MP3 after HWC

Moderated by M. Bednarek, B. Auchmann

Overview

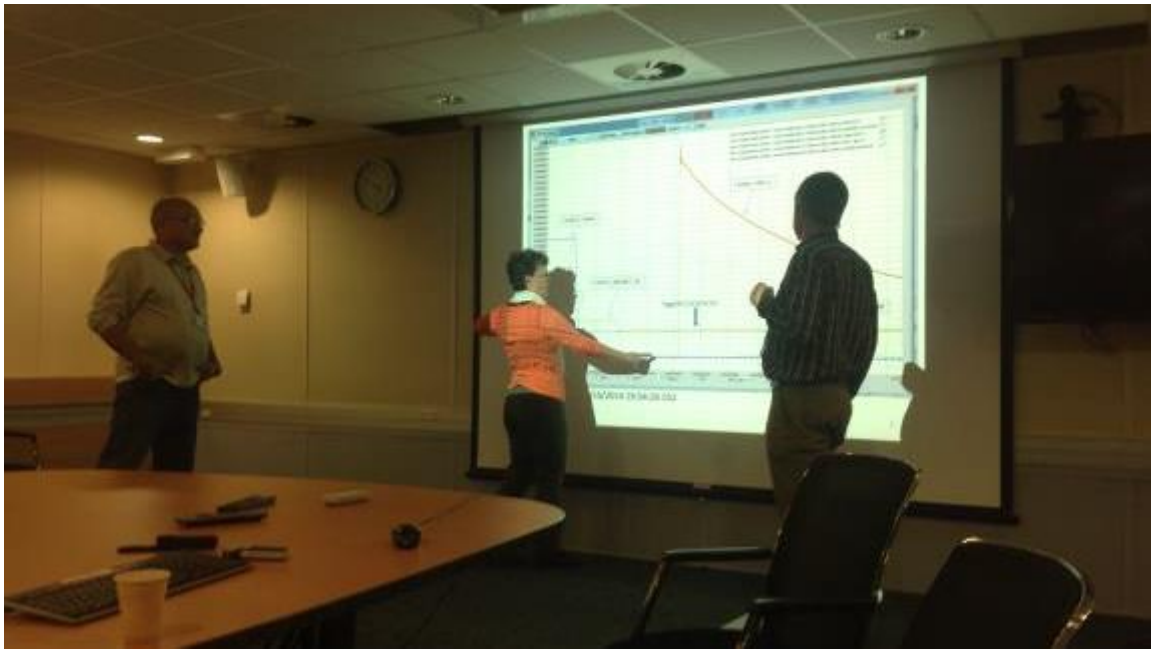
- Future of Powering-Test Analyses.
- Analysis of powering events during Run 2.
- Online monitoring during Run 2.
- Setting priorities.
- Other topics for MP3 meetings.
- Summary of main questions.

Future of Powering-Test Analyses

Could all powering tests have an automatic MP3 signature?

YES!

Even quench analysis could be automated in principle – ideally in combination with automatic detection of quenches!



Future of Powering-Test Analyses

Certain conditions need to be met (mentioned previously):

- Improve PM data quality decisively (timing, data defects).
- Define criteria *(currently only heater-discharge test is not based on quantitative criteria – even though many should be revised and have been treated leniently during HWC).*
- Implement/update analysis tools.

Strongly desirable:

- Proper storage of analysis data (no more MTF, what else?)
- Tools for statistical and trend analysis of test results.

