

September 21, 1999

Mr. Robert J. Wanczyk  
Acting Director of Operations  
Vermont Yankee Nuclear Power Corporation  
185 Old Ferry Road  
Brattleboro, VT 05301

SUBJECT: VERMONT YANKEE NUCLEAR POWER STATION - ISSUANCE OF  
AMENDMENT RE: SAFETY LIMIT - MINIMUM CRITICAL POWER RATIO  
(TAC NO. MA6060)

Dear Mr. Wanczyk:

The Commission has issued the enclosed Amendment No. 176 to Facility Operating License DPR-28 for the Vermont Yankee Nuclear Power Station, in response to your application dated July 12, 1999.

The amendment revises the value for the minimum critical power ratio safety limit and deletes the wording specifying the limit as cycle 20 values.

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,  
ORIGINAL SIGNED BY:  
Richard P. Croteau, 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. 176 to License No. DPR-28  
2. Safety Evaluation

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

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Sincerely,

A handwritten signature in black ink, appearing to read "R. Croteau".

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

Docket No. 50-271

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License No. DPR-28  
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cc w/ encls: See next page

Vermont Yankee Nuclear Power Station

cc:

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

VERMONT YANKEE NUCLEAR POWER CORPORATION

DOCKET NO. 50-271

VERMONT YANKEE NUCLEAR POWER STATION

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 176  
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 July 12, 1999, 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.

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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. 176, 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 60 days.

FOR THE NUCLEAR REGULATORY COMMISSION



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: September 21, 1999

ATTACHMENT TO LICENSE AMENDMENT NO. 176

FACILITY OPERATING LICENSE NO. DPR-28

DOCKET NO. 50-271

Replace the following page of the Appendix A Technical Specifications with the attached revised page. The revised page is identified by amendment number and contains marginal lines indicating the areas of change.

Remove

Insert

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## 1.1 SAFETY LIMIT

1.1 FUEL CLADDING INTEGRITYApplicability:

Applies to the interrelated variable associated with fuel thermal behavior.

Objective:

To establish limits below which the integrity of the fuel cladding is preserved.

Specification:A. Bundle Safety Limit (Reactor Pressure >800 psia and Core Flow >10% of Rated)

When the reactor pressure is >800 psia and the core flow is greater than 10% of rated:

1. A Minimum Critical Power Ratio (MCPR) of less than 1.10 (1.12 for Single Loop Operation) shall constitute violation of the Fuel Cladding Integrity Safety Limit (FCISL).

## 2.1 LIMITING SAFETY SYSTEM SETTING

2.1 FUEL CLADDING INTEGRITYApplicability:

Applies to trip setting of the instruments and devices which are provided to prevent the nuclear system safety limits from being exceeded.

Objective:

To define the level of the process variable at which automatic protective action is initiated.

Specification:A. Trip Settings

The limiting safety system trip settings shall be as specified below:

1. Neutron Flux Trip Settingsa. APRM Flux Scram Trip Setting (Run Mode)

When the mode switch is in the RUN position, the APRM flux scram trip setting shall be as shown on Figure 2.1.1 and shall be:

$$S \leq 0.66(W - \Delta W) + 54\%$$

where:

S = setting in percent of rated thermal power (1593 MWt)

W = percent rated two loop drive flow where 100% rated drive flow is that flow equivalent to  $48 \times 10^6$  lbs/hr core flow



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO.176 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 July 12, 1999, the Vermont Yankee Nuclear Power Corporation (the licensee) submitted a request to amend the Vermont Yankee Nuclear Power Station (VY) Technical Specifications (TSs). The proposed amendment would revise the value for the minimum critical power ratio safety limit and delete the wording specifying the limit as cycle 20 values.

2.0 EVALUATION

The licensee proposes changes to the value of the safety limit M CPR (SLM CPR) in TS 1.1.A.1 from 1.11 to 1.10 for two recirculation loop operation and from 1.13 to 1.12 for single recirculation loop operation when the reactor steam pressure is greater than 800 psia and core flow greater than 10 percent rated core flow. The removal of cycle-specific statements, "For the Cycle 20 core loading, the existence of " and "Core loading subsequent to Cycle 20 will require recalculation of the M CPR" are also proposed.

The licensee described the methodology used to calculate the SLM CPR value for the TS in the submittal. The Cycle 21 SLM CPR analysis was performed by GE Nuclear Energy (GENE) using the plant-specific and cycle-specific fuel and core parameters and NRC approved methodologies described in GESTAR-II (NEDE-24011-P-A-11, Sections 1.1.5 and 1.2.5), NEDO-10958-A, January 1977 and Amendment 25 to GESTAR-II.

The staff has reviewed the justification for the SLM CPR value of 1.10 for two recirculation loop operation and 1.12 for single loop operation for Cycle 21 using the approach stated in Amendment 25 to GESTAR-11, NEDE-24011 and in NEDO-32601.

Based on our review of the submittal and the detailed summary results of the analysis for the Cycles 20 and 21 operation, the staff has concluded that the Cycle 21 SLM CPR analysis for VY using the plant-specific and cycle-specific calculation in conjunction with the approved method is acceptable for VY. The Cycle 21 SLM CPR will ensure that 99.9 percent of the fuel rods in the core will not experience boiling transition which satisfies the requirements of General Design Criterion 10 of Appendix A to 10 CFR Part 50 regarding acceptable fuel design limits. The staff has concluded that the justification for the SLM CPR value of 1.10 for two loop and 1.12 for single loop for VY Cycle 21 operation is acceptable because approved methodologies were used. The proposed removal of cycle-specific statements is also acceptable because the

analysis is already performed using plant-specific and cycle-specific parameters in accordance with the procedures specified in Amendment 25 to GESTAR-II, NEDE-2401-P-A.

### 3.0 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 comments.

### 4.0 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 (64 FR 40910). 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.

### 5.0 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: T. Huang

Date: September 21, 1999