

7/7/78

Docket No. 50-293

Boston Edison Company
M/C NUCLEAR
ATTN: Mr. G. Carl Andognini
800 Boylston Street
Boston, Massachusetts 02199

Gentlemen:

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The Commission has issued the enclosed Amendment No. 32 to Facility License No. DPR-35 for the Pilgrim Nuclear Power Station. This amendment consists of changes to the Appendix B Technical Specifications in partical response to your request dated February 1, 1978.

This amendment revised the provisions in the Technical Specifications relating to Appendix B (Non-Radiological) condenser cooling water discharge temperature limits, to provide for a maximum discharge temperature of 75°F or 32°F above the temperature of the intake water, whichever is greater.

Our review of your application resulted in minor modifications to your proposal. These have been discussed with and agreed to by your staff.

The remaining Technical Specification changes requested in your letter of February 1, 1978 will be dealt with as work load permits.

The amendment does not involve significant new safety information of a type not considered by a previous Commission safety review of the facility. It does not involve a significant increase in the probability or consequences of an accident, does not involve a significant decrease in a safety margin, and therefore does not involve a significant hazards consideration. We have also concluded that there is reasonable assurance that the health and safety of the public will not be endangered by this action.

Copies of the related Environmental Impact Appraisal, Negative Declaration and Notice of Issuance are also enclosed.

Sincerely,

Thomas A. Ippolito, Chief
Operating Reactors Branch #3
Division of Operating Reactors

*SEE PREVIOUS YELLOW FOR CONCURRENCES

OFFICE >	Enclosures and see next page	cc: ORB#3	ORB#3	EEB/DOR DSE	OELD	ORB#3
SURNAME >		*SSheppard	JHannon:acr	TDCain	*BSmith	Tippolito
DATE >		6/29/78	7/7/78	7/7/78	7/6/78	7/7/78

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Docket No. 50-293

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Our review of your application resulted in minor modifications to your proposal. These have been discussed with and agreed to by your staff.

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15/

Thomas A. Ippolito, Chief
 Operating Reactors Branch #3
 Division of Operating Reactors

submit to note

OFFICE	ORB #3	ORB #3	DSE EEB/DOR	OELD	ORB #3
Enclosures and cc: See next page	SSheppard	JHannon:mjf	TDCain	B Smith	TIPPOLITO
DATE	6/29/78	6/ /78	1 /78	7 16/78	1 /78

Enclosures:

1. Amendment No. 32 to DPR-35
2. Environmental Impact Appraisal
3. Notice

cc w/enclosures:

Mr. Paul J. McGuire
Pilgrim Station Acting Manager
Boston Edison Company
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Plymouth, Massachusetts 02360

U. S. Environmental Protection Agency
Region I Office
ATTN: EIS COORDINATOR
JFK Federal Building
Boston, Massachusetts 02203

Anthony Z. Roisman
Natural Resources Defense Council
917 15th Street, N. W.
Washington, D. C. 20005

Henry Herrmann, Esquire
Massachusetts Wildlife Federation
151 Tremont Street
Boston, Massachusetts 02111

Plymouth Public Library
North Street
Plymouth, Massachusetts 02360

Massachusetts Department of Public Health
ATTN: Commissioner of Public Health
600 Washington Street
Boston, Massachusetts 02111

Water Quality & Environmental Commissioner
Department of Environmental Quality
Engineering
100 Cambridge Street
Boston, Massachusetts 02202

Mr. David F. Tarantino
Chairman, Board of Selectmen
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Chief, Energy Systems Analyses
Branch (AW-459)
Office of Radiation Programs
U. S. Environmental Protection Agency
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401 M Street, S. W.
Washington, D. C. 20460



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

BOSTON EDISON COMPANY

DOCKET NO. 50-293

PILGRIM NUCLEAR POWER STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 32
License No. DPR-35

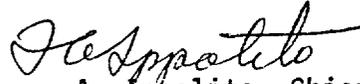
1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by the Boston Edison Company (the licensee) dated February 1, 1978 complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules 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 License No. DPR-35 is hereby amended to read as follows:

"3.B Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 32, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications."

