

October 31, 2000

Mr. Michael A. Balduzzi  
Vice President, Operations  
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SUBJECT: VERMONT YANKEE NUCLEAR POWER STATION - ISSUANCE OF  
AMENDMENT RE: PRIMARY CONTAINMENT ISOLATION SYSTEM  
INITIATION SIGNALS (TAC NO. MA9981)

Dear Mr. Balduzzi:

The Commission has issued the enclosed Amendment No. 194 to Facility Operating License DPR-28 for the Vermont Yankee Nuclear Power Station, in response to your application dated September 14, 2000, as supplemented on September 22, 2000.

The amendment revises the Technical Specifications (TSs) to clarify the valve isolation signal information in the TS Table 4.7.2 and make an administrative change to the table main steam isolation valves component identification.

A copy of the related Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

**/RA/**

Richard P. Croteau, Sr. Project Manager, Section 2  
Project Directorate I  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket No. 50-271

Enclosures: 1. Amendment No. 194 to  
License No. DPR-28  
2. Safety Evaluation

cc w/encls: See next page

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Vermont Yankee Nuclear Power Station

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VERMONT YANKEE NUCLEAR POWER CORPORATION

DOCKET NO. 50-271

VERMONT YANKEE NUCLEAR POWER STATION

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 194  
License No. DPR-28

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment filed by the Vermont Yankee Nuclear Power Corporation (the licensee) dated September 14, 2000, as supplemented on September 22, 2000, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance: (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 3.B of Facility Operating License No. DPR-28 is hereby amended to read as follows:

(B) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 194 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA/*

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

Attachment: Changes to the Technical  
Specifications

Date of Issuance: October 31, 2000

ATTACHMENT TO LICENSE AMENDMENT NO. 194

FACILITY OPERATING LICENSE NO. DPR-28

DOCKET NO. 50-271

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain vertical lines in the margin indicating the area of change.

**Remove**

159  
162

**Insert**

159  
162

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 194 TO FACILITY OPERATING LICENSE NO. DPR-28  
VERMONT YANKEE NUCLEAR POWER CORPORATION  
VERMONT YANKEE NUCLEAR POWER STATION  
DOCKET NO. 50-271

## 1.0 INTRODUCTION

By letter dated September 14, 2000, as supplemented on September 22, 2000, the Vermont Yankee Nuclear Power Corporation (the licensee) submitted a request to amend the Vermont Yankee Nuclear Power Station (VY) Technical Specifications (TSs). The licensee proposed to clarify the valve isolation signal information in the TS Table 4.7.2 and make an administrative change to the table main steam isolation valves component identification. TS Table 4.7.2 lists containment isolation valves and the Primary Containment Isolation System (PCIS) groups to which the valves are assigned. Note 1 to Table 4.7.2 defines the isolation signals that are associated with the designated groups. The isolation signal description for Group 2 states that the valves are closed upon either low reactor water level or high drywell pressure. Residual heat removal (RHR) containment cooling valves V10-39A/B, V10-34A/B, V10-26A/B, V10-31A/B, and V10-38A/B are designated as Group 2 in Table 4.7.2 and isolate upon either 1) low-low reactor water level and low reactor pressure, or 2) high drywell pressure. Table 4.7.2 and associated Note 1 are being revised to clarify Group 2 isolation signals. Additionally, main steam isolation valve component identifications are revised by this proposed change to more clearly reflect all four inboard and outboard valves. The September 22, 2000, supplemental letter was within the scope of the original application and did not change the staff's proposed no significant hazards consideration determination.

## 2.0 BACKGROUND

To provide timely protection against the onset and consequences of accidents involving the gross release of radioactive materials from the fuel and nuclear system process barrier, the primary containment and reactor vessel isolation control system initiates automatic isolation of appropriate pipelines that penetrate the primary containment whenever monitored variables exceed preselected operational limits.

