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Docket No. 50-293

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

Dear Mr. Andognini:

The Commission has issued the enclosed Amendment No. 36 to Operating License No. DPR-35 for the Pilgrim Nuclear Power Station. This amendment consists of changes to the Technical Specifications in response to your request dated December 31, 1975 and supplements thereto dated November 12, 1976, October 16 and November 2, 1978.

This amendment changes the license and Technical Specifications relating to the receipt, possession, and use of byproduct, source and special nuclear material.

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

Sincerely,

Original signed by

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

Enclosures:

1. Amendment No. 36 to DPR-35
2. Safety Evaluation
3. Notice

cc w/enclosures:  
see next page

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OFFICE	ORB#3	ORB#3	OELD	ORB#3	
SURNAME	SSheppard	JHannon:acr	Henry Smith	T.Ippolito	
DATE	12/27/78	12/16/78	12/16/78	12/16/78	

Mr. G. Carl Andognini

cc w/enclosures:

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Department of Environmental Quality  
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Region I Office  
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Boston, Massachusetts 02108



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. 36  
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 December 31, 1975, and supplements thereto dated November 12, 1976, October 16, and November 2, 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.

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2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraphs 2.B., 2.C., 2.D and 3.B of Facility License No. DPR-35 are hereby amended to read as follows:
- B. Pursuant to the Act and 10 CFR Part 70, to receive, possess and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the Final Safety Analysis Report, as supplemented and amended;
  - C. Pursuant to the Act and 10 CFR Parts 30, 40 and 70 to receive, possess and use at any time any byproduct, source or special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
  - D. Pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and
  - E. Pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

3.B Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 36, 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. Ippolito, Chief  
Operating Reactors Branch #3  
Division of Operating Reactors

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: January 17, 1979

ATTACHMENT TO LICENSE AMENDMENT NO. 36

FACILITY OPERATING LICENSE NO. DPR-35

DOCKET NO. 50-293

Revise Appendix A as follows:

Remove page 206k and replace with pages 206k, 206l, and 206m

#### 4. MISCELLANEOUS RADIOACTIVE MATERIALS SOURCES

##### 4.1 SEALED SOURCE CONTAMINATION

Each sealed source containing radioactive material either in excess of 100 microcuries of beta and/or gamma emitting material or 5 microcuries of alpha emitting material shall be free of  $\geq 0.005$  microcuries of removable contamination at all times.

Each sealed source with removable contamination in excess of the above limit shall be immediately withdrawn from use and:

- a. Either decontaminated and repaired, or
- b. Disposed of in accordance with Commission Regulations.

##### 4.2 SURVEILLANCE REQUIREMENTS

- a. Test Requirements - Each sealed source shall be tested for leakage and/or contamination by:

- (1) The licensee, or
- (2) Other persons specifically authorized by the Commission or an Agreement State.

The test method shall have a detection sensitivity of at least 0.005 microcuries per test sample.

- b. Test Frequencies - Each category of sealed sources, excluding startup sources and fission detectors previously subjected to core flux, shall be tested at the frequency described below.

- (1) Sources in use - At least once per six months for all sealed sources containing radioactive material:

- (a) With a half-life greater than 30 days, excluding Hydrogen 3, and

- (b) In any form other than gas.

- (2) Stored sources not in use - Each sealed source and fission detector shall be tested prior to use or transfer to another licensee unless tested within the previous six months. Sealed sources transferred without a certificate indicating the last test date shall be tested prior to being placed into use.

- (3) Startup sources and fission detectors - Each sealed startup source and fission detector shall be tested within 31 days prior to being subjected to core flux or installed in the core and following repair or maintenance to the source.

#### 4.3 REPORTS

A report shall be prepared and submitted to the Commission on an annual basis if sealed source or fission detector leakage tests reveal the presence of  $\geq 0.005$  microcuries of removable contamination.

#### 4.4 RECORDS RETENTION

A complete inventory of radioactive materials in possession shall be maintained current at all times.

Records required to be maintained for two years:

- a. Test results, in units of microcuries, for leak tests performed pursuant to Specification 4.2.
- b. Record of annual physical inventory verifying accountability of sources on record.

