
UNITED STATES OF AMERICA
Before the
FEDERAL ENERGY REGULATORY COMMISSION

NORTH AMERICAN ELECTRIC) **Docket Nos. RM08-13-000**
RELIABILITY CORPORATION)

COMPLIANCE FILING OF THE
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION
IN RESPONSE TO THE FEDERAL ENERGY REGULATORY COMMISSION'S
MARCH 18, 2010 ORDER No. 733 APPROVING TRANSMISSION RELAY
LOADABILITY RELIABILITY STANDARD (PRC-023-1) AND REQUIRING
COMPLIANCE FILING

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ATTACHMENT:

EXHIBIT A: Order No. 733 Action Plan and Timetable

I. INTRODUCTION

The North American Electric Reliability Corporation (“NERC”) respectfully submits this compliance filing in response to the Federal Energy Regulatory Commission’s (“FERC”) Order No. 733 issued March 18, 2010 approving Reliability Standard PRC-023-1 – Transmission Relay Loadability.¹ Order No. 733 approved Reliability Standard PRC-023-1 – Transmission Relay Loadability, and directed NERC, as the Electric Reliability Organization (“ERO”), to develop certain modifications to the PRC-023-1 standard through its Reliability Standards development process, to be completed by specific deadlines. Additionally, in Order No. 733, NERC was directed to file a report no later than 120 days of the Order addressing the issue of protective relay operation due to stable power swings, and was directed to include an action plan and timeline that explains how and when NERC intends to address this issue through its Reliability Standards Development Process. This filing addresses that Order No. 733 directive and includes an action plan and timeline, included in **Exhibit A**. **Exhibit A** also identifies the phased approach NERC is taking to address all of the FERC directives from Order No. 733, including the specific directive to develop a new Reliability Standard to address stable power swings.

On April 19, 2010, NERC filed a Request for Clarification and, In the Alternative, Rehearing of Order No. 733.² In its clarification and rehearing request, NERC requested that:

- (1) the Commission extend from one year to 24 months from the date of the Order on clarification and rehearing the time NERC must develop a test that Planning Coordinators must use to identify sub-200 kV facilities that are critical to the reliability of the Bulk Power System;
- (2) the Commission clarify or grant rehearing that it is authorizing the Reliability Standards Development Process to deal with the applicability of generator step-up transformer relay

¹ *Transmission Relay Loadability Reliability Standard*, 18 FERC ¶61,221 (Order No. 733) (March 18, 2010).

² *See, Request of the North American Electric Reliability Corporation for Clarification and, in the Alternative, Rehearing of Order No. 733*, Docket No. RM08-13-000 (April 19, 2010).

loadability in a separate Reliability Standard from PRC-023-1; and (3) that the Commission's statement that a Reliability Standard requiring dependable protection system operation for faults and secure operation for stable swings, for a defined set of contingencies and base cases, is consistent with the Order regarding protective relays operating unnecessarily due to stable power swings.

The Commission has not yet issued an Order on NERC's pending clarification and rehearing request. As explained in NERC's clarification and rehearing request, the NERC System Protection and Control Task Force ("SPCTF") has already provided guidance to the Regional Entities for identifying operationally significant 100 kV to 200 kV facilities during the voluntary Beyond Zone 3 relay review and mitigation program. Formalizing this guidance into a mandatory test for Planning Coordinators and operational planners to determine the criticality of facilities below 200 kV could meet the performance characteristics consistent with the tenets of the TPL and TOP standards, and meet the reliability objectives of PRC-023-1. If NERC can rely on these existing study regimes and extend the original SPCTF guidelines, then NERC believes that gaining approval through the standards process and performing sample tests could be accomplished in the one-year time period.

However, developing a more comprehensive testing regime from those tests already being conducted to determine the criticality of sub-200 kV facilities that would require additional specific system studies beyond those already conducted by Planning Coordinators and Transmission Owners would require significant time and commitment from a wide array of industry experts, and the participation and support of NERC's technical committees to design (and for the industry to agree on) testing procedures. The testing procedures would then have to be vetted through the Reliability Standards development process, including field testing of

representative sample utilities, prior to filing with the Commission for approval. In short, this process is complicated, and NERC does not believe that it will be possible to perform all of these tasks within the one-year timeframe mandated in Order No. 733.

