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December 27, 1999  
ENGC Ltr. 5.99.184

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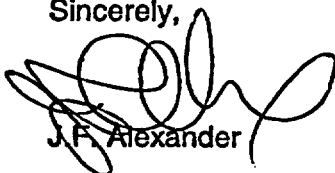
2000 ENVIRONMENTAL MONITORING PROGRAMS AND PLANS

Gentlemen:

In accordance with NPDES Permit No. MA0003557 (Federal) and No. 359 (State) for Pilgrim Station, the attached 2000 Environmental Monitoring, Thermal Discharge Fish Surveillance, and Dissolved Nitrogen Saturation Reduction Programs and Plans are submitted by Entergy Nuclear Generation Company for your approval. This submittal is made in accordance with Part 1, Paragraph 8d of the above-referenced permit.

If there are any questions concerning the attached programs and plans, please do not hesitate to call Mr. Robert Anderson (508-830-7935).

Sincerely,



J. F. Alexander

RDA/sc

Attachment: Marine Ecology Monitoring Related to Operation of Pilgrim Station  
Unit 1, NPDES Permit Programs

cc: U. S. Nuclear Regulatory Commission  
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Washington, DC 20555

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**MARINE ECOLOGY MONITORING**  
**RELATED TO OPERATION OF PILGRIM STATION**  
**NPDES PERMIT PROGRAMS**

In accordance with NPDES Permit requirements for Pilgrim Station Permit No. MA0003557 (Federal) and No. 359 (State), the following modified programs are presented for 2000. The 1978 through 1999 programs were submitted to the U.S. Environmental Protection Agency (EPA) and Mass. Department of Environmental Protection (DEP) previously.

**I. ENVIRONMENTAL MONITORING**

The Environmental Monitoring Program represents a continuation of previous monitoring with changes made based on latest results and analyses. Pre-operational studies for Pilgrim Station commenced in 1969, almost four years before initial operation in December 1972. In accordance with environmental monitoring and reporting requirements of the Pilgrim Station Operating License, DPR-35, issued by the U.S. Atomic Energy Commission (now the Nuclear Regulatory Commission), Boston Edison carried out a post-operational Marine Ecology Program. This program was designed to investigate the Cape Cod Bay ecosystem, with emphasis on the Rocky Point area, to determine whether the operation of Pilgrim Station resulted in measurable effects on the marine ecology and to evaluate the significance of any such effects. The Marine Ecology Program for Pilgrim Station continued for five years from initial full power operation (that is, through December 1977) and was replaced by the NPDES Permit Program (with NRC concurrence). Amendment #67 (1983) to the PNPS Technical Specifications deleted Appendix B non-radiological water quality requirements since they were incorporated in the NPDES Permit. The post-operational monitoring for Pilgrim Station and the collected data are incorporated and analyzed in the Marine Ecology Semi-Annual Reports (#1-54), Marine Ecology Final Report (1978), and the Section 316 Demonstration Document (1975) and Supplement (1977) pursuant to the Federal Water Pollution Control Act Amendments of 1972.

The NPDES Program includes the following elements:

**A. Marine Fisheries Monitoring**

The efforts listed below will be conducted in 2000.

**Fish**

As in 1999, Marine Fisheries studies in 2000 will focus on the winter flounder population to develop an understanding of PNPS impact on this indicator species. Population estimation and adult equivalency analyses will be conducted on this key species to help assess the impact of PNPS entrainment. Trawling area swept population analysis, percentage entrained larvae vs. ambient larvae in the PNPS vicinity, and various population modeling approaches are presently being considered for recommendation in 2000.

### Restoration

Rainbow smelt spawning enhancement efforts will continue in 2000 for the Jones River in Kingston.

Entergy Nuclear Generation Company will support fisheries restoration/enhancement efforts in 2000. Winter flounder will be hatchery spawned and reared from January-June, and tagged released, and tracked to determine wild survivability compared to the natural population. If successful, a full-scale winter flounder hatchery operation may be developed to mitigate for PNPS entrainment impact of this species.

