



NORTH AMERICAN ELECTRIC  
RELIABILITY CORPORATION

July 31, 2009

Ms. Kimberly Bose  
Secretary  
Federal Energy Regulatory Commission  
888 First Street, N.E.  
Washington, D.C. 20426

**Re: NERC Notice of Penalty regarding MidAmerican Energy Company, FERC Docket  
No. NP09-\_-000**

Dear Ms. Bose:

The North American Electric Reliability Corporation (NERC) hereby provides this Notice of Penalty<sup>1</sup> regarding MidAmerican Energy Company (MEC), NERC Registry ID NCR00824,<sup>2</sup> in accordance with the Federal Energy Regulatory Commission's (Commission or FERC) rules, regulations and orders, as well as NERC Rules of Procedure including Appendix 4C (NERC Compliance Monitoring and Enforcement Program (CMEP)).<sup>3</sup>

On May 1, 2008, MEC self-reported non-compliance with Reliability Standard PRC-005-1 Requirement (R) 2.1, to Midwest Reliability Organization (MRO), for failure to document evidence of its Protection System device maintenance and testing program within each device's defined intervals. This Notice of Penalty is being filed with the Commission because, based on information from MRO, MEC does not dispute the violation of PRC-005-1 R2.1 and the proposed zero dollar (\$0) financial penalty to be assessed to MEC. Accordingly, the violation identified as NERC Violation Tracking Identification Number MRO200800051 is a Confirmed Violation, as that term is defined in the NERC Rules of Procedure and the CMEP.

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<sup>1</sup> *Rules Concerning Certification of the Electric Reliability Organization; and Procedures for the Establishment, Approval, and Enforcement of Electric Reliability Standards* (Order No. 672), III FERC Stats. & Regs. ¶ 31,204 (2006); *Notice of New Docket Prefix "NP" for Notices of Penalty Filed by the North American Electric Reliability Corporation*, Docket No. RM05-30-000 (February 7, 2008). *See also* 18 C.F.R. Part 39 (2008). *Mandatory Reliability Standards for the Bulk-Power System*, FERC Stats. & Regs. ¶ 31,242 (2007) (Order No. 693), *reh'g denied*, 120 FERC ¶ 61,053 (2007) (Order No. 693-A).

<sup>2</sup> Midwest Reliability Organization confirmed that MidAmerican Energy Company was included on the NERC Compliance Registry on May 30, 2007 as a Balancing Authority, Distribution Provider, Generator Operator, Generator Owner, Load Serving Entity, Purchasing-Selling Entity, Resource Planner, Transmission Operator, Transmission Owner, Transmission Planner and Transmission Service Provider, and was subject to the requirements of NERC Reliability Standard PRC-005-1. On June 4, 2008, a Notice of Penalty was filed with the Commission in Docket No. NP08-2-000 regarding a Settlement Agreement by and between MRO and MEC to resolve an alleged violation of FAC-003-1 R2. The Commission did not engage in further review of that Notice of Penalty. *Guidance on Filing Reliability Notices of Penalty*, 124 FERC ¶ 61,015 (2008).

<sup>3</sup> *See* 18 C.F.R. § 39.7(c)(2).

### Statement of Findings Underlying the Violation

This Notice of Penalty incorporates the findings and justifications set forth in the Notice of Confirmed Violation and Proposed Penalty or Sanction (NOCV) issued on December 12, 2008, by MRO. The details of the findings and basis for the penalty are set forth herein. This Notice of Penalty filing contains the basis for approval of this Notice of Penalty by the NERC Board of Trustees Compliance Committee (BOTCC). In accordance with Section 39.7 of the Commission's regulations, 18 C.F.R. § 39.7 (2007), NERC provides the following summary table identifying each Reliability Standard at issue in this Notice of Penalty.

Region	Registered Entity	NOC ID	NERC Violation ID	Reliability Std.	Req. (R)	VRF	Total Penalty (\$)
MRO	MidAmerican Energy Company	NOC-133	MRO200800051	PRC-005-1	2.1	High <sup>4</sup>	0

The purpose of Reliability Standard PRC-005-1 is to ensure all transmission and generation Protection Systems affecting the reliability of the bulk power system are maintained and tested.

In summary, PRC-005-1 R2.1 requires an entity such as MEC to provide documentation of its Protection System maintenance and testing program and the implementation of that program to its Regional Entity on request (within 30 calendar days). The documentation of the program implementation shall include evidence that Protection System devices were maintained and tested within defined intervals. PRC-005-1 R2.1 has a "High" Violation Risk Factor (VRF).

In April 2008, MEC conducted an internal investigation following a relay replacement project and found discrepancies related to the testing of eight generator protection relays at Neal Unit 3 (a single 515 MW unit from the Neal complex) and battery testing at two black start combustion turbines connected to the 69 kV system (Pleasant Hills Units 1 and 2). On May 1, 2008, MEC self-reported non-compliance with PRC-005-1 R2.1 for its failure to maintain and test Protection System devices within their defined intervals.

