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NLS2017065

July 24, 2017

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

Subject: Licensee Event Report No. 2017-003-00
Cooper Nuclear Station, Docket No. 50-298, DPR-46

Dear Sir or Madam:

The purpose of this correspondence is to forward Licensee Event Report 2017-003-00.

There are no new commitments contained in this letter.

Sincerely,

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

/bk

Attachment: Licensee Event Report 2017-003-00

cc: Regional Administrator w/attachment
USNRC - Region IV

NPG Distribution w/attachment

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

INPO Records Center w/attachment
via ICES entry

Senior Resident Inspector w/attachment
USNRC - CNS

SORC Chairman w/attachment

SRAB Administrator w/attachment

CNS Records w/attachment

TEZZ
NRR

COOPER NUCLEAR STATION

P.O. Box 98 / Brownville, NE 68321-0098

Telephone: (402) 825-3811 / Fax: (402) 825-5211

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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.

1. FACILITY NAME Cooper Nuclear Station	2. DOCKET NUMBER 05000298	3. PAGE 1 of 4
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4. TITLE
Mispositioned Control Room Emergency Filter System Supply Fan Damper 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
05	26	17	2017	003	00	07	24	2017		05000
									FACILITY NAME	DOCKET
										05000

9. OPERATING MODE 1	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)			
	<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)(ii)	<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)
	<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)
10. POWER LEVEL 100	<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 checked="" 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 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 Jim Shaw, Licensing Manager	TELEPHONE NUMBER (Include Area Code) (402) 825-2788
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13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
B	JH	DMP	H260	Y					

14. SUPPLEMENTAL REPORT EXPECTED <input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO	15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR

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

On May 26, 2017, a Control Room Emergency Filter System (CREFS) supply fan damper was discovered to be partially open, limiting air flow to less than the Technical Specifications (TS) required flow. The configuration of the supply fan damper is to be fully open when the corresponding supply fan is in service. Cooper Nuclear Station (CNS) Operations personnel declared CREFS inoperable at 1105 and entered TS Limiting Condition for Operation 3.7.4, Condition A.

Subsequent investigation revealed that the damper control arm was correctly positioned, however the T-handle for the control arm was overtightened causing the control arm to bend upward which mispositioned the damper from full open to partially open. The control arm for HV-AD-AD1021B was replaced and post work testing performed to ensure the correct position of the damper. CREFS was declared operable at 0432 on May 27, 2017.

To prevent recurrence, CNS will modify the design of the both CREFS damper control arms and the means of securing in position to prevent control arm bending.

There were no safety consequences associated with this condition.



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

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1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Cooper Nuclear Station	05000- 298	2017	- 003	- 00

NARRATIVE

PLANT STATUS

Cooper Nuclear Station (CNS) was in Mode 1, Power Operations, 100 percent power, at the time of discovery; i.e., May 26, 2017.

BACKGROUND

The Control Room Emergency Filter System (CREFS) [EIIS:JH] provides a protected environment from which control room personnel can safely operate the plant following an uncontrolled release of radioactivity, hazardous chemicals, or smoke. CREFS maintains the Control Room Envelope (CRE) at a positive pressure with respect to the adjoining areas.

The safety related function of CREFS includes a single high efficiency air filtration system for emergency treatment of outside supply air and a CRE boundary that limits the inleakage of unfiltered air. The system consists of a prefilter, a high efficiency particulate air filter [EIIS:FLT], an activated charcoal adsorber [EIIS:ADS] section, a supply fan [EIIS:FAN], an emergency booster fan, an exhaust booster fan, and the associated ductwork [EIIS:DUCT], valves [EIIS:V] or dampers [EIIS:DMP], doors [EIIS:DR], barriers, and instrumentation.

The CREFS is a standby system. Upon receipt of an initiation signal, CREFS automatically switches to the emergency bypass mode of operation to minimize infiltration of contaminated air into the CRE.

CNS Technical Specifications (TS) 3.7.4 requires one supply fan to be operable to support CREFS operability.

