

REGULATORY DOCKET FILE COPY

Docket

JAN 14 1981

Docket No. **50-271**

Mr. Robert L. Smith
Licensing Engineer
Vermont Yankee Nuclear Power
Corporation
1671 Worcester Road
Framingham, Massachusetts 01701

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Dear Mr. Smith:

The Commission has issued the enclosed Amendment No. 62 to Facility Operating License No. DPR-28 for the Vermont Yankee Nuclear Power Station. The amendment consists of changes to the Technical Specifications in response to your application dated September 5, 1980.

This amendment revises the pressure-temperature limitations in order to comply with 10 CFR Part 50, Appendix G, "Fracture Toughness Requirements."

Copies of the Safety Evaluation and Notice of Issuance are also enclosed.

We have discussed the details of your most recent analysis with your representatives; however, in order to complete our records for reference in reviewing future pressure-temperature limits for Vermont Yankee, please submit the details of the most recent calculation including determination of limiting material, redetermined fluence, and RT_{NDT} shift calculations.

Sincerely,

Original Signed by
T. A. Ippolito

Thomas A. Ippolito, Chief
Operating Reactors Branch #2
Division of Licensing

Enclosures:

1. Amendment No. 62
2. Safety Evaluation
3. Notice

cc w/encls:
See next page



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No legal objection to amendment or FR Notice.

OFFICE	DL:ORB#2	DL:ORB#2	DL:ORB#2	DL:ORB#2	OELD		
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

January 14, 1981

Docket No.: 50-271

Mr. Robert L. Smith
Licensing Engineer
Vermont Yankee Nuclear Power
Corporation
1671 Worcester Road
Framingham, Massachusetts 01701

Dear Mr. Smith:

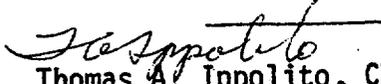
The Commission has issued the enclosed Amendment No. 62 to Facility Operating License No. DPR-28 for the Vermont Yankee Nuclear Power Station. The amendment consists of changes to the Technical Specifications in response to your application dated September 5, 1980.

This amendment revises the pressure-temperature limitations in order to comply with 10 CFR Part 50, Appendix G, "Fracture Toughness Requirements."

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Sincerely,


Thomas A. Ippolito, Chief
Operating Reactors Branch #2
Division of Licensing

Enclosures:

1. Amendment No. 62
2. Safety Evaluation
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cc w/encls:
See next page

8102120 541

Mr. Robert L. Smith

cc:

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Mr. Robert L. Smith

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Resident Inspector
c/o U. S. NRC
P. O. Box 176
Vernon, Vermont 05453



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

VERMONT YANKEE NUCLEAR POWER CORPORATION

DOCKET NO. 50-271

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 62
License No. DPR-28

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Vermont Yankee Nuclear Power Corporation (the licensee) dated September 5, 1980, 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 Appendices A and B, as revised through Amendment No. 62, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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

FOR THE NUCLEAR REGULATORY COMMISSION


Thomas A. Ippolito, Chief
Operating Reactors Branch #2
Division of Licensing

Attachment:
Changes to the Technical
Specifications

Date of Issuance: January 14, 1981

ATTACHMENT TO LICENSE AMENDMENT NO. 62

FACILITY OPERATING LICENSE NO. DPR-28

DOCKET NO. 50-331

1. Replace the following pages of the Appendix "A" Technical Specifications with the enclosed pages. The revised pages are identified by Amendment number and contain vertical lines indicating the area of change.