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

FOR THE NUCLEAR REGULATORY COMMISSION



Thomas A. Appolito, Chief
Operating Reactors Branch #3
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of Issuance: July 7, 1978

ATTACHMENT TO LICENSE AMENDMENT NO. 32

FACILITY OPERATING LICENSE NO. DPR-35

DOCKET NO. 50-293

Revise Appendix B as follows:

Remove pages 1, 2, and 4 and insert revised pages 1, 2 and 4. Marginal lines indicate revised area.

1. CONDENSER COOLING WATER SYSTEM1.1 DISCHARGE TEMPERATUREApplicability:

Applies to the temperature of the condenser cooling water at its point of discharge to Cape Cod Bay.

Intent:

To limit the effects of increased water temperature on marine biota.

Specifications:

A. The condenser cooling water temperature at its point of discharge to Cape Cod Bay shall be limited to the greater of the following:

- (1) 75°F; or
- (2) 32°F above the temperature of the intake water.

B. If actual operating conditions are such that A above is exceeded, the licensee shall take such action as necessary to return to the limit and notify the NRC as follows:

- (1) Notification of any operating occurrence which is outside of Specification A shall be made in writing to the NRC within thirty days of the occurrence.

2. CONDENSER COOLING WATER SYSTEM2.1 DISCHARGE TEMPERATUREApplicability:

Applies to monitoring of the temperature of the condenser cooling water.

Intent:

To ascertain that the limiting conditions on discharge temperature are not exceeded.

Specifications:

Permanent station records will be maintained of discharge temperatures and Delta T values on an hourly basis.

The discharge temperature rise may be taken as the Delta T between the condenser inlet and the average of the outlet temperature sensors, averaged over not more than one hour.

Specifications: (Continued)

Basis:

The analysis of thermal effects in Cape Cod Bay from full power operation⁽¹⁾ is based on a calculated, long-term average temperature rise across the condenser of 29°F associated with a calculated flow rate of about 320,000 gpm. The design objective for the condenser cooling water discharge temperature is, therefore, 29°F above the temperature of the intake water.

Higher temperature rises are expected during periods of high ambient water temperature and occasionally over short periods, during backwash operations to remove mussels that become attached to condenser tubes and piping, due to temporarily fouled heat transfer surfaces, normal tidal fluctuations, or a circulating water pump malfunction. Some operating flexibility is also needed to allow for minor errors in the temperature measurement/recording system. If the design objective for the condenser cooling system is achieved, then it is anticipated that most of the minor short-term increases in Delta T above the design objective can be accommodated by setting the operational objective at 32°F (Delta T) and by permitting the temperature measurements to be averaged over not more than one hour. This setting is consistent with the present allowable values in the Pilgrim Discharge Permit issued by the Environmental Protection Agency.⁽⁴⁾ In the event of a spurious circulating water pump trip under mid-summer water temperature conditions, for example, this flexibility gives the operators time to get the pump back on line without drastically reducing reactor power level.

Biological studies of thermal effects have invariably shown that the tolerance of aquatic species to increased temperatures is a function of the duration over which the organisms are exposed to the temperature increase. More specifically, it has generally been found that temperature tolerance increases significantly as the exposure time decreases.^(2,3) It is, therefore, predicted that the increased temperature rise permitted over periods less than one hour (such that the average Delta T over the hour is still maintained at 32°F or less) will not result in any significantly increased adverse effects on the biota. Even continuous operation of the plant at a Delta T of 32°F would not be expected to result in thermal plume temperature rises any higher than the predictions reported in Reference 1 because of the generally conservative procedures used in the analyses. Therefore, the predicted environmental effects resulting from the 32°F operating objective on condenser cooling water temperature increase are expected to be essentially the same as those reported in Reference 1.⁽⁵⁾

