



PRC-002-NPCC-01 Disturbance Monitoring

**NPCC Compliance and
Standards Workshop
Nov. 10, 2010**

**Lee Pedowicz
Manager, Reliability Standards**



PRC-002-NPCC-01

Purpose

“Ensure that adequate disturbance data is available to facilitate Bulk Electric System event analyses.”



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Background

- *PRC-002 is a “Fill in the blank” standard*
- *NERC Project 2007-11 Disturbance Monitoring--revise NERC Standards PRC-002, PRC-018*
- *Each region to supplement PRC-002 with a Regional Standard*

PRC-002-NPCC-01

- ***PRC-002-NPCC-01 addresses:***
 - ***Sequence of Events Recorders--
criteria for installation***
 - ***Fault recorders on generating units--
thresholds based on machine MVA***
 - ***Dynamic Disturbance Recorders--
thresholds on a load basis and critical
facilities locations***
 - ***Documentation requirements for DME
settings, testing, and returning to
service, etc.***



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Definitions needed for terms not found in the NERC Glossary.

More stringent than NERC PRC-002:

- ***Sequence of Event recording capability required determined by service to radial loads greater than 300MW, units with a Nameplate Capacity greater than 50MVA, and Generating Plants greater than 300MVA Nameplate Capacity***

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- ***Locations for application of Fault Recording equipment***
 - ***Generating Plants greater than 200MVA capacity***
 - ***Shunt capacitors, shunt reactors***
 - ***Dynamic VAR devices***
 - ***HVDC terminals***
- ***Specifies Fault Recording equipment trigger settings***
 - ***Phase currents set at 1.5 p.u. or less of rated CT secondary current, protective relay tripping for all Protection Groups***



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- *Trigger settings for Fault Recorders (continued):*
 - *Neutral overcurrent 0.2 p.u. or less of rated CT secondary current*
 - *Monitored phase undervoltage set at 0.85 p.u. or greater*

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*More stringent than NERC PRC-002
(continued):*

- *Specifies additional Dynamic Disturbance Recording equipment trigger settings, and location requirements for installation.*
 - *One DDR per 3,000MW of peak load*
 - *Consideration of major load centers, major generation clusters, etc.*

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- *More stringent than NERC PRC-002 (continued):*
- *Requires Reliability Coordinator involvement for Dynamic Disturbance Recording*
- *Data file and document requirements*
 - *View, read, and analyze with a COMTRADE analysis tool*

- *Avoids the use of generalities.*
- *Technical Bases*
 - *NPCC A-15 Disturbance Monitoring Equipment Criteria--adopted by the NPCC August 23, 2007*
 - *Drafting Team Subject Matter Expert experience when collecting data from past events.*

Implementation Plan

- *Fifty percent compliance within two years of FERC and Canadian entities' approvals*
- *Seventy-five percent compliance within three years of FERC and Canadian entities' approvals*
- *One hundred percent compliance within four years of FERC and Canadian entities' approvals*

History

- *Three postings for comments*
 - *Nov. 12, 2008 – Dec. 21, 2008*
 - *June 2, 2009 – July 15, 2009*
 - *Sept. 9, 2009 – Oct. 24, 2009*
- *Comments evaluated, and responded to by the DMSDT*
- *TFSP, and RCC endorsed the Standard and its Implementation Plan*



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- *RSC voted to post for Member approval*
- *Posted for 30 Day Pre-Ballot Review
Nov. 24, 2009*
- *Notification of Ballot posted Dec. 2,
2009*
- *Ballot period Dec. 17 thru Jan. 6, 2010*
- *Approved by NPCC Board of Directors
at their Feb. 9, 2010 Meeting*
- *NERC Board of Trustees approved
Nov. 4, 2010, and will be forwarded to
FERC and the Canadian authorities for
their approvals*

**PRC-006-NPCC-01
NPCC UFLS Regional
Standard and Draft
Program Requirements**

2010 Fall Workshop

**Gerry Dunbar
Senior Criteria Specialist
November 10th, 2010**



UFLS Program

- ***NERC***
 - ***UFLS Background and Existing Requirements***

- ***NPCC***
 - ***UFLS Criteria***

- ***UFLS Issues***
 - ***NPCC Regional Standard Drafting Team***

- ***Applicability***

- ***Implementation***
 - ***Transition from D#12 to Regional Standard***

- ***Status of UFLS Standards***



UFLS Program

NERC Requirements

- ***UFLS Program Requirements:***
 - *PRC-006, PRC-007, PRC-009*
 - *Applicable to the Regional Reliability Organization (RRO)*

- ***FERC Order 693 May 2007***
 - *UFLS Requirements Apply to Users, Owners, Operators .*
 - *Standards Committee:*
 - *Absorbed All Three Standards into a single PRC-006-1*
 - *Establish Design and Documentation Requirements for UFLS.*
 - *Broad Program Characteristics.*

- ***Regional UFLS Standards:***
 - *Support PRC-006-1 Continent Wide.*
 - *UFLS Program Specifics.*



UFLS Program

NPCC Criteria

- ***NPCC Criteria (A3/Directory #2)***
 - ***Automatic UFLS 10% @ 59.3 Hz.***
 - ***Automatic UFLS 15% @ 58.8Hz.***

- ***2006 Assessment of UFLS Adequacy***
 - ***Program Modifications***
 - ***5 Stages of Automatic UFLS and Anti Stall***
 - ***Initial Threshold Higher (59.5Hz)***
 - ***Block Sizes of 7%***

- ***NPCC Directory #12***
 - ***Revised UFLS Program Requirements June 2009***



UFLS Program

UFLS Issues

- ***Generator Tripping Above the Curve.***
 - ***Existing Directory#12 Curve.***

- ***Compensatory Load Shedding.***
 - ***Criteria Attachments.***

- ***Small Entities.***

- ***Generator Applicability.***

- ***Program Tolerances.***
 - ***SS38 Study Report***

- ***Implementation Plan Milestones.***



Applicability

- ***NPCC Directory #12***
 - ***BA, TO, GO***

- ***UFLS Regional Standard***
 - ***PC, GO, DP, TO***
 - ***DP/TO's with 100MW or more of end use load***
 - ***Small Entities***
 - ***DP/TO with less than 25 MW exempt***
 - ***GO's 1MVA***



Implementation

- ***NPCC UFLS Implementation Plan
(Directory#12)***
 - ***Approved June 2009.***
 - ***6 year plan.***
 - ***Annual Milestones.***
 - ***Accelerated progress in first 3 years.***
 - ***UFLS Regional Standard will adopt Directory #12 Implementation Plan when approved.***



Status of Draft Standards

- ***NERC PRC-006-1 UFLS Continent Wide***
 - *Approved: Quorum 89.4% - Affirmative Ballots 84.6%*
 - *NERC BOT Approval November 4th, 2010*
 - *FERC Approval*

- ***PRC -006-NPCC-1 Regional Standard***
 - *Two Open Process Postings*
 - *Pre Ballot Review and NPCC Membership Ballot*
 - *NERC and FERC Approvals*



Standards Program Area

Questions or Comments?