GIADA FS MODEL

REPORT ON
IN FLIGHT ACTIVE PAYLOAD CHECKOUT N. 8 (PC8)
performed on
05/06-07-2009and 09-07-2009 - 01/08/2009

PREPARED	APPROVED	AUTHORIZED
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REVISIONS LOG

REV	DOCUMENT CHANGE ORDER	DATE	CHANGES DESCRIPTION	PREPARED
0	-	31-10-2011	First issue	GIADA Team

1. SCOPE AND APPLICABILITY

Payload Checkout 8 (PC8) was an active checkout .
The Active Payload Checkout 8 ran for 2 consecutive days (05-06 July2008) plus 26 consecutive days starting on the 9th July 2008 until the 1st August 2008. This is approximately twice the allocated time of the active PC6 scenario that preceded it.
PC8 consists of two phases. The 1st phase is a passive test (GD01) similar to the previous Passive Payload Checkouts the 2nd phase is an active test; GD02 is a Non nominal operational configuration test (Instrument with only Impact Sensor operational and cover closed), in GD03 we have successfully tested a non-standard configuration, the GD_INT was an interference test.
The passive test (GD01), which includes standard procedures and full functional verification, was executed by switching on Main and Redundant I/Fs in sequence and executing similar procedures for the two cases. GD02, GD03 and GD_INT were executed only on Main I/F.

This document reports the results obtained on GIADA experiment during PC8.

This report is applicable to GIADA FS model on board the Rosetta S/C. The data were retrieved from DDS by means of the PI Workstation located at Università Parthenope in Naples.

GIADA IWS software configuration is GES v. 4.2.2 plus RSOC Converter v. 1.1.2. GIADA in flight software configuration is 2.3 plus three additional patches (one more patch is used to update the context file).

2. REFERENCES

2.1 APPLICABLE DOCUMENT

AD1	RO-EST-RS-3001/EID A	ROSETTA Experiment Interface Document – Part A
AD2	RO-EST-RS-3009/EIDB	ROSETTA GIADA Experiment Interface Document – Part B
AD3	RO-ESC-PL-5000 – last issue	Flight Control Procedure
AD4	GIA-GAL-MA-007 Issue 4	GIADA Flight Spare Experiment User Manual last version

2.2 REFERENCE DOCUMENT

	None.	

3. DEFINITIONS AND ABBREVIATIONS

3.1 ABBREVIATIONS

CAL	Calibration
CF	Context File
CREP	Cover REPort
CT	Configuration Table
DDS	Data Disposition System
EGSE	Electrical Ground Support Equipment
EQM	Electrical Qualification Model
ESA	European Space Agency
FCP	Flight Control Procedure
FS	Flight Spare
GDS	Grain Detection System
GES	GIADA EGSE SW
GIADA	Grain Impact Analyser and Dust Accumulator
HK	House Keeping
I/F	InterFace
INAF-OAC	INAF - Osservatorio Astronomico di Capodimonte – Napoli (I)
IRQ	Interrupt ReQuest
IS	Impact Sensor
IWS	Instrument Work-Station
MBS	Micro Balance System
ME	Main Electronics
MTL	Mission TimeLine
MON	Monitor
OBCP	On-Board Control Procedure
PC	Payload Checkout
PI	Principal Investigator
PS	GIADA Power Supply
PZT	(IS) Piezoelectric Sensor
RED	Redundant
REV	Revision
RMOC	Rosetta Mission Operation Centre
RSOC	Rosetta Science Operation Centre
S/C	(Rosetta) Spacecraft
S/S	(GIADA) Sub-system (e.g. IS or GDS or MBS)
SCI	Scientific
SSC	Source Sequence Count
SSMM	Solid State Mass Memory on-board of Rosetta Spacecraft
SW	Software
TC	TeleCommand
TM	Telemetry
UM	User Manual
UTC	Coordinated Universal Time
VC0	Virtual Channel 0 (Real Time TM packets)
VC1	Virtual Channel 1 (TM packets coming from Mass Memory)

4. DESCRIPTION OF ACTIVITIES

The Active Payload Checkout n. 8 (PC8) scenario begins on the 8th September 2009 and ran for 18 days to the 4th October 2009, according to the timelines reported in Section 11.
About GIADA, PC8 consists of three different tests, named respectively GD01, GD02, GD03 and GD_INT..

- GD01 is the passive test routinely executed in every payload checkout,6-Months status check;
- GD02 is a test ofGIADA/VIRTIS interference;
- GD03 upload on-board of new Context File settings performing and checking new procedures.
- GD_INT performs a interference test with ROSINA.

PC8 is a maintenance and calibration scenario plan and therefore there are no scientific objectives.
Details of the plan of activities referred to as passive part of PC8 are in Section 11.1
No problem appeared during PC8 open/close cover procedures.

In the next table there are some information about PC8

Scenario period	5/07/08 to 1/08/08
Scenario duration	26 days
Sundistance	1.93 AU to 2.03 AU
Earth distance	~1.88 AU
Propagation delay	~15 min.

The data were off-line elaborated on the PI IWS at INAF-OAC in Naples.

5. SUMMARY OF DATA ANALYSIS

The full sets of plots about Housekeeping data are reported in Sections 6 and 7 for GD01 test on the Main and Redundant I/F's respectively; in Section 8, 9 and 10 for GD02, GD03 and GD_INT tests, respectively, for the Main I/F..

Here following the main findings are summarised.

5.1 GENERAL CONSIDERATIONS

Test started on "Fri Jul 11 2008 16:56:14.683444", when the first TM packet was received from GIADA switched on the Main interface; the last TM packet on the Main interface was received on "Sat Jul 12 2008 04:32:53.863083". Test on the Redundant interface started on "Sat Jul 12 2008 04:56:14.691468" (1st packet received) and ended on "Sat Jul 12 2008 16:33:03.871109" (last packet received). Test on the Main interface GD02 started on "Sun Jul 06 2008 04:41:10.619825" (1st packet received) and ended on "Sun Jul 06 2008 06:23:00.413875" (last packet received). Test on the Main interface GD03 started on "Sun Jul 13 2008 19:36:14.717322" (1st packet received) and ended on "Sun Jul 13 2008 22:33:04.449762" (last packet received). Test on the Main interface GD_INT started on "Sat Jul 19 2008 02:01:10.821381" (1st packet received) and ended on "Sat Jul 19 2008 21:13:00.549060" (last packet received).

The first expected packet **(Connection Test Report, service 17,2) was not received** in the time window of any test, because the DDS has marked it with a wrong UTC time, being an unsynchronised time tag (bad time quality) TM report..

At the 3rd IS power-on both on Main I/F (Sat Jul 12 2008 03:10:01) and Red I/F (Sat Jul 12 2008 15:10:02), the event **"*Hardware error in IS event detection circuitry. No IRQ received.*"** was received (see TCTM report file residing in the log directory of GES). This is a false message produced by the ME of GIADA when the IS electronics is powered-on. This is a known problem (see relevant Remark in GIADA FS UM [**AD 4**]).

As reported in the "Cover Reports" (**CREP**) no OPEN/CLOSE problem occurred during PC8

5.2 GIADA STATUS

The **current consumption** and **power supply temperatures** are shown in **Errore. L'origine iferimento non è stata trovata.** for Main on GD01,**Errore. L'origine riferimento non è stata trovata.**for Red on GD01, Figure 8.1-2 for Main GD02 and Figure 10.1-2 for GD_INT; Power values must be compared with soft and hard limits reported in GIADA FS UM (**AD4**) and summarised in Table 5.2-1.

As reported in GIADA FS UM (**AD4**), the Soft and Hard Alarm Limits for Power consumption in Table 5.2-1 for parameters NGDD0086, NGDD0087 and/or NGDD0088 refer to the different GIADA operating modes. The Soft Alarm Limits in Normal and Flux Modes refer to nominal conditions, i.e. with all sub-systems switched ON. This means that when GIADA is in Normal Mode, but not with all sub-systems ON (or in Flux with MBS OFF), the lower Soft Alarm Limits indicated in the Table can be overcome. In order to avoid flood of Out Of Limits (OOL) alarms, it has been decided (July 2006) to refer the Hard Alarm Limits to the extreme instrument status for each mode (e.g., in normal mode, with all subsystems off – lower – or at maximum power consumption - upper). Other configurations not related to real GIADA failure may still give OOL, related to operation in non nominal temperature conditions, although such conditions have never been experienced so far.

In general, all **functional parameters** measured during the PC 8 test behave as expected.

QUANTITY	NAME	LNAME	SOFT ALARM LIMITS		HARD ALARM LIMITS	
			Lower	Higher	Lower	Higher
+5V Power Consumption ([1])	NGDD0086	Current +5V	110 mA	150 mA	80 mA	180 mA
+15V Power Consumption ([1])	NGDD0087	Current +15V	30 mA	60 mA	20 mA	70 mA
-15V Power Consumption ([1])	NGDD0088	Current -15V	50 mA	90 mA	40 mA	100 mA
+5V Power Consumption ([2])	NGDD0086	Current +5V	110 mA	150 mA	80 mA	180 mA
+15V Power Consumption ([2])	NGDD0087	Current +15V	30 mA	600 mA	20 mA	700 mA
-15V Power Consumption ([2])	NGDD0088	Current -15V	50 mA	600 mA	40 mA	700 mA
+5V Power Consumption ([3])	NGDD0086	Current +5V	110 mA	1600 mA	80 mA	1800 mA
+15V Power Consumption ([3])	NGDD0087	Current +15V	30 mA	550 mA	20 mA	600 mA
-15V Power Consumption ([3])	NGDD0088	Current -15V	50 mA	350 mA	40 mA	400 mA
+5V Power Consumption ([4])	NGDD0086	Current +5V	110 mA	170 mA	80 mA	1500 mA
+15V Power Consumption ([4])	NGDD0087	Current +15V	30 mA	200 mA	20 mA	220 mA
-15V Power Consumption ([4])	NGDD0088	Current -15V	50 mA	135 mA	40 mA	155 mA

Table 5.2-1. Hard and Soft limits for GIADA FS power consumption

([1]) Safe mode ([2]) Cover mode ([3]) Normal mode ([4]) Flux mode

All **Temperatures** behave as expected (Main on GD01: **Errore. L'origine riferimento non è stata rovata.**3,,

Figure 6.1-4; Red on GD01: **Errore. L'origine riferimento non è stata trovata.**3, **Errore. L'origine riferimento non è stata trovata.**4, Main on GD02: **Errore. L'origine riferimento non è stata trovata.**3, **Errore. L'origine riferimento non è stata trovata.**4,Main on GD03: **Errore. L'origine riferimento non è stata trovata.**3, **Errore. L'origine riferimento non è stata trovata.**4,Main on GD_INT: **Errore. L'origine riferimento non è stata trovata.**3, **Errore. L'origine riferimento non è stata trovata.**4.The peaks visible at the beginning and at the end of Frangibolt and IS temperature profiles are features due to the temporary increasing of power

consumption at Power-on of the motor heaters (see Figure 6.1-5 and Figure 6.1-6 for Main on GD01; **Errore. L'origine riferimento non è stata trovata.** and **Errore. L'origine riferimento n è stata trovata.** for Redon GD01see Figure 6.1-5 and Figure 6.1-6 for Main on GD02;see Figure 6.1-5 and Figure 6.1-6 for Main on GD03 and see Figure 6.1-5 and Figure 6.1-6 for Main on GD_INT).

The trend of the IS Temperature is more noisy with the Main than with the Red I/F (Main on GD01: Figure 6.3-4; Red on GD01: **Errore. L'origine riferimento non è stata trovata.**; Main on GD02: Figure 6.3-4;Main on GD03: Figure 6.3-4 and Main on GD_INT: Figure 6.3-4).

The detection **Thresholds** applied on GDS are shown in

Figure 6.2-2 (Main on GD01), **Errore. L'origine riferimento non è stata trovata.** (Red on GD01),in

Figure 6.2-2 (Main on GD02),in

Figure 6.2-2 (Main on GD03 and in

Figure 6.2-2 (Main on GD_INT), **Errore. L'origine riferimento non è stata trovata.** while those applied to PZT3 and PZT5 of IS are shown in Figure 6.3-23 and Figure 6.3-34 (Main on GD01), **Errore. L'origine riferimento non è stata trovata.**3 and **Errore. L'origine riferimento non è ata trovata.**4 (Red on GD01),Figure 6.3-23 and Figure 6.3-34 (Main on GD02),Figure 6.3-23 and Figure 6.3-34 (Main on GD03) and in Figure 6.3-23 and Figure 6.3-34 (Main on GD_INT) . Moreover, Range and Gain for IS are set as shown in Table 5.2-2.

RANGE	GAIN				
	PZTA	PZTB	PZTC	PZTD	PZTE
Low	High	High	High	High	High

Table 5.2-2. IS Range and Gain configuration

During PC8 no scientific data were occurred..

During PC8 test the **GDS CAL data** show for the **GDS Left side** an output level of about **0.8V** and for the **GDS Right side** a level of about **0.18 V** (depending on temperature).

The frequency level of all MBS has no relevant changes with respect to PC7 test.

6. PC8 DATA ANALYSIS – MAIN INTERFACE (GD01)

6.1 GIADA STATUS

Figure 6.1-1. HK Status of GIADA vs. time – Main

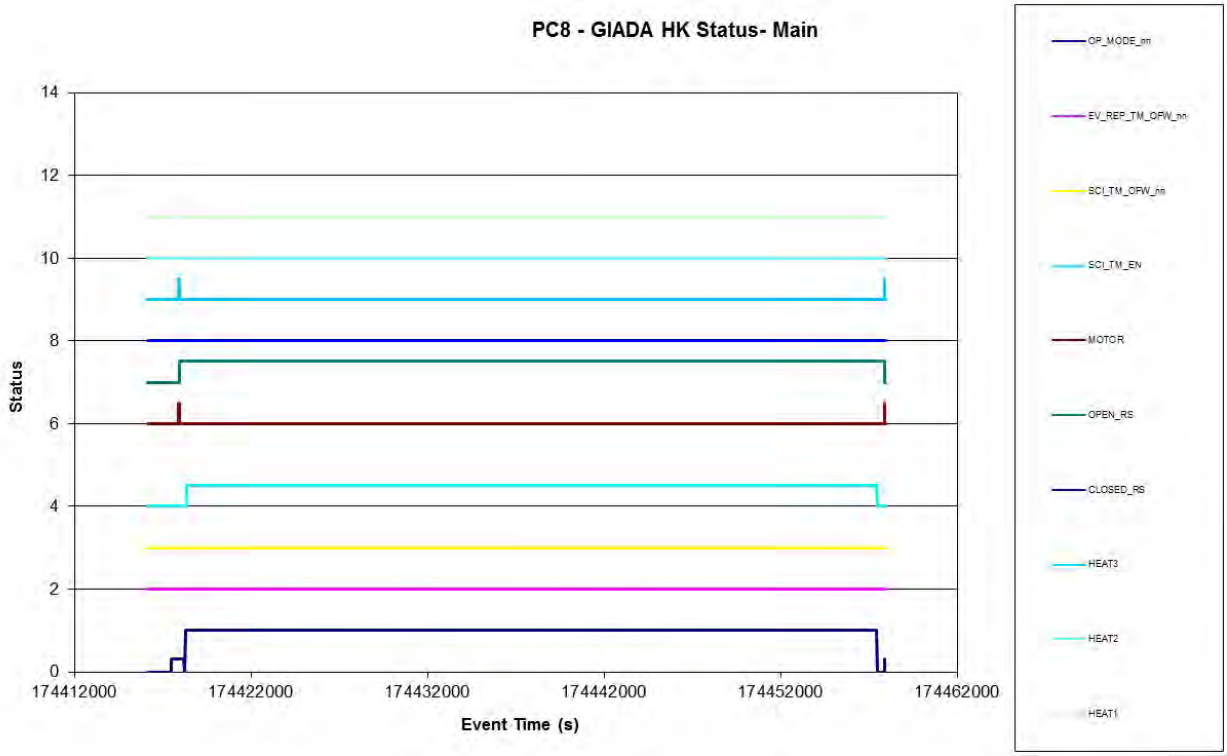


Figure 6.1-2. Power profile and Power Supply temperature vs. time - HK, Main

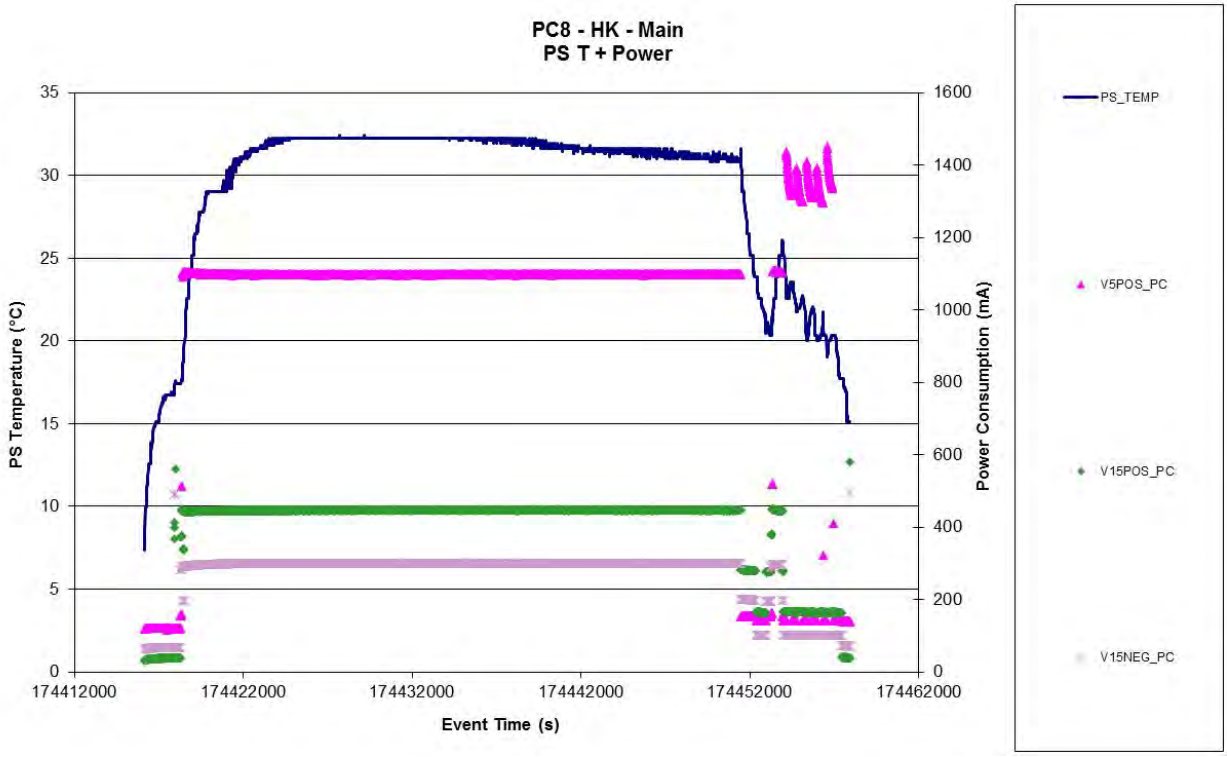


Figure 6.1-3. Evolution of temperatures of system elements vs. time - HK, Main

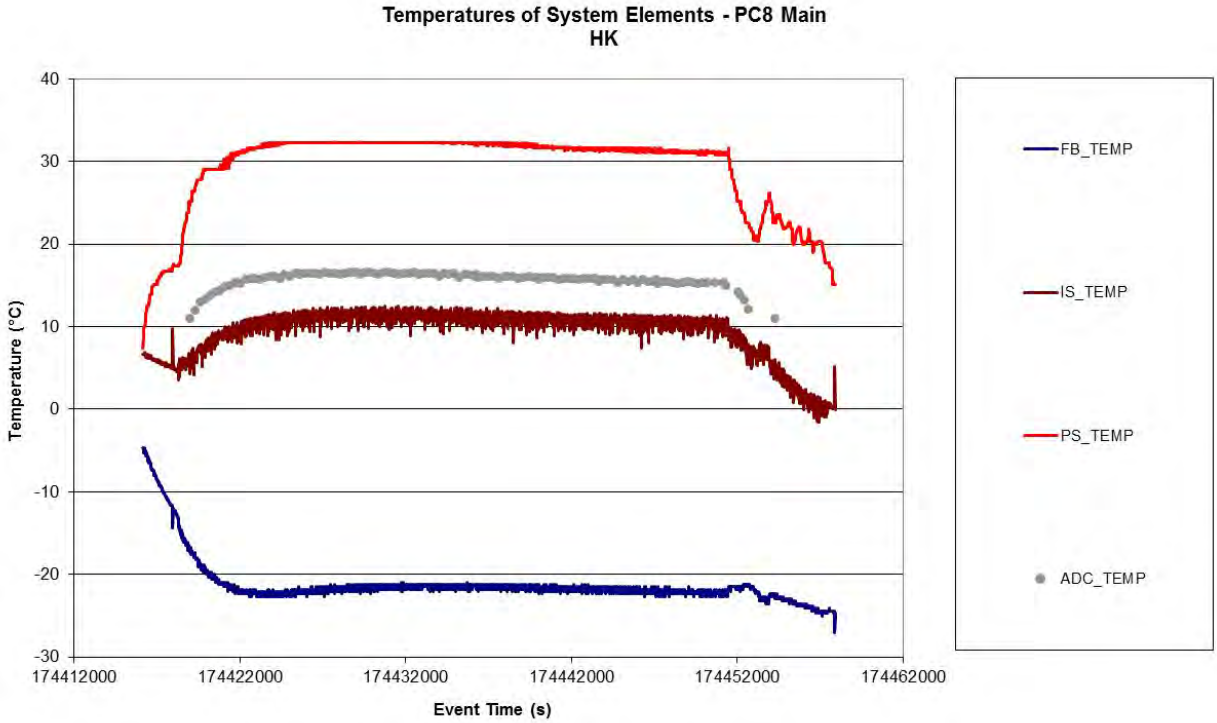


Figure 6.1-4. Evolution of temperatures of sub-systems vs. time with instrument in Normal Mode– Main

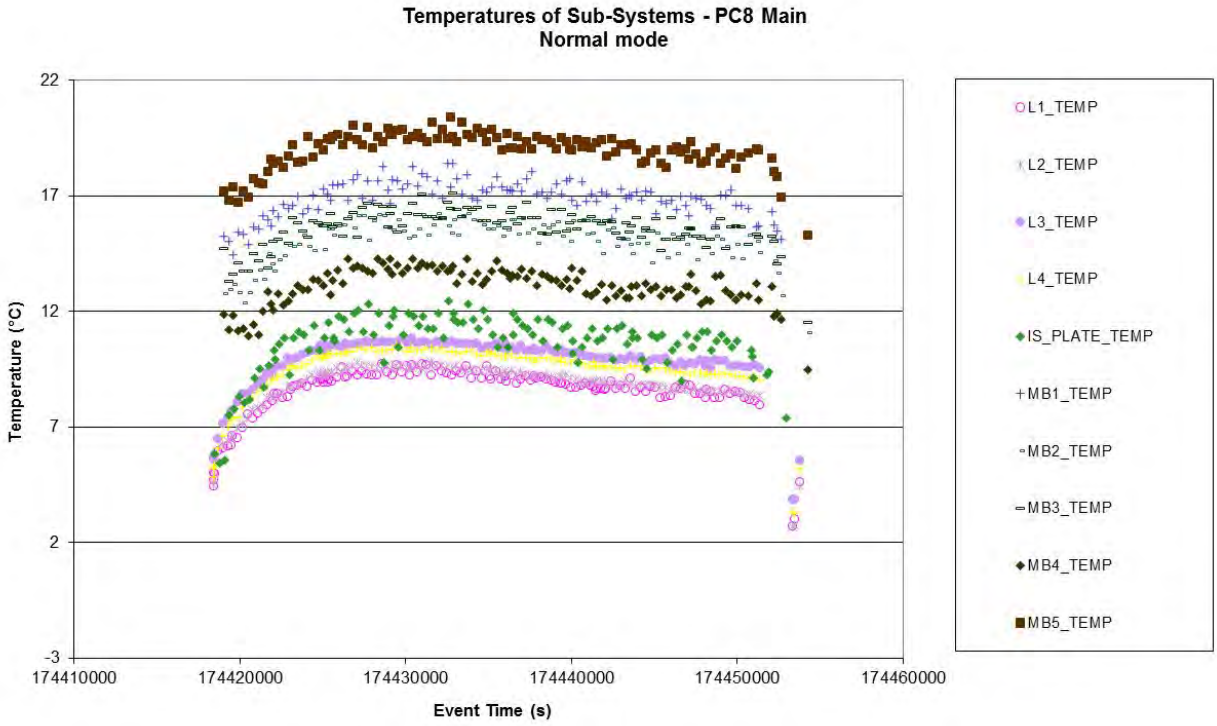


Figure 6.1-5. HK Status versus Temperatures of system elements– Main

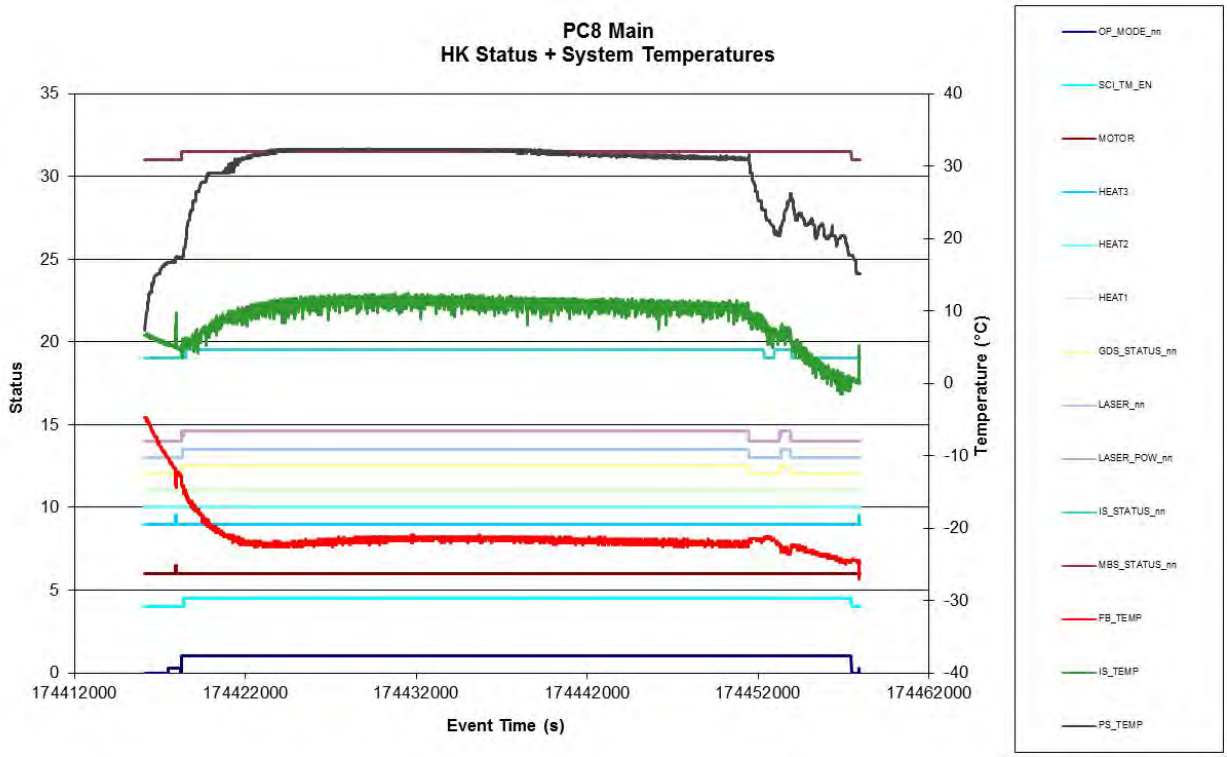
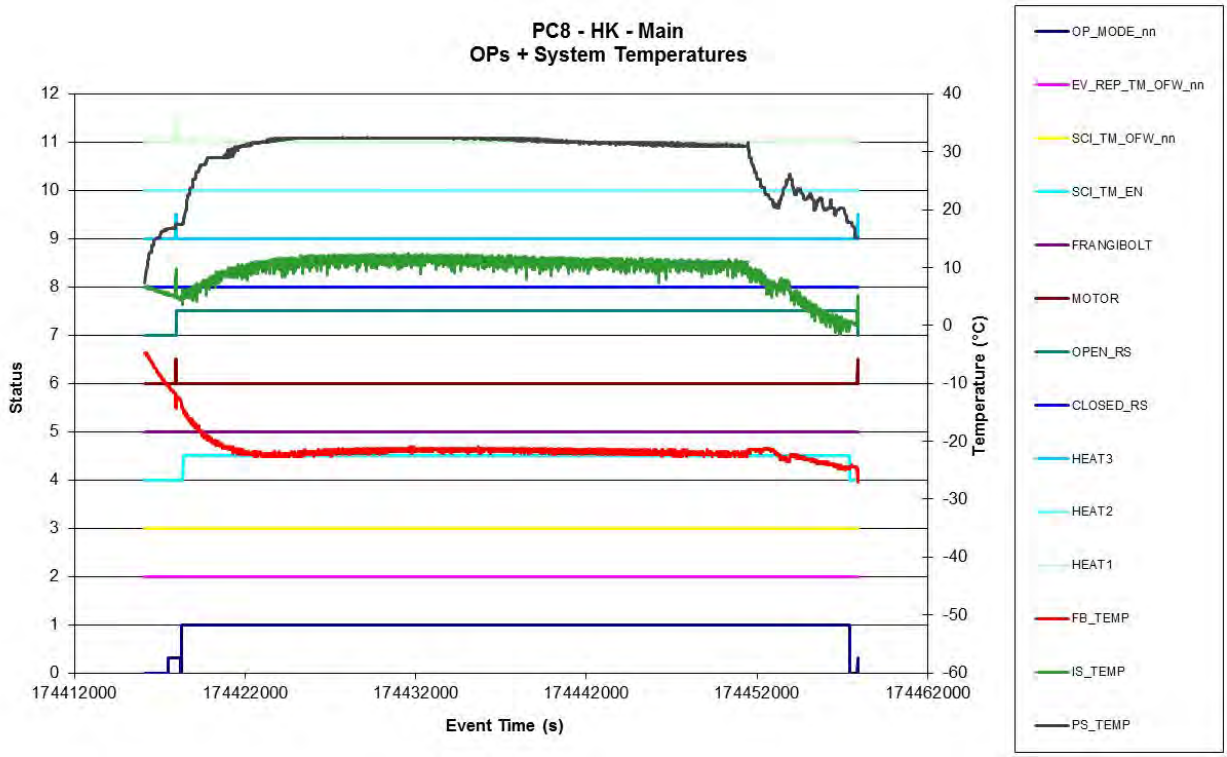


Figure 6.1-6. Operation Status versus Temperatures of system elements– Main
In the diagram are reported operative parameters with relevant variations.



6.2 GRAIN DETECTION SYSTEM (GDS)

6.2.1 GDS – Status

Figure 6.2-1. GDS Operation Status vs. time – Main

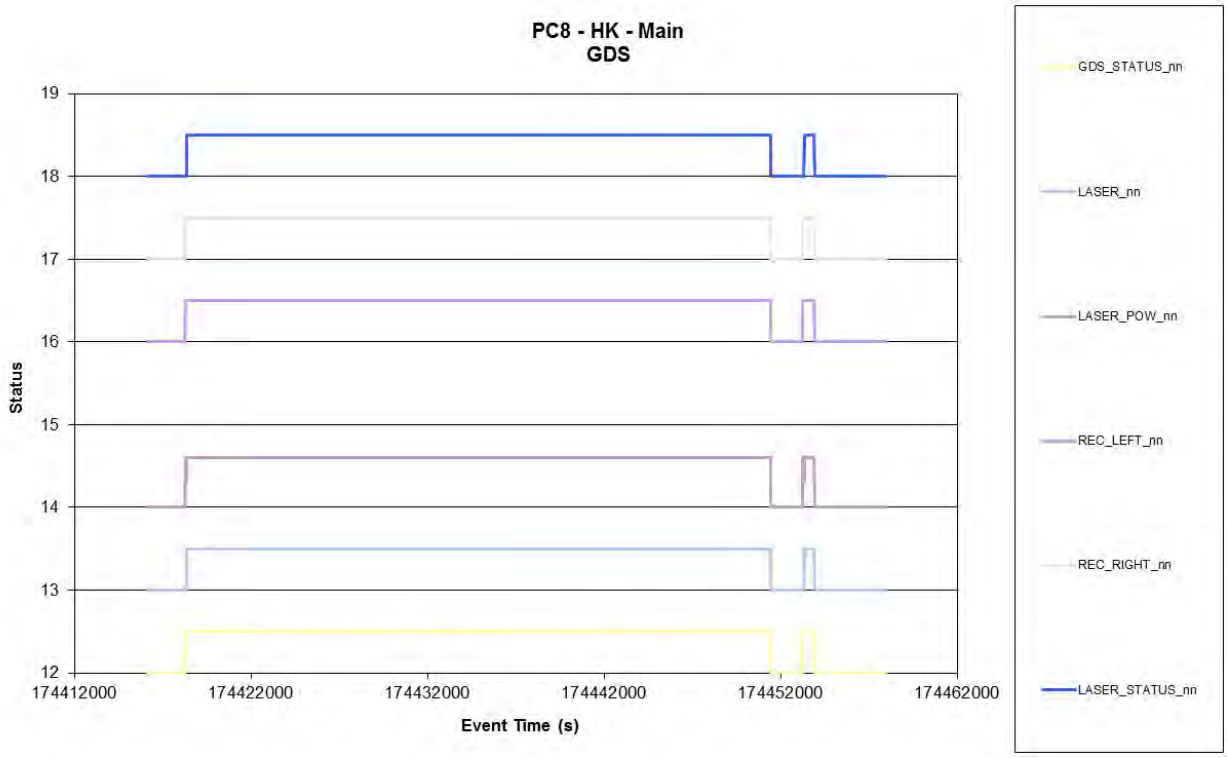


Figure 6.2-2. GDS Thresholds change vs. time – Main

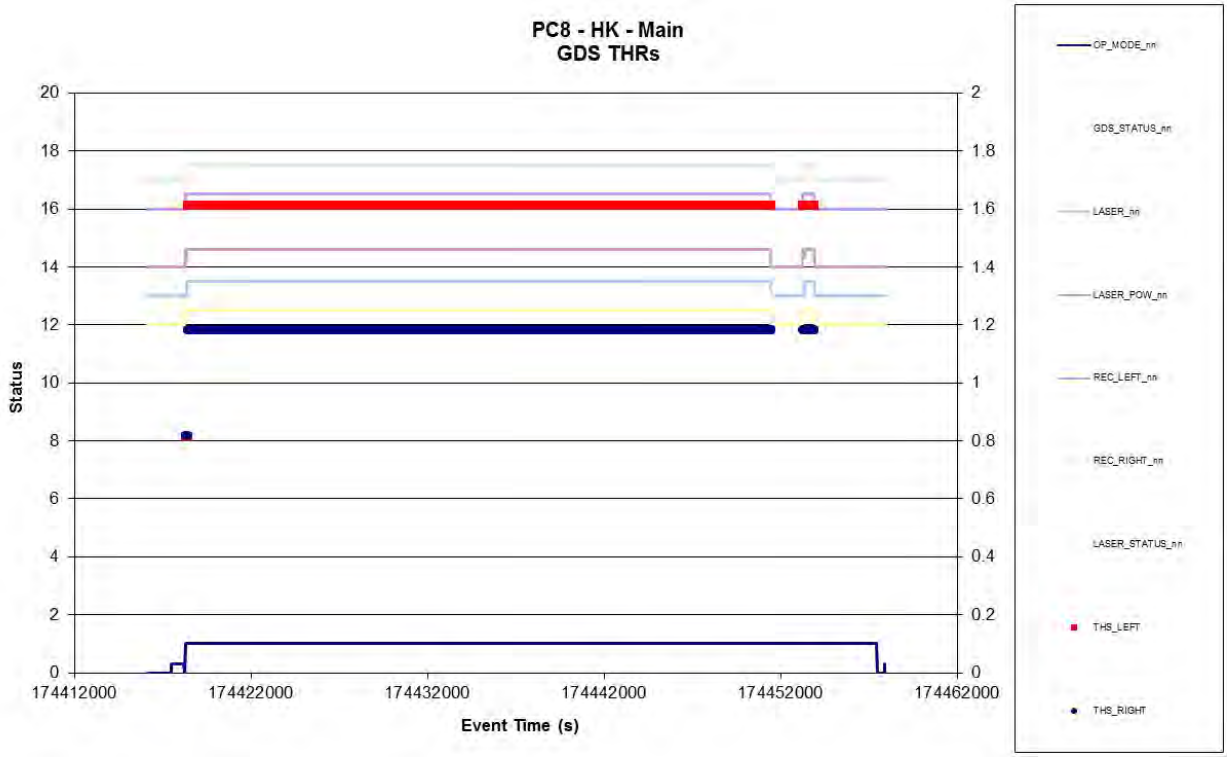


Figure 6.2-3. GDS Laser Temperatures vs. time– Main

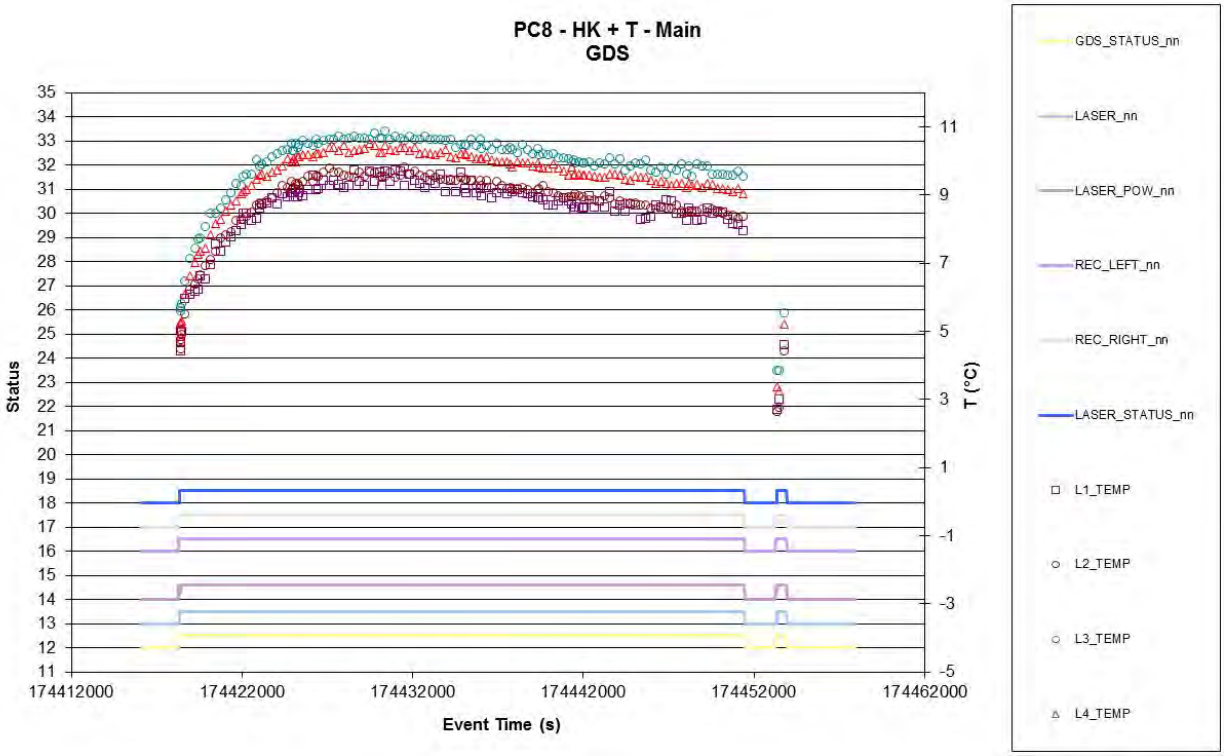


Figure 6.2-4. GDS Laser Monitor vs. time– Main

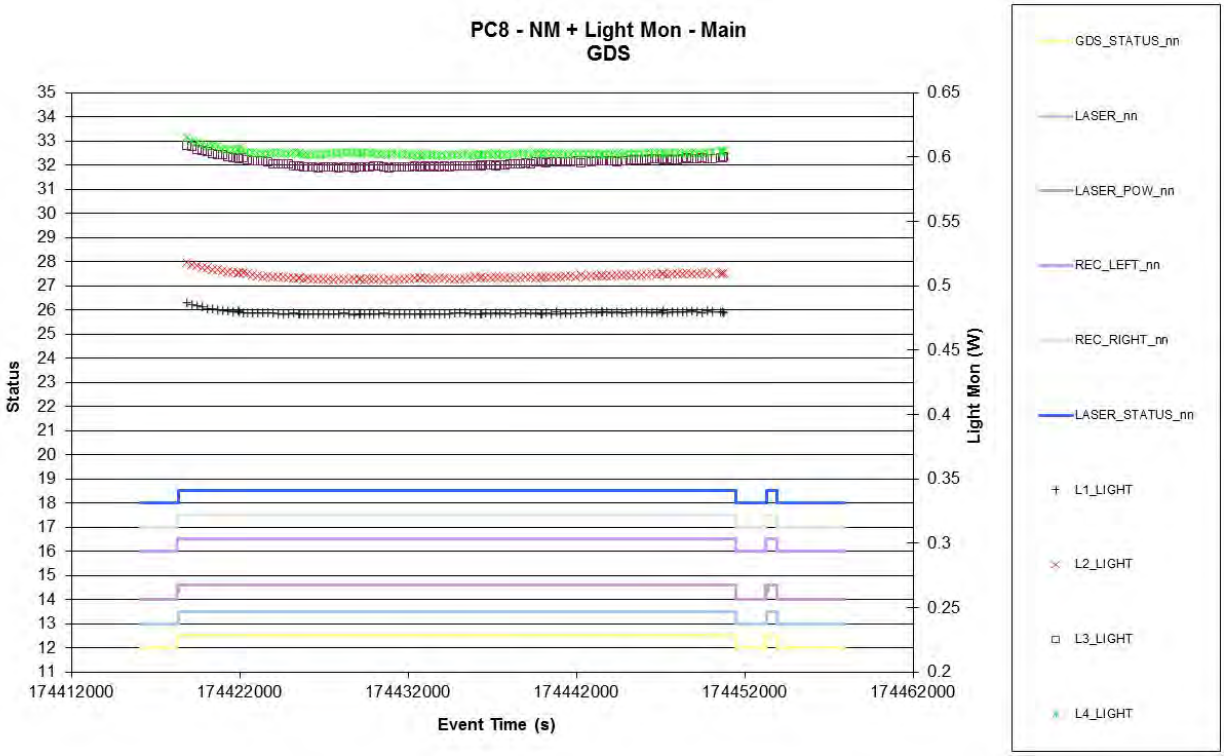


Figure 6.2-5. Lasers Light Monitor versus Temperature (HK, HK-SCI, SCI) – Main

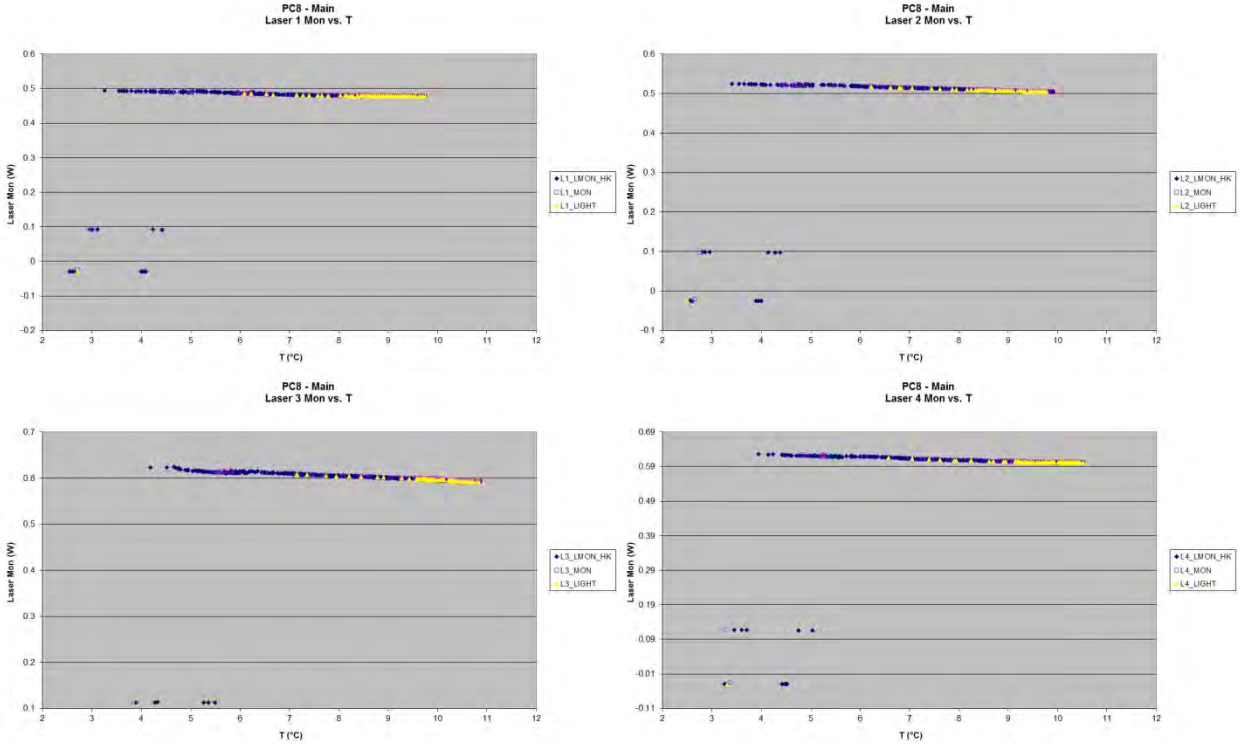
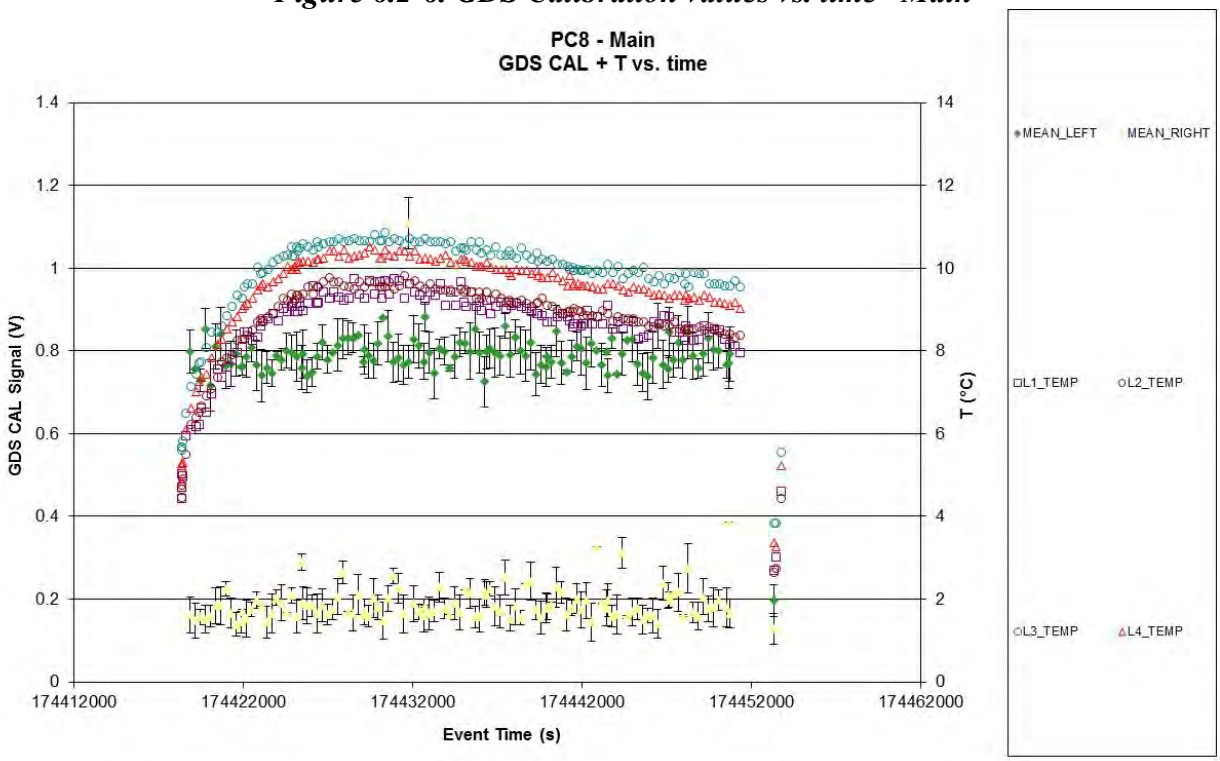


