Nebraska Public Power District

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NLS2017076
August 17, 2017

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

Subject: Licensee Event Report No. 2017-004-00
Cooper Nuclear Station, Docket No. 50-298, DPR-46

Dear Sir or Madam:

The purpose of this correspondence is to forward Licensee Event Report 2017-004-00.

There are no new commitments contained in this letter.

Sincerely,

KHDell DA for John Dent

John Dent, Jr.
Vice President Nuclear-
Chief Nuclear Officer

/jo

Attachment: Licensee Event Report 2017-004-00

cc: Regional Administrator w/attachment
USNRC - Region IV

Cooper Project Manager w/attachment
USNRC - NRR Plant Licensing Branch IV

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

IE22
NRR

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www.nppd.com

NRC FORM 366 (04-2017) 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
Cooper Nuclear Station	05000298	1 of 3

4. TITLE

Torus to Drywell Vacuum Breaker Failure to Indicate Full Closed Causes 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 05000
06	19	17	2017 -	004 -	00	08	17	2017	FACILITY NAME	DOCKET 05000

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check all that apply)*			
1	☐ 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)(ii)	☐ 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)
	☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
10. POWER LEVEL	☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
100	☐ 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)(i)
	☐ 20.2203(a)(2)(vi)	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(vii)	☐ 73.77(a)(2)(ii)
		☐ 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)*
Jim Shaw, Licensing Manager	(402) 825-2788

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
				Y					

14. SUPPLEMENTAL REPORT EXPECTED	15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
☒ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☐ NO		12	31	18

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

On June 19, 2017, during performance of surveillance 6.PC.207, "Torus to Drywell Vacuum Breaker Operation," the control switch for vacuum breaker PC-AOV-NRV21 was cycled open, then closed. When the control switch was taken to close, the vacuum breaker failed to indicate closed. As such, Operations declared primary containment and PC-AOV-NRV21 inoperable and entered Technical Specification (TS) Limiting Condition for Operation (LCO) 3.6.1.1 Condition A and LCO 3.6.1.8 Condition B at 21:15 hours. In addition, TS LCO 3.6.1.1 Condition B was entered at 22:15 hours due to PC-AOV-NRV21 still indicating intermediate.

The control switch for PC-AOV-NRV21 was cycled open, and then closed a second time. At this time, PC-AOV-NRV21 indicated closed. Operations declared primary containment and PC-AOV-NRV21 operable at 23:11 hours and exited TS LCO 3.6.1.1, Condition A and Condition B, and TS LCO 3.6.1.8, Condition B.

The cause is currently under investigation. Cooper Nuclear Station will provide a supplement to this Licensee Event Report after inspection of the vacuum breakers can be performed (i.e., during Refueling Outage 30).

There were no safety consequences associated with this condition.

NARRATIVE

PLANT STATUS

Cooper Nuclear Station (CNS) was in Mode 1, Power Operations, 100 percent power, at the time of discovery; i.e., June 19, 2017.

BACKGROUND

The function of the Torus to Drywell Vacuum Breaker [EIIS:VACB] is to relieve vacuum in the drywell. There are 12 internal vacuum breakers which allow air and steam flow from the suppression chamber (torus) to the drywell when the drywell is at a negative pressure. Torus to Drywell Vacuum breakers prevent an excessive negative differential pressure across the drywell boundary. Each vacuum breaker is a self-actuating valve [EIIS:V], similar to a check valve, which can be remotely operated for testing purposes.

A negative differential pressure across the drywell wall is caused by rapid depressurization of the drywell. Design Bases Accident (DBA) analyses assume the vacuum breakers to be closed initially and to remain closed and leak tight, until the suppression pool is at a positive pressure relative to the drywell. The requirement that the vacuum breakers be closed ensures that there is no excessive bypass leakage should a Loss of Coolant Accident (LOCA) occur.

The function of the primary containment [EIIS:NH] is to isolate and contain fission products released from the Reactor Primary System following a design basis LOCA and to confine the postulated release of radioactive material. The safety design basis for the primary containment is that it must withstand the pressures and temperatures of the limiting DBA without exceeding the design leakage rate. The leakage from the drywell to the suppression chamber must be limited to ensure the pressure suppression function is accomplished and the suppression chamber pressure does not exceed design limits.

The vacuum breaker has a safety function in the closed position to limit the amount of bypass flow to ensure proper containment response on a postulated LOCA event and an open safety function post LOCA to limit negative differential pressure between the drywell and the suppression chamber. With the valve partially open, the LOCA containment response cannot be assured.

EVENT DESCRIPTION

On June 19, 2017, during performance of surveillance 6.PC.207, "Torus to Drywell Vacuum Breaker Operation," the control switch for vacuum breaker PC-AOV-NRV21 was cycled open, then closed. When the control switch was taken to close, the vacuum breaker failed to indicate closed. As such, Operations declared primary containment and PC-AOV-NRV21 inoperable and entered Technical Specification (TS) Limiting Condition for Operation (LCO) 3.6.1.1 Condition A and LCO 3.6.1.8 Condition B at 21:15 hours. In addition, TS LCO 3.6.1.1 Condition B was entered at 22:15 hours due to PC-AOV-NRV21 still indicating intermediate.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Cooper Nuclear Station	05000- 298	2017	- 004	- 00

NARRATIVE

The control switch for PC-AOV-NRV21 was cycled open, then closed a second time. At this time, PC-AOV-NRV21 indicated closed. Operations declared primary containment operable at 23:11 hours and exited TS LCO 3.6.1.1, Condition A and Condition B, and TS LCO 3.6.1.8 Condition B.

The event is currently under investigation. CNS will provide additional event details, the safety significance, cause, corrective actions, and previous events in a supplement to this Licensee Event Report.

BASIS FOR REPORT

CNS is reporting this event under 10 CFR 50.73(a)(2)(v)(D) as a condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident.

CNS also reported this event to the Nuclear Regulatory Commission Operations Center per Event Notification 52813.

CNS subsequently performed an engineering evaluation which concluded that PC-AOV-NRV21 would have completed its closure under forces resulting from reactor blowdown. As such, this event is not considered a Safety System Functional Failure.

Other criteria, if determined to be applicable, will be provided in the supplemental report.