

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

TO: HAROLD R. DENTON
DIRECTOR, OFFICE OF NUCLEAR
REACTOR REGULATION

RE: CONSTRUCTION PERMITS

CPPR-135
CPPR-136

In the Matter of)
)

PUBLIC SERVICE COMPANY OF)
NEW HAMPSHIRE, et al.)

(Seabrook Station, Units 1 and 2))
_____)

Docket Nos.
50-443
50-444

MEMORANDUM OF THE COMMONWEALTH OF MASSACHUSETTS IN SUPPORT
OF SEACOAST ANTI-POLLUTION LEAGUE'S REQUEST FOR AN ORDER TO
SHOW CAUSE DATED JUNE 30, 1980.

INTRODUCTION

The Commonwealth of Massachusetts ("Commonwealth") participated in the construction permit licensing proceedings for the Seabrook Station in an effort to protect the interests of its residents who either reside in communities or frequent beaches in the vicinity of that station. Because of these interests, the Commonwealth remains concerned about the issue of emergency evacuation at Seabrook.

On June 30, 1980, the Seacoast Anti-Pollution League ("SAPL") filed with the NRC a request that the Commissioners review a decision rendered by the Director of the Office of Nuclear Reactor Regulation ("Director") on February 11, 1980. In that decision the Director had denied a petition filed by

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SAPL on May 2, 1979, pursuant to 10 C.F.R. §2.206 seeking an Order to Show Cause why construction permits for the proposed nuclear power plant at Seabrook should not be suspended or revoked. As grounds for its petition SAPL cited, inter alia, the failure of the licensee, Public Service Company of New Hampshire, to demonstrate during the construction permit process the feasibility of evacuation beyond the low population zone.

The Commission, in October, 1980, decided not to review the Director's denial of SAPL's petition, but directed the staff to treat the June 30th SAPL request for Commission review as a new petition for a Show Cause Order under §2.206.

The Commonwealth supports the current SAPL request for an Order to Show Cause why the Seabrook construction permits should not be suspended or revoked^{1/} for the following reasons:

1. The Director denied SAPL's May, 1979 petition on the basis that it was premature to reopen the Seabrook construction permit proceedings until certain events had transpired. Those events having transpired, the Director should now approve the request for an Order to Show Cause.
2. There has been no determination of the feasibility of safely evacuating the population within the 10-mile plume exposure Emergency Planning Zone of the Seabrook Station. Present evidence suggests that such evacuation may not be feasible.
3. It is in the interest of all parties that the feasibility of evacuation be assessed now, rather than at the operating license stage of review. If the present evidence suggesting that evacuation is

^{1/} The Commonwealth also filed a Memorandum in support of SAPL's May, 1979 request.

not feasible is later confirmed, the applicant faces the loss of hundreds of millions, perhaps billions, of dollars of wasted investment. At the same time, residents of and visitors to the EPZ face the possibility that the Licensing Board, moved by the expenditure of these sums, will permit operation despite the absence of truly adequate means of evacuation.

I. THE PRE-CONDITIONS TO ISSUANCE OF THE ORDER SET FORTH BY THE DIRECTOR HAVE BEEN MET

In his February 11, 1980 denial of SAPL's petition for an Order to Show Cause, the Director concluded that it would be "premature" to reopen the Seabrook construction permit proceedings pending (1) the receipt and evaluation of evacuation time estimates prepared by the licensee; (2) adoption of the then proposed rules amending 10 C.F.R. Part 50 regarding emergency planning;^{2/} and (3) "guidance from the Commission" on reconsideration of construction permits.^{3/}

In August of last year Public Service Company of New Hampshire submitted its evacuation time estimates to the Commission. In December, 1980, the Commonwealth received notice that the Commission had completed an analysis of all evacuation time estimates which it had received. On August 19, 1980 the Commission published its final regulations on emergency planning, amending 10 C.F.R. Part 50, which regulations took effect on November 3, 1980.^{4/}

^{2/} 44 Fed. Reg. 75167 (December 19, 1979).

