ASPEN LEAFLET

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Upcoming Events

Please visit our website for details on the following events.

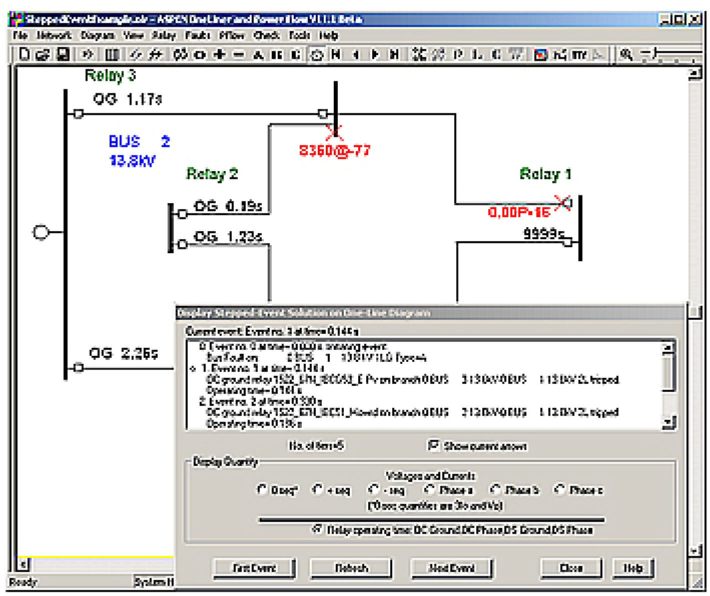
- On-line class on Relay Database Reports, on Sept. 9-10, 2008.
- Advanced OneLiner training class in Albany, New York on Sept. 16-18, 2008. The next class will be a regular class to be held in San Francisco in Feb. 2009.
- ASPEN Users Group Meeting on Oct. 20, 2008, in Spokane, WA, one day before the Western Protective Relay Conference.

Stepped Event Analysis

Stepped event analysis is one of the important additions in the upcoming V11 release of OneLiner™. A stepped event simulation begins an initiating short circuit defined by the user. The stepped-event logic then simulates subsequent relay-tripping and line-reclosing events until no further events are forthcoming.

The user has the ability to specify additional events to model evolving faults (e.g., a short circuit that starts as a single-line-to-ground fault and ends up being a line-to-line fault), breaker failure and other schemes.

At the conclusion of a stepped-event simulation, the program displays a modeless dialog box showing all the simulated events. The user can use the controls in this dialog box to “play” the events one by one. Figure 1 shows a series of events triggered by a single-line-to-ground bus fault.



- Hospitality suite at the Western Protective Relay Conference in Spokane, WA, evenings from Oct. 20-23, 2008.

New Users Since March 2008

OneLiner

- Hatch Mott MacDonald, Millburn, NJ
- Laramore, Douglass & Popham, Inc., Chesterfield, MO
- Michigan Tech University, Houghton, MI
- Peak Power Engineering, Golden, CO
- Phasor Engineering, Calgary, AB, Canada
- Power Consulting Engineers, Lilburn, GA
- Salient Power Engineering, Arvada, CO
- Shaw Energy Delivery Services, Charlotte, NC
- Third Planet Windpower Llc., Bad Axe, MI
- TriAxis Engineering, Vancouver, WA

