Omaha Public Power District
P.O. Box 399 Hwy. 75 - North of Ft. Calhoun Fort Calhoun, NE 68023-0399
402/636-2000

December 7, 1994
LIC-94-0245

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Station P1-137
Washington, DC 20555

Reference: Docket No. 50-285

Gentlemen:

Subject: Licensee Event Report 94-008 for the Fort Calhoun Station

Please find attached Licensee Event Report 94-008 dated December 7, 1994. This report is being submitted pursuant to 10 CFR 50.73(a)(2)(v)(B). If you should have any questions, please contact me.

Sincerely,

W. G. Gates

W. G. Gates
Vice President

WGG/jrg

Attachment

c: LeBoeuf, Lamb, Greene & MacRae
L. J. Callan, NRC Regional Administrator, Region IV
S. D. Bloom, NRC Project Manager
R. P. Mullikin, NRC Senior Resident Inspector
INPO Records Center

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NRC FORM 366 (5-92) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 5/31/95

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.

LICENSEE EVENT REPORT (LER)

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

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Fort Calhoun Station Unit No. 1	05000285	1 OF 4

TITLE (4)
Potential for Raw Water Pump Room Flooding Following a Heavy Load Drop

EVENT DATE (5)			LER NUMBER (6)			REPORT NUMBER (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
										05000
11	08	94	94	-- 008 --	00	12	07	94	FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§ (Check one or more) (11)							
POWER LEVEL (10)	100		20.402(b)		20.405(c)		50.73(a)(2)(iv)		73.71(b)
			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
			20.405(a)(1)(iii)		50.73(a)(2)(i)		50.73(a)(2)(viii)(A)		(Specify in Abstract below and in Text, NRC Form 366A)
			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 (Include Area Code)
Scott A. Lindquist, Shift Technical Advisor	(402) 533-6829

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
YES (If yes, complete EXPECTED SUBMISSION DATE)	X	NO				

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

Fort Calhoun Station (FCS) Updated Safety Analysis Report (USAR) Section 14.24, "Heavy Load Incident," in part, discusses the hazards associated with postulated load drops involving the Intake Structure Crane, HE-5. This discussion addresses the potential effect on the Raw Water (RW) System of several scenarios involving a postulated drop of a 24,000 lb. Circulating Water pump motor from HE-5. Questions were raised regarding the existing Hazard Elimination Statements in that they did not appear to adequately address the possibility of flooding in the RW pump room as a result of a heavy load drop. Subsequent evaluation concluded that a heavy load drop in the Intake Structure could result in flooding of the RW pump room, with the potential to render the RW System inoperable.

The root cause of this event was determined to be a lack of depth in evaluation/review associated with the original load drop analysis.

A Danger Tag was placed to restrict the use of HE-5. Additional corrective actions will include completion of an Engineering Assistance Request to address the deficiency in the original heavy loads analysis for the Intake Structure and establishment of procedural guidance to appropriately control the use of HE-5.

BACKGROUND

The Fort Calhoun Station (FCS) Raw Water (RW) System is designed to provide cooling for the Component Cooling Water (CCW) System, which in turn provides cooling for various plant heat loads during normal and accident conditions. The RW System can also be used to provide direct cooling for certain engineered safeguards components in the event of a loss of CCW. Four RW pumps (AC-10A, AC-10B, AC-10C and AC-10D) are installed in the Intake Structure to provide screened river water to the CCW heat exchangers. The RW pump discharge piping is arranged as two interconnected headers, valved at the pumps and in the Auxiliary Building. Each header is designed to accommodate full flow to the CCW heat exchangers under all modes of plant operation. Operational and control functions of the system can be performed from the Control Room.

Water level instrumentation in the RW pump room provides an alarm in the Control Room if water from any source endangers the RW pumps.

NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants," dated July 1980, required utilities to review their overhead load handling equipment, systems, and procedures. The consequences of dropping worst case loads associated with several specified cranes were evaluated to determine compliance with the criteria of NUREG-0612. Updated Safety Analysis Report (USAR) Section 14.24, "Heavy Load Incident," in part, discusses the hazards associated with postulated load drops involving the Intake Structure Crane, HE-5. This discussion addresses the potential effect on the RW System of several scenarios involving a postulated drop of a 24,000 lb. Circulating Water pump motor from HE-5. These scenarios include: a load drop crushing a RW pump and associated piping, a load drop shearing RW pump electrical cables and a load drop through the RW pump area floor slab. For each of these scenarios, a "Hazard Elimination Statement" is provided which describes the expected response to such an event.

