

Proposed Draft Standard	Source Planning Standard
<p><i>The drafting team proposes to revise existing standard EOP-005 to incorporate IV.A.M2 and IV.A.M3. IV.A.M2 is translated into requirements R8 and R9 shown in red below and measure M1. IV.A.M3 is translated into requirement R10 and measure M2. Proposed changes are shown in the red text and the black text is the existing Version 0 standard.</i></p> <p>A. Introduction</p> <ol style="list-style-type: none"> 1. Title: System Restoration Plans 2. Number: EOP-005-01 3. Purpose: To ensure plans, procedures, and resources are available to restore the electric system to a normal condition in the event of a partial or total shut down of the system. 4. Applicability: <ol style="list-style-type: none"> 4.1. Transmission Operators. 4.2. Balancing Authorities. 5. Proposed Effective Date: November 1, 2005. <p>B. Requirements</p> <p>R1. Each Transmission Operator shall have a restoration plan to reestablish its electric system in a stable and orderly manner in the event of a partial or total shutdown of its system, including necessary operating instructions and procedures to cover emergency conditions, and the loss of vital telecommunications channels. Each Transmission Operator shall include the applicable elements listed in EOP-005 in developing a restoration plan.</p> <p>R2. Each Transmission Operator shall review and update its restoration plan at least annually and whenever it makes changes in the power system network, and shall correct deficiencies found during the simulated restoration exercises.</p>	<p>Introduction</p> <p>Titles:</p> <p>IVAM2 - Demonstrate through simulation or testing that a blackstart generating unit can perform its function.</p> <p>IVAM3 - Diagram the number, size, and location of system blackstart generating units and the initial transmission switching requirements.</p> <p>Standard:</p> <p>S1. A coordinated system blackstart capability plan shall be established, maintained, and verified through analysis indicating how system blackstart generating units will perform their intended functions as required in system restoration plans. Such blackstart capability plans shall include coordination within and among Regions as appropriate.</p> <p>Applicability:</p> <p>IVAM2 - Transmission operators.</p> <p>IVAM3 - Transmission operators.</p> <p>Effective Date:</p> <p>October 9, 2000</p> <p>Measures</p> <p>M2. Simulation or test results to demonstrate that blackstart generating unit(s) can perform their intended functions in system restoration.</p> <p>Each transmission operator shall verify that the number, size, and location of system blackstart generating units are sufficient to meet Regional restoration plan expectations.</p> <p>The transmission operator of each system shall demonstrate, through simulation or testing, that its blackstart generating unit(s) can perform their intended functions as required in the Regional</p>

<p>R3. Each Transmission Operator shall develop restoration plans with a priority of restoring the integrity of the Interconnection.</p> <p>R4. Each Transmission Operator shall coordinate its restoration plans with Balancing Authorities within its area, its Reliability Coordinator, and neighboring Transmission Operators and Balancing Authorities.</p> <p>R5. Each Transmission Operator and Balancing Authority shall periodically test its telecommunication facilities needed to implement the restoration plan.</p> <p>R6. Each Transmission Operator and Balancing Authority shall train its operating personnel in the implementation of the restoration plan. Such training shall include simulated exercises, if practicable.</p> <p>R7. Each Transmission Operator and Balancing Authority shall verify the restoration procedure by actual testing or by simulation.</p> <p>R8. (IVAM2) Each Transmission Operator shall verify that the number, size, and location of system blackstart generating units are sufficient to meet Regional Reliability Organization restoration plan requirements.</p> <p>R9. (IVAM2) The Transmission Operator shall demonstrate, through simulation or testing, that its blackstart generating unit(s) can perform the startup functions as stated in the Transmission Operator’s restoration plan. The Transmission Operator shall perform such simulation or testing at least every five years, and shall provide documentation to the Regional Reliability Organization on request.</p> <p>R10. (IVAM3) The Transmission Operator shall document the cranking paths or maintain cranking path diagrams, including initial switching requirements, associated between each blackstart generating unit and the unit(s) to be cranked and shall provide documentation to the Regional Reliability Organization upon request.</p>	<p>restoration plan (Standard IV.A.S1). Such simulation or testing shall be performed at least every five years.</p> <p>Documentation of the most current simulations or tests shall be provided to the Regions and NERC on request (30 business days).</p> <p>M3. Diagram of the number, size, and location of system blackstart generating units and the initial transmission switching requirements.</p> <p>Each transmission operator shall have on file diagrams showing the location of each blackstart generating unit that is part of the Regional blackstart capability plan (Standard IV.A.S1, M1). The diagrams shall be reviewed and updated annually or when system changes occur. Where applicable, primary and secondary cranking paths associated with each blackstart generating unit and the units to be restarted shall be identified on the diagrams. The current diagrams shall be provided to the Region and NERC on request (30 business days).</p> <p>Several transmission operators or the entire Region may elect to jointly develop the diagrams to improve coordination.</p> <p>Compliance</p> <p>Compliance Monitoring Responsibility</p> <p>IVAM2 - Regions</p> <p>IVAM3 - Regions</p> <p>Timeframe</p> <p>IVAM2 - Simulation or testing of blackstart capability units: every five years. Documentation of the most current simulations or tests: on request (30 business days).</p> <p>IVAM3 - Update of diagrams showing blackstart generating units annually or when system changes occur. Current diagrams: on request (30 business days).</p> <p>Levels of Non-Compliance</p>
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<p>R11. Following a disturbance in which one or more areas of the Bulk Electric System become isolated or blacked out, the affected Transmission Operators and Balancing Authorities shall begin immediately to return the Bulk Electric System to normal.</p> <p>R11.1. The affected Transmission Operators and Balancing Authorities shall work in conjunction with their Reliability Coordinator(s) to determine the extent and condition of the isolated area(s).</p> <p>R11.2. The affected Transmission Operators and Balancing Authorities shall take the necessary actions to restore Bulk Electric System frequency to normal, including adjusting generation, placing additional generators online, or load shedding.</p> <p>R11.3. The affected Balancing Authorities, working with their Reliability Coordinator(s), shall immediately review the Interchange Schedules between those Balancing Authority Areas or fragments of those Balancing Authority Areas within the separated area and make adjustments as needed to facilitate the restoration. The affected Balancing Authorities shall make all attempts to maintain the adjusted Interchange Schedules, whether generation control is manual or automatic.</p> <p>R11.4. The affected Transmission Operators shall give high priority to restoration of off-site power to nuclear stations.</p> <p>R11.5. The affected Transmission Operators may resynchronize the isolated area(s) with the surrounding area(s) when the following conditions are met:</p> <p>R11.5.1. Voltage, frequency, and phase angle permit.</p> <p>R11.5.2. The size of the area being reconnected and the capacity of the transmission lines</p>	<p>IVAM2 Level 1: Not applicable.</p> <p>IVAM3 Level 1: Not applicable.</p> <p>IVAM2 Level 2: Not applicable.</p> <p>IVAM3 Level 2: Not applicable.</p> <p>IVAM2 Level 3: Not applicable.</p> <p>IVAM3 Level 3: Not applicable.</p> <p>IVAM2 Level 4: The transmission operator’s simulation or test results demonstrating that blackstart generating units can perform their intended functions were not provided, or the results were not compliant with the Regional restoration plan.</p> <p>IVAM3 Level 4: The transmission operator’s diagrams of the number, size, and location of system blackstart generating units and the initial transmission switching requirements were not provided, or the diagrams were not compliant with the Regional restoration plan.</p> <p>Regional Differences</p> <p>None identified.</p>
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effecting the reconnection and the number of synchronizing points across the system are considered.

R11.5.3. Reliability Coordinator(s) and adjacent areas are notified and Reliability Coordinator approval is given.

R11.5.4. Load is shed in neighboring areas, if required, to permit successful interconnected system restoration.

R12. ~~Each Transmission Operator shall ensure the availability and location of black start capability within its area to meet the needs of the restoration plan.~~

C. Measures

M1. (IVAM2) The Transmission Operator shall, within 30 calendar days of a request, provide its Regional Reliability Organization with documentation of simulations or tests that demonstrate the blackstart units in its area are able to perform the functions of the restoration plan.

M2. (IVAM3) The Transmission Operator shall, within 30 calendar days of a request, provide documentation or a diagram showing the number, size and location of system blackstart generating units and the associated cranking paths.

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Monitoring Responsibility

Regional Reliability Organization.

~~Self-Certification: Each Transmission Operator shall annually self-certify to the Regional Reliability Organization that the following criteria have been met:~~

- ~~1.1.1—The necessary operating instructions and procedures for restoring loads, including identification of critical load requirements.~~
- ~~1.1.2—A set of procedures for annual review for simulating and, where practical, actual testing and verification of the restoration plan resources and procedures.~~
- ~~1.1.3—Documentation must be retained in the personnel training records that operating personnel have been trained annually in the implementation of the plan and have participated in restoration exercises.~~
- ~~1.1.4—Any significant changes to the restoration plan must be reported to the Regional Reliability Organization.~~

1.2. Compliance Monitoring Period and Reset Timeframe

One calendar year.

1.3. Data Retention

The Transmission Operator must have its plan to reestablish its electric system available for review by the Regional Reliability Organization at all times.

~~The Compliance Monitor shall retain any audit data for three years.~~

1.4. Additional Compliance Information

~~The Transmission Operator shall demonstrate compliance through self certification or audit (periodic, as part of targeted monitoring or initiated by complaint or event), as determined by the Compliance Monitor.~~

<p>2. Levels of Non-Compliance</p> <p>2.1. Level 1: Plan exists but has not been reviewed annually.</p> <p>2.2. Level 2: Plan exists but does not address one of the elements listed in Attachment 1-EOP-005.</p> <p>2.3. Level 3: The Transmission Operator did not provide documentation or a diagram showing the number, size and location of system blackstart generating units and the associated cranking paths.</p> <p>2.4. Level 4:</p> <p>2.4.1 Plan exists but does not address two or more of the requirements in Attachment 1-EOP-005-1, or there is no restoration plan in place, or</p> <p>2.4.2 The Transmission Operator’s simulation or test results demonstrating that blackstart generating units can perform their intended functions were not provided, or the results were not compliant with the regional restoration plan.</p> <p>E. Regional Differences None identified.</p>	
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Draft Proposed Standard	Source Planning Standard
<p><i>The drafting team proposes to revise existing standard MOD-016 to incorporate II.D.M2. Proposed changes are shown in the red text and the black text is the existing Version 0 standard.</i></p> <p>A. Introduction</p> <ol style="list-style-type: none"> Title: Documentation of Data Reporting Requirements for Actual and Forecast Demands, Net Energy for Load, and Controllable Demand-Side Management Number: MOD-016-01 Purpose: <p>Accurate, actual Demand data is needed to ensure that assessments and validation of past events and databases can be performed. To ensure that assessments and validation of past events and databases can be performed, reporting of actual demand data is needed. Forecast Demand data is needed to perform future system assessments to identify the need for system reinforcements for continued reliability. In addition, to assist in proper real-time operating, Load information related to controllable Demand-Side Management (DSM) programs is needed.</p> Applicability: <ol style="list-style-type: none"> 4.1. Planning Authority 4.2. Regional Reliability Organization. Proposed Effective Date: April November 1, 2005. <p>B. Requirements</p> <ol style="list-style-type: none"> R1. The Planning Authority and Regional Reliability 	<p>Introduction</p> <p>Title:</p> <p>IIDM2 - Reporting procedures to ensure against double counting or the omission of customer demand data.</p> <p>Standard:</p> <p>S1. Actual and forecast customer demands and net energy for load data required for the analysis of the reliability of the interconnected transmission systems shall be developed and maintained on an aggregated Regional, subregional, power pool, and individual system basis and on a dispersed substation basis.</p> <p>Applicability:</p> <p>Entities responsible for the reliability of the interconnected transmission systems in conjunction with the Regions.</p> <p>Effective Date:</p> <p>Approved by Engineering Committee July 14, 1998</p> <p>Measures</p> <p>M2. Reporting procedures that ensure against double counting or the omission of customer demand data.</p> <p>The reporting procedures that are developed shall ensure that customer demands are not double counted or omitted in reporting actual or forecast demand data on either an aggregated or dispersed basis within an area or Region.</p> <p>Full compliance:</p> <p>The data reporting procedures shall adequately address prevention of double counting, the omission of data in accordance with Measurement M2 above, and shall be available on request (five business days) to the Regions and NERC.</p>

<p>Organization shall develop and maintain have documentation a procedure that identifies identifying the scope and details of the actual and forecast (a) Demand data, (b) Net Energy for Load data, and (c) controllable DSM data to be reported for system modeling and reliability analyses. The procedure shall include all of the following:</p> <p>R1.1. A requirement that each Load-Serving Entity develop a set of actual and forecast customer demand values for use in all its data reporting during a calendar year.</p> <p>R1.2. (II.D.M2) A requirement that each Load-Serving Entity count each customer within its service territory once and only once in developing its actual and forecast customer demand values.</p> <p>R1.3. A requirement that each Load-Serving Entity with a controllable DSM program identify the amounts and locations of customer load designed to be curtailed with that DSM program.</p> <p>R1.4. A requirement that each Load-Serving Entity update its actual and forecast customer demand values once each year according to a schedule.</p> <p>R1.5. A requirement that each Regional Reliability Organization use the actual and forecast data provided by the Load-Serving Entities in conducting its reliability assessments.</p> <p>R1.6. A schedule for each Load-Serving Entity to provide its actual and forecast demand data and the amount of customer load designed to be curtailed with a controllable DSM program to its Planning Authority and Regional Reliability Organ</p> <p>R2. The Regional Reliability Organization shall</p>	<p>Compliance</p> <p>Compliance Monitoring Responsibility Regions and NERC</p> <p>Timeframe On request (five business days)</p> <p>Levels of Non-Compliance</p> <p>Level 1: Reporting procedures that address double counting and the omission of data were provided on schedule, but were incomplete in one or more areas.</p> <p>Level 2: Reporting procedures that address double counting and the omission of data were not provided on schedule, but were complete when submitted.</p> <p>Level 3: Reporting procedures that address double counting and the omission of data were not provided on schedule, and were incomplete in one or more areas when submitted.</p> <p>Level 4: Reporting procedures that address double counting and the omission of data were not provided.</p> <p>Regional Differences None identified.</p>
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There is no need to restate requirements in other standards.

~~procedure for reporting customer Demand data to all Planning Authorities and Load-Serving Entities that work within its Region within 30 calendar days of approval. The aggregated and dispersed data submittal requirements shall ensure that consistent data is supplied for Reliability Standards TPL-005-0, TPL-006-0, MOD-010-0, MOD-011-0, MOD-012-0, MOD-013-0, MOD-014-0, MOD-015-0, MOD-016, MOD-017-0, MOD-018-0, MOD-019-0, MOD-020-0, and MOD-021-0.~~

- ~~R3. The documentation of the scope and details of the data reporting requirements shall be available on request (five business days).~~

Redundant

C. Measures

- ~~M1. The Regional Reliability Organization shall have evidence it provided its actual and forecast customer demand data reporting procedure within 30 calendar days of approval to each Planning Authority and Load-Serving Entity that works within its Regional Reliability Organization. The Planning Authority and Regional Reliability Organization shall each provide evidence to its Compliance Monitor that it provided data and reporting procedures per Reliability Standard MOD-016-R1 and R2.~~
- M2. The Regional Reliability Organization’s procedure for actual and forecast customer demand data shall contain all items identified in requirements R1.1 to R1.6.

D. Compliance

- 1. **Compliance Monitoring Process**
 - 1.1. **Compliance Monitoring Responsibility**
 - ~~Compliance Monitor for Planning Authority: Regional Reliability Organization.~~
 - Compliance Monitor for Regional Reliability

<p>Organization: NERC.</p> <p>1.2. Compliance Monitoring Period and Reset Timeframe</p> <p>On request (five business days). One calendar year.</p> <p>1.3. Data Retention</p> <p>None specified. For the Regional Reliability Organization: Current version of the procedure. For the auditor: Three years of audit information.</p> <p>1.4. Additional Compliance Information</p> <p>The Regional Reliability Organization shall demonstrate compliance through self certification or audit (periodic, as part of targeted monitoring or initiated by complaint or event), as determined by the Compliance Monitor.</p> <p>None.</p> <p>2. Levels of Non-Compliance</p> <p>2.1. Level 1: Not Applicable. Identified the scope and details of demand, Net Energy for Load, and controllable DSM data to be reported and the reporting procedures but did not specify that consistent data is to be supplied for Reliability Standards TPL-005-0, TPL-006-0, MOD-010-0, MOD-011-0, MOD-012-0, MOD-013-0, MOD-014-0, MOD-015-0, MOD-016, MOD-017-0, MOD-018-0, MOD-019-0, MOD-020-0, and MOD-021-0.</p> <p>2.2. Level 2: The procedure did not address one of the elements in requirement R1. Not Applicable.</p>	
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<p>2.3. Level 3: Not Applicable.</p> <p>2.4. Level 4: Either the procedure did not address two or more of the required elements in requirement R1 or there was no procedure. Did not identify the scope and details of demand, Net Energy for Load, and controllable DSM data to be reported and the reporting procedures.</p> <p>E. Regional Differences</p> <p>None identified.</p>	
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Draft Proposed Standard	Source Planning Standard
<p><i>The drafting team proposes the new standard MOD-022-1 below as a translation of I.F.M5.</i></p> <p>A. Introduction</p> <ol style="list-style-type: none"> 1. Title: Use of Disturbance Data to Develop and Maintain Models 2. Number: MOD-022-1 3. Purpose: To ensure that system models remain current by using recorded disturbance data. 4. Applicability <ol style="list-style-type: none"> 4.1. Planning Authority. 4.2. Transmission Planner. 5. Proposed Effective Date: November, 2005. <p>B. Requirements</p> <p>R1. The Planning Authority and Transmission Planner shall each use recorded data from Disturbance Monitoring Equipment as required in PRC-002 R3.1 and PRC-002 R3.2 to develop, maintain, and enhance steady-state and dynamic models.</p> <p>C. Measures</p> <p>M1. The Planning Authority and Transmission Planner shall each provide evidence that recorded disturbance data was used to assess its steady state and dynamic models. This evidence shall be provided to the Regional Reliability Organization within 30 calendar days of a request.</p> <p>D. Compliance</p>	<p>Introduction</p> <p>Title: IFM5 (Old M6) - Use of disturbance data to develop and maintain models</p> <p>Standard: S2. Requirements for providing disturbance monitoring data for the purpose of developing, maintaining, and updating transmission system models shall be established on a Regional basis.</p> <p>Applicability: Regional members</p> <p>Effective Date: Approved by Engineering Committee July 14, 1998</p> <p>Measures</p> <p>M5. Use of database in Standard I.F.S1 and S2, M5. Regional members shall use recorded data from disturbance monitoring equipment to develop, maintain, and enhance steady-state and dynamic system models and generator performance models.</p> <p>Full compliance: The information in the Region’s database (Standard I.F.S1 and S2, M5) shall be used to improve steady-state and dynamic system models and generator performance models. Changes incorporated in the models should note how system fault and disturbance data may have been used to effect such changes. This documentation shall be provided to the Regions on request (within 30 days).</p> <p>Compliance</p>

<p>1. Compliance Monitoring Process</p> <p>1.1. Compliance Monitoring Responsibility Regional Reliability Organization.</p> <p>1.2. Compliance Monitoring Period and Reset Timeframe One calendar year.</p> <p>1.3. Data Retention The Planning Authority and Transmission Planner shall retain disturbance simulation results and updates they applied to steady-state and dynamic models as a result of those simulations for the current and last model update periods. The Compliance Monitor shall retain any audit data for three years</p> <p>1.4. Additional Compliance Information The Planning Authority and Transmission Planner shall demonstrate compliance through the following method, as determined by the Compliance Monitor - self certification or audit (periodic, as part of targeted monitoring or initiated by complaint or event).</p> <p>2. Levels of Non-Compliance</p> <p>2.1. Level 1: Not Applicable.</p> <p>2.2. Level 2: Available recorded data from Disturbance Monitoring Equipment of system disturbances that occurred since the most recent model update was used in steady state and/or dynamic simulations, but needed model changes identified by the simulations were not incorporated in steady-state and/or dynamic models.</p> <p>2.3. Level 3: Not Applicable.</p> <p>2.4. Level 4: Available recorded data from disturbance</p>	<p>Compliance Monitoring Responsibility Regions.</p> <p>Timeframe On request (30 days)</p> <p>Levels of Non-Compliance</p> <p>Level 1: Documentation of model changes resulting from the Regional database was provided on schedule, but was incomplete in one or more areas.</p> <p>Level 2: Documentation of model changes resulting from the Regional database was not provided on schedule, but was complete when submitted.</p> <p>Level 3: Documentation of model changes resulting from the Regional database was not provided on schedule, and was incomplete in one or more areas when submitted.</p> <p>Level 4: Documentation of model changes resulting from the Regional database was not provided.</p> <p>Regional Differences None identified.</p>
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monitoring equipment of system disturbances that occurred since the most recent model update was not used in steady state and/or dynamic simulations.

