SPIRE-AST-REP-002628

Title: **PACS IMT**

CI-No: 153300

			Date:	
Prepared by:	S. Ilsen / M. Koelle		Date:	04/10/2005
Checked by:	C. Schlosser			27/10/05
Product Assurance:	for R. Stritter			7. 11. 05
Configuration Control:	W. Wietbrock			02.11.05
Project Management:	Dr. W. Fricke			07/11/05

Distribution: See Distribution List (last page)

Issue	Date	Sheet	Description of Change	Release
1	04/10/ 2005		First Issue	

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1   Scope

1.1   Objective

This test report describes the results of the IMT until the failure of the PACS DPU performed for the Herschel PACS Instrument.

The test was performed at ASED in Ottobrunn from 19/09/2005 to 21/09/2005.

1.2   Summary

Detailed results are given in the as-run-procedure in Chapter 7

The following NCR's have been raised:

- HP-111000-ASED-NC-1282 - Wrong MIB definition of command PC162420 (see Appendix 11)

- HP-111000-ASED-NC-1491 – PACS DPU power anomaly (see Appendix 12)

- HP-111000-ASED-NC-1493 - CRC in HK not compliant with CRC in procedure Memory Management Test (see Appendix 13)

- HP-111000-ASED-NC-1494 - DEC_MEC got blocked and DEC_MEC - DPU comm link dead (see Appendix 14)

- HP-111000-ASED-NC-1495 - Cooler Recycle Failed (see Appendix 15)

- HP-111000-ASED-NC-1496 – IMT TestID 516 should be run in Burst mode (SPEC_dark_current...tcl) (see Appendix 16)

- HP-111000-ASED-NC-1497 - DPU packets get corrupted (bad packets) (see Appendix 17)

The following NCR's have been altered:

- N/A

An overview can be found in chapter 15.2

Conclusion:

During the IMT numerous problem were recognised. NCR have been raised to trace these problems. The test is stopped on the third day of IMT because of the PACS DPU failure. After a DPU exchange on day 4, the tests are restarted. Continuous problems with the new DPU however caused another stop.

During the IMT HIFI and SPIRE were in STANDBY mode and monitored regularly by the test operator. No problems were detected.

Extra Comments:

- During the PACS IMT it is noticed that a lot of SPIRE HK are arriving in an incorrect order (SSC errors). Since the PACS bus profile should allow enough space for at least 2 SPIRE TM packets a second, this is not nominal. An NCR is already raised (1375) to investigate if this problem is caused by problems in the bus profile or on the CDMU DFE or somewhere else.

- During the PACS IMT multiple out of limits were reported on PACS parameters. This is a known ASED NCR 1276. Also SSC errors are reported on the CCS (known ASED NCR 1247). In the beginning these problems are reported in the test report. After discussion with PA, it is decided that the errors are too frequent to include them each time.

- During the first part of the IMT (before DPU crash), 3 TCL scripts are updated by PACS to fix known problems detected during the IMT. It concerns the following scripts:

  o emissivity_SPEC_spu_setup.tcl

  o rsrf_SPEC_spu_setup.tcl

  o wavecal_SPEC_spu_setup.tcl

- During the second part of IMT (after DPU crash), 5 TCL scripts were updated on the CCS. It concerns the following scripts:

  o BOLO_cooler_OBS_shell.tcl

  o emissivity_SPEC_spu_setup.tcl

  o rsrf_SPEC_spu_setup.tcl

  o SPEC_dark_current_spt_eqmimt_obs_shell.tcl

  o wavecal_SPEC_spu_setup.tcl

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

PACS-ME-TP-021, Issue 1.1 from 06.09.2005

2.2   Reference Documents

N/A

2.3   OtherDocuments

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	H Feuchtgruber, T. Mueller, E. Wiezorrek
PA Responsible	D. Hendry / E. Lamprecht
ESA/Alcatel Representative	W. Pinter-Krainer, A. Heske / 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*

Item	Model	Remark
DPU	AVM	During the test, this module is exchanged with the CFM
SPU	AVM	
DEC/MEC	EM	

4.4.3   *Software*

Prime 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

Standby Instrument: SPIRE

SW Ident	Issue /Version	Responsible	Comment
Inst DPU OBS	2.0.A1	Inst	

Inst DRCU OBS	Boot SW June 2003	Inst	

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	2.0.614	Terma	

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):

- PACS_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_09_19_12_06_ilsens_hpws42_REALTIME_P_IMT_1	**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 log in Appendix 3)	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: HIFI_prime_inst.pst** **This is done because the OBSW upload with HIFI as standby would be too slow.**	**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

Philosophy:

Before power on of any instrument, the PACS prime bus profile is loaded on the CDMU DFE. This means that HIFI and SPIRE are considered to be in standby mode from the beginning.

After the CDMU DFE configuration, the instruments are powered on in the following order:

- HIFI (to STANDBY mode)
- PACS (to PRIME mode)
- SPIRE (to STANDBY mode)

Monitoring:

All data coming from the instruments will be stored on the CCS. No active monitoring will be done on the instruments in standby mode. Of course limits will be monitored and checked and if necessary the instrumenters will be contacted and corrective actions taken.

For SPIRE a check list ("Common Herschel Instrument Checkout Procedure for IMT") is available to monitor regularly the status of the instrument. It is confirmed by SPIRE that these checks shall not be done during night and only sporadically during the day.

6.1 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**

Remark: The actual switching of the LCL's (PLM SCOE switches) is done with the INSTR_POWER_ON.tcl script. The log file of this script can be found in Appendix 4

Remark: To speed up the booting of the ICU, it is decided by HIFI that chapter 2.4.5 should be executed instead of 2.4.1 (nominal power on procedure). Chapter 2.4.5 powers on the ICU, uploads new OBSW and boots from this new OBSW.

Step #	Action	Comments	Check
1	Apply power to ICU	Select ICU_housekeeping AND	**OK**
		Check voltage in the range 26V – 29V Actual value = **27.9 V**	**OK**
		Check ICU current draw is 480 - 560 mA Actual value = **0.52 A**	**OK**
		Check for receipt of (5,2) event packet after power-on	**OK**
2	Upload new OBSW	The stack file (OBS2_22.hpws42) containing the OBSW is adapted since a new version of the MIB is used on the CCS. The version is 07092005. This is entered in the first line of the stack file.	**OK**
		Load stack file "OBS2_22.hpws42"	**OK**
		Arm All -> Send	**OK**
		Send Command HIFI_load_boot No reply (as expected by HIFI)	**OK**
		Bus is cycled and no HK is coming in.	**OK**
		RESET button is pressed and HK is coming in	**OK**
		Continue 2.4.1 after POWER ICU	**OK**
		Check for receipt of HK packets every 3 sec	**OK**
		Check OBS version **Result: 2.16hex = 2.22dec**	**OK**
		Compare HK (secondary supply voltages) with previous results **This could not be done since HIFI is not present. No out-of-limits have been crossed, so it is assumed that all values are OK.**	**OK**
2	Manual Stack command: HIFI_Housekeeping_on HIF_HK_rate=1_pkt_per_sec	Select ICU_housekeeping and HRH_analog AND's	**OK**
		Check for HK updates every 1 sec **(1,1) packet arrived causing a SSC error. This is a result**	**OK**

		from the OBSW upload.	
		Check FCU HK received and no limit errors **This could not be done since HIFI is not present. No out-of-limits have been crossed, so it is assumed that all values are OK.**	**OK**
3	Apply power to FCU	Check power supply HK fields are green (FCU SCOE display). **This is done by ASED personal according to procedure: SRON-G/HIFI/PR/2005-102**	**OK**
4	Manual Stack command: HIFI_notify_PDU_status HIF_FCU_s=on	Check that the voltages and currents are within the following ranges PS1: "+15V": +15.6V – +16.4V, 107mA – 131mA; **15.853 0.114** "-15V": -16.4V – -15.6V, 78mA – 96mA; **-15.824 0.086** "+5V": +5.5V – +6.0V, 119mA – 147mA. **5.946 0.133** PS2: "+18V": +17.0V – +19.0V, 120mA – 148mA; **18.007 0.132** "-18V": -18.0V – -17.0V, 104mA – 128mA; **-18.014 0.116** "+8V": +7.0V – +9.0V, 16mA – 26mA. **8.003 0.021**	**OK**
5	Apply power to HRH	*Select ICU_housekeeping and HRH_analog AND's*	**OK**
		Check voltage in the range 26V – 29V Actual value = **27.7 V**	**OK**
		Check HRH current draw is 2.2A – 2.8A Actual value = **2.4 A**	**OK**
6	Manual Stack 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* **Temperature out of limit (soft):** **HM075192** **HM076192** **This is due a faulty calibration** **This known error is already traced in ASED-NCR-1261**	**OK**
		Check voltage in the range 26V – 29V Actual value = **27.9 V**	**OK**
		Check WEH current draw is 0.9A – 1.0A Actual value = **0.94 A**	**OK**
8	Manual Stack command: HIFI_notify_PDU_status HIF_FCU_s=on HIF_HRSH_s=on	Check WBS_H HK received and no limit errors **This command failed the command completion. This is a known NCR: 1262**	

	HIF_WBSH_s=on		
9	Apply power to <u>LCU</u> **In procedure HRH is mentioned, this is a type error, it should be LCU. This known error is already traced in ASED-NCR-1260**	*Select ICU_housekeeping and LCU_status AND's*	**OK**
		Check voltage in the range 26V – 29V Actual value = **V**	**OK**
		Check WEH current draw is 0.69A – 0.72A Actual value = **A**	**OK**
10	Manual Stack 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 **This command failed the command completion. This is a known NCR: 1262**	**OK**

Remark: After this power on, the HIFI_housekeeping_on command is send to change the HK rate to once every 5 seconds.

6.2   Power on PACS to PRIME Mode

According to Procedure(s):

- **HP-2-ASED-PR-0035 (Chapter 3: Order of Execution – Step 10)**
- **PACS-ME-TP-021 (Issue 1.1 – 06/09/05 – chapter 4.1)**

Important remark : At this point the bus profile has changed from HIFI_prime_inst.pst to PACS_prime_inst.pst. This because HIFI needs a time-consuming OBSW upload to power on, which would take double the time in case the HIFI was non-prime in the bus profile.

Configuration Check:

Step #	Action	Comments	Check
1	PACS warm electronics is mounted on the SVM		**OK**
2	28 V power is connected to CCS power supplies		**OK**
3	PACS OBT interface is connected to CCS OBT simulator		**OK**
4	DPU 1553 interface is connected to CDMU DFE		**OK**
5	The CDMU DFE is up and running bus list "nominal"	**PACS_prime_inst.pst**	**OK**
6	PACS+EGSE grounding has been verified against AD-7		**OK**
7	Check that all TOPE-Tcl scripts (sec.10) are accessible via the CCS	**All received PACS TCL scripts have been added to the CCS. No time was available to check this. In case TCL scripts would be missing, they will be added to the running CCS session later.**	**OK**

Remark: During the power on multiple out of limits were reported. This is a known ASED NCR 1276. Also a SSC error was reported on the CCS (known ASED NCR 1247).

Step #	Action	Comments	Check
1	Execute script: PACS_POWER_ON.tcl (log see Appendix 5)	**During the PACS_POWER_ON.tcl script the CCS reported a TOPE CORBA error. The CCS process EXIF_TM1 was restarted after which the script was repeated. This is a known ASED NCR 1440.**	**NOK**

		PACS is sending regular non-Prime HK packets and essential HK packets	**OK**
		1355 links DPU-SPUS, DPU-SPUL, DPU-DMC, DMC-SPUS, DMC-SPUL, DMC-BOLC are on and communicating	**OK**
		Counters for TM(1,2), TM(1,8) and NACKs shall be 0	**OK**
		¨ 28 V power is on for all 4 sub-systems	**OK**

6.3 Power on SPIRE to STANDBY Mode

According to Procedure(s):

- **HP-2-ASED-PR-0035 (Chapter 3: Order of Execution – Step 10)**
- **SPIRE-RAL-PRC-002494 (Issue 1.1 Appendix 1 – 09/09/05)**

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 6)** **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**

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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** **Remark: This script sends more then 2 TC's a second. The current bus profile (HIFI_prim_inst.pst) does not allow this and puts the TC's in a queue. This caused multiple SSC errors, although no packets or TC's are lost. This error is traced in a new ASED NCR 1471**	**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	**Remark: This script sends more then 2 TC's a second. The current bus profile (HIFI_prim_inst.pst) does not allow this and puts the TC's in a queue. This caused multiple SSC errors, although no packets or TC's are lost. This error is traced in a new ASED NCR 1471** **Since this script has a lot of TC's inside, the tie between**	**OK**

		sending the TC from the CCS and actual acceptance on the instrument went up to 35 seconds. This caused a series of SSC errors. Because issue 1.1 was used instead of 1.2, the HK is coming in each second instead of each 4 seconds. This is communicated to SPIRE.	
6	Manual Switch on of the DRCU by the CCS staff step 2: • Switch on all 5 remote DCU switches		**OK**
7	Check that THSK parameter is again refreshing every second	**THSK incrementing every 4 second**	**OK**
8	Check that TM2N parameter is again incrementing every second	**TM2N incrementing every 4 second**	**OK**

Final Configuration:
- SPIRE DPU and DRCU are both on
- HK generation is on

6.3.3   *SFT-SPIRE-CCS-FUNC-SCU-03*

Purpose: SCU DC thermometry check

Step #	Action	Comments				Check
1	Execute TCL script SFT-SPIRE-CCS-FUNC-SCU-03.tcl					**OK**
2	Wait for the parameter BBFULLTYPE to get set to SCU_DC_Therm					**OK**
3	A few seconds later record the value of parameter SCUTEMPSTAT	Check if the following parameters change value:				
		Parameter	**Start**	**During**	**End**	
		SCUTEMPSTAT **Observed**	0 **0000000**	FFFF **0000FF FF**	FFFF **0000FF FF**	**OK**
4	Record the RAW values	**Parameter**		**Value**		**OK**

of SCU temperatures	**PUMPHTRTEMP**	**4.02**	
	PUMPHSTEMP	**7.94**	
	EVAPHSTEMP	**7.38**	
	SHUNTTEMP	**1.57**	
	SOBTEMP	**10.9**	
	SL0TEMP	**1.95**	
	PL0TEMP	**2.03**	
	OPTTEMP	**10.39**	
	BAFTEMP	**10.09**	
	BSMIFTEMP	**9.64**	
	SCAL2TEMP	**8.21**	
	SCAL4TEMP	**10.56**	
	SCALTEMP	**10.67**	
	SMECIFTEMP	**10.73**	
	SMECTEMP	**11.19**	
	BSMTEMP	**9.78**	

Final Configuration: Unchanged

6.3.4 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	-	-	2.28	
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

6.3.5   Extra

Because SPIRE-CCS-DRCU-ON-STEP2 was executed instead of SPIRE-CCS-DRCU-ON-STEP2-STBY, the SPIRE HK rate was once every second instead of once every 4 seconds. SPIRE informed us that this can be solved by running SPIRE-CCS-DRCU-ON-STEP1 and afterwards SPIRE-CCS-DRCU-ON-STEP2-STBY.

Step #	Action	Comments	Check
1	Execute TCL script SFT-SPIRE-CCS-DRCU-ON-STEP1.tcl	**HK stopped as expected**	**OK**
5	Execute TCL script SFT-SPIRE-CCS-DRCU-ON-STEP2-STBY.tcl	**HK coming in at a rate of one every 4 seconds.** **The MODE is now ON instead of REDY. This has been discussed with SPIRE and is nominal.**	**OK**

7   Step by Step Procedure: PACS IMT results

According to Procedure(s):

- **HP-2-ASED-PR-0035 (Chapter 3: Order of Execution – Step 11)**
- **PACS-ME-TP-021**

Important Remark: The HK and science data checks in this chapter are executed by PACS personal on the IEGSE. This report is focussed on 'command and control' issues and only those issues will be discussed below. A separate PACS report will be generated to discuss all science data analysis.

7.1   Test ID: 401 - PACS Switch on

This script is already executed as part of the PACS power on (see chapter 0)

7.2   Test ID: 402 - Memory Management Test

Step #	Action	Comments	Check
1	Send command from SCOS2000: DPU_MEMORY_LOAD_DRAM Parameters: Repeater value: 1 DPU_MEMORY_BLOCK_ID: 0x1100 DPU_MEMORY_ADDR : 0x1FB2 DPU_4_BYTES_WORDS_DATA: 0x7D0 DPU_CHECKSUM: 0xD62A	Check in HK that DPU OBSW telecommands lost counter will go to 20 **Counter indicates 2000 instead of 20. PACS will investigate.**	**NOK**
2	Send command from SCOS2000: DPU_MEMORY_CHECK Parameters: DPU_MEMORY_BLOCK_ID: 0x1100 DPU_MEMORY_ADDR : 0x1FB1 DPU_DATA_LENGTH: 1	Reported checksum is 0xD62A **Checksum is DC10 instead of D62A. An NCR is raised to cover this (ASED NCR 1493)**	**NOK**
extra	Send command from SCOS2000: DPU_MEMORY_CHECK Parameters: DPU_MEMORY_BLOCK_ID: 0x1100 DPU_MEMORY_ADDR : **0x1FB2** DPU_DATA_LENGTH: 1	Reported checksum is 0xD62A	**OK**
3	Send command from SCOS2000: DPU_MEMORY_DUMP Parameters: DPU_MEMORY_BLOCK_ID: 0x1100 DPU_MEMORY_ADDR : **0x1FB2** DPU_DATA_LENGTH: 1	Dumped value is 0x7D0	**OK**

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7.3 Test ID: 403 - PACS Setup of Spectroscopy with CSs off and Open Grating Launch Lock

Only step b is executed.

Remark: At this point a response from SPIRE is received to change the HK rate. (see chapter 6.3.5)

Remark: During the next script multiple out of limits were reported. This is a known ASED NCR 1276. Also SSC errors are reported on the CCS (known ASED NCR 1247).

Step #	Action	Comments	Check
1	Execute: SetupSpectroscopyCSoff_Shell.tcl	**This script failed during its execution. The command PC162420 allows 8 times parameter PP067420, but the TCL script tried to send 9 times this parameter. The script stopped after this command (~75% of script executed). An NCR is raised (ASED NCR 1482)**	**NOK**
		Spectroscopy HK packets are sent	**N/A**
		Nominal detector setting (C=0.3pF, r=64, bias=[210mV, 70mV], heater=200uA)	**N/A**
		Chopper controller on	**N/A**
		Grating controller on and grating homing completed	**N/A**
extra	To put the instrument in a safe mode after a not fully completed TCL script, the following script is run: ENTER_SAFE_Mode_Shell.tcl		**OK**

Important Remark: This end the first day of IMT (19/09/2005).

Important Remark: At this point the second day of IMT (20/09/2005) is started. The CCS is restarted, because the connection with the server was lost (new session name: 2005_09_20_06_18_ilsens_hpws42_REALTIME_P_IMT_2) and all connections are restored (CDMUDFE, PLMSCOE, HIEGSE, EQMCRYO).

Important Remark: Because of NCR 1482, a MIB change is necessary. The current CCS session is stopped, the CDF.DAT file is changed and a new CCS session is started (new session name: 2005_09_20_07_07_ilsens_hpws42_REALTIME_P_IMT_3). After startup, all connections are restored (CDMUDFE, PLMSCOE, HIEGSE, EQMCRYO). HIFI and PACS have been checked briefly and are OK.

7.4 Test ID: 403 - PACS Setup of Spectroscopy with CSs off and Open Grating Launch Lock

Only step b is executed.

Remark: This test step is repeated since it was not completely executed yesterday.

Remark: During the next script multiple out of limits were reported. This is a known ASED NCR 1276. Also SSC errors are reported on the CCS (known ASED NCR 1247).

Step #	Action	Comments	Check
1	Execute: SetupSpectroscopyCSoff_Shell.tcl	Spectroscopy HK packets are sent	**OK**
		Nominal detector setting (C=0.3pF, r=64, bias=[210mV, 70mV], heater=200uA)	**OK**
		Chopper controller on	**OK**
		Grating controller on and grating homing completed	**OK**

7.5   Test ID: 404 – Grating Test

Remark: During the next script the CCS was restarted (server + workstations). A new session is started and all connections were restored. New session name: 2005_09_20_07_53_ilsens_hpws42_REALTIME_P_IMT_4

Step #	Action	Comments	Check
1	Execute: PACS_Spec_Gra_Diaghk_Setup.tcl	**This TCL script blocked during its execution while it was requesting the output for procedure getChkSum. This procedure was not found by the CCS. A check was done and the procedure is available. It was used during last 2 SFTs without problems. Since the CCS showed some strange behaviour in the morning (workstation is restarted for this), it is chosen to restart the CCS server and all workstation to make a clean start. (new session name: 2005_09_20_07_53_ilsens_hpws42_REALTIME_P_IMT_4)**	**NOK**
extra	Execute (second time): PACS_Spec_Gra_Diaghk_Setup.tcl	Diagnostic HK packets are produced	**OK**
2	Execute: SPEC_Gra_Healthcheck_obs_Shell.tcl	**During the execution the DEC/MEC got blocked (according to PACS). The script is aborted and a manual stack command is executed: PC005380 (DPU_SET_FUNCT) With the following parameter: PP007380 = 103 PP006380 = 1**	**NOK**

Step #	Action	Comments	Check
		An NCR is raised to track this problem. (AED NCR 1494)	
		During this multiple out of limits were reported. This is a known ASED NCR 1276. Also SSC errors are reported on the CCS (known ASED NCR 1247).	
		Grating moves between extreme values (<100000 and >900000)	
3	Execute: PACS_Diaghk_Reset.tcl	Production of diagnostic HK packets stops	**OK**

7.6   Test ID: 406 – Thermal Behaviour Test in Spectroscopy

Step #	Action	Comments	Check
1	Execute: ENTER_SAFE_Mode_Shell.tcl	Check that PACS is in SAFE mode	**OK**
2	Execute: SPEC_thermal_OBS_shell.tcl **During the script, PACS detected some problems and 2 manual stack commands were executed during the execution of the TCL. The script is not stopped. PC005380 (DPU_SET_FUNCT) With the following parameter: PP007380 = 103 PP006380 = 1** **PC013380 (DPU_STOP_OBCP) With the following parameter: PP012380 = 27**	0 Check that spectroscopy HK packets are sent and temperature Sensors are on	**OK**
		1 Check that blue array is on and biased	**OK**
		3 Check that red array is on and biased	**OK**
		5 Check that both arrays and DECs are off	**OK**
		7 Check that both arrays are on and biased	**OK**
		9 Check that both arrays are off, but DECs are on	**OK**
		11 Check heater current sequence with 50/100/200 microA and temperatures of the blue module with sensors	**OK**
		26 Check that both arrays are on, biased and blue heater current is at 200 microA	**OK**
		31 Check that chopper is chopping for 5 min	**OK**
		36 Check tht grating is homing	**OK**
		41 Check grating and chopper operation for about 5 min **PACS to investigate.**	**NOK**
		49 Check that CSs are powering **PACS to investigate.**	**NOK**
		69 Check that CSs are off again	
		71 Check that chopper and grating controllers are off	**OK**
		73 Check that arrays and DECs are switched off, heater current set to zero	**OK**

		again	
		78 Check that HK packets are set to "NonPrime"	**OK**
3	Execute: ENTER_SAFE_Mode_Shell.tcl	Check that PACS is in SAFE mode	**OK**

7.7   Test ID: 407 – Setup Spectroscopy, Data Rate and Cryostat Background Adjustment

Step #	Action	Comments	Check
1	Execute: SetupSpectroscopyEQMIMT_Shell.tcl	Spectroscopy HK packets are sent	**OK**
		Nominal detector setting (C=0.3pF, r=64, bias=[210mV,70mV], heater=200uA)	**OK**
		Chopper controller on	**OK**
		Grating controller on and grating homing completed	**OK**
		Calibration sources are heating up	**OK**
2	Execute: SPEC_spu_data_rate_obs_Shell.tcl	Check that chopper moves to CS2	**OK**
		Check correct display of science data in QLA	**OK**
		Check that chopper moves to zero	**OK**
3	Execute: Background_Adjustment_Shell_01.tcl	Monitor detector signal due to cryostat background in comparison to signal of internal calibration sources	**OK**
4	Execute (again): Background_Adjustment_Shell_01.tcl **During this part of the script, the cover temperature is adjusted.**	Continue monitoring cryostat background signal until the signal level reaches a value between the CS1 and CS2 signal	**OK**
extra	Execute (again): Background_Adjustment_Shell_01.tcl **During this part of the script, the cover temperature is adjusted.**	Continue monitoring cryostat background signal until the signal level reaches a value between the CS1 and CS2 signal	**OK**
extra	Execute (again): Background_Adjustment_Shell_01.tcl **During this part of the script, the cover temperature is adjusted.**	Continue monitoring cryostat background signal until the signal level reaches a value between the CS1 and CS2 signal	**OK**
5	Execute: Background_Adjustment_Shell_02.tcl	Monitor detector signal	**OK**
6	Execute: Background_Adjustment_Shell_03.tcl	Monitor detector signal	**OK**
7	Execute: Background_Adjustment_Shell_04.tcl	Monitor detector signal	**OK**
8	Execute: Background_Adjustment_Shell_05.tcl	Monitor detector signal	**OK**

7.8   Test ID: 408 – Chopper Full FOV Scan in Spectroscopy

Step #	Action	Comments	Check
1	Execute: SPEC_Chop_fft_eqmimt_obs_Shell.tcl	Diagnostic HK for chopper is activated	**OK**
		Grating is on position 461000	**OK**
		First chopper scan is from - 25000 to +25000 in steps of 500	**OK**
		Observing time is 5 seconds on each position	**OK**
		Second chopper scan is from +25000 to -25000 in steps of 500	**OK**
		Diagnostic HK is deactivated	**OK**
		Chopper and grating move back to their default positions	**OK**

7.9   Test ID: 409 – Reconfiguration and Optional Switch-off/on Cycle

Since we are not at the end of a day, only step a is executed.