REFERENCES

1. Final Environmental Statement Section III-D.1, V-B, and V-C, May 1972.
2. Stober, Q. J. and E. O. Salo, Biological Studies of the Kiket Island Nuclear Power Site, Second Annual Report, Sept. 1, 1970 to Sept. 30, 1971, University of Washington, College of Fisheries, Fisheries Research Institute, Seattle, Washington.
3. Pilgrim Nuclear Studies: Benthic Survey and Bioassay Studies, Second Quarterly Report, Nov. 6, 1971 to Feb. 5, 1972, submitted to Commonwealth of Mass., Division of Marine Fisheries by Battelle, William F. Clapp Laboratories, Inc., Duxbury, Mass., Report No. 14309.
4. NPDES Permit No. MA0003557, Authorization to Discharge Under the National Pollutant Discharge Elimination System.
5. Marine Ecology Studies Related to Operation of Pilgrim Station, Semi-Annual Report Number 11, July 1977 through December 1977.



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

ENVIRONMENTAL IMPACT APPRAISAL BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 32 TO DPR-35

BOSTON EDISON COMPANY

PILGRIM UNIT NO. 1

DOCKET NO. 50-293

Description of Proposed Action

On February 1, 1978, Boston Edison Company submitted proposed Technical Specification changes which would in part modify environmental Technical Specification 1.1. The licensee proposed that this specification, which limits increases in the condenser cooling water discharge to 30°F, be increased to 32°F and that certain other modifications to ETS 1.1.B and 1.1.C be made.

Environmental Impacts of Proposed Action

Background

Specification 1.1.B required that the condenser cooling water discharge temperature be limited to 75°F or 30°F above the temperature of the intake water, whichever is greater. Specification 1.1.C required notification to NRC when violations of 1.1.B occur but allowed the ΔT to exceed 32°F for 2 hours before immediate notification would be necessary.

The licensee proposed to modify Specification 1.1.B such that the ΔT is increased to 32°F. In addition, the licensee proposed to add a maximum discharge temperature limit of 102°F to apply during normal startup and a 120°F discharge temperature to apply during condenser backwash.

The licensee stated in a telephone call that the 2°F increase in ΔT is needed because the plant is now operating at full power and the design ΔT of the condenser has been found to be an underestimate. Even maintaining extra cleanliness of the condensers through more frequent thermal backwashing and manual scouring has not allowed the design ΔT to be met at full power.

The 32°F ΔT , the 102°F limit during normal startup, and the 120°F limit for backflushing are contained in the draft NPDES permit issued by EPA. The licensee requests that the NRC environmental Technical Specifications be made consistent with the EPA permit.

The following specific changes were evaluated for this amendment.

1. The environmental impact of adding 2°F to the ΔT when the discharge temperature exceeds 75°F.
2. Assess the need for including 102°F maximum discharge temperature contained in the draft NPDES permit in the ETS. The current ETS do not have a maximum discharge temperature.
3. Assess the need for including the 120°F maximum discharge temperature during thermal backflushing in the ETS.

The licensee also requested complete deletion of the notification requirement when specification 1.1.B. is exceeded.

Evaluation

The 2°F increase in the ΔT when the discharge temperature exceeds 75°F could have an effect on organisms passing through the station and on organisms residing in or passing through the thermal plume. The 2°F increase does not increase the total heat output to the environment over that evaluated in the Unit No. 1 FES, Section V. The Staff's experience would indicate that the reason for the underestimate in ΔT is that the actual cooling water flow through the plant is less than the design value; therefore, a greater temperature rise (ΔT) for the same amount of heat rejected to the aquatic environment results. Such a reduction in flow would be accompanied by a similar reduction in organisms entrained.

The Pilgrim Unit No. 1 and Unit No. 2 Final Environmental Impact Statements, Section V, conservatively assumed that all entrained organisms would be killed. The impact of the entrainment of zooplankton (including lobster larvae), ichthyoplankton and Irish moss spores was not predicted to be significant. The assessment in the Pilgrim Unit No. 2 FES, Section III, was for a combined flow of about 2600 cfs which includes only about 700 cfs from Unit No. 1. Comprehensive marine ecology studies conducted by the licensee have not detected significant impacts to the important species in the site vicinity and thermal plume area. These studies, which have been conducted since 1972 (Pilgrim Semi-Annual Operating Reports 1-11), are to be included in a final five-year report to be submitted in 1978.

