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November 18, 2008

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10 CFR Part 50.73

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

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

LER 2008-007, "Loss of Shutdown Cooling due to ESF Actuation Caused by Pressure Spike"

A Licensee Event Report (LER) for this occurrence is attached.

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

Timothy J. O'Connor
Site Vice President, Monticello Nuclear Generating Plant
Northern States Power - Minnesota

Enclosure

cc: Administrator, Region III, USNRC
Project Manager, Monticello, USNRC
Resident Inspector, Monticello, USNRC

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NRC FORM 366 (9-2007) | U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Monticello Nuclear Generating Plant	05000263	1 of 4

TITLE (4) Loss of Shutdown Cooling due to ESF Actuation

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER 05000
09	20	2008	2008	– 007	– 00	11	18	2008	FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9)	4
POWER LEVEL (10)	0

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

	20.2201(b)		20.2203(a)(3)(ii)		50.73(a)(2)(ii)(B)		50.73(a)(2)(ix)(A)
	20.2201(d)		20.2203(a)(4)		50.73(a)(2)(iii)		50.73(a)(2)(x)
	20.2203(a)(1)		50.36(c)(1)(i)(A)		50.73(a)(2)(iv)(A)		73.71(a)(4)
	20.2203(a)(2)(i)		50.36(c)(1)(ii)(A)		50.73(a)(2)(v)(A)		73.71(a)(5)
	20.2203(a)(2)(ii)		50.36(c)(2)	X	50.73(a)(2)(v)(B)		OTHER Specify in Abstract below or in NRC Form 366A
	20.2203(a)(2)(iii)		50.46(a)(3)(ii)		50.73(a)(2)(v)(C)		
	20.2203(a)(2)(iv)		50.73(a)(2)(i)(A)		50.73(a)(2)(v)(D)		
	20.2203(a)(2)(v)		50.73(a)(2)(i)(B)		50.73(a)(2)(vii)		
	20.2203(a)(2)(vi)		50.73(a)(2)(i)(C)		50.73(a)(2)(viii)(A)		
	20.2203(a)(3)(i)		50.73(a)(2)(ii)(A)		50.73(a)(2)(viii)(B)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Ron Baumer	763-295-1357

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX		CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

SUPPLEMENTAL REPORT EXPECTED (14)			EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
	YES (If yes, complete EXPECTED SUBMISSION DATE).	X NO				

ABSTRACT

On September 20, 2008 at 21:35 hours with the unit in a forced outage, the site experienced a Loss of Shutdown Cooling (SDC) caused by a Low-Low Reactor Water Level Engineered Safety Feature (ESF) actuation during restoration of the Control Rod Drive (CRD) system. The actuation of the ESF resulted in a Reactor Protection System signal (with the reactor shutdown), Containment isolation resulting in a loss of normal shutdown cooling, and starting of the plant emergency diesel generators. The cause of the event was an instrument back-fill valve which had been left open. When the CRD system was started, a pressure spike was transmitted to the Reactor Water Level Low-Low transmitter and an ESF signal was generated. Corrective actions taken were to revise station procedures and to hold communication meetings with each operating crew.

Event Description

On 09/11/2008 the station experienced a loss of normal off-site power (LONOP) and a resultant reactor scram (ENS#44484). The Shutdown Checklist for the scram was approved to commence on 09/12/08 at 21:39. During a normal shutdown the Control Rod Drive (CRD) [AA] Reference Leg backfill system would be isolated prior to starting a CRD pump [P]. The backfill system was not completely isolated due to the individual performing the checklist having a question on how to safely access the valve [V]. The procedure was stopped and the individual brought the question to the lead operator. The checklist was set aside and not completed. The Control Room Reactor Operator did not notify the Control Room Supervisor (CRS) or Shift Manager (SM) of the safety concern or that the valve (CRD-141) was not closed. On 09/17/08 at 09:33 the Station experienced another LONOP due to the loss of 1R transformer [XFMR] with the 2R transformer isolated (ENS#44498). At 11:29 normal shutdown cooling was restored. Another Operating Lead sent an operator to close CRD-141 however vibration monitoring equipment was in the way. Again the CR Lead operator did not notify the CRS or SM of the difficulty in isolating CRD-141.

