Road Trip!!!!

Ausflug to the Big City!

(many thanks to our hosts)

Zeuthen Visit 20-22.Jan

- Invitation: MTF Group
  - Modulator Test Facility for the XFEL
  - Testing prototypes of XFEL Modulators
  - Work together with MHF-p group here
- Job List: MTF
  - “Issues” with the Front End Server in the Thomson Prototype Modulator: meet and discuss with the Thomson programmers
  - Preparations for “Long-Term” Tests
    - Archiving, including Event Archiving as done for the High Power RF stations at FLASH (T.Grevsmuehl)

But First: Administrative Stuff (yuk)

- Upgrade Archive Servers
  - Machine Data- (note to phil: new name?) and Event-Archives
  - for Contexts PITZ and MTF
    - Easier maintenance of configurations (i.e. adding and removing entries).
  - Zeuthen Selection of Computers, administration, ….
- Upgrade ENS
- Time Synchronization

Administrative Stuff (Part 2)

- Discussing Differences in Strategies Hamburg ←→ Zeuthen
  - "Client Program Launching" (distribution) for both Java and VB Apps
    - To share the same archive-display programs
  - Server Administration (by the Server-Writer)
    - Pandora Radiation Monitors. The same system in use here (PETRA, FLASH) will be used for PITZ

    A Simple Request from the User (me):
      - Could the Server PC for PITZ please be set-up in the SAME WAY as in Hamburg?
        - » Configuration, file copy at start-up, watchdog, shared drives, etc.

The A-Team / Task Force: Gunter, Ruediger, Stefan, Ulla, ...

(alphabetical order)

The Thomson Server

- Front End Server written in C (native TINE)
- Running on Embedded Windows XP
- Not just (analogue) High-Power + High-Voltage – also (digital) High-Tech! (FPGA's, etc.)
  - For XFEL reliability, reproducibility, fault-recovery, u.s.w.
- GUI runs on same PC
  - Data transport between client and server with windows messages
  - LOTS of data traffic (curves at 10 Hz), clicking buttons
    - Not one of the "typical" use-cases
- Sometimes, ... the server "crashes" "hangs
- During tests to try to induce the "problem" (with Phil at the keyboard) the server "hung"
  - mutex-a-phore/handshaking problem?