### Gas Saturation

In 2000, saturated gas analyses will be conducted during any periods of potential discharge-related mortalities. A Weiss satumeter will be used in situ to measure total partial pressure of dissolved gases and percent saturation of total gas, nitrogen, and oxygen.

### **B. Impingement Monitoring**

The main objective of the impingement study is to calculate impingement rates of marine organisms by gathering and analyzing data on numbers and species carried onto the four intake traveling screens at Pilgrim Station. In 2000, the weekly collection time will be twenty-four hours (three 8-hour periods). Supplemental initial fish survival data and reimpingement data, if possible, will also be recorded. Entergy will analyze the data and prepare the reports.

### **C. Entrainment Monitoring**

As in 1999, entrainment monitoring in 2000 will emphasize consideration of ichthyoplankton, particularly winter flounder.

The 2000 entrainment studies will consist of routine monitoring of the Pilgrim discharge. This monitoring will be on a three times per week basis from March through September, and three times biweekly from October through February. If exceptionally high egg or larvae concentrations are found in the discharge when compared with previous years, steps may be taken to implement contingency ichthyoplankton sampling plans to assess the magnitude of the high concentrations. The plans will consist of additional tows and sample analysis from the discharge canal. The data will be analyzed and reports prepared, including adult equivalency impact analyses for some of the more abundant and significant species entrained (6 species). In addition, winter flounder population modeling will also be done to help develop a broader understanding of PNPS impact on this species.

### **D. Reporting of Environmental Monitoring**

Semi-annual and annual reports with results of the above (items A-D) will be submitted to the EPA and DEP by October 31, 2000, and April 30, 2001, covering the periods January-June and January-December 2000, respectively.

## **II. THERMAL DISCHARGE FISH SURVEILLANCE**

For 2000, as in 1999 removal of the PNPS discharge canal, barrier net on an experimental basis (to be reviewed annually) is recommended. A net will be available for installation should any related fish incident warrant it.

The Thermal Discharge Fish Surveillance Program for Pilgrim Station will involve frequent visual inspections of the discharge canal during periods of fish migration to determine fish presence and condition. The inspection elements of the Surveillance Program monitor compliance with the NPDES Permit by providing a check on fish in the discharge canal.

## **III. DISSOLVED NITROGEN SATURATION REDUCTION**

The plan for reducing dissolved nitrogen surface saturation levels to less than 115% in the discharge canal will involve a power reduction or outage should a school of fish susceptible to gas bubble disease mortality be in the immediate vicinity of Pilgrim Station. The procedure for determining the need, feasibility, and request for a power reduction or outage is as follows:

- A. Responsible regulatory/agency personnel familiar with fishery statistics (e.g., Mass. Division of Marine Fisheries) will estimate the magnitude of the fish school and, based on measured water quality (gas saturation) and other pertinent environmental data, make a determination as to the likelihood and effect of a gas bubble disease mortality. They will also determine the potential necessity for a nitrogen saturation reduction and notify Entergy of this initial judgment.
- B. Entergy will notify the appropriate regional power authorities of the possibility of a power reduction and obtain projections through at least the upcoming weekend. Entergy will transmit load information to the agencies/persons taking the actions identified in item A above.
- C. On the basis of this information, agency personnel will formulate specific recommendations to the EPA Regional Administrator and/or the Mass. DEP, Office of Watershed Management (OWM) or their designees, on the timing and duration of a power reduction that is, in their judgment, appropriate and in the overall public interest.
- D. Responsible regulatory personnel will request a power reduction through a telephone call to the Entergy, Pilgrim Nuclear Power Station, Vice President-Nuclear.
- E. Entergy personnel will record results of periodic surveillance of the condition and location of the fish prior to and subsequent to any station operational changes.