Figure 6.2-6. GDS Calibration values vs. time– Main



6.3 IMPACT SENSOR (IS)

6.3.1 IS – Status

Figure 6.3-1. IS Operation Status vs. time –Main

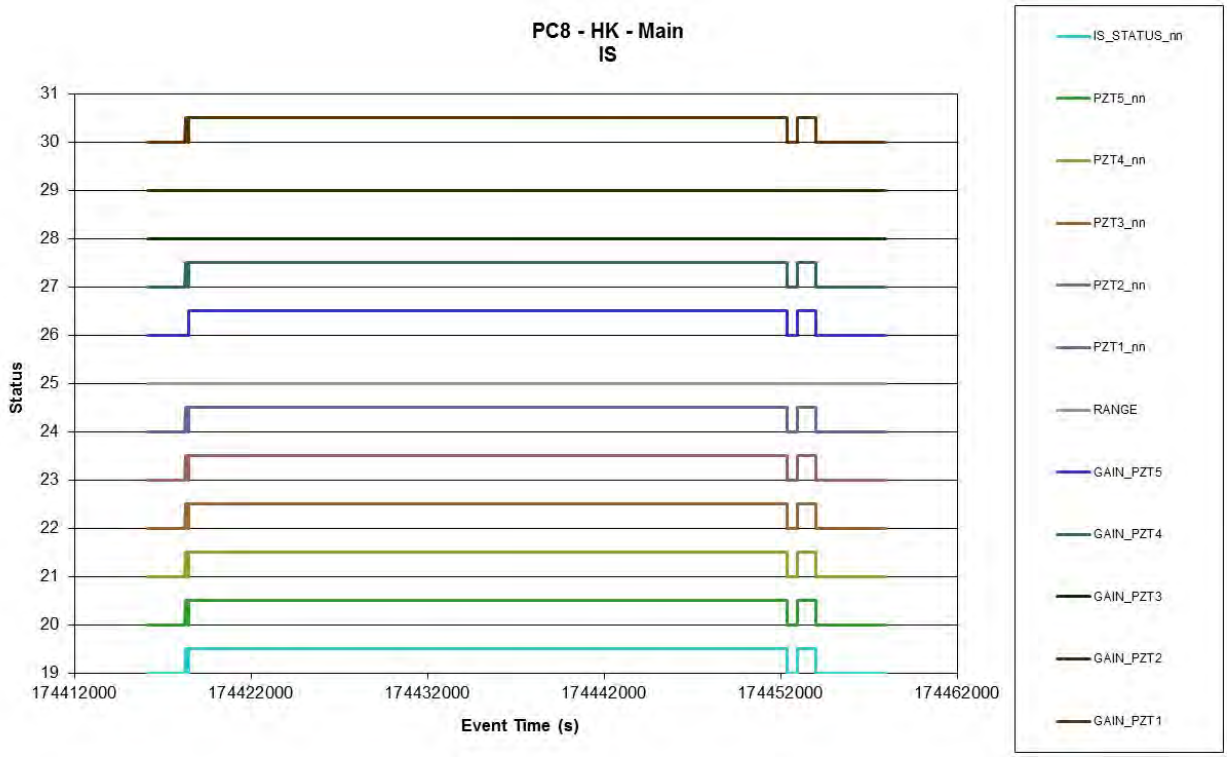


Figure 6.3-2. IS PZT 3 Thresholds change vs. time –Main

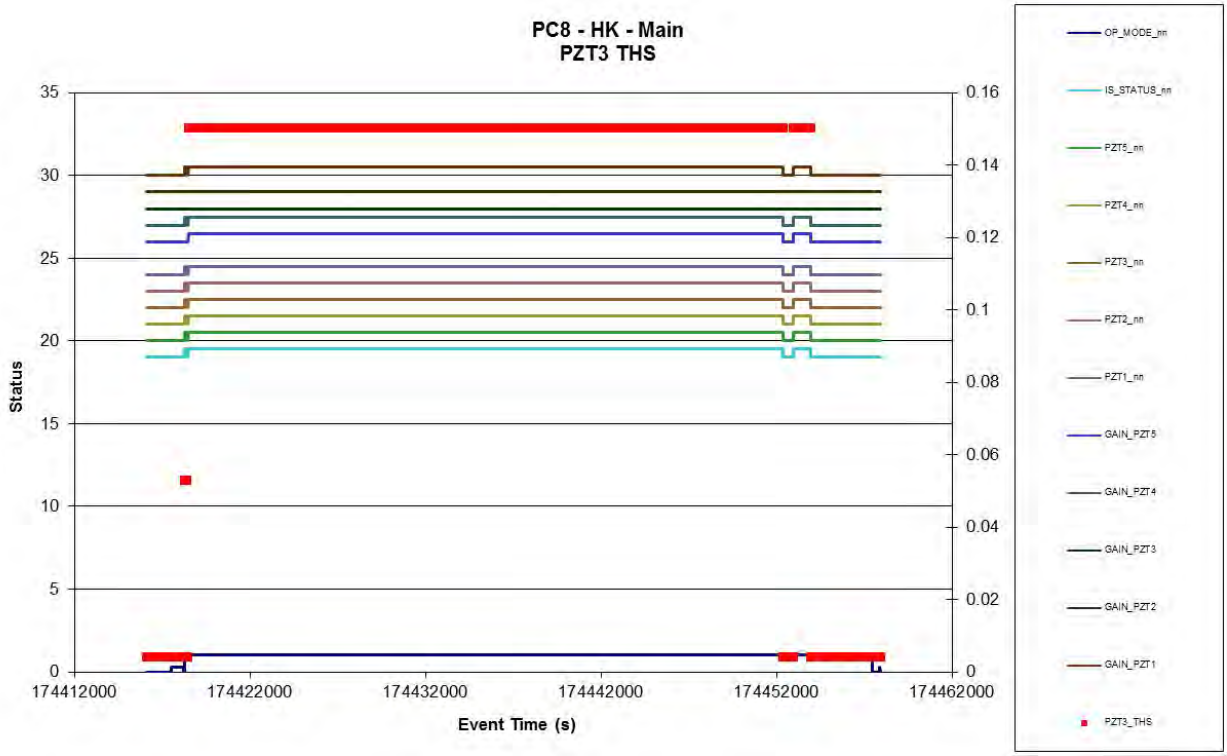


Figure 6.3-3. IS PZT 5 Thresholds change vs. time –Main

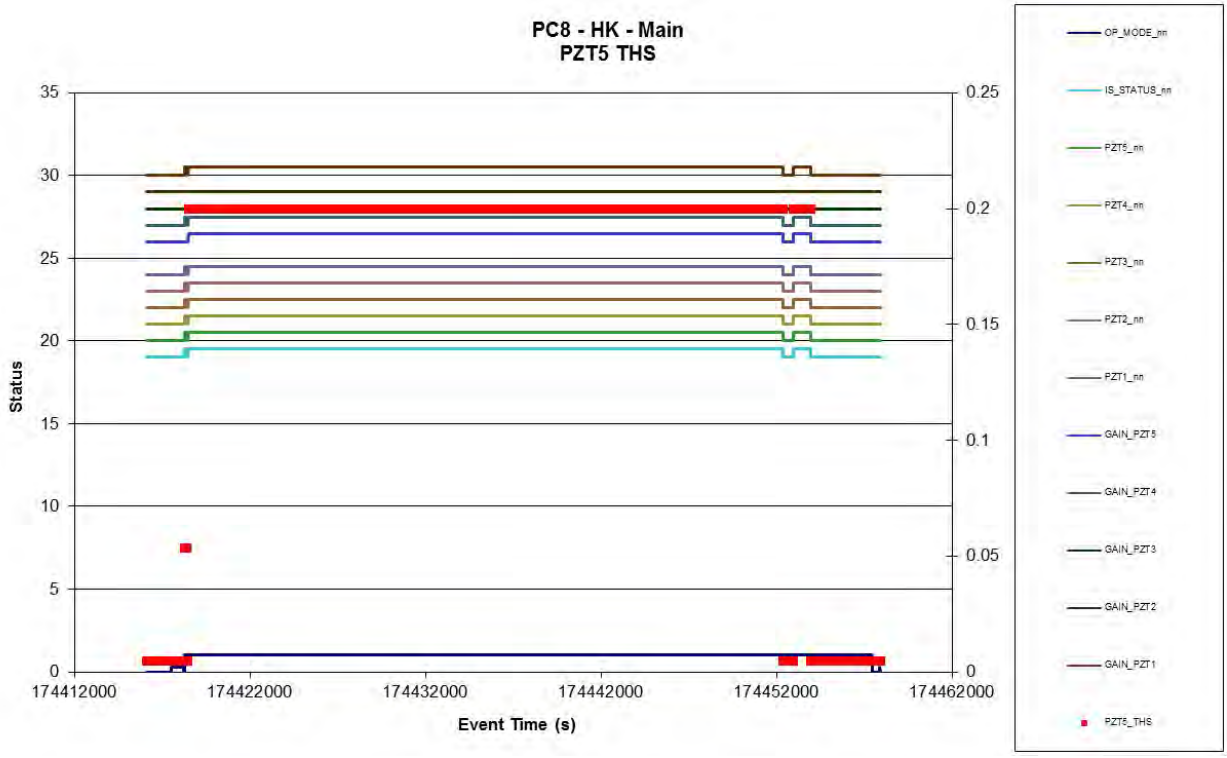
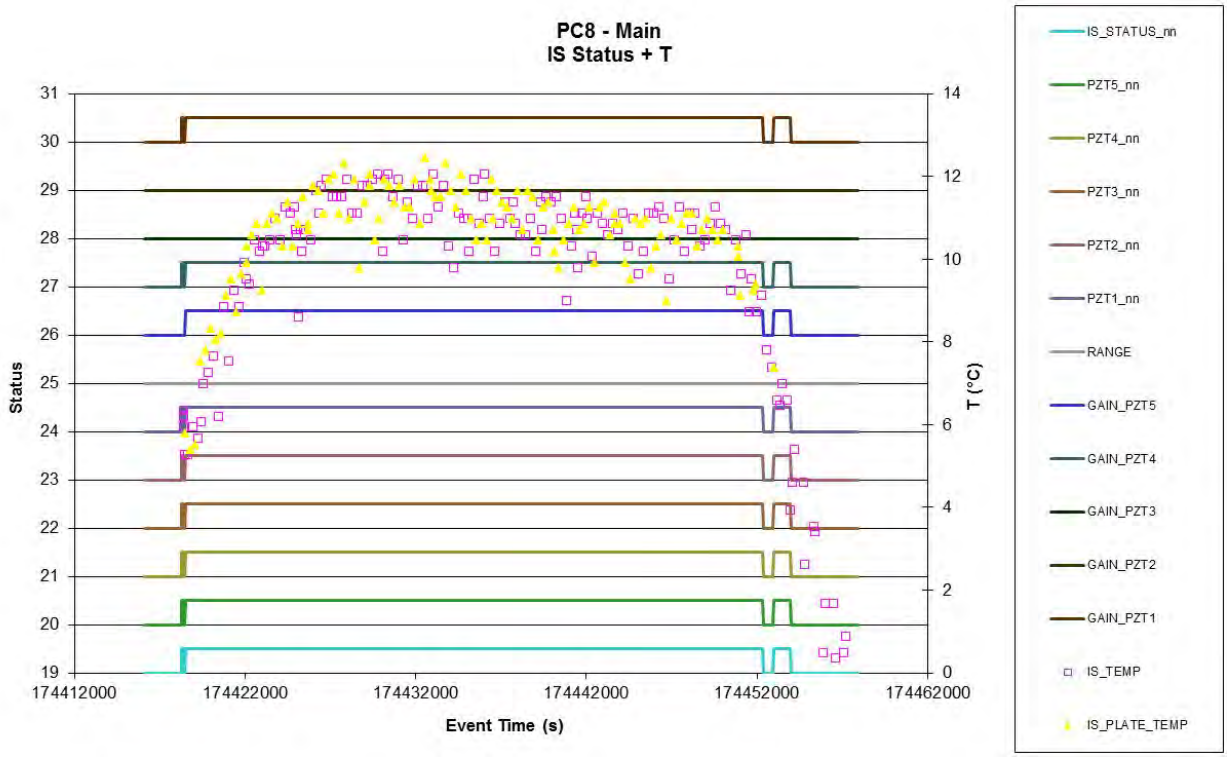


Figure 6.3-4. IS Temperature vs. time (HK, HK-SCI, SCI) –Main



6.3.1.1 CAL

Figure 6.3-5. PZTs Mean and St Dev. CAL vs. time – Main

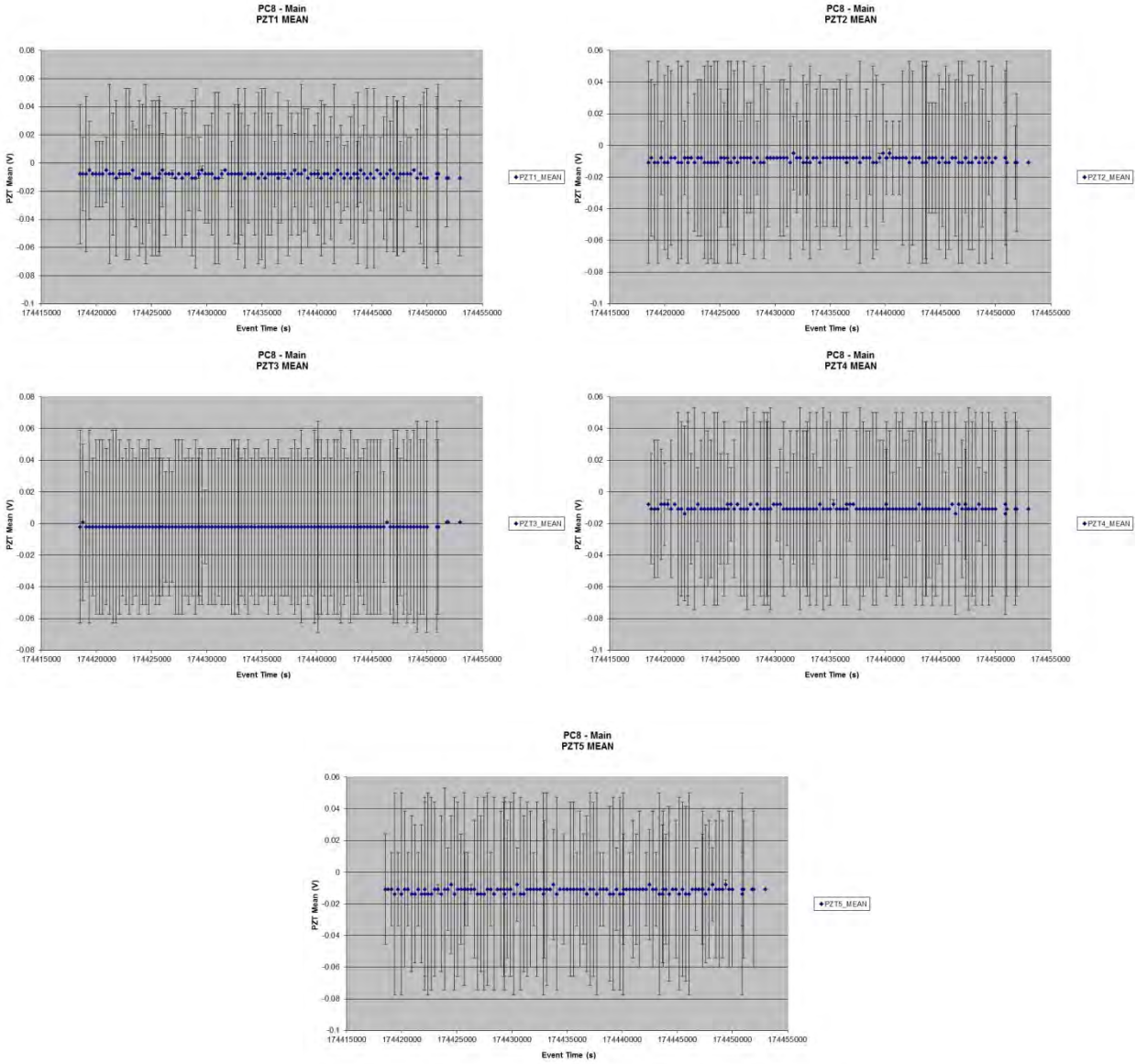


Figure 6.3-6. Reference Voltages for IS calibration vs. time – Main Voltages values for the calibrator don't show level variation

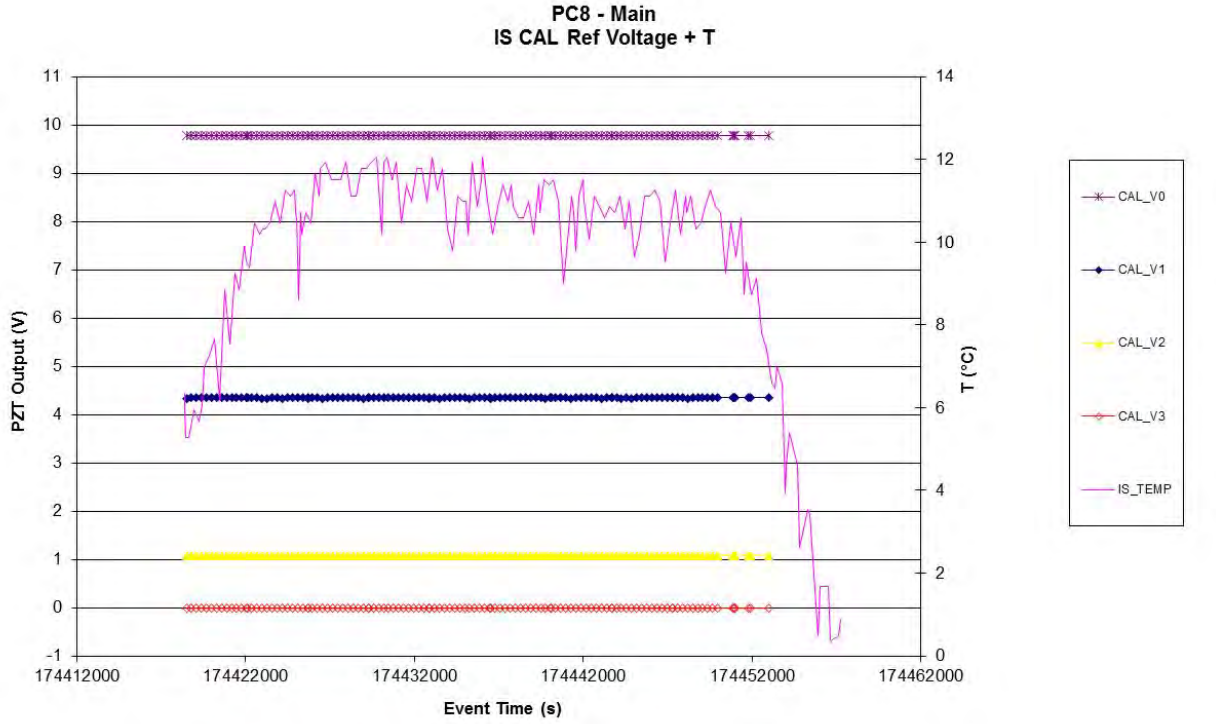
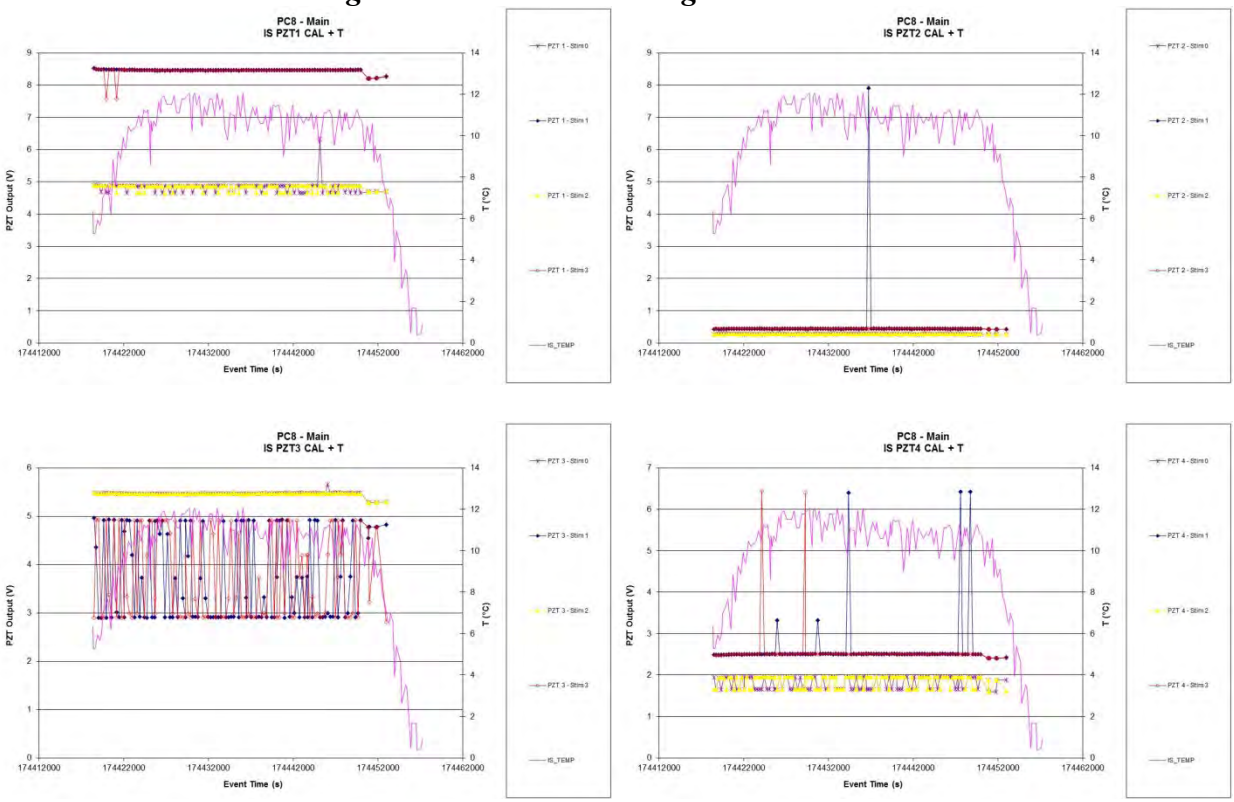
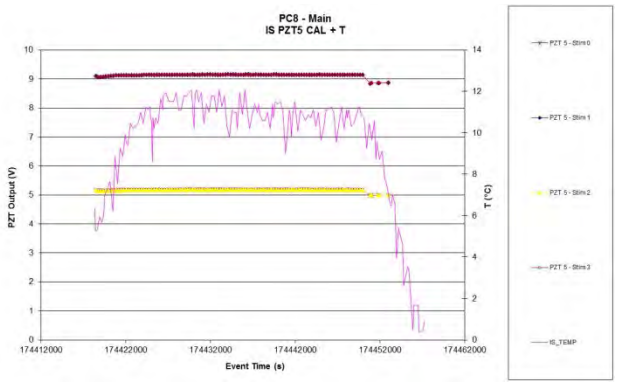


Figure 6.3-7. PZTs CAL Signal vs. time – Main





6.4 MICRO BALANCE SYSTEM (MBS)

6.4.1 MBS – Status

Figure 6.4-1. MBS Operation Status vs. time – Main

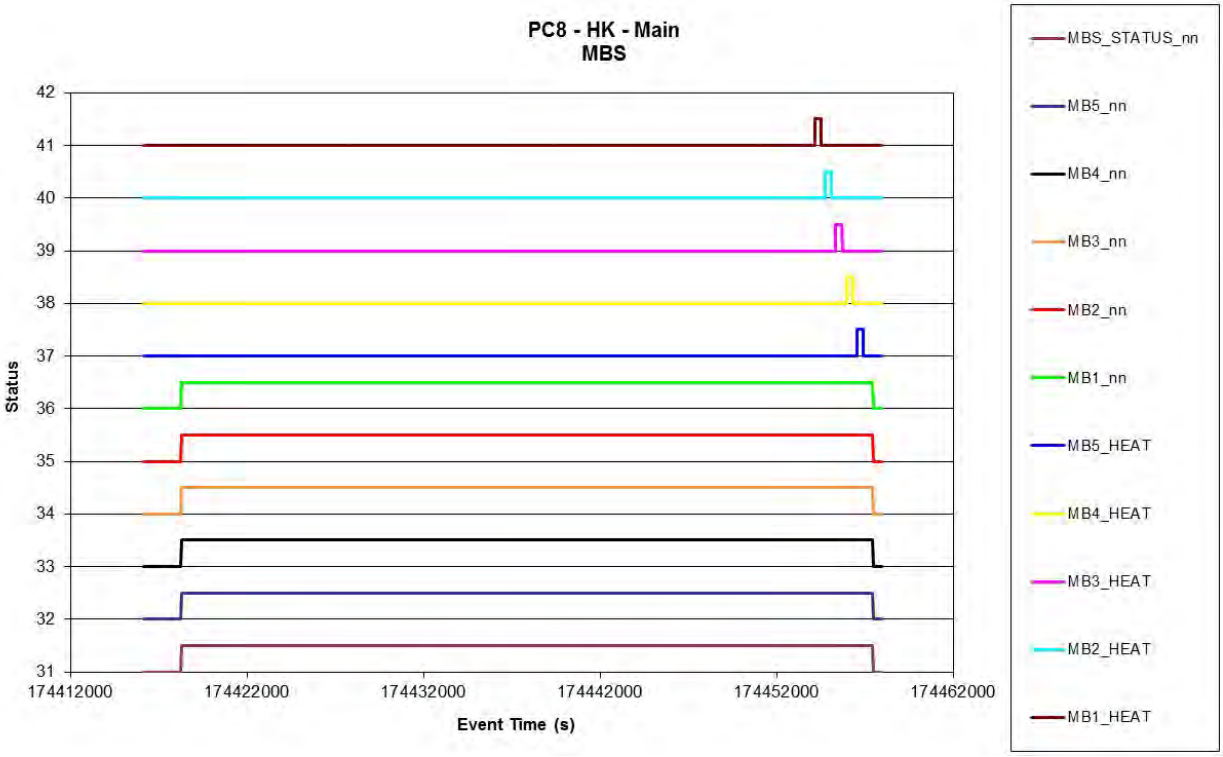
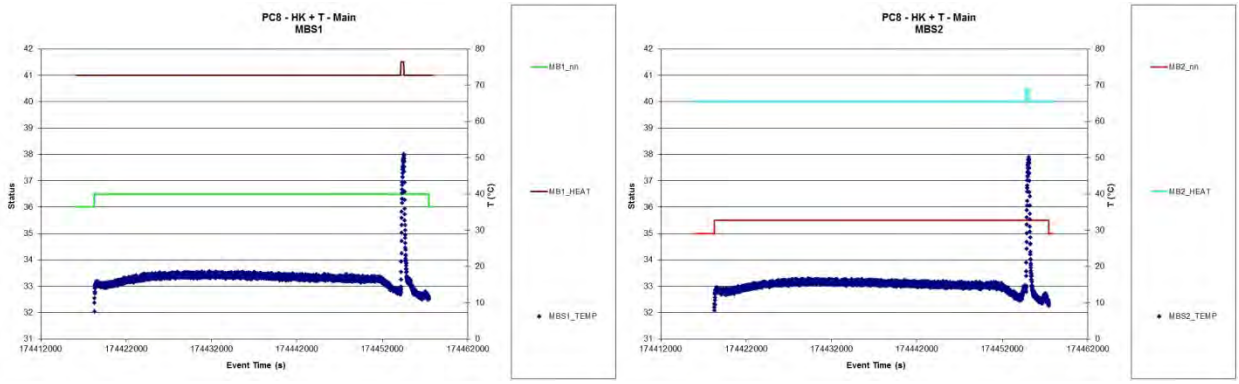


Figure 6.4-2. MBSs Temperature vs. time (SCI) – Main



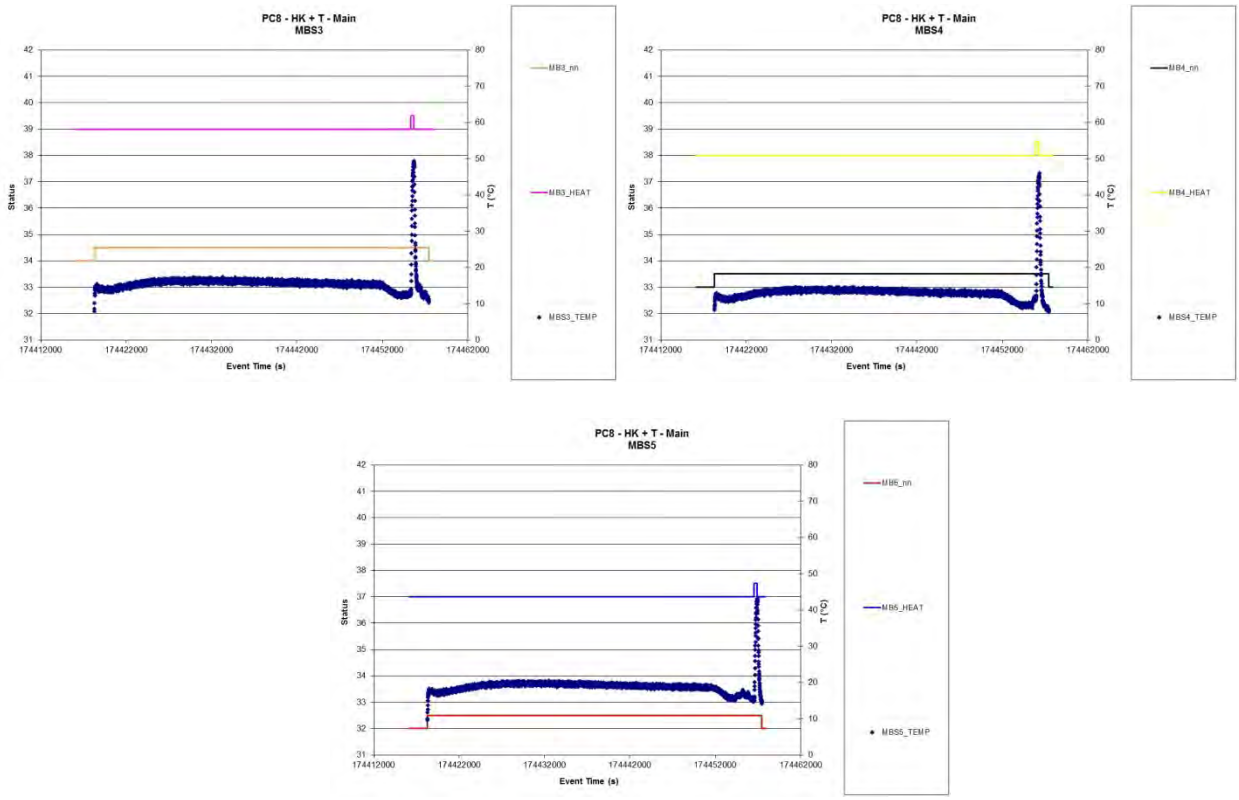
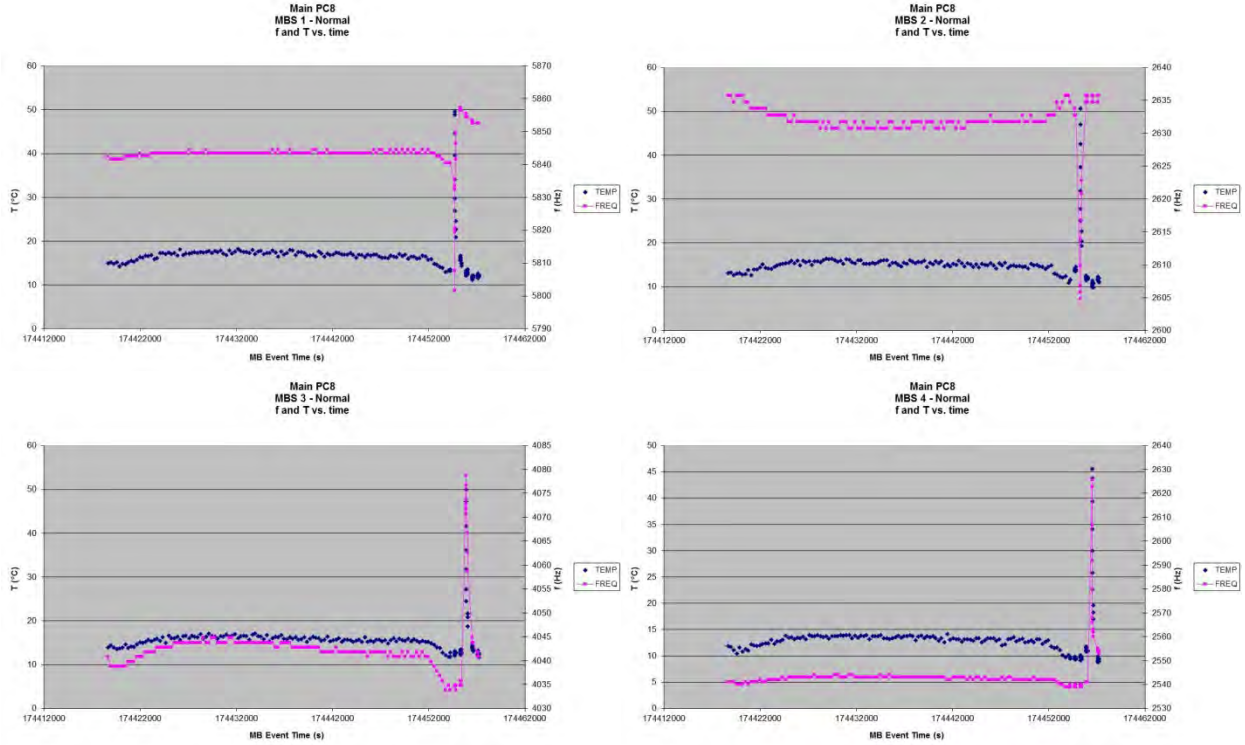
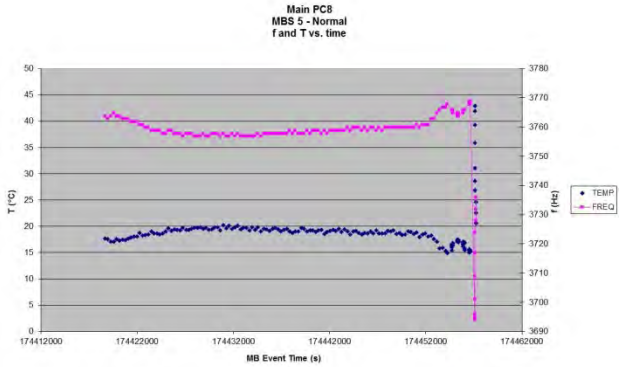


Figure 6.4-3. MBSs Frequency and Temperature vs. time– Main




Main PC8
MBS 5 - Normal
f and T vs. time
T (°C)
f (Hz)
MB Event Time (s)
TEMP
FREQ
50
45
40
35
30
25
20
15
10
5
0
3780
3770
3760
3750
3740
3730
3720
3710
3700
3690
174412000
174422000
174432000
174442000
174452000
174462000

7. PC8 DATA ANALYSIS – RED INTERFACE (GD01)

7.1 GIADA STATUS

Figure 7.1-1. HK Status of GIADA vs. time – Red

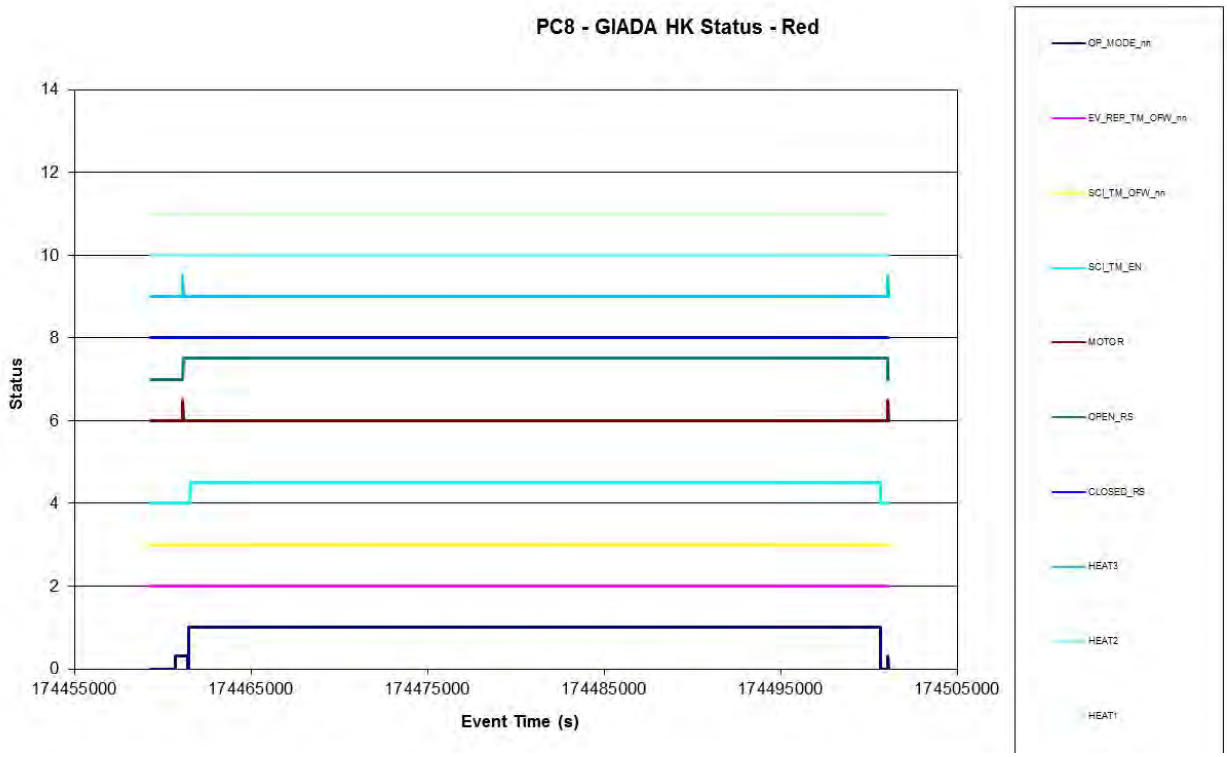


Figure 7.1-2. Power profile and Power Supply temperature vs. time - HK, Red

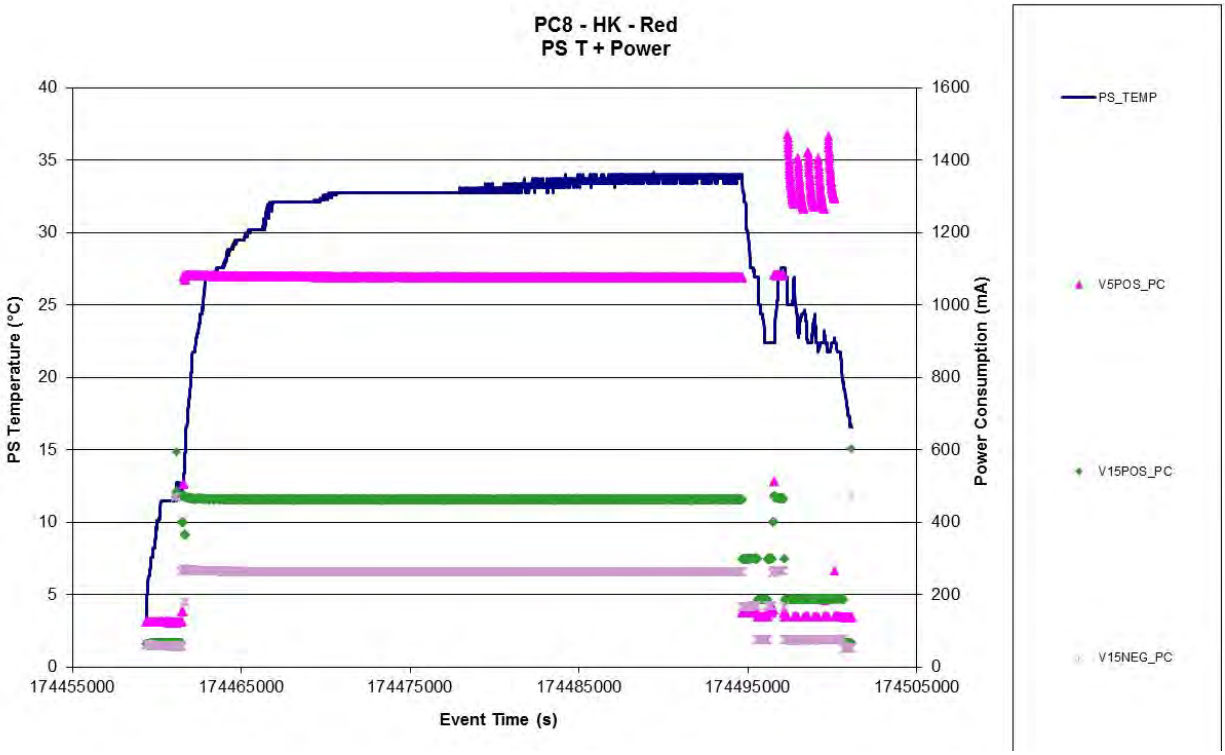


Figure 7.1-3. Evolution of temperatures of system elements vs. time - HK, Red

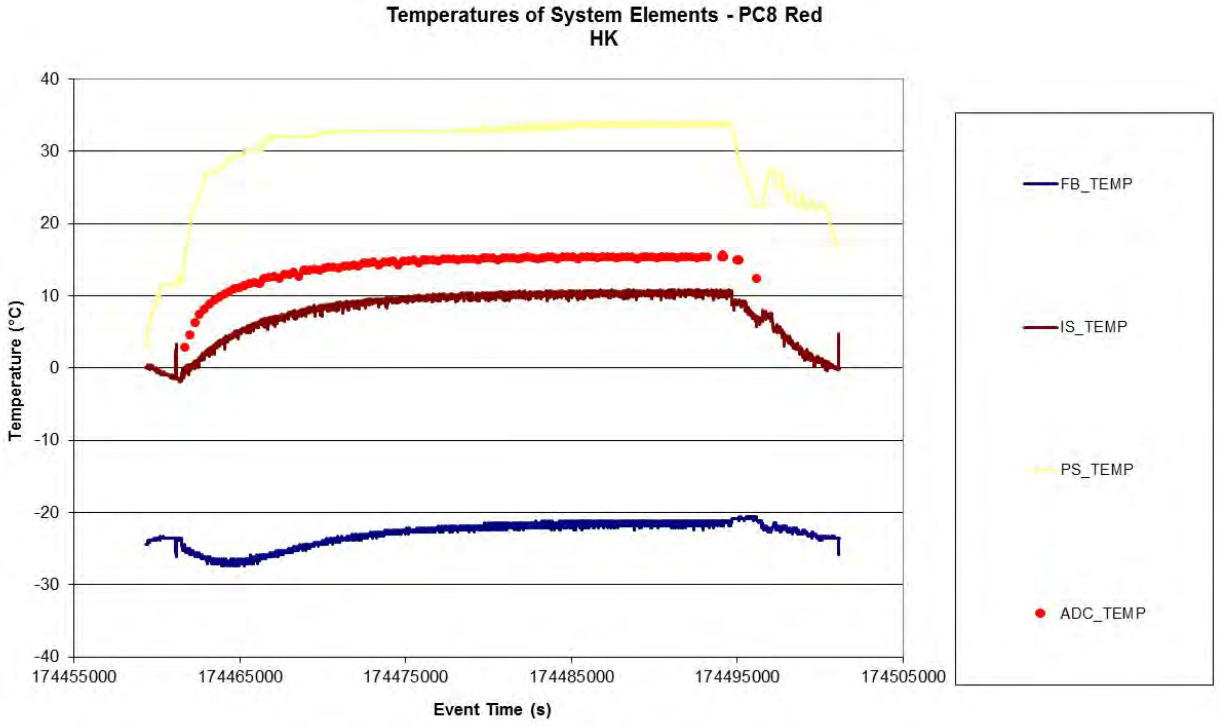


Figure 7.1-4. Evolution of temperatures of sub-systems vs. time with instrument in Normal Mode– Red

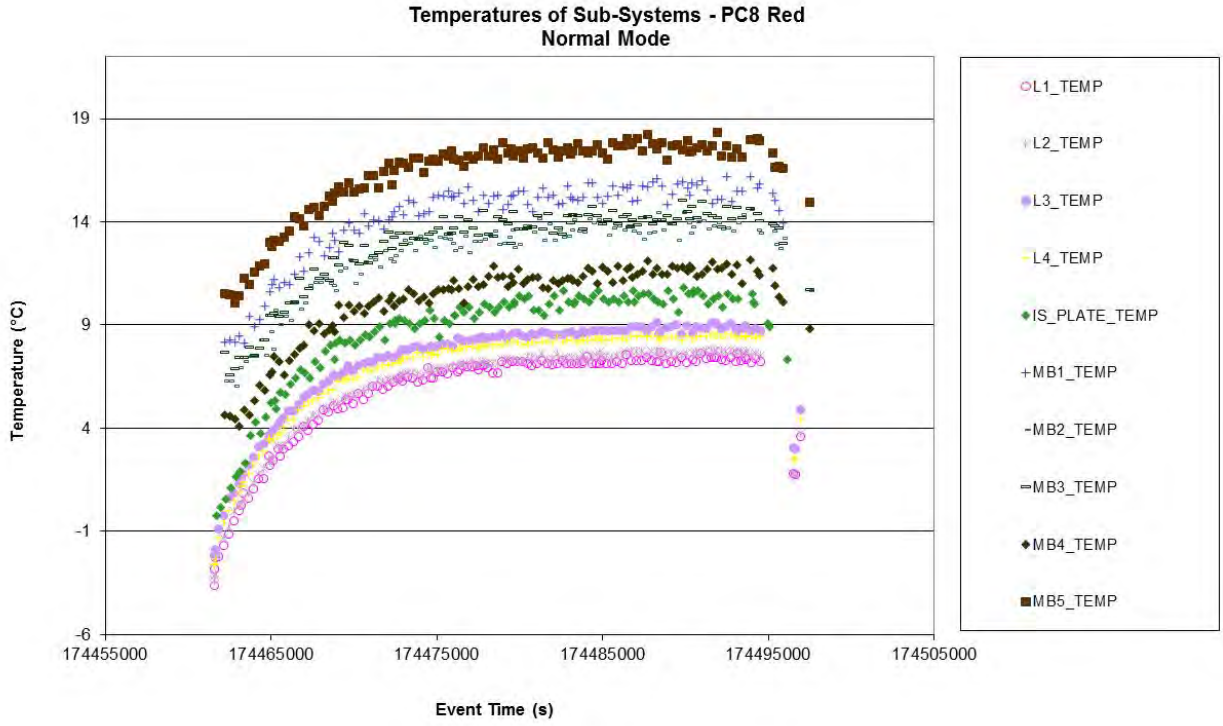


Figure 7.1-5. HK Status versus Temperatures of system elements – Red

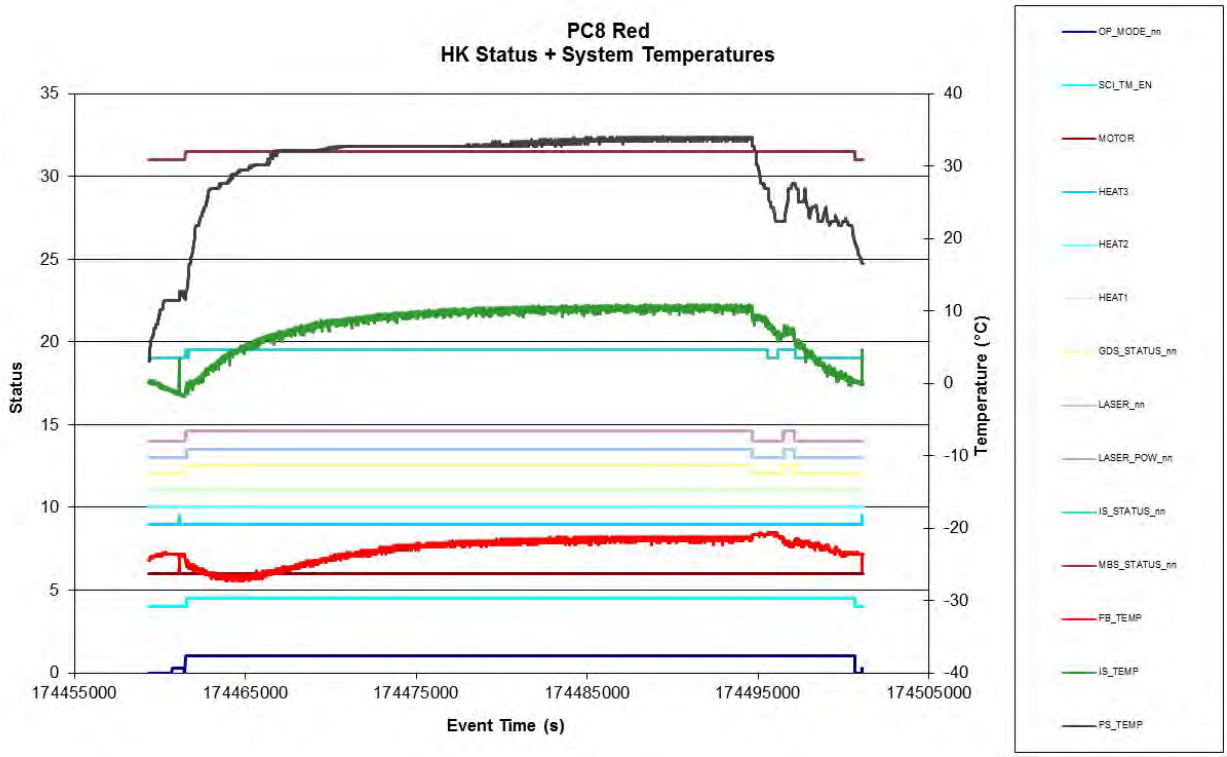
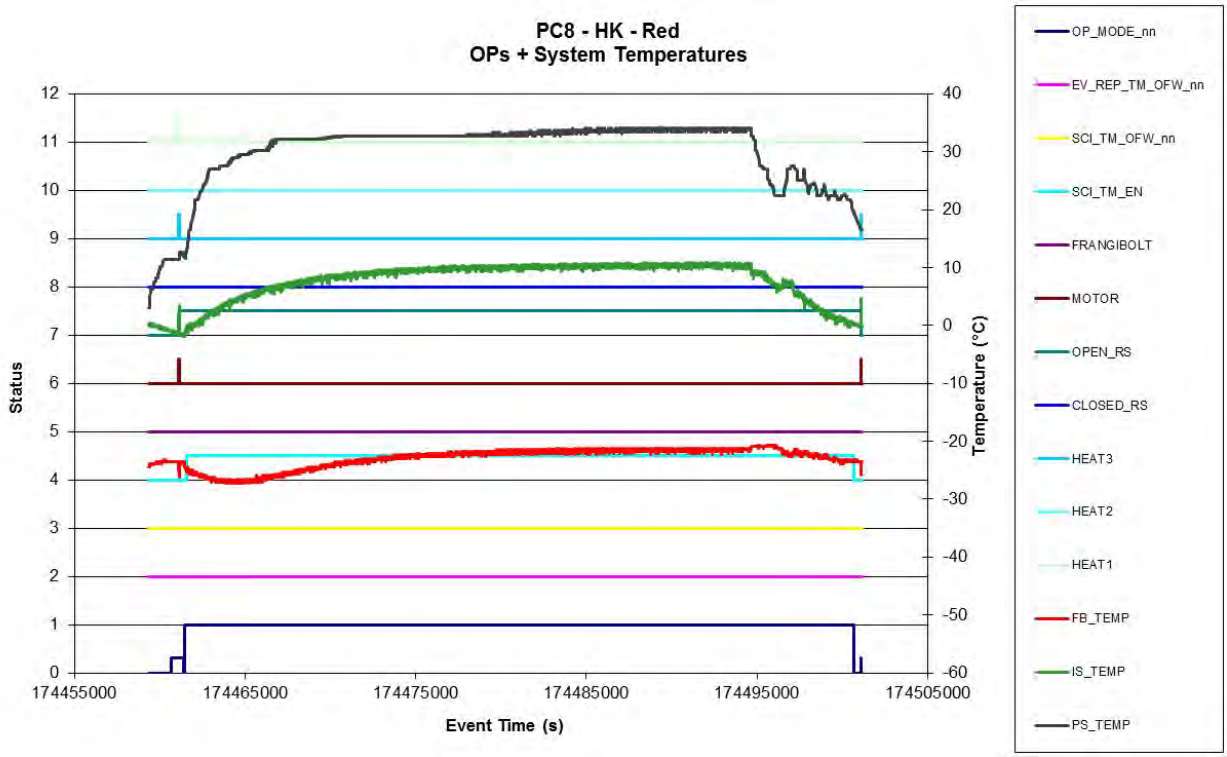


Figure 7.1-6. Operation Status versus Temperatures of system elements – Red
In the diagram are reported operative parameters with relevant variations.