Step #	Action	Comments	Check
1	Execute: ENTER_SAFE__Mode_Shell.tcl	PACS is in SAFE mode	**OK**
2	Execute: PACS_Switch_Off_CCS.tcl	PACS is sending no TM packets anymore and the 28 V power is off	**N/A**
3	Wait >10 sec		**N/A**
4	Execute: PACS_Switch_On_CCS.tcl	PACS is sending regular non-Prime HK packets and essential HK packets	**N/A**
		1355 links DPU-SPUS, DPU-SPUL, DPU-DMC, DMC-SPUS, DMC-SPUL, DMC-BOLC are on and communicating	**N/A**
		Counters for TM(1,2), TM(1,8) and NACKs shall be 0	**N/A**
		28 V power is on for all 4 sub-systems	**N/A**

7.10   Test ID: 410 – Cooler Recycling

Step #	Action	Comments	Check
1	Execute: BOLO_cooler_OBS_shell.tcl **During the script, PACS requested to send a manual stack command to request more HK packets. The script is not stopped. The following command is send:** **PC003380 (DPU_SET_HK_LIST)** **With the following parameter:** **PP005380 = PHOT** **PP025380 = BOTH Array** **During the cooldown the DEC/MEC connection was lost. To recover from this without loosing the cooler recylcle, DEC/MEC is manually powered down and up again. After this all DEC/MEC commands in the PACS_POWER_ON.tcl are executed with the manual stack. This was not successful. Another approach is tried:** • **power down SPU, DEC/MEC, DPU (manually from PLM SCOE)** • **Execute PACS_POWER_ON_BOLCout.TCL (see Appendix 7)** • **PC003380 (with PP005380 = PHOT and PP025380 = BOTH Array)** **This problem is track by a new NCR (ASED NCR 1494).** **The cooler recycle itself was not successful. An NCR is raised to track this problem. (ASED NCR 1495)**		**NOK**
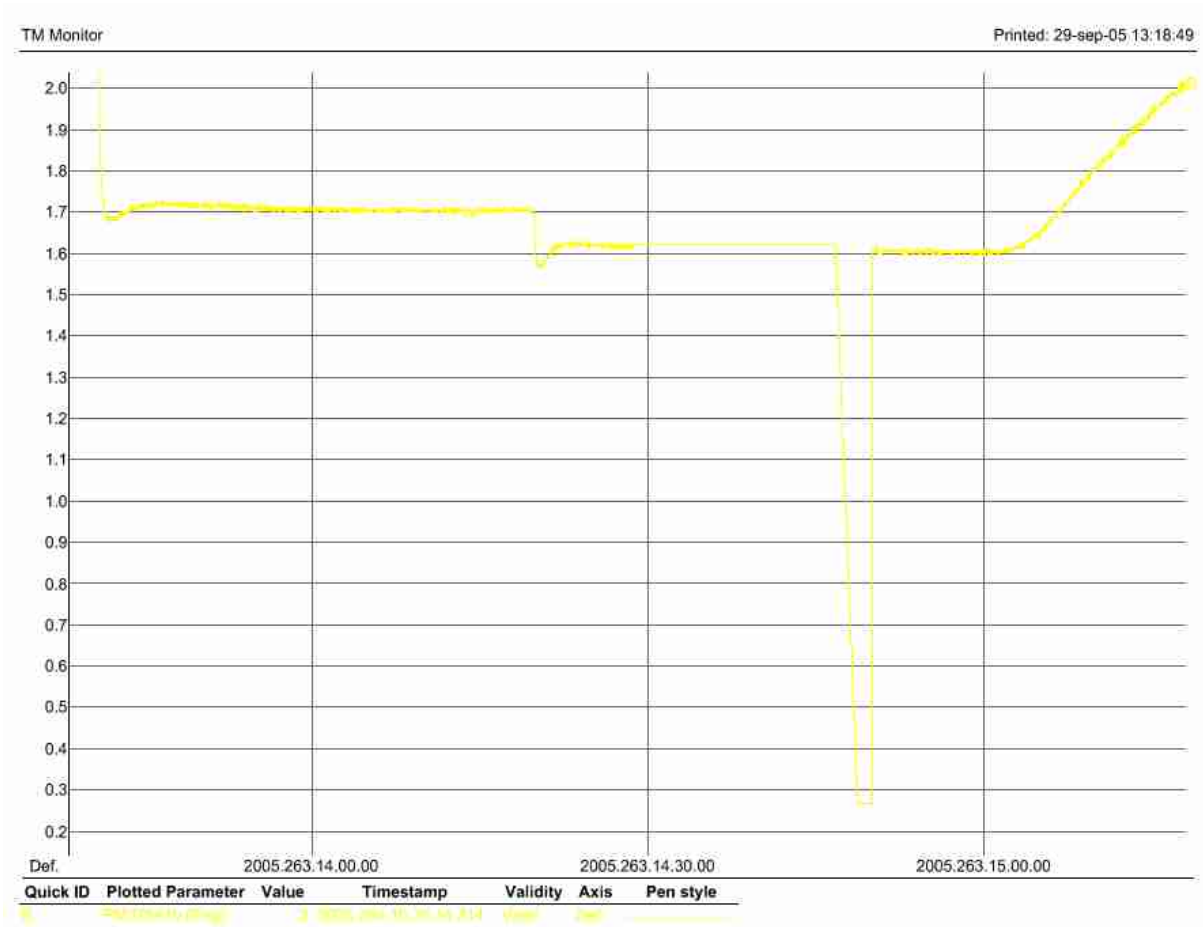
Step #	Action	Comments	Check
1	Execute: ENTER_SAFE_Mode_Shell.tcl	Check that PACS is in SAFE mode	**OK**

Important Remark: This ends the second day of IMT (20/09/2005).

Important Remark: This is the start of the 3rd day of IMT (21/09/2005). Since yesterday, the cooler recycle was not successful, the tests that require this are moved to the end of IMT and we continue now with the tests planned for day 4.

7.11   Test ID: 516 – Detector Dark Current on Internal Calibration Sources

Step #	Action	Comments	Check
1	Execute: SetupSpectroscopyCSoff_Shell.tcl	Spectroscopy HK packets are sent	**OK**
		Nominal detector setting (C=0.3pF, =64, bias=[210mV,70mV], heater=200uA)	**OK**

				Chopper controller on	**OK**
				Grating controller on and grating homing completed	**OK**
2	Execute: SPEC_dark_current_spt_eqmimt_obs_shell.tcl			Check that the chopper moved to position -22605 cu. (CS1)	**OK**
				CRE setup has ramp length of 512 for blue and red and capacitor is 0 for 100fF	**OK**
	During this test, a lot of SSC errors were detected on the following packets (APID: 1157, Type 21, Subtype 1).			Buffer Transmission Mode is activated	**OK**
	To solve this, during this test, the bus profile is changed to PACS_burst_mode.pst on request of PACS and the following command is sent:			Check that after 10 minutes of measurements on CS1 the chopper moved to position 24162 cu. (CS2)	**OK**
	PC009380 (DPU_SET_BUS_LIST) – Enabled.			SPU reset is done after 10 minutes of measurements on CS2	**OK**
	Now both the DPU and the CDMU DFE are configured for PACS burst mode and no SSC errors are reported for the packets mentioned above. After this change 2 more			Chopper moved to default position 0 cu.	**OK**
	SSC errors were detected, both on HK packets (3,25 – APID 1152)			CRE setup is set back to its default values	**OK**
	This problem is tracked with a new NCR (ASED NCR 1496)				
	During the execution of this script (towards the end), the connection between CDMU DFE and CCS is lost. Just before this occurred, CCS reported "IFMGRconn: Telecommand buffer size just reached 103 for SCOE HIEGSE".				
	This looks a lot like a hick-up in the network. Further investigation will be done if this problem happens again.				

7.12   Test ID: 517 – Grating Performance Test

Remark: The bus profile is changed back to PACS_prime_inst.pst

Step #	Action	Comments	Check
1	Execute: ENTER_SAFE_Mode_Shell.tcl	PACS is in SAFE mode	**OK**
2	Execute: SetupSpectroscopyEQMIMT_Shell.tcl	Spectroscopy HK packets are sent	**OK**
		Nominal detector setting (C=0.3pF, r=64, bias=[210mV,70mV], heater=200uA)	**OK**
		Chopper controller on	**OK**

		Grating controller on and grating homing completed	**OK**
		Calibration sources are heating u	**OK**
3	Execute: PACS_Spec_Gra_Diaghk_Setup.tcl	Diagnostic HK packets are produced	**OK**
4	Execute: SPEC_Gra_slew_time_cal_Shell.tcl	Grating moves between extreme values	**OK**
5	Execute: PACS_Diaghk_Reset.tcl	Production of diagnostic HK packets stops	**OK**

7.13   Test ID: 518 – Chopper Performance Test Spectroscopy

Step #	Action	Comments	Check
1	Execute: SPEC_Chop_spt_eqmimt_obs_shell.tcl	Diagnostic HK for chopper is activated	**OK**
		CRE setup has ramp length of 32	**OK**
		OBCP08 is executed (with 3 ramps per chopper plateau)	**OK**
		CRE setup has ramp length of 16	**OK**
		OBCP08 is executed (with 2 ramps per chopper plateau)	**OK**
		CRE setup has ramp length of 32	**OK**
		OBCP27 is executed (with 5 ramps per chopper plateau)	**OK**
		OBCP27 is executed (with 3 ramps per chopper plateau)	**OK**
		CRE setup has ramp length of 16	**OK**
		OBCP27 is executed (with 3 ramps per chopper plateau)	**OK**
		OBCP27 is executed (with 2 ramps per chopper plateau)	**OK**
		CRE setup is set back to its default values	**OK**
		Diagnostic HK for chopper is deactivated	**OK**

7.14   Test ID: 519 – Emissivity of internal calibration sources

Step #	Action	Comments	Check
1	Execute: SPEC_spu_reset.tcl	Science data flow stops	**OK**
2	Execute: emissivity_SPEC_cre_setup.tcl	CRE HK values as commanded	**OK**
3	Execute: emissivity_SPEC_SPU_setup.tcl	Science data flow starts	**OK**

	In this script 2 commands were missing according to PACS. This was caused by a translation error from CUS to TCL scripts. The 2 missing commands have been manually send. **PC039400 and PC040390.**		
4	Execute: emissivity_SET_temp_cs2_50.tcl	CS2 temperature decreases	**OK**
5	Execute: emissivity_SPEC_full_cs1_scan.tcl	Grating moves in steps of 1600 up + down over full range	**OK**
6	Execute: emissivity_SET_temp_cs1_50.tcl	CS1 temperature decreases	**OK**
7	Execute: emissivity_SPEC_full_cs2_scan.tcl **During this test a (5,2) was received from the PACS DPU (2005.264.09.11.36.585). According to PACS this can only be caused by a power cycle. The PLM SCOE HK does not show any power abnormalities.** **The force boot command is send and HK is coming in.** **To restart testing a power cycle is needed.** **This problem is tracked by ASED NCR 1490 and is probably related to ASED NCR 1991)**	Grating moves in steps of 1600 up + down over full range	**NOK**
extra	**Execute:** **PACS_POWER_OFF.tcl**		**OK**
extra	**Execute:** **PACS_POWER_ON.tcl**		**OK**
extra	**Execute:** **SetupSpectroscopyCSoff_Shell.tcl** **After execution of this script. The CCS process EXIF_TM1 died without any reason. The process is restarted and the script SubscribeParams has been stopped and started again. This is a known problem and is tracked with ASED NCR 1440**		**OK**
extra	**Send Manual Stack Command:** **PC140420 (DMC_SET_TEMP_BB_1)** **With PP094420 = 59 Ohm (Eng)**		**OK**
extra	**Send Manual Stack Command:** **PC144420 (DMC_SET_TEMP_BB_2)** **With PP094420 = 59 Ohm (Eng)**		**OK**
extra	**Unrelated to the previous error, 3 updated TCL scripts are loaded onto the CCS.**	**emissivity_SPEC_spu_setup.tcl** **rsrf_SPEC_spu_setup.tcl** **wavecal_SPEC_spu_setup.tcl**	**OK**
extra	**Execute:** **SPEC_spu_reset.tcl**	**Science data flow stops**	**OK**
extra	**Execute:** **emissivity_SPEC_cre_setup.tcl**	**CRE HK values as commanded**	**OK**
extra	**Execute:** **emissivity_SPEC_SPU_setup.tcl**	**Science data flow starts**	**OK**
8	Execute: emissivity_SET_temp_cs2_90.tcl	CS2 temperature increases	**N/A**

	Script is skipped because of previous error		
9	Execute: emissivity_SPEC_full_cs1_scan.tcl **Script is skipped because of previous error**	Grating moves in steps of 1600 up + down over full range	**N/A**
10	Execute: emissivity_SET_temp_cs1_90.tcl **Script is skipped because of previous error**	CS1 temperature increases	**N/A**
11	Execute: emissivity_SPEC_full_cs2_scan.tcl **During this script, suddenly all CRC checks failed on all PACS packets. PACS reacted by sending command PC367380 (DPU_RESET_1553). Apparently this is a known PACS bug which occurs every ~30 hours. To track this problem a new NCR is rasied (ASED NCR 1497)** **In the time all packets were rejected, something went wrong and PACS asked for some manual stack commands to make sure everything is configured correctly. This is done by the following manual commands:** **PC005380 (DPU_SET_FUNCT)** **With the following parameter:** **PP007380 = 103** **PP006380 = 1** **PC108420 (DMC_SWON_GRAT_CONT)** **PC110420 (DMC_ENABLE_GRAT_CONT)** **After these commands it is noticed that no PACS packets are coming in anymore. The PLM SCOE reported 28 V, but no current on the DPU. The time the current went to 0 is 2005.264.10.26.20.00.** **PACS is powered down (PACS_POWER_OFF.tcl see Appendix 8)** **During the power off procedure the current went back up to ~0.45 A and multiple (5,4) ERROR_REPORT packets arrived on the CCS.** **Power profile of this situation is in Appendix 18**	Grating moves in steps of 1600 up + down over full range	
12	Execute: emissivity_SET_temp_cs2_75.tcl	CS2 temperature decreases	**N/A**
13	Execute:	Grating moves in steps of 1600 up +	**N/A**

	emissivity_SPEC_full_cs1_scan.tcl	down over full range	
14	Execute: emissivity_SET_temp_cs1_70.tcl	CS1 temperature decreases	**N/A**
15	Execute: emissivity_SPEC_full_cs2_scan.tcl	Grating moves in steps of 1600 up + down over full range	**N/A**
16	Execute: SPEC_spu_reset.tcl	Check that science data flow stops	**N/A**

Important Remark:

At this point it is concluded in a NRB related to ASED NCR 1491 that the PACS DPU should be dismounted and changed with a new DPU. To do this in a safe and controlled way, all instruments are shut down according to their relevant procedure.

The DPU AVM is changed for the DPU CFM (OBSW 7.68). More details can be found in ASED NCR 1491. PACS indicates that the operation of both DPU's should be very similar. The only differences are:

- **A (5,1) packet instead of a (5,2) at booting.**

- **A minimum of 4 minutes wait time between a power off and power on**

8 Step by Step Procedure: Switch Off Instruments

8.1 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**

Remark : Switching of LCLs has been done with INSTR_POWER_OFF.tcl (see Appendix 9)

Step #	Action	Comments	Check
1	Select LCU_status AND	Verify LCU is in standby mode. Do not continue if this is not so!	**OK**
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**
6	Switch off power to FCU manually (executed by HIFI)	Check voltage and current go to zero.	**OK**

8.2 Switch Off SPIRE

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)**

Remark : Switching of LCLs has been done with INSTR_POWER_OFF.tcl (see Appendix 9)

8.2.1 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**

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8.2.2   *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**

8.2.3 *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		**OK**

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8.3   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)**

Remark : This step is not executed since PACS was already OFF

Step #	Action	Comments	Check
1	Execute: PACS_POWER_OFF.tcl	PACS is sending no TM packets anymore	**N/A**
		28 V power is off	**N/A**

9   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)**

Step #	Action	Comments	Check
1	Execute: "WARNING_LAMP_POWER_OFF.tcl"	**Warning lamp is broken.**	**N/A**
2	Execute: "EGSE_OFFLINE_AUTO.tcl" The log of this script can be found in Appendix 10	Check: PLM SCOE HK packets stopped	**OK**
		Check: CDMU DFE HK packets stopped	**OK**
3	Shut down PLM EGSE		**OK**

10   Step by Step Procedure: Configure CCS and EGSE (2)

According to Procedure(s):

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

This is the start of the second part of the IMT (after DPU exchange). In total this is the fourth day of IMT (22/09/2005)

Step #	Action	Comments	Check
1	Note Testsession	2005_09_22_11_30_ilsens_hpws42_REALTIME_P_IMT4	**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"	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: PACS_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**

11 Step by Step Procedure: Power On Instruments (2)

Philosophy:

Before power on of any instrument, the PACS prime bus profile is loaded on the CDMU DFE. This means that HIFI and SPIRE are considered to be in standby mode from the beginning.

After the CDMU DFE configuration, the instruments are powered on in the following order:

- PACS (to PRIME mode) – This to give PACS personal maximum time to check out the new DPU

- HIFI (to STANDBY mode)

- SPIRE (to STANDBY mode)

11.1   Power on PACS to PRIME Mode (2)

According to Procedure(s):

- **HP-2-ASED-PR-0035 (Chapter 3: Order of Execution – Step 10)**
- **PACS-ME-TP-021 (Issue 1.1 – 06/09/05 – chapter 4.1)**

Configuration Check:

Step #	Action	Comments	Check
1	PACS warm electronics is mounted on the SVM		**OK**
2	28 V power is connected to CCS power supplies		**OK**
3	PACS OBT interface is connected to CCS OBT simulator		**OK**
4	DPU 1553 interface is connected to CDMU DFE		**OK**
5	The CDMU DFE is up and running bus list "nominal"	**PACS_prime_inst.pst**	**OK**
6	PACS+EGSE grounding has been verified against AD-7		**OK**
7	Check that all TOPE-Tcl scripts (sec.10) are accessible via the CCS		**OK**

Remark: During the power on multiple out of limits were reported. This is a known ASED NCR 1276. Also a SSC error was reported on the CCS (known ASED NCR 1247).

Step #	Action	Comments	Check
1	Execute script: PACS_POWER_ON.tcl	PACS is sending regular non-Prime HK packets and essential HK packets	**OK**
		1355 links DPU-SPUS, DPU-SPUL, DPU-DMC, DMC-SPUS, DMC-SPUL, DMC-BOLC are on and communicating	**OK**
		Counters for TM(1,2), TM(1,8) and NACKs shall be 0	**OK**
		¨ 28 V power is on for all 4 sub-systems	**OK**

11.2   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**

Remark: The actual switching of the LCL's (PLM SCOE switches) is done with the INSTR_POWER_ON.tcl script.

Remark: To speed up the booting of the ICU, it is decided by HIFI that chapter 2.4.5 should be executed instead of 2.4.1 (nominal power on procedure). Chapter 2.4.5 powers on the ICU, uploads new OBSW and boots from this new OBSW.

Step #	Action	Comments	Check
1	Apply power to ICU	Select ICU_housekeeping AND	**OK**
		Check voltage in the range 26V – 29V Actual value = **27.9 V**	**OK**
		Check ICU current draw is 480 - 560 mA Actual value = **0.52 A**	**OK**
		Check for receipt of (5,2) event packet after power-on	**OK**
2	Upload new OBSW	The stack file (OBS2_22.hpws42) containing the OBSW is adapted since a new version of the MIB is used on the CCS. The version is 07092005. This is entered in the first line of the stack file.	**OK**
		Load stack file "OBS2_22.hpws42"	**OK**
		Arm All -> Send	**OK**
		Send Command HIFI_load_boot No reply (as expected by HIFI)	**OK**
		Bus is cycled and no HK is coming in.	**OK**
		RESET button is pressed -> HK expected, but not coming	**NOK**
		Send Command HIFI_load_boot	**NOK**
		Bus is cycled and HK is coming in.	**OK**
		Continue 2.4.1 after POWER ICU	**OK**
		Check for receipt of HK packets every 3 sec	**OK**
		Check OBS version **Result: 2.16hex = 2.22dec**	**OK**
		Compare HK (secondary supply voltages) with previous results **This could not be done since HIFI is not present. No out-of-limits have been crossed, so it is assumed that all values are OK.**	**OK**
2	Manual Stack command:	Select ICU_housekeeping and HRH_analog AND's	

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	HIFI_Housekeeping_on HIF_HK_rate=1_pkt_per_sec

Changed to once every 5 seconds. | Check for HK updates every 1 sec

(1,1) packet arrived causing a SSC error. This is a result from the OBSW upload. | **OK** |
| | | Check FCU HK received and no limit errors

This could not be done since HIFI is not present. No out-of-limits have been crossed, so it is assumed that all values are OK. | **OK** |
| 3 | Apply power to FCU | Check power supply HK fields are green (FCU SCOE display).

This is done by ASED personal according to procedure: SRON-G/HIFI/PR/2005-102 | **OK** |
| 4 | Manual Stack command: HIFI_notify_PDU_status HIF_FCU_s=on | Check that the voltages and currents are within the following ranges

PS1:
"+15V": +15.6V – +16.4V,   107mA – 131mA;
15.853   0.114
"-15V": -16.4V – -15.6V,   78mA – 96mA;
 -15.824   0.086
"+5V": +5.5V – +6.0V,   119mA – 147mA.
5.946   0.133
PS2:
"+18V": +17.0V – +19.0V,   120mA – 148mA;
18.007   0.132
"-18V": -18.0V – -17.0V,   104mA – 128mA;
-18.014   0.116
"+8V": +7.0V – +9.0V,   16mA – 26mA.
8.003   0.021 | **OK** |
| 5 | Apply power to HRH | *Select ICU_housekeeping and HRH_analog AND's* | **OK** |
| | | Check voltage in the range 26V – 29V
Actual value = **27.7 V** | **OK** |
| | | Check HRH current draw is 2.2A – 2.8A
Actual value = **2.4 A** | **OK** |
| 6 | Manual Stack 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*

**Temperature out of limit (soft):
HM075192
HM076192
This is due a faulty calibration**

This known error is already traced in ASED-NCR-1261 | **OK** |
| | | Check voltage in the range 26V – 29V
Actual value = **27.9 V** | **OK** |
| | | Check WEH current draw is 0.9A – 1.0A
Actual value = **0.94 A** | **OK** |
| 8 | Manual Stack command: HIFI_notify_PDU_status | Check WBS_H HK received and no limit errors | **OK** |

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	HIF_FCU_s=on HIF_HRSH_s=on HIF_WBSH_s=on		
9	Apply power to <u>LCU</u> **In procedure HRH is mentioned, this is a type error, it should be LCU. This known error is already traced in ASED-NCR-1260**	*Select ICU_housekeeping and LCU_status AND's*	**OK**
		Check voltage in the range 26V – 29V Actual value = **V**	
		Check WEH current draw is 0.69A – 0.72A Actual value = **A**	
10	Manual Stack 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	

11.3 Power on SPIRE to STANDBY Mode

According to Procedure(s):

- **HP-2-ASED-PR-0035 (Chapter 3: Order of Execution – Step 10)**
- **SPIRE-RAL-PRC-002494 (Issue 1.1 Appendix 1 – 09/09/05)**

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**

11.3.1 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** **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

11.3.2 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-STBY.tcl		**OK**
6	Manual Switch on of the DRCU by the CCS staff step 2: • Switch on all 5 remote DCU switches		**OK**

| 7 | Check that THSK parameter is again refreshing every second | **THSK incrementing every <u>4</u> second** | **OK** |
| 8 | Check that TM2N parameter is again incrementing every second | **TM2N incrementing every <u>4</u> second** | **OK** |

Final Configuration:
- SPIRE DPU and DRCU are both on
- HK generation is on

11.3.3 *SFT-SPIRE-CCS-FUNC-SCU-03*

Purpose: SCU DC thermometry check

Step #	Action	Comments				Check
1	Execute TCL script SFT-SPIRE-CCS-FUNC-SCU-03.tcl					**OK**
2	Wait for the parameter BBFULLTYPE to get set to SCU_DC_Therm					**OK**
3	A few seconds later record the value of parameter SCUTEMPSTAT	Check if the following parameters change value:				
		Parameter	**Start**	**During**	**End**	
		SCUTEMPSTAT **Observed**	0 **0000000**	FFFF **0000FF FF**	FFFF **0000FF FF**	**OK**
4	Record the RAW values of SCU temperatures	**Parameter**	**Value**			**OK**
		PUMPHTRTEMP	**4.20**			
		PUMPHSTEMP	**3.89**			
		EVAPHSTEMP	**3.73**			
		SHUNTTEMP	**1.61**			
		SOBTEMP	**5.30**			
		SL0TEMP	**1.67**			
		PL0TEMP	**1.68**			
		OPTTEMP	**5.13**			
		BAFTEMP	**5.10**			
		BSMIFTEMP	**4.82**			
		SCAL2TEMP	**4.16**			
		SCAL4TEMP	**6.19**			
		SCALTEMP	**5.16**			
		SMECIFTEMP	**5.17**			
		SMECTEMP	**6.66**			
		BSMTEMP	**4.50**			

Final Configuration: Unchanged

11.3.4 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	**-**	**-**	**2.03**	
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

12   Step by Step Procedure: PACS IMT results

According to Procedure(s):

- **HP-2-ASED-PR-0035 (Chapter 3: Order of Execution – Step 11)**
- **PACS-ME-TP-021**

The first test is a retest of the cooler recycling. Since last time, the TCL file hasn't changed, but some extra commands are send to prepare PACS.

Step #	Action	Comments	Check
1	Send the following commands in a MSK: PC003380 (DPU_SET_HK_LIST) With the following parameter: PP005380 = PHOT PP025380 = BOTH Array PC221410 With the following parameter: PP114410 = 0 PC217410 With the following parameter: PP109410 = 0.00118 A (Eng) = 3011 (Raw)		**OK**

12.1   Test ID: 410 – Cooler Recycling

Important Remark: Before this test, 5 TCL scripts were updated on the CCS. This was a request from PACS. It concerns the following scripts:

- **BOLO_cooler_OBS_shell.tcl**
- **emissivity_SPEC_spu_setup.tcl**
- **rsrf_SPEC_spu_setup.tcl**
- **SPEC_dark_current_spt_eqmimt_obs_shell.tcl**
- **wavecal_SPEC_spu_setup.tcl**

Step #	Action	Comments	Check
1	Execute: BOLO_cooler_OBS_shell.tcl	Heater currents are set as commanded	
		TEMP_EV should be close to 0.3 K after the execution of the script (110 min)	
		TEMP_EV should be below 300mK 120	

		min after starting of the recycling	
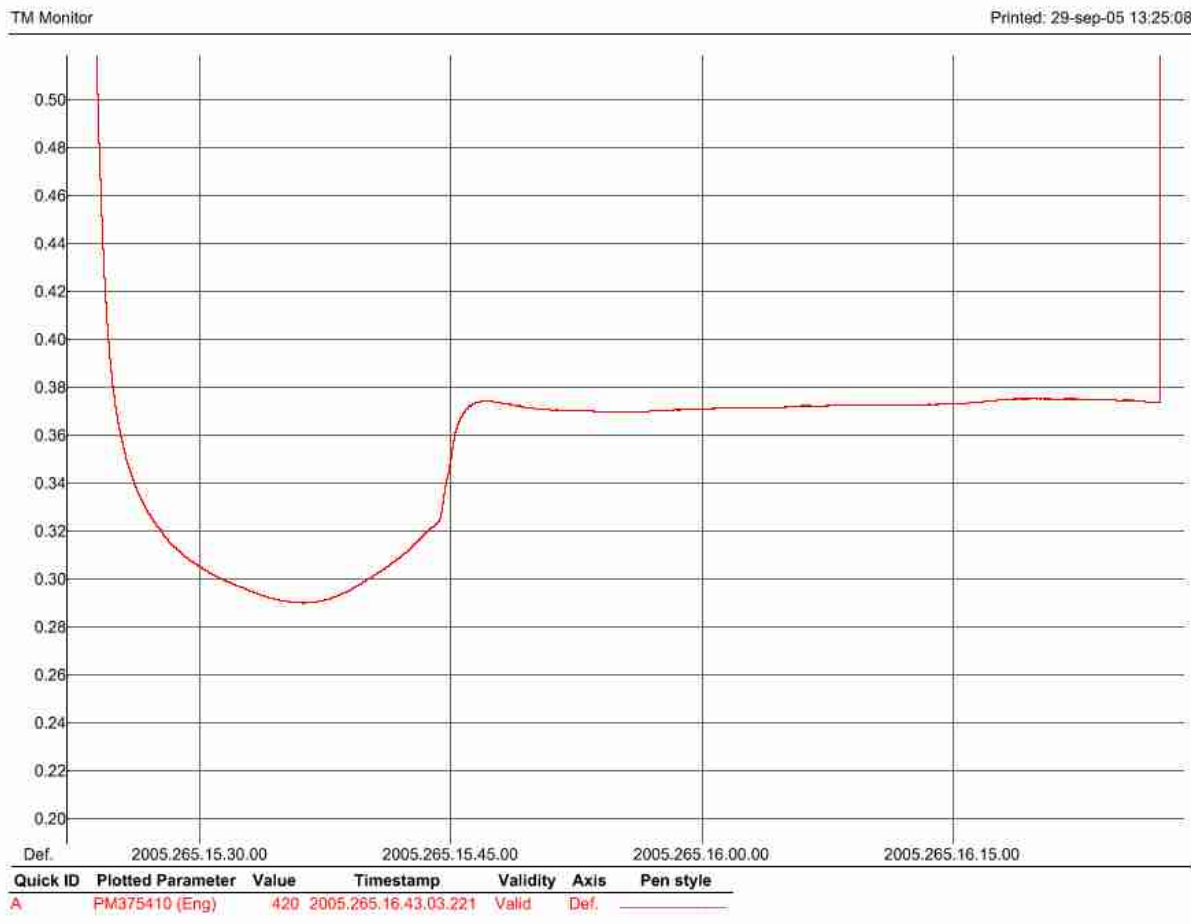
12.2　Test ID: 411 – Thermal Behaviour Test in Photometry

Step #	Action	Comments	Check
1	Execute: PHOT_thermal_OBS_shell.tcl	0 Check that photometry HK packets are sent and temperature sensors are on	
		1 Check that groups 1,3,5,6 are switched-on and bolometer temperature sensors are on	
		6 Check if the safe polarisations for M7 configuration are set	
		11 Is the chopper moving between the 2 CSs?	
		16 Are both calibration sources heating up?	
		36 Is the filter wheel changing positions every 15 sec?	