^{3/} Public Service Company of New Hampshire, et al., DD 80-6, 11 NRC 371, at 373 (February 11, 1980).

^{4/} 45 Fed. Reg. 55402 (August 19, 1980).

Thus, the first two events which, in the opinion of the Director, had to occur before consideration of the emergency planning issue would be timely have, in fact, occurred. Since the Commission has issued its final regulations on emergency planning, there is no reason to expect further formal "guidance" from the Commission regarding the reconsideration of construction permits. The Commission has not, so far as we are aware, given notice of any intention to issue further formal guidelines in this area. The Director should, therefore, now grant SAPL's petition for an Order to Show Cause.

II. THERE HAS BEEN NO DETERMINATION OF THE FEASIBILITY OF EVACUATION WITHIN THE SEABROOK EPZ

In its Final Regulations on Emergency Planning, amending 10 C.F.R. Part 50,^{5/} the Commission now requires appropriate emergency planning for the evacuation of persons beyond the low population zone of all light-water nuclear power plants, such as the Seabrook facility. A plume exposure Emergency Planning Zone having a radius of about ten miles must now be established around each such plant, with the exact size and shape of the EPZ to be decided on the basis of specific conditions at the site. Licensees must submit emergency plans providing for

^{5/} 45 Fed. Reg. 55402 (August 19, 1980).

evacuation within the plume exposure EPZ's as part of their final safety analysis reports, and those plans must be approved prior to issuance of operating licenses.

While the Final Regulations on Emergency Planning do not require that operators already holding construction permits demonstrate compliance with the new requirements before the operating license stage of review, the Commission expressly noted in a statement accompanying its publication of the proposed rules which preceded those final regulations^{6/} that it was "considering whether construction permits which have already been issued should be reconsidered because of the emergency planning considerations of the [proposed rules]." The Director quoted this Commission statement in his decision denying the May, 1979 SAPL petition and further observed that in December, 1979 the NRC staff requested all licensees of plants under construction to submit evacuation time estimates so that the Commission would be in a position to identify those plants where "unusual evacuation constraints exist and special planning measures should be considered."^{7/}

Such "unusual evacuation constraints exist" in the case of the Seabrook plant. It is therefore one of the instances

^{6/} 44 Fed. Reg. 75167, (December 19, 1979).

^{7/} 11 NRC 371, at 373 (1980).

anticipated by the Staff where construction permits should be reconsidered and, if necessary, special planning measures ordered.

From the beginning of the Seabrook construction permit proceedings, the NRC Staff has maintained that it has the authority to require a demonstration of the feasibility of evacuating persons beyond the LPZ because of the proximity of the Seabrook units to coastal beaches, the inadequacy of sheltering facilities along the coast, and the limited road networks serving the beaches.^{8/} This position has been supported by NECNP, the Attorney General of New Hampshire, and the NRC Advisory Committee on Reactor Safety.^{9/} There is thus a clear recognition of the unusual difficulties associated with evacuation of the beaches near the Seabrook facility.

Within about a five-mile radius of the Seabrook units there is an estimated summer peak population of approximately 100,000 persons, with the majority being clustered in the beach areas lying from northeast to south-southeast of the site.^{10/} It is undisputed that even when the seasonal population is

^{8/} See Public Service Company of New Hampshire ALAB - 390, 5 NRC 733, at 735-36 (1977).

^{9/} See Id.; Letter from the Chairman of the ACRS to the Chairman of the AEC reviewing Seabrook application (December 10, 1974) [Relevant language quoted at 5 NRC 751].

^{10/} Public Service Company of New Hampshire, et al., LBP-76-26, 3 NRC 857, at 871-72 (June 29, 1976).

time-weighted, population densities at the Seabrook site exceed the "trip points" of Regulatory Guide 4.7 for both plant start-up and retirement.^{11/} And the Licensing Appeal Board has determined that the beach area located just over one and one-half miles from Seabrook is the nearest population center to the site, since it will "at times be the most densely populated area in the state."^{12/}

SAPL has filed affidavits prepared by civil defense directors and other officials of New Hampshire towns in the vicinity of the Seabrook facility. Attached hereto are similar affidavits prepared by municipal officials in Massachusetts. Based on their past experiences with large beach crowds and their knowledge of the limited access roads and traffic "choke" points which exist in their areas, these local officials have serious concerns about the feasibility of evacuating their communities in a timely fashion.

