

June 5, 1990

Docket No. 50-271

Mr. L. A. Tremblay
Licensing Engineer
Vermont Yankee Nuclear Power Corporation
580 Main Street
Bolton, Massachusetts 01740-1398

Dear Mr. Tremblay:

SUBJECT: ISSUANCE OF AMENDMENT NO. 123 TO FACILITY OPERATING LICENSE
NO. DPR-28 - VERMONT YANKEE NUCLEAR POWER STATION (TAC NO. 76094)

The Commission has issued the enclosed Amendment No. 123 to Facility Operating License No. DPR-28 for the Vermont Yankee Nuclear Power Station. This amendment is in response to your application dated February 28, 1990.

This amendment modifies Technical Specification (TS) 5.2.B of the Design Features section. Specifically, it adds to the description of the control rod material to include hafnium as well as boron carbide. This change will enable the licensee to use control rods containing hafnium.

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

This completes action under TAC 76094.

Sincerely,

Is/
R. EATON

For Morton B. Fairtile, Project Manager
Project Directorate I-3
Division of Reactor Projects I/II
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 123 to
License No. DPR-28
2. Safety Evaluation

cc w/enclosures:
See next page

9006140098 900605
PDR ADOCK 05000271
P PDC

OFC	: PDI-3/PM	: PDI-3/LA	: OGE	: PDI-3/D	:
NAME	: MFairtile	: MRushbrook	: RBachmann	: RWessman	:
DATE	: 05/23/90	: 05/27/90	: 05/27/90	: 06/15/90	:

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3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

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Richard H. Wessman, Director
Project Directorate I-3
Division of Reactor Projects I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: June 5, 1990

OFC	: PDI-3/PM	: PDI-3/LA	: OGC	: PDI-3/D	:	:	:
NAME	: MBFairlie	: MRushbrook	: RBachmann	: RHWessman	:	:	:
DATE	: 5/27/89	: 5/27/89	: 5/31/89	: 6/5/89	:	:	:

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

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This completes action under TAC 76094.

Sincerely,

A handwritten signature in dark ink, appearing to read "Morton B. Fairtile", is written over the typed name.

Morton B. Fairtile, Project Manager
Project Directorate I-3
Division of Reactor Projects I/II
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 123 to
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2. Safety Evaluation

cc w/enclosures:
See next page

Mr. L. A. Tremblay

cc:

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Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Mr. L. A. Tremblay

cc:

Mr. Gustave A. Linenberger, Jr.
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Resident Inspector
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Adjudicatory File (2)
Atomic Safety and Licensing Board
Panel Docket
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

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AMENDMENT NO. 123 TO DPR-28 VERMONT YANKEE NUCLEAR POWER STATION DATED June 5, 1990

DISTRIBUTION:

Docket File 50-271 ←
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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. 123
License No. DPR-28

1. The Nuclear Regulatory Commission (the Commission or the NRC) has found that:
 - A. The application for amendment filed by the Vermont Yankee Nuclear Power Corporation (the licensee) dated February 28, 1990 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 set forth in 10 CFR Chapter I;
 - 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:

Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 123, 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.

FOR THE NUCLEAR REGULATORY COMMISSION



Richard H. Wessman, Director
Project Directorate I-3
Division of Reactor Projects I/II
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: June 5, 1990

ATTACHMENT TO LICENSE AMENDMENT NO. 123

FACILITY OPERATING LICENSE NO. DPR-28

DOCKET NO. 50-271

Replace the following page of the Appendix A Technical Specifications with the attached page. The revised page is identified by Amendment number and contains vertical lines indicating the area of change.

Remove
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Insert
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5.0 DESIGN FEATURES

5.1 Site

The station is located on the property on the west bank of the Connecticut River in the Town of Vernon, Vermont, which the Vermont Yankee Nuclear Power Corporation either owns or to which it has perpetual rights and easements. The site plan showing the exclusion area boundary, boundary for gaseous effluents and boundary for liquid effluents is on Figure 2.2-5 in the FSAR. The minimum distance to the boundary of the exclusion area as defined in 10CFR100.3 is 910 feet.