### BASES

#### SEALED SOURCE CONTAMINATION

The limitations on sealed sourced removable contamination ensure that the body or individual organ irradiation does not exceed allowable limits in the event of ingestion or inhalation of the source material. The limitation on removable contamination for sources requiring leak testing, including alpha emitters, is based on 10 CFR 70.39(c) limits for plutonium. Quantities of interest to this specification which are exempt from the leakage testing are consistent with the criteria of 10 CFR Part 30.11-20 and 70.19. Leakage from sources excluded from the requirements of this specification is not likely to represent more than one maximum permissible body burden for total body irradiation if the source material is inhaled or ingested.

## 5.0 MAJOR DESIGN FEATURES

### 5.1 SITE FEATURES

Pilgrim Nuclear Power Station is located on the Western Shore of Cape Cod Bay in the Town of Plymouth, Plymouth County, Massachusetts. The site is located at approximately 41°51' north latitude and 70°35' west longitude on the Manomet Quadrangle, Massachusetts, Plymouth County 7.5 Minute Series (topographic) map issued by U. S. Geological Survey. UTM coordinates are 19-46446N-3692E.

The reactor (center line) is located approximately 1800 feet from the nearest property boundary.

### 5.2 REACTOR

- A. The core shall consist of not more than 580 fuel assemblies with fuel rods in an 8 x 8 array.
- B. The reactor core shall contain 145 cruciform-shaped control rods. The control material shall be boron carbide powder ( $B_4C$ ) compacted to approximately 70% of theoretical density.

### 5.3 REACTOR VESSEL

The reactor vessel shall be as described in Table 4.2.2 of the FSAR. The applicable design codes shall be as described in Table 4.2.1 of the FSAR.

### 5.4 CONTAINMENT

- A. The principal design parameters for the primary containment shall be as given in Table 5.2.1 of the FSAR. The applicable design codes shall be as described in Section 12.2.2.8 of the FSAR.
- B. The secondary containment shall be as described in Section 5.3.2 of the FSAR.
- C. Penetrations to the primary containment and piping passing through such penetrations shall be designed in accordance with standards set forth in Section 5.2.3.4 of the FSAR.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
SUPPORTING AMENDMENT NO. 36 TO FACILITY OPERATING LICENSE NO. DPR-35

BOSTON EDISON COMPANY

PILGRIM NUCLEAR POWER STATION, UNIT NO. 1

DOCKET NO. 50-293

Introduction

By application dated December 31, 1975 as supplemented November 12, 1976, October 16 and November 2, 1978, Boston Edison Company (BECo) proposed an amendment to the licensed conditions for receipt, possession and use of special nuclear, source and byproduct material at the Pilgrim Nuclear Power Station, Unit No. 1.

Discussion

By letter dated January 24, 1975 we requested BECo to provide:

1. A proposed amendment to the conditions of existing Facility Operating License DPR-35 relating to the receipt, possession, and use of byproduct, source, and special nuclear materials;
2. The related surveillance and reporting requirements for miscellaneous radioactive material sources; and
3. FSAR revisions to include information described in Regulatory Guide 1.70.3, "Additional Information, Radioactive Materials Safety for Nuclear Power Plants" dated February, 1974.

Our letter included standard formats and guidelines for the requested proposals.

The objective of the requests made in our letter of January 24, 1975 was to add flexibility to the operation of nuclear power plants by establishing a more generalized approach to the licensing of byproduct, source and special nuclear materials. This objective would reduce the

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number of licensing actions required as a result of changes in possession limits of related materials. In order to assure that adequate safeguards be maintained within the framework of this more generalized approach, provisions for more stringent control, accountability and leakage testing of byproduct, source and special nuclear materials were included.

The BECo proposed license amendment, as supplemented and modified following discussions between the NRC staff and BECo, is responsive to the requests and guidelines in our letter of January 24, 1975.

