February 10, 1977

Docket No.: 50-271

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Yankee Atomic Electric Company
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Gentlemen:

The Commission has issued the enclosed Amendment No. 30 to Facility Operating License No. DPR-28 for the Vermont Yankee Nuclear Power Station. The amendment eonsists of changes to the Technical Specifications in response to your application dated August 26, 1976.

This amendment revises the Maximum Average Planar Linear Heat Generation Rate curves to be consistent with the current design limit linear heat operation rate of 13.4 kw/ft.

Copies of the Safety Evaluation and the Federal Register Notice are also enclosed.

Sincerely
Original Signed

Robert W. Reid, Chief
Operating Reactors Branch #4
Division of Operating Reactors

Enclosures:
1. Amendment No. 30
2. Safety Evaluation
3. Federal Register Notice

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Form AEC-318 (Rev. 9-53) AECM 0240

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

VERMONT YANKEE NUCLEAR POWER CORPORATION

DOCKET NO. 50-271

VERMONT YANKEE NUCLEAR POWER STATION

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 30
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 August 26, 1976, 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.

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

FOR THE NUCLEAR REGULATORY COMMISSION

Robert W. Reid, Chief
Operating Reactors Branch #4
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of Issuance: February 10, 1977

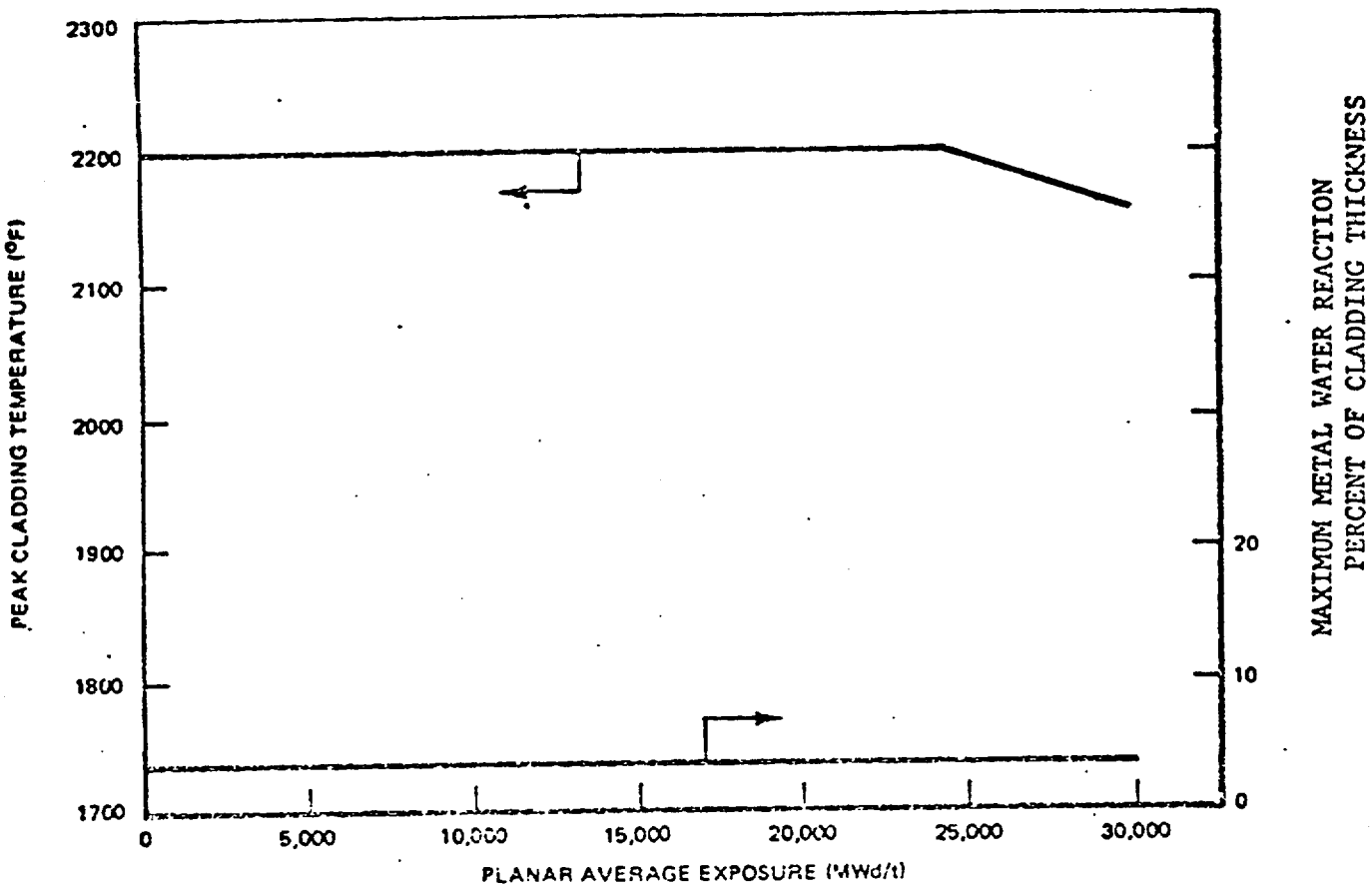
ATTACHMENT TO LICENSE AMENDMENT NO. 30

FACILITY OPERATING LICENSE NO. DPR-28

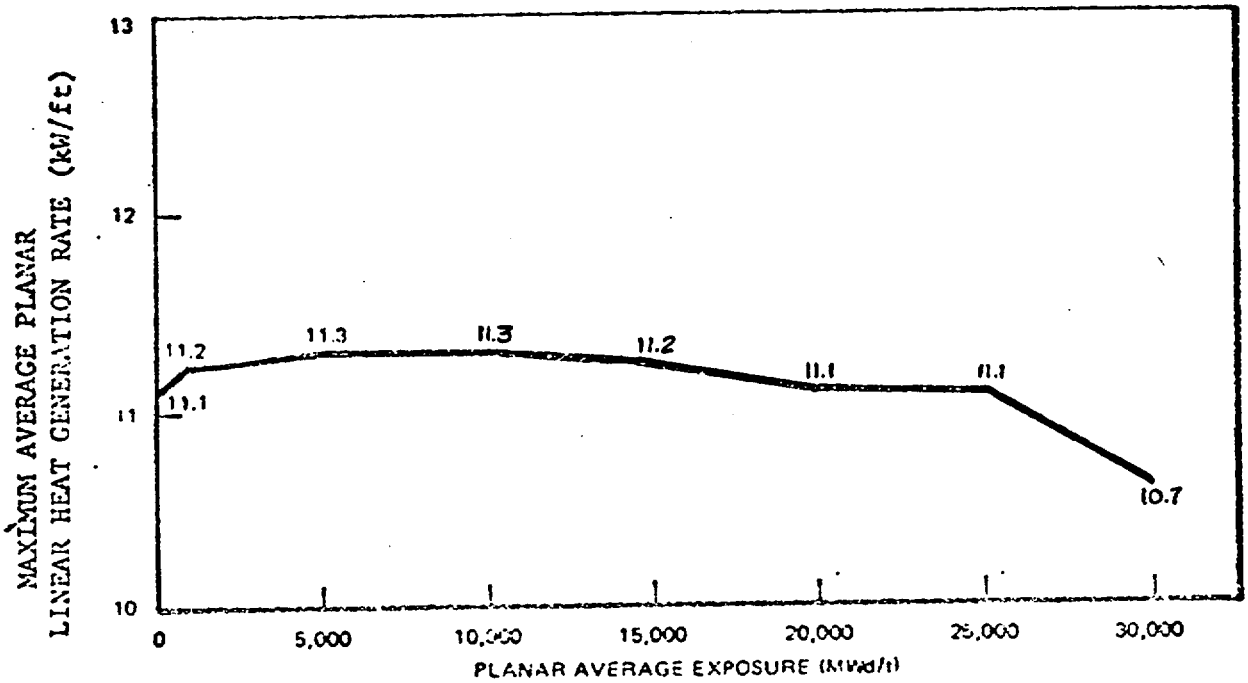
DOCKET NO. 50-271

Revise Appendix A Technical Specifications as follows:

Remove Pages	Insert Pages
180-n (Figure 3.11-1B)	180-n (Figure 3.11-1B)
180-n1 (Figure 3.11-1C)	180-n1 (Figure 3.11-1C)