7.2 GRAIN DETECTION SYSTEM (GDS)

7.2.1 GDS – Status

Figure 7.2-1. GDS Operation Status vs. time – Red

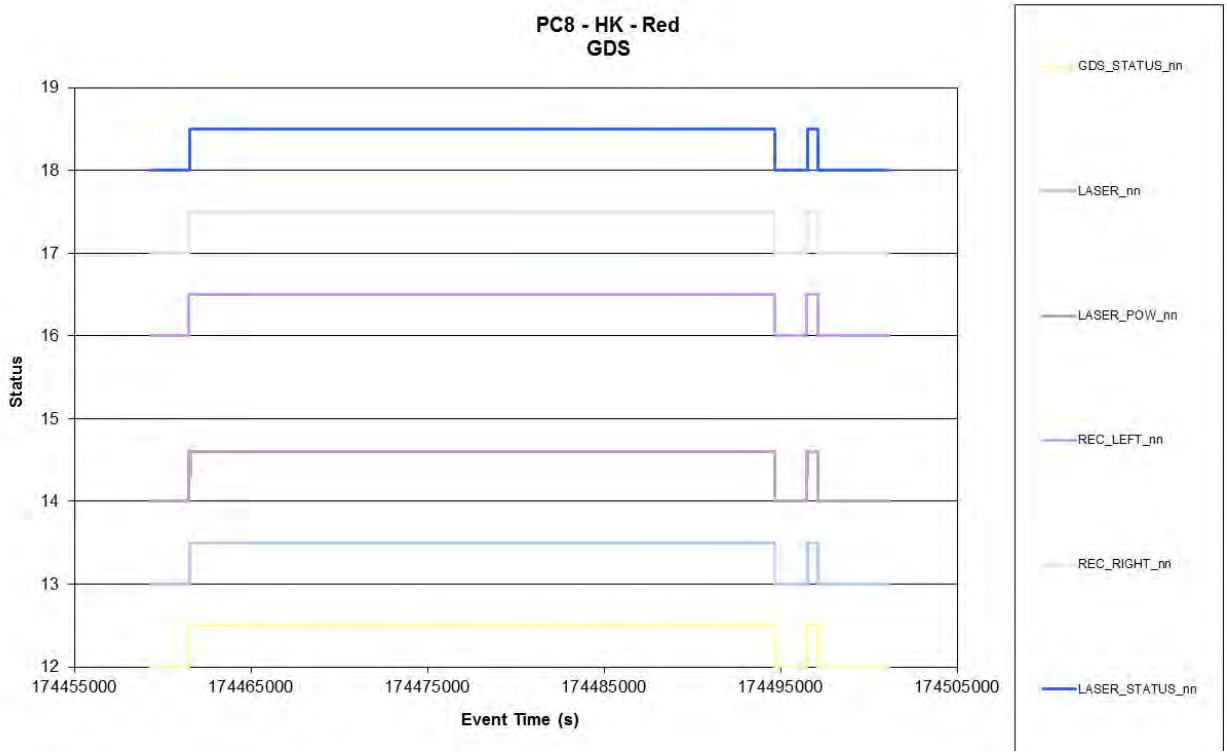


Figure 7.2-2. GDS Thresholds change vs. time – Red

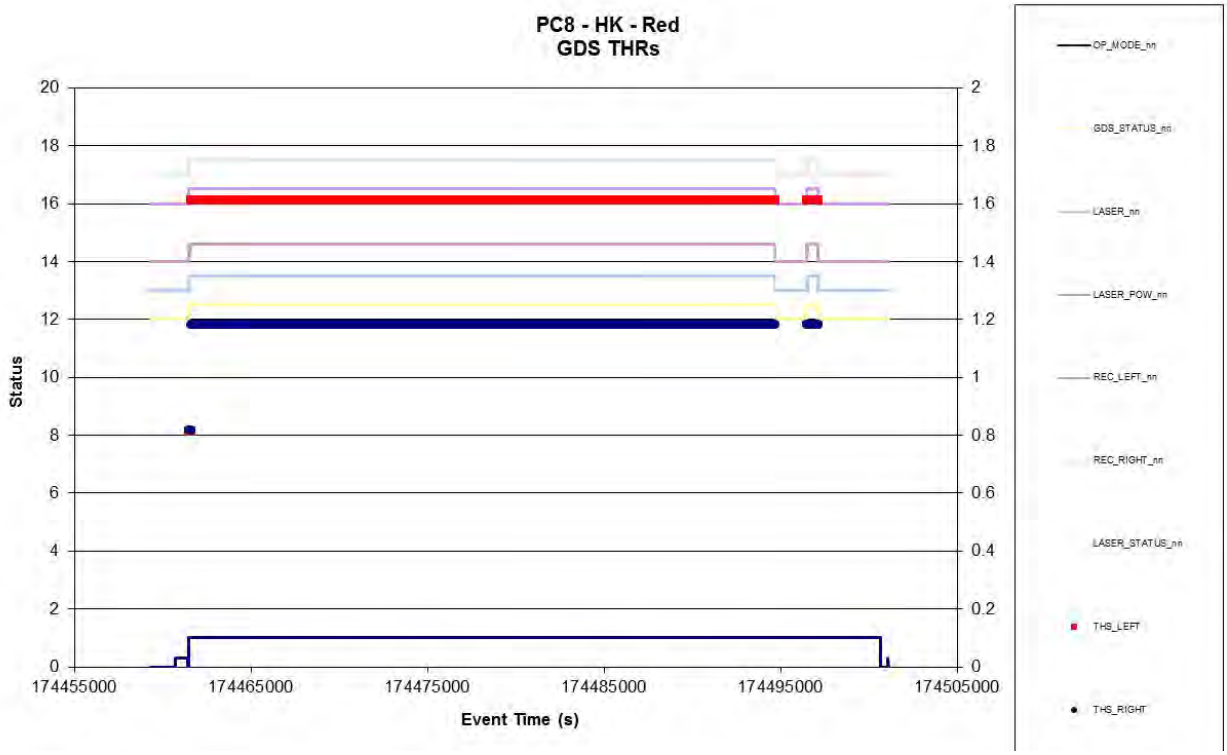


Figure 7.2-3. GDS Laser Temperatures vs. time– Red

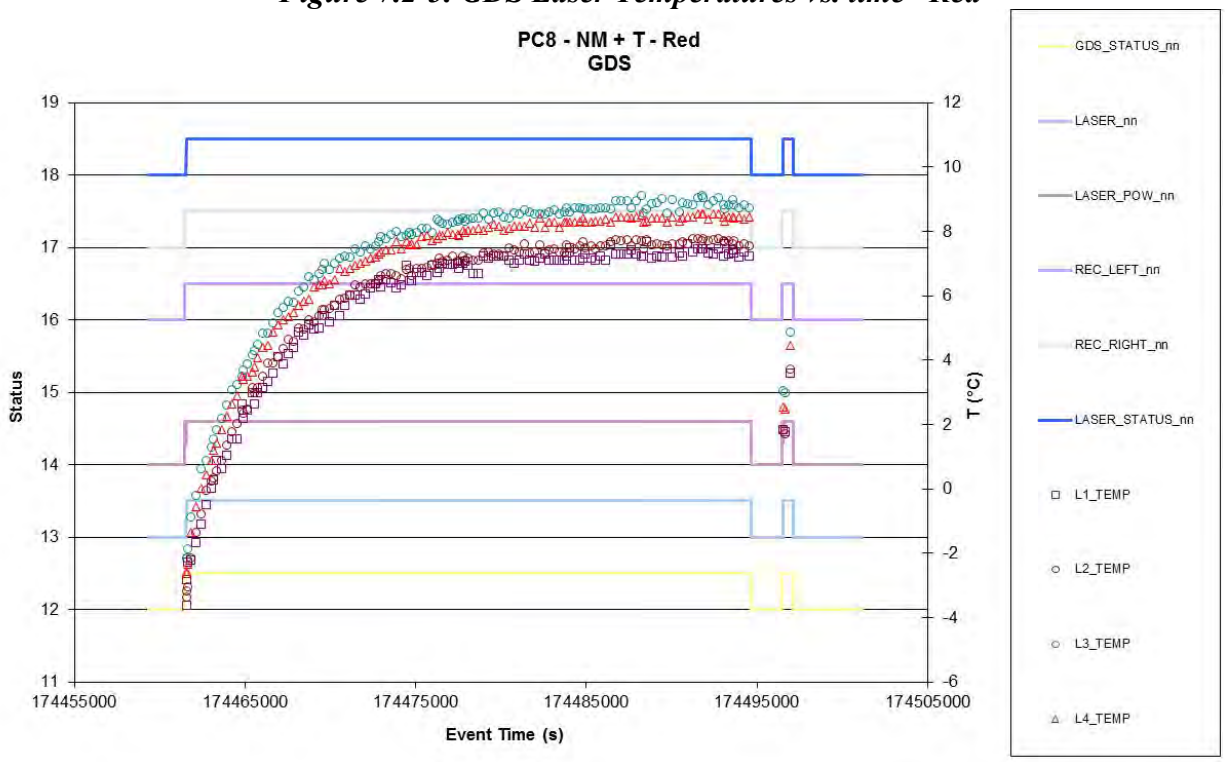


Figure 7.2-4. GDS Laser Monitor vs. time– Red

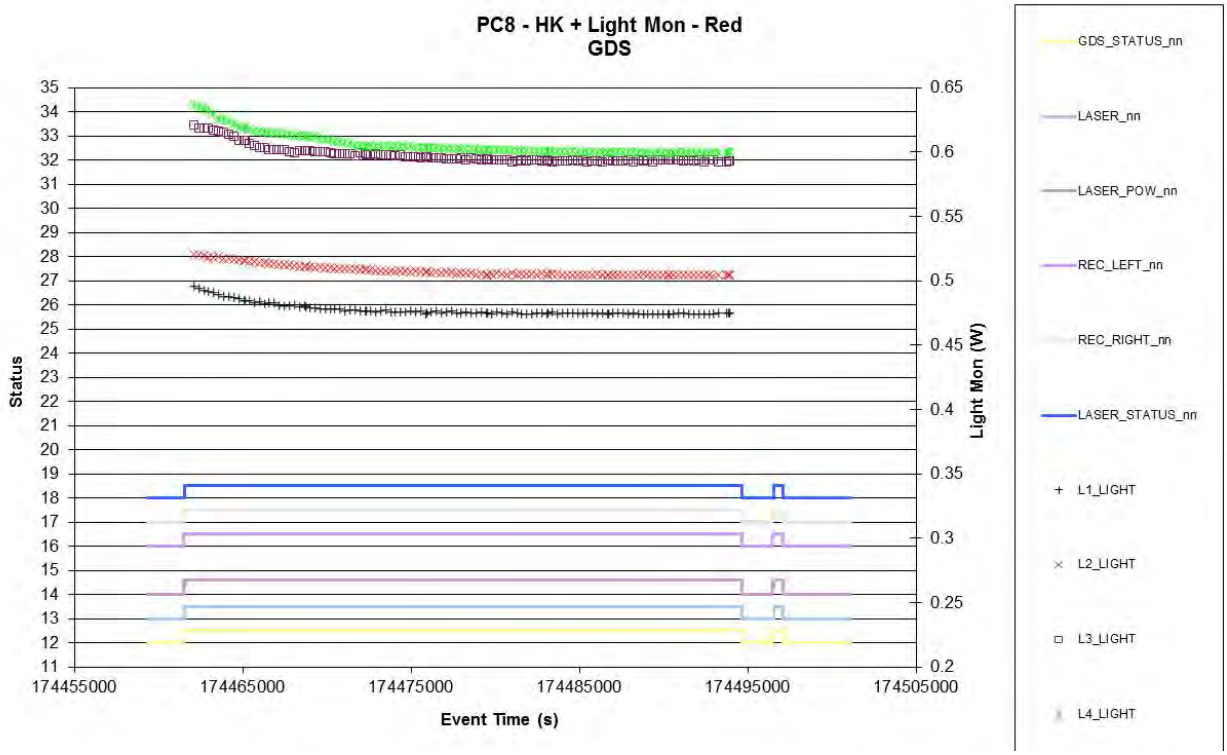


Figure 7.2-5. Lasers Light Monitor versus Temperature (HK, HK-SCI, SCI) –Red

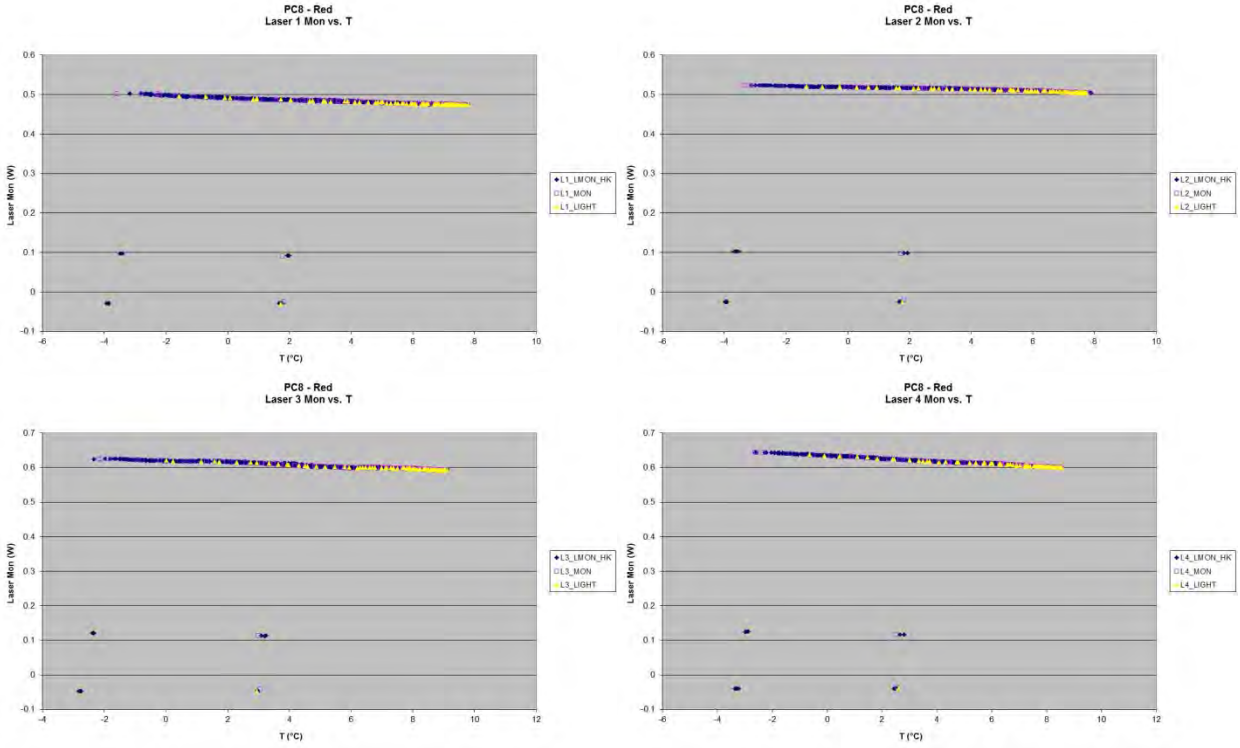
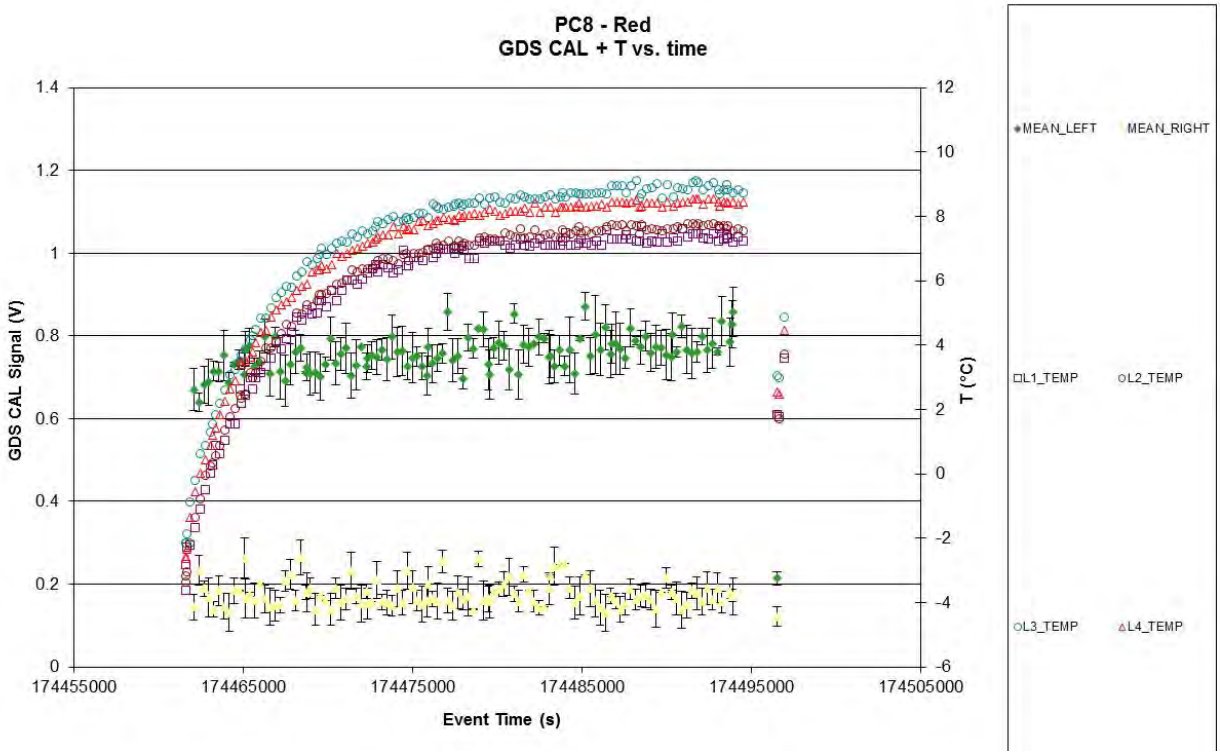


Figure 7.2-6. GDS Calibration Values vs. time– Red



7.3 IMPACT SENSOR (IS)

7.3.1 IS – Status

Figure 7.3-1. IS Operation Status vs. time – Red

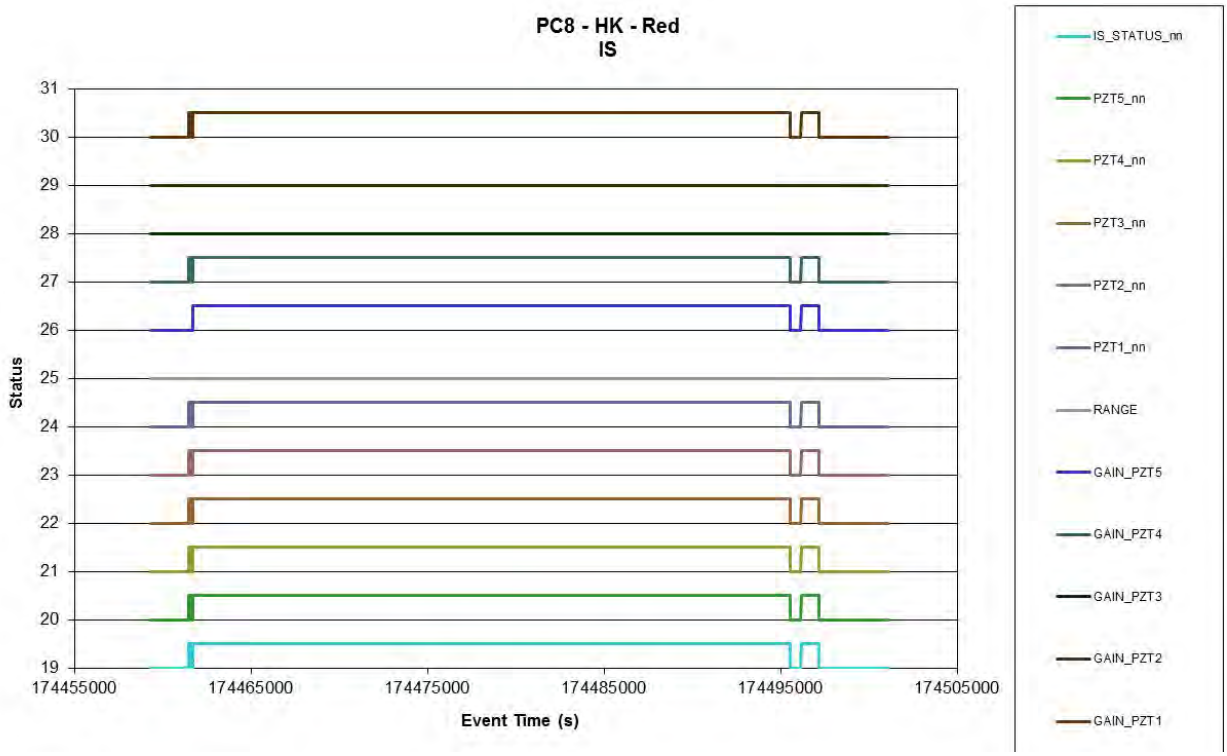


Figure 7.3-2. IS PZT 3 Thresholds change vs. time – Red

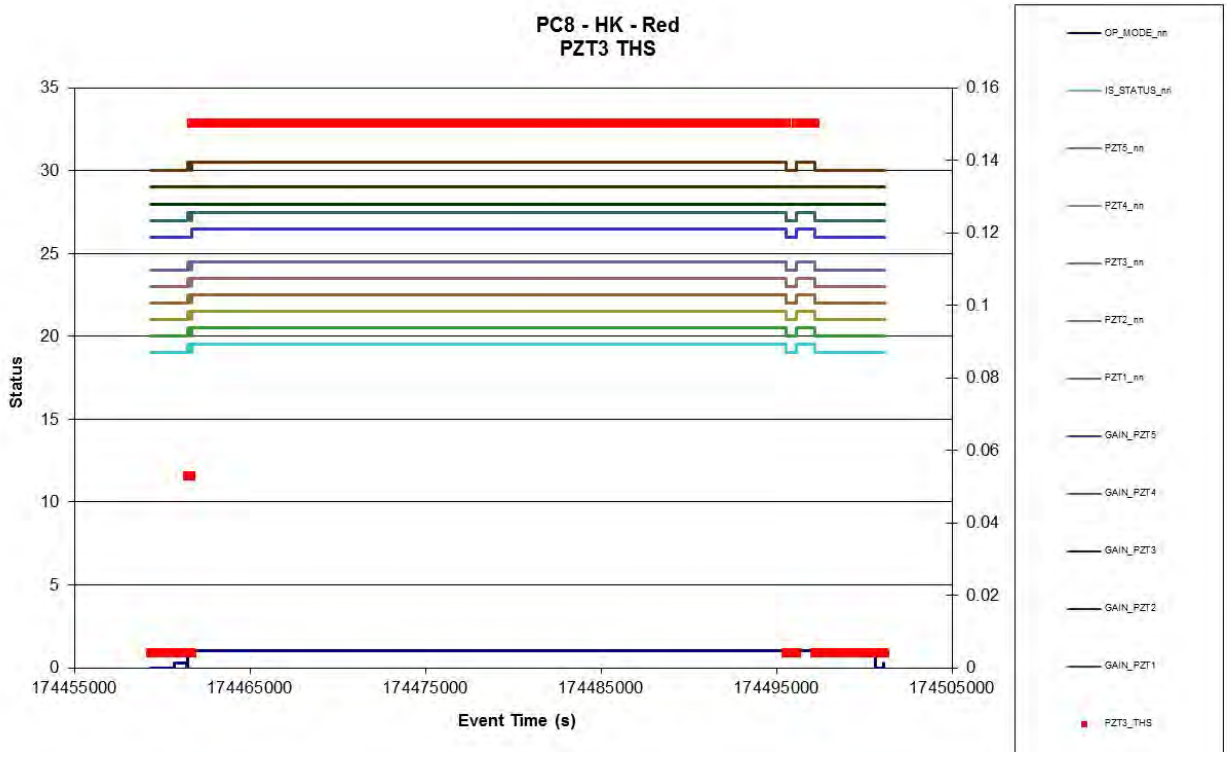


Figure 7.3-3. IS PZT 5 Thresholds change vs. time – Red

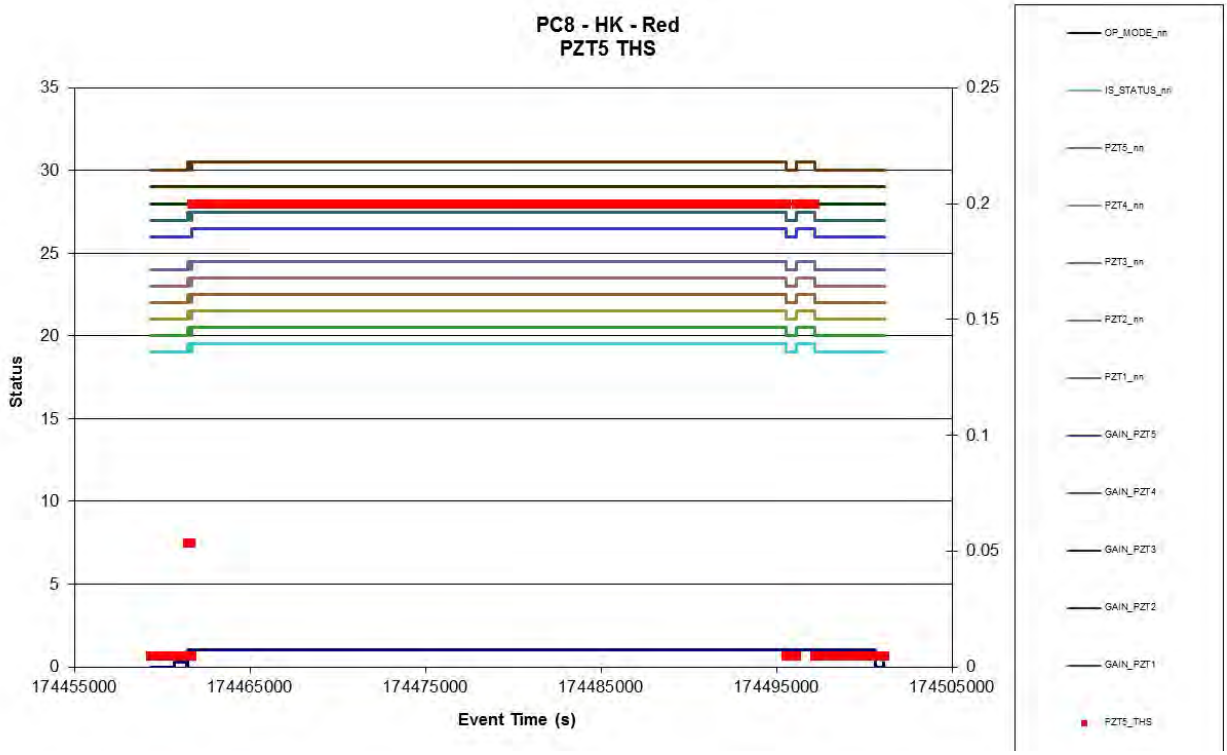
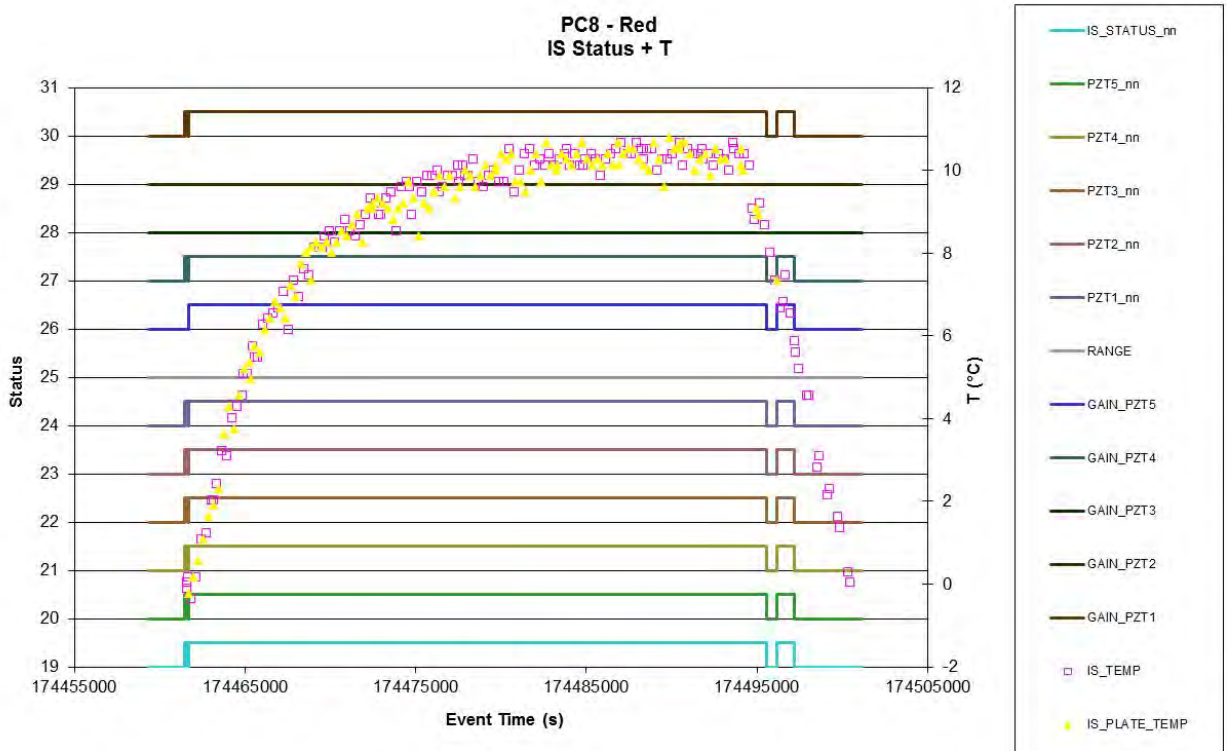


Figure 7.3-4. IS Temperature vs. time (HK, HK-SCI, SCI) – Red



7.3.1.1 CAL

Figure 7.3-5. PZTs Mean and St Dev. CAL vs. time – Red

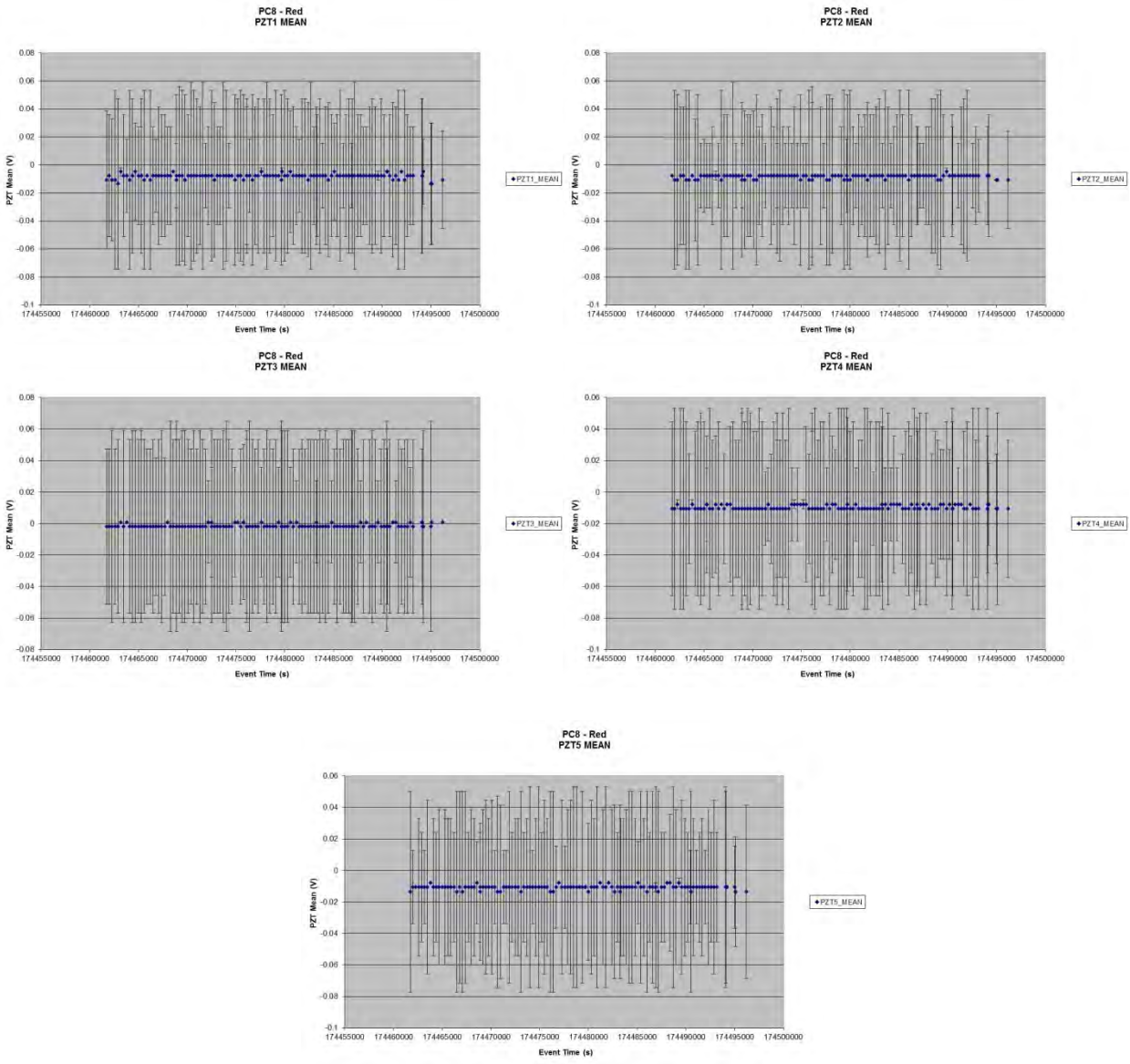


Figure 7.3-6. Reference Voltages for IS calibration vs. time – Red Voltages values for the calibrator don't show level variation

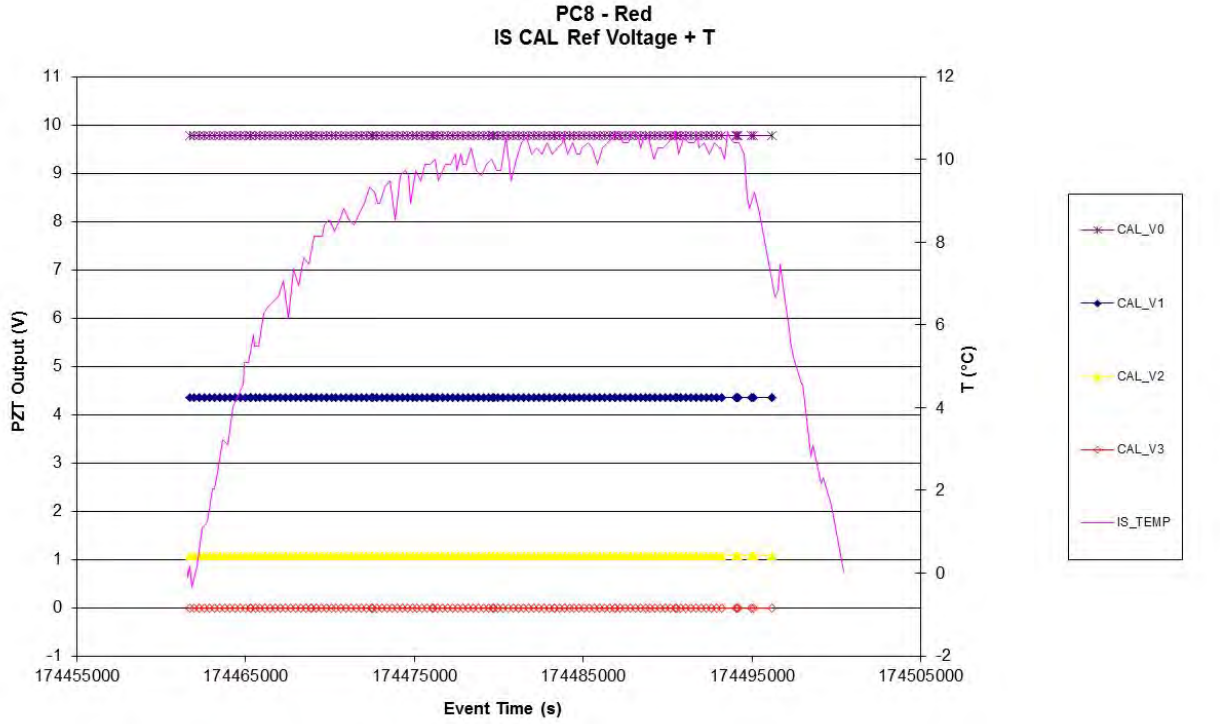
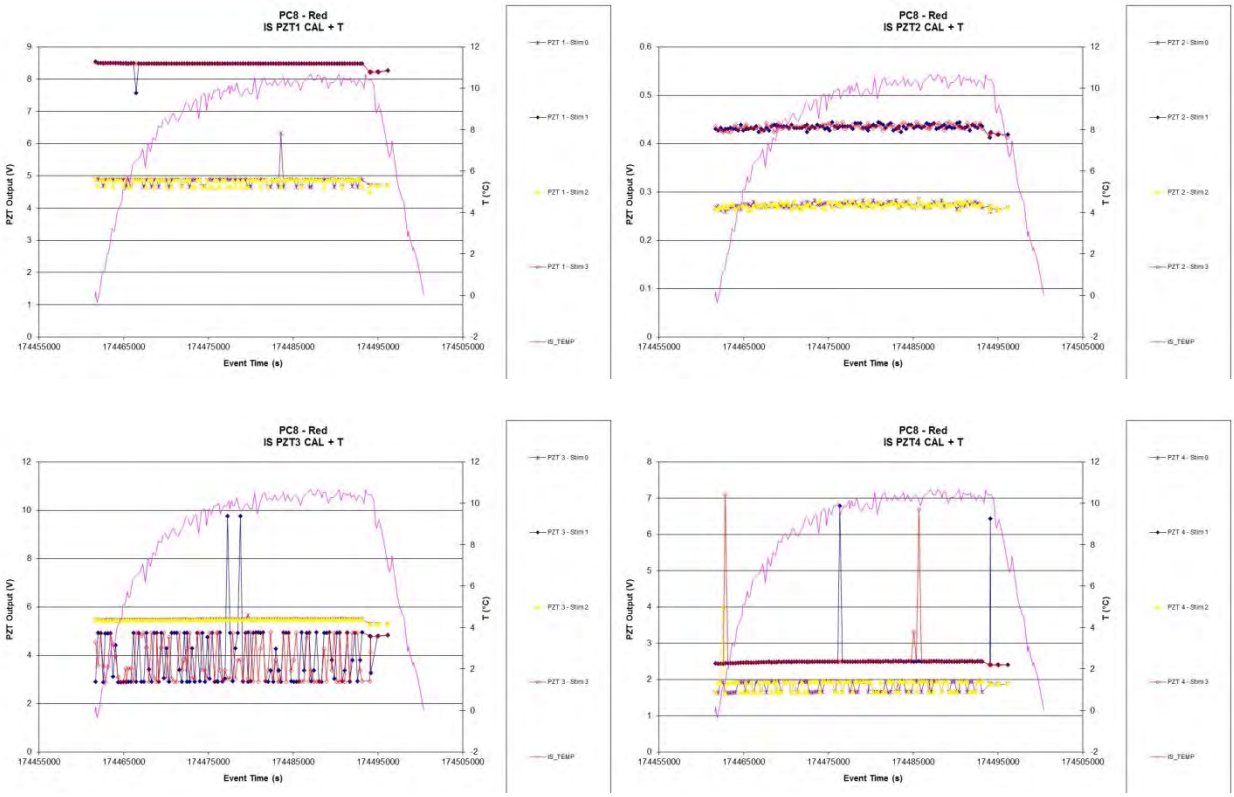
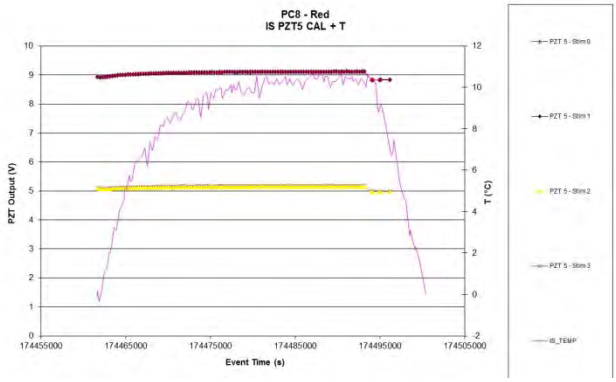


Figure 7.3-7. PZTs CAL Signal vs. time – Red





7.4 MICRO BALANCE SYSTEM (MBS)

7.4.1 MBS – Status

Figure 7.4-1. MBS Operation Status vs. time – Red

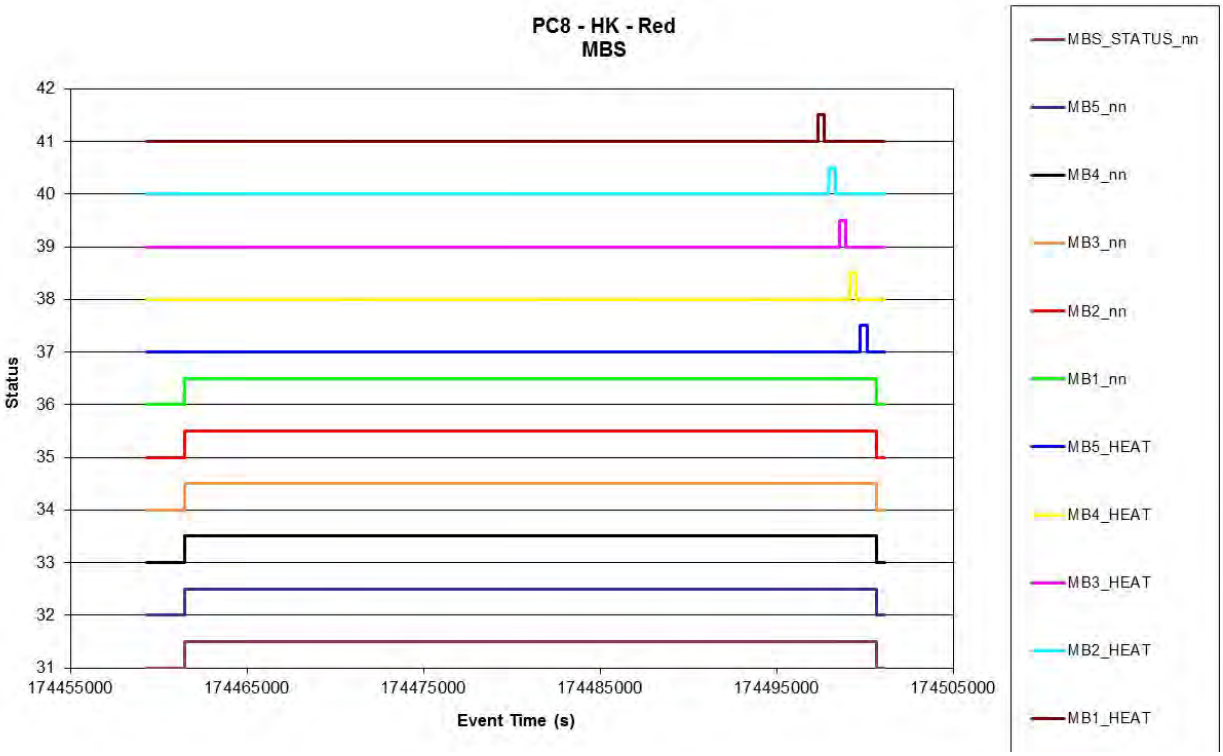
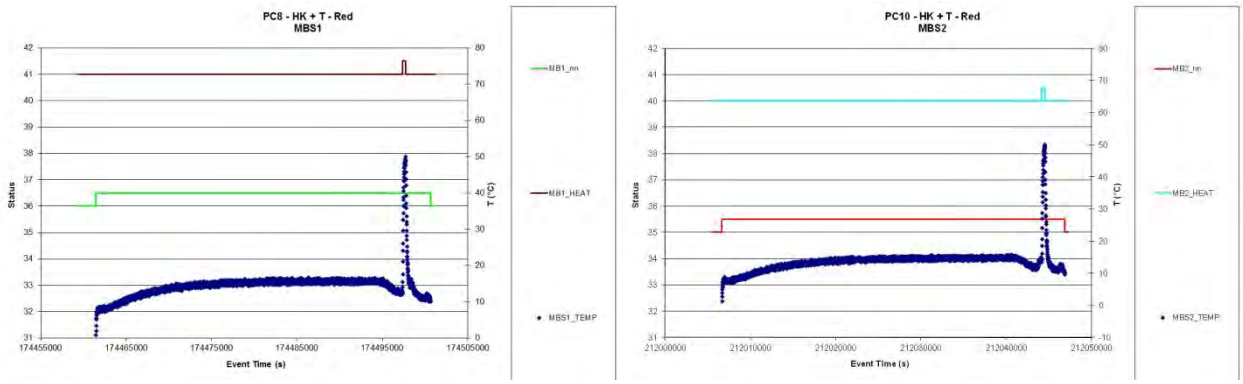


