

NOV 26 1974

Docket No. 50-293

Boston Edison Company
ATTN: Mr. Maurice J. Feldmann
Vice President
Operations and Engineering
800 Boylston Street
Boston, Massachusetts 02199

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Gentlemen:

The Commission has issued the enclosed Amendment No. 5 to Facility License No. DPR-35 for the Pilgrim Nuclear Power Station. This amendment includes Change No. 7 to the Technical Specifications and is in response to your request dated August 5, 1974, as supplemented by letter dated October 22, 1974.

This amendment modifies the limiting conditions for operation associated with the drywell to pressure suppression chamber vacuum breakers by establishing performance criteria and imposing additional surveillance requirements upon these components to assure that their limiting conditions for operation will be met.

These changes anticipate the installation of an improved alarm and position indicating system for the vacuum breakers. Those portions of the change related to components not currently in place will not become effective until they are installed. Interim compliance with the performance criteria will be assured by an increased frequency of surveillance until the improved features are installed.

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

Sincerely,

Original signed by
Dennis L. Ziemann

PCollins
SVarga
CHEbron
RSchemel
ACRS (16)

Dennis L. Ziemann, Chief
Operating Reactors Branch #2
Directorate of Licensing

HJMcAlduff, ORO
JRBuchanan, ORNL
TBAbernathy, DTFE

Enclosures:

1. Amendment No. 5
w/Change No. 7
2. Safety Evaluation

OFFICE →	3. Federal Register Notice	L:ORB #2	L:ORB #2	L:ORB #2	OGC	L:OR
SURNAME →	PO' Connor:aw	RMDiggs	DLZiemann	R. Rinsley	KRGoller	KRG
DATE →	See next page	10/30/74	10/31/74	10/4/74	10/13/74	10/26/74

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Boston Edison Company

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cc w/enclosures:

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Mr. J. Edward Howard, Superintendent
~~Nuclear~~ Engineering Department
Boston Edison Company
800 Boylston Street
Boston, Massachusetts 02199

cc w/enclosures and cy of BEC
filings dated 8/5/74 and 10/22/74:
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Acting Commissioner of Public Health
Massachusetts Department of Public
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600 Washington Street
Boston, Massachusetts 02111

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BOSTON EDISON COMPANY

DOCKET NO. 50-293

PILGRIM NUCLEAR POWER STATION

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 5
License No. DPR-35

1. The Atomic Energy Commission (the Commission) has found that:
 - A. The application for amendment by Boston Edison Company (the licensee) dated August 5, 1974, as supplemented October 22, 1974, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended, 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. Prior public notice of this amendment is not required since the amendment does not involve a significant hazards consideration.
2. Accordingly, the license is amended by a change 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:

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"B. Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications, as revised by issued changes thereto through Change No. 7."

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

FOR THE ATOMIC ENERGY COMMISSION

Original signed by:
Karl R. Goller

Karl R. Goller, Assistant Director
for Operating Reactors
Directorate of Licensing

Attachment:
Change No. 7 to the
Technical Specifications

Date of Issuance: NOV 26 1974

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ATTACHMENT TO LICENSE AMENDMENT NO. 5
CHANGE NO. 7 TO THE TECHNICAL SPECIFICATIONS
FACILITY OPERATING LICENSE NO. DPR-35

The attached pages supersede pages bearing the same number, except as otherwise indicated. The revised pages have marginal lines indicating where the changes appear.

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Page 157a - addition
Page 168
Page 168a - addition

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3.7 Primary Containment3. Pressure Suppression Chamber - Reactor Building Vacuum Breakers

a. Except as specified in 3.7.A.3.b below, two pressure suppression chamber - reactor building vacuum breakers shall be operable at all times when primary containment integrity is required. The set point of the differential pressure instrumentation which actuates the pressure suppression chamber - reactor building vacuum breakers shall be 0.5 psid.

b. From and after the date that one of the pressure suppression chamber - reactor building vacuum breakers is made or found to be inoperable for any reason, reactor operation is permissible only during the succeeding seven days unless such vacuum breaker is sooner made operable, provided that the repair procedure does not violate primary containment integrity.

4. Drywell-Pressure Suppression Chamber Vacuum Breakers

a. When primary containment is required, all drywell-pressure suppression chamber vacuum breakers shall be operable except during testing and as stated in Specifications 3.7.A.4.b, c and d, below. Drywell-pressure suppression chamber vacuum breakers shall be considered operable if:

- (1) The valve is demonstrated to open with the applied force of the installed test actuator as indicated by the position switches and remote position indicating lights.
- (2) The valve shall return by gravity when released after being opened by remote or manual means, to within 3/32" of the fully closed position.
- (3) The position alarm system, when installed, shall annunciate in the control room if the valve opening exceeds 3/32".

4.7 Primary Containment3. Pressure Suppression Chamber - Reactor Building Vacuum Breakers

a. The pressure suppression chamber-reactor building vacuum breakers and associated instrumentation including set point shall be checked for proper operation every three months.