Step #	Action	Comments	Check
		39 Is the chopper moving between the 2 CSs?	
		44 Are both CSs switched off?	
		46 Are the chopper and grating controller switched-off?	
		48 Are the bolometer array groups 1,3,5,6 switched-off?	
		53 Is the HK list set again to NonPrime?	
extra	**Execute Manual Stack Command on PACS request:** **PC221410** **PP114410 = 35 Hex** **PC003380 (DPU_SET_HK_LIST)** **With the following parameter:** **PP005380 = PHOT** **PP025380 = BOTH Array**		**NOK**
2	Execute: ENTER_SAFE__Mode_Shell.tcl **Execute Manual Stack Command on PACS request:** **PC222410** **PP115410 = ON**	PACS is in SAFE mode	**OK**

Remark: This ends day 4 of IMT testing.

Remark: This is the start of day 5 of IMT testing.

Step #	Action	Comments	Check
extra		**PACS DPU stopped sending HK packets (last packet 06:03:40 UTC)**	**NOK**
extra	**Manually switch Off** • **SPU (send TC YC041942 (1,14)** • **DEC/MEC (send TC YC041942 (1,12)** • **DPU (send TC YC041942 (1,13)**	• **Current = 0 (YM440942)** • **Current = 0 (YM408942)** • **Current = 0 (YM424942)**	**OK**
extra	**Wait 4 min**		
extra	**Patch and Execute:** **PACS_POWER_ON_BOLCout.TCL**	**HK Packets arrive**	**OK**

12.3   Test ID: 407 – Setup Spectroscopy, Data Rate and Cryostat Background Adjustment – only Step1

Step #	Action	Comments	Check
1	Execute:	Spectroscopy HK packets are sent	**OK**

	SetupSpectroscopyEQMIMT_Shell.tcl	Nominal detector setting (C=0.3pF, r=64, bias=[210mV,70mV], heater=200uA)	**OK**
		Chopper controller on	**OK**
		Grating controller on and grating homing completed	**OK**
		Calibration sources are heating up	**OK**

12.4   Test ID: 520 – Quick Wavelength Check

Step #	Action	Comments	Check
1	Execute: SPEC_spu_reset.tcl	Science data flow stops	**OK**
2	Execute: wavecal_SPEC_cre_setup.tcl	CRE housekeeping as commanded	**OK**
3	Execute: wavecal_SPEC_spu_setup.tcl	Science data flow starts	**OK**
4	Execute: wavecal_cs1_scan.tcl	Grating moves in steps of 133 from position 535000 to 715000 and back	
extra		**Many SSC check failures due to a mass of TM (science) packets arrive.** **CCS complains about Unknown TM packet received (APID 1157, Type 21,1)**	
extra		**DPU crashed again, No HK packets sent anymore.** **Last HK at 10:37:09**	**NOK**
extra	**Execute: PACS_Poweer_Off.tcl**		**OK**

Remark: The test is stopped because of problem with the PACS DPU and cooler recycle.

13   Step by Step Procedure: Switch Off Instruments

13.1   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**

Step #	Action	Comments	Check
1	Select LCU_status AND	Verify LCU is in standby mode. Do not continue if this is not so! **Result: Check and OK**	**OK**
2	Switch off power to LCU (Send TC YC514942)	Check voltage and current go to zero.	**OK**
3	Switch off power to WEH (Send TC YC515942)	Check voltage and current go to zero.	**OK**
4	Switch off power to HRH (Send TC YC517942)	Check voltage and current go to zero.	**OK**
5	Switch off power to FCU manually	Check voltage and current go to zero.	**OK**
6	Switch off power to ICU (Send TC YC513942)	Check voltage and current go to zero.	**OK**

13.2   Switch Off SPIRE

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)**

Step #	Action	Comments	Check
1	Run SFT_SPIRE_CCS_ THO procedure		
1.1	Execute SFT_SPIRE_CCS_FUNC_ THO	Many SSC check failures	**OK**
1.2	A few seconds later record the value of parameter SCUTEMPSTAT	SCUTEMPSTAT = 0	**OK**
1.3	A few seconds later record the value of parameter SUBKSTAT	SUBKSTAT = 0	**OK**
1.4	Note down the value of the MODE parameter on the DPU AND OBSPARAMETERS display	MODE = DRCU_ON ??? = ON ???	**??**
2	Run SFT_SPIRE_CCS_ DRCU_OFF procedure		
2.1	Execute TCL script SFT-SPIRECCS-DRCU-ON-STEP1.tcl	Many SSC check failures	**OK**
2.2	Check that THSK parameter is not refreshing anymore		**OK**
2.3	Check that TM2N parameter is not incrementing anymore		**OK**
2.4	Manual Switch off of the DRCU by the CCS staff: • Switch off all 5 remote DCU switches in ANY order • Switch off secondary power to the SPIRE Power Bench (see Figure 5) • Switch off primary		**OK** **OK** **OK**

	power to the SPIRE Power Bench		
3	Run SFT_SPIRE_CCS_ DPU_OFF procedure		
3.1	Request the CCS staff to power off the SPIRE DPU using the CCS 28V Power Supply Send TC YC511942	Check voltage and current go to zero	**OK**

13.3   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)**

PACS is already switched off because of DPU problems at the end of IMT.

Step #	Action	Comments	Check
1	Execute: PACS_POWER_OFF.tcl	PACS is sending no TM packets anymore	**N/A**
		28 V power is off	**N/A**

14   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 executed manually.

Step #	Action	Comments	Check
1	Execute: "WARNING_LAMP_POWER_OFF.tcl"	**Warning lamp is broken.**	N/A
2	Execute: "EGSE_OFFLINE_AUTO.tcl"	Check: PLM SCOE HK packets stopped	N/A
		Check: CDMU DFE HK packets stopped	N/A
3	Shut down PLM EGSE		N/A

15   Summary Sheets

15.1   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	
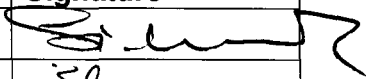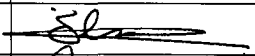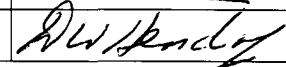
Table 15.1-1: Procedure Variation Sheet

15.2   Non Conformance Report (NCR) Summary

NCR - No.	NCR - Title	Date	Open Closed	PA sig.
1482	Wrong MIB definition of command PC162420	19/09/05	Open	
1491	PACS DPU power anomaly	21/09/05	Open	
1493	CRC in HK not compliant with CRC in procedure Memory Management Test	21/09/05	Open	
1494	DEC_MEC got blocked and DEC_MEC - DPU comm link dead	21/09/05	Open	
1495	Cooler Recycle Failed	21/09/05	Open	
1496	IMT TestID 516 should be run in Burst mode (SPEC_dark_current...tcl)		Open	
1497	DPU packets get corrupted (bad packets)	21/09/05	Open	

Table 15.2-1: Non-Conformance Record Sheet

15.3   Sign-off Sheet

	Name	Date	Signature
Test Manager	S. Idler	17.10.05	
Operator	S. ILSEN	04.10.05	
PA Responsible	D. HENDRY	04/10/05	

Appendix 1: PACS Nominal Bus Profile (PACS_prime_inst.PST)

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

[Config]
NumberOfSubFrames=64

[SubFrame1]
1=RTaccessSA

[SubFrame2]
1=RTaccessSA

[SubFrame3]
1=RTaccessSA

[SubFrame4]
1=TMpoll,21     ;TM poll from: SPIRE
2=RTaccessSA

[SubFrame5]
1=TMpacket,21  ;TM packet from: SPIRE
2=TMpoll,16     ;TM poll from: HIFI
3=RTaccessSA

[SubFrame6]
1=TMpacket,16  ;TM packet from: HIFI
2=TMpoll,25     ;TM poll from: PACS
3=RTaccessSA

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

[SubFrame8]
1=TMpacket,21  ;TM packet from: SPIRE
2=TMpoll,16     ;TM poll from: HIFI
3=RTaccessSA

[SubFrame9]
1=TMpacket,16  ;TM packet from: HIFI
2=TMpoll,25     ;TM poll from: PACS
3=RTaccessSA

[SubFrame10]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame11]
1=TMpoll,25     ;TM poll from: PACS
2=RTaccessSA

[SubFrame12]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame13]
1=TMpoll,25     ;TM poll from: PACS
2=RTaccessSA

[SubFrame14]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame15]
```

```
        1=TMpoll,25      ;TM poll from: PACS
        2=RTaccessSA

        [SubFrame16]
        1=TMpacket,25   ;TM packet from: PACS
        2=RTaccessSA

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

        [SubFrame18]
        1=TCpacket       ;TC packet to: SPIRE
        2=TMpoll,25      ;TM poll from: PACS
        3=RTaccessSA

        [SubFrame19]
        1=TMpacket,25   ;TM packet from: PACS
        2=RTaccessSA

        [SubFrame20]
        1=TMpoll,25      ;TM poll from: PACS
        2=RTaccessSA

        [SubFrame21]
        1=TMpacket,25   ;TM packet from: PACS
        2=RTaccessSA

        [SubFrame22]
        1=TMpoll,25      ;TM poll from: PACS
        2=RTaccessSA

        [SubFrame23]
        1=TMpacket,25   ;TM packet from: PACS
        2=RTaccessSA

        [SubFrame24]
        1=TMpoll,25      ;TM poll from: PACS
        2=RTaccessSA

        [SubFrame25]
        1=TMpacket,25   ;TM packet from: PACS
        2=RTaccessSA

        [SubFrame26]
        1=TMpoll,25      ;TM poll from: PACS
        2=RTaccessSA

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

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

        [SubFrame29]
        1=TMpacket,25   ;TM packet from: PACS
        2=RTaccessSA

        [SubFrame30]
        1=TMpoll,25      ;TM poll from: PACS
        2=RTaccessSA

        [SubFrame31]
        1=TMpacket,25   ;TM packet from: PACS
        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: PACS
3=TMpoll,25    ;TM poll from: PACS
4=RTaccessSA

[SubFrame34]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame35]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA

[SubFrame36]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame37]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA

[SubFrame38]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame39]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA

[SubFrame40]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame41]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA

[SubFrame42]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame43]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA

[SubFrame44]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame45]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA

[SubFrame46]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame47]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA

[SubFrame48]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame49]
```

```
        1=TCpacket  ;TC packet to: HIFI
        2=TMpoll,25    ;TM poll from: PACS
        3=RTaccessSA

        [SubFrame50]
        1=TMpacket,25  ;TM packet from: PACS
        2=RTaccessSA

        [SubFrame51]
        1=TMpoll,25    ;TM poll from: PACS
        2=RTaccessSA

        [SubFrame52]
        1=TMpacket,25  ;TM packet from: PACS
        2=RTaccessSA

        [SubFrame53]
        1=TMpoll,25    ;TM poll from: PACS
        2=RTaccessSA

        [SubFrame54]
        1=TMpacket,25  ;TM packet from: PACS
        2=RTaccessSA

        [SubFrame55]
        1=TMpoll,25    ;TM poll from: PACS
        2=RTaccessSA

        [SubFrame56]
        1=TMpacket,25  ;TM packet from: PACS
        2=RTaccessSA

        [SubFrame57]
        1=TMpoll,25    ;TM poll from: PACS
        2=RTaccessSA

        [SubFrame58]
        1=TMpacket,25  ;TM packet from: PACS
        2=RTaccessSA

        [SubFrame59]
        1=TMpoll,25    ;TM poll from: PACS
        2=RTaccessSA

        [SubFrame60]
        1=TMpacket,25  ;TM packet from: PACS
        2=RTaccessSA

        [SubFrame61]
        1=RTreadSA,25,1 ;RT status from: PACS
        2=TMpoll,25    ;TM poll from: PACS

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

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

Appendix 2: PACS Burst Mode Bus Profile (PACS_burst_mode.PST)

```
;Burst HERSCHEL bus profile
;PACS is RT 25: 38TM, 2TC
;SPIRE is RT 21: 2TM, 1TC
;HIFI is RT 16:  2TM, 1TC

[Config]
NumberOfSubFrames=64

[SubFrame1]
1=RTaccessSA

[SubFrame2]
1=RTaccessSA

[SubFrame3]
1=RTaccessSA

[SubFrame4]
1=TMpoll,21     ;TM poll from: SPIRE
2=RTaccessSA

[SubFrame5]
1=TMpacket,21  ;TM packet from: SPIRE
2=TMpoll,16     ;TM poll from: HIFI
3=RTaccessSA

[SubFrame6]
1=TMpacket,16  ;TM packet from: HIFI
2=TMpoll,25     ;TM poll from: PACS
3=RTaccessSA

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

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

[SubFrame9]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25     ;TM poll from: PACS
3=RTaccessSA

[SubFrame10]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame11]
1=TMpoll,25     ;TM poll from: PACS
2=RTaccessSA

[SubFrame12]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25     ;TM poll from: PACS
3=RTaccessSA

[SubFrame13]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25     ;TM poll from: PACS
3=RTaccessSA

[SubFrame14]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25     ;TM poll from: PACS
```

```
3=RTaccessSA

[SubFrame15]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame16]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame17]
1=TCpacket     ;TC packet PACS
2=RTaccessSA

[SubFrame18]
1=TCpacket     ;TC packet SPIRE
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame19]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame20]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA

[SubFrame21]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame22]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame23]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame24]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame25]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame26]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA

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

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

[SubFrame29]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA
```

```
[SubFrame30]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame31]
1=TMpacket,25  ;TM packet from: PACS
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 PACS
3=RTaccessSA

[SubFrame34]
1=RTaccessSA

[SubFrame35]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA

[SubFrame36]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame37]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA

[SubFrame38]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame39]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame40]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame41]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame42]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame43]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame44]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame45]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA
```

```
[SubFrame46]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame47]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame48]
1=TMpacket,25  ;TM packet from: PACS
2=RTaccessSA

[SubFrame49]
1=TCpacket      ;TC packet HIFI
2=RTaccessSA

[SubFrame50]
1=RTaccessSA

[SubFrame51]
1=TMpoll,25    ;TM poll from: PACS
2=RTaccessSA

[SubFrame52]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame53]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame54]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame55]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame56]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame57]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame58]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame59]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,25    ;TM poll from: PACS
3=RTaccessSA

[SubFrame60]
1=TMpacket,25  ;TM packet from: PACS
2=TMpoll,21    ;TM poll from: SPIRE
3=RTaccessSA
```

```
[SubFrame61]
1=RTreadSA,25,1 ;RT status from: PACS
2=TMpacket,21  ;TM packet from: SPIRE
3=TMpoll,16     ;TM poll from: HIFI

[SubFrame62]
1=RTreadSA,16,1 ;RT status from: HIFI
2=TMpacket,16  ;TM packet from: HIFI
3=TMpoll,25     ;TM poll from: PACS

[SubFrame63]
1=RTreadSA,21,1 ;RT status from: SPIRE
2=TMpacket,25  ;TM packet from: PACS
```

Appendix 3: Log of EGSE_CONFIG_AUTO.tcl

```
********************************************************************************
2005.262.12.11.49.884611 EGSE CONFIG Sequence
********************************************************************************
2005.262.12.11.49.885071
********************************************************************************
2005.262.12.11.49.885650 Check of CDMU DFE and PLM SCOE
********************************************************************************
2005.262.12.11.49.885959
2005.262.12.11.49.886495
2005.262.12.11.49.886729 Connecting to CDMU DFE
2005.262.12.11.51.891525 Attaching to CMDU DFE
2005.262.12.11.52.899027
2005.262.12.11.52.899533 Checking if CDMU DFE BIST was OK
2005.262.12.11.54.902327
2005.262.12.11.55.123694 >>> RESULT : CDMU DFE BIST OK, continuing EGSE_CONFIG.
2005.262.12.11.57.126165
2005.262.12.11.57.126531 Connecting to PLM SCOE
2005.262.12.11.59.129378 Attaching to PLM SCOE
2005.262.12.12.00.132984
2005.262.12.12.00.133348 Checking if PLM SCOE BIST was OK
2005.262.12.12.02.136201
2005.262.12.12.02.259225 >>> RESULT : PLM SCOE BIST OK, continuing EGSE_CONFIG.
********************************************************************************
2005.262.12.12.04.262965 Configuring CDMU DFE
********************************************************************************
2005.262.12.12.04.263385
2005.262.12.12.04.263926 Switching CDMUDFE to ONLINE mode
2005.262.12.12.05.392973
2005.262.12.12.05.393362
2005.262.12.12.05.393975
2005.262.12.12.05.394528 Available PST tables:
2005.262.12.12.05.395130 1. HIFI_prime_inst.PST
2005.262.12.12.05.395758 2. SPIRE_prime_inst.PST
2005.262.12.12.05.396342 3. PACS_prime_inst.PST
2005.262.12.12.05.396926 4. PACS_burst_mode.PST
2005.262.12.12.05.397506 5. PACS_SPIRE_par.PST
2005.262.12.12.05.398102
2005.262.12.12.05.419731  >>> Please enter the number of the required PST table. Enter 0 for
an unlisted.
2005.262.12.12.50.504298
2005.262.12.12.50.504649 You have selected 1 : HIFI_prime_inst.PST
2005.262.12.12.50.505245
2005.262.12.12.50.506090 Loading HIFI_prime_inst.PST file on CDMU DFE
2005.262.12.12.50.506704
2005.262.12.12.55.653661 The PST table is loaded on the CDMU DFE.
2005.262.12.12.55.654089
2005.262.12.12.55.654742 Enabling PST file execution.
2005.262.12.12.56.725991
2005.262.12.12.56.726360 Enabling TM Queue.
2005.262.12.12.57.827205
2005.262.12.12.57.827575 Enabling TM Polling.
2005.262.12.12.58.863975
2005.262.12.12.58.864346 Enabling TC Queue.
2005.262.12.12.59.900699
2005.262.12.12.59.901063 Enabling SA Queue.
2005.262.12.13.00.939402
2005.262.12.13.00.939762 Enabling SA Reading.
2005.262.12.13.01.976208
2005.262.12.13.01.976571 Enabling Low Level Time Synchronisation.
2005.262.12.13.03.012964
2005.262.12.13.03.038595 ****************** USER INFORMATION *****************
2005.262.12.13.03.039344 User Info>: >>> Please Enable the Busmonitor (Set Online Mode and
Start New Acquisition) and press OK.
2005.262.12.13.03.039972 ******************************************************
2005.262.12.14.09.719796 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.262.12.14.09.720174 >>>>>>>>  Reading out CDMUDFE Settings
2005.262.12.14.09.720764 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
```

```
2005.262.12.14.09.721369
2005.262.12.14.09.723805 Status_CDMU_OnLine is 1 (extracted from TLM YM777944)
2005.262.12.14.09.726397 Status_CDMU_TMpolling is 1 (extracted from TLM YM780944)
2005.262.12.14.09.728681 Status_CDMU_SAreadActive is 1 (extracted from TLM YM781944)
2005.262.12.14.09.730820 Status_CDMU_SAqueueActive is 1 (extracted from TLM YM782944)
2005.262.12.14.09.733004 Status_CDMU_TMqueueActive is 1 (extracted from TLM YM783944)
2005.262.12.14.09.735200 Status_CDMU_TCqueueActive is 1 (extracted from TLM YM784944)
2005.262.12.14.09.736313 Status_CDMU_PSTfileName is HIFI_prime_inst.... (extracted from TLM
YM809944)
2005.262.12.14.09.738519 Status_CDMU_PSTrunning is 1 (extracted from TLM YM829944)
***************************************************************************
2005.262.12.14.12.742721 Configuring PLM SCOE
***************************************************************************
2005.262.12.14.12.743160
2005.262.12.14.12.743803 Switching PLM SCOE to ONLINE mode
2005.262.12.14.13.831711
2005.262.12.14.18.835980 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.262.12.14.18.836363 >>>>>>>>  Reading out PLM SCOE Settings
2005.262.12.14.18.837002 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.262.12.14.18.837612
2005.262.12.14.18.840009 Status_PLM_OnLine is 1 (extracted from TLM YM018942)
2005.262.12.14.18.842306 Status_PLM_PSU1_Master is currently 0 (extracted from TLM YM129942)
2005.262.12.14.18.844614 Status_PLM_PSU1_Slave is currently 0 (extracted from TLM YM145942)
2005.262.12.14.18.846830 Status_PLM_PSU2_Master is currently 0 (extracted from TLM YM177942)
2005.262.12.14.18.849122 Status_PLM_PSU2_Slave is currently 0 (extracted from TLM YM193942)
2005.262.12.14.18.853836 Status_PLM_LCL1_V is currently 0.00697093131021 (extracted from TLM
YM228942)
2005.262.12.14.18.857165 Status_PLM_LCL1_I is currently 0.000101930265373 (extracted from TLM
YM232942)
2005.262.12.14.18.861423 Status_PLM_LCL2_V is currently 0.0650620236993 (extracted from TLM
YM244942)
2005.262.12.14.18.864677 Status_PLM_LCL2_I is currently 0.000506599550135 (extracted from TLM
YM248942)
2005.262.12.14.18.869053 Status_PLM_LCL3_V is currently 0.00929457508028 (extracted from TLM
YM260942)
2005.262.12.14.18.872280 Status_PLM_LCL3_I is currently 0.000506599550135 (extracted from TLM
YM264942)
2005.262.12.14.18.876689 Status_PLM_LCL4_V is currently 0.034854657948 (extracted from TLM
YM276942)
2005.262.12.14.18.879985 Status_PLM_LCL4_I is currently 0.000506599550135 (extracted from TLM
YM280942)
2005.262.12.14.18.884291 Status_PLM_LCL5_V is currently 0.0302073694766 (extracted from TLM
YM292942)
2005.262.12.14.18.887587 Status_PLM_LCL5_I is currently 0.000253299775068 (extracted from TLM
YM296942)
2005.262.12.14.18.891927 Status_PLM_LCL6_V is currently 0.0766802430153 (extracted from TLM
YM308942)
2005.262.12.14.18.895280 Status_PLM_LCL6_I is currently 0.000253299775068 (extracted from TLM
YM312942)
2005.262.12.14.18.899897 Status_PLM_LCL7_V is currently 0.0325310118496 (extracted from TLM
YM324942)
2005.262.12.14.18.906047 Status_PLM_LCL7_I is currently 0.000506599550135 (extracted from TLM
YM328942)
2005.262.12.14.18.910932 Status_PLM_LCL8_V is currently 0.00929457508028 (extracted from TLM
YM340942)
2005.262.12.14.18.914863 Status_PLM_LCL8_I is currently 0.000506599550135 (extracted from TLM
YM344942)
2005.262.12.14.18.919909 Status_PLM_LCL9_V is currently 0.00697093131021 (extracted from TLM
YM356942)
2005.262.12.14.18.924126 Status_PLM_LCL9_I is currently 0.00101319910027 (extracted from TLM
YM360942)
2005.262.12.14.18.929012 Status_PLM_LCL10_V is currently 0.00929457508028 (extracted from TLM
YM372942)
2005.262.12.14.18.932819 Status_PLM_LCL10_I is currently 0.000253299775068 (extracted from TLM
YM376942)
2005.262.12.14.18.937711 Status_PLM_LCL11_V is currently 0.00929457508028 (extracted from TLM
YM388942)
2005.262.12.14.18.942772 Status_PLM_LCL11_I is currently 0.000253299775068 (extracted from TLM
YM392942)
2005.262.12.14.18.948017 Status_PLM_LCL12_V is currently 0.00697093131021 (extracted from TLM
YM404942)
```

```
2005.262.12.14.18.952085 Status_PLM_LCL12_I is currently 0.000506599550135 (extracted from TLM
YM408942)
2005.262.12.14.18.956936 Status_PLM_LCL13_V is currently 0.0185891501606 (extracted from TLM
YM420942)
2005.262.12.14.18.960752 Status_PLM_LCL13_I is currently 0.000506599550135 (extracted from TLM
YM424942)
2005.262.12.14.18.965702 Status_PLM_LCL14_V is currently 0.0952693969011 (extracted from TLM
YM436942)
2005.262.12.14.18.969788 Status_PLM_LCL14_I is currently 0.000253299775068 (extracted from TLM
YM440942)
```