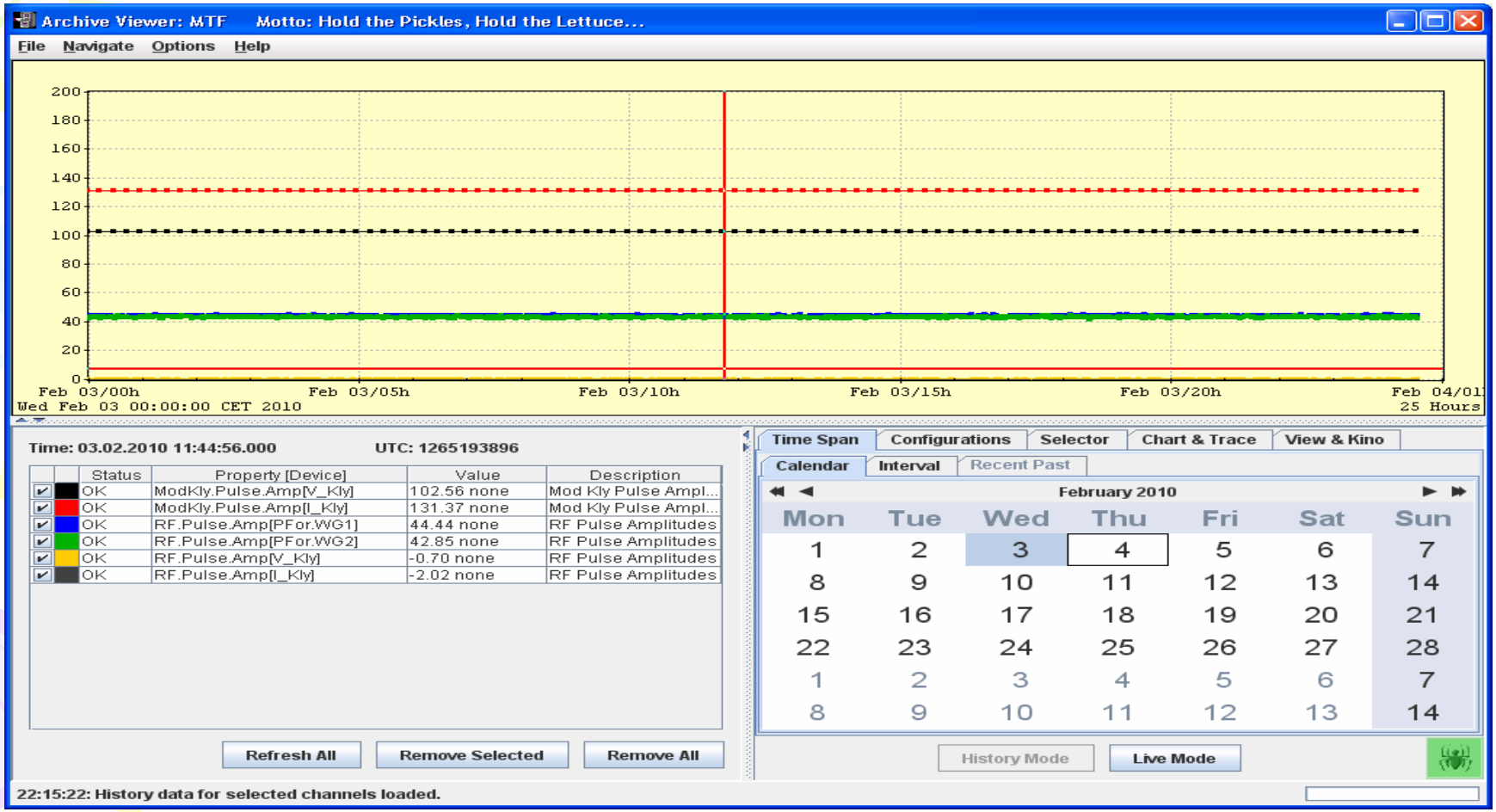
FIXED! (C-lib client/server tine32.dll : SVN 2125)

Modulator Archiving

- Design: 30 Hz Pulsing Rate
- Operation Mode: test Facility (not a User Facility)
  - Stability measurements (is the pulse-to-pulse stability within specifications?)
  - Operating the system at its limits (understanding trips, fixing problems)
- Copy the software for the archiving of the FLASH High Power RF
- Combination of Machine Data- and Event-Archiving
- Solution was presented at an earlier TINE Meeting:
  - The pulses should be “constant” (in amplitude and shape)
  - If the pulses change, then they are interesting!
  - Idea: Collect all pulse and compare in “real-time”
  - “Event” (d.h. a change) Detected – save data in Event-Archive
  - Monitor amplitudes, etc in Machine-Data Archive

