

MAY 15 1975

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Chebron

Docket No. 50-297

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

Gentlemen:

The Commission has issued the enclosed Amendment No. 9 to Facility License No. DPR-35. This amendment includes Change No. 11 to the Technical Specifications and is in response to your request dated October 7, 1974.

This amendment requires operability and surveillance of hydraulic snubbers required to protect the primary coolant system and all other safety related systems and components.

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

Sincerely,

Original signed by  
Dennis L. Ziemann

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

Enclosures:

1. Amendment No. 9  
w/Change No. 11
2. Safety Evaluation
3. Federal Register Notice

bcc: J. R. Buchanan, ORNL  
T. B. Abernathy, DTIE

cc w/encls:  
See next page

CP,  
r

OFFICE	RL:ORB- x7403	RL:ORB-2	RL:ORB-2	OELD	RL:ORB-2
SURNAME	RMDiggs:esp	JLSapir	PWO' Connor	G. T. NER	DLZiemann
DATE	4/21/75	4/23/75	4/22/75	5/18/75	4/24/75 + 5/15/75

MAY 15 1975

cc w/enclosures:  
Mr. Dale G. Stoodley, Counsel  
Boston Edison Company  
800 Boylston Street  
Boston, Massachusetts 02199

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

Mr. Grant Baston, Pilgrim Division Head  
Boston Edison Company  
RFD #1 Rocky Hill Road  
Plymouth, Massachusetts 02360

Mr. Winfield M. Sides, Jr.  
Quality Assurance Manager  
800 Boylston Street  
Boston, Massachusetts 02199

Anthony Z. Roisman, Esquire  
Berlin, Roisman and Kessler  
1712 N Street, N. W.  
Washington, D. C. 20036

Plymouth Public Library  
North Street  
Plymouth, Massachusetts 02360

Mr. J. E. Larson  
Senior Licensing Engineer  
and Co-ordinator  
Boston Edison Company  
RFD #1 Rocky Hill Road  
Plymouth, Massachusetts 02360

Mr. David F. Tarantino  
Chairman, Board of Selectman  
11 Lincoln Street  
Plymouth, Massachusetts 02360

cc w/enclosures and copy of  
incoming dtd. 10/7/74:  
Henry Kolbe, M. D.  
Acting Commissioner of Public  
Health  
Massachusetts Department of  
Public Health  
600 Washington Street  
Boston, Massachusetts 02111

Mr. Wallace Stickney  
Environmental Protection Agency  
JFK Federal Building  
Boston, Massachusetts 02203

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BOSTON EDISON COMPANY

DOCKET NO. 50-295

PILGRIM NUCLEAR POWER STATION

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 9  
License No. DPR-35

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Boston Edison Company (the licensee) dated October 7, 1974, 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; and
  - 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.
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. 11."

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

**FOR THE NUCLEAR REGULATORY COMMISSION**

Original signed by  
Dennis L. Ziemann

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

Attachment:  
Change No. 11 to the  
Technical Specifications

Date of Issuance: **MAY 15 1975**

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ATTACHMENT TO LICENSE AMENDMENT NO. 9

CHANGE NO. 11 TO THE TECHNICAL SPECIFICATIONS

FACILITY OPERATING LICENSE NO. DPR-35

Add the new pages numbered 137a, 137b, 137c, 151a and 151b. The revised pages have marginal lines indicating where the changes appear.

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LIMITING CONDITION FOR OPERATION

SURVEILLANCE REQUIREMENT

3.6.I Hydraulic Snubbers

1. During all modes of operation except Cold Shutdown and Refuel, all hydraulic snubbers shall be operable except as noted in 3.6.I.2 through 3.6.I.5 below.
2. The hydraulic snubbers listed in Table 3.6.I are not required to protect the primary coolant system or any other safety related system or component and are therefore exempt from these specifications.
3. From and after the time that a hydraulic snubber is determined to be inoperable, continued reactor operation is permissible only during the succeeding 72 hours unless the snubber is sooner made operable.
4. If the requirements of 3.6.I.1 and 3.6.I.3 cannot be met, an orderly shutdown shall be initiated and the reactor shall be in a cold shutdown condition within 36 hours.
5. If a hydraulic snubber is determined to be inoperable while the reactor is in the shutdown or refuel mode, the snubber shall be made operable prior to reactor startup.

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4.6.I Hydraulic Snubbers

The following surveillance requirements apply to all hydraulic snubbers except those listed in 3.6.I.2.

