

Present status of the individual systems analysis applications

B Khomenko, E Michel, B Pannetier, A Raimondo, H Reymond, A Rijllart

1. Introduction
2. Automatic analysis for the HWC
3. Manual analysis for experts
4. Status of the applications
5. Conclusions

1. Introduction

1. Introduction

Three main clients are already involved with the PM analysis:

- AT-MEL for the surface & tunnel HWC of the Quench Protection Systems
- AB-CO-MI for the HWC of the Power Interlock Systems
- AB-PO for the HWC of the Power Converters installed in the LHC

1. Introduction

Following several periodical meetings and specifications related to the SACEC and GLOBAL ANALYSIS, 2 types of tools have been developed by our section:

- Automated analysis tools used via the Sequencer for the HWC



- Dedicated applications for the experts
(based on the same analysis)



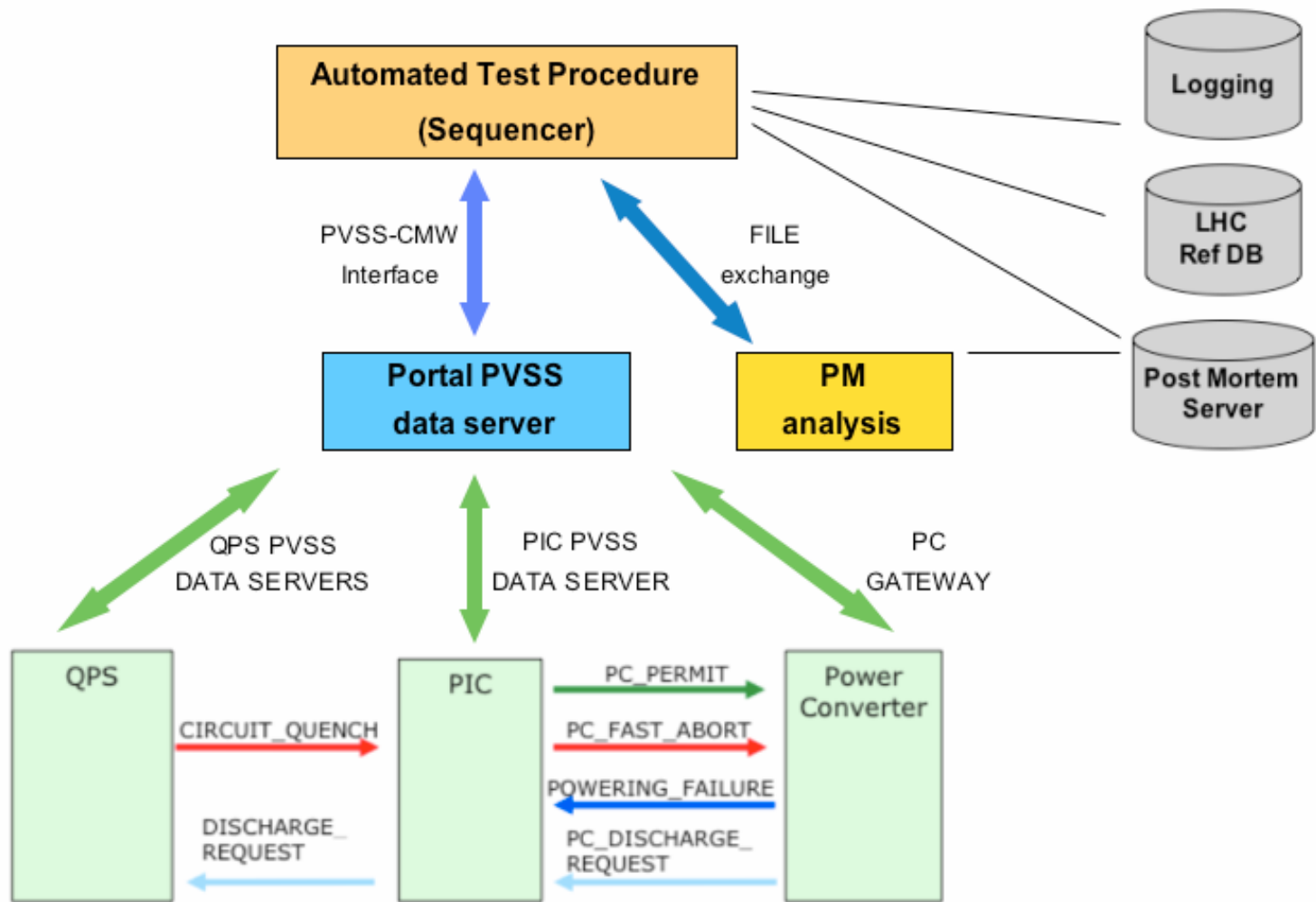
2. Automatic analysis for the HWC

2. Automatic analysis for the HWC

In the framework of the Hardware Commissioning, a test manager application has been developed (AB/CO-AP): the **SEQUENCER**

- It gives the possibility to set & execute sequence of steps
- Each sequence consists of a set of instructions
- The instructions allow status read & real actions on the QPS, PIC & PC systems in the LHC tunnel

2.1 Architecture of the systems



2.2 Sequence of a test

When a test is launched by the SEQUENCER:

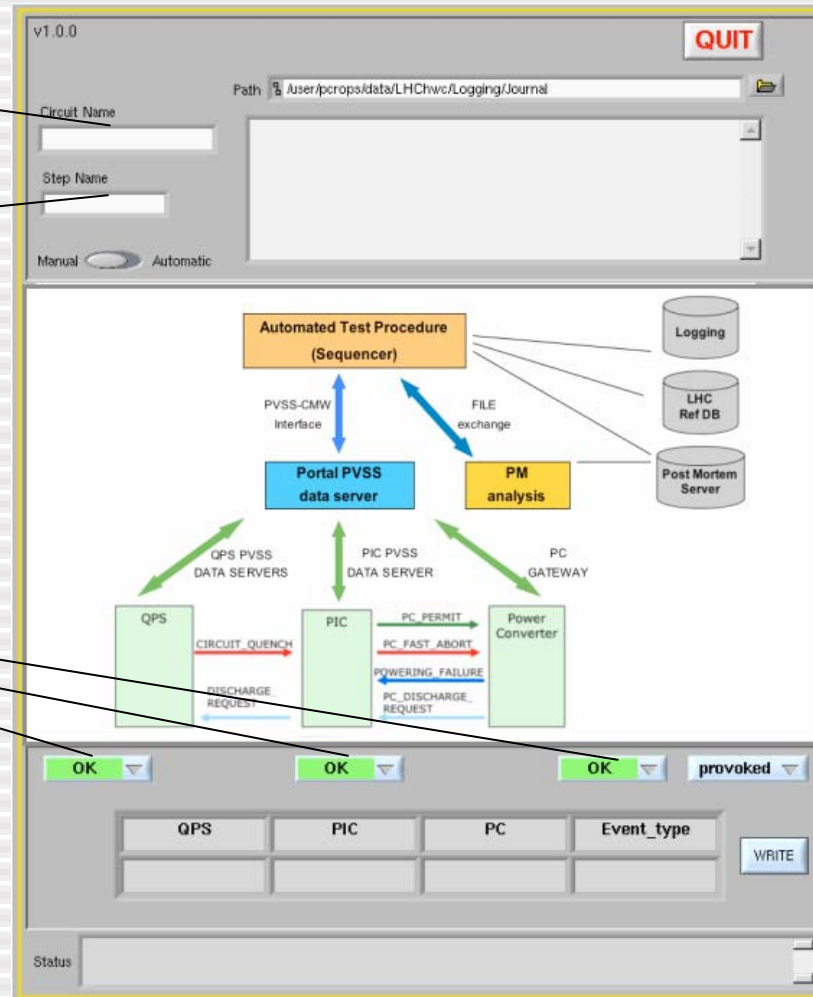
- Instructions & parameters are sent on the equipments according to the test (short circuit, interlock, powering to nominal)
- Test data are sent to the PM Automatic Analysis (localization, test type, circuit name...)
- When PM files are available, they are read from the PM server, and analysis are started
- Then status (OK / FAILED) is returned by the PMAA to the Sequencer
- According to the result, the next step will be executed or not

2.3 Draft panel of the PM Automatic Analysis

Circuit Name

Step Name

Result of the analysis



2.4 Sequence of the PM Automatic Analysis

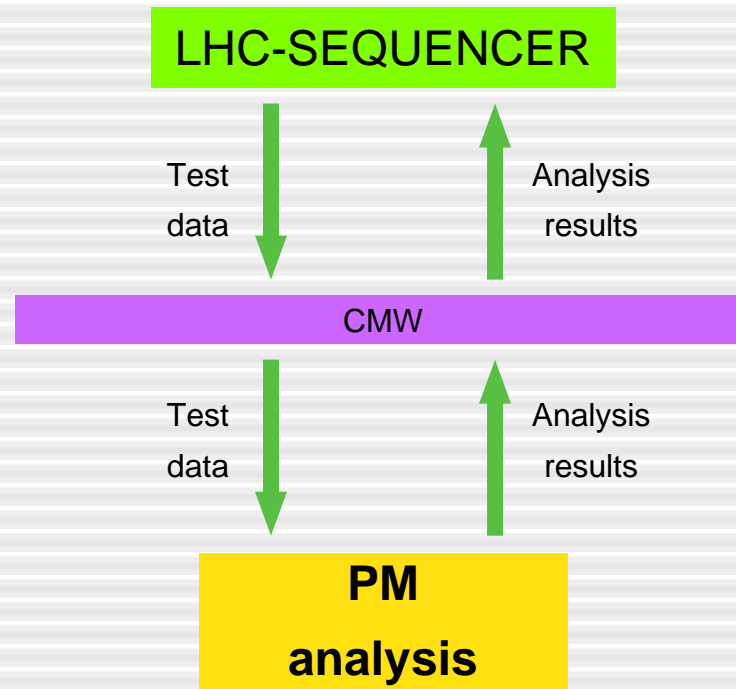
From the PMAA side:

- A loader is waiting for the PM files on the PM server, according to the test data (circuit name...)
- When a PM file is available, the specific analysis is executed and the result is returned to the Sequencer
- When the results from the 3 analysis are generated:
 - IF all is OK, a new test can be launched
 - ELSE manual analysis should be done by an expert

2.5 Actual status of the Sequencer

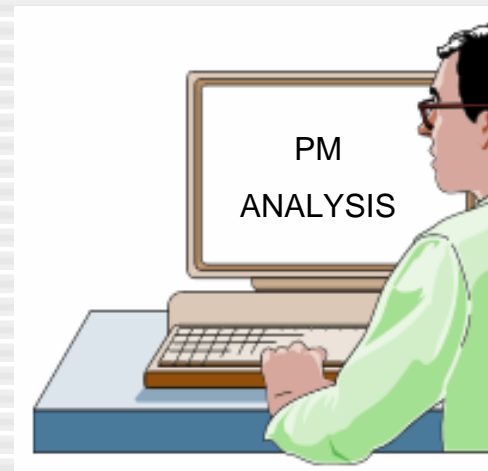
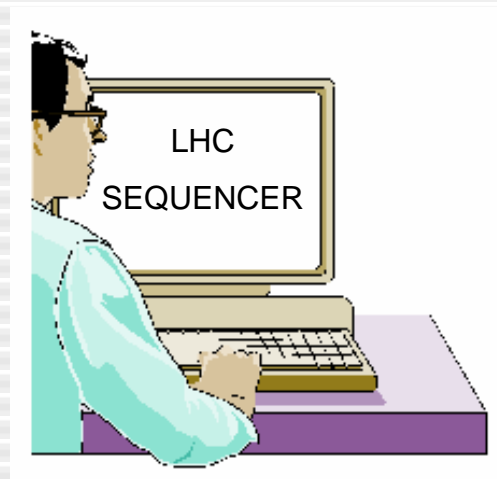
- The software developed for the Sequencer is going to be integrated in the LHC-SEQUENCER (general sequencer for LHC physics & hardware)
- The “old” Sequencer application will still be used for the long test (i.e. Dry Run)
- PIC1, PIC2 tests will be managed via the LHC-SEQUENCER
 - Should be available mid February/March
 - Interaction with PMAA must be redesigned

