



**Tutorial:
Compliance to NERC Standards
Hosted by Rotating Machinery Committee**

Tuesday, March 27th from 1:30 pm – 5:30 pm

Compliance to NERC (North American Electric Reliability Council) standards affects everyone in the energy industry. This tutorial will provide a broad overview of the NERC standards affecting Transmission & Distribution, Generation, and Protection. Information will be provided on the standards that have been approved, standards that will be approved by the Federal Energy Regulatory Commission (FERC), and how to find and learn about the standards in order to comply. FERC approval of the Reliability Standards and compliance is expected by June 2007. FERC has indicated that there will be no phase-in period for the Reliability Standards. This presentation will be conducted by Mr. Gerry Cauley whom is the Vice President and Director of Standards for the North American Electric Reliability Council (NERC). He oversees an open process involving more than 250 industry volunteer experts in the development of reliability standards governing the operation and planning of North American bulk power systems.

The remaining portion of the tutorial will focus on generation and the Reliability Standards associated with modeling and generator testing. Emphasis will be placed on the necessary testing, modeling and validating of generators in order to comply. Mr. Les M. Hajagos of Kestrel Power Engineering will provide the presentation. Mr. Hajagos presently conducts training on this subject to various utilities throughout North America. He is the chair of the Generator Model Validation and Excitation System Modeling task force of the IEEE Power Engineering Society.

The NERC generator modeling program is based on the Western Electric Coordinating Council's (WECC) generator testing program. WECC's program was developed and initiated as a direct result of the widespread electric system disturbances experienced in the Western Interconnection during July and August of 1996. Computer simulations of modeling data provided by member utilities and system configurations representing the actual conditions of July 2nd and August 10th indicated that the system would successfully withstand the disturbances without widespread outages. However, the outages themselves confirmed that the member utilities modeling data was incorrect and required better representation of generator components such as governors, turbines, exciters, power system stabilizers, and other system elements. The discrepancy between the simulations and the actual system performance indicated the vital need for better data. The recommendation to test generating units was made recognizing that it would entail costs, risks, and significant effort. All of the generators within the WECC territory rated above 10 MW (approximately 1440 generators) were tested. Subsequent simulations using the updated modeling data reflected the actual disturbance, and that the system would not withstand these disturbances. The more recent Northeast Blackout also suffered from improper modeling of the power system. The recommendation to require all generators to be tested was endorsed by the North American Electric Reliability Council (NERC). The result of this recommendation was the development of the MOD Reliability Standards.