

July 15, 1981

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)

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Docket No. 50-471

NRC STAFF'S RESPONSE TO THE COMMONWEALTH OF
MASSACHUSETTS' FIRST SET OF INTERROGATORIES
TO THE NRC STAFF RELATIVE TO EMERGENCY
PLANNING; NRC STAFF'S MOTION FOR A PROTECTIVE ORDER

At the prehearing conference in Boston on July 1, 1981, the Commonwealth of Massachusetts (Commonwealth) served the Staff with its First Set of Interrogatories Relative to Emergency Planning. On July 10, 1981, the Staff provided its objections, on the basis of 10 C.F.R. § 2.720(h)(2)(ii), to those interrogatories. The Staff noted that its assertion of those objections did not constitute a waiver of other objections, on grounds other than 10 C.F.R. § 2.720(h)(2)(ii), the Staff may wish to make. Without waiving those objections the Staff hereby voluntarily provides the following responses to the Commonwealth's interrogatories.

Instruction B

When the Staff's response to an interrogatory specifically references documents, those documents serve as the basis for the response. Additional documents, if any, which serve as the basis of such response also will be listed.

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Instruction C

See NRC Staff's Response Pursuant to 10 C.F.R. § 2.720(h)(2)(ii) to the Commonwealth of Massachusetts' First Set of Interrogatories to the NRC Staff, filed July 10, 1981 (Staff's § 2.720 Response).

Instruction D

The affidavits of the individuals who prepared answers to the Commonwealth's interrogatories will be provided in the near future. Those individuals are not available on the date of filing of this Response.

Instruction E

See Staff's § 2.720 Response.

Instruction F

At this time, the Staff has not determined who will testify for it on any subject.

Interrogatory Nos. 1 and 2

See Staff's § 2.720 Response. However, the Staff voluntarily provides the following additional response:

Yes. The basis for size of the plume and ingestion pathway EPZs is that they are consistent with 10 C.F.R. Part 50, Appendix E and 10 C.F.R. § 50.47. Other documents which serve as the basis for this answer are NUREG-0396 and NUREG-0654.

Interrogatory No. 3

See Staff's § 2.720 Response. However, the Staff voluntarily provides the following response:

NUREG-0396 and Section I. E. of NUREG-0654 contain the guidance on the size and configuration of the plume and ingestion EPZs. The NRC has

no further guidance under development concerning the definition of the plume or ingestion EPZs.

Interrogatory No. 4

See Staff's § 2.720 Response. However, the Staff voluntarily provides the following response:

See SER Supp. No. 5. In addition, the NRC Staff used the general methodology described in Appendix B of NUREG/CR-1856 to evaluate the adequacy of the analysis, methodology, assumptions and documentation of the evacuation time estimate study submitted by the Applicant. The NRC has not conducted a specific study for Pilgrim II on consequences.

Interrogatory No. 5

See Staff's § 2.720 Response.

Interrogatory No. 6

See Staff's § 2.720 Response. However, the Staff voluntarily provides the following response:

The Staff has not done any such site-specific analysis for Pilgrim Unit 2. WASH-1400 analyzes generically the consequences of PWR-1 through PWR-7 accidents and describes in detail the assumptions, methodology and results. In addition, the NRC/EPA Task Force Report on Emergency Planning, "Planning Basis for the Development of State and Local Governmental Radiological Emergency Response Plans in Support of Light Water Nuclear Power Plants, NUREG-0396, EPA 520/1-78-016" is based on the analysis in WASH-1400 and provides the basis for off-site emergency preparedness.

Interrogatory No. 7

Same answer as for Interrogatory No. 6.

Interrogatory No. 8

See Staff's § 2.720 Response. However, the Staff voluntarily provides the following response:

- a. Yes. See SER Supp. No. 5.
- b. Yes. See SER Supp. No. 5.
- c-h. See Staff's § 2.720 Response.

Interrogatory No. 9

Yes, for very severe accidents which are highly unlikely to occur. However, this possibility need not be considered in determining the feasibility of developing, by the operating license stage, an adequate emergency plan.