1. All hydraulic snubbers whose seal material has been demonstrated by operating experience, lab testing or analysis to be compatible with the operating environment shall be visually inspected to verify their operability in accordance with the following schedule:

Number of Snubbers Found Inoperable During Inspection or During Inspection Interval	Next Required Inspection Interval
0	18 months + 25%
1	12 months + 25%
2	6 months + 25%
3,4	124 days + 25%
5,6,7	62 days + 25%
>8	31 days + 25%

The required inspection interval shall not be lengthened more than one step at a time.

Snubbers may be categorized in two groups, "accessible" or "inaccessible" based on their accessibility for inspection during reactor operation. These two groups may be inspected independently according to the above schedule.

2. All hydraulic snubbers whose seal materials have not been demonstrated to be compatible with the operating environment shall be visually inspected for operability every 31 days.

4.6.I Hydraulic Snubbers (cont'd)

3. The initial inspection shall be performed within 6 months from the date of issuance of these specifications. For the purpose of entering the schedule in Specification 4.6.I.1, it shall be assumed that the facility had been on a 6 month inspection interval.
4. Once each refueling cycle, a representative sample of 10 snubbers or approximately 10% of the snubbers, whichever is less, shall be functionally tested for operability including verification of proper piston movement, lock up and bleed. For each unit and subsequent unit found inoperable, an additional 10% or ten snubbers shall be so tested until no more failures are found or all units have been tested.
5. Once each refueling cycle at least two representative snubbers from a relatively severe environment shall be completely disassembled and examined for damage and abnormal seal degradation.

TABLE 3.6.I

<u>New Boston Edison Co. No.</u>	<u>Location</u>	<u>Elevation</u>
S-1-30-1	Main Steam Line A	24'9"
S-1-30-2	Main Steam Line A	24'9"
S-1-30-3	Main Steam Line B	24'9"
S-1-30-4	Main Steam Line B	24'9"
S-1-30-5	Main Steam Line C	24'9"
S-1-30-6	Main Steam Line C	24'9"
S-1-30-7	Main Steam Line D	24'9"
S-1-30-8	Main Steam Line D	24'9"
S-1-10-9	From Stop Valves	28'6"
S-1-10-10	From Stop Valves	28'6"
S-1-10-11	To Stop Valves	39'
S-1-20-12	To Stop Valves	39'
S-1-10-13	To Stop Valves	39'3"
S-1-3-14	To Stop Valves	24'9"
S-1-3-15	To Stop Valves	39'3"
S-1-10-16	To Stop Valves	24'9"
S-1-3-17	Steam By-Pass	40'3"
S-1-3-18	Steam By-Pass	40'3"
S-1-3-19	Steam By-Pass	38'7"
S-1-10-20	B Train Over 2nd Point	21'
S-1-10-21	B Train Over 2nd Point	21'
S-1-10-22	B Train Over 2nd Point	21'
S-1-10-23	B Train Over 2nd Point	21'
S-1-10-24	B Train Over 2nd Point	21'
S-1-10-25	A Train Over 2nd Point	21'
S-1-10-26	A Train Over 2nd Point	21'
S-1-10-27	A Train Over 2nd Point	21'
S-1-10-28	A Train Over 2nd Point	21'
S-1-10-29	A Train over 1st Point	21'
S-1-3-38	Air Ejectors	34'
S-1-3-39	Air Ejectors	25'
S-1-3-40	Air Ejectors	34'
S-1-3-41	Air Ejectors	34'
S-1-3-42	Air Ejectors	35'

BASES:

3.6.I and 4.6.I

Hydraulic Snubbers

Snubbers are designed to prevent unrestrained pipe motion under dynamic loads as might occur during an earthquake or severe transient, while allowing normal thermal motion during startup and shutdown. The consequence of an inoperable snubber is an increase in the probability of structural damage to piping as a result of a seismic or other event initiating dynamic loads. It is therefore required that all hydraulic snubbers required to protect the primary coolant system or any other safety system or component be operable during reactor operation.

Because the snubber protection is required only during relatively low probability events, a period of 72 hours is allowed for repairs or replacements. In case a shutdown is required, the allowance of 36 hours to reach a cold shutdown condition will permit an orderly shutdown consistent with standard operating procedures. Since plant startup should not commence with knowingly defective safety related equipment, Specification 3.6.I.5 prohibits startup with inoperable snubbers.

All safety related hydraulic snubbers are visually inspected for overall integrity and operability. The inspection will include verification of proper orientation, adequate hydraulic fluid level and proper attachment of snubber to piping and structures.

The inspection frequency is based upon maintaining a constant level of snubber protection. Thus the required inspection interval varies inversely with the observed snubber failures. The number of inoperable snubbers found during a required inspection determines the time interval for the next required inspection. Inspections performed before that interval has elapsed may be used as a new reference point to determine the next inspection. However, the results of such early inspections performed before the original required time interval has elapsed (nominal time less 25%) may not be used to lengthen the required inspection interval. Any inspection whose results require a shorter inspection interval will override the previous schedule.