No part of the site shall be sold or leased and no structure shall be located on the site except structures owned by the Vermont Yankee Nuclear Power Corporation or related utility companies and used in conjunction with normal utility operations.

5.2 Reactor

- A. The core shall consist of not more than 368 fuel assemblies.
- B. The reactor core shall contain 89 cruciform-shaped control rods. The control material shall be boron carbide powder (B_4C) or hafnium, or a combination of the two.

5.3 Reactor Vessel

The reactor vessel shall be as described in Table 4.2-3 of the FSAR. The applicable design codes shall be as described in subsection 4.2 of the FSAR.

5.4 Containment

- A. The principal design parameters and applicable design codes for the primary containment shall be as given in Table 5.2.1 of the FSAR.
- B. The secondary containment shall be as described in subsection 5.3 of the FSAR and the applicable codes shall be as described in Section 12.0 of the FSAR.
- C. Penetrations to the primary containment and piping passing through such penetrations shall be designed in accordance with standards set forth in subsection 5.2 of the FSAR.

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
SUPPORTING AMENDMENT NO. 123 TO FACILITY OPERATING LICENSE NO. DPR-28

VERMONT YANKEE NUCLEAR POWER CORPORATION

VERMONT YANKEE NUCLEAR POWER STATION

DOCKET NO. 50-271

INTRODUCTION

By letter dated February 28, 1990, the Vermont Yankee Nuclear Power Corporation (the licensee) proposed a change to Technical Specification 5.2 of the Design Features section of the Technical Specifications (TS). The proposed change revises the TS to add hafnium as an alternate absorber material in the control blades. This would allow the control blades in the reactor to contain either B₄C powder or hafnium, or a combination of the two as the control material. The reason for this change is that hafnium absorber material can prolong the control blade nuclear lifetime and reduce the number of discharged blades, thereby reducing the on-site storage and handling.

EVALUATION

The staff discovered in late 1988 that hafnium control rods in some PWRs can swell due to cracking and hydriding. The affected licensees have taken remedial actions to correct this problem, and have implemented surveillance plans. Although the staff has not yet observed any similar problem of hafnium swelling and cracking in BWRs, we will continue to monitor the hafnium mechanical and nuclear performance in BWRs.

The use of hafnium as an alternative control material in BWRs has been approved in lead test assembly designs. General Electric and ASEA-ATOM have previously used the combination of hafnium and B₄C control material in control blade designs. In general, hafnium has effectively shown satisfactory neutronic performance. The use of hafnium material minimizes the problem of intergranular stress corrosion cracking (IGSCC) associated with the B₄C material because hafnium produces less fission gas and thus less swelling than B₄C. Therefore, designers frequently employ hafnium in the top 6 inches in the outer row of tubes because these areas experience higher neutron flux.

The licensee stated that "For alternative control rod designs, the Limiting Conditions of Operation (LCOs) 3.3.A, 3.3.B, and 3.3.C protect the integrity of the plant. These LCOs provide the minimum shutdown margin, require a shutdown margin demonstration, restrict the control rod drop accident impact, and specify the average and four-rod group scram times. The impact of utilizing a

new control rod design on each of these LCOs as well as the impact on licensing using the approved methods listed in Specification 6.7.A.4, will be verified before installation."

On the basis of the above considerations the staff concludes that the use of hafnium control material and the associated Technical Specification change are acceptable for Vermont Yankee.

ENVIRONMENTAL CONSIDERATION

This amendment involves a change in a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The staff has determined that the amendment involves no significant increase in the 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 published a proposed finding that the amendment involves no significant hazards consideration and there has been no public comment on such finding. Accordingly, this 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 this amendment.

CONCLUSION

The Commission made a proposed determination that the amendment involves no significant hazards consideration which was published in the Federal Register (55 FR 10546) on March 21, 1990 and consulted with the State of Vermont. No public comments were received and the State of Vermont did not have any comments.

The staff 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, and (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: S.L. Wu
V. Rooney

Dated: June 5, 1990