Accordingly, NERC has developed the action plan and timetable included in this filing to address the Order No. 733 directives in compliance with the deadlines in the Order to the extent reasonably possible. Should the Commission determine that a more comprehensive testing regime from those tests already being conducted is necessary and grant NERC's request for additional time to comply with the directive to develop a test for Planning Coordinators to use to identify sub-200 kV facilities that are critical to the Bulk Power System, NERC will modify its action plan and timetable based on the extension of time, and will file an updated timetable with the Commission in an informational filing.

II. NOTICES AND COMMUNICATIONS

Notices and communications with respect to this filing may be addressed to:

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III. ACTION PLAN AND TIMETABLE FOR RESPONDING TO ORDER No. 733 DIRECTIVES

Order No. 733, Paragraph 150:

We will not direct the ERO to modify PRC-023-1 to address stable power swings. However, because both NERC and the Task Force have identified undesirable relay operation due to stable power swings as a reliability issue, we direct the ERO to develop a Reliability Standard that requires the use of protective relay systems that can differentiate between faults and stable power swings and, when necessary, phases out protective relay systems that cannot meet this requirement. We also direct the ERO to file a report no later than 120 days of this Final Rule addressing the issue of protective relay operation due to stable power swings. The report should include an action plan and timeline that explains how and when the ERO intends to address this issue through its Reliability Standards development process.

Order No. 733 directed NERC to develop a new Reliability Standard to differentiate between faults and stable power swings, which are detailed in the action plan and timetable included in **Exhibit A**. Because the standard drafting team will address this and other Order No. 733 directives concurrently, the action plan and timetable includes all of the Order No. 733 directives. The directives to modify the Violation Risk Factors and Violation Severity Levels were addressed in NERC's April 19, 2010 filing. For the remaining directives, NERC has outlined a three-phase approach for responding to the Commission's directives. For each directive included in the action plan and timetable, NERC includes a description of its current status and the version of the development activity in which the item has been or will be addressed.

NERC is also including in **Exhibit A** various items NERC was directed to *consider* in Order No. 733. To the extent the issues for consideration are appropriate to include in the three phases described below, the standard drafting team will consider the items. Otherwise, the team will consider the items in future standards development activities.

To accomplish the FERC-directed modifications, NERC will initiate a standards development project and will submit a Standards Authorization Request (SAR) to the NERC Standards Committee for approval at its August 12, 2010 meeting. The SAR will identify in detail the three phases to address the Order No. 733 directives. A general overview of each phase of the project is explained below. Additionally, in **Exhibit A**, NERC addresses each of the Order No. 733 directives and will complete each directive based on the timeline for completing each phase of the project.

Phase I – Directed Modifications to PRC-023, Transmission Relay Loadability

In Phase I of the project, the NERC Relay Loadability standard drafting team will modify the PRC-023-1 Reliability Standard to incorporate the directed modifications outlined in **Exhibit A**, or will propose equally effective alternative approaches that address the Commission's concerns. In parallel with this effort, NERC plans to convene a panel of industry subject matter experts to develop a straw man proposal for the test Planning Coordinators must use to identify sub-200 kV facilities that are critical to the reliability of the Bulk Power System. The panel will collect industry feedback on the straw man test using the current standards development process that will be incorporated into Requirement R3 of PRC-023-1. As noted above, if NERC is able to rely on existing study regimes used by the Planning Coordinators and Reliability Coordinators to develop the test to determine the criticality of sub-200 kV facilities in compliance with Order No. 733, NERC believes this could be accomplished within one year.

A modified PRC-023, Version 2 Reliability Standard is intended to be completed in this first phase. NERC anticipates conducting one to two public postings of the modified standard during this phase of the project to collect industry feedback. As noted above, NERC filed with the Commission a Request for Clarification and Rehearing of Order No. 733 on April 19, 2010.