In June of 1975, extensive evidentiary hearings were conducted, over the objection of the Applicant, before the Atomic Safety and Licensing Board on the issue of the feasibility of evacuating persons beyond the Seabrook LPZ, and particularly from Hampton Beach. There was conflicting

^{11/} See Seabrook Alternative Site Study, NUREG-0501, at A-60 (December, 1978).

^{12/} See Public Service Company of New Hampshire, ALAB-422, 6 NRC 33, at 51 (1977).

testimony on the issue, which testimony was never resolved by the Licensing Board since it determined that emergency plans need not be developed for areas beyond the LPZ.^{13/} The conflicts in that testimony give further reason to question the feasibility of evacuation beyond the LPZ.

Moreover, the licensee's own evacuation time estimates leave substantial doubt as to the feasibility of evacuation. Public Service estimates that, on a summer weekend, it will take four hours and 20 minutes to evacuate a 180 degree sector to the north of the plant having only a two-mile radius.^{14/} That sector includes only one beach area, Hampton Beach, and accounts for only 5,247 of the 9,177 estimated vehicles associated with that beach population.^{15/} Public Service provides a similar estimate -- 4 hours and 30 minutes--for evacuation of the ten-mile 90 degree northeast sector containing Hampton Beach.^{16/}

Neither of these estimates includes the time required for competent authorities to make decisions about the need for evacuation or to notify officials and the public of that need.

^{13/} Public Service Company of New Hampshire, LBP-76-26, 3 NRC 857, 922-26 (1976).

^{14/} Public Service Company of New Hampshire, Preliminary Evacuation Clear Time Estimates for Areas Near Seabrook Station, August 4, 1980, Table 4.

^{15/} *Id.*, Table 2.

^{16/} *Id.*, Table 4.

Nor do they include the time required for individuals to prepare to evacuate or for officials to confirm that evacuation has been completed.^{17/} A recent NRC study, NUREG/CR-1745, attests to the significance of these omissions:

It is important to understand that estimates of the length of the time period from the decision to evacuate through clearances of the evacuation zone is [sic.] significantly affected by the time required for both notification and preparation. That is to say, the length of time that it takes to clear the area cannot be calculated with any degree of certainty without knowing how long it takes to notify the populace of an impending evacuation, and how long each person will consume in preparation.^{18/}

Even without accounting for decision, notification, preparation, or confirmation time, the licensee's estimates exceed the time period during which fatalities and injuries will result from exposure to radionuclides on the ground in the event of an "atmospheric" Class 9 accident, according to NUREG-0396.^{19/} That document reveals that, assuming a uniform population density of 100 persons per square mile and plume speed of 10 m.p.h., an evacuation time of only three hours will result in approximately three deaths and twelve

^{17/} Id. at 11.

^{18/} Analysis of Techniques for Estimating Evacuation Times for Emergency Planning Zones, NUREG/CR-1745, at 3-4 (November, 1980).

^{19/} Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans In Support of Light Water Nuclear Power Plants, NUREG-0396, EPA 52011-78-016, December, 1978, Figures I-17 and I-18.

early injuries in the 0-5 mile range of the plant and approximately five early injuries in the 5-10 mile range.^{20/} If evacuation time reaches five hours (with, for example, the addition of notification time), the results are approximately six deaths and twenty-eight early injuries in the 0-10 mile range.^{21/} Of course, NUREG-0396 makes no attempt to estimate the long-term genetic or other health effects associated with such evacuation times.

Thus, even if evacuation can be accomplished within the times estimated by Public Service, there will be a significant number of early injuries and deaths in the event of an atmospheric Class 9 accident at Seabrook. And there is reason to suspect that actual evacuation times would be much longer.