2.5 Actual status of the Sequencer



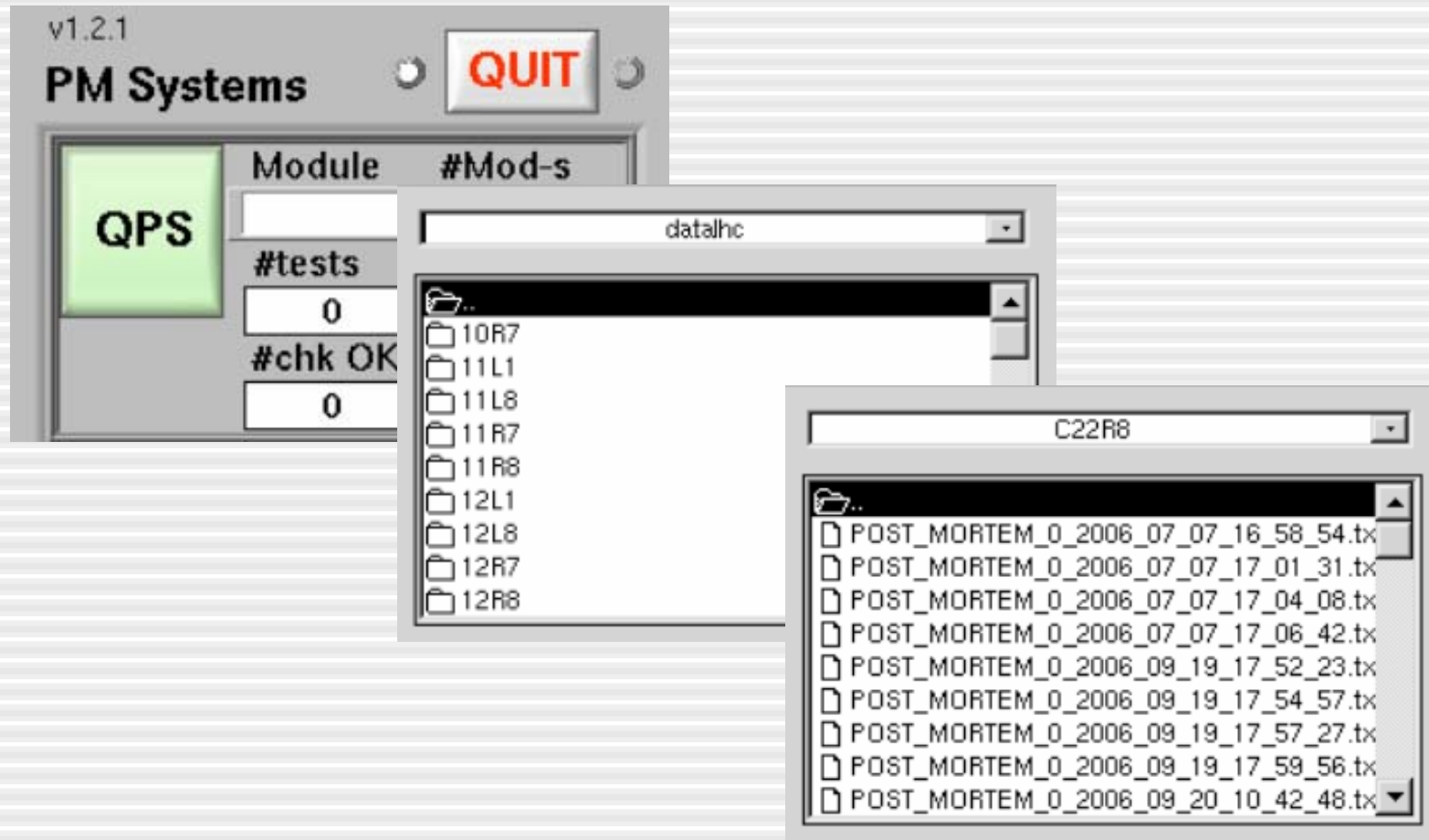
2.5 Actual status of the Sequencer

- In case of problems at the beginning, oral communication between 2 operators is still foreseen

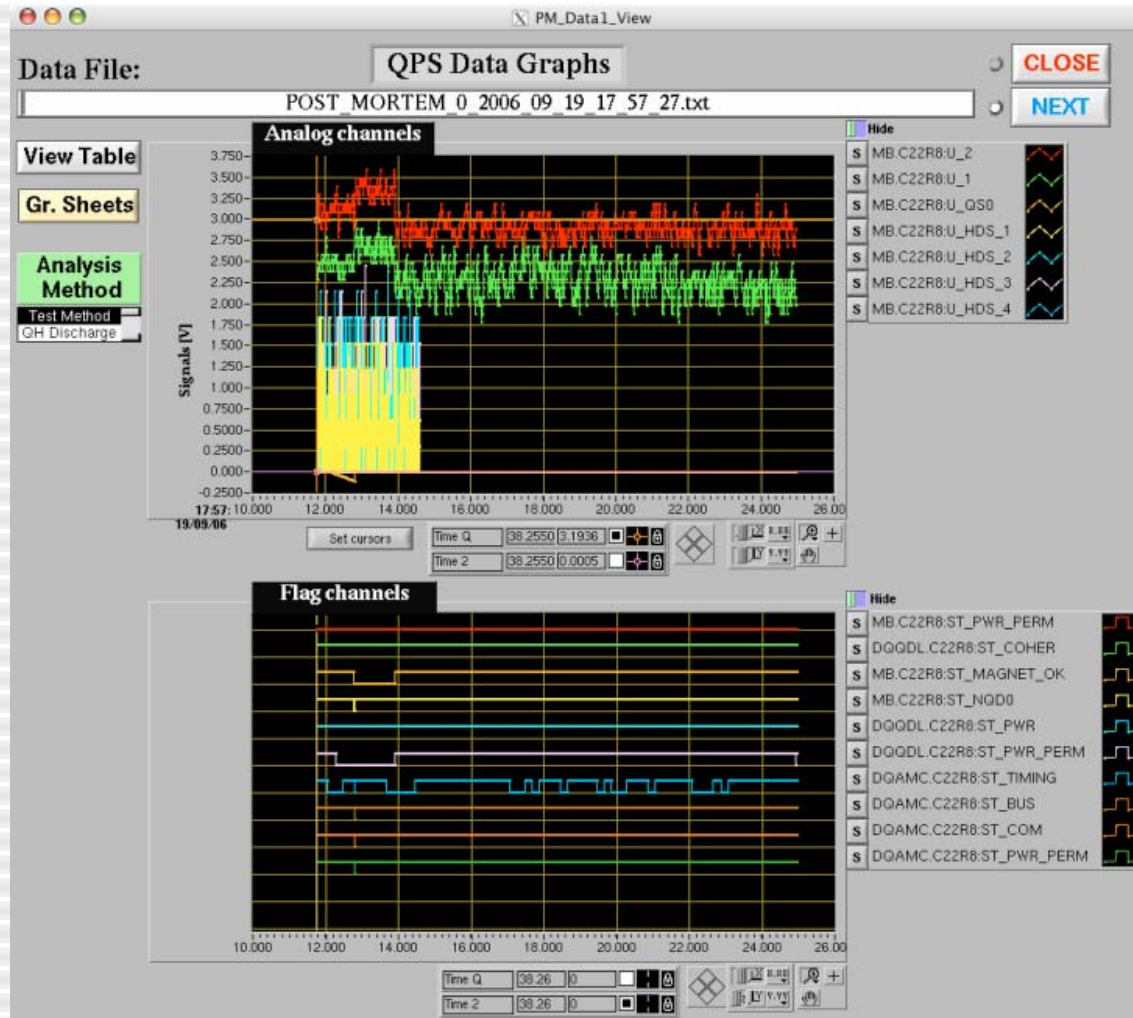


3. Manual analysis for experts

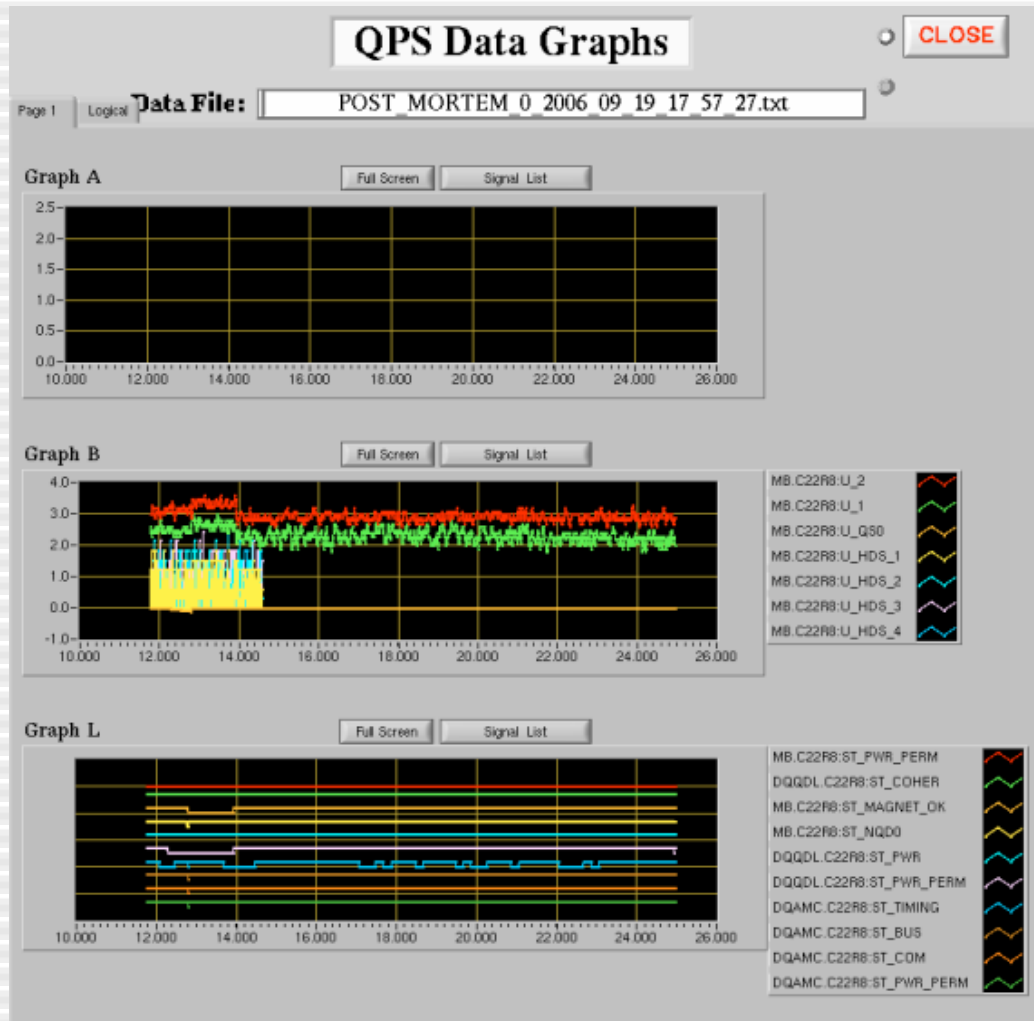
3.1 QPS Expert Analysis



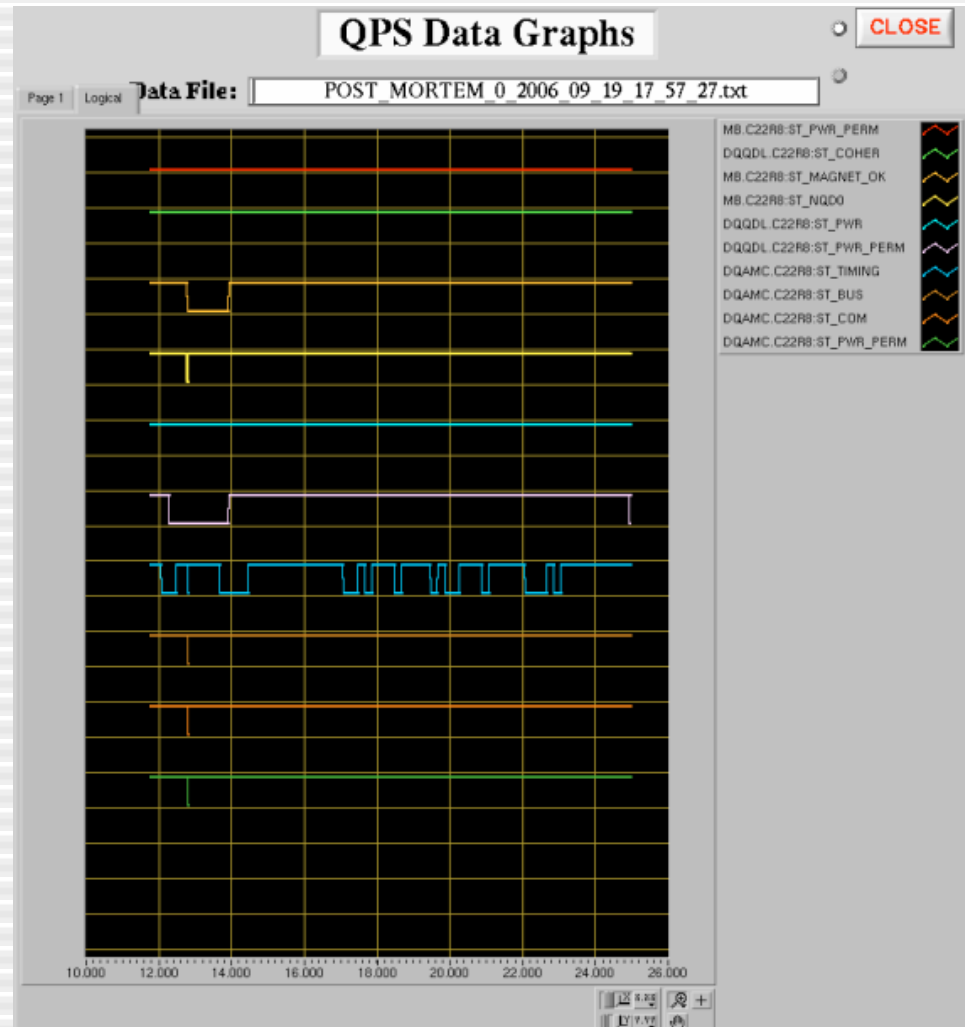
3.1 QPS Expert Analysis



3.1 QPS Expert Analysis



3.1 QPS Expert Analysis



3.1 QPS Expert Analysis

PM (QPS) Table Text

Columns to show

Data File: POST_MORTEM_0_2006_09_19_17_57_27.txt

All Act Sel(#)