Figure 7.4-2. MBSs Temperature vs. time (SCI) – Red



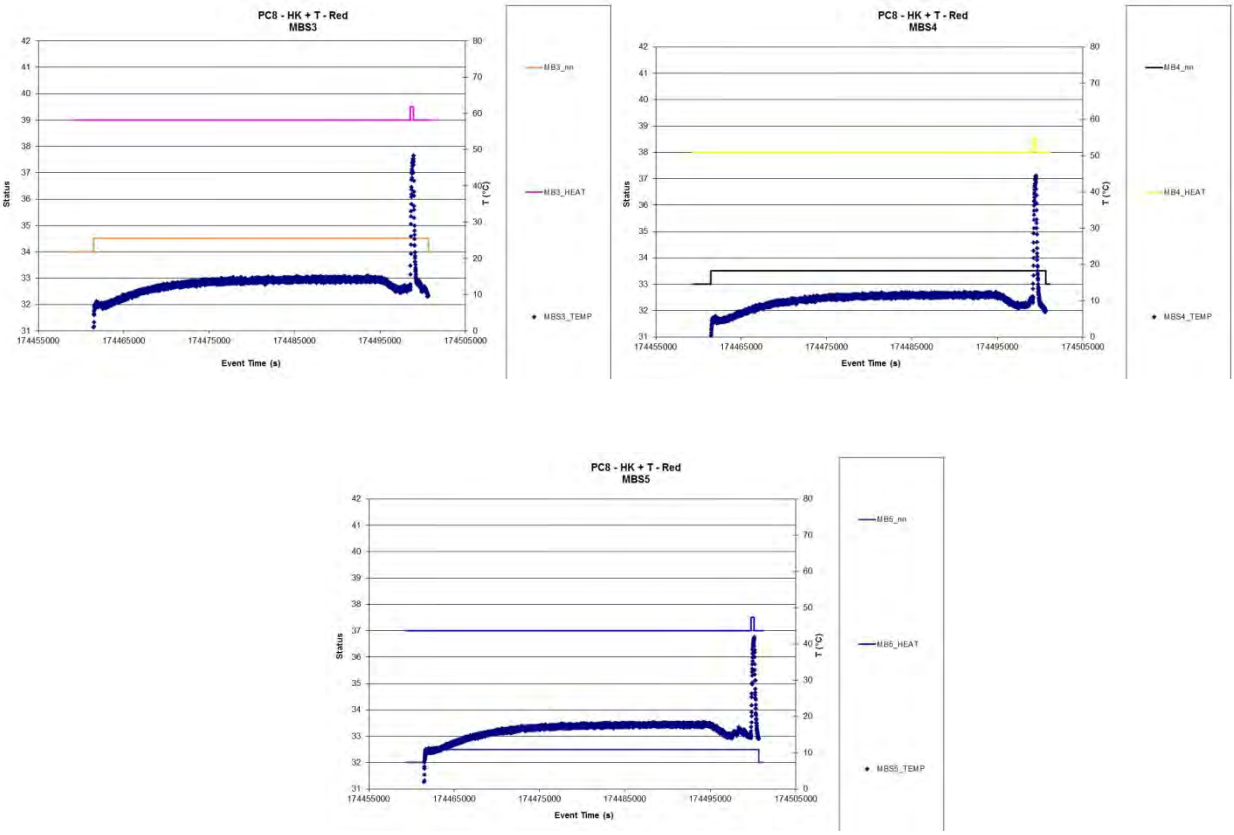
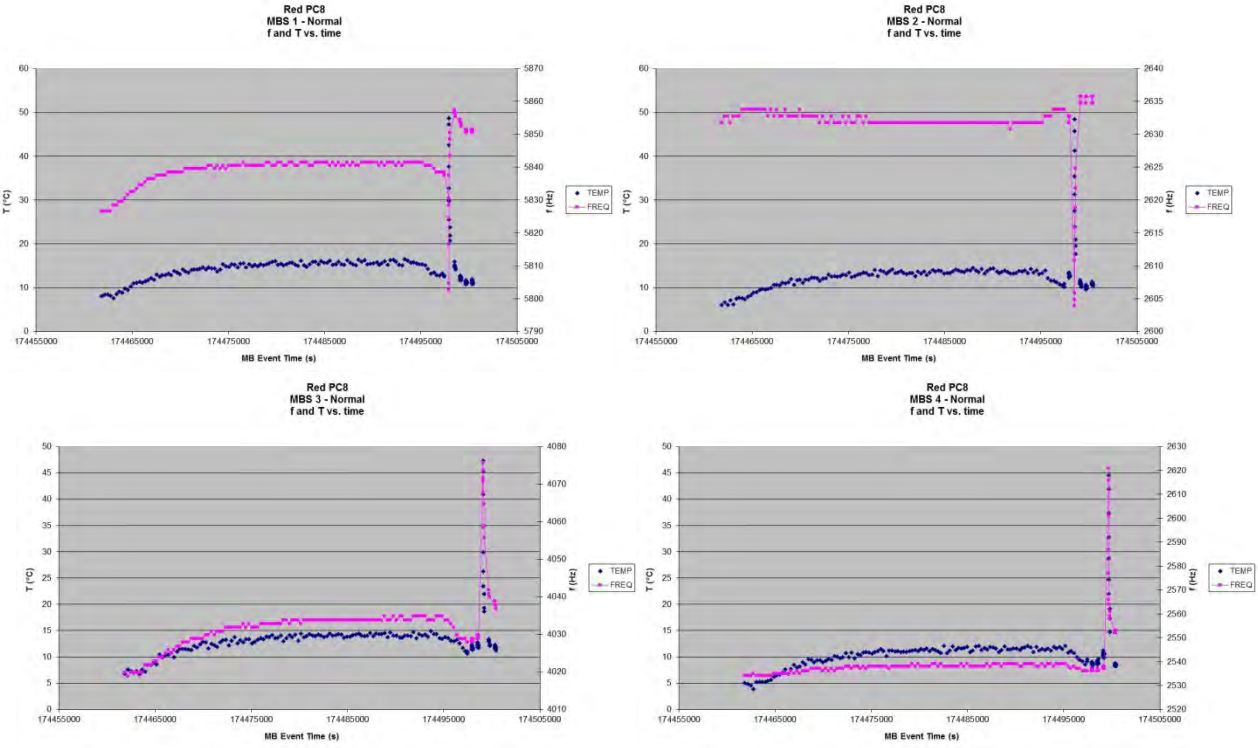
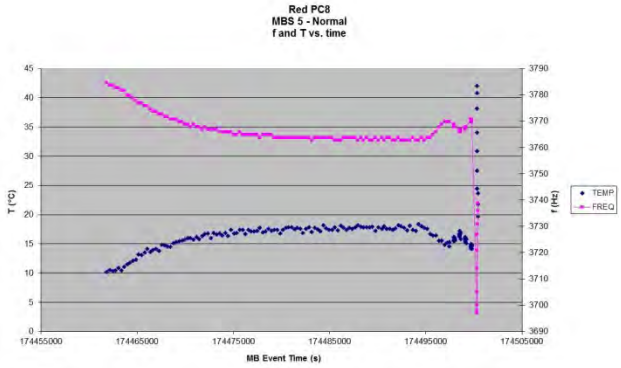


Figure 7.4-3. MBSs Frequency and Temperature vs. time– Red




Red PC8
MBS 5 - Normal
f and T vs. time
T (°C)
f (Hz)
MB Event Time (s)
TEMP
FREQ
45
40
35
30
25
20
15
10
5
0
3790
3780
3770
3760
3750
3740
3730
3720
3710
3700
3690
174455000
174465000
174475000
174485000
174495000
174505000

8. PC8 DATA ANALYSIS – MAIN INTERFACE (GD02)

8.1 GIADA STATUS

Figure 8.1-1. HK Status of GIADA vs. time – Main

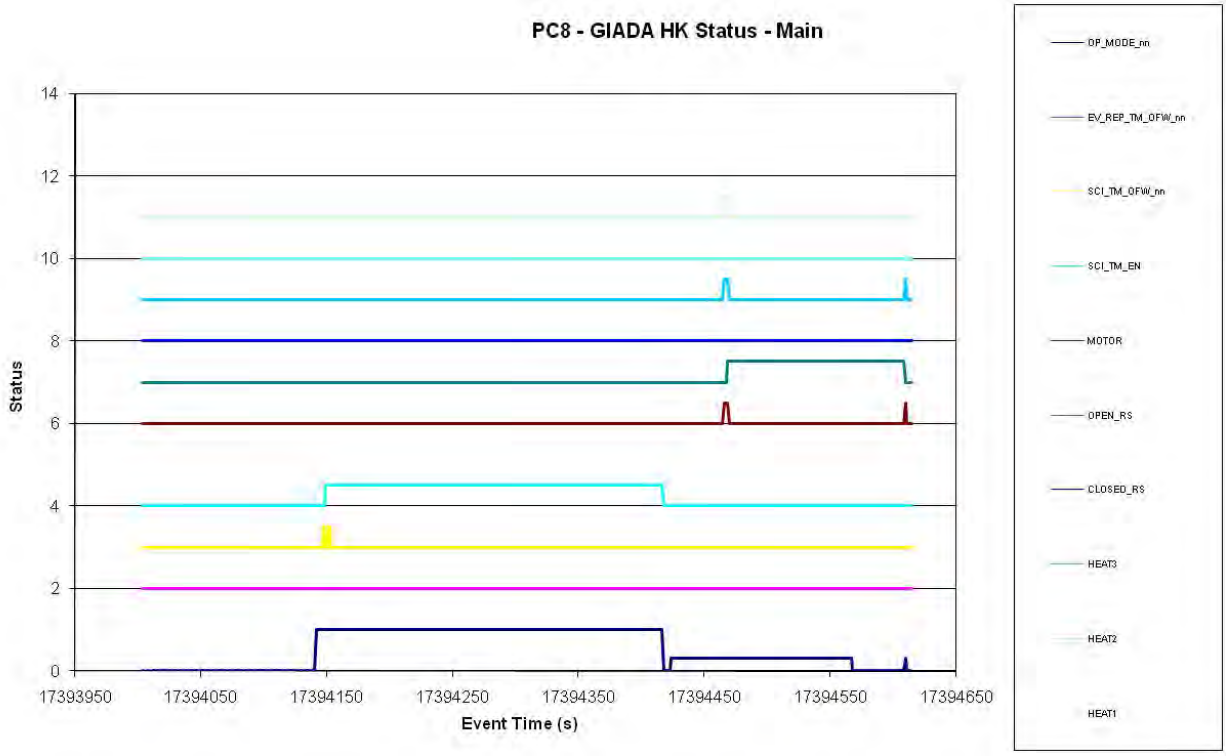


Figure 8.1-2. Power profile and Power Supply temperature vs. time - HK, Main

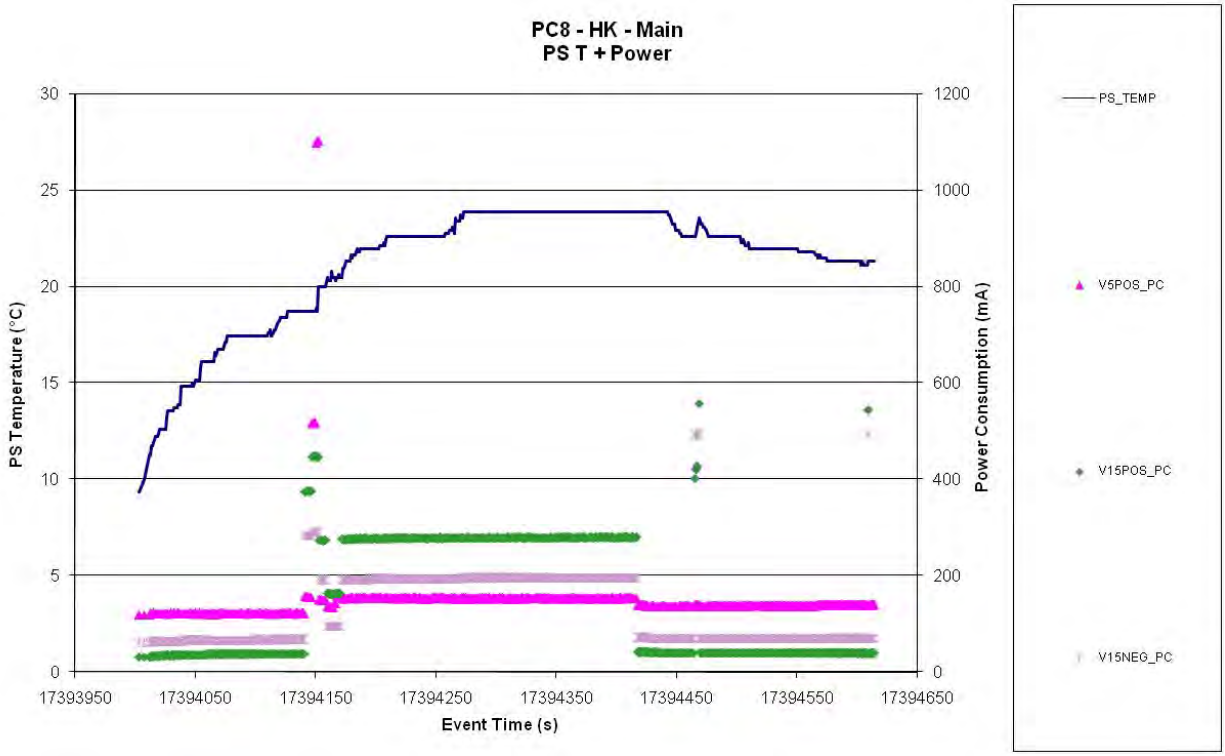


Figure 8.1-3. Evolution of temperatures of system elements vs. time - HK, Main

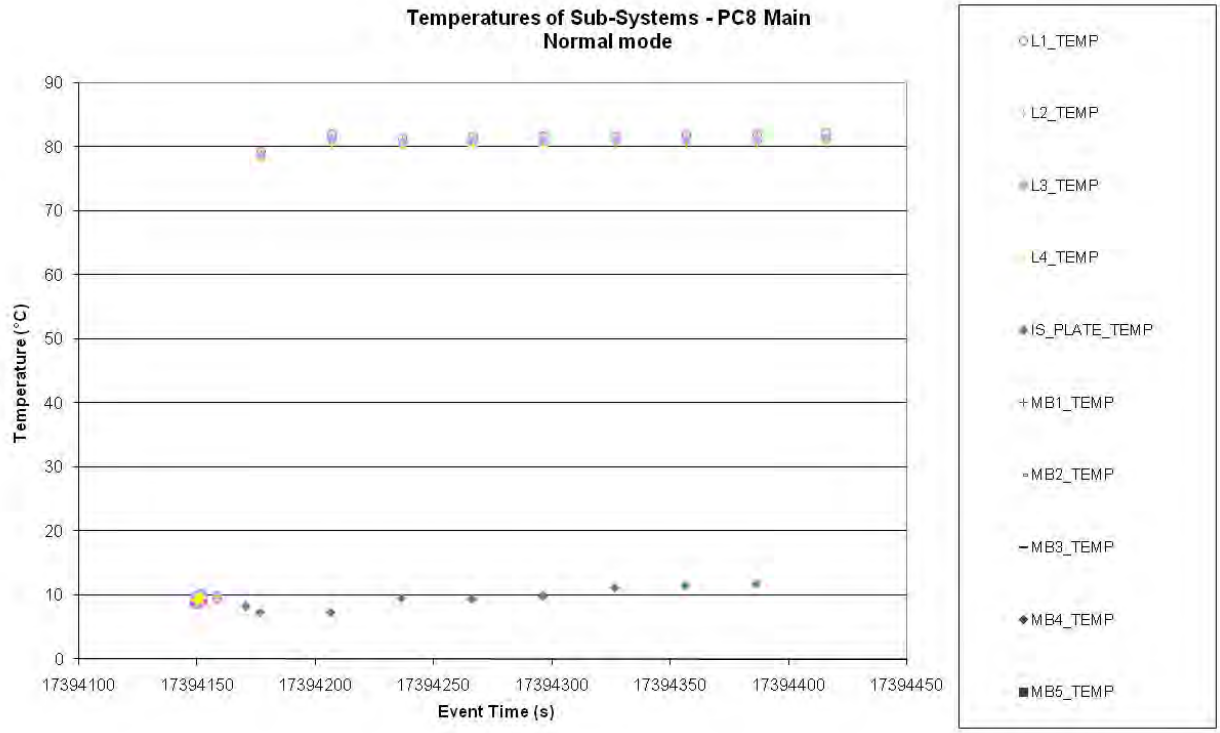


Figure 8.1-4. Evolution of temperatures of sub-systems vs. time with instrument in Normal Mode– Main

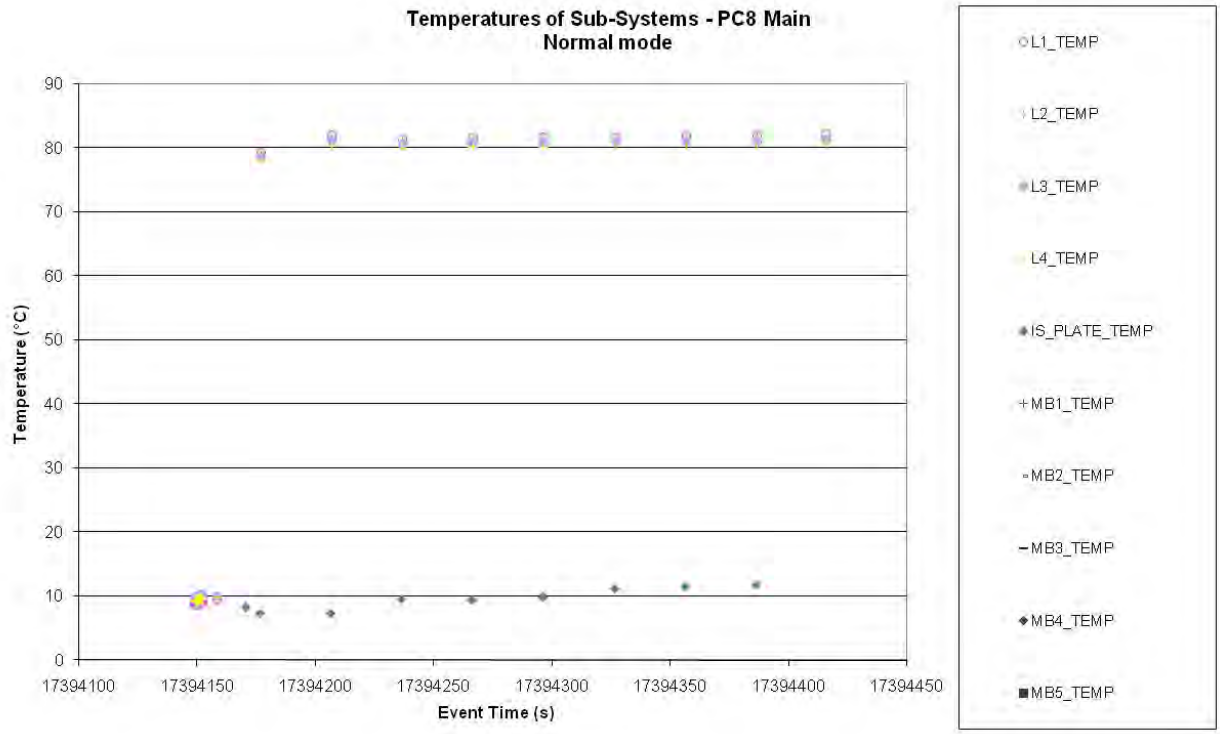


Figure 8.1-5. HK Status versus Temperatures of system elements – Main

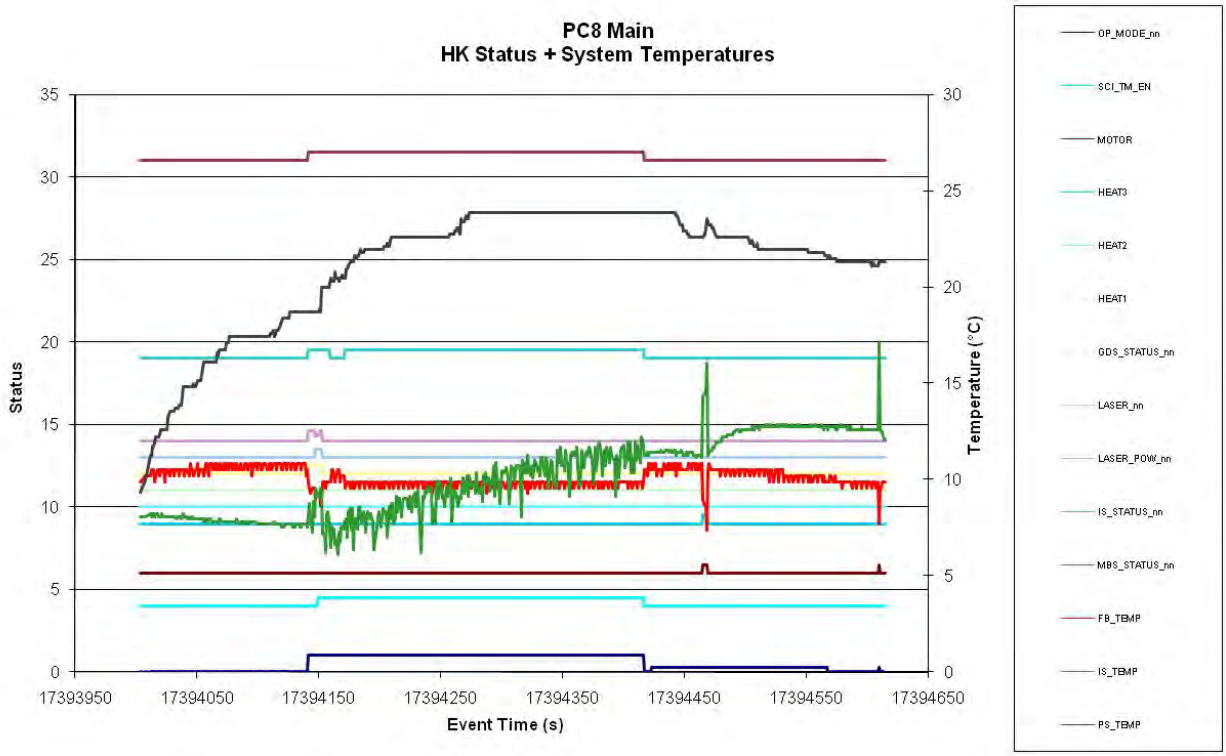
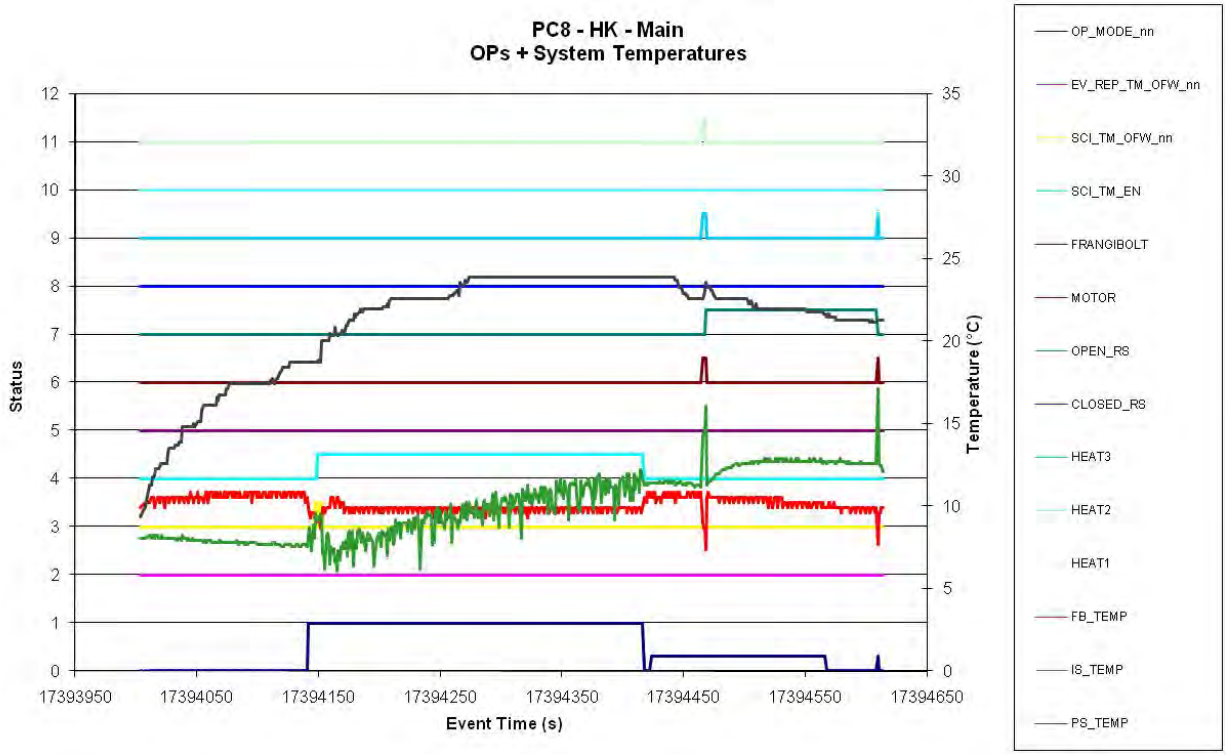


Figure 8.1-6. Operation Status versus Temperatures of system elements – Main
In the diagram are reported operative parameters with relevant variations.



8.2 GRAIN DETECTION SYSTEM (GDS)

8.2.1 GDS – Status

Figure 8.2-1. GDS Operation Status vs. time – Main

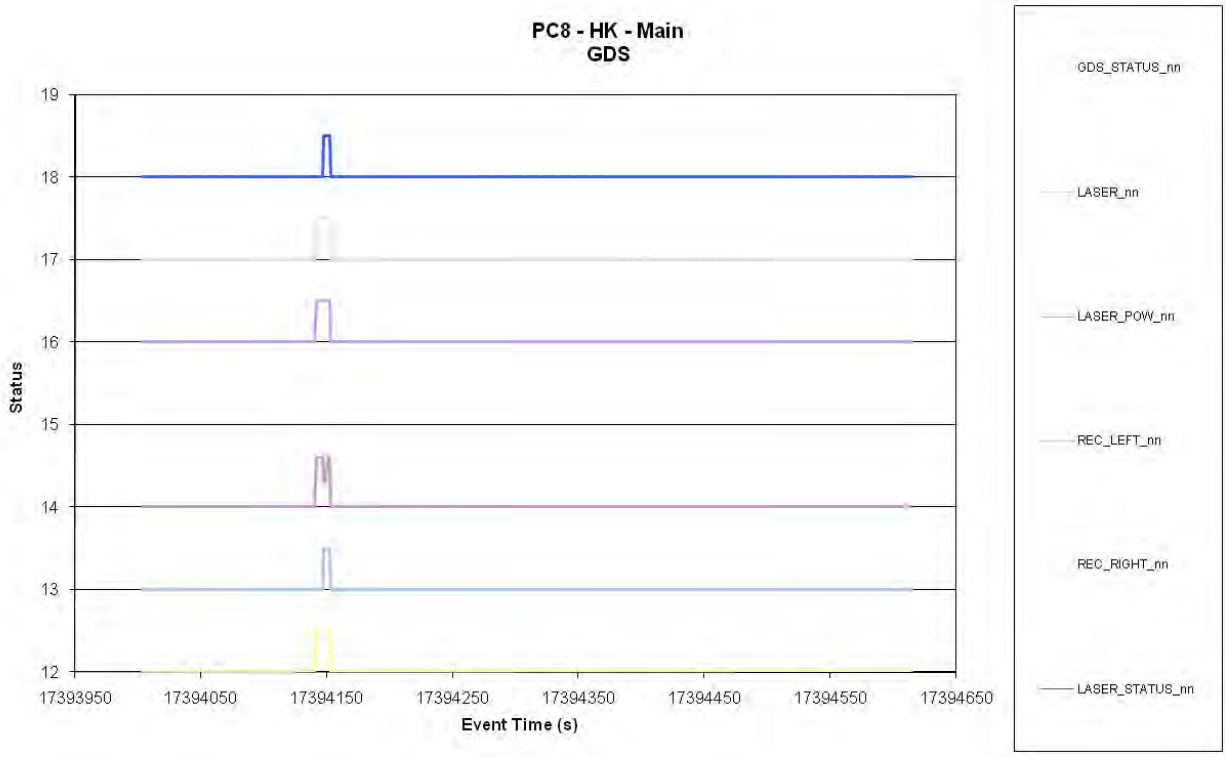


Figure 8.2-2. GDS Thresholds change vs. time – Main

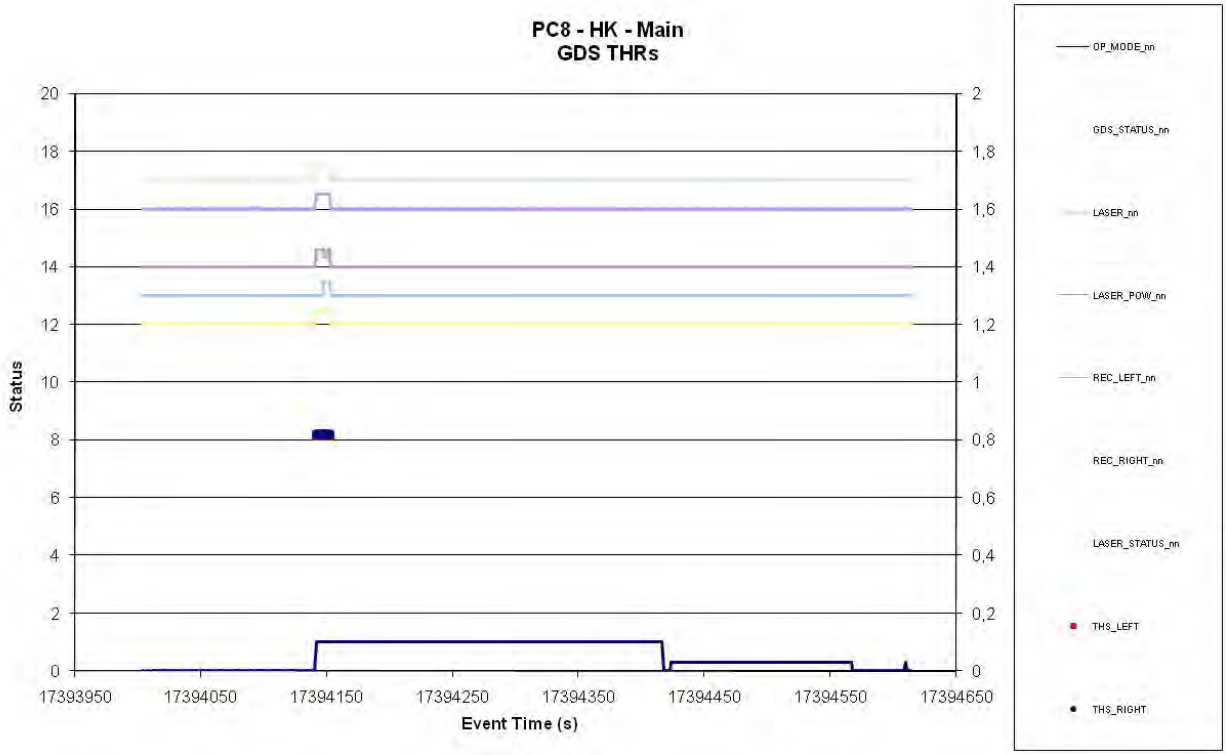


Figure 8.2-3. GDS Laser Temperatures vs. time– Main

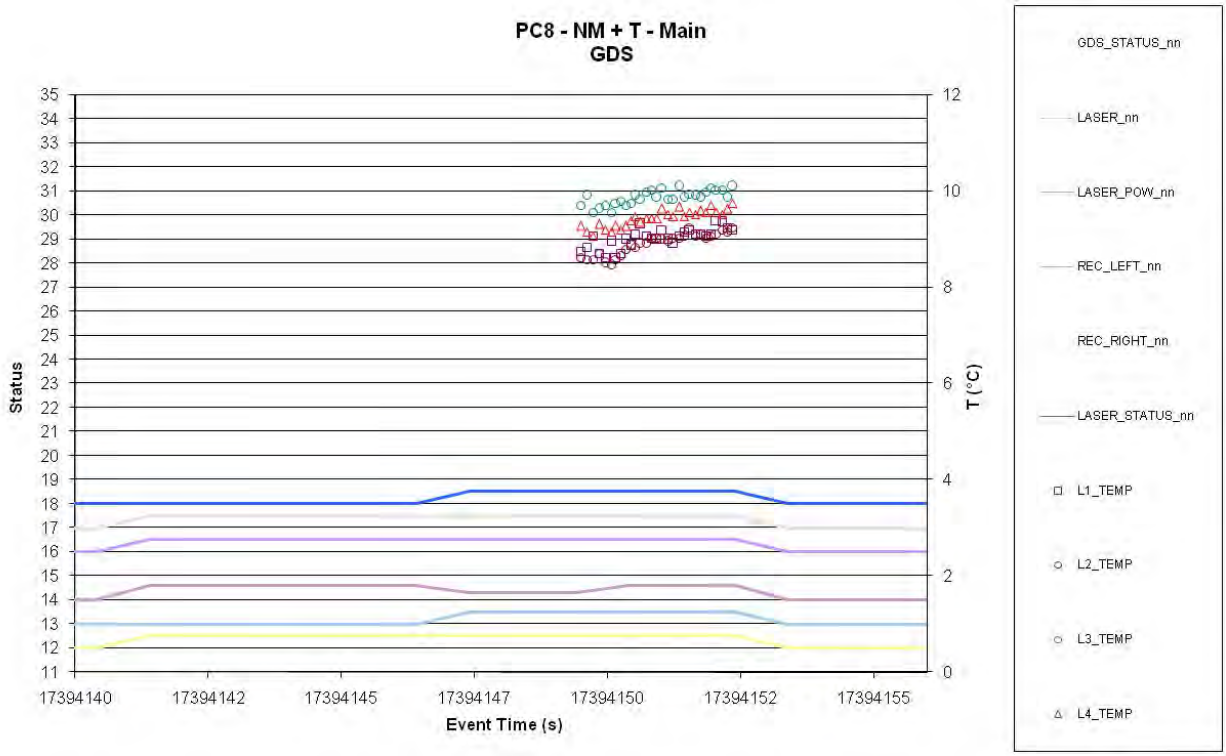


Figure 8.2-4. GDS Laser Monitor vs. time– Main

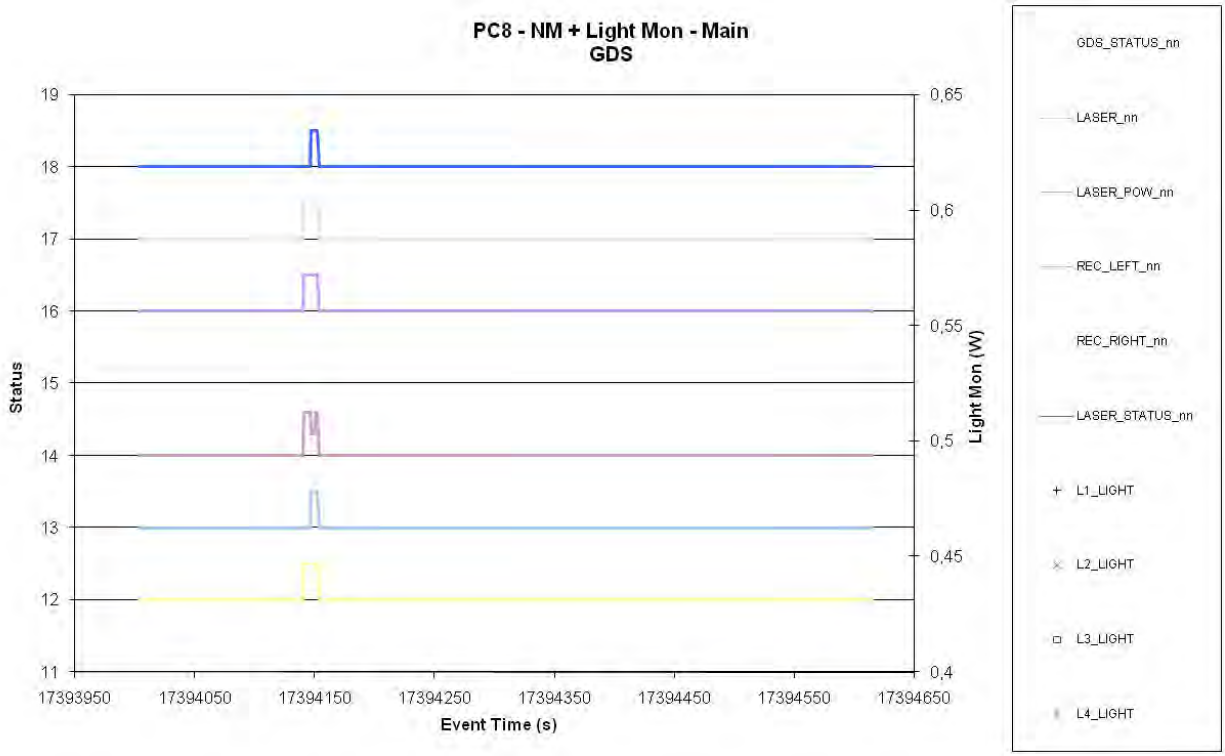


Figure 8.2-5. Lasers Light Monitor versus Temperature (HK, HK-SCI, SCI) – Main

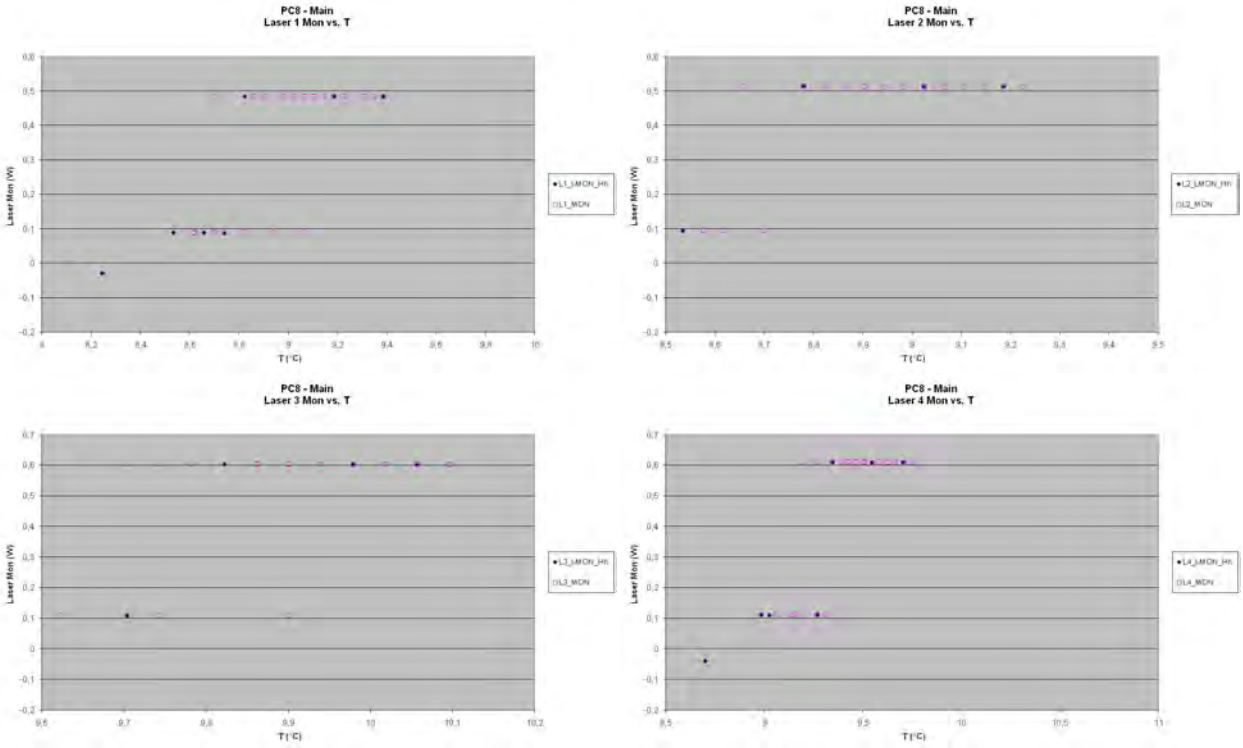
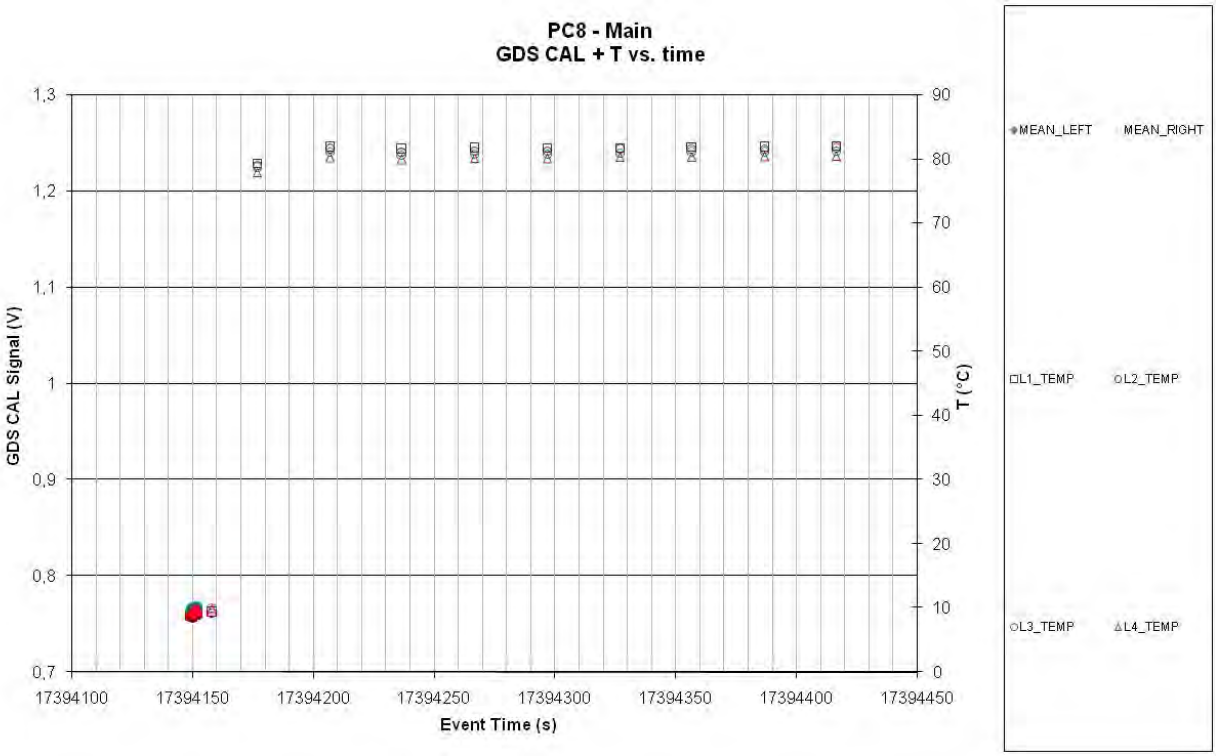


Figure 8.2-6. GDS Calibration values vs. time– Main



8.3 IMPACT SENSOR (IS)

8.3.1 IS – Status

Figure 8.3-1. IS Operation Status vs. time – Main

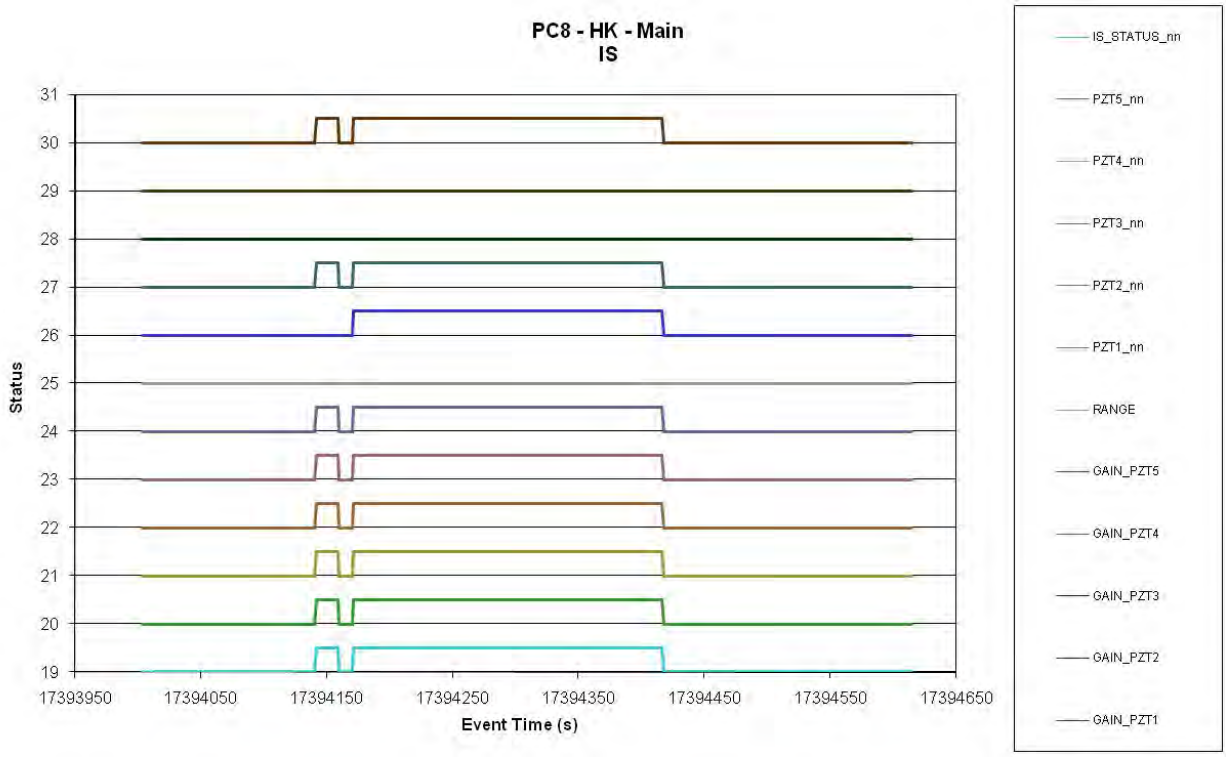


Figure 8.3-2. IS PZT 3 Thresholds change vs. time – Main

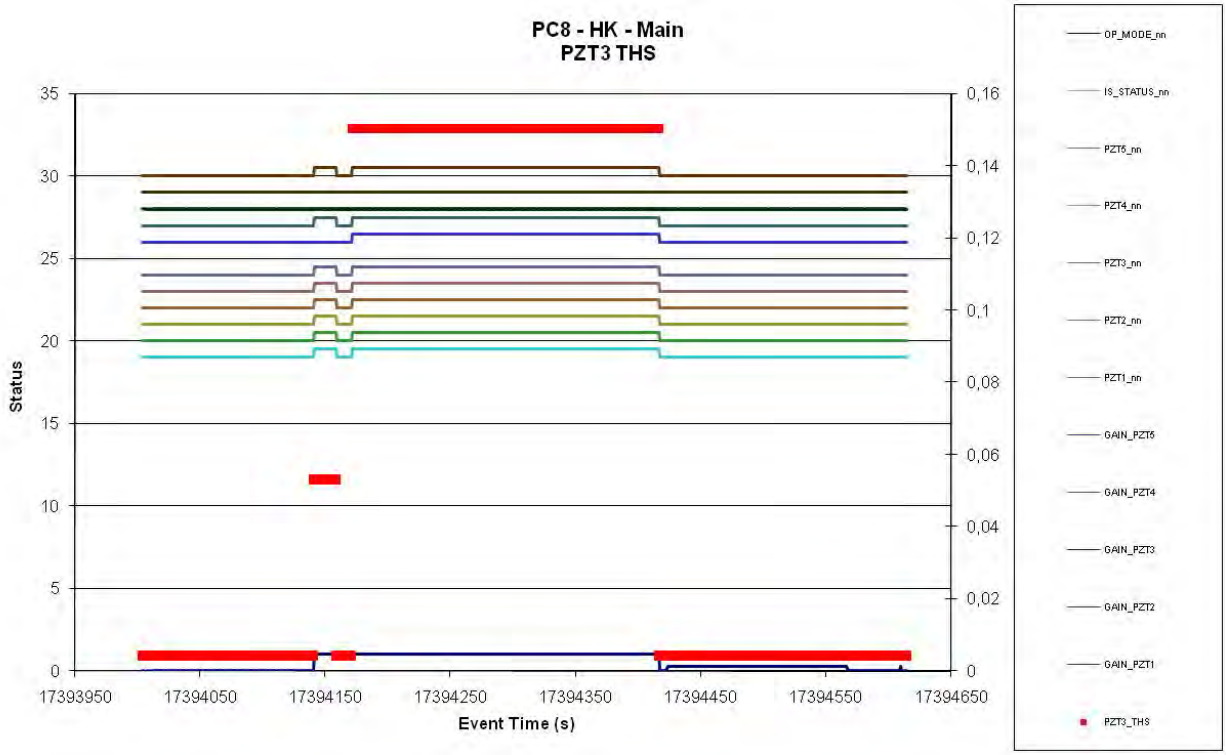


Figure 8.3-3. IS PZT 5 Thresholds change vs. time – Main

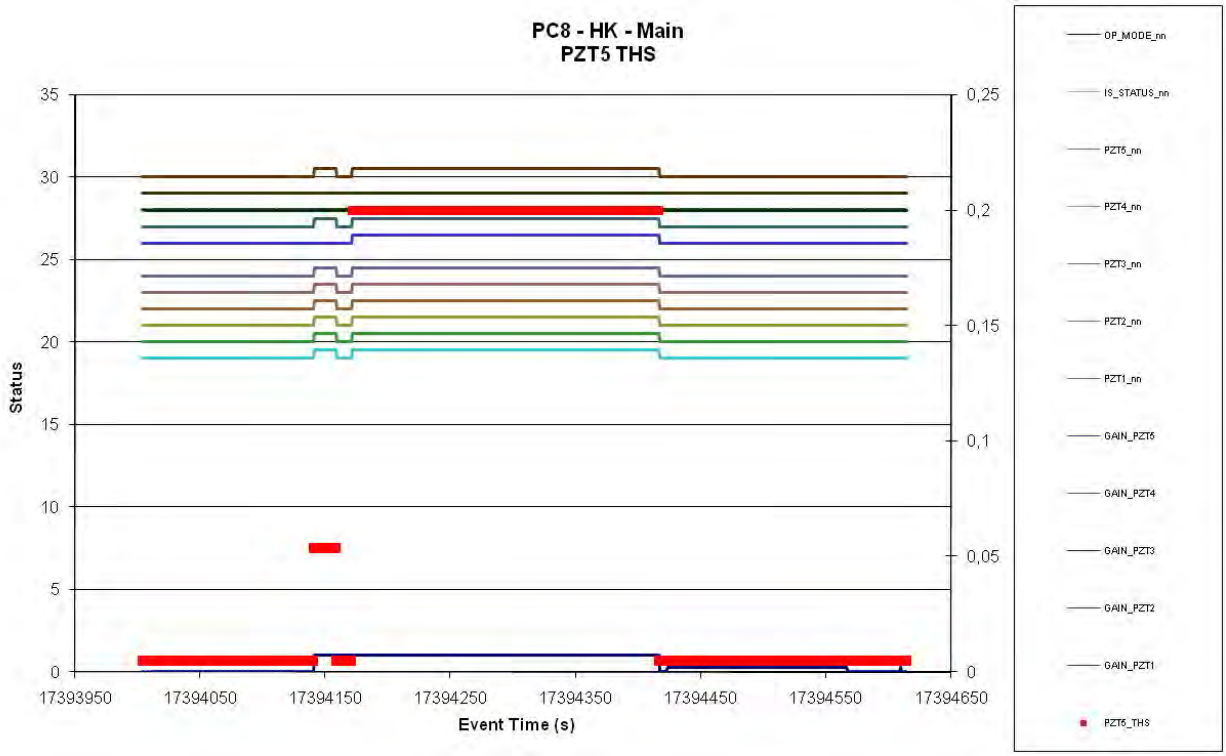
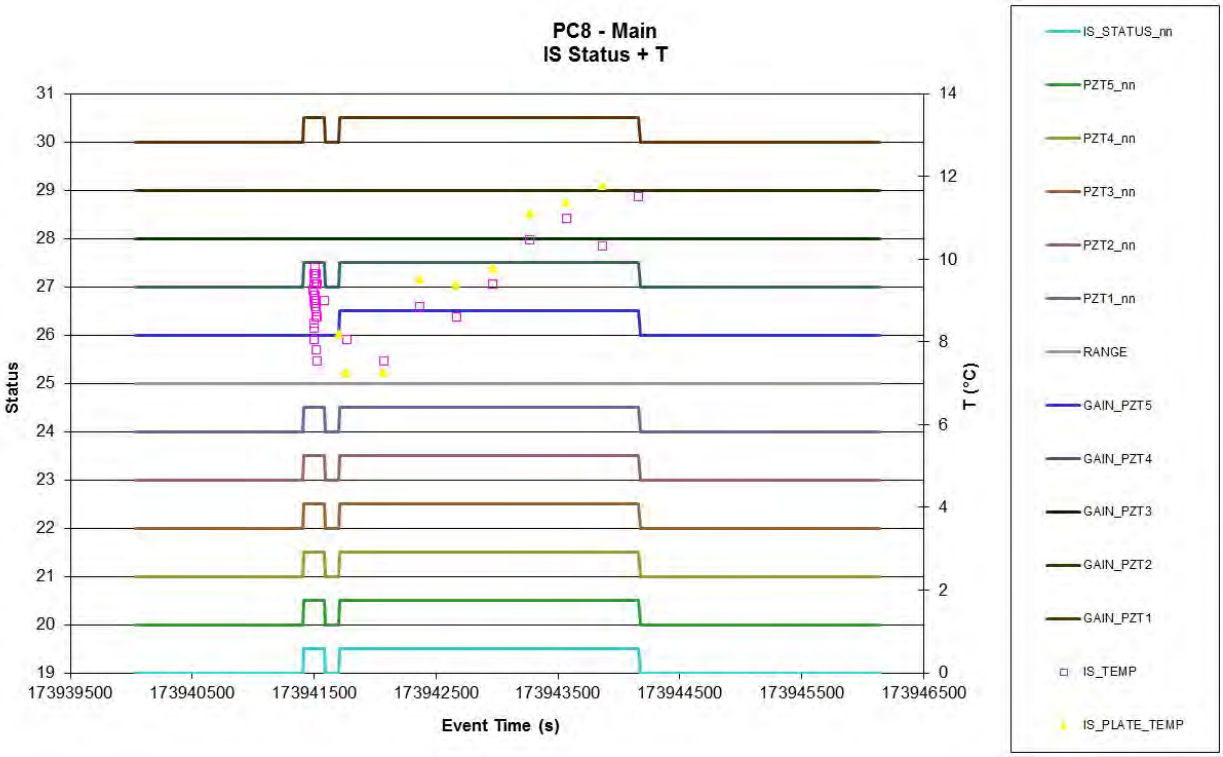