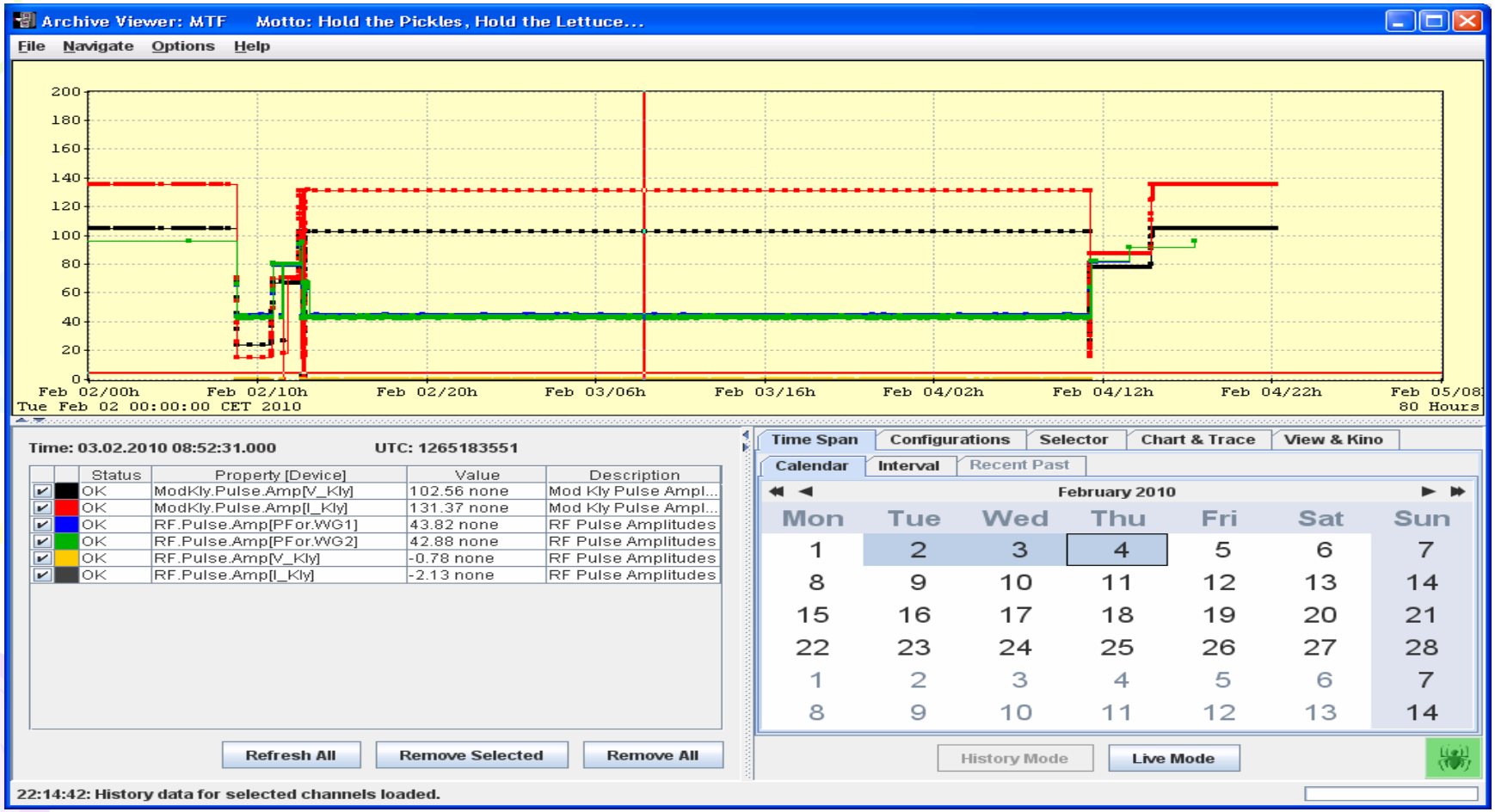
Stability Measurements?