#### Neal Unit 3 Relay Testing

The MEC electro-mechanical relay testing interval is five years per the MEC testing schedule. The last verifiable test records for the eight electro-mechanical relays at Neal Unit 3 were dated October 2002. Generator relay testing was performed at the Neal Unit 3 plant in November 2004, but the internal investigation uncovered that the tests were only on the generator digital relays and did not include the eight electro-mechanical relays. According to MRO, MEC self-

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<sup>4</sup> Reliability Standard PRC-005-1 Requirement R2 has a "Lower" VRF and the sub-requirements have "High" VRFs. During a final review of the standards subsequent to the March 23, 2007 filing of the Version 1 VRFs, NERC identified that some standards requirements were missing VRFs; one of these include PRC-005-1 R2.1. On May 4, 2007, NERC assigned PRC-005 R2.1 a "High" VRF. In the Commission's June 26, 2007 Order on Violation Risk Factors, the Commission approved the PRC-005-1 R2.1 "High" VRF as filed. Therefore, the "High" VRF was in effect from June 26, 2007.

certified compliance in October 2007 based on the relay testing summary spreadsheet available at that time.

The ‘generator relays’ were reported as tested in 2004 after one engineer reported them tested by a contractor. The second engineer misunderstood this to mean the ‘generator digital protection relays’ as well as the ‘generator/transformer electro-mechanical relays’ as listed on the generator test list. It was discovered during the internal investigation that only the ‘generator digital protection relays’ were tested. The eight electro-mechanical relays were replaced and tested as part of normal maintenance outage during the April 12, 2008 – May 13, 2008 outage period at Neal Unit 3 plant. Because of the April 15, 2008 discovery of testing discrepancies, the eight electro-mechanical relays were tested one day later. This test entailed reviewing all settings for proper performance. Specifically, MEC tested the affected relays after they had been removed from service and determined that the actual protection of the system was never degraded. MEC concluded that staff miscommunication was the primary cause for this incident. To prevent a recurrence of human error that led to this violation, MEC instituted specific relay test records for all applicable power plants in May 2008.

MEC owns and maintains 1,822 relay devices subject to compliance with Reliability Standard PRC-005-1, R2.1. The eight electro-mechanical relays that exceeded the defined maintenance and testing interval represent 0.44% of the total MEC relays. Due to the misunderstanding between the engineers in documenting the testing, the eight electro-mechanical relays exceeded the defined interval for maintenance and testing from November 1, 2007 until they were tested on April 16, 2008.

#### Pleasant Hills Battery Testing

MEC maintains and operates 213 battery banks subject to compliance with Reliability Standard PRC-005-1, R2.1. MEC’s 2007 testing plan included instructions on battery testing including (i) annual testing and (ii) bi-monthly testing provisions on applicable units, such as Pleasant Hills Units 1 and 2. MEC was able to demonstrate that annual and bi-monthly battery testing was compliant when MEC submitted its 2007 self-certification in October 2007. Although the normal procedure called for both Units 1 and 2 to be tested on the same day, MEC was unable to provide evidence that bi-monthly testing occurred in the October and December 2007 timeframe on Pleasant Hills Unit 1. While MEC was able to provide evidence of bi-monthly testing for Unit 2, it was unable to provide evidence that annual battery testing occurred in the last quarter of 2007 on both Units 1 and 2.

At MEC’s internal review of past test records in April 2008, it was verified that testing prior to October 2007 was consistently performed for all units in the MEC battery banks by technicians responsible for all on-site units. The same records show bi-monthly testing was consistent for all periods except for October and December 2007 but, correct and true maintenance and testing within the defined interval resumed as expected in February 2008. MEC concluded that the primary cause for these incidents appeared to be human error; the technician was not following the normal procedures for recording maintenance activities.

Upon identifying the battery testing recording discrepancies that happened between October and December 2007, MEC tested the affected batteries and determined that the actual protection of the system was never degraded. MEC then modified its maintenance work order systems to generate a report that is run prior to the end of the bi-monthly reporting period that indicates the battery testing status of all plants. This process is intended to help ensure that all battery testing is completed as scheduled.

MRO determined that the violation of PRC-005-1 R2.1 with respect to relay testing began November 1, 2007 and continued until relay testing was complete on April 16, 2008. The battery testing records violation of PRC-005-1 R2.1 also began on November 1, 2007. The battery testing records were properly documented and maintained according to schedule as of February 1, 2008, but the violation itself was not completely mitigated until relay testing was complete on April 16, 2008. In addition to resolving the specific past interval testing violations, MEC's approved Mitigation Plan included system enhancements to prevent future recurrence. This included modifying its internal system programming to enhance its reporting thus reducing the risk of subsequent violations. The system enhancement was completed on September 12, 2008.

MRO exercised discretion to assess no penalty for this violation because: (1) the violation was related to only eight electro-mechanical protection relays for a single 515 MW unit representing 0.44% of the MEC relay population and battery testing at two black start combustion turbines connected to the 69 kV system out of the MEC battery bank population of 213; (2) the violation, which was identified during an internal audit following the replacement of the electro-mechanical protection relays, was self-reported; (3) the violation was identified during an internal audit conducted by MEC as a result of its increasing compliance and document management efforts; (4) within one week of identifying the discrepancy, the related equipment was tested to verify that it would have functioned properly if called upon; (5) when MEC recognized the irregularity in the documentation, the affected relays and batteries were tested and an operability evaluation was performed to ensure the actual protection of the system was never degraded; and (6) MEC expended over 1,200 personnel hours in efforts to gather, verify and upload data to a common storage site for maintaining generation and substation relay maintenance and test records, which will help MEC to maintain adequate records, avoid documentation errors and demonstrate compliance with the applicable Commission-approved Reliability Standards.

