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August 22, 2017

L-MT-17-062  
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 2015-004-01, "Past Inoperability of Turbine Stop Valve Scram Function Exceeded Technical Specification Requirements"

Enclosed is the Monticello Nuclear Generating Plant (MNGP) Licensee Event Report (LER) 2015-004-01, "Past Inoperability of Turbine Stop Valve Scram Function Exceeded Technical Specification Requirements." This condition was reportable to the NRC in accordance with 10 CFR 50.73(a)(2)(i)(B), as an Operation or Condition Prohibited by Technical Specifications. This LER is being supplemented to include causal evaluation results and final corrective actions.

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 Nuclear Generating Plant, USNRC  
Resident Inspector, Monticello Nuclear Generating Plant, USNRC



**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, 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 4
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**4. TITLE**  
Past Inoperability of Turbine Stop Valve Scram Function Exceeded Technical Specification Requirements

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
06	24	2015	2015	004	01	08	22	2017	FACILITY NAME	DOCKET NUMBER 05000
									FACILITY NAME	DOCKET NUMBER 05000

<b>9. OPERATING MODE</b>	<b>11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)</b>			
<b>1</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 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>  <b>095</b>	<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 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 type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> 73.77(a)(2)(i)
	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 73.77(a)(2)(ii)
		<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> OTHER	Specify in Abstract below or in NRC Form 366A

**12. LICENSEE CONTACT FOR THIS LER**

LICENSEE CONTACT Andrew Kouba, Regulatory Affairs 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	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	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 June 24, 2015 during performance of turbine stop valve scram testing, the relay associated with the scram logic failed to de-energize as expected. Based on this failure to de-energize, stop valve 4 (SV-4) limit switch would not have contributed an input to the scram logic as designed.

Equipment causal evaluation determined setup instructions in work plans and test surveillance provided to electricians were not sufficient to ensure repeatability of the paired stop valve limit switches during replacement, surveillance testing, or performance of troubleshooting. Two contributing causes were identified. (1) Original construction installation details were not precise enough to ensure correct horizontal position alignment and installation of limit switch to actuating rod and (2) repair lessons learned were not incorporated into maintenance repair notes and work plans to document repairs and setup information. Corrective actions include revision of the turbine stop valve closure calibration checks procedure to include stop valve limit switch set up guidance to achieve proper paired switch operation. Additionally, turbine stop valve limit switches SV-1, SV-3, SV-4 were modified with a larger diameter upper switch contact arm roller to increase the engagement of the contact roller and actuating piston rod collar, as evident from SV-2 limit switch maintenance history.



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

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Monticello Nuclear Generating Plant	05000-263	YEAR	SEQUENTIAL NUMBER	REV NO.
		2015	- 004	- 01

**NARRATIVE**

**EVENT DESCRIPTION**

On May 20 through May 25, 2015, during the refueling outage, the turbine stop valve (SV) [V] limit switches [33] were replaced.

On May 23, 2015, turbine stop valve closure calibration checks were performed as post maintenance testing. This check identified that the closed indication light for SV-4 position indication did not illuminate at any time.

On May 25, 2015, investigations were performed. Binding was found in the movement of the actuating arm for the limit switch for SV-4. Adjustments were made to the switch and connecting arms. The stop valves were cycled several times to provide evidence that the switches were performing as designed. Following completion of the maintenance, the turbine stop valve closure calibration check was successfully performed.

Reactor startup commenced on May 28, 2015. As part of normal startup activities, the stop valves were opened in preparation for turbine operation. It was noted that when SV-4 opened, the stop valve closure scram relay did not energize as expected. At this time, investigation was performed and found that an adjustment of the stop valve stem follower was required. The adjustment was performed and the valve cycled to verify the limit switch would actuate in the required test band. The turbine stop valve closure calibration check was successfully performed for SV-4.

Reactor power reached 40% during startup on June 1, 2015, at approximately 2155 hours.

On June 24, 2015 at 1130 hours, during performance of the turbine stop valve closure scram test, closure of SV-4 did not actuate the required relays [RLY]. At 1245 hours, the fuses [FU] were removed to meet the Technical Specification required action to place the channel in trip. At the time of discovery, the plant was in Mode 1, at 95% power.

During the refueling outage in 2017, upper switch contact rollers on turbine stop valve limit switches for SV-1, SV-3, and SV-4 were replaced with a larger roller to increase engagement between contact roller and actuating piston rod collar. During a review of maintenance history, SV-2 limit switch was identified as having a larger upper switch contact roller previously installed, which increased the actuating band margin of the paired limit switches.

On May 9, 2017, surveillance 0300, Turbine Stop Valve Closure Calibration Checks, using newly developed switch setup guidance, was completed satisfactorily. SV-4 limit switch set up was successful to clear dual indication.

**EVENT ANALYSIS**

The event is reportable in accordance with 10 CFR 50.73(a)(2)(i)(B) Operation or Condition Prohibited by Technical Specifications. A past operability evaluation determined that there was not sufficient evidence to



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Monticello Nuclear Generating Plant	05000-263	2015	004	01

conclude that SV-4 stop valve closure scram function was operable since the limit switch replacement during the refueling outage. Therefore, the TS 3.3.1.1 Limiting Condition for Operation had not been met since the plant exceeded 40% rated thermal power on June 1. This exceeded the TS required action time to place the channel in trip.

This event is not considered a Safety System Functional Failure per NEI 99-02 Revision 7.

**SAFETY SIGNIFICANCE**

Although the limit switch for SV-4 would not have provided input to its associated scram logic, the stop valve closure scram would have occurred as designed since the limit switches associated with the other three stop valves were verified to be functioning as designed. Since any three stop valves can cause a stop valve closure scram, the scram would still have occurred. By design, all four stop valves close at the same time on a turbine generator trip signal. Other than manual test stroking (one valve at a time), there is no operating scenario where only some of the stop valves close.

The turbine stop valve closure scram initiates a scram earlier than either the nuclear instrumentation system or primary system high pressure. The nuclear system high pressure scram in conjunction with the automatic pressure relief system is adequate to preclude over pressurizing the primary system. The turbine stop valve closure scram that provides addition margin to the primary system pressure limit.

**CAUSE**

Equipment causal evaluation determined setup instructions in work plans and test surveillance provided to electricians were not sufficient to ensure repeatability of the paired stop valve limit switches during replacement, surveillance testing, or performance of troubleshooting. Two contributing causes were identified. (1) Original construction installation details were not precise enough to ensure correct horizontal position alignment and installation of limit switch to actuating rod and (2) repair lessons learned were not incorporated into maintenance repair notes and work plans to document repairs and setup information.

**CORRECTIVE ACTION**

Corrective actions include:

- Revision of the turbine stop valve closure calibration checks procedure to include stop valve limit switch set up guidance to achieve proper paired switch operation.
- Turbine stop valve limit switches SV-1, SV-3, SV-4 were modified with a larger diameter upper switch contact arm roller to increase the engagement of the contact roller and actuating piston rod collar, as evident from SV-2 limit switch maintenance history.

**PREVIOUS SIMILAR EVENTS**

There were no similar Licensee Event Reports during the past three years.



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		2015	- 004	- 01

#### ADDITIONAL INFORMATION

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