

## PER-005 System Personnel Training Reference Document

### Reference #1: Determining Task Performance Requirements

The purpose of this reference is to provide guidance in writing a performance standard that describes the desired outcome of a task. A standard for acceptable performance should be in either measurable or observable terms.

Clear standards of performance are necessary for an individual to know when he or she has completed the task and to ensure agreement between employees and their supervisors on the objective of a task. Performance standards answer the following questions:

How timely must the task be performed?

*Or*

How accurately must the task be performed?

*Or*

With what quality must it be performed?

*Or*

What response from the customer must be accomplished?

When a performance standard is quantifiable, successful performance is more easily demonstrated. For example, in the following task statement, the criteria for successful performance is to return system loading to within normal operating limits, which is a number that can be easily verified.

Given a System Operating Limit violation on the transmission system, implement the correct procedure for the circumstances to mitigate loading to within normal operating limits.

Even when the outcome of a task cannot be measured as a number, it may still be observable. The next example contains performance criteria that is qualitative in nature, that is, it can be verified as either correct or not, but does not involve a numerical result.

Given a tag submitted for scheduling, ensure that all transmission rights are assigned to the tag per the company Tariff and in compliance with NERC and NAESB standards.

## **Reference #2: Systematic Approach to Training References:**

The following list of hyperlinks identifies references for the NERC Standard PER-005 to assist with the application of a systematic approach to training:

- (1) DOE-HDBK-1078-94, A Systematic Approach to Training  
<http://www.hss.energy.gov/NuclearSafety/techstds/standard/hdbk1078/hdbk1078.pdf>
- (2) DOE-HDBK-1074-95, January 1995, Alternative Systematic Approaches to Training, U.S. Department of Energy, Washington, D.C. 20585 FSC 6910  
<http://www.hss.energy.gov/NuclearSafety/techstds/standard/hdbk1074/hdb1074.html>
- (3) ADDIE – 1975, Florida State University  
[http://www.nwlink.com/~donclark/history\\_isd/addie.html](http://www.nwlink.com/~donclark/history_isd/addie.html)
- (4) DOE Standard - Table-Top Needs Analysis  
DOE-HDBK-1103-96  
<http://hss.energy.gov/NuclearSafety/techstds/standard/hdbk1103/hdbk1103.pdf>

### **Reference #3: Normal and Emergency Operations Topics**

These topics are identified as meeting the topic criteria for normal and emergency operations training per Requirement 1 and Requirement 3 of this standard.

#### **A. Recognition and Response to System Emergencies**

1. Emergency drills and responses
2. Communication tools, protocols, coordination
3. Operating from backup control centers
4. System operations during unstudied situations
5. System Protection
6. Geomagnetic disturbances weather impacts on system operations
7. System Monitoring – voltage, equipment loading
8. Real-time contingency analysis
9. Offline system analysis tools
10. Monitoring backup plans
11. Sabotage, physical, and cyber threats and responses

#### **B. Operating Policies and Standards Related to Emergency Operations**

1. NERC standards that identify emergency operations practices (e.g. EOP Standards)
2. Regional reliability operating policies
3. Sub-regional policies and procedures
4. ISO/RTO policies and procedures

#### **C. Power System Restoration Philosophy and Practices**

1. Black start
2. Interconnection of islands – building islands
3. Load shedding – automatic (under-frequency and under-voltage) and manual
4. Load restoration philosophies

#### **D. Interconnected Power System Operations**

1. Operations coordination
2. Special protections systems
3. Special operating guides
4. Voltage and reactive control, including responding to eminent voltage collapse
5. Understanding the concepts of Interconnection Reliability Operating Limits versus System Operating Limits
6. DC tie operations and procedures during system emergencies
7. Thermal and dynamic limits
8. Unscheduled flow mitigation – congestion management
9. Local and regional line loading procedures
10. Radial load and generation operations and procedures
11. Tie line operations
12. E-tagging and Interchange Scheduling
13. Generating unit operating characteristics and limits, especially regarding reactive capabilities and the relationship between real and reactive output

**E. Technologies and Tools**

1. Forecasting tools
2. Power system study tools
3. Interchange Distribution Calculator (IDC)

**F. Market Operations as They Relate to Emergency Operations**

1. Market rules
2. Locational Marginal Pricing (LMP)
3. Transmission rights
4. OASIS
5. Tariffs
6. Fuel management
7. Real-time, hour-ahead and day-ahead tools