	[21] DQAMC.C22R8: ST_BUS	[22] DQAMC.C22R8: ST_COM	[23] DQAMC.C22R8: ST_PWR_PERM	[24] MB.C22R8: U_2	[25] MB.C22R8: U_1	[26] MB.C22R8: U_QS0	[27] MB.C22R8: U_HDS_1	[28] MB.C22R8: U_HDS_2
11.766	T	T	T	-203.18	-203.985	0.0042122	0.92007	1.84014
11.772	T	T	T	9.33448	2.58959	0.000793397	0	1.84014
11.777	T	T	T	2.99227	2.58959	0.000671297	0	0.30669
11.782	T	T	T	2.99227	2.48892	0.0010376	0.61338	0.61338
11.787	T	T	T	2.99227	2.38825	0.000671297	1.22676	0
11.792	T	T	T	2.99227	2.38825	0.0014039	0.61338	0.61338
11.797	T	T	T	2.99227	2.26758	0.000915497	0	0.61338
11.803	T	T	T	3.09294	2.26758	0.000793397	0.30669	0.30669
11.808	T	T	T	3.19361	2.26758	0.000304997	0	1.53345
11.813	T	T	T	3.19361	2.38825	0.0014039	0	0
11.818	T	T	T	3.29428	2.38825	0.0012618	0.61338	0
11.823	T	T	T	3.29428	2.38825	0.000549197	1.84014	0
11.828	T	T	T	3.19361	2.48892	0.000793397	0.61338	0.30669
11.834	T	T	T	3.19361	2.48892	0.001526	0	0
11.839	T	T	T	3.19361	2.48892	0.0018923	0.30669	0.30669
11.844	T	T	T	2.99227	2.48892	0.000182697	0	0.92007
11.849	T	T	T	2.99227	2.38825	0.000671297	0.92007	0.30669
11.854	T	T	T	2.99227	2.38825	0.0014039	0.61338	0
11.859	T	T	T	2.99227	2.38825	0.000427097	1.84014	0
11.865	T	T	T	2.8916	2.38825	-0.000305503	0.30669	0.61338
11.870	T	T	T	2.99227	2.38825	0.001526	0.61338	0.61338
11.875	T	T	T	2.99227	2.48892	-0.000549703	0.61338	2.14683
11.881	T	T	T	2.8916	2.48892	0.000427097	0.61338	0.30669
11.886	T	T	T	2.99227	2.48892	0.0022586	0	0
11.891	T	T	T	2.8916	2.58959	0.0010376	0.30669	0
11.896	T	T	T	2.99227	2.58959	0.0023807	1.53345	0
11.901	T	T	T	2.99227	2.48892	6.07967e-05	0.61338	0.61338
11.906	T	T	T	3.09294	2.48892	0.0014039	1.84014	0.92007
11.912	T	T	T	3.19361	2.48892	0.0022586	0.30669	0
11.917	T	T	T	3.09294	2.48892	0.000427097	0	1.53345
11.922	T	T	T	3.09294	2.48892	0.000915497	0.92007	0.30669
11.927	T	T	T	3.09294	2.48892	0.000915497	0.61338	0
11.932	T	T	T	3.09294	2.48892	0.0010376	1.53345	0
11.937	T	T	T	2.99227	2.38825	0.0014039	0	0.30669
11.943	T	T	T	3.09294	2.48892	0.001526	0	0
11.948	T	T	T	3.09294	2.48892	-6.13033e-05	0.30669	0.30669
11.953	T	T	T	3.09294	2.58959	0.000304997	1.22676	0
11.958	T	T	T	3.19361	2.48892	0.0010376	1.22676	0.30669
11.963	T	T	T	3.19361	2.58959	0.0022586	0.61338	0

3.1 QPS Expert Analysis

QPS: Test Mode

Initial mV NaN Final mV NaN
 mV noise -0.00 mV at Tr 0.00
 mV max 0.00 at ms 0.00

MB.C22R8:U_1
 mV max 2992.27

MB.C22R8:U_2
 mV max 3596.29

MB.C22R8:ST_MAGNET_OK
 Profile TFT t1 -15.50
 t2 1118.50

MB.C22R8:ST_NQD0
 Profile TFT Thresh 0.00

MB.C22R8:ST_PWR_PERM
 Profile F

Profile - t1 0.00
 t2 0.00

DQDDL.C22R8:ST_PWR_PERM
 Profile T3T

DQDDL.C22R8:ST_PWR
 Profile T

DQAMC.C22R8:ST_PWR_PERM
 Profile TFT

DQAMC.C22R8:ST_BUS
 Profile TFT

DQAMC.C22R8:ST_COM
 Profile TFT

CLOSE

QPS: QH Discharge **CLOSE**

MB.C22R8:U_HDS_1
 MB.C22R8:U_HDS_2
 MB.C22R8:U_HDS_3
 MB.C22R8:U_HDS_4

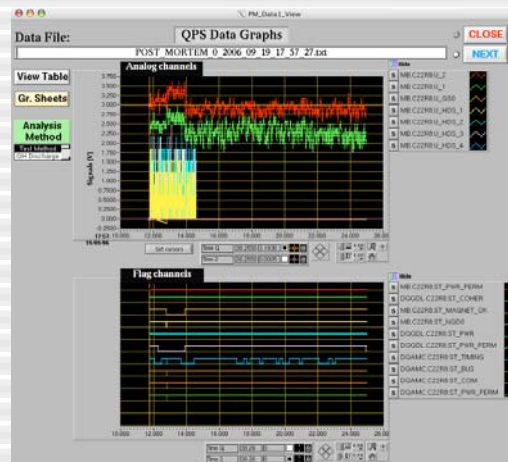
QH Discharge Parameters

	U_HDS_1	U_HDS_2	U_HDS_3	U_HDS_4	
Vinit [V]	0.6	0.4	0.5	0.5	in [810,990]V
t-tq [ms]	0.0	0.0	0.0	0.0	<30ms
Tau [ms]	0.0	0.0	0.0	0.0	in [65,123]ms
C [mF]	0.00	0.00	0.00	0.00	in [5.6,8.8]mF
Vmin [V]	0.0	0.0	0.0	0.0	in [-5,60]V

3.1 QPS Expert Analysis



QPS data



3.1 QPS Expert Analysis

The QPS expert application can be used:

- Magnet protection systems validation during reception phase
- HWC of the systems installed in the tunnel



3.2 PIC Expert Analysis

PMA_PIC_1.0_beta

LOAD CLOSE

Start 00:00:00 2007/01/12 Stop 00:00:00 2007/01/12 Select the time window to analyze (UTC time)

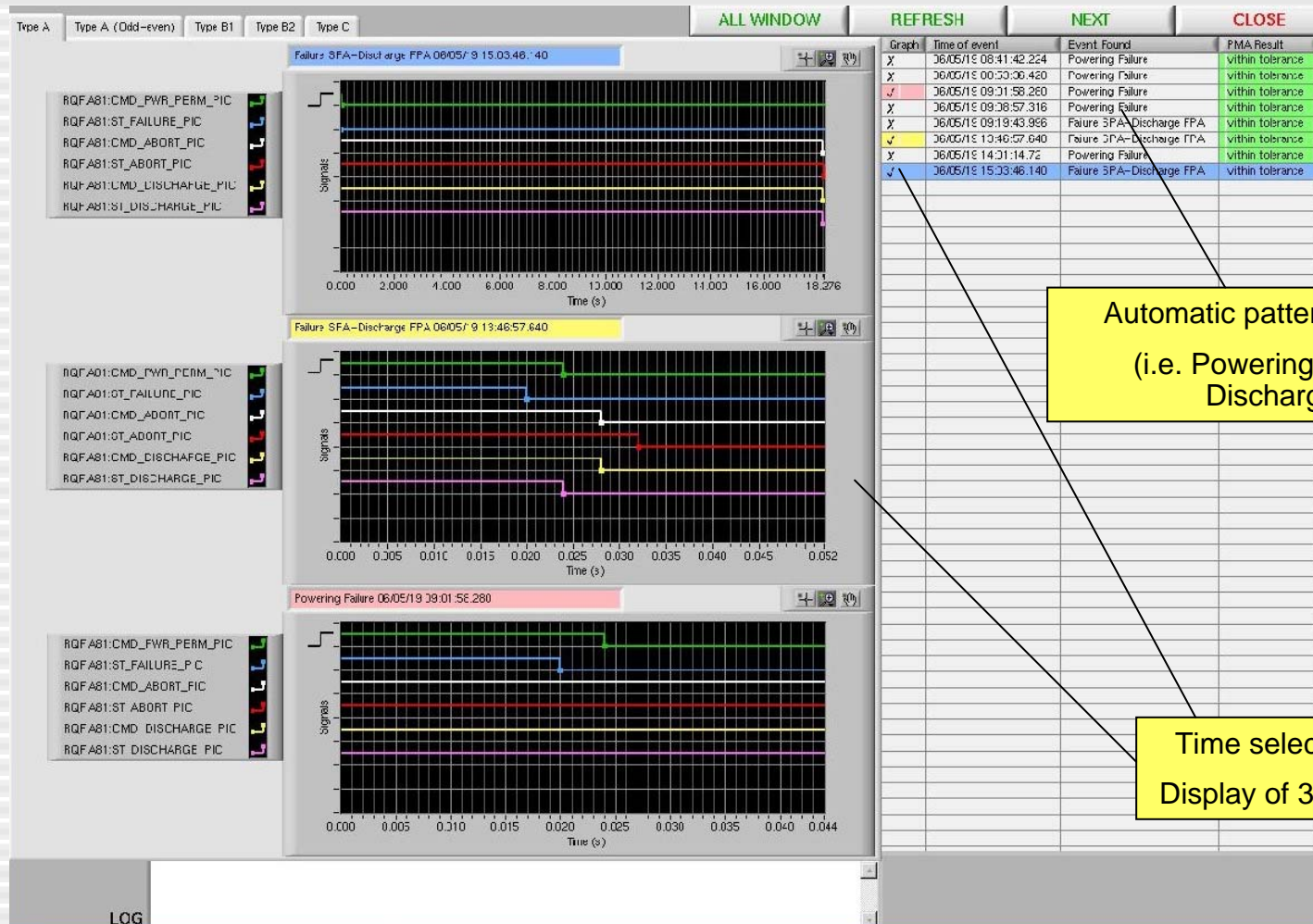
Production Logging Database Test Logging Database

Selection Type

A whole Subsector A whole PIC Circuits manual selection

Subsectors	Pics	Circuits
A56	CIP-TZ76-AR7	RQT13.R7B1
A67	CIP-UA83-AL8	RQT13.R7B2
A78		RQTL10.R7B1
A81		RQTL10.R7B2
LL1		RQTL11.R7B1
LL5		RQTL11.R7B2
LR1		RQTL7.R7B1
LR5		RQTL7.R7B2
ML2		RQTL8.R7B1
ML4		RQTL8.R7B2
ML6		RQTL9.R7B1
ML8		RQTL9.R7B2
MR2		RSS.A78B1
MR4		RSS.A78B2
MR6		RCBCH10.R7B2
MR8		RCBCH6.R7B2
XL1		RCBCH7.R7B1
XL2		RCBCH8.R7B2
XL5		RCBCH9.R7B1
XL8		RCBCV10.R7B1
XR1		RCBCV6.R7B1
XR2		RCBCV7.R7B2
XR5		RCBCV8.R7B1
XR8		RCBCV9.R7B2

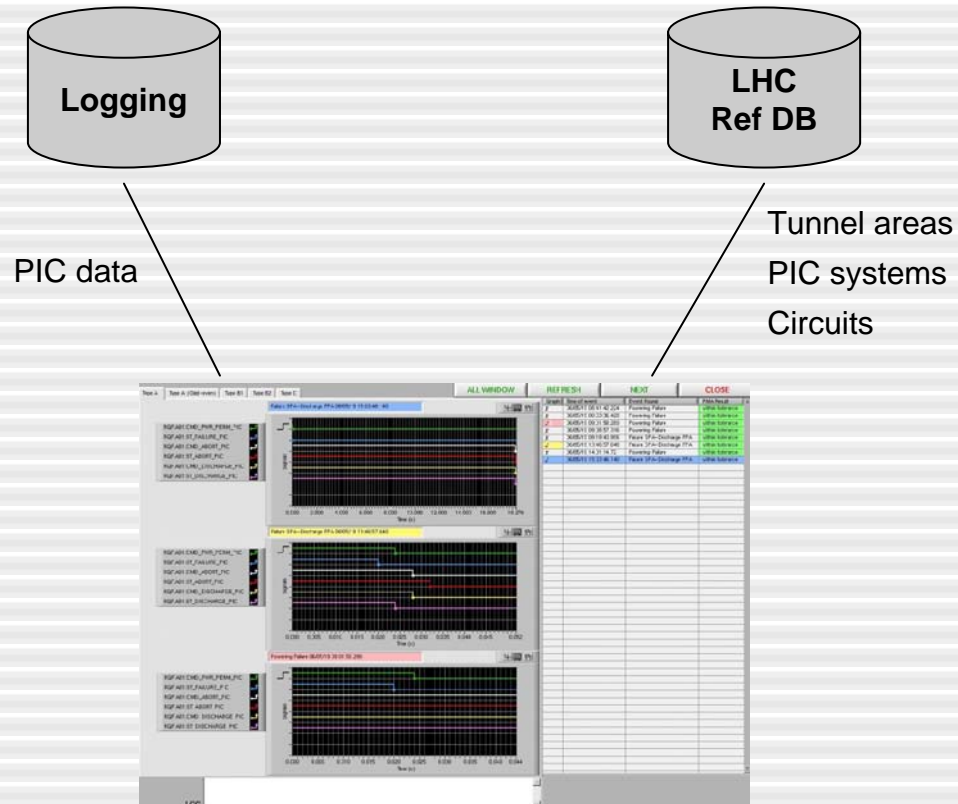
3.2 PIC Expert Analysis



Automatic pattern analysis
(i.e. Powering Failure,
Discharge)