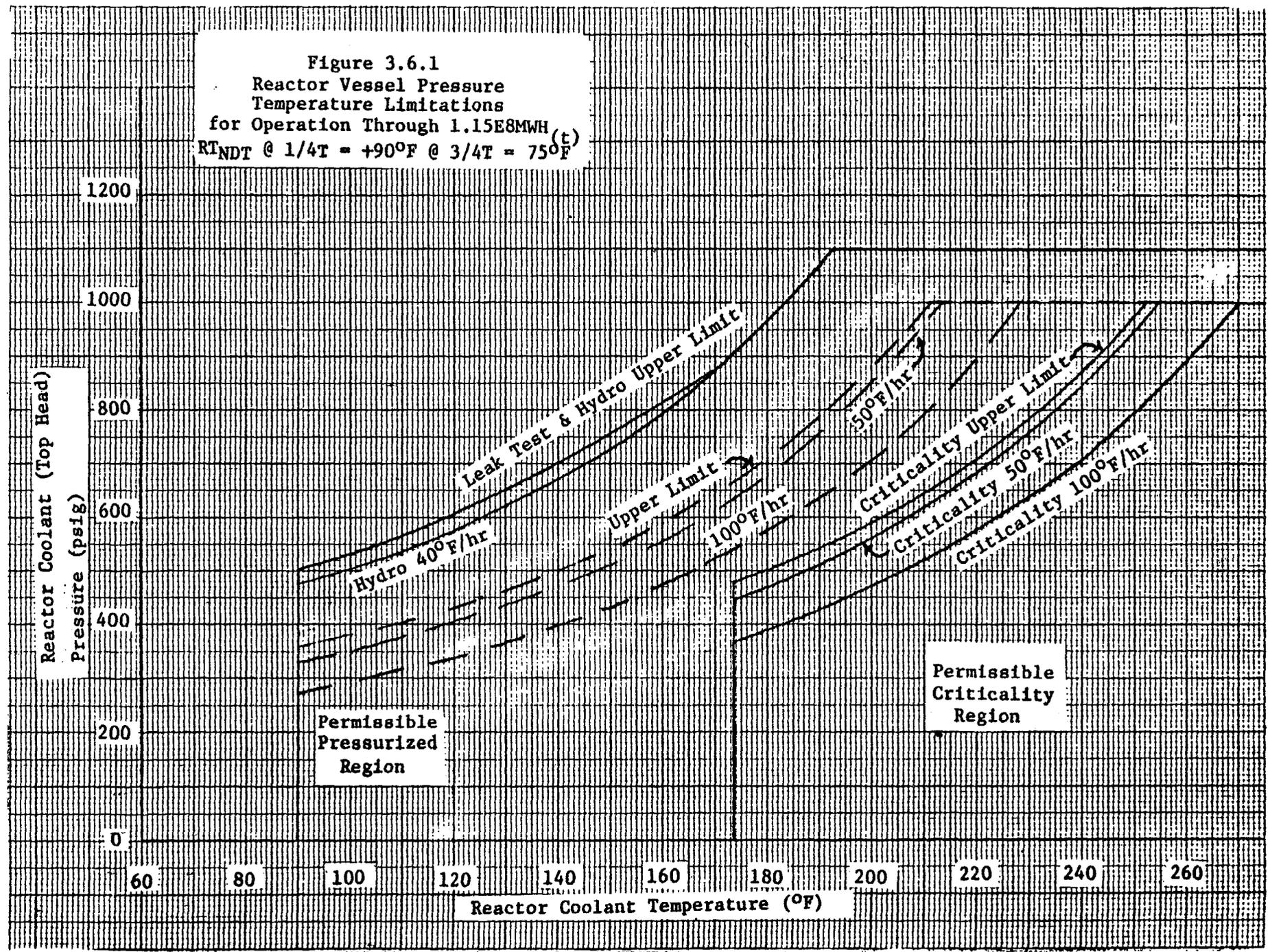
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Figure 3.6.1
 Reactor Vessel Pressure
 Temperature Limitations
 for Operation Through 1.15E8MWH^(t)
 RT_{INDT} @ 1/4T = +90°F @ 3/4T = 75°F



Bases:

3.6 & 4.6 REACTOR COOLANT SYSTEM

A. Pressure and Temperature Limitations

All components in the Reactor Coolant System are designed to withstand the effects of cyclic loads due to system temperature and pressure changes. These cyclic loads are introduced by normal load transients, reactor trips, and startup and shutdown operations. The various categories of load cycles used for design purposes are provided in Section 4.2 of the FSAR. During startup and shutdown, the rates of temperature and pressure changes are limited so that the maximum specified heatup and cooldown rates are consistent with the design assumptions and satisfy the stress limits for cyclic operation.

During heatup, the thermal gradients in the reactor vessel wall produce thermal stresses which vary from compressive at the inner wall to tensile at the outer wall. These thermal induced compressive stresses tend to alleviate the tensile stresses induced by the internal pressure. Therefore, a pressure-temperature curve based on steady state conditions (i.e., no thermal stresses) represents a lower bound of all similar curves for finite heatup rates when the inner wall of the vessel is treated as the governing locations.

The heatup analysis also covers the determination of pressure-temperature limitations for the case in which the outer wall of the vessel becomes the controlling location. The thermal gradients established during heatup produce tensile stresses at the outer wall of the vessel. These stresses are additive to the pressure induced tensile stresses which are already present. The thermal induced stresses at the outer wall of the vessel are tensile and are dependent on both the rate of heatup and the time along the heatup ramp; therefore, a lower bound curve similar to that described for the heatup of the inner wall cannot be defined. Subsequently, for the cases in which the outer wall of the vessel becomes the stress controlling location, each heatup rate of interest must be analyzed on an individual basis.

In order to prevent undue stress on the vessel nozzles and bottom head region, the recirculation loop temperatures should be within 50°F of each other prior to startup of an idle loop.

The reactor vessel materials have been tested to determine their initial nil-ductility transition temperature (NDTT) of 40°F maximum. An additional margin of 20°F has been added in order to estimate reference temperature, RT_{NDT} . Reactor operation and resultant fast neutron ($E > 1$ Mev) irradiation will cause an increase in the RT_{NDT} . Therefore, an adjusted reference temperature can be predicted using current industry practices (GE SIL No. 14, Supplement No. 1) based on recent GE surveillance data. The pressure/temperature limit curve Figure 3.6.1 includes predicted adjustments for this shift in RT_{NDT} for operation through 1.15×10^8 MWH(t), as well as adjustments for possible errors in the pressure and temperature sensing instruments.

