



Nebraska Public Power District

COOPER NUCLEAR STATION
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CNSS948060

February 18, 1994

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Dear Sir:

Cooper Nuclear Station Licensee Event Report 94-001, is forwarded as an attachment to this letter.

Sincerely,

R. L. Gardner

R. L. Gardner
Plant Manager

RLG/nc

Attachment

cc: L. J. Callan
G. R. Horn
J. M. Meacham
R. E. Wilbur
V. L. Wolstenholm
D. A. Whitman
INPO Records Center
NRC Resident Inspector
R. J. Singer
CNS Training
CNS Quality Assurance
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220127

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Cooper Nuclear Station	DOCKET NUMBER (2) 0 5 0 0 0 2 9 8	PAGE (3) 1 OF 0 4
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TITLE (4)
Unexpected Opening of the High Pressure Coolant Injection Pump Minimum Flow Valve, an ESF Component, During Surveillance Testing Due to Actuation of the Pump Discharge Pressure Switch

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)			
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES			DOCKET NUMBER(S)
0 1	1 9	9 4	9 4	0 0 1	0 0	0 2	1 8	9 4				0 5 0 0 0
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OPERATING MODE (9) N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)									
POWER LEVEL (10) 1 0 0	20.402(b)	20.405(e)	<input checked="" type="checkbox"/>	50.73(a)(2)(iv)	73.71(b)					
	20.405(a)(1)(i)	50.36(e)(1)	<input type="checkbox"/>	50.73(a)(2)(v)	73.71(c)					
	20.405(a)(1)(ii)	50.36(e)(2)	<input type="checkbox"/>	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 365A)					
	20.405(a)(1)(iii)	50.73(a)(2)(i)	<input type="checkbox"/>	50.73(a)(2)(viii)(A)						
	20.405(a)(1)(iv)	50.73(a)(2)(ii)	<input type="checkbox"/>	50.73(a)(2)(viii)(B)						
	20.405(a)(1)(v)	50.73(a)(2)(iii)	<input type="checkbox"/>	50.73(a)(2)(ix)						

LICENSEE CONTACT FOR THIS LER (12)

NAME Donald L. Reeves, Jr.	TELEPHONE NUMBER AREA CODE: 4 0 2 8 2 5 - 3 8 1 1
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

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

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On January 19, 1994, at approximately 2:15 am, with the plant in full power operation, HPCI-MOV-M025, the High Pressure Coolant Injection (HPCI) pump minimum flow bypass valve, unexpectedly opened during surveillance testing while the pump discharge valve was being opened. An initial assessment indicated that the cause of the actuation was due to pressure fluctuations caused by the pressure maintenance system. HPCI-MOV-M025 was closed, system parameters were verified to be normal, and the surveillance test was continued without any further problems.

An engineering evaluation concluded that operation of the valve could occur when HPCI-MOV-M020, the pump discharge valve is re-opened. Discussions with Control Room Operators revealed that occasionally, the valve had automatically opened during past valve operability tests. Such actuation(s) had not been reported due to lack of understanding of the extent of ESF component level reporting requirements. However, due to increased emphasis on a questioning attitude and attention to detail, this actuation was documented as a discrepancy and subsequently determined to be reportable. The root cause of the problem is design, since unnecessary actuations of the minimum flow valve should not occur.

A procedure change was made to the HPCI valve operability surveillance test to ensure operator awareness that automatic operation of the minimum flow valve could occur when HPCI-MOV-M020 is re-opened. A similar change has been made to the RCIC surveillance test. An evaluation of the HPCI and RCIC Pump Discharge Pressure switch configurations and setpoints will be made and changes implemented, if practical, to eliminate the unnecessary cycling of the minimum flow valves. To ensure operator awareness of reporting requirements, licensed Operators will be apprised of ESF component level reporting requirements.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
COOPER NUCLEAR STATION	05000298	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 2
		94	-- 001 --	00	

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

A. Event Description

On January 19, 1994, at approximately 2:15 am, HPCI-MOV-MO25, the High Pressure Coolant Injection (HPCI) pump minimum flow bypass valve, unexpectedly opened during surveillance testing when HPCI-MOV-MO20, the pump discharge valve, was being opened. HPCI-MOV-MO25 automatically opens if HPCI System Flow is <485 gpm and either a HPCI Initiation signal is received or pump discharge pressure is >125 psig. An initial assessment indicated that the most likely cause of the unexpected actuation was due to pressure fluctuations caused by the pressure maintenance system. HPCI-MOV-MO25 was closed, system parameters were verified to be normal, and the surveillance test was continued without any further problems.