Figure 8.3-4. IS Temperature vs. time (HK, HK-SCI, SCI) – Main



8.3.1.1 CAL

Figure 8.3-5. PZTs Mean and St Dev. CAL vs. time – Main

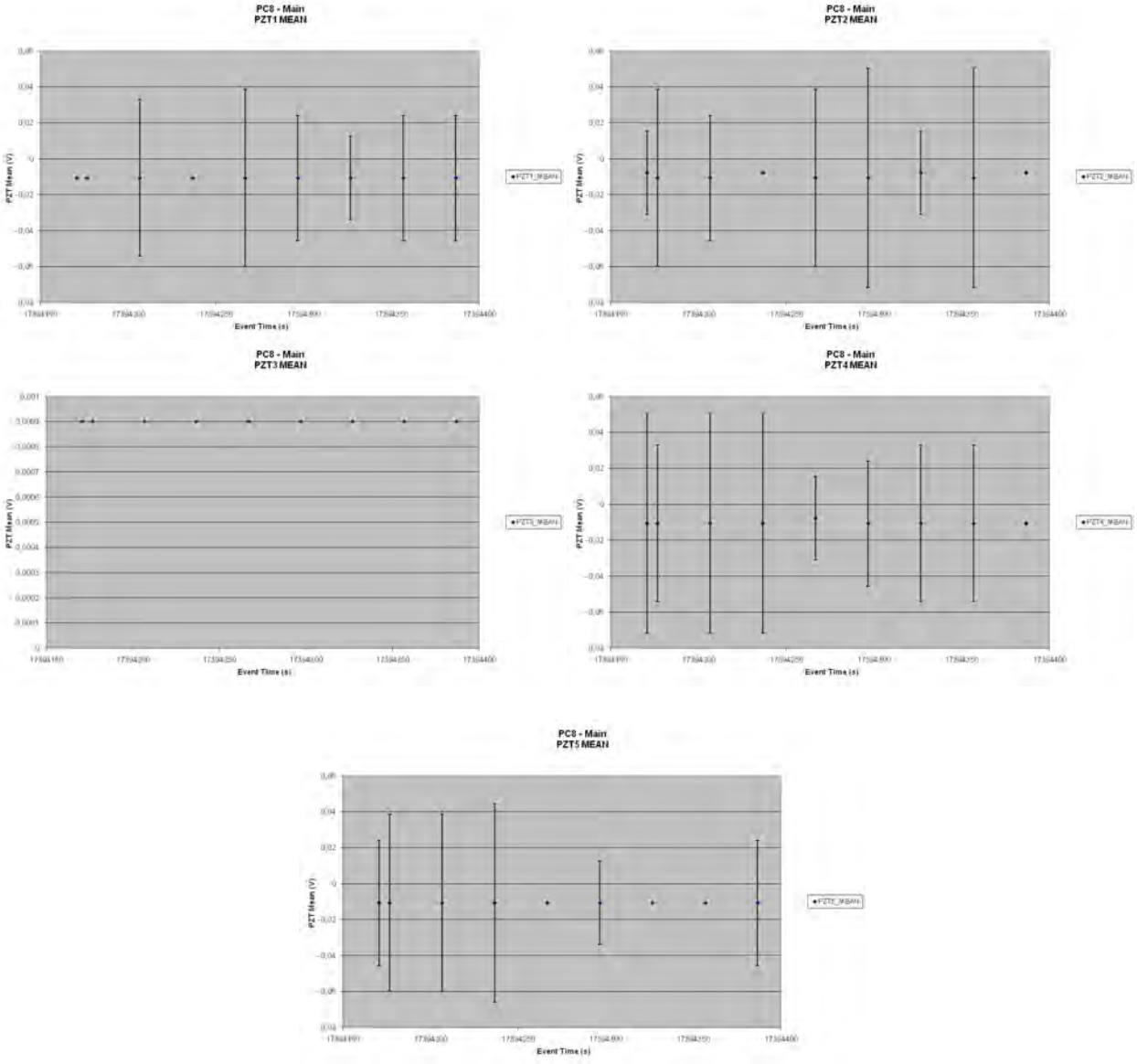


Figure 8.3-6. Reference Voltages for IS calibration vs. time – Main Voltages values for the calibrator don't show level variation

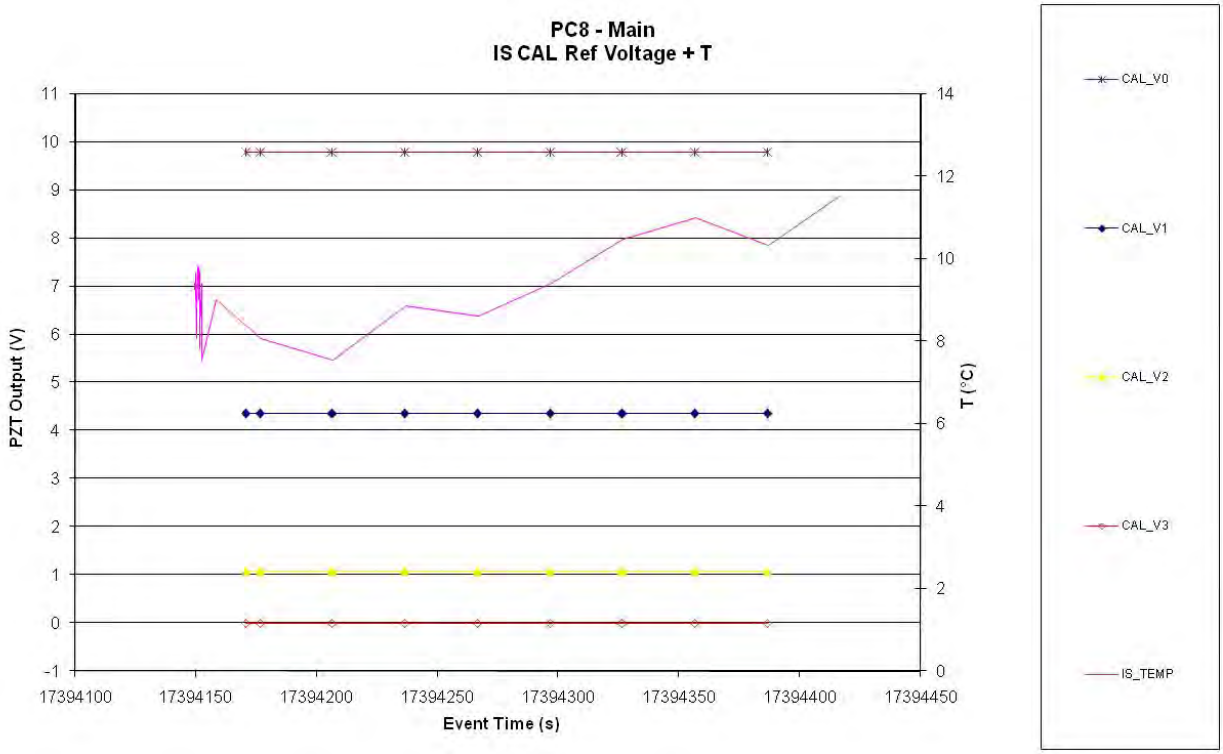
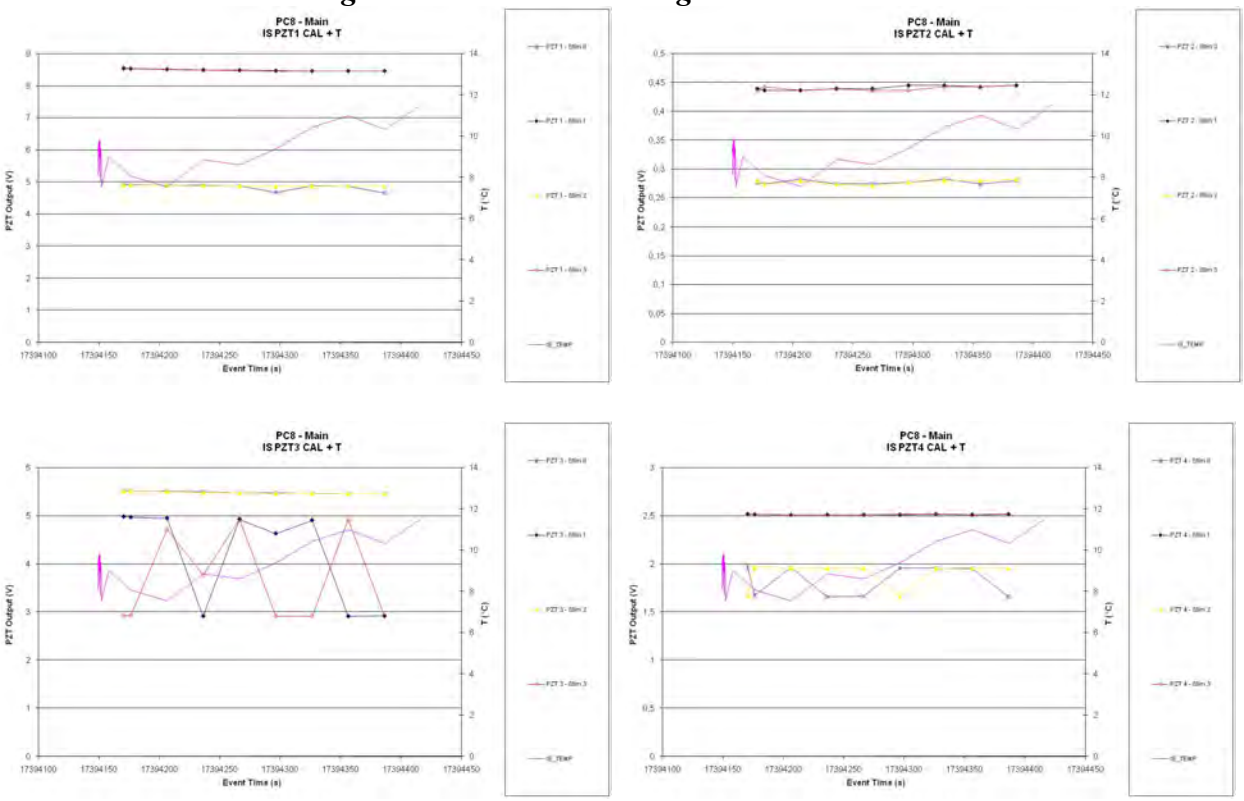
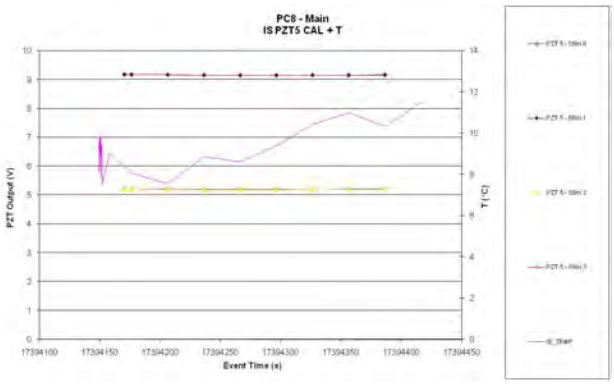


Figure 8.3-7. PZTs CAL Signal vs. time – Main





8.4 MICRO BALANCE SYSTEM (MBS)

8.4.1 MBS – Status

Figure 8.4-1. MBS Operation Status vs. time – Main

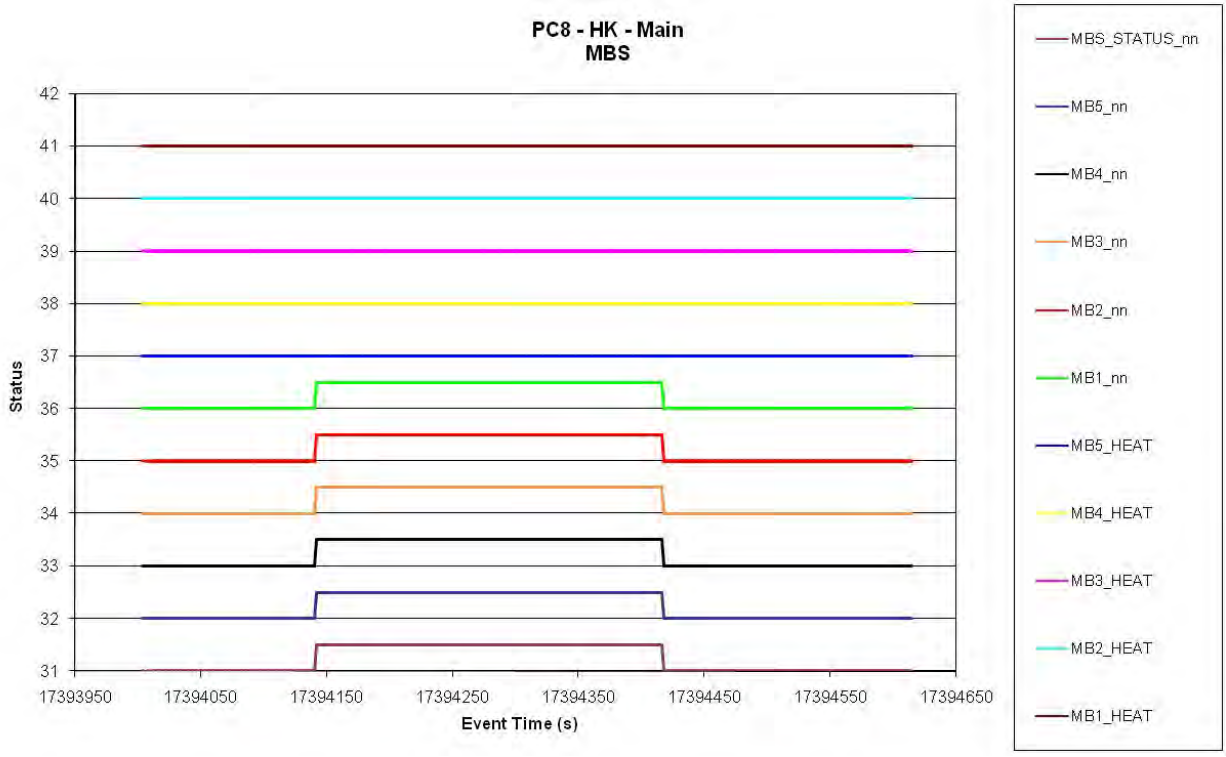
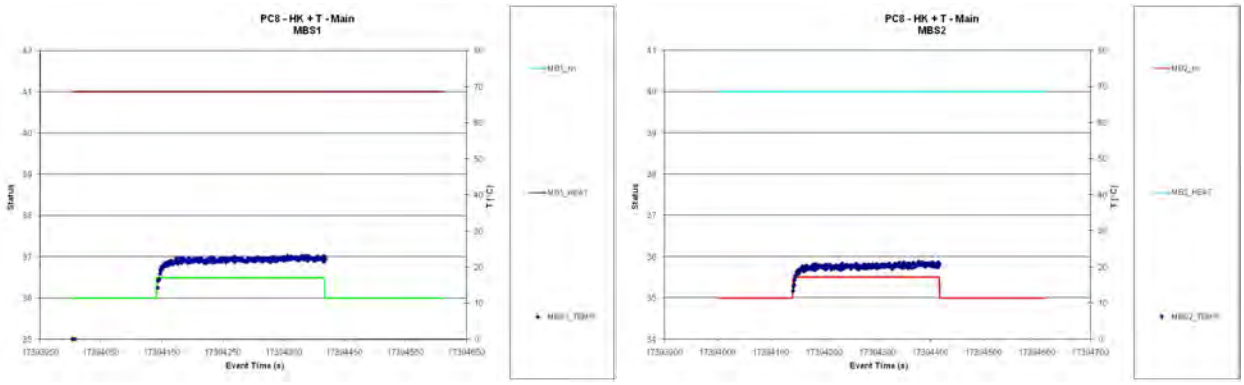


Figure 8.4-2. MBSs Temperature vs. time (SCI) – Main



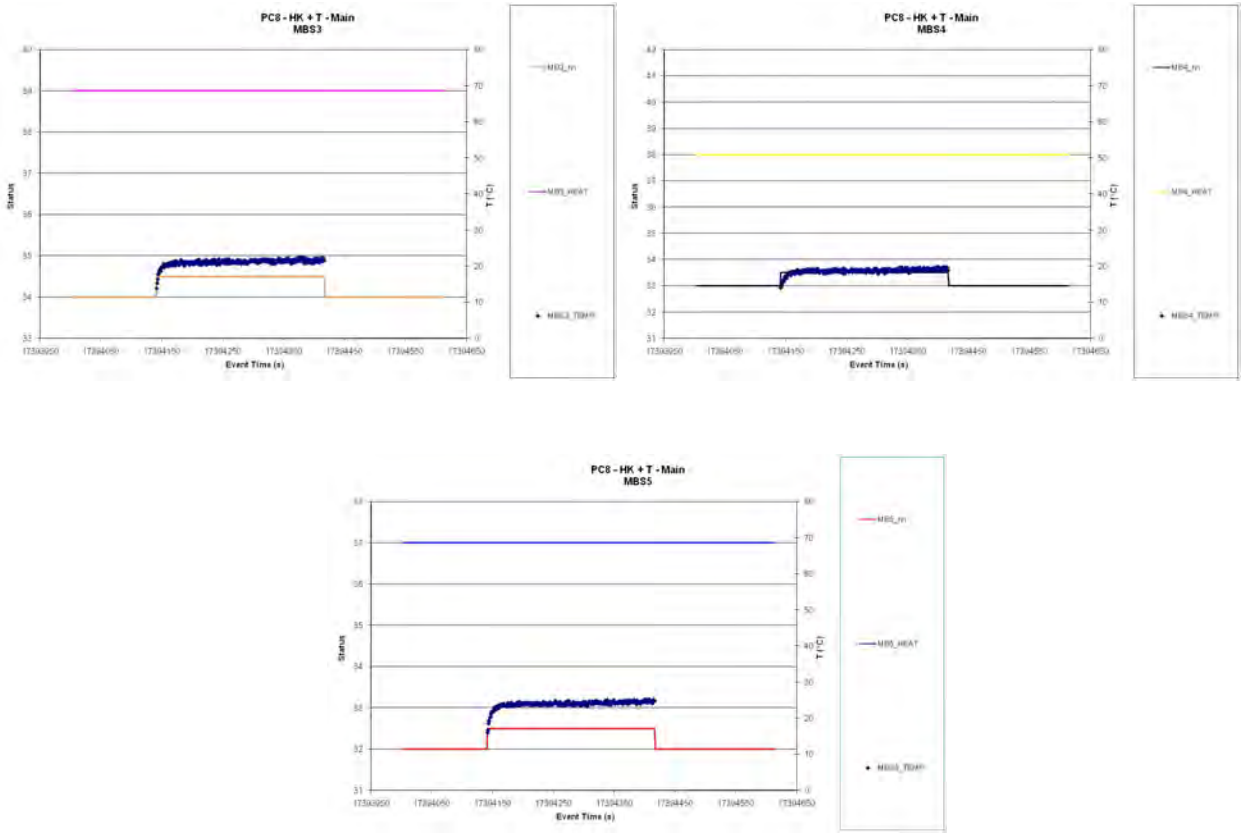
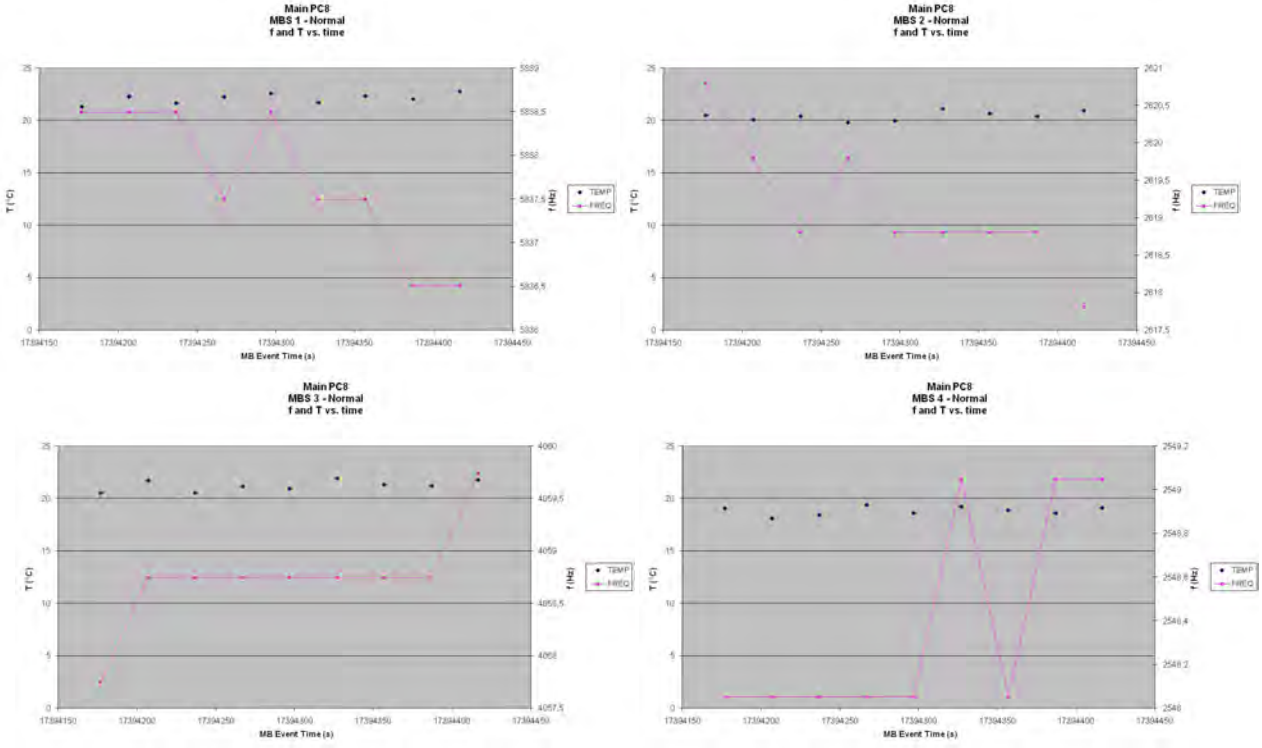
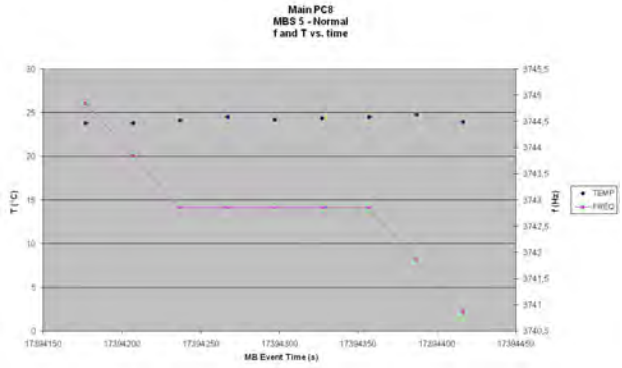


Figure 8.4-3. MBSs Frequency and Temperature vs. time– Main




Main PC8
MBS 5 - Normal
f and T vs. time
T (°C)
f (Hz)
MB Event Time (s)
TEMP
FREQ

9. PC8 DATA ANALYSIS – MAIN INTERFACE (GD03)

9.1 GIADA STATUS

Figure 9.1-1. HK Status of GIADA vs. time – Main

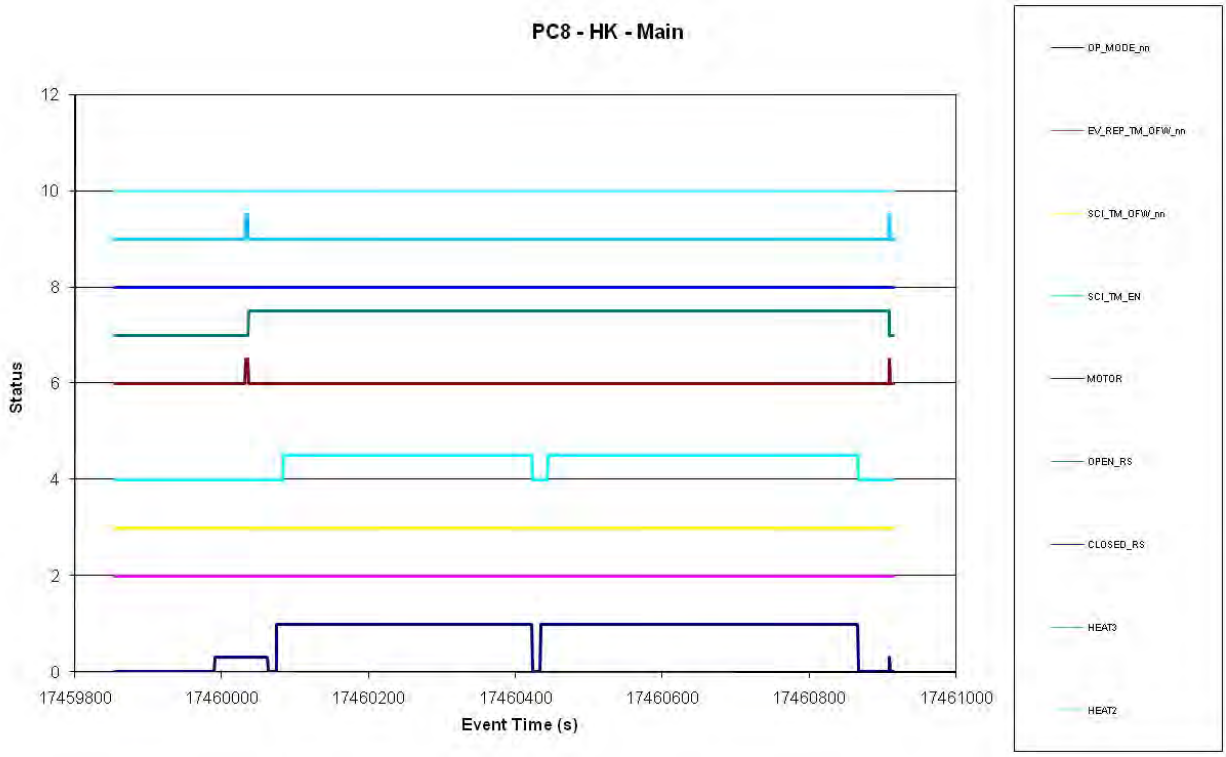


Figure 9.1-2. Power profile and Power Supply temperature vs. time - HK, Main

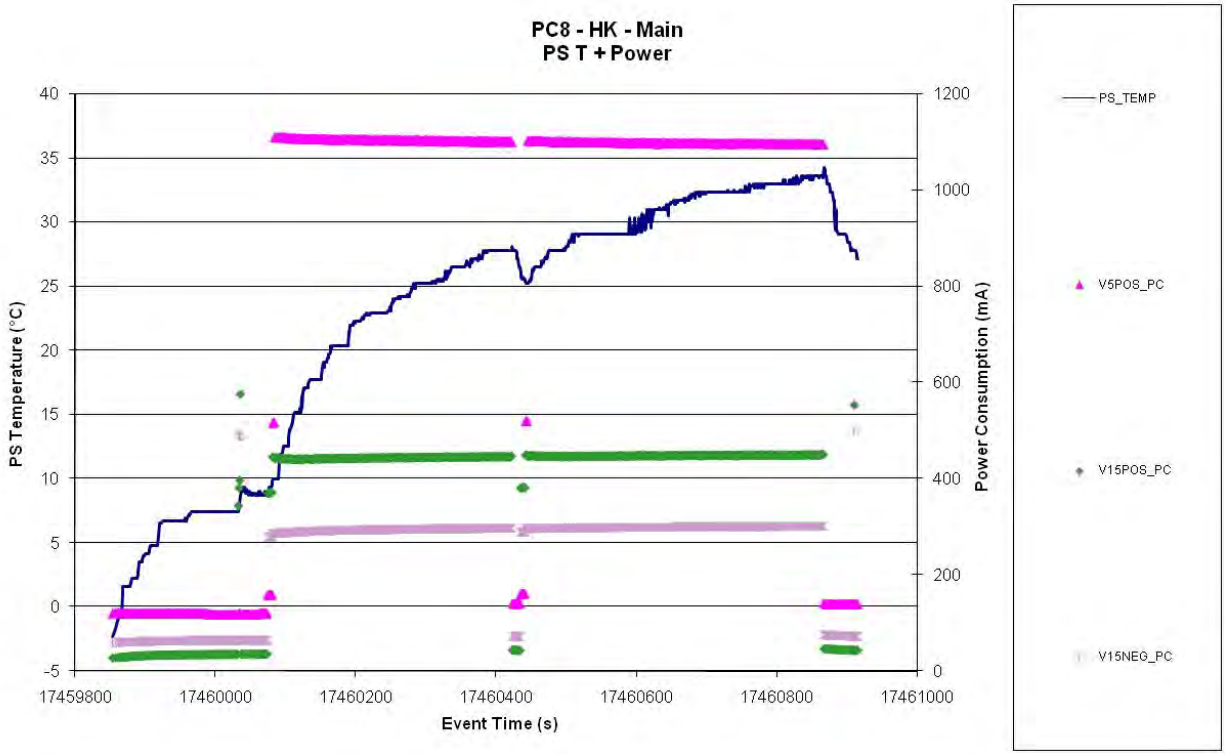


Figure 9.1-3. Evolution of temperatures of system elements vs. time - HK, Main

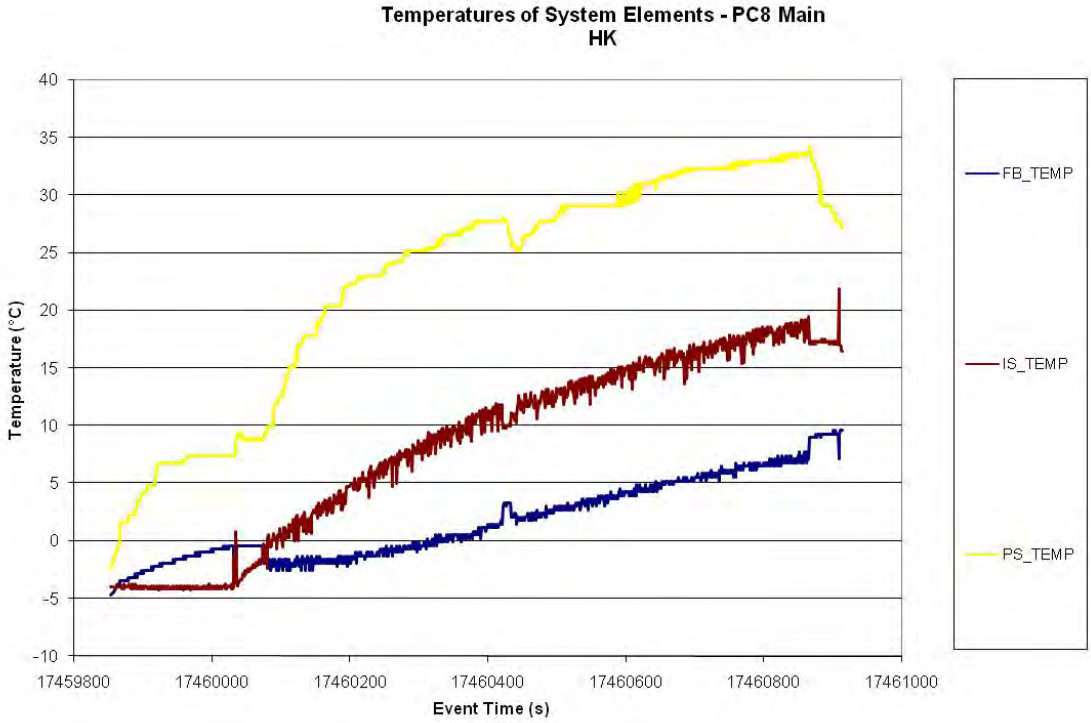


Figure 9.1-4. Evolution of temperatures of sub-systems vs. time with instrument in Normal Mode– Main

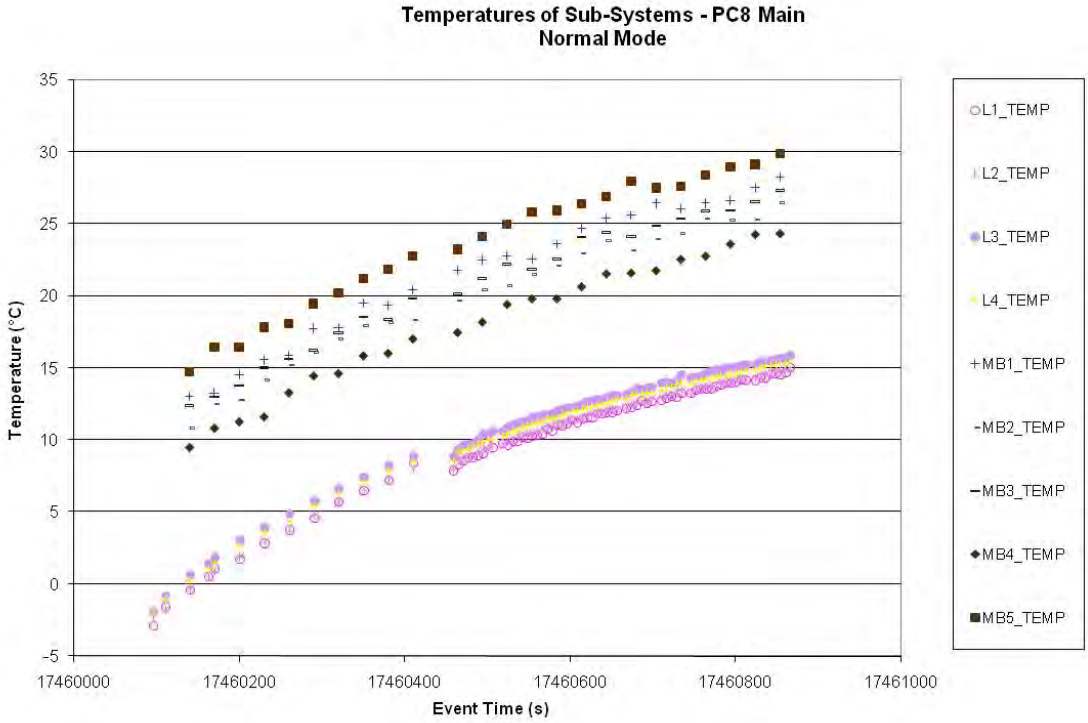


Figure 9.1-5. HK Status versus Temperatures of system elements – Main

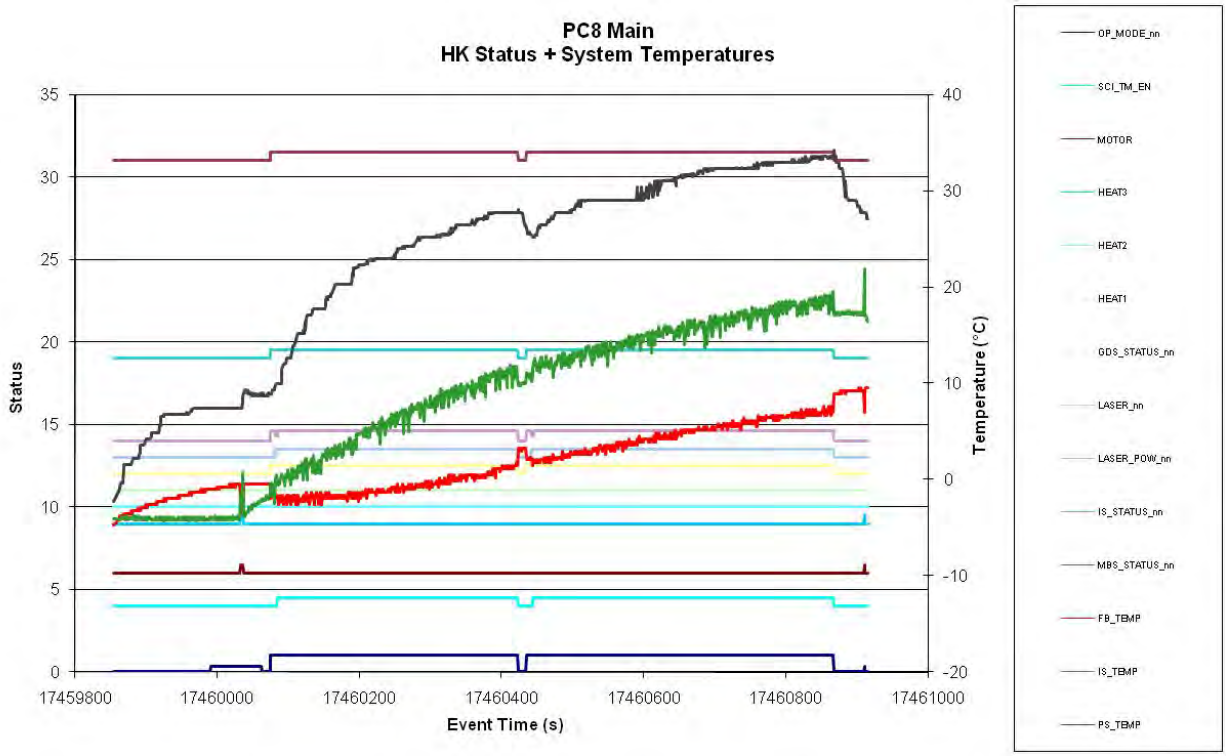
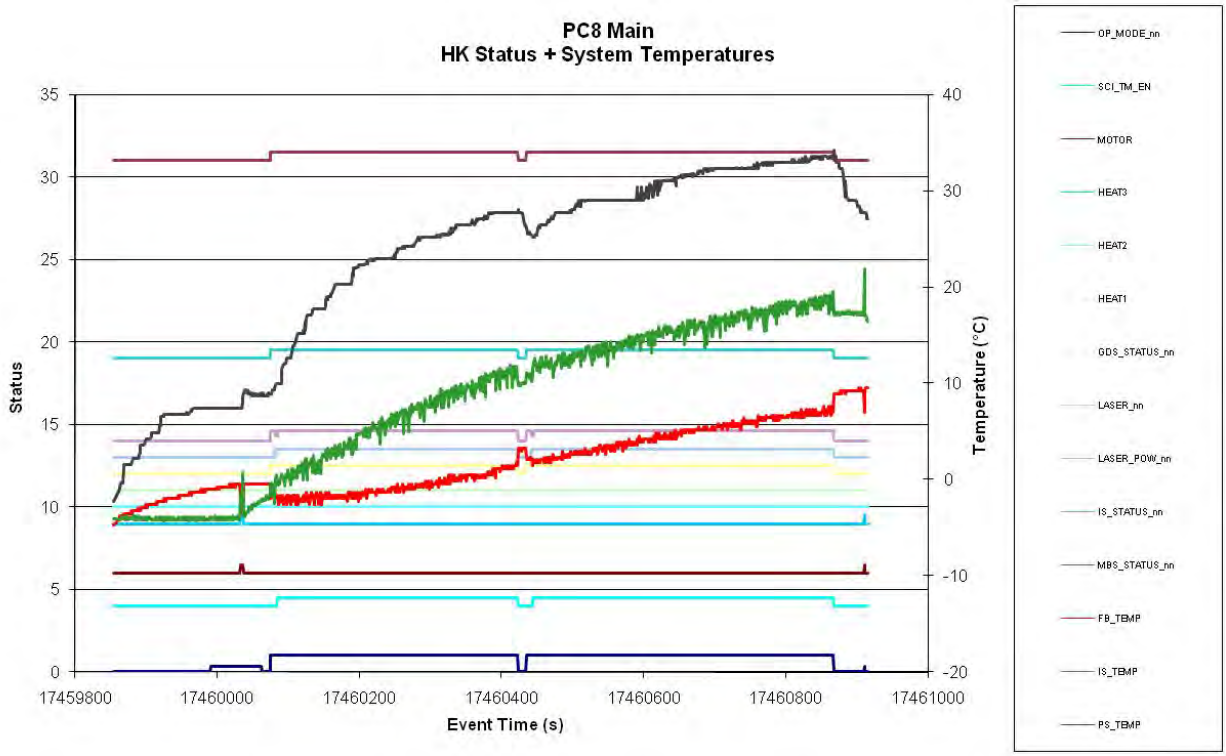


Figure 9.1-6. Operation Status versus Temperatures of system elements – Main
In the diagram are reported operative parameters with relevant variations.



