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July 13, 2016

L-MT-16-019  
10 CFR 50.73

ATTN: Document Control Desk  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Monticello Nuclear Generating Plant  
Docket No. 50-263  
Renewed Facility Operating License No. DPR-22

LER 2014-003-01, "Torus to Drywell Vacuum Breaker Dual Indication During Testing"

Northern States Power Company, a Minnesota Corporation (NSPM), doing business as Xcel Energy, hereby submits the supplement to Monticello Nuclear Generating Plant (MNGP) Licensee Event Report (LER) 2014-003.

Summary of Commitments

This letter makes no new commitments and no revisions to existing commitments.

A handwritten signature in black ink, appearing to read 'Peter A. Gardner'.

Peter A. Gardner  
Site Vice President, Monticello Nuclear Generating Plant  
Northern States Power Company – Minnesota

Enclosure

cc: Administrator, Region III, USNRC  
Project Manager, Monticello, USNRC  
Resident Inspector, Monticello, USNRC  
Minnesota Department of Commerce



**LICENSEE EVENT REPORT (LER)**  
(See Page 2 for required number of digits/characters for each block)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

<b>1. FACILITY NAME</b> Monticello Nuclear Generating Plant	<b>2. DOCKET NUMBER</b> 05000-263	<b>3. PAGE</b> 1 OF 3
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**4. TITLE**  
Torus to Drywell Vacuum Breaker Dual Indication During Testing

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
02	11	2014	2014	003	01	07	13	2016		05000
										05000

**9. OPERATING MODE**      **11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)**

1	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input checked="" type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)
10. POWER LEVEL  88%	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)
	<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> OTHER
	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

**12. LICENSEE CONTACT FOR THIS LER**

LICENSEE CONTACT Andrew Kouba, Licensing Engineer	TELEPHONE NUMBER (Include Area Code) 763-271-7251
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**13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT**

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

<b>14. SUPPLEMENTAL REPORT EXPECTED</b> <input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO	<b>15. EXPECTED SUBMISSION DATE</b>	MONTH	DAY	YEAR

**ABSTRACT** (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On February 11, 2014 while performing the monthly torus to drywell vacuum breaker check procedure, vacuum breaker valve AO-2382A indicated closed as expected in the control room after cycling but did not indicate closed locally in the reactor building. The valve was cycled several times per an alarm response procedure for an open torus to drywell vacuum breaker until it indicated closed.

A causal evaluation has determined the cause of the observed intermittent dual indication for vacuum breaker valve AO-2382A after cycling to be interference between the vacuum breaker test lever and vacuum breaker test actuator stem. This interference was introduced during the 2013 refueling outage when the lever arm was removed for seal replacements. The procedural guidance was not detailed enough to ensure the critical clearances were maintained during removal and replacement of the test lever. The condition was resolved during the 2015 outage by establishing proper clearances between the test lever and actuator stem for all torus to drywell vacuum breakers. In some cases (5 of 8 torus to drywell vacuum breakers) a portion of the test actuator stem was removed. In addition, a revision to the torus to drywell vacuum breaker seal replacement procedure was made to ensure proper clearance between the test lever and test actuator stem would be maintained following maintenance activities.



**LICENSEE EVENT REPORT (LER)  
CONTINUATION SHEET**

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**NARRATIVE**

**EVENT DESCRIPTION**

On February 11, 2014 the plant was in Mode 1 at approximately 88% power. At 1430 during performance of the monthly torus to drywell vacuum breaker check procedure, vacuum breaker valve AO-2382A [VACB] indicated closed in the control room but provided dual indication locally in the reactor building. Each vacuum breaker is provided with dual position switches which operate status lights in the control room and reactor building. The vacuum breaker was declared inoperable, and Technical Specification (TS) Action 3.6.1.7.B was entered. An alarm response procedure for an open torus to drywell vacuum breaker was entered and the valve was cycled four times until it was verified closed at 1436.

After the torus to drywell vacuum breaker indicated closed, the vacuum breaker was declared operable and the TS Action 3.6.1.7 was exited.