Power Flow

- Rising Edge Engineering Ltd., Calgary, AB, Canada

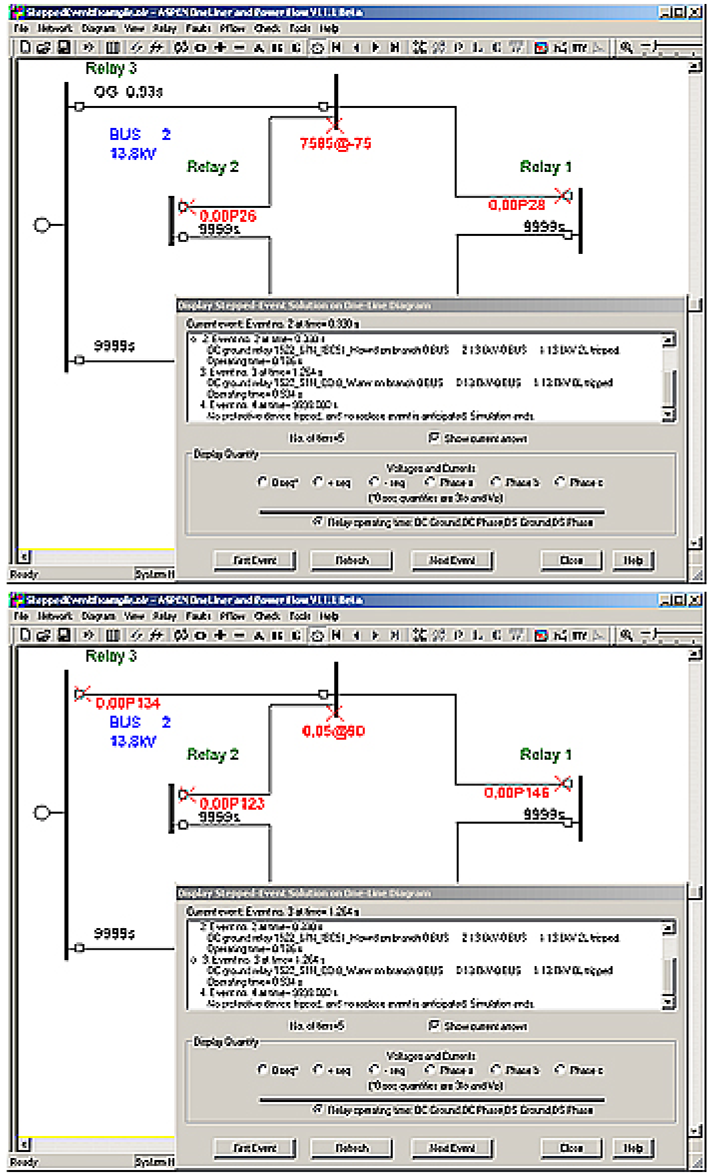


Fig. 1: A bus fault is cleared after three relay-tripping events.

The implementation of this feature was a major undertaking because these requirements:

1. For overcurrent relays, OneLiner has to track the disk position over time: Fault currents cause the disk to move forward, and periods of zero current cause the disk to either reset immediately or roll back according to the reset time.

2. For reclosers, OneLiner has to model the opening and closing operations until the devices lock out.

- Third Planet Windpower Llc., Bad Axe, MI

DistriView™

- Alaska Electric Light & Power, Juneau, AK
- Brown & Kysar, Inc., Battle Ground, WA
- Control Devices, Inc., New Iberia, LA
- HydroOne, Toronto, ON, Canada

Relay Database™

- Public Service Electric & Gas, Clifton, NJ
- Tacoma Power, Washington

Line Constants Program™

- Exponential Engineering Co. Fort Collins, CO
- Laramore, Douglass & Popham, Inc., Chesterfield, MO
- Maritime Electric Co., Charlottetown, PE, Canada
- Saudi Services for Electro Mechanic Work, Riyadh, Saudi Arabia

3. For distance relays, we added logic to simulate “start zone-2 timer on forward zone-3 or zone-4 pickup” because it is frequently used to protect 3-terminal lines.

4. For distance relays controlled by POTT and other schemes, the program has to model the communication and control logic.
We have demonstrated this feature at the last OneLiner class and at the Georgia Tech users’ group meeting. It was very well received. Many users have given us suggestions, and many of those are being implemented.

Current-Limited Generator Model

The short circuit current from solar photovoltaic systems and some wind turbines are often limited to 110 to 120% of full-load current. These devices have in common a dc/ac converter (or back-to-back dc/ac converters) as the interface between the source of electrical power and the utility network.
We are implementing a current-limited generator model in OneLiner in V11 to model these installations. The modeling parameters are same as those for regular generators, except the user must also enter the maximum current. The current limit is enforced by an iterative loop within the short circuit computation logic in OneLiner.

Fast Contingency Simulations in Power Flow Program

A “Batch Cases” feature has been in the ASPEN Power Flow Program™ for some time. Most users use it to look for branch overloads, abnormal voltages, and LTC adjustments under branch and generator contingencies. We are improving this feature for the upcoming V11 release to make it faster and more reliable. We also renamed the command as: “Batch Contingency Analysis”. The main improvements are these:

1. The editor for the Contingency Analysis file is implemented as a Windows “wizard”. The user can choose one of three paths at the beginning: Open an existing batch file, create an empty batch file, or create a new file with N-1 contingency cases. (The last option is new.) In all three cases, the user can add, delete and edit cases within the file.
2. The contingency-analysis command in V11 requires the user to

solve a power flow before simulating the contingencies. The program uses this base-case solution as the starting point for all the contingency cases. This scheme has two benefits. First, it enhances the reliability of convergence and speeds up the solution. Second, it gives the user the flexibility to enforce different automatic-control constraints for the base case and for the contingency cases. As an example, the user can solve the base case with all the automatic controls turned on, and then (for speed considerations) omit generator PV/PQ switching and LTC tap adjustment for the contingency cases.

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