Experience at operating facilities has shown that the required surveillance program should assure an acceptable level of snubber performance provided that the seal materials are compatible with the operating environment.

Snubbers containing seal material which has not been demonstrated by operating experience, lab tests or analysis to be compatible with the operating environment should be inspected more frequently (every month) until material compatibility is confirmed or an appropriate changeout is completed.

Examination of defective snubbers at reactor facilities and material tests performed at several laboratories (Reference 1) has shown that millable gum polyurethane deteriorates rapidly under the temperature and moisture conditions present in many snubber locations. Although molded polyurethane exhibits greater resistance to these conditions, it also may be unsuitable for application in the higher temperature environments. Data are not currently available to precisely define an upper temperature limit for the molded polyurethane. Lab tests and in-plant experience indicate that seal materials are available, primarily ethylene propylene

BASES:

3.6.I and 4.6.I

Hydraulic Snubbers (cont'd)

compounds, which should give satisfactory performance under the most severe conditions expected in reactor installations.

To further increase the assurance of snubber reliability, functional tests should be performed once each refueling cycle. These tests will include stroking of the snubbers to verify proper piston movement, lock-up and bleed. Ten percent or ten snubbers, whichever is less, represents an adequate sample for such tests. Observed failures on these samples should require testing of additional units. Snubbers in high radiation areas or those especially difficult to remove need not be selected for functional tests provided operability was previously verified. To complement the visual external inspections, disassembly and internal examination for component damage and abnormal seal degradation should be performed. The examination of two units, each refueling cycle, selected from relatively severe environments should adequately serve this purpose. Any observed wear, breakdown or deterioration will provide a basis for additional inspections.

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(1) Report H. R. Erickson, Bergen Paterson to K. R. Goller, NRC, October 7, 1974  
Subject: Hydraulic Shock Sway Arrestors

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 9 TO LICENSE NO. DPR-35

(CHANGE NO. 11 TO THE TECHNICAL SPECIFICATIONS)

BOSTON EDISON COMPANY

PILGRIM NUCLEAR POWER STATION

DOCKET NO. 50-293

INTRODUCTION

During the summer of 1973, inspections at two reactor facilities revealed a high incidence of inoperable hydraulic shock suppressors (snubbers) manufactured by Bergen Paterson Pipesupport Corporation. As a result of those findings, the Office of Inspection and Enforcement required each operating reactor licensee to immediately inspect all Bergen Paterson snubbers utilized on safety systems and to reinspect them 45 to 90 days after the initial inspection. Snubbers supplied by other manufacturers were to be inspected on a lower priority basis.

Since a long term solution to eliminate recurring failures was not immediately available, the Division of Reactor Licensing sent a letter dated October 2, 1973, to operating facilities (including Pilgrim) utilizing Bergen Paterson snubbers specifying continuing surveillance requirements and requesting a submittal within one year of proposed Technical Specifications for a snubber surveillance program. On October 7, 1974, Boston Edison proposed Technical Specifications for hydraulic snubbers at Pilgrim Unit 1 reactor. During our review of the proposed change, we found that certain modifications were necessary. These modifications were discussed with Boston Edison and have been incorporated into the proposed Technical Specifications.

EVALUATION

Snubbers are designed to prevent unrestrained pipe motion under dynamic loads as might occur during an earthquake or severe transient while allowing normal thermal movement during startup and shutdown.

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The consequence of an inoperable snubber is an increase in the probability of structural damage to piping resulting from a seismic or other postulated event which initiates dynamic loads. It is, therefore, necessary that snubbers installed to protect safety system piping be operable during reactor operation and be inspected at appropriate intervals to assure their operability.

Examination of defective snubbers at reactor facilities has shown that the high incidence of failures observed in the summer of 1973 was caused by severe degradation of seal materials and subsequent leakage of the hydraulic fluid. The basic seal materials used in Bergen Paterson snubbers were two types of polyurethane; a millable gum polyester type containing plasticizers and an unadulterated molded type. Material tests performed at several laboratories (Reference 1) established that the millable gum polyurethane deteriorated rapidly under the temperature and moisture conditions present in many snubber locations. Although the molded polyurethane exhibited greater resistance to these conditions, it also may be unsuitable for application in the higher temperature environments. Data are not currently available to precisely define an upper temperature limit for the molded polyurethane. The investigation indicated that seal materials are available, primarily ethylene propylene compounds, which should give satisfactory performance under the most severe conditions expected in reactor installations.