The licensee's most recent evacuation time estimates are defective in several ways. As we have already mentioned, Public Service has failed to include in its estimates the time required for decision, notification, preparation, and confirmation. Even more importantly, it has failed to provide

^{20/} Id.

^{21/} Id. The population density in the beach area near the Seabrook site is much greater than the 100 persons per square mile assumed in NUREG-0396. As the Licensing Appeal Board has noted, "there is no doubt that, at peak periods . . . in excess of 25,000 people will be found in [that] densely populated area." Public Service Company of New Hampshire, ALAB-422, 6 NRC 33, at 51 (1977). Thus, all of the health and fatality figures contained in NUREG-0396 are understated so far as the Seabrook site is concerned.

estimates based on simultaneous evacuation during the peak summer season of all of the beach areas lying from NE to SSE of the site or even simultaneous evacuation of Hampton Beach and either of the other two beach areas, Seabrook Beach and Salisbury State Beach. This defeats the purpose of licensee evacuation time estimates, as stated in NUREG/CR-1745--namely, "to present time estimates in a format that will aid a realistic assessment of the options."^{22/} The licensee has also failed to provide a time estimate for evacuation of the entire 10-mile EPZ, as required by NUREG-0654.^{23/} And it has assumed that approximately one vehicle per household would be used in the evacuation. This assumption, according to NUREG/CR-1745, results in a low estimate of the number of automobiles being evacuated.^{24/}

Other significant deficiencies in the licensee's estimates include the following:

- (1) admitted failure to account in its off-season estimates for evacuation of the forty schools and in any of its estimates for evacuation of the three

^{22/} Analysis of Techniques for Estimating Evacuation Times for Emergency Planning Zones, NUREG/CR-1745, at 13 (November, 1980). That document indicates that two evacuation times should be reported for each evacuation zone--one reflecting evacuation of that zone alone and one reflecting simultaneous evacuation of all contiguous zones. Id. at 14.

^{23/} See Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plant, NUREG-0654, FEMA-REP-1, Rev. 1 (November, 1980), App. 4, at 4-4.

^{24/} Analysis of Techniques for Estimating Evacuation Times for Emergency Planning Zones, NUREG/CR-1745, at 10 (November, 1980).

hospitals and other institutions^{25/} located within the ten-mile EPZ;^{26/}

(2) failure to account for the public transportation-dependent population;

(3) failure to include major employers in its estimates of summer transient automobile demand; and

(4) failure to consider the effect of voluntary evacuation beyond the ten-mile EPZ.

Given these deficiencies, it seems likely that the licensee's current evacuation time estimates are too low. This is especially so in view of the Federal Emergency Management Agency's estimates that there are 7,180 people in the non-automobile owning population and 3,500 people in institutions, together constituting 10% of the total resident population within the Seabrook EPZ.^{27/}

It is also noteworthy that the evacuation time estimates provided by the licensee in its PSAR^{28/} are significantly

^{25/} See Seabrook Preliminary Safety Analysis Report ("PSAR"), at 2.1-8 and Tables 2.1-5 and 2.1-6.

^{26/} NUREG/CR-1745 concludes that evacuation times for large special facilities, such as hospitals, may well be longer than the evacuation time for the general public. See Analysis of Techniques for Estimating Evacuation Times for Emergency Planning Zones, NUREG/CR-1745, at 15 (November, 1980).

^{27/} The Dynamic Evacuation Analyses: Independent Assessment of Evacuation Times from the Plume Exposure Pathway Emergency Planning Zones of Twelve Nuclear Power Stations, FEMA-REP- (number not yet assigned), at 46.