Furthermore, the violation was deemed by MRO not to be a violation that put bulk power system reliability at serious or substantial risk. MRO found that MEC fosters a good compliance culture throughout its operations because the violation was identified during an internal review and MEC self-reported its non-compliance with PRC-005-1, R2.1.<sup>5</sup> There was no repetitive violation and no negative relevant compliance history. Moreover, MEC cooperated with MRO and worked diligently to identify and mitigate the violation. Finally, according to MRO, there was no evidence of any attempt by MEC to conceal the violation, no evidence that the violation

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<sup>5</sup> As noted above, the Notice of Penalty for MEC's violation of FAC-003-1 R2 was filed with the Commission on June 4, 2008 in Docket No. NP08-2-000. *See also Guidance on Filing Reliability Notices of Penalty*, 124 FERC ¶ 61,015.

was intentional, and no aggravating extenuating circumstances that would have led MRO Staff to recommend any penalty beyond zero dollars (\$0).

### **Status of Mitigation Plan<sup>6</sup>**

On September 12, 2008, MEC submitted a Mitigation Plan to address the referenced violation. MEC's mitigation plan was accepted by MRO on October 13, 2008 and by NERC on October 20, 2008. The Mitigation Plan for the violation listed is designated as MIT-08-1076 and was submitted as non-public information to FERC on October 20, 2008 in accordance with FERC orders. MEC's Mitigation Plan specified the following tasks and actions for mitigation were taken:

- **Operational Testing** - When MEC recognized the possible documentation discrepancies, the affected relays and batteries were tested promptly to ensure that the actual protection of the system was never degraded. Operability tests were positive and determined that the relays and batteries would have functioned as designed even though the normal testing and maintenance cycle was not followed within the defined intervals.
- **The Use of Relay Test Records Rather than Summary Spreadsheets** - MEC now has specific relay test records for all applicable power plants. It will continue to require specific relay test records as evidence of proof of compliance rather than rely on the use of summary spreadsheets. The relay test sheets have been uploaded into the MEC SharePoint compliance software.
- **MEC Relay Maintenance and Testing Plan Clarifications** - MEC reviewed its relay and maintenance testing plans and added sections that clearly defined the scope of facilities and relays to be tested.
- **MEC Battery Maintenance Enhancements** - MEC reviewed its SynerGen work order management system for consistency. It then modified its maintenance work order systems where appropriate to enhance its reporting to reduce the chance of missing bi-monthly and annual battery tests. The fluid generation department developed a query to check the status of battery testing at all plants including the Pleasant Hills units. These are run prior to the end of the bi-monthly reporting period to avoid missing bi-monthly and annual battery testing intervals.

On November 11, 2008, MRO requested supporting evidence from MEC that its Mitigation Plan had been completed. On November 25, 2008, MEC provided an update to its Mitigation Plan including evidence of the operability tests conducted on the eight electro-mechanical relays, specific relay testing spreadsheets (rather than the summary spreadsheet maintained prior to the discovery of the relay testing deficiency), the generation and substation relay testing records, its General Protection System Maintenance and Testing summary, and its battery testing records. On December 3, 2008, MEC certified that its Mitigation Plan was complete as of September 12, 2008. Relays had been tested by April 16, 2008 and were replaced as part of a normal maintenance outage during the April 12, 2008 – May 13, 2008 outage period. Battery testing was returned to compliance in February 2008 when the bi-monthly testing and maintenance resumed as scheduled. The final step of the Mitigation Plan, enhancements to battery maintenance system programming, was complete as of September 12, 2008. Upon reviewing the

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<sup>6</sup> See 18 C.F.R § 39.7(d)(7).



evidence submitted by MEC, MRO notified MEC on December 5, 2008 that it found MEC to be fully compliant with Reliability Standard PRC-005-1 R2.1.

## **Statement Describing the Proposed Penalty, Sanction or Enforcement Action Imposed<sup>7</sup>**

### **Basis for Determination**

Taking into consideration the Commission's direction in Order No. 693, the NERC Sanction Guidelines and the Commission's July 3, 2008 Guidance Order,<sup>8</sup> the NERC BOTCC reviewed the NOCV and supporting documentation on February 8, 2008. The NERC BOTCC approved the assessment of a zero dollar (\$0) penalty against MEC based upon MRO's findings and determinations, the NERC BOTCC's review of the applicable requirements of the Commission-approved Reliability Standards and the underlying facts and circumstances of the violation at issue.

In reaching this determination, NERC BOTCC considered the following:

- The violation of PRC-005-1 R2.1 was deemed not to be a violation that put bulk power system reliability at serious or substantial risk;
- The violation is the first incidence of the Requirement at issue by MEC;
- MEC had a previous unrelated violation of FAC-003-1 R2 for failure to maintain the appropriate clearance between a tree and a conductor in accordance with its Vegetation Management Plan;<sup>9</sup>
- MEC worked cooperatively with MRO by providing its updated Mitigation Plan with additional supporting evidence at MRO's request;
- MEC has corrected the violations;
- The violation was promptly mitigated and MRO has verified MEC's Certification of Completion, as discussed above; and
- The actions taken by MEC ensure that reliability is maintained.

Therefore, NERC believes that the proposed zero dollar (\$0) financial penalty is appropriate and consistent with NERC's goal to ensure reliability of the bulk power system.

Pursuant to Order No. 693, the penalty will be effective upon expiration of the thirty (30) day period following the filing of this Notice of Penalty with FERC, or, if FERC decides to review the penalty, upon final determination by FERC.

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<sup>7</sup> See 18 C.F.R. § 39.7(d)(4).