An extensive seal replacement program has been carried out at many reactor facilities. Experience with ethylene propylene seals has been very good with no serious degradation reported thus far. Although the seal replacement program has significantly reduced the incidence of snubber failures, some failures continue to occur. These failures have generally been attributed to faulty snubber assembly and installation, loose fittings and connections and excessive pipe vibrations. The failures have been observed in both PWRs and BWRs and have not been limited to units manufactured by Bergen Paterson. Because of the continued incidence of snubber failures, we have concluded that snubber operability and surveillance requirements should be incorporated into the Technical Specifications. We have further concluded that these requirements should be applied to all safety related hydraulic snubbers, regardless of manufacturer, in all light water cooled reactor facilities.

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(1) Report H. R. Erickson, Bergen Paterson to K. R. Goller, NRC, October 7, 1974, Subject: Hydraulic Shock Sway Arrestors

We have developed the attached Technical Specifications and Bases to provide additional assurance of satisfactory snubbers performance and reliability. The specifications require that snubbers be operable during reactor operation and prior to startup. Because snubber protection is required only during relatively low probability events, a period of 72 hours is allowed for repair or replacement of defective units before the reactor must be shut down.

An inspection program is specified to provide additional assurance that the snubbers remain operable. The inspection frequency is based upon maintaining a constant level of snubber protection. Thus the required inspection interval varies inversely with the observed snubber failures. The longest inspection interval allowed in the Technical Specifications after a record of no snubber failures has been established is nominally 18 months. Experience at operating facilities has shown that the required surveillance program should provide an acceptable level of snubber performance provided that the seal materials are compatible with the operating environment. Snubbers containing seal material which has not been demonstrated to be compatible with the operating environment are required to be inspected every 31 days until the compatibility is established or an appropriate seal change is completed.

To further increase the level of snubber reliability, the Technical Specifications require functional tests and internal inspections of snubbers at least once each refueling cycle. The tests will verify proper piston movement, lock up and bleed, and the internal inspections will monitor for wear, breakdown and deterioration that cannot be observed by the external inspections.

#### CONCLUSIONS

We have concluded that the proposed additions to the Technical Specifications, as modified, increase the probability of successful snubber performance, increase reactor safety and we therefore find them acceptable.

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: MAY 15 1975

UNITED STATES NUCLEAR REGULATORY 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. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 9 to Facility Operating License No. DPR-35 issued to the Boston Edison Company (the licensee), which revised Technical Specifications for operation of the Pilgrim Nuclear Power Station (the facility), located in Plymouth County, Massachusetts. The amendment is effective as of its date of issuance.

The amendment requires operability and surveillance of hydraulic snubbers required to protect the primary coolant system and all other safety related systems and components in accordance with the licensee's request dated October 7, 1974.

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 is not required since the amendment does not involve a significant hazards consideration.

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For further details with respect to this action, see (1) the application for amendment dated October 7, 1974, (2) Amendment No. 9 to License No. DPR-35, with Change No. 11, and (3) the Commission's concurrently issued 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 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 Reactor Licensing.

Dated at Bethesda, Maryland, this **15<sup>th</sup>** day of **May 1975**.

FOR THE NUCLEAR REGULATORY COMMISSION

Original signed by  
Dennis L. Ziemann

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

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

Office of the Executive Legal Director

Performance of hydraulic snubbers is a generic concern. The attached package of snubber Tech Specs for Pilgrim is representative of amendments we will issue to eight other facilities with only minor tailoring. All of these facilities have submitted proposed Tech Specs which we are modifying. ~~Because of their similarity to the Pilgrim package, we plan to issue the remaining amendments without submitting them for OELD concurrence.~~

*Dennis L. Ziemann*

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

*don't agree*

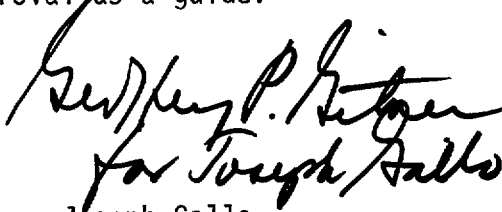


May 14, 1975

NOTE TO: D. L. Ziemann, Chief  
Operating Reactors - Branch #2

RE: Pilgrim 1

We have concurred in the post-notice finding regarding Amendment 9 to Facility License No. DPR-35. We do not agree, as suggested in your note to me, on the matter of concurrence for future similar actions. Such actions should be reviewed by the cognizant hearing lawyer who will use this approval as a guide.

A handwritten signature in black ink, appearing to read "Joseph P. Gallo for Joseph Gallo". The signature is written in a cursive, somewhat stylized script.

Joseph Gallo  
Chief Hearing Counsel