Time selection &
Display of 3 events

3.2 PIC Expert Analysis



3.2 PIC Expert Analysis

The PIC expert application has been used during Dry Run in UA83



The automatic pattern recognition will be useful for the offline analysis during HWC in sector 7-8



3.3 PC Expert Analysis

PM_Browser V1.1.6

Systems	Classes	Years	Days	Events	Basket	Signals
BLM	40	2006	Dec 08	061129-155532.940_RPMBB.UJ56.RCBXV3.R5		
FGC	40_gw	2007	Dec 07	061129-152111.960_RPMBB.UJ56.RCBXV1.R5		
PM	51		Dec 06	061129-150459.560_RPMBB.UJ56.RCBXV2.R5		
QPS	51_gw		Dec 05	061129-145415.840_RPHGB.RR57.RQ6.R5B1		
TEST			Dec 04	061129-145415.420_RPHGB.RR57.RQ5.R5B2		
			Dec 01	061129-145414.900_RPHGA.RR57.RQ7.R5B2		
			Dec 01	061129-145414.620_RPHGA.RR57.RQ7.R5B1		
			Nov 30	061129-145413.680_RPHGB.RR57.RQ6.R5B2		
			Nov 29	061129-145413.680_RPHGA.RR57.RQ8.R5B2		
			Nov 28	061129-145413.300_RPHH.RR57.RQ4.R5B1		
			Nov 27	061129-145413.240_RPHGA.RR57.RQ8.R5B1		
			Nov 27	061129-145412.500_RPHGA.RR57.RQ9.R5B2		
			Nov 24	061129-145412.400_RPHGA.RR57.RQ9.R5B1		
			Nov 23	061129-145412.200_RPHGA.RR57.RQ10.R5B2		
			Nov 22	061129-145412.160_RPHGA.RR57.RQ10.R5B1		
			Nov 19	061129-145137.340_RPHH.RR57.RQ4.R5B2		
			Nov 18	061129-144157.580_RPLB.UJ56.RCSSX3.R5		
			Nov 17	061129-144016.100_RPLB.UJ56.RCSSX3.R5		
			Nov 13	061129-142155.620_RPLB.UJ56.RCSSX3.R5		
			Nov 10	061129-141728.740_RPLB.UJ56.RCSX3.R5		
			Nov 10	061129-141728.740_RPLB.UJ56.RCOSX3.R5		
			Nov 09	061129-141728.720_RPLB.UJ56.RCTX3.R5		
			Nov 08	061129-141728.520_RPLB.UJ56.RCOX3.R5		
			Nov 07	061129-113753.400_RPMBA.RR57.RQT12.R5B2		
			Nov 04	061129-104337.000_RPMBB.RR57.ROD.A56B2		
			Nov 03	061129-104337.000_RPMBB.RR57.ROD.A56B1		
			Nov 02	061129-095229.940_RPMBB.RR57.ROF.A56B1		
			Nov 01	061129-092854.800_RPMBB.RR57.RSS.A56B2		
			Oct 31	061129-091319.820_RPMBB.RR57.ROF.A56B1		
			Oct 28			
			Oct 27			

Search by: Events Search Engine
 Directory size: 29
 Loading

3.3 PC Expert Analysis

PM_Browser V1.1.6

Systems	Classes	Years	Days	Events	Basket	Signals
BLM	40	2006	Dec 08	061129-155532.940_RPMBB.UJ56.RCBXV3.R5		
FGC	40_gw	2007	Dec 07	061129-152111.960_RPMBB.UJ56.RCBXV1.R5		
PM	51		Dec 06	061129-150459.560_RPMBB.UJ56.RCBXV2.R5		
QPS	51_gw		Dec 05	061129-145415.840_RPHGB.RR57.RQ6.R5B1		
TEST			Dec 04	061129-145415.420_RPHGB.RR57.RQ5.R5B2		
			Dec 04	061129-145414.900_RPHGA.RR57.RQ7.R5B2		
			Dec 01	061129-145414.620_RPHGA.RR57.RQ7.R5B1		
			Nov 30	061129-145413.680_RPHGB.RR57.RQ6.R5B2		
			Nov 29	061129-145413.680_RPHGA.RR57.RQ8.R5B2		
			Nov 28	061129-145413.300_RPHH.RR57.RQ4.R5B1		
			Nov 27	061129-145413.240_RPHGA.RR57.RQ8.R5B1		
			Nov 24	061129-145412.500_RPHGA.RR57.RQ9.R5B2		
			Nov 23	061129-145412.400_RPHGA.RR57.RQ9.R5B1		
			Nov 22	061129-145412.200_RPHGA.RR57.RQ10.R5B2		
			Nov 22	061129-145412.160_RPHGA.RR57.RQ10.R5B1		
			Nov 19	061129-145137.340_RPHH.RR57.RQ4.R5B2		
			Nov 18	061129-144157.580_RPLB.UJ56.RCSSX3.R5		
			Nov 17	061129-144016.100_RPLB.UJ56.RCSSX3.R5		
			Nov 13	061129-142155.620_RPLB.UJ56.RCSSX3.R5		
			Nov 10	061129-141728.740_RPLB.UJ56.RCSSX3.R5		
			Nov 09	061129-141728.740_RPLB.UJ56.RCOX3.R5		
			Nov 09	061129-141728.720_RPLB.UJ56.RCTX3.R5		
			Nov 08	061129-141728.520_RPLB.UJ56.RCOX3.R5		
			Nov 07	061129-113753.400_RPMBA.RR57.RQT12.R5B2		
			Nov 04	061129-104337.000_RPMBB.RR57.ROD.A56B2		
			Nov 03	061129-104337.000_RPMBB.RR57.ROD.A56B1		
			Nov 02	061129-095229.940_RPMBB.RR57.ROF.A56B1		
			Nov 01	061129-092854.800_RPMBB.RR57.RSS.A56B2		
			Nov 01	061129-091319.820_RPMBB.RR57.ROF.A56B1		
			Oct 31			
			Oct 28			
			Oct 27			

Search by: Events Search Engine
 Directory size: 29
 Loading:

3.3 PC Expert Analysis

PM_Browser V1.1.6

Systems	Classes	Years	Days	Events	Basket	Signals
BLM	40	2006	Dec 08	061129-155532.940_RPMBB.UJ56.RCBXV3.R5	061129-145415.420_RPHGB.RR57.RQ5.R5B2	
FGC	40_gw	2007	Dec 07	061129-152111.960_RPMBB.UJ56.RCBXV1.R5	061129-145413.240_RPHGA.RR57.RQ8.R5B1	
PM	51		Dec 06	061129-150459.560_RPMBB.UJ56.RCBXV2.R5	061129-144157.580_RPLB.UJ56.RCSSX3.R5	
QPS	51_gw		Dec 05	061129-145415.840_RPHGB.RR57.RQ6.R5B1	061129-141728.740_RPLB.UJ56.RCOSX3.R5	
TEST			Dec 04	061129-145415.420_RPHGB.RR57.RQ5.R5B2	061129-104337.000_RPMBB.RR57.ROD.A56B2	
			Dec 01	061129-145414.900_RPHGA.RR57.RQ7.R5B2		
			Dec 04	061129-145414.620_RPHGA.RR57.RQ7.R5B1		
			Nov 30	061129-145413.680_RPHGB.RR57.RQ6.R5B2		
			Nov 29	061129-145413.680_RPHGA.RR57.RQ8.R5B2		
			Nov 28	061129-145413.300_RPHH.RR57.RQ4.R5B1		
			Nov 27	061129-145413.240_RPHGA.RR57.RQ8.R5B1		
			Nov 24	061129-145412.500_RPHGA.RR57.RQ9.R5B2		
			Nov 23	061129-145412.400_RPHGA.RR57.RQ9.R5B1		
			Nov 22	061129-145412.200_RPHGA.RR57.RQ10.R5B2		
			Nov 22	061129-145412.160_RPHGA.RR57.RQ10.R5B1		
			Nov 19	061129-145137.340_RPHH.RR57.RQ4.R5B2		
			Nov 18	061129-144157.580_RPLB.UJ56.RCSSX3.R5		
			Nov 17	061129-144016.100_RPLB.UJ56.RCSSX3.R5		
			Nov 13	061129-142155.620_RPLB.UJ56.RCSSX3.R5		
			Nov 10	061129-141728.740_RPLB.UJ56.RCSX3.R5		
			Nov 09	061129-141728.740_RPLB.UJ56.RCOSX3.R5		
			Nov 09	061129-141728.720_RPLB.UJ56.RCTX3.R5		
			Nov 08	061129-141728.520_RPLB.UJ56.RCOX3.R5		
			Nov 07	061129-113753.400_RPMBA.RR57.RQT12.R5B2		
			Nov 04	061129-104337.000_RPMBB.RR57.ROD.A56B2		
			Nov 03	061129-104337.000_RPMBB.RR57.ROD.A56B1		
			Nov 02	061129-095229.940_RPMBB.RR57.ROF.A56B1		
			Nov 01	061129-092854.800_RPMBB.RR57.RSS.A56B2		
			Nov 01	061129-091319.820_RPMBB.RR57.ROF.A56B1		
			Oct 31			
			Oct 28			
			Oct 27			

Search by: Events Search Engine
 Directory size: 29
 Loading

3.3 PC Expert Analysis

PM_Browser V1.1.6

Beginning Date: 00:00:00 01/01/2006
End Date: 13:32:49 01/12/2007

Date: Any
Sector: 7-8
Powering Subsector: Any
Equipment: RPLA
Equipment Keyword:

SEARCH

Events Found: 0

Events	Basket	Signals
	061129-145415.420_RPHGB.RR57.RQ5.R5B2 061129-145413.240_RPHGA.RR57.RQ8.R5B1 061129-144157.580_RPLB.UJ56.RCSSX3.R5 061129-141728.740_RPLB.UJ56.RCOSX3.R5 061129-104337.000_RPMBB.RR57.ROD.A56B2	

Add to Basket Clear Selection Clear basket Use Selection Show in table Show in chart

Search by: Events Search Engine Directory size: 93 Loading

3.3 PC Expert Analysis

PM_Browser V1.1.6

Beginning Date: 00:00:00 01/01/2006
 End Date: 13:32:59 01/12/2007

Date: Any
 Sector: 7-8
 Powering Subsector: Any
 Equipment: RPLA
 Equipment Keyword:

SEARCH

Events Found: 65

Events	Basket	Signals
061204-114852.480_RPLA.14L8.RCBH13.L8B1	061129-145415.420_RPHGB.RR57.RQ5.R5B2	
061204-174313.940_RPLA.14L8.RCBV14.L8B1	061129-145413.240_RPHGA.RR57.RQ8.R5B1	
061123-095712.660_RPLA.16L8.RCBH15.L8B1	061129-144157.580_RPLB.UJ56.RCSSX3.R5	
061123-142035.480_RPLA.16L8.RCBH15.L8B1	061129-141728.740_RPLB.UJ56.RCOSX3.R5	
061123-095703.440_RPLA.16L8.RCBH16.L8B2	061129-104337.000_RPMBB.RR57.ROD.A56B2	
061123-142046.440_RPLA.16L8.RCBH16.L8B2		
061123-095724.720_RPLA.16L8.RCBV15.L8B2		
061123-102939.400_RPLA.16L8.RCBV15.L8B2		
061123-142025.600_RPLA.16L8.RCBV15.L8B2		
061123-095706.640_RPLA.16L8.RCBV16.L8B1		
061123-103925.000_RPLA.16L8.RCBV16.L8B1		
061123-142041.480_RPLA.16L8.RCBV16.L8B1		
061205-121301.080_RPLA.18L8.RCBH17.L8B1		
061204-165402.020_RPLA.18L8.RCBV18.L8B1		
061204-171358.700_RPLA.20L8.RCBH19.L8B1		
061204-171358.720_RPLA.20L8.RCBV19.L8B2		
061204-173842.880_RPLA.20L8.RCBV20.L8B1		
061205-113107.700_RPLA.22L8.RCBH21.L8B1		
061205-113107.700_RPLA.22L8.RCBV21.L8B2		
061205-113116.740_RPLA.22L8.RCBV22.L8B1		
061205-101220.120_RPLA.24L8.RCBV24.L8B1		
061208-145534.540_RPLA.24R7.RCBH23.R7B1		
061208-112005.580_RPLA.26R7.RCBH25.R7B1		
061205-153031.460_RPLA.28L8.RCBH27.L8B1		
061206-102512.580_RPLA.28L8.RCBH27.L8B1		
061208-163502.280_RPLA.28L8.RCBH27.L8B1		
061208-163511.020_RPLA.28L8.RCBH28.L8B2		
061206-102237.400_RPLA.28L8.RCBV27.L8B2		
061208-163502.260_RPLA.28L8.RCBV27.L8B2		
061208-163511.020_RPLA.28L8.RCBV28.L8B1		
061208-125456.920_RPLA.28R7.RCBH27.R7B1		
061208-163942.060_RPLA.28R7.RCBH27.R7B1		