TS Table 4.7.2 lists primary containment isolation valves by isolation groups. The valves identified as Group 2 include:

- RHR Discharge to Radwaste (10-57, 10-66)
- Drywell Floor Drain (20-82, 20-83)
- Drywell Equipment Drain (20-94, 20-95)
- RHR Return to Suppression Pool (10-39A, B)
- RHR Return to Suppression Pool (10-34A, B)
- RHR Drywell Spray (10-26A, B & 10-31A, B)
- RHR Suppression Chamber Spray (10-38A, B)

Note 1 to Table 4.7.2 lists isolation signals by isolation groups. For Group 2, Note 1 states:

"The valves in Group 2 are closed upon any one of the following conditions:

1. Low reactor water level
2. High drywell pressure"

The VY Final Safety Analysis Report (FSAR) Table 7.3.1 lists the primary containment and reactor vessel isolation valves, designated Group 2 in TS Table 4.7.2, that close on low reactor vessel water level or high drywell pressure signals as: RHR Discharge to Radwaste (10-57, 10-66); Drywell Floor Drain (20-82, 20-83); and Drywell Equipment Drain (20-94, 20-95).

However, FSAR Table 7.3.1 lists the primary containment and reactor vessel isolation valves, designated Group 2 in TS Table 4.7.2, that close on reactor vessel low-low level (with concurrent low reactor pressure for RHR and core spray only), rather than low reactor water level as specified in the current TS, or high drywell pressure signals as: RHR Return to Suppression Pool (10-39A, B); RHR Return to Suppression Pool (10-34A, B); RHR Drywell Spray (10-26A, B and 10-31A, B); and RHR Suppression Chamber Spray (10-38A, B). The isolation signal codes associated with these valves are specified in the list attached to FSAR Table 7.3.1 as: signal G - high drywell pressure or reactor vessel low-low reactor water level (with coincident low reactor pressure for RHR and core spray only); and signal RM - remote manual closure (signal RM).

Therefore, the licensee proposed clarifying TS Table 7.3.1 to indicate that valves V10-39A/B, V10-34A/B, V10-31A/B, and V10-38A/B are closed upon either 1) low-low reactor water level and low reactor pressure or 2) high drywell pressure.

In addition, TS Table 4.7.2 lists the component identification for main steam isolation valves on page 159 as "(2-80A, D & 2-86A, D)." This listing is incomplete because the VY main steam isolation valves are identified in current plant configuration documents as 2-80A, B, C, and D and 2-86A, B, C, and D. The licensee stated that TS Table 4.7.2 should more clearly identify all four inboard and outboard main steam isolation valves as primary containment isolation valves and proposed a complete listing of the main steam isolation valves.



### 3.0 EVALUATION

The licensee stated that the intent of TS Table 4.7.2 Note 1 is to define isolation valve actuation signals. By clarifying that the 10 containment cooling valves listed in Table 4.7.2 isolate on 1) low-low reactor vessel level and low reactor pressure, or 2) high drywell pressure signals, an accurate description will be provided.

The licensee also stated that an abnormally decreasing reactor vessel water level or high drywell pressure could indicate a breach in the nuclear process system barrier. Vessel level and drywell pressure instruments initiate signals to actuate both primary containment isolation and ECCS initiation. The first isolation trip setting, 127" above top of enriched fuel and defined as "low reactor water level", was selected to initiate isolation of certain valves at the earliest indication of a possible breach, yet far enough below normal operational levels to avoid spurious actuation. Valves designated as PCIS Group 2 that isolate at this trip setting include RHR Discharge to Radwaste (10-57, 10-66); Drywell Floor Drain (20-82, 20-83); and Drywell Equipment Drain (20-94, 20-95). The second level trip setting, 82.5" above top of enriched fuel and defined as "low-low reactor water level", is indicative of a potential significant loss of vessel water inventory and isolates remaining valves in lines that are not needed for safety features or required for cooling capability. This trip setting also initiates ECCS and isolation of the RHR containment cooling valves.