An overview of one day of operations: Modulator Parameters: Voltage, Current, …



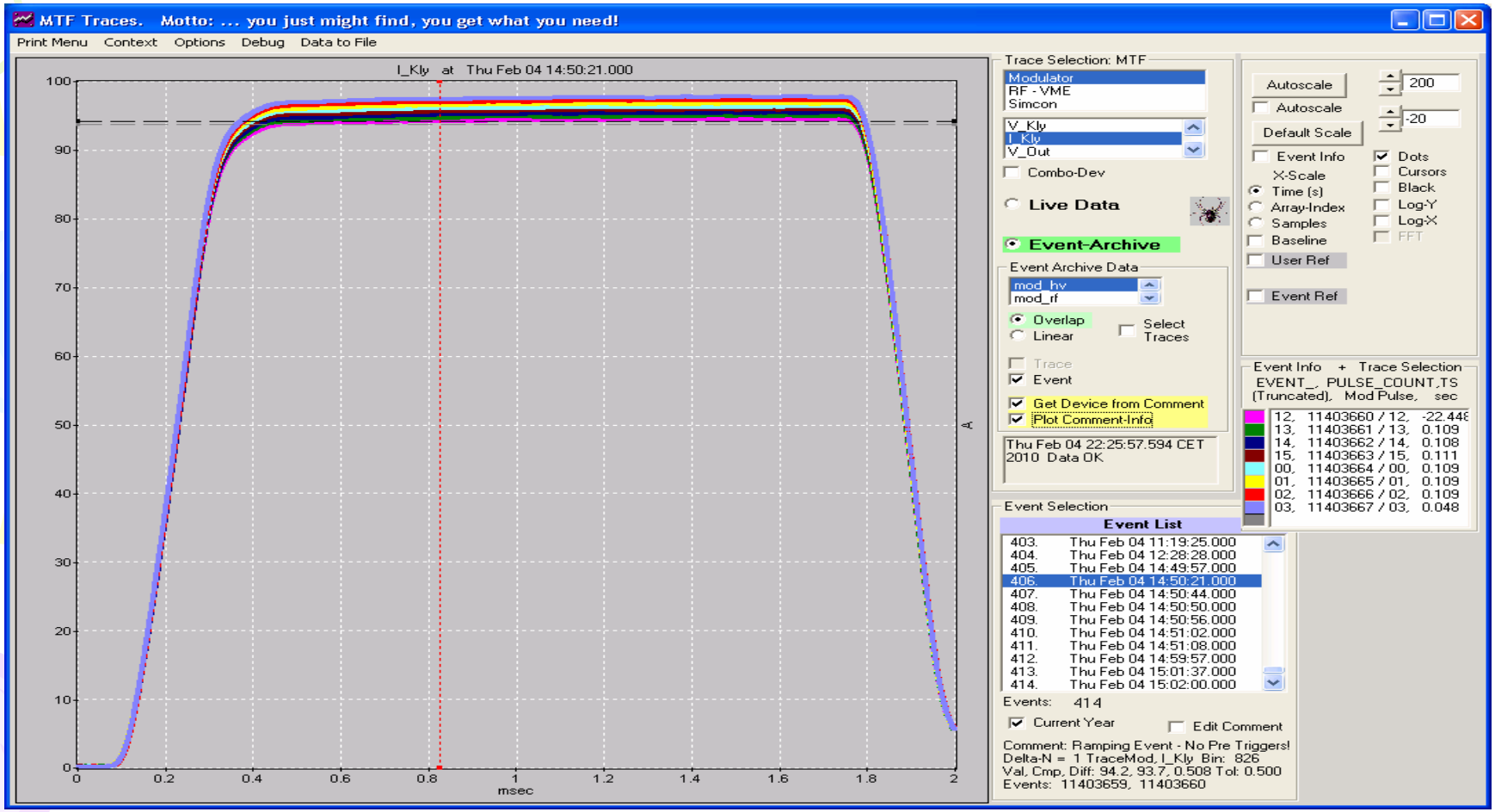
Three Days: With Bau-Phasen Zwischen-Durch?

With the Machine-Data Archive, it is quick to get an overview, to zoom into times when things were changing