9.2 GRAIN DETECTION SYSTEM (GDS)

9.2.1 GDS – Status

Figure 9.2-1. GDS Operation Status vs. time – Main

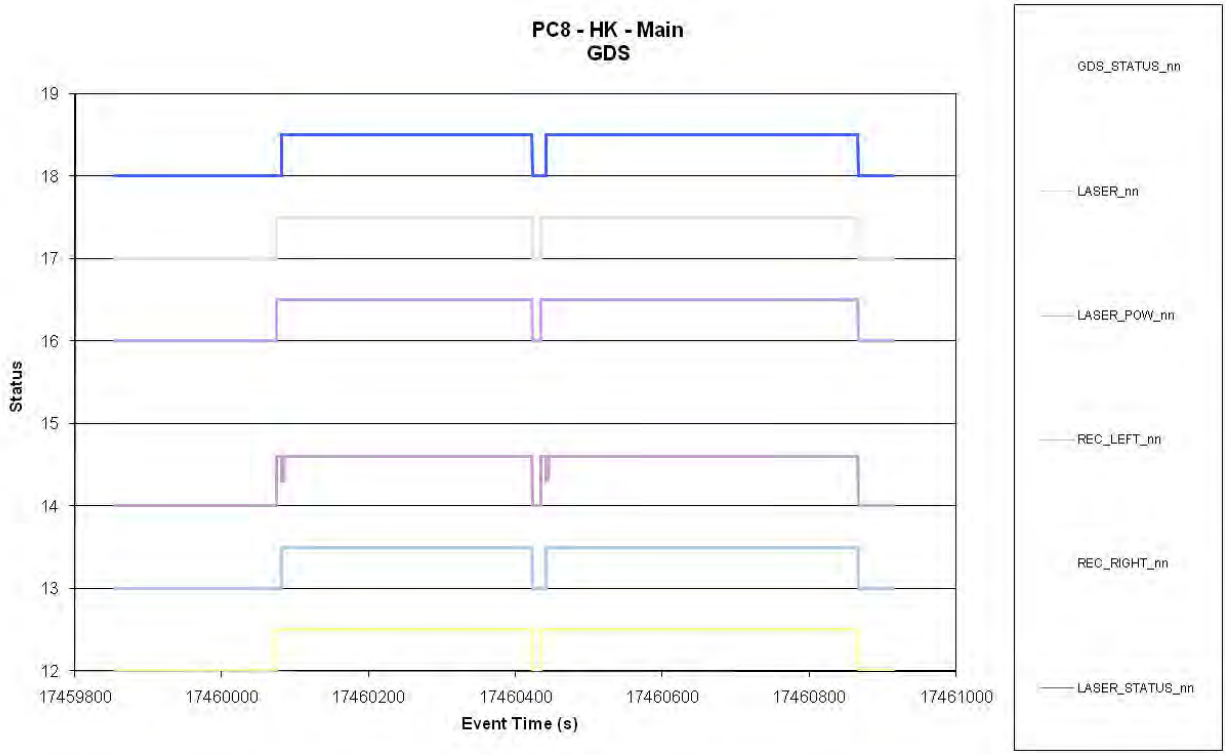


Figure 9.2-2. GDS Thresholds change vs. time – Main

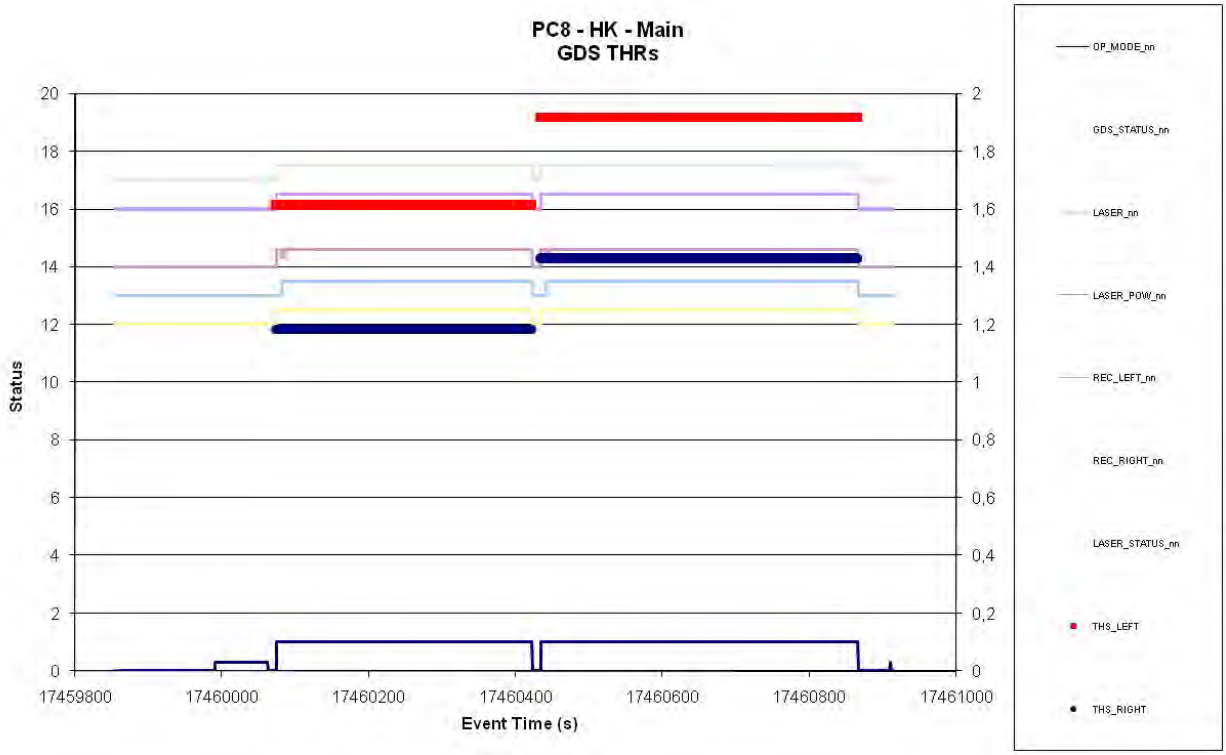


Figure 9.2-3. GDS Laser Temperatures vs. time– Main

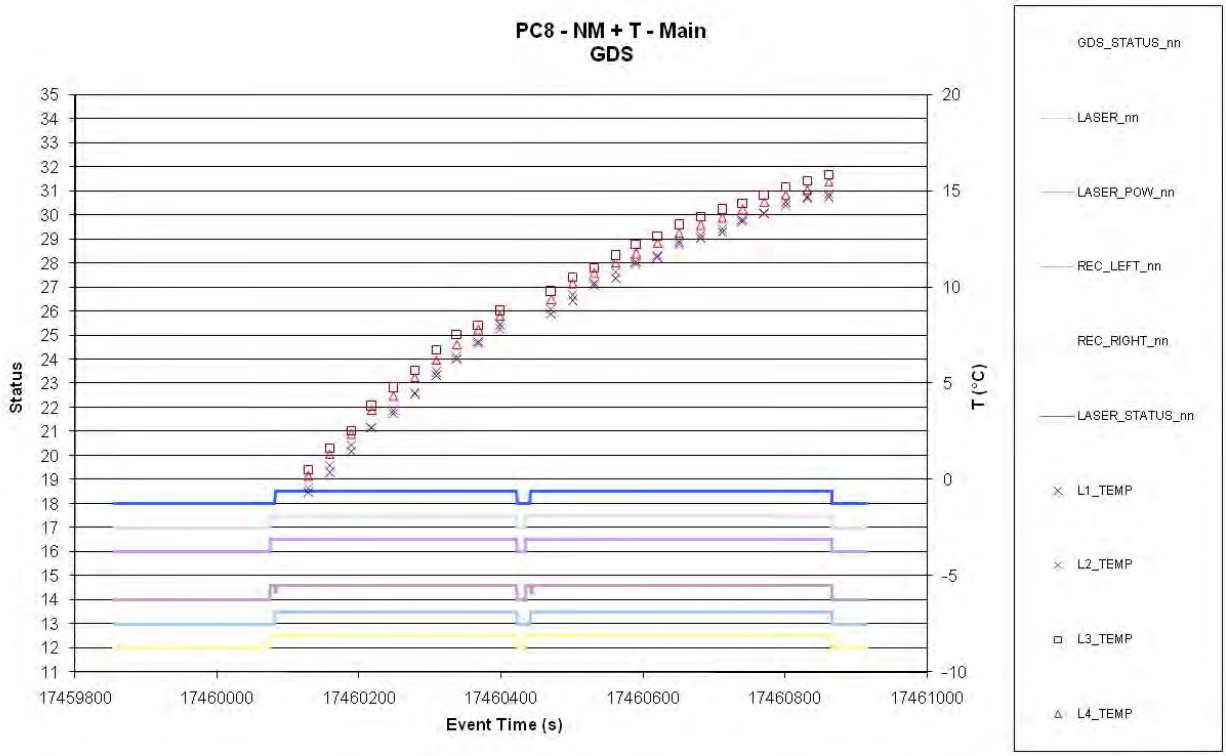


Figure 9.2-4. GDS Laser Monitor vs. time– Main

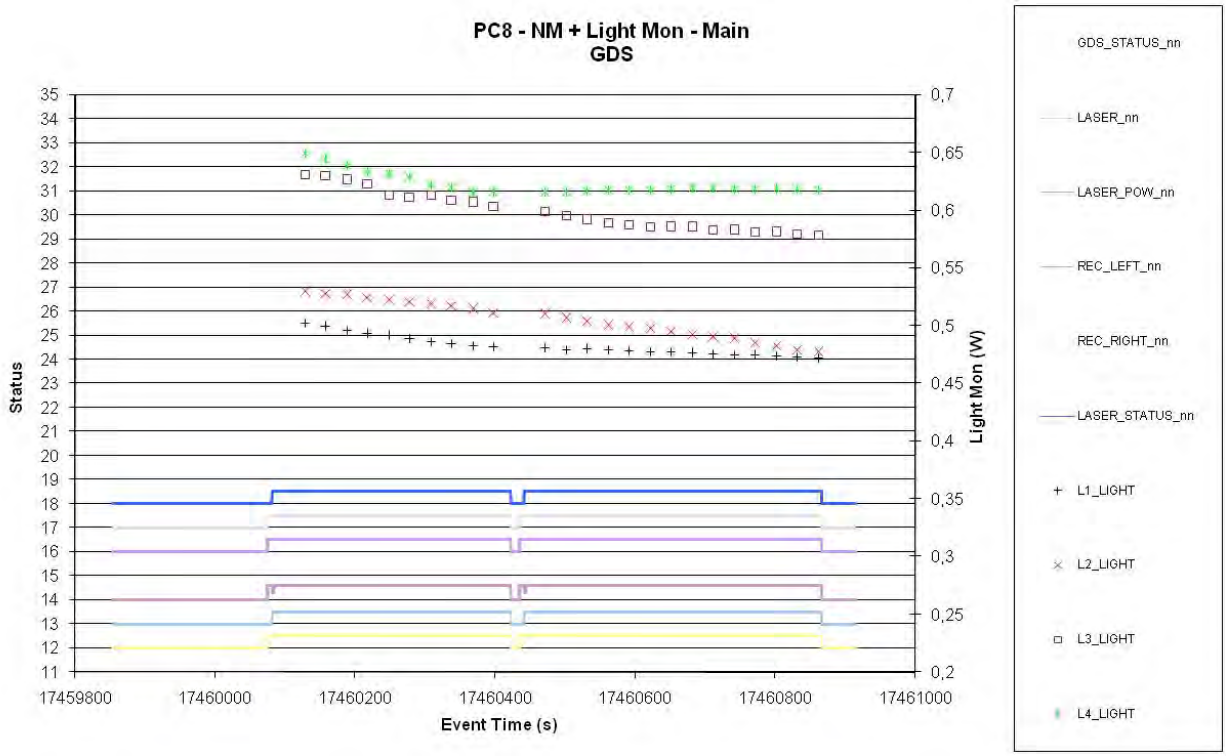


Figure 9.2-5. Lasers Light Monitor versus Temperature (HK, HK-SCI, SCI) – Main

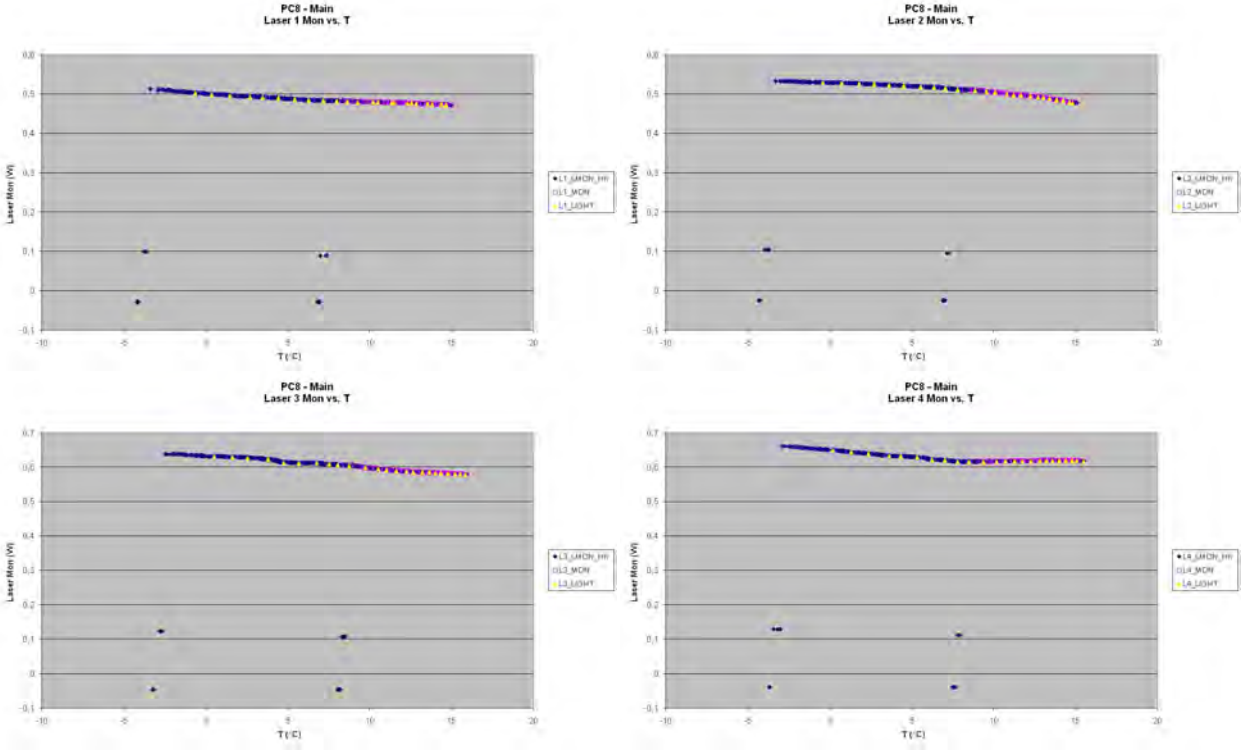
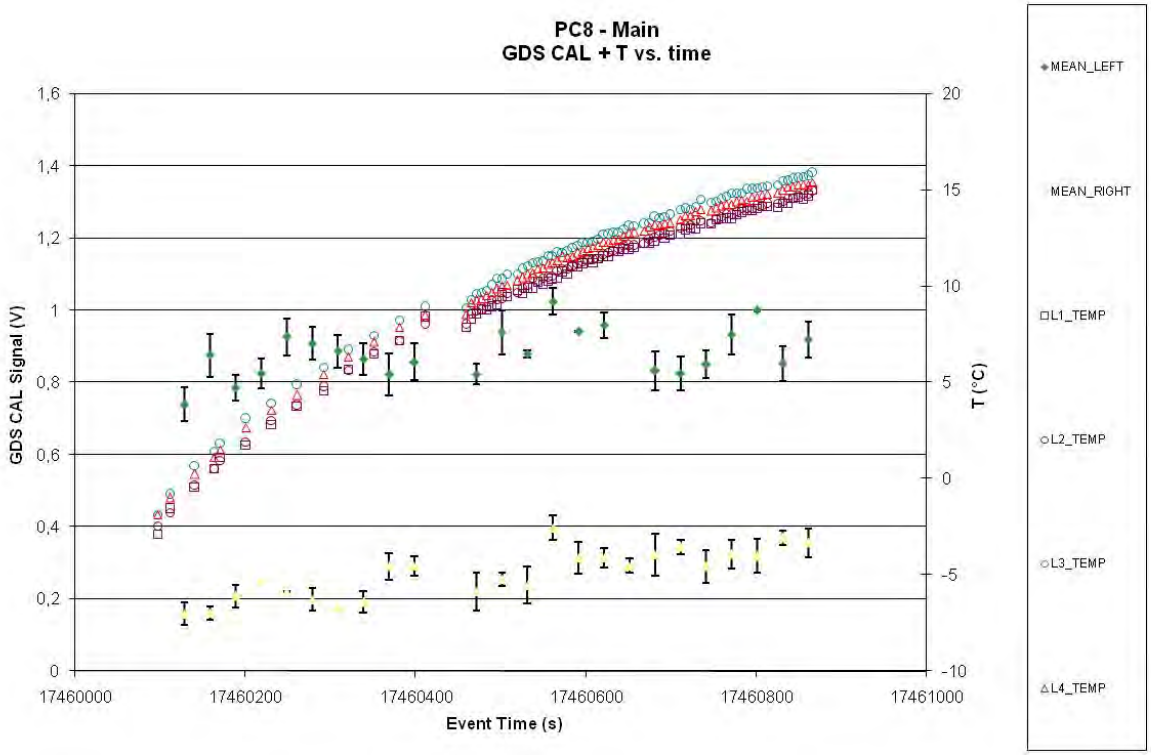


Figure 9.2-6. GDS Calibration values vs. time– Main



9.3 IMPACT SENSOR (IS)

9.3.1 IS – Status

Figure 9.3-1. IS Operation Status vs. time – Main

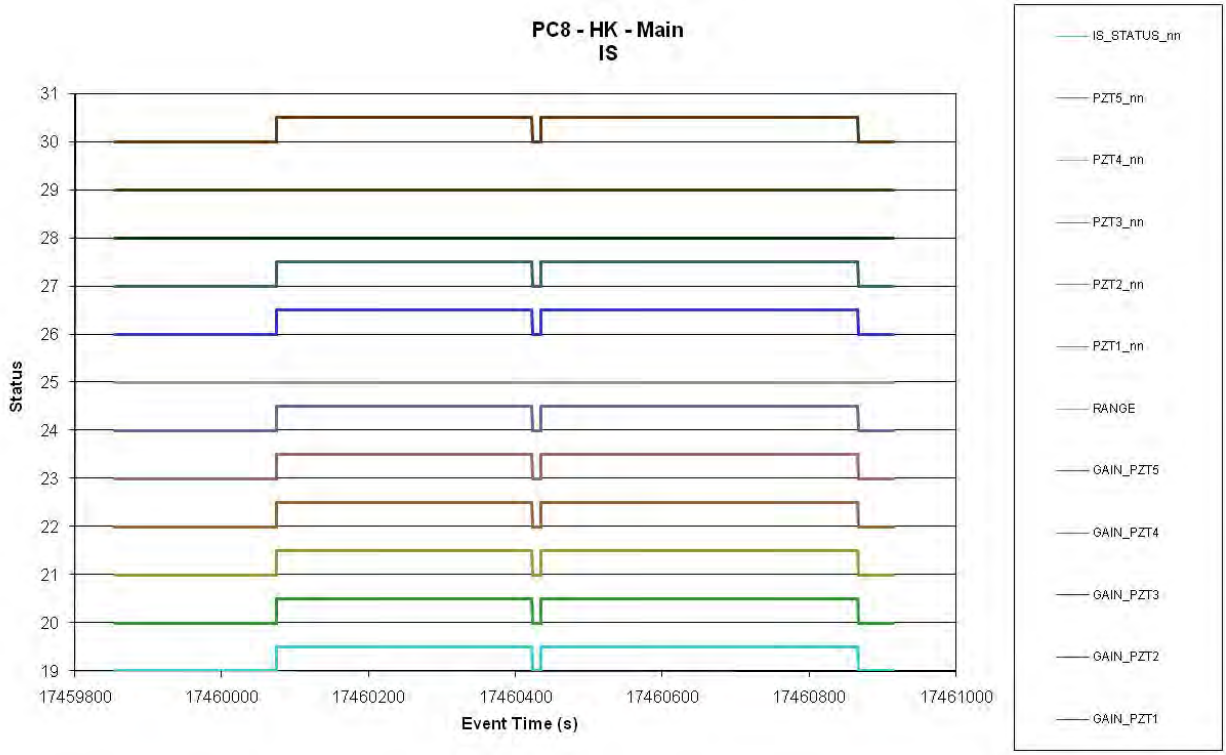


Figure 9.3-2. IS PZT 3 Thresholds change vs. time – Main

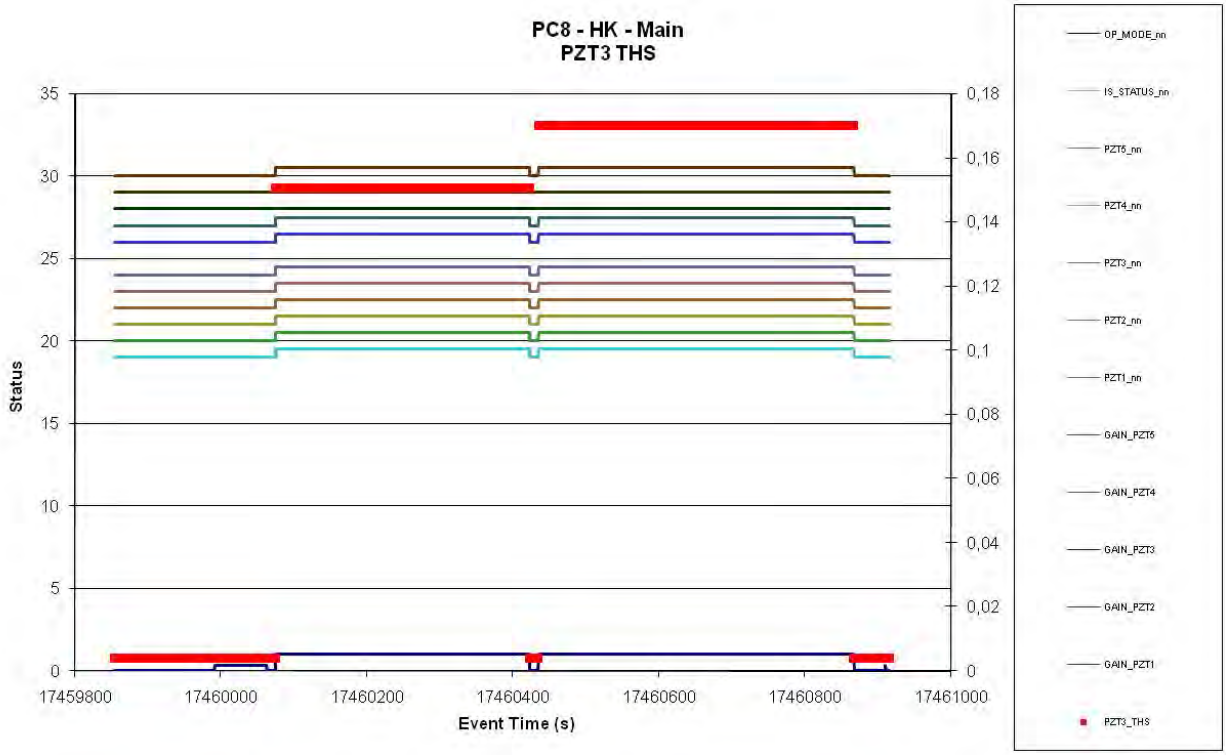


Figure 9.3-3. IS PZT 5 Thresholds change vs. time – Main

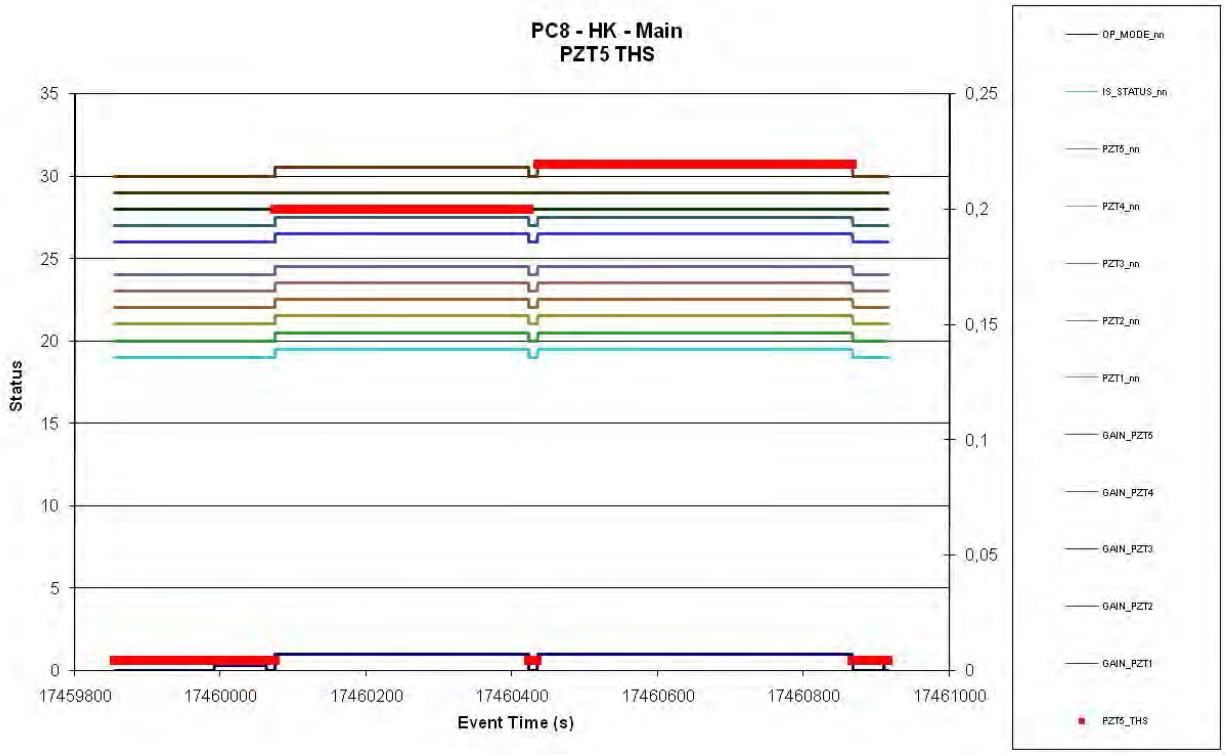
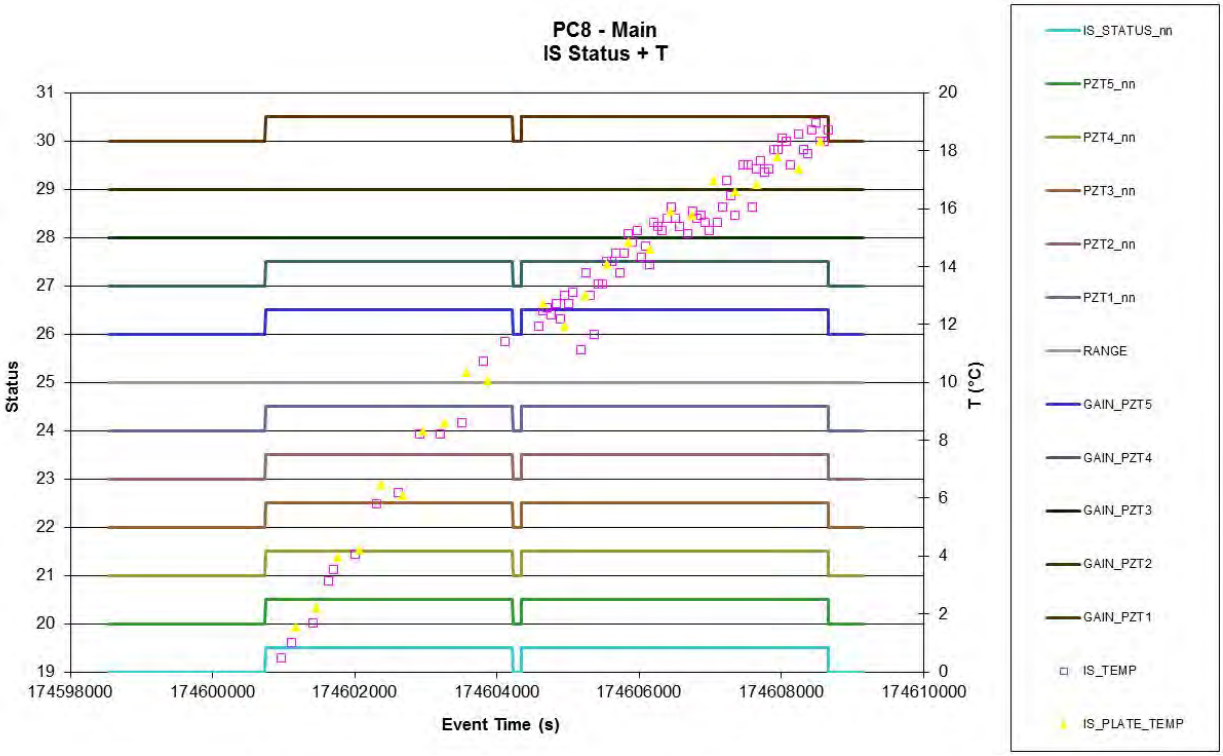


Figure 9.3-4. IS Temperature vs. time (HK, HK-SCI, SCI) – Main



9.3.1.1 CAL

Figure 9.3-5. PZTs Mean and St Dev. CAL vs. time – Main

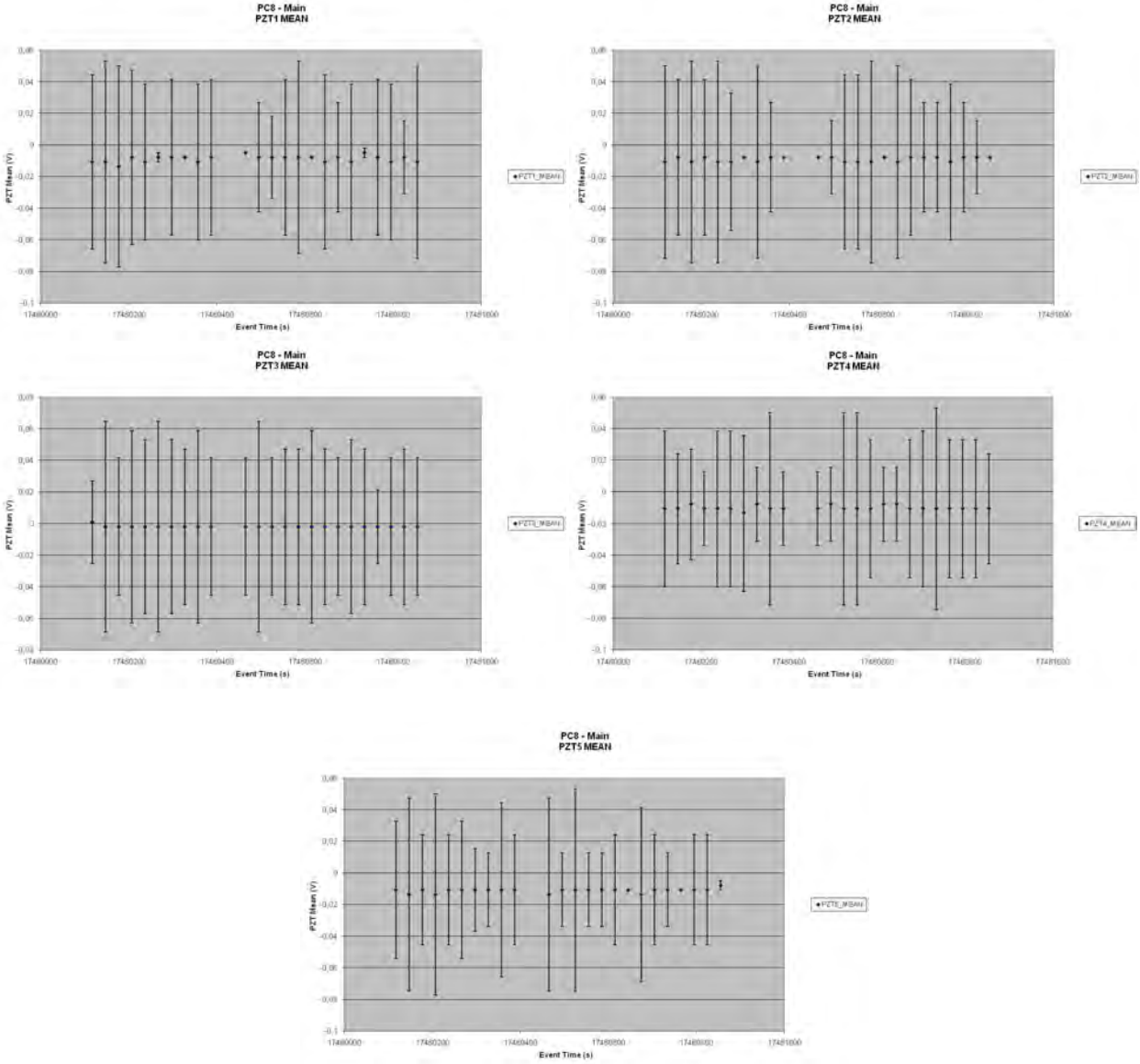


Figure 9.3-6. Reference Voltages for IS calibration vs. time – Main Voltages values for the calibrator don't show level variation

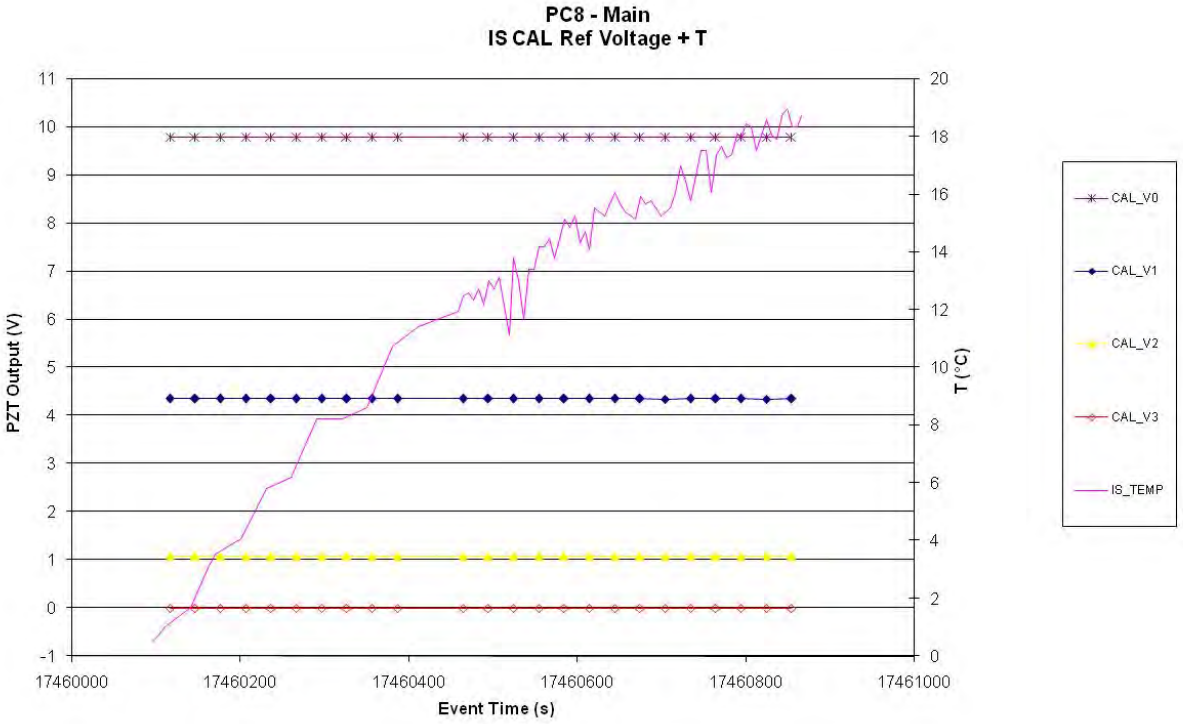
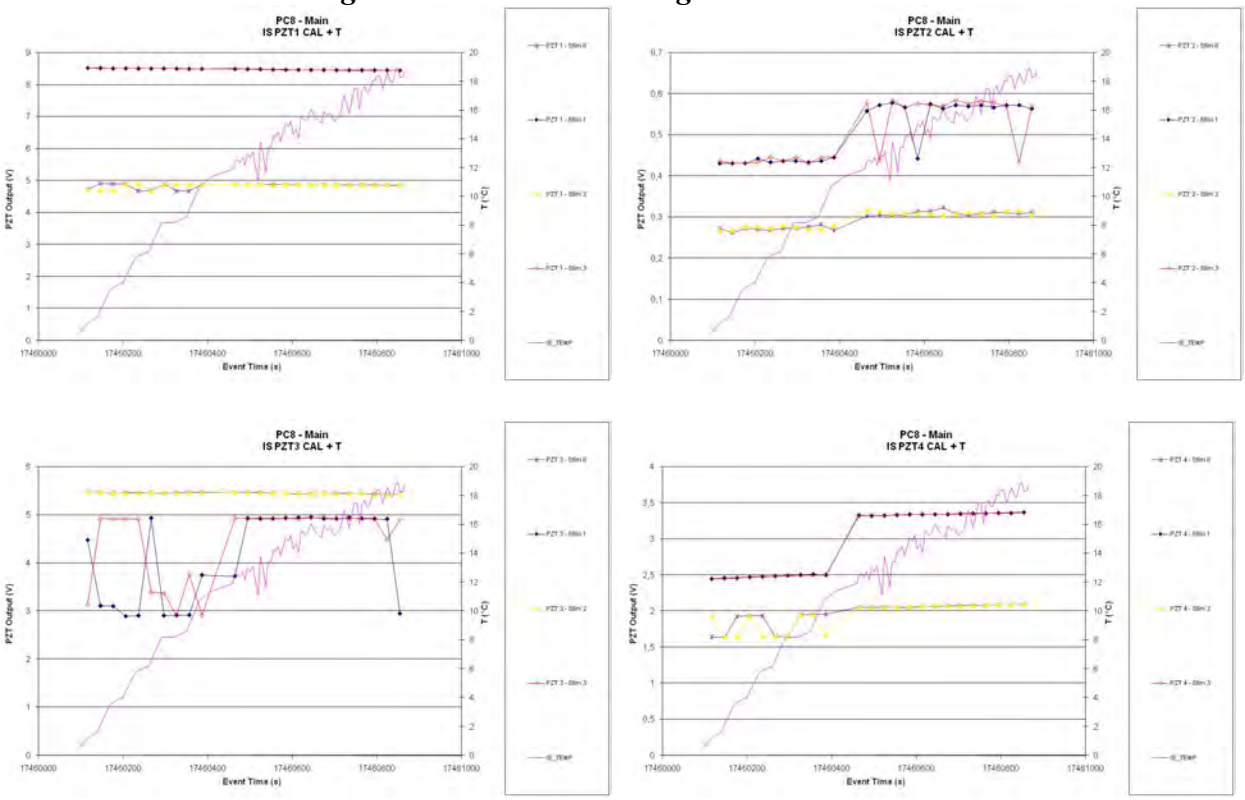
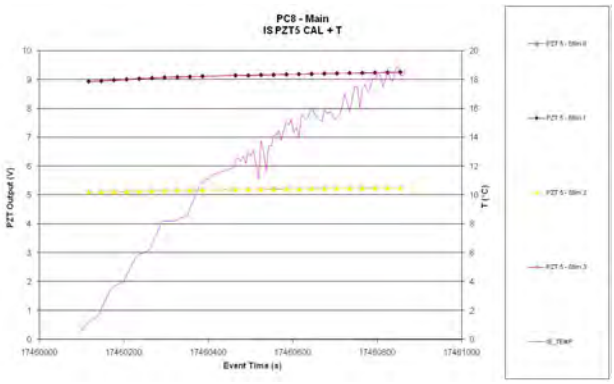


Figure 9.3-7. PZTs CAL Signal vs. time – Main





9.4 MICRO BALANCE SYSTEM (MBS)

9.4.1 MBS – Status

Figure 9.4-1. MBS Operation Status vs. time – Main

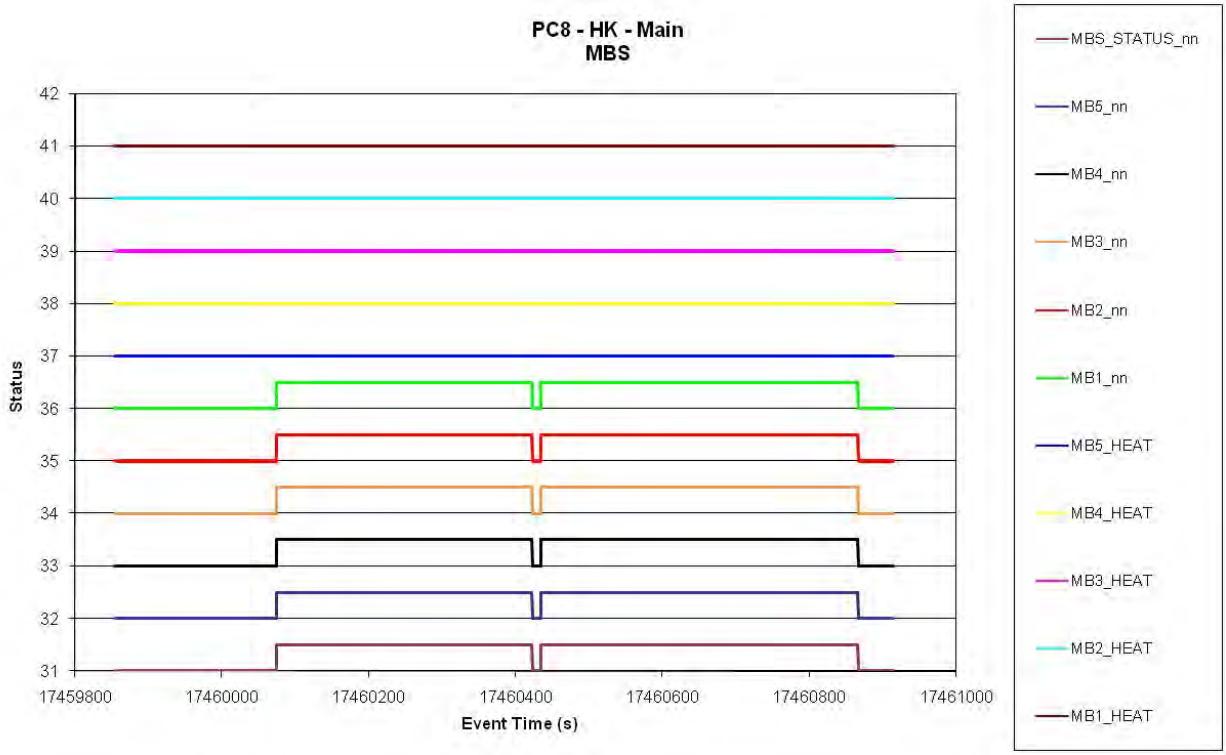
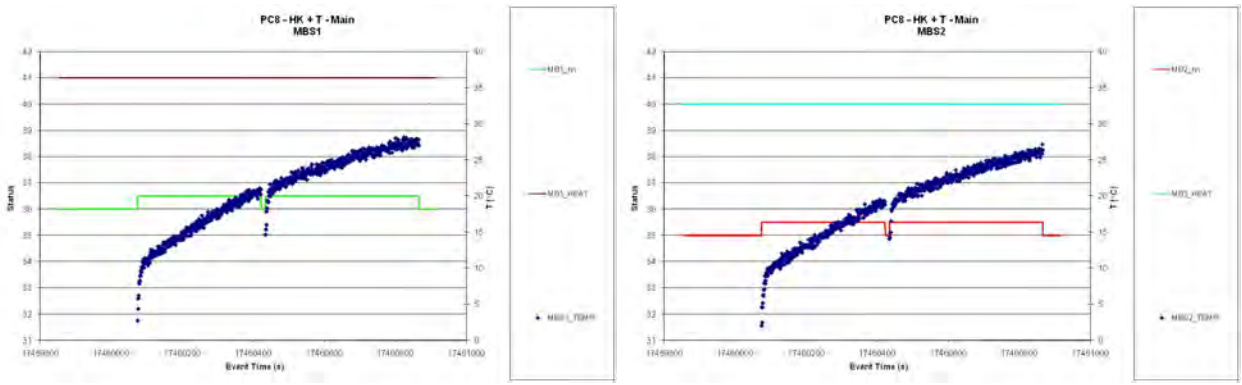


Figure 9.4-2. MBSs Temperature vs. time (SCI) – Main



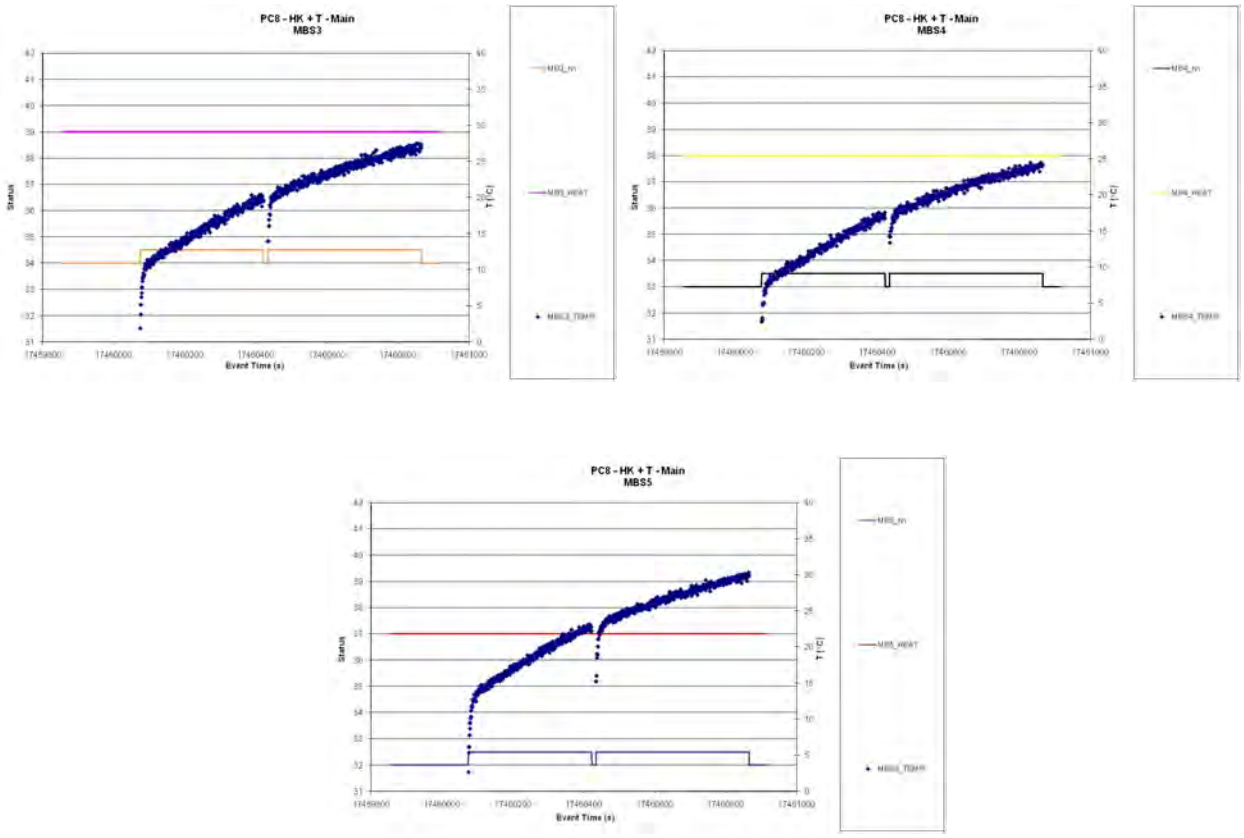
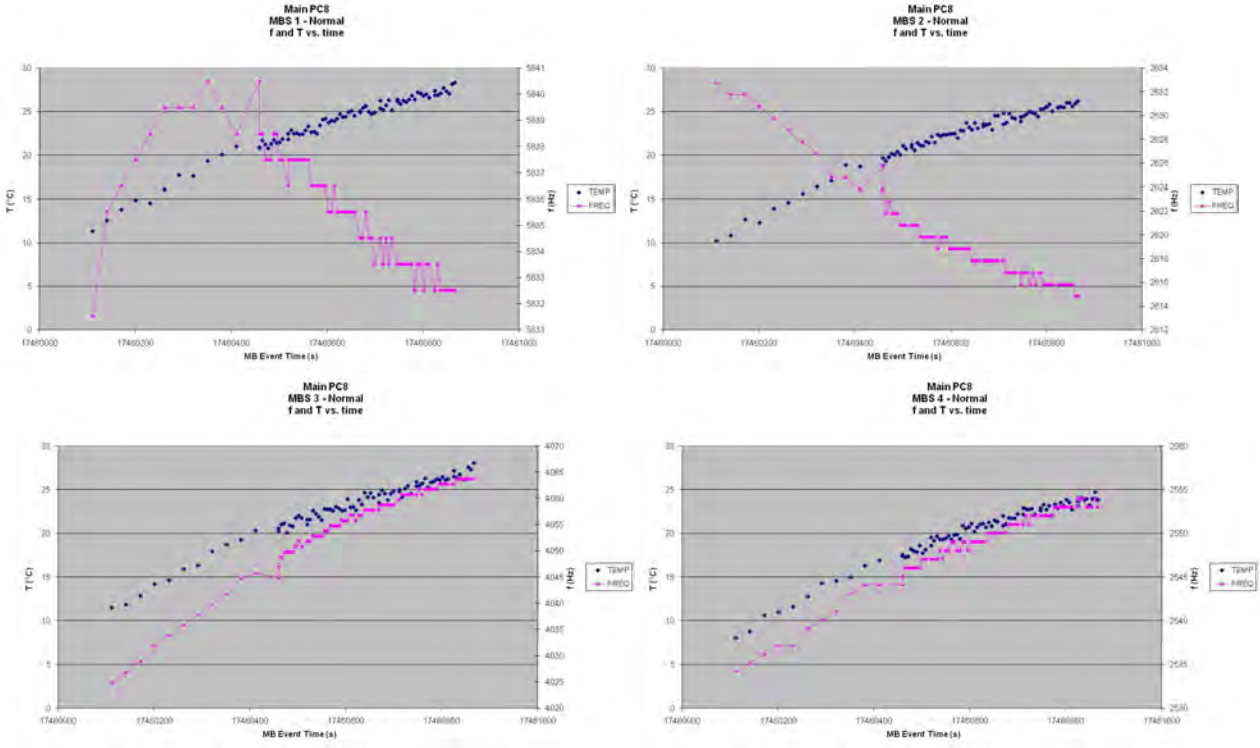
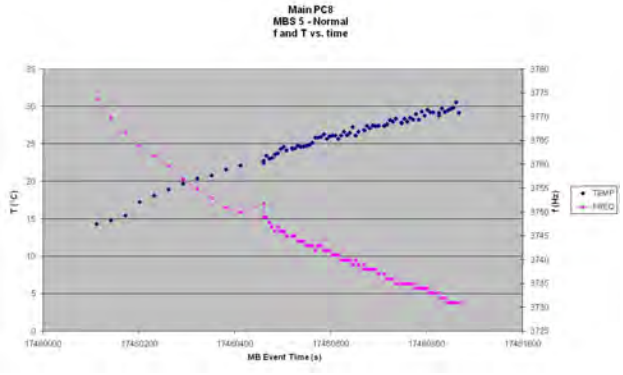


Figure 9.4-3. MBSs Frequency and Temperature vs. time– Main




Main PC8
MBS 5 - Normal
f and T vs. time
T (°C)
f (Hz)
TEMP
FREQ
MB Event Time (s)

10. PC8 DATA ANALYSIS – MAIN INTERFACE (GD_INT)

10.1 GIADA STATUS

Figure 10.1-1. HK Status of GIADA vs. time – Main

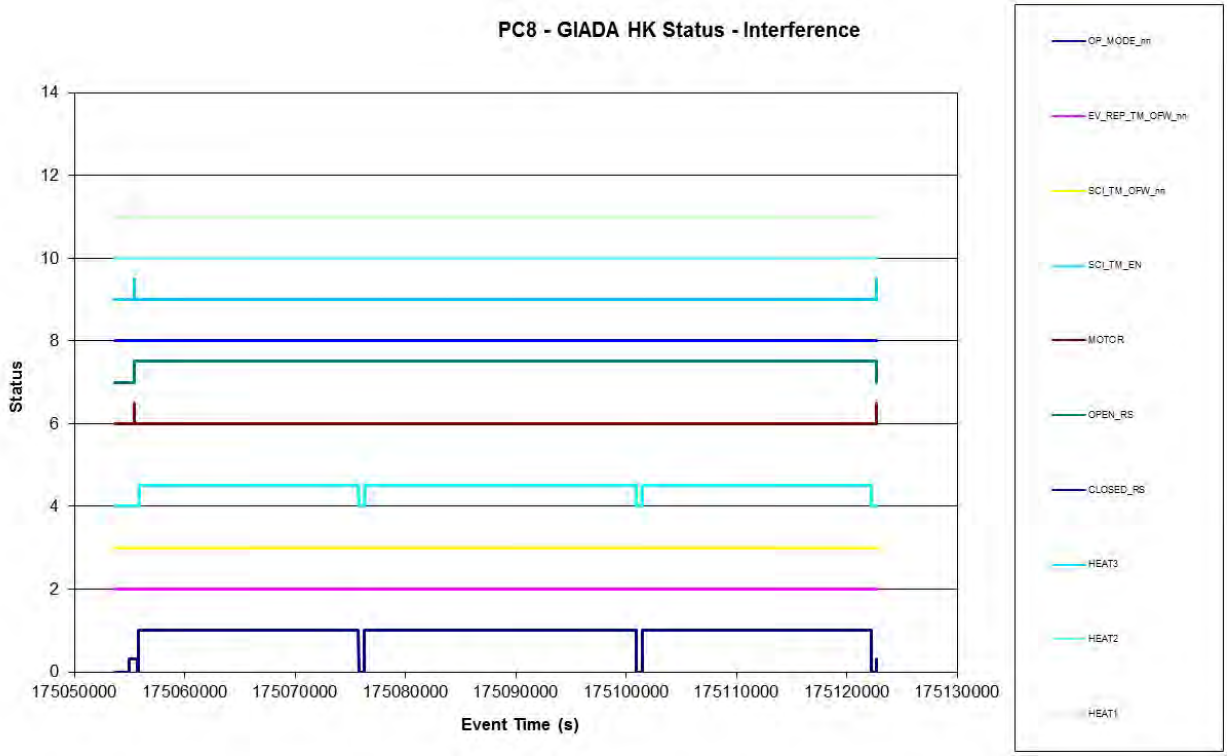


Figure 10.1-2. Power profile and Power Supply temperature vs. time - HK, Main

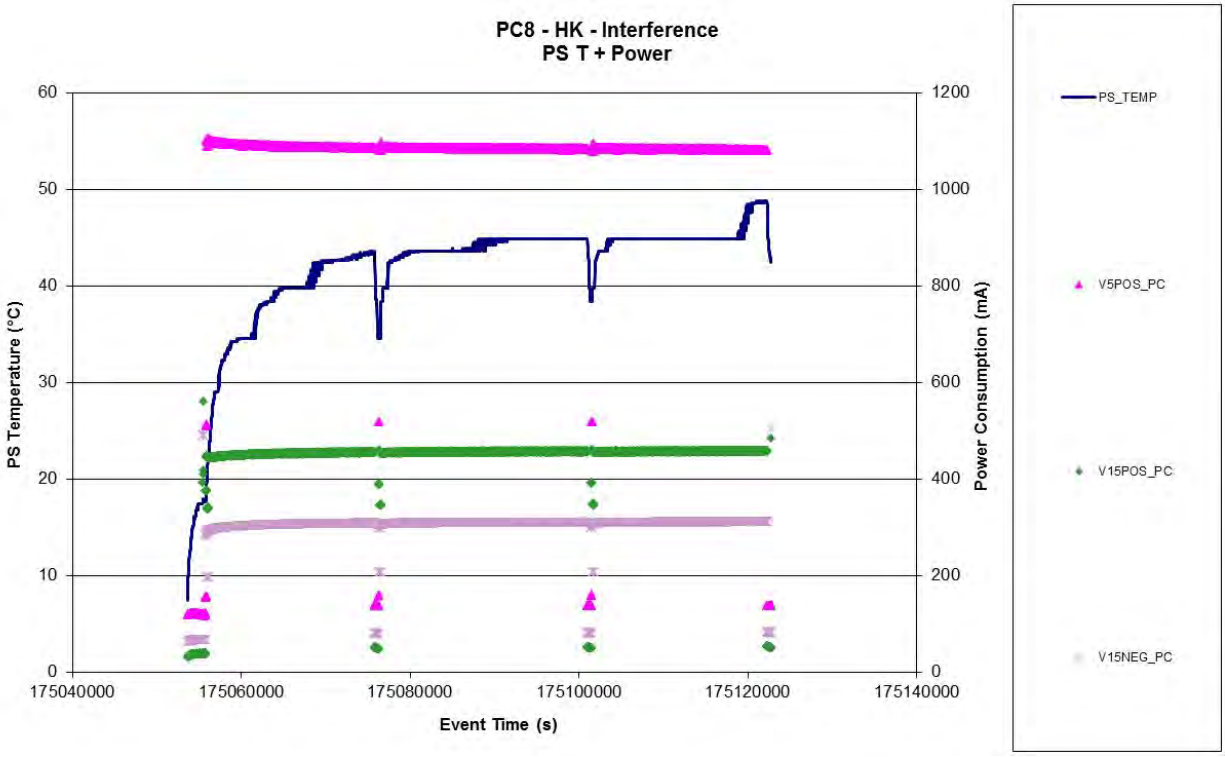


Figure 10.1-3. Evolution of temperatures of system elements vs. time - HK, Main

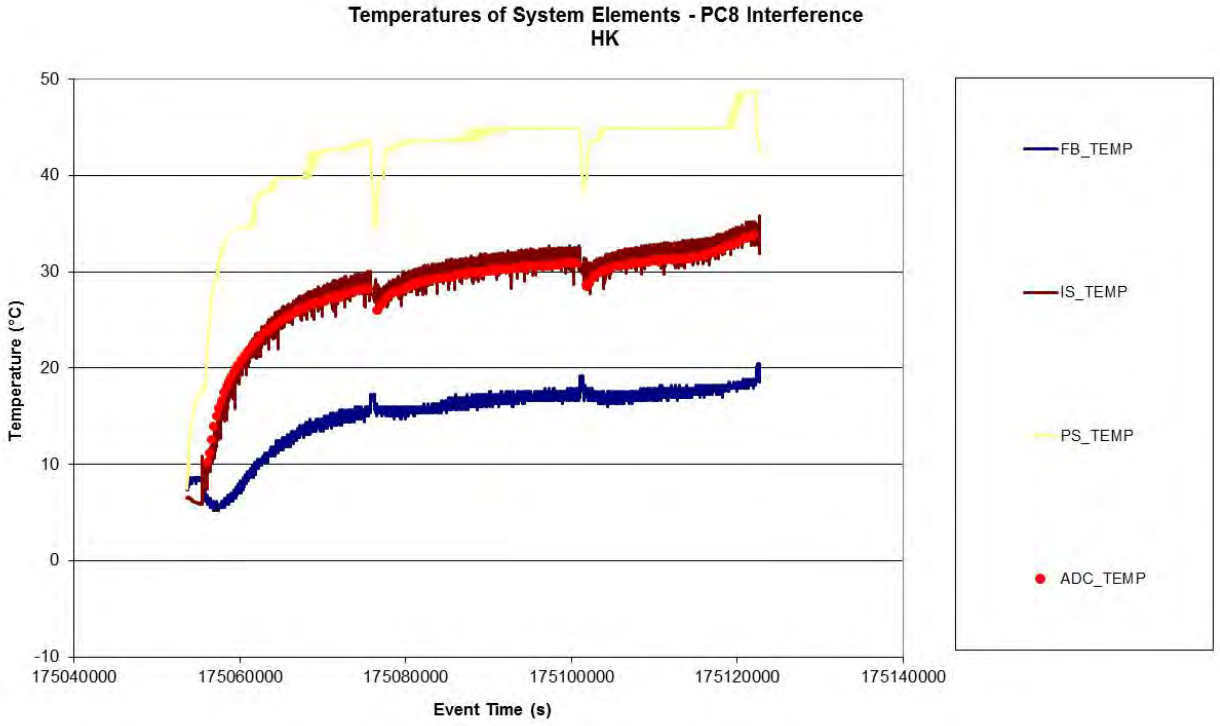


Figure 10.1-4. Evolution of temperatures of sub-systems vs. time with instrument in Normal Mode– Main