The actual shift in NDTT of the vessel material will be established periodically during operation by removing and evaluating, in accordance with ASTM E185-73, reactor vessel material irradiation surveillance specimens installed near the inside wall of the reactor vessel in the core area. Since the neutron spectra at the irradiation samples and vessel inside radius are essentially identical, the measured transition shift for a sample can be applied with confidence to the adjacent section of the reactor vessel. In order to estimate the material properties at the 1/4 and 3/4 positions in the vessel plate, the shift in NDTT is assumed to be 62% and 22%, respectively of the irradiation samples properties. The heatup and cooldown curves must be recalculated when the ΔRT_{NDT} determined from the surveillance capsule is different from the calculated ΔRT_{NDT} for the equivalent capsule radiation exposure.

The pressure-temperature limit lines shown on Figure 3.6.1 for reactor criticality and for inservice leak and hydrostatic testing have been provided to assure compliance with the minimum temperature requirements of Appendix G to 10 CFR 50 for reactor criticality and for inservice leak and hydrostatic testing.

The number of reactor vessel irradiation surveillance specimens and the frequencies for removing and testing these specimens are provided to assure compliance with the requirements of Appendix H to 10 CFR Part 50.

B. Coolant Chemistry

A steady state radioiodine concentration limit of 1.1 μCi 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.C.1.a or there is a failure or prolonged shutdown of the cleanup demineralizer. In the event of a steam line rupture outside the drywell, the NRC staff calculations show the resultant radiological dose at the site boundary to be less than 30 Rem to the thyroid. This dose was



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 62 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 September 5, 1980, Vermont Yankee Nuclear Power Corporation, the licensee, proposed changes in the limiting conditions of operation governing the reactor vessel pressure/temperature limitations. The proposed change included pressure/temperature curves calculated on two different bases. The first curve was based on Appendix G to 10 CFR 50. The second curve was based on a revised Appendix G which has not yet become effective. We have reviewed and approved the use of the first proposed curve. We will review the second curve after the revised Appendix G on which it was based becomes effective.

Evaluation

In letter dated September 5, 1980, the licensee proposed a revision to Figure 3.6.1 (Reactor Vessel Pressure Temperature Limitations for Operation through 8.0E7 MWH (t)) of the Vermont Yankee Technical Specifications. The proposed operating limits were calculated in accordance with Appendix G, 10 CFR 50 and Standard Review Plan 5.3.2 which includes Branch Technical Position MTEB 5-2. These new operating limits were based on a fluence at the vessels inner wall of 3.83×10^{17} n/cm², calculated for operation through 1.15 E8 MWH (t) (which is estimated to occur late in 1983). At this point in time, the limiting material in the beltline with an original RTNDT of 60°F was calculated by the licensee to have an RTNDT shift of 30°F based upon recent dosimetry data (showing an increase at Vermont Yankee of 4.3 times that reported in the FSAR). We have reviewed with the licensee the analysis by which an inner vessel wall fluence was calculated to produce the 30°F RTNDT shift for the limiting material. In order to complete our records for reference in reviewing future RTNDT shift calculations for Vermont Yankee, the licensee has agreed to forward the details of the most recent analysis to the USNRC including determination of limiting material, redetermined fluence, and RTNDT shift calculations.

We have reviewed the proposed changes to the pressure-temperature operating limits and conclude that they are in accordance with Appendix G, 10 CFR 50 and Standard Review Plan 5.3.2. The use of Appendix G for establishing safe operating limitations will ensure adequate safety margins during operation, testing, maintenance and postulated accident conditions and constitute an acceptable basis for satisfying the requirements of NRC General Design Criterion 31, Appendix G, 10 CFR 50.

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Environmental Considerations

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and, pursuant to 10 CFR §51.5(d)(4), that an environmental impact statement, or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

Conclusion

We have concluded, based on the considerations discussed above, that: (1) because the amendment 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 amendment 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) 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.

Dated: January 14, 1981

UNITED STATES NUCLEAR REGULATORY COMMISSIONDOCKET NO. 50-271VERMONT YANKEE NUCLEAR POWER CORPORATIONNOTICE OF ISSUANCE OF AMENDMENT TO FACILITY
OPERATING LICENSE

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 62 to Facility Operating License No. DPR-28 issued to Vermont Yankee Nuclear Power Corporation which revises the Technical Specifications for operation of the Vermont Yankee Nuclear Power Station located in Windham County, Vermont. The amendment is effective as of the date of its issuance.

This amendment changes the Technical Specifications to revise the pressure-temperature limitations in order to comply with 10 CFR Part 50, Appendix G, "Fracture Toughness Requirements."

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. Prior public notice of this amendment was not required since the amendment does not involve a significant hazards consideration.

The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR Section 51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of this amendment.

- 2 -

For further details with respect to this action, see (1) the application for amendment dated September 5, 1980, (2) Amendment No. 62 to License No. DPR-28, and (3) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, NW., Washington, D. C., and at the Brooks Memorial Library, 224 Main Street, Brattleboro, Vermont 05301. A copy of items (2) and (3) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Licensing.

Dated at Bethesda, Maryland this 14th day of January 1981.

FOR THE NUCLEAR REGULATORY COMMISSION



Thomas A. Ippolito, Chief
Operating Reactors Branch #2
Division of Licensing