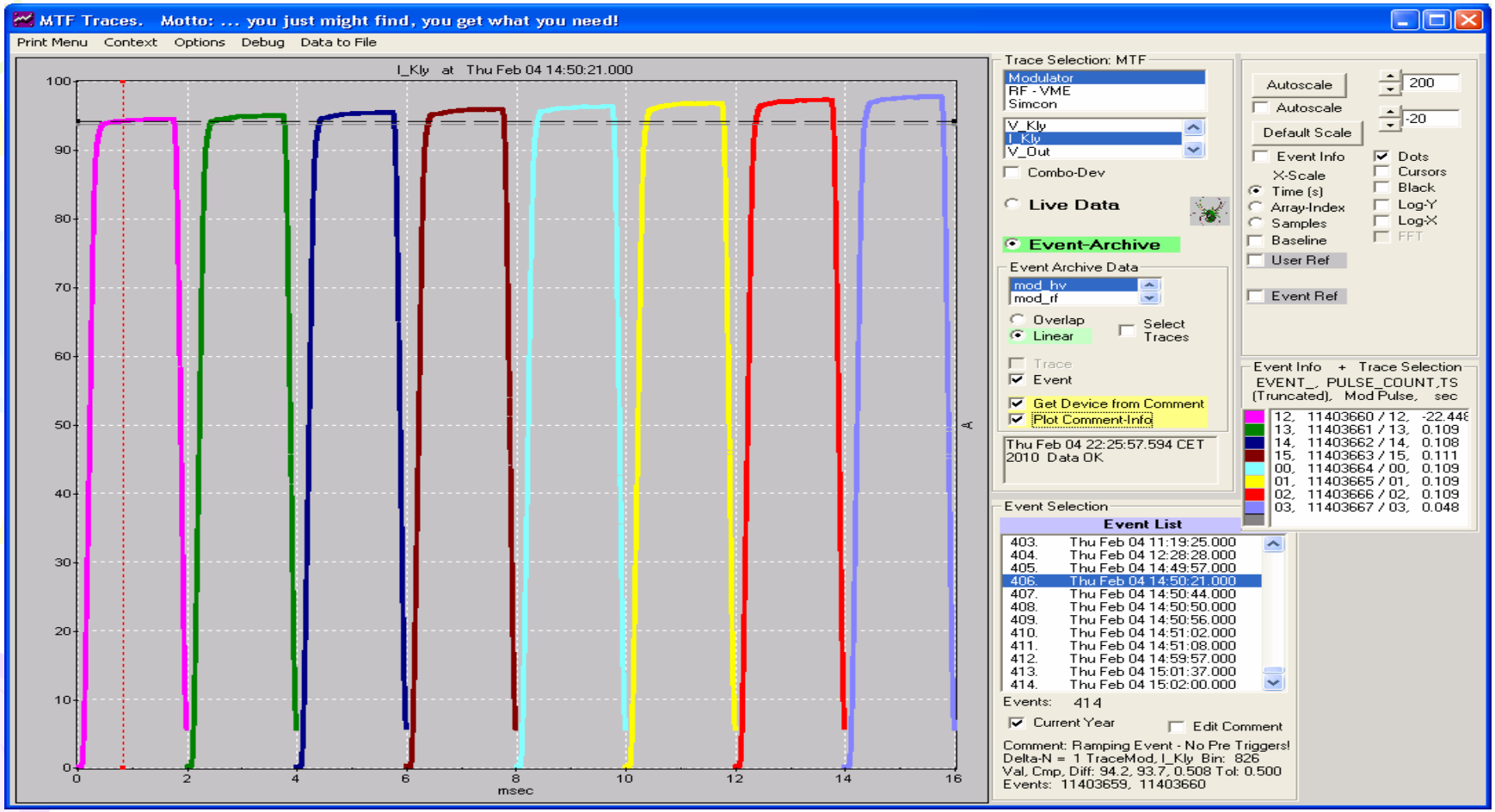


Event Detected: Pulse Values are changing!