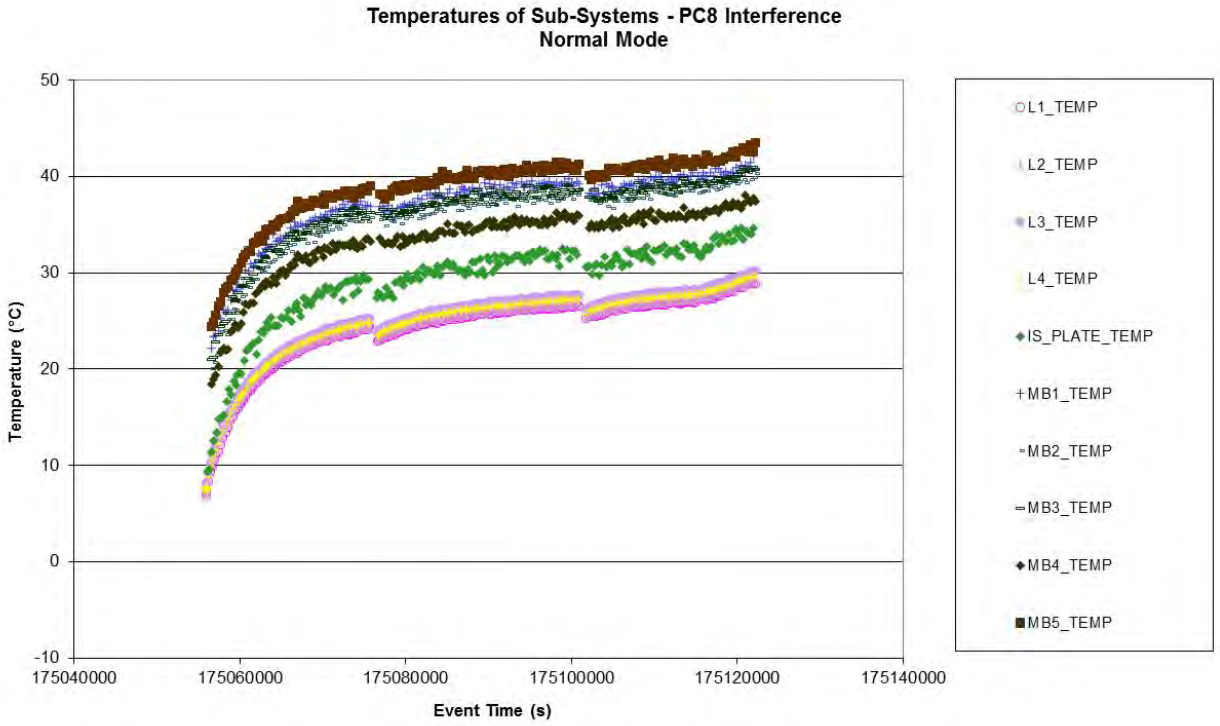


Figure 10.1-5.HK Status versus Temperatures of system elements – Main

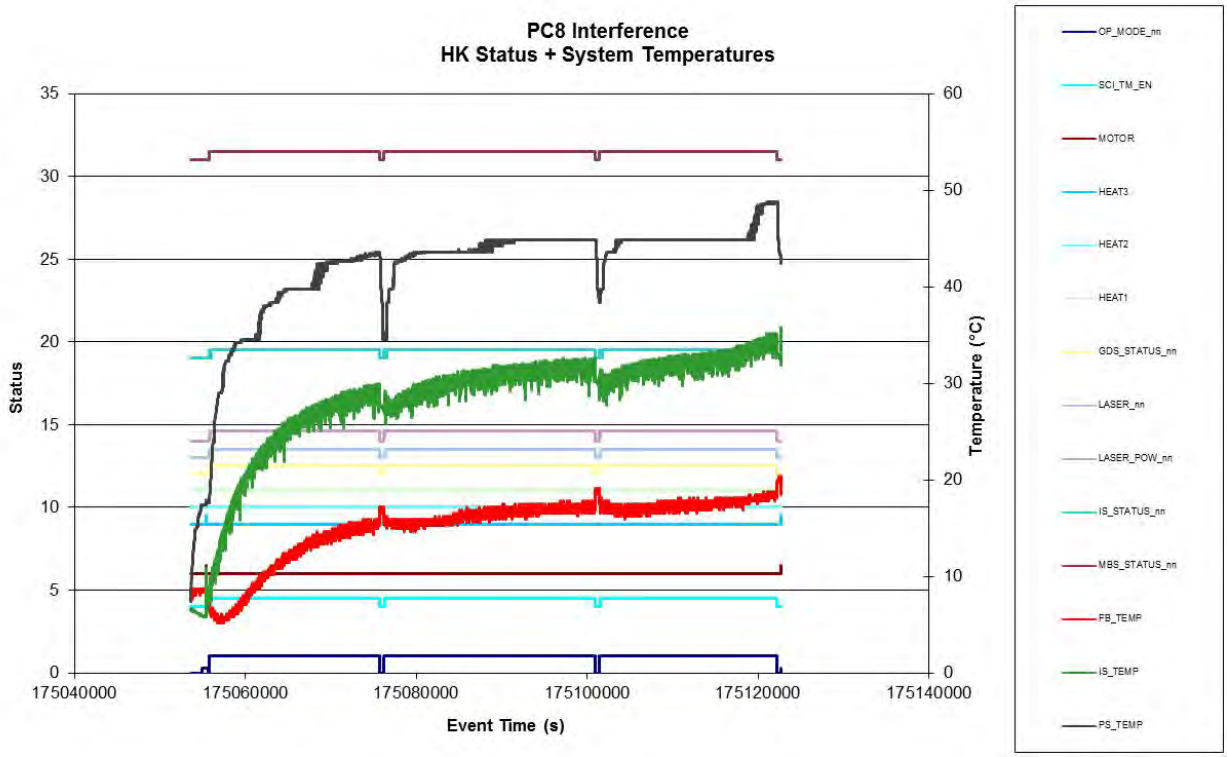
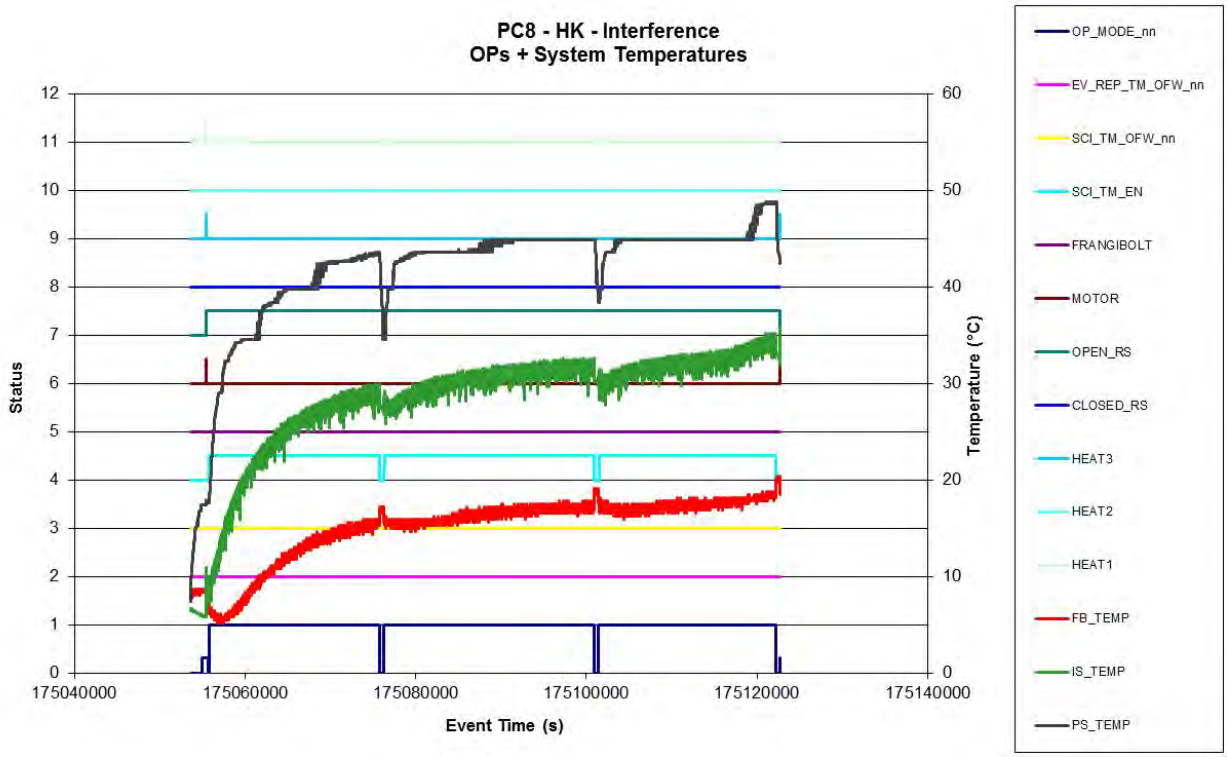


Figure 10.1-6. Operation Status versus Temperatures of system elements – Main
In the diagram are reported operative parameters with relevant variations.



10.2 GRAIN DETECTION SYSTEM (GDS)

10.2.1 GDS – Status

Figure 10.2-1. GDS Operation Status vs. time – Main

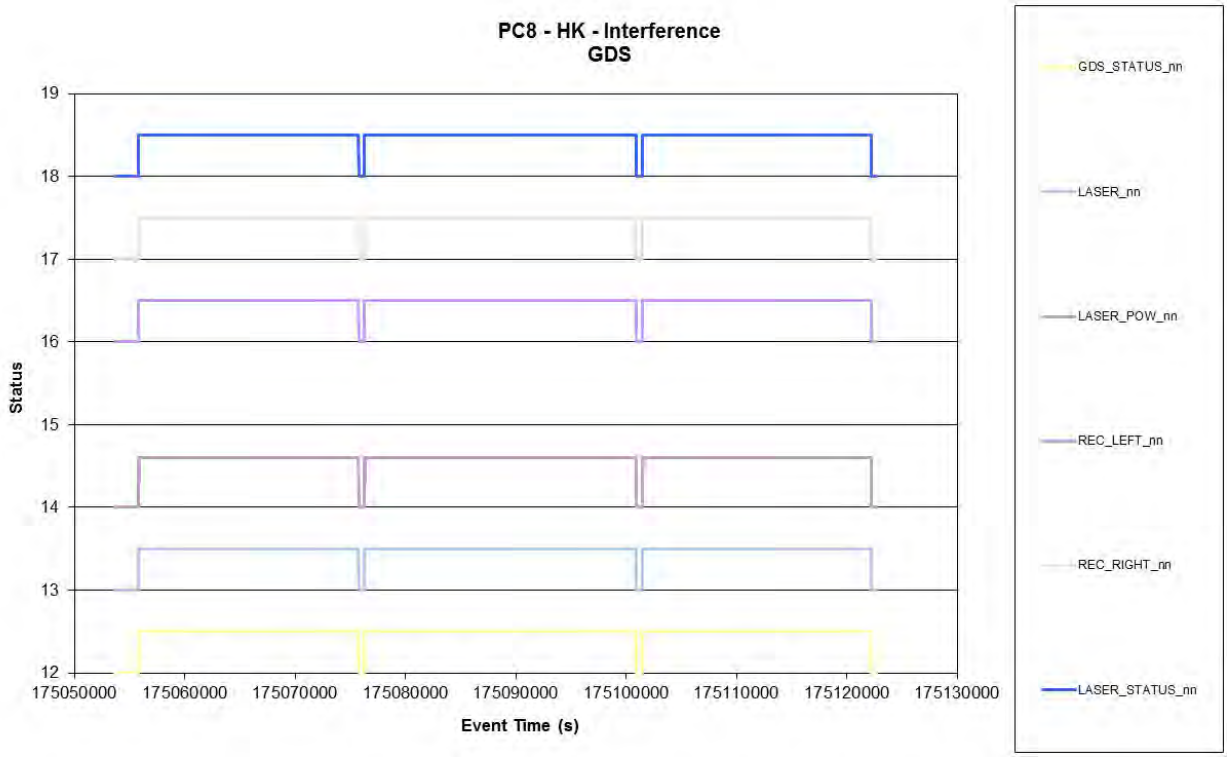


Figure 10.2-2. GDS Thresholds change vs. time – Main

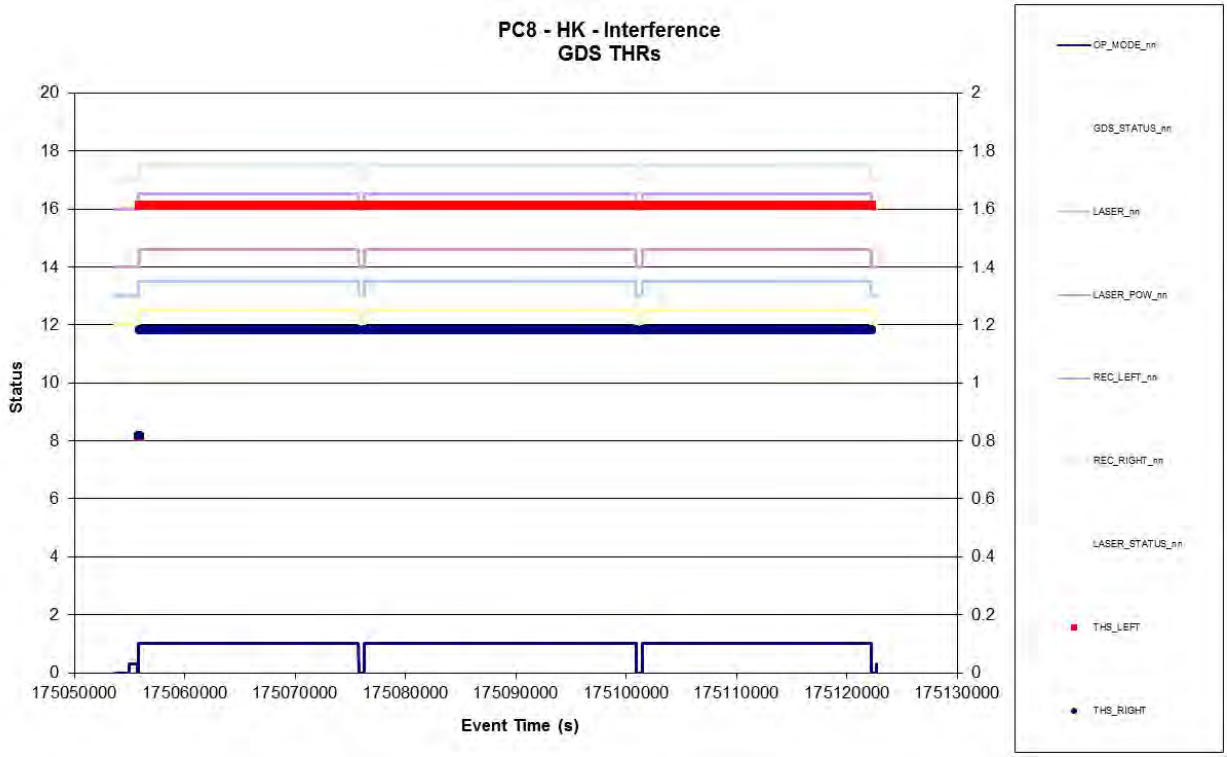


Figure 10.2-3. GDS Laser Temperatures vs. time– Main

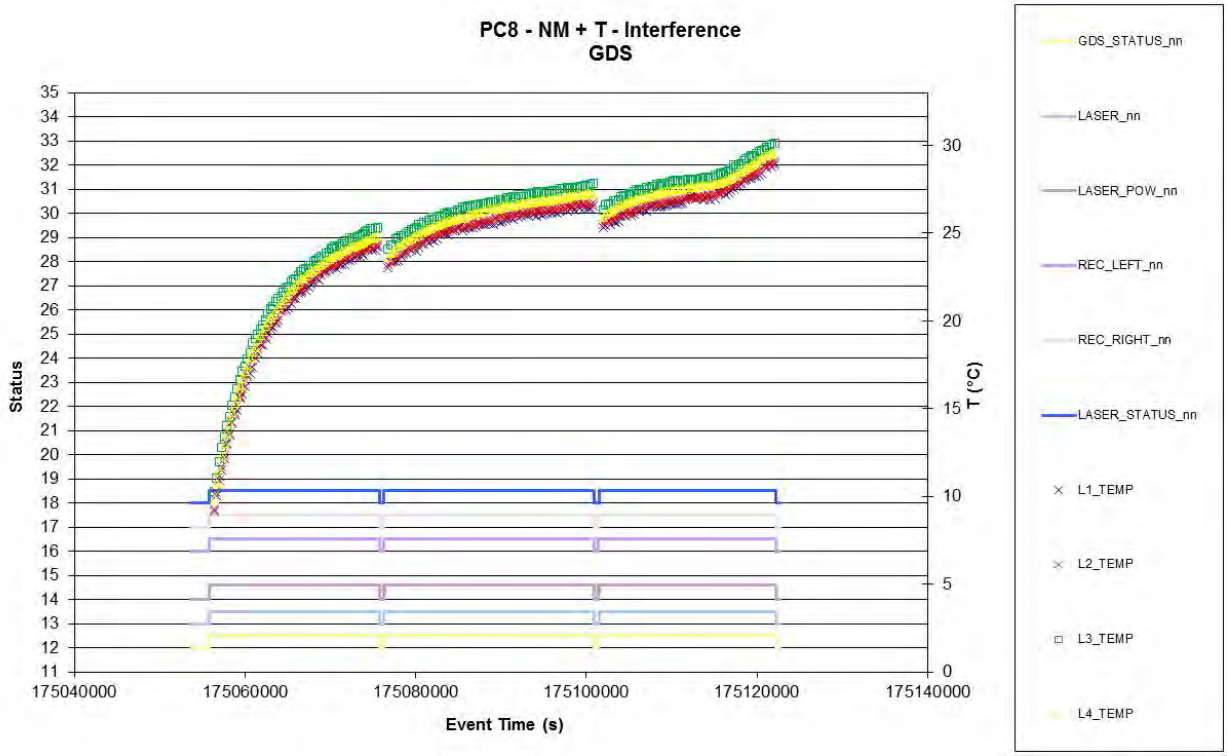


Figure 10.2-4. GDS Laser Monitor vs. time– Main

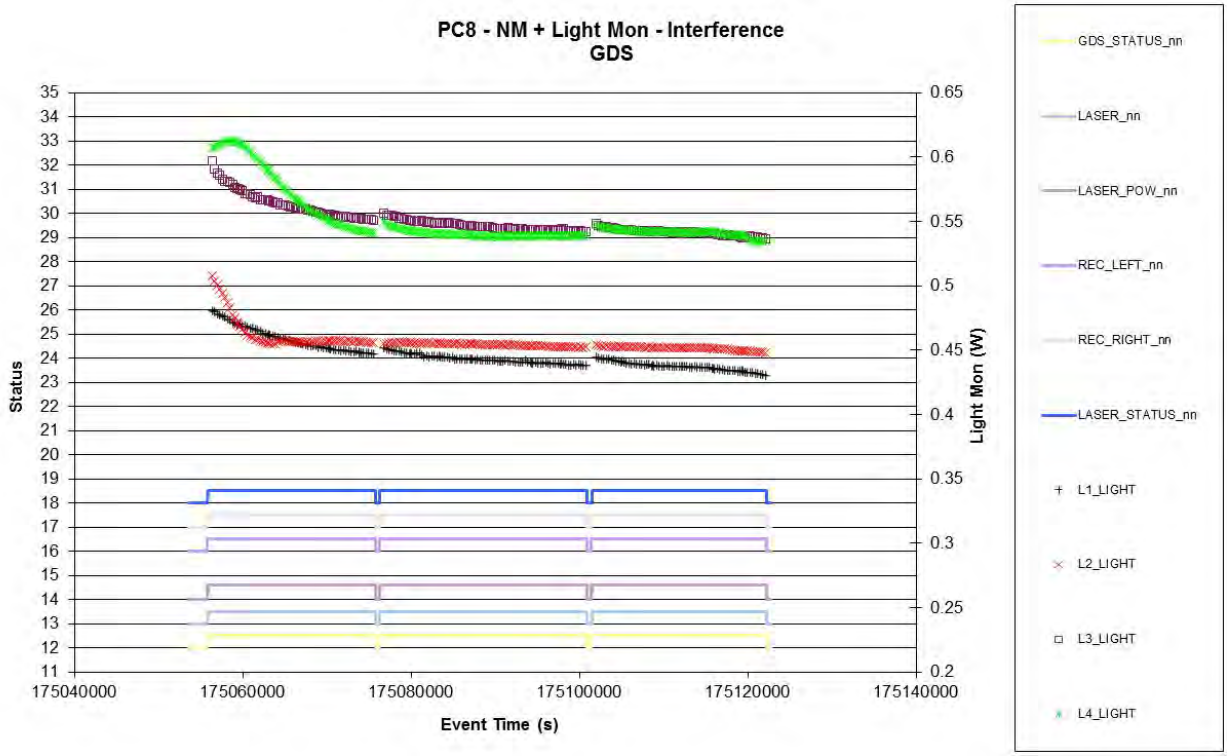


Figure 10.2-5. Lasers Light Monitor versus Temperature (HK, HK-SCI, SCI) – Main

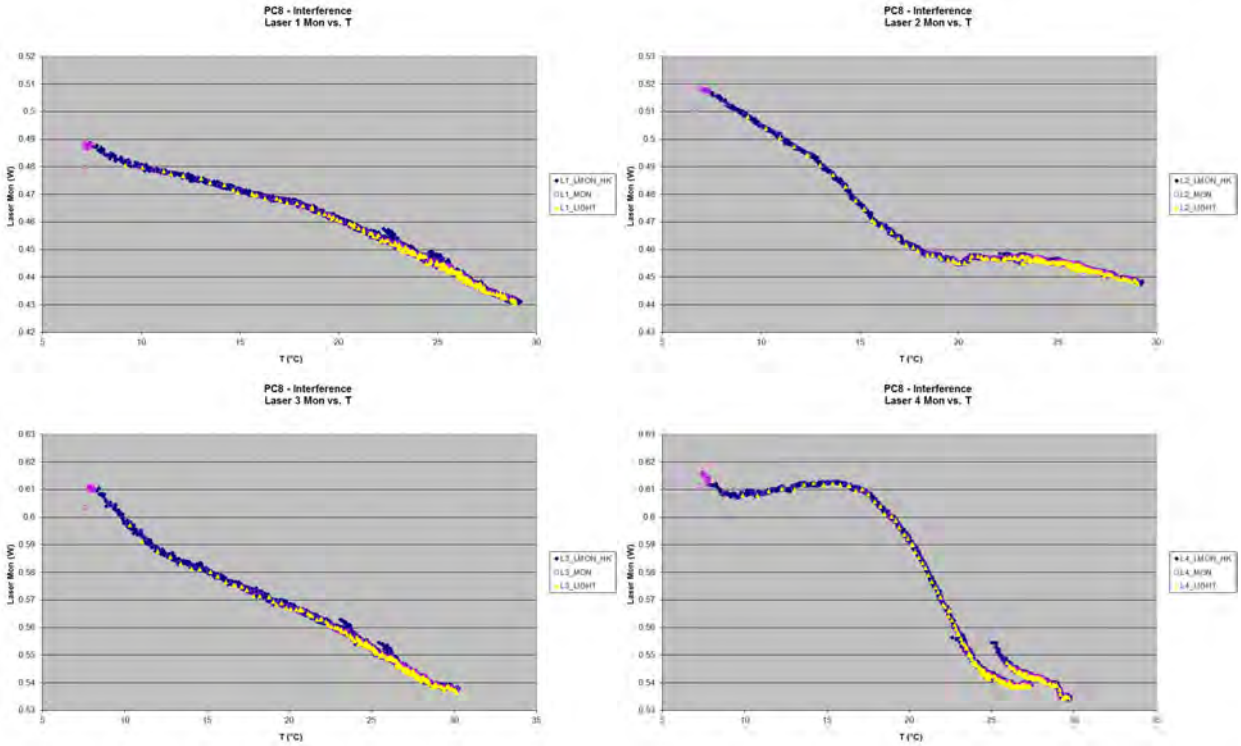
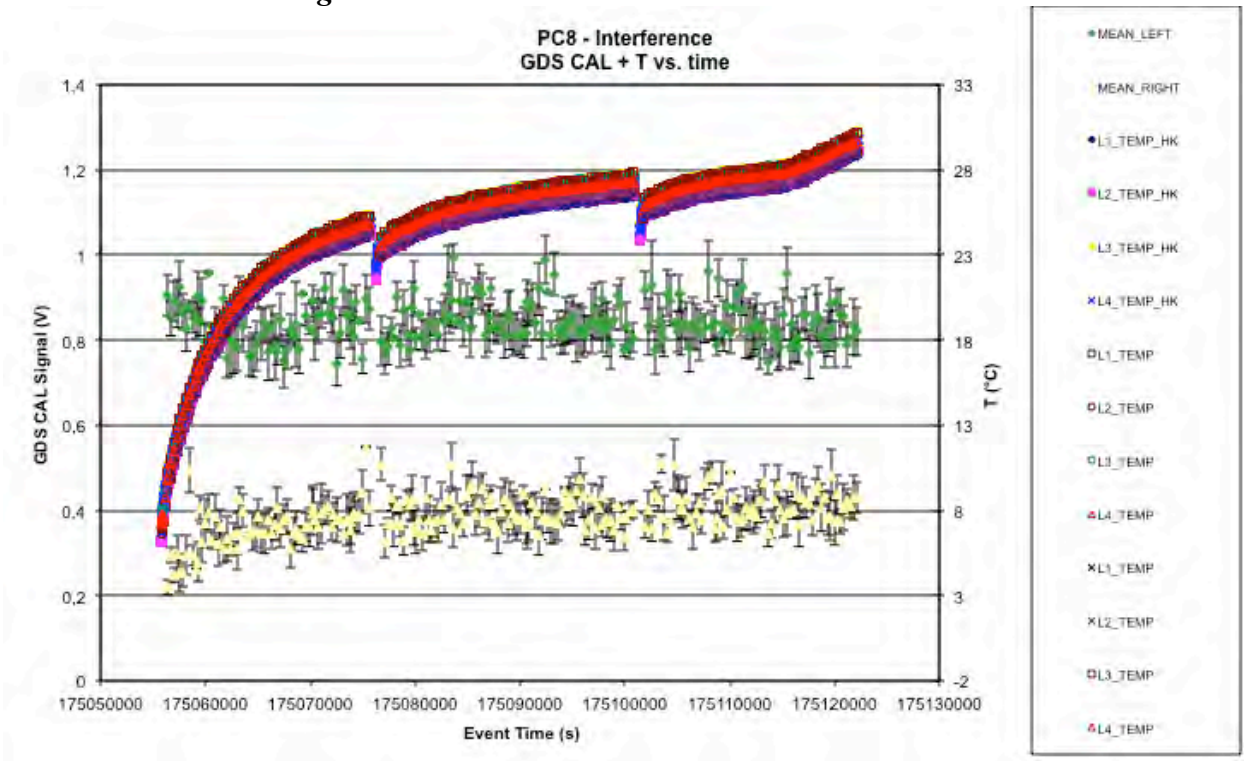


Figure 10.2-6. GDS Calibration values vs. time– Main



10.3 IMPACT SENSOR (IS)

10.3.1 IS – Status

Figure 10.3-1. IS Operation Status vs. time – Main

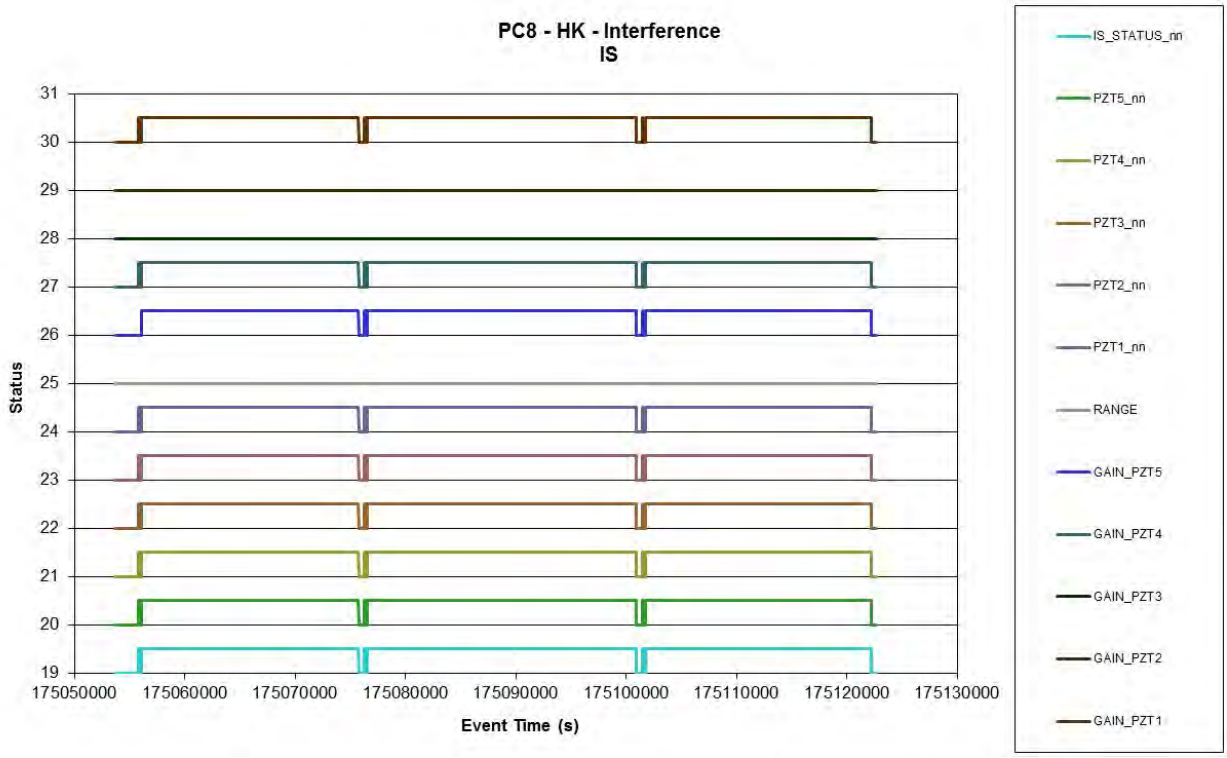


Figure 10.3-2. IS PZT 3 Thresholds change vs. time – Main

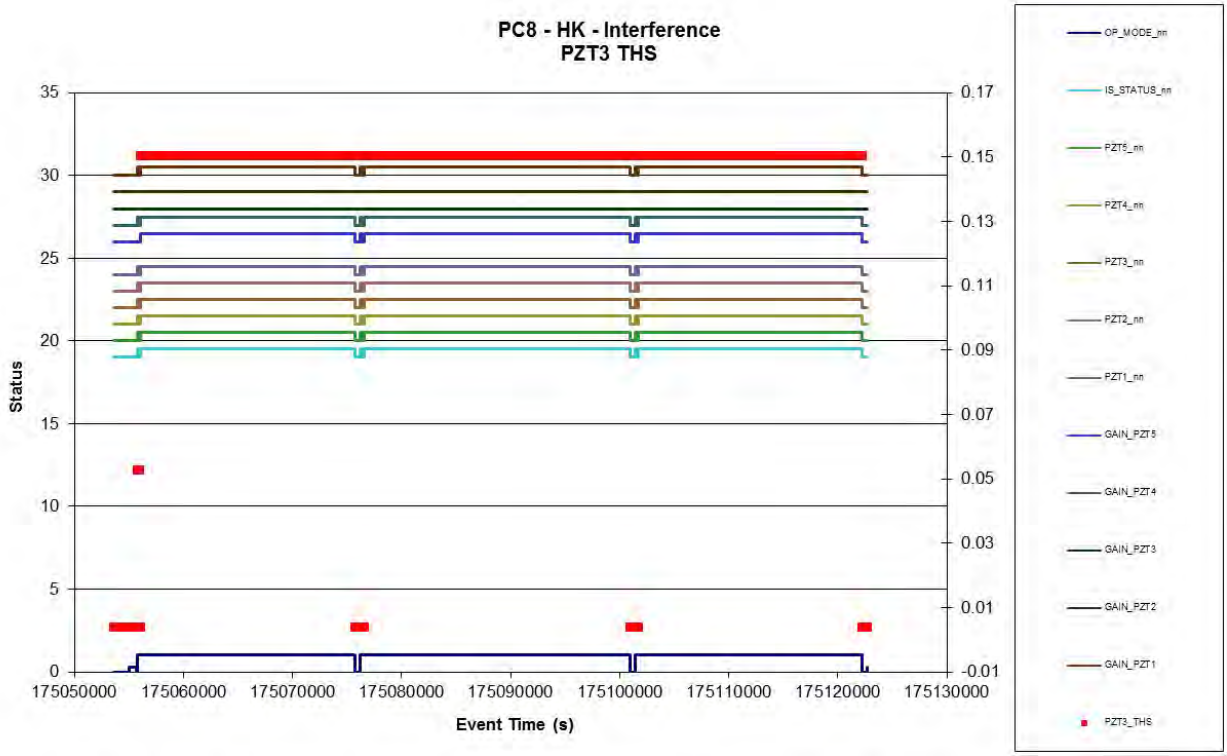


Figure 10.3-3. IS PZT 5 Thresholds change vs. time – Main

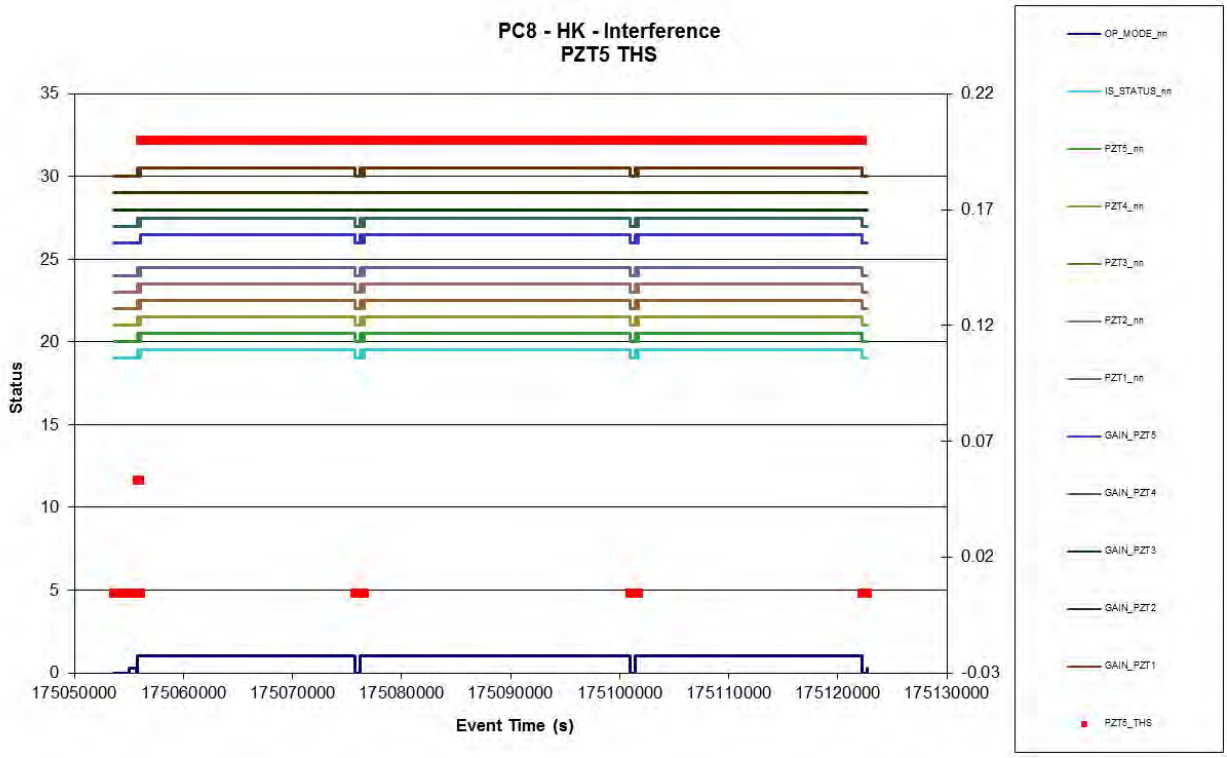
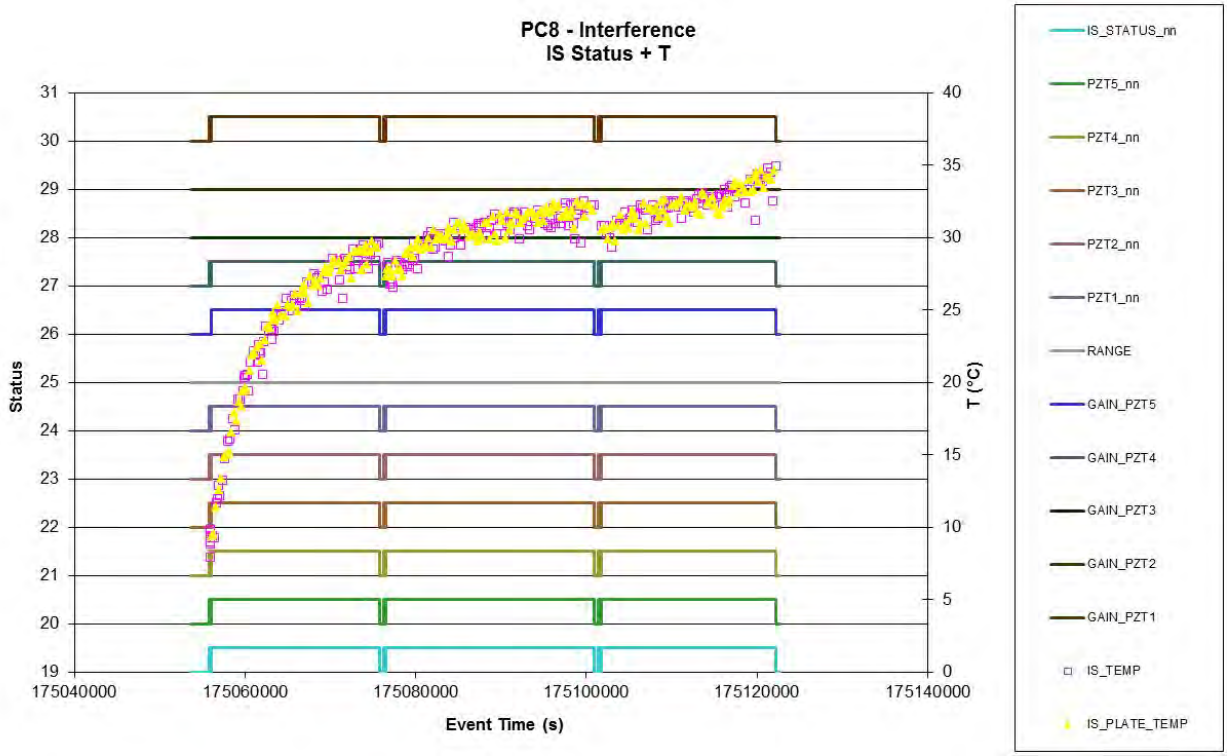


Figure 10.3-4. IS Temperature vs. time (HK, HK-SCI, SCI) – Main



10.3.1.1 CAL

Figure 10.3-5. PZTs Mean and St Dev. CAL vs. time – Main

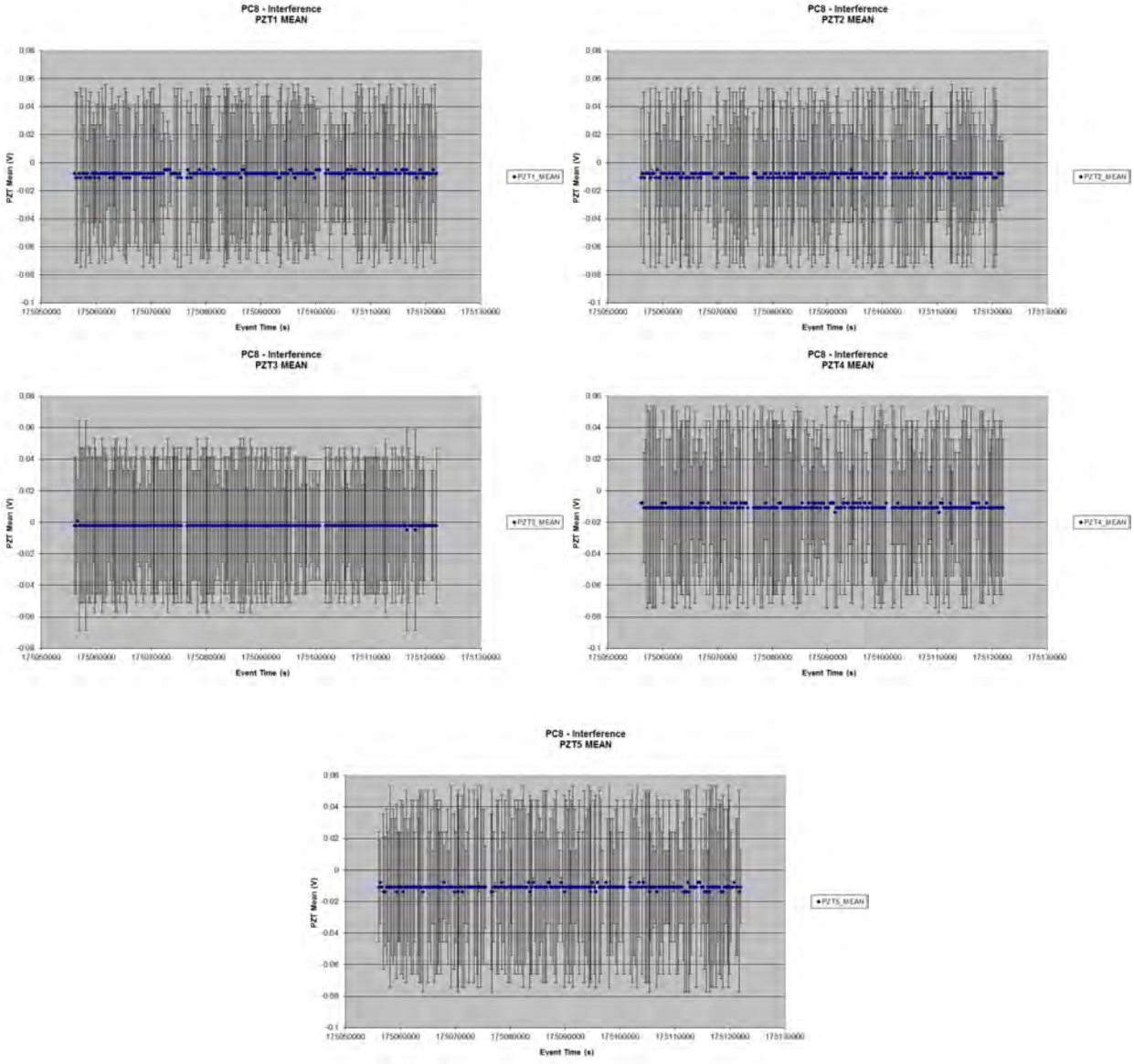


Figure 10.3-6. Reference Voltages for IS calibration vs. time – Main Voltages values for the calibrator don't show level variation

