



Nebraska Public Power District

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

NLS950041

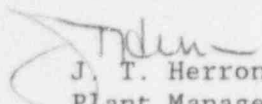
January 26, 1995

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

Dear Sir:

Cooper Nuclear Station Licensee Event Report 94-035 is forwarded as an attachment to this letter.

Sincerely,


J. T. Herron
Plant Manager

/rkg

Attachment

cc: L. J. Callan
G. R. Horn
J. H. Mueller
R. G. Jones
R. A. Sessoms
K. C. Walden
INPO Records Center
NRC Resident Inspector
R. J. Singer
CNS Training
CNS Quality Assurance
R. L. Koch

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PDR ADOCK 05000298
S PDR

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LICENSEE EVENT REPORT (LER)

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

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
(MNB 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)
COOPER NUCLEAR STATIONDOCKET NUMBER (2)
05000298PAGE (3)
1 OF 4TITLE (4) Inoperable Standby Gas Treatment (SGT) System Due to a Potential Backflow of Water
from the Z Sump Under Design Basis Accident Conditions

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 NAME	DOCKET NUMBER
12		94	94	-- 035 --	00	01	26	95	FACILITY NAME	DOCKET NUMBER

OPERATING MODE	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)
N	20.402(b)
	20.405(a)(1)(i)
	20.405(a)(1)(ii)
	20.405(a)(1)(iii)
	20.405(a)(1)(iv)
	20.405(a)(1)(v)

POWER LEVEL (10)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
0	50.36(c)(1)	X 50.73(a)(2)(v)	73.71(c)
	50.36(c)(2)	50.73(a)(2)(vii)	OTHER
	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	(Specify in
	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	Abstract below
	50.73(a)(2)(iii)	50.73(a)(2)(x)	and in Text, NRC Form 366A)

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Gautam Sen, Senior Staff Nuclear Licensing & Safety Eng	(402) 825-3811

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
N/A	N/A	N/A	N/A	No					

SUPPLEMENTAL REPORT EXPECTED (14)

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

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On December 29, 1994, while investigating the safety classification of a system with respect to a proposed modification to prevent freezing of the Elevated Release Point Drain Sump (Z sump) pump discharge lines, the Engineering Support Department discovered the following condition:

Under design basis accident conditions with a coincident loss of offsite power, the Z sump pumps and high level alarm would lose power and the condensation from Standby Gas Treatment (SGT) effluent cooling in the underground piping and the Elevated Release Point (ERP) tower would accumulate in the sump filling the 10" SGT discharge lines through the open 2" drain line. As a result, the SGT system operability could not be assured and, therefore, secondary containment could not be maintained.

Per NUREG-1022, the cause of this event is attributed to a design error at the time of plant construction (Cause code B).

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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FACILITY NAME (1)		DOCKET NUMBER (2)		LER NUMBER (6)			PAGE (3)
COOPER NUCLEAR STATION		05000298		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 4
				94	-- 035 --	00	

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

On December 29, 1994, when this condition was discovered, the plant was in cold shutdown with no fuel handling in progress.

Event Description

On December 29, 1994, while investigating the safety classification of a system with respect to a proposed design change to prevent freezing of the Z sump pump discharge lines, the Engineering Support Department discovered the following condition:

Under design basis accident conditions (high humidity in the Reactor Building) with a coincident loss of offsite power, the non-essential Z sump pumps and high level alarm would lose power. The post-accident condensation from SGT effluent cooling in the underground piping and in the ERP tower would collect in the Z sump. However, loss of operability of the Z sump pumps or the associated level control circuit will result in the Z sump level rising to the point of backflowing into the SGT 10-inch discharge lines through the open 2-inch drain line. Water accumulation in these lines will impact operability of the SGT System by reducing SGT System flow rate. Therefore, secondary containment cannot be maintained under this condition.

In addition, the following related conditions have been identified:

- 1) The Z sump pumps and level control equipment will not be accessible during external flooding conditions if the water level rises above elevation 890 ft. MSL. Plant shutdown due to external flooding concerns is not required until the river level reaches 902 ft MSL.
- 2) Loss of power to the heat tracing to the ERP tower could result in freezing of the condensation on the inside of the ERP tower or inside the above ground SGT discharge lines which could affect SGT system operability.
- 3) Loss of power to the heat tracing to the sump pump discharge lines could result in freezing of the water in these lines resulting in the sump pump system becoming inoperable.

Safety Significance

Calculation NEDC 95-001 shows that for worst case post-Design Basis Accident (DBA) conditions (Reactor Building conditions of 103°F and 100% Relative Humidity), it would take approximately 6.7 hours for condensation from the SGT System to increase the Z sump level from a point just below the high level setpoint of 880 ft. 4 in. to the point where water begins to backflow into the SGT discharge lines (at 882 ft. 7 in.). In other words, a period of 6.7 hours will be available to correct the condition before impacting the SGT System.

