





**WISCONSIN PUBLIC SERVICE CORPORATION**

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February 19, 1993

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

Ladies/Gentlemen:

Docket 50-305  
Operating License DPR-43  
Kewaunee Nuclear Power Plant  
Proposed Methodology for Resolution of the Heating Steam Piping  
System Seismic Qualification

- References:
- 1) Letter from R.C. Knop (NRC) to C.A. Schrock (WPSC), dated March 24, 1992.
  - 2) IE Bulletin No. 79-14, "Seismic Analyses For As-Built Safety-Related Piping Systems", dated July 2, 1979.
  - 3) Meeting between WPSC Staff and NRC Staff, Washington D.C., January 15, 1993.

The purpose of this letter is to present Wisconsin Public Service Corporation's (WPSC's) proposed methodology and schedule for the seismic evaluation and modification of the heating steam piping system located in safety-related areas of the Kewaunee Nuclear Power Plant (KNPP).

**I. BACKGROUND**

The heating steam system at KNPP was installed during original plant construction in accordance with the USA Standard (USAS) Code for Pressure Piping, B31.1.0-1967. However, the system was not seismically designed or supported and was designated as a non-safety-related system. The piping was also not required to be evaluated for pipe rupture in accordance with the criteria for high-energy piping. As defined in the KNPP

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Updated Safety Analysis Report (USAR), high-energy piping systems are those which have a service temperature above 200 degrees Fahrenheit and a design pressure above 275 psig. Since the heating steam piping system has a design pressure of 150 psig, and normally operates at a pressure of less than 50 psig, the system was not considered to be high-energy.

A KNPP Safety System Functional Inspection (SSFI) team identified a concern with the heating steam piping in the 1A and 1B battery rooms during a plant walkdown in 1989. The concern was that a failure of the piping system during a seismic event may impact the operation of safety-related electrical equipment in the rooms. As a result of the inspection, a Design Change Request (DCR) was written to seismically mount the system piping and unit heaters located in battery rooms 1A and 1B.

In January 1992, during an inspection of the KNPP steam exclusion system by the NRC resident inspectors, concerns were raised with the presence of non-seismically designed heating steam system piping within areas designated as steam exclusion zones. The heating steam piping is routed through areas containing safety-related equipment. The inspectors questioned the ability of the equipment to withstand the temperature and humidity environment resulting from a failure of the heating steam piping during a seismic event. The heating steam concerns were documented in Inspection Report 92-003, as included in reference 1.

Following discussions with NRC staff, WPSC implemented compensatory measures to alleviate the staff concerns. Heating steam was isolated from several areas of the plant containing safety-related electrical distribution equipment, including the battery rooms, diesel generator rooms and the screenhouse. In addition, administrative controls were implemented to instruct control room operators to isolate heating steam to other steam exclusion zones in response to a seismic event.

KNPP conducted ultrasonic wall-thickness inspections on the heating steam piping in 1986 and 1989, and performed radiography inspections of the piping in 1992. For all inspections, the average percent of wall thinning for each pipe diameter examined was significantly less than the wall loss allowed by the USAS B.31.1.0 code.

A team of WPSC and contractor personnel walked down the piping systems in question on January 30, 1992, to determine if potential seismic vulnerabilities existed. The walkdown team determined that the piping and associated unit heaters were in no danger of collapse if a seismic event were to occur. However, since the piping systems were not seismically designed, WPSC determined that further evaluations were necessary to demonstrate that the piping systems would maintain integrity under seismic loadings.

## II. EVALUATION METHODOLOGY

WPSC proposes to conduct detailed analyses of the heating steam piping and unit heaters located within safety-related areas of the plant. The analyses will be performed in accordance with WPSC's implementation program for IE Bulletin 79-14 (reference 2), including field walkdowns, engineering evaluations and piping and piping support analysis.

Piping stress allowables will be computed in accordance with USAS B31.1.0 - 1967 Code allowables as described in Table B.7-3 of the KNPP USAR. Any required modifications to the system piping, piping supports and unit heater supports will be made to ensure that piping stress levels remain below the USAR allowables.

## III. SCHEDULE

A design change request has been initiated to evaluate and upgrade the heating steam system piping and unit heaters located in battery rooms 1A and 1B. All required modifications to the battery room piping systems are expected to be complete by May, 1993. Steam supply to these rooms is expected to be restored shortly after the modifications are complete.

Walkdowns of the heating steam piping systems in the diesel generator rooms, the screenhouse and areas within the auxiliary building are scheduled to take place in mid-year 1993. Engineering evaluations, including piping and piping support analyses are expected to be complete by the end of 1993. A final schedule for support modifications within these areas has not been completed, but will be established based on resource availability. WPSC will provide this schedule to the NRC on or before March 1, 1994. Following the completion of required piping system modifications for a given area of the plant, the steam supply to the heating system in that area will be restored if it was isolated.

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The evaluation methodology described in this letter is the same as that presented to the NRC staff during a meeting on January 15, 1993 (reference 3). WPSC may evaluate other options for resolution of this issue, but we will notify the NRC prior to implementing any program changes. If there are any questions or concerns with WPSC's proposed methodology or schedule for resolution of this issue, please notify a member of my staff as soon as possible.

Sincerely,



C.A. Schrock  
Manager - Nuclear Engineering

GCR/cjt

cc - US NRC, Region III  
Mr. Patrick Castleman, US NRC

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