Standard Development Roadmap

This section is maintained by the drafting team during the development of the standard and will be removed when the standard becomes effective.

This proposed standard is the Version 0 PRC-002 modified to include a translation of planning measure I.F.M3, which was not included in the approval Version 0 reliability standards because it required further work.

Development Steps Completed:

1. A SAR was posted from December 2, 2004 through January 7, 2005.
2. The SAC appointed a standard drafting team on January 13, 2005.
3. The drafting team posted its response to SAR comments and all other historical comments on April 19, 2005.
4. The drafting team posted Draft 1 of the standard on April 21, 2005.
5. The drafting team posted Draft 2 of the standard on September 1, 2005.
6. The drafting team posted Draft 3 of the standard on December 1, 2005.
7. The drafting team posted Draft 4 of the standard on April 3, 2006.

Description of Current Draft:

This is the fifth draft of the standard to be posted for a 30-day pre-ballot review from May 15–June 13, 2006.

Future Development Plan:

Anticipated Actions	Anticipated Date
1. Post standards and implementation plan for 30-day pre-ballot review.	May 15–June 13, 2006
2. Conduct first ballot.	June 19–29, 2006
3. Consider comments submitted with first ballot; post consideration of comments.	July 3–14, 2006
4. Conduct second ballot.	July 15–25, 2006
5. Post standards and implementation plan for 30-day review by board.	July 1–30, 2006
6. Board adoption date.	August 2, 2006
7. Proposed effective date.	Nine months after BOT adoption.

Definitions of Terms Used in Standard

This section includes all newly defined or revised terms used in the proposed standard. Terms already defined in the Reliability Standards Glossary of Terms are not repeated here. New or revised definitions listed below become approved when the proposed standard is approved. When the standard becomes effective, these defined terms will be removed from the individual standard and added to the Glossary.

Disturbance Monitoring Equipment (DME): Devices capable of monitoring and recording system data pertaining to a Disturbance. Such devices include the following categories of recorders[1]:

- Sequence of event recorders which record equipment response to the event
- Fault recorders, which record actual waveform data replicating the system primary voltages and currents. This may include protective relays.
- Dynamic Disturbance Recorders (DDRs), which record incidents that portray power system behavior during dynamic events such as low-frequency (0.1 Hz – 3 Hz) oscillations and abnormal frequency or voltage excursions

[1] Phasor Measurement Units and any other equipment that meets the functional requirements of DMEs may qualify as DMEs.

A. Introduction

1. Title: **Define Regional Disturbance Monitoring and Reporting Requirements**

2. Number: PRC-002-1

3. Purpose: Ensure that Regional Reliability Organizations establish requirements for installation of Disturbance Monitoring Equipment (DME) and reporting of Disturbance data to facilitate analyses of events and verify system models.

4. Applicability

4.1. Regional Reliability Organization.

5. (Proposed) Effective Date: Nine months after BOT adoption.

B. Requirements

R1. The Regional Reliability Organization shall establish the following installation requirements for sequence of event recording:

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.

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

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

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.

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

R2.1.3.1. Three phase to neutral voltages.

R2.1.3.2. Three phase currents and neutral currents.

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

R2.1.3.4. Frequency.

R2.1.3.5. Megawatts and megavars.

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.

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.

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 COMTRADE[2] analysis tool,

R4.5. Naming of data files in conformance with the IEEE C37.232 Recommended Practice for Naming Time Sequence Data Files[3].

R4.6. Data content requirements and guidelines.

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

[3] Compliance with this requirement is not effective until the IEEE Standard is approved.

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.

C. Measures

M1. The Regional Reliability Organization's requirements for the installation of Disturbance Monitoring Equipment shall address Requirements 1 through 3.

M2. The Regional Reliability Organization's Disturbance monitoring data reporting requirements shall include all elements identified in Requirements 4.

M3. The Regional Reliability Organization shall have evidence it provided its Regional Disturbance monitoring and reporting requirements 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

1. Compliance Monitoring Process

1.1. Compliance Monitoring Responsibility

NERC.

1.2. Compliance Monitoring Period and Reset Time Frame

One calendar year.

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

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:

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.

E. Regional Differences

None identified.

Version History

Version	Date	Action	Change Tracking