

## 1100 Grid Dynamics & Emergency Operations Series



**Who Benefits:** Balancing Area Operators and Personnel; Power system Operators and Personnel; Utility Operators and Personnel; Balancing Area Operators and Personnel; Power Systems Repair and Maintenance Personnel; Dispatch Personnel; Reliability Coordinators; Balancing Authority Area Personnel; Transmission Operators; Reliability Coordinators

### 1101 System Control and Performance Requirements

4 CE Hours: 4 Hours Operations/4 Hours Professional

*This training module offers hands-on insight into the critical tasks of controlling, monitoring, and measuring system control performance.*

#### Program Segments

#### Lesson 1 – Control Performance Standards

Review of NERC regions; CPS introductory quiz; electricity system control review; review of dynamic scheduling; ACE at NERC; ACE at WECC; WECC inadvertent term; electric system control; dynamic look at basic system control

#### Lesson 2 – CPS, NERC Standards and the CPS Completion Exam

CPS-CDS Control Highlights; CPS Review; NERC Standards; CPS-01 Training Exam

#### Lesson 3 – NERC and the CPS-01 Completion Exam

NERC standards; CPS-01 Completion Exam; conclusion

### 1102 Emergency Operations: 2 Versions: Eastern/Western Interconnection

4 CE Hours: 3 Simulation Hours /4 Hours Operations/4 Hours Professional/  
4 EOP Hours

*This training module is a great tool for enhancing readiness for emergency operations and a great prerequisite for your own table-top or simulator training.*

#### Program Segments

#### Lesson 1 – Communications

Overview of emergency operations; communications; key attributes of communications; methods for improving communications; taking prudent action in an emergency; communication highlights.

#### Lesson 2 – Path Operations and Emergencies

Path Operations and emergencies; emergency operations for line trips; monitoring, control and response; transformer failure; self-evaluations; the physics of power flow; unscheduled flow in the WECC region; power flow calculation; historical review; WECC USF reduction procedure.

#### Lesson 3 – Restoration Frequency Considerations

Restoration frequency considerations; dropping load to restore island frequency; picking up load on an isolated system; system disaster recovery basics; emergency exercises.

### 1103 High Voltage, Safety & Power Systems Operations

2 CE Hours: 2 Hours Operations/2 Hours Professional  
2 EOP Hours

*This training module is great for the newcomer in system operations.*

#### Program Segments

#### Lesson 1 – Power Systems Operations

Introductory quiz; introductory quiz answers and feedback; safety; basic review of power systems operations; EHV Operation; WECC ACE-PACE; AC EHV terms; EHV; 500 kV basics; single-pole CB tripping; procedures and communication

### 1103 High Voltage, Safety & Power Systems Operations (cont'd)

#### Lesson 2 – Inter-tie Systems Separations and Emergency Training

Pacific inter-tie separation; SPS and RAS; sequence of system separations; restoring the inter-tie; table-top exercises and emergency training; table-top scenarios; high-voltage and safety; final exam; summary; conclusion

### 1104 Synchronizing Islands

2 CE Hours: 1 Simulation Hour/2 Hours Operations/2 Hours Professional  
2 EOP Hours

*This practical training module is a great prerequisite for the emergency training that is so necessary for all levels and disciplines involved in power generation, power transfer, balancing, and reliability.*

#### Program Segments

#### Lesson 1 – Synchronizing Islands

Synchronizing islands; introductory synchronizing islands quiz; introductory quiz answers and feedback; definitions; electric system islanding

#### Lesson 2 – Electric System Under-voltage

Electric system under-voltage; review of under-voltage and under-frequency tripping; isolated pockets created by islanding

#### Lesson 3 – A Review of NERC Standards

NERC Standards; phase angle and power flow; review basics; completion exam; conclusion

### 1105 Undervoltage & Underfrequency

2 CE Hours : 1 Simulation Hour /2 Hours Operations/2 Hours Professional  
2 EOP Hours

*This training module provides great insight into understanding of undervoltage and underfrequency conditions.*

#### Program Segments

#### Lesson 1 – Underfrequency and Undervoltage Introduction and Review

Introductory quiz; introductory quiz review and feedback; introduction to under-frequency and undervoltage; frequency control terms; dynamic look at under-frequency and undervoltage; frequency deficiency and voltage deficiency review; voltage frequency facts; review; undervoltage and underfrequency facts; completion exam

### 1106 Voltage Control Review – NERC & WECC CE

2 CE Hours: 2 Hours Operations/2 Hours Professional

*This training module is a great review as well as a must-have for those newer in the operation and control of power systems.*

#### Program Segments

#### Lesson 1 – Voltage Control

Introductory quiz; voltage relationships; terms and definitions; review of sine wave relationships; capacitor basics; voltage control highlights; dynamic worksheets; other relationships important to voltage control; review of NERC terms; completion exam