Search by: Events Search Engine Directory size: 93 Loading

3.3 PC Expert Analysis

PM_Browser V1.1.6

Beginning Date: 00:00:00 01/01/2006
End Date: 13:33:35 01/12/2007

Date: Any
Sector: 7-8
Powering Subsector: Any
Equipment: RPLA

Equipment Keyword:

SEARCH

Events Found: 65

Search by: Events Search Engine

Directory size: 93

Loading:

Events	Basket	Signals
061204-114852.480_RPLA.14L8.RCBH13.L8B1	061129-145415.420_RPHGB.RR57.RQ5.R5B2	
061204-174313.940_RPLA.14L8.RCBV14.L8B1	061129-145413.240_RPHGA.RR57.RQ8.R5B1	
061123-095712.660_RPLA.16L8.RCBH15.L8B1	061129-144157.580_RPLB.UJ56.RCSSX3.R5	
061123-142035.480_RPLA.16L8.RCBH15.L8B1	061129-141728.740_RPLB.UJ56.RCOSX3.R5	
061123-095703.440_RPLA.16L8.RCBH16.L8B2	061129-104337.000_RPMBB.RR57.ROD.A56B2	
061123-142046.440_RPLA.16L8.RCBH16.L8B2	061123-142035.480_RPLA.16L8.RCBH15.L8B1	
061123-095724.720_RPLA.16L8.RCBV15.L8B2	061123-142041.480_RPLA.16L8.RCBV16.L8B1	
061123-102939.400_RPLA.16L8.RCBV15.L8B2	061204-173842.880_RPLA.20L8.RCBV20.L8B1	
061123-142025.600_RPLA.16L8.RCBV15.L8B2	061208-145534.540_RPLA.24R7.RCBH23.R7B1	
061123-095706.640_RPLA.16L8.RCBV16.L8B1	061206-102512.580_RPLA.28L8.RCBH27.L8B1	
061123-103925.000_RPLA.16L8.RCBV16.L8B1		
061123-142041.480_RPLA.16L8.RCBV16.L8B1		
061205-121301.080_RPLA.18L8.RCBH17.L8B1		
061204-165402.020_RPLA.18L8.RCBV18.L8B1		
061204-171358.700_RPLA.20L8.RCBH19.L8B1		
061204-171358.720_RPLA.20L8.RCBV19.L8B2		
061204-173842.880_RPLA.20L8.RCBV20.L8B1		
061205-113107.700_RPLA.22L8.RCBH21.L8B1		
061205-113107.700_RPLA.22L8.RCBV21.L8B2		
061205-113116.740_RPLA.22L8.RCBV22.L8B1		
061205-101220.120_RPLA.24L8.RCBV24.L8B1		
061208-145534.540_RPLA.24R7.RCBH23.R7B1		
061208-112005.580_RPLA.26R7.RCBH25.R7B1		
061205-153031.460_RPLA.28L8.RCBH27.L8B1		
061206-102512.580_RPLA.28L8.RCBH27.L8B1		
061208-163502.280_RPLA.28L8.RCBH27.L8B1		
061208-163511.020_RPLA.28L8.RCBH28.L8B2		
061206-102237.400_RPLA.28L8.RCBV27.L8B2		
061208-163502.260_RPLA.28L8.RCBV27.L8B2		
061208-163511.020_RPLA.28L8.RCBV28.L8B1		
061208-125456.920_RPLA.28R7.RCBH27.R7B1		
061208-163942.060_RPLA.28R7.RCBH27.R7B1		

3.3 PC Expert Analysis

PM_Browser V1.1.6

Beginning Date: 00:00:00 01/01/2006
End Date: 13:34:03 01/12/2007

Date: Any
Sector: 7-8
Powering Subsector: Any
Equipment: RPLA

Equipment Keyword:

Events Found: 65

SEARCH

Events	Basket	Signals
061204-114852.480_RPLA.14L8.RCBH13.L8B1	061129-145415.420_RPHGB.RR57.RQ5.R5B2	PROPERTY
061204-174313.940_RPLA.14L8.RCBV14.L8B1	061129-145413.240_RPHGA.RR57.RQ8.R5B1	SYMBOL
061123-095712.660_RPLA.16L8.RCBH15.L8B1	061129-144157.580_RPLB.UJ56.RCSSX3.R5	ACTION
061123-142035.480_RPLA.16L8.RCBH15.L8B1	061129-141728.740_RPLB.UJ56.RCOSX3.R5	I_A
061123-095703.440_RPLA.16L8.RCBH16.L8B2	061129-104337.000_RPMBB.RR57.ROD.A56B2	I_B
061123-142046.440_RPLA.16L8.RCBH16.L8B2	061123-142035.480_RPLA.16L8.RCBH15.L8B1	I_EARTH
061123-095724.720_RPLA.16L8.RCBV15.L8B2	061123-142041.480_RPLA.16L8.RCBV16.L8B1	I_MEAS
061123-102939.400_RPLA.16L8.RCBV15.L8B2	061204-173842.880_RPLA.20L8.RCBV20.L8B1	U_LEAD_POS
061123-142025.600_RPLA.16L8.RCBV15.L8B2	061208-145534.540_RPLA.24R7.RCBH23.R7B1	U_LEAD_NEG
061123-095706.640_RPLA.16L8.RCBV16.L8B1	061206-102512.580_RPLA.28L8.RCBH27.L8B1	R_LEAD_POS
061123-103925.000_RPLA.16L8.RCBV16.L8B1		R_LEAD_NEG
061123-142041.480_RPLA.16L8.RCBV16.L8B1		I_REF
061205-121301.080_RPLA.18L8.RCBH17.L8B1		V_REF
061204-165402.020_RPLA.18L8.RCBV18.L8B1		V_MEAS
061204-171358.700_RPLA.20L8.RCBH19.L8B1		DATA_STATUS
061204-171358.720_RPLA.20L8.RCBV19.L8B2		CLASS_ID
061204-173842.880_RPLA.20L8.RCBV20.L8B1		ST_FAULTS
061205-113107.700_RPLA.22L8.RCBH21.L8B1		ST_WARNINGS
061205-113107.700_RPLA.22L8.RCBV21.L8B2		ST_LATCHED
061205-113116.740_RPLA.22L8.RCBV22.L8B1		ST_UNLATCHED
061205-101220.120_RPLA.24L8.RCBV24.L8B1		STATE_PLL
061208-145534.540_RPLA.24R7.RCBH23.R7B1		STATE_OP
061208-112005.580_RPLA.26R7.RCBH25.R7B1		STATE_VS
061205-153031.460_RPLA.28L8.RCBH27.L8B1		STATE_PC
061206-102512.580_RPLA.28L8.RCBH27.L8B1		ST_MEAS_A
061208-163502.280_RPLA.28L8.RCBH27.L8B1		ST_MEAS_B
061208-163511.020_RPLA.28L8.RCBH28.L8B2		
061206-102237.400_RPLA.28L8.RCBV27.L8B2		
061208-163502.260_RPLA.28L8.RCBV27.L8B2		
061208-163511.020_RPLA.28L8.RCBV28.L8B1		
061208-125456.920_RPLA.28R7.RCBH27.R7B1		
061208-163942.060_RPLA.28R7.RCBH27.R7B1		

Search by: Events Search Engine File size: 19 kB Loading

3.3 PC Expert Analysis

PM_Browser V1.1.6

Beginning Date: 00:00:00 01/01/2006
End Date: 13:34:35 01/12/2007

Date: Any
Sector: 7-8
Powering Subsector: Any
Equipment: RPLA

Equipment Keyword:

Events Found: 65

SEARCH

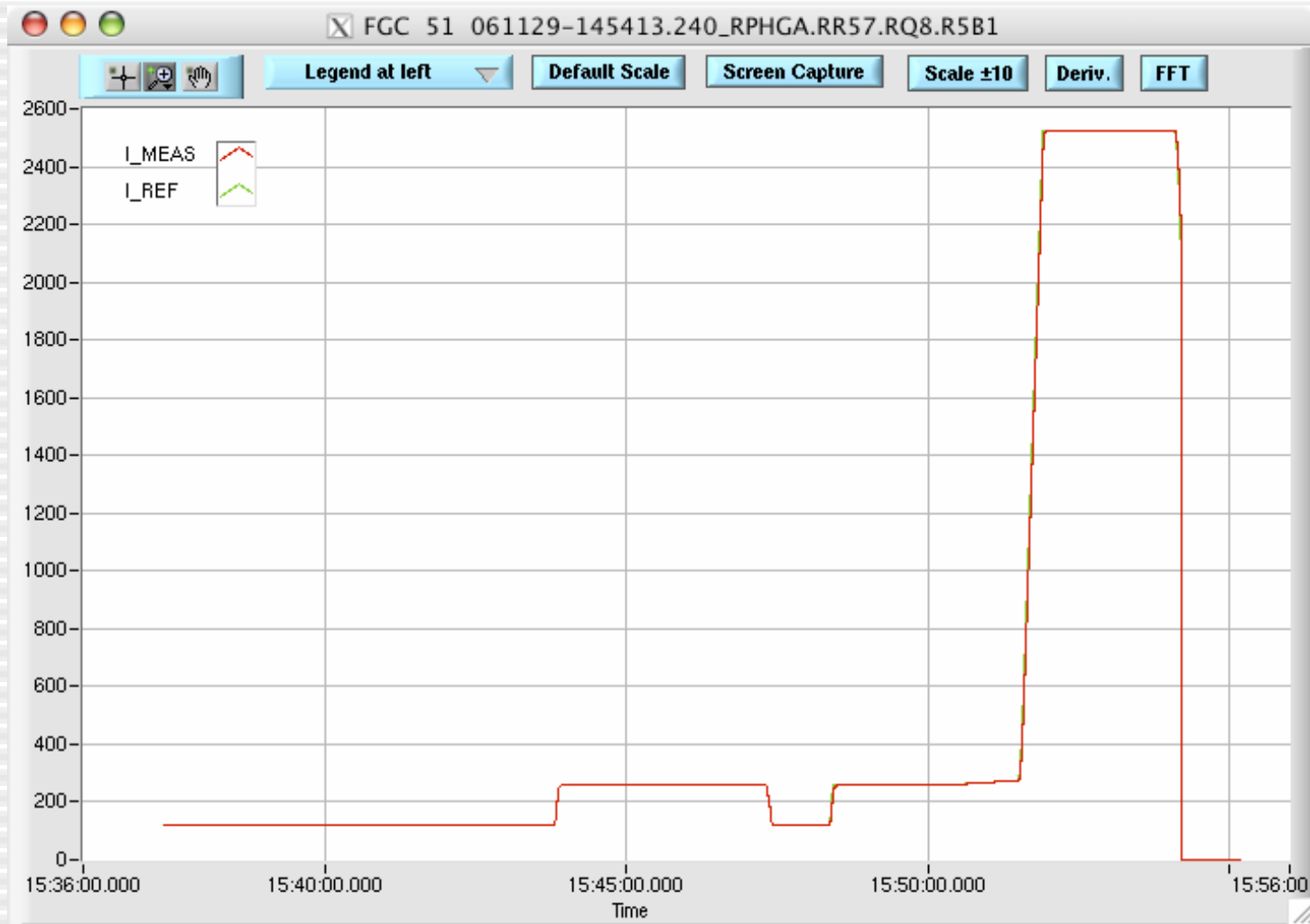
Events	Basket	Signals
061204-114852.480_RPLA.14L8.RCBH13.L8B1	061129-145415.420_RPHGB.RR57.RQ5.R5B2	PROPERTY
061204-174313.940_RPLA.14L8.RCBV14.L8B1	061129-145413.240_RPHGA.RR57.RQ8.R5B1	SYMBOL
061123-095712.660_RPLA.16L8.RCBH15.L8B1	061129-144157.580_RPLB.UJ56.RCSSX3.R5	ACTION
061123-142035.480_RPLA.16L8.RCBH15.L8B1	061129-141728.740_RPLB.UJ56.RCOSX3.R5	I_A
061123-095703.440_RPLA.16L8.RCBH16.L8B2	061129-104337.000_RPMBB.RR57.ROD.A56B2	I_B
061123-142046.440_RPLA.16L8.RCBH16.L8B2	061123-142035.480_RPLA.16L8.RCBH15.L8B1	I_EARTH
061123-095724.720_RPLA.16L8.RCBV15.L8B2	061123-142041.480_RPLA.16L8.RCBV16.L8B1	I_MEAS
061123-102939.400_RPLA.16L8.RCBV15.L8B2	061204-173842.880_RPLA.20L8.RCBV20.L8B1	U_LEAD_POS
061123-142025.600_RPLA.16L8.RCBV15.L8B2	061208-145534.540_RPLA.24R7.RCBH23.R7B1	U_LEAD_NEG
061123-095706.640_RPLA.16L8.RCBV16.L8B1	061206-102512.580_RPLA.28L8.RCBH27.L8B1	R_LEAD_POS
061123-103925.000_RPLA.16L8.RCBV16.L8B1		R_LEAD_NEG
061123-142041.480_RPLA.16L8.RCBV16.L8B1		I_REF
061205-121301.080_RPLA.18L8.RCBH17.L8B1		V_REF
061204-165402.020_RPLA.18L8.RCBV18.L8B1		V_MEAS
061204-171358.700_RPLA.20L8.RCBH19.L8B1		DATA_STATUS
061204-171358.720_RPLA.20L8.RCBV19.L8B2		CLASS_ID
061204-173842.880_RPLA.20L8.RCBV20.L8B1		ST_FAULTS
061205-113107.700_RPLA.22L8.RCBH21.L8B1		ST_WARNINGS
061205-113107.700_RPLA.22L8.RCBV21.L8B2		ST_LATCHED
061205-113116.740_RPLA.22L8.RCBV22.L8B1		ST_UNLATCHED
061205-101220.120_RPLA.24L8.RCBV24.L8B1		STATE_PLL
061208-145534.540_RPLA.24R7.RCBH23.R7B1		STATE_OP
061208-112005.580_RPLA.26R7.RCBH25.R7B1		STATE_VS
061205-153031.460_RPLA.28L8.RCBH27.L8B1		STATE_PC
061206-102512.580_RPLA.28L8.RCBH27.L8B1		ST_MEAS_A
061208-163502.280_RPLA.28L8.RCBH27.L8B1		ST_MEAS_B
061208-163511.020_RPLA.28L8.RCBH28.L8B2		
061206-102237.400_RPLA.28L8.RCBV27.L8B2		
061208-163502.260_RPLA.28L8.RCBV27.L8B2		
061208-163511.020_RPLA.28L8.RCBV28.L8B1		
061208-125456.920_RPLA.28R7.RCBH27.R7B1		
061208-163942.060_RPLA.28R7.RCBH27.R7B1		

