Mini Track: 'Security and Reliability'

Mini Track Chair:
Peter W. Sauer
University of Illinois at Urbana-Champaign, USA

This mini-track is part of the Complex Systems track. It focuses on topics related to the ability of complex systems such as power systems to survive disturbances with minimal impact on performance. Specific topics include: Modeling and simulation, Steady-State and Dynamic Security Assessment; Available Transfer Capability (ATC); State Estimation; Security-Constrained Optimal Power Flow; Sensor Applications; Large-Scale Real-Time Control; and related technologies. Included in this is the issue of voltage stability, modeling and analysis of failure propagation, and nonlinear control.

This year's papers focus specifically on monitoring and model verification, visualization, operation under multiple objectives, fast contingency analysis, automated fault diagnosis, substation data processing for decision making, and interdependence in fuel supplies and the power system. The papers are particularly relevant after the August 14, 2003 blackout which has drawn considerable attention to the subjects of monitoring, control, and analysis of large electric power grids.

The paper by Apostolov is concerned with the verification of models used in security assessment. The paper by Meliopoulos, Cokkinides, and Overbye looks at visualization techniques using real-time power flow data. The paper by McArthur, Davidson, Hossack and McDonald reports on automating power system fault diagnosis through multi-agent system technology. The paper by Kezunovic and Taylor proposes a new solution to substation sensing and decision making issues. The paper by Begovic, Radibratovic, Lambert and Novosel looks at the issues of reactive power in the operation of a large system where optimization requires several objectives. The paper by Venkatasubramanian, Kavasseri, and Lu reports on a new method to monitor generator dynamic states in real time. The paper by Carullo, Olaleye and Nwankpa proposes a bold new approach to contingency analysis using dedicated VLSI components. The paper by Fedora considers the interdependency between fuel systems and the electrical system.

0-7695-2056-1/04 $17.00 (C) 2004 IEEE