637 Status_PLM_LCL4_I is currently 0.000506599550135 (extracted from TLM
YM280942)
2005.302.13.39.47.356771 Status_PLM_LCL5_V is currently 0.0302073694766 (extracted from TLM
YM292942)
2005.302.13.39.47.357911 Status_PLM_LCL5_I is currently 0.000253299775068 (extracted from TLM
YM296942)
2005.302.13.39.47.359029 Status_PLM_LCL6_V is currently 0.0766802430153 (extracted from TLM
YM308942)
2005.302.13.39.47.360191 Status_PLM_LCL6_I is currently 0.000253299775068 (extracted from TLM
YM312942)
2005.302.13.39.47.361309 Status_PLM_LCL7_V is currently 0.0371783003211 (extracted from TLM
YM324942)
2005.302.13.39.47.362433 Status_PLM_LCL7_I is currently 0.000506599550135 (extracted from TLM
YM328942)
2005.302.13.39.47.363560 Status_PLM_LCL8_V is currently 0.00929457508028 (extracted from TLM
YM340942)
2005.302.13.39.47.364685 Status_PLM_LCL8_I is currently 0.000506599550135 (extracted from TLM
YM344942)
2005.302.13.39.47.365830 Status_PLM_LCL9_V is currently 0.00697093131021 (extracted from TLM
YM356942)
2005.302.13.39.47.366999 Status_PLM_LCL9_I is currently 0.00101319910027 (extracted from TLM
YM360942)
2005.302.13.39.47.368161 Status_PLM_LCL10_V is currently 0.00929457508028 (extracted from TLM
YM372942)
2005.302.13.39.47.369268 Status_PLM_LCL10_I is currently 0.000253299775068 (extracted from TLM
YM376942)
2005.302.13.39.47.370422 Status_PLM_LCL11_V is currently 0.00697093131021 (extracted from TLM
YM388942)
2005.302.13.39.47.371604 Status_PLM_LCL11_I is currently 0.000506599550135 (extracted from TLM
YM392942)
2005.302.13.39.47.372747 Status_PLM_LCL12_V is currently 0.00697093131021 (extracted from TLM
YM404942)
2005.302.13.39.47.373883 Status_PLM_LCL12_I is currently 0.00101319910027 (extracted from TLM
YM408942)
2005.302.13.39.47.375049 Status_PLM_LCL13_V is currently 0.0185891501606 (extracted from TLM
YM420942)
2005.302.13.39.47.376228 Status_PLM_LCL13_I is currently 0.000506599550135 (extracted from TLM
YM424942)
2005.302.13.39.47.377375 Status_PLM_LCL14_V is currently 0.092945754528 (extracted from TLM
YM436942)
2005.302.13.39.47.378520 Status_PLM_LCL14_I is currently 0.000253299775068 (extracted from TLM
YM440942)
*********************************************************************************
2005.302.13.39.47.379619 Disconnect and detach from CDMU DFE and PLM SCOE
*********************************************************************************
2005.302.13.39.47.380369
2005.302.13.39.47.381014
2005.302.13.39.47.381656 Disconnecting from CDMU DFE
2005.302.13.39.49.384790 Detaching from CMDU DFE
2005.302.13.39.50.388306
2005.302.13.39.50.388674 Disconnecting from PLM SCOE
2005.302.13.39.52.391601 Detaching from PLM SCOE
2005.302.13.39.53.395160
```

Appendix 9: HP-113000-ASED-NC-1622 - PACS HK packets anomaly



Oct 26, 05 6:18 TMPH_PRNT_2005.299.06.18.01.779 Page 1/2

TM Packet History display printout from time: 2009.299.06.17.10.631 to time: 2005.299.06.17.52.799