E. Regional Differences

1. None

Draft Proposed Standard	Source Planning Standard
<p><i>The drafting team proposes the new standard MOD-023-1 below as a translation of II.B.M1.</i></p> <p>A. Introduction</p> <ol style="list-style-type: none"> 1. Title: Regional Reliability Organization Procedures for Verifying Generator Equipment Data 2. Number: MOD-023-1 3. Purpose: To verify generator modeling and equipment data to be used in planning and operating reliability studies. 4. Applicability <ol style="list-style-type: none"> 4.1. Regional Reliability Organization. 5. Proposed Effective Date: November 1, 2005. <p>B. Requirements</p> <p>R1. The Regional Reliability Organization shall establish and maintain procedures to address verification of generator modeling and equipment data. These procedures shall include but not be limited to the following:</p> <ol style="list-style-type: none"> R1.1. Generating unit exemption criteria including documentation of those units that are exempt from a portion or all of these procedures. R1.2. Acceptable methods for model and data verification, including but not limited to manufacturer data, performance tracking, simulation, analysis, and testing. R1.3. Periodicity and schedule of model and data verification. R1.4. Data verification parameters to be reported, including: <ol style="list-style-type: none"> R1.4.1. Generator gross and net real power 	<p>Introduction</p> <p>Title:</p> <p style="padding-left: 40px;">IIB M1 - Regional procedures for generation equipment testing</p> <p>Purpose:</p> <p>Standard:</p> <p style="padding-left: 40px;">Generation equipment shall be tested to verify that data submitted for steady-state and dynamics modeling in planning and operating studies is consistent with the actual physical characteristics of the equipment. The data to be verified and provided shall include generator gross and net dependable capability, gross and net reactive power capability, voltage regulator controls, speed/load governor controls, and excitation systems.</p> <p>Applicability:</p> <p style="padding-left: 40px;">Regions</p> <p>Effective Date:</p> <p style="padding-left: 40px;">Approved by Engineering Committee: July 14, 1998</p> <p>Measures</p> <p style="padding-left: 40px;">M1 - Procedures for validating generation equipment data.</p> <p style="padding-left: 40px;">Each Region shall establish and maintain procedures for generation equipment data verification and testing for all types of generating units in its Region. These procedures shall address generator gross and net dependable capability, reactive power capability, voltage regulator controls, speed/load governor controls, and excitation systems (including power system stabilizers and other devices, if applicable). These procedures shall also address generating</p>

<p>capability.</p> <p>R1.4.2. Generator gross and net reactive power capability.</p> <p>R1.4.3. Speed/load governor controls.</p> <p>R1.4.4. Excitation systems, including voltage regulator controls, limiters, compensators, and power system stabilizers, if applicable.</p> <p>R2. The Regional Reliability Organization shall make its procedures available to the Generator Owners, Generator Operators, and Transmission Planners affected by the procedure.</p> <p>R2.1. The Regional Reliability Organization shall make approved revisions to the procedure available to the affected responsible entities within 30 calendar days.</p> <p>R3. The Regional Reliability Organization shall provide its procedures to NERC on request.</p> <p>C. Measures</p> <p>M1. The Regional Reliability Organization shall have available for inspection a procedure for the verification of generator models and data meeting the criteria listed in Requirement R1.</p> <p>M2. The Regional Reliability Organization shall have evidence that its procedure for verification of generator models and data is available to affected Generator Owners, Generator Operators, and Transmission Planners and that any revisions were available within 30 calendar days of approval.</p> <p>M3. The Regional Reliability Organization shall have evidence that it provided its procedure for verification of generator models and data to NERC within 30 calendar days of a request.</p> <p>D. Compliance</p> <p>1. Compliance Monitoring Process</p>	<p>unit exemption criteria and shall require documentation of those generating units that are exempt from a portion or all of these procedures.</p> <p>Full compliance:</p> <p>Each Region shall establish, maintain, and document procedures for generation equipment data verification and testing for all non-exempt generating units in its Region. The equipment to be tested and the data to be reported shall include, as a minimum, those items specified under Measurements M1, M2, M3, M4, M5, and M6 of this Standard II.B. S1. The schedule for the testing of the generation equipment, as defined in Measurements M2, M3, M4, M5, and M6, and the schedule for the submittal of the verification or test data to the Regions shall be included in the Regional procedures. Each Region shall also develop the criteria under which generation equipment may be exempt from a portion or all of the required testing procedures. A list of the exempt units shall be maintained by each Region. Documentation of verification and testing procedures shall be available to all reporting parties on request (five business days).</p> <p>Compliance</p> <p>Compliance Monitoring Responsibility</p> <p>NERC</p> <p>Compliance Monitoring Period and Reset Timeframe</p> <p>On request (five business days).</p> <p>Data Retention</p> <p>Levels of Non-Compliance</p> <p>Level 1: Documentation of Regional procedures for generation equipment testing was provided on schedule, but was incomplete in one or more areas.</p>
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<p>1.1. Compliance Monitoring Responsibility NERC.</p> <p>1.2. Compliance Monitoring Period and Reset Timeframe One calendar year.</p> <p>1.3. Data Retention The Regional Reliability Organization shall retain both the current and previous versions of the procedure. The Compliance Monitor shall retain any audit data for three years.</p> <p>1.4. Additional Compliance Information The Regional Reliability Organization shall demonstrate compliance through self certification or audit (periodic, as part of targeted monitoring or initiated by complaint or event), as determined by the Compliance Monitor.</p> <p>2. Levels of Non-Compliance</p> <p>2.1. Level 1: Procedures for generation equipment model and data verification did not address one of the required elements MOD-023 R1.1, R1.3, R2, or R3.</p> <p>2.2. Level 2: Procedures for generation equipment model and data verification did not address two or more of the required elements MOD-023 R1.1, R1.3, R2, or R3.</p> <p>2.3. Level 3: Procedures for generation equipment model and data verification did not address the required elements of MOD-023 R1.2.</p> <p>2.4. Level 4: Procedures for generation equipment model and data verification did not address all of the required elements of MOD-023 R1.4.</p> <p>E. Regional Differences</p>	<p>Level 2: Documentation of Regional procedures for generation equipment testing was not provided on schedule, but was complete when submitted.</p> <p>Level 3: Documentation of Regional procedures for generation equipment testing was not provided on schedule, and was incomplete in one or more areas when submitted.</p> <p>Level 4: Documentation of Regional procedures for generation equipment testing was not provided.</p> <p>Regional Differences None identified.</p>
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Comparison of II.B.M1 to MOD-023-1

None identified.	
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Draft Proposed Standard	Source Planning Standard
<p><i>The drafting team proposes the new standard MOD-024-1 below as a translation of II.B.M2.</i></p> <p>A. Introduction</p> <ol style="list-style-type: none"> 1. Title: Verification of Generator Gross and Net Dependable Capability 2. Number: MOD-024-1 3. Purpose: To ensure generator gross and net real power capability are available and consistent with models used to assess Bulk Electric System reliability. 4. Applicability <ol style="list-style-type: none"> 4.1. Generation Owner. 5. Proposed Effective Date: November 1, 2005. <p>B. Requirements</p> <ol style="list-style-type: none"> R1. The Generator Owner shall verify the sustainable gross and net real power capability of its units in accordance with Regional Reliability Organization requirements. R2. The Generator Owner shall provide the Regional Reliability Organization and applicable Transmission Planner with the following information on request: <ol style="list-style-type: none"> R2.1. Summer and winter gross and net real power capabilities of each unit based on the power factor level expected for each unit at the time of summer and winter peak demand, respectively. R2.2. Real power requirements of auxiliary loads. R2.3. Method of verification, including date and conditions as established in the Regional Reliability 	<p>Introduction</p> <p>Title: IIBM2 - Verification of gross and net real power dependable capability of generators.</p> <p>Standard: S1. Generation equipment shall be tested to verify that data submitted for steady-state and dynamics modeling in planning and operating studies is consistent with the actual physical characteristics of the equipment. The data to be verified and provided shall include generator gross and net dependable capability, gross and net reactive power capability, voltage regulator controls, speed/load governor controls, and excitation systems.</p> <p>Applicability: Generation equipment owners</p> <p>Effective Date: Approved by Engineering Committee July 14, 1998</p> <p>Measures</p> <p>M2. Verification of gross and net dependable capability of generators</p> <p>Generation equipment owners shall annually test to verify the gross and net dependable capability of their units. They shall provide the Regions with the following information on request:</p> <ol style="list-style-type: none"> a) Summer and winter gross and net capabilities of each unit based on the power factor level expected for each unit at the time of summer and winter peak demand, respectively.

<p style="text-align: center;">Organization procedures.</p> <p>C. Measures</p> <p>M1. The Generator Owner shall document verification of sustainable gross and net real power capability of generators, including verification methods as established by Regional Reliability Organization procedures, and shall make such documentation available to the Regional Reliability Organization.</p> <p>M2. The Generator Owner shall have evidence it provided the Regional Reliability Organization and appropriate Transmission Planner with verification of generator sustainable gross and net real power capability within 30 calendar days.</p> <p>D. Compliance</p> <p>1. Compliance Monitoring Process</p> <p>1.1. Compliance Monitoring Responsibility Regional Reliability Organization.</p> <p>1.2. Compliance Monitoring Period and Reset Timeframe One calendar year.</p> <p>1.3. Data Retention The Generator Owner shall retain information from the most current and prior verification. The Compliance Monitor shall retain any audit data for three years.</p> <p>1.4. Additional Compliance Information The Generator Owner shall demonstrate compliance through self certification or audit (periodic, as part of targeted monitoring or initiated by complaint or event),</p>	<p>b) Active or real power requirements of auxiliary loads.</p> <p>c) Date and conditions during tests (ambient and design temperatures, generator loading, voltages, hydrogen pressure, high-side voltage, and auxiliary loads).</p> <p>Full compliance:</p> <p>Generation equipment owners shall test annually all of their non-exempt generation equipment for summer and winter gross and net real power (MW) dependable capability according to the Regional procedures under Measurement M1 of this Standard II.B. S1. Operating data may be acceptable as test data providing it was obtained under test-like conditions.</p> <p>Test conditions and test results shall be documented and all data requested by the Region shall be provided by the generation equipment owners in accordance with the Regional procedures in Measurement M1 of Standard II.B. S1. Exceptions to the schedules in the Regional procedures will need to be agreed to by the Region and the generation equipment owners.</p> <p>Compliance</p> <p>Compliance Monitoring Responsibility Regions</p> <p>Timeframe Annually</p> <p>Levels of Non-Compliance</p> <p>Level 1: Verification of generator gross and net real power dependable capability was provided on schedule, but was incomplete in one or more areas.</p> <p>Level 2: Verification of generator gross and net real power dependable capability was not provided on schedule, but was complete when submitted.</p>
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<p>as determined by the Compliance Monitor.</p> <p>2. Levels of Non-Compliance</p> <p>2.1. Level 1: Verified generator data was provided but was missing some of the information required in the method of verification required in MOD-024 R2.3.</p> <p>2.2. Level 2: Not applicable.</p> <p>2.3. Level 3: Verified generator data was provided but was missing the real power requirements of some auxiliary loads required in MOD-024 R2.2.</p> <p>2.4. Level 4:</p> <p>2.4.1 Verified generator data was not provided or</p> <p>2.4.2 Was provided but was missing any value of real power capability required in MOD-024 R2.1.</p> <p>E. Regional Differences</p> <p>None.</p>	<p>Level 3: Verification of generator gross and net real power dependable capability was not provided on schedule, and was incomplete in one or more areas when submitted.</p> <p>Level 4: Verification of generator gross and net real power dependable capability was not provided.</p> <p>Regional Differences</p> <p>None identified.</p>
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Draft Proposed Standard	Source Planning Standard
<p><i>The drafting team proposes the new standard MOD-025-1 below as a translation of II.B.M3.</i></p> <p>A. Introduction</p> <ol style="list-style-type: none"> 1. Title: Verification of Reactive Power Capability 2. Number: MOD-025-1 3. Purpose: To verify generator gross and net reactive power capability are available and consistent with models used to assess Bulk Electric System reliability. 4. Applicability <ol style="list-style-type: none"> 4.1. Generator Owner. 5. Proposed Effective Date: November 1, 2005. <p>B. Requirements</p> <p>R1. The Generator Owner shall verify the gross and net reactive power capability of its units in accordance with Regional Reliability Organization requirements.</p> <p>R2. The Generator Owner shall provide the Regional Reliability Organization and the applicable Transmission Planner(s) with the following information on request:</p> <ol style="list-style-type: none"> R2.1. Maximum sustainable reactive power capability (both lagging and leading) as a function of real power output, including generator terminal voltage limitations. R2.2. Reasons for reactive power limitation(s). R2.3. Reactive power requirements of auxiliary loads. R2.4. Method of verification, including date and conditions as established in the Regional 	<p>Introduction</p> <p>Title:</p> <p>IIBM3 - Verification of gross and net reactive power capability of generators.</p> <p>Standard:</p> <p>Generation equipment shall be tested to verify that data submitted for steady-state and dynamics modeling in planning and operating studies is consistent with the actual physical characteristics of the equipment. The data to be verified and provided shall include generator gross and net dependable capability, gross and net reactive power capability, voltage regulator controls, speed/load governor controls, and excitation systems.</p> <p>Applicability:</p> <p>Generation equipment owners</p> <p>Effective Date:</p> <p>Approved by Engineering Committee: July 14, 1998</p> <p>Measures</p> <p>M3. Verification of gross and net reactive power capability of generators.</p> <p>Generation equipment owners shall test to verify the gross and net reactive power capability of their units at least every five years. They shall provide the Regions with the following information on request:</p> <p>Maximum sustained reactive power capability (both lagging and leading) as a function of real power output and generator terminal voltage. If safety or system conditions do not allow testing to full capability, computations and engineering reports of estimated capability shall be provided.</p>

<p style="text-align: center;">Reliability Organization procedures.</p> <p>C. Measures</p> <p>M1. The Generator Owner shall document the verification of the sustainable gross and net reactive power capability of its generating units, including verification methods as established by Regional Reliability Organization procedures, and shall make such documentation available to the Regional Reliability Organization.</p> <p>M2. The Generator Owner shall have evidence it provided the Regional Reliability Organization and applicable Transmission Planner(s) with validation of generator sustainable gross and net reactive power capability within 30 calendar days of a request.</p> <p>D. Compliance</p> <p>1. Compliance Monitoring Process</p> <p>1.1. Compliance Monitoring Responsibility Regional Reliability Organization.</p> <p>1.2. Compliance Monitoring Period and Reset Timeframe One calendar year.</p> <p>1.3. Data Retention The Generator Owner shall retain information from the most current and prior verification The Compliance Monitor shall retain any audit data for three years.</p> <p>1.4. Additional Compliance Information The Generator Owner shall demonstrate compliance through self certification or audit (periodic, as part of targeted monitoring or initiated by complaint or event), as determined by the</p>	<p>Reason for reactive power limitation.</p> <p>Reactive power requirements of auxiliary loads.</p> <p>Date and conditions during tests (ambient and design temperatures, generator loading, voltages, hydrogen pressure, high-side voltage, and auxiliary loads).</p> <p>Full compliance:</p> <p>Generation equipment owners shall test at least every five years all of their non-exempt generating units for reactive power capability according to the Regional procedures required under Measurement M1 of this Standard II.B. S1.</p> <p>Test conditions and test results shall be documented and all data requested by the Region shall be provided by the generation equipment owners in accordance with the Regional procedures in Measurement M1 of Standard II.B. S1. Exceptions to the schedules in the Regional procedures will need to be agreed to by the Region and the generation equipment owners.</p> <p>Compliance</p> <p>Compliance Monitoring Responsibility: Regions</p> <p>Compliance Monitoring Period and Reset Timeframe: At least every five years</p> <p>Data Retention:</p> <p>Levels of Non-Compliance:</p> <p>Level 1: Verification of generator gross and net reactive power capability was provided on schedule, but was incomplete in one or more areas.</p> <p>Level 2: Verification of generator gross and net reactive power capability was not provided on schedule, but was completed when submitted.</p>
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<p>Compliance Monitor.</p> <p>2. Levels of Non-Compliance</p> <p>2.1. Level 1: Verified generator data was provided but was missing some of the information in the method of verification required in MOD-025 R2.4.</p> <p>2.2. Level 2: Verified generator data was provided but was missing the reasons for reactive power limitation(s) required in MOD-025 R2.2.</p> <p>2.3. Level 3: Verified generator data was provided when requested but was missing the reactive power requirements of some auxiliary loads as required in MOD-025 R2.3.</p> <p>2.4. Level 4:</p> <p>2.4.1 Verified generator data was not provided or</p> <p>2.4.2 Was provided but was missing reactive power capability required in MOD-025 R2.1.</p> <p>E. Regional Differences</p> <p>None identified.</p>	<p>Level 3: Verification of generator gross and net reactive power capability was not provided on schedule, and was incomplete in one or more areas when submitted.</p> <p>Level 4: Verification of generator gross and net reactive power capability was not provided.</p> <p>Regional Differences</p> <p>None identified.</p>
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Draft Proposed Standard	Source Planning Standard
<p><i>The drafting team proposes the new standard MOD-026-1 below as a translation merging II.B.M4 and II.B.M6.</i></p> <p>A. Introduction</p> <ol style="list-style-type: none"> 1. Title: Verification and Modeling of Generator Excitation Systems and Voltage Controls 2. Number: MOD-026-1 3. Purpose: To verify generator excitation system functions (including voltage regulator controls, limiters, compensators, and power system stabilizers, if applicable) are available and consistent with models used to assess Bulk Electric System reliability. 4. Applicability <ol style="list-style-type: none"> 4.1. Generator Owner. 5. Proposed Effective Date: November 1, 2005. <p>B. Requirements</p> <p>R1. (II.B.M4) The Generator Owner shall, within 30 calendar days of a request, provide to the Regional Reliability Organization and applicable Transmission Planner(s) data associated with the generator excitation system functions (including voltage regulator controls, limiters, compensators, and power system stabilizers, if applicable), in accordance with Regional Reliability Organization requirements.</p> <p>R2. (II.B.M6) The Generator Owner shall verify the data used in dynamic models for excitation systems (including power system stabilizers and other devices, if applicable) in accordance with Regional Reliability Organization requirements.</p> <p>R3. (II.B.M6) The Generator Owner shall, within 30 calendar days of a request, provide to the Regional Reliability</p>	<p>Introduction</p> <p>Title:</p> <p>II.B.M4 - Test results of generator voltage regulator controls and limit functions.</p> <p>II.B.M6 - Verification of excitation system dynamic modeling data.</p> <p>Standard:</p> <p>Generation equipment shall be tested to verify that data submitted for steady-state and dynamics modeling in planning and operating studies is consistent with the actual physical characteristics of the equipment. The data to be verified and provided shall include generator gross and net dependable capability, gross and net reactive power capability, voltage regulator controls, speed/load governor controls, and excitation systems.</p> <p>Applicability:</p> <p>Generation equipment owners</p> <p>Effective Date:</p> <p>Approved by Engineering Committee: July 14, 1998</p> <p>Measures</p> <p>Test results of generator voltage regulator controls and limit functions.</p> <p>M4. Generation equipment owners shall test voltage regulator controls and limit functions at least every five years. Upon request, they shall provide the Regions with the status of voltage regulator testing as well as information that describes how generator controls coordinate with the generator’s short-term capabilities and protective relays. Test reports shall include minimum and maximum excitation limiters</p>