Interrogatory No. 10

Yes, in the event of an accident and in the absence of traffic control mechanisms. For this reason, mechanisms to control the routing of traffic from Cape Cod are contemplated. The Staff did not perform a specific analysis with no traffic control mechanisms because such mechanisms are contemplated.

Interrogatory No. 11

- a. Yes. All that is required at this construction permit stage is a determination of feasibility. Detailed plans need not be considered until the operating license stage.
- b-e. See Staff's § 2.720 Response.

Interrogatory No. 12

It is the Staff's opinion that BECo's PSAR satisfies the quoted informational requirement. The information submitted includes consideration of the feasibility of traffic control mechanisms for Cape Cod. The basis for this conclusion is found in SER Supp. No. 5.

Interrogatory No. 13

a, b, c, e. See Staff's § 2.720 Response.

d. It is feasible to develop an emergency plan which will include the use of available shelter.

Interrogatory No. 14

See Staff's § 2.720 Response.

Interrogatory Nos. 15, 16, 17

See Staff's § 2.720 Response.

Interrogatory No. 18

a. It is the Staff's understanding that the quoted language does not include the administration of radioprotective drugs to the general public.

b-d. See Staff's § 2.720 Response.

Interrogatory Nos. 19-23

See Staff's § 2.720 Response.

Interrogatory No. 24

Based on the Staff's experience, such separate evacuation time estimates are not necessary for determining the feasibility of developing an overall emergency plan. Detailed plans will be considered at the operating license stage of the proceeding for Pilgrim.

Interrogatory No. 25

No specific estimates for Pilgrim Unit 2 have been made.

Interrogatory No. 26

See Staff's § 2.720 Response.

Interrogatory No. 27

NUREG-0654 applies to the evacuation time estimates submitted for operating plants to highlight the need to use population figures that represent the current population at the site. The Staff used the applicant-supplied population data to allow for a comparison of the evacuation calculation method used by the licensee. The Applicant will be requested to provide an update of the projected evacuation times for the projected start of plant operation for Pilgrim Unit 2.

Interrogatory No. 28

Yes. While the PSAR is not clear on this point, the Staff intends to require, at the operating license stage, that emergencies of various classifications will be declared whenever the Emergency Action Levels indicate that such declarations are in order.

Interrogatory No. 29

Yes. See 10 C.F.R. Part 50, Appendix E and NUREG-0654.

Interrogatory Nos. 30 and 31

It is feasible to arrange for notification via one state agency. However, the details of notification procedures will be examined at the operating license stage.

Interrogatory No. 32

None.

Interrogatory No. 33

Based on the Staff's experience, it is not necessary to consider these factors in order to determine the feasibility of developing an overall emergency plan. The CLEAR model does not explicitly account for these items.

Interrogatory No. 34

Rain. The Staff has asked BECo to provide evacuation time estimates which account for this condition.

Interrogatory No. 35

See Staff's § 2.720 Response.

Interrogatory No. 36

See Staff's § 2.720 Response.

Interrogatory No. 37

Protective actions are taken to avoid doses; therefore, once a dose has been received, the taking of protective actions would be meaningless.

Interrogatory No. 38

Yes. The Staff does not expect that an emergency response vehicle would be prevented from entering the plume EPZ. The Staff has not discussed obtaining buses with the Town of Plymouth. This level of planning is not required at the CP stage. The Staff's model assumes that the inbound lanes are open for emergency vehicles and the addition of these vehicles to total load on the road network will not significantly impact the evacuation time estimates.

Interrogatory No. 39

See Staff's § 2.720 Response.

Interrogatory No. 40

NUREG-0654, Criterion J.10.h states that relocation centers should be at least 5 miles and preferably 10 miles beyond the boundaries of the plume EPZ.

Interrogatory No. 41

The Staff agrees with the statement, which does apply to Pilgrim Unit 2. The documents which serve as the basis for this answer are SAND 78-0454 and NUREG-0396.

Interrogatory No. 42

The uncertainties are discussed in WASH-1400 and NUREG-CR-0400. However, these uncertainties need not be considered quantitatively in licensing decisions.