Current printout time: 2005.299.06.18.01.780 FILTER MODE: ACTIVE DISPLAY MODE: BRIEF STATISTIC: OFF
Number of printed lines: 30

Mnemonic	Generation Time	Reception Time	VC	APID	SSC	Type	STyp	PI1	PI2	DS	SPID	OSID	Tmf	Tmb	F	D
NO_PRIME_HK	2005.299.06.17.52.799	2005.299.06.17.55.150	0	1154	1446	3	25	3	0	65535	160002429		EG	G	E	E
NO_PRIME_HK	2005.299.06.17.50.792	2005.299.06.17.53.137	0	1154	1445	3	25	3	0	65535	160002429		EG	G	E	E
NO_PRIME_HK	2005.299.06.17.48.785	2005.299.06.17.51.136	0	1154	1444	3	25	3	0	65535	160002429		EG	G	E	E
Missing Packets: 1			1154													
ESSENTIAL_HK	2005.299.06.17.46.778	2005.299.06.17.49.182	0	1152	13428	3	25	4	0	65535	160003429		EG	G	E	E
Missing Packets: -1			1152													
ESSENTIAL_HK	2005.299.06.17.46.778	2005.299.06.17.49.140	0	1152	13428	3	25	4	0	65535	160003429		EG	G	E	E
NO_PRIME_HK	2005.299.06.17.44.766	2005.299.06.17.47.141	0	1154	1442	3	25	3	0	65535	160002429		EG	G	E	E
NO_PRIME_HK	2005.299.06.17.42.759	2005.299.06.17.45.134	0	1154	1441	3	25	3	0	65535	160002429		EG	G	E	E
NO_PRIME_HK	2005.299.06.17.40.752	2005.299.06.17.43.150	0	1154	1440	3	25	3	0	65535	160002429		EG	G	E	E
NO_PRIME_HK	2005.299.06.17.38.745	2005.299.06.17.41.149	0	1154	1439	3	25	3	0	65535	160002429		EG	G	E	E
ESSENTIAL_HK	2005.299.06.17.36.738	2005.299.06.17.39.180	0	1152	13427	3	25	4	0	65535	160003429		EG	G	E	E
NO_PRIME_HK	2005.299.06.17.36.732	2005.299.06.17.39.138	0	1154	1438	3	25	3	0	65535	160002429		EG	G	E	E
NO_PRIME_HK	2005.299.06.17.34.725	2005.299.06.17.37.149	0	1154	1437	3	25	3	0	65535	160002429		EG	G	E	E
NO_PRIME_HK	2005.299.06.17.32.718	2005.299.06.17.35.134	0	1154	1436	3	25	3	0	65535	160002429		EG	G	E	E
NO_PRIME_HK	2005.299.06.17.30.711	2005.299.06.17.33.134	0	1154	1435	3	25	3	0	65535	160002429		EG	G	E	E
NO_PRIME_HK	2005.299.06.17.28.705	2005.299.06.17.31.138	0	1154	1434	3	25	3	0	65535	160002429		EG	G	E	E
Missing Packets: 1			1154													
ESSENTIAL_HK	2005.299.06.17.26.698	2005.299.06.17.29.190	0	1152	13426	3	25	4	0	65535	160003429		EG	G	E	E
Missing Packets: -1			1152													
ESSENTIAL_HK	2005.299.06.17.26.698	2005.299.06.17.29.149	0	1152	13426	3	25	4	0	65535	160003429		EG	G	E	E
NO_PRIME_HK	2005.299.06.17.24.685	2005.299.06.17.27.149	0	1154	1432	3	25	3	0	65535	160002429		EG	G	E	E
NO_PRIME_HK	2005.299.06.17.22.679	2005.299.06.17.25.141	0	1154	1431	3	25	3	0	65535	160002429		EG	G	E	E
NO_PRIME_HK	2005.299.06.17.20.672	2005.299.06.17.23.150	0	1154	1430	3	25	3	0	65535	160002429		EG	G	E	E
NO_PRIME_HK	2005.299.06.17.18.665	2005.299.06.17.21.143	0	1154	1429	3	25	3	0	65535	160002429		EG	G	E	E
ESSENTIAL_HK	2005.299.06.17.16.658	2005.299.06.17.19.188	0	1152	13425	3	25	4	0	65535	160003429		EG	G	E	E
NO_PRIME_HK	2005.299.06.17.16.652	2005.299.06.17.19.149	0	1154	1428	3	25	3	0	65535	160002429		EG	G	E	E
NO_PRIME_HK	2005.299.06.17.14.645	2005.299.06.17.17.138	0	1154	1427	3	25	3	0	65535	160002429		EG	G	E	E

Wednesday October 26, 2005 2005_10_24_07_53_ilsens_hpws42_REALTIME_S_IMT_2 1/2

Printed by hpexec

12 Distribution List

	Name	Dep./Comp.		Name	Dep./Comp.