The staff concludes, on the basis of our preliminary review of the environmental monitoring data since 1972 and the predictions contained in the FES's, Section V, for Units Nos. 1 and 2, that increasing the ΔT by 2°F will not have a significant environmental impact.

The licensee's proposal for the 102°F maximum discharge temperature during normal startup does not need to be included in the environmental Technical Specifications. Past operation of the plant during routine startups has not resulted in any adverse effects and none were predicted to occur in the Pilgrim Unit No. 1 and Unit No. 2 FES's, Section V. The staff concludes that this limit does not need to be included in the ETS as no justification can be made at this time for its inclusion.

The licensee's proposal for the 120°F maximum discharge temperature during condenser backwash operations is contained in the NPDES permit¹. When condenser backwash operations are being conducted the plant is significantly reduced in power and the heated water is discharged into the intake canal; therefore, the staff considered the need for this temperature limitation in the intake canal as well as the discharge canal.

The staff has assessed the need for this requirement. Condenser backwashing occurs for 1 to 2 hours at intervals of 2 or 3 weeks to stop the growth of mussels by subjecting them to a thermal shock.

The 30-day notification requirement when a limiting condition is exceeded has not been deleted as requested by the licensee. The notification requirement is effectively the mechanism whereby the Technical Specification is enforced. Therefore, the staff does not agree with the licensee that deletion of the 30-day notification requirement is appropriate.

The requirements for the immediate (24-hour) notification when the ΔT exceeds 32°F for 2 hours has been deleted as the routine ΔT is now 32°F. The thirty day notification requirement is considered by the Staff to be an adequate response time for violations of this specification. Most increases in ΔT are of short duration, due to tidal fluctuations, water pump malfunction, or temporary condenser fouling and do not require immediate notice to the Commission.

¹Pursuant to 40 CFR §125.35(d)(2) the effectiveness of the NPDES permit for Unit No. 1 has been stayed until the completion of an adjudicatory hearing under 40 CFR §125.36.

Conclusion and Basis for Negative Declaration

On the basis of the foregoing 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 Commission's FES for Pilgrim Unit No. 1 and our review of operational monitoring reports. On this basis and in accordance with 10 CFR Part 51.5(c), the Commission concludes that no environmental impact statement for the proposed action need be prepared and a negative declaration to this effect is appropriate.

Dated: July 7, 1978

UNITED STATES NUCLEAR REGULATORY COMMISSIONDOCKET NO. 50-293BOSTON EDISON COMPANYNOTICE OF ISSUANCE OF AMENDMENT TO FACILITYOPERATING LICENSEAND NEGATIVE DECLARATION

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 32 to Facility Operating License No. DPR-35, issued to Boston Edison Company, which revised Technical Specifications for operation of the Pilgrim Nuclear Generating Station (the facility) located near Plymouth, Massachusetts. The amendment is effective as of its date of issuance.

The amendment permits a maximum condenser cooling water discharge temperature of 32°F above the temperature of the intake water. This represents a 2°F increase in the ΔT from the previous Technical Specifications.

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.

The Commission has prepared an environmental impact appraisal for the revised Technical Specifications and has concluded that an environmental impact statement for this particular action is not warranted because there will be no environmental impact attributable to the action other than that which has already been predicted and described in the Commission's Final Environmental Statement for the facility dated May, 1972.

For further details with respect to this action, see (1) the application for amendment dated February 1, 1978, (2) Amendment No. 32 to License No. DPR-35, and (3) the Commission's Environmental Impact Appraisal. 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 Plymouth Public Library on North Street, Plymouth, Massachusetts 02360. 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 7 day of July 1978.

FOR THE NUCLEAR REGULATORY COMMISSION


Thomas A. Ippolito, Chief
Operating Reactors Branch #3
Division of Operating Reactors