Omaha Public Power District
1623 Harney Omaha, Nebraska 68102-2247
402/536-4000

October 6, 1988
LIC-88-873

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

References: 1) Docket No. 50-285

2) OPPD Report 00000-MPS-6SR-056, Rev. 01, "Evaluation of Thermal Stresses in Piping Connected to C-E Designed Reactor Coolant Systems," dated September, 1988.

Gentlemen:

SUBJECT: NRC Bulletin 88-08, Thermal Stresses in Piping Connected to Reactor Coolant Systems

The purpose of this letter is to provide a response to NRC concerns documented in NRC Bulletin 88-08, "Thermal Stresses in Piping Connected to Reactor Coolant Systems," which requests that utilities address the issue of thermal stresses in unisolable piping connected to the Reactor Coolant System (RCS).

NRC Bulletin 88-08 Action #1 requests a "review of systems connected to the RCS to determine whether unisolable sections of piping can be subjected to stresses from temperature stratification or temperature oscillations that could be induced by leaking valves and that were not evaluated in the design analysis of the piping." The requested Action #1 has been completed for Fort Calhoun and is documented in Reference 2.

NRC Bulletin 88-08 Action #2 requests that OPPD perform nondestructive examinations at the welds, heat-affected zones and high stress locations, including geometric discontinuities of those locations that may have been subjected to excessive thermal stresses, to provide assurance that there are no existing flaws. None of the locations evaluated during the review are believed to have been subjected to excessive thermal stresses. The thermal hydraulic mechanisms described in the attached report, Ref. 2, are not expected to result in extreme temperature distributions. There have also been no known cracks or failures due to fatigue at any of the subject locations. Based on an analysis of systems, OPPD does not believe any locations need to be non-destructively examined at this time.

IE16
1/1

Action #3 requests that OPPD plan and implement a program to provide continuing assurance that unisolable sections of all piping connected to the RCS will not be subjected to combined cyclic and static thermal and other stresses that could cause fatigue failure during the remaining life of the unit. Three suggestions for implementing a program are provided in the bulletin as follows:

(1) redesign and modify this section of piping to withstand combined stresses caused by various loads including temporal and spatial distributions of temperature resulting from leakage across valve seats,

(2) instrument this piping to detect adverse temperature distributions and establish appropriate limits on temperature distributions, or

(3) provide means for ensuring that pressure upstream from block valves is monitored and does not exceed RCS pressure.

Based on justification provided in the attached report (Reference 2), OPPD believes the actions of suggestion (1) regarding piping modifications are not required at this time. Suggestion (3) regarding OPPD monitoring of valve leakage is not applicable to the OPPD design for the reasons documented in the attached report.

Suggestion (2) recommends instrumenting the pipe to detect adverse temperature distributions and establishing appropriate limits on temperature distributions. Each of the locations discussed in Ref. #1 may be subject to local specific thermal transient loadings which do not occur in the major portions and components of the RCS. A more accurate thermal loading definition is desirable in order to realistically evaluate and monitor these locations. While adverse temperature distributions are not expected to be discovered, OPPD believes additional information may be useful to quantify any potential temperature gradients to verify that associated potential loadings are insignificant. The pressurizer surge line is considered to have the greatest potential for thermal gradients. Therefore, OPPD is planning to install instrumentation on the pressurizer surge line during the 1988 refueling outage and monitor temperature, stresses and pipe displacement during plant start-up and full power operation.

The Combustion Engineering Owners Group (CEOG) is considering a program to collect and analyze data from a pilot unit. CEOG unit outage schedules and piping configurations are currently being examined to select the most appropriate pilot plant. Data from this plant would be collected using surface mounted thermocouples and is intended to be generically applicable to other CEOG plants.

NRC Bulletin 88-08 Action #4 requests a schedule for completing Actions #1 through #3. In summary, Action #1 has been completed and is documented in Ref. 2. OPPD believes Action #2, in view of the justification provided in this submittal, is not required at this time. Action #3 is currently being addressed by instrumentation of the pressurizer surge line and with collection of additional data through CEOG. OPPD believes that all of the actions requested in NRC Bulletin 88-08 have been appropriately addressed.

This written report is being submitted under oath or affirmation under the provisions of Section 182a, Atomic Energy Act of 1954, as amended.

Sincerely,

K. J. Morris
Division Manager
Nuclear Operations

KJM/rh

c: LeBoeuf, Lamb, Leiby & MacRae
1333 New Hampshire Avenue, N.W.
Washington, DC 20036

R. D. Martin, NRC Regional Administrator, Region IV
P. D. Milano, NRC Project Manager
P. H. Harrell, NRC Senior Resident Inspector

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
Omaha Public Power District	)	Docket No. 50-285
(Fort Calhoun Station,	)	
Unit No. 1)	)	

AFFIDAVIT

K. J. Morris, being duly sworn, hereby deposes and says that he is duly authorized to sign and file with the Nuclear Regulatory Commission the attached response to NRC Bulletin 88-08; that he is familiar with the content thereof; and that the matters set forth therein are true and correct to the best of his knowledge, information and belief.

K. J. Morris
Division Manager
Nuclear Operations

STATE OF NEBRASKA)
) ss
COUNTY OF DOUGLAS)

Subscribed and sworn to before me, a Notary Public in and for the State of Nebraska on the 6th day of October, 1988.

GENERAL NOTARY - State of Nebraska
MELVA L. EVANS
My Comm. Exp. 2-11-92

Melva L. Evans
Notary Public