<sup>8</sup> *Guidance on Filing Reliability Notices of Penalty*, 124 FERC ¶ 61,015 (2008).

<sup>9</sup> As noted above, the Notice of Penalty for MEC's violation of FAC-003-1 R2 was filed with the Commission on June 4, 2008 in Docket No. NP08-2-000. See also *Guidance on Filing Reliability Notices of Penalty*, 124 FERC ¶ 61,015.

**Attachments to be Included as Part of this Notice of Penalty**

The attachments to be included as part of this Notice of Penalty are the following documents and material:

- a) MEC's Self Report dated May 1, 2008, included as Attachment a;
- b) MEC's Response dated September 12, 2008, included as Attachment b;
- c) Mitigation Plan designated as MIT-08-1076 submitted September 12, 2008, included as Attachment c;
- d) MEC's Mitigation Plan Update dated November 25, 2008, included as Attachment d;
- e) MEC's Certification of Completion of the Mitigation Plan dated December 3, 2008, included as Attachment e; and
- f) MRO's Verification of Completion of the Mitigation Plan dated December 5, 2008, included as Attachment f.

**A Form of Notice Suitable for Publication<sup>10</sup>**

A copy of a notice suitable for publication is included in Attachment g.

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<sup>10</sup> See 18 C.F.R. § 39.7(d)(6).

## Notices and Communications

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

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President and Chief Executive Officer  
David N. Cook\*  
Vice President and General Counsel  
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For MEC:  
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VP, Standards and Compliance  
MidAmerican Energy Company  
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Davenport, IA 52801  
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Email: javerweg@midamerican.com

\*Persons to be included on the Commission's service list are indicated with an asterisk. NERC requests waiver of the Commission's rules and regulations to permit the inclusion of more than two people on the service list.

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For MRO:  
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President  
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Sara E. Patrick\*  
Director of Regulatory Affairs and Enforcement  
Midwest Reliability Organization  
2774 Cleveland Avenue North  
Roseville, MN 55113  
Phone: 651-855-1708  
Email: se.patrick@midwestreliability.org



## Conclusion

NERC respectfully requests that the Commission accept this Notice of Penalty as compliant with its rules, regulations and orders.

Respectfully submitted,

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David N. Cook  
Vice President and General Counsel  
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cc: MidAmerican Energy Company  
Midwest Reliability Organization

Attachments

## **Attachment a**

### **MEC's Self Report, dated May 1, 2008**

## Self Report Maintenance

## Self Report Details

\* Standard  
Requirement

PRC-005-1 R2

\* Date Alleged Violation  
Occurred

May 1, 2008



\* Alleged Violation Description and Cause

NERC standard PRC-005-1, states that each Generator Owner will maintain and test protection system devices within their defined intervals. MidAmerican self certified full compliance in the fall of 2007 based on currently available relay records reflecting a 2004 test date. As a part of increasing overall compliance performance and document management capabilities,



\* Potential Impact to the Bulk Power System

There was no known degradation of system reliability to the bulk power system due to the lack of documentation. Tests of the potentially impacted relays and batteries proved they were functional and would have operated as designed.

Fields marked with \* are required!

## Toggle Entity Comments and Documents Section

## Entity Comments And Documents

Entity Comments

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By

Comment

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Documents				
Name	Type	Description	Button	Button

Save

Add Comment

Add Document

Submit

Cancel

## **Attachment b**

**MEC's Response, dated September 12, 2008**



MidAmerican Energy  
106 East Second Street  
P.O. Box 4350  
Davenport, IA 52808  
563 333-8110 Telephone  
563 333-8023 Fax  
javerweg@midamerican.com

James Averweg  
Vice President, Compliance & Standards

September 12, 2008

Dan Schoonecker  
Vice President, Operations  
2774 Cleveland Ave N  
Roseville, Mn 55113

Dear Dan:

MidAmerican has reviewed the notice of alleged violation and proposed penalties and sanctions issued on August 14, 2008 for reliability standard PRC-005-1 as a result of our self report on May 1, 2008. The NERC Violation Tracking Identification Number is MRO200800051. MidAmerican is in agreement with the notice of alleged violation and proposed penalties and sanctions. As required by Section 5.1 of the NERC CMEP, MidAmerican is notifying the MRO of its election of option 1 "MEC agrees with or does not contest the Alleged Violations and proposed penalty or sanction, and agrees to submit and implement a mitigation plan to correct the violation and its underlying causes". MidAmerican is submitting a mitigation plan (attached), and has already implemented the mitigation plans to correct the violation including its underlying causes.

I, as the VP of Compliance & Standards, am (i) MidAmerican's point of contact for the Mitigation Plan, (ii) technically knowledgeable regarding the Mitigation Plan and, (iii) am authorized and competent to respond to questions regarding the status of the Mitigation Plan. Terry Harbour is responsible for filing the Mitigation Plan in the MRO Compliance Data Management System (CDMS) which was completed on September 12, 2008.

Sincerely,

Jim Averweg,  
VP, Compliance & Standards  
MidAmerican Energy Company



**Attachment c**

**Mitigation Plan designated as MIT-08-1076,  
submitted September 12, 2008**

## **MidAmerican PRC-005-1 Mitigation Plan Submission**

### **1.0 Summary**

This Mitigation Plan responds to the MRO notice of Alleged Violation to the NERC Standard PRC-005-1. The root cause of the Alleged Violation to both relay testing errors and battery testing documentation errors was human miscommunications and errors. A review of the Alleged Violation determined that MidAmerican programs and procedures were sound and remain sound. MidAmerican has outlined and implemented a Mitigation Plan which corrected the Alleged Violation and reduces the probability of a recurrence. There were no negative reliability impacts to the bulk power grid during the Alleged Violation or during the period when the Mitigation Plan was implemented. Mitigation Plan milestones have been documented.

