George S. Thomas
Vice President-Nuclear Production

PSNH

Public Service of New Hampshire

New Hampshire Yankee Division

NYN-88130

September 30, 1988

United States Nuclear Regulatory Commission
Washington, DC 20555

Attention: Document Control Desk

References: (a) Facility Operating License NPF-56, Docket No. 50-443

(b) NRC Bulletin 88-08, dated June 22, 1988, "Thermal Stresses in Piping Connected to Reactor Coolant Systems"

Subject: Response to NRC Bulletin 88-08

Dear Sir:

In response to Reference (b), this letter describes the actions taken to date at Seabrook Station to ensure that unisolable piping connected to the Reactor Coolant System (RCS) is not subjected to unacceptable thermal stress from either temperature stratification or temperature oscillations that could be caused by valve seat leakage.

In response to action item number one in the Bulletin, each system connected to the RCS was reviewed to determine whether any sections of piping unisolable from the RCS could be subjected to stress from temperature stratification or temperature oscillations induced by a leaking isolation valve. The system review determined that the charging pumps are the only pumps capable of providing the necessary head to drive assumed leakage flow through a closed isolation valve toward an unisolable piping section connected to the RCS. At Seabrook Station, the seven piping lines shown in Figure 1 are pressurized by the charging pumps and connect to the RCS. Four of these lines are High Head Safety Injection lines and the remaining three are Charging System lines (the normal and alternate loop charging lines and the pressurizer auxiliary spray line). The unisolable sections of piping in each of these seven lines have therefore been identified as potentially susceptible to previously unanalyzed thermal stress from a leaking isolation valve.

With respect to action item number two in the Bulletin, it has been determined that non-destructive examination of the potentially susceptible areas of the four High Head Safety Injection lines will be performed prior to initial criticality. Non-destructive examination of the three potentially susceptible piping sections identified in the Charging System is not meaningful because these piping sections have not been subjected to excessive thermal stress. In the Charging System, the temperature differences imposed upon the unisolable piping sections during normal power operation are limited to acceptable values because any leakage would first pass through the regenerative heat exchanger and become significantly heated. Additionally, to date, the RCS has been operated at temperatures exceeding 200°F for less than eighty days. In each of the potentially susceptible lines, the closed isolation valves are new valves designed to meet a specification that limits leakage.

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In response to action item number three in the Bulletin, a temperature monitoring program for the High Head Safety Injection System lines is currently being developed and will be implemented prior to initial criticality. This program will place temperature monitoring instrumentation on each of the four High Head Safety Injection unisolable piping sections to detect adverse temperature distributions. The program will specify appropriate temperature limits, define requirements for periodic review of temperature measurements and set forth action to be taken in the event of exceeding a temperature limit.

It has been determined that the scope of the program will not include the three Charging System lines. Assumed leakage through a closed isolation valve in either the normal charging, alternate charging or pressurizer auxiliary spray line would be heated to acceptable levels by the heating action of the regenerative heat exchanger. Each of these Charging System lines is fully insulated downstream of the regenerative heat exchanger; thus the loss of heat from the piping to the containment is minimal. Therefore, the maximum expected temperature difference that could occur in each of these unisolable piping sections resulting from assumed leakage through a closed isolation valve could not induce a level of cyclic thermal stress exceeding the material endurance limit; thus the material could withstand additional thermal stress cycles without failure due to fatigue.

In summary, as a result of the requested evaluation of Reference (b), seven piping sections unisolable from the RCS were identified to be potentially susceptible to previously unanalyzed thermal stress that could be induced by a leaking isolation valve. Non-destructive examination of the four unisolable piping sections in the High Head Safety Injection System will be performed and a temperature monitoring program to detect deleterious valve leakage in these piping sections will be implemented prior to initial criticality.

Should you have any questions regarding this information, please contact Mr. Geoffrey Kingston at (603) 474-9574, extension 3371.

Very truly yours,

George S. Thomas

Enclosure

cc: Mr. William T. Russell
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STATE OF NEW HAMPSHIRE

Rockingham, ss. September 30, 1988

Then personally appeared before me, the above-named George S. Thomas who, being duly sworn, did state that he is Vice President - Nuclear Production of Public Service Company of New Hampshire, that he is duly authorized to execute and file the foregoing information in the name and on the behalf of Public Service Company of New Hampshire, and that the statements therein are true to the best of his knowledge and belief.

Marilyn R. Sullivan

Marilyn R. Sullivan, Notary Public
My Commission Expires: April 29, 1992

Figure 1

Piping Containing Unisolable Sections Potentially Susceptible to Thermal Stress from a Leaking Isolation Valve