4. Drywell-Pressure Suppression Chamber Vacuum Breakers

a. Periodic Operability Tests

- (1) Once each month each drywell-pressure suppression chamber vacuum breaker shall be exercised and the operability of the valve and installed position indicators and alarms verified.
- (2) A drywell to suppression chamber differential pressure decay rate test shall be conducted at least every 3 months.
- (3) Until such time as position indicators with alarm in the control room are installed on the drywell-pressure suppression chamber vacuum breakers,

3.7 Primary Containment

- b. Any drywell-suppression chamber vacuum breaker may be non-fully closed as determined by the position switches provided that the drywell to suppression chamber differential decay rate is demonstrated to be not greater than 25% of the differential pressure decay rate for the maximum allowable bypass area of 0.2 ft².
- c. Reactor operation may continue provided that no more than 2 of the drywell-pressure suppression chamber vacuum breakers are determined to be inoperable provided that they are secured or known to be in the closed position.
- d. If a failure of one of the two installed position alarm systems occurs for one or more vacuum breakers, reactor operation may continue provided that a differential pressure decay rate test is initiated immediately and performed every 15 days thereafter until the failure is corrected. The test shall meet the requirements of Specification 3.7.A.4.b.

5. Oxygen Concentration

- a. After completion of the startup test program and demonstration of plant electrical output, the primary containment atmosphere shall be reduced to less than 5% oxygen by volume with nitrogen gas during reactor power operation with reactor coolant pressure above 100 psig, except as specified in 3.7.A.5.b.

4.7 Primary Containment

additional testing shall be performed as follows: Once per week the operability of the drywell-suppression chamber vacuum breakers shall be verified. Following the operability test, a drywell to suppression chamber differential pressure decay rate test shall be performed.

- b. During each refueling outage:
- (1) Each vacuum breaker shall be tested to determine that the disc opens freely to the touch and returns to the closed position by gravity with no indication of binding.
 - (2) Vacuum breaker position switches and installed alarm systems shall be calibrated and functionally tested.
 - (3) At least 25% of the vacuum breakers shall be visually inspected such that all vacuum breakers shall have been inspected following every fourth refueling outage. If deficiencies are found, all vacuum breakers shall be visually inspected and deficiencies corrected.
 - (4) A drywell to suppression chamber leak rate test shall demonstrate that the differential pressure decay rate does not exceed the rate which would occur through a 1 inch orifice without the addition of air or nitrogen.

5. Oxygen Concentration

The primary containment oxygen concentration shall be measured and recorded at least twice weekly.

3.7 Primary Containment

- b. Within the 24-hour period subsequent to placing the reactor in the Run mode following a shutdown, the containment atmosphere oxygen concentration shall be reduced to less than 5% by volume and maintained in this condition. De-inerting may commence 24 hours prior to a shutdown.
6. If the specifications of 3.7.A cannot be met, an orderly shutdown shall be initiated and the reactor shall be in a Cold Shutdown condition within 24 hours.

4.7 Primary Containment

BASES:

3.7.A & 4.7.A Primary Containment (Cont'd)

The occurrence of primary system leakage following a major refueling outage or other scheduled shutdown is much more probable than the occurrence of the loss-of-coolant accident upon which the specified oxygen concentration limit is based. Permitting access to the drywell for leak inspections during a startup is judged prudent in terms of the added plant safety offered without significantly reducing the margin of safety. Thus, to preclude the possibility of starting the reactor and operating for extended periods of time with significant leaks in the primary system, leak inspections are scheduled during startup periods, when the primary system is at or near rated operating temperature and pressure. The 24-hour period to provide inerting is judged to be sufficient to perform the leak inspection and establish the required oxygen concentration.

Vacuum Relief

The purpose of the vacuum relief valves is to equalize the pressure between the drywell and suppression chamber and reactor building so that the structural integrity of the containment is maintained. The vacuum relief system from the pressure suppression chamber to reactor building consists of two 100% vacuum relief breakers (2 parallel sets of 2 valves in series). Operation of either system will maintain the pressure differential less than 2 psig; the external design pressure. One valve may be out of service for repairs for a period of seven days. If repairs cannot be completed within seven days, the reactor coolant system is brought to a condition where vacuum relief is no longer required.

7 | The capacity of the 10 drywell vacuum relief valves is sized to limit the pressure differential between the suppression chamber and drywell during post-accident drywell cooling to the design limit of 2 psig. They are sized on the basis of the Bodega Bay pressure suppression system tests. The ASME Boiler and Pressure Vessel Code, Section III, Subsection B, for this vessel allows a 5 psig vacuum; therefore, with two vacuum relief valves secured in the closed position and eight operable valves, containment integrity is not impaired.

7 | Reactor operation is permissible if the bypass area between the primary containment drywell and suppression chamber does not exceed an allowable area. The allowable bypass area is based upon analysis considering primary system break area, suppression chamber effectiveness, and containment design pressure. Analyses show that the maximum allowable bypass area is 0.2 ft², which is equivalent to all vacuum breakers open 3/32". (See letters from Boston Edison to the Directorate of Licensing, dated May 15, 1973 and October 22, 1974)

Reactor operation is not permitted if differential pressure decay rate is demonstrated to exceed 25% of allowable, thus providing a

BASES:

3.7.A & 4.7.A Primary Containment (Cont'd)

margin of safety for the primary containment in the event of a small break in the primary system.