Add to Basket Clear Selection Clear basket Use Selection

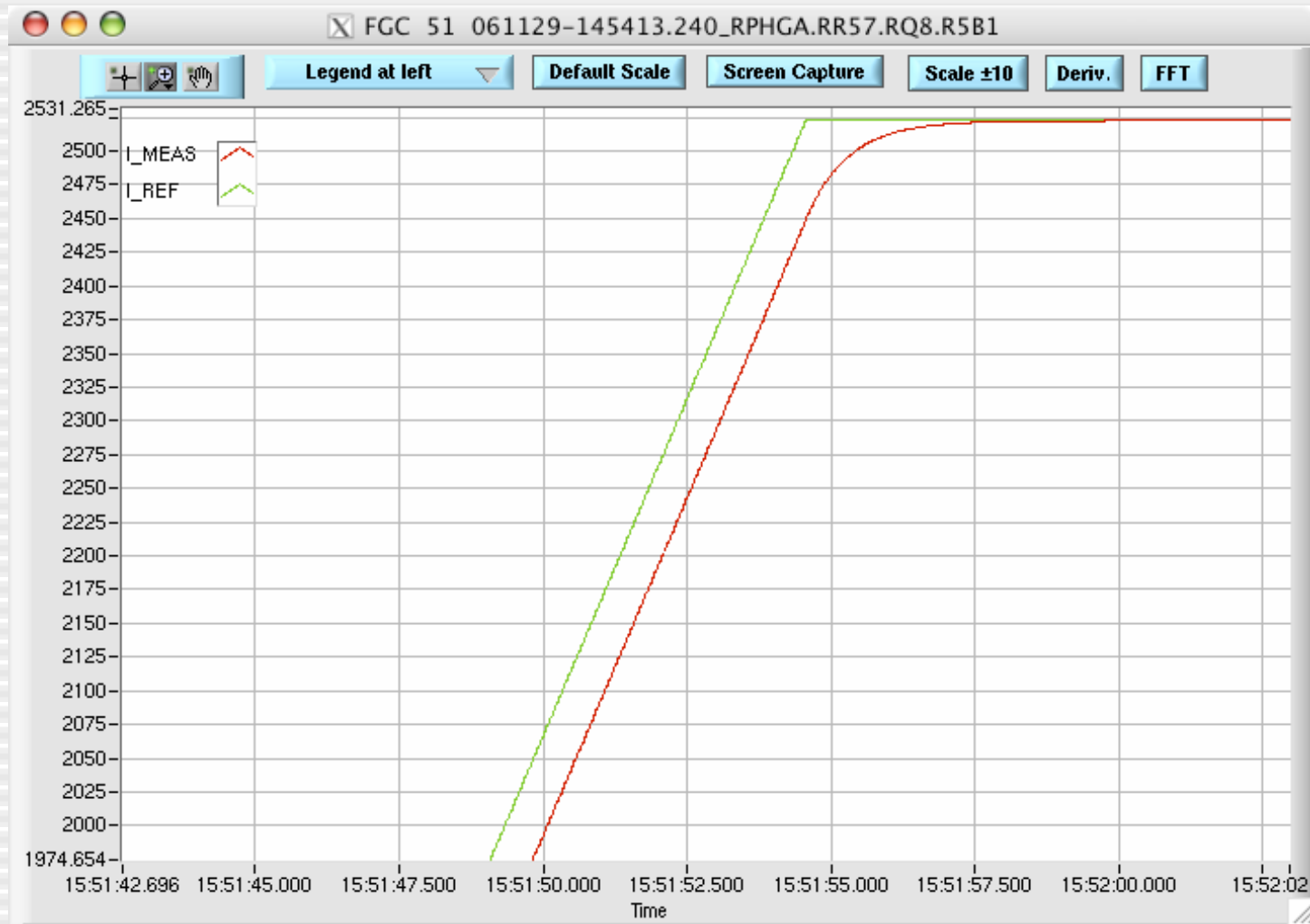
Search by: Events Search Engine File size: 19 kB Loading