Interrogatory No. 43

With respect to Pilgrim Unit 2, no. The Staff is now conducting an on-site implementation review of BECo's emergency plans for Pilgrim Unit 1. The resulting findings and conclusions will be available in early fall.

Interrogatory No. 44

See Staff's § 2.720 Response. The Staff has not conducted any off-site drills for Pilgrim Unit 2. Annual exercises of the Pilgrim Unit 1 plan are conducted and the NRC inspection reports can be obtained at the Public Document Room. An exercise of the Pilgrim Unit 1 Emergency Plan revised to meet the upgraded requirements will be conducted on a yearly basis.

Interrogatory No. 45

The accident scenarios are described in WASH-1400.

Interrogatory Nos. 46 and 47

See Staff's § 2.720 Response.

Interrogatory No. 48

There are none. There are no time estimates for a "west extended EPZ."

Interrogatory No. 49

It is the intent of this statement to highlight the need for local officials when preparing their emergency plans to study the plume EPZ traffic network and to identify important intersections. The Staff has not identified the "important intersections."

Interrogatory No. 50

The acronym EVACCC is the previous name for the CLEAR model. The name of the model was changed from EVACCC to CLEAR in order to avoid confusion with the EVAC model used by HMM Associates.

Interrogatory No. 51

The Staff made no attempt to use the identical routes proposed in the EPZ plan. The study was intended to be an independent evaluation of the evacuation times and routing. The routing and population assignment was based on Staff opinion of the routes that would be used if there were no traffic management in effect. If traffic management were assured, it should lower the evacuation times. This approach was taken to provide an independent and conservative evaluation.

Interrogatory No. 52

The CLEAR calculations assumed a free flow rate of 1700 vehicles per lane-hour because this is a reasonable figure for the free flow rate for predominately outbound traffic movement during an evacuation. The

CLEAR and EVAC models employ different methodologies. The respective free flow rates are integral components of different methodologies and are therefore not directly comparable. The two methodologies produce similar results as is evident in SER Supp. No. 5.

Interrogatory No. 53

See Staff's § 2.720 Response. A map of the transportation network and a list of all characteristics of the road segments will be provided when the Staff responds to the Commonwealth's document request.

Interrogatory No. 54

Having the transportation network empty at the beginning of the evacuation results in a more conservative evacuation time estimate than not assuming the transportation network empty at the beginning of the evacuation. There are a finite number of vehicles in the EPZ. Each vehicle is either stationary or moving. To start with a specific number of vehicles already in the process of leaving the EPZ would decrease evacuation time estimates.

Interrogatory No. 55

The CLEAR model accounts for work-to-home travel by staggering the rate at which the population accesses the transportation network. Thereby, the work-to-home travel is incorporated in the preparation time in the CLEAR model.

Interrogatory No. 56

See Staff's § 2.720 Response. However, the Staff voluntarily provides the following response:

There are no estimates of the number of buses, ambulances, tow trucks, traffic control vehicles and vehicles for use in notifying the

public included in CLEAR because the number of trips such vehicles would make is considered to be small in relation to the number of trips required to evacuate the general population.

Interrogatory No. 57

The bases are that the traffic management plans necessary to alleviate the bottleneck at the rotary intersection of Route 3 and Route 6 include:

- a. limiting the northbound traffic on the Sagamore Bridge; and
- b. rerouting more traffic to the west and north.

These plans have not been incorporated into the pre-planned evacuation routes. See SER Supplement No. 5.

Interrogatory No. 58

- a-b. The CLEAR model includes the distribution of notification and preparation times. The minimum notification time for the CLEAR calculations is 15 minutes. The maximum preparation time is 90 seconds.
- c. The Staff has not conducted any analysis to determine if at the Pilgrim site staggered evacuation is appropriate. This is a question that would be answered as part of the planning conducted by State and local officials.

Interrogatory No. 59

The distribution of preparation times is given in SER Supplement No. 5. This distribution is based upon the guidance of NUREG/CR-1745.

