Restoration: Planning, Assessing, and Implementing

Background

The class will be delivered over a 2-day period. The class is intended to take the next step in the area of restoration training. The participants will be required to utilize the basic elements of restoration and utilize them in a simulated environment. The class will be a combination of lecture and group activities with the majority of the class being comprised of group activities. The Power Simulator system will be presented with specific elements of a real-life system. This would include: critical loads and underfrequency protected circuits located throughout the entire system, blackstart generation, generation start-up power requirements, etc.

Target Audience

The class is intended for System Operators who possess the basic knowledge of electric system restoration, which includes operating personnel who have completed the OES-NA CCTR Restoration class or those operators who have more than 5 years experience operating on the electric system in system operations.

NERC Continuing Education Hours

16.0 CEHs – Total
4.0 CEHs – Standards
16.0 CEHs – Ops Topics
13.0 CEHs – Sim

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NERC Emergency Training Requirement

16.0 hours of Emergency Operations

Class Content

Planning

Lecture - The elements of developing a Blackstart plan will be identified in addition to a review of NERC EOP Standards related to system restoration requirements. This will include: critical loads, blackstart generation, underfrequency protected circuits, generation start-up power requirements, etc.

Group Exercise – The class will be broken into small workgroups. Each group is responsible for developing a Blackstart plan for the system that they are presented with. After completion of their plan, the class will re-convene and each group will be responsible to report on their plan with explanation of why they elected to utilize their particular strategy. The class will critique each plan to ensure that all elements of the restoration have been incorporated into the plan.

Assessing

Lecture – The elements related to assessing the system following a disturbance will be identified. The class will be required to utilize this knowledge in the group exercise.

Implementing

Lecture – Brief overview of restoration strategies, load pick-up guides, and frequency implications that should be utilized in the restoration process.

Group Exercise – The class will break into their groups and each group will be presented with a system of different configurations. Some may have generation and load that survived and others may be faced with a completely blacked out scenario with or without outside assistance available. In addition, there may be both generation and transmission facility damage incurred. The group will be responsible to assess their specific situation and establish their plan for restoration and to mitigate the differences from the classroom developed Blackstart Plan. The groups will then be responsible to restore their system using a Generic Simulator while experiencing additional events that may occur during the course of their restoration efforts (i.e. Lines tripping, generators tripping, emergency events that they must respond to).

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Classroom Schedule

Day 1 - 8:00 AM to 5:00 PM
Day 2 - 8:00 AM to 5:00 PM

Attendee Requirements

Attendees must sign-in for the training activity in accordance with the attendance verification process stated:

- Attendees are required to sign-in on the course sign-in sheet
- Attendees are required to provide their NERC SO Certification # on the sign-in sheet, if applicable
- Attendees are required to provide a photo ID as proof of identity
- Attendees must participate in all course activities
- Attendees must successfully complete the activity assessment and obtain a minimum passing grade on the assessment. If the attendee is unsuccessful in the initial assessment, a second opportunity to successfully complete the assessment following remedial instruction will be given.
- Attendees must submit a course evaluation form