

Omaha Public Power District  
444 South 16th Street Mall  
Omaha, Nebraska 68102-2247  
402/636-2000

March 30, 1992  
LIC-92-061L

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 92-008 for the Fort Calhoun Station

Please find attached Licensee Event Report 92-008 dated March 30, 1992. This report is being submitted pursuant to 10 CFR 50.73(a)(2)(ii)(B). If you should have any questions, please contact me.

Sincerely,

*W. G. Gates*

W. G. Gates  
Division Manager  
Nuclear Operations

WGG/lah

Attachment

c: R. D. Martin, NRC Regional Administrator, Region IV  
D. L. Wigginton, NRC Senior Project Manager  
S. D. Bloom, NRC Project Engineer  
R. P. Mullikin, NRC Senior Resident Inspector  
INPO Records Center

020032

*IFDR*  
*11*

LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN: PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-640), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PA. WORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) Fort Calhoun Station Unit No. 1

DOCKET NUMBER (2) 0 5 0 0 0 2 8 5

PAGE (3) 1 OF 0 4

TITLE (4) Safety Injection Relief Valve Setpoints Greater Than Qualified System Design Pressures

EVENT DATE (6)			LER NUMBER (8)		REPORT DATE (7)			OTHER FACILITIES INVOLVED (5)				
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME(S)		DOCKET NUMBER(S)	
0 2	2 7	9 2	9 2	0 0 8	0 0	0 3	3 0	9 2	N		0 5 0 0 0 0	
												0 5 0 0 0 0

OPERATING MODE (9) 5

POWER LEVEL (10) 0 0 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 50. (Check one or more of the following) (11)

<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(c)	<input type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)
<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 50.38(c)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(k)
<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 50.38(c)(2)	<input type="checkbox"/> 50.73(a)(2)(vi)	OTHER (Specify in Abstract below - 50 in text, NRC Form 893A)
<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(vii)(A)	
<input type="checkbox"/> 20.405(a)(1)(iv)	<input checked="" type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(vii)(B)	
<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(viii)	

LICENSEE CONTACT FOR THIS LER (12)

NAME Scott A. Lindquist, Shift Technical Advisor

TELEPHONE NUMBER AREA CODE 4 1 0 2 5 3 1 3 1 - 1 6 1 8 1 2 1 9

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRCDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRCDS

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)  NO

EXPECTED SUBMISSION DATE (15)

MONTH	DAY	YEAR

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

On February 27, 1992 at 1600 CST, plant management determined that four relief valves (SI-187, SI-309, SI-310 and SI-311) on Safety Injection (SI) system piping had been installed with relief setpoints which were not within the SI system design pressures qualified by the original hydrostatic test. Based on data from a 1983 hydrostatic test, the piping associated with one of the relief valves (SI-311) is now considered to be qualified to a design pressure consistent with the present relief valve setpoint. The setpoints of the remaining three relief valves were found to be greater than the design pressures (as qualified by hydrostatic testing) of the associated piping. The piping associated with these three valves has been evaluated and the relief valve setpoints were found to be below the pressure ratings (per United States of America Standard B16.5-1968) of the piping. These relief valves are considered capable of performing their design function which is to protect their associated piping from thermally induced pressure transients.

This condition has existed since plant construction, and resulted from design and analysis deficiencies by the original plant Architect/Engineer.

Corrective actions include updating plant documents and adjusting the setpoints of the three nonconforming relief valves to pressures consistent with the design basis of the associated piping.

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 RECORDS AND REPORTS MANAGEMENT BRANCH (F-500), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)  Fort Calhoun Station Unit No. 1	DOCKET NUMBER (2)  0500023592	LER NUMBER (3)			PAGE (5)  02 OF 04
		YEAR	SEQUENTIAL NUMBER	PREVIOUS NUMBER	
			008	00	

TEXT if more space is required, use additional NRC Form 300A(s) (17)

The Fort Calhoun Station Updated Safety Analysis Report (USAR) Section 6.2.3.8 designates the design code for the Safety Injection (SI) system piping as United States of America Standard (USAS) B31.7-1968. Paragraph 1-702.2.4 of USAS B31.7-1968 requires relief valves to be set such that the first relief valve in a piping section begins relieving at a pressure no higher than the piping design pressure. Four relief valves (SI-187, SI-309, SI-310, and SI-311) in the Safety Injection System have been identified which were not installed to this Code requirement.

