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Docket No. 50-271

AUG 1974

AUG 23 1974

**Yankee Atomic Electric Company**  
 ATTN: Mr. G. Carl Andognini  
 Assistant to the Vice President  
 20 Turnpike Road  
 Westboro, Massachusetts 01581

Gentlemen:

The Commission has issued the enclosed Amendment No. 8 to Facility License No. DPR-28. This amendment includes Change No. 19 to the Technical Specifications, Appendix A, and is in response to Vermont Yankee's request dated July 25, 1974.

This amendment incorporates a surveillance requirement to remove a neutron flux dosimeter during the first refueling outage (Fall 1974) rather than the third refueling outage and makes changes to conform with recent ASTM requirements for neutron flux material samples.

The Safety Evaluation and the Federal Register Notice relating to this action are also enclosed.

Sincerely,

Original signed by:  
 Karl R. Goller

Karl R. Goller, Assistant Director  
 for Operating Reactors  
 Directorate of Licensing

**Enclosures:**

1. Amendment No. 8  
 w/Change No. 19
2. Safety Evaluation
3. Federal Register Notice

cc w/encls:  
 See attached

OFFICE ▶	L:ORB-2	L:ORB-2	L:ORB-2	OGC	L:AD/ORs	
SURNAME ▶	x7403:esp FDAnderson	RMDiggs	DLZiemann	OGC Santalia	KRG KRGoller	g
DATE ▶	8/8/74	8/8/74	8/9/74	8/21/74	8/22/74	

AUG 23 1974

cc w/encls:

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David Schoenbrod, Esquire  
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Chairman, Vermont Public Service  
Board  
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Mr. David M. Scott  
Radiation Health Engineer  
Agency of Human Services  
Division of Occupational Health  
P. O. Box 607  
Barre, Vermont 05641

additional cc: See next page

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cc w/encls:  
Brooks Memorial Library  
224 Main Street  
Brattleboro, Vermont 05301

New England Coalition on Nuclear  
Pollution  
Hill and Dale Farm  
West Hill - Faraway Road  
Putney, Vermont 05346

Mr. Raymond H. Puffer  
Chairman  
Board of Selectman  
Vernon, Vermont 05354

cc w/encls and copy of  
7/25/74 application:  
Mr. Wallace Stickney  
Environmental Protection Agency  
JFK Federal Building  
Boston, Massachusetts 02203

Mr. Richard V. DeGrasse  
State of Vermont  
Public Service Board  
7 School Street  
Montpelier, Vermont 05602

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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. 8  
License No. DPR-28

1. The Atomic Energy Commission (the Commission) having found that:
  - A. The application for amendment by Vermont Yankee Nuclear Power Corporation (the licensee) dated July 25, 1974, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended, and the Commission's rules and regulations set forth in 10 CFR Chapter 1;
  - 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. Prior public notice of this amendment is not required since the amendment does not involve a significant hazards consideration.
2. Accordingly, the license is amended by a change to the Technical Specifications as indicated in the attachment to this license amendment and Paragraph 3.B of Facility License No. DPR-28 is hereby amended to read as follows:

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**B. Technical Specifications**

The Technical Specifications contained in Appendices A and B as revised, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications, as revised by issued changes thereto through Change No. 19.

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

FOR THE ATOMIC ENERGY COMMISSION

Original signed by:  
Karl R. Goller

Karl R. Goller, Assistant Director  
for Operating Reactors  
Directorate of Licensing

**Attachment:**

Change No. 19 to Appendix A  
Technical Specifications

Date of Issuance: *APR 18 1957*

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ATTACHMENT TO LICENSE AMENDMENT NO. 8

CHANGE NO. 19 TO APPENDIX A TECHNICAL SPECIFICATIONS

FACILITY OPERATING LICENSE NO. DPR-28

Delete pages 106 and 118 from the Technical Specifications and insert the attached replacement pages.

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3.6 LIMITING CONDITIONS FOR OPERATION

4. The pump in an idle recirculation loop shall not be started unless the temperatures of the coolant within the idle and operating recirculation loops are within 50°F of each other.

