

## **WAVEWIN TRAINING & USER GROUP MEETING**

Philadelphia Hyatt Regency Hotel  
Minutes of the Meeting, June 1<sup>st</sup> – 3<sup>rd</sup>, 2010

### **OFFICERS**

Tony Giuliante	(Chair)
Bill Royse	(Vice Chair)
Beverly Giuliante	(Planner)
Maria Rothweiler	(Secretary)
Amir Makki	(Treasurer)

### **ATTENDING MEMBERS**

Jeff Pond	(NGrid)
Edward Morrow	(NGrid)
Bill Royse	(Progress Energy)
Shi Jiang	(Con Edison)
Brandon Desbrough	(ITC)
Jack Soehren	(ITC)
Florian Vasilescu	(Hydro One)
Tom Owens	(Virginia Power)
Robert Orndorff	(Virginia Power)
David Busot	(Tampa Electric)
David Keen	(Rockwell Automation)
John Fiske	(CVPS)
Pam Hughes	(CVPS)
Ralph Schneider	(CVPS)
John Walsh	(SBTS LLC)
George Semati	(TIS Labs)
Mark Taylor	(Softstuf)
Frank Rothweiler	(Softstuf)
Maria Makki	(Softstuf)
Amir Makki	(Softstuf)
Tony Giuliante	(ATG Consulting)
Beverly Giuliante	(ATG Consulting)

### **MEETING LOCATION**

Hyatt Regency Hotel, 201 South Columbus Blvd, Philadelphia, PA

## **MEETING SUMMARY**

The chair began by thanking the group for attending the annual Wavewin training and user group meeting and then introductions were made. The chair reviewed the agenda and discussed possible dates for next years meeting. The group agreed to meet during the second week of June.

The three day meeting proceeded as follows:

- 1<sup>st</sup> day, morning session: "***Dynamic Relay Testing Fundamentals***" seminar presented by Tony Giuliani.
- 1<sup>st</sup> day, afternoon session: "***Understanding CT Saturation & Transformer Inrush***" seminar presented by Tony Giuliani.
- 2<sup>nd</sup> day, morning session: "***Digital Fault Records Fundamentals & Analysis***" seminar presented by Amir Makki.
- 2<sup>nd</sup> day, afternoon session: "***Software Development Review & Planning Session***" meeting moderated by Maria Rothweiler.
- 3<sup>rd</sup> day, morning session: "***Transient Data Acquisition & the Sniffer***" seminar presented by George Semati.
- 3<sup>rd</sup> day, afternoon session: "***Digital Fault Records Collection & Management***" seminar presented by Amir Makki and Mark Taylor.

The sessions were held in open format and were made available via Webx. The minutes of the previous meeting were approved and the group was briefed on the research and development activities during the past year. The primary focus was on:

- Simplifying the device configuration, data access, and poll upon demand procedures.
- Enhancing the data management procedures by adding features to save retrieved fault records to multiple folders, to periodically archive and/or delete them, and to allow for their management in a friendly way (dispatch table).
- Adding specialized functions to the software channels to allow for plotting frequency, RMS, power factor, and active and reactive power.
- Developing support for the double ended algorithm from the Tony Giuliani seminar presented at last years user group meeting.
- Identifying the requirements needed to automate fault location calculations based on user defined associations between available equipment and recorded data.

- Identifying the basic parameters and relationships that are needed for developing a high-level/graphical interface for configuring the device manager.
- Identifying the requirements needed to interface with energy management systems (EMS) so that operators can pick options on their current systems and request data from a specific device in the substation.

By the end of the meeting the group had composed a considerable list of requested revisions, enhancements, and additions as noted in the following sections:

## **ANALYSIS SESSION**

The following issues were addressed in the analysis session:

### ***1) Discussions:***

- The latest COMTRADE revision was reviewed. It was determined that the date and time of the first sample and trigger points must be specified as critical in the standard. Amir was asked to suggest this correction when the standard is reaffirmed.
- COMTRADE should also allow for a novel method to support additional fields for specifying positive and zero sequence line impedance parameters and line length without losing compatibility with the 1999 version.
- Jack Soehren noted that searching by fault date gives only “dat” type files.
- Amir cautioned that, when using COMTRADE single file format with Binary type, Version 2010, a text editor cannot be used because this version combines the data and configuration files into one file.
- Bill Royse noted that it would be nice to provide a summary that defines the terms used in the Standards C37.111 and C37.232
- The F2 short cut key is used to edit a highlighted text file. Another technique is to double click on the file.
- Because there are standard system voltages used in North America, Tony Giuliani noted that the pre-fault system voltage can be used to determine whether the scale of the file is true peak or RMS peak.
- Jeff Pond cautioned that files with filtered data will not show DC offset.
- Jack Soehren asked how to change the phasor positions: Using the + or – keys, a user can change the position of a marked channel by moving it up or down.