### **2.0 Introduction and Identification of Alleged Violation**

A 2008 MidAmerican internal audit revealed two areas of concern, relay testing records and battery testing records. Documentation errors for relay testing records on eight electro-mechanical relays at the Neal Unit 3 power plant were found and battery testing at the Pleasant Hills Units 1 and 2 black start combustion turbines connected to the 69 kV system were not properly documented. The NERC standard PRC-005-1 and Requirement 2, states that each Generator Owner will maintain and test protection system devices within their defined intervals.

#### **2.1 Neal Unit 3 Power Plant Relays**

As a part of MidAmerican's increasing compliance and document management efforts, MidAmerican conducted 2008 self-audits which found documentation discrepancies related to eight electro-mechanical generator protection relays at the Neal Unit 3 power plant (a single 515 MW unit from the Neal complex). The lack of specific relay test sheets for the eight Neal Unit 3 electro-mechanical relays triggered an internal investigation which concluded the relays did not appear to have been tested in 2004 as previously recorded.

The last verifiable test records for the eight electro-mechanical relays in question was October of 2002. Generator relay testing was performed at the Neal Unit 3 plant in November of 2004, but these tests appear to have been on the generator digital relays and not on the eight electro-mechanical relays. MidAmerican self certified compliance in October of 2007 based on the relay testing summary spreadsheet data available at that time. The eight electro-mechanical relays were replaced as part of a normal maintenance outage during the April 12 – May 13, 2008 outage period at the Neal Unit 3 plant. MidAmerican discovered a documentation discrepancy on April 15, 2008. When MidAmerican recognized the possible documentation error, the affected relays were bench tested on April 16, of 2008. This verified that the relays would have operated properly and did not degrade system reliability at any time. MidAmerican subsequently reviewed its records and then reported a possible non-compliance in May of 2008.

MidAmerican performed a root cause analysis on the relay test documentation error and concluded that a potential violation had occurred with human miscommunication as the primary driver. The use of summary spreadsheets rather than specific relay test sheet data allowed two individuals to have different interpretations of what relays were required to be tested which led to a documentation error in 2004. These records were thought to be correct until April of 2008.

## 2.2 Pleasant Hills Battery Testing:

The MidAmerican 2007 testing plan included instructions on battery testing which contained annual testing and bimonthly testing provisions on applicable units such as the Pleasant Hills units 1 and 2. Although battery testing was compliant when MidAmerican submitted its 2007 self certification in October of 2007, MidAmerican was not able to definitively prove or disprove that bi-monthly testing occurred by the end of October and December in 2007 on Pleasant Hills Unit 1. Nor could MidAmerican definitively prove that annual battery testing occurred by the end of 2007 on the Pleasant Hills Units 1 and 2. When MidAmerican recognized the possible documentation discrepancy in April of 2008, the affected batteries were tested to satisfy the missing tests, to ensure that the batteries were sound, and to demonstrate that system reliability was never degraded.

MidAmerican performed a root cause analysis on the battery test documentation errors and concluded that the primary driver appears to be human error. Without formal records MidAmerican cannot definitively prove that testing was or was not performed. A review of past test records indicates that prior to October and December of 2007 testing was consistently performed for all units by the technicians that were responsible for all units on site. The same records show bimonthly testing was consistent for all periods except for the October and December bimonthly tests in 2007 and resumed as expected in February of 2008.

## 3.0 Additional Information on Alleged Violation

MidAmerican had plans to replace the eight Neal Unit 3 electro-mechanical relays in the fall of 2007 as part of an ongoing relay replacement program that had specified relay replacement for each of the Neal units. Had this program been completed on time the eight Neal Unit 3 electro-mechanical relays would have been replaced in September or October of 2007 and MidAmerican would not have entered into a non-compliance situation. However, the Neal Unit 3 outage was delayed by approximately six months and the relays were not replaced until April of 2008. The root cause remained unchanged in the fact that the documentation error led MidAmerican to believe it was compliant based upon summary spreadsheet information showing all generation relays at the Neal Unit 3 as being tested in 2004.



**4.0 Mitigation Plans**

The following specific tasks and actions for mitigation were taken.

**4.1 Operational Testing**

When MidAmerican recognized the possible documentation discrepancies, the affected relays and batteries were tested promptly to ensure that the actual protection of the system was never degraded. Operability tests were positive and determined that the relays and batteries would have functioned as designed even though they had passed the normal maintenance cycle. This item is complete.

**4.2 The Use of Relay Test Records Rather than Summary Spreadsheets**

MidAmerican now has specific relay test records for all applicable power plants. It will continue to require specific relay test records as evidence of proof of compliance rather than rely on the use of summary spreadsheets. The relay test sheets have been uploaded into the MidAmerican SharePoint compliance software. This item is complete.

**4.3 MidAmerican Relay Maintenance and Testing Plan Clarifications**

MidAmerican reviewed its relay and maintenance testing plans and added sections that clearly define the scope of facilities and relays to be tested. This item is complete.