<p>Organization and applicable Transmission Planner(s) the results of excitation system model and data verification, including but not limited to the following information:</p> <p>R3.1. Type of excitation / voltage regulator control system (static, brushless, rotating, manufacturer, etc.).</p> <p>R3.2. Voltage regulator controls.</p> <p>R3.3. under and over excitation limiters.</p> <p>R3.4. Line drop compensators.</p> <p>R3.5. Gains and time constants.</p> <p>R3.6. Power system stabilizers, if applicable.</p> <p>R3.7. Method of verification, including the date, the voltage regulator mode of operation, and the voltage regulator control settings during the verification.</p> <p>R4. (II.B.M6) The Generator Owner shall provide design data for new or refurbished excitation systems prior to the in-service date as required by the Regional Reliability Organization procedure and provide updated data once the unit is in service. Open circuit test response chart recordings shall be provided showing generator field voltage and generator terminal voltage.</p> <p>R5. (II.B.M6) The Generator Owner shall provide open circuit test response chart recordings showing generator field voltage and generator terminal voltage (exciter field voltage and current data for brushless units) in accordance with Regional Reliability Organization requirements.</p> <p>C. Measures</p> <p>M1. (II.B.M4) The Generator Owner shall document verification of the excitation system functions (including voltage regulator controls, limiters, compensators, and power system stabilizers, if applicable), and shall make such documentation available to the Regional Reliability Organization.</p>	<p>(volts/hertz), gain and time constants, the type of voltage regulator control function, date tested, and the voltage regulator control setting.</p> <p>M6. Generation equipment owners shall verify the dynamic model data for excitation systems (including power system stabilizers and other devices, if applicable) at least every five years. Design data for new or refurbished excitation systems shall be provided at least one year prior to the in-service date with updated data provided once the unit is in service. Open circuit test response chart recordings shall be provided showing generator field voltage and generator terminal voltage. (Brushless units shall include exciter field voltage and current.</p> <p>Full compliance:</p> <p>Generation equipment owners shall test at least every five years all of their non-exempt voltage regulator controls and limit functions in accordance with Measurement M4 above and the Regional procedures required under Measurement M1 of this Standard II.B. S1.</p> <p>All test data and status information requested by the Region shall be provided by the generation equipment owners in accordance with the Regional procedures in Measurement M1 of Standard II.B. S1. Exceptions to the schedules in the Regional procedures will need to be agreed to by the Region and the generation equipment owners.</p> <p>Compliance</p> <p>Compliance Monitoring Responsibility:</p> <p>Regions</p> <p>Compliance Monitoring Period and Reset Timeframe:</p> <p>At least every five years</p> <p>Data Retention:</p>
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<p>M2. (II.B.M6) The Generator Owner shall have evidence it provided the Regional Reliability Organization and applicable Transmission Planner(s) with verification results for the excitation system functions (including voltage regulator controls, limiters, compensators, and power system stabilizers, if applicable).</p> <p>D. Compliance</p> <p>1. Compliance Monitoring Process</p> <p>1.1. Compliance Monitoring Responsibility Regional Reliability Organization.</p> <p>1.2. Compliance Monitoring Period and Reset Timeframe One calendar year.</p> <p>1.3. Data Retention Generator Owner shall retain assessments for two years. The Compliance Monitor shall retain any audit data for three years.</p> <p>1.4. Additional Compliance Information The Generator Owner shall demonstrate compliance through self certification or audit (periodic, as part of targeted monitoring or initiated by complaint or event), as determined by the Compliance Monitor.</p> <p>2. Levels of Non-Compliance</p> <p>2.1. Level 1: Generator voltage regulator controls and limit function information were provided but were incomplete in one area as specified in MOD-026 R1, R2 and R5.</p> <p>2.2. Level 2 not applicable</p>	<p>Additional Compliance Information</p> <p>Levels of Non-Compliance:</p> <p>II.B.M4 Level 1: Test results of generator voltage regulator controls and limit functions were provided on schedule, but were incomplete in one or more areas.</p> <p>II.B.M6 Level 1: Verification of excitation system dynamic modeling data was provided on schedule, but was incomplete in one or more areas.</p> <p>II.B.M4 Level 2: Test results of generator voltage regulator controls and limit functions were not provided on schedule, but were complete when submitted.</p> <p>II.B.M6 Level 2: Verification of excitation system dynamic modeling data was not provided on schedule, but was complete when submitted.</p> <p>II.B.M4 Level 3: Test results of generator voltage regulator controls and limit functions were not provided on schedule, and were incomplete in one or more areas when submitted.</p> <p>II.B.M6 Level 3: Verification of excitation system dynamic modeling data was not provided on schedule, and was incomplete in one or more areas when submitted.</p> <p>II.B.M4 Level 4: Test results of generator voltage regulator controls and limit functions were not provided.</p> <p>II.B.M6 Level 4: Verification of excitation system dynamic modeling data was not provided.</p> <p>Regional Differences</p> <p>None identified.</p>
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2.3. Level 3: Generator Owner provided design data for new or refurbished excitation systems prior to the in-service date but was incomplete as required by the Regional Reliability Organization procedure or provided incomplete updated data once the unit is in service as specified in MOD-026 R3 and R4.

2.4. Level 4: Generator Owner did not verify the data used in dynamic models for excitation systems (including power system stabilizers and other devices, if applicable) in accordance with Regional Reliability Organization requirements as specified in MOD-026 R2.

E. Regional Differences

None specified.

Draft Proposed Standard	Source Planning Standard
<p><i>The drafting team proposes the new standard MOD-027-1 below merging the translations of II.B.M5 and III.C.M9.</i></p> <p>A. Introduction</p> <ol style="list-style-type: none"> 1. Title: Verification and Status of Generator Frequency Response 2. Number: MOD-027-1 3. Purpose: To provide verification and status of generator primary (other than Automatic Generation Control) frequency response for use in models for reliability studies. 4. Applicability <ol style="list-style-type: none"> 4.1. Generator Owner. 5. Proposed Effective Date: November 1, 2005. <p>B. Requirements</p> <p>R1. (II.B.M5) The Generator Owner shall provide data to the Transmission Planner, Transmission Operator, and Regional Reliability Organization on how the unit speed and real power output are expected to change in response to frequency transients, in accordance with Regional Reliability Organization requirements.</p> <p>R2. (III.C.M9) The Generator Owner shall provide the Regional Reliability Organization and applicable Transmission Planner(s) with the following information within 30 days of a request:</p> <ol style="list-style-type: none"> R2.1. Non-functioning or blocked speed/load governor controls, or controls that influence speed/load governor controls. R2.2. Method of verification of the generator frequency response, including date and conditions of the 	<p>Introduction</p> <p>Title:</p> <p>II.B.M5 - Test results of speed/load governor controls.</p> <p>III.C.M9 - Speed/load governing system.</p> <p>Standards:</p> <p>II.B.S5. Generation equipment shall be tested to verify that data submitted for steady-state and dynamics modeling in planning and operating studies is consistent with the actual physical characteristics of the equipment. The data to be verified and provided shall include generator gross and net dependable capability, gross and net reactive power capability, voltage regulator controls, speed/load governor controls, and excitation systems.</p> <p>III.C.S5. Prime mover control (governors) shall operate with appropriate speed/load characteristics to regulate frequency.</p> <p>Applicability</p> <p>II.B.M5 - Generation equipment owners</p> <p>III.C.M9 - Generator owner/operator.</p> <p>Effective Date:</p> <p>Approved by Engineering Committee: July 14, 1998</p> <p>Measures</p> <p>II.B.M5. Test results of speed/load governor controls.</p> <p>Generation equipment owners shall test speed/load governor controls at least every five years. Upon request, they shall provide the Regions with the status of governor tests as well as information that describes the characteristics (droop and</p>

<p>verification.</p> <p>C. Measures</p> <p>M1. (II.B.M5 and III.C.M9) The Generator Owner shall have evidence it provided the Regional Reliability Organization, Transmission Planner, and Transmission Operator with the information required in R1 and R2 within 30 calendar days of a request.</p> <p>D. Compliance</p> <p>1. Compliance Monitoring Process</p> <p>1.1. Compliance Monitoring Responsibility Regional Reliability Organization.</p> <p>1.2. Compliance Monitoring Period and Reset Timeframe One calendar year.</p> <p>1.3. Data Retention The Generator Owner shall retain information from the most current and prior verification. The Compliance Monitor shall retain any audit data for three years.</p> <p>1.4. Additional Compliance Information Generator Owner shall demonstrate compliance through self certification or audit (periodic, as part of targeted monitoring or initiated by complaint or event), as determined by the Compliance Monitor.</p> <p>2. Levels of Non-Compliance</p> <p>2.1. Level 1: Method of verification of the generator frequency response was provided but was missing some of the information required in MOD-027 R2.2.</p>	<p>deadband) of the speed/load governing system.</p> <p>III.C.M9. Generator owners/operators shall provide the Region, the transmission system operator, and NERC as requested (30 business days) with the characteristics of the generator’s speed/load governing system. Boiler or nuclear reactor control shall be coordinated to maintain the capability of the generator to aid control of system frequency during an electric system disturbance. Non-functioning or blocked speed/load governor controls shall be reported to the Region, the transmission system operator, and NERC on request (30 business days).</p> <p>Full compliance:</p> <p>II.B.M5. Generation equipment owners shall test at least every five years all of their non-exempt speed/load governor controls according to the Regional procedures required under Measurement M1 of this Standard II.B. S1. They shall also provide on request (within 30 days) information on the characteristics (droop and deadband) of the speed/load governing system.</p> <p>III.C.M9. All test data and status information requested by the Region shall be provided by the generation equipment owners in accordance with the Regional procedures in Measurement M1 of Standard II.B. S1. Exceptions to the schedules in the Regional procedures will need to be agreed to by the Region and the generation equipment owners.</p> <p>Compliance</p> <p>Compliance Monitoring Responsibility: Regions.</p> <p>Compliance Monitoring Period and Reset Timeframe:</p> <p>II.B.M5: At least every five years.</p> <p>III.C.M9: On request (30 business days).</p>
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<p>2.2. Level 2: Not applicable.</p> <p>2.3. Level 3: Data on how a unit is expected to change in response to frequency transients was provided but was missing some of the information required in MOD-027 R1.</p> <p>2.4. Level 4:</p> <p>2.4.1 Information on speed/load governor controls was provided but was missing some of the information required in MOD-027 R2.1, or</p> <p>2.4.2 Method of the verification of the generator frequency response was not provided, or</p> <p>2.4.3 Data on how a unit is expected to change in response to frequency transients was not provided, or</p> <p>2.4.4 Information on non-functioning or blocked speed/load governor controls, or controls that influence speed/load governor controls was not provided.</p> <p>E. Regional Differences</p> <p>None identified.</p>	<p>Data Retention</p> <p>Levels of Non-Compliance</p> <p>II.B.M5 Level 1: Test results of speed/load governor controls were provided on schedule, but were incomplete in one or more areas.</p> <p>III.C.M9 Level 1: Information on the generator's speed/load governing system was provided but did not include all the requirements as defined above in Measurement M9.</p> <p>II.B.M5 Level 2: Test results of speed/load governor controls were not provided on schedule, but were complete when submitted.</p> <p>III.C.M9 Level 2: Not applicable.</p> <p>II.B.M5 Level 3: Test results of speed/load governor controls were not provided on schedule, and were incomplete in one or more areas when submitted.</p> <p>III.C.M9 Level 3: Not applicable.</p> <p>II.B.M5 Level 4: Test results of speed/load governor controls were not provided.</p> <p>III.C.M9 Level 4: Information on the generator's speed/load governing system was not provided.</p> <p>Regional Differences</p> <p>None identified.</p>
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Draft Proposed Standard	Source Planning Standard
<p><i>The drafting team proposes the new standard MOD-028-1 below as a translation merging III.B.M2 and III.B.M3. III.B.M1 is not addressed in this standard because its requirements are already addressed in existing standards TPL-001-0, TPL-002-0, TPL-003-0, and TPL-004-0.</i></p> <p>A. Introduction</p> <ol style="list-style-type: none"> 1. Title: Provision of Models and Data for Transmission Power Electronic Control Devices 2. Number: MOD-028-1 3. Purpose: To ensure that accurate transmission Power Electronic Control Device models and data are provided to the Transmission Planner to enable assessments required to meet system performance defined in Reliability Standards TPL-001, TPL-002, TPL-003, and TPL-004. 4. Applicability <ol style="list-style-type: none"> 4.1. Transmission Owner. 4.2. Transmission Operator. 5. Proposed Effective Date: October 1, 2005. <p>B. Requirements</p> <p>R1. (IIIBM2) The Transmission Owner shall provide transmission Power Electronic Control Device models and data suitable for use in system modeling.</p> <p>R1.1. (IIIBM2) The Transmission Owner shall provide preliminary models and data for transmission Power Electronic Control Devices to the Transmission Planner and Planning Authority to permit analysis of the potential impacts of these devices on system reliability prior to their installation or change.</p>	<p>Introduction</p> <p>Titles:</p> <p>IIIBM2 - Provision of models and data for control devices for use in system modeling.</p> <p>IIIBM3 - Periodic review of settings and operating strategies of control devices.</p> <p>Standard:</p> <p>S1. Transmission control devices shall be planned and designed to meet the system performance requirements as defined in the I.A. Standards of the Transmission Systems and associated Table I. These devices shall be coordinated with other control devices within a Region and, where appropriate, with neighboring Regions.</p> <p>Applicability:</p> <p>IIIBM2 - Transmission owners.</p> <p>IIIBM3 - Transmission owners or operators.</p> <p>Effective Date:</p> <p>IIIBM2 and IIIBM3 approved by Engineering Committee July 14, 1998</p> <p>Measures</p> <p>M2. Transmission control device models and data.</p> <p>Transmission owners shall provide transmission control device models and data, suitable for use in system modeling, to the Regions and NERC on request. Preliminary data on these devices shall be provided prior to their in-service dates. Validated models and associated data shall be provided following installation and energization.</p> <p>Full compliance with M2:</p>

<p>R1.2. (IIIBM2) The Transmission Owner shall provide validated models and data to the Transmission Planner and Planning Authority, based on commissioning test results, within 30 calendar days after the in-service dates of the Power Electronic Control Devices, so that the impacts of these devices on system security may be fully assessed and incorporated into System Operating Limits and Interconnection Reliability Operating Limits.</p> <p>R2. (IIIBM3) The Transmission Owner and Transmission Operator shall review the settings and operating strategies of each transmission Power Electronic Control Device every five years.</p> <p>R3. The Transmission Owner or Transmission Operator shall provide the following documentation to the Regional Reliability Organization and NERC upon request:</p> <p>R3.1. (IIIBM2) Validated models and data for each transmission Power Electronic Control Device.</p> <p>R3.2. (IIIBM3) Present settings and operating strategies of each transmission Power Electronic Control Device.</p> <p>C. Measures</p> <p>M1. (IIIBM2) The Transmission Owner shall have evidence it provided transmission Power Electronic Control Device preliminary models and data, allowing enough time to perform of studies of potential impacts before the new or changed Power Electronic Control Device is put in service. Validated models must be provided within 30 calendar days after the in service date.</p> <p>M2. (IIIBM3) The Transmission Owner and Transmission Operator shall have evidence that it reviewed transmission Power Electronic Control Device settings and operating strategies and shall provide such evidence within 30 calendar days of a request by the Regional Reliability Organization or</p>	<p>Transmission owners shall provide transmission control device models and data suitable for use in system modeling. These models and data will be used in the assessments of the reliability of the transmission network under Standard I.A. Transmission owners shall provide preliminary models and data for transmission control devices to permit analysis of the potential impacts of these devices on system reliability prior to their installation. Validated models and data, based on commissioning test results, shall be provided after the in-service dates of the control devices so that the impacts of these devices on system security may be fully assessed and incorporated into operating security limits.</p> <p>Validated transmission control device models and data should be provided to the Regions and NERC on request (within 30 days).</p> <p>M3. Periodic review and validation of settings and operating strategies. The transmission owners or operators shall document and periodically (at least every five years or as required by changes in system conditions) review the settings and operating strategies of the control devices. Documentation shall be provided to the Regions and NERC on request.</p> <p>Full compliance with M3:</p> <p>Transmission owners or operators shall review the settings and operating strategies of transmission control devices whenever changes to the system are made or at least every five years to ensure that these control devices continue to perform their intended function. Documentation of the current settings and operating strategies shall be provided to the Regions and NERC on request (within 30 days).</p> <p>Compliance</p> <p>Compliance Monitoring Responsibility</p>
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<p>NERC.</p> <p>M3. (IIIBM2 and IIIBM3) The Transmission Owner and Transmission Operator shall have evidence it provided documentation of validated models and data and present settings and operating strategies for each transmission Power Electronic Control Device, within 30 calendar days of a request by the Regional Reliability Organization or NERC.</p> <p>D. Compliance</p> <p>1. Compliance Monitoring Process</p> <p>1.1. Compliance Monitoring Responsibility Regional Reliability Organization.</p> <p>1.2. Compliance Monitoring Period and Reset One calendar year.</p> <p>1.3. Data Retention The Transmission Owner and Transmission Operator shall retain current data plus previous update.</p> <p>1.4. Additional Compliance Information The Transmission Owner and Transmission Operator shall demonstrate compliance through self certification or audit (periodic, as part of targeted monitoring or initiated by complaint or event), as determined by the Compliance Monitor.</p> <p>2. Levels of Non-Compliance</p> <p>2.1. Level 1: (IIIBM2 and IIIBM3) Transmission Power Electronic Control Device models, data, and settings were not provided to the Regional Reliability Organization within 30 days of a request.</p> <p>2.2. Level 2: (III.B.M3) Transmission Owner and Transmission Operator review of the settings and operating strategies of each transmission Power</p>	<p>Regions</p> <p>Timeframe</p> <p>IIIBM2. On request (within 30 days)</p> <p>IIIBM3. When conditions change or at least every five years.</p> <p>Levels of Non-Compliance</p> <p>IIIBM2. Level 1: Control device models and data for use in system modeling were provided on schedule, but were incomplete in one or more areas.</p> <p>IIIBM3. Level 1: A review of control device settings and operating strategies was provided on schedule, but was incomplete in one or more areas.</p> <p>IIIBM2. Level 2: Control device models and data for use in system modeling were not provided on schedule, but were complete when submitted.</p> <p>IIIBM3. Level 2: A review of control device settings and operating strategies was not provided on schedule, but was complete when submitted.</p> <p>IIIBM2. Level 3: Control device models and data for use in system modeling were not provided on schedule, and were incomplete in one or more areas when submitted.</p> <p>IIIBM3. Level 3: A review of control device settings and operating strategies was not provided on schedule, and was incomplete in one or more areas when submitted.</p> <p>IIIBM2. Level 4: Control device models and data for use in system modeling were not provided.</p> <p>IIIBM3. Level 4: A review of control device settings and operating strategies was not provided.</p> <p>Regional Differences</p> <p>None identified.</p>
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<p>Electronic Control Device was older than five years.</p> <p>2.3. Level 3: (III.B.M2) Preliminary models of the transmission Power Electronic Control Device models, data, and settings were not provided with sufficient time to allow testing before the device went into service</p> <p>2.4. Level 4: There shall be a level 4 non-compliance if either of the two following conditions exists:</p> <p>2.4.1 (III.B.M2) Preliminary models of the transmission Power Electronic Control Device models, data, and settings were not provided before the device went into service, or</p> <p>2.4.2 (IIIBM2 and IIIBM3) Validated transmission Power Electronic Control Device models, data, and settings were not provided to the Transmission Operator within 30 calendar days after the device went into service.</p> <p>E. Regional Differences</p> <p>None identified.</p>	
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Draft Proposed Standard	Source Planning Standard
<p><i>The drafting team proposes to revise existing standard PRC-002 to incorporate the translation of I.F.M3. Changes are shown in red below and the black text is the existing Version 0 standard. I.F.M3 is translated as new requirements R3 and R4 and new measures M3 and M4.</i></p> <p>A. Introduction</p> <ol style="list-style-type: none"> Title: Define Regional and Document Disturbance Monitoring and Reporting Requirements Number: PRC-002-01 Purpose: <p>To ensure there are clear requirements for installation of Disturbance Monitoring Equipment and reporting of Disturbance data. This Disturbance data is necessary to evaluate system performance; to determine the causes of Disturbances; and to develop, verify, and update system models.</p> <p>To ensure that Disturbance monitoring equipment is installed in a uniform manner to facilitate development of models and analyses of events.</p> Applicability: <ol style="list-style-type: none"> 1.1. Regional Reliability Organization. Proposed Effective Date: April November 1, 2005. <p>B. Requirements</p> <p>R1. The Regional Reliability Organization shall develop comprehensive 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:</p> <p>R1.1. Type of data recording capability (e.g., sequence-of-</p>	<p>Introduction</p> <p>Title: IFM3 - Disturbance monitoring data reporting requirements</p> <p>Standard: S2. Requirements for providing disturbance monitoring data for the purpose of developing, maintaining, and updating transmission system models shall be established on a Regional basis.</p> <p>Applicability: Regions</p> <p>Effective Date: October 9, 2000</p> <p>Measures</p> <p>M3. Regional disturbance monitoring data reporting requirements.</p> <p>Each Region shall establish requirements for entities to provide disturbance monitoring data to ensure that data is available to determine system performance and the causes of system disturbances. Each Region's disturbance monitoring data reporting requirements shall include:</p> <ol style="list-style-type: none"> Definition of "disturbance" General requirements for data format Data content requirements and guidelines Timetable for response to data request Requirements for the storage and retention of the <div data-bbox="1503 829 1856 987" style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Note: The Definitions approved with V0 included a definition of 'disturbance' so it wasn't included in PRC-002_R3.</p> </div>