Each drywell-suppression chamber vacuum breaker is equipped with position switches which provide signals of disk position to indicators and alarms in the control room.

7

The interim surveillance required by specification 4.7.A.4.a(3) is intended to provide additional assurance of vacuum breaker operability and position until position indicators with alarms in the control room can be installed on the vacuum breakers. At that time specification 4.7.A.4.a(3) will no longer be applicable.

SAFETY EVALUATION BY THE DIRECTORATE OF LICENSING

SUPPORTING AMENDMENT NO. 5 TO LICENSE NO. DPR-35

(CHANGE NO. 7 TO THE TECHNICAL SPECIFICATIONS)

BOSTON EDISON COMPANY

PILGRIM NUCLEAR POWER STATION

DOCKET NO. 50-293

INTRODUCTION

The drywell-to-pressure suppression chamber (torus) vacuum breakers protect the drywell against damage which could be caused by the drywell negative pressure differential that would exist after the condensation of steam in the drywell following a loss-of-coolant accident.

Tests of vacuum breakers in some BWR plants have demonstrated that these devices have, on occasion, failed to perform properly and also did not have accurate valve position indication available in the control room.

By letter dated January 23, 1973, the Regulatory staff requested that Boston Edison evaluate the operation of the Pilgrim drywell to torus vacuum breakers, establish performance criteria for the operability of the vacuum breakers, and propose modifications to the breakers and their related technical specifications to provide increased assurance that these components will operate as designed.

In response to this request Boston Edison submitted the requested evaluation by letters dated March 26, 1973 and May 15, 1973. On May 1, 1974, BECo submitted a commitment to modify the Pilgrim I drywell to torus vacuum breakers by installation of redundant, safety grade position switches on each vacuum breaker. BECo further committed to provide a new position alarm system which will annunciate in the control room if any vacuum breaker is open. Boston Edison plans to complete these modifications by the end of the refueling outage scheduled for September 1975.

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During the interim period, prior to the completion of the proposed modifications, Boston Edison will carry out a program of augmented surveillance which provides additional assurance that the vacuum breakers will perform as required. On August 5, 1974, Boston Edison proposed a change to the Pilgrim Nuclear Power Station Technical Specifications which would implement these interim surveillance requirements and establish more clearly defined operational criteria for the vacuum breakers.

EVALUATION

The changes to the Technical Specifications proposed by Boston Edison require that BECo carry out additional surveillance testing on a weekly basis pending the installation of the redundant position indication and alarm system on the vacuum breakers. Based upon BECo's inspection of the operation and condition of the Pilgrim vacuum breaker which verified that all were closed as required and exhibited no evidence of binding, we have determined that the proposed increased surveillance test program will provide adequate assurance that all vacuum breakers are operational and will also assure that the existence of an open vacuum breaker will be promptly detected during the interim period until the improved valve position alarm system is installed.

CONCLUSION

We have concluded, based on the considerations discussed above, that: (1) because the change 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 change 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.

Date:

15/
Paul W. O'Connor
Operating Reactors Branch #2
Directorate of Licensing

Original signed by
Dennis L. Ziemann

Dennis L. Ziemann, Chief
Operating Reactors Branch #2
Directorate of Licensing

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UNITED STATES ATOMIC ENERGY COMMISSION

DOCKET NO. 50-293

BOSTON EDISON COMPANY

NOTICE OF ISSUANCE OF AMENDMENT TO FACILITY
OPERATING LICENSE

Notice is hereby given that the U. S. Atomic Energy Commission (the Commission) has issued Amendment No. 5 to Facility Operating License No. DPR-35 issued to the Boston Edison Company which revised Technical Specifications for operation of the Pilgrim Nuclear Power Station located in Plymouth County, Massachusetts. The amendment is effective as of its date of issuance.

The amendment changes the Technical Specifications of the Pilgrim Nuclear Power Station by:

1. Establishing performance criteria for the drywell to pressure suppression chamber vacuum breakers, and
2. Establishing additional surveillance requirements to assure that the performance criteria are met.

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.

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For further details with respect to this action, see (1) the application for amendment dated August 5, 1974, and supplement thereto dated October 22, 1974, (2) Amendment No. 5 to License No. DPR-35, with Change No. 7, 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 ~~Public~~ Public Library on North Street in Plymouth, Massachusetts 02360.

A copy of items (2) and (3) may be obtained upon request addressed to the U. S. Atomic Energy Commission, Washington, D. C. 20545, Attention: Deputy Director for Reactor Projects, Directorate of Licensing - Regulation.

Dated at Bethesda, Maryland, this *26th* day of *November, 1974*

FOR THE ATOMIC ENERGY COMMISSION

Original signed by
Dennis L. Ziemann

Dennis L. Ziemann, Chief
Operating Reactors Branch #2
Directorate of Licensing

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