On September 16, 1991 the SI System Engineer generated Engineering Assistance Request (EAR) 91-097 which requested Design Engineering - Nuclear (DEN) to perform a review of the stress calculations of the piping protected by SI-309 to confirm the design pressure and temperature for the piping and justify the 350 psig setpoint of SI-309. This review was requested because the initial Code hydrostatic test of the piping established the design pressure as 300 psig while the first 10-year Inservice Inspection (ISI) interval hydrostatic test was conducted at a test pressure of 450 psig which corresponds to a design pressure of 360 psig.

Following verification that the SI-309 thermal relief valve set pressure did not conform to the design pressure qualified by the original Code hydrostatic test, DEN performed a review of setpoints of thermal relief valves in addition to the single relief valve review requested in the original EAR. Setpoints of thermal relief valves in the SI, Chemical and Volume Control, Raw Water, Component Cooling Water, Auxiliary Feedwater, and Reactor Coolant Systems were reviewed to determine if similar nonconformances existed. The Main Steam Safety Valve setpoints were also reviewed. The results of this review concluded that a similar design concern exists for SI-187 and SI-310. DEN also concluded that a similar design concern had originally existed for SI-311, however, hydrostatic testing of the piping protected by SI-311 was performed in 1983 that qualified this section of piping to a higher design pressure which is considered to meet USAS B31.7-1968 Code requirements.

On February 27, 1992 at 1600 CST plant management determined that safety injection relief valves SI-187, SI-309, SI-310 and SI-311 had been installed outside construction code requirements and concluded that a reportable condition existed. The NRC was notified on February 27, 1992 at 1831 CST pursuant to 10 CFR 50.72(b)(2). This written report is submitted pursuant to 10 CFR 50.73(a)(2)(ii)(B).

SI-309 is the relief valve on the class 301R shutdown cooling suction line outside containment. Its setpoint is 350 psig and the piping design conditions qualified by the original Code hydrostatic test are 300 psig and 350 degrees F. SI-309 is considered capable of performing its design function because the pressure rating (per USAS B16.5-1968) of the most limiting component in a class 301R piping system (304SS, 300# flange) is 470 psig at 350 degrees F. This rating exceeds the setpoint of SI-309 and the most severe operating conditions to which this piping is likely to be subjected. In the event of an accident during power operations, the piping protected by SI-309 is normally isolated by locked closed valves and is not required to be placed in service. Therefore, the nonconformance involving SI-309 does not have substantial nuclear safety significance.

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 REG. DIV. AND REPORTS MANAGEMENT BRANCH (P-330), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20585, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)  Fort Calhoun Station Unit No. 1	DOCKET NUMBER (2)  0500028592	LER NUMBER (3)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
			008	00	03	OF 01

TEXT: If more space is required, use additional NRC Form 896A's(17)

SI-187 is the relief valve in the class 601 Low Pressure Safety Injection (LPSI) header inside containment and SI-310 is the relief valve in the class 601 shutdown cooling heat exchangers outlet cross-tie piping. The setpoint of both of these valves is 600 psig and the piping design conditions qualified by the original Code hydrostatic test are 500 psig and 350 degrees F. SI-187 is considered capable of performing its design function because the most limiting components in the piping it serves are four 300#, 316SS flanged joints. The pressure rating (per USAS B16.5-1968) of these flanges is 675 psig at 350 degrees F, which exceeds the setpoint of SI-187 and the most severe operating conditions to which this piping is likely to be subjected. SI-310 is considered capable of performing its design function because the most limiting components in the piping it serves are 300#, 316SS valves. The pressure rating of these valves meets or exceeds the 300#, 316SS flange rating (per USAS B16.5-1968) which is 675 psig at 350 degrees F. This rating exceeds the setpoint of SI-310 and the most severe operating conditions to which this piping is likely to be subjected.

