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November 9, 2018

L-MT-18-068  
10 CFR 50.73  
10 CFR 21

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

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

LER 2018-001-00, Non-Fully Closed Check Valves Resulted in a Potential Pathway Outside  
Secondary Containment

Pursuant to 10 CFR 50.73(a)(2)(ii)(B) and 10CFR 50.73(a)(2)(v)(C)&(D), Northern States Power Company, a Minnesota Corporation (NSPM), doing business as Xcel Energy, hereby submits Monticello Nuclear Generating Plant (MNGP) Licensee Event Report (LER) 2018-001-00. Additionally, this report also constitutes an interim 10 CFR 21 report.

Summary of Commitments

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

A handwritten signature in black ink, appearing to read 'Chris R. Church', written over a horizontal line.

Christopher R. Church  
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)  
(See NUREG-1022, R.3 for instruction and guidance for completing this form  
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

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 Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to [Infocollects.Resource@nrc.gov](mailto: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**  
Non-Fully Closed Check Valves Resulted in a Potential Pathway Outside Secondary Containment

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
09	10	2018	2018	- 001	- 00	11	09	2018	Facility Name	Docket Number <b>05000</b>
									Facility Name	Docket Number <b>05000</b>

<b>9. Operating Mode</b> 1	<b>11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: (Check all that apply)</b>			
	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<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)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
<b>10. Power Level</b> 100	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> 73.77(a)(1)
	<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> 73.77(a)(2)(ii)
	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 73.77(a)(2)(iii)
	<input type="checkbox"/> 50.73(a)(2)(i)(C)		<input checked="" type="checkbox"/> Other (Specify in Abstract below or in NRC Form 366A)	

**12. Licensee Contact for this LER**

Licensee Contact Stephen Sollom, Regulatory Affairs Senior Engineer	Telephone Number (Include Area Code) 612-342-8982
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**13. Complete One Line for each Component Failure Described in this Report**

Cause	System	Component	Manufacturer	Reportable To ICES	Cause	System	Component	Manufacturer	Reportable To ICES
B	BM	ISV	BNL	Yes					

<b>14. Supplemental Report Expected</b> <input checked="" type="checkbox"/> Yes (If yes, complete 15. Expected Submission Date) <input type="checkbox"/> No	<b>15. Expected Submission Date</b>	Month 02	Day 07	Year 2019
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Abstract (Limit to 1400 spaces, i.e., approximately 14 single-spaced typewritten lines)

On 9/10/2018 during the 11 Core Spray surveillance procedure, the check valves CST-103-1 and CST-104-1 failed to completely close. The pressure control valve (PCV) upstream of the check valves was leaking water from the diaphragm of the actuator, and was bypassed. On 9/11/2018 it was identified that when the check valves failed to completely close, a potential pathway outside secondary containment existed. This event is reportable in accordance with 10 CFR 50.73(a)(2)(ii)(B), unanalyzed condition, and 10 CFR 50.73(a)(2)(v)(C)&(D), "event or condition that could have prevented fulfillment of a safety function". The check valves did not fully close because of binding in the valves. The immediate corrective actions were to isolate the flow path outside of secondary containment and to inspect, repair, and re-install the check valves. A condition of approval will be added to future purchase orders for safety related check valves purchased from BNL. The action will be to verify surface finishes meet requirements prior to shipment. The condition of approval will be maintained until there is high degree of confidence that similar issues will not reoccur. Plant procedures will be updated to include alternative source term (AST) considerations. Additionally, this report also constitutes an interim 10 CFR 21 report.



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

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 Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to [Infocollects.Resource@nrc.gov](mailto: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.

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1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV. NO.
Monticello Nuclear Generating Plant	05000-263	2018	- 001	- 00

**EVENT DESCRIPTION**

On September 10, 2018, the Monticello Nuclear Generating Plant (MNGP) was operating in Mode 1 at 100% power. At approximately 2215 on 9/10/2018 the surveillance procedure for Division 1, Core Spray (CS) [BM] was initiated. While performing the surveillance the Division 1 CS keep-fill line check valves [JSV], CST-103-1 and CST-104-1 (these check valves are in series), failed to completely close. An operator identified at the pressure indicator (downstream of the Division I CS fill line pressure control valve (PCV) and upstream of the check valves) that the pressure was fluctuating around 190 pounds per square inch gauge (psig) causing water to spray from the diaphragm of the actuator. A pressure greater than 160 psig in this section of the condensate service piping during the surveillance demonstrated there was back flow through these check valves from the operating core spray pump, indicating a failure to close. A decision was made to isolate the PCV and open the Division I CS fill line bypass valve to prevent additional leakage from the PCV onto the floor inside secondary containment.