^{28/} Seabrook PSAR, Amendment 23, July, 1974, at S13-7 - S13-16.

higher than its current estimates, even though the earlier estimates relate to 22.5 degree sectors (rather than 90 degree or 180 degree sectors) and cover only a five-mile radius.^{29/} In its PSAR, the licensee estimates that it will take eight hours from the occurrence of the accident to clear three of the six beach sectors to the five-mile radius and that the other three sectors will require five and one-half to six hours.^{30/}

A FEMA study estimates that a minimum of six hours and 10 minutes will be needed to evacuate the entire EPZ on a summer Sunday, even if notification is completed within 15 minutes.^{31/} That study further concludes that

The behavior of drivers who are caught in congestion within direct sight of the Seabrook Station can only be guessed at this time. Any breakdown in orderly evacuation traffic flow will result in evacuation times greater than the ones estimated above. Total evacuation times could range from 10 hours 30 minutes to 14 hours 40 minutes for an evacuation in which traffic control is generally ineffective.^{32/}

FEMA estimates, then, are also considerably higher than the licensee's current estimates. The early deaths and

^{29/} The earlier figures do purport to include notification time.

^{30/} Seabrook PSAR, at S13-16.

^{31/} The Dynamic Evacuation Analyses: Independent Assessment of Evacuation Times from the Plume Exposure Pathway Emergency Planning Zones of Twelve Nuclear Power Stations, FEMA-REP- (number not yet assigned), at 46.

^{32/} Id.

injuries resulting from a Class 9 accident would, of course, be significantly higher than the figures recited above if the longer times estimated by FEMA or by the licensee in the 1974 amendment to its PSAR are actually required for evacuation.

III. THE FEASIBILITY OF EVACUATION SHOULD BE ASSESSED IMMEDIATELY

The foregoing discussion demonstrates that there are indeed "unusual constraints" associated with evacuation of the Seabrook EPZ and serious questions about the feasibility of safe evacuation of the area. That being the case, Seabrook is an appropriate instance for immediate examination of the feasibility issue.

Both the "Moffett Report"^{33/} and the Report of the President's Commission on the Accident at Three Mile Island have roundly criticized the NRC's past practice of postponing full consideration of emergency planning issues until the operating license stage. The President's Commission wrote,

The construction permit stage does not require complete design plans, and therefore the full safety review does not occur until the operating license stage. By then, hundreds of millions of dollars have been spent or committed in the construction process. Therefore, the ultimate safety review may be influenced by economic considerations that can lead

33/ Emergency Planning Around U.S. Nuclear Powerplants: Nuclear Regulatory Commission Oversight, Fourth Report by the Committee on Government Operations, 96th Congress, 1st Session, House Report No. 96-413 (August 8, 1979) ["Moffett Report"].

to a reluctance to order major changes at the operating license stage.^{34/}

Similarly, the Moffett Report observed that

[i]t is not until the plant is nearly built and the utility applies for an operating license that it must come forward with a fullblown emergency plan. By then, of course, the Commission may find itself in the untenable position of having to choose between scrapping a multi-billion dollar investment or allowing the welfare of area residents to be jeopardized.^{35/}

The Government Operations Committee concluded in the Moffett Report that there is "considerable doubt" about the feasibility of conducting evacuations in any densely populated areas^{36/} and that evacuation of a sufficient area around a number of U.S. plants is clearly not feasible.^{37/} In an exchange, recounted in the Moffett Report, between Congressman Moffett and then Chairman Hendrie, Congressman Moffett, speaking on behalf of the Environment, Energy and Natural Resources Subcommittee of the Government Operations Committee, called on the NRC to "take a hard look at the feasibility of evacuation in the case of plants located near major population areas and treat that examination as a "priority."^{38/} The Commission certainly does not fulfill this legislative mandate

^{34/} Report of the President's Commission on the Accident at Three Mile Island, at 52.

^{35/} Id. at 30.

^{36/} Id. at 8.

^{37/} Id. at 48.

^{38/} Id. at 46-47.

or meet the criticisms of the Committee on Government Operations and the President's Commission by postponing consideration of emergency planning at Seabrook.

