

RELATED CORRESPONDENCE

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY
AND LICENSING BOARD



In the matter of)
)
BOSTON EDISON COMPANY, et al.)
)
(Pilgrim Nuclear Generating)
Station, Unit 2))
_____)

Docket No. 50-471



RESPONSE OF BOSTON EDISON COMPANY, et al.
TO

COMMONWEALTH OF MASSACHUSETTS'

SECOND SET OF

INTERROGATORIES TO

BOSTON EDISON COMPANY

RELATIVE TO EMERGENCY PLANNING

(INCLUDING MOTION FOR PROTECTIVE ORDER)

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DATED: August 14, 1981

INTERROGATORY #1

1. Please clarify the following aspects of BECO's answer to Interrogatory No. 8 of the Commonwealth's First Set of Interrogatories to Boston Edison Company Relative to Emergency Planning:

a. BECO states, in the third paragraph of its answer, that "... spaces are available in public buildings and offices which could accommodate peak seasonal populations ...". Does this reference to "peak seasonal populations" include the peak transient populations?

b. BECO refers in the last sentence of the third paragraph, and again in the last paragraph, to "category 2" level of protection. Please explain these references, citing any NRC or other federal guidance from which this system of categorization is derived.

c. Please explain the meaning of the following phrase contained in the footnote on page 18 of BECO's Answers to the Commonwealth's First Set of Interrogatories--" this figure . . . assumes a 100% existing ratio for the Plymouth total of both existing and upgradable spaces."

RESPONSE #1

A. a. Yes.

b. "Category 2" is a designation currently in use by the Federal Emergency Management Agency to define the degree of radiation protection afforded by a structure. A protection factor (i.e., dose reduction factor) of 40 corresponds to "Category 2".

c. A specific estimate of the number of "Category 2" shelter spaces in Plymouth was not available. Based on information provided by the Massachusetts Civil Defense Agency, 10% of the total available shelter spaces in Plymouth were estimated to be at the Category 2 level.

B. "Protective Construction," FEMA TR-39, December 1979. Boston Edison objects to Part B of this interrogatory, and to Part B of each interrogatory, to the extent that it is construed to call for more than the principal documents (and documents referenced therein) relied upon by Applicants' Direct Panel at the time these answers are prepared.

C. None. Boston Edison objects to Part C of this interrogatory, and to Part C of each interrogatory, to the extent that it is construed to call for a search of the literature by it or by the members of the Applicants' Direct Panel. The answer to this part is given based on the present recollection of the Applicants' Direct Panel at the time these answers are drafted, and does not include documents published and available in the general literature.

D. Boston Edison presently proposes to call the following persons to testify on emergency planning matters:

Robert H. Cunningham, Boston Edison
Thomas Sowdon, Boston Edison
Scott T. McCandless, HMM Associates
Robert J. Merlino, HMM Associates

The qualifications of these persons were attached to Boston Edison Company's responses to Commonwealth of Massachusetts' First Set of Interrogatories to Boston Edison Company Relative to Emergency Planning, Dated July 20, 1981. Hereinafter referred to as "Applicants' Direct Panel".

INTERROGATORY #2

The Staff has indicated, in response to Interrogatory No. 34 of the Commonwealth's First Set of Interrogatories to the NRC Staff Relative to Emergency Planning, that it has asked BECo to provide evacuation time estimates assuming the weather condition of rain. Does BECo intend to comply with this request? If so, by what date? Describe the exact nature of the weather condition to be assumed. Specifically, will the assumption involve a rainfall mid-day on a summer weekend after beaches are full? If BECo has already performed an analysis of evacuation times at Pilgrim assuming the condition of rain, explain in detail the results of that analysis.

RESPONSE #2

A. The Staff has requested that Boston Edison Company provide evacuation time estimates for the first year of plant operation, including our estimate of evacuation times for the high summer tourist population during rain. Boston Edison Company has agreed to provide this information by August 24. This information is included in a letter from NRC to Boston Edison Company dated July 24, 1981. The NRC's distribution list indicates that a copy of this letter has been sent to the Commonwealth of Massachusetts.

The analysis is presently underway and the assumptions to be used have not yet been defined. A report will be written which documents the data, assumptions and results. A copy will be provided to the Commonwealth of Massachusetts at the time of its transmittal to the NRC.