EVENT DESCRIPTION

During preparation for an upcoming service water inspection, questions were raised regarding the validity of the Hazard Elimination Statements associated with the Intake Structure load drop incidents. Specifically, the existing Hazard Elimination Statements did not appear to adequately address the possibility for flooding in the RW pump room as a result of a heavy load drop. The concern involved whether such flooding had the potential to disable the RW pumps for a greater period of time than other load drop scenarios evaluated in the USAR. Engineering Assistance Requests (EARs) 94-093 and 94-094 were initiated on August 8, 1994 to investigate this issue. On October 3, 1994, following completion of EAR 94-093, Incident Report (IR) 940344 was issued to document the potential deficiency in the Intake Structure Heavy Loads Analysis. Based on this IR, a Caution Tag was placed to restrict the use of the Intake Structure Crane.

The issue was further evaluated by Design Engineering Nuclear. This evaluation concluded that a heavy load drop in the Intake Structure could result in flooding of the RW pump room, with the potential to render the RW System inoperable. Flooding could result either from a severed RW pipe or, if river level was high enough, through a hole in the floor of the room. This conclusion was presented to the FCS Plant Review Committee (PRC), and at 1328 on November 8, 1994 (with the plant in Mode 1 at approximately 100% power) this issue was determined to be reportable pursuant to 10 CFR 50.72(b)(2)(iii)(B). The NRC was notified of this determination at 1424 on November 8, 1994. This LER is being submitted pursuant to 10 CFR 50.73(a)(2)(v)(B).

SAFETY ASSESSMENT

USAR Table 14.24-1 addresses a postulated drop of a Circulating Water pump motor (24,000 lb.) that disables the electrical motor leads to all four RW pumps. The Hazard Elimination Statement states, in part, "A plant procedure has been written to ensure that the loss of the raw water pump cables does not inhibit decay heat removal capability during a refueling outage." This procedure, Abnormal Operating Procedure AOP-18, "Loss of Raw Water," provides guidance to plant personnel in determining when a loss of raw water condition has occurred. It also aids in diagnosing the specific cause of the loss of raw water and either restoring RW System operation, providing an alternate means of cooling CCW using the Fire Protection System, or as a last resort, implementing feed and bleed cooling of the CCW system.

The guidance provided by AOP-18 would also be applicable to a scenario involving loss of RW pump operability due to flooding. Although the time required to restore RW pump operability would likely be greater following a flooding event as compared to an event involving sheared power cables, the guidance provided by AOP-18 is considered to be adequate to provide acceptable heat removal during such an event.

On November 8, 1994, when this issue was determined to be reportable, the potential for a heavy load drop from HE-5 did not exist because a Caution Tag had previously been placed to restrict its use. A Danger Tag was subsequently placed to further ensure that appropriate controls would be in place prior to use of HE-5 to move heavy loads (See Corrective Actions).

CONCLUSIONS

The root cause of this event was determined to be a lack of depth in evaluation/review. The failure to identify RW pump room flooding as a limiting load drop scenario in the NUREG-0612 safety analysis appears to be an oversight by personnel associated with completion of the analysis.

The original analysis was performed by a contractor approximately ten years ago. The current guidelines and requirements for completing a similar analysis are more thorough as compared to those used in the original analysis. Also, additional administrative controls incorporated into plant procedures and instructions for plant modifications should ensure that any future configuration changes will be reviewed for their effects on plant flooding scenarios. As a result, the probability of this type of oversight occurring during a present day analysis has been significantly reduced.

CORRECTIVE ACTIONS

The following corrective actions have been or will be completed:

1. A Danger Tag has been placed on HE-5 to prevent its use. Appropriate controls are in place to ensure adequate reviews are conducted and concurrences received prior to any load lifts in the Intake Structure. These controls will ensure that heavy loads are not carried over piping which could flood the RW pump room.

2. a. Engineering Assistance Request (EAR) 94-094 will be completed to address deficiencies in the heavy loads analysis for the Intake Structure. This action will be completed by February 15, 1995.

   b. Based on the results of EAR 94-094, procedural guidance will be established to appropriately control the use of HE-5 to move heavy loads. This action will be completed by April 15, 1995.

3. The heavy loads analysis will be reviewed to determine whether there are any potential flooding issues associated with postulated heavy load drop incidents, that have not been adequately addressed. This review will be completed by April 15, 1995.

PREVIOUS SIMILAR EVENTS

No previous similar LERs have been identified involving deficiencies in the FCS heavy loads analysis.