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

```
2005.262.12.18.29.121967
***************************************************************************
2005.262.12.18.29.122889 Start of Instrument POWER ON sequence.
***************************************************************************
2005.262.12.18.29.123201
2005.262.12.18.29.123424  To run this script, the CDMU DFE and PLM SCOE should be
2005.262.12.18.29.123663  powered and configured.
2005.262.12.18.29.123891  To initiate, this script will connect and attach to the CDMUDFE
2005.262.12.18.29.124125  and PLM SCOE.
2005.262.12.18.29.124347
2005.262.12.18.29.124571 Connecting to CDMU DFE
2005.262.12.18.31.131209 Attaching to CMDU DFE
2005.262.12.18.32.138387
2005.262.12.18.32.138752 Connecting to PLM SCOE
2005.262.12.18.34.141648 Attaching to PLM SCOE
2005.262.12.18.35.145259 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.262.12.18.35.145656 >>>>>>>>  Reading out CDMUDFE Settings
2005.262.12.18.35.146076 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.262.12.18.35.146488
2005.262.12.18.35.288315 Status_CDMU_OnLine is 1 (extracted from TLM YM777944)
2005.262.12.18.35.290455 Status_CDMU_TMpolling is 1 (extracted from TLM YM780944)
2005.262.12.18.35.292570 Status_CDMU_SAreadActive is 1 (extracted from TLM YM781944)
2005.262.12.18.35.294567 Status_CDMU_SAqueueActive is 1 (extracted from TLM YM782944)
2005.262.12.18.35.296677 Status_CDMU_TMqueueActive is 1 (extracted from TLM YM783944)
2005.262.12.18.35.298694 Status_CDMU_TCqueueActive is 1 (extracted from TLM YM784944)
2005.262.12.18.35.543819 Status_CDMU_PSTfileName is HIFI_prime_inst.... (extracted from TLM
YM809944)
2005.262.12.18.35.546181 Status_CDMU_PSTrunning is 1 (extracted from TLM YM829944)
2005.262.12.18.35.547190
2005.262.12.18.35.547743 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.262.12.18.35.548296 >>>>>>>>  Reading out PLM SCOE Settings
2005.262.12.18.35.548810 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.262.12.18.35.549376
2005.262.12.18.35.682514 Status_PLM_OnLine is 1 (extracted from TLM YM018942)
2005.262.12.18.35.684663 Status_PLM_PSU1_Master is currently 0 (extracted from TLM YM129942)
2005.262.12.18.35.929507 Status_PLM_PSU1_Slave is currently 0 (extracted from TLM YM145942)
2005.262.12.18.35.983548 Status_PLM_PSU2_Master is currently 0 (extracted from TLM YM177942)
2005.262.12.18.35.986034 Status_PLM_PSU2_Slave is currently 0 (extracted from TLM YM193942)
2005.262.12.18.35.989623 Status_PLM_LCL1_V is currently 0.00697093131021 (extracted from TLM
YM228942)
2005.262.12.18.35.992965 Status_PLM_LCL1_I is currently 0.000101930265373 (extracted from TLM
YM232942)
2005.262.12.18.36.239721 Status_PLM_LCL2_V is currently 0.0627383813262 (extracted from TLM
YM244942)
2005.262.12.18.36.243440 Status_PLM_LCL2_I is currently 0.000506599550135 (extracted from TLM
YM248942)
2005.262.12.18.36.247506 Status_PLM_LCL3_V is currently 0.00929457508028 (extracted from TLM
YM260942)
2005.262.12.18.36.251199 Status_PLM_LCL3_I is currently 0.000506599550135 (extracted from TLM
YM264942)
2005.262.12.18.36.497327 Status_PLM_LCL4_V is currently 0.034854657948 (extracted from TLM
YM276942)
2005.262.12.18.36.501024 Status_PLM_LCL4_I is currently 0.000506599550135 (extracted from TLM
YM280942)
2005.262.12.18.36.505161 Status_PLM_LCL5_V is currently 0.0302073694766 (extracted from TLM
YM292942)
2005.262.12.18.36.508815 Status_PLM_LCL5_I is currently 0.000253299775068 (extracted from TLM
YM296942)
2005.262.12.18.36.755038 Status_PLM_LCL6_V is currently 0.0766802430153 (extracted from TLM
YM308942)
2005.262.12.18.36.811492 Status_PLM_LCL6_I is currently 0.000253299775068 (extracted from TLM
YM312942)
2005.262.12.18.36.817792 Status_PLM_LCL7_V is currently 0.034854657948 (extracted from TLM
YM324942)
2005.262.12.18.36.821304 Status_PLM_LCL7_I is currently 0.000506599550135 (extracted from TLM
YM328942)
```

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2005.262.12.18.37.128552 Status_PLM_LCL8_V is currently 0.00929457508028 (extracted from TLM
YM340942)
2005.262.12.18.37.145014 Status_PLM_LCL8_I is currently 0.000506599550135 (extracted from TLM
YM344942)
2005.262.12.18.37.148886 Status_PLM_LCL9_V is currently 0.00697093131021 (extracted from TLM
YM356942)
2005.262.12.18.37.152354 Status_PLM_LCL9_I is currently 0.00101319910027 (extracted from TLM
YM360942)
2005.262.12.18.37.156284 Status_PLM_LCL10_V is currently 0.00929457508028 (extracted from TLM
YM372942)
2005.262.12.18.37.401529 Status_PLM_LCL10_I is currently 0.000253299775068 (extracted from TLM
YM376942)
2005.262.12.18.37.405726 Status_PLM_LCL11_V is currently 0.00929457508028 (extracted from TLM
YM388942)
2005.262.12.18.37.409410 Status_PLM_LCL11_I is currently 0.000506599550135 (extracted from TLM
YM392942)
2005.262.12.18.37.413396 Status_PLM_LCL12_V is currently 0.00697093131021 (extracted from TLM
YM404942)
2005.262.12.18.37.659004 Status_PLM_LCL12_I is currently 0.000506599550135 (extracted from TLM
YM408942)
2005.262.12.18.37.718854 Status_PLM_LCL13_V is currently 0.0185891501606 (extracted from TLM
YM420942)
2005.262.12.18.37.722100 Status_PLM_LCL13_I is currently 0.000506599550135 (extracted from TLM
YM424942)
2005.262.12.18.37.726054 Status_PLM_LCL14_V is currently 0.0952693969011 (extracted from TLM
YM436942)
2005.262.12.18.37.729698 Status_PLM_LCL14_I is currently 0.000253299775068 (extracted from TLM
YM440942)
2005.262.12.18.37.730470
2005.262.12.18.37.731094
********************************************************************************
2005.262.12.18.37.732099 Power On Instruments
********************************************************************************
2005.262.12.18.37.732831
2005.262.12.18.37.733456
2005.262.12.18.37.734077
2005.262.12.18.37.734699 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.262.12.18.37.735323 >>>>>>>>  Start Up Instruments
2005.262.12.18.37.735951 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.262.12.18.37.736577
2005.262.12.18.37.765982  Which instrument needs to be Powered? PACS, SPIRE, HIFI, CCU?
2005.262.12.18.46.374129  You have selected to power HIFI.
2005.262.12.18.46.374701
2005.262.12.18.46.375354  The current power on order is:
2005.262.12.18.46.376004  --------------------------------
2005.262.12.18.46.378089  1. LCL 3    HIFI ICU    Primary    Voltage: 0.00929457508028 V
Current: 0.000506599550135 A
2005.262.12.18.46.379901  2. LCL 7    HIFI HRH    Primary    Voltage: 0.034854657948 V
Current: 0.000506599550135 A
2005.262.12.18.46.682226  3. LCL 5    HIFI WEH    Primary    Voltage: 0.0302073694766 V
Current: 0.000253299775068 A
2005.262.12.18.46.684935  4. LCL 4    HIFI LCU    Primary    Voltage: 0.0325310118496 V
Current: 0.000506599550135 A
2005.262.12.18.46.685951  5. LCL 0    N/A    Primary    Voltage: N/A V    Current: N/A A
2005.262.12.18.46.687182  6. LCL 0    N/A    Primary    Voltage: N/A V    Current: N/A A
2005.262.12.18.46.688278
2005.262.12.18.46.716504  Do you want to change this order? : Choose Yes or No
2005.262.12.19.07.176815  User has chosen NO
2005.262.12.19.09.181221
2005.262.12.19.09.210503  Do you want to enable the PSU(s)? : Choose Yes or No
2005.262.12.19.10.627799  User has chosen YES
2005.262.12.19.12.631277
2005.262.12.19.12.719613  Sending Telecommand YC036942
2005.262.12.19.12.719984  Synchronizing on SEV...
2005.262.12.19.12.721255  Synchronised on SEV for TC(s): YC036942
2005.262.12.19.12.721967
2005.262.12.19.12.722561  >>> Checking
2005.262.12.19.18.725969  PSU 1 Master status is currently 1 (from YM129942)
2005.262.12.19.18.726359  PSU 1 Slave status is currently 1 (from YM145942)
2005.262.12.19.18.727019
2005.262.12.19.18.752688 ******************** USER INFORMATION ********************
```

```
2005.262.12.19.18.753452 User Info>: Check Successful! PSU 1 has been enabled.
2005.262.12.19.18.754091 ********************************************************
2005.262.12.19.22.056586
2005.262.12.19.22.136690  Sending Telecommand YC036942
2005.262.12.19.22.137054  Synchronizing on SEV...
2005.262.12.19.22.138028  Synchronised on SEV for TC(s): YC036942
2005.262.12.19.22.138674
2005.262.12.19.22.139323  >>> Checking
2005.262.12.19.28.144751  PSU 2 Master status is currently 1 (from YM177942)
2005.262.12.19.28.145231  PSU 2 Slave status is currently 1 (from YM193942)
2005.262.12.19.28.145836
2005.262.12.19.28.176821 ******************* USER INFORMATION *******************
2005.262.12.19.28.177552 User Info>: Check Successful! PSU 2 has been enabled.
2005.262.12.19.28.178205 ********************************************************
2005.262.12.19.29.436922
2005.262.12.19.29.437327  >>> Start Enabling LCL's
2005.262.12.19.29.437943
2005.262.12.19.29.466667  Do you want to enable LCL 3? : Choose Yes or No
2005.262.12.19.32.037536  User has chosen YES
2005.262.12.19.34.042281
2005.262.12.19.34.140231  Sending Telecommand YC040942 to Enable Limiter
2005.262.12.19.34.140604  Synchronizing on SEV...
2005.262.12.19.34.141680  Synchronised on SEV for TC(s): YC040942
2005.262.12.19.34.142310
2005.262.12.19.34.207361  Sending Telecommand YC043942 to Set Limiter
2005.262.12.19.34.207825  Synchronizing on SEV...
2005.262.12.19.34.251141  Synchronised on SEV for TC(s): YC043942
2005.262.12.19.34.251526
2005.262.12.19.34.252097  >>> Checking
2005.262.12.19.40.257859  LCL 3 has currently a voltage of 27.9371700287.(from YM260942)
2005.262.12.19.40.258263  LCL 3 has currently a current of 0.525850355625.(from YM264942)
2005.262.12.19.40.258866
2005.262.12.19.40.285970 ******************* USER INFORMATION *******************
2005.262.12.19.40.286671 User Info>: Check Successful! LCL 3 has been enabled.
2005.262.12.19.40.287275 ********************************************************
2005.262.14.51.22.308280
2005.262.14.51.22.385529  Do you want to enable LCL 7? : Choose Yes or No
2005.262.14.51.23.754512  User has chosen YES
2005.262.14.51.25.756222
2005.262.14.51.25.871895  Sending Telecommand YC040942 to Enable Limiter
2005.262.14.51.25.872271  Synchronizing on SEV...
2005.262.14.51.25.873360  Synchronised on SEV for TC(s): YC040942
2005.262.14.51.25.874019
2005.262.14.51.25.941478  Sending Telecommand YC043942 to Set Limiter
2005.262.14.51.25.941850  Synchronizing on SEV...
2005.262.14.51.25.972807  Synchronised on SEV for TC(s): YC043942
2005.262.14.51.25.973215
2005.262.14.51.25.973798  >>> Checking
2005.262.14.51.31.980521  LCL 7 has currently a voltage of 27.7350139618.(from YM324942)
2005.262.14.51.31.980935  LCL 7 has currently a current of 2.43015789986.(from YM328942)
2005.262.14.51.31.981540
2005.262.14.51.32.011969 ******************* USER INFORMATION *******************
2005.262.14.51.32.012743 User Info>: Check Successful! LCL 7 has been enabled.
2005.262.14.51.32.013351 ********************************************************
2005.262.14.52.23.209069
2005.262.14.52.23.258344  Do you want to enable LCL 5? : Choose Yes or No
2005.262.14.52.24.606455  User has chosen YES
2005.262.14.52.26.609800
2005.262.14.52.26.715549  Sending Telecommand YC040942 to Enable Limiter
2005.262.14.52.26.715921  Synchronizing on SEV...
2005.262.14.52.26.721063  Synchronised on SEV for TC(s): YC040942
2005.262.14.52.26.721473
2005.262.14.52.26.782424  Sending Telecommand YC043942 to Set Limiter
2005.262.14.52.26.782803  Synchronizing on SEV...
2005.262.14.52.26.845470  Synchronised on SEV for TC(s): YC043942
2005.262.14.52.26.846098
2005.262.14.52.26.846706  >>> Checking
2005.262.14.52.32.852758  LCL 5 has currently a voltage of 27.9394931793.(from YM292942)
2005.262.14.52.32.853228  LCL 5 has currently a current of 0.948354363441.(from YM296942)
2005.262.14.52.32.853847
2005.262.14.52.32.879351 ******************* USER INFORMATION *******************
```

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2005.262.14.52.32.880073 User Info>: Check Successful! LCL 5 has been enabled.
2005.262.14.52.32.880701 **********************************************************
2005.262.14.53.25.871657
2005.262.14.53.25.905985  Do you want to enable LCL 4? : Choose Yes or No
2005.262.14.53.27.689471  User has chosen YES
2005.262.14.53.29.693035
2005.262.14.53.29.749679  Sending Telecommand YC040942 to Enable Limiter
2005.262.14.53.29.750050  Synchronizing on SEV...
2005.262.14.53.29.751005  Synchronised on SEV for TC(s): YC040942
2005.262.14.53.29.751655
2005.262.14.53.29.807395  Sending Telecommand YC043942 to Set Limiter
2005.262.14.53.29.807778  Synchronizing on SEV...
2005.262.14.53.29.844153  Synchronised on SEV for TC(s): YC043942
2005.262.14.53.29.844612
2005.262.14.53.29.845199  >>> Checking
2005.262.14.53.35.848159  LCL 4 has currently a voltage of 27.9371700287.(from YM276942)
2005.262.14.53.35.848556  LCL 4 has currently a current of 0.75179374218.(from YM280942)
2005.262.14.53.35.849189
2005.262.14.53.35.875135 ******************** USER INFORMATION ********************
2005.262.14.53.35.875855 User Info>: Check Successful! LCL 4 has been enabled.
2005.262.14.53.35.876470 **********************************************************
2005.262.14.53.36.895609
2005.262.14.53.36.924044 ******************** USER INFORMATION ********************
2005.262.14.53.36.924748 User Info>: No LCL is selected to be switched on as fifth
2005.262.14.53.36.925360 **********************************************************
2005.262.14.53.38.703492
2005.262.14.53.38.732040 ******************** USER INFORMATION ********************
2005.262.14.53.38.732791 User Info>: No LCL is selected to be switched on as sixth
2005.262.14.53.38.733420 **********************************************************
2005.262.14.53.39.622213
2005.262.14.53.39.622613
2005.262.14.53.39.623225  All selected LCL's for HIFI are powered.
2005.262.14.53.39.623821
2005.262.14.53.39.689212  Do you want to power on another instrument? : Choose Yes or No
2005.262.14.53.50.063555  User has chosen NO
2005.262.14.53.52.066711
2005.262.14.53.52.067415 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.262.14.53.52.068047 >>>>>>>>  Reading out PLM SCOE Settings
2005.262.14.53.52.068654 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.262.14.53.52.069244
2005.262.14.53.52.070498 Status_PLM_OnLine is 1 (extracted from TLM YM018942)
2005.262.14.53.52.071772 Status_PLM_PSU1_Master is currently 1 (extracted from TLM YM129942)
2005.262.14.53.52.073041 Status_PLM_PSU1_Slave is currently 1 (extracted from TLM YM145942)
2005.262.14.53.52.074328 Status_PLM_PSU2_Master is currently 1 (extracted from TLM YM177942)
2005.262.14.53.52.075593 Status_PLM_PSU2_Slave is currently 1 (extracted from TLM YM193942)
2005.262.14.53.52.076884 Status_PLM_LCL1_V is currently 0.00697093131021 (extracted from TLM
YM228942)
2005.262.14.53.52.078251 Status_PLM_LCL1_I is currently 0.000917372351978 (extracted from TLM
YM232942)
2005.262.14.53.52.079575 Status_PLM_LCL2_V is currently 0.0650620236993 (extracted from TLM
YM244942)
2005.262.14.53.52.080895 Status_PLM_LCL2_I is currently 0.00557259470224 (extracted from TLM
YM248942)
2005.262.14.53.52.082196 Status_PLM_LCL3_V is currently 27.9418182373 (extracted from TLM
YM260942)
2005.262.14.53.52.083514 Status_PLM_LCL3_I is currently 0.495454370975 (extracted from TLM
YM264942)
2005.262.14.53.52.084822 Status_PLM_LCL4_V is currently 27.9394931793 (extracted from TLM
YM276942)
2005.262.14.53.52.086138 Status_PLM_LCL4_I is currently 0.72139775753 (extracted from TLM
YM280942)
2005.262.14.53.52.087455 Status_PLM_LCL5_V is currently 27.9394931793 (extracted from TLM
YM292942)
2005.262.14.53.52.088767 Status_PLM_LCL5_I is currently 0.95012742281 (extracted from TLM
YM296942)
2005.262.14.53.52.090083 Status_PLM_LCL6_V is currently 0.079003892839 (extracted from TLM
YM308942)
2005.262.14.53.52.091408 Status_PLM_LCL6_I is currently 0.00379949645139 (extracted from TLM
YM312942)
2005.262.14.53.52.092756 Status_PLM_LCL7_V is currently 27.7280406952 (extracted from TLM
YM324942)
```

```
2005.262.14.53.52.094079 Status_PLM_LCL7_I is currently 2.50057530403 (extracted from TLM
YM328942)
2005.262.14.53.52.095408 Status_PLM_LCL8_V is currently 0.00929457508028 (extracted from TLM
YM340942)
2005.262.14.53.52.096739 Status_PLM_LCL8_I is currently 0.0045593958348 (extracted from TLM
YM344942)
2005.262.14.53.52.098064 Status_PLM_LCL9_V is currently 0.00697093131021 (extracted from TLM
YM356942)
2005.262.14.53.52.099400 Status_PLM_LCL9_I is currently 0.00253299763426 (extracted from TLM
YM360942)
2005.262.14.53.52.100733 Status_PLM_LCL10_V is currently 0.00929457508028 (extracted from TLM
YM372942)
2005.262.14.53.52.102154 Status_PLM_LCL10_I is currently 0.00278629735112 (extracted from TLM
YM376942)
2005.262.14.53.52.103486 Status_PLM_LCL11_V is currently 0.00929457508028 (extracted from TLM
YM388942)
2005.262.14.53.52.104811 Status_PLM_LCL11_I is currently 0.00354619673453 (extracted from TLM
YM392942)
2005.262.14.53.52.106153 Status_PLM_LCL12_V is currently 0.00697093131021 (extracted from TLM
YM404942)
2005.262.14.53.52.107502 Status_PLM_LCL12_I is currently 0.0116517897695 (extracted from TLM
YM408942)
2005.262.14.53.52.108823 Status_PLM_LCL13_V is currently 0.0185891501606 (extracted from TLM
YM420942)
2005.262.14.53.52.110211 Status_PLM_LCL13_I is currently 0.00151979865041 (extracted from TLM
YM424942)
2005.262.14.53.52.111580 Status_PLM_LCL14_V is currently 0.0952693969011 (extracted from TLM
YM436942)
2005.262.14.53.52.112925 Status_PLM_LCL14_I is currently 0.00430609611794 (extracted from TLM
YM440942)
2005.262.14.53.52.113664 <<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<
2005.262.14.53.52.114332 <<<<<<<  Power Sequence Ended!
2005.262.14.53.52.114997 <<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<
```