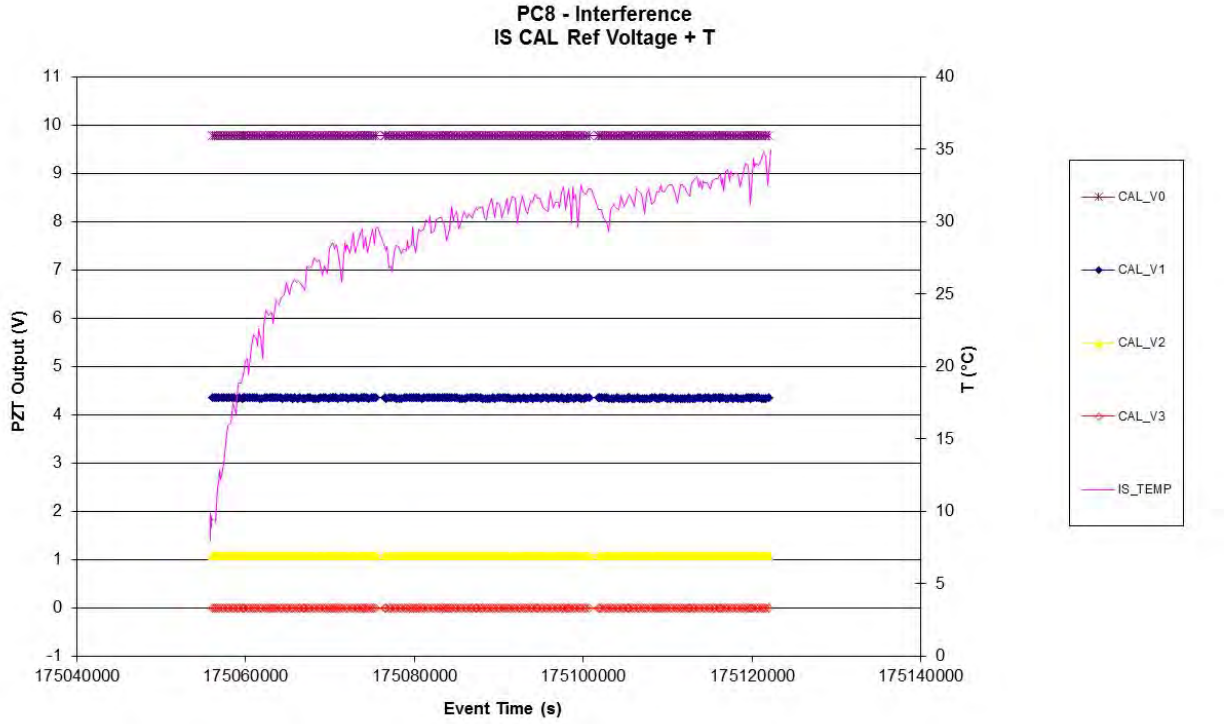
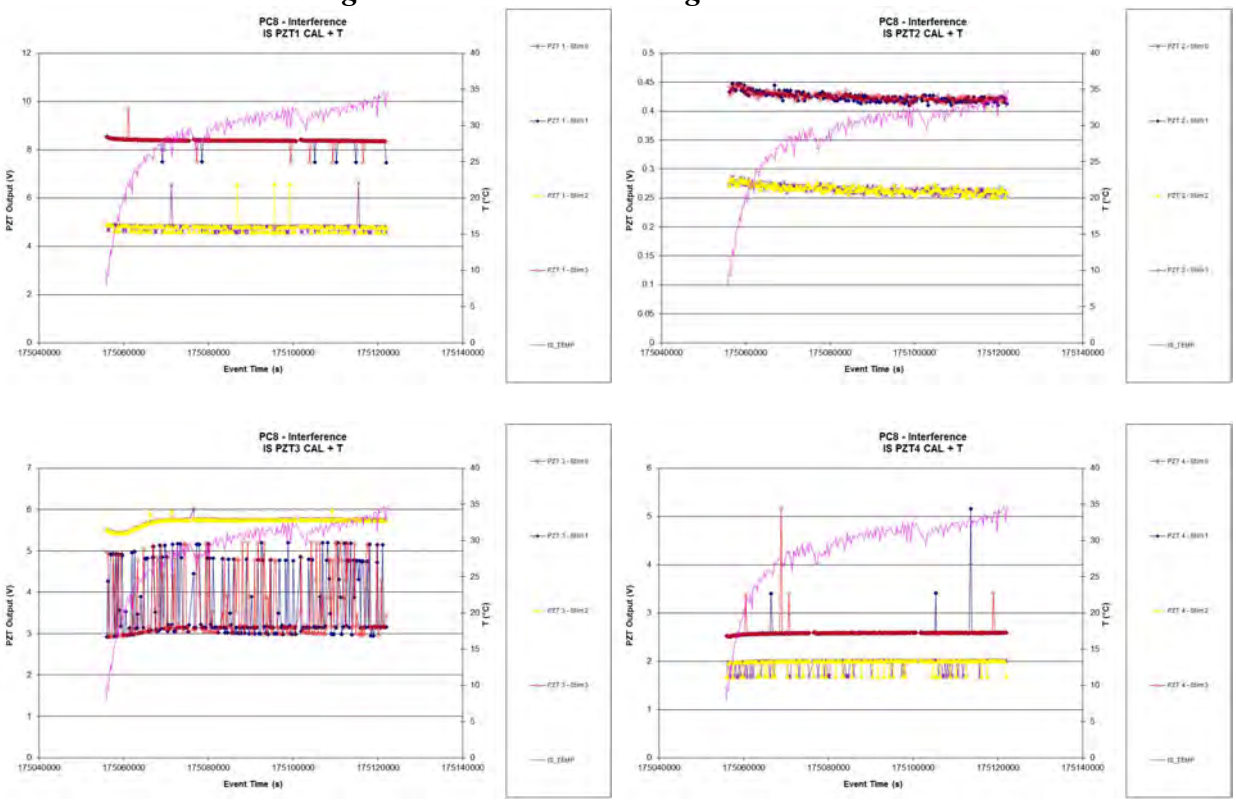
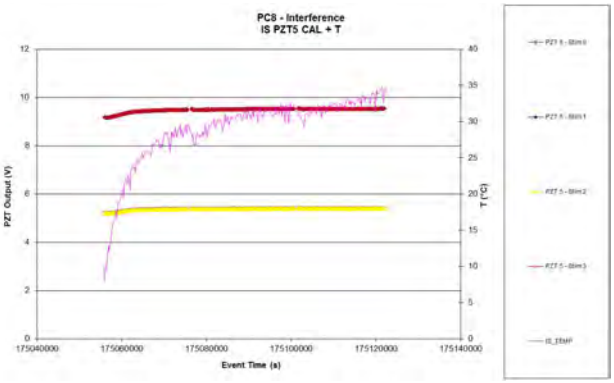


Figure 10.3-7.PZTs CAL Signal vs. time – Main





10.4 MICRO BALANCE SYSTEM (MBS)

10.4.1 MBS – Status

Figure 10.4-1. MBS Operation Status vs. time – Main

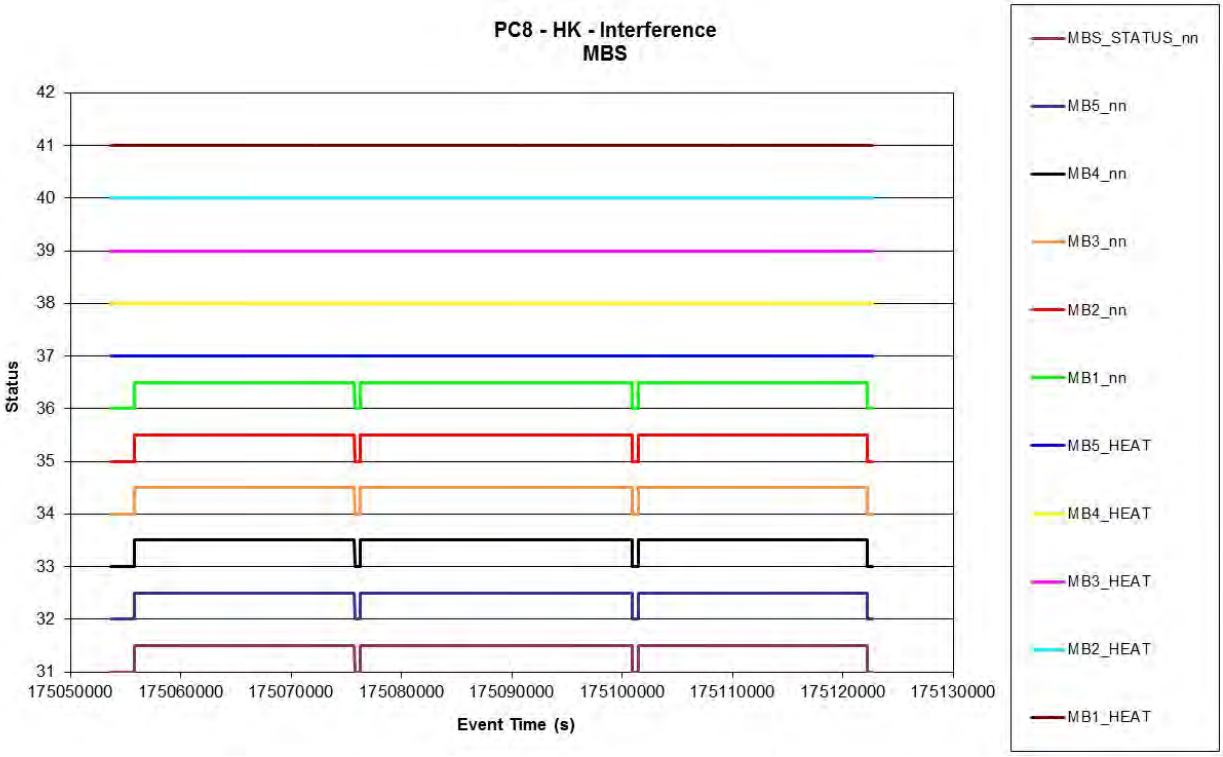
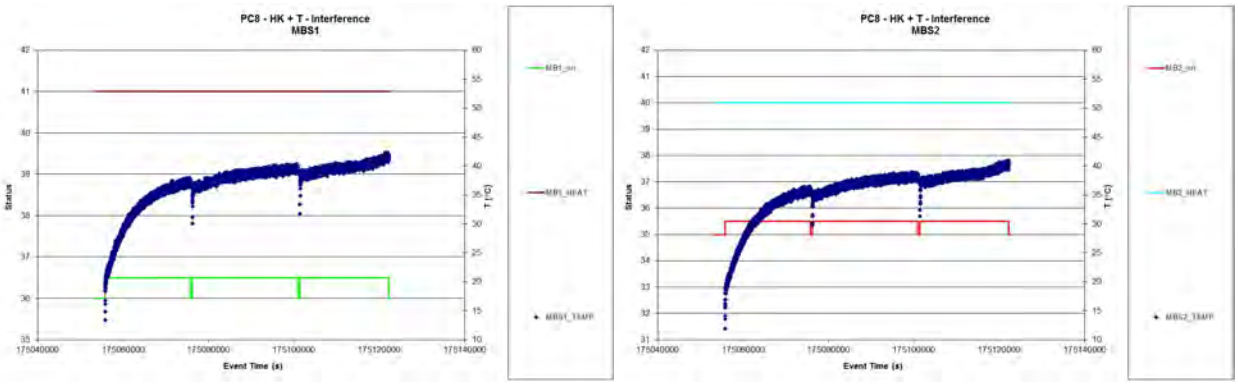


Figure 10.4-2.MBSs Temperature vs. time (SCI) – Main



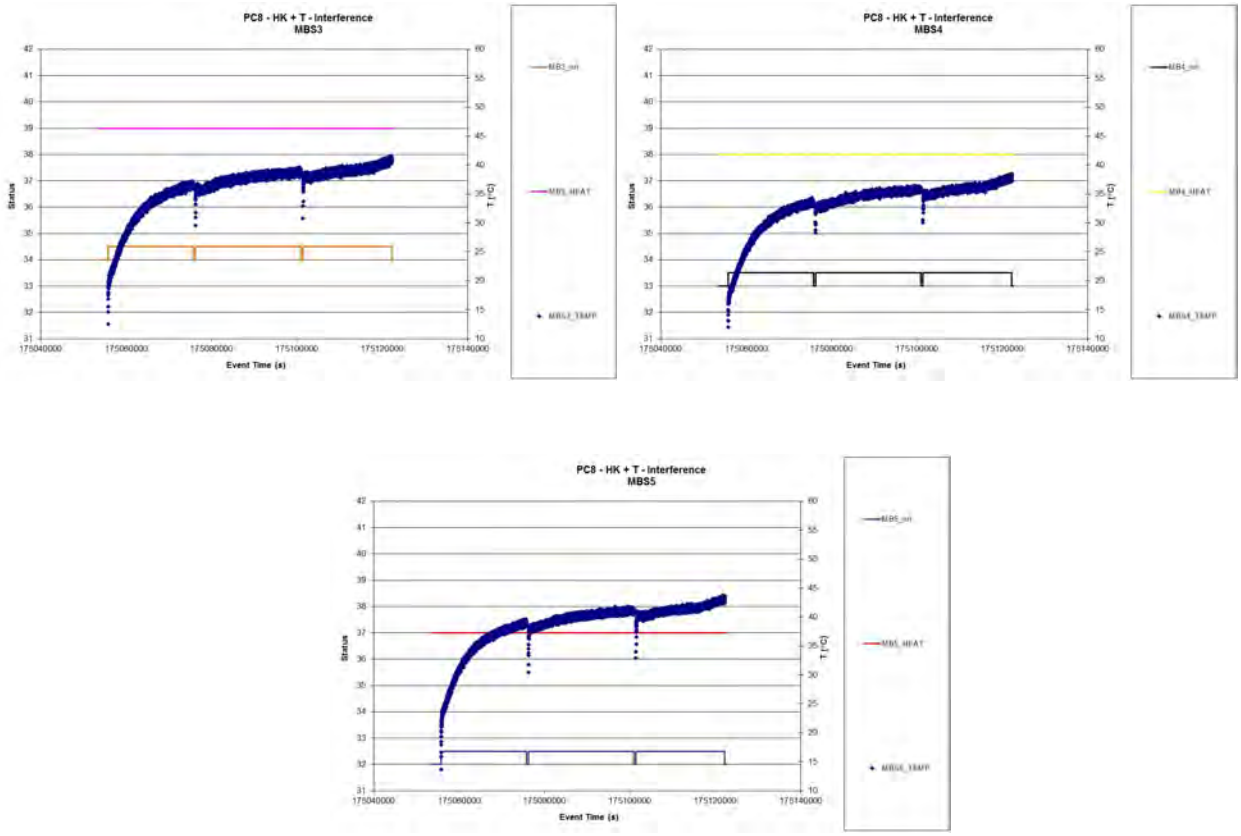
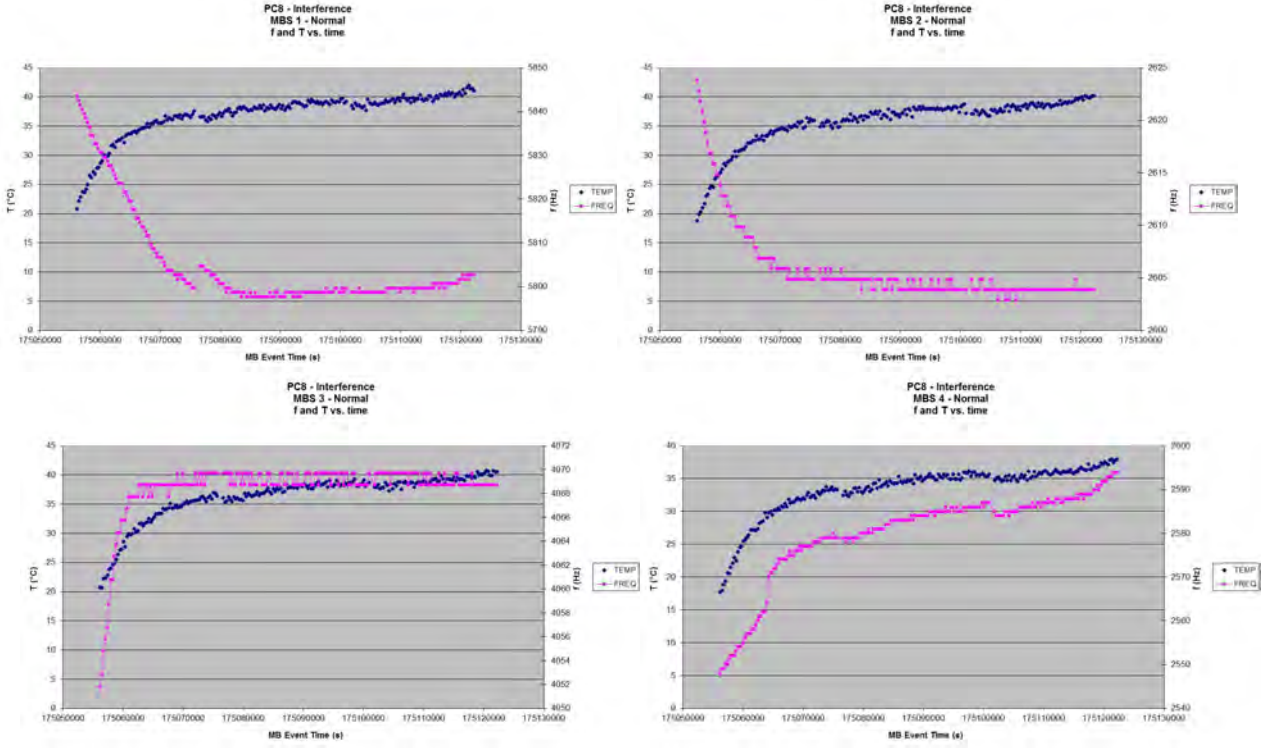
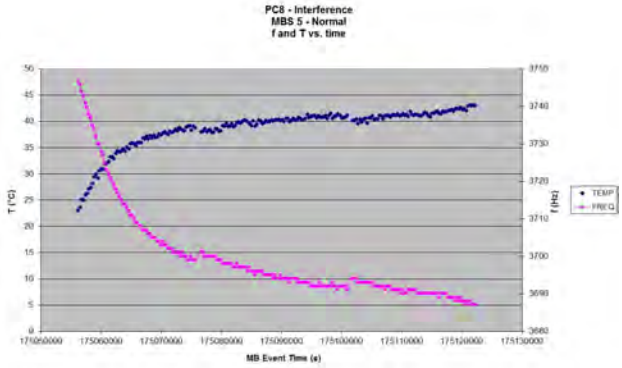


Figure 10.4-3. MBSs Frequency and Temperature vs. time– Main




PC6 - Interference
MBS 5 - Normal
f and T vs. time
T (°C)
f (Hz)
TEMP
FREQ
MB Event Time (s)

11. TIMELINES FOR GIADA PC8

11.1 TIMELINE FOR MAIN INTERFACE (GD01)

```
# $Log: OIOR_PIHRSO_D_0000_GD_PCA___.ROS,v $
#
# Revision 1.8  2006/10/07 11:22:23  GIADA
# timing changed after results of PC2; sequences updated after PC1 have internal
timing
# slightly different wrt previous sequences and requires this correction in the
timeline
# for future PCn. Also IS and GDS thresholds have been modified.
#
# Revision 1.7  2006/09/05 11:22:23  vdhiri
# Updated to have relative timing. Note No Generic Switch ON/OFF used. Use in
PC4/Passive PCn.
#
# Revision 1.6  2006/07/13 09:03:58  vdhiri
# Updated for PC3. And use of top level itl that was necessary for use of PORG.
#
# Revision 1.5  2006/01/24 18:51:20  kwirth
# Final GD OIOR for PC2.
# Original filename: OIOR_PIHRSO_D_0000_GD_PCA3__00013.ROS.
#
# Version  1.3  2005/12/12 giada MAIN for PCn
# Passive Checkout OIOR for GD after sequences update
# RSOC Assumption MSP I1
#
#============================================================================#
# Filename:       OIOR_PIHRSO_D_0000_GD_PCA1_300013.ROS
# Type:     Input Timeline file
#
# Description:    Passive Check-Out GD adapted to sequences updating
#
#
# Author:   PP
#
#           GIADA
#
# Date:           19 December 2005
#
#
# Proposed by GIADA team
# 19 December 2005
#
# (c) ESA/Estec
#
#----------------------------------------------------------------------------#
#============================================================================#

# EPS required, but RSOC will use CVS version
Version: 00001

Ref_date: 24-Nov-2006
Start_time: 000_00:00:00
End_time: 000_12:00:00

#============================================================================#
# Description: "1. | Switch on and test - main I/F"
```

```
#============================================================================#

+000_00:00:00     GIADA   OFF AGDS001A ( \
                                        VGD0001B = "nom. branch" [ENG] \ #
GIADA on Main IF
                                        VGD0001A = "YES" [ENG]) # Context
exists

+000_00:03:00     GIADA SAFE  AGDS002A # Patch CT v.flight 1

+000_00:08:00     GIADA SAFE  AGDS003A # Patch SW v.2.3

+000_00:24:00     GIADA SAFE  AGDS035A # Go to Cover Mode

+000_00:26:00     GIADA COVER AGDF090A # Open cover

+000_00:36:00     GIADA COVER AGDS065A # Go to Safe mode

+000_00:37:00     GIADA SAFE  AGDS110A # Go to Normal mode

Description: "GIADA operative in normal mode"

+000_00:39:00     GIADA NORMAL      AGDS038A( \
                                            VGDS038A = 35 \
                                            VGDS038B = 26 )   # Set GDS L and
R thresholds

+000_00:39:30     GIADA NORMAL      AGDS037A(\
                                            VGDS037A = Off [ENG])   # Set IS
On/Off

+000_00:40:00     GIADA NORMAL      AGDS036A ( \
                                    VGDS0031 = 0x05 \
                                    VGDS0032 = 0x05 \
                                    VGDS0033 = 0x0f \
                                    VGDS0034 = 0x05 \
                                    VGDS0035 = 0x14 \
                                    VGDS0018 = Enabled [ENG] \
                                    VGDS0019 = Enabled [ENG] \
                                    VGDS0020 = Enabled [ENG] \
                                    VGDS0021 = Enabled [ENG] \
                                    VGDS0022 = Enabled [ENG] \
                                    VGDS0023 = Low [ENG] \
                                    VGDS0025 = High [ENG] \
                                    VGDS0026 = High [ENG] \
                                    VGDS0027 = High [ENG] \
                                    VGDS0028 = High [ENG] \
                                    VGDS0029 = High [ENG])  # Set IS status
                                                        and thresholds

+000_00:40:30     GIADA NORMAL      AGDS037A(\
                                    VGDS037A = On [ENG])    # Set IS On/Off
+000_00:45:00     GIADA NORMAL      AGDS120A ( \
                                    VGDS0010 = 0xF8 \
                                    VGDS0011 = 0x04 \ # Calibrate IS, GDS, MBS

                                    REPEAT = 105 \
                                    SEPARATION = 00:05:00 )
```

```
Description: "change GIADA setting and check effects"

+000_09:30:00     GIADA NORMAL      AGDF100A # Self-interference test

+000_10:30:00     GIADA NORMAL      AGDF055A # MBS heating

#=============================================================================#
# Description: "2. | Shut down"
#=============================================================================#

+000_11:30:00     GIADA NORMAL      AGDF060A # go to safe mode & off

#====================================END======================================#
```

11.2 TIMELINE FOR REDUNDANT INTERFACE (GD01)

```
# $Log: OIOR_PIHRSO_D_0000_GD_PCB___.ROS,v $
#
# Revision 1.8  2006/10/07 11:22:23  GIADA
# timing changed after results of PC2; sequences updated after PC1 have internal
# timing
# slightly different wrt previous sequences and requires this correction in the
# timeline
# for future PCn. Also IS and GDS thresholds have been modified.
#
# Revision 1.7  2006/09/05 11:22:23  vdhiri
# Updated to have relative timing. Note No Generic Switch ON/OFF used. Use in
# PC4/Passive PCn.
#
# Revision 1.6  2006/07/13 09:03:58  vdhiri
# Updated for PC3. And use of top level itl that was necessary for use of PORG.
#
# Revision 1.5  2006/01/24 18:51:46  kwirth
# Final GD OIOR for PC2.
# Original filename: OIOR_PIHRSO_D_0000_GD_PCB3__00014.ROS.
#
# Version  1.3  2005/12/12 giada REDUNDANT for PCn
# Passive Checkout OIOR for GD after sequences update
# RSOC Assumption MSP I1
#
#=============================================================================#
# Filename:       OIOR_PIHRSO_D_0000_GD_PCB1_300014.ROS
# Type:     Input Timeline file
#
# Description:    Passive Check-Out GD adapted to sequences updating
#
#
# Author:   PP
#
#           GIADA
#
# Date:           19 December 2005
#
#
# Proposed by GIADA team
# 19 December 2005
#
# (c) ESA/Estec
#-----------------------------------------------------------------------------#
```

```
#============================================================================#

# EPS required, but RSOC will use CVS version
Version: 00001

Ref_date: 24-Nov-2006
Start_time: 000_00:00:00
End_time: 001_00:00:00

#============================================================================#
# Description: "1. | Switch on and test - redundant I/F"
#============================================================================#

+000_12:00:00     GIADA   OFF AGDS001A ( \
                                        VGD0001B = "red. branch" [ENG] \ #
GIADA on Red IF
                                        VGD0001A = "YES" [ENG]) # Context
exists

+000_12:03:00     GIADA SAFE  AGDS002A # Patch CT v.flight 1

+000_12:08:00     GIADA SAFE  AGDS003A # Patch SW v.2.3

+000_12:24:00     GIADA SAFE  AGDS035A # Go to Cover Mode

+000_12:26:00     GIADA COVER AGDF090A # Open cover

+000_12:36:00     GIADA COVER AGDS065A # Go to Safe mode

+000_12:37:00     GIADA SAFE  AGDS110A # Go to Normal mode

Description: "GIADA operative in normal mode"

+000_12:39:00     GIADA NORMAL      AGDS038A( \
                                            VGDS038A = 35 \
                                            VGDS038B = 26 )   # Set GDS L and
R thresholds

+000_12:39:30     GIADA NORMAL      AGDS037A(\
                                            VGDS037A = Off [ENG])   # Set IS
On/Off

+000_12:40:00     GIADA NORMAL      AGDS036A ( \
                                      VGDS0031 = 0x05 \
                                      VGDS0032 = 0x05 \
                                      VGDS0033 = 0x0f \
                                      VGDS0034 = 0x05 \
                                      VGDS0035 = 0x14 \
                                      VGDS0018 = Enabled [ENG] \
                                      VGDS0019 = Enabled [ENG] \
                                      VGDS0020 = Enabled [ENG] \
                                      VGDS0021 = Enabled [ENG] \
                                      VGDS0022 = Enabled [ENG] \
                                      VGDS0023 = Low [ENG] \
                                      VGDS0025 = High [ENG] \
                                      VGDS0026 = High [ENG] \
                                      VGDS0027 = High [ENG] \
                                      VGDS0028 = High [ENG] \
                                      VGDS0029 = High [ENG])# Set IS status and
```

```
                                                          thresholds

+000_12:40:30     GIADA NORMAL      AGDS037A(\
                                    VGDS037A = On [ENG])    # Set IS On/Off

+000_12:45:00     GIADA NORMAL      AGDS120A ( \
                                    VGDS0010 = 0xF8 \
                                    VGDS0011 = 0x04 \ # Calibrate IS, GDS, MBS

                                    REPEAT = 105 \
                                    SEPARATION = 00:05:00 )

Description: "change GIADA setting and check effects"

+000_21:30:00     GIADA NORMAL      AGDF100A # Self-interference test

+000_22:30:00     GIADA NORMAL      AGDF055A # MBS heating

#============================================================================#
# Description: "2. | Shut down"
#============================================================================#

+000_23:30:00     GIADA NORMAL      AGDF060A # go to safe mode & off

#=====================================END====================================#
```

11.3 TIMELINE FOR MAIN INTERFACE (GD02)

```
# $Log: OIOR_PIHRSO_D_0011_GD_02___.ROS,v $
#
# Version  1.0  2008/04/09 GIADA test during PC8 in Steins Fly-by configuration
#
# Version  1.1  2008/05/15 GIADA test during PC8 in Steins Fly-by configuration
# RELATIVE TIMING APPLIED
#
# Version  1.2  2008/05/26 GIADA test during PC8 in Steins Fly-by configuration
# Timing conflict with the sequence AGDS311A fixed.
#
#============================================================================#
# Filename:       OIOR_PIHRSO_D_0011_GD_02____00034.ROS
# Type:     Input Timeline file
#
# Description:    GIADA test during PC8 in Steins Fly-by configuration
#
#
# Author:   PP, AA
#
#           GIADA
#
# Date:           26 May 2008
#
#
# Proposed by GIADA team
#
# (c) ESA/Estec
#
#----------------------------------------------------------------------------#
#============================================================================#
```

```
# EPS required, but RSOC will use CVS version
Version: 00001
Ref_date: 06-Jul-2008
Start_time: 000_00:00:00
End_time: 000_01:45:00
#============================================================================#

# Description: "1. | Switch on and test - main I/F"

#============================================================================#



+000_00:00:00     GIADA   OFF AGDS001A ( \
                        VGD0001B = "nom. branch" [ENG] \ # GIADA on Main IF
                        VGD0001A = "YES" [ENG]) # Context exists

+000_00:03:00     GIADA SAFE  AGDS002A # Patch CT v.flight 1

+000_00:08:00     GIADA SAFE  AGDS003A # Patch SW v.2.3

+000_00:24:00     GIADA SAFE  AGDS110A # Go to Normal mode

+000_00:26:00     GIADA NORMAL      AGDS311A( \

                                    VGDS037A = Off [ENG])   # Set GDS off

Description: "GIADA operative in normal mode, GDS off, cover closed"

+000_00:27:00     GIADA NORMAL      AGDS037A(\
                                    VGDS037A = Off [ENG])   # Set IS Off

+000_00:28:00     GIADA NORMAL      AGDS036A ( \

                                    VGDS0031 = 0x05 \
                                    VGDS0032 = 0x05 \
                                    VGDS0033 = 0x0f \
                                    VGDS0034 = 0x05 \
                                    VGDS0035 = 0x14 \
                                    VGDS0018 = Enabled [ENG] \
                                    VGDS0019 = Enabled [ENG] \
                                    VGDS0020 = Enabled [ENG] \
                                    VGDS0021 = Enabled [ENG] \
                                    VGDS0022 = Enabled [ENG] \
                                    VGDS0023 = Low [ENG] \
                                    VGDS0025 = High [ENG] \
                                    VGDS0026 = High [ENG] \
                                    VGDS0027 = High [ENG] \
                                    VGDS0028 = High [ENG] \
                                    VGDS0029 = High [ENG])  # Set IS status and
                                                              thresholds

+000_00:29:00     GIADA NORMAL      AGDS037A(\

                                    VGDS037A = On [ENG])    # Set IS On
```

```
+000_00:30:00     GIADA NORMAL      AGDS426A ( \

                                    VGDS0010 = 0xF8 \
                                    VGDS0011 = 0x04 \ # Calibrate IS
                                    REPEAT = 8 \

                                    SEPARATION = 00:05:00 )


#============================================================================#

# Description: "2. | Cover opening necessary to avoid undesired cover behavior"

#============================================================================#


+000_01:10:00     GIADA NORMAL      AGDS065A # Go to Safe mode

+000_01:11:00     GIADA SAFE  AGDS035A # Go to Cover Mode

+000_01:13:00     GIADA COVER AGDF090A # Open cover


#============================================================================#

# Description: "3. | Shut down"

#============================================================================#


+000_01:35:00     GIADA COVER AGDF060A # Go to safe mode & off


#====================================END=====================================#
```

11.4 TIMELINE FOR MAIN INTERFACE (GD03)

```
# $Log: OIOR_PIHRSO_D_0011_GD_03___.ROS,v $
#
# Version  1.0  2008/05/15 GIADA test of setting TC during PC8
#
# Version  1.1  2008/05/26 GIADA test of setting TC during PC8
# GD Patches CT in RAM applied with all parameters values defined.
#
#============================================================================#
# Filename:       OIOR_PIHRSO_D_0011_GD_03____00035.ROS
# Type:     Input Timeline file
#
# Description:    GIADA test of setting TC during PC8
#
#
# Author:   PP, AA
```

```
#
#           GIADA
#
# Date:           26 May 2008
#
#
# Proposed by GIADA team
#
# (c) ESA/Estec
#
#-------------------------------------------------------------------------------#
#===============================================================================#

# EPS required, but RSOC will use CVS version

Version: 00001

Ref_date: 13-Jul-2008

Start_time: 000_00:00:00

End_time: 000_03:00:00


#===============================================================================#

# Description: "1. | Switch on and test setting TC"

#===============================================================================#


+000_00:00:00     GIADA   OFF AGDS001A ( \

                              VGD0001B = "nom. branch" [ENG] \ # GIADA on Main
                                                                 IF

                              VGD0001A = "YES" [ENG]) # Context exists


+000_00:08:00     GIADA SAFE  AGDS003A # Patch SW v.2.3

+000_00:24:00     GIADA SAFE  AGDS035A # Go to Cover Mode
+000_00:26:00     GIADA COVER AGDF090A # Open cover


+000_00:36:00     GIADA COVER AGDS065A # Go to Safe mode


#===============================================================================#

# Description: "2. | 1st GD Patch CT in RAM."

#===============================================================================#



000_00:37:00    GIADA   SAFE    AGDS004A ( \ # GD Patch CT in RAM
                                  VGDX0001 = 0x0000 \  # CF spare 1
                                  VGDX0002 = 0x1E00 \  # CF CovFra heat on time
```

```
VGDX0003 = 0x0000 \  # CF CovMot heat on time
 VGDX0004 = 0xA105 \  # CF FB safety temp
 VGDX0005 = 0xA105 \  # CF FB test temp
 VGDX0006 = 0x1E00 \  # CF FB test timeout 1
 VGDX0007 = 0x0000 \  # CF FB test timeout 2
 VGDX0008 = 0x6506 \  # CF FB working temp
 VGDX0009 = 0x5802 \  # CF FB op timeout 1
 VGDX0010 = 0x0000 \  # CF FB op timeout 2
 VGDX0011 = 0x3200 \  # CF velocity
 VGDX0012 = 0xAB00 \  # CF steps to open
 VGDX0013 = 0xAB00 \  # CF steps to close
 VGDX0014 = 0x7800 \  # CF opening timeout 1
 VGDX0015 = 0x0000 \  # CF opening timeout 2
 VGDX0016 = 0x7800 \  # CF closing timeout 1
 VGDX0017 = 0x0000 \  # CF closing timeout 2
 VGDX0018 = 0x03AF \  # CF GDS status
 VGDX0019 = 0x1A23 \  # CF GDS thresholds
 VGDX0020 = 0xA9F5 \  # CF laser max temp
 VGDX0021 = 0xE0FD \  # CF laser min temp
 VGDX0022 = 0x0000 \  # CF spare 2
 VGDX0023 = 0x0000 \  # CF spare 3
 VGDX0024 = 0x100E \  # CF GDS time bet cal 1
 VGDX0025 = 0x0000 \  # CF GDS time bet cal 2
 VGDX0026 = 0x1F9F \  # CF IS status
 VGDX0027 = 0xB71A \  # CF IS maxop temp
 VGDX0028 = 0x0000 \  # CF spare 4
 VGDX0029 = 0x3500 \  # CF IS hyst temp
 VGDX0030 = 0x0500 \  # CF IS thresholds 1
 VGDX0031 = 0x0F05 \  # CF IS thresholds 2
 VGDX0032 = 0x1405 \  # CF IS thresholds 3
 VGDX0033 = 0x100E \  # CF IS time bet cal 1
 VGDX0034 = 0x0000 \  # CF IS time bet cal 2
 VGDX0035 = 0x04F8 \  # CF IS calconfig
 VGDX0036 = 0x009F \  # CF MBS status
 VGDX0037 = 0x4B0A \  # CF MBS max temp
 VGDX0038 = 0x00F8 \  # CF MBS temp checking
 VGDX0039 = 0x2C01 \  # CF MBS time interval 1
 VGDX0040 = 0x0000 \  # CF MBS time interval 2
 VGDX0041 = 0x9A09 \  # CF MBS max heat temp
 VGDX0042 = 0x6801 \  # CF heating timeout 1
 VGDX0043 = 0x0000 \  # CF heating timeout 2
  VGDX0044 = 0x100E \  # CF MBS time bet cal 1

  VGDX0045 = 0x0000 \  # CF MBS time bet cal 2
  VGDX0046 = 0x6D1A \  # CF IS maxnonop temp
  VGDX0047 = 0xCE1D \  # CF IS min temp
  VGDX0048 = 0xC719 \  # CF ME maxop temp
  VGDX0049 = 0x0000 \  # CF spare 5
  VGDX0050 = 0x0000 \  # CF spare 6
  VGDX0051 = 0x0000 \  # CF spare 7
  VGDX0052 = 0x0000 \  # CF spare 8
  VGDX0053 = 0x3C00 \  # CF timeout scipkt 1
  VGDX0054 = 0x0000 \  # CF timeout scipkt 2
  VGDX0055 = 0x0A00 \  # CF time HK pkt 1
  VGDX0056 = 0x0000 \  # CF time HK pkt 2
  VGDX0057 = 0x2800 \  # CF arm TC timeout 1
  VGDX0058 = 0x0000 \  # CF arm TC timeout 2
  VGDX0059 = 0x0000 \  # CF patches status 1
  VGDX0060 = 0x0000 \  # CF patches status 2
```

```
                                VGDX0061 = 0x0000 \  # CF patches status 3
                                VGDX0062 = 0x0000 \  # CF patches status 4
                                VGDX0063 = 0x2800 \  # CF max GDS events sec
                                VGDX0064 = 0x2800 \  # CF max IS events sec
                                VGDX0065 = 0x0000 \  # CF PAD 1
                                VGDX0066 = 0x0000 \  # CF PAD 2
                                VGDX0067 = 0x0000 \  # CF PAD 3
                                VGDX0068 = 0x0000 \  # CF PAD 4
                                VGDX0069 = 0x9ECA  ) # CF CRC


+000_00:38:00     GIADA SAFE  AGDS110A # Go to Normal mode


+000_00:45:00     GIADA NORMAL      AGDS120A ( \

                                VGDS0010 = 0xF8 \
                                VGDS0011 = 0x04 \ # Calibrate IS, GDS, MBS
                                REPEAT = 10 \
                                SEPARATION = 00:05:00 )


+000_01:36:00     GIADA NORMAL      AGDS065A # Go to Safe mode


#============================================================================#

# Description: "3. | 2nd GD Patch CT in RAM."

#============================================================================#


000_01:37:00    GIADA   SAFE    AGDS004A ( \ # GD Patch CT in RAM

                                    VGDX0001 = 0x0000 \  # CF spare 1
                                    VGDX0002 = 0x1E00 \  # CF CovFra heat on
                                                         time
                                    VGDX0003 = 0x0000 \  # CF CovMot heat on
                                                         time
                                    VGDX0004 = 0xB905 \  # CF FB safety temp
                                    VGDX0005 = 0xB905 \  # CF FB test temp
                                    VGDX0006 = 0x1E00 \  # CF FB test timeout 1
                                    VGDX0007 = 0x0000 \  # CF FB test timeout 2
                                    VGDX0008 = 0x8A06 \  # CF FB working temp
                                    VGDX0009 = 0x5802 \  # CF FB op timeout 1
                                    VGDX0010 = 0x0000 \  # CF FB op timeout 2
                                    VGDX0011 = 0x3200 \  # CF velocity
                                    VGDX0012 = 0xAB00 \  # CF steps to open
                                    VGDX0013 = 0xAB00 \  # CF steps to close
                                    VGDX0014 = 0x7800 \  # CF opening timeout 1
                                    VGDX0015 = 0x0000 \  # CF opening timeout 2
                                    VGDX0016 = 0x7800 \  # CF closing timeout 1
                                    VGDX0017 = 0x0000 \  # CF closing timeout 2
                                    VGDX0018 = 0x03AF \  # CF GDS status
                                    VGDX0019 = 0x1E28 \  # CF GDS thresholds
                                    VGDX0020 = 0xA9F5 \  # CF laser max temp
```

```
                                VGDX0021 = 0xE0FD \  # CF laser min temp
                                VGDX0022 = 0x0000 \  # CF spare 2
                                VGDX0023 = 0x0000 \  # CF spare 3
                                VGDX0024 = 0x2C01 \  # CF GDS time bet cal1
                                VGDX0025 = 0x0000 \  # CF GDS time bet cal2
                                VGDX0026 = 0x1F9F \  # CF IS status
                                VGDX0027 = 0xB71A \  # CF IS maxop temp
                                VGDX0028 = 0x0000 \  # CF spare 4
                                VGDX0029 = 0x3500 \  # CF IS hyst temp
                                VGDX0030 = 0x0A00 \  # CF IS thresholds 1
                                VGDX0031 = 0x110A \  # CF IS thresholds 2
                                VGDX0032 = 0x160A \  # CF IS thresholds 3
                                VGDX0033 = 0x2C01 \  # CF IS time bet cal 1
                                VGDX0034 = 0x0000 \  # CF IS time bet cal 2
                                VGDX0035 = 0x04F8 \  # CF IS calconfig
                                VGDX0036 = 0x009F \  # CF MBS status
                                VGDX0037 = 0x4B0A \  # CF MBS max temp
                                VGDX0038 = 0x00F8 \  # CF MBS temp checking
                                VGDX0039 = 0x3C00 \  # CF MBS time interval
                                VGDX0040 = 0x0000 \  # CF MBS time interval
                                                       2
                                VGDX0041 = 0x9A09 \  # CF MBS max heat temp
                                VGDX0042 = 0x6801 \  # CF heating timeout 1
                                VGDX0043 = 0x0000 \  # CF heating timeout 2
                                VGDX0044 = 0x2C01 \  # CF MBS time bet cal1
                                VGDX0045 = 0x0000 \  # CF MBS time bet cal2
                                VGDX0046 = 0x6D1A \  # CF IS maxnonop temp
                                VGDX0047 = 0xCE1D \  # CF IS min temp
                                VGDX0048 = 0xC719 \  # CF ME maxop temp
                                VGDX0049 = 0x0000 \  # CF spare 5
                                VGDX0050 = 0x0000 \  # CF spare 6
                                VGDX0051 = 0x0000 \  # CF spare 7
                                VGDX0052 = 0x0000 \  # CF spare 8
                                VGDX0053 = 0x3C00 \  # CF timeout scipkt 1
                                VGDX0054 = 0x0000 \  # CF timeout scipkt 2
                                VGDX0055 = 0x0A00 \  # CF time HK pkt 1
                                VGDX0056 = 0x0000 \  # CF time HK pkt 2
                                VGDX0057 = 0x2800 \  # CF arm TC timeout 1
                                VGDX0058 = 0x0000 \  # CF arm TC timeout 2
                                VGDX0059 = 0x0000 \  # CF patches status 1
                                VGDX0060 = 0x0000 \  # CF patches status 2

                                VGDX0061 = 0x0000 \  # CF patches status 3
                                VGDX0062 = 0x0000 \  # CF patches status 4
                                VGDX0063 = 0x2800 \  # CF max GDS events
                                                       sec
                                VGDX0064 = 0x2800 \  # CF max IS events sec
                                VGDX0065 = 0x0000 \  # CF PAD 1
                                VGDX0066 = 0x0000 \  # CF PAD 2
                                VGDX0067 = 0x0000 \  # CF PAD 3
                                VGDX0068 = 0x0000 \  # CF PAD 4
                                VGDX0069 = 0x249D  ) # CF CRC

+000_01:38:00     GIADA SAFE  AGDS110A # Go to Normal mode

#============================================================================#

# Description: "4. | Shut down"
```

```
#=============================================================================#

+000_02:50:00     GIADA NORMAL      AGDF060A # go to safe mode & off

#=====================================END=====================================#
```

11.5 TIMELINE FOR MAIN INTERFACE (GD_INT)

```
# $Log: OIOR_PIHRSO_D_0011_GD_IC05S.ROS,v $
#
# Version  1.0  2008/04/09 Set up GIADA for PC8 Interference test 5-6 and start
susceptible mode
#
# Version  1.1  2008/05/15 Set up GIADA for PC8 Interference test 5-6 and start
susceptible mode
# RELATIVE TIMING APPLIED; ALL TIMELINES FOR INTERFERENCE TEST MERGED IN UNIQUE
TIMELINE
#
# Version  1.2  2008/05/26 Set up GIADA for PC8 Interference test 5-6 and start
susceptible mode
# Last calibration timing fixed; ALL TIMELINES FOR INTERFERENCE TEST MERGED IN
UNIQUE TIMELINE
#
#=============================================================================#
# Filename:       OIOR_PIHRSO_D_0011_GD_IC05S_00036.ROS
# Type:     Input Timeline file
#
# Description:    Set up GIADA for PC8 Interference test 5-6 and start
susceptible mode
#
#
# Author:   PP, AA
#
#           GIADA
#
# Date:           26 May 2008
#
#
# Proposed by GIADA team
#
# (c) ESA/Estec

#
#-----------------------------------------------------------------------------#

#=============================================================================#

# EPS required, but RSOC will use CVS version

Version: 00001


Ref_date: 19-Jul-2008

Start_time: 000_00:00:00

End_time: 000_19:15:00
```

```
#============================================================================#

# Description: "1. | Switch on and SUSCEPTIBLE MODE"

#============================================================================#


+000_00:00:00     GIADA   OFF AGDS001A ( \

                           VGD0001B = "nom. branch" [ENG] \ # GIADA on Main IF
                           VGD0001A = "YES" [ENG])    # Context exists



+000_00:03:00     GIADA SAFE  AGDS002A # Patch CT v.flight 1

+000_00:08:00     GIADA SAFE  AGDS003A # Patch SW v.2.3

+000_00:24:00     GIADA SAFE  AGDS035A # Go to Cover Mode

+000_00:26:00     GIADA COVER AGDF090A # Open cover

+000_00:36:00     GIADA COVER AGDS065A # Go to Safe mode

+000_00:37:00     GIADA SAFE  AGDS110A # Go to Normal mode

Description: "GIADA operative in normal mode"

+000_00:39:00     GIADA NORMAL      AGDS038A( \

                                    VGDS038A = 35 \
                                    VGDS038B = 26 )   # Set GDS L and R
                                                        thresholds

+000_00:40:00     GIADA NORMAL      AGDS037A(\

                                          VGDS037A = Off [ENG])   # Set IS On/Off

+000_00:41:00     GIADA NORMAL      AGDS036A ( \

                                          VGDS0031 = 0x05 \
                                          VGDS0032 = 0x05 \
                                          VGDS0033 = 0x0f \
                                          VGDS0034 = 0x05 \
                                          VGDS0035 = 0x14 \
                                          VGDS0018 = Enabled [ENG] \
                                          VGDS0019 = Enabled [ENG] \
                                          VGDS0020 = Enabled [ENG] \
                                          VGDS0021 = Enabled [ENG] \
                                          VGDS0022 = Enabled [ENG] \
                                          VGDS0023 = Low [ENG] \
                                          VGDS0025 = High [ENG] \
                                          VGDS0026 = High [ENG] \
                                          VGDS0027 = High [ENG] \
                                          VGDS0028 = High [ENG] \
                                          VGDS0029 = High [ENG])  # Set IS status
                                                                    and thresholds
```

```
+000_00:42:00     GIADA NORMAL      AGDS037A(\

                                          VGDS037A = On [ENG])    # Set IS On/Off


+000_00:45:00     GIADA NORMAL      AGDS120A ( \

                                    VGDS0010 = 0xF8 \
                                    VGDS0011 = 0x04 \ # Calibrate IS, GDS, MBS

                                          REPEAT = 65 \

                                          SEPARATION = 00:05:00 )



#============================================================================#

# Description: "2. | EMISSIVE MODE"

#============================================================================#


+000_06:10:00     GIADA NORMAL      AGDS065A # Go to Safe mode

+000_06:18:00     GIADA SAFE  AGDS110A # Go to Normal mode

Description: "GIADA operative in normal mode"

+000_06:20:00     GIADA NORMAL      AGDS038A( \

                                          VGDS038A = 35 \
                                          VGDS038B = 26 )   # Set GDS L and R
                                                            thresholds

+000_06:21:00     GIADA NORMAL      AGDS037A(\

                                          VGDS037A = Off [ENG])   # Set IS On/Off

+000_06:22:00     GIADA NORMAL      AGDS036A ( \

                                          VGDS0031 = 0x05 \
                                          VGDS0032 = 0x05 \
                                          VGDS0033 = 0x0f \
                                          VGDS0034 = 0x05 \
                                          VGDS0035 = 0x14 \
                                          VGDS0018 = Enabled [ENG] \
                                          VGDS0019 = Enabled [ENG] \
                                          VGDS0020 = Enabled [ENG] \
                                          VGDS0021 = Enabled [ENG] \
                                          VGDS0022 = Enabled [ENG] \
                                          VGDS0023 = Low [ENG] \
                                          VGDS0025 = High [ENG] \
                                          VGDS0026 = High [ENG] \
                                          VGDS0027 = High [ENG] \
                                          VGDS0028 = High [ENG] \
                                          VGDS0029 = High [ENG])  # Set IS status
                                                                    and thresholds
```

```
+000_06:23:00     GIADA NORMAL      AGDS037A(\

                                          VGDS037A = On [ENG])    # Set IS On/Off

#=============================================================================#

# Description: "3. | BACK TO SUSCEPTIBLE MODE"

#=============================================================================#


+000_06:25:00     GIADA NORMAL      AGDS120A ( \

                                    VGDS0010 = 0xF8 \
                                    VGDS0011 = 0x04 \ # Calibrate IS, GDS, MBS

                                    REPEAT = 81 \

                                    SEPARATION = 00:05:00 )


#=============================================================================#

# Description: "4. | EMISSIVE MODE"

#=============================================================================#


+000_13:10:00     GIADA NORMAL      AGDS065A # Go to Safe mode

+000_13:18:00     GIADA SAFE  AGDS110A # Go to Normal mode

Description: "GIADA operative in normal mode"

+000_13:20:00     GIADA NORMAL      AGDS038A( \

                                    VGDS038A = 35 \
                                    VGDS038B = 26 )   # Set GDS L and R
                                                        thresholds

+000_13:21:00     GIADA NORMAL      AGDS037A(\

                                          VGDS037A = Off [ENG])   # Set IS On/Off


+000_13:22:00     GIADA NORMAL      AGDS036A ( \

                                          VGDS0031 = 0x05 \
                                          VGDS0032 = 0x05 \
                                          VGDS0033 = 0x0f \
                                          VGDS0034 = 0x05 \
                                          VGDS0035 = 0x14 \
                                          VGDS0018 = Enabled [ENG] \
                                          VGDS0019 = Enabled [ENG] \
                                          VGDS0020 = Enabled [ENG] \
                                          VGDS0021 = Enabled [ENG] \
```

```
                                        VGDS0022 = Enabled [ENG] \
                                        VGDS0023 = Low [ENG] \
                                        VGDS0025 = High [ENG] \
                                        VGDS0026 = High [ENG] \
                                        VGDS0027 = High [ENG] \
                                        VGDS0028 = High [ENG] \
                                        VGDS0029 = High [ENG])  # Set IS status
                                                                  and thresholds
+000_13:23:00     GIADA NORMAL      AGDS037A(\

                                        VGDS037A = On [ENG])    # Set IS On/Off

#=============================================================================#

# Description: "5. | BACK TO SUSCEPTIBLE MODE"

#=============================================================================#

+000_13:25:00     GIADA NORMAL      AGDS120A ( \

                                        VGDS0010 = 0xF8 \

                                        VGDS0011 = 0x04 \ # Calibrate IS, GDS,
                                                            MBS

                                        REPEAT = 68 \

                                        SEPARATION = 00:05:00 )


#=============================================================================#

# Description: "6. | Shut down"

#=============================================================================#


+000_19:05:00     GIADA NORMAL      AGDF060A # go to safe mode & off

#=====================================END=====================================#
```