Analysis of Powering Events

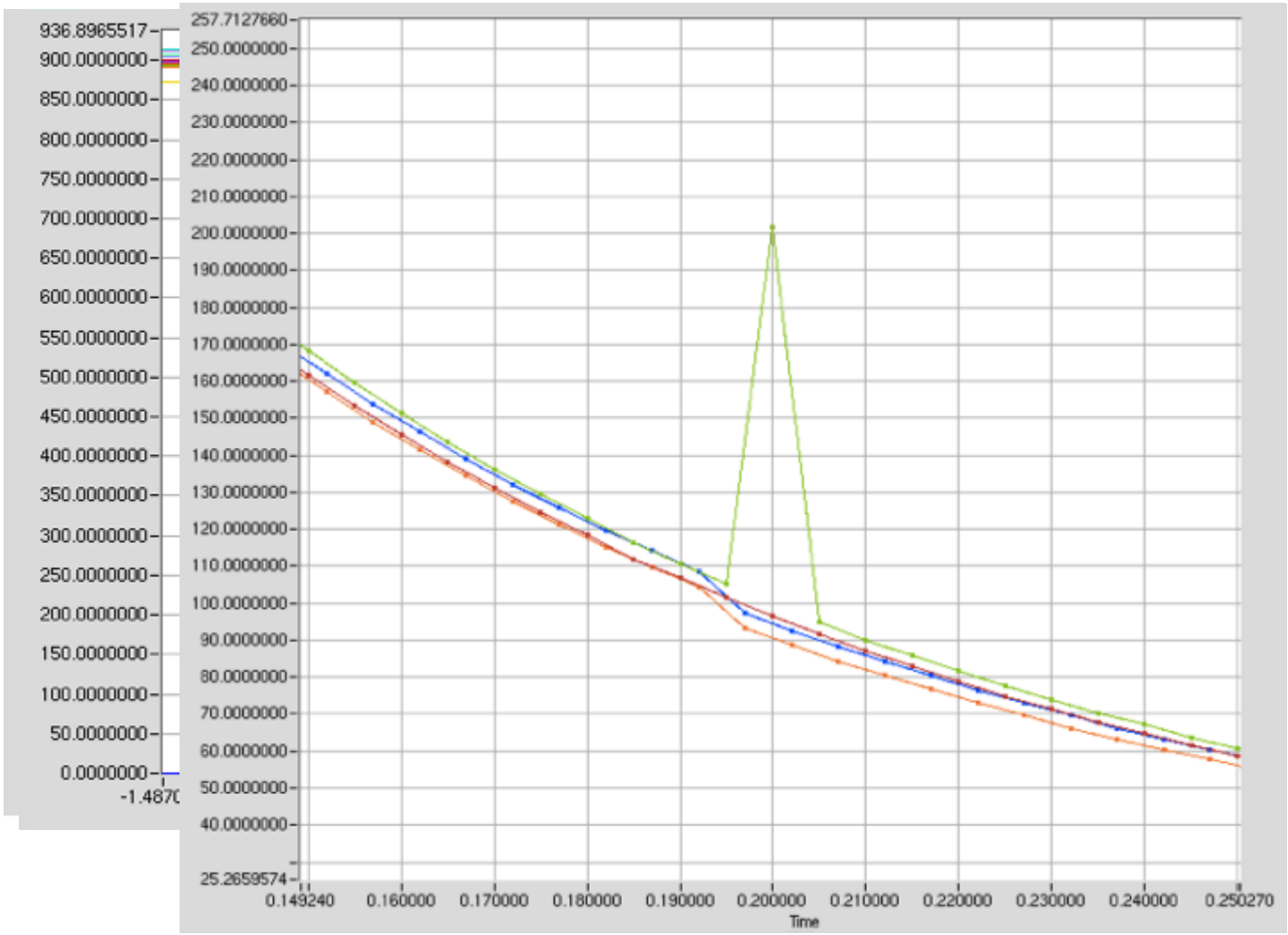
Analysis of powering events closely resembles HWC test analysis.

Often MP3 members follow simple algorithms (Twiki)

– **this can be done by a computer!**

Analysis of Powering Events

Defect or no defect?



Analysis of Powering Events

The following should be automated *(fully manual so far)***:**

- Recognize all protection-relevant events as such
  - e.g. spurious heater firing without powering of the circuit.
  - Introduce “Protection Event” category in PM framework?
- Understand the origin of the trip.
  - In particular, quenches need to be identified for all circuit types.
  - Map mutual coupling to help identifying relevant events.
- Authorize the re-powering based on analysis of
  - QPS signals (alive, not too noisy)
  - Quench heaters
  - EE
  - Diode leads
  - Grounding, etc.
- Store and monitor data in analogy to HWC tests.

Online Monitoring in Run 2

All of the following and more was observed during HWC.

There is no reason it cannot occur during a run period.

