



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION III  
2443 WARRENVILLE ROAD, SUITE 210  
LISLE, IL 60532-4352  
August 17, 2011

EA-11-110

Mr. Mark A. Schimmel  
Site Vice President  
Prairie Island Nuclear Generating Plant  
Northern States Power Company, Minnesota  
1717 Wakonade Drive East  
Welch, MN 55089

**SUBJECT: FINAL SIGNIFICANCE DETERMINATION OF WHITE FINDING  
WITH ASSESSMENT FOLLOWUP AND NOTICE OF VIOLATION  
NRC INSPECTION REPORT 05000282/2011011; 05000306/2011011  
PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNITS 1 AND 2**

Dear Mr. Schimmel:

This letter provides you the final significance determination of the preliminary White finding for Unit 1 as discussed in our previous communication dated June 9, 2011, which included U.S. Nuclear Regulatory Commission (NRC) Inspection Report No. 05000282/2011010; 05000306/2011010. The finding involved both trains of safety-related battery chargers being incapable of performing their safety function from initial installation in 1994 due to being susceptible to locking up (i.e., stop providing an output, if the incoming alternating current voltage dropped below the nameplate minimum voltage at the battery charger motor control center during certain design basis events).

At your request, a Regulatory Conference was held on July 28, 2011, to discuss your views on this issue. During the meeting you and your staff described your assessment of the significance of the findings and the corrective actions taken to resolve it, including the root cause evaluation of the findings. You attributed the root cause of the failure to a mindset which originally considered the battery chargers as non-essential pieces of equipment along with the incorporation of recovery actions into a procedure such that plant personnel did not consider there to be a problem. A partial list of attendees at this meeting is included in Enclosure 1.

During the meeting, you provided your perspective that the NRC's risk assessment was overly conservative in assessing the amount of credit that should be applied to the ability of plant personnel to identify and recover a failed battery charger. You provided information to support Prairie Island's position that a more realistic assessment, which considered: (1) the information which would be available to the operators upon a battery charger failure; (2) operator experience and training; (3) the "as-built, as operated" battery capacity; and (4) the time available to the operators versus the amount of time necessary to reset the chargers, would result in a finding of very low risk significance. Specifically, your staff provided information to show that the Prairie Island operators would have had numerous annunciators in the control

room that would have assisted them in identifying the problem and that procedures, as far back as 1996, would have provided direction on resetting the battery charger input breakers. Your staff described the results of two simulations which showed that the operators could identify, diagnose, and correct a locked-up battery charger within an hour. You then described why Prairie Island should be given credit for the ability to reset the battery charger within an hour in determining the risk significance. Specifically, your staff noted that the NRC's Human Reliability Worksheet stated that if the time remaining on the battery exceeded the time to recover the battery charger by at least 30 minutes, then the evolution should be considered to have "extra time." Furthermore, your staff noted that the NRC's Human Reliability Worksheet stated that if the time remaining on the battery was at least twice the time necessary to recover the battery charger and was greater than 30 minutes, then the evolution should be considered to have "expansive time." Your staff noted that use of either "extra time" or "expansive time" designations would reduce the human error probability value, resulting in a very low safety significance determination.

The NRC carefully considered the information that you provided. The NRC acknowledged that Prairie Island has qualified and well-trained operators. The NRC also agreed that there would be visual cues to alert the operators and that general procedures existed to provide direction on resetting a locked-out battery charger. The NRC considered that battery capacity could result in longer battery life estimates than described in the updated safety analysis report, due to conservative assumptions in the design basis battery depletion calculations. The NRC also determined that the battery life for Unit 2 would be longer than Unit 1 in the risk assessment scenarios of interest due to differences in battery loading. The NRC determined that operator recovery of the battery charger was feasible, because the time available would allow operator action in response to this previously unknown equipment failure. However, the NRC noted that the timed scenarios performed by the plant were done after the battery charger issue was identified by the NRC and became well-known by the Prairie Island staff. Prior to the NRC identifying the issue in 2010, the need for operator action to diagnose and restore a failed charger had not been identified as a time critical operator action. The operator action was not directed by the emergency operating procedures and was not included in any operator training that would simulate the complex scenarios modeled in the significance determination process. Therefore, the NRC concluded that the operator response during the timed simulations was not a good indicator as to the time that the operator response would have taken in an event. For that reason, although the NRC considered the available time performance shaping factor<sup>1</sup>, the NRC determined it was neither a positive or negative performance driver. As a result, available time was assigned a nominal value rather than "extra" or "expansive" time being credited. After considering the information you provided during the conference, the NRC still concludes that this evaluation was appropriate to these circumstances.

Therefore, after considering the information developed during the inspection and the information you provided at the regulatory conference, the NRC has concluded that the finding is appropriately characterized for Unit 1 as White, a finding of low to moderate risk significance.

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<sup>1</sup> A performance shaping factor is a term that describes an item which influences human performance and human error probability when doing a risk analysis.