B. Plant Status

The plant was in operation at full power, conducting monthly surveillance testing of the HPCI System Motor Operated Valves (MOVs).

C. Basis for Report

The unexpected, automatic actuation of HPCI-MOV-MO25, an ESF component, during surveillance testing on January 19, is reportable in accordance with 10CFR50.73(a)(2)(iv). This condition was determined to be reportable at approximately 1:15 pm on January 20, the day after test performance, following a review of the surveillance test.

D. Cause

An engineering evaluation concluded that operation of the minimum flow valve could occur when HPCI-MOV-MO20, the normally open pump discharge valve, is re-opened after being closed during the valve operability surveillance test. In order to cycle the HPCI Injection valve, HPCI-MOV-MO19, HPCI-MOV-MO20 is closed first, then HPCI-MOV-MO19 is cycled open and closed. Pressure measurements taken on January 21 revealed that upon closure of the pump discharge valve, pressure between it and the injection valve increased from 70 psig to 100 psig as the valve was driven into its seat. Cycling the injection valve resulted in increasing the pressure between the valves to 150 psig; an immediate increase from 100 to 140 psig upon valve operation in the open direction and an increase of 10 more psig as the valve was driven into its seat. Due to the fact that there was no gradual upward trend in pressure when the injection valve was open, engineering concluded that the injection check valve, HPCI-CV-29CV, was essentially leak tight. Upon actuation of HPCI-MOV-MO20 to the open position, a pressure wave was created which was of sufficient magnitude to cause the HPCI Pump High Pressure Discharge switch, HPCI-PS-85, to actuate at 125 psig. Actuation of this switch caused HPCI-MOV-MO25 to automatically open.

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

Cause (continued)

Discussions with Control Room Operators revealed that the minimum flow valve had occasionally opened automatically during past MOV operability tests. Such actuation(s) had not been reported due to lack of understanding of the essential ESF component level reporting requirements. However, due to increased emphasis on a questioning attitude and attention to detail, this actuation was documented as a discrepancy and subsequently determined to be reportable. The root cause of the problem is design, since unnecessary actuations of the minimum flow valve should not occur.

E. Safety Significance

HPCI-MOV-MO25 is provided for pump protection. Upon system initiation, the valve opens and remains open until system flow reaches 800 gpm, at which point the valve automatically closes. The valve will reopen at 485 gpm on decreasing flow. Flow through the minimum flow line is returned to the Suppression Pool.

Following the unexpected actuation of the valve to the open position, the licensed Control Room Operator reclosed the valve. The valve operated properly and remained closed. The surveillance test was resumed and operation of the minimum flow valve was checked in later steps of the test procedure. Its operation was determined to be satisfactory. Consequently, the unexpected actuation of the valve would not have affected system operability.

F. Safety Implications

Due to the fact that valve operability was determined to be satisfactory, this event was of little safety consequence. Had valve operability been affected, the most significant initial plant condition would have been full power operation.

G. Corrective Action

As discussed in Section D, Cause, an engineering evaluation of the event revealed that while actuation of the minimum flow valve may not occur every time HPCI-MOV-MO20 is reopened during the surveillance test, data taken during the investigation indicates that it should not be unexpected because a pressure increase may be created that is approximately the setpoint of the pressure switch. Engineering also advised that due to the similarity of the logic circuitry for the Reactor Core Isolation Cooling (RCIC) minimum flow

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Corrective Action (continued)

valve, its actuation during valve operability surveillance testing also should not be unexpected. Discussions with Control Room Operators revealed that minimum flow valve actuations had occurred in the past but had not been considered test discrepancies since the basis for their operation was understood.

To ensure operator awareness of the potential actuation, a procedure change was made to the HPCI valve operability surveillance test, indicating that automatic operation of the minimum flow valve could occur when HPCI-MOV-MO20 was re-opened. A similar change has been made to the RCIC valve operability surveillance test. An evaluation of the HPCI and RCIC Pump Discharge Pressure switch configurations and setpoints will be performed. If practical, charges will be implemented to eliminate the occasional unnecessary cycling of the minimum flow valves.

Additionally, to ensure operator awareness of reporting requirements, licensed Operators will be apprised of ESF component level reporting requirements and that unplanned ESF component actuations are subject to the notification and reporting requirements prescribed in 10CFR50.72 and 10CFR50.73.

H. Similar Events

None