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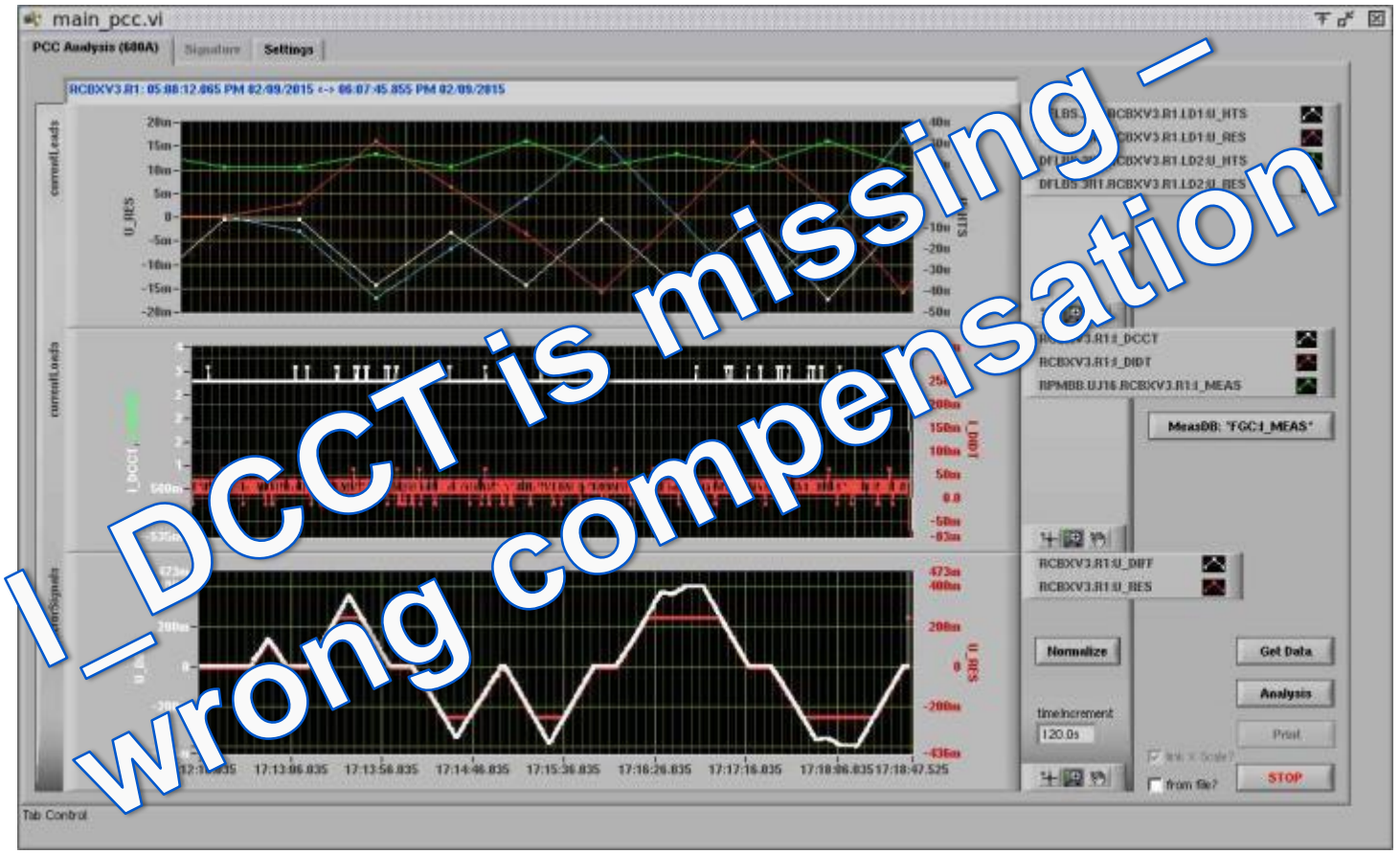