B. Coolant Chemistry

1. The steady state radioiodine concentration in the reactor coolant shall not exceed 1.1 microcuries of I-131 dose equivalent per gram of water.

Change 19/August 23, 1974

4.6 SURVEILLANCE REQUIREMENTS

3. When the reactor vessel head bolting studs are tightened or loosened the reactor vessel shell temperature immediately below the head flange shall be permanently recorded.
4. Prior to and during startup of an idle recirculation loop the temperature of the reactor coolant in the operating and idle loops shall be permanently logged.
5. A neutron flux dosimeter and material samples shall be installed in the reactor vessel adjacent to the vessel wall at the core mid-plane level. The material sample program shall conform to ASTM E185-66. A dosimeter shall be removed during the first refueling outage and tested to verify or adjust the calculated values of neutron fluence used to determine the vessel NDTT for Figure 3.6.1.

B. Coolant Chemistry

1. a. A sample of reactor coolant shall be taken at least every 96 hours and analyzed for radioactive iodines of I-131 through I-135 during power operation. In addition, when steam jet air ejector monitors indicate an increase in radioactive gaseous effluents of 25 percent or 5000 uCi/sec, whichever is greater, during steady state reactor operation a reactor coolant sample shall be taken and analyzed for radioactive iodines.
- b. An isotopic analysis of a reactor coolant sample shall be made at least once per month.

The "worst case" curve relating change in transition temperature to neutron fluence as presented in the FSAR was used to construct the "Minimum Reactor Pressurization Temperature" curve of Figure 3.6.1. This curve is based on an initial NDT of the vessel shell adjacent to the core. A 60°F margin based on the requirements of Section III of the ASME Boiler and Pressure Vessel Code, and a 60°F margin to account for the thickness effect of heavy section steel were added to 40°F to give the 160°F minimum temperature from initial operation to the time when the neutron fluence exceeds  $5 \times 10^{16}$  nvt. At that time the minimum temperature will increase steadily as the neutron fluence increases based on the "worst case" curve. After 40 years of operation the minimum operating temperature will be about 180°F.

The reactor vessel head flange and the vessel flange in combination with the double "O" ring type seal are designed to provide a leak tight seal when bolted together. When the vessel head is placed on the reactor vessel, only that portion of the head flange near the inside of the vessel rests on the vessel flange. As the head bolts are replaced and tensioned, the vessel head is flexed slightly to bring together the entire contact surfaces adjacent to the "O" rings of the head and vessel flange. The head flange and adjacent plate have an NDT of 10°F and are not subjected to any appreciable neutron fluence; therefore, the minimum temperature for bolting the vessel flange is  $10^{\circ}\text{F} + 60^{\circ}\text{F} = 70^{\circ}\text{F}$ .

Numerous data are available relating integrated flux and the change in nil-ductility transition temperature (NDTT) in various steels. The most conservative data has been used in Specification 3.6. The integrated flux at the vessel wall is calculated from core physics data and will be measured using flux monitors installed inside the vessel. The measurements of the neutron flux at the vessel wall will be used to check and, if necessary, correct the calculated data to determine an accurate NDTT.

In addition, vessel material samples will be located within the vessel to monitor the effect of neutron exposure on these materials. The samples include specimens of base metal, weld zone metal, heat affected zone metal, and standard specimens. These samples will receive neutron exposure more rapidly than the vessel wall material and, therefore, will lead the vessel in integrated neutron flux exposure. These samples will provide further assurance that the shift in NDTT used in the specification is conservative.