Initially, a failure modes and effects analysis performed in 2014 determined the cause of the observed indication to be inconsistent operation of the valve limit switches. Ongoing investigation during the 2015 refueling outage identified that the vacuum breaker AO-2382A had higher than expected opening torque, and during subsequent investigation, failed to close due to interference observed between the vacuum breaker test lever and the vacuum breaker test actuator stem. An evaluation for only AO-2382A was performed since it was the only vacuum breaker valve with interference that prevented closing during testing in the 2015 refueling outage. These conditions were resolved during the 2015 refueling outage by establishing proper clearances between the test lever and actuator stem on all vacuum breaker valves. In some cases (5 of 8 torus to drywell vacuum breakers) a portion of the test actuator stem was removed. In addition, a revision to the torus to drywell vacuum breaker seal replacement procedure was made to ensure proper clearance between the test lever and test actuator stem would be maintained following maintenance activities.

**EVENT ANALYSIS**

The event is reportable in accordance with 10 CFR 50.73 (a)(2)(v)(D) as a condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident and in accordance with 10 CFR 50.73(a)(2)(ii) as an unanalyzed condition. The event was initially reported in Event Notification 49819.

A review of the event determined that a safety system functional failure did not occur as defined in Nuclear Energy Institute (NEI) 99-02 Revision 7. An engineering analysis was performed which determined that the torus to drywell vacuum breaker was capable of performing its design basis function with the limiting test lever and actuator stem interference observed during the 2015 refueling outage.

**SAFETY SIGNIFICANCE**

Vacuum breakers are provided to equalize the pressure between the suppression chamber (i.e., torus) and the drywell to prevent a backflow of water from the suppression chamber pool into the vent header system (open function). A stuck open vacuum breaker would allow communication between the drywell and

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**NARRATIVE**

suppression chamber airspace, and as a result, there would be a potential for suppression chamber over pressurization due to this bypass leakage if a loss of coolant accident were to occur (closed function).

Based on as-found testing performed during the 2015 refueling outage, the torque required to overcome the binding between the vacuum breaker test lever and actuator stem was very small. The additional torque changes the vacuum breaker valve response to the movement of gases through the valve during various accident scenarios. However, even with this additional friction, the operational characteristics of the vacuum breaker would have met the most limiting design requirements for the ability to open and close as well as seating requirements.

An evaluation assuming AO-2382A to hang open in the position observed during the 2015 refueling outage showed the containment bypass leakage would be less than 50% of that assumed in the primary containment safety analysis. An evaluation for only AO-2382A was performed since it was the only vacuum breaker valve with interference that prevented closing during testing in the 2015 refueling outage. In addition, no other vacuum breaker valve showed dual indication between 2013 and 2015, nor failed to close during testing performed during the 2015 refueling outage.

For the above reasons, this condition would not have prevented torus to drywell vacuum breaker AO-2382A or any other torus to drywell vacuum breaker from performing its specified safety function in the open or closed position, nor prevented primary containment from performing its specified safety function to maintain reactor pressure boundary leakage requirements.

**CAUSE**

A causal evaluation has determined the cause of the observed intermittent dual indication for vacuum breaker valve AO-2382A after cycling to be interference between the vacuum breaker test lever and vacuum breaker test actuator stem. The clearance had been altered during the 2013 refueling outage when the lever arm was removed to replace the seals in the vacuum breakers resulting in intermittent interference and binding. The procedural guidance for the removal and replacement of the torus to drywell vacuum breaker test lever was not detailed enough to ensure the critical clearances were maintained.

**CORRECTIVE ACTION**

The condition was resolved during the 2015 outage by establishing proper clearances between the test lever and actuator stem for all torus to drywell vacuum breakers. In some cases (5 of 8 torus to drywell vacuum breakers) a portion of the test actuator stem was removed. In addition, a revision to the torus to drywell vacuum breaker seal replacement procedure was made to ensure proper clearance between the test lever and test actuator stem would be maintained following maintenance activities.

**PREVIOUS SIMILAR EVENTS**

LER 2014-002 reported a similar occurrence of valve AO-2382A not indicating closed during performance of the torus to drywell monthly vacuum breaker check procedure on February 07, 2014.