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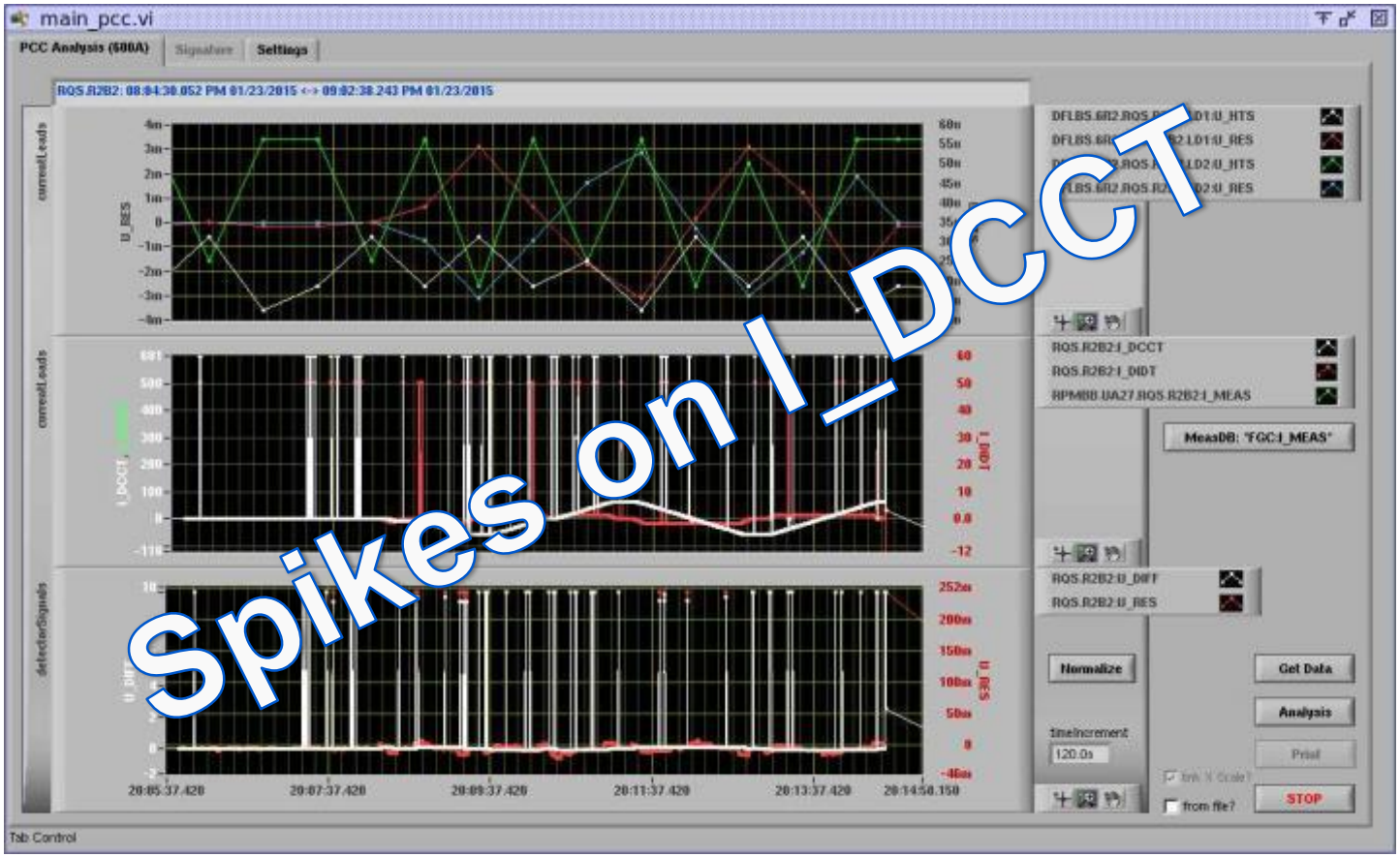

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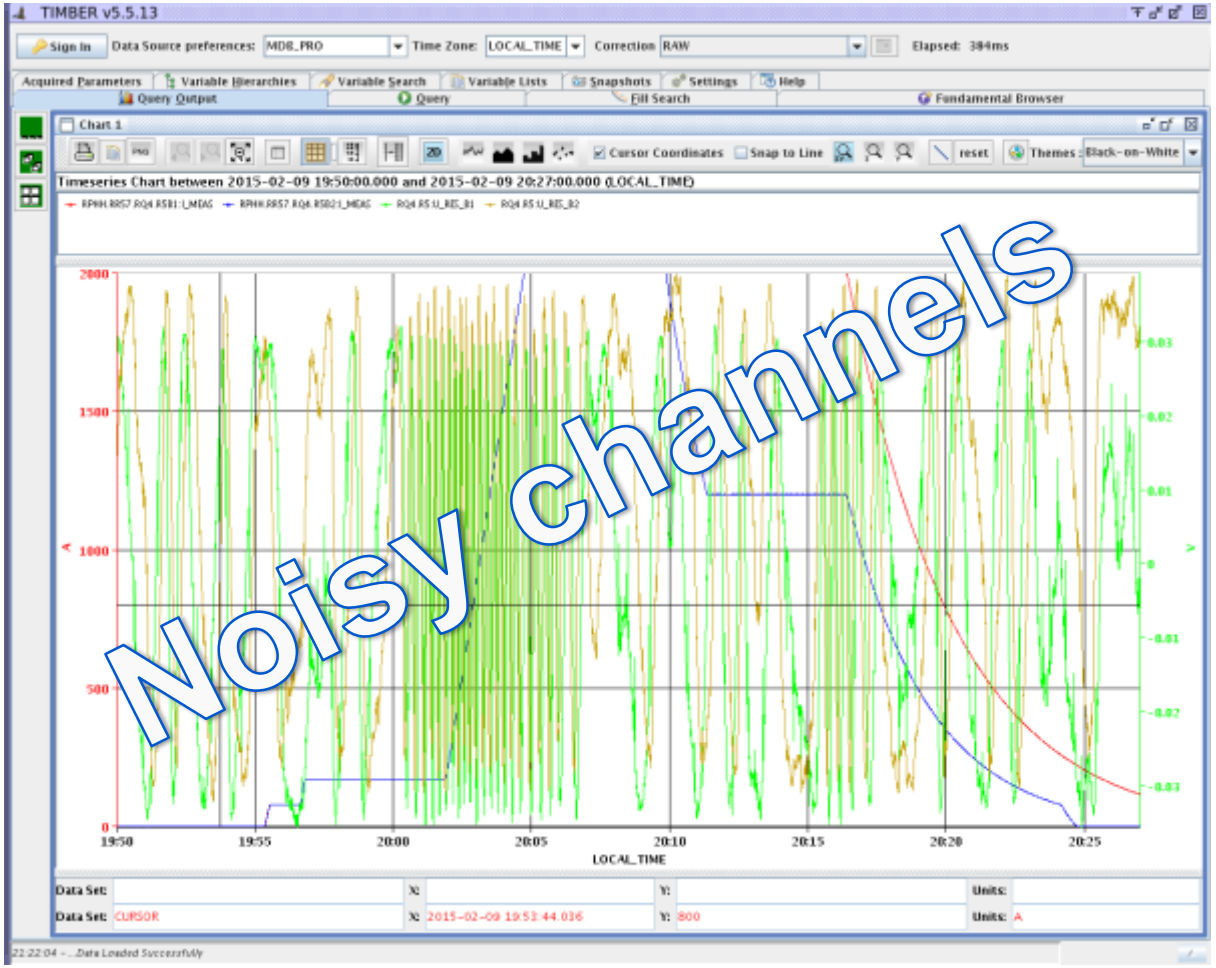