PEAK CLADDING TEMPERATURE VERSUS PLANAR AVERAGE EXPOSURE



MAXIMUM AVERAGE PLANAR LINEAR HEAT GENERATION RATE (MAPLHGR)
VERSUS PLANAR AVERAGE EXPOSURE

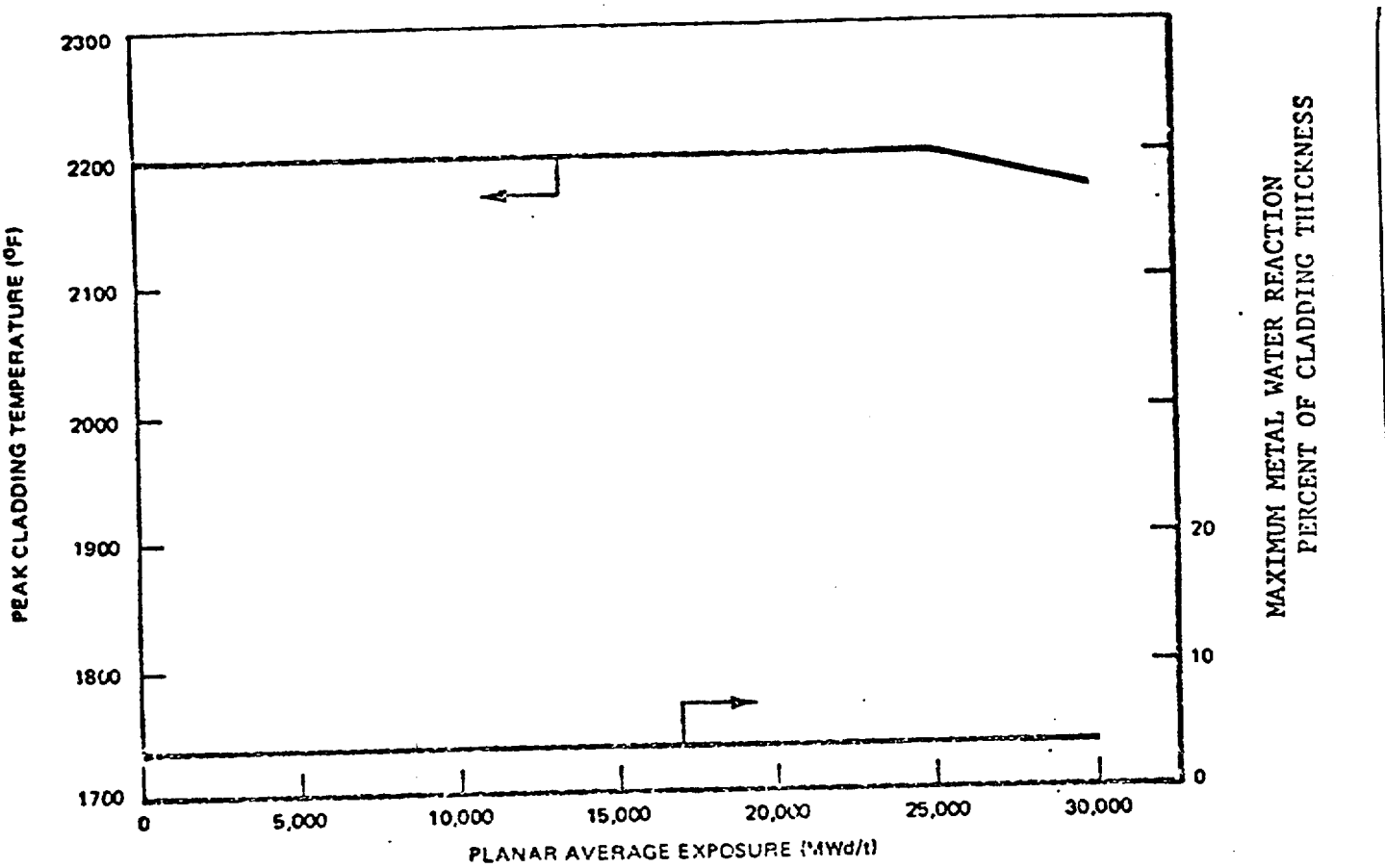
Vermont Yankee Bypass Flow Holes Plugged, 8 x 8 SD219 Fuel 180-n

