

A. Introduction

1. **Title:** Define ~~and Document~~ Regional Disturbance Monitoring ~~and Reporting~~ Equipment Requirements.
2. **Number:** PRC-002-01
3. **Purpose:** ~~To e~~Ensure that Regional Reliability Organizations establish requirements for installation of Disturbance Monitoring Equipment (DME) and reporting of ~~Disuturbance~~ Disturbance data is installed in a uniform manner to facilitate development of models and analyses of events and verify system models.
4. **Applicability:**
 - 4.1. Regional Reliability Organization
5. **(Proposed) Effective Date:** ~~April 1, 2005~~ Nine months after BOT adoption.

B. Requirements

~~R1.~~ The Regional Reliability Organization shall ~~develop comprehensive~~ establish the following installation requirements for ~~the installation of~~ Disturbance monitoring equipment ~~to ensure data is available to determine system performance and the causes of System Disturbances.~~ The comprehensive requirements shall include all of the following ~~sequence of event recording:~~

R1.

R1.1. Location, monitoring and recording requirements, including the following:

R1.1.1. Criteria for equipment location (e.g., by voltage, geographic area, station size, etc.).

R1.1.2. Devices to be monitored.

~~Type of data recording capability (e.g., sequence of event, Fault recording, dynamic Disturbance recording):~~

~~Equipment characteristics including but not limited to:~~

~~Recording duration requirements.~~

~~Time synchronization requirements.~~

~~Data format requirements.~~

~~Event triggering requirements~~

~~R1.3.~~ R2. The Regional Reliability Organization shall establish the following installation requirements for fault recording:

R2.1. Location, monitoring and recording requirements including the following:

~~M,, and reporting capabilities of the equipment.~~

R2.1.1. Criteria for equipment location (e.g., by voltage, geographic area, station size, etc.).

R2.1.2. Elements to be monitored at each location.

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R2.1.3. Electrical quantities to be recorded for each monitored element shall be sufficient to determine the following:

—Three phase to neutral V voltages.

R2.1.3.1.

R1.3.2. Three phase C currents and neutral currents.

R2.1.3.2.

R2.1.3.3. Polarizing currents and voltages, if used.

—Frequency.

R2.1.3.4.

R1.3.4. Megawatts and megavars W and/or $MVAR$, as appropriate.

R2.1.3.5.

R2.2. Technical requirements, including the following:

R2.2.1. Recording duration requirements.

R2.2.2. Minimum sampling rate of 16 samples per cycle.

R2.2.3. Event triggering requirements.

Data retention capabilities (e.g., length of time data is to be available for retrieval):

Regional coverage requirements (e.g., by voltage, geographic area, electric area or subarea):

Installation requirements:

Substations:

Transmission lines:

Generators:

R3. The Regional Reliability Organization shall establish the following installation requirements for dynamic Disturbance recording:

R3.1. Location, monitoring and recording requirements including the following:

R3.1.1. Criteria for equipment location giving consideration to the following:

- . Site(s) in or near major load centers

- Site(s) in or near major generation clusters

- Site(s) in or near major voltage sensitive areas

- Site(s) on both sides of major transmission interfaces

- A major transmission junction

- Elements associated with Interconnection Reliability Operating Limits

- Major EHV interconnections between control areas

- Coordination with neighboring regions within the interconnection

R3.1.2. Elements and number of phases to be monitored at each location.

R3.1.3. Electrical quantities to be recorded for each monitored element shall be sufficient to determine the following:

R3.1.3.1. Voltage, current and frequency.

R3.1.3.2. Megawatts and megavars.

R3.2. Technical requirements, including the following:

R3.2.1. Capability for continuous recording for devices installed after January 1, 2009.

R3.2.2. Each device shall sample data at a rate of at least 960 samples per second and shall record the RMS value of electrical quantities at a rate of at least 6 records per second.

~~R1.7. Responsibility for maintenance and testing.~~

~~R1.8. Requirements for periodic (at least every five years) updating, review, and approval of the Regional requirements.~~

R4. The Regional Reliability Organization shall establish requirements for facility owners to report Disturbance data recorded by their DME installations. The Disturbance data reporting requirements shall include the following:

R4.1. Criteria for events that require the collection of data from DMEs.

R4.2. List of entities that must be provided with recorded Disturbance data.

R4.3. Timetable for response to data request.