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FACILITY NAME (1)		DOCKET NUMBER (2)		LER NUMBER (6)			PAGE (3)
COOPER NUCLEAR STATION		05000298		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	3 OF 4
				94	-- 035 --	00	

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

Safety Significance (cont'd)

If this condition cannot be corrected within 6.7 hours, the SGT System could be inoperable. It could result in a ground release of unfiltered secondary containment radioactivity possibly exceeding 10CFR100 limits at the site boundary. In that case, this event could be safety significant. However, if the power to the sump pumps is recovered within 6.7 hours, the safety significance of this event would be minimal.

Root Cause

The root cause of this event is attributable to a design deficiency. This is based on the fact that the original plant design failed to recognize that the Z sump system performs an essential function with respect to operability of the SGT system and therefore, was not designed to meet essential criteria including the single failure criteria.

A contributing cause for this event is the lack of a questioning culture by the plant operating and engineering organizations.

Corrective Action

The applicable CNS procedures have been reviewed to determine if the adequacy of design control presently established would allow such an event to occur. This review has yielded the following facts:

1. CNS Engineering Procedures require multiple design reviews by appropriate CNS departments to address engineering, constructability, operability, maintainability, radiological, ALARA, and other concerns. The Station Modification Cover Sheet and appropriate checklists provide sufficient depth of reviews to reveal any missing information with respect to a component and system.
2. CNS Engineering Procedures provide step-by-step methodology, criteria, and controls to be used in the system/component classification process. They require answers to specific questions presented in Component Application Data Sheets, Component Application Analysis Sheets, and Component Evaluation Sheets. These Procedures also furnish System Functional Classifications to eliminate any uncertainties regarding classification of equipment.

Based on the above, significant enhancements have been initiated in the CNS procedures since the original plant design that assures an adequate depth of review and acceptance process. The elements that presently exist in the CNS Engineering Procedures would prevent such an event from occurring.

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COOPER NUCLEAR STATION		05000298		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	4 OF 4
				94	-- 035 --	00	

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

Corrective Action (cont'd)

In order to correct the existing condition, the following actions will be taken:

1. A design change will be implemented to eliminate the single failure vulnerabilities associated with the appropriate components in the Z sump system and the power to the presently installed heat tracing on the ERP tower, the SGT discharge lines, and the sump pump discharge lines. This will be completed prior to startup from the current outage.
2. The appropriate components in the Z sump system will be classified essential (non-seismic). This action includes providing for the testing and preventive maintenance required for essential components. This will be accomplished prior to startup from the current outage.
3. The insulation and heat tracing on the sump pump discharge lines will be replaced prior to startup from the current outage.
4. Procedures will be developed to identify actions to be taken during an external flooding event to ascertain sump pump operability. This will be completed prior to startup from the current outage.

In order to prevent recurrence of such an event, the following corrective actions will be taken:

1. Appropriate safety-related systems will be reviewed for potential operability concerns resulting from the failure of a non-essential support or interconnecting system as part of the Design Criteria Document (DCD) development/validation process.
2. Training will be provided on or before May 15, 1995, on the interaction of non-essential systems with safety-related systems for personnel involved in the development/validation of DCDs.
3. Training on this event will be provided to operations personnel during Requalification Cycle 95-04 and to engineering personnel as a case study in the second half of 1995.

Furthermore, with respect to the contributing cause, significant change has already occurred in the area of the lack of a questioning culture at CNS as evidenced by the process which led to the identification of this event.

Similar Events

None

Correspondence No: NLS950041

The following table identifies those actions committed to by the District in this document. Any other actions discussed in the submittal represent intended or planned actions by the District. They are described to the NRC for the NRC's information and are not regulatory commitments. Please notify the Licensing Manager at Cooper Nuclear Station of any questions regarding this document or any associated regulatory commitments.

COMMITMENT	COMMITTED DATE OR OUTAGE
1. A design change will be implemented to eliminate the single failure vulnerabilities associated with the appropriate components in the Z sump system and the power to the presently installed heat tracing on the ERP tower, the SGT discharge lines, the sump pump discharge lines.	Prior to startup from the current outage
2. The appropriate components in the Z sump system will be classified essential (non-seismic). This action includes providing for the testing and preventive maintenance required for essential components.	Prior to startup from the current outage
3. The insulation and heat tracing on the sump pump discharge lines will be replaced.	Prior to startup from the current outage
4. Procedures will be developed to identify actions to be taken during an external flooding event to ascertain sump pump operability.	Prior to startup from the current outage
5. Appropriate safety-related systems will be reviewed for potential operability concerns resulting from the failure of a non-essential support or interconnecting system as part of the Design Criteria Document (DCD) development/validation process.	None
6. Training will be provided on the interaction of non-essential systems with safety-related systems for personnel involved in the development/validation of DCDs.	May 15, 1995
7. Training on this event will be provided to operations personnel during Regualification Cycle 95-04 and to engineering personnel as a case study in the second half of 1995.	December 31, 1995