<p>event, fault recording, dynamic Disturbance recording).</p> <p>R1.2. Equipment characteristics including but not limited to:</p> <p>R1.2.1. Recording duration requirements.</p> <p>R1.2.2. Time synchronization requirements.</p> <p>R1.2.3. Data format requirements.</p> <p>R1.2.4. Event triggering requirements</p> <p>R1.3. Monitoring, recording, and reporting capabilities of the equipment.</p> <p>R1.3.1. Voltage.</p> <p>R1.3.2. Current.</p> <p>R1.3.3. Frequency.</p> <p>R1.3.4. MW and/or MVAR, as appropriate.</p> <p>R1.4. Data retention capabilities (e.g., length of time data is to be available for retrieval).</p> <p>R1.5. Regional coverage requirements (e.g., by voltage, geographic area, electric area or subarea).</p> <p>R1.6. Installation requirements:</p> <p>R1.6.1. Substations.</p> <p>R1.6.2. Transmission lines.</p> <p>R1.6.3. Generators.</p> <p>R1.7. Responsibility for maintenance and testing.</p> <p>R1.8. Requirements for periodic (at least every five years) updating, review, and approval of the regional requirements.</p> <p>R2. The Regional Reliability Organization shall provide its requirements for the installation of Disturbance Monitoring</p>	<p>disturbance data</p> <p>6. The process for the periodic review and approval of the Region’s disturbance monitoring data reporting requirements</p> <p>Documentation of Regional data reporting requirements shall be provided to other Regions and NERC on request (five business days).</p> <p>Compliance</p> <p>Compliance Monitoring Responsibility</p> <p>NERC</p> <p>Timeframe</p> <p>On request by NERC (30 business days)</p> <p>Levels of Non-Compliance</p> <p>Level 1: The Regional requirements for providing disturbance monitoring data do not address one of the six areas as listed above in Measurement M3.</p> <p>Level 2: The Regional requirements for providing disturbance monitoring data do not address two of the six areas as listed above in Measurement M3.</p> <p>Level 3: Not applicable.</p> <p>Level 4: The Regional requirements for providing disturbance monitoring data were not provided, or the Regional requirements for providing disturbance monitoring data do not address three or more of the six areas as listed above in Measurement M3.</p> <p>Regional Differences</p> <p>None identified.</p>
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<p>Equipment to the affected Transmission Owners and Generator Owners within 30 calendar days of the approval of a revision, and to other Regional Reliability Organizations and NERC within 30 calendar days of a request.</p> <p>R3. (IFM3) Each Regional Reliability Organization shall establish requirements for entities to provide Disturbance data necessary to evaluate system performance and analyze the causes of system disturbances. The data reporting requirements shall include:</p> <p>R3.1. Criteria for reviewing Disturbance data</p> <p>R3.2. List of entities that must be provided with Disturbance data</p> <p>R3.3. Data format.</p> <p>R3.4. Data content requirements and guidelines.</p> <p>R3.5. Timetable for response to data request.</p> <p>R3.6. Requirements for the storage and retention of the Disturbance data.</p> <p>R3.7. The process for the periodic review and approval of the Regional Reliability Organization’s Disturbance monitoring data reporting requirements.</p> <p>R4. (IFM3) Each Regional Reliability Organization shall provide its Disturbance data reporting requirements to the affected Transmission Owners and Generator Owners within 30 calendar days of the approval of a revision, and to other Regional Reliability Organizations and NERC within 30 calendar days of a request.</p> <p>C. Measures</p> <p>M1. The Regional Reliability Organization’s requirements for the installation of Disturbance Monitoring Equipment shall address all elements listed in Reliability Standard PRC-002-01_R1.</p> <p>M2. The Regional Reliability Organization shall have evidence it</p>	
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provided its requirements for the installation of Disturbance Monitoring Equipment to the affected Transmission Owners and Generator Owners within 30 calendar days of the approval of a revision, and to other Regional Reliability Organizations and NERC on request.

M3. (IFM3) The Regional Reliability Organization's documented Disturbance monitoring data reporting requirements include all elements identified in PRC-002 R3.

M4. (IFM3) The Regional Reliability Organization has evidence it provided its Disturbance monitoring data reporting requirements to the affected Transmission Owners and Generator Owners within 30 calendar days of the approval of a revision, and to other Regional Reliability Organizations and NERC on request.

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Monitoring Responsibility

NERC.

1.2. Compliance Monitoring Period and Reset Timeframe

One calendar year. On request by NERC (~~30 calendar days~~)

1.3. Data Retention

The RRO shall retain its current and prior version of the requirements for the installation of monitoring equipment and for reporting disturbance data.

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

~~None Specified~~

1.4. Additional Compliance Information

The Regional Reliability Organization shall demonstrate

compliance through self certification or audit (periodic, as part of targeted monitoring or initiated by complaint or event), as determined by the Compliance Monitor.

None

2. Levels of Non-Compliance

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

2.1.1 The Regional Reliability Organization’s Disturbance monitoring requirements do not address one of the eight requirements contained in PRC-002 R1.

2.1.2 (IFM3) The Regional requirements for providing Disturbance monitoring data do not address one of the areas identified in PRC-002 R3.

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

2.2.1 The Regional Reliability Organization’s Disturbance monitoring requirements do not address two of the eight requirements contained in PRC-002 R1.

2.2.2 (IFM3) The regional requirements for providing Disturbance monitoring data do not address two of the areas identified in PRC-002 R 3.

2.3. Level 3: The Regional Reliability Organization’s Disturbance monitoring requirements do not address three of the eight requirements contained in PRC-002 R1.

2.4. Level 4: There shall be a level four non-compliance if any of the following conditions exist:

2.4.1 The Regional Reliability Organization’s Disturbance monitoring requirements were not provided or

<p>2.4.2 The Regional Reliability Organization's Disturbance monitoring requirements do not address four or more of the eight requirements contained in PRC-002 R1.</p> <p>2.4.3 (IFM3) Regional requirements for providing Disturbance monitoring data were not provided</p> <p>2.4.4 Regional requirements for providing Disturbance monitoring data do not address three or more of the areas identified in PRC-002 R3.</p> <p>E. Regional Differences</p> <p>None identified.</p>	
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Draft Proposed Standard	Source Planning Standard
<p><i>The drafting team proposes to revise existing standard PRC-003 to include the translation of III.C.M10. Changes are shown in the red text and the existing Version 0 standard is shown in the black text. III.C.M10 is incorporated by expanding the scope of the regional procedures to also include generator protection system misoperations.</i></p> <p>A. Introduction</p> <ol style="list-style-type: none"> 1. Title: Regional Procedure for Transmission and Generation Protection System Misoperations. 2. Number: PRC-003-01 3. Purpose: To ensure all transmission and generation protection system misoperations are analyzed for cause and corrective action and maintenance and testing programs are developed and implemented 4. Applicability <ol style="list-style-type: none"> 4.1. Regional Reliability Organization 5. Proposed Effective Date: April November 1, 2005 <p>B. Requirements</p> <p>R1. Each Regional Reliability Organization shall have a procedure for the monitoring, review, analysis, and correction of all transmission and generation protection system misoperations on categories of devices identified for monitoring. Each Regional Reliability Organization’s procedure shall include at a minimum the following elements:</p> <ol style="list-style-type: none"> R1.1. The procedure shall identify the categories of protection systems to be reported as needed for bulk electric system reliability. R1.2. Requirements for monitoring and analysis of all 	<p>Introduction</p> <p>Title: IIICM10 - Regional procedure on generator protection operation</p> <p>Standard: S6. All generation protection system misoperations shall be analyzed for cause and corrective action.</p> <p>Applicability: Regions</p> <p>Effective Date: October 9, 2000</p> <p>Measures M10. Procedure for monitoring, review, analysis, and correction of all generator protection operations. Each Region shall have in place a procedure for the monitoring, review, analysis, and correction of generation protection system operations. The procedure shall require that misoperations be analyzed for cause and that corrective actions be implemented. (Each Region shall define misoperations.) The procedure shall also require that a record of such analysis and corrective actions be maintained and be provided to the Region and NERC on request (five business days). The Regional procedure shall include the following elements:</p> <ol style="list-style-type: none"> 1. Requirements for monitoring, analysis, and notification of all generation protective device misoperations. 2. List of the data reporting requirements (periodically

<p>transmission and generation protective device misoperations.</p> <p>R1.3. Description of the data reporting requirements (periodicity and format) for those misoperations that adversely affects the reliability of the Bulk Electric Systems as specified by the Regional Reliability Organization.</p> <p>R1.4. Process for review, review cycle, follow up, and documentation of mitigation plans for misoperations.</p> <p>R1.5. Identification of the Regional Reliability Organization group responsible for the procedure and the process for Regional Reliability Organization approval of the procedure.</p> <p>R1.6. Regional Reliability Organization definition of misoperations.</p> <p>R2. Each Regional Reliability Organization shall maintain documentation of its procedure and provide it to the affected Transmission Owners and Generator Owners within 30 calendar days of the approval of a revision, and to NERC on request (within 30 calendar days).</p> <p>C. Measures</p> <p>M1. The Regional Reliability Organization shall have a procedure for the monitoring, review, analysis, and correction of transmission and generation protection system misoperations as defined in PRC-003 R1.</p> <p>M2. The Regional Reliability Organization shall have evidence it provided documentation of its procedure as defined in PRC-003 R2.</p> <p>D. Compliance</p> <p>1. Compliance Monitoring Process</p>	<p>and format).</p> <ol style="list-style-type: none"> 3. Requirements for analysis and documentation of corrective action plans for misoperations. 4. Periodicity of review of the procedure by the Region. 5. Identification of the Regional group responsible for the procedure and the process for Regional approval of the procedure. 6. Regional definition of misoperation. <p>Compliance</p> <p>Compliance Monitoring Responsibility</p> <p>NERC</p> <p>Timeframe</p> <p>On request (five business days).</p> <p>Levels of Non-Compliance</p> <p>Level 1: The Regional procedure does not address all the requirements as defined above in Measurement M10.</p> <p>Level 2: Not applicable.</p> <p>Level 3: Not applicable.</p> <p>Level 4: The Regional procedure was not provided.</p> <p>Regional Differences</p> <p>None identified.</p>
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<p>1.1. Compliance Monitoring Responsibility NERC.</p> <p>1.2. Compliance Monitoring Period and Reset Timeframe One calendar year. On request (within 30 calendar days)</p> <p>1.3. Data Retention The Regional Reliability Organization shall retain the current and previous requirement revision. The Compliance Monitor shall retain any audit data for three years. None Specified.</p> <p>1.4. Additional Compliance Information The Regional Reliability Organization shall demonstrate compliance through self certification or audit (periodic, as part of targeted monitoring or initiated by complaint or event), as determined by the Compliance Monitor. None.</p> <p>2. Levels of Non-Compliance</p> <p>2.1. Level 1: Not applicable. The Regional Reliability Organization's procedure does not address all the requirements as defined in Reliability Standard PRC-003-0_R1.</p> <p>2.2. Level 2: Not applicable.</p> <p>2.3. Level 3: Not applicable.</p> <p>2.4. Level 4: The Regional Reliability Organization's procedure was not provided or did not address one or more of the requirements as defined in PRC-003 R1.</p>	
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E. Regional Differences None identified.	
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Draft Proposed Standard	Source Planning Standard
<p><i>The drafting team proposes to revise existing standard PRC-004 to include the translation of III.C.M11. Changes are shown in the red text and the existing Version 0 standard is shown in the black text. III.C.M11 is incorporated by expanding the scope of the requirements to also address generator protection system misoperations.</i></p> <p>A. Introduction</p> <ol style="list-style-type: none"> 1. Title: Analysis and Reporting-Mitigation of Transmission and Generation Protection System Misoperations 2. Number: PRC-004-01 3. Purpose: To ensure all transmission and generation protection system misoperations are analyzed for cause and corrective action, and to ensure maintenance and testing programs are developed and implemented to mitigate the possibility of future misoperations. 4. Applicability: <ol style="list-style-type: none"> 4.1. Transmission Owner. 4.2. Generator Owner that owns a transmission protection system. 4.3. Distribution Provider that owns a transmission protection system. 5. Proposed Effective Date: April November 1, 2005. <p>B. Requirements</p> <ol style="list-style-type: none"> R1. The Transmission Owner, Generator Owner, and Distribution Provider that owns a transmission or generation protection system shall analyze all protection system misoperations and shall take corrective actions develop and implement a mitigation plan to avoid future misoperations. R2. The Transmission Owner, Generator Owner, and Distribution 	<p>Introduction</p> <p>Title: IIC M11 - Analysis of misoperations of generator protection equipment</p> <p>Standard: S6. All generation protection system misoperations shall be analyzed for cause and corrective action.</p> <p>Applicability: Generation owner/operator</p> <p>Effective Date: October 9, 2000</p> <p>Measures</p> <p>M11. Documentation of protection misoperations, analyses, and corrective actions.</p> <p>Generator owners/operators shall analyze protection system operations and report and maintain a record of all misoperations in accordance with Regional procedures in Measurement III.C. S6, M10. Corrective actions shall be taken to avoid future misoperations.</p> <p>Documentation of the analysis and corrective actions shall be provided to the affected Regions and NERC on request (30 business days).</p> <p>Compliance</p> <p>Compliance Monitoring Responsibility Regions</p> <p>Timeframe On request (30 business days).</p>

Provider that owns a transmission or generation protection system shall provide to its affected Regional Reliability Organization and NERC on request (within 30 calendar days) documentation of the misoperations analyses and mitigation plan according to the Regional Reliability Organization's procedures of Reliability Standard PRC-003_R1 referenced by PRC-003 R1.

C. Measures

- M1.** The Transmission Owner, Generator Owner, and Distribution Provider that owns a transmission or generation protection system shall have evidence it analyzed its protection system misoperation(s) and ~~took corrective actions to develop and implemented its mitigation plan to~~ avoid future misoperations.
- M2.** ~~The Each~~ Transmission Owner, Generator Owner, and Distribution Provider that owns a transmission or generation protection system shall have evidence it provided documentation of its protection system misoperations, analyses and ~~corrective actions mitigation plan(s)~~ according to the Regional Reliability Organization procedures referenced by PRC-003 R1.

D. Compliance

- 1. Compliance Monitoring Process**
 - 1.1. Compliance Monitoring Responsibility**

Regional Reliability Organization.
 - 1.2. Compliance Monitoring Period and Reset**

Timeframe:
One calendar year. ~~On request (within 30 calendar days).~~
 - 1.3. Data Retention**

The Transmission Owner, Generator Owner, and Distribution Provider that owns a transmission or generation protection system shall retain data on protection system misoperations and accompanying mitigation plans

Levels of Non-Compliance

- Level 1:** Documentation of generator protection system misoperations was provided but does not address all identified misoperations or does not provide a record of corrective actions taken for all identified misoperations.
- Level 2:** Documentation of generator protection system misoperations was provided but was lacking one of these three elements: (a) a complete record of misoperations for the time and place requested, (b) an analysis of all misoperations, and (c) a record of corrective actions taken.
- Level 3:** Documentation was provided but was lacking two of these three elements: (a) a complete record of misoperations for the time and place requested; (b) an analysis of all misoperations; (c) a record of corrective actions taken.
- Level 4:** No documentation of generator protection system misoperations was provided.

Regional Differences

None identified.

