Xcel Energy®
RESPONSIBLE BY NATURE®

2807 West County Road 75
Monticello, MN 55362

June 13, 2019

L-MT-19-032
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 2019-001-00, RHR Decay Heat Removal Pump Start Permissive Logic Hardening Error

Northern States Power Company, a Minnesota corporation, doing business as Xcel Energy hereby submits Monticello Nuclear Generating Plant (MNGP) Licensee Event Report (LER) 2019-001-00 "RHR Decay Heat Removal Pump Start Permissive Logic Hardening Error" pursuant to 10 CFR 50.73(a)(2)(i)(B) as an operation or condition which was prohibited by the plant's Technical Specification.

Summary of Commitments

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

T A Conboy
THOMAS CONBOY FOR CHRISTOPHER CHURCH

Christopher R. Church
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

NRC FORM 366 (02-2018) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 03/31/2020

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.

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/)

1. Facility Name	2. Docket Number	3. Page
Monticello Nuclear Generating Plant	05000-263	1 OF 4

4. Title
RHR Decay Heat Removal Pump Start Permissive Logic Hardening Error

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
										05000
04	13	2019	2019	001	00	06	13	2019	Facility Name	Docket Number
										05000

9. Operating Mode	11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: *(Check all that apply)*			
4	☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
	☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
	☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
	☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
10. Power Level	☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
	☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
0	☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(C)	☐ 73.77(a)(1)
	☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(D)	☐ 73.77(a)(2)(ii)
	☐ 20.2203(a)(2)(vi)	☒ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(vii)	☐ 73.77(a)(2)(iii)
		☐ 50.73(a)(2)(i)(C)	☐ Other (Specify in Abstract below or in NRC Form 366A	

12. Licensee Contact for this LER

Licensee Contact	Telephone Number (Include Area Code)
Gus Hernandez	(763)-271-6746

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
D	BO	P	B260	Y	N/A	N/A	N/A	N/A	N/A

14. Supplemental Report Expected	15. Expected Submission Date	Month	Day	Year
☐ Yes (If yes, complete 15. Expected Submission Date) ☒ No				

Abstract (Limit to 1400 spaces, i.e., approximately 14 single-spaced typewritten lines)

On April 16, 2019 at approximately 0215 with the plant shutdown in Mode 5 with the cavity flooded and fuel pool gates out, 13 Residual Heat Removal (RHR) Pump failed to start from the control room during performance of the RHR System Cold Shutdown Valve Operability Test. Investigation into the failure to start identified that hardening activities on Division 1 of RHR Shutdown Cooling (SDC) conducted on April 13, 2019 resulted in defeating remote start capability of both 11 and 13 RHR pumps. This condition caused the 11 and 13 RHR pumps to be inoperable between April 13 and April 16. With both pumps inoperable, LCOs 3.4.8, 3.9.7 and 3.9.8 were not met and the Required Action for one or two RHR shutdown cooling subsystems inoperable requiring verification of an alternate method of decay heat removal for each inoperable RHR shutdown cooling system within 1 hour and once per 24 hours thereafter was not performed. This condition was determined to be reportable in accordance with 10 CFR 50.73(a)(2)(i)(B), "Any operation or condition which was prohibited by the plant's Technical Specifications." There were no actual safety consequences from this condition. The 11 RHR pump was operating in SDC mode for the duration of the condition from when hardening was installed until the hardening error was corrected. At no time during this condition was shutdown cooling lost or not in service controlling reactor water temperature. A low pressure ECCS injection/spray subsystem was operable at all times for the duration of the condition.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Monticello Nuclear Generating Plant	05000-263	2019	001	00

EVENT DESCRIPTION

On April 16, 2019 at 0215 with the plant shutdown in Mode 5 with the cavity flooded and fuel pool gates out, 13 (P-202C) Residual Heat Removal (RHR) Pump [P] failed to start from the control room during performance of the RHR System Cold Shutdown Valve Operability Test. Investigation into the failure to start identified that hardening activities on Division 1 of RHR Shutdown Cooling (SDC) conducted on April 13, 2019 to prevent inadvertent trips of SDC resulted in defeating remote start capability of both 11 (P-202A) and 13 (P-202C) RHR pumps. The hardening was installed on April 13, 2019 at 1418 with the plant shutdown in Mode 4 and was corrected on April 16, 2019 at 0431 restoring the ability to start the 11 and 13 RHR pumps from the control room. Subsequently, the 11 and 13 SDC subsystems [BO] were determined to be inoperable during this time frame. However, 11 RHR pump was in service in SDC mode from April 13, 2019 at 1150 with the plant in Mode 3 prior to the installation of hardening and remained continuously in service in SDC mode throughout the condition providing the required decay heat removal.