EVENT DESCRIPTION

On May 26, 2017, at approximately 0321, CNS Operations personnel questioned air flow and differential pressure in the main control room. Subsequently, CREFS supply fan damper, HV-AD-AD1021B, was discovered to be partially open limiting air flow. The configuration of HV-AD-AD1021B is to be fully open when its corresponding supply fan, CREFS supply fan 1B, is in service. CREFS flow rate testing was conducted and determined actual air flow was 802 cubic feet per minute (cfm), less than the TS required flow of 810 cfm. Based on this information, Operations personnel declared CREFS inoperable at 1105 and entered TS Limiting Condition for Operation (LCO) 3.7.4, Condition A, to restore CREFS to Operable within a completion time of seven days.

Further investigation revealed that the control arm for HV-AD-AD1021B was correctly positioned in the open notch to position the damper open, however the control arm had been bent at both notches changing the position of the damper from full open to partially open.



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NARRATIVE

In 2012, both CREFS dampers (HV-AD-AD1021A and HV-AD-AD1021B) were modified by adding ground level damper position control arms. Prior to 2012, the system design required operators to secure the damper positions by locking screws at an elevation above ground level requiring ladders or climbing. Due to safety concerns, the position control arms and associated linkages were installed to reach the damper elevation. This modification installed damper position controls at ground level with open and closed notches in the damper control arms.

Just prior to this event on May 22, 2017, a corrective maintenance work order was implemented which replaced the damper control arms as the original control arms, installed via the 2012 modification, were slightly bent. Prior to completion of this work, the control arms had to be replaced a second time when it was discovered that they had also been bent due to overtightening of the T-handles.

The control arms are supported by unistrut with an open channel below which created a "valley" under the T-handle control arm position securing point. This configuration was intended to prevent control arm motion and correctly position the dampers; however, the configuration did not consider that if the T-handles are overtightened the control arms could bend.

The control arm for HV-AD-AD1021B was replaced and post work testing performed to ensure the correct position of the damper. TS LCO 3.7.4 was exited and CREFS was declared operable at 0432 on May 27, 2017.

Additionally, Operations issued a Standing Order to perform applicable portions of two CREFS surveillance procedures if the CREFS supply fan dampers are manipulated to verify CREFS flow rate and CRE pressure relative to atmosphere. This action is to verify the dampers have not moved due to potential rod movement from the control arm becoming bowed.

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 52771.

SAFETY SIGNIFICANCE

There were no safety consequences associated with this condition. The potential safety significance of this event was low due to the limited duration the condition existed, the condition only slightly degrading CREFS flow below the operability limit, and the condition had no impact on the CRE boundary. CREFS flow was degraded due to supply fan 1B discharge damper being only partially open, when it was required to be fully open. Actual CREF system flow was 802 cfm, which was slightly below the required flow of 810 cfm. The total duration of inoperability of CREFs due to this condition was approximately 1.5 days, which is less than the seven day TS completion time. This condition did not cause an impact to the safety of the general public, nuclear safety, industrial safety, or radiological safety.



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NARRATIVE

CNS subsequently performed an engineering analysis which concluded that the CREFS safety design basis was met. The margin in unfiltered inleakage and filter efficiency provides a high degree of confidence that calculated doses would be below the regulatory limits for control room personnel even with the degraded supply air flow through CREFS supply fan 1B and supply fan damper HV-AD-AD1021B. Furthermore, testing performed May 26, 2017, on the CRE in the emergency pressurization mode showed that CREFS met the administrative limit for positive pressure in the CRE. As such, this event is not considered a Safety System Functional Failure.

CAUSE

The T-handle for damper control arm for HV-AD-AD1021B was overtightened causing the control arm to bend upward, mispositioning the damper.

CORRECTIVE ACTIONS

The damper control arm was replaced and post work testing performed to ensure correct position of the damper.

To prevent recurrence, CNS will modify the design of the CREFS damper control arms and the means of securing in position to prevent bending and will provide for independent verification of position of the damper control arms. This action is being tracked in CNS' corrective action program.

PREVIOUS EVENTS

CNS has submitted the following Licensee Event Reports (LER) in the past five years related to CREFS supply fans. Both events resulted in a loss of safety function.

1. LER 2016-009-00 – On December 7, 2016, the running CREFS supply fan was inadvertently turned off during the conduct of a surveillance procedure. The root cause was attributed to human error.
2. LER 2016-006-00 – On October 23, 2016, CREFS supply fan 'A' experienced high vibration. The root cause was the preventive maintenance strategy was ineffective to ensure shaft to bearing engagement.