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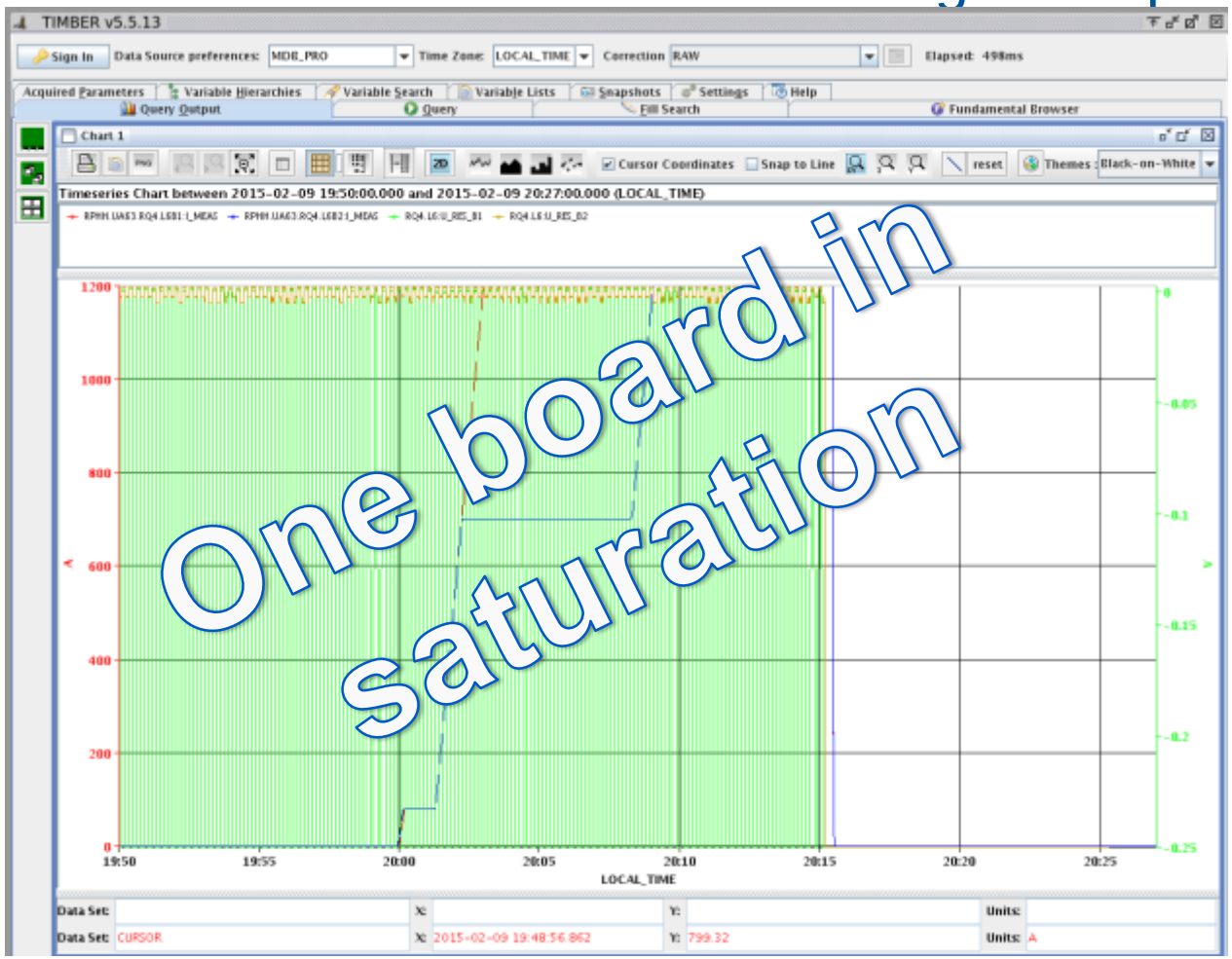