R4.4. Provision for reporting Disturbance data in a format which is capable of being viewed, read and analyzed with a generic COMTRADE¹ analysis tool,

R4.5. Naming of data files in conformance with the IEEE C37.232 Recommended Practice for Naming Time Sequence Data Files².

R4.6. Data content requirements and guidelines.

R5. The Regional Reliability Organization shall provide its requirements (and any revisions to those requirements) including those for DME installation and Disturbance data reporting to the affected Transmission Owners and Generator Owners within (30 calendar days of approval of those requirements.

R6. The Regional Reliability Organization shall periodically (at least every five years) review, update and approve its Regional requirements for Disturbance monitoring and reporting.

~~—————The Regional Reliability Organization shall provide its requirements for the installation of Disturbance monitoring equipment to other Regional Reliability Organizations and NERC on request (30 calendar days).~~

C. Measures

¹ IEEE C37.111-1999 IEEE Standard Common Format for Transient Data Exchange for Power Systems or its successor standard

² Compliance with this requirement is not effective until the IEEE Standard is approved.

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- M1.** ~~The Regional Reliability Organization’s requirements for the installation of Disturbance monitoring-Monitoring equipment-Equipment shall address all elements listed in Reliability Standard PRC-002-0-RequirementsRequirements 1 through 3+.~~
- M2.** ~~The Regional Reliability Organization’s Disturbance monitoring data reporting requirements shall include all elements identified in Requirements 4.~~
- M2.M3.** ~~The Regional Reliability Organization shall have evidence it provided its Regional Disturbance monitoring and reporting requirements for the installation of Disturbance monitoring equipment to other Regional Reliability Organizations and NERC on request (30 calendar days)-as required in Requirement 5.~~
- M4.** ~~The Regional Reliability Organization shall have evidence it conducted a review at least once every five years of its regional requirements for Disturbance monitoring and reporting as required in Requirement 6.~~

D. Compliance

M3.1. Compliance Monitoring Process

5.1.—Compliance Monitoring Process

1.1. ~~Compliance Monitoring~~ Responsibility

~~Compliance Monitor:—NERC.~~

1.2. Compliance Monitoring Period and Reset Time Frame

~~One calendar yearOn request by NERC (30 calendar days.)~~

1.3. Data Retention

~~The Regional Reliability Organization shall retain documentation of its DME requirements for three years.~~

~~The Compliance Monitor will retain its audit data for three years.~~

1.4. Additional Compliance Information

~~—None specified.~~

5.6.Additional Compliance Information

~~The Regional Reliability Organization shall demonstrate compliance through providing its documentation of Disturbance Monitoring and Reporting requirements or self-certification as determined by the Compliance Monitor.~~

2. Levels of Non-Compliance

2.1. Level 1: ~~There shall be a level one non-compliance if either of the following conditions exist:~~

2.1.1 ~~Disturbance data reporting requirements were not specified as required in R4.1 through R4.6.~~

2.1.2 ~~No evidence it conducted a review at least once every five years of its regional requirements for Disturbance monitoring and reporting as required in R6.~~

2.2. Level 2: ~~There shall be a level two non-compliance if any of the following conditions exist:~~

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2.2.1 Technical requirements were not specified for one or more types of DMEs.

2.2.2 Requirements do not provide criteria for equipment location or criteria for monitored elements or monitored quantities as required R1, R2 and R3.

2.3. Level 3: Not applicable.

2.4. Level 4: Disturbance monitoring and reporting requirements were not available or were not provided to Transmission Owners and Generator Owners:...

~~_____ The Regional Reliability Organization's Disturbance monitoring requirements do not address one of the eight requirements contained in Reliability Standard PRC-002-0_R1.~~

~~_____ Level 2: _____ The Regional Reliability Organization's Disturbance monitoring requirements do not address two of the eight requirements contained in Reliability Standard PRC-002-0_R1.~~

~~_____ Level 3: _____ The Regional Reliability Organization's Disturbance monitoring requirements do not address three of the eight requirements contained in Reliability Standard PRC-002-0_R1.~~

~~_____ Level 4: _____ The Regional Reliability Organization's Disturbance monitoring requirements were not provided or do not address four or more of the eight requirements contained in Reliability Standard PRC-002-0_R1.~~

E. Regional Differences

~~M4.~~None identified.

Version History

| Version | Date | Action | Change Tracking |
|---------|---------------|----------------|-----------------|
| 0 | April 1, 2005 | Effective Date | New |