## **2) Requests:**

- The web attendees requested that a list of attendees be sent to them.
- Jeff Pond commented that a standard Event Summary format should be created for the control center system operators.
- Amir was asked to run a test to determine the Wavewin file limit size in RAM and to describe some of the factors related to using large files.
- Ralph Schneider (CVPS) noted that SEL uses RMS calibrated values. It is desirable that Wavewin automatically convert the file to true peak anytime an SEL file is read.
- A problem was noted that when using Wavewin, the user may not have administrative rights (read/write access) to change configuration parameters. An alternative will be investigated.
- Wavewin does not allow resizing of the columns in the data display table. Plans to allow for such resizing will be made and implemented.
- Bill Royse would like to use the ++ scale on particular channels, not all channels.
- It is desirable to be able to individually adjust the times for merged Sequence of Events Records.
- Jeff Pond suggested that when frequency calculations are made with the calculator, the number of cycles be displayed so they can be easily determined.
- Fault location should be modified to show both percent of line and distance (miles or kilometers) in both calculators (single and double).
- Jeff Pond described a bug in Wavewin regarding the new Hathaway IDM recorders using the replay plus with extension “dat”. The problem was corrected in the latest release.
- Shi Jiang noted that a function to calculate CT saturation would be very helpful.

## **PLANNING SESSION**

The following is a list of motions approved:

- Import Excel data to device manager and hide unneeded driver fields via a preference setting.
- Add a new field as an additional parameter sent to relay to specify number of cycles to retrieve (usually should be 30 cycles, default should be 15 cycles). Also, should allow user to specify how many cycles to retrieve (this was a recent SEL firmware change).

- Allow the user to compose a library of his/her own set of custom drivers by manually selecting and assigning multiple drivers to the same device (from the configuration dialog). An example custom driver may include drivers to: *dial, login to switch, switch to port, login to relay, request a history list, poll for events, read meter values, logout from the relay, return back to the switch, logout from the switch, and then hang up.*
- Allow the user to access terminal mode information from the dispatcher table.
- The double ended algorithm should be automated. The goal is to automatically select the files, align them, arrange the channels, run the algorithm, and then create a summary file. The results should be presented in a paper at the Fault Disturbance Conference.
- For the double ended calculator, allow the user to set the V & I phase names in the preference window.
- For the double ended calculator, allow the user to print a summary of the fault location results.
- For the double ended calculator, it must have a provision to synchronize the data (by rotation).
- User Group reports and minutes should be sent to all attendees. This may help sign up additional members for future user group meetings.
- Write drivers to support a circuit breaker timing application.
- Write drivers to monitor battery during trip application.
- Bill Royse announced that he will be retiring this year and Jeff Pond was nominated without objection and agreed to serve as the vice chair of the user group.
- The group agreed to meet again next year with facilities for up to 30 attendees with web access and audio equipment.
- The planning session was concluded with a summary of the listed “near term” additions, fixes, and enhancements.

## **SNIFFER SESSION**

The following revisions were requested during the sniffer session:

- The group was cautioned that IP LAN addresses 0 & 1 are reserved and should not be used.
- For the gain settings, provide the actual measurement ranges, i.e.:

- 1) Gain 1 is 0.5 to 50 Amps,
  - 2) Gain 2 is 0.25 to 25 Amps, and so on.
- The group agreed to take the gain information to an advanced window because, typically, Gain 1 is used with all sensors unless there is a special application.
  - “Connect” should say “Upload” (actually none of the fields should be editable until an actual connection is made).
  - Once a connection is made, the “Connect” button should be mute (or consider renaming the “Connect” button to “Disconnect”).
  - “Downloading” should operate like “Saving to Disk”. (Provide a warning – “Are you sure you want to overwrite?”).
  - Time code field should be auto filled (it should be read from the computer or provided via a pop-up function).
  - Need a message that says: the “Unused” title means its channel data will not be saved.
  - Amir asked to add a mouse over function to define each button.
  - Sensor type and model number should be affixed on each sensor and should match what is shown in the sensors list in the configuration program.
  - Also, next to each sensor name the range of values or rating should be added.
  - The DC cancellation column should be taken out (the program should automatically decide when to apply it) and moved to an advanced window where interested users can control it.
  - The “Offset” and “Scale” columns should also be moved to the advanced window (no need to see them all of the time).
  - Re-label the “RMS” column to “Actual Value”, or “Measured Value”, or just “Value”.
  - The trigger “Duration” column should be specified in milliseconds, not in samples.
  - The trigger limits for the “Upper” and “Lower” columns should be set automatically, they should also be moved to the advanced window for interested users. Actually, the best thing is to just have two fields:
    - 1) Trigger Above, and
    - 2) Trigger Below.
  - Remove the “Primary” column (not needed, this application is always in secondary values).

- Change “P/S ratio” label to “CT & PT ratios”.
- Add a new column labeled “Display in” with a dropdown menu (kA, kV, etc.).

**PREPARED BY**

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