Given the complexities in developing a test, NERC requested in its request for clarification and rehearing that the Commission extend the deadline to twenty-four (24) months from the date FERC issues an Order on the clarification or rehearing request, to develop a test that Planning Coordinators must use to determine whether a sub-200 kV facility is critical to the reliability of the Bulk Power System. Should the Commission grant NERC the requested extension of time to comply with the directive to complete the test, NERC will deliver the test in the form of a revised PRC-023 Requirement R3 within the extended timeframe. NERC is prepared to submit the remaining directed modifications to PRC-023 included in Phase I of the project within the directed timeframe of one year.

Phase II – Development of a new Standard Addressing Generator Relay Loadability

In Phase II of the project, a Standard Drafting Team will be formed to develop a new Reliability Standard to address the subject of generator relay loadability as directed in Order No. 733. As indicated in NERC's clarification and rehearing request, NERC believes adding additional requirements to the PRC-023 standard in addition to developing a new Reliability Standard to address generator relay loadability could lead to confusion over applicability and the possibility of conflicting requirements. Therefore, NERC proposed in its clarification and rehearing request to address the issue of generator relay loadability in a new Reliability Standard, separate and distinct from the PRC-023 Reliability Standard, which is intended to address relays that protect transmission elements. Subject to the Commission's response to NERC's pending clarification and rehearing request, NERC plans to address generator relay loadability in a new Reliability Standard for applications where the relays are set with a shorter reach to protect the generator and the generator step-up transformer, and for applications where the relays are set with a longer reach to provide backup protection for transmission system faults.

The standard drafting team will use relevant sections of the NERC technical reference document, *Power Plant and Transmission System Protection Coordination*, to develop the requirements by which generator relay loadability will be assessed. This technical reference document, which was approved by the NERC Planning Committee on December 8, 2009, is presently under revision by the NERC System Protection and Control Subcommittee (SPCS). The section of this document that addresses loadability of phase distance protection applied for generator and generator step-up (GSU) transformer protection is one of the sections being revised to address additional complexities identified by the SPCS. The revised document will be submitted for approval by the NERC Planning Committee by the end of July 2010.

The requirements to address generator relay loadability will be developed using the then current standards development process. The timeline for the development of generator loadability requirements includes all the required steps in the NERC standards development procedure. NERC has incorporated expedited steps in the timeline to ensure that the requirements related to generator relay loadability are developed in a timely fashion. The new Reliability Standard is anticipated to be completed in 2012. Once the development is complete, NERC will submit the proposed standard to the NERC Board of Trustees and to FERC for approval.

Phase III – Development of a New Standard Addressing the Issue of Protective Relay Operations Due To Power Swings

In Phase III of the project, a standard drafting team will be formed to develop a new Reliability Standard to address the subject of protective relay operations due to power swings. In its pending request for clarification and rehearing of Order No. 733, NERC requested that the Commission clarify the apparent conflict in Paragraph 168 of Order No. 733, which recognizes

the need for “relays that are less susceptible to transient or dynamic power swings” from Paragraphs 150 and 173, which appear to direct NERC to develop a Reliability Standard containing an absolute obligation to prevent “protective relays from operating unnecessarily by requiring the use of protective relay systems that can differentiate between faults and stable power swings” and “phasing out those systems that cannot meet the requirement.”

Based on the Commission’s response to NERC’s pending rehearing and clarification request, NERC will develop a proposed Reliability Standard through the Reliability Standards development process in compliance with the Commission’s directive. Additionally, while some of the standards development effort in Phase III is intended to overlap with prior phases of the project, most of the development will occur after completion of Phase II to efficiently use NERC and industry technical resources on the higher priority items in the earlier phases.

The timeline for the development of requirements to address protective relay operations due to power swings includes all the required steps in the NERC standards development procedure. NERC recognizes the urgency to address this reliability issue and has incorporated expedited steps in the timeline to ensure that the requirements related to the issue of protective relay operations due to power swings are developed in a timely fashion. However, as noted above, the majority of the development work will occur in series with Phase II in order to efficiently use NERC and industry technical resources. The new Reliability Standard is anticipated to be completed in 2014. Once the development work is complete, NERC will submit the proposed standard to the NERC Board and FERC for approval.