Interrogatory No. 60

No. The confirmation time is not included in the CLEAR evacuation time estimates. Nothing need be added as confirmation times are not considered part of the evacuation time. See NUREG/CR-1745.

Interrogatory Nos. 61 and 62

NUREG-0718 speaks for itself.

Interrogatory Nos. 63 and 64

See SER Supp. No. 6.

Interrogatory Nos. 65, 66 and 67

No. There are no NRC requirements or guidance on emergency preparedness measures for dealing with liquid releases during a core melt accident other than monitoring of the plant environs.

Interrogatory No. 68

The NRC has not performed any analysis of the potential consequences as a result of liquid releases during a core melt accident for Pilgrim Unit 2.

Interrogatory No. 69

The Staff is not aware of specific design features, other than the reactor pressure vessel and the containment systems, which would serve to mitigate the potential consequences of releases through the liquid pathway. There are, however, several methods of interdiction, including pumping and construction of slurry walls, that could be used to prevent migration of contaminated ground water. Site specific techniques have not been identified for the Pilgrim site.

Interrogatory No. 70

See SER Supp. No. 6, items II.F.1, 2, 3.

Interrogatory No. 71

See Staff's § 2.720 Response. However, the Staff voluntarily provides the following response:

There is no Table 3 in Reg. Guide 1.97, revision 2. If the Commonwealth is referring to Table 2, see response to Interrogatory No. 70.

Interrogatory No. 72

See Staff's § 2.720 Response. However, the Staff voluntarily provides the following response:

See SER No. 6, item II.F.2.

Interrogatory No. 73

See Staff's § 2.720 Response. However, the Staff voluntarily provides the following response:

See SER Supp. No. 6, item II.F.1, and Reg. Guide 1.97, revision 2, Table 2.

Interrogatory No. 74

See Staff's § 2.720 Response. However, the Staff voluntarily provides the following response:

Notices and meeting minutes containing the date, location, agenda, and attendees of all such meetings, if any, specifically concerning Pilgrim Unit 2 have been placed in the Public Document Room. The Staff knows of no other meetings which have not been noticed and reported in the Public Document Room.

Interrogatory No. 75

See Staff's § 2.720 Response. However, the Staff voluntarily provides the following response:

1. Thomas McKenna
Emergency Preparedness Analyst, Emergency Preparedness
Licensing Branch, Division of Emergency Preparedness, U.S.
Nuclear Regulatory Commission.
B.S. Mathematics; courses and experience in emergency
preparedness.
2. Thomas Urbanick II
Assistant Research Engineer, Texas Transportation Institute,
Texas A & M University
B.S., M.S., Ph.D., civil engineering; experience in traffic
engineering and traffic planning engineering.
3. M.P. Moeller
Scientist, Health Physics Technology Section, Radiological
Sciences Department, Battelle Pacific Northwest Laboratories
B.A., mathematics
4. A. E. Desrosiers
Senior Research Scientist, Health Physics Technology Section,
Radiological Sciences Department, Battelle Pacific Northwest
Laboratories
Sc.D., environmental Health Sciences; MS., health physics;
MS., nuclear engineering; B.A., physics; experience in risk
analysis and emergency planning

Interrogatory No. 76

10 C.F.R. Part 50. In addition, the Staff relied upon the following:

NUREG-0396/EPA-520/1-78-016 Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Light Water Nuclear Power Plants, December 1978.

NUREG-0654/FEMA-Rep-1, Rev. 1 Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, November 1980.

NUREG/CR 1745 Analysis of Techniques for Estimating Evacuation Times for Emergency Planning Zones, November 1980.

NUREG-718 - Licensing Requirements for Pending Applicants for Construction Permits and Manufacturing License, March 1981.

EPA-520/1-75-001, Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, Revision February 1980.

U.S. NRC Policy Statement, Planning Basis for Emergency Responses to Nuclear Power Reactor Accidents, Federal Register 45 FR 2893, January 15, 1980.