B. None.

C. None.

D. Applicants' Direct Panel.

INTERROGATORY #3

BECO states, in its answer to Interrogatory No. 56 of the Commonwealth's First Set of Interrogatories to Boston Edison company Relative to Emergency Planning, that "there are no 'ranges' as such associated with these types of devices." This answer seems inconsistent with the reference in SER Supplement No. 6, at p. 39, to a "high-range radiation monitor." Please explain this apparent inconsistency and describe in detail any ranges which you determine are in fact associated with these devices.

RESPONSE #3

A. Interrogatory #56 requested information on instruments to "measure continuous iodine and other halogens."

SER Supplement 6 at p. 39 refers to the "containment high range radiation monitor which meets the specifications of Table II.F.1-3 of NUREG 0737". This monitor will be a "gross" monitor, that is, it will not be designed to distinguish between noble gases, halogens and other gamma or gamma and beta emitting nuclides and, therefore, cannot properly be classified as an instrument to continuously measure iodine and other halogens.

In addition, inplant sampling of halogens in airborne effluent paths will be conducted by collecting a representative sample of the halogens on a charcoal (or other medium) cartridge followed by on-site laboratory analysis.

There are no "ranges" associated with these halogen sampling devices.

B. None.

C. None.

D. Applicants' Direct Panel.

INTERROGATORY #4

BECO refers, at p. 1C-8 of Amendment 43 to the Pilgrim PSAR, to "the current Emergency Preparedness evacuation model." Does this refer to the model used by HMM Associates, Inc. in its calculation of evacuation time estimates as described in Amendments 40 and 41 of the PSAR? If not, describe the referenced model in detail.

RESPONSE #4

- A. Yes.
- B. None.
- C. None.
- D. Applicants' Direct Panel.

INTERROGATORY #5

BECO states, in its answer to Interrogatory No. 31 of the Commonwealth's First Set of Interrogatories to Boston Edison Co. Relative to Emergency Planning, that "[t]he frequency of hurricanes, earthquakes and tornados put them beyond the bounds of any reasonable 'adverse case' definition." What, in the opinion of BECO, is the frequency of each of these events at the Pilgrim site?

RESPONSE #5

A. The PSAR (see Section 2.5) deals extensively with the subject of seismic activity as related to Pilgrim Unit 2. A conclusion at page 2.5-59 states:

"Conclusion

The seismic history of New England indicates that there are restricted areas of significant earthquake activity throughout the historical and instrumental record. These areas are the Ossipee, New Hampshire and the Cape Ann, Massachusetts region. The rest of New England is characterized by very infrequent, low intensity earthquakes. A region defined by Vermont, portions of southern Quebec, and western and central Massachusetts, is nearly aseismic. The record for New England is the most complete for the United States, and because of the low attenuation characteristics for the earthquakes, it is reasonably complete even for low magnitude, low intensity events."

From page 2.5-60a:

"The site region is within the area of the longest continuous record of settlement and population for the northeastern United States. During this 350-year period no earthquakes of design significance have been located in the site area."

PSAR Section 2.3 contains data on hurricanes and tornadoes.

From page 2.3-4:

"For the period of record 1886-1970, coastal Massachusetts has experienced 18 tropical cyclones (sustained wind speeds greater than or equal to 40 mph). Of these, 6 are classified as hurricanes (sustained wind speed greater than 74 mph) and one as a great hurricane (sustained wind speed exceeding 125 mph). A tropical cyclone could be expected then along the Massachusetts coast about once every 4 years, a hurricane once every 14 years, and a great hurricane once every 85 years."

From page 2.3-5:

"Severe tornado activity in eastern Massachusetts is not common. Records from the National Severe Storm Forecast Center for the period 1951-1971 show a total of 85 tornadoes occurring in the entire State of Massachusetts, but only five occurring in Plymouth County in which the Pilgrim site is located. In a 1^0 square containing the site (42-43N, 70-71W), Thom shows a total of 7 tornadoes having occurred in the period 1953-1962. Applying Thom's analyses, the probability of a tornado striking any given point in a given year in this 1^0 square is approximately 0.00055. This implies a recurrence interval for a tornado at the Rocky Point site equal to the reciprocal of this

probability, or about 1800 years. The tornadoes that did occur in the Plymouth area did not inflict major damage. The proximity to the ocean, and the terrain in the vicinity of the site, are unfavorable to severe tornado activity."