Cases arising under the National Environmental Policy Act, 42 U.S.C. Section 4331 et seq., provide a useful parallel to this situation. Confronted with the problem of "sunk costs", courts insist on early review of significant environmental issues. Thus, in upholding the grant of a preliminary injunction enjoining further construction of a bridge, the Second Circuit found in Steubing v. Brinegar, 511 F.2d 489, at 497 (2nd Cir. 1975), that "[w]ithout preliminary injunctive relief construction might well reach the stage of completion where for economic and other reasons it would be impossible to turn back or alter the project in light of what an Environmental Impact Statement revealed, and thus the environment might thereby be irreparably damaged."³⁹ Similarly, the Fourth Circuit noted, in halting construction of an interstate highway pending a NEPA review by the Secretary of Transportation, that

[f]urther investment of time, effort, or money in the proposed route would make alteration or abandonment of the route increasingly less wise and, therefore, increasingly unlikely. If investment in the proposed route were to continue prior to and during the Secretary's consideration of the environmental

^{39/} See also National Wildlife Federation v. Andrus, 440 F. Supp. 1245, at 1256 (D.D.C. 1977).

report, the options open to the Secretary would diminish, and at some point his consideration would become a meaningless formality.⁴⁰

The Commission clearly has the authority to require that Public Service Company demonstrate the feasibility of evacuating the Seabrook EPZ now. At the time when emergency planning was limited to the low population zone, Commission decisions required a determination during construction permit proceedings that "timely evacuation [of the LPZ] is reasonably assured."^{41/} The Commission's Final Regulations on Emergency Planning, while extending emergency planning requirements to Emergency Planning Zones, maintain the requirement that a determination of feasibility be made at the construction permit stage for new plants. The Regulations state that:

The Preliminary Safety Analysis Report shall contain sufficient information to ensure the compatibility of proposed emergency plans for both onsite areas and the EPZ's with facility design features, site layout, and site location with respect to such considerations as access routes, surrounding population distributions, land use, and local jurisdictional boundaries . . .^{42/}

^{40/} Arlington Coalition on Transportation v. Volpe, 458 F.2d 1323, 1333 (4th Cir. 1972), cert. denied, 409 U.S. 1000 (1972). See also Environmental Defense Fund v. Tennessee Valley Authority, 468 F.2d 1164, 1183-84 (6th Cir. 1972); Latham v. Volpe, 455 F.2d 1111, 1121 (9th Cir. 1971).

^{41/} Consumers Power Company, (Midland Plant Units 1 and 2) ALAB-123, 6 AEC 331, at 342. (1973). See also Southern California Edison Company, et al., (San Onofre Nuclear Generating Station Units 2 and 3), ALAB-248, 8 AEC 957, 961-63 (1974).

^{42/} 10 C.F.R. Part 50. Appendix E, Section II.

Thus, the Commission cannot now issue construction permits without determining that timely evacuation of the EPZ for the particular plant is feasible.

Section 186(a) of the Atomic Energy Act^{43/} authorizes the NRC to suspend or revoke "[a]ny license . . . because of conditions revealed . . . which would warrant the Commission to refuse to grant a license on an original application." The U.S. Court of Appeals for the District of Columbia Circuit has held that this clause

applies to all licensing matters, including health, safety, and environmental considerations . . . [and] reflects a deliberate policy choice on the part of Congress when it enacted section 186(a) to render licenses for nuclear facilities subject to post-licensing review under evolving licensing standards, rather than under those standards applicable at the time the license in question was issued.^{44/}

It is clear, then, that the emergency plan for the Seabrook environs is now subject to post-licensing review under the new emergency planning standards.

In light of the gravity of the issue of safe evacuation, it is the responsibility of the Director to issue the show cause order requested by SAPL. Deferral of this major outstanding safety question to the operating license stage would be inconsistent with the primary obligation of the Commission and Staff to protect public health and safety.

^{43/} 42 U.S.C. §2236(a).

^{44/} Ft. Pierce Utilities Authority of the City of Ft. Pierce v. U.S.A. and the NRC, Nos. 77-1925 and 77-2101, slip opinion at 19-20 (D.C. Cir., March 23, 1979).

Dated: March 13, 1981

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