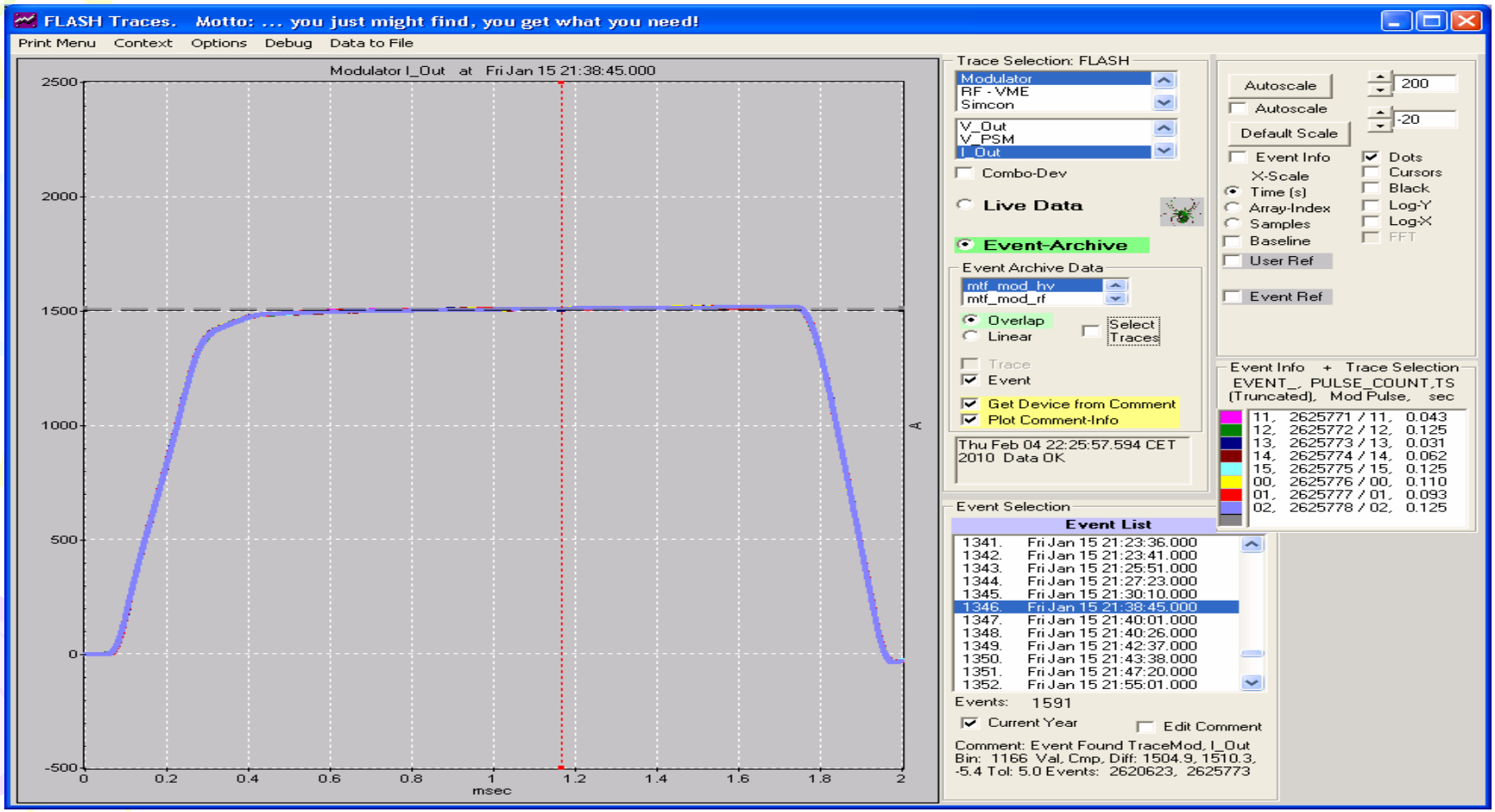
[Overlay the 8 pulses in the Event]