**4.4 MidAmerican Battery Maintenance Enhancements**

MidAmerican reviewed its SynerGen work order management system for consistency and modified its maintenance work order systems where appropriate to enhance its reporting to reduce the chance of missing bi-monthly and annual battery tests. The fluid generation department developed a query to check the status of battery testing at all of its plants including the Pleasant Hills units which are run prior to the end of the bi-monthly reporting period to avoid missing bi-monthly and annual battery testing. This item is complete.

These items will enhance compliance to PRC-005-1 R2 by requiring specific relay test records as proof of compliance, by storing the records in a central location, and by more clearly specifying the facilities and relays to be tested. This will reduce the probability of human miscommunications and documentation errors in the future.

**5.0 Additional Information on Mitigation Plans**

MidAmerican does not have any additional relevant information at this time.

## 6.0 Milestones

### Milestone Activity

1. Neal 3 Relay Benchmark Testing
2. PHEC Battery Operational Testing
3. MidAmerican Relay Plan Clarifications
4. Generation Relay Test Records Gathered
5. MidAmerican Battery Maintenance Upgrades

### Completion Date

Completed in April  
Completed in April  
Completed in April  
Completed in May  
Completed in September

## 7.0 Additional Relevant Information on Milestones

MidAmerican does not have any additional relevant timeline information at this time.

## 8.0 Reliability Risks

There were no additional negative reliability impacts to implementing the MidAmerican mitigation plans either for the relays or batteries. When MidAmerican recognized the possible documentation discrepancy, the affected relays and batteries were tested promptly to ensure that the actual protection of the system was never degraded. Since all of the affected relays had already been replaced as part of a normal maintenance outage no transmission outages were required and all relaying was back in compliance in April of 2008. The former relays were bench tested to verify that they would have performed as designed as verification that system reliability was not negatively impacted by the six month lapse. Battery testing was performed promptly to ensure that the batteries were sound, and to demonstrate that system reliability was never degraded.

While future relay testing errors will be reduced with the implementation of the mitigation plans, there were no significant increased risks to the bulk electric system while the mitigation plan was under development. The MidAmerican mitigation plan focused on two elements, specific documentation and reduced human miscommunication. MidAmerican now requires specific relay and battery test sheets to be provided to verify that relays and batteries were maintained within their defined intervals. MidAmerican believes that the completed MidAmerican Mitigation Plan has adequately addressed and reduced the probability of future potential relay and battery testing problems.

## **Attachment d**

### **MEC's Mitigation Plan Update, dated November 25, 2008**





November 25, 2008

Riaz Islam  
Engineer  
Midwest Reliability Organization (MRO)  
Roseville, MN 55113-1127

Dear Riaz:

MidAmerican has updated its Mitigation Plan Submission with specific evidence of completed items in Section 4.0 according to the MRO data request dated November 11, 2008. The NERC Violation Tracking Identification Number is MRO200800051. If you have questions, please contact me.

Sincerely,  
Terry Harbour  
MidAmerican Energy Company

## **MidAmerican PRC-005-1 Mitigation Plan Submission Verification**

### **1.0 Summary**

This mitigation plan verification responds to the November 11, 2008 MRO request for data verification. The verification relates to MidAmerican's self report to the Alleged Violation to NERC Standard PRC-005-1 and NERC Violation Id MRO200800051. The root cause of the Alleged Violation to both relay testing errors and battery testing documentation errors was human miscommunications and errors. A review of the Alleged Violation determined that MidAmerican programs and procedures were sound and remain sound. MidAmerican implemented a mitigation plan which corrected the Alleged Violation and reduces the probability of a recurrence. There were no negative reliability impacts to the bulk power grid during the Alleged Violation or during the period when the Mitigation Plan was implemented. Mitigation plan milestones have been met and are complete.

### **2.0 Introduction and Identification of Alleged Violation**

A 2008 MidAmerican internal audit revealed two areas of concern, relay testing records and battery testing records. Documentation errors for relay testing records on eight electro-mechanical relays at the Neal Unit 3 power plant were found and battery testing at the Pleasant Hills Units 1 and 2 black start combustion turbines connected to the 69 kV system were not properly documented. The NERC standard PRC-005-1 and Requirement 2, states that each Generator Owner will maintain and test protection system devices within their defined intervals.

#### **2.1 Neal Unit 3 Power Plant Relays**

As a part of MidAmerican's increasing compliance and document management efforts, MidAmerican conducted 2008 self-audits which found documentation discrepancies related to eight electro-mechanical generator protection relays at the Neal Unit 3 power plant (a single 515 MW unit from the Neal complex). The lack of specific relay test sheets for the eight Neal Unit 3 electro-mechanical relays triggered an internal investigation which concluded the relays did not appear to have been tested in 2004 as previously recorded.

The last verifiable test records for the eight electro-mechanical relays in question was October of 2002. Generator relay testing was performed at the Neal Unit 3 plant in November of 2004, but these tests appear to have been on the generator digital relays and not on the eight electro-mechanical relays. MidAmerican self certified compliance in October of 2007 based on the relay testing summary spreadsheet data available at that time. The eight electro-mechanical relays were replaced as part of a normal maintenance outage during the April 12 – May 13, 2008 outage period at the Neal Unit 3 plant. MidAmerican discovered a documentation discrepancy on April 15, 2008. When MidAmerican recognized the possible documentation error, the affected relays were bench tested on April

16, of 2008. This verified that the relays would have operated properly and did not degrade system reliability at any time. MidAmerican subsequently reviewed its records and then reported a possible non-compliance in May of 2008.