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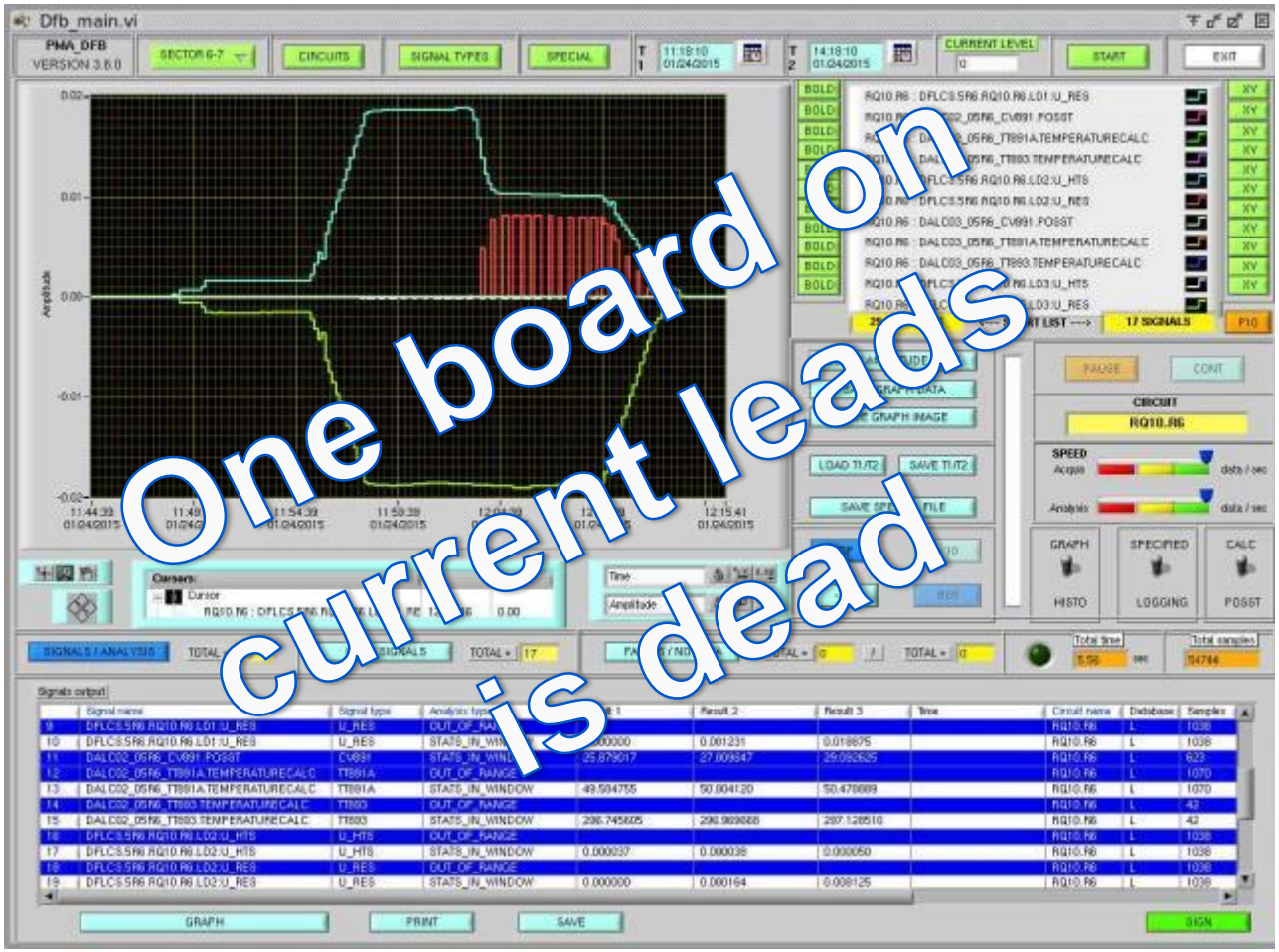