Appendix 5: Log of PACS_POWER_ON.tcl

```
2005.262.15.00.48.255557
*******************************************************************************
2005.262.15.00.48.256466 Start of PACS POWER ON sequence.
*******************************************************************************
2005.262.15.00.48.256803
2005.262.15.00.48.257034 To run this script, the CDMU DFE and PLM SCOE should be
2005.262.15.00.48.257269 powered and configured.
2005.262.15.00.48.257495 To initiate, this script will connect and attach to the CDMUDFE
2005.262.15.00.48.257731 and PLM SCOE.
2005.262.15.00.48.257955
2005.262.15.00.48.258181 >>> Connecting to CDMU DFE.
2005.262.15.00.51.263996 >>> Attaching to CDMU DFE.
2005.262.15.00.54.272785
2005.262.15.00.54.273149 >>> Connecting to PLM SCOE.
2005.262.15.00.57.277568 >>> Attaching to PLM SCOE.
2005.262.15.01.00.280612
2005.262.15.01.00.280988 >>> Reading out CDMUDFE Settings
2005.262.15.01.00.281406
2005.262.15.01.00.710024 Status_CDMU_OnLine is 1 (extracted from TLM YM777944)
2005.262.15.01.00.713797 Status_CDMU_TMpolling is 1 (extracted from TLM YM780944)
2005.262.15.01.00.919526 Status_CDMU_SAreadActive is 1 (extracted from TLM YM781944)
2005.262.15.01.00.922264 Status_CDMU_SAqueueActive is 1 (extracted from TLM YM782944)
2005.262.15.01.00.924911 Status_CDMU_TMqueueActive is 1 (extracted from TLM YM783944)
2005.262.15.01.01.167698 Status_CDMU_TCqueueActive is 1 (extracted from TLM YM784944)
2005.262.15.01.01.170548 Status_CDMU_PSTfileName is PACS_prime_inst.... (extracted from TLM
YM809944)
2005.262.15.01.01.414217 Status_CDMU_PSTrunning is 1 (extracted from TLM YM829944)
2005.262.15.01.01.414832
2005.262.15.01.01.415318 >>> Reading out PLM SCOE Settings
2005.262.15.01.01.415817
2005.262.15.01.01.594898 Status_PLM_OnLine is 1 (extracted from TLM YM018942)
2005.262.15.01.01.680038 Status_PLM_PSU1_Master is currently 1 (extracted from TLM YM129942)
2005.262.15.01.01.923809 Status_PLM_PSU1_Slave is currently 1 (extracted from TLM YM145942)
2005.262.15.01.01.926602 Status_PLM_PSU2_Master is currently 1 (extracted from TLM YM177942)
2005.262.15.01.01.929412 Status_PLM_PSU2_Slave is currently 1 (extracted from TLM YM193942)
2005.262.15.01.02.175169 Status_PLM_LCL1_V is currently 0.00697093131021 (extracted from TLM
YM228942)
2005.262.15.01.02.179303 Status_PLM_LCL1_I is currently 0.00101930263918 (extracted from TLM
YM232942)
2005.262.15.01.02.183950 Status_PLM_LCL2_V is currently 0.0650620236993 (extracted from TLM
YM244942)
2005.262.15.01.02.477901 Status_PLM_LCL2_I is currently 0.00607919460163 (extracted from TLM
YM248942)
2005.262.15.01.02.483277 Status_PLM_LCL3_V is currently 27.9418182373 (extracted from TLM
YM260942)
2005.262.15.01.02.486985 Status_PLM_LCL3_I is currently 0.484815746546 (extracted from TLM
YM264942)
2005.262.15.01.02.781677 Status_PLM_LCL4_V is currently 27.9394931793 (extracted from TLM
YM276942)
2005.262.15.01.02.785869 Status_PLM_LCL4_I is currently 0.723424196243 (extracted from TLM
YM280942)
2005.262.15.01.02.790642 Status_PLM_LCL5_V is currently 27.9418182373 (extracted from TLM
YM292942)
2005.262.15.01.03.035063 Status_PLM_LCL5_I is currently 0.95088738203 (extracted from TLM
YM296942)
2005.262.15.01.03.040206 Status_PLM_LCL6_V is currently 0.0766802430153 (extracted from TLM
YM308942)
2005.262.15.01.03.043777 Status_PLM_LCL6_I is currently 0.00379949645139 (extracted from TLM
YM312942)
2005.262.15.01.03.287862 Status_PLM_LCL7_V is currently 27.7257175446 (extracted from TLM
YM324942)
2005.262.15.01.03.376065 Status_PLM_LCL7_I is currently 2.5324909687 (extracted from TLM
YM328942)
2005.262.15.01.03.620976 Status_PLM_LCL8_V is currently 0.00929457508028 (extracted from TLM
YM340942)
2005.262.15.01.03.711949 Status_PLM_LCL8_I is currently 0.0045593958348 (extracted from TLM
YM344942)
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2005.262.15.01.03.716487 Status_PLM_LCL9_V is currently 0.00697093131021 (extracted from TLM
YM356942)
2005.262.15.01.03.960227 Status_PLM_LCL9_I is currently 0.00253299763426 (extracted from TLM
YM360942)
2005.262.15.01.03.964874 Status_PLM_LCL10_V is currently 0.00929457508028 (extracted from TLM
YM372942)
2005.262.15.01.03.968304 Status_PLM_LCL10_I is currently 0.00278629735112 (extracted from TLM
YM376942)
2005.262.15.01.04.213367 Status_PLM_LCL11_V is currently 0.00697093131021 (extracted from TLM
YM388942)
2005.262.15.01.04.217172 Status_PLM_LCL11_I is currently 0.00354619673453 (extracted from TLM
YM392942)
2005.262.15.01.04.462023 Status_PLM_LCL12_V is currently 0.00697093131021 (extracted from TLM
YM404942)
2005.262.15.01.04.514680 Status_PLM_LCL12_I is currently 0.0116517897695 (extracted from TLM
YM408942)
2005.262.15.01.04.572918 Status_PLM_LCL13_V is currently 0.0185891501606 (extracted from TLM
YM420942)
2005.262.15.01.04.817428 Status_PLM_LCL13_I is currently 0.00151979865041 (extracted from TLM
YM424942)
2005.262.15.01.04.822507 Status_PLM_LCL14_V is currently 0.090622112155 (extracted from TLM
YM436942)
2005.262.15.01.04.827056 Status_PLM_LCL14_I is currently 0.00430609611794 (extracted from TLM
YM440942)
2005.262.15.01.04.827891
2005.262.15.01.04.828532 >>> Switch ON PSU(s)
2005.262.15.01.04.829156
2005.262.15.01.04.963249 >>> Sending Telecommand YC036942
2005.262.15.01.04.963616
2005.262.15.01.04.964244 >>> Checking
2005.262.15.01.11.095200 PSU 2 Master status is currently 1 (from YM177942)
2005.262.15.01.11.095607 PSU 2 Slave status is currently 1 (from YM193942)
2005.262.15.01.11.096324
2005.262.15.01.11.096970 >>> Switch ON DPU
2005.262.15.01.11.097632
2005.262.15.01.11.135820 >>> Sending Telecommand YC040942 to Enable Limiter 13 -> PACS DPU
2005.262.15.01.11.136217
2005.262.15.01.11.275545 >>> Sending Telecommand YC043942 to Set Limiter 13 -> PACS DPU
2005.262.15.01.11.275923
2005.262.15.01.11.276531 >>> Checking
2005.262.15.01.17.431963 LCL 13 has currently a voltage of 27.9487876892.(from YM420942)
2005.262.15.01.17.432657 LCL 13 has currently a current of 0.471644192934.(from YM424942)
2005.262.15.01.17.433496
2005.262.15.01.34.441434 Force Boot DPU
2005.262.15.01.35.585478 ******************** USER INFORMATION ********************
2005.262.15.01.35.585923 User Info>: Please check if the force boot has been executed
correctly and press OK.
2005.262.15.01.35.586608 ********************************************************
2005.262.15.01.55.837898
2005.262.15.01.55.838250
2005.262.15.01.55.838847 >>> Switch ON DEC/MEC
2005.262.15.01.55.839434
2005.262.15.01.55.981851 >>> Sending Telecommand YC040942 to Enable Limiter 12 -> PACS DEC/MEC
2005.262.15.01.55.982224
2005.262.15.01.56.049014 >>> Sending Telecommand YC043942 to Set Limiter 12 -> PACS DEC/MEC
2005.262.15.01.56.049507
2005.262.15.01.56.050106 >>> Checking
2005.262.15.02.02.129507 LCL 12 has currently a voltage of 27.909286499.(from YM404942)
2005.262.15.02.02.129919 LCL 12 has currently a current of 0.55320674181.(from YM408942)
2005.262.15.02.02.130534
2005.262.15.02.22.139044 DPU reset of 1355
2005.262.15.02.24.267313 Establish DPU --> DMC connection (DPU-START-OBCP, n=19)
2005.262.15.02.28.303133 Copy DMC SW from EEPROM to RAM
2005.262.15.02.30.339564 DMC_LLSW_LOAD_EEPROM
2005.262.15.02.32.409179 Start DMC HLSW
2005.262.15.02.43.019064 DPU starts link with DMC with DPU as slave
2005.262.15.02.46.070903
2005.262.15.02.46.071457
2005.262.15.02.46.072242 >>> Switch ON BOLC
2005.262.15.02.46.073078
2005.262.15.02.46.137728 >>> Sending Telecommand YC040942 to Enable Limiter 11 -> PACS BOLC
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2005.262.15.02.46.138105
2005.262.15.02.46.247009 >>> Sending Telecommand YC043942 to Set Limiter 11 -> PACS BOLC
2005.262.15.02.46.247608
2005.262.15.02.46.248425 >>> Checking
2005.262.15.02.52.572952 LCL 11 has currently a voltage of 27.9627304077.(from YM388942)
2005.262.15.02.52.573387 LCL 11 has currently a current of 0.044580757618.(from YM392942)
2005.262.15.02.52.573998
2005.262.15.03.07.581563 DMC_RESET_SMCS_CHIP_2
2005.262.15.03.11.701699 Execute BOLC initialisation including frequency setting
2005.262.15.03.17.931660 set image frequence to 20 Hz
2005.262.15.03.18.517404
2005.262.15.03.18.517769
2005.262.15.03.18.518342 >>> Switch ON SPU
2005.262.15.03.18.518907
2005.262.15.03.18.535640 >>> Sending Telecommand YC040942 to Enable Limiter 14 -> PACS SPU
2005.262.15.03.18.536103
2005.262.15.03.18.639316 >>> Sending Telecommand YC043942 to Set Limiter 14 -> PACS SPU
2005.262.15.03.18.639696
2005.262.15.03.18.640291 >>> Checking
2005.262.15.03.24.763135 LCL 14 has currently a voltage of 28.0463829041.(from YM436942)
2005.262.15.03.24.763727 LCL 14 has currently a current of 0.448340594769.(from YM440942)
2005.262.15.03.24.764505
2005.262.15.03.44.772619 DPU reset of 1355
2005.262.15.03.48.861162 DPU starts link with DMC with DPU as slave
2005.262.15.03.58.967384 DPU starts link with (blue) SPUS with DPU as master
2005.262.15.04.03.040231 DPU starts link with (red) SPUL with DPU as master
2005.262.15.04.07.179496 LOAD SPU RED HLSW FROM EEPROM TO RAM
2005.262.15.04.13.460660 LOAD SPU BLUE HLSW FROM EEPROM TO RAM
2005.262.15.04.21.633824 Start SPUS HLSW
2005.262.15.04.24.708998 DPU starts link with (blue) SPUS with DPU as slave
2005.262.15.04.28.776094 Start SPUL HLSW
2005.262.15.04.31.816188 DPU starts link with (red) SPUL with DPU as slave
2005.262.15.04.36.959012 Establish connection SPUL-DMC, DMC as master
2005.262.15.04.37.993893 Establish connection SPUS-DMC, DMC as master
2005.262.15.04.40.026365 Establish connection DMC-SPURS DMC Master
2005.262.15.04.41.096345 Establish connection DMC-SPURL DMC Master
2005.262.15.04.43.736125 FPU T-sensors are activated
2005.262.15.04.43.736504
2005.262.15.04.43.737093
2005.262.15.04.43.737696 >>> Reading out CDMUDFE Settings
2005.262.15.04.43.738307
2005.262.15.04.43.848460 Status_CDMU_OnLine is 1 (extracted from TLM YM777944)
2005.262.15.04.43.849846 Status_CDMU_TMpolling is 1 (extracted from TLM YM780944)
2005.262.15.04.43.851277 Status_CDMU_SAreadActive is 1 (extracted from TLM YM781944)
2005.262.15.04.43.852849 Status_CDMU_SAqueueActive is 1 (extracted from TLM YM782944)
2005.262.15.04.43.854095 Status_CDMU_TMqueueActive is 1 (extracted from TLM YM783944)
2005.262.15.04.43.855935 Status_CDMU_TCqueueActive is 1 (extracted from TLM YM784944)
2005.262.15.04.43.857281 Status_CDMU_PSTfileName is PACS_prime_inst.... (extracted from TLM
YM809944)
2005.262.15.04.43.859297 Status_CDMU_PSTrunning is 1 (extracted from TLM YM829944)
2005.262.15.04.43.860000
2005.262.15.04.43.860594 >>> Reading out PLM SCOE Settings
2005.262.15.04.43.861246
2005.262.15.04.44.104378 Status_PLM_OnLine is 1 (extracted from TLM YM018942)
2005.262.15.04.44.105738 Status_PLM_PSU1_Master is currently 1 (extracted from TLM YM129942)
2005.262.15.04.44.107283 Status_PLM_PSU1_Slave is currently 1 (extracted from TLM YM145942)
2005.262.15.04.44.109637 Status_PLM_PSU2_Master is currently 1 (extracted from TLM YM177942)
2005.262.15.04.44.110817 Status_PLM_PSU2_Slave is currently 1 (extracted from TLM YM193942)
2005.262.15.04.44.112000 Status_PLM_LCL1_V is currently 0.00697093131021 (extracted from TLM
YM228942)
2005.262.15.04.44.113126 Status_PLM_LCL1_I is currently 0.000917372351978 (extracted from TLM
YM232942)
2005.262.15.04.44.114557 Status_PLM_LCL2_V is currently 0.0627383813262 (extracted from TLM
YM244942)
2005.262.15.04.44.115673 Status_PLM_LCL2_I is currently 0.00607919460163 (extracted from TLM
YM248942)
2005.262.15.04.44.116833 Status_PLM_LCL3_V is currently 27.9394931793 (extracted from TLM
YM260942)
2005.262.15.04.44.359922 Status_PLM_LCL3_I is currently 0.484815746546 (extracted from TLM
YM264942)
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2005.262.15.04.44.414408 Status_PLM_LCL4_V is currently 27.9418182373 (extracted from TLM
YM276942)
2005.262.15.04.44.415635 Status_PLM_LCL4_I is currently 0.722917497158 (extracted from TLM
YM280942)
2005.262.15.04.44.417268 Status_PLM_LCL5_V is currently 27.9418182373 (extracted from TLM
YM292942)
2005.262.15.04.44.418459 Status_PLM_LCL5_I is currently 0.95012742281 (extracted from TLM
YM296942)
2005.262.15.04.44.419651 Status_PLM_LCL6_V is currently 0.079003892839 (extracted from TLM
YM308942)
2005.262.15.04.44.421158 Status_PLM_LCL6_I is currently 0.00379949645139 (extracted from TLM
YM312942)
2005.262.15.04.44.422355 Status_PLM_LCL7_V is currently 27.7233943939 (extracted from TLM
YM324942)
2005.262.15.04.44.423860 Status_PLM_LCL7_I is currently 2.53907704353 (extracted from TLM
YM328942)
2005.262.15.04.44.425127 Status_PLM_LCL8_V is currently 0.00929457508028 (extracted from TLM
YM340942)
2005.262.15.04.44.668391 Status_PLM_LCL8_I is currently 0.0045593958348 (extracted from TLM
YM344942)
2005.262.15.04.44.729355 Status_PLM_LCL9_V is currently 0.00697093131021 (extracted from TLM
YM356942)
2005.262.15.04.44.730599 Status_PLM_LCL9_I is currently 0.00253299763426 (extracted from TLM
YM360942)
2005.262.15.04.44.732228 Status_PLM_LCL10_V is currently 0.00929457508028 (extracted from TLM
YM372942)
2005.262.15.04.44.733475 Status_PLM_LCL10_I is currently 0.00278629735112 (extracted from TLM
YM376942)
2005.262.15.04.44.734657 Status_PLM_LCL11_V is currently 27.967376709 (extracted from TLM
YM388942)
2005.262.15.04.44.736208 Status_PLM_LCL11_I is currently 0.0448340587318 (extracted from TLM
YM392942)
2005.262.15.04.44.737370 Status_PLM_LCL12_V is currently 27.8953456879 (extracted from TLM
YM404942)
2005.262.15.04.44.738886 Status_PLM_LCL12_I is currently 0.753820121288 (extracted from TLM
YM408942)
2005.262.15.04.44.740079 Status_PLM_LCL13_V is currently 27.9511127472 (extracted from TLM
YM420942)
2005.262.15.04.44.982766 Status_PLM_LCL13_I is currently 0.437195420265 (extracted from TLM
YM424942)
2005.262.15.04.44.984057 Status_PLM_LCL14_V is currently 28.0231437683 (extracted from TLM
YM436942)
2005.262.15.04.44.985243 Status_PLM_LCL14_I is currently 0.750527203083 (extracted from TLM
YM440942)
2005.262.15.04.44.986319
2005.262.15.04.44.986968
*******************************************************************************
2005.262.15.04.44.987979 PACS Power On Sequence has ended
*******************************************************************************
2005.262.15.04.44.988971
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Appendix 6: Log of INSTR_POWER_ON.tcl (Used for SPIRE power on)

```
2005.262.15.07.03.665562
********************************************************************************
2005.262.15.07.03.666467 Start of Instrument POWER ON sequence.
********************************************************************************
2005.262.15.07.03.666778
2005.262.15.07.03.667003  To run this script, the CDMU DFE and PLM SCOE should be
2005.262.15.07.03.667234  powered and configured.
2005.262.15.07.03.667460  To initiate, this script will connect and attach to the CDMUDFE
2005.262.15.07.03.667695  and PLM SCOE.
2005.262.15.07.03.667922
2005.262.15.07.03.668143 Connecting to CDMU DFE
2005.262.15.07.05.673002 Attaching to CMDU DFE
2005.262.15.07.06.678532
2005.262.15.07.06.678892 Connecting to PLM SCOE
2005.262.15.07.08.681788 Attaching to PLM SCOE
2005.262.15.07.09.685375 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.262.15.07.09.685780 >>>>>>>>  Reading out CDMUDFE Settings
2005.262.15.07.09.686202 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.262.15.07.09.686624
2005.262.15.07.09.781525 Status_CDMU_OnLine is 1 (extracted from TLM YM777944)
2005.262.15.07.09.783246 Status_CDMU_TMpolling is 1 (extracted from TLM YM780944)
2005.262.15.07.09.784823 Status_CDMU_SAreadActive is 1 (extracted from TLM YM781944)
2005.262.15.07.09.786412 Status_CDMU_SAqueueActive is 1 (extracted from TLM YM782944)
2005.262.15.07.09.788036 Status_CDMU_TMqueueActive is 1 (extracted from TLM YM783944)
2005.262.15.07.09.789696 Status_CDMU_TCqueueActive is 1 (extracted from TLM YM784944)
2005.262.15.07.09.791281 Status_CDMU_PSTfileName is PACS_prime_inst.... (extracted from TLM
YM809944)
2005.262.15.07.09.792947 Status_CDMU_PSTrunning is 1 (extracted from TLM YM829944)
2005.262.15.07.09.793501
2005.262.15.07.09.794007 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.262.15.07.09.794546 >>>>>>>>  Reading out PLM SCOE Settings
2005.262.15.07.09.795082 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.262.15.07.09.795609
2005.262.15.07.09.926179 Status_PLM_OnLine is 1 (extracted from TLM YM018942)
2005.262.15.07.09.928013 Status_PLM_PSU1_Master is currently 1 (extracted from TLM YM129942)
2005.262.15.07.09.929756 Status_PLM_PSU1_Slave is currently 1 (extracted from TLM YM145942)
2005.262.15.07.09.931526 Status_PLM_PSU2_Master is currently 1 (extracted from TLM YM177942)
2005.262.15.07.09.933293 Status_PLM_PSU2_Slave is currently 1 (extracted from TLM YM193942)
2005.262.15.07.09.936351 Status_PLM_LCL1_V is currently 0.00697093131021 (extracted from TLM
YM228942)
2005.262.15.07.09.939046 Status_PLM_LCL1_I is currently 0.000917372351978 (extracted from TLM
YM232942)
2005.262.15.07.09.942132 Status_PLM_LCL2_V is currently 0.0650620236993 (extracted from TLM
YM244942)
2005.262.15.07.09.944762 Status_PLM_LCL2_I is currently 0.00607919460163 (extracted from TLM
YM248942)
2005.262.15.07.09.947789 Status_PLM_LCL3_V is currently 27.9418182373 (extracted from TLM
YM260942)
2005.262.15.07.09.950402 Status_PLM_LCL3_I is currently 0.485322386026 (extracted from TLM
YM264942)
2005.262.15.07.09.953463 Status_PLM_LCL4_V is currently 27.9394931793 (extracted from TLM
YM276942)
2005.262.15.07.09.956195 Status_PLM_LCL4_I is currently 0.722410917282 (extracted from TLM
YM280942)
2005.262.15.07.09.959398 Status_PLM_LCL5_V is currently 27.9418182373 (extracted from TLM
YM292942)
2005.262.15.07.09.962012 Status_PLM_LCL5_I is currently 0.951393961906 (extracted from TLM
YM296942)
2005.262.15.07.09.965075 Status_PLM_LCL6_V is currently 0.0766802430153 (extracted from TLM
YM308942)
2005.262.15.07.09.967734 Status_PLM_LCL6_I is currently 0.00379949645139 (extracted from TLM
YM312942)
2005.262.15.07.09.970835 Status_PLM_LCL7_V is currently 27.7257175446 (extracted from TLM
YM324942)
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2005.262.15.07.09.973460 Status_PLM_LCL7_I is currently 2.54312968254 (extracted from TLM
YM328942)
2005.262.15.07.09.976600 Status_PLM_LCL8_V is currently 0.00929457508028 (extracted from TLM
YM340942)
2005.262.15.07.09.979302 Status_PLM_LCL8_I is currently 0.0045593958348 (extracted from TLM
YM344942)
2005.262.15.07.09.982442 Status_PLM_LCL9_V is currently 0.00697093131021 (extracted from TLM
YM356942)
2005.262.15.07.09.985215 Status_PLM_LCL9_I is currently 0.00253299763426 (extracted from TLM
YM360942)
2005.262.15.07.09.988380 Status_PLM_LCL10_V is currently 0.00929457508028 (extracted from TLM
YM372942)
2005.262.15.07.09.991097 Status_PLM_LCL10_I is currently 0.00278629735112 (extracted from TLM
YM376942)
2005.262.15.07.09.994301 Status_PLM_LCL11_V is currently 27.967376709 (extracted from TLM
YM388942)
2005.262.15.07.09.997078 Status_PLM_LCL11_I is currently 0.0448340587318 (extracted from TLM
YM392942)
2005.262.15.07.10.000269 Status_PLM_LCL12_V is currently 27.8930225372 (extracted from TLM
YM404942)
2005.262.15.07.10.005075 Status_PLM_LCL12_I is currently 0.762432277203 (extracted from TLM
YM408942)
2005.262.15.07.10.008493 Status_PLM_LCL13_V is currently 27.9557590485 (extracted from TLM
YM420942)
2005.262.15.07.10.011268 Status_PLM_LCL13_I is currently 0.43390250206 (extracted from TLM
YM424942)
2005.262.15.07.10.014535 Status_PLM_LCL14_V is currently 28.0254669189 (extracted from TLM
YM436942)
2005.262.15.07.10.017364 Status_PLM_LCL14_I is currently 0.74571454525 (extracted from TLM
YM440942)
2005.262.15.07.10.018053
2005.262.15.07.10.018715
*****************************************************************************
2005.262.15.07.10.019718 Power On Instruments
*****************************************************************************
2005.262.15.07.10.020474
2005.262.15.07.10.021109
2005.262.15.07.10.021718
2005.262.15.07.10.022332 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.262.15.07.10.022965 >>>>>>>>  Start Up Instruments
2005.262.15.07.10.023587 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.262.15.07.10.024211
2005.262.15.07.10.099461  Which instrument needs to be Powered? PACS, SPIRE, HIFI, CCU?
2005.262.15.09.33.663295  You have selected to power SPIRE.
2005.262.15.09.33.663859
2005.262.15.09.33.664506  The current power on order is:
2005.262.15.09.33.665144  --------------------------------
2005.262.15.09.33.667582  1. LCL 1    SPIRE HSDPU    Primary    Voltage: 0.00697093131021 V
Current: 0.000917372351978 A
2005.262.15.09.33.668375  2. LCL 0    N/A    Primary    Voltage: N/A V    Current: N/A A
2005.262.15.09.33.669055
2005.262.15.09.33.722489  Do you want to change this order? : Choose Yes or No
2005.262.15.09.41.110835  User has chosen NO
2005.262.15.09.43.114906
2005.262.15.09.43.144443  Do you want to enable the PSU(s)? : Choose Yes or No
2005.262.15.09.44.170271  User has chosen YES
2005.262.15.09.46.172471
2005.262.15.09.46.251888  Sending Telecommand YC036942
2005.262.15.09.46.252284  Synchronizing on SEV...
2005.262.15.09.46.253328  Synchronised on SEV for TC(s): YC036942
2005.262.15.09.46.254020
2005.262.15.09.46.254621  >>> Checking
2005.262.15.09.52.259230  PSU 1 Master status is currently 1 (from YM129942)
2005.262.15.09.52.259615  PSU 1 Slave status is currently 1 (from YM145942)
2005.262.15.09.52.260318
2005.262.15.09.52.304049 ******************* USER INFORMATION *******************
2005.262.15.09.52.304824 User Info>: Check Successful! PSU 1 has been enabled.
2005.262.15.09.52.305436 *******************************************************
2005.262.15.09.54.071536
2005.262.15.09.54.071933  >>> Start Enabling LCL's
2005.262.15.09.54.072544
```

```
2005.262.15.09.54.119426  Do you want to enable LCL 1? : Choose Yes or No
2005.262.15.09.55.459355  User has chosen YES
2005.262.15.09.57.461880
2005.262.15.09.57.530918  Sending Telecommand YC040942 to Enable Limiter
2005.262.15.09.57.531294  Synchronizing on SEV...
2005.262.15.09.57.532300  Synchronised on SEV for TC(s): YC040942
2005.262.15.09.57.533014
2005.262.15.09.57.581202  Sending Telecommand YC043942 to Set Limiter
2005.262.15.09.57.581570  Synchronizing on SEV...
2005.262.15.09.57.637246  Synchronised on SEV for TC(s): YC043942
2005.262.15.09.57.637630
2005.262.15.09.57.638220  >>> Checking
2005.262.15.10.03.644253  LCL 1 has currently a voltage of 27.858165741.(from YM228942)
2005.262.15.10.03.644649  LCL 1 has currently a current of 0.456953376532.(from YM232942)
2005.262.15.10.03.645369
2005.262.15.10.03.679940 ******************** USER INFORMATION ********************
2005.262.15.10.03.680707 User Info>: Check Successful! LCL 1 has been enabled.
2005.262.15.10.03.681314 *********************************************************
2005.262.15.10.17.400409
2005.262.15.10.17.431176 ******************** USER INFORMATION ********************
2005.262.15.10.17.431871 User Info>: No LCL is selected to be switched on as second
2005.262.15.10.17.432466 *********************************************************
2005.262.15.10.40.296586
2005.262.15.10.40.296982
2005.262.15.10.40.297577  All selected LCL's for SPIRE are powered.
2005.262.15.10.40.298177
2005.262.15.10.40.328391  Do you want to power on another instrument? : Choose Yes or No
2005.262.15.10.42.564128  User has chosen NO
2005.262.15.10.44.567863
2005.262.15.10.44.568572 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.262.15.10.44.569172 >>>>>>>>  Reading out PLM SCOE Settings
2005.262.15.10.44.569763 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.262.15.10.44.570338
2005.262.15.10.44.571525 Status_PLM_OnLine is 1 (extracted from TLM YM018942)
2005.262.15.10.44.572569 Status_PLM_PSU1_Master is currently 1 (extracted from TLM YM129942)
2005.262.15.10.44.573616 Status_PLM_PSU1_Slave is currently 1 (extracted from TLM YM145942)
2005.262.15.10.44.574657 Status_PLM_PSU2_Master is currently 1 (extracted from TLM YM177942)
2005.262.15.10.44.575690 Status_PLM_PSU2_Slave is currently 1 (extracted from TLM YM193942)
2005.262.15.10.44.576770 Status_PLM_LCL1_V is currently 27.8604888916 (extracted from TLM
YM228942)
2005.262.15.10.44.577855 Status_PLM_LCL1_I is currently 0.4332036376 (extracted from TLM
YM232942)
2005.262.15.10.44.578931 Status_PLM_LCL2_V is currently 0.0650620236993 (extracted from TLM
YM244942)
2005.262.15.10.44.580011 Status_PLM_LCL2_I is currently 0.00557259470224 (extracted from TLM
YM248942)
2005.262.15.10.44.581078 Status_PLM_LCL3_V is currently 27.9418182373 (extracted from TLM
YM260942)
2005.262.15.10.44.582149 Status_PLM_LCL3_I is currently 0.485322386026 (extracted from TLM
YM264942)
2005.262.15.10.44.583331 Status_PLM_LCL4_V is currently 27.9418182373 (extracted from TLM
YM276942)
2005.262.15.10.44.584453 Status_PLM_LCL4_I is currently 0.724437355995 (extracted from TLM
YM280942)
2005.262.15.10.44.585535 Status_PLM_LCL5_V is currently 27.9418182373 (extracted from TLM
YM292942)
2005.262.15.10.44.586626 Status_PLM_LCL5_I is currently 0.951647222042 (extracted from TLM
YM296942)
2005.262.15.10.44.587731 Status_PLM_LCL6_V is currently 0.0766802430153 (extracted from TLM
YM308942)
2005.262.15.10.44.588811 Status_PLM_LCL6_I is currently 0.00379949645139 (extracted from TLM
YM312942)
2005.262.15.10.44.589900 Status_PLM_LCL7_V is currently 27.7233943939 (extracted from TLM
YM324942)
2005.262.15.10.44.591012 Status_PLM_LCL7_I is currently 2.54718255997 (extracted from TLM
YM328942)
2005.262.15.10.44.592103 Status_PLM_LCL8_V is currently 0.00929457508028 (extracted from TLM
YM340942)
2005.262.15.10.44.593194 Status_PLM_LCL8_I is currently 0.0045593958348 (extracted from TLM
YM344942)
```

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2005.262.15.10.44.594301 Status_PLM_LCL9_V is currently 0.00697093131021 (extracted from TLM
YM356942)
2005.262.15.10.44.595462 Status_PLM_LCL9_I is currently 0.00253299763426 (extracted from TLM
YM360942)
2005.262.15.10.44.596599 Status_PLM_LCL10_V is currently 0.00929457508028 (extracted from TLM
YM372942)
2005.262.15.10.44.597706 Status_PLM_LCL10_I is currently 0.00278629735112 (extracted from TLM
YM376942)
2005.262.15.10.44.598811 Status_PLM_LCL11_V is currently 27.9650535583 (extracted from TLM
YM388942)
2005.262.15.10.44.599911 Status_PLM_LCL11_I is currently 0.0448340587318 (extracted from TLM
YM392942)
2005.262.15.10.44.601151 Status_PLM_LCL12_V is currently 27.8883743286 (extracted from TLM
YM404942)
2005.262.15.10.44.602279 Status_PLM_LCL12_I is currently 0.763445496559 (extracted from TLM
YM408942)
2005.262.15.10.44.603487 Status_PLM_LCL13_V is currently 27.9534358978 (extracted from TLM
YM420942)
2005.262.15.10.44.605072 Status_PLM_LCL13_I is currently 0.432129412889 (extracted from TLM
YM424942)
2005.262.15.10.44.606294 Status_PLM_LCL14_V is currently 28.0254669189 (extracted from TLM
YM436942)
2005.262.15.10.44.607418 Status_PLM_LCL14_I is currently 0.743434786797 (extracted from TLM
YM440942)
2005.262.15.10.44.608101 <<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<
2005.262.15.10.44.608747 <<<<<<<  Power Sequence Ended!
2005.262.15.10.44.609387 <<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<
```