V. CONCLUSION

The North American Electric Reliability Corporation respectfully requests that FERC accept this filing and Attachments in compliance with Paragraph 150 of Order No. 733 in accordance with Section 215(d)(1) of the FPA and Part 39.5 of FERC regulations.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that I have served a copy of the foregoing document upon all parties listed on the official service list compiled by the Secretary in this proceeding.

Dated at Washington, D.C. this 16th day of July, 2010.

/s/ Holly A. Hawkins
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*Attorney for North American Electric
Reliability Corporation*

EXHIBIT A

Order No. 733 Action Plan and Timetable

Order No. 733 – Action Plan and Timetable

| Paragraph | Text | Project Phase/ Timeline | Status |
|-----------|---|---|--|
| 60 | With respect to sub-100 kV facilities, we adopt the NOPR proposal and direct the ERO to modify PRC-023-1 to apply an “add in” approach to sub-100 kV facilities that are owned or operated by currently-Registered Entities or entities that become Registered Entities in the future, and are associated with a facility that is included on a critical facilities list defined by the Regional Entity. We also direct that additions to the Regional Entities’ critical facility list be tested for their applicability to PRC-023-1 and made subject to the Reliability Standard as appropriate. | Phase I – by March 18, 2011 | The Standard Drafting Team is proceeding to incorporate this requirement into the standard. |
| 69 | Finally, pursuant to section 215(d)(5) of the FPA, we direct the ERO to modify Requirement R3 of the Reliability Standard to specify the test that planning coordinators must use to determine whether a sub-200 kV facility is critical to the reliability of the Bulk-Power System. We direct the ERO to file its test, and the results of applying the test to a representative sample of utilities from each of the three Interconnections, for Commission approval no later than one year from the date of this Final Rule. | Phase I – Note NERC’s pending request for rehearing filed on April 19, 2010 regarding this directive. | NERC is convening a panel of industry subject matter experts to develop a straw man proposal for the test. |
| 97 | Finally, commenters argue that there should be some mechanism for entities to challenge criticality determinations. We agree that such a mechanism is appropriate and direct the ERO to develop an appeals process (or point to a process in its existing procedures) and submit it to the Commission no later than one year after the date of this Final Rule. | Phase I – by March 18, 2011 | NERC Staff will work with the Standard Drafting Team to ensure an appeals process exists in an appropriate location (within the Standard or as a procedure). |
| 105 | In light of the ERO’s statement that within two years it expects to submit to the Commission a proposed Reliability Standard addressing generator relay loadability, we direct the ERO to submit to the Commission an updated and specific timeline explaining when it expects to develop and submit this proposed Standard. | Phase II – by the end of 2012 | The updated and specific timeline is submitted in this filing. |

Order No. 733 – Action Plan and Timetable

| Paragraph | Text | Project Phase/ Timeline | Status |
|------------------|--|------------------------------------|---|
| 108 | Finally, the PSEG Companies suggest that the ERO consider whether a generic rating percentage can be established for generator step-up transformers and, if so, determine that percentage. Although we do not adopt the NOPR proposal, we encourage the ERO to consider the PSEG Companies’ suggestion in developing a Reliability Standard that addresses generator relay loadability. | Phase II – by the end of 2012 | The Standard Drafting Team will consider this suggestion during the Standard Development Process. |
| 150 | However, because both NERC and the Task Force have identified undesirable relay operation due to stable power swings as a reliability issue, we direct the ERO to develop a Reliability Standard that requires the use of protective relay systems that can differentiate between faults and stable power swings and, when necessary, phases out protective relay systems that cannot meet this requirement. We also direct the ERO to file a report no later than 120 days of this Final Rule addressing the issue of protective relay operation due to power swings. The report should include an action plan and timeline that explains how and when the ERO intends to address this issue through its Reliability Standards development process. | Phase III – by the end of 2014 | The updated and specific timeline is submitted in this filing. |
| 162 | We agree with the PSEG Companies and direct the ERO to consider “islanding” strategies that achieve the fundamental performance for all islands in developing the new Reliability Standard addressing stable power swings. | Phase I – by March 18, 2011 | The Standard Drafting Team will consider this suggestion during the Standard Development Process. |
| 186 | However, we will adopt the NOPR proposal to direct the ERO to modify PRC-023-1 to require that transmission owners, generator owners, and distribution providers give their transmission operators a list of transmission facilities that implement sub-requirement R1.2. | Phase I – by March 18, 2011 | The Standard Drafting Team is proceeding to incorporate this requirement into the standard. |
| 203 | We adopt the NOPR proposal and direct the ERO to modify sub-requirement R1.10 so that it requires entities to verify that the limiting piece of equipment is capable of sustaining the anticipated overload for the longest clearing time associated with the fault. | Phase I – by March 18, 2011 | The Standard Drafting Team is proceeding to incorporate this requirement into the standard. |