## B. Coolant Chemistry

A steady state radioiodine concentration limit of 1.1 uCi of I-131 dose equivalent per gram of water in the reactor coolant system can be reached if the gross radioactivity in the gaseous effluents are near the limit as set forth in Specification 3.8.A.2 or there is a failure or prolonged shutdown of the cleanup demineralizer. In the event of a steam line rupture outside the drywell, the AEC staff calculations show the resultant radiological dose at the site boundary to be less than 30 Rem to the thyroid. This does was



SAFETY EVALUATION BY THE DIRECTORATE OF LICENSING

SUPPORTING AMENDMENT NO. 8 TO FACILITY OPERATING LICENSE NO. DPR-28

(CHANGE NO. 19 TO APPENDIX A TECHNICAL SPECIFICATIONS)

VERMONT YANKEE NUCLEAR POWER CORPORATION

VERMONT YANKEE NUCLEAR POWER STATION

DOCKET NO. 50-271

INTRODUCTION

By letter dated July 25, 1974, the Vermont Yankee Nuclear Power Corporation (VYNPC) requested changes to the Technical Specifications appended to Facility Operating License No. DPR-28 for the Vermont Yankee Nuclear Power Station. The proposed changes would:

1. Require removal of a neutron flux dosimeter during the first refueling outage (Fall 1974) rather than during the third refueling outage.
2. Incorporate changes to conform with recent ASTM requirements for neutron flux material samples.

DISCUSSION

The proposed changes to the Technical Specifications do not involve any limits on reactor operations or safety related equipment. The proposed changes relate to the surveillance requirements for removal of neutron flux dosimeters (flux wires). The results from an analysis of these dosimeters provide data used to assess the accuracy of calculated values for the expected neutron fluence on the reactor pressure vessel. The experimental data obtained during actual operation of the reactor is used to verify or adjust the predicted shift in nil-ductility transition temperature for the reactor pressure vessel materials. The proposed change will require removal of the neutron flux dosimeter during the first refueling outage (Fall 1974) rather than during the third refueling outage. The purpose of the early removal is to prevent possible loss of the experimental data because of degradation of the flux wire which has been observed to occur in other reactors. Although the upcoming

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refueling outage is by definition, the first refueling, it is actually the third time that some refueling of the Vermont Yankee core has occurred since initial operation in early 1973 because of its unusual fuel experience. The other proposed change to the same surveillance requirement will incorporate the material sample program recommended by the American Society for Testing and Materials (ASTM) in ASTM E185-66 to reflect recent changes in the codes and regulations. Clarification of the intent of the surveillance program has resulted from these changes.

CONCLUSION

The staff concludes that: (1) because the change does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the change does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) that such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

*/s/ Fredric D. Anderson*

Fredric D. Anderson  
Operating Reactors Branch #2  
Directorate of Licensing

Original signed by  
Dennis L. Ziemann

Dennis L. Ziemann, Chief  
Operating Reactors Branch #2  
Directorate of Licensing

DATE: **AUG 23 1974**

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UNITED STATES ATOMIC ENERGY COMMISSION

DOCKET NO. 50-271

VERMONT YANKEE NUCLEAR POWER CORPORATION

NOTICE OF ISSUANCE OF AMENDMENT TO FACILITY  
OPERATING LICENSE

Notice is hereby given that the U. S. Atomic Energy Commission (the Commission) has issued Amendment No. 8 to Facility Operating License No. DPR-28 issued to Vermont Yankee Nuclear Power Corporation which revised Technical Specifications for operation of the Vermont Yankee Nuclear Power Station, located near Vernon, Vermont. The amendment is effective as of its date of issuance.

The amendment incorporates a surveillance requirement to remove a neutron flux dosimeter during the first refueling outage (Fall 1974) rather than the third refueling outage and makes changes to conform with recent ASTM requirements for neutron flux material samples.

The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment.

For further details with respect to this action, see (1) the application for amendment dated July 25, 1974, (2) Amendment No. 8 to License No. DPR-28, with Change No. 19, and (3) the Commission's

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concurrently issued related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N. W., Washington, D. C. and at the Brooks Memorial Library at 224 Main Street, Brattleboro, Vermont 05301. A copy of items (2) and (3) may be obtained upon request addressed to the U. S. Atomic Energy Commission, Washington, D. C. 20545, Attention: Deputy Director for Reactor Projects, Directorate of Licensing - Regulation.

Dated at Bethesda, Maryland, this 23rd day of August, 1974.

FOR THE ATOMIC ENERGY COMMISSION

Original signed by  
Dennis L. Ziemann

Dennis L. Ziemann, Chief  
Operating Reactors Branch #2  
Directorate of Licensing

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