Appendix 7: Log of PACS_POWER_ON_BOLCout.tcl (used to recover from ASED NCR 1494)

```
2005.263.14.47.56.036900
*******************************************************************************
2005.263.14.47.56.037809 Start of PACS POWER ON sequence.
*******************************************************************************
2005.263.14.47.56.038125
2005.263.14.47.56.038355 To run this script, the CDMU DFE and PLM SCOE should be
2005.263.14.47.56.038591 powered and configured.
2005.263.14.47.56.038817 To initiate, this script will connect and attach to the CDMUDFE
2005.263.14.47.56.039052 and PLM SCOE.
2005.263.14.47.56.039278
2005.263.14.47.56.039506 >>> Connecting to CDMU DFE.
2005.263.14.47.59.044494 >>> Attaching to CDMU DFE.
2005.263.14.48.02.051297
2005.263.14.48.02.051665 >>> Connecting to PLM SCOE.
2005.263.14.48.05.054241 >>> Attaching to PLM SCOE.
2005.263.14.48.08.057193
2005.263.14.48.08.057563 >>> Reading out CDMUDFE Settings
2005.263.14.48.08.057998
2005.263.14.48.08.162184 Status_CDMU_OnLine is 1 (extracted from TLM YM777944)
2005.263.14.48.08.164381 Status_CDMU_TMpolling is 1 (extracted from TLM YM780944)
2005.263.14.48.08.166484 Status_CDMU_SAreadActive is 1 (extracted from TLM YM781944)
2005.263.14.48.08.168529 Status_CDMU_SAqueueActive is 1 (extracted from TLM YM782944)
2005.263.14.48.08.170571 Status_CDMU_TMqueueActive is 1 (extracted from TLM YM783944)
2005.263.14.48.08.172791 Status_CDMU_TCqueueActive is 1 (extracted from TLM YM784944)
2005.263.14.48.08.174720 Status_CDMU_PSTfileName is PACS_prime_inst.... (extracted from TLM
YM809944)
2005.263.14.48.08.176866 Status_CDMU_PSTrunning is 1 (extracted from TLM YM829944)
2005.263.14.48.08.177403
2005.263.14.48.08.177887 >>> Reading out PLM SCOE Settings
2005.263.14.48.08.178388
2005.263.14.48.08.401807 Status_PLM_OnLine is 1 (extracted from TLM YM018942)
2005.263.14.48.08.459563 Status_PLM_PSU1_Master is currently 1 (extracted from TLM YM129942)
2005.263.14.48.08.461816 Status_PLM_PSU1_Slave is currently 1 (extracted from TLM YM145942)
2005.263.14.48.08.464103 Status_PLM_PSU2_Master is currently 1 (extracted from TLM YM177942)
2005.263.14.48.08.466396 Status_PLM_PSU2_Slave is currently 1 (extracted from TLM YM193942)
2005.263.14.48.08.471228 Status_PLM_LCL1_V is currently 27.8604888916 (extracted from TLM
YM228942)
2005.263.14.48.08.474627 Status_PLM_LCL1_I is currently 0.434936404228 (extracted from TLM
YM232942)
2005.263.14.48.08.479008 Status_PLM_LCL2_V is currently 0.0650620236993 (extracted from TLM
YM244942)
2005.263.14.48.08.482303 Status_PLM_LCL2_I is currently 0.00607919460163 (extracted from TLM
YM248942)
2005.263.14.48.08.486765 Status_PLM_LCL3_V is currently 27.9418182373 (extracted from TLM
YM260942)
2005.263.14.48.08.490080 Status_PLM_LCL3_I is currently 0.481776177883 (extracted from TLM
YM264942)
2005.263.14.48.08.494552 Status_PLM_LCL4_V is currently 27.9418182373 (extracted from TLM
YM276942)
2005.263.14.48.08.497938 Status_PLM_LCL4_I is currently 0.72139775753 (extracted from TLM
YM280942)
2005.263.14.48.08.502484 Status_PLM_LCL5_V is currently 27.9418182373 (extracted from TLM
YM292942)
2005.263.14.48.08.505845 Status_PLM_LCL5_I is currently 0.952660441399 (extracted from TLM
YM296942)
2005.263.14.48.08.510839 Status_PLM_LCL6_V is currently 0.0766802430153 (extracted from TLM
YM308942)
2005.263.14.48.08.514735 Status_PLM_LCL6_I is currently 0.00379949645139 (extracted from TLM
YM312942)
2005.263.14.48.08.519806 Status_PLM_LCL7_V is currently 27.7164230347 (extracted from TLM
YM324942)
2005.263.14.48.08.524292 Status_PLM_LCL7_I is currently 2.63026475906 (extracted from TLM
YM328942)
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2005.263.14.48.08.529707 Status_PLM_LCL8_V is currently 0.00929457508028 (extracted from TLM
YM340942)
2005.263.14.48.08.534154 Status_PLM_LCL8_I is currently 0.0045593958348 (extracted from TLM
YM344942)
2005.263.14.48.08.539595 Status_PLM_LCL9_V is currently 0.00697093131021 (extracted from TLM
YM356942)
2005.263.14.48.08.543805 Status_PLM_LCL9_I is currently 0.00253299763426 (extracted from TLM
YM360942)
2005.263.14.48.08.548614 Status_PLM_LCL10_V is currently 0.00929457508028 (extracted from TLM
YM372942)
2005.263.14.48.08.552233 Status_PLM_LCL10_I is currently 0.00278629735112 (extracted from TLM
YM376942)
2005.263.14.48.08.557065 Status_PLM_LCL11_V is currently 27.967376709 (extracted from TLM
YM388942)
2005.263.14.48.08.560712 Status_PLM_LCL11_I is currently 0.0448340587318 (extracted from TLM
YM392942)
2005.263.14.48.08.565501 Status_PLM_LCL12_V is currently 0.00697093131021 (extracted from TLM
YM404942)
2005.263.14.48.08.569095 Status_PLM_LCL12_I is currently 0.0116517897695 (extracted from TLM
YM408942)
2005.263.14.48.08.573805 Status_PLM_LCL13_V is currently 0.0185891501606 (extracted from TLM
YM420942)
2005.263.14.48.08.577395 Status_PLM_LCL13_I is currently 0.00151979865041 (extracted from TLM
YM424942)
2005.263.14.48.08.582184 Status_PLM_LCL14_V is currently 0.0952693969011 (extracted from TLM
YM436942)
2005.263.14.48.08.585826 Status_PLM_LCL14_I is currently 0.00430609611794 (extracted from TLM
YM440942)
2005.263.14.48.08.586572
2005.263.14.48.08.587190 >>> Switch ON PSU(s)
2005.263.14.48.08.587809
2005.263.14.48.08.707907 >>> Sending Telecommand YC036942
2005.263.14.48.08.708276
2005.263.14.48.08.708970 >>> Checking
2005.263.14.48.14.712429 PSU 2 Master status is currently 1 (from YM177942)
2005.263.14.48.14.712822 PSU 2 Slave status is currently 1 (from YM193942)
2005.263.14.48.14.713477
2005.263.14.48.14.714102 >>> Switch ON DPU
2005.263.14.48.14.714710
2005.263.14.48.14.813238 >>> Sending Telecommand YC040942 to Enable Limiter 13 -> PACS DPU
2005.263.14.48.14.813620
2005.263.14.48.14.884491 >>> Sending Telecommand YC043942 to Set Limiter 13 -> PACS DPU
2005.263.14.48.14.884928
2005.263.14.48.14.885552 >>> Checking
2005.263.14.48.20.890055 LCL 13 has currently a voltage of 27.9557590485.(from YM420942)
2005.263.14.48.20.890452 LCL 13 has currently a current of 0.464045166969.(from YM424942)
2005.263.14.48.20.891084
2005.263.14.48.37.899112 Force Boot DPU
2005.263.14.48.39.021982 ******************** USER INFORMATION ********************
2005.263.14.48.39.022461 User Info>: Please check if the force boot has been executed
correctly and press OK.
2005.263.14.48.39.023147 ********************************************************
2005.263.14.48.52.651628
2005.263.14.48.52.651975
2005.263.14.48.52.652582 >>> Switch ON DEC/MEC
2005.263.14.48.52.653197
2005.263.14.48.52.797152 >>> Sending Telecommand YC040942 to Enable Limiter 12 -> PACS DEC/MEC
2005.263.14.48.52.797522
2005.263.14.48.52.864606 >>> Sending Telecommand YC043942 to Set Limiter 12 -> PACS DEC/MEC
2005.263.14.48.52.864980
2005.263.14.48.52.865555 >>> Checking
2005.263.14.48.58.868039 LCL 12 has currently a voltage of 27.909286499.(from YM404942)
2005.263.14.48.58.868440 LCL 12 has currently a current of 0.56536513567.(from YM408942)
2005.263.14.48.58.869061
2005.263.14.49.18.878093 DPU reset of 1355
2005.263.14.49.20.979009 Establish DPU --> DMC connection (DPU-START-OBCP, n=19)
2005.263.14.49.25.012831 Copy DMC SW from EEPROM to RAM
2005.263.14.49.27.090297 DMC_LLSW_LOAD_EEPROM
2005.263.14.49.29.122882 Start DMC HLSW
2005.263.14.49.39.701479 DPU starts link with DMC with DPU as slave
2005.263.14.49.42.786459
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2005.263.14.49.42.786826
2005.263.14.49.42.787404 >>> Switch ON BOLC
2005.263.14.49.42.787969
2005.263.14.49.42.890355 >>> Sending Telecommand YC040942 to Enable Limiter 11 -> PACS BOLC
2005.263.14.49.42.890729
2005.263.14.49.42.959697 >>> Sending Telecommand YC043942 to Set Limiter 11 -> PACS BOLC
2005.263.14.49.42.960111
2005.263.14.49.42.960681 >>> Checking
2005.263.14.49.48.963299 LCL 11 has currently a voltage of 27.967376709.(from YM388942)
2005.263.14.49.48.963699 LCL 11 has currently a current of 0.0448340587318.(from YM392942)
2005.263.14.49.48.964295
2005.263.14.50.03.973046 DMC_RESET_SMCS_CHIP_2
2005.263.14.50.08.110309 Execute BOLC initialisation including frequency setting
2005.263.14.50.14.120070 set image frequence to 20 Hz
2005.263.14.50.14.623821
2005.263.14.50.14.624184
2005.263.14.50.14.624748 >>> Switch ON SPU
2005.263.14.50.14.625303
2005.263.14.50.14.764862 >>> Sending Telecommand YC040942 to Enable Limiter 14 -> PACS SPU
2005.263.14.50.14.765321
2005.263.14.50.14.832024 >>> Sending Telecommand YC043942 to Set Limiter 14 -> PACS SPU
2005.263.14.50.14.832580
2005.263.14.50.14.833186 >>> Checking
2005.263.14.50.20.835785 LCL 14 has currently a voltage of 28.0463829041.(from YM436942)
2005.263.14.50.20.836192 LCL 14 has currently a current of 0.456699460745.(from YM440942)
2005.263.14.50.20.836804
2005.263.14.50.40.845846 DPU reset of 1355
2005.263.14.50.44.948125 DPU starts link with DMC with DPU as slave
2005.263.14.50.55.089456 DPU starts link with (blue) SPUS with DPU as master
2005.263.14.50.59.232674 DPU starts link with (red) SPUL with DPU as master
2005.263.14.51.03.334739 LOAD SPU RED HLSW FROM EEPROM TO RAM
2005.263.14.51.09.510580 LOAD SPU BLUE HLSW FROM EEPROM TO RAM
2005.263.14.51.17.757800 Start SPUS HLSW
2005.263.14.51.20.862282 DPU starts link with (blue) SPUS with DPU as slave
2005.263.14.51.24.964484 Start SPUL HLSW
2005.263.14.51.28.039610 DPU starts link with (red) SPUL with DPU as slave
2005.263.14.51.33.106389 Establish connection SPUL-DMC, DMC as master
2005.263.14.51.34.211509 Establish connection SPUS-DMC, DMC as master
2005.263.14.51.36.314328 Establish connection DMC-SPURS DMC Master
2005.263.14.51.37.384317 Establish connection DMC-SPURL DMC Master
2005.263.14.51.39.988945 FPU T-sensors are activated
2005.263.14.51.39.989331
2005.263.14.51.39.989911
2005.263.14.51.39.990466 >>> Reading out CDMUDFE Settings
2005.263.14.51.39.991031
2005.263.14.51.39.992225 Status_CDMU_OnLine is 1 (extracted from TLM YM777944)
2005.263.14.51.39.993259 Status_CDMU_TMpolling is 1 (extracted from TLM YM780944)
2005.263.14.51.39.994282 Status_CDMU_SAreadActive is 1 (extracted from TLM YM781944)
2005.263.14.51.39.995598 Status_CDMU_SAqueueActive is 1 (extracted from TLM YM782944)
2005.263.14.51.39.996673 Status_CDMU_TMqueueActive is 1 (extracted from TLM YM783944)
2005.263.14.51.39.997710 Status_CDMU_TCqueueActive is 1 (extracted from TLM YM784944)
2005.263.14.51.39.998784 Status_CDMU_PSTfileName is PACS_prime_inst.... (extracted from TLM
YM809944)
2005.263.14.51.39.999824 Status_CDMU_PSTrunning is 1 (extracted from TLM YM829944)
2005.263.14.51.40.000463
2005.263.14.51.40.001313 >>> Reading out PLM SCOE Settings
2005.263.14.51.40.001910
2005.263.14.51.40.002980 Status_PLM_OnLine is 1 (extracted from TLM YM018942)
2005.263.14.51.40.004012 Status_PLM_PSU1_Master is currently 1 (extracted from TLM YM129942)
2005.263.14.51.40.005045 Status_PLM_PSU1_Slave is currently 1 (extracted from TLM YM145942)
2005.263.14.51.40.006072 Status_PLM_PSU2_Master is currently 1 (extracted from TLM YM177942)
2005.263.14.51.40.007390 Status_PLM_PSU2_Slave is currently 1 (extracted from TLM YM193942)
2005.263.14.51.40.008711 Status_PLM_LCL1_V is currently 27.8604888916 (extracted from TLM
YM228942)
2005.263.14.51.40.009999 Status_PLM_LCL1_I is currently 0.432693988085 (extracted from TLM
YM232942)
2005.263.14.51.40.011288 Status_PLM_LCL2_V is currently 0.0650620236993 (extracted from TLM
YM244942)
2005.263.14.51.40.012566 Status_PLM_LCL2_I is currently 0.00557259470224 (extracted from TLM
YM248942)
```

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2005.263.14.51.40.013894 Status_PLM_LCL3_V is currently 27.9418182373 (extracted from TLM
YM260942)
2005.263.14.51.40.015207 Status_PLM_LCL3_I is currently 0.482282757759 (extracted from TLM
YM264942)
2005.263.14.51.40.016524 Status_PLM_LCL4_V is currently 27.9418182373 (extracted from TLM
YM276942)
2005.263.14.51.40.017818 Status_PLM_LCL4_I is currently 0.721904337406 (extracted from TLM
YM280942)
2005.263.14.51.40.019104 Status_PLM_LCL5_V is currently 27.9418182373 (extracted from TLM
YM292942)
2005.263.14.51.40.020400 Status_PLM_LCL5_I is currently 0.952407121658 (extracted from TLM
YM296942)
2005.263.14.51.40.021693 Status_PLM_LCL6_V is currently 0.0766802430153 (extracted from TLM
YM308942)
2005.263.14.51.40.023094 Status_PLM_LCL6_I is currently 0.00379949645139 (extracted from TLM
YM312942)
2005.263.14.51.40.024401 Status_PLM_LCL7_V is currently 27.7164230347 (extracted from TLM
YM324942)
2005.263.14.51.40.025702 Status_PLM_LCL7_I is currently 2.63026475906 (extracted from TLM
YM328942)
2005.263.14.51.40.027090 Status_PLM_LCL8_V is currently 0.00929457508028 (extracted from TLM
YM340942)
2005.263.14.51.40.028390 Status_PLM_LCL8_I is currently 0.00405279640108 (extracted from TLM
YM344942)
2005.263.14.51.40.029701 Status_PLM_LCL9_V is currently 0.00697093131021 (extracted from TLM
YM356942)
2005.263.14.51.40.031014 Status_PLM_LCL9_I is currently 0.00253299763426 (extracted from TLM
YM360942)
2005.263.14.51.40.032328 Status_PLM_LCL10_V is currently 0.00929457508028 (extracted from TLM
YM372942)
2005.263.14.51.40.033612 Status_PLM_LCL10_I is currently 0.00278629735112 (extracted from TLM
YM376942)
2005.263.14.51.40.034923 Status_PLM_LCL11_V is currently 27.967376709 (extracted from TLM
YM388942)
2005.263.14.51.40.036233 Status_PLM_LCL11_I is currently 0.0448340587318 (extracted from TLM
YM392942)
2005.263.14.51.40.037528 Status_PLM_LCL12_V is currently 27.8906974792 (extracted from TLM
YM404942)
2005.263.14.51.40.038835 Status_PLM_LCL12_I is currently 0.761925697327 (extracted from TLM
YM408942)
2005.263.14.51.40.040154 Status_PLM_LCL13_V is currently 27.9534358978 (extracted from TLM
YM420942)
2005.263.14.51.40.041467 Status_PLM_LCL13_I is currently 0.429089814425 (extracted from TLM
YM424942)
2005.263.14.51.40.042793 Status_PLM_LCL14_V is currently 28.0254669189 (extracted from TLM
YM436942)
2005.263.14.51.40.044128 Status_PLM_LCL14_I is currently 0.745967805386 (extracted from TLM
YM440942)
2005.263.14.51.40.044829
2005.263.14.51.40.045440
************************************************************************
2005.263.14.51.40.046434 PACS Power On Sequence has ended
************************************************************************
2005.263.14.51.40.047157
```

Appendix 8: Log of PACS_POWER_OFF.tcl

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2005.264.10.27.44.961773
*******************************************************************************
2005.264.10.27.44.962727 Start of PACS POWER OFF sequence.
*******************************************************************************
2005.264.10.27.44.963044
2005.264.10.27.44.963270 To run this script, the CDMU DFE and PLM SCOE should be
2005.264.10.27.44.963503 powered and configured.
2005.264.10.27.44.963728 To initiate, this script will connect and attach to the CDMUDFE
2005.264.10.27.44.963964 and PLM SCOE.
2005.264.10.27.44.964188
2005.264.10.27.44.964416 >>> Connecting to CDMU DFE.
2005.264.10.27.47.969210 >>> Attaching to CDMU DFE.
2005.264.10.27.50.976045
2005.264.10.27.50.976409 >>> Connecting to PLM SCOE.
2005.264.10.27.53.980293 >>> Attaching to PLM SCOE.
2005.264.10.27.56.981950
2005.264.10.27.56.982310 >>> Reading out CDMUDFE Settings
2005.264.10.27.56.982739
2005.264.10.27.57.090988 Status_CDMU_OnLine is 1 (extracted from TLM YM777944)
2005.264.10.27.57.093409 Status_CDMU_TMpolling is 1 (extracted from TLM YM780944)
2005.264.10.27.57.095762 Status_CDMU_SAreadActive is 1 (extracted from TLM YM781944)
2005.264.10.27.57.097872 Status_CDMU_SAqueueActive is 1 (extracted from TLM YM782944)
2005.264.10.27.57.100113 Status_CDMU_TMqueueActive is 1 (extracted from TLM YM783944)
2005.264.10.27.57.102265 Status_CDMU_TCqueueActive is 1 (extracted from TLM YM784944)
2005.264.10.27.57.104222 Status_CDMU_PSTfileName is PACS_prime_inst.... (extracted from TLM
YM809944)
2005.264.10.27.57.106447 Status_CDMU_PSTrunning is 1 (extracted from TLM YM829944)
2005.264.10.27.57.107042
2005.264.10.27.57.107547 >>> Reading out PLM SCOE Settings
2005.264.10.27.57.108058
2005.264.10.27.57.110226 Status_PLM_OnLine is 1 (extracted from TLM YM018942)
2005.264.10.27.57.112706 Status_PLM_PSU1_Master is currently 1 (extracted from TLM YM129942)
2005.264.10.27.57.115075 Status_PLM_PSU1_Slave is currently 1 (extracted from TLM YM145942)
2005.264.10.27.57.117295 Status_PLM_PSU2_Master is currently 1 (extracted from TLM YM177942)
2005.264.10.27.57.119623 Status_PLM_PSU2_Slave is currently 1 (extracted from TLM YM193942)
2005.264.10.27.57.124179 Status_PLM_LCL1_V is currently 27.8628120422 (extracted from TLM
YM228942)
2005.264.10.27.57.127399 Status_PLM_LCL1_I is currently 0.435649961233 (extracted from TLM
YM232942)
2005.264.10.27.57.131784 Status_PLM_LCL2_V is currently 0.0627383813262 (extracted from TLM
YM244942)
2005.264.10.27.57.135189 Status_PLM_LCL2_I is currently 0.00557259470224 (extracted from TLM
YM248942)
2005.264.10.27.57.139993 Status_PLM_LCL3_V is currently 27.9418182373 (extracted from TLM
YM260942)
2005.264.10.27.57.143281 Status_PLM_LCL3_I is currently 0.487348765135 (extracted from TLM
YM264942)
2005.264.10.27.57.147690 Status_PLM_LCL4_V is currently 27.9418182373 (extracted from TLM
YM276942)
2005.264.10.27.57.150995 Status_PLM_LCL4_I is currently 0.72139775753 (extracted from TLM
YM280942)
2005.264.10.27.57.155380 Status_PLM_LCL5_V is currently 27.9418182373 (extracted from TLM
YM292942)
2005.264.10.27.57.158688 Status_PLM_LCL5_I is currently 0.952407121658 (extracted from TLM
YM296942)
2005.264.10.27.57.163247 Status_PLM_LCL6_V is currently 0.0766802430153 (extracted from TLM
YM308942)
2005.264.10.27.57.166524 Status_PLM_LCL6_I is currently 0.00379949645139 (extracted from TLM
YM312942)
2005.264.10.27.57.170967 Status_PLM_LCL7_V is currently 27.7187461853 (extracted from TLM
YM324942)
2005.264.10.27.57.174257 Status_PLM_LCL7_I is currently 2.6292514801 (extracted from TLM
YM328942)
2005.264.10.27.57.178664 Status_PLM_LCL8_V is currently 0.00929457508028 (extracted from TLM
YM340942)
2005.264.10.27.57.182002 Status_PLM_LCL8_I is currently 0.0045593958348 (extracted from TLM
YM344942)
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2005.264.10.27.57.186403 Status_PLM_LCL9_V is currently 0.00697093131021 (extracted from TLM
YM356942)
2005.264.10.27.57.189821 Status_PLM_LCL9_I is currently 0.00253299763426 (extracted from TLM
YM360942)
2005.264.10.27.57.194276 Status_PLM_LCL10_V is currently 0.00929457508028 (extracted from TLM
YM372942)
2005.264.10.27.57.197779 Status_PLM_LCL10_I is currently 0.00278629735112 (extracted from TLM
YM376942)
2005.264.10.27.57.202386 Status_PLM_LCL11_V is currently 27.967376709 (extracted from TLM
YM388942)
2005.264.10.27.57.205752 Status_PLM_LCL11_I is currently 0.0448340587318 (extracted from TLM
YM392942)
2005.264.10.27.57.210231 Status_PLM_LCL12_V is currently 27.7907810211 (extracted from TLM
YM404942)
2005.264.10.27.57.213601 Status_PLM_LCL12_I is currently 1.92153203487 (extracted from TLM
YM408942)
2005.264.10.27.57.216950 Status_PLM_LCL13_V is currently 27.9534358978 (extracted from TLM
YM420942)
2005.264.10.27.57.219964 Status_PLM_LCL13_I is currently 0.457206100225 (extracted from TLM
YM424942)
2005.264.10.27.57.224544 Status_PLM_LCL14_V is currently 28.0254669189 (extracted from TLM
YM436942)
2005.264.10.27.57.227987 Status_PLM_LCL14_I is currently 0.739128708839 (extracted from TLM
YM440942)
2005.264.10.27.57.228699
2005.264.10.27.57.229327 Reset bias for all groups sequentially
2005.264.10.28.10.538123 BOL biases are set to zero
2005.264.10.28.10.538506 Now BOLC is prepared for switch-off
2005.264.10.28.10.539173 Set temperature probes off
2005.264.10.28.11.053585 Set all groups to OFF
2005.264.10.28.13.070846 >>> Switch OFF SPU
2005.264.10.28.13.071412
2005.264.10.28.13.138336  Sending Telecommand YC041942 to Disable Limiter 14 PACS SPU
2005.264.10.28.13.138911
2005.264.10.28.13.139557 >>> Checking
2005.264.10.28.19.145781 LCL 14 has currently a voltage of 0.0952693969011.(from YM436942)
2005.264.10.28.19.146190 LCL 14 has currently a current of 0.00430609611794.(from YM440942)
2005.264.10.28.19.146868
2005.264.10.28.19.650427 >>> Switch OFF BOLC
2005.264.10.28.19.650788
2005.264.10.28.19.797375  Sending Telecommand YC041942 to Disable Limiter 11 PACS BOLC
2005.264.10.28.19.797748
2005.264.10.28.19.798348 >>> Checking
2005.264.10.28.25.803718 LCL 11 has currently a voltage of 0.00929457508028.(from YM388942)
2005.264.10.28.25.804122 LCL 11 has currently a current of 0.00379949645139.(from YM392942)
2005.264.10.28.25.804743
2005.264.10.28.26.308518 >>> Switch OFF DECMEC
2005.264.10.28.26.308888
2005.264.10.28.26.384278  Sending Telecommand YC041942 to Disable Limiter 12 PACS DECMEC
2005.264.10.28.26.384924
2005.264.10.28.26.385574 >>> Checking
2005.264.10.28.32.391492 LCL 12 has currently a voltage of 0.00697093131021.(from YM404942)
2005.264.10.28.32.391892 LCL 12 has currently a current of 0.0121583892033.(from YM408942)
2005.264.10.28.32.392564
2005.264.10.28.32.896268 >>> Switch OFF DPU
2005.264.10.28.32.896628
2005.264.10.28.33.043212  Sending Telecommand YC041942 to Disable Limiter 13 PACS DPU
2005.264.10.28.33.043579
2005.264.10.28.33.044149 >>> Checking
2005.264.10.28.39.047565 LCL 13 has currently a voltage of 0.0185891501606.(from YM420942)
2005.264.10.28.39.047967 LCL 13 has currently a current of 0.00151979865041.(from YM424942)
2005.264.10.28.39.048558
2005.264.10.28.39.552301 PACS is off
2005.264.10.28.39.552667 >>> Reading out CDMUDFE Settings
2005.264.10.28.39.553245
2005.264.10.28.39.554448 Status_CDMU_OnLine is 1 (extracted from TLM YM777944)
2005.264.10.28.39.555494 Status_CDMU_TMpolling is 1 (extracted from TLM YM780944)
2005.264.10.28.39.556536 Status_CDMU_SAreadActive is 1 (extracted from TLM YM781944)
2005.264.10.28.39.557557 Status_CDMU_SAqueueActive is 1 (extracted from TLM YM782944)
2005.264.10.28.39.558590 Status_CDMU_TMqueueActive is 1 (extracted from TLM YM783944)
2005.264.10.28.39.559607 Status_CDMU_TCqueueActive is 1 (extracted from TLM YM784944)
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2005.264.10.28.39.560673 Status_CDMU_PSTfileName is PACS_prime_inst.... (extracted from TLM
YM809944)
2005.264.10.28.39.561711 Status_CDMU_PSTrunning is 1 (extracted from TLM YM829944)
2005.264.10.28.39.562339
2005.264.10.28.39.562911 >>> Reading out PLM SCOE Settings
2005.264.10.28.39.563482
2005.264.10.28.39.564456 Status_PLM_OnLine is 1 (extracted from TLM YM018942)
2005.264.10.28.39.565465 Status_PLM_PSU1_Master is currently 1 (extracted from TLM YM129942)
2005.264.10.28.39.566499 Status_PLM_PSU1_Slave is currently 1 (extracted from TLM YM145942)
2005.264.10.28.39.567607 Status_PLM_PSU2_Master is currently 1 (extracted from TLM YM177942)
2005.264.10.28.39.568628 Status_PLM_PSU2_Slave is currently 1 (extracted from TLM YM193942)
2005.264.10.28.39.569699 Status_PLM_LCL1_V is currently 27.8604888916 (extracted from TLM
YM228942)
2005.264.10.28.39.570783 Status_PLM_LCL1_I is currently 0.434120982885 (extracted from TLM
YM232942)
2005.264.10.28.39.571853 Status_PLM_LCL2_V is currently 0.0650620236993 (extracted from TLM
YM244942)
2005.264.10.28.39.572965 Status_PLM_LCL2_I is currently 0.00607919460163 (extracted from TLM
YM248942)
2005.264.10.28.39.574054 Status_PLM_LCL3_V is currently 27.9418182373 (extracted from TLM
YM260942)
2005.264.10.28.39.575132 Status_PLM_LCL3_I is currently 0.483295977116 (extracted from TLM
YM264942)
2005.264.10.28.39.576279 Status_PLM_LCL4_V is currently 27.9418182373 (extracted from TLM
YM276942)
2005.264.10.28.39.577412 Status_PLM_LCL4_I is currently 0.72139775753 (extracted from TLM
YM280942)
2005.264.10.28.39.579309 Status_PLM_LCL5_V is currently 27.9418182373 (extracted from TLM
YM292942)
2005.264.10.28.39.580437 Status_PLM_LCL5_I is currently 0.952407121658 (extracted from TLM
YM296942)
2005.264.10.28.39.581552 Status_PLM_LCL6_V is currently 0.079003892839 (extracted from TLM
YM308942)
2005.264.10.28.39.582666 Status_PLM_LCL6_I is currently 0.00379949645139 (extracted from TLM
YM312942)
2005.264.10.28.39.583774 Status_PLM_LCL7_V is currently 27.7187461853 (extracted from TLM
YM324942)
2005.264.10.28.39.584877 Status_PLM_LCL7_I is currently 2.6292514801 (extracted from TLM
YM328942)
2005.264.10.28.39.585966 Status_PLM_LCL8_V is currently 0.00929457508028 (extracted from TLM
YM340942)
2005.264.10.28.39.587053 Status_PLM_LCL8_I is currently 0.0045593958348 (extracted from TLM
YM344942)
2005.264.10.28.39.588144 Status_PLM_LCL9_V is currently 0.00697093131021 (extracted from TLM
YM356942)
2005.264.10.28.39.589244 Status_PLM_LCL9_I is currently 0.00253299763426 (extracted from TLM
YM360942)
2005.264.10.28.39.590349 Status_PLM_LCL10_V is currently 0.00929457508028 (extracted from TLM
YM372942)
2005.264.10.28.39.591429 Status_PLM_LCL10_I is currently 0.00278629735112 (extracted from TLM
YM376942)
2005.264.10.28.39.592540 Status_PLM_LCL11_V is currently 0.00929457508028 (extracted from TLM
YM388942)
2005.264.10.28.39.593784 Status_PLM_LCL11_I is currently 0.00379949645139 (extracted from TLM
YM392942)
2005.264.10.28.39.594959 Status_PLM_LCL12_V is currently 0.00697093131021 (extracted from TLM
YM404942)
2005.264.10.28.39.596140 Status_PLM_LCL12_I is currently 0.0116517897695 (extracted from TLM
YM408942)
2005.264.10.28.39.597279 Status_PLM_LCL13_V is currently 0.0185891501606 (extracted from TLM
YM420942)
2005.264.10.28.39.598404 Status_PLM_LCL13_I is currently 0.00151979865041 (extracted from TLM
YM424942)
2005.264.10.28.39.599593 Status_PLM_LCL14_V is currently 0.0952693969011 (extracted from TLM
YM436942)
2005.264.10.28.39.600726 Status_PLM_LCL14_I is currently 0.00430609611794 (extracted from TLM
YM440942)
2005.264.10.28.39.601415
2005.264.10.28.39.602026
*****************************************************************************
2005.264.10.28.39.603008 PACS Power Off Sequence has ended
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********************************************************************************
2005.264.10.28.39.603730
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Appendix 9: Log of INSTR_POWER_OFF.tcl (used for HIFI and SPIRE power down)