MidAmerican performed a root cause analysis on the relay test documentation error and concluded that a potential violation had occurred with human miscommunication as the primary driver. The use of summary spreadsheets rather than specific relay test sheet data allowed two individuals to have different interpretations of what relays were required to be tested which led to a documentation error in 2004. These records were thought to be correct until April of 2008.

## **2.2 Pleasant Hills Battery Testing:**

The MidAmerican 2007 testing plan included instructions on battery testing which contained annual testing and bimonthly testing provisions on applicable units such as the Pleasant Hills units 1 and 2. Although battery testing was compliant when MidAmerican submitted its 2007 self certification in October of 2007, MidAmerican was not able to definitively prove or disprove that bi-monthly testing occurred by the end of October and December in 2007 on Pleasant Hills Unit 1. Nor could MidAmerican definitively prove that annual battery testing occurred by the end of 2007 on the Pleasant Hills Units 1 and 2. When MidAmerican recognized the possible documentation discrepancy in April of 2008, the affected batteries were tested to satisfy the missing tests, to ensure that the batteries were sound, and to demonstrate that system reliability was never degraded.

MidAmerican performed a root cause analysis on the battery test documentation errors and concluded that the primary driver appears to be human error. Without formal records MidAmerican cannot definitively prove that testing was or was not performed. A review of past test records indicates that prior to October and December of 2007 testing was consistently performed for all units by the technicians that were responsible for all units on site. The same records show bimonthly testing was consistent for all periods except for the October and December bimonthly tests in 2007 and resumed as expected in February of 2008.

## **3.0 Additional Information on Alleged Violation**

MidAmerican had plans to replace the eight Neal Unit 3 electro-mechanical relays in the fall of 2007 as part of an ongoing relay replacement program that had specified relay replacement for each of the Neal units. Had this program been completed on time the eight Neal Unit 3 electro-mechanical relays would have been replaced in September or October of 2007 and MidAmerican would not have entered into a non-compliance situation. However, the Neal Unit 3 outage was delayed by approximately six months and the relays were not replaced until April of 2008. The root cause remained unchanged in the fact that the documentation error led MidAmerican to believe it was compliant



based upon summary spreadsheet information showing all generation relays at the Neal Unit 3 as being tested in 2004.

### **3.1 Supplemental Information:**

The eight Neal Unit 3 electro-mechanical relays meet criteria specified in the NERC document Protection System Maintenance, A Technical Reference under Section 2.2 as five of the eight units protect the main Generator Step Up (GSU) transformer (item 5 in section 2.2), and the remaining three protect the generator auxiliary transformer (item 6 in section 2.2) as listed below.

1. Protection Systems for transmission equipment operated at 200 kV and above.
2. Protection Systems for transmission equipment operated at 100 kV to 200 kV as designated by the Planning Coordinator as critical to the reliability of the electric system.
5. Protection Systems of generator step-up transformers for individual generators of greater than 20 MVA (gross nameplate rating) with high-side terminals connected to facilities defined in items 1 or 2 above, and all generator step-up transformers in generation plants greater than 75 MVA (gross aggregate nameplate rating)
6. Protection Systems of generator auxiliary load transformers (regardless of where they are connected) in generation plants greater than 75 MVA (gross aggregate nameplate rating).

### **4.0 Mitigation Plans**

The following specific tasks and actions for mitigation were taken. These items enhanced compliance to PRC-005-1 R2 by requiring specific relay test records as proof of compliance, by storing the records in a central location, and by more clearly specifying the facilities and relays to be tested. This will reduce the probability of human miscommunications and documentation errors in the future.

#### **4.1 Operational Testing**

When MidAmerican recognized the possible documentation discrepancies, the affected relays and batteries were tested promptly to ensure that the actual protection of the system was never degraded. Operability tests were positive and determined that the relays and batteries would have functioned as designed even though they had passed the normal maintenance cycle. This item is complete.

Evidence:

See file Item4-1-PRC-005-1-Neal3-retired-relays-2008.pdf

#### **4.2 The Use of Relay Test Records Rather than Summary Spreadsheets**

MidAmerican now has specific relay test records for all applicable power plants. It will continue to require specific relay test records as evidence of proof of compliance rather than rely on the use of summary spreadsheets. The relay test sheets have been uploaded into the MidAmerican SharePoint compliance software. This item is complete.

Evidence:

See file Item4-2-PRC-005-1-Evidence-of-Specific-Relay-Testing.doc

#### **4.3 MidAmerican Relay Maintenance and Testing Plan Clarifications**

MidAmerican reviewed its relay and maintenance testing plans and added sections that clearly define the scope of facilities and relays to be tested listed under the Protection System Maintenance and Testing Program heading. This item is complete.

Evidence:

See file Item4-3-PRC-005-1-NERC-Gen-Maintenance-Testing-Summary-2008.doc

#### **4.4 MidAmerican Battery Maintenance Enhancements**

MidAmerican reviewed its SynerGen work order management system for consistency and modified its maintenance work order systems where appropriate to enhance its reporting to reduce the chance of missing bi-monthly and annual battery tests. The fluid generation department developed a query to check the status of battery testing at all of its plants including the Pleasant Hills units which are run prior to the end of the bi-monthly reporting period to avoid missing bi-monthly and annual battery testing. This item is complete.

Evidence:

See file Item4-4-PRC-005-1-PHEC-1-2-Battery-Testing-Records

#### **4.5 MidAmerican Manpower Evaluation**

The MRO has requested an evaluation of the manpower expended on MidAmerican mitigation plans. MidAmerican personnel have spent over 30 man-weeks of time gathering, verifying, uploading data to a common storage site, and maintaining generation and substation relay maintenance and test records.