Order No. 733 – Action Plan and Timetable

| Paragraph | Text | Project Phase/ Timeline | Status |
|------------------|--|------------------------------------|---|
| 224 | While we are not adopting the NOPR proposal, we direct the ERO to document, subject to audit by the Commission, and to make available for review to users, owners and operators of the Bulk-Power System, by request, a list of those facilities that have protective relays set pursuant sub-requirement R1.12. | Phase I – by March 18, 2011 | NERC Staff will work within the Phase I timeline to develop this list. |
| 237 | We adopt the NOPR proposal and direct the ERO to modify the Reliability Standard to add the Regional Entity to the list of entities that receive the critical facilities list. [sub-requirement R3.3] | Phase I – by March 18, 2011 | The Standard Drafting Team is proceeding to incorporate this requirement into the standard. |
| 244 | We adopt the NOPR proposal and direct the ERO to include section 2 of Attachment A in the modified Reliability Standard as an additional Requirement with the appropriate violation risk factor and violation severity level. | Phase I – by March 18, 2011 | The Standard Drafting Team is proceeding to incorporate this requirement into the standard. |
| 264 | After further consideration, and in light of the comments, we will not direct the ERO to remove any exclusion from section 3, except for the exclusion of supervising relay elements in section 3.1. Consequently, we direct the ERO to revise section 1 of Attachment A to include supervising relay elements on the list of relays and protection systems that are specifically subject to the Reliability Standard. | Phase I – by March 18, 2011 | The Standard Drafting Team is proceeding to revise section 1 of Attachment A to the standard. |
| 283 | Additionally, in light of our directive to the ERO to expand the Reliability Standard’s scope to include sub-100 kV facilities that Regional Entities have already identified as necessary to the reliability of the Bulk-Power System through inclusion in the Compliance Registry, we direct the ERO to modify the Reliability Standard to include an implementation plan for sub-100 kV facilities. | Phase I – by March 18, 2011 | The Standard Drafting Team is proceeding to incorporate an implementation plan for sub-100 kV facilities. |

Order No. 733 – Action Plan and Timetable

| Paragraph | Text | Project Phase/ Timeline | Status |
|------------------|---|---|---|
| 284 | We also direct the ERO to remove the exceptions footnote from the “Effective Dates” section. | Phase I – by March 18, 2011 | The Standard Drafting Team is proceeding to remove the exceptions footnote from the standard. |
| 297 | Finally, we direct the ERO to assign a “high” violation risk factor to Requirement R3. | Filed with the Commission on April 19, 2010 | Completed. |
| 308 | Consequently, we direct the ERO to assign a single violation severity level of “severe” for violations of Requirement R1. | Filed with the Commission on April 19, 2010 | Completed. |
| 310 | Accordingly, we direct the ERO to change the violation severity level assigned to Requirement R2 from “lower” to “severe” to be consistent with Guideline 2a. | Filed with the Commission on April 19, 2010 | Completed. |
| 311 | Finally, we direct the ERO to assign a “severe” violation severity level to Requirement R3. | Filed with the Commission on April 19, 2010 | Completed. |