<p>for a period of 12 months.</p> <p>The Compliance Monitor shall retain any audit data for three years.</p> <p>None specified</p> <p>1.4. Additional Compliance Information</p> <p>The Transmission Owner, Generator Owner, and Distribution Provider shall demonstrate compliance through self certification or audit (periodic, as part of targeted monitoring or initiated by complaint or event), as determined by the Compliance Monitor.</p> <p>None</p> <p>2. Levels of Non-Compliance</p> <p>2.1. Level 1: Documentation of transmission protection system misoperations is complete according to Reliability Standard PRC-003_R1 PRC-003 R1 but documentation of corrective actions taken for all identified misoperations of mitigation plans is incomplete.</p> <p>2.2. Level 2: Not applicable Documentation of corrective actions taken for misoperations is complete, but documentation of transmission protection system misoperations is incomplete according to Reliability Standard PRC-003-0_R1.</p> <p>2.3. Level 3: Documentation of misoperations and corrective actions of protection system misoperations is incomplete according to Reliability Standard PRC-003-0_R1 PRC-003 R1.</p> <p>2.4. Level 4: Documentation of protection system misoperations is incomplete according to PRC-003 R1 and documentation of mitigation plans is incomplete. No documentation of misoperations or corrective actions was provided.</p>	
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E. Regional Differences None identified.	
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Draft Proposed Standard	Source Planning Standard
<p><i>The drafting team proposes to revise existing standard PRC-005 to include the translation of III.C.M12. Changes are shown in the red text and the existing Version 0 standard is shown in the black text. III.C.M12 is incorporated by expanding the scope of the regional procedures to also include documentation of generator protection system maintenance and testing programs.</i></p> <p>A. Introduction</p> <ol style="list-style-type: none"> 1. Title: Transmission and Generation Protection System Maintenance and Testing 2. Number: PRC-005-01 3. Purpose: To ensure all transmission and generation protection systems misoperations are analyzed for cause and corrective action, and maintenance and testing programs are developed and implemented affecting the Bulk Electric System are maintained and tested. 4. Applicability: <ol style="list-style-type: none"> 1.1. Transmission Owner. 1.2. Generator Owner that owns Transmission protection systems. 1.3. Distribution Provider that owns transmission or generation protection systems. 5. Proposed Effective Date: April November 1, 2005. <p>B. Requirements</p> <ol style="list-style-type: none"> R1. The Each Transmission Owner, Generator Owner and Distribution Provider that owns a transmission or generation protection system shall have a transmission protection system maintenance and testing program in place. The program(s) shall 	<p>Introduction</p> <p>Title: IIICM12 - Maintenance and testing of generator protection systems</p> <p>Standard: S7. Generation protection system maintenance and testing programs shall be developed and implemented.</p> <p>Applicability Generator owner/operator</p> <p>Effective Date: October 9, 2000</p> <p>Measures M12. Documentation and implementation of generator protection system maintenance and testing program. Generator owners/operators shall have a generator protection system maintenance and testing program in place. This program shall include protection system identification, frequency of protection system testing, and frequency of protection system maintenance. Documentation of the program and its implementation shall be provided to the appropriate Regions and NERC on request (30 business days).</p> <p>Compliance Compliance Monitoring Responsibility Regions</p> <p>Timeframe On request (30 business days).</p>

<p>include, at a minimum:</p> <p>R1.1. Protection system devices identification shall include but are not limited to:</p> <p>R1.1.1. Relays.</p> <p>R1.1.2. Instrument transformers.</p> <p>R1.1.3. Communications systems, where appropriate.</p> <p>R1.1.4. Batteries.</p> <p>R1.2. Documentation of maintenance and testing intervals and their basis.</p> <p>R1.3. Summary of testing procedure.</p> <p>R1.4. Schedule for system testing.</p> <p>R1.5. Schedule for system maintenance.</p> <p>R1.6. Date last tested/maintained.</p> <p>R2. The Each Transmission Owner, Generator Owner and Distribution Provider that owns a transmission or generation protection system shall provide documentation of its protection system program and its implementation to the appropriate Regional Reliability Organization and NERC on request (within 30 calendar days).</p> <p>C. Measures</p> <p>M1. The Each Transmission Owner, Generator Owner and Distribution Provider that owns a transmission or generation protection system shall have a protection system maintenance and testing program as defined in Reliability Standard PRC-005-0_R1 PRC-005 R1.</p> <p>M2. The Each Transmission Owner, Generator Owner and Distribution Provider that owns a transmission or generation protection system shall have evidence it provided documentation of its protection system maintenance and testing program and the implementation of its program as defined in Reliability Standard</p>	<p>Levels of Non-Compliance</p> <p>Level 1: Documentation of the maintenance and testing program was provided, but records indicate that implementation was not on schedule.</p> <p>Level 2: Documentation of the maintenance and testing program was incomplete, but records indicate implementation was on schedule.</p> <p>Level 3: Documentation of the maintenance and testing program was incomplete, and records indicate implementation was not on schedule.</p> <p>Level 4: No documentation of the maintenance and testing program or its implementation was provided.</p> <p>Regional Differences</p> <p>None identified.</p>
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~~PRC-003-0-R2~~ PRC-003 R2.

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Monitoring Responsibility

Regional Reliability Organization.

~~Each Regional Reliability Organization shall report compliance and violations to NERC via the NERC compliance reporting process.~~

1.2. Compliance Monitoring Period and Reset

One calendar year.

~~On request (within 30 calendar days.)~~

1.3. Data Retention

~~The Transmission Owner, Generator Owner and Distribution Provider shall retain any changes to its maintenance and testing program for three years and evidence of its implementation for one year.~~

~~The Compliance Monitor shall retain any audit data for three years.~~

~~None specified.~~

1.4. Additional Compliance Information

~~The Transmission Owner, Generator Owner and Distribution Provider shall demonstrate compliance through self certification or audit (periodic, as part of targeted monitoring or initiated by complaint or event), as determined by the Compliance Monitor.~~

~~None.~~

2. Levels of Non-Compliance

<p>2.1. Level 1: Documentation of the maintenance and testing program provided was complete as required in PRC-005 R1, but records indicate that implementation was not on schedule as required in PRC-005 R2. was incomplete, but records indicate implementation was on schedule.</p> <p>2.2. Level 2: Documentation of the maintenance and testing program was provided was incomplete as required in PRC-005 R1, but records indicate implementation of the documented portions of the maintenance and testing program was not on schedule as required in PRC-005 R2.</p> <p>2.3. Level 3: Documentation of the maintenance and testing program provided was incomplete, and records indicate implementation of the documented portions of the maintenance and testing program was not on schedule.</p> <p>2.4. Level 4:</p> <p>2.4.1 Documentation of the maintenance and testing program, or its implementation, was not provided.</p> <p>E. Regional Differences</p> <p>None identified.</p>	
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Draft Proposed Standard	Source Planning Standard
<p><i>The drafting team proposes the new standard PRC-018-1 below as a translation merging I.F.M2 and I.F.M4.</i></p> <p>A. Introduction</p> <ol style="list-style-type: none"> 1. Title: Disturbance Monitoring Equipment Installation and Data Reporting 2. Number: PRC-018-1 3. Purpose: To ensure that system events are recorded for the facilitation of model development and event analysis, Regional Reliability Organizations set requirements for the installation and reporting of data from Disturbance Monitoring Equipment (see PRC-002). PRC-018 ensures that the necessary Disturbance Monitoring Equipment is installed and the status of the equipment is reported for the purposes of verification and coordination. It also ensures Disturbance data is reported in accordance with regional criteria. 4. Applicability <ol style="list-style-type: none"> 4.1. Transmission Owner. 4.2. Generator Owner. 5. Proposed Effective Date: November 1, 2005. <p>B. Requirements</p> <p>R1. (IFM2) The Transmission Owner and Generator Owner shall install Disturbance Monitoring Equipment to meet the Regional Reliability Organization requirements specified in accordance with PRC-002.</p> <p>R2. (IFM2) The Transmission Owner and Generator Owner shall maintain, and report to the Regional Reliability Organization on request, the following data on its installed Disturbance Monitoring Equipment:</p>	<p>Introduction</p> <p>Titles:</p> <p style="padding-left: 40px;">IFM2 - Disturbance monitoring equipment list</p> <p style="padding-left: 40px;">IFM4 - Disturbance data</p> <p>Standards:</p> <p style="padding-left: 40px;">S1 - IFM2 - Requirements for the installation of disturbance monitoring equipment (e.g., sequence-of-event, fault recording, and dynamic disturbance recording equipment) that is necessary to ensure data is available to determine system performance and the causes of system disturbances shall be established on a Regional basis.</p> <p style="padding-left: 40px;">S2 - IFM4 - Requirements for providing disturbance monitoring data for the purpose of developing, maintaining, and updating transmission system models shall be established on a Regional basis.</p> <p>Applicability for IFM2 and IFM4:</p> <p style="padding-left: 40px;">Regional members</p> <p style="padding-left: 40px;">Transmission owners</p> <p style="padding-left: 40px;">Generation owners</p> <p>Effective Date for IFM2 and IFM4:</p> <p style="padding-left: 40px;">October 9, 2000</p> <p>Measures</p> <p style="padding-left: 40px;">IFM2. Disturbance monitoring equipment installations and operational status.</p> <p style="padding-left: 40px;">Regional members, generation owners, and transmission owners shall install disturbance monitoring equipment to meet the Regional requirements determined in I.F. S1, M1.</p> <p style="padding-left: 40px;">The following data on the disturbance monitoring installations</p>

<p>R2.1. Type of equipment.</p> <p>R2.2. Make and model of equipment.</p> <p>R2.3. Installation location.</p> <p>R2.4. Operational status, including time synchronization status.</p> <p>R2.5. Monitored facilities (lines, buses, etc.) and monitored quantities (MW, Mvar, etc.)</p> <p>R2.6. Date last tested.</p> <p>R3. (IFM4) The Transmission Owner and Generator Owner shall provide Disturbance data in accordance with the Regional Reliability Organization procedure established in PRC-002.</p> <p>C. Measures</p> <p>M1. (IFM2) The Transmission Owner and Generator Owner shall each have evidence that its Disturbance Monitoring Equipment is installed in accordance with its associated Regional Reliability Organization’s requirements.</p> <p>M2. (IFM2) The Transmission Owner and Generator Owner shall each have the data listed in PRC-002 R2.1 through R2.6 and shall have evidence it provided this data to its Regional Reliability Organization within 30 calendar days of a request.</p> <p>M3. (IFM4) The Transmission Owner and Generator Owner shall each have evidence it provided its Disturbance data to its Regional Reliability Organization as required by PRC-002 R3.</p>	<p>Time synchronization was an important factor in retrieving usable data following the August 2003 blackout. The drafting team recommends modifying the requirement 2.4 to specify that when an entity provides the status of its disturbance monitoring equipment, this includes ‘time synchronization status.’ Do you agree with this addition?</p>	<p>shall be maintained:</p> <ol style="list-style-type: none"> 1. Type of equipment 2. Make and model of equipment 3. Installation location 4. Monitored facilities (lines, buses, etc.) and associated quantities (MW, Mvar, etc.) 5. Operational status 6. Date last tested <p>Current data on the disturbance monitoring equipment installations shall be provided to the Regions and NERC on request (30 business days).</p> <p>IFM4. System disturbance data.</p> <p>Regional members, generation owners, and transmission owners shall provide system disturbance data to the Regions in compliance with the respective Regional requirements identified in Measurement I.F. S2, M3.</p> <p>The current system disturbance data shall be provided to NERC on request (30 business days).</p> <p>Compliance</p> <p>Compliance Monitoring Responsibility: Regions.</p> <p>Timeframe:</p> <p>IFM2 - On request (30 business days).</p> <p>IFM4 - On request by NERC (30 business days)</p> <p>Levels of Non-Compliance</p> <p>IFM2 Level 1: Disturbance monitoring equipment is installed at all required locations in accordance with the Regional requirements defined in I.F. S1, M1, however, the data</p>
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<p>D. Compliance</p> <p>1. Compliance Monitoring Process</p> <p> 1.1. Compliance Monitoring Responsibility Regional Reliability Organization.</p> <p> 1.2. Compliance Monitoring Period and Reset Timeframe One calendar year.</p> <p> 1.3. Data Retention The Transmission Owner and Generator Owner shall retain any changes to the data on Disturbance Monitoring Equipment installations and any disturbance data provided to the Regional Reliability Organization for 12 months. The Compliance Monitor shall retain any audit data for three years.</p> <p> 1.4. Additional Compliance Information The Transmission Owner and Generator Owner shall demonstrate compliance through self certification or audit (periodic, as part of targeted monitoring or initiated by complaint or event), as determined by the Compliance Monitor.</p> <p>2. Levels of Non-Compliance</p> <p> 2.1. Level 1: (IFM2) Disturbance Monitoring Equipment is installed at all required locations as required in PRC-018 R1, however the installation data provided was incomplete and did not meet one of the six requirements R2.1 through R2.6 PRC-018, or (IFM4) Disturbance data was provided as required in PRC-018 R3, however, the data was incomplete and did not meet all of the requirements of the Regional Reliability Organization.</p>	<p>provided was incomplete and did not meet one of the six requirements listed above in Measurement M2.</p> <p>IFM4 Level 1: Disturbance data from the disturbance monitoring equipment was provided, however, the data was incomplete and did not meet all of the requirements of the respective Regional requirements.</p> <p>IFM2 Level 2: Disturbance monitoring equipment is installed at all required locations in accordance with the Regional requirements defined in I.F. S1, M1, however, the data provided was incomplete and did not meet two of the six requirements listed above in Measurement M2.</p> <p>IFM4 Level 2: Not applicable.</p> <p>IFM2 Level 3: Disturbance monitoring equipment is installed at all required locations in accordance with the Regional requirements defined in I.F. S1, M1, however, the data provided was incomplete and did not meet three, four or five of the six requirements listed above in Measurement M2.</p> <p>IFM4 Level 3: Not applicable.</p> <p>IFM2 Level 4: Disturbance monitoring equipment is not installed at all required locations in accordance with the Regional requirements defined in I.F. S1, M1, or data for the disturbance monitoring equipment installations was not provided.</p> <p>IFM4 Level 4: Disturbance data from the disturbance monitoring equipment was not provided.</p> <p>Regional Differences None identified.</p>
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- 2.2. **Level 2: (IFM2)** Disturbance Monitoring Equipment is installed at all required locations as required in PRC-018 R1, however the installation data provided was incomplete and did not meet two of the six requirements R2.1 through R2.6 of PRC-018.
- 2.3. **Level 3: (IFM2)** Disturbance Monitoring Equipment is installed at all required locations as required in PRC-018 R1, however the installation data provided was incomplete and did not meet three or more of the six requirements R2.1 through R2.6 of PRC-018.
- 2.4. **Level 4: (IFM2)** Disturbance Monitoring Equipment is not installed at all required locations as required in PRC-018 R1, or the installation data was not provided; **(IFM4)** or the Disturbance data required in PRC-018 R3 was not provided.

E. Regional Differences

None identified.

Draft Proposed Standard	Source Planning Standard
<p><i>The drafting team proposes the new standard PRC-019-1 below as a translation of III.C.M8.</i></p> <p>A. Introduction</p> <ol style="list-style-type: none"> 1. Title: Coordination of Generator Voltage Regulator Controls with Unit Capabilities and Protection 2. Number: PRC-019-1 3. Purpose: To ensure generator voltage levels, reactive flows, and reactive resources are controlled and maintained within limits in real time to protect equipment and the reliable operation of the Interconnection. 4. Applicability <ol style="list-style-type: none"> 4.1. Generator Owner. 5. Proposed Effective Date: November 1, 2005 <p>B. Requirements</p> <p>R1. Unless exempted by the Regional Reliability Organization, the Generator Owner shall provide the Regional Reliability Organization, NERC, and the Transmission Operator information documenting that the generator voltage regulator controls and limit functions coordinate with the generator’s capabilities and protective relays. Unless exempted, the Generator Operator shall provide information to show the following:</p> <p>R1.1. The generator manufacturer’s reactive capability curve is consistent with the generator current capability. The capability curve includes specification of nominal voltage, ambient air or cooling temperature, or hydrogen pressure as appropriate. Per Regional Reliability Organization</p>	<p>Introduction</p> <p>Title: IIICM8 - Coordination of generator controls with the generator’s short-term capabilities and protective relays.</p> <p>Standard: S4. Voltage regulator controls and limit functions (such as over and under excitation and volts/hertz limiters) shall coordinate with the generator’s short duration capabilities and protective relays.</p> <p>Applicability: Generator owner/operator</p> <p>Effective Date: October 9, 2000</p> <p>Measures</p> <p>M8. Information indicating coordination of generator voltage regulator controls and limit functions with the generator’s short-term capabilities and protective relays.</p> <p>Generator owners/operators shall provide the Region, the Transmission Operator, and NERC, as requested (30 business days), with information that ensures that the generator voltage regulator controls and limit functions (such as over and under excitation and volts/hertz limiters) coordinate with the generator’s short-term capabilities and protective relays, unless exempted by the Region.</p> <p>Compliance</p> <p>Compliance Monitoring Responsibility Regions</p> <p>Timeframe</p>

<p>requirements, in order to document coordination, the following characteristics shall be plotted, or in a form that could be plotted on the capability curve:</p> <ul style="list-style-type: none"> R1.1.1. Steady state maximum and minimum excitation limiter control characteristics as applicable. R1.1.2. The MW limit of the prime mover. R1.1.3. The steady state stability limit. R1.1.4. Any other limit that could restrict the MW or Mvar capability (GSU MVA rating, generator rotor shorted turn, etc.). R1.1.5. Loss of excitation / field protective relay characteristics. R1.1.6. Out of step. R1.1.7. Generator back-up distance relay (if applicable). <p>R1.2. The Automatic Voltage Regulator coordinates with:</p> <ul style="list-style-type: none"> R1.2.1. Minimum excitation limit. R1.2.2. Loss of excitation / field protective relay characteristic. <p>R1.3. The Volts / Hertz settings:</p> <ul style="list-style-type: none"> R1.3.1. Protect the generator and GSU from damage. R1.3.2. Coordinate with AVR control. R1.3.3. To the extent possible per R1.3.1, allow the unit to operate at the upper limit of expected normal operation. <p>R1.4. There are secure settings for the generator protective relays which could trip the generator for system</p>	<p>On request (30 business days).</p> <p>Levels of Non-Compliance</p> <p>Level 1: Information on generator voltage regulator controls and limit functions and their coordination with the generator’s short-term capabilities and protective relays was provided, but was incomplete in one or more areas.</p> <p>Level 2: Not applicable.</p> <p>Level 3: Not applicable.</p> <p>Level 4: Information on generator controls and their coordination with the generator’s short-term capabilities and protective relays was not provided.</p> <p>Regional Differences</p> <p>None identified.</p> <div data-bbox="1236 786 1572 1050" style="border: 1px solid black; height: 163px; width: 160px; margin: 20px auto;"></div>
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conditions other than faults in the generator or transformer:

R1.4.1. Generator backup voltage restrained overcurrent.

R1.4.2. Negative sequence.

R1.4.3. Underfrequency.

R1.4.4. Overfrequency.

C. Measures

M1. The Generator Owner shall have evidence it provided the Transmission Operator, Regional Reliability Organization, and NERC with information that shows its generator voltage regulator controls and limit functions coordinate with the generator's capabilities and protective relays within 30 calendar days of a request.

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Monitoring Responsibility

Regional Reliability Organization.

1.2. Compliance Monitoring Period and Reset Timeframe

Initial five calendar year phase in period, then one calendar year.

1.3. Data Retention

The Generator Owner shall retain all current information needed to show coordination.

The Compliance Monitor shall retain any audit data for three years.

