December 27, 2001

Mr. Michael A. Balduzzi
Senior Vice President and Chief Nuclear Officer
Vermont Yankee Nuclear Power Corporation
185 Old Ferry Road
P.O. Box 7002
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SUBJECT: VERMONT YANKEE NUCLEAR POWER STATION - CORRECTION FOR AN INSERVICE INSPECTION RELIEF REQUEST FROM REQUIREMENTS OF SECTION XI OF THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS BOILER AND PRESSURE VESSEL CODE (ASME CODE) (TAC NO. MB2310)

Dear Mr. Balduzzi:

On November 20, 2001, the Nuclear Regulatory Commission (NRC) authorized an alternative to Section XI of the ASME Code pursuant to 10 CFR 50.55(a)(3)(ii) for the third 10-year inservice inspection interval for Vermont Yankee Nuclear Power Station (VY). This action was in response to your letter of June 29, 2001, that submitted Relief Request No. P-3.

This letter corrects an omission on pages 3 and 4 of the safety evaluation (SE) provided with the November 20, 2001, letter. The submittal of June 29, 2001, requested relief for both the high-pressure coolant injection (HPCI) system and the reactor core isolation cooling (RCIC) system. In the introduction and background sections of the SE, the staff did note that both HPCI and RCIC were included in the relief, however, RCIC was inadvertently omitted from the evaluation and conclusion sections. The evaluation of this request did include both HPCI and RCIC. This correction does not change the conclusion of the SE. Enclosed please find corrected SE pages. We apologize for any inconvenience this may have caused.

Sincerely,

/RA/

James W. Clifford, Chief, Section 2
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-271

Enclosure: As stated

cc w/encl: See next page

Vermont Yankee Nuclear Power Station

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> Prior to performing the VT-2 visual examination, the system shall be pressurized to nominal operating pressure for a minimum of 10 minutes. The system shall be maintained at nominal operating pressure during performance of the VT-2 visual examination.

A minimum 10-minute hold time prior to visual inspection will provide adequate assurance of the leak-tight integrity of insulated components."

2.5 Licensee's Basis for Relief (as stated)

"Code Case N-498-1 specifies that pressure tests include a 4-hour hold time prior to performing the VT-2 visual examination of insulated systems. Compliance with the 4-hour hold time will result in a hardship, without a compensating increase in quality or safety.

The HPCI and RCIC systems are not required to operate during normal plant operation. These systems are periodically functionally tested in accordance with Technical Specifications [TS] surveillance requirements, for a duration of typically between 30 to 40 minutes each quarter. Operation of these systems adds heat to the suppression pool. Control of these additional heat loads for extended periods of system operation (e.g., 4 hours) would require operating the Residual Heat Removal (RHR) system in suppression pool cooling mode. In order to place the RHR system in suppression pool cooling mode at power, Technical Specifications require entry into the Limiting Condition for Operation (LCO) for the RHR Low Pressure Coolant Injection (LPCI) mode. Extending the HPCI or RCIC system functional test duration to more than four hours in order to satisfy the Code Case N-498-1 hold time would subject the suppression pool to unnecessarily excessive heat loads and could challenge the Technical Specifications suppression pool temperature limit. It would also require remaining in the LPCI LCO for an extended period of time, thereby reducing the availability of safety-related equipment.

HPCI and RCIC systems are operated under a quarterly surveillance program and are therefore monitored operationally 4 times per year or 40 times per ISI interval. Additionally, the proposed alternative hold time is the same as for pressure test requirements performed once each inspection period per ASME Section XI, 1986 IWA-5213(b) for testing required by IWC-2500-1 Category C-H and IWD-2500-1 Category D-B."

3.0 EVALUATION

Both the Code and Code Case N-498-1 specify pressure tests that require a 4-hour hold time prior to performing the VT-2 visual examination during the hydrostatic test of insulated systems. The licensee has stated that compliance with the 4-hour hold time will result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. The licensee has further stated that performance of the test with a 4-hour hold time could compromise plant safety.

Based on the review of information provided, the staff believes that in order to maintain suppression pool temperature within the TS limits, the pressure test and the 4-hour hold time for the subject system would require dedicated operation of the RHR system in the suppression pool cooling mode while the reactor is at power. Furthermore, due to exhaust of steam from the HPCI and/or RCIC turbine into the suppression pool, the steam condensation capability of

the suppression pool will be reduced. Therefore, should an actual plant emergency occur during the test, the ability to bring the plant to a safe shutdown condition could be compromised.

Within each 10-year inspection interval, a system functional test at operating pressure including a VT-2 visual examination is conducted on the system at 40-month intervals in accordance with the Code. At or near the end of each inspection interval, the Code requires a hydrostatic test, which by virtue of Code Case N-498-1, can be a system leakage test requiring pressurization to nominal operating pressure for at least 4 hours prior to the VT-2 visual examination. However, the licensee's proposed alternative would allow performance of the system functional test with pressurization for at least 10 minutes at nominal operating pressure without removal of the insulation in lieu of a 4-hour hold time at this pressure prior to the VT-2 visual examination.

The piping and components subject to the VT-2 visual examination contain steam. The staff believes that steam leaks are audible and, therefore, are more easily detectable than comparable water leaks from insulated components. Therefore, for these components, a reduced hold time for steam piping at nominal operating pressure without removal of the insulation prior to performing VT-2 visual examination is expected to permit detection of leakage. The piping included in this relief are the portions extending from the steam admission valve through the HPCI and RCIC turbine and the turbine exhaust piping to the suppression pool along with the associated drains and vent lines. In an unlikely event of missing a very small leak during a system functional test, the leak can be detected during maintenance activities requiring pump/turbine operation for post-maintenance testing or the next system functional test. Further, assuming reasonable crack growth between consecutive tests for the portion of subject piping which is at system pressure during normal plant operation, the system will also remain functional in spite of a leak. Compliance with the Code requirement would require removal of insulation from the affected piping, conducting the test, and replacement of the insulation following the test. This would result in hardship to the licensee without a compensating increase in the level of quality and safety.

4.0 CONCLUSION

The NRC staff concludes that for HPCI and RCIC turbine inlet and exhaust piping to the suppression pool and the associated drains and vents, maintaining a 4-hour hold time at nominal operating pressure prior to the VT-2 visual examination during a system pressure test challenges the heat limitations of the suppression pool and, thus, could create an operational safety concern. A system functional test at nominal operating pressure with a 10-minute hold time at pressure without removal of the insulation prior to performing the VT-2 visual examination will provide reasonable assurance of leak-tight integrity of the subject system. In addition, the staff considers the removal and subsequent reinstallation of insulation for the sole purpose of complying with the requirements of the applicable Code and Code Case N-498-1 to be a hardship without a compensating increase in the level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(ii), the licensee's proposed alternative is authorized for the third 10-year ISI interval of Vermont Yankee Nuclear Power Station.

Principal Contributor: P. Patnaik

Date: November 20, 2001