



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

ENVIRONMENTAL IMPACT APPRAISAL

BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 48 TO FACILITY OPERATING LICENSE NO. DPR-28

VERMONT YANKEE NUCLEAR POWER CORPORATION

VERMONT YANKEE NUCLEAR POWER STATION

DOCKET NO. 50-271

Description of Proposed Action

By letter from Vermont Yankee Nuclear Power Corporation (VYNPC) to NRC dated August 16, 1978, VYNPC proposed an amendment to their Appendix B Environmental Technical Specifications (ETS) for Vermont Yankee Nuclear Power Station. The proposal would modify all sections of these ETS except Section 2.1.C. This evaluation treats the proposed change dealing with Section 1.1, condenser cooling water limits and monitoring. The other changes proposed by VYNPC are still under review and will be dealt with in a subsequent action. We have made a few minor modifications to the licensee's proposed changes to Section 1.1 and they have agreed to them.

Under this amendment, operation of Vermont Yankee is allowed in the open or helper-cycle mode during the period of October 15 through May 15. Certain discharge temperature restrictions are placed in operation during these periods to assure acceptable environmental impact. This amendment requires the plant to operate in the closed-cycle mode during the period of May 16 through October 14. Additionally, the proposed amendment removes the limitation on the size of the thermal plume. These operation restrictions of this amendment were developed by the Vermont Yankee Technical Advisory Committee and appear in the current NPDES Permit for the station.

Evaluation

Vermont Yankee has demonstrated during five previous studies (Phase I, February - April 1974; Phase II, December 1974 - May 1975; Phase III, October 1975 - May 1976, Phase IV, September 1976 - May 1977; Phase V, October 1977 - May 1978) that the controlled discharge of selected amounts of heated water directly to the Connecticut River at Vernon under conditions of normally occurring river flows have resulted in no measureable adverse impact on the water quality and biotic communities in the river. These five studies have resulted in a good understanding of the effects of heated water on the aquatic ecosystem at Vernon.

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We have intensively reviewed the results of the first four phases described in the environmental impact appraisals accompanying Amendment 20 to License DPR-28 dated September 6, 1976, and Amendment 40 to License DPR-28 dated November 21, 1977.

By letter from VYNPC to NRC dated August 31, 1978, we received the results of Phase V. We have reviewed the Phase V results in a manner similar to the earlier reviews and have reached the following conclusions:

- (1) Phytoplankton: None of the five Phase Studies indicated a statistically significant difference in phytoplankton population within the plume as compared to that outside of the plume or downstream of the plant as compared to that upstream of the plant.
- (2) Zooplankton: All of the zooplankton data show as much variability among replicate samples as between different stations indicating high spatial variability. No statistically significant difference in population has been observed within the plume as compared to that outside of the plume or downstream of the plant as compared to that upstream of the plant. Intake and discharge samples indicate little entrainment mortality.
- (3) Benthos: The population varied much more from colder months to warmer months than from areas outside the thermal plume to areas within the thermal plume. In general, there was a greater diversity of organisms within the thermal plume area than outside of it, indicating a possible beneficial effect of plant operation.
- (4) Fishes: The results of the studies indicate that fish tend to stay on the New Hampshire side of the river away from the plant because of the more favorable habitat type on the far side of the river. The density of the fish was equivalent to or greater outside the plume than within it indicating little attraction to it. Cage studies with the brown trout Salmo Trutta indicated that the natural river population should be able to withstand the discharge temperature, and rate of temperature change imposed by the plant.

On the basis of our review of the data we conclude that the action proposed by this amendment will not result in a significant change in the environmental impact of the Vermont Yankee facility.

Conclusion and Basis for Negative Declaration

On the basis of our analysis, it is concluded that there will be no significant environmental impact attributable to the proposed action other than has already been predicted and described in the FES and subsequent Environmental Impact Appraisals. Having made this conclusion,

we further conclude that no environmental impact statement for the proposed action need be prepared and a Negative Declaration to this effect is appropriate.

Dated: October 13, 1978