At 1129 on 9/11/2018, it was identified that a potential pathway for emergency core cooling system (ECCS) leakage outside of secondary containment could exist with failure of the check valves to completely close. If a design basis loss of coolant accident (LOCA) occurred while this pathway was present, the check valve leakage from the operating core spray pumps could have exceeded the alternative source term (AST) limits. This created an unanalyzed condition. The control room emergency filtration (CREF) system was declared inoperable because the control room envelope (CRE) was not capable of shielding the operators from potential elevated dose rates resulting from the unanalyzed condition.

At 1204 on 9/11/2018, the ECCS leakage path was isolated by isolating portions of Division 1 CS from the torus and the CS pump was placed in pull-to-lock, thereby ensuring the design basis doses for control room habitability would not be exceeded and restoring the CRE operability. The check valves, CST-103-1 and CST-104-1, were inspected, repaired, and re-installed in the plant. The repair consisted of honing the bore and the replacement of soft goods for each check valve. The surveillance procedure was then performed to ensure that CST-103-1 and CST-104-1 closed and the Division 1 CS was declared operable on 9/12/2018 at approximately 2351.

The check valves CST-103-1 and CST-104-1 were manufactured by BNL, 2" Model CBV-A5-20-0053.

**EVENT ANALYSIS**

The failure of the check valves to completely close allowed a potential pathway for leakage outside of secondary containment which was an unanalyzed condition. If a design basis LOCA occurred while this pathway was present, the leakage could have exceeded the alternative source term (AST) limits. The potential elevated dose rates would affect dose limits for control room habitability and therefore fulfillment of a safety function. The event was determined to be reportable in accordance with 10 CFR 50.73(a)(2)(ii)(B), "unanalyzed condition" and 10 CFR 50.73 (a)(2)(V)(C)&(D), "event or condition that could have prevented fulfillment of a safety function". This event is classified as a safety system functional failure per NEI 99-02, revision 7. Additionally, this report also constitutes an interim 10 CFR 21 report.



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

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Monticello Nuclear Generating Plant	05000-263	2018	- 001	- 00

**SAFETY SIGNIFICANCE**

There were no actual safety consequences associated with the event described in this report. Offsite power remained available during the event and no safety system responses occurred as a result of this event. The scenario of interest for this unanalyzed condition was a design basis LOCA. The design basis LOCA has a low probability of occurrence. Further, the configuration existed for approximately 14 hours (from 2215 09/10/2018 to 1204 09/11/2018), before the pathway was isolated.

The leakage through PCV diaphragm occurred within the Secondary Containment and the area was cleaned up once the spill was isolated. Any leakage, other than the PCV diaphragm leakage, passed into isolated piping of the non-safety related condensate service system minimizing leakage potential. The continuation of the surveillance test following identification of the backflow and opening of the PCV bypass confirmed that there was minimal CS flow diversion which would not have impacted the ability of the CS system to supply required flow to the reactor vessel if called upon to supply this flow.

**CAUSE**

The direct cause of the check valves to completely close was due to the binding of the valves. The valves' center-section bore had uniform concentric grooves located where the poppet stem cycles, and combined with the normal, small amount of hematite resulted in binding. The concentric grooves combined with a lack of wear on the poppet supports the conclusion that the grooves were caused during the manufacturing of the valves and not due to wear.

**CORRECTIVE ACTION**

The check valves CST-103-1 and CST-104-1 concentric grooves were corrected by honing the valves' center bore and installing them back into the plant.

A condition of approval will be added to future purchase orders for safety related check valves purchased from BNL. The action will be to verify surface finishes meet requirements prior to shipment. The condition of approval will be maintained until there is high degree of confidence that similar issues will not reoccur.

Plant procedures will be updated to include AST consideration in applicable procedures.

**PREVIOUS SIMILAR EVENTS**

There were no previous similar licensee event reports in the past three years.

**ADDITIONAL INFORMATION**

The Institute of Electrical and Electronics Engineer codes for equipment are denoted by [XX].