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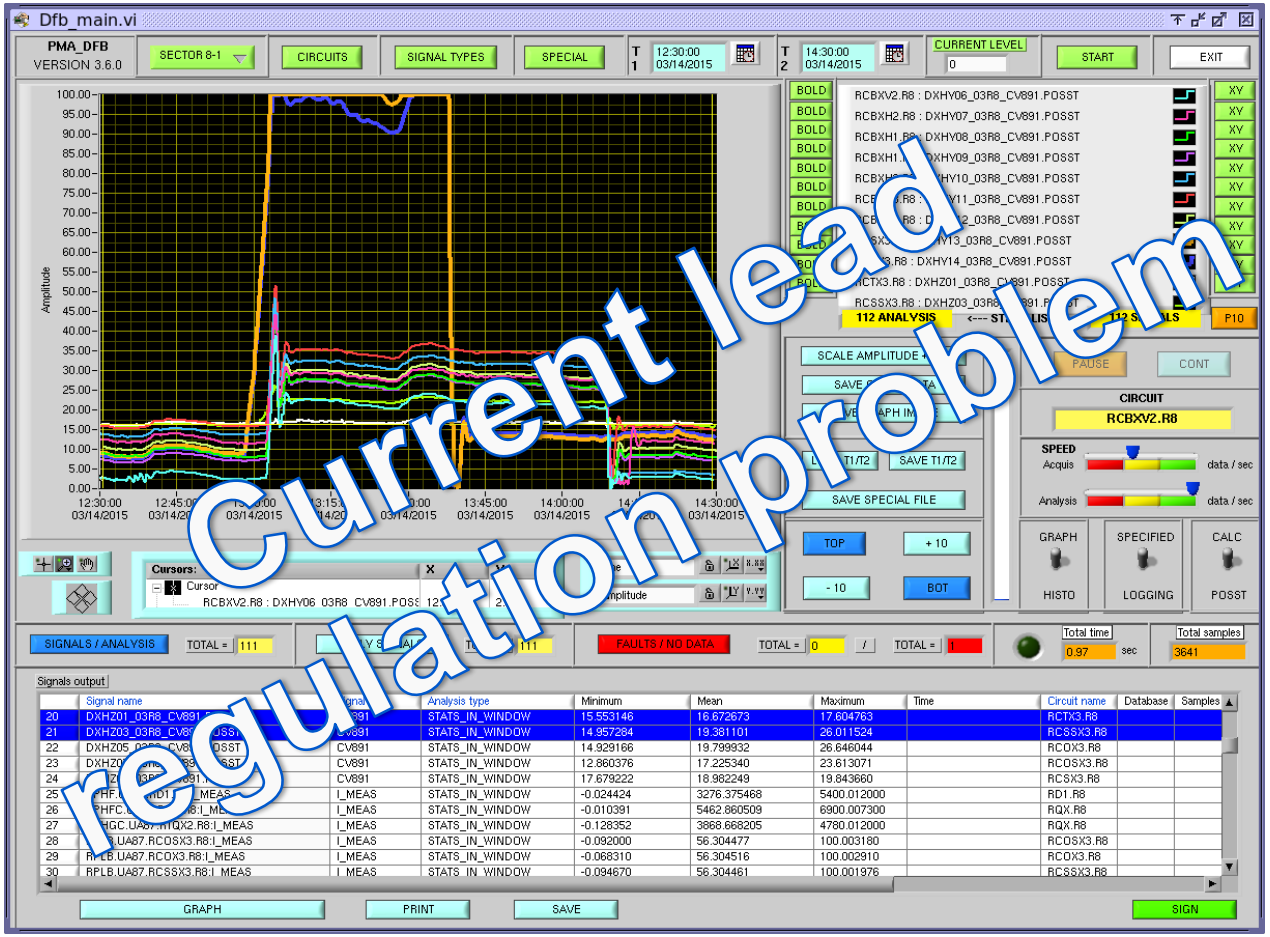


Online Monitoring in Run 2

All of these defects were detected during HWC.

During the run period we do not systematically perform similar checks.

These issues can be introduced during any access. They may appear spontaneously due to various reasons.

They should be detected by automatic processes that scan the logging data.