Amendment No. 30

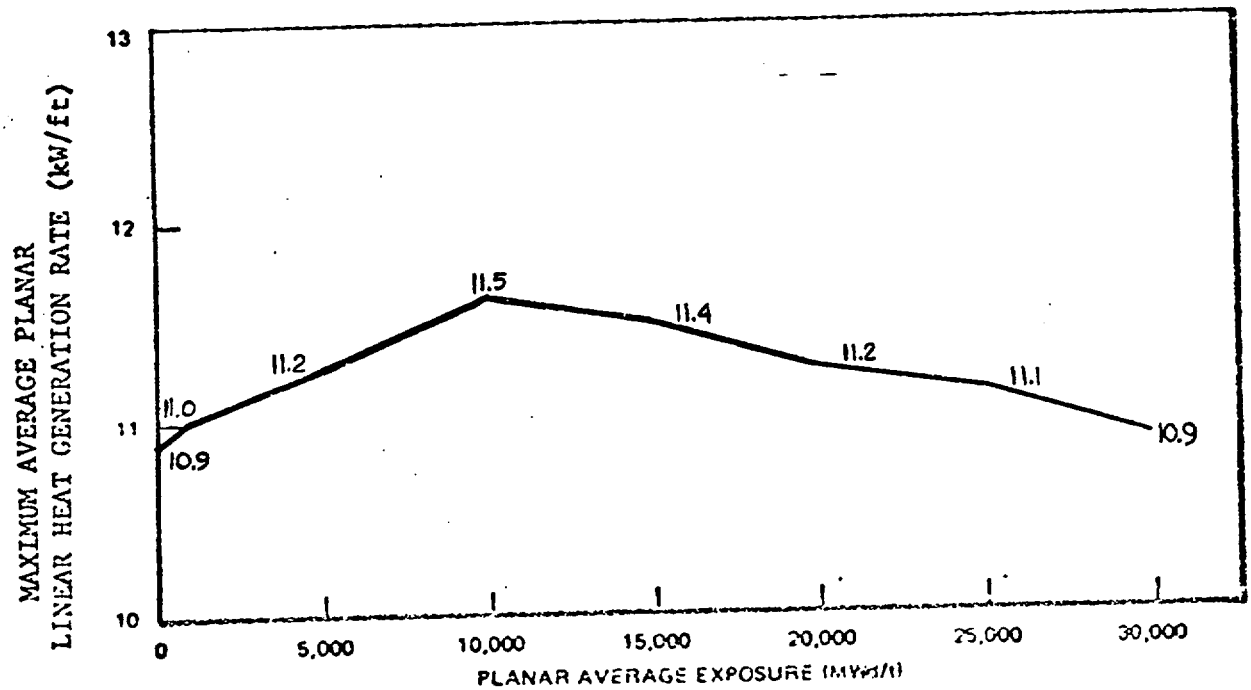
Figure 3.11-1B

Figure 3.11-1C

Vermont Yankee Bypass Flow Holes Plugged, 8 x 8, 8D274 Fuel



PEAK CLADDING TEMPERATURE VERSUS PLANAR AVERAGE EXPOSURE



MAXIMUM AVERAGE PLANAR LINEAR HEAT GENERATION RATE (MAPLHGR)
VERSUS PLANAR AVERAGE EXPOSURE

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 30 TO FACILITY OPERATING LICENSE DPR-28

VERMONT YANKEE NUCLEAR POWER CORPORATION

VERMONT YANKEE NUCLEAR POWER STATION

DOCKET NO. 50-271

Introduction

By letter dated August 26, 1976, Vermont Yankee Nuclear Power Corporation (VYNPC) requested a change to the Vermont Yankee Nuclear Power Station (VYNPS) Technical Specifications to revise the Maximum Average Planar Linear Heat Generation Rate (MAPLHGR) as it relates to the Loss-of-Coolant Accident (LOCA) and Emergency Core Cooling System (ECCS) performance.

Background

Present Technical Specification limits related to MAPLHGR are based on a Design Basis Loss-of-Coolant Accident (DB-LOCA) analysis which assumed a peak Linear Heat Generation Rate (LHGR) for a single rod of 14.4 kw/ft[1], which is different from the current limit. The newly proposed MAPLHGR Technical Specification limits are based on DB-LOCA calculations which assumed the current LHGR limit of 13.4 kw/ft.