You have 30 calendar days from the date of this letter to appeal the staff's determination of significance for the identified White finding. Such appeals will be considered to have merit only if they meet the criteria given in the IMC 0609, Attachment 2. An appeal must be sent in writing to the Regional Administrator, Region III, 2443 Warrenville Road, Lisle, IL 60532.

The NRC has also determined that the failure to ensure that the batteries were capable of performing their safety function is a violation of Technical Specification 3.8.4, as cited in the Notice of Violation (Notice) in Enclosure 2. The circumstances surrounding the violation were described in detail in Inspection Report No. 05000282/2011010; 05000306/2011010. In accordance with the NRC Enforcement Policy, the Notice is considered escalated enforcement action because it is associated with a White finding.

The NRC has concluded that information regarding the reason for the violation, the corrective actions taken and planned to be taken to correct the violation and prevent recurrence, and the date when full compliance was achieved, is already adequately addressed on the docket in NRC Inspection Report No. 05000282/2011010; 05000306/2011010 and during the regulatory conference. Therefore, you are not required to respond to this letter unless the description therein does not accurately reflect your corrective actions or your position. In that case, or if you choose to provide additional information, you should follow the instructions specified in the Notice.

As a result of our review of Prairie Island's performance, including this White finding, we have assessed Unit 1 to be in the Regulatory Response column of the NRC's Action Matrix. Therefore, we plan to conduct a supplemental inspection using Inspection Procedure 95001, "Inspection for One or Two White Inputs in a Strategic Performance Area," when your staff has notified us of your readiness for this inspection. This inspection procedure is conducted to provide assurance that the root cause and contributing causes of risk significant performance issues are understood, the extent of condition and the extent of cause are identified, and the corrective actions are sufficient to prevent recurrence.

The NRC identified that a similar condition existed on the Unit 2 battery chargers. The NRC's preliminary assessment categorized the Unit 2 issue as having very low safety significance or Green. The NRC has completed its evaluation for Unit 2 and has concluded that the failure should be characterized as Green, a finding having very low safety significance, based on the Phase III analysis described in the subject inspection report. This finding is also associated with a violation of Technical Specification 3.8.4; however, because of its very low safety significance, and because it was entered into your corrective action program, the NRC is treating the issue as an NRC-identified Non-Cited Violation, in accordance with Section 2.3.2 of the NRC Enforcement Policy (NCV 05000306/2011011-02). The apparent violation listed in the subject inspection report for Unit 2 is considered closed.

If you contest the subject or severity of an NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, U.S. Nuclear Regulatory Commission - Region III, 2443 Warrenville Road, Lisle, IL 60532-4352; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the Resident Inspector Office at the Prairie Island Nuclear Generating Plant.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response, if any, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the public without redaction. The NRC also includes significant enforcement actions on its Web site at <http://www.nrc.gov/reading-rm/doc-collections/enforcement/actions>.

Sincerely,

***/RA by Cynthia D. Pederson Acting for/***

Mark A. Satorius  
Regional Administrator

Docket Nos. 050-00282; 050-00306  
License Nos. DPR-42; DPR-60

Enclosures:

1. Partial List of Regulatory Conference Attendees
2. Notice of Violation

cc w/encl: Distribution via ListServ

REGULATORY CONFERENCE  
LIST OF ATTENDEES

Xcel Energy

Dennis Koehl, Chief Nuclear Officer  
Mark Schimmel, Prairie Island Site Vice President  
Kevin Davison, Prairie Island Plant Manager  
Darrel Lapcinski, Prairie Island Shift Manager  
Paula Anderson, Fleet Regulatory Affairs Director  
Jon Anderson, Prairie Island Regulatory Affairs Manager  
John Bickel, Probabilistic Risk Analyst  
Robert Flann, Engineer  
Ivy Netzel, Engineer  
Matt Birkel, Licensing Engineer  
Terry Pickens, Regulatory Policy Director (via phone)  
Mark Huting, Fleet Engineering Program Director (via phone)  
Paul Huffman, Prairie Island Engineering Director (via phone)  
Hank Butterworth, Fleet Operation Standardization Director (via phone)  
Michelle Kelly, Fleet Engineering Supervisor (via phone)  
Mary Sandok, Communication Nuclear Manager(via phone)  
Rick Rohrer, Fleet Engineering Programs Manager (via phone)  
Scott Northard, Prairie Island Recovery Manager (via phone)  
Dale Vincent, Prairie Island Principle Licensing Engineer (via phone)

Nuclear Regulatory Commission

Mark Satorius, Regional Administrator  
Steven West, Director, Division of Reactor Projects (DRP)  
Gary Shear, Deputy Director DRP  
John Giessner, Chief, Branch 4, DRP  
Steven Orth, Enforcement Officer  
Karla Stoedter, Senior Resident Inspector, DRP  
Laura Kozak, Senior Risk Analyst, DRP  
See-Meng Wong, Senior Risk Analyst, Office of Nuclear Reactor Regulation (NRR)  
Nick Valos, Senior Reactor Analyst, DRP  
Robert Lerch, Project Engineer, DRP  
Swetha Shah, Reactor Engineer, DRP  
Carey Brown, Engineering Inspector, Division of Reactor Safety  
Allan Barker, Government Liaison  
Viktoria Mitlyng, Public Affairs Officer  
Prema Chandrathil, Public Affairs Officer  
Samson Lee, Deputy Director, Division of Risk Assessment, NRR (via phone)  
Mary Ann Ashley, Senior Enforcement Coordinator, NRR (via phone)  
Nicole Coleman, Enforcement Coordinator, Office of Enforcement (via phone)  
Jeff Circle, Chief, PRA Operational Support Branch, NRR (via phone)  
Tom Wengert, Project Manager, NRR  
Diana Betancourt, Reactor Engineer (via phone)

List of Attendees, cont.