The licensee stated that valves V10-39A/B, V10-34A/B, V10-26A/B, V10-31A/B, and V10-38A/B are designed to perform both a primary containment isolation function and an isolation function in support of RHR LPCI operation. These valves close automatically, if open, upon receipt of an ECCS actuation signal, to ensure that adequate core cooling is being directed to the reactor core via the LPCI mode of RHR operation.

The licensee also stated that the proposed change does not affect the ability of the primary containment isolation or ECCS to perform their required safety functions. The VY accident analysis assumes valves V10-39A/B, V10-34A/B, V10-26A/B, V10-31A/B, and V10-38A/B are in their normally closed position prior to accident initiation, thereby maintaining primary containment integrity and ensuring 10 CFR Part 100 limits are met. The closed position of these valves prior to the accident also facilitates alignment of the RHR system in LPCI mode to ensure adequate core cooling in accordance with 10 CFR 50.46. A logic signal to maintain these valves in a closed position results from a 1) low-low reactor vessel level and low reactor pressure, or 2) high drywell pressure condition. Therefore, it is unnecessary for these valves to close on a low reactor vessel level signal.

Although the accident analysis assumes these valves are in the normally closed position, these valves may be open during operation to perform valve testing or for torus cooling.

These valves are stroked open and closed one at a time during inservice operability testing quarterly. During this testing, the isolation valve in each line not being tested is verified closed in accordance with the surveillance procedure. This administrative control ensures primary containment integrity is maintained and adequate core cooling is available if needed, thereby validating the accident analysis assumptions.

The licensee stated that torus cooling valves (V10-34A/B, V10-39A/B) may be open for a limited time during normal operation in support of torus water level or temperature control. If an accident were to occur in this condition, these valves would automatically isolate on a 1) low-low reactor vessel level and low reactor pressure or 2) high drywell pressure condition. Closure of these valves ensures primary containment integrity is maintained and adequate core cooling is available if needed. The probability of an accident occurring while in torus cooling mode is insignificant due to the limited duration of operation in this configuration as allowed by Technical Specifications. Therefore, the difference in the isolation signal setpoint is inconsequential.

There are no physical changes to the plant and no change in the method of operation proposed by this TS change. The current TS did not identify that the group 2 isolation valves V10-39A/B, V10-34A/B, V10-26A/B, V10-31A/B, and V10-38A/B actually close automatically on 1) low-low reactor water level and low reactor pressure or 2) high drywell pressure rather than closing automatically on 1) low reactor water level or 2) high drywell pressure. As previously stated, the FSAR documents that these Group 2 isolation valves close on high drywell pressure or reactor vessel low-low reactor water level (with coincident low reactor pressure for RHR and core spray only); and signal RM - remote manual closure (signal RM).

The current TSs did not reflect the actual plant construction and the description provided in the FSAR. The licensee proposed correcting the TS with this amendment request. The staff has reviewed the proposed TS changes to indicate that V10-39A/B, V10-34A/B, V10-26A/B, V10-31A/B, and V10-38A/B actually close automatically on 1) low-low reactor water level and low reactor pressure or 2) high drywell pressure and finds the proposed changes acceptable because these valves are normally closed. In addition, if the valves are open for quarterly testing or torus cooling, the difference in setpoint between low and low-low water level is inconsequential considering the probability of an accident occurring at these times.

The proposed addition to the TS to identify all four inboard and outboard main steam isolation valves on Table 4.7.2 is proposed to ensure completeness of primary containment isolation valve information in the TS. The staff has reviewed this proposed change and considers it acceptable because all main steam isolation valves receive these isolation signals and it is appropriate to refer to the complete list in the TS.

#### 4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Vermont State official was notified of the proposed issuance of the amendment. The State official had no comment.

#### 5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (65 FR 58111). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental

impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

## 6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: R. Croteau

Date: October 31, 2000