<p>1.4. Additional Compliance Information</p> <p>The Generator Owner shall demonstrate compliance through self certification or audit (periodic, as part of targeted monitoring or initiated by complaint or event), as determined by the Compliance Monitor.</p> <p>2. Levels of Non-Compliance.</p> <p>2.1. Level 1: Not applicable.</p> <p>2.2. Level 2: The Generator Owner information on coordination of the generator voltage regulator controls and limit functions does not address one of the requirements identified in accordance with PRC-019 R1.</p> <p>2.3. Level 3: Not applicable.</p> <p>2.4. Level 4: The Generator Owner information on coordination of the generator voltage regulator controls and limit functions does not address two or more of the requirements identified in accordance with PRC-019 R1.</p> <p>E. Regional Differences</p> <p>None identified.</p>	
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Draft Proposed Standard	Source Planning Standard
<p><i>The drafting team proposes the new standard PRC-020-1 below as a translation of III.E.M2.</i></p> <p>A. Introduction</p> <ol style="list-style-type: none"> 1. Title: Under-Voltage Load Shedding Program Database 2. Number: PRC-020-1 3. Purpose: Mitigate the risk of system voltage collapse or voltage instability by implementing an Under-Voltage Load Shedding (UVLS) program in areas of the system most susceptible to voltage collapse. 4. Applicability <ol style="list-style-type: none"> 4.1. Regional Reliability Organization. 5. Proposed Effective Date: November 1, 2005 <p>B. Requirements</p> <p>R1. The Regional Reliability Organization shall maintain and annually update a UVLS program database. This database shall include sufficient information to model the UVLS program in dynamic simulations of the interconnected transmission systems, including the following items:</p> <p>R1.1. Size and location of customer load, or percent of connected load, to be interrupted.</p> <div style="border: 1px solid black; background-color: #e0f7fa; padding: 5px; margin-top: 10px;"> <p>PRC-021 (III.E.M1) requires owners and operators of UVLS programs to provide the region with data on the UVLS program for the region’s database. PRC-020 (III.E.M2) requires the region to establish reporting requirements for its UVLS database. The source documents did not agree on the listed data and the drafting team has modified both standards so they agree.</p> </div>	<p>Introduction</p> <p>Title: IIEM2 - Undervoltage load shedding program database.</p> <p>Standard: S1. Automatic undervoltage load shedding (UVLS) programs shall be planned and implemented in coordination with other UVLS programs in the Region and, where appropriate, with neighboring Regions.</p> <p>Applicability: Regions</p> <p>Effective Date: October 9, 2000</p> <p>Measures</p> <p>M2. UVLS program database.</p> <p>Each Region shall maintain and annually update an UVLS program database. This database shall include sufficient information to model the UVLS program in dynamic simulations of the interconnected transmission systems, including the following items:</p> <ol style="list-style-type: none"> 1. Type of UVLS equipment, 2. Voltage set point(s), 3. Time delay from initiation to trip signal, and 4. Amount of demand interrupted at peak or other specified level. <p>While the database shall be updated annually, the current database shall be provided to NERC on request (within 30 business days).</p>

<p>R1.2. Corresponding voltage set points.</p> <p>R1.3. Time delay from initiation to trip signal.</p> <p>R1.4. Breaker operating times.</p> <p>R1.5. Related generation protection.</p> <p>R1.6. Islanding schemes.</p> <p>R1.7. Automatic load restoration schemes.</p> <p>R1.8. Any other schemes that are part of or impact the UVLS programs.</p> <p>R2. The Regional Reliability Organization shall update the UVLS database annually, and shall provide the current UVLS database to NERC within 30 calendar days of a request.</p> <p>C. Measures</p> <p>M1. The Regional Reliability Organization shall have evidence that it updated its UVLS database and provided database information upon request as required in PRC-020-1 R1 and R2 respectively.</p> <p>D. Compliance</p> <p>1. Compliance Monitoring Process</p> <p>1.1. Compliance Monitoring Responsibility NERC.</p> <p>1.2. Compliance Monitoring Period and Reset Timeframe One calendar year.</p> <p>1.3. Data Retention The Regional Reliability Organization shall retain the current and prior annual updated database. The Compliance Monitor shall retain all audit data for three years.</p> <p>1.4. Additional Compliance Information</p>	<p>Compliance</p> <p>Compliance Monitoring Responsibility NERC</p> <p>Timeframe Database to be updated annually. Current database on request (30 business days).</p> <p>Levels of Non-Compliance</p> <p>Level 1: A UVLS program database was provided, but was incomplete.</p> <p>Level 2: Not applicable.</p> <p>Level 3: Not applicable.</p> <p>Level 4: A UVLS program database was not provided.</p> <p>Regional Differences None identified.</p>
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<p>The Regional Reliability Organization shall demonstrate compliance through self certification or audit (periodic, as part of targeted monitoring or initiated by complaint or event), as determined by the Compliance Monitor.</p> <p>2. Levels of Non-Compliance</p> <p>2.1. Level 1: The Regional Reliability Organization provided a UVLS program database that was incomplete.</p> <p>2.2. Level 2: Not applicable.</p> <p>2.3. Level 3: Not applicable.</p> <p>2.4. Level 4: The Regional Reliability Organization did not provide a UVLS program database.</p> <p>E. Regional Differences</p> <p>None identified.</p>	
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Draft Proposed Standard	Source Planning Standard
<p><i>The drafting team proposes the new standard PRC-021-1 below as a translation of III.E.M1.</i></p> <p>A. Introduction</p> <ol style="list-style-type: none"> 1. Title: Under-Voltage Load Shedding Program Data 2. Number: PRC-021-1 3. Purpose: Mitigate the risk of system voltage collapse or voltage instability by implementing an Under-Voltage Load Shedding (UVLS) program in areas most susceptible to voltage collapse. 4. Applicability <ol style="list-style-type: none"> 1.1. Transmission Owner that owns a UVLS program. 1.2. Transmission Operator that operates a UVLS program. 1.3. Distribution Provider that owns or operates a UVLS program. 1.4. Load-Serving Entity that owns or operates a UVLS program. 5. Proposed Effective Date: November 1, 2005. <p>B. Requirements</p> <p>R1. Each Transmission Owner, Transmission Operator, Load-Serving Entity and Distribution Provider that owns or operates a UVLS program shall provide, and annually update, its UVLS data as necessary for its Regional Reliability Organization to maintain and update a UVLS program database. The following data shall be provided to the Regional Reliability Organization for each installed UVLS system:</p> <ol style="list-style-type: none"> R1.1. Size and location of customer load, or percent of connected load, to be interrupted. R1.2. Corresponding voltage set points. 	<p>Introduction</p> <p>Title: III E M1 - Undervoltage load shedding program documentation.</p> <p>Standard: S1. Automatic undervoltage load shedding (UVLS) programs shall be planned and implemented in coordination with other UVLS programs in the Region and, where appropriate, with neighboring Regions. All UVLS programs shall be coordinated with generation control and protection systems, underfrequency load shedding programs, Regional load restoration programs, and transmission protection and control programs.</p> <p>Applicability: UVLS owners and operators.</p> <p>Effective Date: October 9, 2000</p> <p>Measures M1. Documentation of UVLS program design details. Those entities owning or operating UVLS programs shall document their UVLS programs including descriptions of the following design details: size of customer demand (load) blocks (% of connected load), corresponding voltage set points, relay and breaker operating times, intentional delays, related generation protection, islanding schemes, automatic load restoration schemes, or any other schemes that are part of or impact the UVLS programs. Documentation of the UVLS programs shall be provided to the appropriate Regions and NERC on request (five</p>

<p>R1.3. Time delay from initiation to trip signal.</p> <p>R1.4. Breaker operating times.</p> <p>R1.5. Related generation protection.</p> <p>R1.6. Islanding schemes.</p> <p>R1.7. Automatic load restoration schemes.</p> <p>R1.8. Any other schemes that are part of or impact the UVLS programs.</p> <p>R2. Each Transmission Owner, Transmission Operator, Load-Serving Entity, and Distribution Provider that owns or operates UVLS programs shall provide documentation of the UVLS system to the Regional Reliability Organization within 30 calendar days of a request.</p> <p>C. Measures</p> <p>M1. Each Transmission Owner, Transmission Operator, Load-serving Entity, and Distribution Provider that owns or operates an UVLS program shall have documentation of its UVLS program that includes all items specified in PRC-021 R1.</p> <p>M2. Each Transmission Owner, Transmission Operator, Load-serving Entity, and Distribution Provider that owns or operates an UVLS program shall have evidence it provided the Regional Reliability Organization and NERC with documentation of its UVLS program within 30 calendar days of a request.</p> <p>D. Compliance</p> <p>1. Compliance Monitoring Process</p>	<p>PRC-021-1 (III.E.M1) requires owners and operators of UVLS programs to provide the region with data on the UVLS program for the region's database. PRC-020-1 (III.E.M2) requires the region to establish reporting requirements for its UVLS database. The source documents did not agree on the listed data and the drafting team has modified both standards so they agree.</p>	<p>business days).</p> <p>Compliance</p> <p>Compliance Monitoring Responsibility</p> <p>Regions</p> <p>Timeframe</p> <p>On request (five business days)</p> <p>Levels of Non-Compliance</p> <p>Level 1: Documentation of the UVLS program was provided, but was incomplete.</p> <p>Level 2: Not applicable.</p> <p>Level 3: Not applicable.</p> <p>Level 4: Documentation of the UVLS program was not provided.</p> <p>Regional Differences</p> <p>None identified.</p>
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<p>1.1. Compliance Monitoring Responsibility Regional Reliability Organization.</p> <p>1.2. Compliance Monitoring Period and Reset Timeframe One calendar year.</p> <p>1.3. Data Retention Each Transmission Owner, Transmission Operator, Load-Serving Entity and Distribution Provider that owns or operates a UVLS program shall retain data for two years. The Compliance Monitor shall retain all audit data for three years.</p> <p>1.4. Additional Compliance Information Transmission Owner, Transmission Operator, Load-Serving Entity and Distribution Provider shall demonstrate compliance through self certification or audit (periodic, as part of targeted monitoring or initiated by complaint or event), as determined by the Compliance Monitor.</p> <p>2. Levels of Non-Compliance</p> <p>2.1. Level 1: Not applicable.</p> <p>2.2. Level 2: It has been more than a year since the UVLS data, used to update the Regional Reliability Organization UVLS program database, was updated.</p> <p>2.3. Level 3: Not applicable.</p> <p>2.4. Level 4: The data used to update the Regional Reliability Organization UVLS program database was not provided or did not address one or more of the items defined in PRC-021 R1.</p> <p>E. Regional Differences None identified.</p>	<p>The August 2003 blackout report recommended that increased use of UVLS programs in areas more susceptible to voltage collapse would improve Bulk Electric System reliability. However, the prior planning standards related to UVLS (III.E.M1-M5) do not provide a comprehensive framework for coordinated and effective UVLS capability. The gaps are identified below by comparing the UVLS standards with analogous requirements of UFLS standards (PRC-006 to PRC-009):</p> <ul style="list-style-type: none"> • PRC-010-0 – Assessment of the Design and Effectiveness of UVLS Program (Analogous to R1.4 and R3 of PRC-006-0 for UFLS). • PRC-011-0 – UVLS System Maintenance and Testing (Analogous to PRC-008-0 for UFLS). • PRC-020-1 – Document UVLS Program (Analogous to R1.2 of PRC-006-0 and R3 of PRC-007-0 for UFLS). • PRC-021-1 – UVLS Database (Requirements analogous to R1.3 and R2 of PRC-006-0). <p>However, this standard is missing the requirement for the RRO to define the coordination requirements for UVLS, equivalent to R1.1 of PRC-006-0 for UFLS. Is there a need for a Regional UVLS Program (similar to existing Regional UFLS Programs)? If yes, the drafting team recommends that a separate SAR be developed for a standard to modify/enhance PRC-021-1 UVLS standards such that it requires the RRO to develop, document and coordinate a Regional UVLS Program. This standard would also specify the coordination requirements of various UVLS programs by entities within a region (or sub-region) and hence justify the need for the RRO’s UVLS Database in PRC-021-1. Note that in absence of a regional program/database, it may be difficult for UVLS-owning entities to comply with R1.1.1 and R1.1.2 of PRC-010-0 that is now in effect.</p>
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Draft Proposed Standard	Source Planning Standard
<p><i>The drafting team proposes the new standard PRC-022-1 below as a translation of III.E.M5.</i></p> <p>A. Introduction</p> <ol style="list-style-type: none"> 1. Title: Under-Voltage Load Shedding Program Performance 2. Number: PRC-022-1 3. Purpose: Mitigate the risk of system voltage collapse or voltage instability by implementing an Under-Voltage Load Shedding (UVLS) program in areas most susceptible to voltage collapse. 4. Applicability: <ol style="list-style-type: none"> 4.1. Load-Serving Entity that operates a UVLS. 4.2. Transmission Owner that owns or operates a UVLS. 4.3. Transmission Operator that operates a UVLS. 4.4. Distribution Provider that owns or operates a UVLS. 5. Proposed Effective Date: Nov 1, 2005 <p>B. Requirements</p> <p>R1. Each Transmission Owner, Transmission Operator, Load-Serving Entity, and Distribution Provider that owns or operates a UVLS program shall analyze and document all UVLS operations, misoperations, and failures to operate. The analysis shall include, but not be limited to:</p> <ol style="list-style-type: none"> R1.1. A description of the event including initiating conditions. R1.2. A review of the UVLS set points and tripping times. R1.3. A simulation of the event. R1.4. A summary of the findings. 	<p>Introduction</p> <p>Title: IIEM5 - Analysis and documentation of UVLS program performance.</p> <p>Standard: Automatic undervoltage load shedding (UVLS) programs shall be planned and implemented in coordination with other UVLS programs in the Region and, where appropriate, with neighboring Regions.</p> <p>Applicability: UVLS owners and operators.</p> <p>Effective Date: October 9, 2000</p> <p>Measures M5. Analysis of UVLS program performance. Those entities owning or operating an UVLS program shall analyze and document all UVLS operations, misoperations, and failures to operate. Documentation of the analysis shall include a review of the UVLS set points and tripping times and a summary of the findings. This documentation shall be provided to the appropriate Regions and NERC on request (30 business days).</p> <p>Compliance Compliance Monitoring Responsibility Regions</p> <p>Timeframe On request (30 business days)</p>

<p>R1.5. Corrective action taken to prevent any misoperation or failure to operate from reoccurring.</p> <p>R2. Each Transmission Owner, Transmission Operator, Load-Serving Entity, and Distribution Provider that owns or operates a UVLS program shall provide documentation of its analysis of UVLS operations, misoperations, and failures to operate, to the Regional Reliability Organization and NERC within 30 calendar days of a request.</p> <p>C. Measures</p> <p>M1. Each Transmission Owner, Transmission Operator, Load-Serving Entity, and Distribution Provider that owns or operates a UVLS program shall have documentation to show its analysis of UVLS operations, misoperations and failures to operate, as specified in PRC-022 R1.</p> <p>M2. Each Transmission Owner, Transmission Operator, Load-serving Entity, and Distribution Provider that owns or operates a UVLS program shall have evidence that it provided documentation of its analysis of UVLS operations, misoperations, and failures to operate within 30 calendar days of a request by the Regional Reliability Organization or NERC.</p> <p>D. Compliance</p> <p>1. Compliance Monitoring Process</p> <p>1.1. Compliance Monitoring Responsibility Regional Reliability Organization.</p> <p>1.2. Compliance Monitoring Period and Reset Timeframe One calendar year.</p> <p>1.3. Data Retention Each Transmission Owner, Transmission Operator, Load-Serving Entity, and Distribution Provider that owns or operates a UVLS program shall data for two years.</p>	<p>Levels of Non-Compliance</p> <p>Level 1: An analysis of UVLS operations, misoperations, and failures to operate was provided but was incomplete.</p> <p>Level 2: Not applicable.</p> <p>Level 3: Not applicable.</p> <p>Level 4: An analysis of UVLS program performance was not provided.</p> <p>Regional Differences</p> <p>None identified.</p>
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<p>1.4. Additional Compliance Information</p> <p>Transmission Owner, Transmission Operator, Load-Serving Entity, and Distribution Provider shall demonstrate compliance through self certification or audit (periodic, as part of targeted monitoring or initiated by complaint or event), as determined by the Compliance Monitor.</p> <p>2. Levels of Non-Compliance</p> <p>2.1. Level 1: Not applicable.</p> <p>2.2. Level 2: An analysis of UVLS operations, misoperations, and failures to operate was provided but did not include one (1) of the five(5) requirements in PRC-002 R1.</p> <p>2.3. Level 3: An analysis of UVLS operations, misoperations, and failures to operate was provided but did not include two (2) or more of the five(5) requirements in PRC-002 R1.</p> <p>2.4. Level 4: An analysis of UVLS operations, misoperations, and failures to operate was not provided.</p> <p>E. Regional Differences</p> <p>None identified.</p>	
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Draft Proposed Standard	Source Planning Standard
<p>A. Introduction</p> <ol style="list-style-type: none"> 1. Title: Redundancy of Transmission Protection Systems 2. Number: PRC-023-1 3. Purpose: Transmission protection systems must ensure that no single protection system component failure would prevent the interconnected transmission systems from meeting system performance requirements. 4. Applicability <ol style="list-style-type: none"> 4.1. Transmission Owners. 4.2. Regional Reliability Organizations. 5. Proposed Effective Date: November 1, 2005 <p>B. Requirements</p> <p>R1. As necessary to meet the system performance requirements of standards TPL-001, TPL-002, TPL-003, and TPL-004 and associated Table I, each Transmission Owner shall provide protection system redundancy with each new or upgraded Bulk Electric System protection system installation, including as a minimum:</p> <ol style="list-style-type: none"> R1.1. Separate ac current inputs. R1.2. Separately fused dc control voltage. R1.3. Other redundant components. R1.4. Breaker failure protections need not be duplicated. <p>R2. Each Regional Reliability Organization shall have a plan for reviewing the need for redundancy in its existing transmission protection systems and for implementing any required redundancy. Documentation of the protection system redundancy reviews shall be provided to NERC and those entities responsible for the reliability of the</p>	<p>III.A.M2</p> <p>Title: Redundancy requirements for transmission protection systems.</p> <p>Applicable to</p> <ol style="list-style-type: none"> 1. Transmission or protection system owners. 2. Regions. <p>S2 Transmission protection systems shall provide redundancy such that no single protection system component failure would prevent the interconnected transmission systems from meeting the system performance requirements of the I.A. Standards on Transmission Systems and associated Table I.</p> <p>M2. Where redundancy in the protection systems due to single protection system component failures is necessary to meet the system performance requirements of the I.A. Standards on Transmission Systems and associated Table I, the transmission or protection system owners shall provide, as a minimum, separate ac current inputs and separately fused dc control voltage with new or upgraded protection system installations. Breaker failure protections need not be duplicated.</p> <p>Each Region shall also develop a plan for reviewing the need for redundancy in its existing transmission protection systems and for implementing any required redundancy. Documentation of the protection system redundancy reviews shall be provided to NERC, the Regions, and those entities responsible for the reliability of the interconnected transmission systems on request.</p> <p>Items to be Measured</p> <ol style="list-style-type: none"> A. Specific redundancy requirements for transmission protection systems. B. A plan for reviewing and implementing required transmission protection systems redundancy.