-2-

Public

Phil Mahowald, Prairie Island Indian Community (via phone)

Jennifer Todd, Prairie Island Indian Community (via phone)

Tom Atterholt, Wisconsin Public Service Commission (via phone)

Dana Kelly, Idaho National Lab (via phone)

Ron Boring, Idaho National Lab (via phone)

ENCLOSURE 1

## NOTICE OF VIOLATION

Northern States Power Company, Minnesota  
Prairie Island Nuclear Generating Plant, Unit 1

Docket No. 050-00282  
License No. NPF-42  
EA-11-110

During a U.S. Nuclear Regulatory Commission (NRC) inspection conducted from May 13 to 20, 2011, a violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the violation is listed below:

Technical Specification (TS) 3.8.4 requires that the train A and train B direct current (DC) electrical power subsystems be operable in Modes 1 through 4.

With one battery charger inoperable, TS 3.8.4, Condition A, requires that the battery charger be restored to an operable status in 8 hours or that actions are taken to shut the plant down within the following 42 hours.

With both battery chargers inoperable, Limiting Condition for Operation (LCO) 3.0.3 requires that when an LCO is not met and the associated actions are not met, an associated action is not provided, or if directed by the associated actions, the unit shall be placed in a mode or other specified condition in which the LCO is not applicable. Action shall be initiated within 1 hour to place the unit, as applicable, in:

Mode 3 within 7 hours;  
Mode 4 within 13 hours; and  
Mode 5 within 37 hours.

Contrary to the above, from December 21, 1994, to approximately October 22, 2010, the safety-related battery chargers on Unit 1 failed to maintain the DC electrical power subsystems operable in Modes 1 through 4. Specifically, all battery chargers were susceptible to a common mode failure under design basis accident conditions whereby the battery chargers would stop providing an output, or "lock-up," when their alternating current input voltage dropped below their nameplate minimum voltage at the battery charger motor control center.

This violation is associated with a White Significance Determination Process finding (VIO 0500282/2011011-01).

The NRC has concluded that information regarding the reason for the violation, the corrective actions taken and planned to be taken to correct the violation and prevent recurrence, and the date when full compliance was achieved, is already adequately addressed on the docket in NRC Inspection Report No. 05000282/2011010; 05000306/2011010 and during the July 28, 2011, regulatory conference. However, you are required to submit a written statement or explanation pursuant to Title 10 of the Code of Federal Regulations (10 CFR) 2.201 if the description therein does not accurately reflect your corrective actions or your position. In that case, or if you choose to respond, clearly mark your response as a "Reply to a Notice of Violation, EA-11-110," and send

ENCLOSURE 2

it to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator and the Enforcement Officer, Region III, 2443 Warrenville Road, Suite 210, Lisle, IL 60532, and a copy to the NRC Resident Inspector at the Prairie Island facility within 30 days of the date of the letter transmitting this Notice of Violation (Notice).

If you contest this enforcement action, you should also provide a copy of your response, with the basis for your denial, to the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001.

If you choose to respond, your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. Therefore, to the extent possible, the response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the public without redaction.

In accordance with 10 CFR 19.11, you may be required to post this Notice within two working days of receipt.

Dated this 17<sup>th</sup> day of August 2011

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response, if any, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents include any personal privacy, proprietary, or safeguards information so that it can be made available to the public without redaction. The NRC also includes significant enforcement actions on its Web site at <http://www.nrc.gov/reading-rm/doc-collections/enforcement/actions>.

Sincerely,

***/RA by Cynthia D. Pederson Acting for/***

Mark A. Satorius  
Regional Administrator

Docket Nos. 050-00282; 050-00306  
License Nos. DPR-42; DPR-60

Enclosure:  
Notice of Violation

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DATE	08/12/11	08/12/11	08/15/11	08/09/11	08/09/11	08/15/11	08/17/11

**OFFICIAL RECORD COPY**

<sup>1</sup> OE concurrence received via e-mail from N. Coleman on August 9, 2011.

<sup>2</sup> NRR concurrence received via e-mail from M.A. Ashley on August 9, 2011.

Letter to Mark A. Schimmel from Mark A. Satorius, dated August.17, 2011

SUBJECT: FINAL SIGNIFICANCE DETERMINATION OF WHITE FINDING  
WITH ASSESSMENT FOLLOWUP AND NOTICE OF VIOLATION  
NRC INSPECTION REPORT 05000282/2011011; 05000306/2011011  
PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNITS 1 AND 2

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