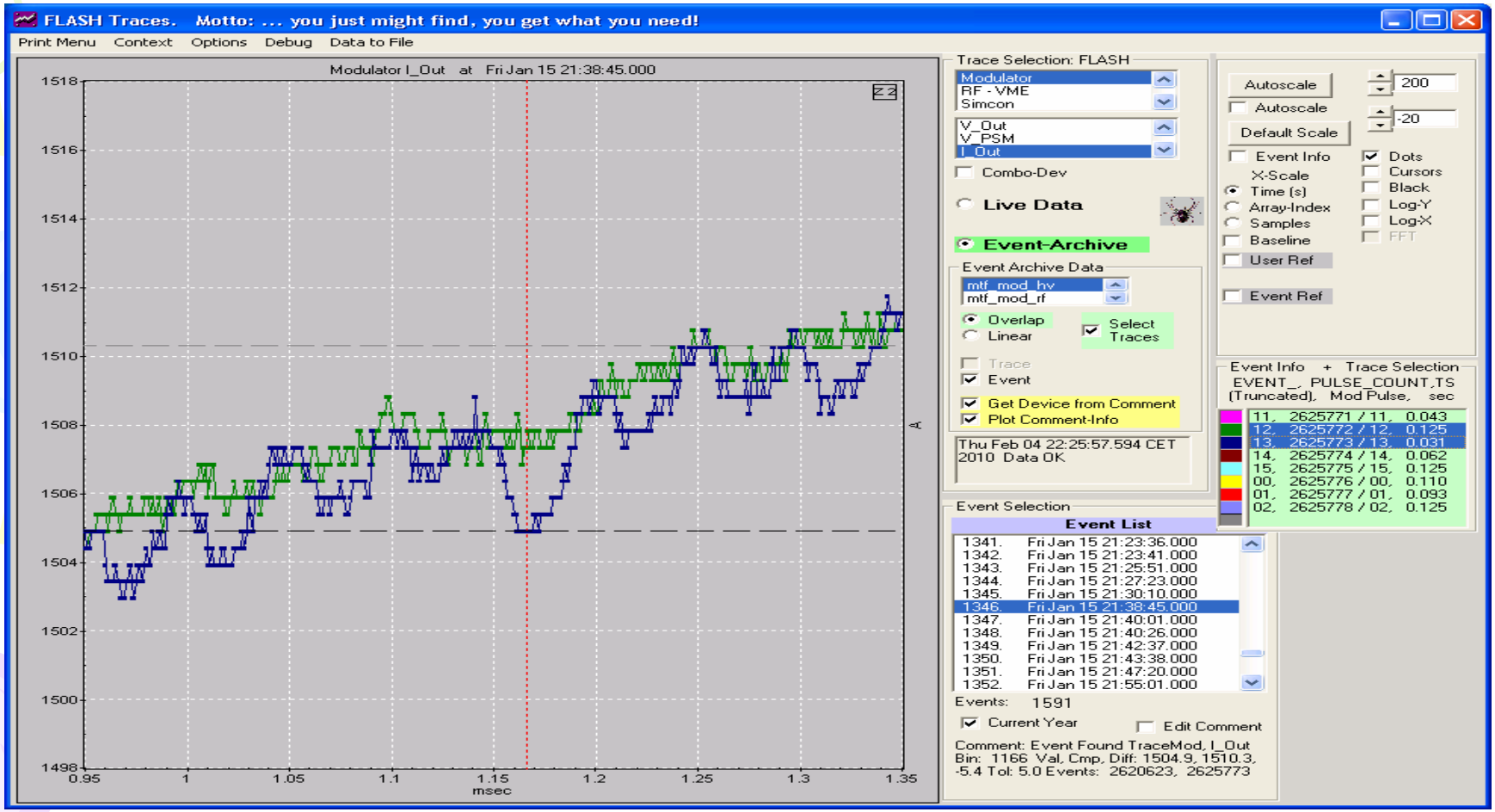
Just ramping up....



Detecting “Out of Tolerance” Events: The 8 pulses in this event look very similar…. try zooming in for a better look…



An extra large “dip” was detected and registered as an event.