- B. Pilgrim Unit 2 PSAR, Sections 2.3 and 2.5.
- C. None.
- D. Applicants' Direct Panel.

INTERROGATORY #6

BECO explains, in its answer to Interrogatory No. 41 of the Commonwealth's First Set of Interrogatories to Boston Edison Co. Relative to Emergency Planning, that the projected doses and dose rates contained in Section 13.3.5.3 of the PSAR are to be used to classify an accident into the General Emergency, Site Emergency, or Alert categories. Are these projected doses and dose rates identical to those included in NUREG-0654 as Example Initiating Conditions for each emergency class? If not, explain in detail the nature of and reasons for any deviation. With respect to any projected dose or dose rate which is not identical to that included in the applicable list of Example Initiating Conditions in NUREG-0654, indicate whether that projected dose or dose rate is consistent in all respects with each of the conditions included in that list and explain the nature of and reasons for any inconsistency.

RESPONSE #6

A. The Protective Action Guides presented in Section 13.3.5.3 of the PSAR are consistent with the guidance of NUREG 0654 published in January 1980 for interim use and comment, to the extent that the Example Initiating Conditions of that document provided guidance on the subject of offsite dose rates.

The information presented in Section 13.3.5.3 also includes projected offsite dose levels that are not specifically listed in NUREG 0654, but were included in response to Section II.J.7 of that document.

The projected doses and dose rates presented in Section 13.3.5.3, and in fact in NUREG 0654, are not necessarily consistent in all respects with each of the other initiating conditions specified in NUREG 0654 since many initiating conditions have no direct or immediate consequence in terms of actual or projected release of radioactive material.

The information presented in Section 13.3.5.3 appropriately represents BECo's plans including consideration of the guidance available at the time of publication of the PSAR.

NUREG 0654 was revised and published as Revision 1 in November 1980 and now makes specific reference to EPA Protective Action Guides under Example Initiating Conditions: Site Area Emergency.

At the time of the Operating License, Pilgrim Unit 2 Emergency Procedures will incorporate appropriate existing guidance on Emergency Classifications and Protective Actions as that guidance pertains to PNPS-2.

- B. NUREG-0654.
- C. None.
- D. Applicants' Direct Panel.

INTERROGATORY #7

Please provide, for each individual whom BECo intends to call as a witness on emergency planning matters, a list of all proceedings of any kind before any tribunal in which said individual has testified and the subject matter of his testimony on each such occasion.

RESPONSE #7

R. J. Merlino

1. Before the Vermont Public Service Board on matters relating to releases of radioactivity and radioactive waste treatment system design and performance for Vermont Yankee Nuclear Power Station.
2. Before the Atomic Safety and Licensing Board in operating license hearings for Vermont Yankee Nuclear Power Station. Subject matter included population, meteorology, releases of radioactivity during normal operations and accidents and resulting radiation exposures, and performance of engineered safety systems.
3. Before the Atomic Safety and Licensing Board in operating license hearings for Maine Yankee Atomic Power Station. Subject matter included radiological safety.
4. Before the Atomic Safety and Licensing Board in construction permit hearings for Pilgrim Unit 2. Subject matter included airplane crash probability at the Pilgrim site.

5. Before the Atomic Safety and Licensing Board in construction permit hearings for Seabrook Nuclear Power Station. Subject matter included population and land use, meteorology and atmospheric dispersion, and loss of coolant accident consequences.

Robert H. Cunningham, Thomas Sowdon and Scott T. McCandless have not previously testified as expert witnesses.

INTERROGATORY #8

Please provide, for each individual whom BECo intends to call as a witness on emergency planning matters, a list of all reports, studies, papers, articles, and books, whether published or not, and whether a draft or not, relating in any way to the subject of emergency planning and prepared, in part or in whole, by said individual or by a corporation, partnership, or other organization of which said individual is an employee, officer, director, partner, or agent.

RESPONSE #8

Documents prepared in whole or in part by R. H. Cunningham:

Emergency Plan for Pilgrim Station.

Amendments 40 and 41, Pilgrim Unit 2 PSAR.

Documents prepared in whole or in part by T. Sowdon:

Emergency Plan for Pilgrim Station.