Online Monitoring in Run 2

Need a list of issues we want to detect, criteria and modules:

- Checks of noise levels on V-taps
- Checks of signal polarities
- Splice resistance
- Current lead temperature
- Compensations during ramps, drifts on plateaus
- Etc.

Will there be a framework and a DB?

- Should tests run daily, fill by fill, truly on-line?
- Should analysis be connected to SIS?

Setting Priorities

We have seen the need for automatic analysis for

- HWC including x-mas stops.
- Event analysis during run period.
- Continuous online monitoring.

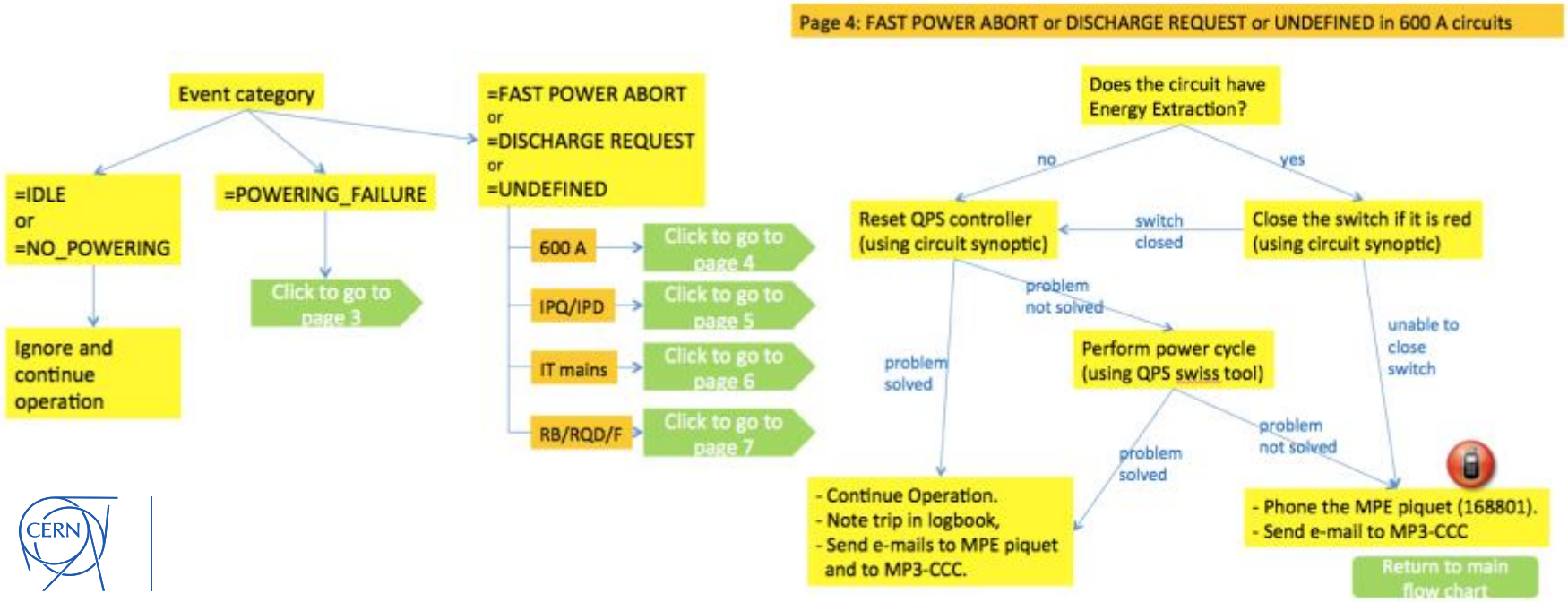
Questions that determine priorities are given below.

In the absence of a tool:

- Is there a risk that we are not protected?
- How big is the impact on machine availability?
- Is there an undue strain on human resources?

Other Topics for MP3 Meetings

- Which tests should be repeated/introduced for x-mas stop?
- Update
  - Procedures
  - Analysis handbooks
  - Analysis criteria
- Improvement to the EIC guide,
  - e.g., how to react to loss-of-communication QPS errors?



Summary of Major Questions

Improved data quality is crucial for automation. It will liberate many resources in the future.

- Can we contribute to the improvement of data quality in any way? *(QPS data communication review)*

Automated analysis of powering tests and powering events, as well as online monitoring are strongly desirable.

- In the three main automation tasks, how do we set the priorities?
- Is there enough manpower – how can we best contribute?

Data storage and data mining are unresolved problems that need to be addressed.

- How will analysis data be stored?

All we can think of at the end of HWC is how to improve analysis by means of automation.

- Is this view of the future of MP3 biased by recent events? Is there something else that should receive higher/equal priority?