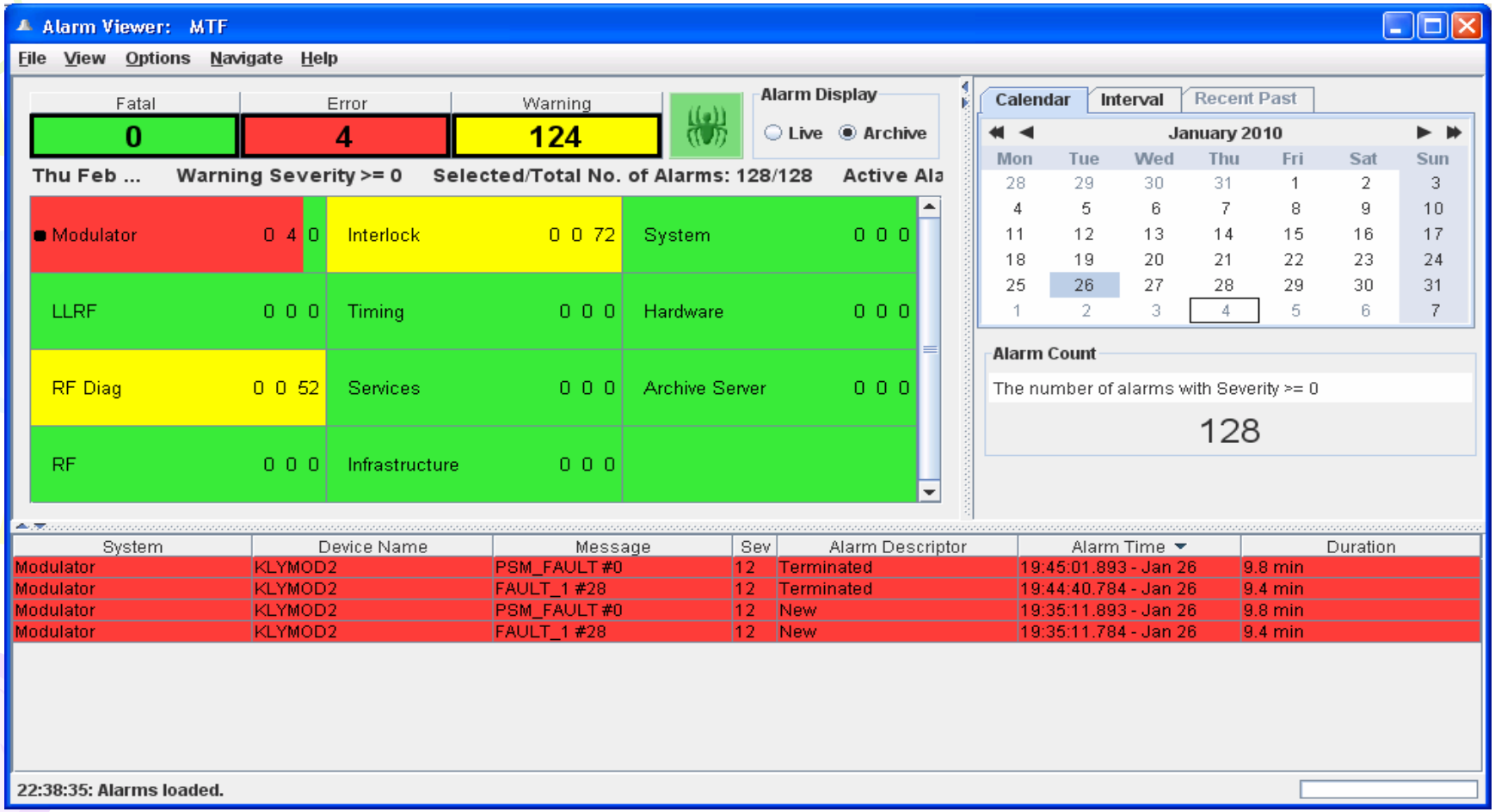


Unexpected !

- For the Offline analysis of events it is useful to have the additional information about the “status” of the hardware
- Sorting through lots of bits can be painful….
- But….
- The Thomson programmers learned about the TINE Alarm System from the Web-Documentation!
- They implemented alarms, and used the local alarm server to transfer error information to the client GUI!!!!!
- Connect to a Central Alarm Server, and get alarm-archiving for free!
- We weren’t planning on doing it, but Phil set up a Central Alarm Server for the context MTF!

Their alarm-information is “basic” (e.g. device: ServerName) but you have the fault info, time stamp sequence...

(These alarms are set and cleared with 100 ms time difference)



Summary

- Good Road Trip!
- Accomplished A lot!
  - Even though
    - missing Gunter for one day
    - next day missing networking for >1/2 the day
  - But that's all OK Because:
- Interesting Project, Fun Colleagues!
  - When's the next trip?

»And now back to you, Phil...