SI-187 and SI-310 do not perform a safety function during an accident. The present 600 psig setpoint of these relief valves is adequate to limit overpressure to well within the pressure rating of the respective piping sections, so this setpoint is not considered to introduce or increase the possibility of a loss of pressure boundary. The piping protected by SI-310 is normally isolated by locked closed valves and is not required to be placed in service following an accident. The setpoint of SI-187 would not adversely affect the performance of the LPSI system during an accident. Therefore, the nonconformances involving SI-187 and SI-310 do not have substantial nuclear safety significance.

SI-311 is the relief on the class 151 containment spray return to the safety injection and refueling water storage tank (SIRWT) line and its setpoint is 150 psig. The design conditions qualified by the original hydrostatic test are 66 psig and 350 degrees F. SI-311 is considered capable of performing its design function because the pressure rating (per USAS B16.5-1968) of the most limiting component in a class 151R piping system (304SS, 150# flange) is 240 psig at 200 degrees F. This rating exceeds the setpoint of SI-311 and the most severe operating conditions to which this piping is likely to be exposed. The piping served by SI-311 serves no function during normal plant operation and is isolated by normally locked closed manual isolation valves. Therefore, the nonconformance involving SI-311 does not adversely affect nuclear safety.

The piping served by SI-311 was pressurized to 190 ± 5 psig during a hydrostatic test conducted in 1983 under American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Section XI ISI requirements. An ASME Section XI ISI test pressure of at least 187.5 psig would substitute for a USAS B31.7 hydrostatic test to qualify design conditions of 150 psig and 200 degrees F. The 1983 hydrostatic test is considered sufficient to qualify this piping to 150 psig and 200 degrees F.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUIREMENT: 30.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-330), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PATENT AND COPYRIGHT PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)  Fort Calhoun Station Unit No. 1	DOCKET NUMBER (2)  0   5   0   0   0   2   8   5   9   2   -   0   0   8   -   0   0   0   4	LER NUMBER (3)		PAGE (4)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	

TEXT (if more space is required, use addition: "NRC Form 366A" (1))

The root cause of this event was determined to be inconsistencies between the Relief Valve Specification Sheets developed by the original plant Architect/Engineer (A/E) in late 1969, and system specific design conditions specified by the A/E in early 1971 and qualified in 1972 by the original Code hydrostatic tests. Additionally, the A/E did not verify that the setpoints of thermal relief valves met the Code requirements for the system specific design conditions as qualified by original Code hydrostatic tests. Also, the A/E did not adequately update existing plant documentation (e.g. piping isometric drawings) to reflect system specific design conditions following qualification by the original Code hydrostatic test in 1972.

A related event involving SI system relief valve setpoints was reported via LER 90-023, in which OPPD committed to comparing safety related relief valve setpoints to design basis documentation. As indicated above, existing plant documentation did not, in all instances, correctly reflect the qualified system design conditions. These documentation inconsistencies were not accounted for during the attempt to complete the comparison of setpoints to design documentation. As a result, the discrepancies discussed in this LER were not identified until after EAR 91-097 was initiated.

As previously noted, a review of the setpoints of thermal relief valves in the SI, Chemical and Volume Control, Raw Water, Component Cooling Water, Auxiliary Feedwater, and the Reactor Coolant Systems was performed under EAR 91-097. The Main Steam Safety Valves were also reviewed. This review concluded that no other Code nonconformances exist for thermal relief valves in these systems.

Modification MR-FC-92-009 has been installed to reduce the setpoint for SI-309 from 350 psig to 300 psig and reduce the SI-187 and SI-310 setpoints from 600 psig to 500 psig. New setpoint data for SI-187, SI-309, and SI-310 have been incorporated into plant testing procedures.

The following additional corrective actions will be completed:

1. Controlled plant drawings and Design Basis Documents will be updated, as applicable, for specific instances identified by EAR 91-097. This will be completed by July 15, 1992.
2. The ASME Section XI 10-year hydrostatic test for class 151 SI piping, SS-ST-SI-3002, will be performed by December 31, 1993. This test will verify the qualification of piping associated with SI-311.

LER 90-023 reported a similar event in which the setpoints of SI system relief valves were found to be greater than the system design pressure.