#### **5.0 Additional Information on Mitigation Plans**

MidAmerican does not have any additional relevant information at this time.

## **6.0 Milestones**

<b>Milestone Activity</b>	<b>Completion Date</b>
1. Neal 3 Relay Benchmark Testing	Completed in April
2. PHEC Battery Operational Testing	Completed in April
3. MidAmerican Relay Plan Clarifications	Completed in April
4. Generation Relay Test Records Gathered	Completed in May
5. MidAmerican Battery Maintenance Upgrades	Completed in September

## **7.0 Additional Relevant Information on Milestones**

MidAmerican does not have any additional relevant timeline information at this time.

## **8.0 Reliability Risks**

There were no additional negative reliability impacts to implementing the MidAmerican mitigation plans either for the relays or batteries. When MidAmerican recognized the possible documentation discrepancy, the affected relays and batteries were tested promptly to ensure that the actual protection of the system was never degraded. Since all of the affected relays had already been replaced as part of a normal maintenance outage no transmission outages were required and all relaying was back in compliance in April of 2008. The former relays were bench tested to verify that they would have performed as designed as verification that system reliability was not negatively impacted by the six month lapse. Battery testing was performed promptly to ensure that the batteries were sound, and to demonstrate that system reliability was never degraded.

While future relay testing errors will be reduced with the implementation of the mitigation plans, there were no significant increased risks to the bulk electric system while the mitigation plan was under development. The MidAmerican mitigation plan focused on two elements, specific documentation and reduced human miscommunication. MidAmerican now requires specific relay and battery test sheets to be provided to verify that relays and batteries were maintained within their defined intervals. MidAmerican believes that the completed MidAmerican Mitigation Plan has adequately addressed and reduced the probability of future potential relay and battery testing problems.



## **Attachment e**

### **MEC's Certification of Completion of the Mitigation Plan, dated December 3, 2008**

**From:** Harbour, Terry R [mailto:TRHarbour@midamerican.com]

**Sent:** Wednesday, December 03, 2008 5:07 PM

**To:** Riaz Islam

**Cc:** Averweg, James

**Subject:** Confirmation that all PRC-005-1-R2 were completed as identified in the 9-12-2008 submission

Riaz,

This is to confirm that all mitigation plan items referenced in the PRC-005-1-R2 plan were completed as identified according to the September 12, 2008 plan submittal.

Terry Harbour

Senior Engineer and NERC Compliance Coordinator

## **Attachment f**

### **MRO's Verification of Completion of the Mitigation Plan, dated December 5, 2008**

**Riaz Islam**

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**From:** Riaz Islam  
**Sent:** Friday, December 05, 2008 4:39 PM  
**To:** 'Harbour, Terry R'  
**Cc:** 'lvvanwyhe@midamerican.com'; Sara E. Patrick; 'mco@midwestreliability.org'  
**Subject:** Mitigation Completion

Hello Terry,

MRO compliance office has reviewed the verification data that MEC provided earlier and validated the completion of the following Mitigation Plan.

- PRC-005-1 R2 (NERC Violation Id - MRO200800051)

We have closed this mitigation plan that you submitted in 2008. All the supporting documentation that you provided are uploaded into the CDMS 4.0 (Please select 'Mitigation Plans' on the 'Enforcement' menu).

We will also notify NERC of the completion of this mitigation plan.

Thanks again for participating in the NERC/MRO Compliance Program.  
Let me know if you have any questions. Thanks

Riaz Islam  
Engineer  
Midwest Reliability Organization (MRO)  
Roseville, MN 55113-1127  
(651)-855-1734

Central Facsimile (651) 855-1712

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**Attachment g**

**Notice of Filing**

UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION

MidAmerican Energy Company

Docket No. NP09-\_\_\_\_-000

NOTICE OF FILING  
July 31, 2009

Take notice that on July 31, 2009, the North American Electric Reliability Corporation (NERC) filed a Notice of Penalty regarding MidAmerican Energy Company in the Midwest Reliability Organization region.

Any person desiring to intervene or to protest this filing must file in accordance with Rules 211 and 214 of the Commission's Rules of Practice and Procedure (18 CFR 385.211, 385.214). Protests will be considered by the Commission in determining the appropriate action to be taken, but will not serve to make protestants parties to the proceeding. Any person wishing to become a party must file a notice of intervention or motion to intervene, as appropriate. Such notices, motions, or protests must be filed on or before the comment date. On or before the comment date, it is not necessary to serve motions to intervene or protests on persons other than the Applicant.

The Commission encourages electronic submission of protests and interventions in lieu of paper using the "eFiling" link at <http://www.ferc.gov>. Persons unable to file electronically should submit an original and 14 copies of the protest or intervention to the Federal Energy Regulatory Commission, 888 First Street, N.E., Washington, D.C. 20426.

This filing is accessible on-line at <http://www.ferc.gov>, using the "eLibrary" link and is available for review in the Commission's Public Reference Room in Washington, D.C. There is an "eSubscription" link on the web site that enables subscribers to receive email notification when a document is added to a subscribed docket(s). For assistance with any FERC Online service, please email [FERCOnlineSupport@ferc.gov](mailto:FERCOnlineSupport@ferc.gov), or call (866) 208-3676 (toll free). For TTY, call (202) 502-8659.

Comment Date: [BLANK]

Kimberly D. Bose,  
Secretary