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NLS2012126
December 6, 2012

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555-0001

Subject: Licensee Event Report No. 2012-004-00
Cooper Nuclear Station, Docket No. 50-298, DPR-46

Dear Sir or Madam:

The purpose of this correspondence is to forward Licensee Event Report 2012-004-00.

There are no new commitments contained in this letter.

Sincerely,

Demetrius Willis for Brian O'Grady

Brian J. O'Grady
Vice President Nuclear-
Chief Nuclear Officer

/jo

Attachment: Licensee Event Report 2012-004-00

cc: Regional Administrator w/attachment
USNRC - Region IV

Cooper Project Manager w/attachment
USNRC - NRR Project Directorate IV-1

Senior Resident Inspector w/attachment
USNRC - CNS

SRAB Administrator w/attachment

NPG Distribution w/attachment

INPO Records Center w/attachment
via ICES entry

SORC Chairman w/attachment

CNS Records w/attachment

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NRC FORM 366 (10-2010) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES 10/31/2013

Estimated burden per response to comply with this mandatory information collection request: 80 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA/Privacy Service 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.

LICENSEE EVENT REPORT (LER)

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

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4. TITLE
Isolation of Shutdown Cooling Results in Loss of Safety Function

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
10	14	2012	2012	- 004 -	00	12	06	2012	FACILITY NAME	DOCKET NUMBER
										05000

9. OPERATING MODE
3

10. POWER LEVEL
000

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

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

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER *(Include Area Code)*
David W. Van Der Kamp, Licensing Manager	(402) 825-2904

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
N/A	N/A	N/A	N/A	N/A					

14. SUPPLEMENTAL REPORT EXPECTED
☐ **YES** *(If yes, complete EXPECTED SUBMISSION DATE)* ☒ **NO**

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

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

On October 14, 2012, Cooper Nuclear Station operations personnel were flushing the B loop of Residual Heat Removal (RHR) in accordance with the station procedure in preparation for the start of the shutdown cooling mode of operation.

The radwaste discharge valve was slowly throttled open per station procedure. Due to existing reactor temperature and pressure, and the position of the radwaste discharge valve, flashing of the hot reactor coolant to steam occurred. The pressure perturbation isolated the RHR shutdown cooling loop.

The RHR system was subsequently vented and the flush was re-performed successfully.

The root cause was the station procedure provides insufficient guidance to avoid automatic closure of the isolation valves during shutdown cooling heatup and flush when the reactor temperature is higher than 212 degrees Fahrenheit.

To prevent recurrence of this event, the station procedure will be revised so that the isolation of RHR is an expected effect that will occur during shutdown cooling heatup and flush, and provide more specific instructions concerning throttling time versus reactor vessel conditions.

PLANT STATUS

Cooper Nuclear Station (CNS) was at 29 psig reactor pressure, in Mode 3, Hot Shutdown, at the time of the event. Shutdown Cooling (SDC) was not in-service at the time. Plant cooldown was in progress through the Main Condenser. Main Turbine bypass valves controlled temperature and pressure steady.

BACKGROUND

The safety objective of the Residual Heat Removal (RHR) system [EIIS:BO] is to provide core cooling, in conjunction with other Emergency Core Cooling Systems, and to provide containment cooling as required during abnormal operational transients and postulated accidents. The RHR system consists of two heat exchangers [EIIS:HX], four main system pumps [EIIS:P], and associated piping, valves [EIIS:V], controls and instrumentation. Irradiated fuel in the shutdown reactor core generates heat during the decay of fission products and increases the temperature of the reactor coolant. The decay heat must be removed to reduce the temperature of the reactor coolant less than or equal to 212 degrees Fahrenheit in preparation for performing Refueling or Cold Shutdown maintenance operations, or the decay heat must be removed for maintaining the reactor in the Hot Shutdown condition.

SDC is a subsystem of RHR and is placed in operation during a normal reactor shutdown and cooldown. Reactor Coolant is pumped by the RHR main system pumps from one recirculation loop through the RHR heat exchangers prior to returning to the reactor vessel through connections to the recirculation loop(s).

Pressure switches [EIIS:PS] RR-PS-128A and RR-PS-128B function to protect SDC suction piping from overpressure. Isolation valves [EIIS:ISV] RHR-MO-17 and RHR-MO-18 are interlocked to close and remain closed on a reactor pressure greater than 72 psig.

EVENT DESCRIPTION

On October 14, 2012, CNS was in Mode 3 with reactor pressure at 29 psig, and reactor coolant temperature at 273 degrees Fahrenheit. Operations personnel were flushing the B loop of RHR in accordance with the station procedure in preparation for the start of the SDC mode of operation.

Per station procedure, the radwaste discharge valve (RHR-MOV-MO57) was slowly throttled open to perform a slow and controlled heatup of RHR piping. Due to existing reactor temperature and pressure, flashing of the hot reactor coolant to steam occurred, causing a pressure spike that exceeded 72 psig. This occurred because the distance that RHR-MOV-MO57 can be throttled open is dependent upon the temperature of the incoming reactor coolant. Consequently, an annunciator alarm was received in the Control Room at 01:17 indicating there had been a high pressure event that automatically closed RHR-MO-17 and RHR-MO-18 isolating the RHR SDC loop.

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17. NARRATIVE

The RHR system was subsequently vented and the flush was re-performed successfully at 02:48.

BASIS FOR REPORT

This event is reportable under 10 CFR 50.73(a)(2)(v)(B) due 60 days from day of discovery, i.e., by December 13, 2012. This was a condition which could have prevented the fulfillment of the safety function of structures or systems that are needed to remove residual heat.

SAFETY SIGNIFICANCE

This event is considered to have minimal safety significance because all RHR pumps and associated equipment required for SDC operation remained available. Isolation of the RHR SDC suction valves occurred due to a momentary isolation signal received while performing system alignment and flushing in preparations for start of SDC operation. This isolation was momentary and did not impact the ability to restore the valves to the open position and place SDC in service.

This is a Safety System Functional Failure.

CAUSE

CNS determined that the station procedure provides insufficient guidance to avoid automatic closure of RHR-MO-17 and RHR-MO-18 during SDC heatup and flush when the reactor temperature is higher than 212 degrees Fahrenheit.

CORRECTIVE ACTION

To prevent recurrence of this event, the procedure will be revised so that the isolation of RHR-MO-17 and RHR-MO-18 is an expected effect that will occur during SDC heatup and flush; and provide more specific instructions concerning throttling time versus reactor vessel conditions.

PREVIOUS EVENTS

On November 7, 2009, isolation signals from pressure switches in the Recirculation System caused SDC suction isolation valves to close, which initiated a trip of the operating RHR Pump D. The event was reported under LER 2009-003-00, Isolation of Residual Heat Removal Shutdown Cooling, dated January 4, 2010.

On September 26, 2009, isolation valves closed while performing the procedure for SDC flush. The procedure was revised to instruct slowly opening RHR-MO-57.

On October 28, 2003, RHR loop A tripped twice while attempting to place in SDC. The condition was attributed to pressure perturbations caused by inadequate flushing of the system.

LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET

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17. NARRATIVE

On June 15, 2003, RHR loop B was in SDC. During the initial pump start of RHR, the SDC suction header high pressure alarm activated; also on May 27, 2003, RHR loop A was in SDC, the SDC suction header high pressure alarm activated. Both events were unexpected Control Room alarms.