	Alberti von Mathias Dr.	AOE22		Sonn Nico	AOE51
	Barlage Bernhard	AED11		Steininger Eric	AED44
	Bayer Thomas	AOA52	X	Stritter Rene	AED11
	Brune Holger	AOA55		Thörmer Klaus-Horst Dr.	OTN/AED65
	Fehringer Alexander	AOE13		Wagner Klaus	AOE22
X	Fricke Wolfgang Dr.	AED 65	X	Wietbrock Walter	AET12
	Geiger Hermann	AOA52		Wöhler Hans	AOE22
	Gerner Willi	AED11		Wössner Ulrich	ASE442
X	Grasl Andreas	OTN/AOA54			
	Grasshoff Brigitte	AET12			
	Hauser Armin	AOE22			
X	Hendry David	Terma Resid.			
	Hengstler Reinhold	AOA 5			
	Hinger Jürgen	AOE22	X	Alcatel	ASP
	Hofmann Rolf	ASE442	X	ESA/ESTEC	ESA
X	Hohn Rüdiger	AED65		**Instruments:**	
	Huber Johann	AOA52	X	MPE (PACS)	MPE
	Hund Walter	ASE442	X	RAL (SPIRE)	RAL
X	Idler Siegmund	AED432	X	SRON (HIFI)	SRON
X	Ilsen Stijn	Terma Resid.		**Subcontractors:**	
	Ivády von András	FAE22		Air Liquide, Space Department	AIR
	Jahn Gerd Dr.	AOE22		Air Liquide, Space Department	AIRS
	Kalde Clemens	APE3		Air Liquide, Orbital System	AIRT
	Kameter Rudolf	OTN/AOA54		Alcatel Bell Space	ABSP
	Kettner Bernhard	AET42		Astrium Sub-Subsyst. & Equipment	ASSE
X	Knoblauch August	AET32		Austrian Aerospace	AAE
X	Koelle Markus	AOA53		Austrian Aerospace	AAEM
X	Kroeker Jürgen	AED65		APCO Technologies S. A.	APCO
	Kunz Oliver Dr.	AOE22		Bieri Engineering B. V.	BIER
X	Lamprecht Ernst	OTN/ASI21		BOC Edwards	BOCE
	Lang Jürgen	ASE442		Dutch Space Solar Arrays	DSSA
	Langenstein Rolf	AED15		EADS CASA Espacio	CASA
	Langfermann Michael	AOA51		EADS CASA Espacio	ECAS
X	Mack Paul	OTN/AOA54		EADS Space Transportation	ASIP
	Müller Jörg	AOA52		Eurocopter	ECD
	Müller Ralf	FAE22		European Test Services	ETS
	Peltz Heinz-Willi	AOE13		HTS AG Zürich	HTSZ
	Pietroboni Karin	AED65		Linde	LIND
	Platzer Wilhelm	AED22		Patria New Technologies Oy	PANT
	Reichle Konrad	AOA52		Phoenix, Volkmarsen	PHOE
	Reuß Friedhelm	AED62		Prototech AS	PROT
X	Rühe Wolfgang	AED65		QMC Instruments Ltd.	QMC
	Runge Axel	OTN/AOA54		Rembe, Brilon	REMB
	Sachsse Bernt	AED21		Rosemount Aerospace GmbH	ROSE
	Schink Dietmar	AED44		RYMSA, Radiación y Microondas	RYM

	Name	Dep./Comp.		Name	Dep./Comp.
X	Schlosser Christian	OTN/AOA54		SENER Ingenieria SA	SEN
	Schmidt Rudolf	FAE22		Stöhr, Königsbrunn	STOE
	Schweickert Gunn	AOE22		Terma A/S, Herlev	TER

END OF DOCUMENT