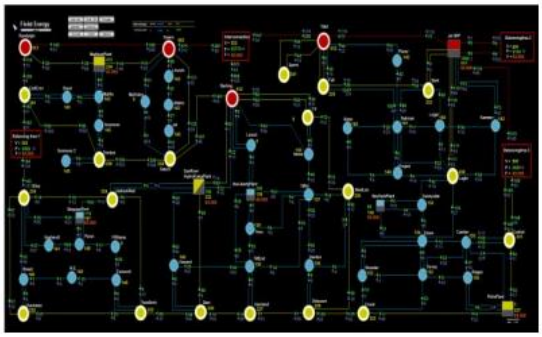
Operations Through Simulation – On-Line

Background

This 16-hour on-line class is designed for real-time System Operating Personnel, Generating Plant personnel, and Operations Support personnel. The class reviews various concepts related to voltage control, congestion management, response to relay operations that includes distance and differential relays, balancing, communications, restoration, and geomagnetic disturbances. It consists primarily of simulation activities that provide the student with extensive opportunity to implement actions on the simulator and see the system response to those actions.

Target Audience

This course is intended for real-time System Operators, Support Personnel, and Generating Plant Personnel operating on the Bulk Electric System who wish to expand their knowledge and to enhance their skills associated with mitigating system conditions that pose reliability risks to the system. The goal is to provide students with the training and hands-on activity through simulation technology the opportunity to better understand operating concepts and to mitigate various operational conditions. The simulation provides a first-hand perspective of the implications to and response of the system when actions are implemented by System Personnel.



NERC Continuing Education Hours

16.0 CEHs – Total
0.0 CEHs – Standards
16.0 CEHs – Ops Topics
15.0 CEHs – Sim

NERC Emergency Training Requirement

16.0 hours of Emergency Operations

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Course Content

The course content includes:

Voltage Control and Mitigation Techniques - The course segment covers the concepts of voltage control. It will step through the causes of low voltage and high voltage conditions, as well as the effects that each condition has on equipment and the reliable operation of the electric system. The segment concludes with the completion of a simulation scenario with system voltage issues.

Congestion Management - The segment addresses the actions available to the System Operator for utilization in mitigating congestion on the bulk power system. Operator actions will be identified, and students will demonstrate these actions in the completion of a simulator scenario that are required to maintain the system within power transfer limits.

System Restoration – The segment identifies the steps of restoration including; system assessment, switching methodologies, restoration processes, islanded operation, and frequency and voltage control. Students are required to complete two simulator scenarios involving both islanded and blacked out conditions.

Relay and Protection - The segment reviews the operation and actions of differential and distance relays. It identifies the function and applications of both differential and distance relay scheme is explored and then identifies the implication of the scheme operation. Students will complete a simulation scenario on a generic simulator, in response to a relay operation and returning the system to normal following a relay operation.

Balancing and Control - The segment reviews the concepts of balancing and control and the tools available for balancing. The control requirements are explored and students must complete two simulation scenarios related to balancing and meeting DCS.

Communications - The segment reviews the highlights of the NERC COM standards. The segment then reviews a simulation scenario that was completed and students are then required to identify the communication and coordination that is required with all of the parties involved in the mitigation of the system conditions.

Geomagnetic Disturbances – The segment defines what geomagnetic disturbances are and how they impact the bulk power system. The segment identifies the NOAA alert scales and the notification process in place to alert entities in the power system. Students are then presented with a generic simulator system that requires them to implement the specific GMD procedures and respond to the implication of the GMD activity.