Documents prepared in whole or in part by R. J. Merlino
(partial list):

An Evacuation Analysis for the Pilgrim Site, ERT
Document No. P-1543-1, August 1975.

Study to estimate evacuation time for Charlestown
Nuclear Project, incorporated into PSAR.

Final Safety Analysis Report for Yankee Atomic
Electric Company, material dealing with definition
of low population zone and radiation exposures from
postulated accidents.

Final Safety Analysis Report for Vermont Yankee Nuclear Power Station, content similar to 3.

Final Safety Analysis Report for Maine Yankee Atomic Power Station, content similar to 3.

Preliminary Safety Analysis Report for Seabrook Project, content similar to 3.

Emergency Plan and Implementing Procedures for St. Lucie Nuclear Power Plant.

Emergency Plan and Implementing Procedures for Turkey Point Nuclear Power Plant.

Emergency Plan for Pilgrim Station.

Amendments 40 and 41 Pilgrim Unit 2 PSAR.

Radiological Contingency Plan for Nuclear Fuel Services Facility in Erwin, Tennessee.

An Update of the Population Distribution Around the Pilgrim Site, July 31, 1981.

Documents prepared in whole or in part by S. T. McCandless (partial list):

Evacuation Times Estimates for Areas Near Pilgrim Station, original draft report dated January 1980 and most current version incorporated into Pilgrim Unit 2 PSAR.

Evacuation Traffic Management Plan for Sagamore/Buzzard's Bay (Draft), August 1981.

Evacuation Time Estimates for Arkansas Nuclear 1.

Major Roadway Improvements in the Vicinity of the
Pilgrim Nuclear Generating Station. July 31, 1981.

Other Studies by HMM Associates (partial list):

Evacuation Time Estimates for Areas Near the Allens
Creek Project.

Evacuation Clear Time Estimates for Areas Near the
Midland Michigan Nuclear Power Plant.

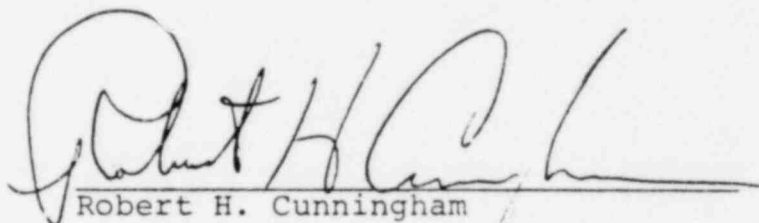
Farley Nuclear Site EPZ Evacuation Time Estimate
Study.

At the request of HMM Associates, Boston Edison Company objects and moves for protective order regarding the production and identification of reports prepared or studies performed by HMM Associates for persons not a party to this proceeding, and in particular those which were not intended for public distribution or which were not publicly distributed.

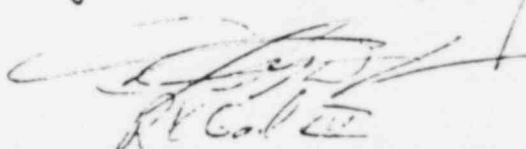
The documents enumerated above are those reports that either have previously been made publicly available, or which the clients for whom they were prepared have, of HMM's request, agreed to their production in this proceeding.


SIGNATURES

The foregoing answers are true to the best of my knowledge, information and belief, except insofar as they are based on information available to Boston Edison Company but not within my personal knowledge, as to which I, based on such information, believe them to be true.


Robert H. Cunningham

As to objections and motion
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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION



In the Matter of)
)
BOSTON EDISON COMPANY, et al.)
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(Pilgrim Nuclear Generating)
Station, Unit 2))

Docket No. 50-471

CERTIFICATE OF SERVICE

I hereby certify that the Response Of Boston Edison, et al. To Commonwealth Of Massachusetts' Second Set Of Interrogatories To Boston Edison Company Relative To Emergency Planning (Including Motion For Protective Order) filed in the above-captioned matter has been served on the following by deposit of a copy thereof in the United States mail, first class, postage prepaid:

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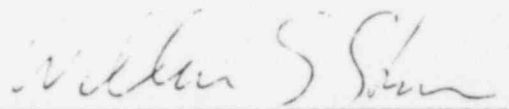
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Dated: August 17, 1981