Show in table Show in chart

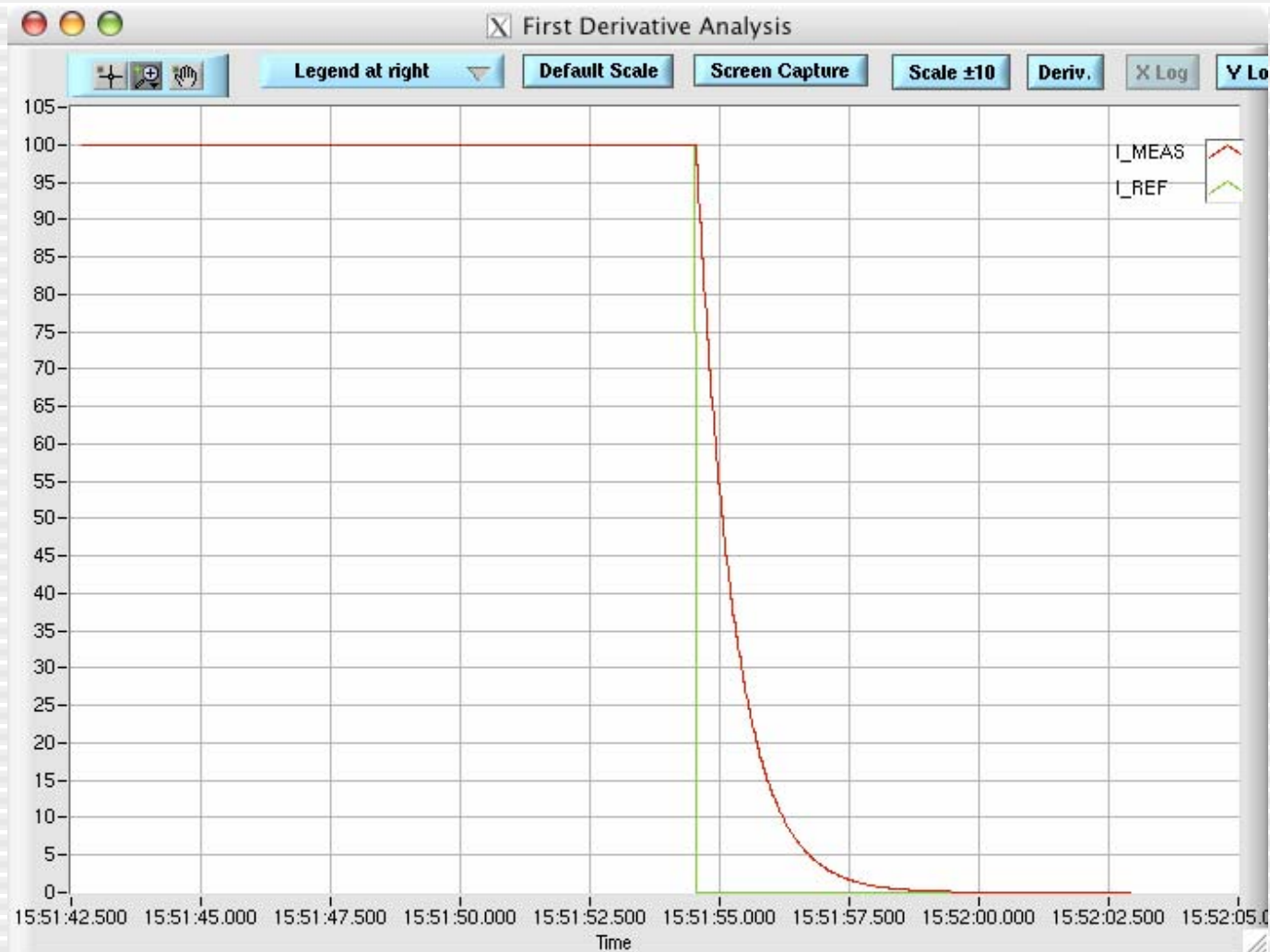
3.3 PC Expert Analysis



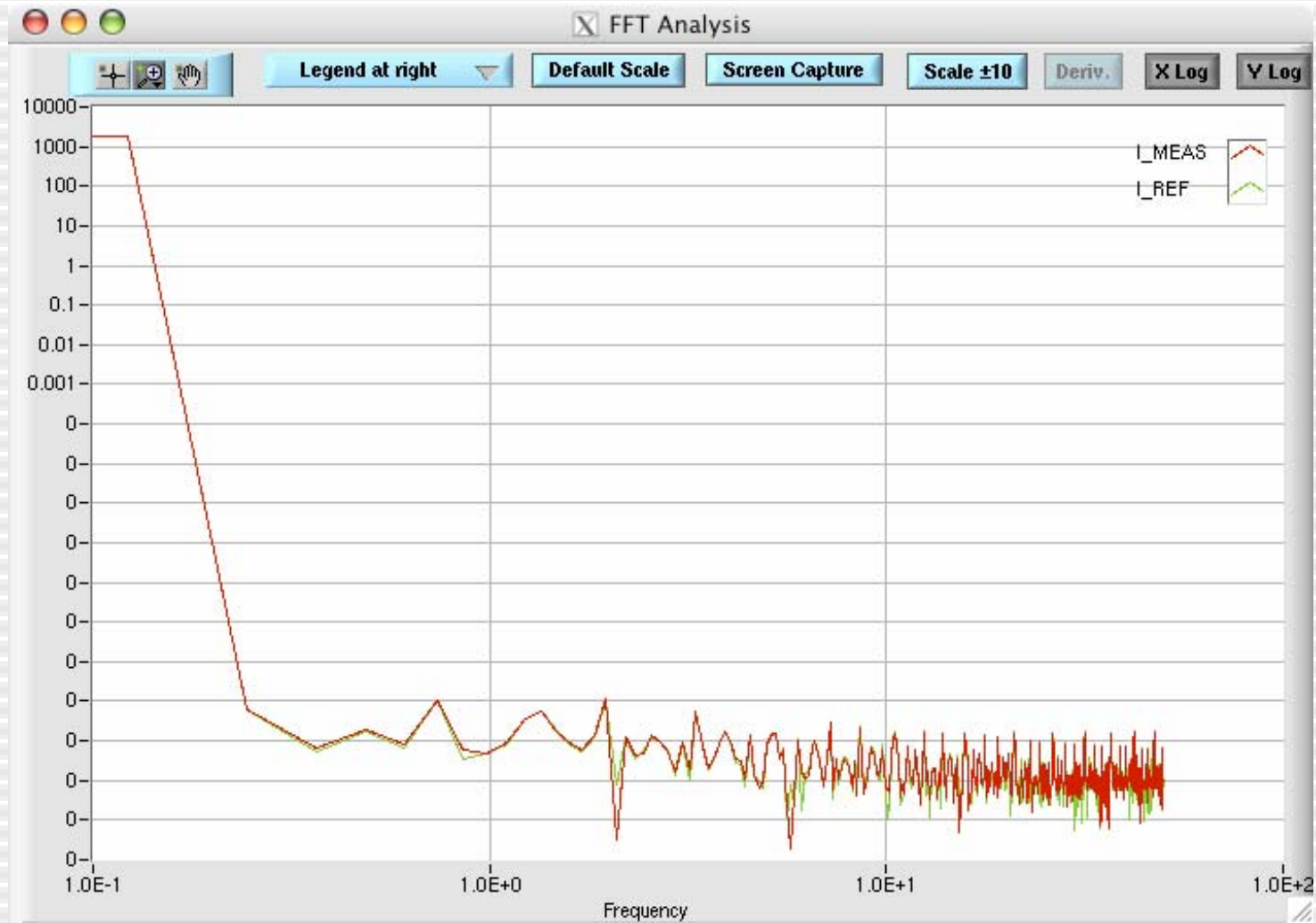
3.3 PC Expert Analysis



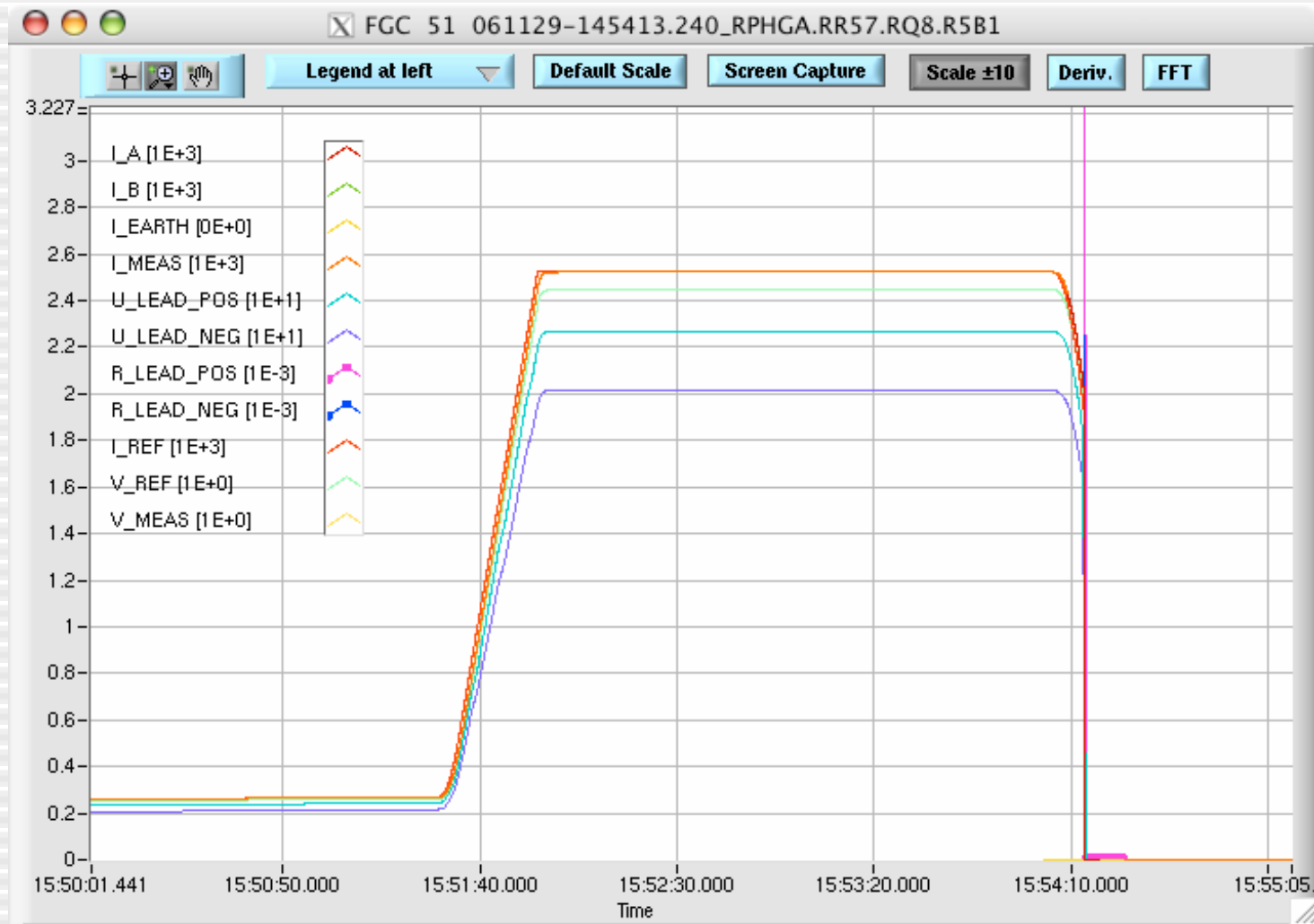
3.3 PC Expert Analysis



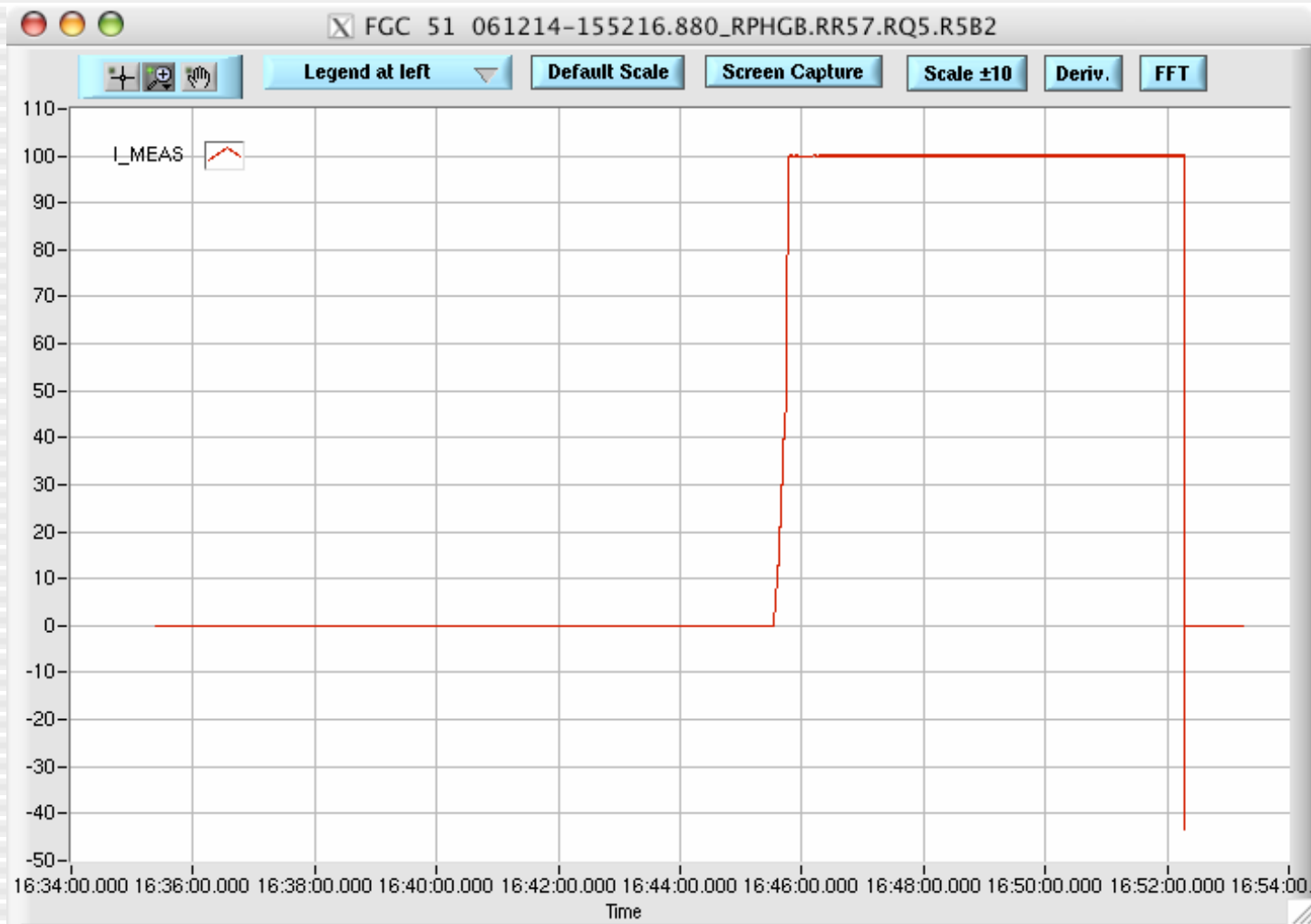
3.3 PC Expert Analysis



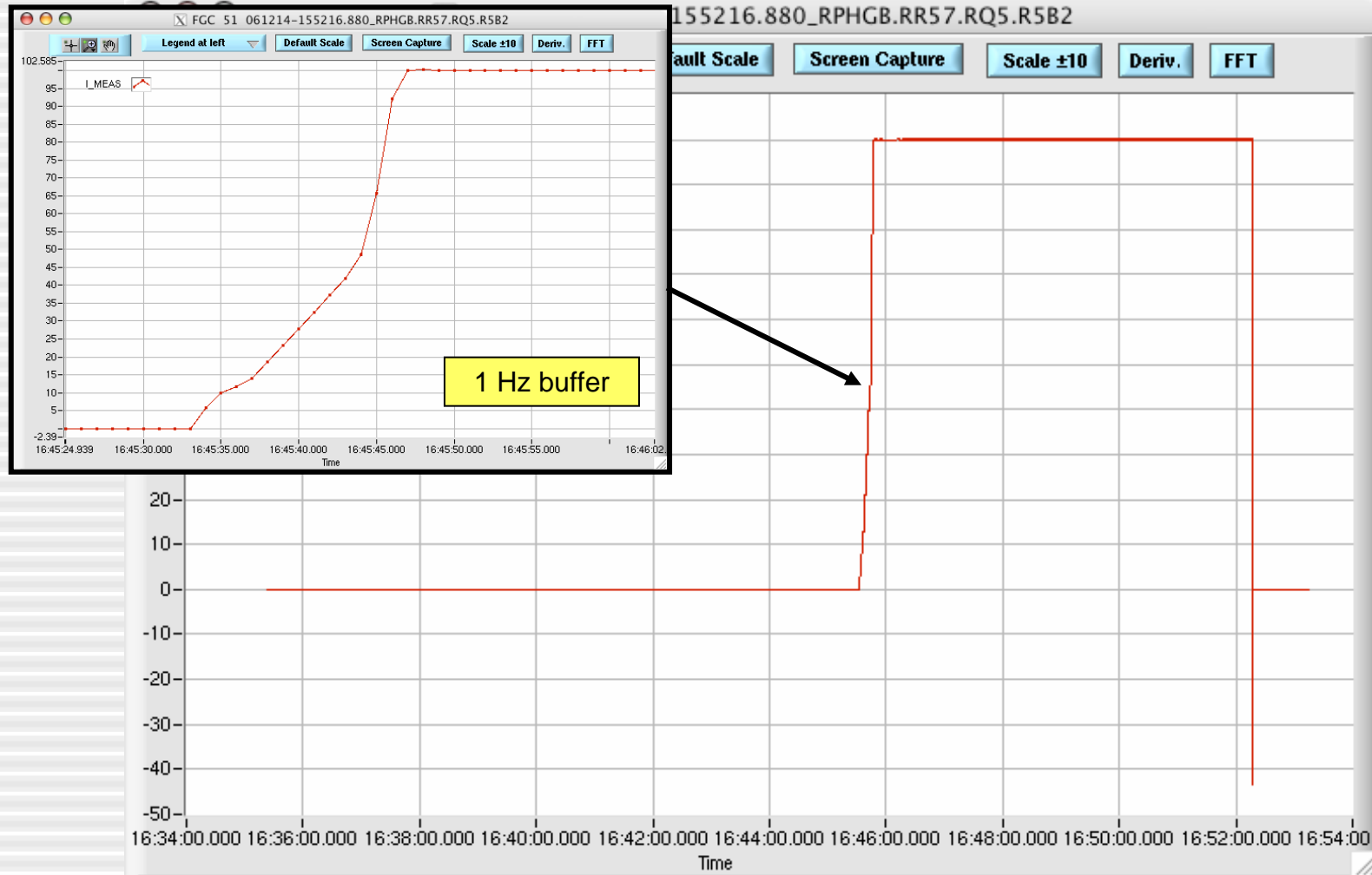
3.3 PC Expert Analysis



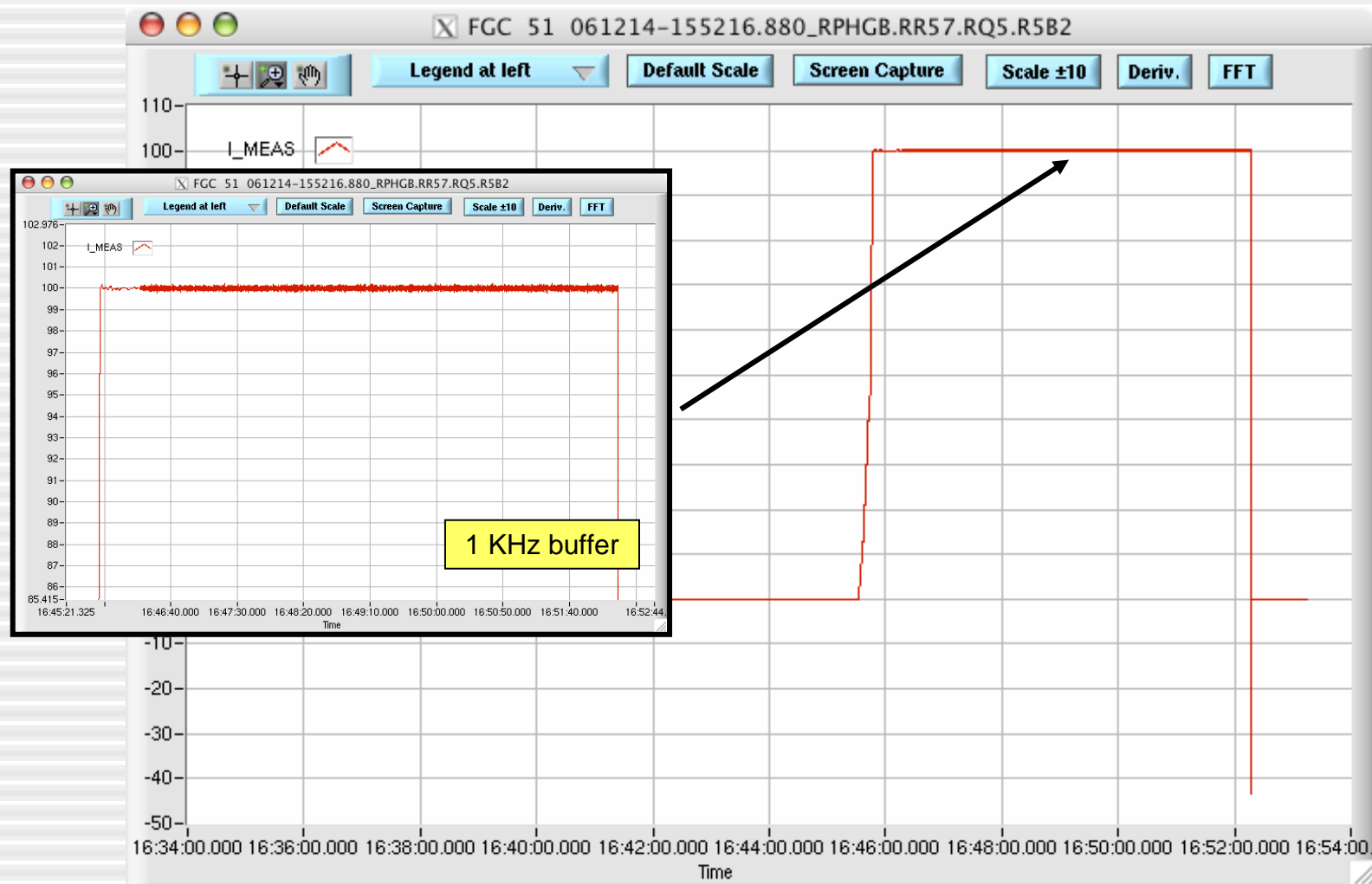
3.3 PC Expert Analysis



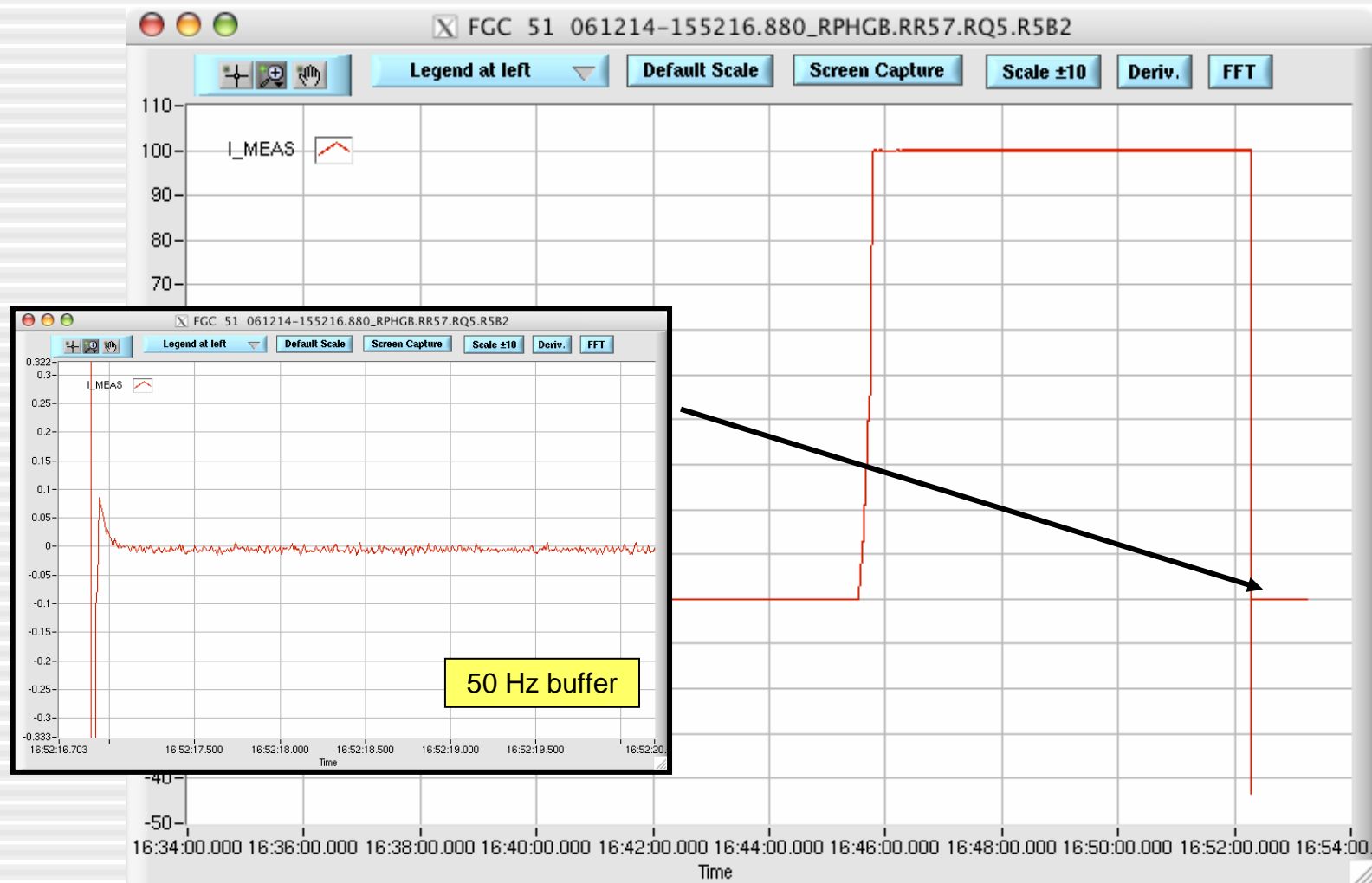
3.3 PC Expert Analysis



3.3 PC Expert Analysis



3.3 PC Expert Analysis



3.3 PC Expert Analysis

PM_Browser V1.1.6

Beginning Date: 00:00:00 01/01/2006
End Date: 13:45:02 01/12/2007

Date: Any
Sector: 7-8
Powering Subsector: Any
Equipment: RPLA

Equipment Keyword:

Events Found: 65

SEARCH

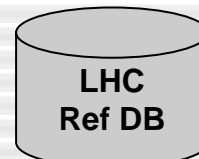
Events	Basket	Signals
061204-114852.480_RPLA.14L8.RCBH13.L8B1	061129-145415.420_RPHGB.RR57.RQ5.R5B2	PROPERTY
061204-174313.940_RPLA.14L8.RCBV14.L8B1	061129-145413.240_RPHGA.RR57.RQ8.R5B1	SYMBOL
061123-095712.660_RPLA.16L8.RCBH15.L8B1	061129-144157.580_RPLB.UJ56.RCSSX3.R5	ACTION
061123-142035.480_RPLA.16L8.RCBH15.L8B1	061129-141728.740_RPLB.UJ56.RCOSX3.R5	I_A
061123-095703.440_RPLA.16L8.RCBH16.L8B2	061129-104337.000_RPMBB.RR57.ROD.A56B2	I_B
061123-142046.440_RPLA.16L8.RCBH16.L8B2	061123-142035.480_RPLA.16L8.RCBH15.L8B1	I_EARTH
061123-095724.720_RPLA.16L8.RCBV15.L8B2	061123-142041.480_RPLA.16L8.RCBV16.L8B1	I_MEAS
061123-102939.400_RPLA.16L8.RCBV15.L8B2	061204-173842.880_RPLA.20L8.RCBV20.L8B1	U_LEAD_POS
061123-142025.600_RPLA.16L8.RCBV15.L8B2	061208-145534.540_RPLA.24R7.RCBH23.R7B1	U_LEAD_NEG
061123-095706.640_RPLA.16L8.RCBV16.L8B1	061206-102512.580_RPLA.28L8.RCBH27.L8B1	R_LEAD_POS
061123-103925.000_RPLA.16L8.RCBV16.L8B1		R_LEAD_NEG
061123-142041.480_RPLA.16L8.RCBV16.L8B1		I_REF
061205-121301.080_RPLA.18L8.RCBH17.L8B1		V_REF
061204-165402.020_RPLA.18L8.RCBV18.L8B1		V_MEAS
061204-171358.700_RPLA.20L8.RCBH19.L8B1		DATA STATUS
061204-171358.720_RPLA.20L8.RCBV19.L8B2		CLASS ID
061204-173842.880_RPLA.20L8.RCBV20.L8B1		ST_FAULTS