```
2005.264.13.32.49.501957
********************************************************************************
2005.264.13.32.49.502903 Start of Instrument POWER OFF sequence.
********************************************************************************
2005.264.13.32.49.503219
2005.264.13.32.49.503446  To run this script, the CDMU DFE and PLM SCOE should be
2005.264.13.32.49.503733  powered and configured.
2005.264.13.32.49.503967  To initiate, this script will connect and attach to the CDMUDFE
2005.264.13.32.49.504208  and PLM SCOE.
2005.264.13.32.49.504430
2005.264.13.32.49.504654 Connecting to CDMU DFE
2005.264.13.32.51.509230 Attaching to CMDU DFE
2005.264.13.32.52.514783
2005.264.13.32.52.515145 Connecting to PLM SCOE
2005.264.13.32.54.518016 Attaching to PLM SCOE
2005.264.13.32.55.521598 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.264.13.32.55.521977 >>>>>>>>  Reading out CDMUDFE Settings
2005.264.13.32.55.522422 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.264.13.32.55.522834
2005.264.13.32.55.630458 Status_CDMU_OnLine is 1 (extracted from TLM YM777944)
2005.264.13.32.55.632354 Status_CDMU_TMpolling is 1 (extracted from TLM YM780944)
2005.264.13.32.55.634239 Status_CDMU_SAreadActive is 1 (extracted from TLM YM781944)
2005.264.13.32.55.729984 Status_CDMU_SAqueueActive is 1 (extracted from TLM YM782944)
2005.264.13.32.55.731705 Status_CDMU_TMqueueActive is 1 (extracted from TLM YM783944)
2005.264.13.32.55.733428 Status_CDMU_TCqueueActive is 1 (extracted from TLM YM784944)
2005.264.13.32.55.734973 Status_CDMU_PSTfileName is PACS_prime_inst.... (extracted from TLM
YM809944)
2005.264.13.32.55.736639 Status_CDMU_PSTrunning is 1 (extracted from TLM YM829944)
2005.264.13.32.55.737195
2005.264.13.32.55.737692 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.264.13.32.55.738227 >>>>>>>>  Reading out PLM SCOE Settings
2005.264.13.32.55.738758 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.264.13.32.55.739283
2005.264.13.32.55.741090 Status_PLM_OnLine is 1 (extracted from TLM YM018942)
2005.264.13.32.55.742892 Status_PLM_PSU1_Master is currently 1 (extracted from TLM YM129942)
2005.264.13.32.55.744750 Status_PLM_PSU1_Slave is currently 1 (extracted from TLM YM145942)
2005.264.13.32.55.746603 Status_PLM_PSU2_Master is currently 1 (extracted from TLM YM177942)
2005.264.13.32.55.748470 Status_PLM_PSU2_Slave is currently 1 (extracted from TLM YM193942)
2005.264.13.32.55.751827 Status_PLM_LCL1_V is currently 27.8604888916 (extracted from TLM
YM228942)
2005.264.13.32.55.754610 Status_PLM_LCL1_I is currently 0.43432483077 (extracted from TLM
YM232942)
2005.264.13.32.55.757842 Status_PLM_LCL2_V is currently 0.0650620236993 (extracted from TLM
YM244942)
2005.264.13.32.55.760645 Status_PLM_LCL2_I is currently 0.00607919460163 (extracted from TLM
YM248942)
2005.264.13.32.55.764009 Status_PLM_LCL3_V is currently 27.9394931793 (extracted from TLM
YM260942)
2005.264.13.32.55.767198 Status_PLM_LCL3_I is currently 0.483295977116 (extracted from TLM
YM264942)
2005.264.13.32.55.770497 Status_PLM_LCL4_V is currently 27.9418182373 (extracted from TLM
YM276942)
2005.264.13.32.55.773265 Status_PLM_LCL4_I is currently 0.72139775753 (extracted from TLM
YM280942)
2005.264.13.32.55.776499 Status_PLM_LCL5_V is currently 27.9418182373 (extracted from TLM
YM292942)
2005.264.13.32.55.779424 Status_PLM_LCL5_I is currently 0.952407121658 (extracted from TLM
YM296942)
2005.264.13.32.55.782823 Status_PLM_LCL6_V is currently 0.0766802430153 (extracted from TLM
YM308942)
2005.264.13.32.55.785731 Status_PLM_LCL6_I is currently 0.00379949645139 (extracted from TLM
YM312942)
2005.264.13.32.55.789012 Status_PLM_LCL7_V is currently 27.7187461853 (extracted from TLM
YM324942)
```

```
2005.264.13.32.55.791806 Status_PLM_LCL7_I is currently 2.62874507904 (extracted from TLM
YM328942)
2005.264.13.32.55.795186 Status_PLM_LCL8_V is currently 0.00929457508028 (extracted from TLM
YM340942)
2005.264.13.32.55.798436 Status_PLM_LCL8_I is currently 0.0045593958348 (extracted from TLM
YM344942)
2005.264.13.32.55.801867 Status_PLM_LCL9_V is currently 0.00697093131021 (extracted from TLM
YM356942)
2005.264.13.32.55.804750 Status_PLM_LCL9_I is currently 0.00253299763426 (extracted from TLM
YM360942)
2005.264.13.32.55.808013 Status_PLM_LCL10_V is currently 0.00929457508028 (extracted from TLM
YM372942)
2005.264.13.32.55.810787 Status_PLM_LCL10_I is currently 0.00278629735112 (extracted from TLM
YM376942)
2005.264.13.32.55.814036 Status_PLM_LCL11_V is currently 0.00929457508028 (extracted from TLM
YM388942)
2005.264.13.32.55.816882 Status_PLM_LCL11_I is currently 0.00379949645139 (extracted from TLM
YM392942)
2005.264.13.32.55.820379 Status_PLM_LCL12_V is currently 0.00697093131021 (extracted from TLM
YM404942)
2005.264.13.32.55.823213 Status_PLM_LCL12_I is currently 0.0116517897695 (extracted from TLM
YM408942)
2005.264.13.32.55.826414 Status_PLM_LCL13_V is currently 0.0185891501606 (extracted from TLM
YM420942)
2005.264.13.32.55.829151 Status_PLM_LCL13_I is currently 0.00151979865041 (extracted from TLM
YM424942)
2005.264.13.32.55.832532 Status_PLM_LCL14_V is currently 0.0952693969011 (extracted from TLM
YM436942)
2005.264.13.32.55.835584 Status_PLM_LCL14_I is currently 0.00430609611794 (extracted from TLM
YM440942)
2005.264.13.32.55.836279
2005.264.13.32.55.836899
*****************************************************************************
2005.264.13.32.55.837932 Power On Instruments
*****************************************************************************
2005.264.13.32.55.838664
2005.264.13.32.55.839297
2005.264.13.32.55.839940
2005.264.13.32.55.840566 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.264.13.32.55.841200 >>>>>>>>  Start Up Instruments
2005.264.13.32.55.841829 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.264.13.32.55.842471
2005.264.13.32.55.883249  Which instrument needs to be Powered down? PACS, SPIRE, HIFI, CCU?
2005.264.13.33.26.509836  You have selected to power down HIFI.
2005.264.13.33.26.510419
2005.264.13.33.26.511084  The current power down order is:
2005.264.13.33.26.511754  --------------------------------
2005.264.13.33.26.513581  1. LCL 4   HIFI LCU    Voltage: 27.9418182373 V    Current:
0.72139775753 A
2005.264.13.33.26.515427  2. LCL 5   HIFI WEH    Voltage: 27.9418182373 V    Current:
0.952407121658 A
2005.264.13.33.26.517255  3. LCL 7   HIFI HRH    Voltage: 27.7164230347 V    Current:
2.62874507904 A
2005.264.13.33.26.519064  4. LCL 3   HIFI ICU    Voltage: 27.9371700287 V    Current:
0.482789337635 A
2005.264.13.33.26.519959  5. LCL 0   N/A     Voltage: N/A V     Current: N/A A
2005.264.13.33.26.520775  6. LCL 0   N/A     Voltage: N/A V     Current: N/A A
2005.264.13.33.26.521608
2005.264.13.33.26.582729  Do you want to change this order? : Choose Yes or No
2005.264.13.33.28.826620  User has chosen NO
2005.264.13.33.30.830762
2005.264.13.33.30.831161  >>> Disable LCL's
2005.264.13.33.30.831799
2005.264.13.33.30.871739  Do you want to disable LCL 4? : Choose Yes or No
2005.264.13.33.31.954969  User has chosen YES
2005.264.13.33.33.958664
2005.264.13.33.34.017581  Sending Telecommand YC041942 to Disable Limiter
2005.264.13.33.34.017950  Synchronizing on SEV...
2005.264.13.33.34.019118  Synchronised on SEV for TC(s): YC041942
2005.264.13.33.34.019784
2005.264.13.33.34.020378  >>> Checking
```

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2005.264.13.33.40.025778  LCL 4 has currently a voltage of 27.9418182373.(from YM276942)
2005.264.13.33.40.026184  LCL 4 has currently a current of 0.72139775753.(from YM280942)
2005.264.13.33.40.026817
2005.264.13.33.40.101033  LCL 4 has not been disabled. Repeat this step? : Choose Yes or No
2005.264.13.34.00.938056  User has chosen NO
2005.264.13.34.02.941486
2005.264.13.34.02.997601  Do you want to disable LCL 5? : Choose Yes or No
2005.264.13.34.04.418608  User has chosen YES
2005.264.13.34.06.420905
2005.264.13.34.06.510930  Sending Telecommand YC041942 to Disable Limiter
2005.264.13.34.06.511292  Synchronizing on SEV...
2005.264.13.34.06.533010  Synchronised on SEV for TC(s): YC041942
2005.264.13.34.06.533393
2005.264.13.34.06.533976  >>> Checking
2005.264.13.34.12.536928  LCL 5 has currently a voltage of 0.0325310118496.(from YM292942)
2005.264.13.34.12.537418  LCL 5 has currently a current of 0.000759899325203.(from YM296942)
2005.264.13.34.12.538051
2005.264.13.34.12.653026  ******************* USER INFORMATION *******************
2005.264.13.34.12.653819  User Info>: Check Successful! LCL 5 has been disabled.
2005.264.13.34.12.654464  *******************************************************
2005.264.13.34.13.813788
2005.264.13.34.13.865720  Do you want to disable LCL 7? : Choose Yes or No
2005.264.13.34.15.016365  User has chosen YES
2005.264.13.34.17.020982
2005.264.13.34.17.113227  Sending Telecommand YC041942 to Disable Limiter
2005.264.13.34.17.113596  Synchronizing on SEV...
2005.264.13.34.17.114566  Synchronised on SEV for TC(s): YC041942
2005.264.13.34.17.115186
2005.264.13.34.17.115749  >>> Checking
2005.264.13.34.23.121407  LCL 7 has currently a voltage of 0.034854657948.(from YM324942)
2005.264.13.34.23.121808  LCL 7 has currently a current of 0.00506599526852.(from YM328942)
2005.264.13.34.23.122413
2005.264.13.34.23.156551  ******************* USER INFORMATION *******************
2005.264.13.34.23.157282  User Info>: Check Successful! LCL 7 has been disabled.
2005.264.13.34.23.157893  *******************************************************
2005.264.13.34.26.259301
2005.264.13.34.26.298706  Do you want to disable LCL 3? : Choose Yes or No
2005.264.13.34.27.823666  User has chosen YES
2005.264.13.34.29.827419
2005.264.13.34.29.898042  Sending Telecommand YC041942 to Disable Limiter
2005.264.13.34.29.898411  Synchronizing on SEV...
2005.264.13.34.29.907390  Synchronised on SEV for TC(s): YC041942
2005.264.13.34.29.907805
2005.264.13.34.29.908393  >>> Checking
2005.264.13.34.35.914173  LCL 3 has currently a voltage of 0.00929457508028.(from YM260942)
2005.264.13.34.35.914573  LCL 3 has currently a current of 0.00759899290279.(from YM264942)
2005.264.13.34.35.915188
2005.264.13.34.35.949361  ******************* USER INFORMATION *******************
2005.264.13.34.35.950064  User Info>: Check Successful! LCL 3 has been disabled.
2005.264.13.34.35.950684  *******************************************************
2005.264.13.34.39.017874
2005.264.13.34.39.069900  ******************* USER INFORMATION *******************
2005.264.13.34.39.070773  User Info>: No LCL is selected to be switched on as fifth
2005.264.13.34.39.071517  *******************************************************
2005.264.13.34.39.995578
2005.264.13.34.40.035497  ******************* USER INFORMATION *******************
2005.264.13.34.40.036264  User Info>: No LCL is selected to be switched on as sixth
2005.264.13.34.40.036896  *******************************************************
2005.264.13.34.40.533515
2005.264.13.34.40.572819  Do you want to disable PSU(s)? : Choose Yes or No
2005.264.13.34.42.850889  User has chosen NO
2005.264.13.34.44.853941
2005.264.13.34.44.855224  PSU 1 Master status is currently 1 (from YM129942)
2005.264.13.34.44.856256  PSU 1 Slave status is currently 1 (from YM145942)
2005.264.13.34.44.857712  PSU 2 Master status is currently 1 (from YM177942)
2005.264.13.34.44.858363  PSU 2 Slave status is currently 1 (from YM193942)
2005.264.13.34.44.858980
2005.264.13.34.44.859573  Power down of HIFI is done.
2005.264.13.34.44.860165
2005.264.13.34.44.899764  Do you want to power down another instrument? : Choose Yes or No
2005.264.13.35.12.153799  User has chosen YES
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2005.264.13.35.14.155045
2005.264.13.35.14.189262  Which instrument needs to be Powered down? PACS, SPIRE, HIFI, CCU?
2005.264.13.36.57.631208  You have selected to power down SPIRE.
2005.264.13.36.57.631683
2005.264.13.36.57.632305  The current power down order is:
2005.264.13.36.57.632932  --------------------------------
2005.264.13.36.57.635544  1. LCL 1    SPIRE HSDPU    Voltage: 27.8604888916 V    Current:
0.436567336321 A
2005.264.13.36.57.636370  2. LCL 0    N/A    Voltage: N/A V    Current: N/A A
2005.264.13.36.57.637029
2005.264.13.36.57.685112  Do you want to change this order? : Choose Yes or No
2005.264.13.36.59.283526  User has chosen NO
2005.264.13.37.01.286842
2005.264.13.37.01.287229  >>> Disable LCL's
2005.264.13.37.01.287840
2005.264.13.37.01.325166  Do you want to disable LCL 1? : Choose Yes or No
2005.264.13.46.31.738694  User has chosen YES
2005.264.13.46.33.743743
2005.264.13.46.33.849479  Sending Telecommand YC041942 to Disable Limiter
2005.264.13.46.33.849854  Synchronizing on SEV...
2005.264.13.46.33.850952  Synchronised on SEV for TC(s): YC041942
2005.264.13.46.33.851600
2005.264.13.46.33.852187  >>> Checking
2005.264.13.46.39.858754  LCL 1 has currently a voltage of 0.00697093131021.(from YM228942)
2005.264.13.46.39.859157  LCL 1 has currently a current of 0.00101930263918.(from YM232942)
2005.264.13.46.39.859772
2005.264.13.46.39.903339  ******************** USER INFORMATION ********************
2005.264.13.46.39.904062  User Info>: Check Successful! LCL 1 has been disabled.
2005.264.13.46.39.904662  ********************************************************
2005.264.13.46.42.429711
2005.264.13.46.42.470987  ******************** USER INFORMATION ********************
2005.264.13.46.42.471732  User Info>: No LCL is selected to be switched on as second
2005.264.13.46.42.472359  ********************************************************
2005.264.13.46.43.134041
2005.264.13.46.43.175722  Do you want to disable PSU(s)? : Choose Yes or No
2005.264.13.46.44.924206  User has chosen NO
2005.264.13.46.46.929026
2005.264.13.46.46.930273  PSU 1 Master status is currently 1 (from YM129942)
2005.264.13.46.46.930990  PSU 1 Slave status is currently 1 (from YM145942)
2005.264.13.46.46.932383  PSU 2 Master status is currently 1 (from YM177942)
2005.264.13.46.46.933041  PSU 2 Slave status is currently 1 (from YM193942)
2005.264.13.46.46.933673
2005.264.13.46.46.934259  Power down of SPIRE is done.
2005.264.13.46.46.934850
2005.264.13.46.46.998088  Do you want to power down another instrument? : Choose Yes or No
2005.264.13.47.19.675866  User has chosen NO
2005.264.13.47.21.677617
2005.264.13.47.21.678299  >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.264.13.47.21.678917  >>>>>>>>  Reading out PLM SCOE Settings
2005.264.13.47.21.679526  >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.264.13.47.21.680116
2005.264.13.47.21.681294  Status_PLM_OnLine is 1 (extracted from TLM YM018942)
2005.264.13.47.21.682368  Status_PLM_PSU1_Master is currently 1 (extracted from TLM YM129942)
2005.264.13.47.21.683429  Status_PLM_PSU1_Slave is currently 1 (extracted from TLM YM145942)
2005.264.13.47.21.684483  Status_PLM_PSU2_Master is currently 1 (extracted from TLM YM177942)
2005.264.13.47.21.685524  Status_PLM_PSU2_Slave is currently 1 (extracted from TLM YM193942)
2005.264.13.47.21.686654  Status_PLM_LCL1_V is currently 0.00697093131021 (extracted from TLM
YM228942)
2005.264.13.47.21.687749  Status_PLM_LCL1_I is currently 0.00101930263918 (extracted from TLM
YM232942)
2005.264.13.47.21.688856  Status_PLM_LCL2_V is currently 0.0627383813262 (extracted from TLM
YM244942)
2005.264.13.47.21.689953  Status_PLM_LCL2_I is currently 0.00607919460163 (extracted from TLM
YM248942)
2005.264.13.47.21.691065  Status_PLM_LCL3_V is currently 0.00929457508028 (extracted from TLM
YM260942)
2005.264.13.47.21.692158  Status_PLM_LCL3_I is currently 0.00759899290279 (extracted from TLM
YM264942)
2005.264.13.47.21.693276  Status_PLM_LCL4_V is currently 0.0371783003211 (extracted from TLM
YM276942)
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2005.264.13.47.21.694386 Status_PLM_LCL4_I is currently 0.00607919460163 (extracted from TLM
YM280942)
2005.264.13.47.21.695484 Status_PLM_LCL5_V is currently 0.0325310118496 (extracted from TLM
YM292942)
2005.264.13.47.21.696625 Status_PLM_LCL5_I is currently 0.000759899325203 (extracted from TLM
YM296942)
2005.264.13.47.21.697725 Status_PLM_LCL6_V is currently 0.0766802430153 (extracted from TLM
YM308942)
2005.264.13.47.21.698836 Status_PLM_LCL6_I is currently 0.00379949645139 (extracted from TLM
YM312942)
2005.264.13.47.21.699974 Status_PLM_LCL7_V is currently 0.034854657948 (extracted from TLM
YM324942)
2005.264.13.47.21.701078 Status_PLM_LCL7_I is currently 0.00506599526852 (extracted from TLM
YM328942)
2005.264.13.47.21.702309 Status_PLM_LCL8_V is currently 0.00929457508028 (extracted from TLM
YM340942)
2005.264.13.47.21.703431 Status_PLM_LCL8_I is currently 0.0045593958348 (extracted from TLM
YM344942)
2005.264.13.47.21.704554 Status_PLM_LCL9_V is currently 0.00697093131021 (extracted from TLM
YM356942)
2005.264.13.47.21.705679 Status_PLM_LCL9_I is currently 0.00253299763426 (extracted from TLM
YM360942)
2005.264.13.47.21.706817 Status_PLM_LCL10_V is currently 0.00929457508028 (extracted from TLM
YM372942)
2005.264.13.47.21.707931 Status_PLM_LCL10_I is currently 0.00303959730081 (extracted from TLM
YM376942)
2005.264.13.47.21.709057 Status_PLM_LCL11_V is currently 0.00929457508028 (extracted from TLM
YM388942)
2005.264.13.47.21.710184 Status_PLM_LCL11_I is currently 0.00354619673453 (extracted from TLM
YM392942)
2005.264.13.47.21.711360 Status_PLM_LCL12_V is currently 0.00697093131021 (extracted from TLM
YM404942)
2005.264.13.47.21.712475 Status_PLM_LCL12_I is currently 0.0116517897695 (extracted from TLM
YM408942)
2005.264.13.47.21.713638 Status_PLM_LCL13_V is currently 0.0185891501606 (extracted from TLM
YM420942)
2005.264.13.47.21.714824 Status_PLM_LCL13_I is currently 0.00151979865041 (extracted from TLM
YM424942)
2005.264.13.47.21.715960 Status_PLM_LCL14_V is currently 0.0952693969011 (extracted from TLM
YM436942)
2005.264.13.47.21.717080 Status_PLM_LCL14_I is currently 0.00430609611794 (extracted from TLM
YM440942)
2005.264.13.47.21.717774 <<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<
2005.264.13.47.21.718422 <<<<<<<  Power Sequence Ended!
2005.264.13.47.21.719044 <<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<
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Appendix 10: Log of EGSE_OFFLINE_AUTO.tcl

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******************************************************************************
2005.264.13.47.28.857821 EGSE OFFLINE Sequence
******************************************************************************
2005.264.13.47.28.858292
******************************************************************************
2005.264.13.47.28.858874 Connect and attach to CDMU DFE and PLM SCOE
******************************************************************************
2005.264.13.47.28.859180
2005.264.13.47.28.859400
2005.264.13.47.28.859622 Connecting to CDMU DFE
2005.264.13.47.30.866028 Attaching to CMDU DFE
2005.264.13.47.31.871553
2005.264.13.47.31.871915 Connecting to PLM SCOE
2005.264.13.47.33.874829 Attaching to PLM SCOE
2005.264.13.47.34.878416
2005.264.13.47.34.878777
2005.264.13.47.34.879188 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.264.13.47.34.879606 >>>>>>>>  Reading out CDMUDFE Settings
2005.264.13.47.34.880028 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.264.13.47.34.880498
2005.264.13.47.34.980462 Status_CDMU_OnLine is 1 (extracted from TLM YM777944)
2005.264.13.47.34.982252 Status_CDMU_TMpolling is 1 (extracted from TLM YM780944)
2005.264.13.47.34.983914 Status_CDMU_SAreadActive is 1 (extracted from TLM YM781944)
2005.264.13.47.34.985581 Status_CDMU_SAqueueActive is 1 (extracted from TLM YM782944)
2005.264.13.47.34.987379 Status_CDMU_TMqueueActive is 1 (extracted from TLM YM783944)
2005.264.13.47.34.989084 Status_CDMU_TCqueueActive is 1 (extracted from TLM YM784944)
2005.264.13.47.34.990673 Status_CDMU_PSTfileName is PACS_prime_inst.... (extracted from TLM
YM809944)
2005.264.13.47.34.992389 Status_CDMU_PSTrunning is 1 (extracted from TLM YM829944)
2005.264.13.47.34.992969
2005.264.13.47.34.993498 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.264.13.47.34.994041 >>>>>>>>  Reading out PLM SCOE Settings
2005.264.13.47.34.994586 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.264.13.47.34.995155
2005.264.13.47.34.996965 Status_PLM_OnLine is 1 (extracted from TLM YM018942)
2005.264.13.47.34.998799 Status_PLM_PSU1_Master is currently 1 (extracted from TLM YM129942)
2005.264.13.47.35.000730 Status_PLM_PSU1_Slave is currently 1 (extracted from TLM YM145942)
2005.264.13.47.35.003071 Status_PLM_PSU2_Master is currently 1 (extracted from TLM YM177942)
2005.264.13.47.35.005042 Status_PLM_PSU2_Slave is currently 1 (extracted from TLM YM193942)
2005.264.13.47.35.008314 Status_PLM_LCL1_V is currently 0.00697093131021 (extracted from TLM
YM228942)
2005.264.13.47.35.011116 Status_PLM_LCL1_I is currently 0.000917372351978 (extracted from TLM
YM232942)
2005.264.13.47.35.014326 Status_PLM_LCL2_V is currently 0.0650620236993 (extracted from TLM
YM244942)
2005.264.13.47.35.017109 Status_PLM_LCL2_I is currently 0.00607919460163 (extracted from TLM
YM248942)
2005.264.13.47.35.020340 Status_PLM_LCL3_V is currently 0.00929457508028 (extracted from TLM
YM260942)
2005.264.13.47.35.023095 Status_PLM_LCL3_I is currently 0.00759899290279 (extracted from TLM
YM264942)
2005.264.13.47.35.026295 Status_PLM_LCL4_V is currently 0.0371783003211 (extracted from TLM
YM276942)
2005.264.13.47.35.029050 Status_PLM_LCL4_I is currently 0.00607919460163 (extracted from TLM
YM280942)
2005.264.13.47.35.032295 Status_PLM_LCL5_V is currently 0.0302073694766 (extracted from TLM
YM292942)
2005.264.13.47.35.035048 Status_PLM_LCL5_I is currently 0.000759899325203 (extracted from TLM
YM296942)
2005.264.13.47.35.038999 Status_PLM_LCL6_V is currently 0.0766802430153 (extracted from TLM
YM308942)
2005.264.13.47.35.041813 Status_PLM_LCL6_I is currently 0.00379949645139 (extracted from TLM
YM312942)
2005.264.13.47.35.045069 Status_PLM_LCL7_V is currently 0.034854657948 (extracted from TLM
YM324942)
2005.264.13.47.35.047859 Status_PLM_LCL7_I is currently 0.00506599526852 (extracted from TLM
YM328942)
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2005.264.13.47.35.051094 Status_PLM_LCL8_V is currently 0.00929457508028 (extracted from TLM
YM340942)
2005.264.13.47.35.053891 Status_PLM_LCL8_I is currently 0.00405279640108 (extracted from TLM
YM344942)
2005.264.13.47.35.057602 Status_PLM_LCL9_V is currently 0.00697093131021 (extracted from TLM
YM356942)
2005.264.13.47.35.060417 Status_PLM_LCL9_I is currently 0.00253299763426 (extracted from TLM
YM360942)
2005.264.13.47.35.063664 Status_PLM_LCL10_V is currently 0.00929457508028 (extracted from TLM
YM372942)
2005.264.13.47.35.066429 Status_PLM_LCL10_I is currently 0.00278629735112 (extracted from TLM
YM376942)
2005.264.13.47.35.069664 Status_PLM_LCL11_V is currently 0.00929457508028 (extracted from TLM
YM388942)
2005.264.13.47.35.072452 Status_PLM_LCL11_I is currently 0.00354619673453 (extracted from TLM
YM392942)
2005.264.13.47.35.076579 Status_PLM_LCL12_V is currently 0.00697093131021 (extracted from TLM
YM404942)
2005.264.13.47.35.079477 Status_PLM_LCL12_I is currently 0.0116517897695 (extracted from TLM
YM408942)
2005.264.13.47.35.082686 Status_PLM_LCL13_V is currently 0.0185891501606 (extracted from TLM
YM420942)
2005.264.13.47.35.085502 Status_PLM_LCL13_I is currently 0.00151979865041 (extracted from TLM
YM424942)
2005.264.13.47.35.088781 Status_PLM_LCL14_V is currently 0.0952693969011 (extracted from TLM
YM436942)
2005.264.13.47.35.091569 Status_PLM_LCL14_I is currently 0.00430609611794 (extracted from TLM
YM440942)
****************************************************************************
2005.264.13.47.35.092775 Switch Off PLM SCOE
****************************************************************************
2005.264.13.47.35.093546
2005.264.13.47.35.095718 Checking current PLM SCOE status
2005.264.13.47.37.098511
2005.264.13.47.37.099058
2005.264.13.47.37.153534  >>> One (or both) PSU's is still powered. Are you sure to power down
the PLM SCOE? : Choose Yes or No
2005.264.13.47.42.261603  User has chosen YES
2005.264.13.47.44.264115
2005.264.13.47.44.264516
2005.264.13.47.44.265174 Switching PLM SCOE to OFFLINE mode.
****************************************************************************
2005.264.13.47.47.326060 Switch Off PLM SCOE
****************************************************************************
2005.264.13.47.48.329158
2005.264.13.47.48.329531 Switching CDMU DFE to OFFLINE mode.
2005.264.13.47.51.468756
2005.264.13.47.51.469155 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.264.13.47.51.469817 >>>>>>>>  Reading out CDMUDFE Settings
2005.264.13.47.51.470456 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.264.13.47.51.471082
2005.264.13.47.51.472278 Status_CDMU_OnLine is 0 (extracted from TLM YM777944)
2005.264.13.47.51.473358 Status_CDMU_TMpolling is 0 (extracted from TLM YM780944)
2005.264.13.47.51.474432 Status_CDMU_SAreadActive is 0 (extracted from TLM YM781944)
2005.264.13.47.51.475505 Status_CDMU_SAqueueActive is 0 (extracted from TLM YM782944)
2005.264.13.47.51.476572 Status_CDMU_TMqueueActive is 0 (extracted from TLM YM783944)
2005.264.13.47.51.477634 Status_CDMU_TCqueueActive is 0 (extracted from TLM YM784944)
2005.264.13.47.51.478746 Status_CDMU_PSTfileName is Empty.PST (extracted from TLM YM809944)
2005.264.13.47.51.479810 Status_CDMU_PSTrunning is 0 (extracted from TLM YM829944)
2005.264.13.47.51.480468
2005.264.13.47.51.481071 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.264.13.47.51.481668 >>>>>>>>  Reading out PLM SCOE Settings
2005.264.13.47.51.482261 >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
2005.264.13.47.51.482856
2005.264.13.47.51.483851 Status_PLM_OnLine is 0 (extracted from TLM YM018942)
2005.264.13.47.51.484892 Status_PLM_PSU1_Master is currently 0 (extracted from TLM YM129942)
2005.264.13.47.51.485937 Status_PLM_PSU1_Slave is currently 0 (extracted from TLM YM145942)
2005.264.13.47.51.486987 Status_PLM_PSU2_Master is currently 0 (extracted from TLM YM177942)
2005.264.13.47.51.488101 Status_PLM_PSU2_Slave is currently 0 (extracted from TLM YM193942)
2005.264.13.47.51.489232 Status_PLM_LCL1_V is currently 0.00697093131021 (extracted from TLM
YM228942)
```

```
2005.264.13.47.51.490466 Status_PLM_LCL1_I is currently 0.000101930265373 (extracted from TLM
YM232942)
2005.264.13.47.51.491591 Status_PLM_LCL2_V is currently 0.0650620236993 (extracted from TLM
YM244942)
2005.264.13.47.51.492828 Status_PLM_LCL2_I is currently 0.000506599550135 (extracted from TLM
YM248942)
2005.264.13.47.51.493920 Status_PLM_LCL3_V is currently 0.00929457508028 (extracted from TLM
YM260942)
2005.264.13.47.51.495020 Status_PLM_LCL3_I is currently 0.000506599550135 (extracted from TLM
YM264942)
2005.264.13.47.51.496109 Status_PLM_LCL4_V is currently 0.0371783003211 (extracted from TLM
YM276942)
2005.264.13.47.51.497217 Status_PLM_LCL4_I is currently 0.000506599550135 (extracted from TLM
YM280942)
2005.264.13.47.51.498302 Status_PLM_LCL5_V is currently 0.0302073694766 (extracted from TLM
YM292942)
2005.264.13.47.51.499408 Status_PLM_LCL5_I is currently 0.000253299775068 (extracted from TLM
YM296942)
2005.264.13.47.51.500519 Status_PLM_LCL6_V is currently 0.0766802430153 (extracted from TLM
YM308942)
2005.264.13.47.51.501627 Status_PLM_LCL6_I is currently 0.000253299775068 (extracted from TLM
YM312942)
2005.264.13.47.51.502741 Status_PLM_LCL7_V is currently 0.0325310118496 (extracted from TLM
YM324942)
2005.264.13.47.51.503854 Status_PLM_LCL7_I is currently 0.000506599550135 (extracted from TLM
YM328942)
2005.264.13.47.51.504956 Status_PLM_LCL8_V is currently 0.00929457508028 (extracted from TLM
YM340942)
2005.264.13.47.51.506087 Status_PLM_LCL8_I is currently 0.000506599550135 (extracted from TLM
YM344942)
2005.264.13.47.51.507201 Status_PLM_LCL9_V is currently 0.00697093131021 (extracted from TLM
YM356942)
2005.264.13.47.51.508325 Status_PLM_LCL9_I is currently 0.00101319910027 (extracted from TLM
YM360942)
2005.264.13.47.51.509443 Status_PLM_LCL10_V is currently 0.00929457508028 (extracted from TLM
YM372942)
2005.264.13.47.51.510533 Status_PLM_LCL10_I is currently 0.000253299775068 (extracted from TLM
YM376942)
2005.264.13.47.51.511631 Status_PLM_LCL11_V is currently 0.00929457508028 (extracted from TLM
YM388942)
2005.264.13.47.51.512746 Status_PLM_LCL11_I is currently 0.000253299775068 (extracted from TLM
YM392942)
2005.264.13.47.51.513926 Status_PLM_LCL12_V is currently 0.00697093131021 (extracted from TLM
YM404942)
2005.264.13.47.51.515057 Status_PLM_LCL12_I is currently 0.000506599550135 (extracted from TLM
YM408942)
2005.264.13.47.51.516379 Status_PLM_LCL13_V is currently 0.0209127943963 (extracted from TLM
YM420942)
2005.264.13.47.51.517578 Status_PLM_LCL13_I is currently 0.000506599550135 (extracted from TLM
YM424942)
2005.264.13.47.51.518743 Status_PLM_LCL14_V is currently 0.0975930392742 (extracted from TLM
YM436942)
2005.264.13.47.51.519997 Status_PLM_LCL14_I is currently 0.000253299775068 (extracted from TLM
YM440942)
***************************************************************************
2005.264.13.47.51.521158 Disconnect and detach from CDMU DFE and PLM SCOE
***************************************************************************
2005.264.13.47.51.521936
2005.264.13.47.51.522587
2005.264.13.47.51.523218 Disconnecting from CDMU DFE
2005.264.13.47.53.526758 Detaching from CMDU DFE
2005.264.13.47.54.530250
2005.264.13.47.54.530614 Disconnecting from PLM SCOE
2005.264.13.47.56.533680 Detaching from PLM SCOE
2005.264.13.47.57.537265
```