<p>interconnected transmission systems within 30 calendar days of a request.</p> <p>C. Measures</p> <p>M1. The Transmission Owner shall provide documentation of the planned implementation of the redundancy requirements to NERC, the Regional Reliability Organization, and those entities responsible for the reliability of the interconnected transmission systems on request (within 30 calendar days).</p> <p>M2. Each Regional Reliability Organization shall have a plan for reviewing transmission system protection redundancy and for implementing the required component redundancy. The Regional Reliability Organization shall have evidence it provided the regional plan to NERC and responsible entities within 30 calendar days of a request.</p> <p>D. Compliance</p> <p>1. Compliance Monitoring Process</p> <p>1.1. Compliance Monitoring Responsibility</p> <p style="padding-left: 40px;">Regional Reliability Organization for R1 and M1.</p> <p style="padding-left: 40px;">NERC for R2 and M2.</p> <p>1.2. Compliance Monitoring Period and Reset Timeframe</p> <p style="padding-left: 40px;">On request (within 30 calendar days) for M1 and M2</p> <p>1.3. Data Retention</p> <p style="padding-left: 40px;">Transmission owners and Regional Reliability Organizations shall retain the current procedures and documentation.</p> <p style="padding-left: 40px;">The Compliance Monitor shall retain any audit data for three years.</p>	<p>Timeframe</p> <p>A. On request (within 30 days).</p> <p>B. On request (within 30 days).</p> <p>Full (100%) Compliance Requirements</p> <p>A. Where assessments (Standard III.A. S1, M1) show the need for transmission protection system redundancy due to single protection system component failures, the transmission or protection system owner shall provide the required component redundancy to meet the system performance requirements of Standard I.A. and associated Table I. These redundancy requirements should include:</p> <ol style="list-style-type: none"> 1) Separate ac current inputs 2) Separately fused dc control voltage 3) Other redundant components <p>Documentation of the planned implementation of the redundancy requirements should be provided to NERC, the Regions, and those entities responsible for the reliability of the interconnected transmission systems on request (within 30 days).</p> <p>B. Each Region shall have a plan for reviewing the transmission or protection system owner’s assessments and for implementing the required component redundancy to promote consistency among its members. The Regional plan along with documentation of the redundancy reviews should be provided to NERC on request (within 30 days).</p> <p>Levels of Non-Compliance</p> <p>A. Level 1 - Requirements to achieve the necessary component redundancy were provided on schedule, but were incomplete in one or more areas.</p> <p style="padding-left: 40px;">Level 2 - Requirements to achieve the necessary component redundancy were not provided on schedule, but were complete when submitted.</p>
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<p>1.4. Additional Compliance Information</p> <p>Transmission owners and Regional Reliability Organizations shall demonstrate compliance through self certification or audit (periodic, as part of targeted monitoring or initiated by complaint or event), as determined by the Compliance Monitor.</p> <p>2. Levels of Non-Compliance for R1, M1</p> <p>2.1. Level 1: Requirements to achieve the necessary component redundancy incomplete in one area.</p> <p>2.2. Level 2: Not applicable.</p> <p>2.3. Level 3: Requirements to achieve the necessary component redundancy were incomplete in two or more areas.</p> <p>2.4. Level 4: Requirements to achieve the necessary component redundancy were not provided.</p> <p>3. Levels of Non-Compliance for R2, M2</p> <p>3.1. Level 1: The Regional plan for reviewing the transmission or protection system owner’s assessments and required component redundancy was incomplete in one area.</p> <p>3.2. Level 2: Not applicable.</p> <p>3.3. Level 3: The Regional plan for reviewing the transmission or protection system owner’s assessments and required component redundancy was incomplete in two or more areas.</p> <p>3.4. Level 4: The Regional plan for reviewing the transmission or protection system owner’s assessments and required component redundancy was not provided.</p> <p>E. Regional Differences</p>	<p>Level 3 - Requirements to achieve the necessary component redundancy were not provided on schedule, and were incomplete in one or more areas when submitted.</p> <p>Level 4 - Requirements to achieve the necessary component redundancy were not provided.</p> <p>B. Level 1 - The Regional plan for reviewing the transmission or protection system owner’s assessments and required component redundancy was provided on schedule, but was incomplete in one or more areas.</p> <p>Level 2 - The Regional plan for reviewing the transmission or protection system owner’s assessments and required component redundancy was not provided on schedule, but was complete when submitted.</p> <p>Level 3 - The Regional plan for reviewing the transmission or protection system owner’s assessments and required component redundancy was not provided on schedule, and was incomplete in one or more areas when submitted.</p> <p>Level 4 - The Regional plan for reviewing the transmission or protection system owner’s assessments and required component redundancy was not provided.</p> <p>Compliance Monitoring Responsibility</p> <p>A. Regions.</p> <p>B. NERC.</p>
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Comparison of III.A.M2 to PRC-023-1

None identified.	
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Draft Proposed Standard	Source Planning Standard
<p><i>The drafting team proposes to revise existing standard VAR-001 to incorporate III.C.M1, III.C.M3, and III.C.M5. III.C.M1 is translated into requirement R10 shown in red below and measure M2. III.C.M3 is translated into requirement R3 and measure M1. III.C.M5 is translated into requirement R11 and measure M3. Proposed changes are shown in the red text and the black text is the existing Version 0 standard.</i></p> <p>A. Introduction</p> <ol style="list-style-type: none"> 1. Title: Voltage and Reactive Control 2. Number: VAR-001-01 3. Purpose: To ensure that voltage levels, reactive flows, and reactive resources are monitored, controlled, and maintained within limits in real time to protect equipment and the reliable operation of the Interconnection. 4. Applicability: <ol style="list-style-type: none"> 4.1. Transmission Operators. 4.2. Purchasing-Selling Entities. 4.3. Generator Operators <p>Proposed Effective Date: April November 1, 2005</p> <p>B. Requirements</p> <ol style="list-style-type: none"> R1. Each Transmission Operator, individually and jointly with other Transmission Operators, shall ensure that formal policies and procedures are developed, maintained, and implemented for monitoring and controlling voltage levels and MVAR flows within their individual areas and with the areas of neighboring Transmission Operators. R2. Each Transmission Operator shall acquire sufficient reactive 	<p>Introduction</p> <p>Titles:</p> <p>IIICM1 - Operation of all synchronous generators in the automatic voltage control mode.</p> <p>IIICM3 - Generator operation for maintaining network voltage schedules.</p> <p>IIICM5 - Tap settings of generator step-up and auxiliary transformers.</p> <p>Standards:</p> <p>S1. (M1) All synchronous generators connected to the interconnected transmission systems shall be operated with their excitation system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless approved otherwise by the Transmission Operator. Requirement moved to VAR-002-1</p> <p>S2. (M3 and M5) Synchronous generators shall maintain a network voltage or reactive power output as required by the transmission system operator within the reactive capability of the units. Generator step-up and auxiliary transformers shall have their tap settings coordinated with electric system voltage requirements.</p> <p>Applicability:</p> <p>IIICM1 - Transmission system operators</p> <p>IIICM3 - Transmission system operator/owner.</p> <p>IIICM5 - Transmission system operators</p> <p>Effective Date for IIICM1, IIICM3, IIICM5: October 9, 2000</p>

<p>resources within its area to protect the to ensure adequate voltage levels under normal and Contingency conditions. This includes the Transmission Operator's share of the reactive requirements of interconnecting transmission circuits.</p> <p>R3. (IIICM3) Each Transmission Operator shall specify a voltage or reactive schedule to be maintained by each synchronous generator, within the reactive capability of the unit, at a specified bus and shall provide each Generator Operator with its voltage or reactive schedule Each Purchasing-Selling Entity shall arrange for (self provide or purchase) reactive resources to satisfy its reactive requirements identified by its Transmission Service Provider.</p> <p>R3.1. Each Transmission Operator shall maintain a list of synchronous generators that are required to follow a voltage or reactive schedule and shall provide this information to the Generator Operators.</p> <p>R4. Each Purchasing-Selling Entity shall arrange for (self-provide or purchase) reactive resources to satisfy its reactive requirements identified by its Transmission Service Provider The Transmission Operator shall know the status of all transmission reactive power resources, including the status of voltage regulators and power system stabilizers.</p> <p>R5. The Transmission Operator shall know the status of all transmission reactive power resources, including the status of voltage regulators and power system stabilizers The Transmission Operator shall be able to operate or direct the operation of devices necessary to regulate transmission voltage and reactive flow.</p> <p>R5.1. When notified of the loss of an automatic voltage regulator control, the Transmission Operator shall notify the Generator Operator of a voltage schedule or reactive output to maintain Interconnection and generator stability.</p>	<p>Measures</p> <p>M3. Documentation of the voltage or reactive schedule provided to synchronous generator owners/operators.</p> <p>List of exempt synchronous generators.</p> <p>Each transmission system operator shall specify a voltage or reactive schedule to be maintained by each synchronous generator at a specified bus and shall provide this information to the generator owner/operator. Documentation of the information provided to the generator owner/operator shall be provided to the Region and NERC on request (five business days).</p> <p>Each transmission system operator shall maintain a list of synchronous generators that are exempt from the requirement of maintaining a network voltage or reactive schedule. The list of exempt generators shall be made available to the Region and NERC on request (five business days).</p> <p>Measures</p> <p>M1. Documentation of procedures for reporting when a synchronous generator is operated without automatic voltage control equipment in service.</p> <p>Transmission Operators shall have procedures requiring synchronous generator owners/operators to provide the following information to them, the Region, and NERC on request (five business days): VAR-001-1 R10</p> <p>a) Summary reports showing the number of hours each synchronous generator did not operate in the automatic voltage control mode during a specified time period, and VAR-001-1 R10.1</p> <p>b) Detailed reports of the date, duration, and reason for each period when a synchronous generator was not operated in the automatic voltage control mode.VAR-001-1 R10.2</p> <p>The procedures shall require the generator owner/operator to retain the above information for 12 rolling months.VAR-001-1</p>
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<p>R6. The Transmission Operator shall be able to operate or direct the operation of devices necessary to regulate transmission voltage and reactive flow Each Transmission Operator shall operate or direct the operation of capacitive and inductive reactive resources within its area— including reactive generation scheduling; transmission line and reactive resource switching; and, if necessary, load shedding—to maintain system and Interconnection voltages within established limits.</p> <p>R7. Each Transmission Operator shall operate or direct the operation of capacitive and inductive reactive resources within its area – including reactive generation scheduling; transmission line and reactive resource switching; and, if necessary, load shedding – to maintain system and Interconnection voltages within established limits. Each Transmission Operator shall maintain reactive resources to support its voltage under first Contingency conditions.</p> <p>R7.1.— Each Transmission Operator shall disperse and locate the reactive resources so that the resources can be applied effectively and quickly when Contingencies occur.</p> <p>R8. Each Transmission Operator shall maintain reactive resources to support its voltage under first Contingency conditions Each Transmission Operator shall correct IROL or SOL violations resulting from reactive resource deficiencies (IROL violations must be corrected within 30 minutes) and complete the required IROL or SOL violation reporting.</p> <p>R8.1. Each Transmission Operator shall disperse and locate the reactive resources so that the resources can be applied effectively and quickly when Contingencies occur.</p> <p>R9. Each Transmission Operator shall correct IROL or SOL violations resulting from reactive resource deficiencies (IROL violations must be corrected within 30 minutes) and</p>	<p>R10.3</p> <p>The procedures shall also specify criteria by which generators are to be exempt from the above requirements. VAR-001-1 R10.4</p> <p>M5. Procedures for reporting synchronous generator step-up and auxiliary transformer tap settings and available tap ranges.</p> <p>The transmission system operator shall have procedures requiring synchronous generator owners/operators to provide tap settings, available tap ranges, and impedance data for generator step-up and auxiliary transformers. When tap changes are necessary, the transmission system operator shall provide the generator owner/operator with a report that specifies the required tap changes and technical justification for these changes. The procedures for reporting the data shall also address generating unit exemption criteria (including any that may apply to nuclear units) and shall require documentation of those generating units that are exempt from a portion or all of these reporting requirements.</p> <p>Documentation of these procedures shall be provided to the Region and NERC on request (five business days).</p> <p>Compliance</p> <p>Compliance Monitoring Responsibility</p> <p>IIICM1, IIICM3, IIICM5: Regions</p> <p>Compliance Monitoring Period and Reset Timeframe</p> <p>IIICM1, IIICM3, IIICM5: On request (five business days).</p> <p>Levels of Non-Compliance</p> <p>IIIBM1 Level 1: Transmission Operator has procedures for synchronous generator owners/operators to follow but they do not include all of the requirements of above Measurement M1.</p> <p>IIIBM3 Level 1: Not applicable.</p>
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<p>complete the required IROL or SOL violation reporting Each Generator Operator shall provide information to its Transmission Operator on the status of all generation reactive power resources, including the status of voltage regulators and power system stabilizers.</p> <p>R9.1. Each Generator Operator shall provide information to its Transmission Operator on the status of all generation reactive power resources, including the status of each voltage regulator and power system stabilizer.</p> <p>R9.2. When a generator's voltage regulator is out of service, the Generator Operator shall maintain the generator field excitation at a level to maintain Interconnection and generator stability.</p> <p>R10. The Transmission Operator shall direct corrective action, including load reduction, necessary to prevent voltage collapse when reactive resources are insufficient (IIICM1) Each Transmission Operator with synchronous generation connected to its system shall provide to the Generator Operator procedures that shall:</p> <p>R10.1. (IIICM1) Require the Generator Operator to provide summary reports showing the number of hours each synchronous generator did not operate in the automatic voltage control mode during a specified time period.</p> <p>R10.2. (IIICM1) Require the Generator Operator to provide logs containing the date, duration, and reason for</p> <div data-bbox="709 386 1039 738" style="border: 1px solid black; background-color: #e0ffe0; padding: 5px; margin: 10px 0;"> <p>The drafting team would prefer to move 9.1 and 9.2 to VAR-002, which addresses Generator Operator requirements, leaving VAR-001 to apply to the Transmission Operator. The drafting team is seeking comment whether this change would be appropriate and preferred by industry.</p> </div>	<p>IIIBM5 Level 1: Procedures exist but do not include all the requirements as defined in above Measurement M5.</p> <p>IIIBM1 Level 2: N/A</p> <p>IIIBM3 Level 2: An incomplete list of exempt synchronous generators was provided.</p> <p>IIIBM5 Level 2: Not applicable.</p> <p>IIIBM1 Level 3: N/A</p> <p>IIIBM3 Level 3: Incomplete documentation of the requested voltage or reactive schedule was provided.</p> <p>IIIBM5 Level 3: Not applicable.</p> <p>IIIBM1 Level 4: Transmission Operator has no procedures for synchronous generator owners/operators to follow to report generator operation in the non-automatic voltage control mode.</p> <p>IIIBM3 Level 4: No documentation of the voltage or reactive schedule was provided.</p> <p>IIIBM5 Level 4: Procedures were not provided.</p> <p>Regional Differences</p> <p>None identified.</p>
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<p>each period when a synchronous generator was not operated in the automatic voltage control mode.</p> <p>R10.3. (IIICM1) Require the Generator Operator to retain the above information for 12 rolling months.</p> <p>R10.4. (IIICM1) Specify criteria by which generators are to be exempted from the above requirements.</p> <p>R11. (III.C.M5) The Transmission Operator shall have, and shall provide to the Generator Operator, procedures instructing Generator Operators to provide tap settings, available tap ranges, and impedance data for generator step-up and auxiliary transformers.</p> <p>R11.1. (IIICM5) When mutually agreed to tap changes are necessary, the Transmission Operator shall provide documentation to the Generator Operator specifying the required tap changes and technical justification for these changes.</p> <p>R11.2. (IIICM5) The Transmission Operator procedures shall address generating unit exemption criteria (including any that may apply to nuclear units).</p> <p>R12. The Transmission Operator shall direct corrective action, including load reduction, necessary to prevent voltage collapse when reactive resources are insufficient.</p> <p>C. Measures</p> <p>Not specified</p> <p>M1. (IIICM3) For VAR-001 R3, the Transmission Operator shall have documentation of the voltage or reactive schedule provided to the Generator Operator and shall provide the information to the Regional Reliability Organization and NERC within 30 calendar days of a request.</p> <p>M2. (IIICM1) The Transmission Operator shall have evidence that the written procedures for synchronous generators meet Requirement 10 and shall provide the information to the</p>	
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Regional Reliability Organization and NERC within 30 calendar days of a request.

M3. (IIICM5) The Transmission Operator shall have procedures for reporting synchronous generator step-up and auxiliary transformer tap settings and available tap ranges as specified in Requirement 11 and shall provide the information to the Regional Reliability Organization and NERC within 30 calendar days of a request.

D. Compliance

1. Compliance Monitoring Process

Not specified

1.1. Compliance Monitoring Responsibility

Regional Reliability Organization.

1.2. Compliance Monitoring Period and Reset Timeframe

One calendar year.

1.3. Data Retention

The Transmission Operator shall retain current and previous version documentation.

1.4. Additional Compliance Information

The Transmission Operator shall demonstrate compliance through self certification or audit (periodic, as part of targeted monitoring or initiated by complaint or event), as determined by the Compliance Monitor.

2. Levels of Non-Compliance

2.1. Level 1: (IIICM1, IIICM5) Transmission Operator has procedures for Generator Operators to follow but they do not include all aspects of Requirements R10 or R11.