061205-113107.700_RPLA.22L8.RCBH21.L8B1		ST_WARNINGS
061205-113107.700_RPLA.22L8.RCBV21.L8B2		ST_LATCHED
061205-113116.740_RPLA.22L8.RCBV22.L8B1		ST_UNLATCHED
061205-101220.120_RPLA.24L8.RCBV24.L8B1		STATE_PLL
061208-145534.540_RPLA.24R7.RCBH23.R7B1		STATE_OP
061208-112005.580_RPLA.26R7.RCBH25.R7B1		STATE_VS
061205-153031.460_RPLA.26L8.RCBH27.L8B1		STATE_PC
061206-102512.580_RPLA.28L8.RCBH27.L8B1		ST_MEAS_A
061208-163502.280_RPLA.28L8.RCBH27.L8B1		ST_MEAS_B
061208-163511.020_RPLA.28L8.RCBH28.L8B2		
061206-102237.400_RPLA.28L8.RCBV27.L8B2		
061208-163502.260_RPLA.28L8.RCBV27.L8B2		
061208-163511.020_RPLA.28L8.RCBV28.L8B1		
061208-125456.920_RPLA.28R7.RCBH27.R7B1		
061208-163942.060_RPLA.28R7.RCBH27.R7B1		

Search by: Events Search Engine File size: 19 kB Loading

3.3 PC Expert Analysis



PC data

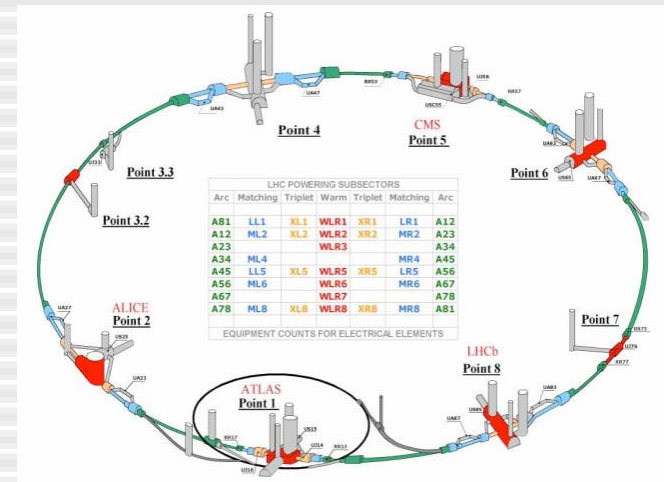


Tunnel areas
Converters types
Powering sub circuit

The screenshot shows the PM_Browser V1.1.6 interface. On the left, there are search filters for Date (Any), Sector (7-8), Powering Subsector (Any), and Equipment (RPLA). A 'SEARCH' button is visible. The main area displays a list of events with columns for Date, Equipment, and Event ID. The 'Basket' tab is active, showing a list of selected events. On the right, a 'Signals' panel lists various properties and actions.

3.3 PC Expert Analysis

The PC expert application is used for the HWC of the Power Converters



4. Status of the applications

4. Status of the applications

- The communication method between PMAA & the new LHC-SEQUENCER has to be changed with CMW subscribe
- Several parameters are still missing in the AA (i.e. limits, delay between signals, ranges ...)
- Specific views must be integrated to help experts during HWC (i.e. logical signals for PC, ...)

5. Conclusions

5. Conclusions

- Analysis blocs can be easily re-used for new clients
- Existing browsing structure can be adapted to new requests
- Merge of the browsing or extraction tools for all clients could be possible
- We are open to all the specifications