WASH-1400/NUREG-75/014, Reactor Safety Study, October 1975

PNL SA 9557, "An Introduction to the Calculation of Evacuation time Estimate," May 1981, Battelle PNWL, Richland, Washington 99352

PNL 3812, "An Evaluation of the Evacuation Time Estimate Submitted by the Applicant for Peak Population Scenarios at the Pilgrim 2 Nuclear Power Station, March 1981, Battelle PNWL, Richland, Washington 99352

EPA-520/6-74-002 "Evacuation Risks-An Evaluation, EPA, June 1974

NUREG/CR-1856, "An Analysis of Evacuation Time Estimates Around 52 Nuclear Power Plant Sites" May 1981

Interrogatory No. 77

Battelle: February 18, 19, 1981. This visit is described in Appendix A of the SER Supp. No. 5. The Staff has made no site visits for the purpose of preparation of its findings on Pilgrim Unit 2 emergency preparedness.

Interrogatory No. 78

See Staff's § 2.720 Response. However, the Staff voluntarily provides the following response:

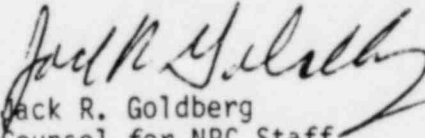
To the best of Staff's knowledge, none.

MOTION FOR A PROTECTIVE ORDER

The Staff has objected to a number of the Commonwealth's interrogatories on the ground that they seek information which is not necessary to a proper decision in this proceeding or which is reasonably obtainable from another source. See 10 C.F.R. § 2.720(h)(2)(ii) and the Staff's § 2.720 Response to the Commonwealth's interrogatories. In addition, the Staff has objected to certain interrogatories on the grounds that the information sought is neither relevant nor reasonably calculated to lead to the discovery of admissible evidence. See 10 C.F.R. § 2.740(b)(1). The Staff also has objected to some interrogatories on the grounds that they are overly broad, unduly burdensome, vague or ambiguous. See the Staff's § 2.720 Response.

On the basis of those objections, and for good cause shown, the Staff hereby moves, pursuant to 10 C.F.R. § 2.740(c), for a protective order that the discovery to which the Staff has objected above not be had.

Respectfully submitted,


Jack R. Goldberg
Counsel for NRC Staff

Dated at Bethesda, Maryland,
this 15th day of July, 1981.

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)

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Docket No. 50-471

AFFIDAVIT OF DINO C. SCALETTI

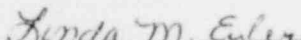
I am a Project Manager in the Nuclear Regulatory Commission Staff's
Licensing Branch 4.

The Responses to Commonwealth's Interrogatories served on July 1, 1981,
and numbered 69-74 were prepared by me. The Responses given are true
and accurate to the best of my knowledge.

I declare under penalty of perjury that the foregoing is true and
correct. Executed on July 15, 1981.


Dino C. Scaletti

Subscribed and sworn to before
me this 15th day of July, 1981


Notary Public

My Commission Expires: July 1, 1982

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
}

CERTIFICATE OF SERVICE

I hereby certify that copies of "NRC STAFF'S RESPONSE TO THE COMMONWEALTH OF MASSACHUSETTS' FIRST SET OF INTERROGATORIES TO THE NRC STAFF RELATIVE TO EMERGENCY PLANNING; NRC STAFF'S MOTION FOR A PROTECTIVE ORDER" and "AFFIDAVIT OF DINO SCALETTI" in the above-captioned proceeding have been served on the following by deposit in the United States mail, first class or as indicated by an asterisk by deposit in the Nuclear Regulatory Commission internal mail system, this 15th day of July, 1981:

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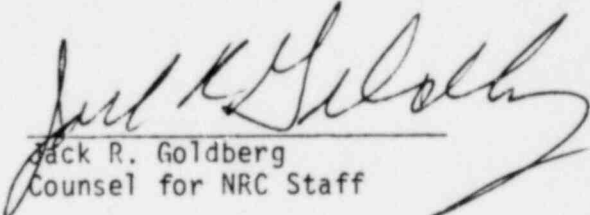
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Atomic Safety and Licensing Appeal
Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555 *

Atomic Safety and Licensing Board
Panel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555 *

Docketing and Service Section
Office of the Secretary
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555 *



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