On 09/20/2008 at 21:35 while in the process of placing the CRD system in service with #12 CRD pump the plant experienced a Reactor Water Low-Low Level signal. Actual Reactor Water Level remained at 64 inches throughout the event. Initial investigation revealed that the transient was caused by a pressure surge through the Reference Leg Backfill system following the start of the #12 CRD pump.

The procedure for starting a CRD pump was reviewed. The procedure did not address the position of CRD-141 or have a precaution about the effect of starting a pump with CRD-141 open. The isolation of the Reference Leg Backfill System is only addressed in the shutdown procedure and the shutdown checklist. Due to the complexity of some shutdowns the need to startup the CRD system may occur before the shutdown checklist steps have been completed.

Event Analysis

The event was reported under 10 CFR 50.72(b)(3)(iv)(A) ESF Actuation. Based on further review by the station, it was concluded that the ESF actuation was caused by an invalid signal. However, the event is reportable under 50.73(a)(2)(v)(B) "Event or Condition that could have Prevented the Fulfillment of a Safety Function."

The event is considered a safety system functional failure since there was a loss or inability of a safety system (RHR) to remove decay heat.

Safety Significance

The station Probabilistic Risk Analysis (PRA) group reviewed the event and provided the following safety significance. At the time of the transient, the reactor had been shutdown for approximately nine days, and all systems with the exception of the 2R transformer were available and capable of performing their intended function. Shutdown cooling was reestablished within approximately 150 minutes following the transient. Without any cooling available to remove decay heat, it is estimated that over fifteen hours were available to restore cooling or makeup injection before water level would have boiled down to the top of active fuel (TAF). This time-to uncover fuel is conservatively based on the initial conditions of 62 inch reactor water level, 95°F reactor water temperature, and decay heat levels consistent with 214 hours following the reactor scram. A risk estimate was performed assuming no potential recovery for the 2R Transformer. This approach is conservative in that recovery of any failed equipment would have the benefit of additional available time (fifteen hours versus the normal ~0.5 hours to boil down to TAF) due to the relatively low decay heat level at the time of the transient. Results of the assessment indicated that the Conditional Core Damage Probability (CCDP) attributable to the loss of SDC event is less than 1.0 E-06, and the Conditional Large Early Release Probability (CLERP) is less than 1.0 E-07. In conclusion, based on the above information, the safety significance of this event was low.

Cause

The cause of the event was the Operating procedure for starting the CRD pumps, did not include steps to ensure the Reference Leg Backfill System was isolated prior to starting the system and pump.

A Contributing Cause of the event was inadequate communication between crew leads and Shift Supervision when difficulties were encountered while performing the Shutdown procedure, and associated Shutdown Checklist.

Corrective Action

1. Revise procedures to include new precautions discussing the pressure surge transient, a new section to address Reference Leg Backfill System Configuration and a cross reference was added to the shutdown procedure.
2. Shift Managers will review this event with their crews to reinforce communication expectations and discuss problem solving methods with their crews. The communication also reinforced the expectation for tracking components out of position in the event a procedural step cannot be completed.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Monticello Nuclear Generating Plant	05000263	2008	– 007	– 00	4 of 4

TEXT *(If more space is required, use additional copies of NRC Form 366A)* **(17)**

Failed Component Identification

None

Previous Similar Events

Station LER 2008-06, "Loss of Normal Off-site Power due to Equipment Contact with 115 kV Line." On September 17, 2008 the station experienced a loss of normal off-site power when a man lift being serviced by a vendor came into contact with a 115 kV line. This resulted in an ESF actuation and resultant loss of normal shutdown cooling.