In 2018, changes to the SDC hardening procedure were initiated to create a stand-alone procedure and to incorporate changes resulting from implementation of Technical Specification Task Force (TSTF)-542, REACTOR PRESSURE VESSEL WATER INVENTORY CONTROL, License Amendment 198. This License Amendment added LCO 3.3.5.3, Reactor Pressure Vessel (RPV) Water Inventory Control Instrumentation, identifying what instrumentation must be maintained in Modes 4 and 5 for water inventory control. Per this LCO, isolation of the Shutdown Cooling System on low water level is no longer required in Modes 4 and 5 provided isolation of the associated penetration flow path is not credited in calculating DRAIN TIME. Consequently, changes to the hardening procedure were made to open both SDC suction valves MO-2029 [ISV] and MO-2030 [ISV] and open their associated breakers, B3333 (MO-2029, RHR S/D COOLING ISOL INBD 480) [52], and D313-07 (MO-2030, SHUTDOWN CLG OUTBD ISOL (250vdc)) [72] respectively, to prevent automatic isolation on reactor vessel low water level. However, during development of the stand-alone hardening procedure a step to install a jumper to bypass an open contact in the 11 and 13 RHR pumps remote start logic with MO-2029 breaker open did not migrate from the original procedure to the new document. The cause of this condition was inadequate rigor applied to the development and review of a new hardening procedure stemming from a narrow focus on preventing inadvertent trips of the SDC function.

EVENT ANALYSIS

The condition causing the 11 and 13 RHR pumps to be inoperable existed between April 13 and April 16 prior to identification. With both pumps inoperable, LCOs 3.4.8, 3.9.7 and 3.9.8 were not met and the Required Action for one or two RHR shutdown cooling subsystems inoperable requiring verification of an alternate method of decay heat removal for each inoperable RHR shutdown cooling system within 1 hour and once per 24 hours thereafter was not performed. This condition was determined to be reportable in accordance with 10

CFR 50.73(a)(2)(i)(B), "Any operation or condition which was prohibited by the plant's Technical Specifications."
This condition is not classified as a safety system functional failure as the shutdown cooling mode of RHR is not intended to mitigate the consequences of an accident as discussed in section 6.2.3.1.2 of the USAR.

SAFETY SIGNIFICANCE

There were no actual safety consequences from this condition. The 11 RHR pump was operating in SDC mode for the duration of the condition from April 13, 2019 at 1418 when hardening was installed until April 16, 2019 at 0431 when the hardening error was corrected. At no time during this condition was shutdown cooling lost or not in service controlling reactor water temperature. A low pressure ECCS injection/spray subsystem was operable at all times for the duration of the condition.

In the event of a trip of the operating 11 RHR pump, restart of 11 RHR pump or start of 13 RHR pump from the control room would not have been possible. Operators would have responded to a loss of Division 1 SDC by attempting to establish Division 2 RHR in SDC mode via the operations manual procedure which directs the operators to remove the hardening from Division 1, place Division 2 RHR in SDC and then install the hardening on Division 2. This method would allow a Division 2 RHR pump to be started and the pump would remain operating following installation of hardening. In all cases, the ability to start an RHR pump locally at the breaker using the pushbutton for mechanical closure of the breaker was always available and unaffected by the hardening error.

In the unlikely case that no RHR pump was able to be started in shutdown cooling mode, a preliminary engineering analysis was performed for the limiting time to boil for the period between April 13, 2019 at 1418 until the plant was in Mode 5 and flooded up on April 15, 2019 at 1838. The analysis shows that the limiting time to boil was approximately 40 minutes. Additionally, the analysis shows that if boiling had occurred prior to head removal, reactor pressure would have remained below the RHR pump shutoff head for six hours, providing time for operator action to address the condition.

CAUSE

During RHR hardening activities, jumpers to provide RHR pump start permissive were not installed. Causal evaluation determined that an Operations mindset of preventing trips of Decay Heat Removal led to inadequate rigor applied to the new hardening procedure. TSTF-542 implementation supported an expanded hardening strategy including preventing trips of the SDC suction valves on low level by opening the breakers to prevent valve closure. Reviewers of the new hardening procedure were focused on logic changes to prevent events that would result in a loss of flow (i.e., removing trips) and overlooked logic changes

necessary to ensure pump permissive signals remained. Because of the "trip prevention" mindset, two individuals reviewed the changes but neither identified the omission of the needed jumper in the start logic.
A contributing cause to the procedure error was an inappropriate safety classification of the new procedure that led to inadequate procedure processing. Appropriately classifying the document would have driven additional reviews.

CORRECTIVE ACTIONS

Upon discovery of the inability to remotely start 13 RHR pump, Operations installed a jumper in the start circuitry that allowed the pump to be started from the control room. A temporary procedure change to the hardening procedure was created to add jumpers for all four RHR pumps to ensure the pump start permissives are maintained while the system is hardened.

Additional corrective actions to be implemented:

- Provide Operations case study on the requisite mindset for technical rigor
- Perform Bypass review of the new hardening procedure in accordance with fleet procedure process
- Change fleet procedure process to clarify definition of Important to Safety/Augmented Quality to allow proper classification of refueling outage Controlled Documents
- Correct the safety classification of the hardening procedure to Augmented Quality
- Change fleet 50.59 procedure to clarify that application of Notes does not supersede Regulatory Review for changes to SSCs important to safety

PREVIOUS SIMILAR EVENTS

LER 2017-006-00, Loss of Reactor Protection System Scram Function During Main Steam Isolation Valve and Turbine Stop Valve Channel Functional Tests Due to Use of a Test Fixture, reported a condition where revision of procedures to use the Reactor Protection System (RPS) test fixture resulted in the loss of two RPS reactor scram functions. The cause of this error was attributed to procedures that were inappropriately revised due to an inaccurate mental model that the use of the test fixture could be used to bypass any function within a trip logic to prevent a half scram. This was considered a legacy issue that occurred circa 2009 and the individuals involved in the issue were no longer in the organization. Therefore, additional corrective actions beyond correcting the procedure error were not performed.

ADDITIONAL INFORMATION

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