VYNPS has been operating since August 6, 1976, under a self imposed administrative control, with the limits of the more restrictive MAPLHGR curves.

Evaluation

The proposed MAPLHGR limits, based on a peak rod at 13.4 kw/ft, are 0.1 kw/ft lower at certain exposures than the old MAPLHGR limits that were based on a peak rod at 14.4 kw/ft.

This apparent anomaly is caused by the way the GE calculational model treats conductance between the fuel and the cladding (gap conductance), summarized below.

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[1]Application for Third Reload for Operation of Cycle 4, Vermont Yankee Nuclear Power Corporation, April 23, 1976.

The GE DB-LOCA calculation uses an iterative procedure to find the maximum allowable MAPLHGR at which the peak cladding temperature (PCT) will remain below 2200°F following a DB-LOCA. The iteration begins at a MAPLHGR consistent with a peak rod power at the design limit, 13.4 kw/ft for 8x8 fuel (or 14.4 kw/ft for the earlier, caluclation for Vermont Yankee). Gap conductances (which are a function of rod power) are calculated for each rod. The calculation then proceeds until PCT is determined for the initially assumed MAPLHGR. If PCT is greater than 2200°F, a lower MAPLHGR is selected and the calculation is repeated until a MAPLHGR consistent with a PCT of 2200°F is found.

However, the gap conductances are not changed between iterations. Calculations at all values of MAPLHGR are performed with each rod's gap conductance unchanged from the value initially calculated. At certain fuel exposures, the variation of gap conductance with rod power (which is not reflected in the successive steps of the iteration at different powers) is such that this procedure results in gap conductances in later iterations (at lower MAPLHGR values) that are larger than that which precisely corresponds to assume rod power. This overpredicts stored heat elimination during the LOCA, and therefore underpredicts PCT by a small amount. This treatment of gap conductances, although not precise, is a reasonable approximation of conditions and does not introduce a significant inadequacy in modeling of the relevant phenomenon. For example, peak clad temperature underprediction would be less than 20°F. Nevertheless, the improved modeling should be incorporated into the GE ECCS calculational model to improve its overall quality.

For most evaluations the effect of this change is very small indeed (and in many cases would result in PCT overprediction), consisting only of the change due to change in conductance from that associated with the value of LHGR originally assumed in the beginning of the iterative process to that associated with the LHGR at the point at which the codes predicts 2200°F. For Vermont Yankee the change is somewhat larger since the original evaluation was based on an LHGR of 14.4 kw/ft which is higher than that actually authorized by the NRC (13.4 kw/ft). It was assumed that a calculation based on the higher rod LHGR would be in all cases more restrictive than that for a lower LHGR. However, due to the anomaly discussed above the lower LHGR requires some further limitations. The applicant has previously voluntarily restricted operations and this amendment imposes the appropriate limits as part of the technical specifications for the license.

We therefore conclude that the newly proposed Technical Specifications for MAPLHGR are acceptable.

Environmental Consideration

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: February 10, 1977

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-271

VERMONT YANKEE NUCLEAR POWER CORPORATION

NOTICE OF ISSUANCE OF AMENDMENT TO FACILITY OPERATING LICENSE

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 30 to Facility Operating License No. DPR-28, issued to Vermont Yankee Nuclear Power Corporation (the licensee), which revised Technical Specifications for operation of the Vermont Yankee Nuclear Power Station (the facility) located near Vernon, Vermont. The amendment is effective as of its date of issuance.

The amendment revises the Maximum Average Planar Linear Heat Generation Rate curves to be consistent with the current design limit linear heat operation rate of 13.4 kw/ft.

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 §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.

For further details with respect to this action, see (1) the application for amendment dated August 26, 1976, (2) Amendment No. 30 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, N. W., Washington, D. C. and at the Brooks Memorial Library, 224 Main St., Brattleboro, Vermont.

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 Operating Reactors.

Dated at Bethesda, Maryland, this 10th day of February 1977.

FOR THE NUCLEAR REGULATORY COMMISSION

Robert W. Reid, Chief
Operating Reactors Branch #4
Division of Operating Reactors