<p>2.2. Level 2: (IICM3) Incomplete list of exempt synchronous generators was provided per requirements R3 or R10.</p> <p>2.3. Level 3: (IICM3) Incomplete documentation of the requested voltage or reactive schedule was provided per requirements R3 or R10.</p> <p>2.4. Level 4: (IICM1, IICM3, IICM5) Transmission Operator has no documentation or procedures addressing requirements R3, R10, or R11.</p> <p>E. Regional Differences</p> <p>None identified.</p>	
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Draft Proposed Standard	Source Planning Standard
<p><i>The drafting team proposes a new standard VAR-002-1 merging the translations of III.C.M2, III.C.M4, and III.C.M6.</i></p> <p>A. Introduction</p> <ol style="list-style-type: none"> 1. Title: Generator Operation for Maintaining Network Voltage Schedules 2. Number: VAR-002-1 3. Purpose: To ensure generators provide reactive and voltage control necessary to ensure voltage levels, reactive flows, and reactive resources are maintained within limits in real time to protect equipment and the reliable operation of the Interconnection. 4. Applicability <ol style="list-style-type: none"> 4.1. Generator Operator. 5. Proposed Effective Date: October 1, 2005. <p>B. Requirements</p> <p>R1. (IIICM2) The Generation Operator shall operate each synchronous generating unit connected to the interconnected transmission system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless otherwise approved by the Transmission Operator.</p> <p>R1.1. (VAR-001 R9.1) Each Generator Operator shall inform its Transmission Operator within 30 minutes of a status change on any synchronous generator reactive power</p> <div style="border: 1px solid black; background-color: #e0ffe0; padding: 5px; width: fit-content; margin-top: 10px;"> <p>If VAR-001 requirements 9.1 and 9.2 were to be moved here instead, the generator requirements would be together – please comment.</p> </div>	<p>Introduction</p> <p>Titles:</p> <p>IIICM2 - Operation of all synchronous generators in the automatic voltage control mode.</p> <p>IIICM4 - Generator operation for maintaining network voltage schedules.</p> <p>IIICM6 - Tap settings of generator step-up and auxiliary transformers.</p> <p>Standard:</p> <p>S1. (M2) All synchronous generators connected to the interconnected transmission systems shall be operated with their excitation system in the automatic voltage control mode (automatic voltage regulator in service and controlling voltage) unless approved otherwise by the Transmission Operator.</p> <p>S2. (M4, M6) Synchronous generators shall maintain a network voltage or reactive power output as required by the transmission system operator within the reactive capability of the units. Generator step-up and auxiliary transformers shall have their tap settings coordinated with electric system voltage requirements.</p> <p>Applicability:</p> <p>IIICM2 - Generation owners/operators.</p> <p>IIICM4 - Generator owner/operator.</p> <p>IIICM6 - Generator owner/operator.</p> <p>Effective Date:</p> <p>October 9, 2000</p>

<p>resource, including the status of each voltage regulator and power system stabilizer.</p> <p>R1.2. (VAR-001 R9.2) When a generator's voltage regulator is out of service, the Generator Operator shall, with concurrence of the Transmission Operator, control the generator voltage or reactive output to maintain Interconnection and generator stability.</p> <p>R1.3. (IIICM2) Each Generator Operator shall report to its Transmission Operator the date, time, duration, and reason for each period when a synchronous generator was not operated in the automatic voltage control mode and shall maintain a written log of this information for 12 rolling months.</p> <p>R2. (IIICM4) Each Generator Operator shall maintain the synchronous generator voltage or reactive output as specified by the Transmission Operator, unless otherwise approved by the Transmission Operator.</p> <p>R3. (IIICM4) Each Generator Operator shall report within 30 minutes to its Transmission Operator the date, time, duration, and reason for each period when a voltage and reactive schedule for a generator is not maintained, and shall maintain a written log of this information, including concurrence of the Transmission Operator, for 12 rolling months.</p> <p>R4. (IIICM6) When mutually agreed with the Transmission Operator, the Generator Operator shall change tap positions according to the documentation provided by the Transmission Operator within a mutually agreed upon time frame.</p> <p>R5. (IIICM6) The Generator Operator shall provide the tap settings and the available tap ranges and impedance data for generator step-up and auxiliary transformers to the Transmission Operator, Regional Reliability Organization, and NERC, within five business days of a request.</p>	<p>Measures</p> <p>M2. Information on the operation of synchronous generators in the non-automatic voltage control mode as defined in Measurement III.C. S1, M1.</p> <p>Each synchronous generating unit shall be operated in the automatic voltage control mode unless otherwise approved by the Transmission Operator.</p> <p>Each synchronous generator owner/operator shall provide to the Transmission Operator, the Region, and NERC, on request (30 business days), information on the operation of the synchronous generator's excitation system according to the Transmission Operator's procedures for synchronous generators as defined in Measurement III.C. S1, M1.</p> <p>M4. Log of date, duration, and reason for each specified period when the synchronous generator did not maintain the established network voltage or reactive power schedule, with documentation of any approvals for such operation received from the transmission system operator.</p> <p>Synchronous generator owners/operators shall maintain the voltage or reactive output as specified by the transmission system operator, unless otherwise approved by the transmission system operator.</p> <p>When requested by the Region and NERC, the synchronous generator owner/operator shall provide (30 business days) a log that specifies the date, duration, and reason for not maintaining the established voltage or reactive power schedule, along with approvals for such operation received from the transmission system operator.</p> <p>M6. Reporting of tap settings, available tap ranges, and impedances for generator step-up and auxiliary transformers.</p> <p>A synchronous generator owner/operator shall provide the tap settings and the available tap ranges and impedance data for generator step-up and auxiliary transformers to the</p>
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<p>C. Measures</p> <p>M1. (IIICM2) The Generator Operator shall provide to the Transmission Operator, the Regional Reliability Organization, and NERC, within 30 calendar days of a request, information on the operation of the synchronous generator’s excitation system according to the Transmission Operator’s procedures for synchronous generators.</p> <p>M2. (IIICM4) The Generator Operator has available on request a log that specifies the date, duration, and reason for not maintaining the established voltage or reactive power schedule, along with approvals for such operation received from the Transmission Operator.</p> <p>M3. (IIICM6) The Generator Operator has documentation of tap settings and changes, available tap ranges, and impedances for generator step-up and auxiliary transformers.</p> <p>D. Compliance</p> <p>1. Compliance Monitoring Process</p> <p>1.1. Compliance Monitoring Responsibility Regional Reliability Organization.</p> <p>1.2. Compliance Monitoring Period and Reset Timeframe One calendar year.</p> <p>1.3. Data Retention The Generator Operator shall maintain a written log of this information for 12 rolling months. The Compliance Monitor shall retain any audit data for three years.</p> <p>1.4. Additional Compliance Information The Generator Owner shall demonstrate compliance through self certification or audit (periodic, as part of</p>	<p>transmission system operator, the Region, and NERC on request (five business days).</p> <p>A generator owner/operator shall change tap positions according to the procedures provided by the transmission system operator within a mutually agreed upon time frame as defined in Measurement III.C. S2, M5.</p> <p>Compliance</p> <p>Compliance Monitoring Responsibility</p> <p>IIICM2 - Regions</p> <p>IIICM4 - Regions</p> <p>IIICM6 - Regions</p> <p>Timeframe</p> <p>IIICM2 - On request (30 business days).</p> <p>IIICM4 - On request (30 business days).</p> <p>IIICM6 - On request (five business days).</p> <p>Levels of Non-Compliance</p> <p>IIICM2 Level 1: Reports indicate incidents of synchronous generator operation without automatic voltage control for a total of less than 8 unit-hours, without permission from the Transmission Operator.</p> <p>IIICM4 Level 1: Logs indicate incidents of synchronous generator operation off the voltage or reactive schedule for a total of less than 8 unit-hours, without permission from the transmission system operator.</p> <p>IIICM6 Level 1: Report does not include all the information requested as defined in Measurement III.C. S2, M5.</p> <p>IIICM2 Level 2: Reports indicate incidents of synchronous generator operation without automatic voltage control for a</p>
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<p>targeted monitoring or initiated by complaint or event), as determined by the Compliance Monitor.</p> <p>2. Levels of Non-Compliance</p> <p>2.1. Level 1: There shall be a Level 1 non-compliance if any of the following conditions exist:</p> <p>2.1.1 Logs indicate incidents, subsequent to the 30-minute notification period, of synchronous generator operation off the voltage or reactive schedule or operation without automatic voltage control, for an accumulated time of less than 8 unit-hours for an individual generator without Transmission Operator concurrence.</p> <p>2.1.2 Documentation of tap settings and changes, available tap ranges, and impedances for generator step-up and auxiliary transformers is not complete.</p> <p>2.2. Level 2: Logs indicate incidents, subsequent to the 30-minute notification period, of synchronous generator operation off the voltage or reactive schedule, or operation without automatic voltage control, for an accumulated time of less than 16 unit-hours for an individual generator without Transmission Operator concurrence.</p> <p>2.3. Level 3: Logs of synchronous generator operation off the voltage or reactive schedule were incomplete, or the logs indicate incidents, subsequent to the 30-minute notification period, of operating off the voltage or reactive schedule or operation without automatic voltage control, for an accumulated time of less than 24 unit-hours for an individual generator without Transmission Operator concurrence.</p> <p>2.4. Level 4: There shall be a Level 4 non-compliance if any of the following conditions exist:</p>	<p>total of less than 16 unit-hours, without permission from the Transmission Operator.</p> <p>IIICM4 Level 2: Logs indicate incidents of synchronous generator operation off the voltage or reactive schedule for a total of less than 16 unit-hours, without permission from the transmission system operator.</p> <p>IIICM6 Level 2: Not applicable.</p> <p>IIICM2 Level 3: Reports were incomplete, or indicate incidents of synchronous generator operation without automatic voltage control for a total of less than 24 unit-hours, without permission from the Transmission Operator.</p> <p>IIICM4 Level 3: Logs of synchronous generator operation off the voltage or reactive schedule were incomplete, or the logs indicate incidents of operating off the voltage or reactive schedule for a total of less than 24 unit-hours, without permission from the transmission system operator.</p> <p>IIICM6 Level 3: Not applicable.</p> <p>IIICM2 Level 4: Reports on the requested information were not provided, or indicate incidents of synchronous generator operation without automatic voltage control for a total of 24 unit-hours or more, without permission from the Transmission Operator.</p> <p>IIICM4 Level 4: Logs of synchronous generator operation off the voltage or reactive schedule were not provided, or the logs indicate incidents of operating off the voltage or reactive schedule for a total of 24 unit-hours or more, without permission from the transmission system operator.</p> <p>IIICM6 Level 4: Report on tap settings, available tap ranges, and impedances for generator step-up and auxiliary transformers was not provided, or report indicates generator</p>
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<p>2.4.1 Logs of synchronous generator operation off the voltage or reactive schedule were not provided, or the logs indicate incidents, subsequent to the 30-minute notification period, of operating off the voltage or reactive schedule or operation without automatic voltage control for an accumulated time of more than 24 unit-hours for an individual generator without Transmission Operator concurrence.</p> <p>2.4.2 Generator operator did not change tap settings as requested by the Transmission Operator during the mutually agreed upon time frame.</p> <p>E. Regional Differences None identified.</p>	<p>owner/operator did not change tap settings as requested by the transmission system operator during the mutually agreed upon time frame.</p> <p>Regional Differences None identified.</p>
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Draft Proposed Standard	Source Planning Standard
<p><i>The drafting team proposes a new standard VAR-003-1 to incorporate the translation of I.D.M1.</i></p> <p>A. Introduction</p> <ol style="list-style-type: none"> 1. Title: Assessment of Reactive Power Resources 2. Number: VAR-003-1 3. Purpose: To ensure that reactive power resources, with a balance between static and dynamic characteristics, are planned and distributed throughout the interconnected transmission systems. 4. Applicability <ol style="list-style-type: none"> 4.1. Transmission Planner. 4.2. Planning Authority. 5. Proposed Effective Date: November 1, 2005. <p>B. Requirements</p> <ol style="list-style-type: none"> R1. The Transmission Planner and Planning Authority shall each establish a method and criteria for assessing adequate static and dynamic reactive power requirements. R2. The Transmission Planner and Planning Authority shall each conduct assessments to ensure static and dynamic reactive power resources are adequate to meet projected customer demands, firm (non-recallable) electric power transfers, and the system performance 	<p>Introduction</p> <p>Title: IDM1 - Adequate voltage resources to meet future customer demands.</p> <p>Standard: S1. Reactive power resources, with a balance between static and dynamic characteristics, shall be planned and distributed throughout the interconnected transmission systems to ensure system performance as defined in Categories A, B, and C of Table I in the I.A. Standards on Transmission Systems.</p> <p>Applicability: Entities responsible for the reliability of the interconnected transmission systems.</p> <p>Effective Date: Approved by Engineering Committee on July 14, 1998</p> <p>Measures M1. Assessment of reactive power resources. Entities responsible for the reliability of the interconnected transmission systems shall conduct assessments (at least every five years or as required by changes in system conditions) to ensure reactive power resources are available to meet projected customer demands, firm (non-recallable) electric power transfers, and the system performance requirements as defined in Categories A, B, and C of Table I of the I.A. Standards on Transmission Systems. Documentation of these assessments shall be provided to the Regions and NERC on request.</p>

requirements as defined in TPL-001, TPL-002, and TPL-003.

R2.1. In its assessment of reactive power resources, the Transmission Planner and Planning Authority shall each address how known changes in system conditions may affect system reliability.

R2.2. The Transmission Planner and Planning Authority shall each perform this assessment at least once every five years or as required by changes in system conditions.

R3. The Transmission Planner and Planning Authority shall each document its assessments of reactive power resources and shall provide these assessments to the Regional Reliability Organization and NERC when requested.

C. Measures

M1. The Transmission Planner and Planning Authority shall each have evidence that it developed, and reviewed within the previous five years, a method and criteria for assessing the adequacy of reactive power resources in accordance with VAR-003 R1 and shall provide this evidence to its Regional Reliability Organization and NERC within three calendar days of a request.

M2. The Transmission Planner and Planning Authority shall each have evidence it conducted an assessment of its reactive power resources within the past five years or as required by system conditions, in accordance with VAR-003 R2.

M3. The Transmission Planner and Planning Authority shall each have evidence it provided documentation of the results of its most recent reactive power resource assessment to its Regional Reliability Organization within 30 calendar days of a request.

D. Compliance

1. Compliance Monitoring Process

Compliance Monitoring Responsibility

Regional Reliability Organization.

Full Compliance:

The entities shall assess reactive power resources to ensure that adequate reactive resources are available to meet future system performance requirements. These assessments shall demonstrate that system performance is consistent with Categories A, B, and C of Table I of Standard I.A.

Additionally, the assessments should address how known changes in system conditions may affect system reliability. These assessments shall be conducted every five years or as required by system conditions. The current assessment results shall be provided to the Regions and NERC on request (within 30 days).

Compliance

Compliance Monitoring Responsibility

Regions

Compliance Monitoring Period and Reset Timeframe

Every five years or as required by system conditions.

Levels of Non-Compliance

Level 1: Assessments of reactive power resources were provided on schedule, but were incomplete in one or more areas.

Level 2: Assessments of reactive power resources were not provided on schedule, but were complete when submitted.

Level 3: Assessments of reactive power resources were not provided on schedule, and were incomplete in one or more areas when submitted.

Level 4: Assessments of reactive power resources were not provided.

<p>1.1. Compliance Monitoring Period and Reset Timeframe One calendar year.</p> <p>1.2. Data Retention The Transmission Planner and Planning Authority shall retain the current assessment. The Compliance Monitor shall retain any audit data for three years.</p> <p>1.3. Additional Compliance Information The Transmission Planner and Planning Authority shall demonstrate compliance through self certification or audit (periodic, as part of targeted monitoring or initiated by complaint or event), as determined by the Compliance Monitor.</p> <p>2. Levels of Non-Compliance</p> <p>2.1. Level 1: Not applicable.</p> <p>2.2. Level 2: Assessments of reactive power resources were incomplete in one area.</p> <p>2.3. Level 3: The Transmission Planner or Planning Authority have not reviewed the method and criteria for assessing adequate static and dynamic reactive power requirements within the last five years.</p> <p>2.4. Level 4:</p> <p style="padding-left: 40px;">2.4.1 The Transmission Planner or Planning Authority did not provide evidence that it has a method and criteria for assessing adequate static and dynamic reactive power requirements, or</p> <p style="padding-left: 40px;">2.4.2 Assessments of reactive power resources were incomplete in more than one area.</p> <p>E. Regional Differences</p>	<p>Regional Differences None identified.</p>
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Comparison of I.D.M1 to VAR-003-1

None identified.	
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Draft Proposed Standard	Source Planning Standard
<p><i>The drafting team proposes a new standard VAR-004-1 to incorporate the translation of III.C.M7.</i></p> <p>A. Introduction</p> <ol style="list-style-type: none"> 1. Title: Generator Performance During Temporary Frequency and Voltage Excursions 2. Number: VAR-004-1 3. Purpose: To ensure that generators remain connected to the electrical grid during temporary voltage and frequency excursions and are not normally tripped manually or by preset protection schemes during temporary voltage and frequency excursions. 4. Applicability <ol style="list-style-type: none"> 4.1. Regional Reliability Organization. 5. Proposed Effective Date: Novmeber 1, 2005 <p>B. Requirements</p> <p>R1. The Regional Reliability Organization shall establish and maintain requirements for generators to remain interconnected during temporary system excursions. These requirements shall include, but not be limited to:</p> <ol style="list-style-type: none"> R1.1. Requirements to stay connected during temporary excursions in: <ol style="list-style-type: none"> R1.1.1. Voltage. R1.1.2. Frequency. R1.2. The definition of temporary excursions expressed as a function of: <ol style="list-style-type: none"> R1.2.1. Time duration in seconds or cycles, as appropriate. 	<p>Introduction</p> <p>Title: IICM7 - Generators performance during temporary excursions in frequency, voltage, etc.</p> <p>Standard: Temporary excursions in voltage, frequency, and real and reactive power output that a generator shall be able to sustain shall be defined and coordinated on a Regional basis.</p> <p>Applicability: Regions</p> <p>Effective Date: October 9, 2000</p> <p>Measures</p> <p>M7. Requirements for withstanding temporary excursions in voltage, frequency, and real and reactive power output of a generator.</p> <p>The Regions shall establish requirements for generators to remain interconnected during temporary excursions in voltage, frequency, and real and reactive power output. These requirements shall include generator exemption criteria.</p> <p>Documentation of these excursion requirements shall be available to the Transmission Operator and NERC upon request (30 business days).</p> <p>Compliance</p> <p>Compliance Monitoring Responsibility NERC</p>

<p>R1.2.2. Amplitude or magnitude of the excursion.</p> <p>R1.2.3. Relationship between time and amplitude or magnitude.</p> <p>R2. The Regional Reliability Organization shall establish and maintain criteria for exemptions to the requirements of requirement R1 based on:</p> <p>R2.1. Generator size.</p> <p>R2.2. Generator operating equipment constraints, i.e. unique auxiliary service voltage restrictions.</p> <p>R2.3. Operating conditions that may potentially damage the generating unit, i.e. changes in real and reactive power output that may be caused by a fault.</p> <p>R3. The Regional Reliability Organization shall establish and maintain a procedure for handling variances to requirement R1, including steps for requesting and approving such variances.</p> <p>R4. The Regional Reliability Organization shall provide documentation of its temporary excursion requirements, exemptions and variance procedure to the Transmission Operators and Generator Operators within its region within 30 calendar days of the approval of a revision.</p> <p>R5. The Regional Reliability Organization shall review and update as necessary its requirements, exemption criteria and variance procedure for generators to withstand temporary excursions in voltage, frequency, and real and reactive power output of a generator at least once every five years.</p> <p>C. Measures</p> <p>M1. The Regional Reliability Organization shall provide NERC with its requirements, exemption criteria and variance procedure for generators to withstand temporary excursions in voltage and frequency within 30 calendar days of a request.</p> <p>M2. The Regional Reliability Organization shall have evidence it</p>	<p>Timeframe</p> <p>On request (30 business days).</p> <p>Levels of Non-Compliance</p> <p>Level 1: Documentation of Regional requirements provided does not address all three generator parameters (voltage, frequency, or real and reactive power output).</p> <p>Level 2: Not applicable.</p> <p>Level 3: Not applicable.</p> <p>Level 4: Documentation of Regional requirements was not provided.</p> <p>Regional Differences</p> <p>None identified.</p>
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provided the requirements, criteria and procedures to the Transmission Operators and Generator Operators within its Region within 30 calendar days of approval.

- M3. The Regional Reliability Organization shall have evidence it reviewed and updated its requirements, criteria and procedures as required in VAR-004 R5.

D. Compliance

1. Compliance Monitoring Process

1.1. Compliance Monitoring Responsibility

NERC.

1.2. Compliance Monitoring Period and Reset Timeframe

One calendar year.

1.3. Data Retention

The Regional Reliability Organization shall retain its current and previous criteria revision.

The Compliance Monitor shall retain any audit data for three years.

1.4. Additional Compliance Information

The Regional Reliability Organization shall demonstrate compliance through self certification or audit (periodic, as part of targeted monitoring or initiated by complaint or event), as determined by the Compliance Monitor.

2. Levels of Non-Compliance

2.1. Level 1: The Regional Reliability Organization did not provide evidence required in VAR-004 R4 or R5.

2.2. Level 2: Documentation of Regional Reliability Organization exemption criteria or variance procedure did not address one or more of the items in VAR-004 R2 or R3.

Comparison of III.C.M7 to VAR-004-1

<p>2.3. Level 3: Not applicable.</p> <p>2.4. Level 4: Documentation of Regional Reliability Organization requirements did not address one or more of the items in VAR-004 R1.</p> <p>E. Regional Differences</p> <p>None identified.</p>	
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