PSS®ODMS Used for Power System Restoration Training

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Sam Phillipson and Joe Smith recently attended the final portion of the Dak-Subregion 2010 Spring Power System Restoration (PSR) Drill and Training Seminar, a 32 hour NERC CEH course for system operators covering an in-depth review of reliability standards, system protection, synchrophasor technology, Midwest ISO procedural training and other related topics. The event, held in Ottertail, Minnesota, was hosted by Otter Tail Power Company (OTP), who has deployed Siemens PTI’s PSS®ODMS product in its control center for advanced online network applications. Several years ago, OTP, which regularly hosts such training seminars, realized that due to its flexibility and intuitive user interface, PSS®ODMS could be used to simulate emergency conditions in "study mode" and immediately show the results of operators' simulated responses, providing valuable, interactive hands-on experience.

During this portion of the training seminar, OTP brought in a server and ten PC workstations, with two operators at each station. Each workstation was set up with a dual monitor display to maximize visualization capabilities. Using OTP’s standard PSS®ODMS network model as a starting point, two different study scenarios had been created and loaded onto each workstation. The operators were required to immediately log each action taken to create a comprehensive hard copy log of their individual procedures. During the session, operators navigated the system, opened or closed devices and observed power flow results as they moved to comply with the scenario directives.

The first scenario involved a response to an EEA 3 and tested the operator response to the EOP-002 directive that required rolling blackouts in the area via a blast call. The participating operators were required to shed 300 MW in their subregion and to meet requirements that no circuit be out of service more than 40 minutes and no customer be interrupted more than two times for the duration of the directive. This tested the operator’s ability to plan for load shed events and take the required action to fulfill the directive.

The second scenario involved a restoration event following a catastrophic failure of facilities compounded by maintenance outages in the area. Operators were directed to work toward restoring the system to a reliable condition.

Despite the majority of the operators being largely unfamiliar with both OTP’s regional model and the PSS®ODMS application (having been given only the briefest introductory tutorial), they had little or no trouble using the software to simulate corrective procedures that would be executed during an actual emergency situation. With its intuitive user interface including powerful interactive one-line diagram displays, ultra-fast and robust PSS/O “engine,” and convenient features such as AutoSolve (which quietly executes a power flow solution in the background as needed in response to operational actions), PSS®ODMS provided a realistic simulation tool for these exercises, enabling the training session to qualify for NERC continuing education hour credits.

This was the third year that PSS®ODMS has been successfully used for the Dak-Subregion PSR Drill and Training.