The licensee's proposal would replace descriptions of special nuclear, source and byproduct materials which appear in License No. DPR-35 with a standard description in conformance with a format acceptable to us. We have reviewed the proposed license language and found that it provides flexible yet controlled licensing provisions necessary to assure that plant activities can be conducted without endangering the health and safety of the public. The changes simplify the language and therefore may avoid unnecessary license amendments in the future.

#### Evaluation

The proposed license amendment, Technical Specification changes, and the FSAR revisions have been reviewed by the NRC staff with particular attention to the Radioactive Materials Safety program. We evaluated the personnel qualifications, facilities, equipment and procedures for handling byproduct, source, and special nuclear material, as described in the revised FSAR Amendment No. 37 and we conclude that they are consistent with the provisions of Regulatory Guide 1.70.3.

The licensee's Radioactive Material Safety Program as described in FSAR Amendment No. 37, provides for the safe storage and handling of sealed radioactive sources and assures protection against undue exposure while handling them. The program also limits use of these sources to experienced and qualified personnel.

Based on our review, we conclude that the comprehensive testing and surveillance program, as established by the proposed Technical Specification changes, provides additional assurance that leakage from radioactive material sources will not exceed allowable limits.

Amendment No. 33 to Operating License No. DPR-35 issued August 17, 1978 authorized the installation and use of high density spent fuel storage racks at the Pilgrim Nuclear Power Station.

We evaluated the amount of reactor fuel which can be received, used, and possessed by the licensee under provisions of the proposed license amendment by assuming that: (1) the new fuel storage area is filled with unused fuel at equilibrium concentration, (2) the reactor is filled with unused fuel at equilibrium concentration, and (3) the new spent fuel storage pool is filled with reactor fuel which has been used to equilibrium burnup.

We have concluded from this calculation that the previous license limit of 4100kg U-235 is insufficient to accommodate the potential amounts of reactor fuel that can now be safely received, used, and possessed by the licensee. Thus, the proposed general license language is desirable to avoid unnecessary future licensing actions.

We further conclude that the proposed license amendment, as supported by the proposed Technical Specification changes and the FSAR revisions, is acceptable in that it:

- a. Complies with the guidance and intent of our letter of January 24, 1975.
- b. Assures that the amount and type of reactor fuel which can be received, used, and possessed is limited by the onsite fuel storage capacity and the requirements for reactor operation which have been approved previously by the NRC staff and which are described in the FSAR as of revision 1 to Amendment No. 37, dated November 2, 1978.
- c. Provides reasonable assurance that byproduct, source, and special nuclear material will be stored, used, and accounted for in a manner which meets the applicable radiation protection provisions of 10 CFR Parts 20, 30, 40 and 70.

We have concluded that the incorporation of flexible yet controlled licensing provisions for the receipt, possession, and use of byproduct, source and special nuclear material into the operating license for Pilgrim Nuclear Power Station Unit No. 1 is 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 Section 51.5(d)(4) that an environmental statement, negative declaration, or environmental appraisal need not be prepared in connection with the issuance of the 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 the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Dated: January 17, 1979

UNITED STATES NUCLEAR REGULATORY COMMISSIONDOCKET NO. 50-293BOSTON EDISON COMPANYNOTICE OF ISSUANCE OF AMENDMENT TO FACILITY  
OPERATING LICENSE

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 36 to Facility Operating License No. DPR-35, issued to Boston Edison Company (the licensee), which revised the license and Technical Specifications for operation of the Pilgrim Nuclear Power Station Unit No. 1 (the facility) located near Plymouth, Massachusetts. The amendment is effective as of its date of issuance.

This amendment changes the license and Technical Specifications relating to the receipt, possession, and use of byproduct, source and special nuclear material.

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 the amendment.

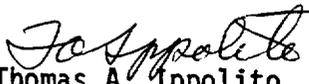
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For further details with respect to this action, see (1) the application for amendment dated November 12, 1976, as supplemented October 16 and November 2, 1978, (2) Amendment No. 36 to License No. DPR-35, and (3) the Commission's related Safety Evaluation. 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 Plymouth Public Library on North Street in Plymouth, Massachusetts 02360. A single 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 17th day of January 1979.

FOR THE NUCLEAR REGULATORY COMMISSION

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