Nebraska Public Power District

COOPER NUCLEAR STATION
P.O. BOX 98, BROWNVILLE, NEBRASKA 68321
TELEPHONE (402) 825-3811

CNSS923618

April 23, 1992

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

Dear Sir:

Cooper Nuclear Station Licensee Event Report 92-005, Revision 0, is being forwarded as an attachment to this letter.

Sincerely,

R. L. Gardiner
Acting Division Manager
of Nuclear Operations
Cooper Nuclear Station

RLG/bjs

Attachment

cc: R. D. Martin
G. R. Horn
J. M. Meacham
R. E. Wilbur
V. L. Wolstenholm
D. A. Whit[illegible]
INPO Rec[illegible] Center
NRC Resident Inspector
R. J. Singer
CNS Training
CNS Quality Assurance

IE22
1/1

NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Cooper Nuclear Station	0 5 0 0 0 2 9 8	1 OF 0 3

TITLE (4) RCIC Inoperability Due To Water In The Turbine Casing Caused By A Plugged Exhaust Line Steam Trap Strainer

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 3	2 5	9 2	9 2	— 0 0 5	— 0 0	0 4	2 3	9 2		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
N	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10): 1 0 0	20.405(a)(1)(i)	50.36(c)(1)	X 50.73(a)(2)(v)	73.71(c)
	20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
	20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
	20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
	20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
Donald L. Reeves, Jr.	AREA CODE 4 0 2 8 2 5 - 3 8 1 1

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	
X	B N	T R B	T 1 4 7	Y							
X	B N	T R P	Y 0 1 0	Y							

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

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

On March 25, 1992 at approximately 7:00 p.m., the Reactor Core Isolation Cooling (RCIC) System was declared inoperable due to evidence of water in the turbine casing. Approximately three hours earlier, operability testing of the RCIC System had been satisfactorily completed, and the system had been returned to its normal standby status. Subsequently, during a Station Operator tour of the Reactor Building to check operating equipment performance and status, water was found running from the RCIC turbine bed plate. Upon closer inspection, the water was found to be leaking from around the turbine shaft. Leakage from the turbine governor valve was also noted. When this condition was found, the plant was in normal operation at full power.

Results of an investigation into the leakage concluded that a malfunctioning turbine exhaust line steam trap was the most likely cause for the water leakage. The steam trap was inspected and the strainer was found plugged with scale, rust particles, and related corrosion products. Periodic routine tests or inspections of the trap had not previously been required. This event is, therefore, considered to be due to lack of preventive maintenance.

The steam trap was removed and cleaned, new internals were installed, and the unit was reinstalled in the system. Subsequent operation of the RCIC System and restoration of the system to its normal standby status were performed satisfactorily. To preclude a future similar problem, inspection and cleaning of this trap has been scheduled for each refueling outage as an element of the preventive maintenance program.

A. Event Description

On March 25, 1992 at approximately 7:00 p.m., the Reactor Core Isolation Cooling (RCIC) System was declared inoperable due to evidence of water in the turbine casing. Approximately three hours earlier, operability testing of the RCIC System, in accordance with Surveillance Procedure (SP) 6.3.6.1, RCIC Test Mode Surveillance Operation, had been satisfactorily completed, and the system had been returned to its normal standby status. Subsequently, during a Station Operator tour of the Reactor Building to check operating equipment performance and status, water was found running from the RCIC turbine bed plate. The Shift Supervisor was notified, and upon closer inspection, water was found leaking from around the turbine shaft. Water leakage from the turbine governor valve packing gland was also noted. An investigation was conducted. As a result, the turbine exhaust line steam trap, RCIC-TP-S58, was suspected to be malfunctioning.

B. Plant Status

Normal full power operation.

C. Basis for Report

Inoperability of a system required by Technical Specifications to be operable and capable of being automatically initiated. While RCIC is not considered to be a safety system for accident analysis purposes, this event is being reported in accordance with 10CFR50.73(a)(2)(v).

D. Cause

The steam trap was inspected and the strainer was found plugged with scale, rust particles and related corrosion products. Periodic routine surveillance tests or preventive maintenance inspections of the trap had not previously been required. The cause of this event is, therefore, considered to be due to lack of preventive maintenance.

E. Safety Significance

The purchase specification for the RCIC turbine, developed by General Electric, the Nuclear Steam Supply System (NSSS) supplier, specified that the quality of the turbine steam supply be dry and saturated. Design Engineering is unaware of the existence of any mechanical or structural evaluation of the functionality of the RCIC System that is based upon system actuation with the turbine partially or fully filled with water. Prudent actions were taken to prevent automatic actuation upon discovery of the condition and the RCIC System was only in this condition for a small fraction of the Allowed Outage Time (AOT). The safety significance of this event is considered minimal.

F. Safety Implications

As specified in the bases for paragrapn 3.5.D of the Technical Specifications, RCIC is designed to provide makeup to the reactor vessel as part of the planned operation for periods when the main condenser is unavailable. The nuclear safety analysis, USAR Appendix G, shows that RCIC provides water to reestablish and maintain reactor vessel water level (and thereby provides for core cooling) when feedwater is lost. As noted in Appendix G, in the discussion section associated with isolation of all steam lines, pressure relief combined with loss of feedwater flow causes reactor vessel water level to fall. At high pressures, the High Pressure Coolant Injection (HPCI) or RCIC System supplies water to maintain reactor vessel water level to provide for core cooling until normal steam flow (or other planned operation) is established. Further, as noted in the discussion section associated with loss of feedwater flow (in Appendix G), either the HPCI or the RCIC System can maintain adequate water level. The redundancy of these systems satisfy the single failure criterion for core cooling. During the time frame when the RCIC System was made inoperable, HPCI was fully operable.

As specified in the foregoing, when the main condenser is unavailable, makeup water can be provided by either RCIC or HPCI. In all other postulated accidents and transients, no credit is taken for the RCIC System. In such cases, HPCI provides makeup water to the reactor when not depressurized. The Automatic Depressurization System (ADS) in conjunction with the low pressure core cooling systems provide redundancy for the HPCI System, should it not be capable of performing its safety function. Therefore, from an accident analysis perspective, there are no safety implications associated with this event.

G. Corrective Action

The steam trap was removed, inspected and, as noted in Section D, the strainer was found plugged. The trap was cleaned, new internals were installed, and the trap was reinstalled in the system. Subsequent operation of the RCIC System and restoration of the system to its normal standby status were performed satisfactorily. To preclude a future similar problem, inspection and cleaning of this trap will be conducted each refueling outage as an element of the preventive maintenance program. With regard to other steam traps installed in the HPCI and RCIC Systems, a trap on the RCIC steam supply piping and a corresponding steam supply piping trap on the HPCI System are checked for proper operation periodically as part of the surveillance testing program. A similar deficiency (strainer plugging) with the exhaust line steam trap for the HPCI turbine would be indicated by a high level alarm by a level switch installed to monitor for water in the drip leg.

H. Similar Events

None.