Appendix 11: HP-111000-ASED-NC-1282 - Wrong MIB definition of command PC162420

Monday September 19 2005 6:51 PM

Company ESTEC	Project Name HERSCHEL-PLANCK	NCR-No: HP-113000-ASED-NC-1482 Related internal NCR-No: Critical Item:Yes ☐ No ☒ Revision 0 Page 1 of 1

Nonconformance Report

NCR Title Wrong MIB definition of command PC162420	
NC Item Identification PACS	
Next Higher Assembly HERSCHEL INSTRUMENTS AND TELESCOPE (CFE)	
Drawing No	Sr No.
Procedure No	
Supplier MPE	Purchase Order
Subsystem	Model EQM
NC Observation Date: 19-SEP-05 Location: ASED OTN	NC Detected During Test

Description of Nonconformance   Requirements Violated
During the IMT, the command PC162420 was rejected. The reason is that this command allows 8 times a value for parameter PP067420. The PACS TCL script included 9 time a value for this parameter. Solution: Change definition in MIB. For now, this is done manually (since IMT should continue). PACS will update MIB and send changes to ASP (HPSDB).
Initiator: Date, Name and Signature 19-SEP-05   S ILSEN
Date: Name: Signature:

Appendix 12: HP-111000-ASED-NC-1491 – PACS DPU power anomaly

Wednesday September 21 2005 4:55 PM

Company	Project Name	NCR-No: HP-113000-ASED-NC-1491	
ESTEC	HERSCHEL-PLANCK	Related internal NCR-No:	
		Critical Item: Yes [X] No [ ]　　　Revision 0	
		Page 1 of 2	

Nonconformance Report

NCR Title　PACS DPU power anomaly	
NC item Identification　PACS	
Next Higher Assembly　HERSCHEL INSTRUMENTS AND TELESCOPE (CFE)	
Drawing No	Sr No.
Procedure No	
Supplier　MPE	Purchase Order
Subsystem	Model　EQM

NC Observation Date: 21-SEP-05　Location: ASED OTN	NC Detected During　Test

Description of Nonconformance	Requirements Violated

During PACS IMT testing 2 power anamolies were seen as follows:
1) DPU rebooted itself during testing -> No power surge was identified on PLM SCOE
2) DPU's power consumption dropped to zero during test.
PACS (all modules) were powered down on request of PACS instrument team.
DPU was restarted after 40 minutes, power consumption stayed at 0 A.

Power cable was checked with breakout box.
Result: 28 V is available at the end of the PLM SCOE cable.

NRB to be held, to decide on further investigations.

Initiator: Date, Name and Signature　21-SEP-05　　D. HENDRY

Internal NRB Dispositions	Classification:
21.09.05 Internal NRB, ASED,PACS,ASP,ESA Perform initial investigations as follows. Disconnect cable DB 32 GO1 3-22 and 4-23 measure voltage result 28 volts. Insert break out box in line GO1 and reconnect harness,mesaure voltage during DPU switch on, result initial current peak of 150 ma then zero current. Disconnect GO1 and connect 50 ohm load and measure switch on current and voltage, result 28v ok and 250 ma current ok Initial conclusion power SCOE is operating ok and fault is within the DPU. Convene customer NRB Ref. to MoMs	Major [X]　Minor [ ] Customer Notification

Cause of NC Ref to Failure Report	Corrective/Preventative Actions	Verification

	PA	Engineering								
Date: Name: Signature:	21-SEP-05 D.Hendry	21-SEP-05 S.Idler	21-SEP-05 D.Hendry	21-SEP-05 S.Ilsen	21-SEP-05 C.Schlosser	21-SEP-05 A.Heske	21-SEP-05 W.Pinter- Krainer	21-SEP-05 G.Doubrovik	21-SEP-05 H.Feuchtgrub er	21-SEP-05 E.Wiezorrek

Wednesday September 21 2005 4:55 PM

Company	Project Name	NCR-No: HP-113000-ASED-NC-1491
ESTEC	HERSCHEL-PLANCK	Related Internal NCR-No:
		Critical Item: Yes [X] No [ ] Revision 0
		Page 2 of 2

Nonconformance Report - Continuation Sheet -

Customer NRB Dispositions (Class Major Only)   Ref. to MoMs   Verification

21.09.05 ESA,ASP,ASED,PACS.
Following initial investigations it was considered that the SCOE and harness were not the cause of the failure and PACS recommend to deintegrate the DPU and return to the supplier for failure investigations.
PACS state that no similar problem has been seen during any lower level testing, during ILT the instrument was power on for a max of 3 days, during the present IMT phase PACS has been on for max of 5 days (in stand by during HIFI IMT and weekend), Unit temp was 28 degees C.
All Instruments use the same design of DPU I/F power circuit
PACS have a replacement unit model CFM at MPI which can be available at OTN by 09-00 tomorrow, this unit needs to have a OBSW upload with Issue 7.68 ,present unit has 7.65, the new issue is for internal H/W changes and to be compatible with I EGSE.
AI/1 PACS
The unit will have stand alone test at MPI following OBSW upload.
The Mechanical I/F of the CFM is the same as existing AVM.
AI/2PACS
The electrical I/F (no redundancy)Connector configuration with respect to which redundancy is connected needs to be confirmed by PACS to ensure correct harness length.
AI/3 PACS
PACS to raise NCR to track the failure investigations of the AVM
List of activities:
1)Swith off HIFI and SPIRE
2) Switch off power SCOE and CDMU FE
3)Check grounding of power SCOE and DPU.
4) Electrically disconnect DPU using general ESD protection no specific order for connector removal is required.
5)Mechanically deintegrate unit.
6)Perform SCOE power on electrical check and current and voltage measurement using dummy loads (analogue measurement).
7)Mechanically integrate CFM
8)Electrical integration check of power and isolation.
9)perform DPU power up check.
10)Pack AVM in transport container and return to supplier for failure investigations.

Finally Determined Cause of NC	Corrective/Preventative Actions
Ref to Failure Report	

Request for Waiver	Alert	Other related Documents
Yes [ ] No [ ] Reference:	Yes [ ] No [ ] Reference:	

	NCR Close Out

NRB Approval

Organization/
Name

Date, Signature

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Issue: 1
Date: 04.10.05   File: HP-2-ASED-TR-0093 - PACS IMT.doc

Appendix 13: HP-111000-ASED-NC-1493 - CRC in HK not compliant with CRC in procedure Memory Management Test

Wednesday September 21 2005 4:58 PM

Company	Project Name	NCR-No: HP-113000-ASED-NC-1493
ESTEC	HERSCHEL-PLANCK	Related internal NCR-No:
		Critical Item: Yes ☐ No ☒ Revision 0
		Page 1 of 1

Nonconformance Report

NCR Title   CRC in HK not compliant with CRC in procedure (Memory Management Test)

NC Item Identification   PACS

Next Higher Assembly   HERSCHEL INSTRUMENTS AND TELESCOPE (CFE)

Drawing No	Sr No.
Procedure No	
Supplier MPE	Purchase Order
Subsystem	Model EQM

NC Observation Date: 21-SEP-05 Location: ASED OTN	NC Detected During Test

Description of Nonconformance   Requirements Violated

During the PACS IMT, the CRC values in the procedure for the Memory Management Test did not comply with the
CRC values in the PACS HK. PACS do decide on further investigation or update of IMT procedure.

Initiator: Date, Name and Signature 21-SEP-05   S ILSEN

Date:
Name:
Signature:

Appendix 14: HP-111000-ASED-NC-1494 - DEC_MEC got blocked and DEC_MEC - DPU comm link dead

Wednesday September 21 2005 5:16 PM

Company	Project Name	
ESTEC	HERSCHEL-PLANCK	NCR-No: HP-113000-ASED-NC-1494
		Related internal NCR-No:
		Critical Item: Yes ☐ No ☒ Revision 0
		Page 1 of 1

Nonconformance Report

NCR Title   DEC/MEC got blocked and DEC/MEC - DPU comm link dead

NC Item Identification   PACS

Next Higher Assembly   HERSCHEL INSTRUMENTS AND TELESCOPE (CFE)

Drawing No	Sr No.

Procedure No

Supplier MPE	Purchase Order
Subsystem	Model EQM

NC Observation Date: 21-SEP-05 Location: ASED OTN	NC Detected During Test

Description of Nonconformance   Requirements Violated

During the execution of IMT (testID 404), the DEC/MEC got blocked (according to PACS). The running script is
aborted and a manual stack command is executed:
PC005380 (DPU_SET_FUNCT)
With the following parameter:
PP007380 = 103
PP006380 = 1

During the cooler recycle, the DEC/MEC - DPU link dead.
To recover from this without loosing the cooler recylce, DEC/MEC is manually powered down and up again.
After this all DEC/MEC commands in the PACS_POWER_ON.tcl are executed with the manual stack. This was not
successful. Another approach is tried:
1) power down SPU, DEC/MEC, DPU (manually from PLM SCOE)
2) Execute PACS_POWER_ON_BOLCout.TCL (see appendix xxx)
3) PC003380 (with PP005380 = PHOT and PP025380 = BOTH Array)
This approach was successful.

These problems should be investigated further by PACS.

Initiator: Date, Name and Signature   21-SEP-05   S ILSEN

Date:
Name:
Signature:

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Issue: 1
Date: 04.10.05   File: HP-2-ASED-TR-0093 - PACS IMT.doc

Appendix 15: HP-111000-ASED-NC-1495 - Cooler Recycle Failed

Wednesday September 21 2005 5:12 PM
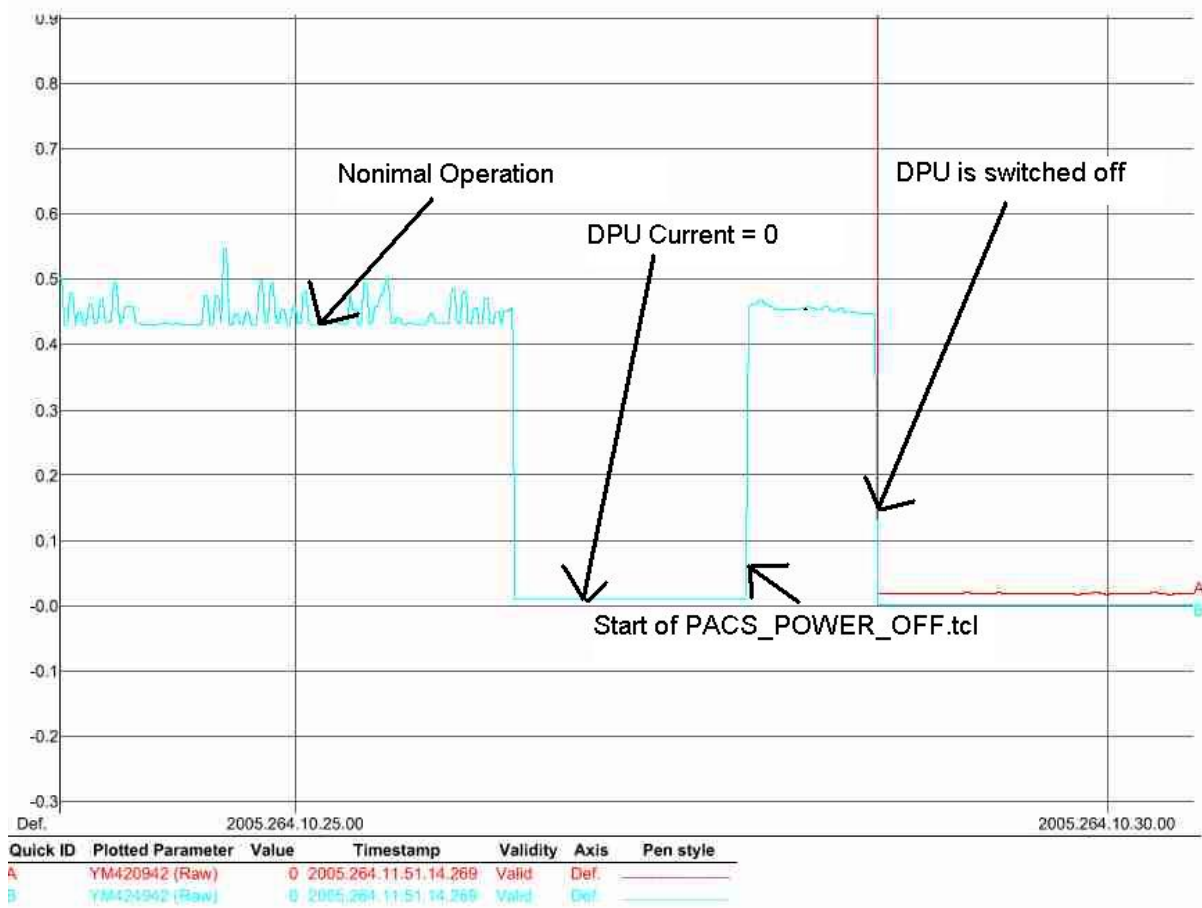
Company ESTEC	Project Name HERSCHEL-PLANCK	NCR-No: HP-113000-ASED-NC-1495 Related internal NCR-No: Critical Item:Yes ☐ No ☒ Revision 0 Page 1 of 1

Nonconformance Report

NCR Title Cooler Recycle Failed	
NC Item Identification PACS	
Next Higher Assembly HERSCHEL INSTRUMENTS AND TELESCOPE (CFE)	
Drawing No	Sr No.
Procedure No	
Supplier	Purchase Order
Subsystem	Model EQM
NC Observation Date: 20-SEP-05 Location: ASED OTN	NC Detected During Test
Description of Nonconformance Requirements Violated During the first cooler recycle in the IMT, PACS detected that this step was not successful. PACS will revise the procedure for the cooler operation.	
Initiator: Date, Name and Signature 21-SEP-05 S ILSEN	
Date: Name: Signature:	

Appendix 16: HP-111000-ASED-NC-1496 – IMT TestID 516 should be run in Burst mode (SPEC_dark_current...tcl)

Wednesday September 21 2005 5:25 PM

Company ESTEC	Project Name HERSCHEL-PLANCK	NCR-No: HP-113000-ASED-NC-1496
		Related internal NCR-No:
		Critical Item: Yes ☐ No ☒ Revision 0
		Page 1 of 1

Nonconformance Report

NCR Title   IMT TestID 516 should be run in Burst mode (SPEC_dark_current...tcl)

NC Item Identification   PACS

Next Higher Assembly   HERSCHEL INSTRUMENTS AND TELESCOPE (CFE)

Drawing No	Sr No.
Procedure No	
Supplier	Purchase Order
Subsystem	Model EQM

NC Observation Date: 20-SEP-05 Location: ASED OTN	NC Detected During Test

Description of Nonconformance	Requirements Violated

During the following script: SPEC_dark_current_spt_eqmimt_obs_shell.tcl a lot of SSC errors were detected on
the following packets with APID: 1157, Type 21, Subtype 1.

To solve this, during this test, the bus profile is changed to PACS_burst_mode.pst on request of PACS and the
following command is sent:
PC009380 (DPU_SET_BUS_LIST) ? Enabled.
Now both the DPU and the CDMU DFE are configured for PACS burst mode and no SSC errors are reported for the
packets mentioned above. After this change 2 more SSC errors were detected, both on HK packets (3,25 ? APID
1152)

The script/procedure should be updated so Burst Mode is implemented before the script is executed and SSC
errors occur.

Initiator: Date, Name and Signature 21-SEP-05   S ILSEN

Date:
Name:
Signature:

Appendix 17: HP-111000-ASED-NC-1497 - DPU packets get corrupted (bad packets)

Wednesday September 21 2005 5:31 PM

Company ESTEC	Project Name HERSCHEL-PLANCK	NCR-No: HP-113000-ASED-NC-1497
		Related internal NCR-No:
		Critical Item:Yes ☐ No ☒ Revision 0
		Page 1 of 1

Nonconformance Report

NCR Title DPU packets get corrupted ("bad packets")	
NC Item Identification PACS	
Next Higher Assembly HERSCHEL INSTRUMENTS AND TELESCOPE (CFE)	
Drawing No	Sr No.
Procedure No	
Supplier	Purchase Order
Subsystem	Model EQM
NC Observation Date: 21-SEP-05 Location: ASED OTN	NC Detected During Test

Description of Nonconformance   Requirements Violated

During the PACS IMT, suddenly all CRC checks failed on all incoming PACS packets. PACS reacted by sending
command PC367380 (DPU_RESET_1553). Apparently this is a known PACS bug which occurs every ~30 hours. Problem
should be solved in new DPU versions.

Initiator: Date, Name and Signature 21-SEP-05   S ILSEN

Date:
Name:
Signature:

Appendix 18: Power Profile (from PLM SCOE) during DPU power down

16   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

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	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